

COPY NO. 1
FOR THE PRESIDENT
OF THE UNITED STATES

BRAZIL



SR-17

Published 30 November 1948



CENTRAL INTELLIGENCE AGENCY

DECLASSIFIED

E.O. 11652, Sec. 3(E) and 5(D) or (G)

CIA 6-13-76
GDS letter, March 1992

WASH DC NARS Date 7-5-76

DISSEMINATION NOTICE

1. This copy of this publication is for the information and use of the recipient designated on the front cover and of individuals under the jurisdiction of the recipient's office who require the information for the performance of their official duties. Further dissemination elsewhere in the department to other offices which require the information for the performance of official duties may be authorized by the following:

- a. Special Assistant to the Secretary of State for Research and Intelligence, for the Department of State
- b. Director of Intelligence, GS, USA, for the Department of the Army
- c. Chief, Naval Intelligence, for the Department of the Navy
- d. Director of Intelligence, USAF, for the Department of the Air Force
- e. Director of Security and Intelligence, AEC, for the Atomic Energy Commission
- f. Deputy Director for Intelligence, Joint Staff, for the Joint Staff
- g. Assistant Director for Collection and Dissemination, CIA, for any other Department or Agency

2. This copy may be either retained or destroyed by burning in accordance with applicable security regulations, or returned to the Central Intelligence Agency by arrangement with the Office of Collection and Dissemination, CIA.

DISTRIBUTION:

Office of the President
National Security Council
National Security Resources Board
Department of State
Office of Secretary of Defense
Department of the Army
Department of the Navy
Department of the Air Force
State-Army-Navy-Air Force Coordinating Committee
Joint Chiefs of Staff
Atomic Energy Commission
Research and Development Board

HARRY S. TRUMAN LIBRARY
Papers of
HARRY S. TRUMAN
PRESIDENT'S SECRETARY FILE

Published November 1948

SR-17

BRAZIL

TABLE OF CONTENTS

SUMMARY

CHAPTER I—POLITICAL SITUATION

1. GENESIS OF THE PRESENT POLITICAL SITUATION	1
2. PRESENT GOVERNMENTAL STRUCTURE	3
a. The Executive Branch	3
b. The Legislative Branch	5
c. The Judicial Branch	6
d. Suffrage	7
e. State and Local Government	7
3. POLITICAL PARTIES	9
a. Partido Social Democrático (Social Democratic Party)	10
b. Uniao Democrática Nacional (National Democratic Union)	11
c. Partido Trabalhista Brasileiro (Brazilian Labor Party)	11
d. Partido Commista do Brasil (Communist Party of Brazil)	12
4. OTHER INFLUENTIAL GROUPS	14
a. The Army	14
b. Big Business	15
c. The Church	16
5. STABILITY OF THE PRESENT REGIME	17

CHAPTER II—ECONOMIC SITUATION

1. FOOD AND AGRICULTURE	21
2. NATURAL RESOURCES	24
a. Minerals	25
b. Non-metals	28
c. Petroleum	29
d. Power	31
e. Coal	32
3. INDUSTRY	32
a. Food-Processing Industries	33
b. Textile Industry	33
c. Iron and Steel	34
d. Chemicals	35

e. Construction and Building Materials	35
f. Paper and Pulp	35
g. Vegetable Oils	36
4. FINANCE	36
5. INTERNATIONAL TRADE	39

CHAPTER III—FOREIGN AFFAIRS

1. BASES OF BRAZILIAN FOREIGN POLICY	43
2. BACKGROUND	43
3. CURRENT RELATIONS—INTERNATIONAL ORGANIZATION	45
4. CURRENT RELATIONS—LATIN AMERICA	45
5. US RELATIONS—GENERAL ESTIMATE	46
6. SUMMARY	48

CHAPTER IV—MILITARY SITUATION

1. GENESIS OF PRESENT MILITARY POLICIES	49
2. WAR POTENTIAL	50
a. Manpower	50
b. Natural Resources	51
c. Industry	52
d. Science	53
e. Finance	53
3. BASIC MILITARY POLICIES AND PRACTICES	54
a. Mission	54
b. General Military Organization	54
c. Recruitment	55
d. Armed Force Personnel	56
e. Training	57
f. Mobilization	58
g. Fiscal	58
h. Logistics	59
i. Intelligence and Counter-Intelligence	59
4. ORGANIZATION, STRENGTH, AND DISPOSITION OF THE VARIOUS ARMED FORCES	61
a. Army	61
b. Navy	62
c. Air Force	63
d. Distribution of Forces	65
e. Quasi-Military Organizations	66
5. GENERAL ESTIMATE OF MILITARY CAPABILITIES	66
a. Adequacy of Present Forces	66
b. Maximum Military Capabilities	69

HARRY S. TRUMAN LIBRARY
Papers of
HARRY S. TRUMAN
PRESIDENT'S SECRETARY FILE



35
35
36
36
39

43
43
45
45
46
48

49
50
50
51
52
53
53
54
54
54
55
56
57
58
58
59
59
61
61
62
63
65
66
66
66
69

CHAPTER V—STRATEGIC CONSIDERATIONS AFFECTING US SECURITY 71

APPENDIX A—Topography and Climate 75

APPENDIX C—Population Characteristics and Statistics 77

APPENDIX D—Biographical Data 79

APPENDIX E—Chronology 83

- Maps:
- The World Around Brazil
 - Brazil: Density of Population
 - Brazil: Commodities and Natural Resources
 - Brazil: Terrain and Transportation
 - Brazil: Minerals



SUMMARY

Brazil is a federal republic, the governmental organization and powers of which generally parallel those of the US. Although basically the distribution of powers is similar to that of the US, the Brazilian federal government constitutionally has the power to legislate more extensively on many social and economic matters that are traditionally considered in the US to be within state jurisdiction. Lack of financial resources and an inefficient administrative organization prevent the federal government from exploiting this power to any notable extent. Democratic government and civil rights are amply provided for in Brazilian law, but their full enjoyment is obstructed by a still-well-defined social caste system and by a bureaucracy that exerts, in general, a stultifying effect upon the development of democracy, since a large proportion of the present bureaucracy is a carry-over from the Vargas dictatorship. Events of recent months seem to confirm the conservative orientation of the Dutra administration. It seems equally clear that, failing an unexpected economic crisis, the government has sufficient political and popular support to continue in office until the next election in 1950.

The Brazilian economy shows great sectional variations. The southern part of Brazil is the economic as well as the political heart of the country. Most of the non-agricultural workers live in the south, and a high percentage of them belongs to government-controlled syndical organizations. Agricultural activity, however, provides almost half of the Brazilian national income, and considerably more than half of the working population is engaged in agricultural pursuits.

Agricultural production is sufficient to maintain the Brazilian population at the low dietary level it has in common with other Latin American peoples. The only significant food import is wheat. Any rapid expansion of food production is very unlikely in the immediate future.

Brazil is endowed with an unusual variety of minerals of strategic value to the US. The pressing need for Brazilian materials in World War II, combined with the lack of previously planned methods for meeting this need, impelled the US to divert to Brazil a great amount of capital, machinery, and technical personnel that were sorely needed elsewhere. This experience suggests the desirability of a different method of approach for the procurement of strategic materials in some future emergency. The Brazilian economy and level of technical skill, unaided by outside assistance, are unequal to the task of full and efficient exploitation of Brazil's natural resources.

As a result of agricultural, and particularly of industrial, development during the past 25 years, the pattern of Brazil's domestic economy and international trade is in

Note: The information in this report is as of September 1948.
The intelligence organizations of the Departments of the Army, Navy, and the Air Force have concurred in this report; for a dissent of the Intelligence Organization of the Department of State, see footnote, page 71.

the initial stages of a rather radical modification. Through industrial development and agricultural diversification, Brazil has partially alleviated its formerly very great dependence on world markets.

Brazil's conduct of its foreign affairs has been generally cooperative and complementary to that of the US. There have been, however, divergencies of policy in the past; there is no reason to believe that shifts in world affairs may not produce divergence in the future. Brazil has always been one of the strongest advocates of Hemisphere political cooperation, and has traditionally attached great importance to most programs for international action. While there is a latent rivalry in Brazil's relations with Argentina, a desire to maintain cordial relations is at present obvious on both sides.

Brazil's military establishment, at present the largest in Latin America (Army, 140,000; Navy, 16,000; Air Force, 14,700), is adequate to maintain internal security, to defend Brazil against attacks by any probable combination of neighbors, and to assume a proportionate responsibility in joint Hemisphere defense. Maximum capabilities, in proportion to population and potential resources, will remain low, even assuming US assistance, because of the low quality of Brazilian manpower resulting from unsatisfactory standards of health, sanitation, and education. Brazil's natural resources and industrial organization, present and to be expected, are not sufficient for the maintenance and combat employment of large forces. Much equipment is, and will continue to be, imported. Organization, equipment, and training of the Brazilian armed forces are modeled as closely after those of the US as limited Brazilian finances and capabilities will permit. Brazil uses an adequate system of compulsory military service, but no system of periodic training of reserves has been instituted. Conscript increments form a smaller part of the forces than in the average Latin American force depending in part on conscription, so that there is no dangerous reduction of forces between the discharge of one conscript class and the calling up of another. Forces are distributed near population centers, with the largest contingent in the south near the Argentine and Uruguayan borders. Brazilian intelligence is well organized and was of distinct value to the US in World War II. Brazil has quasi-military forces numbering about 80,000, which are trained to supplement military forces in time of war.

Brazil is of strategic importance to the US from the political, economic, and military viewpoints. Brazil has considerable latitude for independent action in international affairs and shares with Argentina capabilities for countering US strength by collaboration with extra-Hemisphere forces, or for rallying the more remote countries of the Hemisphere to anti-US causes and programs. Brazil is one of the most important of the Latin American countries as a source of strategic and critical materials. The military significance of Brazil arises from its geographic position with relation to Caribbean defense requirements and to trans-Atlantic movement of military forces.

CHAPTER I POLITICAL SITUATION

1. GENESIS OF THE PRESENT POLITICAL SYSTEM.

When the republic was established in 1889, the Brazilians adopted a constitution similar in its basic concepts to that of the United States. Although there has been a reasonable amount of progress and political development under the democratic federal system, the failures in Brazilian political evolution may in large part be attributed to the fact that such a system does not fit the realities of Brazilian history and society. Brazil was one of the last countries in Latin America to attempt the establishment of a government which was federally organized and which provided for the whole range of civil liberties and guarantees that are found in the US system. Thus, Brazil has had a minimum of time (59 years) to adjust to a governmental system which flies in the face of an historical tradition centuries old.

During the colonial period (1502-1822) government was centralized in the hands of royal officials, and society continued to have a clear-cut stratification of classes with characteristic upper-class privileges and exemptions. In contrast to the other Latin American countries, Brazilian achievement of independence (1822) did not entail any radical breaking with the past: it merely involved the exchange of one monarchy for another. In 1820 when King Dom Joao returned with his court to Portugal and attempted to revive the pre-Napoleonic policy of governing Brazil from the mother country, such a protest was aroused in Brazil that it was declared an independent empire with Dom Joao's son, Dom Pedro I, as emperor. The empire thus inaugurated lasted until 1889.

Dom Pedro I was a man of autocratic convictions and determined to govern by his convictions. His short reign (1822-1831) was a continual struggle between democratic forces and the autocratic principles of which he was an almost perfect exponent. The emperor's highhandedness so aroused public opinion that he was forced to realize that his only course, if he wished to preserve the dynasty, was to abdicate. He did so in 1831. His heir being under age, a regency was established to take charge of the government for the nine-year interregnum. The regency relinquished power to Dom Pedro II in 1840.

During his reign (1840-1889), Dom Pedro II constantly promoted the democratization of the government and society. Centralized government continued, but civil liberties and representative government were legally recognized and encouraged. Brazil did not become, however, and has not even now become a democracy in the US sense. Moreover, the relative progress between 1840 and 1889 was made over the opposition of vested interests, heirs of centuries of privilege. As a result of the abolition of slavery in 1888, the government irrevocably lost the support of the upper classes, particularly of the landowners. The empire came to an end the following year, and a republic was formed.

The republic was established, not to facilitate democratization and the growth of liberty, but to protect vested interests against an all-too-liberal emperor whose progressive government had allowed new groups to undermine the economic and political bases of the power of the privileged classes. In the eyes of the ruling classes it was not enough to dispense with the monarchy; centralized government of any kind had to go. Only under a federal system, with its large measure of local autonomy, could the privileged classes have any reasonable assurance of gaining and holding the political power necessary to maintain their position against the growing pressures of democracy. Therefore, when the republic was established in 1889 it was federally organized, and the constitution contained provisions relative to civil and political rights and guarantees quite similar to those in the US Constitution.

Brazilians were thus among the last people in the Hemisphere to get an opportunity to put the concepts of federalism and civil liberties into practice, and have had only a short period of time in which to overcome the deeply ingrained, centuries-old traditions of centralized autocratic government and a rigid caste society. The several civil wars and dictatorships during the republican era attest this fact.

By far the most important of these dictatorships, in terms of its impact on Brazil, was that of Getulio Vargas, 1930-1945. During Vargas' long tenure the constitution in force at the time was either corrupted or ignored according to whichever procedure met the requirements of the dictatorship. When the Dutra administration came to power in 1945 with the aim of restoring constitutional government, it was forced to draw up a new constitution. This constitution, which contains several significant innovations, was promulgated on 18 September 1946.

The general organization of government as provided in the old constitution was retained in the constitution of 1946. Selection of the President and Vice-President by the electoral college system was discontinued, however, and election by direct popular vote substituted. The term of Senators was reduced from nine to eight years, one-third of the Senate being elected at one quadrennium and the remaining two-thirds at the other quadrennium.

The provision in the 1937 constitution for establishment of a permanent committee of the Senate to exercise various checks on presidential action during the period when Congress was in recess was deleted from the Constitution of 1946. In most cases of national defense emergency, the President may now take immediate independent action. When he does so, however, he is required to issue a call for a congressional session to meet within fifteen days to ratify or disapprove the President's actions.

The provisions dealing with the state of siege have been amplified in the constitution of 1946 in an attempt to protect the country against the President's abuse of this power. The President may now declare a state of siege only when Congress is not in session. He is further limited by the fact that he must call Congress into special session to convene within fifteen days after the declaration of a state of siege. All facts are then reviewed by Congress and a vote of approval or cancellation taken.

The Vargas regime, for reasons of political expediency, introduced certain governmental controls over private property, thus modifying the orthodox capitalistic con-

ce
th
su
int

of g
vide
mis
mus
yea
a ser

ment
gress
ber of
in rep
regime

It
civil li
still e
stricke
are by
relative

2. PRE
Bra
generall
each org
and laws
a.

term of fi
full posses
not be re-
relative su
President
Senate, Ch
Brazilian V
of a tie.

Th
sage to Con
with membe
the size of t
introduce bil

cept represented in the old constitution. Many of these were made permanent in the constitution of 1946, and, as a result, the government may now legally intervene to supervise an industry or other economic activity when it is considered in the public interest to do so.

On paper, the constitution of 1946 appears to be admirably suited to the needs of government in Brazil. It recognizes the critical problems of the country and provides machinery for their solution. It makes what seems to be a practical compromise between individual liberties and the social necessities of Brazilian civilization. It must be remembered, however, that this constitution has been in force less than two years; hence it is too early to decide definitely whether or not the Brazilians will make a serious effort to live by the letter and spirit of their fundamental law.

Partly as a result of conditions created by Vargas, the present Brazilian Government is functioning to a large extent on the basis of executive decree rather than congressional legislation. Congress has done little as yet to enact the considerable number of laws necessary to implement the new constitution, nor has it made much progress in repealing or modifying certain undesirable laws promulgated during the Vargas regime.

It should not be surprising that the benefits of federalism and the enjoyment of civil liberties are by no means complete realities in Brazil today. The "old families" still exercise considerable political influence and economic power. The poverty-stricken and illiterate masses do not participate effectually in politics. Civil liberties are by no means a farce; yet the measure of their enjoyment is still determined by the relative few who control the government.

2. PRESENT GOVERNMENTAL STRUCTURE.

Brazil is a federal republic the governmental organization and powers of which generally parallel those of the United States. There are twenty states in the union, each organized under the republican form of government, with its own constitution and laws.

a. *The Executive Branch.*

The President and Vice-President of Brazil are elected simultaneously for a term of five years. To qualify for either office one must be a native-born Brazilian, in full possession of political rights, and at least thirty-five years of age. Incumbents may not be re-elected to their respective offices for the succeeding term, nor may any blood relative succeed them. In cases of vacancy in the presidency, the succession is Vice-President of the Republic, President of the Chamber of Deputies, Vice-President of the Senate, Chief Justice of the Federal Supreme Court. As in the United States, the Brazilian Vice-President presides over the Senate, being qualified to vote only in case of a tie.

The President of Brazil may directly introduce legislation by means of a message to Congress; that is, he does not, as in the US, merely recommend it. He shares with members of the House of Deputies the authority to introduce legislation fixing the size of the armed forces as well as finance legislation. Only the President may introduce bills creating public administrative offices or modifying the salaries of public

officials. Presidential influence in legislative matters is exerted through the Ministers of State, who may be called before either house of Congress, or any of its committees, for information or advice. A Brazilian cabinet officer, however, may not participate in congressional sessions as of right but must be invited by the particular house. When attending under these circumstances, he is constitutionally required to limit his discussion to those matters previously indicated by the particular house in its summons, thereby restricting the extent to which the President may bring his influence to bear. While giving Congress exclusive discretion as to the subject matter that may be discussed, this arrangement also operates as a protective device for the President in that cabinet officers may not be exposed to questioning which was not anticipated and for which they are not prepared.

The President is given ten working days in which to sanction or veto bills that have been passed by Congress. The Brazilian President, unlike the President of the United States, has an item veto which gives him greater influence in the determination of legislative policy. (The item veto makes it possible for the chief executive to veto a part or parts of a bill while approving the remainder.) Vetoed bills are returned to the President of the Senate who calls Congress into joint session to consider the veto message. A veto may be overridden by a two-thirds vote of the Senators and Deputies present at the joint session.

The Brazilian President's constitutional power with regard to special congressional sessions is not as potent a basis for influencing legislative policy as that of other Latin American presidents. In the first place, the ordinary session of the Brazilian Congress is of nine months' duration, a relatively long period for Latin American legislatures; hence there is less likelihood that a special session will be needed. In the second place, the President's control over the work of a special session is much less than that of other presidents because even in a presidentially-called special session, Congress may consider and enact any legislation within its normal competence. Congress is only morally (not constitutionally) bound to consider the legislative matters suggested by the President in his call for a special session. Finally, the President's power in this connection is further limited by the fact that he does not have the exclusive power to call a special session. It must also be called upon petition of one-third of the membership of either house.

The President is required to present the budget bill to the House of Deputies within the first two months of the congressional session. If Congress has not passed the budget by 30 November, the budget of the preceding year is automatically extended for another year. In an attempt to assure a balanced budget, the constitution prohibits the inclusion of any item of expenditure the income for which is not provided also. In the past, Brazilian presidents and congresses have successfully ignored constitutional provisions designed to insure a balanced budget and consequently have kept the budget in a chronic state of imbalance. The present constitution (adopted in 1946) contains even more detailed and extensive limitations and controls. It must be kept in mind, however, that the present Dutra administration (the only one so far under the new constitution) has been unusually economy-minded, and has, therefore, oper-

ated well with
can tell if late
trols on budge

The B
when judged k
obtained large
toward recruit
and its Foreign
evidence that
The bureaucra
since a large p

b. The l

The l
a House of De

The S
elect three Se
elected in one

The
impeachment
tional, with th
firms the app
proposed by t

The
eral territor
election distr
votes of the l
tient being to
does not rece
added to tho
than the que
leading party
that party is
for the electi
leading party

Alth
ing party ha
tional system
form of gro
members of
Democratic
very anti-Co

the Ministers
committees,
participate in
use. When
mit his dis-
s summons,
nce to bear.
may be dis-
ent in that
ted and for

o bills that
ent of the
ermination
e to veto a
returned to
er the veto
d Deputies

pecial con-
as that of
f the Bra-
American
In the
much less
session,
ce. Con-
e matters
resident's
the exclu-
e-third of

Deputies
or passed.
extended
on pro-
provided
ed con-
ve kept
uted in
must be
under
oper-

ated well within the letter and spirit of the constitution in this regard. Only the future can tell if later administrations will be resourceful in evading the constitutional controls on budget making.

The Brazilian Civil Service is needlessly large, as well as wasteful and inefficient when judged by present-day US or British criteria. Admittance to the bureaucracy is obtained largely through political and social influence. Some progress is being made toward recruitment through examination, especially in the Ministry of Foreign Affairs and its Foreign Service. The merit system is, however, in its infancy and there is no evidence that it will greatly influence public administration for a long time to come. The bureaucracy exerts in general a stultifying effect on the development of democracy since a large proportion of it is a carry-over from the period of the Vargas dictatorship.

b. *The Legislative Branch.*

The legislative branch of the Brazilian Government consists of a Senate and a House of Deputies, members of both being chosen by direct popular election.

The Senate is composed of 63 members; the 20 states and the Federal District elect three Senators each for a term of eight years. One-third of the membership is elected in one quadrennium and the remaining two-thirds in the other quadrennium.

The constitution vests four special powers in the Senate: it acts as a court of impeachment; it is charged, whenever any decree or law has been declared unconstitutional, with the duty of officially suspending the execution of such law or decree; it confirms the appointments of various public officials; it must approve any foreign loan proposed by the Federal District, or any state or municipality.

The House of Deputies is composed of representatives of the states and federal territories, chosen on the basis of population, the entire state constituting an election district. Brazil uses a type of electoral quotient system wherein the surplus votes of the lesser parties go to the leading party, the method of establishing the quotient being to divide the total votes cast by the number of seats to be filled. If a party does not receive a number of votes equivalent to the quotient, then *all* of its votes are added to those of the leading party. If a party receives a number of votes greater than the quotient, or a multiple thereof, the surplus votes are added to those of the leading party. For example, if a party obtains 17,000 votes and the quotient is 5,000, that party is entitled to three Deputies. The *surplus* of 2,000 over the 15,000 necessary for the election of the three Deputies is added to the number of votes obtained by the leading party. The votes transferred to the leading party are referred to as *sobras*.

Although under this system minority parties do gain representation, the leading party has greater representation than would be justified under a truly proportional system. Moreover, in extreme and isolated cases, this system makes possible a form of gross misrepresentation. For example, in the January 1947 elections for members of the municipal council of the Federal District the votes of the Christian Democratic Party were given as *sobras* to the Communist Party, thereby causing the very anti-Communist Christian Democrats to contribute to the political advancement

of the Communists. Naturally, objections to the system have been voiced, but the courts have held it to be constitutional.

The House of Deputies, consisting of 304 members, is elected in its entirety every four years. The constitution vests two special powers in the House: the impeachment of public officers before the Senate, and the authority to demand of the President a financial accounting of his administration during the congressional recess if he fails to render such accounting within sixty days after the opening of Congress.

Congressional organization and procedure are generally similar to those in the United States. As has been stated, the power to call a special session of Congress is not vested in the President alone: a petition signed by one-third of the membership of either house also requires one. The President is thus prevented, should he wish to do so, from thwarting the popular will by refusing to call a special session.

c. Judicial Branch.

Brazilians have adopted the same solution of the judicial function in a federalized government as that in the United States Constitution. That is to say, litigation involving a national interest or problem is adjudicated with finality in the federal court system while litigation exclusively of state interest is heard and decided with finality within the particular state court system. A second parallelism is found in the constitutional organization of the federal court system. The Brazilian Constitution establishes only two federal courts (the Supreme Federal Tribunal and the Federal Court of Appeals) and leaves the creation of lesser courts to the discretion of Congress.

The Supreme Federal Tribunal is composed of eleven Justices appointed by the President with the Senate's approval. As a bar to "packing the court," the constitution provides that the number of Justices may be increased by an act of Congress when an increase has been proposed by the court itself.

There are no significant differences between the jurisdiction of the Brazilian Supreme Federal Tribunal and that of the United States Supreme Court. The Brazilian court has original jurisdiction in cases involving the malfeasance and misfeasance in office of certain high government officials, conflicts of jurisdiction between federal and state courts, and in cases in which either the federal government or any of the states is a party. Appellate jurisdiction is so designed as to give the Supreme Federal Tribunal final decision in cases involving an interpretation by lower courts, either federal or state, of the treaties, constitution or laws of the republic.

The Federal Court of Appeals, the other constitutional court in Brazil, is roughly comparable to the Court of Appeals of the District of Columbia in the United States. It is composed of nine Judges appointed by the President with the approval of the Senate.

Judges of the federal courts hold office during good behavior and may be removed from office only by impeachment, which requires a two-thirds vote in the Senate.

As in other Latin American countries, the expense of court procedure makes justice much more readily available to the litigant who has money. It is based, as in all

"Roman
of oral p

d.

have the
classes of
themselves
those dep
for officers
the countr
tion and v
Compulsor
than it is i
the legislat
practical di

Alt
because of t
public apatl
only about 7
Vargas dicta
4,818,108 vot

Coer
ing Brazilian
ticipation in
election mach
how one is to
with only isol
to have been th

A spe
putes. These
honest. The c
down decisions.

e. State a

The pos
ally that of the s
may not be aboli
assemblies. In t
new state within
sents, while in Br

ced, but the

n its entirety
use: the im-
mand of the
ssional recess
of Congress.
those in the
Congress is
membership of
e wish to do

on in a fed-
o say, litiga-
n the federal
decided with
found in the
Constitution
the Federal
of Congress.
ppointed by
t." the con-
of Congress

ne Brazilian
The Bra-
e and mis-
ion between
nent or any
he Supreme
wer courts,

n Brazil, is
he United
e approval

nd may be
ote in the.

ure makes
ed. as in all

"Roman-law" countries, upon written briefs and written replies, involves a minimum of oral pleading, and is conducive to excessive delays.

d. Suffrage.

All citizens eighteen years old or above and inscribed in the electoral registers have the right to vote. Brazilian women have had the suffrage since 1934. Several classes of persons are ineligible for registration: illiterates, those unable to express themselves in the national tongue, most enlisted personnel of the armed forces, and those deprived of their political rights by law as the result of a criminal record. Except for officers of the armed forces, housewives, judges, other public officials if absent from the country at election time, invalids, and persons over sixty-five years of age, registration and voting are compulsory, and failure to do so subjects the delinquent to a fine. Compulsory voting legislation is no more effective in "getting out the vote" in Brazil than it is in the other countries of the world which have similar legislation. In Brazil, the legislation is, as all such legislation must be, indifferently enforced because of the practical difficulties involved.

Although it is estimated that there are 25,000,000 Brazilians of voting age, because of the legally prescribed disqualifications, combined with a certain degree of public apathy and lax enforcement of the compulsory registration law, Brazil has only about 7,500,000 registered voters. In the two most important elections since the Vargas dictatorship—those in December 1945 and in January 1947—5,843,943 and 4,818,108 votes, respectively, were cast.

Coercion has not generally been a significant factor in recent elections in keeping Brazilian voters away from the polls. More important obstacles to maximum participation in elections are indifference, weather, and inefficient administration of the election machinery such as the dissemination of information as to where, when, and how one is to vote. The elections of December 1945 and January 1947 were orderly with only isolated instances of violence and fraud. Competent observers report them to have been the most honest in the history of Brazilian elections.

A special system of courts has been set up for the settlement of election disputes. These courts perform their duties well and are generally considered to be honest. The chief criticism of their work is that they are prone to delay in handing down decisions.

e. State and Local Government.

The position of the states in the Brazilian governmental organization is virtually that of the states in the United States: they have a constitutional right to exist and may not be abolished or dismembered without the consent of their respective legislative assemblies. In the United States, however, Congress may abolish a state or erect a new state within the territory of an existing one, provided the legislature thereof consents, while in Brazil such congressional action is subject not only to the consent of the

HARRY S. TRUMAN LIBRARY
 Papers of
 HARRY S. TRUMAN
 PRESIDENT'S SECRETARY FILE

state legislature, but also to the results of a plebiscite of the people residing in the area directly affected by such modifications of territorial limits.

The federal government is one of delegated powers. The states have governments of reserved powers in that there is reserved to them all powers which are not explicitly or implicitly prohibited to them by the constitution. Although basically the distribution of powers in the Brazilian federal union generally parallels that of the US, nevertheless the Brazilian federal government constitutionally has the power to legislate more extensively on many matters which are traditionally considered in the US to be within state jurisdiction. Hence, in meeting the social, economic, and political needs of the people of Brazil the federal government could play a greater role than that of the US. This situation results from two factors: (a) the powers delegated to the federal government are more extensive and detailed, and (b) the Brazilian courts and Congress have been more liberal in their interpretation of the implied powers of the federal government. Lack of financial resources and inefficient administrative organization prevent the federal government from exploiting this power to any notable extent.

There is one other major difference between the US and Brazilian federal unions with regard to the distribution of powers. The US Constitution contains no express guarantees for municipalities against action by their respective state governments. The only federal protection municipalities have against state action is that by modern interpretation of the "equal protection of the laws" and "due process" clauses of the Fourteenth Amendment, municipalities get a limited protection against arbitrary action by state governments. In Brazil state governments do not have as complete control of municipalities. The constitution expressly defines and protects the taxing power of municipalities. It guarantees their right to determine their own administrative organization with regard to matters of peculiar municipal interest. There are two important limitations upon these municipal powers. In those municipalities defined by federal law to be important defense and industrial areas the mayor (*prefeito*) is appointed by the State Governor or President of the Republic as the case may be. The second limitation is that the state government may intervene in the municipality when higher authorities consider that the municipal financial or administrative system is being locally mismanaged. Although the Brazilian states as geographic units play a very important role in the electoral and general political pattern of the country, their legal position and competence is more circumscribed than is the case of the United States.

As in other Latin American federal unions, the constitutional right of the central government to intervene constitutes a potent control of state governments. The new Brazilian constitution, however, goes further in setting up protections against the abuse of the power to name interventors than is found in most other Latin American constitutions. The power to decree an intervention for certain reasons is vested in the President, and for others, in the Congress, neither having complete exercise of the power. The President's discretion is more limited than that of the Congress.

3. POLITICA

Partid
 Uniao
 Partid
 Vacan
 Cor
 Comm
 Affilia

Total

* The PTB
 ** The PRB
 siders himself :

Brazilian
 electoral allia
 last several
 Republic, all
 themselves fo
 parties in th
 a great strat
 or the other

Getulio V
 the various s
 scope. To c
 national elec
 qualify as "na

During t
 (the party of
 those elemen
 the Vargas cc
 does either 1
 parties, only
 have a real i

HARRY S. TRUMAN LIBRARY
 Papers of
 HARRY S. TRUMAN
 PRESIDENT'S SECRETARY FILE

ing in the
 ve govern-
 ch are not
 sically the
 hat of the
 power to
 red in the
 and politi-
 role than
 legated to
 an courts
 powers of
 ministrative
 y notable
 al unions
 o express
 rnments.
 y modern
 es of the
 ry action
 e control
 g power
 istrative
 are two
 defined
 feito) is
 e. The
 ty when
 stem is
 s play a
 ry, their
 United
 central
 he new
 st the
 merican
 in the
 the

3. POLITICAL PARTIES.

PARTY AFFILIATION	FEDERAL SENATE	FEDERAL CHAMBER OF DEPUTIES
Partido Social Democrático	35	144
Uniao Democrática Nacional	17	74
Partido Trabalhista Brasileiro	3	18*
Partido Republicano	3	17
Partido Social Trabalhista	2	16
Partido Social Progressista	2	8
Partido Democrata Cristao	..	3
Partido Socialista Brasileiro	..	3
Partido de Representação Popular	..	1
Partido Libertador	..	1
Partido Republicano Democrático	..	1**
Vacancies because of expulsion of Communist members	1	14
Communists elected under PSP label	..	2
Affiliation uncertain	..	2
Total	63	304

* The PTB lists 24 deputies elected by that party but 6 have either withdrawn or been expelled.

** The PRD is not legally registered but Guaraci Silveira, although elected by the PST, considers himself a member.

Brazilian political parties are highly unstable both as to membership and as to electoral alliances. They are markedly personalistic in character, and only during the last several years have they been operating on a national basis. Under the First Republic, all parties were essentially state organizations which made alliances among themselves for participation in national elections, and because of this situation, the parties in the two most populous states (Sao Paulo and Minas Gerais) used to enjoy a great strategic advantage, and the presidency usually went to the governor of one or the other of them.

Getulio Vargas, with the aid of interventors and other federal officials stationed in the various states, broke the power of the state machines and created one of national scope. To consolidate this success, a new electoral decree was issued for the 1945 national elections which forbade state parties to participate therein. In order to qualify as "national", a party must have adherents in as many as five states.

During the closing months of Vargas' regime, two major parties appeared: the PSD (the party of the Vargas-created national machine); and the UDN which united all those elements that had played leading roles in the political life of the Republic before the Vargas *coup*. These loosely knit parties are not separated by any sharp issues, nor does either have a consistent, well-defined political philosophy. Of the remaining parties, only two—Getulio Vargas' Labor Party and the Communists—can be said to have a real impact upon national affairs. Each of the latter two is built around a

single popular leader. Although fourteen parties participated in the last national elections (January 1947), these four polled 79 percent of the total vote. Of the ten remaining parties, three accounted for 15 percent of the total. These latter parties were: The Republican Party, largely a revival of an old Minas Gerais party, whose policies are similar to those of the UDN; the Social Progressive Party, which is the personal vehicle of Governor Adhemar de Barros of Sao Paulo; and the Popular Representation Party, heir of the "Brazilian Integralist Action" (the prewar Fascist movement), under the leadership of Plinio Salgado.

Because of this multiple-party system, blocs are necessary for victory in elections; hence government suffers from all those elements of instability inherent in coalition government. Because a President is by no means sure of winning control of Congress, the success of his administration is likely to depend upon his ability to make and sustain party alliances within the legislature.

Although as a result of the instability of Brazilian parties internally and in coalition, party politics seldom offer an accurate reflection of the actual interplay and relations of the major interest groups in Brazil, there are some policies upheld in common by the various parties. All major parties accept the principle of government aid in developing industry, agriculture, transportation, and communications; commonly urge government encouragement of cooperatives; favor anti-trust legislation as a means of curbing foreign monopolies; and promise improved educational and public health facilities. The continuing presence on the political scene of Getulio Vargas on the one hand and fear of the Communists on the other, caused even the most conservative parties to endorse for inclusion in the 1946 Constitution the principles of social security, guaranteed minimum wages, the eight-hour day, and distribution among the workers of the excess profits of industry.

The principal parties are as follows:

a. *Partido Social Democrático (Social Democratic Party).*

The PSD, the Administration party, was formed in 1945. In almost every state the Vargas-appointed federal "interventor" served as chairman of the PSD state committee, and the key posts in the organization went to government office-holders or to officials in government-controlled enterprises. During the early months of the party's existence, many members were undecided as to whether to support the official party candidate, General Dutra, or to continue their allegiance to Vargas and work for his retention of power. To this day, party members are plagued by this conflict of loyalties. In the important states of Pernambuco and Minas Gerais, Vargas men still actually control the PSD machine, and pro-Dutra members retaliate by working with local branches of the UDN.

The PSD, while paying lip service to progressive government, is in fact giving Brazil a conservative administration. No doubt influenced by the Army, with which its relations are intimate, it has successfully prevented the repeal of the undemocratic decree-laws of the Vargas regime. Moreover, it has been slow in drafting the labor legislation necessary to implement the liberal labor provisions of the new constitution.

the main
of indust
men. Th

system; (c
pand the
affect fore
and agric
interest";

vigorous d

b. U

T

political ec
claims maj
professes t
liberties.

Th
several of t
(the Repub
have withd
Democratic
as the Braz

(1)

fessional gr
cism bars t
Forces). In

(2)

right to strik
administrati
government's

tion: (b) is p

c. Part

The

was formed in

last national
Of the ten re-
parties were:
whose policies
the personal
representation
movement),

in elections;
t in coalition
of Congress,
ake and sus-

and in coali-
lay and rela-
in common
ment aid in
monly urge
a means of
public health
Vargas on the
conservative
al security,
the workers

most every
PSD state
holders or
ns of the
the official
work for
conflict of
men still
king with

act giving
th which
democratic
the labor
stitution.

(1) *Membership.*

Party membership is drawn chiefly from elements deeply committed to the maintenance of the *status quo*: government officials; army officers; representatives of industrial and commercial interests; large land-holders; and highly placed churchmen. The party polled 1,546,000 votes in the 1947 elections.

(2) *Program.*

Domestic: (a) Protective tariffs; (b) government-controlled trade-union system; (c) anti-Communism; (d) increased production to combat inflation and to expand the volume of exports; (e) anti-trust legislation (in practice such would primarily affect foreigners); (f) increased income taxes; (g) government promotion of industry and agriculture; (h) introduction of foreign capital provided it is "in the national interest"; (i) extension of labor legislation to rural workers.

International: (a) Hemisphere solidarity; (b) support of the UN; (c) vigorous diplomatic action in furtherance of Brazil's economic interests.

b. *Uniao Democrática Nacional (National Democratic Union).*

The UDN was founded early in 1945 by government officials who had suffered political eclipse in Vargas' 1937 *coup*. It is still essentially an anti-Vargas party. It claims major credit for the re-establishment of constitutional government in Brazil, and professes to regard itself as the long-term guardian of Brazil's democracy and civil liberties.

The UDN was originally a coalition of various anti-Vargas elements including several of the traditional state parties. Two of the parties originally affiliated with it (the Republican Party of Minas Gerais and the Freedom Party of Rio Grande do Sul) have withdrawn to form new national parties. Another UDN faction, the so-called Democratic Left, withdrew on ideological grounds and established what is now known as the Brazilian Socialist Party.

(1) *Membership.*

Party membership consists of: members of Brazil's "old families"; professional groups; many of Brazil's journalists; intellectuals and students whose Catholicism bars them to Communism; members of the armed forces (especially the Air Forces). In the 1947 elections the party polled 1,152,400 votes.

(2) *Program.*

Domestic: (a) Favors introduction of foreign capital; (b) recognizes the right to strike and favors free trade unions; (c) stands for decentralization of public administration; (d) is anti-Communist, yet in the interest of civil liberties opposes the government's suppression of the Communist Party; (e) opposes all Vargas elements.

International: (a) Supports the foreign policy of the Dutra administration; (b) is pro-US.

c. *Partido Trabalhista Brasileiro (Brazilian Labor Party).*

The Brazilian Labor Party, the political vehicle of former President Vargas, was formed in August 1945 under the leadership of certain members of the Labor Min-

HARRY S. TRUMAN LIBRARY
Papers of
HARRY S. TRUMAN
PRESIDENT'S SECRETARY FILE

istry and heads of government-controlled syndicates. Although Vargas was at the time nominally backing the candidacy of the PSD nominee, General Dutra, there is little doubt that he intended to use the party as his own political instrument. After his overthrow in October 1945, however, Vargas and his PTB cooperated with the PSD, continuing to do so until the campaign for the 1947 elections. Since the latter date, the PTB has frankly opposed the Dutra government, and frequently joined forces with the Communists against the administration. Although the Labor Party sometimes also copies the Communists' propaganda line in attacking "international capitalism" and "Yankee imperialism", there is no real identity of aims or sympathies between the two parties.

The PTB's strength and weakness lie in the fact that it is a one-man party. Vargas' personality is the major bond of unity among its members, and Vargas tends to look with disfavor upon potential competitors within the party. When in 1947, for example, the party's leader in Sao Paulo, Hugo Borghi, seemed to be developing independent strength within the party, he was expelled, and has since been trying to organize his own labor group.

(1) *Membership.*

PTB membership consists of: a high percentage of the working classes; government officials (especially in the Labor Ministry); small farmers in the south of Brazil; and businessmen who became wealthy under the Vargas regime. In the 1947 elections the party polled 672,400 votes.

(2) *Program.*

Domestic: (a) Universal suffrage; (b) state planning and intervention in the economy; (c) curbs on accumulation of large personal fortunes; (d) land reform; (e) extension of social security program.

International: (a) Supports the government's foreign policy; (b) pro-Perón.

d. *Partido Comunista do Brasil (Communist Party of Brazil).*

Although the Communist Party has had only brief periods of legal existence in Brazil, it has exercised considerable influence on the political life of the country. The "Socialist Party of Brazil", founded in 1916, joined the Communist International in 1921. While officially outlawed in 1923, its small membership continued active. The prestige of the Communist Party was greatly enhanced about 1927 when Luiz Carlos Prestes, one of Brazil's national heroes, was converted to Marxism, and subsequently spent several years in the USSR. Returning to Brazil in 1935, Prestes led the National Liberal Alliance, a Communist front, in an abortive uprising against the Vargas Government, and was imprisoned for his part in it. His nine years' imprisonment increased his own and the party's prestige enormously.

In 1945, shortly after Brazil established relations with the USSR, Prestes was released under a general amnesty decree. It soon became evident that he had made some sort of deal with President Vargas who allowed the Communists (then a legally recognized party) to work freely within the trade unions for the purpose of uniting

them in a n...
munists can...
presidential...
over the pa...
Army coup...

On...
munists ma...
elected to t...
Deputies. T...
ing to incorp...
tinued their...
also promote...
the Leopoldi...
refused to u...

In 1...
Prestes' publ...
USSR, he wo...
the Supreme...
Although ini...
nearly a year...
the governme...
and possible U...
when the par...
was largely r...
Paulo. The g...
Soviet and ar...
outlawing of...
munist Party...
the Communis...
7 January 194...
officeholders...
seats in the C...
elected by the...
latures, and e...

As a c...
the Communis...
Progressista...
the smaller pa...
municipal offic...
be expelled from...
numerous front...
Union of Democ...
the Friends of...
The most activ...

HARRY S. TRUMAN LIBRARY
Papers of
HARRY S. TRUMAN
PRESIDENT'S SECRETARY FILE

was at the
tra, there is
ment. After
with the PSD,
ter date, the
ces with the
ometimes also
talism" and
een the two
man party.
argas tends
in 1947, for
oping inde-
g to organ-
ng classes;
he south of
In the 1947
vention in
nd reform;
(b) pro-
existence
e country.
ernational
re. The
z Carlos
requently
National
as Gov-
increased
es was
nd made
legally
uniting

them in a national confederation free of government control. For their part, the Communists campaigned for the election of a constituent assembly instead of the scheduled presidential elections, a proposal which Vargas himself thereafter endorsed. Alarm over the party's increasing political influence was a powerful motivation behind the Army coup ousting Vargas.

On account of Prestes' organizing ability and personal popularity, the Communists made an impressive showing in the December 1945 elections. Prestes was elected to the Senate, and fourteen party candidates won seats in the Chamber of Deputies. The Communists were extremely active in the Constituent Assembly, working to incorporate their program into the constitution. At the same time, they continued their drive for an independent labor movement affiliated with the CTAL. They also promoted several major strikes, including the nationwide bank employees' strike, the Leopoldina Railway strike, and the continual strikes of the Santos stevedores who refused to unload ships from Spain.

In March 1946 a strong wave of anti-Communist sentiment was aroused by Prestes' public statement that in case of an "imperialist war" between Brazil and the USSR, he would fight against Brazil. At this time a Labor Party Deputy petitioned the Supreme Electoral Tribunal to revoke the registration of the Communist Party. Although initiated at that time, the court action was not really carried forward until nearly a year later. The Brazilian Army had long been bringing pressure to bear on the government to outlaw the party in spite of the strenuous opposition of the UDN and possible US disapproval. Army pressure increased after the January 1947 elections, when the party, although losing in numerical votes, gained slightly in percentage, and was largely responsible for electing the Governor of the very important State of Sao Paulo. The growing influence of the Communists with labor, and the increasing anti-Soviet and anti-Communist feeling in the US were other factors contributing to the outlawing of the party at this time. Although the political registration of the Communist Party was cancelled on 7 May 1947 by decision of the Superior Electoral Tribunal, the Communists continued to participate actively in all phases of Brazilian politics until 7 January 1948, when Congress finally passed the bill withdrawing mandates of party officeholders. At that time, the Communists had one Federal senatorship, fourteen seats in the Chamber of Deputies (two other seats were held by Communist Deputies elected by the Social Progressive Party), forty-three seats in the various state legislatures, and eighteen seats (a plurality) in the Municipal Council of Rio de Janeiro.

As a counter move to the cancellation of the party's registration (7 May 1947), the Communists attempted to obtain registration for a front party, the *Partido Popular Progressista*. In this they failed, but in the meantime they have infiltrated several of the smaller parties in the various states and elected a number of their candidates to municipal offices. While known Communist Party members will doubtless eventually be expelled from office, the Communists will still be able to carry on their work through numerous front organizations; for example, the League of Anti-Fascist Intellectuals, the Union of Democratic Youth, the Committee of Pro-Democratic Women, the Society of the Friends of the Spanish People, and various neighborhood "improvement" clubs. The most active of their front organizations during the last six months of 1947 and

early 1948 was the MAIP (Movement to Aid the Popular Press), which succeeded in collecting a large amount of money, ostensibly to help the Rio daily TRIBUNA POPULAR and other Communist newspapers out of their financial difficulties. Although TRIBUNA POPULAR itself has now been closed by executive decree, another Rio daily, IMPRENSA POPULAR, has appeared to take its place. The Communists have also reorganized their cells for effective underground operation, and there have been some hints that they may initiate a program of violence.

(1) *Membership.*

The party's members are drawn mostly from the urban working class, although it has made considerable efforts to mobilize Brazil's agricultural laborers. Like other Latin American Communist parties, it has attracted many of the leading intellectuals, and has won the sympathy of many university students. In the 1947 elections the Communists polled 452,850 votes.

(2) *Program.*

Domestic: (a) Nationalization of public services, banks, and insurance companies; (b) price-fixing except on farm products; (c) land reform; (d) exclusion of US companies from petroleum exploitation; (e) free trade unions with the right to strike; (f) worker participation in industrial management and profits; (g) independent labor court system; (h) universal suffrage.

International: (a) Anti-US; (b) anti-Franco Spain; (c) pro-USSR; (d) friendly to the Perón government; (e) opposed to the admission of Displaced Persons to Brazil.

4. OTHER INFLUENTIAL GROUPS.

In addition to the regular political parties, there are several other important groups which exert, directly and indirectly, appreciable political influence. The basis of the effectiveness of these groups stems, in large measure, from the fact that their members come from a social elite which is closely knit and keenly class conscious. The officers of the armed forces, the high functionaries of the bureaucracy (including the diplomatic service and the judiciary), the heads of the Catholic hierarchy, the great landholders, the leading bankers, many of the important industrialists and merchants, as well as many of the university professors, newspaper publishers and professional men, are drawn from a restricted number of families.

These "first families", extensively intermarried, are united in the effort to maintain their class and their way of life against any encroachments. They are the backbone of the pressure groups discussed below, linking these groups with each other and with the Government.

a. *The Army.*

The Army is the most powerful single pressure group in Brazil, its influence transcending even that of the political parties which are manipulated from time to time by the Army for the achievement of its political ends. It is safe to assume that no government can come to power without the Army's sanction. The effectiveness of

the Army as
of the officer
and (c) the

Infl
Brazilian Gc
key posts as
and prestige
as that of go
Director of t
officers. An
government-
committees s

An
Security Cou
insofar as th
confidence o
vis-à-vis the
thority to det
as to justify
autonomy.
porated a full
copies of the
"too highly c
council has h

The
below in Cha
phasis aside,
the interests
officers (such
dent Dutra)
them, as well

b. *Big I*

Lead
upon the gov
people, are no
to these "big
also able to m

Of pi
duced by Getu
couraged to f
syndical organ
syndicates bei
confederations

succeeded in
IBUNA POPU-
les. Although
ther Rio daily,
ists have also
ave been some

working class,
rural laborers.
of the leading
In the 1947

and insurance
(d) exclusion
the right to
independent

pro-USSR; (d)
aced Persons

ortant groups
basis of the
eir members
The officers
the diplo-
e great land-
erchants, as
essional men,

to maintain
the backbone
and with

s influence
om time to
sume that
iveness of

the Army as a pressure group results from (a) the close social and family relationships of the officer class, (b) the high degree of group spirit throughout the Army generally, and (c) the practice of having Army officers hold important government posts.

Influential Army officers not only hold numerous elective positions in the Brazilian Government (from that of President on down) but are appointed to many key posts as well. The War Minister is always an Army general, and greater power and prestige attach to this portfolio than to that of the Foreign Minister. Such posts as that of governor of a federal territory, Chief of Police of the Federal District, and Director of the National Department of Posts and Telegraphs generally go to Army officers. Army officers are also frequently appointed as "interventors", directors of government-owned railroads and industrial enterprises, and as members of economic committees such as the Central Price Commission and the National Petroleum Council.

An extremely influential agency dominated by the military is the National Security Council which advises the President on national and international policy insofar as the security of Brazil is involved. It consists largely of "officers in the close confidence of the President." To illustrate the political potential of this council vis-à-vis the domestic political scene, the constitution gives the Security Council authority to determine those cities whose importance as ports or military bases is so great as to justify their being given a special form of government which restricts their local autonomy. A statute recently passed by Congress over Communist opposition incorporated a full list of these cities, and when the Communist Deputies attempted to obtain copies of the National Security Council's reports on the subject, these were refused as "too highly confidential" in nature for release even to members of Congress. The council has had an important voice in the recent discussion concerning oil legislation.

The nationalistic views of the Army on the petroleum question are discussed below in Chapter II, Section 2, Natural Resources (pp. 29-31). This nationalistic emphasis aside, there is no evidence that the Army advocates policies that conflict with the interests of the United States. Although some of Brazil's most influential general officers (such as Góes Monteiro, War Minister Canrobert Pereira da Costa, and President Dutra) were notably pro-German during the early part of World War II, all of them, as well as the Army generally, are today intensely pro-US.

b. *Big Business.*

Leading businessmen and industrialists, as a group, exert much influence upon the government, particularly in the economic field. They, like most Army people, are normally supporters of the PSD. In addition to the influence that accrues to these "big business" men from their close social and family relationships, they are also able to make their influence effective through various organizations.

Of primary importance in this connection is the syndical organization introduced by Getulio Vargas and retained by the present regime. Business groups are encouraged to form syndicates somewhat analogous to the trade unions. Briefly, the syndical organization consists of local syndicates for each trade or industry, the local syndicates being members of state federations which are themselves under the national confederations of the various state federations. As a reward for accepting a consider-

able measure of government control, each syndicate becomes the officially recognized spokesman for the interests of its particular trade. Certain material inducements are also offered; for example, concerns belonging to syndicates enjoy preferred status in the award of public contracts.

The very nature of the syndical organization existing in Brazil places the various syndicates in a strategic position for stimulating government action on business problems. During a market crisis in the textile industry several years ago, for example, the Syndicate of Industries of Spinning and Weaving of Rio de Janeiro was in part responsible for the negotiation of an agreement with Argentina that raised the Argentine import quota for Brazilian textiles. The same syndicate was also very influential in 1939-1940 in obtaining certain modifications of the labor laws which it desired.

In addition, there are certain commercial and industrial organizations of a private nature (already in existence at the time the syndicates were established) which have been brought within the official syndical framework. Conspicuous examples are the Commercial Association of Rio de Janeiro and the Federation of Industries of the State of Sao Paulo. The former, founded as long ago as 1834, is one of the "old Portuguese associations." It was originally interested in promoting foreign trade policies which were advantageous to traders in the seaports. The association was gradually expanded to include industry, agriculture, the professions, real estate, and credit concerns. While it continues, in accord with its long-established traditions, to represent the interests of businessmen in Rio, it began, under the Vargas regime, to represent numerous trade associations all over Brazil. One of its functions is that of representing its members in difficult and complex negotiations with the government departments. The government frequently turns to it for advice when drafting or amending legislation and administrative regulations.

The Federation of Industries of the State of Sao Paulo in 1942 represented a group of syndicates that accounted for more than 60 percent of the state's industrial activities. Its major activity is that of submitting recommendations on subjects of interest to its membership for consideration by various governmental agencies. It has been responsible for new legislation (or modifications of existing legislation) on labor, manufacturing standards, taxation, bankruptcy, and innumerable other matters of concern to industry.

c. *The Church.*

The Catholic Church in Brazil has never been as powerful a political force as in some other Latin American countries. The time has not yet come, however, when one can ignore the Church in any discussion of political forces in Brazil. Individual clergymen exert influence, particularly among rural parishioners, and in addition to this, the Church seeks to influence political events through lay organizations such as the *Liga Eleitoral Católica*.

The Church has worked to obstruct the growth of Communism in Brazil. In the more recent elections, it has actively called upon its communicants to defeat not

only the Communist support

Of the
Liga Eleitoral
September 19
of non-Comm
dates willing

The
laymen have
to the Church
men with the
tion, is inclin
dictate to B
Church on th
believe that t

5. STABILITY

Events c
orientation o
economic cri
until the nex

The dec
recent electi
conclusively
the Vargas f
his denuncia
clusion of a
should assur
in dealing w
import since
in Brazilian

Sao Pau
structure th
perous, and
ambitions fo
to begin a p
pirations fo
He was Intel
and at that
in earnest a
no importar
middle class
commerce o

ally recognized
nducements are
ferred status in

razil places the
action on busi-
years ago, for
de Janeiro was
that raised the
was also very
or laws which

anizations of a
blished) which
s examples are
dustries of the
ne "old Portu-
trade policies
was gradually
nd credit con-
s. to represent
e. to represent
t of represent-
ment depart-
or amending

represented a
industrial ac-
ects of interest
It has been
labor, manu-
ers of concern

ical force as
wever, when
Individual
addition to
such as the

Brazil. In
defeat not

only the Communist candidates but also any candidate believed to have accepted Communist support.

Of particular importance in the Church's anti-Communist program is the *Liga Eleitoral Católica* established by Carlos Carmelo Cardinal Vasconcelos Mota in September 1945. The league adopted the practice of serving notice on the candidates of non-Communist parties that they could not expect the league's support if such candidates willingly accepted Communist votes.

The political effectiveness of the Church is weakened in that many Catholic laymen have no hesitancy in entering into political coalitions with groups unacceptable to the Church hierarchy. Because of the family and social connections of high churchmen with those upper-class elements which govern Brazil, the Church, as an organization, is inclined to take its political cue from them. The Church is not in a position to dictate to Brazil's ruling class. If differences of opinion should arise between the Church on the one hand and the governing class on the other, there is no reason to believe that the Church could have its way.

5. STABILITY OF THE PRESENT REGIME.

Events of the last few months in Brazil seem to have confirmed the conservative orientation of the Dutra government. It seems equally clear that, failing an unexpected economic crisis, the government has sufficient political support to continue in office until the next election in 1950.

The decisive defeat of the pro-Vargas *Queremistas* and the Communists in the recent election (9 November 1947) for Vice Governor of Sao Paulo seems to have conclusively demonstrated to President Dutra that he does not require the support of the Vargas forces and need make no particular concessions to labor. At the same time, his denunciation of the *Queremistas* during that campaign smoothed the way for conclusion of a legislative alliance with the UDN. This pact, signed 22 January 1948, should assure the administration an easy majority in Congress and give it a freer hand in dealing with the Communists. The election was an event of the greatest political import since it was in effect a test of strength involving most of the significant elements in Brazilian politics.

Sao Paulo is a key state in Brazilian politics. It has a more complex and fluid class structure than the other states because it is the most highly industrialized, most prosperous, and has the largest immigrant population. For unknown politicians having ambitions for national office, these factors make Sao Paulo an excellent area in which to begin a political career. One of these politicians, Adhemar de Barros, who has aspirations for the presidency in 1950, is at present serving as governor of the state. He was Interventor of Sao Paulo for several years (1938-1941) during the Vargas regime and at that time built up enough of a machine and a fortune to start his political career in earnest after the fall of the *Estado Novo*. His Social Progressive Party, which has no importance outside the state, draws its membership largely from Sao Paulo's new middle class, many of them second-generation immigrants who have made fortunes in commerce or industry, or succeeded through their own efforts in establishing them-

selves in the professions. Although in January 1947 the PSD, the UDN, the Labor Party, and the Communists were all stronger in Sao Paulo than the Social Progressive Party, Barros made his way by adroit political maneuvering and personal appeal. After winning the governorship through an electoral deal with the Communists, he renounced Communist support and attempted to come to terms with President Dutra to stave off the threat of federal intervention in the State.

In the campaign for Vice-Governor, Barros backed Luiz Novelli, Jr., Dutra's son-in-law, who ran as an independent when he failed to receive the PSD nomination. The candidate of the PSD State Committee was Carlos Cirilo, Jr., majority leader in the federal Chamber of Deputies, and a member of the *Queremista* faction. Both *Queremistas* and Communists actively supported Cirilo. President Dutra, although not endorsing Novelli, publicly condemned the PSD State Committee for its dealings with the Communists.

Novelli's decisive victory over Cirilo had far-reaching consequences. It showed that the combined forces of the two parties making the greatest appeal to labor could still not carry the state which was believed to have the largest labor vote. Communist morale suffered a set-back because the election clearly demonstrated that the party's voting strength had declined as a result of its being outlawed. The election was a severe blow to the prestige of Getulio Vargas, who, believing Sao Paulo to be one of his strongholds, had campaigned in person for Cirilo. This probably has eliminated Vargas as a major factor in the 1950 presidential campaign. Governor Adhemar de Barros' position with his own constituents and with Dutra was consolidated. The pro-Vargas *Queremista* faction in the PSD was discredited, thereby strengthening Dutra's hand within his own party and enhancing his prestige nationally.

Novelli's victory in the important state of Sao Paulo is particularly significant for the Dutra administration. The defeat of the *Queremista* faction of the PSD removed the "Vargas taint" which had made difficult any UDN support for the Dutra administration. Now that the *Queremistas* have fallen from favor, President Dutra has been able to effect a rapprochement with his "loyal opposition" which bids well to enhance his ability to control the political situation in Brazil.

Shortly before the Sao Paulo election, UDN and PSD leaders had entered into negotiations seeking some common ground of collaboration to facilitate the solution of the nation's economic problems. The defeat of the *Queremistas* removed the last major obstacle to such a joint effort. An inter-party pact proposed by the UDN and accepted by the PSD, contained the following bases of collaboration: (a) immediate execution of a plan for increase of production (especially agricultural production), improvement of transportation, and reduction of the cost of living; (b) strict observance of the constitution (included to justify the UDN's collaboration with a party it has consistently accused of ignoring constitutional guarantees); and (c) quick passage of legislation necessary to implement the labor and social provisions of the constitution. To elaborate and execute the pact it was agreed that a temporary bipartisan economic commission be set up to draft emergency plans. The agreement also envisages the creation of a system of committees to facilitate the passage of legislation through Congress and to regulate inter-party relations. Other parties were invited to participate, but the

HARRY S. TRUMAN LIBRARY
Papers of
HARRY S. TRUMAN
PRESIDENT'S SECRETARY FILE

the Labor
Progressive
nal appeal.
nists, he
dent Dutra

utra's son-
omination.
y leader in
on. Both
although
s dealings

It showed
abor could
ommunist
he party's
ion was a
one of his
lated Var-
de Barros'
ro-Vargas
ra's hand

reant for
removed
adminis-
has been
chance

to nego-
of the
st major
accepted
ecution
vement
consti-
ntly ac-
slation
elabo-
com-
ation
ss and
ut the

Republican Party was the only one to join with the PSD and UDN in signing the pact on 22 January 1948.

While the system of inter-party collaboration is being initiated at the federal level, most of the state organizations of the member parties are either undecided or unwilling to follow the lead of the national organizations. Party relations within most states seem to have been steadily deteriorating since the election of governors in January 1947. The failure of governors to obtain majorities in their respective state legislatures has prolonged and aggravated local contests for power. One of the most difficult tasks facing the new Inter-Party Council will be that of creating harmony and inducing cooperation among the respective parties at the state level.

The Dutra government has, nevertheless, made a major gain in strength. Dutra's leadership in his own party is more secure. The signing of the Inter-Party Pact by the UDN, following closely upon the ousting of Communists from elective offices (8 January 1948), a congressional measure which the UDN had long opposed as unconstitutional, is a good indication that the leaders of the UDN consider the Communist case closed. (By making "strict observance of the constitution" one of the bases of their proposal for cooperation, they covered this retreat from principle.) The government will now be able to use whatever police measures seem necessary to keep the Communists under control. Furthermore, the exclusion of the Communists from the government and the fact that the Sao Paulo elections showed the supposed political power of labor to be quite exaggerated leave the remaining parties under less compulsion to offer sops to labor. In the all-important matters of implementation of the constitution and economic planning, the administration will probably not encounter the opposition of principle which it had to meet in outlawing the Communists. For example, legislation in pursuance of the labor and social provisions of the constitution is not likely to become a major issue, despite the potential dynamite of such questions as autonomy of labor unions and profit-sharing, for the majority of the members of the PSD, the UDN, the Labor Party, and most of the minor parties, share a profound conservatism in economic and social matters.

Of the major economic issues confronting the government at the moment, politically most explosive is the implementation of the constitutional provision admitting foreign capital for the development of Brazil's subsoil resources (notably its petroleum deposits). Both the PSD and the UDN included planks favorable to foreign capital in their 1945 platforms, but in the case of petroleum, neither has been willing to take a stand in opposition to the popular attitude of "Brazilian oil for the Brazilians" which has been fostered not only by the Communists, but by the Army and certain powerful financial interests as well. Thus the Dutra administration may not meet Brazil's economic problems satisfactorily, but it appears to have enough support among the politically important elements of the population to continue in office until the end of its term. The PSD now controls a plurality of the country's votes. If the UDN should repudiate its policy of cooperation, the PSD would be exposed to the dangers of a possible electoral coalition between the UDN and Adhemar de Barros (although such an alliance at the present time seems improbable). Both conservative parties are

HARRY S. TRUMAN LIBRARY
Papers of
HARRY S. TRUMAN
PRESIDENT'S SECRETARY FILE



handicapped by the lack of leaders with popular appeal, an asset which Barros is busy developing.

If the PSD-UDN coalition continues in operation, some agreement may be made to pass the presidency on to a UDN candidate with little change in the real ruling group. Governor Octavio Mangabeira of Bahia, the UDN leader instrumental in the inter-party negotiations, is known to have presidential ambitions, and some observers feel that this was the motive behind his efforts to promote collaboration with the Administration. Another member of the UDN who could command support among both parties is Oswaldo Aranha. Any candidate, however, would have to be acceptable to the Army, and that might give an advantage to Air Brigadier Eduardo Gomes, UDN candidate in 1945. Another bipartisan presidential possibility who would have Army approval is Colonel Edmundo de Macedo Soares, Governor of the State of Rio. Largely non-partisan himself, Macedo Soares has important family connections in both the major parties and was elected to his present office by a PSD-UDN coalition.

The success of the PSD-UDN negotiations seems to have given rise to suspicions that some agreement may already have been reached on a mutually acceptable successor to President Dutra. Shortly before the signing of the pact, Adhemar de Barros conferred with the Governor of Minas Gerais, Milton Campos (who has also been mentioned as a potential UDN presidential candidate), and the two governors issued a statement that they were entering a political alliance and declared their joint interest in preventing a "hasty solution to the problem of presidential succession." Since these two states have at least one third of the total electorate of the country, this was an adroit move. It could be the first step in a revival of the old Sao Paulo-Minas Gerais alliance which for so long controlled the choice of the nation's President. On the other hand, since both governors owe their election to coalitions, their political alliance will not accomplish much unless they succeed in developing personal machines sufficiently strong to free them of the uncertainties inherent in coalition support. But in any case each governor will be able to use the alliance for bargaining purposes in furthering his own political fortunes.

Dissolution of the Inter-Party Pact and a breakdown of the national party system would give the advantage to Adhemar de Barros, whereas an effective PSD-UDN alliance would weight the scales heavily for whatever candidate the two conservative parties could agree on.

The only foreign power whose actions may be expected to have any effect on the continuation in office of the present regime is the United States, but even this effect would be an indirect one. Obtaining economic aid from the US would increase the prestige of the administration, and any damage to the national economy caused by channeling of US manufactures to Europe under the Marshall Plan would lower its popularity. At the present time, however, it does not look as though US action will be a vital factor in the stability of the present regime.



The
the cour
backwo
manufac
however
but a m
pursuits

The
also the
to the m
the othe
ticularly
strip lies
of capita
can be r

Eco
governm
mental
While th
ship giv
other pu
control

A k
controll
ernmen
activitie
standar
low, and

The
people a
been m
still dep
and var
well ba
Brazilia

1. Foc
Doi
at the l

Barros is busy

ay be made to
ruling group.

ne inter-party
feel that this

administration.
parties is Os-

to the Army,
candidate in

approval is
largely non-

in the major

o suspicions

ceptable suc-
r de Barros

o been men-
ued a state-

interest in

Since these
his was an

has Gerais

in the other
al alliance

res suffici-

But in
ses in fur-

ty system

UDN alli-

re parties

et on the

his effect

ease the

caused by

lower its

tion will

CHAPTER II ECONOMIC SITUATION

The Brazilian economy is characterized by great variations from one section of the country to another—running all the way from a mere subsistence in the jungle or backwoods country, through the feudal-type agricultural estates and backward hand-manufacturing sections, to modern, highly industrialized areas. On an over-all basis, however, almost half of Brazilian national income is derived from agricultural activity, but a much greater proportion of the working population is engaged in agricultural pursuits.

The southern part of the country is the industrial heart of Brazil; it comprises also the important agricultural and animal husbandry areas, and is thus essential to the maintenance of current standards of living in the other parts of the country. On the other hand, the economies of the northern and northeastern regions are not particularly well integrated with that of the southern area. To the west of the coastal strip lies a huge area believed to have a high economic potential. A great investment of capital and the development of transportation will be necessary before this potential can be realized.

Economic activity in Brazil has been largely left to private enterprise, but the government exercises varying degrees of control through semi-private, quasi-governmental associations and corporations, and export and import restrictions are in effect. While the government owns or partly owns the Bank of Brazil (majority stock ownership gives the government control), a steel mill, a powder plant, railroads, and some other public utilities, there is in general no growing trend toward greater government control and ownership of industry.

A large majority of the workers are in syndical organizations, which are closely controlled by the government. They have become less active during 1947 under government repression of all signs of industrial conflicts and suppression of Communist activities. The general well-being of the people is rather poor. Health, nutritional standards, and housing for the great mass of people is recognized to be abominably low, and the standard of living for the workers is barely above the subsistence level.

There has been some improvement in these things, however, and there are more people above the subsistence level of living than there were a decade ago. Progress has been made in converting plentiful raw materials into consumer goods, but Brazil is still dependent upon imports of many types of machinery and equipment, coal, wheat, and various other products. The ocean shipping under the Brazilian flag is considered well balanced for Brazilian needs. Additional capital would be very desirable for Brazilian development, and foreign financial aid is being sought by the government.

1. FOOD AND AGRICULTURE.

Domestic agricultural production is sufficient to maintain the Brazilian population at the low dietary level which it has in common with other Latin American peoples.

HARRY S. TRUMAN LIBRARY
Papers of
HARRY S. TRUMAN
PRESIDENT'S SECRETARY FILE

The only significant food import is wheat, the current annual consumption of which is about 1,200,000 metric tons. Brazil produces only about 110,000 tons. Most of the wheat imports are normally supplied by Argentina. Because of prevailing Argentine prices, however, a large proportion of Brazilian imports are presently being supplied by the US. Coffee and cotton are the major agricultural exports. The prospects for any significant expansion of agricultural production in the immediate future are not good.

Because coffee accounts for nearly 10 percent of total employment, 35 percent of foreign exchange receipts, and 9 percent of the national income, the Brazilian economy is deeply affected by coffee production and prices. Postwar developments have confirmed earlier trends that militated against coffee's former dominant economic role. These trends, moreover, favor a more balanced economy. Nevertheless, coffee production and marketing are still a crucially important factor in the economy. The declining importance of coffee has until recently been a result of the increasing importance of production and exports of other commodities, such as textiles and raw cotton, rather than of declines in production and export of coffee. In the past few years, however, production of coffee has declined slightly, and is expected to decline still further since available new coffee lands remain only in less accessible areas, while older lands continue to lose their fertility under the present system of exploitation. There appears to be a better balance between coffee production and available markets at present than formerly, and the tremendous, burdensome surpluses of the '30's appear to be a thing of the past.

Coffee's traditional domination of the Brazilian economic structure has had an effect upon the organization and functions of the Brazilian government which bids fair to become a permanent characteristic. The early success of Brazil's coffee-control schemes, for instance, has tended to convince not only the coffee growers, but also the majority of the entrepreneurial class, that the protection and encouragement of domestic enterprise through monopolistic governmental export and financing corporations is a legitimate governmental function. This conception of government has found expression in national institutes to aid in the production and sale of practically all of Brazil's agricultural commodities and some of its industrial output as well.

Cotton is becoming increasingly important domestically with the growth of the textile and allied industries. It is also important from the standpoint of world cotton production. There have been few years since the mid-1930's that Brazil has not accounted for from five to ten percent of the world's cotton production. It has ranked second to coffee among agricultural exports for the past ten years. In 1946 it accounted for approximately 16 percent of the total value of Brazilian exports.

Cotton production has declined from a peak of 2,700,000 bales in 1944 to 1,300,000 bales in 1947. Several factors account for the decline, such as adverse weather, the changing relation between the prices of cotton and those of other agricultural products, and a change in government policy. Estimates of Brazilian cotton production for 1948, based on average past yields for acreage planted, do not exceed the 1947 figures. In spite of smaller cotton crops, Brazil was able to export approximately 1,607,000 and

1,000,000 bales
about 900,000
Before the ex
will be limite
Brazilian con

Generall
rice, and bea

One of t
stock industr
cash farm inc
ian populatic
cause of the r
has imposed i
meat packers

In additi
livestock pro
lands of Braz
gravitates to
of "pushing t

Although
try is insigni
Brazilian's di
by inadequat

Forest pr
in Brazilian e
the railroads

More tha
in Brazil, as
mercial activ
enter into the
enter the mo
production.

one percent o
crops for mar

About tw
in Brazil live
far from any
social or econ
no means of
people, consec

The outli
as crop harve
peanuts, corn

1,000,000 bales in 1946 and 1947 respectively (along with a domestic consumption of about 900,000 bales each year) by drawing upon surpluses accumulated during the war. Before the end of 1948, however, a surplus probably will no longer exist, and exports will be limited to small current excess production over consumption, largely removing Brazilian competition with US cotton from the world markets.

Generally throughout Brazil, subsistence food crops such as corn, manioc, bananas, rice, and beans are planted.

One of the most significant developments is the growing importance of the livestock industry. In recent years, livestock raising has become the greatest source of cash farm income. Meat in some form is part of the diet of all segments of the Brazilian population. The marketing of cattle, however, tends to be irregular, in part because of the meat rationing, price controls, and export controls, which the government has imposed in order to protect Brazilian consumers against possible exploitation by the meat packers. Foot-and-mouth disease is a continuing problem in Brazil.

In addition to its importance to the Brazilian economy as such, this increase of livestock production is having a beneficial social effect. The great natural pasture lands of Brazil lie for the most part in the interior. The expanding industry naturally gravitates to this area and thereby functions, as cattle raising did in the US, as a means of "pushing back the frontier."

Although many good fishing areas are available to Brazilian fishermen, the industry is insignificant in that country's economy. Fish is not an important part of the Brazilian's diet. Moreover, the development of the industry is further handicapped by inadequate refrigeration, transportation, and market facilities.

Forest products play a much more important role in the domestic economy than in Brazilian exports. Wood is Brazil's principal fuel, providing the energy for running the railroads and many of the industrial enterprises.

More than 65 percent of the working population is engaged in agricultural activity in Brazil, as compared to 8 percent in industrial production, and 23 percent in commercial activity. A very large proportion of Brazilian agricultural activity does not enter into the money economy. Nevertheless, that agricultural production which does enter the money economy is approximately equal to one-half the value of industrial production. Perhaps not over a third of the agricultural workers, working less than one percent of the land of Brazil (mostly on large plantations), produce the commercial crops for market in the cities and in export trade.

About two-thirds of agricultural workers (more than 40 percent of all workers) in Brazil live and work on a subsistence basis, under extremely primitive conditions, far from any means of transportation, without educational opportunities, and without social or economic contacts beyond perhaps two days' walking distance, and with almost no means of getting any surplus production to market in the large cities. These people, consequently, are of little economic, social, and political influence in Brazil.

The outlook for agricultural production and for food supplies is not so favorable as crop harvest statistics appear to indicate. Recorded plantings of food crops, such as peanuts, corn, rice, manioc, beans, and other vegetables, have increased considerably

over the past decade, but a large proportion of the urban population continues, nevertheless, to be underfed. This fact is not entirely a result of inadequate production: the urban population has increased far more rapidly than the capacity of the nation's transportation system, with the result that existing railroads and trucks simply cannot handle the increased tonnage of foods needed to sustain the millions of persons now concentrated in the cities. The fact that wheat imports have been irregular as well as inadequate has greatly complicated the problem of supplying food for the urban areas, which at one time had some rather dangerous political repercussions in the form of food riots.

Rapid expansion of Brazilian agricultural production is extremely unlikely to occur, but a considerable increase in available food supplies would take place if capacity of transport and marketing facilities were expanded to take care of the increased tonnage. Improved agricultural techniques undoubtedly would increase production in most areas. At present less than one-fourth of Brazil's nearly two million farms have any farm implements other than the hoe and the axe. The existing relationship between commodity prices and labor costs is favorable to increased use of farm machinery, but the very war conditions that have caused existing high commodity prices and brought about the new relationship, have also caused a world-wide shortage of farm machinery. It is probable that by the time such machinery is in abundant supply again, commodity prices will have receded. In that case, the use of farm machinery will increase at a relatively slow rate.

Much of the best farming area in Brazil consists of huge *fazendas* which produce most of the commercial crops. The others often produce little, and the land is left idle for want of management or labor. Small owner-operated farms might be more productive, as is evidenced by an efficient group of small farmers in the South. At present, however, there is little interest in breaking up the large estates. Much land, moreover, is not under cultivation because it requires fertilizer to bring forth good crop yields, and fertilizer prices are so high that it does not pay to use the land under existing conditions. Much highly fertile land also lies unused for lack of transport facilities, and, in some areas, for lack of irrigation. Consequently, any truly significant expansion of agricultural production seems possible only on a long-term basis; in the years immediately ahead, only a modest expansion may be expected.

2. NATURAL RESOURCES.

During the war years Brazil made an effective contribution of strategic minerals to the war industries of the US and UK. In 1944, Brazil was the source of virtually all the US imports of quartz crystal, 53 percent of the tantalite, 47 percent of the beryllium ore, 45 percent of the rutile, 17 percent of the mica, 13 percent of the manganese ore, 12 percent of the tungsten ore, 10 percent of the zirconium ore, and relatively minor quantities of metallurgical grade chromite, ilmenite, industrial diamonds, and talc.

Production of these materials during the war was generally considered to have been at the maximum level possible for the available equipment and facilities. By far, most of the thought, money, and equipment devoted to mining in Brazil during the

HARRY S. TRUMAN LIBRARY
Papers of
HARRY S. TRUMAN
PRESIDENT'S SECRETARY FILE

war was expended in the procurement of strategic materials needed in the war effort of the United Nations, and of the US in particular. Except for quartz crystal and zirconium, almost the entire Brazilian output of strategic minerals went to the US. The attainment of still higher export tonnages was prevented primarily by inadequate, slow, unreliable, and expensive transportation facilities.

a. Minerals.

(1) Manganese.

During World War II, the US obtained about 20 percent of total manganese ore imports from Brazil. Brazilian exports equaled about 350,000 metric tons annually for the years 1941-1943. Exports dropped to 146,983 metric tons in 1944, in part because of transportation difficulties in Brazil and in part because of increased availability of manganese from other areas. The important Brazilian deposits are found in Minas Gerais, Mato Grosso, and the Territory of Amapá, and are the largest reserves of manganese in the Western Hemisphere.

The state of Minas Gerais is the center of manganese mining in Brazil, and Lafaiete is by far the most important district in that state. The Morro da Mina mine, operated by a subsidiary of US Steel, is the largest producer in the country. It is ideally situated as to transportation, being served by the broad-gauge Central do Brasil Railway. Open-cut mining is used, and the output approximated 25,000 tons of ore a month during the early part of World War II. In 1947, the US received from Brazil 167,000 metric tons of manganese ore, almost the entire Brazilian production for that year. With the proper stimulus (firm contracts at an increased price) it is estimated that at least 50,000 tons per year over present production could be obtained quickly, and that such production could be maintained over a period of at least several years.

The largest known manganese deposit in the Hemisphere, the Urucum property, is located at Corumbá in Mato Grosso. Reserves in the deposit may be as much as 30 million tons, but are not under development at present. During World War II, the Sociedade Brasileira de Mineração worked the mine, and small shipments were made via the Paraguay River over 1,700 miles to Rosario. Before large-scale shipments can be made profitably, however, the following problems must be solved: (1) the normal ones of developing an ore deposit in a remote and fairly inaccessible locality where all housing, equipment, and social and sanitary services must be built from the ground up, and most mining equipment imported; (2) the development of transportation to deep water which will necessitate an expenditure of as much as 20 million dollars; and (3) the matter of obtaining mining rights for either governmental or private (foreign) capital. In this latter regard, it is estimated that if the Urucum deposits are to be developed by private (American) interests, the means or equitable rights for such development must be settled by negotiation between the two governments.

Deposits in the Territory of Amapá, for which the minimum estimate is five million tons of ore containing 40 to 55 percent manganese, are only about 125 miles by river and road transport from the Amazon port of Macapá. However, the manganese in these deposits contains arsenic as an impurity. Arsenic is not com-

monly encountered in manganese and may pose a metallurgical problem which must be solved before the ore can be used profitably.

Either at Urucum or at Amapá, further exploration and development need to be done to establish with more exactitude the quantity and quality of ore reserves, before extensive large-scale development is undertaken. Under prevailing Brazilian conditions, a large-scale development (250,000 or more tons per year) would probably require two to four years at Urucum until full production could be attained and a somewhat shorter time at Amapá.

(2) *Iron.*

Brazil has very large deposits of high-grade iron ore in the state of Minas Gerais. Known deposits are estimated at a probable three billion tons or more. High-grade hematite, canga, and other ores running from 50 to 68 percent probably account for one-third of the deposits. The facts that open-cut mining is possible and that the hematite ores require no pre-export processing increase the feasibility of exploitation. Transportation, however, has been a major difficulty even though the distance between the coast and the iron-ore region is less than 500 miles. Prewar exports did not exceed 450,000 metric tons.

An attempted emergency development was started in June of 1942, when a US-UK-Brazil plan was initiated to increase the amount of iron ore coming out of the Itabira region. This plan required that the mines be mechanized and that the railroad and port facilities be redesigned to carry heavier traffic. The US Export-Import Bank undertook to lend Brazil \$14,000,000 for this purpose. The UK agreed to pay off the British shareholders of the Itabira Ore Co., who had previously owned the mines, and present the shares to the Brazilian government in exchange for a promise of a certain amount of the ore for a three-year period. During 1943, approximately 340,000 tons of iron ore were exported from this mine to the UK, Canada, and the US. It was hoped that, by the end of 1944, the redesign of railway and dock facilities would be completed so that ore shipments could be substantially increased.

On the contrary, during 1944 transport facilities deteriorated so much under heavy usage that exports dropped 40 percent. The 206,000 tons shipped went entirely to the UK. Work to redesign the railway for heavy traffic progressed very slowly. By March of 1947 only 95 miles of the projected 360 miles had been completed, at which time work stopped completely because funds to pay the construction company were not forthcoming from the Brazilian Government. Work continues to be suspended pending solution of the financial problems involved in the project. It is estimated that from two to five years will be necessary for completion. When the work is completed, exports should rise to one and a half million metric tons a year.

(3) *Tungsten.*

Ores bearing the strategically important tungsten have been worked in three widely separated areas of Brazil: the northeast, the state of Sao Paulo, and the state of Rio Grande do Sul. By far the most productive area is the northeast section. During World War II, some 12 percent of total US imports of tungsten minerals were obtained from there. With a drop in tungsten prices at the end of the war, Brazilian

product
what hi
Under
could p

Gerais,
being v
two ye
imprac
do Toc

locate
Ceará

metric
1,294
ductio
year,
the in
minir
explo
Brazi
vance

badd

badd
tons
in 19
of th
eluv
amc
Pro
exp
cou

peg
tan

production slumped, but present increased world prices will probably result in somewhat higher Brazilian production for 1948 (possibly a thousand tons of concentrates). Under pressure of emergency conditions, production could be greatly expanded and could probably be maintained at a high level for a period of several years.

(4) *Nickel.*

There are substantial reserves of nickel in the Brazilian states of Minas Gerais, Goiás, and Bahia, but only one deposit, that at Livramento in Minas Gerais, is being worked. Small quantities of ferro-nickel are made and consumed locally. After two years of effort, the American Smelting and Refining Company has abandoned as impractical its attempt to develop the largest known Brazilian deposit near Sao José do Tocantins in central Goiás.

(5) *Beryllium.*

Beryl is mined in conjunction with tantalite from pegmatite deposits located throughout northeastern Brazil, in the states of Paraíba, Rio Grande do Norte, Ceará, and Minas Gerais.

During the years 1940-44, inclusive, production averaged about 1,500 metric tons. Exports of beryl in 1945 amounted to 510 metric tons but increased to 1,294 metric tons in 1946. An increase in price could probably raise the volume of production to 2,000 metric tons annually. To push production beyond 2,000 tons per year, however, would require either a very much higher price or other inducements to the individual producers. The recovery of beryl requires hand labor and selective mining. Although it is not susceptible to mechanization, limited technical guidance in exploration might contribute substantially to an increase in Brazilian production. Brazil's beryl reserves are unknown, since no development work is carried on in advance of the actual mining.

(6) *Zirconium.*

Brazil is of prime interest to the US as a source of zirconium ores (both baddeleyite and zircon).

Brazil supplied 50 percent of US imports of zirconium (most of which was baddeleyite) in 1942 and 10 percent in 1944. The drop in production from 17,000 metric tons in the peak year to 2,152 (shipments, which probably represented total production) in 1944 was attributed to diminishing US military demands and increased utilization of the metals reserve stockpile in the US. Zirconium ore is recovered from alluvial, eluvial, and vein deposits in Sao Paulo and southwestern Minas Gerais. A minor amount is also derived as a by-product from the workings of monazite beach sands. Provided the present US defense program is carried out, Brazilian production may be expected to increase in 1948 and 1949, although it is not expected that the 1942 levels could be attained in either year.

(7) *Tantalite.*

Tantalite is found in combination with columbite in the heterogeneous pegmatites in Rio Grande do Norte, Ceará, and Paraíba. Annual prewar exports of tantalite ore amounted to about 25 metric tons, England and the US being the principal

purchasers. During World War II, tantalite production increased to a peak of 198 metric tons in 1944, which constituted 53 percent of total US tantalite imports for that year. At the end of the war, production of Brazilian tantalite ores decreased to 30 tons in 1945. However, a substantial increase is now expected owing to US stockpile purchasing.

(8) *Titanium.*

Rutile and ilmenite are the common ores of titanium.

Rutile is present in relatively large quantities in Ceará, Goiás, and Minas Gerais. Exploitation in Brazil began in the mid-1930's. Exports increased from 768 metric tons in 1937 to a peak of 4,615 metric tons in 1942, dropping to 28 metric tons in 1946. An increase in production is largely dependent on price.

Ilmenite is found in beach sands along the coast of Espírito Santo and Bahia and is among Brazil's long-exploited mineral resources. Exports of ilmenite increased from 120 metric tons in 1937 to 5,000 metric tons in 1945. During 1946, the Brazilian affiliates of E. I. Dupont de Nemours of Wilmington, Delaware and the Foote Mineral Company of Philadelphia, Pennsylvania, combined in a proposal to mine beach sands along the coast of Espírito Santo for the recovery of ilmenite and other minerals.

(9) *Thorium.*

The monazite beach sands of Brazil are, after India, the most important known source of thorium in the world. These are found in the coastal belt between the mouths of the Rio Jequitinhonha and the Paraíba do Sul in the states of Bahia and Espírito Santo. These monazite sands were worked 20 to 50 years ago for the recovery of monazite and are now being reworked for ilmenite with monazite and zirconite as by-products. In 1945 exports amounted to 1,030 metric tons of monazite concentrate and 1,250 tons in 1946. All exports went to the US in accordance with the US-Brazilian exclusive purchase agreement for monazite.

(10) *Bauxite.*

Although up to the present time production of bauxite has been negligible, Brazil has substantial reserves. Since 1942, Dutch Guiana has supplied more than 90 percent of US bauxite imports. Brazilian reserves, estimated at 10 million tons minimum, are found at Poços de Caldas and Ouro Preto in Minas Gerais and in a coastal zone in the states of Bahia, Espírito Santo, Rio de Janeiro, and Sao Paulo.

During the critical period of World War II, small quantities were shipped to the US and Canada. Under normal conditions, however, exploitation of Brazilian reserves is very uneconomical. Freight costs to the Brazilian coast, taxes, and the expense of the long overseas haul displaces the advantage of low-cost production at the source.

b. *Non-metals.*

(1) *Piezo Electric Quartz.*

Brazil is practically the sole world source of supply for piezo electric quartz crystals, which are in demand for the oscillators used in radar and electronics, for the production of aircraft and munitions, and for other industrial uses.

ain and F
chases in l
for ultimat
order from
the USSR
the states
quantity, w
centration
Serra dos C

therefore w
men are qu
clined follo
wartime lev
in 1946 follo

(2)

trial diamon
country as
present Bra
industrial d
estimated at
of the type
than bort ar
in all types c

(3)

world were I
US with 17.7
mica from p
Bahia. Dur
qualifiers, ar
zilian mica h
the war it bec
price declined
quantity of e
1946. The U
Volume of pr

c. *Petro*

Braz
ernment geol

HARRY S. TRUMAN LIBRARY
Papers of
HARRY S. TRUMAN
PRESIDENT'S SECRETARY FILE

d to a peak of 198
ite imports for that
res decreased to 30
ing to US stockpile

, Goias, and Minas
increased from 768
to 28 metric tons

Espirito Santo and
ports of ilmenite
During 1946, the
are and the Foote
osal to mine beach
and other minerals.

e most important
stal belt between
ates of Bahia and
o for the recovery
and zirconite as
azite concentrate
the US-Brazilian

s been negligible,
ed more than 90
illion tons mini-
and in a coastal
to.

es were shipped
ion of Brazilian
xes, and the ex-
oduction at the

electric quartz
tronics, for the

At present, the US is the principal market for quartz crystal. Great Britain and France purchase minor quantities. The USSR is unable to make open purchases in Brazil, although a clandestine sale of "a good-sized quantity" to Argentina for ultimate delivery to the USSR was reported at the end of 1946. In 1947, a \$2 million order from Czechoslovakia was refused because of the suspicion that transshipment to the USSR was contemplated. Quartz crystal is found in small, scattered deposits in the states of Minas Gerais, Bahia, and Goias. Those in Bahia produce the greatest quantity, while those of Minas Gerais are of the best quality. The largest single concentration of deposits occurs within an area of about 55 square miles, located in the Serra dos Cristais range in the state of Goias.

Quartz crystals are recovered without heavy mining equipment, and therefore when there is any lessening of demand, thousands of prospectors and workmen are quick to shift into other enterprises. Consequently, when US demand declined following the end of World War II, production dropped below 20 percent of the wartime level. Exports, which had reached a peak of 2,400 tons in 1943, fell to 170 tons in 1946 followed by a slight upward trend in 1947.

(2) Industrial Diamonds.

Although Brazil did not contribute more than eight percent of US industrial diamond imports during any one year of World War II, the importance of that country as a US source is likely to increase in the future because of the fact that at present Brazilian diamond production is increasing while that of most other important industrial diamond producing areas is declining. Brazilian production for 1947 was estimated at 360,000 carats. Furthermore, Brazil is practically the sole world source of the type of industrial diamond known as *carbonados* which resists cleavage better than bort and is therefore more useful for cutting where shocks must be sustained, as in all types of drilling with diamond bits.

(3) Mica.

At the time of World War II, the major mica-producing countries of the world were India, Madagascar, Union of South Africa, and Brazil. Brazil supplied the US with 17.7 percent of its total mica imports in 1944. During the war Brazil produced mica from pegmatite deposits in the states of Minas Gerais, Goias, Sao Paulo, and Bahia. During 1942, a partially successful attempt was made to train trimmers, qualifiers, and inspectors to Indian, or universal standards. Prior to the war, Brazilian mica had been shipped to India for processing before its sale to the US. During the war it became possible to process a large part of Brazilian mica in Brazil. Although price declined with the end of World War II, unstable conditions in India caused the quantity of exports to increase, reaching the near-record level of 1,148 metric tons in 1946. The UK and the Netherlands are important purchasers, as well as the US. Volume of production is responsive to an increase in price.

c. Petroleum.

Brazil may have comparatively large petroleum reserves. As a result of government geological studies, petroleum is believed to exist in five regions, the first being

the Paraná basin in southern Brazil. The promise of this section arises from the fact that geological indications are the same as those in the Argentine and Bolivian oil fields. The second region centers around Santarém and Obidos in the state of Pará and the third lies in the states of Maranhao and Piauí. Exploration to date has been completely inadequate in these latter two areas. The fourth is that part of the Amazon region lying within the Territory of Acre. The Acre district is probably the most promising from the potential quantity viewpoint. The same geological formations as those found in the abundant oil fields of Peru and Bolivia extend all through this area. The region, however, is also the most remote of the five, and difficult transportation problems will be involved. The fifth region is a coastal belt extending from the town of Marau, in the northern half of Bahia, to Maceió, capital of Alagoas. Geological indications here are less favorable than in the Paraná basin or Acre Territory. Because the coastal location of this area presents the least difficult transportation problems, the region is now being worked.

Although the north coastal, or Bahia region, has been exploited since 1939, production in 1945 was only 79,265 barrels, while that for 1946 was 66,697 barrels. Estimated on the basis of the daily production average for January-August 1947, production for the year increased to 97,846 barrels, which was unimportant in relation to Brazil's domestic petroleum requirements of about 8,000,000 barrels.

Brazilian oil problems can be solved only by more thorough studies, as well as a far more intensive drilling campaign. It has been estimated that, at the present rate of progress, seven centuries would be required to complete exploration studies. Characteristically, Brazilian capital gravitates toward investments from which a quick return may be expected; therefore, no great volume of private investment in the uncertain Brazilian petroleum industry can be expected for some time to come. Available government funds are far from sufficient. Hence it would appear that foreign capital, more accustomed to the taking of long-term risks, will be necessary for any efficient, large-scale exploration and development of Brazil's petroleum deposits.

With the overthrow of the Vargas regime in late 1945, the situation seemed favorable for foreign private investment. The 1946 constitution permits the admission of foreign capital. President Dutra expressed himself as favoring foreign investment. The US legal firm of Curtice and Hoover was appointed as his adviser on oil legislation.

In spite of these favorable developments, the trend of legislation in 1947 was toward the virtual exclusion of foreign investment in the exploitation of petroleum. Various legislative bills, including the one presented to the legislature early in 1948, have been judged by Curtice and Hoover to be such that no US oil company would consider operating under the proposed conditions.

Powerful forces have been working for the exclusion of foreign capital. The Army, though favoring Brazilian self-sufficiency in oil, has insisted that absolute control must rest with Brazil. The Army has been influenced in part by nationalist sentiments of long standing, and in part by bribery from refinery interests (Sampaio). The method by which the Army hopes to obtain self-sufficiency by exclusive Brazilian effort is obscure. One member of the Army clique has stated that the US need for oil would

force the US government to furnish capital for exploitation even if Brazilian legislation should exclude private US capital.

Further opposition to foreign investment in oil has come from the Communists, who have found their interest parallel to the Army's expressed view and have successfully organized student groups with the slogan "Brazilian oil for Brazilians." Brazilian nationalism, so greatly intensified by Vargas during his regime, has made the propaganda of the Army and the Communists more effective with the mass of the electorate. The US Petroleum Attaché stated in December of 1947 that the anti-foreign-capital forces had so thoroughly aroused public opinion as to make impossible an early governmental reversal of position.

On the other hand, President Dutra continues to affirm a desire that foreign capital shall find Brazilian petroleum an attractive investment. Furthermore, since April 1948, the Brazilian non-Communist press has been notably more favorable to foreign investment. Since this last development was in response to a presidential request made after a conference between Dutra and various military leaders, the inference is possible that the Army may be slowly changing its point of view. In addition, Communist agitation has become a much less potent force since the expulsion of the Communists from elective office on 7 January 1948. Some revision of the bill now before Congress will probably be made, but it remains to be seen whether revision will go far enough to make Brazilian petroleum an attractive investment for foreign private capital.

It is probable that at least some sections of the Army will continue to favor investment of the necessary capital and technique by the US Government. In this connection, it may be noted that the record of US-Brazilian cooperation for the exploitation of sub-soil resources during World War II does not show complete failure, but it is not encouraging.

d. *Power.*

Hydroelectric plants and wood are almost the only sources of industrial power in Brazil. Currently, Brazil is very deficient in coal and petroleum, and the timber resources are seriously depleted in areas easily accessible to industrial demand. However, the hydroelectric potential could supply the need. The only three areas in Brazil not favored with potential water-power resources of appreciable magnitude are the semi-arid northeast, the state of Rio Grande do Sul (to which, however, thermo-electric power is available), and the states of Piauí and Maranhao. The remaining states have sufficient water power to meet their present and probable future requirements.

Development of this potential source of power, though slow, has generally progressed as industrialization has increased. Hydroelectric power increased from 4,022 millions of kw hours in 1939 to 79,917 millions of kw hours in 1945. Nevertheless, development lags consistently behind need, and bureaucratic chaos leads at times to such serious difficulties as the almost complete breakdown of the power system of Belem.

The government attitude toward foreign investment in this field is comparatively favorable. Although Brazilians have constructed, maintained, and operated

some of the smaller plants, about 80 percent of the electric power is furnished by the Brazilian Traction, Light and Power, Ltd. (a Canadian corporation) and Electric Bond and Share (a US company).

e. *Coal.*

The known coal resources of Brazil are too limited to provide self-sufficiency in this regard even at the present level of industrialization. Under the stimulus of war, and with the help of American engineers, Brazilian coal production rose from 883,000 metric tons in 1938 to a maximum of 2 million tons in 1943. Including imports, the normal consumption rate is about 2.5 million tons a year. If greater quantities were easily available, the consumption rate would undoubtedly be considerably higher.

For many years the principal producing field has been that in Rio Grande do Sul, west of Porto Alegre. The annual production rate has been between 750,000 and 1 million metric tons, most of which is consumed locally. At times small quantities are exported to Argentina, but in general, the quality is too poor economically to justify shipment to distant markets such as Rio de Janeiro or Sao Paulo. Total remaining reserves are not known. It is estimated that the field has passed its period of maximum production.

The second major coal field is in the southern part of Santa Catarina just inland from the ports of Laguna and Imbituba. The principal seam lies near the surface and is exploited by means of a large number of small drift mines, primitively equipped. The mining is a difficult process as the coal must be laboriously hand sorted from the waste at the working face.

This coal is of particular importance because of its excellent coking characteristics. Experience at the Volta Redonda steel plant has shown that it can be used either alone or mixed with up to 50 percent of some non-coking coal and still produce a coke which, while high in ash and sulphur, possesses excellent agglomerating qualities, hardness, and porosity for blast furnace use. Total recoverable reserves are estimated at 400 to 500 million tons.

3. *INDUSTRY.*

Rapid increase in manufacturing production, in the number of manufacturing establishments, and in the variety of products manufactured has taken place in Brazil during the past decade. World War II increased the general rate of industrial expansion, though in many lines expansion was handicapped by lack of necessary imports of machinery and fuels. The increasing industrial activity has accelerated farm-to-city migration, which in turn greatly complicates Brazil's transport, housing, and finance problems. The government has taken an active interest in promoting the development of many industries through loans, import restrictions and tariffs, and various other devices. Most of the larger industries have effective lobbies or associations which can effect political pressure for their interests, and the government has been responsive to such pressure.

Although foreign participation in the industrial development of Brazil early took the form of financing new local industrial projects, the more recent trend has been

the establishment of branch plants in Brazil by foreign firms such as the Goodyear Company, the General Electric Company, and General Motors Company. The United States Government has assisted in some industrial development schemes through loans by the Export-Import Bank, one of which was the \$45,000,000 loan for the Volta Redonda steel mill.

There has been no tendency toward a policy of nationalization of industry in Brazil. On the contrary, the government encourages foreign capital participation in the industrial development of the country with some, but by no means excessive, restrictions on the withdrawal of profits and capital. The government's investment policy with regard to petroleum and some kinds of mining are exceptions, though some steps have been taken to make these more attractive to foreign capital.

Industrial development in Brazil has been uneven as between areas and as between one industry and another. Most of the industries of Brazil are concentrated in the southern and more temperate section of the country; the northern, northeastern, and central states, though they comprise five-sixths of the area of the country, contain only a few textile mills, alcohol distilleries, and sugar mills, particularly in Pernambuco and Bahia. Concentrated in the southern section (comprising only 17.2 percent of the national territory) are 85 percent of the industrial production, 90 percent of the factories, 90 percent of the electric power, and more than 50 percent of the population. The most industrialized state is Sao Paulo, which produces about 42 percent of the industrial output of the entire nation. Rio de Janeiro, the Federal District, and Minas Gerais account for 25 percent. The three extreme southern states (Paraná, Santa Catarina, and Rio Grande do Sul) contribute 23 percent of the industrial output.

a. Food-Processing Industries.

The most important industry in Brazil, in terms of the money value of the products, is the food-processing industry, accounting for about 40 percent by value of all industrial production. This industry includes such activities as sugar refining, flour milling, bread baking, bottling of milk, cheese making, canning fruits and vegetables, meat packing, and cleaning and grading coffee. The food-processing industry may be considered the core of the small middle class in Brazil since there are over 20,000 food-processing and liquor-making establishments reported in Brazilian statistics. These establishments are mostly moderate-sized concerns, employing an average of twelve each. The industry provides about 18 percent of the industrial jobs in Brazil.

b. Textile Industry.

The textile industry is the greatest large-scale industry of Brazil. It is estimated that more than 2,200 textile plants produce approximately 1,200,000,000 meters of cloth each year and employ an average of 112 workers each. Employment in the textile industry represents over 27 percent of industrial employment, the greatest number of workers in any single industry, though the product represents only 18 percent by value of all industrial production. In addition the closely allied clothing industry accounts for another 2 percent of industrial production and 4.5 percent of employment, in more than 2,800 establishments.

The textile industry has been able to meet most Brazilian textile needs. The bulk of the textile output consists of coarse cotton cloth and jute bagging to meet the special demands of Brazilian consumers. There is also production of the finer grades of cloth sufficient to meet most domestic requirements. Imports of piece goods have dwindled from a value of approximately \$20,000,000 in 1927 to a negligible amount at present.

Furthermore, during World War II, Brazil became an important supplier of nearby foreign markets such as Uruguay, Argentina, Chile, and Paraguay, as well as the Union of South Africa, exporting about 200,000 meters of cloth a year. Brazilians hope to be able to retain and expand these markets, which formerly were dominated largely by the Japanese. The outlook for continuing high exports of textiles, however, is dim, because: (a) lower-priced competition by the US for the textile markets is expected to develop; (b) Brazilian costs are comparatively high; (c) to reduce costs would require replacement of most of the equipment in Brazil, which would take five to seven years if all operators made a determined effort to rehabilitate their plants.

c. Iron and Steel.

If the development of heavy industry is considered a measure of the progress toward general industrialization in a country, Brazil is in a period of significant industrial development. Although iron and steel production began over a century and a half ago, it advanced slowly, largely as a result of lack of adequate fuel supplies. In recent years the industry has done much to overcome this handicap by more efficient exploitation of the coking coal available (see section 2, above, Natural Resources, p. 32), by using electric furnaces, and by importing coal. Iron ore and limestone are plentiful in Brazil and are not therefore factors limiting production.

In 1935, a large steel mill was constructed at Monlevade, near the iron deposits of Itabira. This mill (Cia. Siderurgica Belgo-Mineira) and the Sabara mill, owned by the same company, produce about 100,000 tons of pig-iron and 82,000 tons of steel products a year. The national steel mill at Volta Redonda, built with the help of \$45,000,000 Export-Import Bank capital, began production in the summer of 1946. It produces pig-iron, rolled plates, rails, and shapes. Brazilian alloy steel production has been in the hands of two small German-Brazilian firms, whose technical skill is reported high, but which have not expanded as much as they could to meet the demand.

Over-all production between 1934 and 1946 increased from 58,559 to 339,847 metric tons of pig-iron; from 61,675 to 317,849 metric tons of billets and ingots; and from 48,699 to 217,552 metric tons of other steel products. Currently, iron and steel production amounts to about 10 percent of the value of all manufacturing production. The range of steel products manufactured in Brazil has increased considerably in the last few years. Now, over 5,000 separate establishments are engaged in metallurgical production and employ over 11 percent of the industrial labor force.

Considerable quantities of iron and steel enter Brazil in the form of machinery and automotive vehicles, and in the form of grey iron castings and malleable iron fittings. Exports have been largely limited to pig-iron and cast iron pipe.

t
c
s
\$
1:
J:

an
fac
sat
jok
ord
the
this

max
zoni
cem
boor
duct

indus
156,0
produ
cardb

d. *Chemicals.*

The chemical industry has been one of the fastest growing industries in Brazil. It has developed from almost nothing since World War I, and now consists of more than 2,000 establishments employing nearly 5 percent of the industrial labor force and supplying nearly 8 percent of the industrial production by value. Its rapid development will probably continue since Brazil not only needs more chemicals, but also possesses ample hydroelectric power and the necessary raw materials for its further expansion. A variety of oils, gums, essences, botanicals, and minerals are produced. In addition, carnauba wax, beeswax, ipacac, cube root, oiticica oil, castor seed, perfumary essences, resins, and other chemicals (which are only partially processed) are exported in quantity. A start has been made with more advanced chemical processing for export, and some foreign shipments have been made of paints, starches, cosmetics, and calcium carbide. The bulk of pharmaceutical and toilet preparations used in Brazil are manufactured within the country either by local companies manufacturing their own brands or by laboratories which compound and package according to the formulas and under the trademarks of foreign companies. The manufacture of acids and other industrial chemicals made rapid strides in the inter-war period. Large quantities of alkalis are still imported, but local manufacture is soon expected to fill this demand since a \$7,500,000 loan to the Cia. Nacional de Alkali was made by the Export-Import Bank in 1947 for the construction of a caustic soda plant at Cabo Frio in the State of Rio de Janeiro.

e. *Construction and Building Materials.*

Building activity in Brazil has been booming since the end of World War II, and demand for building materials is at an all-time high. For the most part, manufacturers of building materials have expanded production, but not rapidly enough to satisfy the present demand. The industry furnishes over 7 percent of the industrial jobs and nearly 5 percent of the industrial production by value. The production record appears to be good, but high costs keep proper housing beyond the reach of all but the very wealthy. Precarious financing injects an additional element of instability in this inflated industry.

Cement production was approximately 900,000 tons in 1946, which is about maximum production with present facilities including the newest plants at Belo Horizonte and at Capos. This production did not meet demand, and over 300,000 tons of cement were imported. There are no plans for further expansion of production. The boom demand is not expected to continue, and there is little prospect for greater production during 1948.

f. *Paper and Pulp.*

Among the smaller but important industries of Brazil is the paper and pulp industry. About 260 paper and pulp mills averaging 60 employees each produced over 156,000 tons of paper in 1946 and accounted for over 2 percent of Brazilian industrial production. For some years domestic mills have supplied most of the wrapping paper, cardboard, and coarser varieties, as well as some special types, such as carbon paper

and cigarette paper. Local wood pulp and newsprint production, however, has been about 8,000 tons a year as compared to 60,000 tons annual consumption. Pulp and newsprint imports, consequently, have been about 52,000 of the 70,000 tons of imported paper and pulps of all kinds. In 1947, a large integrated mill in the state of Paraná was brought into production. It has a maximum annual capacity of 40,000 tons of pulp and newsprint, and can produce mechanical pulp for other manufacturers as well as cardboard and other heavy paper products. This plant, of course, should materially reduce Brazil's dependence upon imports for pulp and newsprint.

g. *Vegetable Oils.*

In the early 1930's, Brazil began developing its vegetable-oil industry and there has been a steady increase in production since then. During World War II, Brazil was one of the main sources of US imports of vegetable oils and waxes. Total production for 1947 was 118,150 metric tons. Cottonseed oil accounted for about 55,000 tons of this total. Almost 70 percent of the cottonseed is processed in Sao Paulo and the remainder in Pernambuco, Paraíba, and Ceará. The production of babassu oil in 1947 was 15,000 metric tons. It is processed chiefly in southern Brazil and on the northern coast. Castor oil production (12,000 metric tons in 1947) is centered in Sao Paulo, as is that of peanut oil. Ceará produces most of the oiticica oil. Flaxseed oil from Rio Grande do Sul and tucum oil from Piauí also make important contributions to Brazil's total vegetable oil production.

Brazil unquestionably has a great potential as a producer of vegetable oils. Oleaginous plants, which are both native and cultivated, can be produced on a very large scale. As more and more commercial uses are developed, the production of these oils may become an exceedingly important factor in the Brazilian economy.

4. **FINANCE.**

Brazil may well have reached a turning point in its financial history. After almost 150 years of unsound and unstable conditions, there are some signs that Brazil is developing a sounder financial system. Central bank functions, which have been makeshift throughout Brazilian history, will probably be placed entirely under the control of a new central bank to be established in the near future. The foreign exchange value of Brazilian currency has remained relatively stable for the past decade, though internally the currency has continued to decline in purchasing power. Federal revenues, after a deficit in almost every year for a century, showed a surplus in 1947. An unmanageable external debt was renegotiated in 1943 and brought well within Brazil's capacity to pay.

On the other hand, private banks are not carefully regulated, and several unsound commercial banks are known to be supported for political reasons by the Bank of Brazil. Furthermore, prospects are uncertain for an excess of revenues over expenditures in 1948. In addition, the Brazilian currency is at present probably overvalued in terms of foreign exchange.

Central bank functions have been makeshift, at best, throughout Brazilian history. In 1905, after a long series of financial crises, reorganizations, failures, and disagree-

ment on banking principles, the present Bank of Brazil was organized. The bank is a joint private and publicly owned corporation, in which slightly over 50 percent of the stock is owned by the federal government. The Bank of Brazil retains all normal commercial functions, and in addition is the banker for the federal government. All federal revenue is deposited in the Bank of Brazil, and federal expenditures are drawn against it by check. The bank also handles exchange-control activities, gold purchases for the account of the government, and financing of exports. In 1945, the Superintendency of Money and Credit was set up as the policy-making agency to exercise, through the Bank of Brazil, control over all central banking functions. The Bank of Brazil has been primarily an operating agency.

Within the near future, however, both the control and operating functions will probably be brought under one head through the establishment of a new central bank. A bill for that purpose has been submitted to the Brazilian Congress. The powers accorded to the proposed bank are extremely broad. Supported by five specialized semi-governmental credit banks, it is to regulate currency, credit, investment, and Brazil's foreign trade. Consequently, if the bill passes in its present form, the bank will be a dominant economic and financial factor in the economy. As far as the control of credit and the stimulation of investment are concerned, such a central bank would be a notable step toward a sounder financial system. A feature of the bill which should measurably strengthened the banking structure is the provision that the *casas bancárias*, or small, poorly financed banking houses, must meet reserve and other usual requirements of regular banks within three years if they are to continue in existence.

The Brazilian unit of currency was officially designated the *milreis* prior to 1 November 1942. Although the name was changed to *cruzeiro* on 1 November 1942, the unit remained substantially the same. Currently the *cruzeiro* is equivalent to US \$0.5405. Comparison with the prewar ratio cannot be precise, because of the multiple exchange rate system prevailing at that time (1939 official, .0594; free market, .0507; special free, .0464; curb, .0480). However, the *cruzeiro* has remained stable or perhaps appreciated slightly in terms of the dollar. This development is in contrast to the trend of depreciation of the currency in relation to the dollar which has prevailed over the past century.

Within the country, however, Brazilian currency has continued to decline in purchasing power. Like other Latin American countries, Brazil was subject to a wartime inflation. Since 1939 the internal value of the *cruzeiro* has declined more than 60 percent. The cause of the inflation was the rapid wartime expansion of bank deposits and increase of currency in circulation, unequaled by the increase in production, imports, or the growth of the money economy. The rate of inflation was somewhat retarded in 1947 by the influx of imports and by the balancing of the federal budget, but basic necessities such as transportation, meat, rice, bread, and beans have continued to increase in price.

The 1947 budgetary surplus was achieved in part by the severely restrictive spending policy of President Dutra and in part by business prosperity which caused receipts to exceed expenditures. Although President Dutra's budget policy shows no change, and the government has a surplus of about US \$20 million carried over from 1947, certain

factors may impede the balancing of receipts and expenditures in 1948. The estimate of receipts is predicated to a considerable extent upon continued business and industrial expansion. Such an expansion has taken place practically every year for a decade or more, but there were several signs in 1947 that the peak of the wartime business boom and of rising prices may have been reached. Another factor is the probability that numerous extra-budgetary credits approved but not drawn upon in 1947 will be carried over to 1948 and will thus increase the expenditure figure for the current year.

Brazil's present external debt service is well within its financial capacity. Although service on the Brazilian external debt had been in default several times since 1898, and several attempts at a viable debt adjustment were made, no adequate solution was found for the problem. In November 1943, however, the US and Great Britain, the principal creditors, agreed with Brazil on a debt readjustment which was based on the premise that Brazil's annual debt service capacity amounted to US \$32 million per year. Service (including state, municipal and "special" obligations, as well as federal) was 11,817,744 in US dollars and 4,936,040 in pounds sterling (slightly less than US \$32 million). Of the total, federal debt service was 384 million cruzeiros (c. US \$20 million) or about two-thirds. This debt readjustment is believed to have placed Brazil's external debt service on a sound basis, and payments have been maintained since it was effected. Brazil's additional obligations in French francs and Dutch florins have been less troublesome. A fund has been constituted and negotiations are under way for the complete repatriation of the French franc debt. The Dutch debt is relatively small.

Service of all federal government debts is also well within the fiscal capacity of the government since it totals only nine percent of the total budget: 384 million cruzeiros (three percent) external debt service; 570 million cruzeiros (four percent) internal debt service; and 330 million cruzeiros (two percent) floating debt service. The present situation is thus radically different from that of less than twenty years ago when the servicing of the external debt alone required a very substantial part of Brazil's gold and foreign exchange receipts.

In addition to banking and budget problems there is the problem of the stability of the cruzeiro in terms of foreign exchange. Rumors of a change in official valuation of the cruzeiro persistently recur. Depreciation has been urged for several years by the powerful exporter and industrialist groups and the adverse balance of trade in 1947 gave added force to the arguments for this course of action. Furthermore, Brazil has not declared a par value for the cruzeiro to the International Monetary Fund as was requested in late 1946. Presumably the reason for this inaction was the desire of the Brazilian Government to manipulate the external value of the cruzeiro. Nevertheless, the value of the cruzeiro has been maintained to date in spite of the fact that it is probably over-valued and in spite of the pressure for depreciation. Rigid import controls, currently in force, were apparently adopted in preference to depreciation in order to keep the cost of vital imports low, as well as to avoid additional cost in the servicing of the foreign debt. Possibly a system of multiple rates may be instituted to reduce the strong pressure for depreciation, since this might enable the Brazilian Government to aid needy and/or influential exporters and importers without incurring the dislocations of a complete revaluation of the currency.

bu

5.

pa
ra
de
po
of
cal
tio
sur
to
vol
suf

feec
var
19th
con
for
cult
befc
terr
imp
this

good
geth
in B
som
effec
thar
cour
effec
time
expo
perc

expa
The
impc

In summary, Brazil shows definite signs of improvement in its financial structure, but has not yet achieved a thoroughly stable system.

5. INTERNATIONAL TRADE.

As a result of agricultural, and particularly of industrial development during the past 25 years, the pattern of Brazil's international trade is in the initial stages of a rather radical modification. The success achieved in this economic development will determine the volume, and of more significance, the variety of export offerings and import requirements. Expanding industrialization will increase the demands for imports of capital goods for a long time to come and will augment the need for fuel and chemicals which Brazil lacks in sufficient volume to sustain a high degree of industrialization. It will draw in its wake an increased demand for those commodities, both consumer and capital, made by a manufacturing process too complicated for the Brazilians to achieve within the foreseeable future. It does not follow, however, that the total volume of international trade will necessarily increase, because an increase in exports sufficient to maintain the 1947 record-high level of imports is unlikely.

Since the Brazilian economy has been largely underdeveloped, Brazil's ability to feed and clothe its population has been to a great extent dependent on uncontrollable variations in the world markets for coffee, rubber, and cotton. It was realized in the 19th century that there could be little chance of stability in the domestic supply of consumer goods until exports were diversified and dependence on the outside world for consumer goods was reduced. Diversified exports, diversification of domestic agricultural production, and the development of light manufacturing would be necessary before any greater stability in government revenues and domestic consumption patterns could be achieved. It was not, however, until the present century, under the impetus of the two World Wars, that Brazil was able to make any notable advance in this direction.

Since 1913, Brazil has achieved virtual self-sufficiency in many essential consumer goods. Furthermore, expanded production of a variety of agricultural products, together with a slowing of coffee expansion after 1933, has meant a gradual diversification in Brazil's export pattern. Consequently, Brazil has succeeded in insulating itself to some extent against variations in foreign trade which are beyond its control. The effects of a fluctuation in coffee prices at present would therefore be much less severe than they were during the 1920's, since coffee now accounts for only 35 percent of the country's exports as compared to 70 percent during the earlier period. Similarly, the effects of a reduction in imports are now much less pronounced as compared to earlier times. At present the only major food import is wheat, and more textiles are now exported than imported. Purchases of durable goods which now account for a greater percentage of imports can be more easily postponed than purchases of food and clothing.

The development of light manufacturing enabled Brazil, during World War II, to expand exports of manufactured goods to the less developed Latin American countries. The increased industrial production for domestic and export demand was also an important factor in establishing Brazil's large export balance of trade. By the end

of 1946, Brazil had accumulated more than US \$700 million in gold and foreign exchange.

The accumulation of foreign exchange, however, was not an unmixed blessing. Since exports exceeded imports, foreign exchange receipts exceeded expenditures. Exporters, of course, needed domestic currency to continue production operations. The government was obliged to hold a great part of the foreign exchange surplus and pay the equivalent to exporters in domestic currency. Rather than raise the required funds by taxation or by floating a domestic loan, the government resorted to currency issue. Thus, between 1939 and 1947, currency in circulation rose from five to twenty billion cruzeiros, contributing markedly to inflation.

Furthermore, the fact that many of Brazil's import requirements could be and were postponed, meant that the accumulation of foreign exchange was in large part committed, and represented a reserve against future essential imports. In effect, it was not a real surplus. Brazil's immediate postwar policy did not reckon with this situation. Despite the fact that the mechanism for control of exchange operations has been in existence since 1931, little effort was made to conserve foreign exchange for the most essential imports then available. On the contrary, imports of virtually all kinds were permitted. By the end of 1946 imports were unprecedentedly high, not only because of the long pent-up demand which had accumulated during the war and which American manufacturers began to satisfy in greater volume in 1946, but also because of the inflated price level in Brazil which made some imports less expensive than competing domestic merchandise. Brazil's balance of trade with the US became adverse in November of 1946, although the total balance remained favorable. Since many of the currencies which Brazil received for its exports were not freely convertible into dollars, the situation had inherent difficulties.

A large part of Brazil's foreign exchange reserve was in the form of soft currencies and hence unavailable for imports from the US. The sterling balance alone accounted for well over US \$200 million. Thus while dollar reserves were decreasing, reserves of soft currencies continued to increase. This tendency was accentuated by credits which had been extended in 1946 to soft-currency areas (US \$20 million to Czechoslovakia, US \$25 million to France, US \$25 million to Belgium, and US \$10 million to Finland). Consequently, at the end of February 1947 the Bank of Brazil for a time ceased to accept British, Czech, or Belgian currencies. By June, Brazil had reinstated a more restrictive system of exchange control with priority for essential imports. This priority system was essentially a restriction on imports from hard-currency areas. Imports from soft-currency areas were relatively free, because the imports classified as essential were generally not available from these areas, and goods of any description were considered more useful to the Brazilian economy than further accumulations of inconvertible currency. The possible alternative of an export embargo on shipments to the soft-currency areas would have caused serious economic dislocations, particularly in the tobacco economy of the northeast.

Despite the more rigid control of imports, Brazil's balance of trade with the US was adverse in 1947 by about US \$300 million. Even Brazil's total balance of trade was

adv
act

bei
pro
and
US
mil
am
\$10
imp
the

perc
(3.9
perc
mon

item
(10.8
iron

Expc
verse
the l
is no
for 1:
balar
sever
prod

I
ports
paci
pand
at pr
al's s
recen
Brazil
sever
such
may b
in tot
new

adverse by US \$83.2 million in 1947, and, in addition, Brazil's non-merchandise transactions are a deficit item in the Brazilian balance of payments.

In order to meet the adverse balance without resorting to the sale of gold, and not being a participating member of the International Monetary Fund, Brazil invoked the provisions of its Stabilization Agreement with the US. The Agreement, as amended and renewed in 1942, provided for cruzeiro sales for US dollars up to the equivalent of US \$100 million. In April of 1947, therefore, \$40 million were drawn, followed by \$20 million more in May and another \$20 million in June. By means of delay in payments, amounting virtually to a forced loan from US exporters, the use of probably another \$100 million was obtained. In early 1948, a system of prior permit for all exports and imports was introduced in a more stringent attempt to restrict Brazilian imports from the US to Brazil's capacity to earn dollars.

During 1947, principal Brazilian exports were coffee (35.6 percent), cotton (14.3 percent), cotton piece goods (5.9 percent), cocoa beans (4.9 percent), and pinewood (3.9 percent). The US took 39 percent of total exports, Argentina 11 percent, UK 8 percent, and France 4 percent. (The percentage of the latter three is for the first nine months.)

Approximately 60 percent of Brazilian imports came from the US. Major import items were machinery, tools, and apparatus (23.3 percent), wheat and wheat flour (10.8 percent), petroleum and products (6.4 percent), automotive vehicles (9.4 percent), iron and steel (6.1 percent), and coal (2.3 percent).

Total Brazilian imports in 1947 came to 22.7 billion cruzeiros (US \$1,180,400,000). Exports were valued at 21.1 billion cruzeiros (US \$1,097,200,000). Thus resulted an adverse merchandise balance of trade amounting to 1.6 billion cruzeiros (US \$83,200,000), the largest trade deficit ever experienced by this country, whose balance of trade is normally favorable. Brazil's present import controls should improve the balance for 1948. The Brazilian Government and businessmen in the face of the 1947 adverse balance of trade are agreed on the necessity of reducing imports. Hope of easing the severity of present import restrictions apparently lies in increased domestic industrial production rather than in increased export capacity.

Brazil's new exchange regulations will probably result in a drop in volume of imports for 1948. Brazil has neither the exchange reserves nor the current earning capacity to continue to import at the rate prevailing in 1947. Exports cannot be expanded sufficiently to fill the gap. Coffee exports will probably be maintained at present levels for the next several years, but a substantial increase is unlikely. Brazil's second export, raw cotton, is expected to decline. The third ranking export of recent years has been cotton textiles. In spite of relatively uneconomic production, Brazil may well maintain a portion of its overseas sales of cotton textiles for the next several years until prewar producers are able to regain their markets. Exports of foods such as rice and meat are limited by the needs of the domestic market. While there may be an increase in exports of lumber, this can hardly result in an appreciable change in total exports. The elimination of less essential items in accordance with Brazil's new import control should go far to balance imports and exports.

A reduction of imports to the level of exports, and the achievement of multilateral convertibility of currency, will not, however, solve Brazil's foreign-exchange problem. Brazil usually has a large debit balance in non-merchandise transactions. Even with severe restrictions, it is improbable that this can be reduced below US \$75 million, unless there should be a substantial increase in new foreign investments in Brazil.

Hence, though it is clear that Brazil will continue to have foreign-trade problems, these problems may be somewhat less important than they were in the past. Formerly, foreign markets were the major outlets of the chief productive enterprises of Brazil. Consequently, Brazil's prosperity depended almost exclusively on the maintenance of foreign demand. This condition has changed. Currently the greatest contribution to farm cash income does not come from coffee, the chief export commodity, but from livestock, for which the major market is domestic. The contribution of coffee to national income has declined in this century from over 40 percent to only 9 percent. Thus, although continuous attention is required to adjust the country's pattern of trade under present payments difficulties, Brazil, through industrial development and agricultural diversification, has partially alleviated its former dependence on world markets.

1.

dev
fac
Afr
gre
dev
har
ship
tha

uns
esse
the
nati
tow
the
to s
not
ing
poli
the

2.

betw
of in
cal p
was
unti
decl
tion
rela
1930

was
1930

CHAPTER III FOREIGN AFFAIRS

1. BASES OF BRAZILIAN FOREIGN POLICY.

To understand the core of Brazilian foreign policy, to comprehend its long-run development as well as its day-to-day operations, one must keep in mind certain basic factors: (a) Brazil's vulnerability to trans-oceanic attack because of proximity to Africa, a long and exposed coast line, and a very limited military potential; (b) its great dependence upon international trade; (c) the need of foreign capital for internal developments (conditioned by the determination to keep control thereof in Brazilian hands); (d) the rivalry with Argentina for military supremacy and political leadership in South America; and (e) a cultural background and tradition different from that of Spanish America.

There are also several factors of secondary importance: (a) since Brazil has no unsettled territorial claims or border disputes, its foreign and military policies are essentially defensive; (b) the country has a deep-seated desire to be counted among the world powers; (c) it has a highly developed spirit of conciliation in meeting international problems and controversies; (d) the mass of the population feels friendly toward the US; and (e) there is a strong anti-Communist and anti-Soviet bias among the ruling classes, especially in the army. Although the net effect of these factors is to steer Brazilian foreign policy toward cooperation with the US, Brazilian policy will not inevitably be consistent with and complementary to US policy. In the past, varying patterns of world affairs have produced divergencies between US and Brazilian policies, and there is no reason to believe that similar divergencies will not occur in the future.

2. BACKGROUND.

Although Brazilian-US friendship is traditional, the present close relationship between the two countries is of relatively recent origin. During the first five years of independence (1822-1827), the British clearly established their economic and political pre-eminence in the new Brazilian Empire. Although Britain's political dominance was short-lived, its economic supremacy in Brazil continued practically unimpaired until the first World War. Since that war, British influence has been steadily declining. The period of truly important Brazilian-US economic and political relations, therefore, did not really begin until World War I. This trend toward closer relations continued in the inter-war period with only one serious competitor: in the 1930's Germany, not Britain, was the aggressive competitor of the US in Brazil.

When Vargas assumed dictatorial powers in November 1937, the approaching war was already posing a major problem for Brazilian foreign policy. The US had, by then, become Brazil's largest market and chief source of imports; the Good Neighbor Policy

HARRY S. TRUMAN LIBRARY
Papers of
HARRY S. TRUMAN
PRESIDENT'S SECRETARY FILE

had strengthened the cordial relations between the two countries. Moreover, Brazilian relations with Germany were strained by German support for the *Integralistas*, a Fascist group, which, after Vargas outlawed it, led an unsuccessful attempt (in May 1938) to assassinate him and seize the government. The Brazilian Foreign Office subsequently declared the German Minister *persona non grata*. At the same time, however, Vargas attached great value to Brazil's expanding trade relations with Germany, while Japan was an even more important market for Brazil's cotton exports.

Many Brazilian army officers were deeply impressed with Germany's growing military power, and German successes in the early stages of World War II greatly increased their admiration. Vargas' determination to be identified with the victors forced him into the exceedingly difficult position of maintaining Brazilian neutrality during the first three years of the war. The very German victories which stimulated the admiration of the pro-Axis army cliques cut off European markets and made Brazil more economically dependent upon the US, a development which resulted in a great increase of pro-Allied feeling among the civilian population.

Under the pressure of public opinion and economic necessity Brazil began visibly to swing toward the United Nations by the middle of 1941. In October of that year, the first Lend-Lease Agreement was signed, and Foreign Minister Oswaldo Aranha proclaimed Brazil's break with the Axis at the Third Meeting of Foreign Ministers of the American Republics in Rio in January 1942. Even before German submarine action against Brazilian shipping had provoked Brazil's declaration of war in August 1942, the nation was cooperating intensively with the Allies, and particularly with the US.

Extensive credits had been made available to Brazil by the Export-Import Bank in 1939 and were supplemented in 1940 by a loan of \$20,000,000 earmarked for the Volta Redonda steel plant. In 1942 this US investment was augmented by an elaborate economic arrangement looking to complete wartime mobilization of the productive resources of Brazil. Brazil increased production and export of strategic raw materials to the Allies. The US granted technical aid and financial assistance for the development of Brazilian transportation and industry, with a view to postwar expansion as well as to wartime necessities.

With the termination of war the US showed interest in Brazil's promised return to democratic government. Ambassador Berle, speaking before a conference of Brazilian newspapermen in September 1945, expressed the satisfaction of the US Government over the democratic trend in Brazil and reportedly stated that the convening of a Constituent Assembly (favored by the Communists and Vargas forces as a substitute for immediate presidential elections) need not interfere with the scheduled presidential elections. Berle's speech was branded as "intervention" by the Communists and President Vargas himself, but was very favorably received by the UDN press.

After the overthrow of Vargas on 29 October, the provisional government, headed by Chief Justice José Linhares, was quick to receive US recognition. Shortly after his victory in the subsequent presidential election, General Dutra declared that his government would maintain close friendship with the US.

Brazil's participation in World War II and its adherence (in February 1943) to the Joint Declaration by the United Nations paved the way for establishment of diplo-

ma
mel
this
mu
wer
and
Cor
Bra:
In (
Pres
Pres

3.

prog
parti
was :
Brazi
in 19
Gene
I
stron
the In
ferenc
the U
at the
resolu
from v
adopti
resolu
the In
dition:
attem

4. Ct

Br
prides
World
republi
recon
which
Brazil
Chile, I

matic relations with the USSR. The establishment of relations with the Soviet Union met with popular approval because of the war record of the USSR. But for Vargas, this development was also part of a plan to keep himself in power by adding Communist support to his own following among Brazilian labor. Diplomatic relations were established between the two countries in April 1945. Relations between Brazil and the USSR mirrored the relations of the Brazilian Government with the Brazilian Communist Party, as well as the relations of the US with the USSR. After the Brazilian Communists were outlawed in May 1947, Soviet Ambassador Suritz left Rio. In October 1947, following publication in the Soviet press of an article insulting President Dutra and the Brazilian Army (published soon after the article insulting President Truman), Brazil broke relations with the USSR.

3. CURRENT RELATIONS—INTERNATIONAL ORGANIZATIONS.

The Brazilian Government has traditionally attached great importance to most programs and organizations for international action. It is an enthusiastic and active participant in the work of the United Nations, extremely proud of the fact that Brazil was selected as one of the temporary members of the original Security Council. A Brazilian, Oswaldo Aranha, served as president of two successive General Assemblies in 1947. Brazil has always tended to cooperate closely with the US in the work of the General Assembly.

Brazil's interest and activity in inter-American affairs is likewise noteworthy. A strong champion of a Hemisphere defense system, Brazil has ratified (March 1948) the Inter-American Treaty of Reciprocal Assistance. At the Ninth International Conference of American States at Bogotá, Brazil's policy and conduct paralleled those of the US more closely than was the case with any other important country represented at the conference. Brazil joined with the US in opposing the introduction of any resolution on European possessions in the Western Hemisphere, and both abstained from voting on the final text. The two countries acted together in the formulation and adoption of the resolution against totalitarian systems—the so-called anti-Communist resolution. Both countries opposed any detailed elaboration of the rights of labor in the Inter-American Charter on Social Guarantees on the ground that economic conditions vary so from country to country that no useful purpose would be served by attempting international action along such specific lines at this time.

4. CURRENT RELATIONS—LATIN AMERICA.

Brazil has always been a strong advocate of Hemisphere political cooperation, and prides itself on maintaining and promoting peaceful relations in Latin America. World War II greatly increased its commercial interchange with the other American republics. After the war, one of the most important aspects of its task of economic reconversion was the necessity of assuring markets for the country's textile industry, which had expanded greatly with the wartime lack of competition, and to this end Brazil concluded bilateral trade agreements during 1946 and 1947 with Argentina, Chile, Uruguay, Paraguay, and Bolivia. In July 1947, following a visit to Rio by Chile's

President Gonzáles Videla, Brazil signed conventions with Chile relating to Economic Cooperation, Travel and Tourism, Air Commerce, and a Supplementary Protocol to the Treaty of Commerce and Navigation of 1943. The year 1947 also saw meetings of President Dutra with the Presidents of Argentina and Uruguay on the occasion of the opening of the International Bridge between Brazil and Argentina and the signing of an agreement for construction of a Friendship Bridge between Brazil and Uruguay.

There is, of course, a latent rivalry in Brazil's relations with Argentina. Brazil's participation in World War II and the material results of its cooperation with the US gave it a great advantage in the traditional competition between the two countries for leadership in South America. Brazil's military strength was greatly increased relative to that of Argentina. Brazil assumed the lead in pushing for an active inter-American policy at a time when Argentina, by its own choice, was virtually isolated from the remainder of the Hemisphere.

In Paraguay and Bolivia, countries which Argentina counts within its sphere, Brazilian influence received a powerful impulse during the war by virtue of Brazil's participation in the war, its increased military strength, and its expanding production. Brazil continues to show an interest in pressing its advantage for more intimate economic and military relations with these two neighbors. Brazil is constructing a railroad connecting the Bolivian city of Santa Cruz with the Brazilian river port of Corumbá with the eventual objective of through rail traffic to the free port of Santos. A joint Bolivian-Brazilian Commission is exploring for oil in that region of Bolivia opened up by the railroad. During the Paraguayan Civil War in 1947, Brazil offered its services as mediator and made strenuous efforts to get both parties to submit to a peaceful settlement.

Despite the ancient rivalries and divergent policies of Brazil and Argentina, a desire to maintain cordial relations is presently evident on both sides. Brazil, in fact, considers that one of its roles in Hemisphere relations is that of intermediary and conciliator between the US and Argentina. Any estrangement between the US and Argentina which would impel the Spanish-speaking countries of South America to align themselves with Argentina, thereby isolating pro-US Brazil, would greatly alarm Brazilians. Moreover, Brazil's trade with Argentina is important, and since the war Brazil has tried to negotiate an agreement whereby Argentina would supply its wheat needs. When the US State Department published its Blue Book on Argentina in 1946, a large segment of the Brazilian press received it enthusiastically, but the Government, in reply to a US request for its views, expressed itself as favoring continental solidarity and the re-establishment of normal relations with Argentina, a view it has consistently supported in recent years. Brazil will continue, however, to be jealous of its position as the closest friend of the US in Latin America, and any development indicating that Argentina might supplant it in this position will provoke a bitter reaction.

5. US RELATIONS—GENERAL ESTIMATE.

Although the present administration has quite consistently followed a policy of friendship and cooperation with the US, relations between the two countries have

suffi
oth
tion
Bra
posit
to c
coop
Cha
(see

with
havi
last
ian
Bra
par

vari
the
obst
the
mitt

For
the
with
than
thou
(Bra
conv
and
posit
Furt
of ca
and
in th
Braz

the I
ment
with
prog
prest

suffered somewhat from the postwar economic situation. Perhaps even more than other Latin American countries, Brazil feels that the US, having enlisted its cooperation in wartime; should now make generous contributions toward the solution of Brazilian economic problems. The removal of Ambassador Carlos Martins from his post in Washington (April 1948) seems to have been largely a result of his inability to obtain more US aid for Brazil. Illustrative of the obstacles hampering postwar cooperation between the two countries are the situation of the Itabira project (see Chapter II, Section 2a (2), *Iron* p. 26), and the question of Brazilian oil legislation (see Chapter II, Section 2c, *Petroleum*, pp. 29-31).

Furthermore, while sympathizing in principle with ERP, many Brazilians agree with the late Senator Roberto Simonsen, an industrialist from Sao Paulo, that it might have detrimental effects on the Brazilian economy. Simonsen suggested in a speech last October that if Brazil is not to suffer from the ERP, the US should finance Brazilian exports to Europe so that Brazil in turn can purchase machinery from the US. Brazil also wants to be able to obtain delivery on industrial machinery at least on a par with deliveries made to Europe.

Another difficulty has been Brazil's failure to participate in and adhere to the various international economic organizations to the degree the US would desire. Since the middle of 1947 shortage of funds and internal political considerations have been obstacles to wholehearted Brazilian cooperation in the International Monetary Fund, the International Trade Organization, and the International Emergency Food Committee.

Continuing cooperation with the US for Hemisphere defense is practically assured. For several reasons it is most unlikely that Brazil would enter upon any relations with the USSR as sympathetic and cooperative as were Brazil's pre-Pearl Harbor relations with Nazi Germany. Brazil's economic dependence on the US, now considerably greater than it was before World War II, is likely to continue for some time to come, even though an attempt is being made to increase trade with other Latin American countries. (Brazil would, of course, welcome additional markets in Europe if sales were financed in convertible currency.) Although the USSR took a few Brazilian exports during 1946 and 1947, it did not provide a major market for Brazilian goods and was not in a position to supply the imports Brazil needed. No change in this situation is expected. Furthermore the US is practically the only country at present from which large amounts of capital for Brazil's development and industrialization can come. The Brazilian Army and ruling classes fear domestic Communism and are bitterly anti-Soviet, as reflected in the government's break with the Soviet Union. Moreover, the majority of the Brazilian people themselves feel a genuine friendliness toward the US.

It is also most unlikely that Brazil will join Argentina in a "third position" between the US and the Soviet Union. Brazil looks to the US for modern arms and equipment, hoping thereby to maintain military superiority over Argentina. Cooperation with the US has greatly helped Brazil in its attempt to rival Argentine material progress, and its leadership in Pan American cooperation has enhanced Brazilian prestige vis-à-vis Argentina.

Brazil's identification of aims with those of the US, and its economic and military dependence on the US do not imply, however, any supine willingness to make concessions incompatible with its sovereignty. When there is an inescapable conflict between cooperation with the US and national sovereignty, Brazil shows no hesitancy in resorting to independent action. Brazil's insistence upon establishing and maintaining the legal fiction upon which the US bases arrangement was founded well illustrates this fact. Brazil gave a concrete demonstration of its independence of judgment after the Argentine *coup d'état* of 4 June 1943 when it recognized the new Argentine Government without acting in accord with the US or the South American Governments. At the present time, Brazilian sensitiveness concerning sovereignty probably underlies the strong feeling against allowing foreign oil companies to operate freely in Brazil.

Brazil is in a fairly advantageous position to seek economic advantages from the US, and may be expected to do so. It has several important sources of bargaining power: (a) strategic raw materials (See Chapter II, Section 2, Natural Resources, pp. 24-31), important to US defense, and (b) a military position of great importance to the defense of the Hemisphere. Politically, Brazil's support is necessary to the US in all programs of inter-American cooperation. Brazil is the largest and most influential (except possibly Argentina) of the Latin American countries, and without its backing the US would find it difficult to advance measures for united action. In broader programs of international action, Brazil's collaboration is also of great value to the US. Failure of Brazil to cooperate in peacetime would be very detrimental to US action in the international field; in wartime, it would be even more serious.

6. SUMMARY.

Brazil may be expected within the predictable future to continue its policy of close cooperation with the US, a policy which, under present-day conditions, is dictated both by preference and by necessity. It may be expected to continue to remain free of aggressive design in its foreign relations and to concern itself with promoting international peace and welfare, supporting, within its financial limitations, international organizations contributing to those ends.

1.

be
to
of
str
im
Pa
gov
alt
tha
by
Sec

mer
cou
illite
noti
und
life.
has
army
the a

Affai
neigh
and
Arger
territ
possib
aggre
ternal

A
of the
every
barrier
mately
from t
of the
Grosso

CHAPTER IV MILITARY SITUATION

1. GENESIS OF PRESENT MILITARY POLICIES.

Brazil's military policies, as well as some of its domestic and foreign policies, have been given distinctive shape by the fact that the military has assumed, and continues to assume, an important and sometimes dominant role in the direction of the destiny of Brazil. The Brazilian Army (the army accounts for 80 percent of armed-force strength, and an even higher percentage of military influence) is conscious of the importance of its role in the preservation of the national integrity in the war with Paraguay in 1864-1870, and in the establishment of the Republic in 1889. Brazilian governments have been essentially dependent upon the support of the military, and although its influence has been exercised, for the most part, in an interdictive rather than in a positive manner, it can be said that governments in Brazil remain in power by consent of the military and fall through loss of its favor. (See also Chapter I, Section 4. a, *The Army*, pp. 14, 15, for political influence of the Brazilian Army.)

Brazilian military leaders have concerned themselves primarily with the development of a military establishment capable of preserving the internal security of a country whose population is the largest in Latin America; this population also is illiterate, socially and economically underprivileged, and possesses only the vaguest notions of political rights and responsibilities; and it is scattered over a vast, largely undeveloped, land, whose natural barriers and hazards retard the growth of a national life. In such a population there is a high potential of political instability, which has on the one hand called for a considerable degree of readiness on the part of the army to support civil authority in the maintenance of order, and on the other offered the army chances for interference on its own initiative.

Brazil's foreign policy has—as was pointed out in detail in Chapter III, *Foreign Affairs*—been non-aggressive. Brazil has, it is true, participated in four wars with neighboring countries—two against Argentina over the territory of Uruguay (1825 and 1851-52); one against Paraguay (1864-1870), in which Brazil joined forces with Argentina and Uruguay against Paraguay; and one against Bolivia (1903) when the territory of Acre was acquired (Brazil later paid Bolivia for the territory). With the possible exception of the Acre incident, however, Brazil has manifested no interest in aggressive warfare or territorial aggrandizement during the last century, and its external military policy has been governed by considerations of defense.

Although the territory of Brazil is almost equal in area to the combined territory of the remaining South American countries, and its boundaries join with those of every South American nation except Chile and Ecuador, there are great natural barriers everywhere except in the South. The Amazon basin—comprising approximately one third of the country—constitutes a virtually impassable barrier to invasion from the north and northwest. The marsh region lying between the upper reaches of the Paraná and the Paraguay rivers, and the extensive wooded area of the Mato Grosso that extends to the Andes, constitute a considerable barrier against invasion

from the west. Although the rapid development of aviation during World War II makes air operations in these areas possible, air-navigation difficulties and supply problems would probably dissuade any enemy that contemplated such operations.

The southern frontier, on the contrary, where Brazil borders on Uruguay, Paraguay, and Argentina, has no effective natural defense barriers. The problem of this frontier is relatively recent, since Brazil's pre-eminence was generally accepted in the Latin American sphere during the period of the Empire, 1822-1889. Not until about the time of the creation of the Republic in 1889 had Argentina developed sufficiently to be in a position to bid for Latin American hegemony. Since that time Argentina has continued to challenge the supremacy of Brazil in the Latin American sphere and in the world, and regard for Argentine military strength has been a strong factor in determining Brazilian military policy. The strategic area involved within the concept of a war with Argentina includes the states of Paraná, Santa Catarina, and Rio Grande do Sul. In recognition of the importance of this region, Rio Grande do Sul has been the maneuver area of the Brazilian Army in which problems are set concerned chiefly with the safeguarding of the country against invasion.

World War II brought into focus for Brazil's defense-policy makers an additional problem—the vulnerability of the strategically important northeastern bulge. The Bulge is remote from the concentration of population and industry in the southern seaboard states. Since Brazil possesses practically no land transportation, defensive measures depend upon air transportation and coastwise shipping; the latter is extremely hazardous in time of war, particularly because Brazil's 3,642-mile coast has many almost landlocked bays that form spacious harbors more accessible to a sea-borne enemy than to land defense forces. Since Brazil cannot hope to defend its long coast by its own efforts, military policy has sought not only the development of a more modern military establishment but also closer cooperation with the US and other nations of the Hemisphere.

Until World War I—and, in fact, until World War II as far as the Army was concerned—the strongest external influences on Brazilian military thinking were those of the French. (The influence of French missions on Brazilian training between World Wars I and II is mentioned in Section 3, *e.*, *Training*, pp. 57, 58.) US influences are now dominant in army, air force, and navy.

2. WAR POTENTIAL.

a. Manpower.

Brazil, with a population of possibly 45,000,000 (the figure is considered liberal by some), has the largest manpower potential of Latin America, having more than twice the theoretical mobilization capacity of either of its closest rivals, Mexico and Argentina. Normal statistical procedure would indicate a total of from 8,000,000 to 9,500,000 males of military age who are presumed fit for service. But the very low average age of the population, and known physical disqualifications—confirmed by experience in recruiting the World War II Brazilian Expeditionary Force—render even

t
h

g
ic
ca
m
ur
to
is
fig
mc
5,0

by
50
scri
to r
vigo
clim
low
ailm
gory
arme
the a

econo.
to in t
indust
tively
are an
its alli
require
nickel,
seleniu.

wool, fc

Highwa
serve as
because

the 8,000,000 figure suspect. About three and one-half million men are said to have had some military experience.

The Brazilians classify their available reserve manpower as follows: first category—700,000 trained reserves with military experience acquired through active service with the armed forces (US estimates of this group run as low as 400,000); second category—1,000,000 partially trained reserves with military experience acquired in military schools or in citizens' military training centers; and third category—1,650,000 untrained reserves with military experience acquired in some other way. The average total of the armed forces over the past 20 years has been approximately 110,000; it is anticipated that in the future strength will be maintained considerably above this figure; present strength is 170,000. The balance (after deducting from theoretical mobilization capacity the present armed forces and the three categories above) of 5,000,000 to 6,000,000 males eligible for service has received no training.

The military value of Brazil's manpower is severely limited by illiteracy and by the general debility of the Brazilian population. Illiteracy is estimated as high as 50 percent of the adult population; it is therefore normally necessary to teach conscripts—drawn principally from less privileged classes in which illiteracy is highest—to read and write before starting their basic training. The average Brazilian lacks vigor and aggressiveness—a fact which is attributable to temperamental characteristics, climatic conditions, inadequate diet and physical and medical care resulting from a low standard of living, and endemic diseases such as hookworm and other parasitic ailments, malaria, and venereal disease. Therefore, the above-mentioned third category and the balance of the manpower pool cannot be considered a real asset to the armed forces, while imposition of rigorous selection standards would greatly decrease the available in the first and second categories.

b. *Natural Resources.* (See also Chapter II, Section 2, pp. 24-32.)

Brazil has potential resources sufficient for the development of an industrial economy. At present it has an export surplus—and this list is not likely to be added to in the near future—of iron ore, some of the ferro-alloying elements, quartz crystals, industrial diamonds, mica, zirconium, graphite, bauxite, beryl, rubber (in comparatively small quantities), vegetable oil, and raw talc. Large monazite-sands deposits are an important source of thorium. Brazil is deficient and would be a burden on its allies in the following: crude oil and petroleum products (98 percent of Brazilian requirements are met by importation), fertilizers, coking coal, sulphur, asbestos, copper, nickel, lead, tin, zinc, antimony, mercury, bismuth, platinum, silver, cryolite, and selenium.

Brazil is practically self-sufficient in the major basic items of textiles excepting wool, foods excepting wheat, and fibers excepting jute.

Brazilian transportation facilities are a major weakness in its war potential. Highways and railroads—non-existent in much of the country—are insufficient to serve as alternates for ocean shipping. Land transportation in the interior is lacking because of the difficulties of jungle and the uneven terrain, and because of the lack

of sufficient capital and the undeveloped economic potential of the interior. Inland water transportation is not sufficient to compensate for the lack of highways and railroads. Commercial air transportation is of major importance, serves to connect the interior with the coast, and is one alternate to ocean shipping along the coast, but it is restricted by insufficient modern airfields and equipment. The concentration of population and industry along the coast would make a comparatively short interruption in ocean traffic extremely serious.

c. *Industry.* (See also Chapter II, Section 3, pp. 32-36.)

Particularly important from the military point of view, in addition to specific facts on the munitions industry given in the following paragraphs of this section, are the following: (a) even when the Volta Redonda project is fully developed, the Brazilian steel industry will not be sufficient to care for Brazil's own wartime needs; (b) hydroelectric power sources, potentially great, will require years for development; (c) there is practically no petroleum industry; and (d) more than 70 percent of Brazil's industry is centered around Sao Paulo.

With the exception of a limited domestic production of rifles, bayonets, small-arms ammunition, light machine guns, gas and gas masks (dependent on imports of necessary raw materials), Brazil must purchase military equipment from foreign countries to supply the needs of its army. The six armament and munitions plants are concentrated in the Rio-Sao Paulo area.

Brazil obtains all first-line tactical and transport aircraft from the US in completed form. The Brazilian aircraft industry consists of: (a) four plants assembling a limited number of light training planes from parts and sub-assemblies imported from the US; (b) one small plant which produces wooden aircraft propellers; (c) a factory originally built to produce aircraft engines which is being converted into an engine-overhaul shop planned also to manufacture products for civilian consumption; and (d) a motor factory, tooled to build only 500 h.p. motors, in which, although it has been in operation for several years, only three engines have been produced. It is doubted that these factories could convert to the production of combat planes because of the lack of matériel, skilled personnel, and technological background. So far as is known, none of them has ever produced aircraft armament. Thus Brazilian industry cannot now, and in the foreseeable future is not likely to be able to support the Brazilian Air Force in action.

All present Brazilian naval construction is taking place in the shipbuilding ways of the Brazilian Navy Yard on Ilha das Cobras and in those of the Henrique Lages organization on Ilha do Viana, both in Rio de Janeiro harbor. These installations have built gunboats, minelayers, subchasers, and destroyers, and at present are working on destroyers, water barges, oil barges, and subchasers. While for the most part these vessels have been, and are being, assembled from prefabricated materials bought abroad, Brazilian technicians are gaining much experience in the process, and Brazil seems to be progressing toward a relatively high degree of independence in the construction of minor combatant types. A small gun and projectile factory in the Arsenal of Ilha das Cobras, which has manufactured tubes and torpedoes for destroyers,

is
an
m

to
qu
sig

air
pos
pre
str
rou
sab
the
unc
how
pete

and
ture
relat
phys
or la
tiona
unive
tion
perfo
proba
and
and
to inc
techn
fare.
coast
It is,
of scie

e.

ment,
cut, ar

is to be enlarged until capable of meeting the requirements of the present naval units and of those to be constructed in the period 1949-53; the Brazilian Navy is also at present manufacturing US-type five-inch naval guns and ammunition.

Brazil has sufficient textile manufacturing and food-processing installations to supply her own needs; Brazilian-manufactured personal equipment is of acceptable quality by US standards. Certain medical supplies, and most specialized engineer and signal equipment, will have to be imported for some time to come.

Brazilian industry is particularly vulnerable to air attack by carrier-based aircraft, because of its concentration along the coast in the Sao Paulo-Rio area. The possibility of such an attack occurring, however, would be much diminished by the presence of friendly land-based air strength on the Brazilian Bulge, even though this strength is so located primarily for the protection of the southern trans-Atlantic air routes and of the southern approaches to the Caribbean area. The possibility of sabotage by enemy secret agents and/or radical labor elements is enhanced because the small size of the industrial area makes it easier for saboteurs to operate directly under the supervision of one person or centralized cell or headquarters. It is believed, however, that Brazilian state police, with, if necessary, army cooperation, are competent to minimize acts of sabotage.

d. Science.

Brazilian capabilities in the field of scientific warfare are extremely limited, and its scientific energies have to date been directed mainly toward improving agriculture and developing industries. The Army Technical School, it is true, offers various relatively modern and comprehensive courses in the fields of electronics and nuclear physics, but the Brazilian Government has neither the trained scientists nor the plant or laboratory facilities necessary for conducting independent research. Of 166 national institutes, the University of Sao Paulo has the greatest potential in electronics; university authorities hope that a betatron, manufactured in the US, will be in operation before the end of 1948. The National Institute of Technology in Rio, created to perform duties similar to those of the United States Advisory Research Service, is probably second in potentialities, but at present is engaged primarily in testing work and does little or no research. Brazil has attempted to import German scientists and has Brazilian scientists studying abroad. Such training as may be incidental to industrial expansion and air developments may help to bring out scientists and technicians whose services can be utilized for research in the field of scientific warfare. The presence of large deposits of thorium-bearing monazite sands along the coast of Brazil also may stimulate an interest in the development of atomic energy. It is, however, improbable that Brazil will be in a position to produce the weapons of scientific warfare for some time to come.

e. Finance.

Considering the probable continuance of military influence in the government, it can be anticipated that Brazilian military expenditures will not be severely cut, and that the country will be in a better position to maintain a sizeable armed

force than the other Latin American countries with the possible exception of Argentina. It is doubtful, however, that present already substantial military expenditures—about 35 percent of the total budget of the federal government in 1947—could be increased without economic disaster for the country as a whole. Until, therefore, Brazil's potentially very great natural resources are developed far beyond their present exploitation, this nation could engage in total war only with financial support from outside.

3. BASIC MILITARY POLICIES AND PRACTICES.

a. Mission.

In line with the historical development of Brazilian policy sketched in Section 1, (pp. 49, 50) above, it may be assumed that the Brazilian military establishment at present has a five-fold mission: (1) the maintenance of internal security; (2) the preservation of its territorial integrity and its national prestige among the nations of the Western Hemisphere (with special regard for its relative strength vis-à-vis that of Argentina); (3) protection of its vital and extremely vulnerable coastal shipping lanes in case of a general conflict and furnishing containing and delaying action until assistance arrives in the event of a major extra-Hemisphere invasion; (4) provision of facilities for Western Hemisphere forces in a general conflict, such as air bases, major naval installations, and staging areas; and (5) provision of an expeditionary force for overseas operations. The first four aspects of the mission presumably enter into peacetime plans, while the fifth would come into effect only in case of a major war.

b. General Military Organization.

The President is the Commander in Chief of the Brazilian Armed Forces; the forces—army, navy, air—operate under three separate cabinet departments headed by ministers, generally military men. There are no titular "commanders in chief" of the forces; next senior in authority to the ministers are the chiefs of staff of the three forces, these officials being selected in the light of various qualifications, such as ability, prestige, politics, length of service, and relative rank. A bill providing for a complete merger of the armed forces under a single ministry has been under consideration for some time, and its passage is anticipated.

Under the present organization, the top directive and advisory bodies are the National Security Council, the Joint General Staff, and the Military Cabinet. The National Security Council is composed of the President of the Republic, the ministers and the chiefs of staff of the three forces, and the Chief of the Military Cabinet. It considers broad problems of national defense and coordinates civilian and military agencies. In the event of realization of the contemplated merger of the three forces under one cabinet minister, the National Security Council will probably be eliminated, and its functions taken over by the Joint General Staff.

The Joint General Staff is composed of a chief appointed by the President from one of the three services—at present the chief is an army general—and a representative from each of the other two forces, all of whom must have graduated from the Navy

W
civ
sta
air

poi
Th
tio

gro
as
sec

rep
anc
infl

16
infa
poir
high
side

the
whi
bett

troy
thou
on c
to d

of li
In g

recei
syste
servi
was
exist
than

of th

War School command course or the general staff course of the army, navy, or air force; civilians also may be appointed to serve on the staff at the President's discretion. The staff prepares and executes plans and combined exercises for the army, navy, and air force.

The Military Cabinet serves as the President's personal military staff, is appointed by the President, and includes a representative from each of the three forces. The senior officer is the chief of the cabinet and also *ex officio* secretary of the National Security Council.

State police forces, fire departments in larger cities, and some other police groups, are so organized as to serve in time of war, under the Minister of War, chiefly as home-guard forces to relieve other military troops from duties concerning internal security.

The army usually takes precedence over the other forces, both because it represents the great bulk of the armed forces (three times the strength of the navy and the air forces combined), and because of its long-continued exercise of dominant influence in both political and military affairs.

Brazilian Army combat strength is 57 percent infantry, 18 percent cavalry, 16 percent artillery, 3 percent armored, and 6 percent miscellaneous. Emphasis on infantry strength is dictated by the necessity of maintaining garrisons at strategic points throughout the country for the preservation of internal order. The relatively high proportion of cavalry derives from two factors: survival of former strategic considerations which envisaged cavalry as the main protective arm against invasion from the south; and scarcity of motor fuel and lack of highway bridges. The present trend—which, however, is impeded by shortage of motor fuel—is toward achieving a modern, better-balanced, armed force with greater emphasis on motorization.

The present organization of the Brazilian Navy stresses the utilization of destroyer and destroyer escort vessels, and, secondarily, subchaser and patrol craft. Although the destroyer group may have some offensive capabilities, tactical emphasis is on coastal patrol, delaying maneuvers, and limited attacks by stealth. Brazil hopes to develop a stronger and better-balanced navy by the acquisition of more capital ships.

The present organization of the air force lays emphasis on the development of light- and medium-bombardment craft with secondary emphasis on fighter craft. In general, the Brazilian Air Force is being developed along US lines.

c. *Recruitment.*

Compulsory military service has existed in Brazil since 1875, but until very recently it was not enforced either universally or equitably, and there was no efficient system for the control of military manpower. A modern system of active and reserve service adapted to the special economic, social, and military circumstances of Brazil was introduced in 1946 and promises to be much more effective than those which existed in the past, although military service under the new law is still selective rather than universal.

Every Brazilian male must register for military service in the first six months of the year in which he becomes 17 years of age. Volunteers may be accepted by

military, naval, and air units up to the limit of the vacancies to be filled. The number of personnel to be called up is fixed annually by the Ministers of War, Navy, and Air according to the necessities of the respective services in view of their strength as authorized by law. Service for conscripts and volunteers is one year.

An average of 500,000 males become eligible for military service each year; however, only 35,000 are accepted for military service in compliance with the present quota. The quota is broken down into subquotas for the various units, which are then filled by drawing by lot on the population residing near unit headquarters. All other members of the annual class, including a large proportion of the rural population, have the obligation of rendering part-time service in the citizens' military training centers; how many actually perform such service is not known. In addition, a certain number of those actually drafted for regular service may be found to be in excess of the requirements, and these men form a replacement pool during the year in which their class is liable for active service.

There appears to be no set program for training reserves, though some facilities are provided for this purpose; reserve training centers for officers are dispersed strategically throughout the country and the army maintains eleven reserve-officer-training schools. These courses are entirely voluntary, and some last for a period of two years. Evidence of Brazil's desire to increase technical training in all branches of military service is seen in the policy of making available to reserves courses which hitherto were open only to the regular army.

The strength of the Brazilian Armed Forces has been set at 172,300. Annual conscripts are approximately 35,000. The army uses, in relation to its strength, more conscripts than does the air force or navy. Even in the army, however, an average strength of approximately 140,000 seems to indicate that the percentage—25 at the maximum—of annual, probably only partly trained, conscripts in the service at any one time would not materially affect organization or total efficiency. Neither would the forces be dangerously reduced—as is the case in other Latin American countries whose forces have a larger percentage of conscripts—in the time lapse between the discharge of one conscript class and the calling-up of the next. There are no figures available to indicate the average length of service of volunteer personnel.

d. Armed Force Personnel.

As a group, Brazilian officers are intelligent, competent, and loyal, and are generally more inclined than their Argentine counterparts toward friendliness and a lack of arrogance in official and social relations. They are generally drawn from the middle and upper brackets—considering financial and social background—but the majority comes from the middle-class. A fair proportion of the high-ranking officers are usually from old and socially prominent families.

The enlisted personnel are of mixed racial stock and are generally drawn from the lower social classes. In general they are of low physical stamina and are illiterate, but are responsive to discipline, adaptable to training, and loyal to their superior officers.

The promotion system is well established. In the army, an officer is given a number on the promotion list when he receives his commission and, as vacancies

c
f
n
t
l
f
p
o
is

ti
co
cie
mc
of

its
ser
ad
gra
In I
and

de J
rate
Join
colle
three
cover
US d
of Ae
are e
by th
techn
officer
for th
equip
school

exercis
mission
was in

occur, he is promoted to the next higher grade. This system is supposed to be effective for all grades; in practice, however, there are many exceptions; some promotions are made for merit; each branch of the service has its separate promotion list; many officers temporarily separated from the service for revolutionary activities or other reasons and later re-instated are adjusted on a separate promotion list. As a result of all these factors many classmates hold very different ranks. In the command echelon and in political positions, an officer is usually chosen for merit, performance, and position on the promotion list, but politics play a considerable part in assessing merit. There is a promotion commission which is a special agency in the Ministry of War.

Enlisted men are promoted on the basis of satisfactory completion of pertinent examinations and/or schools, existing vacancies, and recommendations of the commanding officers. The enlisted promotion system appears to be fairly and efficiently handled. Enlisted men may attend schools to receive commissions. The promotion systems in the navy and air force apparently do not differ widely from that of the army.

Brazilian service pay is low compared to that in the US, but, compared to its buying power in the normal Brazilian market, it is sufficient to maintain the service personnel on a middle-class social standard. Air force personnel receive an additional allowance for flying pay—very roughly, two-thirds the base pay for lower grades, diminishing to approximately one-fourth to one-half for the higher grades. In Brazil, as in other countries, industry can and does attract service-trained specialists and technicians away from the services.

e. Training.

Brazilian military schools are located for the most part in the vicinity of Rio de Janeiro and are grouped in large training and instruction installations. Schools rate from good to excellent; improvements have been rapid under the guidance of the Joint Brazil-US Military Commission and the US Naval Mission. There is no war college, but plans for the establishment of one are under consideration. Each of the three forces has its general staff school, giving comprehensive three-year courses covering advanced tactics, logistics, and combined arms, and including up-to-date US doctrine. The curricula of the Military and Naval Academies and of the School of Aeronautics are patterned after those of the US service academies; courses in theory are excellent; those in practical work are becoming more adequate but are hampered by the lack of equipment. There are eleven reserve training centers for officers. The technical schools, such as signal, medical-corps, and motor-transport, for soldiers and officers, are considered very good. The Sergeants' School in Rio trains enlisted men for the next higher grade and in the use and maintenance of their own weapons and equipment. Enlisted men may become officers by attending any of the preparatory schools and entering the Military Academy.

Foreign influence on Brazilian training has been practically limited to that exercised by two countries—France and the US. A French military (ground forces) mission was accredited in 1919 and remained influential until 1940; a French air mission was in Brazil 1918-1924, and brought about limited development of the air force.

US influence began with the Brazilian Navy, in cooperative activities during World War I. A US naval mission has been in Brazil since 1922 with only a two-year lapse, and has been the dominant factor in the training and development of the Brazilian Navy. Operations under the US Fleet in World War II further brought Brazilian naval practice in line with that of the US Navy. US Army and Air Force influences began with a small general-staff and coast-artillery mission in 1936, and became dominant with the establishment of a military and military-aviation mission in 1941. This mission was replaced in 1942 by the Joint Brazil-US Military Commission, which, with sections both in Washington and Brazil, supervised the training and preparation of the Brazilian Expeditionary Force for participation in World War II, and has continued active. Prior to 1941 the Brazilian Army had made little progress toward modernization; now it is as much a counterpart of the US Army as local conditions and availability of US equipment permit.

Additional impetus has been given the Brazilian military training program by opportunity for study in the US. Since 1939 about 400 Brazilian army officers have been trained in US army schools. From 1941-45 a total of 1,131 enlisted naval personnel were trained at naval activities in the US, and in August 1946, 136 officers and enlisted men were in training in 16 different naval activities. Since 1941 the US Air Force has trained more than 300 Brazilian pilots and more than 600 aircraft technicians at air force schools in the US. Technicians include photographers, meteorologists, and communications and maintenance experts.

Brazilian garrison and field training is modeled after that of the US. Maneuvers on the division scale are held annually, and occasionally of larger units. Combined-arms training courses are given in the General Staff School; in 1947, in addition to divisional maneuvers in the various army areas, a combined-arms problem, involving army, navy, and air forces in a coastal assault, was carried out near Rio.

f. Mobilization.

Present army mobilization plans call for the induction of reserves by categories into the existing units of the military regions in which they reside. The first category of trained reserves would be used to bring existing units to war strength and replace soldiers cadred out to form new units. The second and third category reservists would be used in succession in the same manner. It is estimated that all the first category could be inducted by M-Day plus 90, but that less than 75 percent of these could be equipped, and there would be a serious shortage of trained officers to command them.

g. Fiscal.

Each of the three forces prepares for the President an estimate of the amount of money desired for the coming year, to be included in the budget presented to Congress by the President. At the end of the fiscal year, any deficit is met by the Treasury by extra-budgetary and usually unfinanced credits; any excess is returned to the Treasury. During World War II there was a secret emergency war budget estimated to be larger than the total budget for national defense, but it is believed that there is no secret budget at present.

s
I
s
t
I
i
k
t
k
V
r
d

L
F
s
r
a
d
T
a
se
ir
D
ou
or
se
is
at

ta
re
ar
wh

Ai
me
wh

h. Logistics.

In the army, supply is controlled by three groups, each immediately responsible to the Minister of War. The General Staff determines characteristics and approves standard models; the Technical and Production Department fixes technical specifications; the General Administrative Department acquires or receives, directly or through subordinate offices, all necessary materials. The General Administrative Department is also responsible for organizing depots for materials and for superintending storage; storage depots are maintained in each of the ten military regions, but each branch distributes supplies pertaining to its particular function. The system for maintenance and repair of equipment and for evacuation of personnel and equipment is based on that of the US, and was used by the Brazilian Expeditionary Force in World War II. The Requisition Commission of the Minister of War, a fact-finding and planning agency responsible for preparing data and plans for requisitions in time of war, does not enter into peacetime procurements.

In the air force, logistical planning and control is a function of the 4th Division of the Air General Staff—corresponding to the A-4 Section of the US Air Force—which studies and regulates the organization and functioning of the supply service, and is charged also with the mobilization of transportation, industry, and matériel. Procurement and distribution are handled by the Directorates of Matériel and *Intendencia*. The Directorate of Matériel handles the procurement, storage, and distribution of ordnance and technical supplies; the Subdirectorate of Aeronautical Technology superintends the technical services, factories, depots, and shops of the air force. The Directorate of *Intendencia* is charged with administrative and financial services and quartermaster functions, such as procurement and distribution of uniforms, individual equipment, subsistence, and practically all non-technical supplies. The Directorates of Matériel and *Intendencia* may purchase on special requisition and without previous authorization of the Air Minister items such as aircraft, vehicles, and ordnance matériel. Local storage and distribution are handled by appropriate service sections of the air-zone commands (see Section 4 c, p. 64). The Brazilian Air Force is not known to have developed an air evacuation system and no information is available on its supply requirements for combat operations.

i. Intelligence and Counter-Intelligence.

Brazil has the usual diplomatic representatives—ambassadors, ministers, attachés, etc.—in major centers abroad, who apparently do a creditable job of routine reporting. Military and economic missions, liaison, courtesy and diplomatic visits, and students in foreign countries, also may be expected to serve its intelligence system when and where possible.

Brazil has four main intelligence arms—the Military, the Naval, and the Air Intelligence Services, and the Federal Directorate of Public Security. The last-mentioned, while not a military agency (it is under the Minister of the Interior) and while it combines police and intelligence duties, has important national-defense func-

HARRY S. TRUMAN LIBRARY
Papers of
HARRY S. TRUMAN
PRESIDENT'S SECRETARY FILE

tions in relation to intelligence and in fact is a much more important organization than the armed-force intelligence services. In addition, Brazilian bureaucrats have been known to have intelligence agencies of their own.

The Military Intelligence organization is the second section of the Army General Staff; its headquarters provides for direct and counter-intelligence, while the local offices handle chiefly cartographic activities; Military Intelligence has at various times been in conflict with the representatives of the Federal Directorate of Public Security, but there have also been examples of excellent cooperation. Naval Intelligence is believed to be chiefly interested in the collection of operational information. Air Intelligence apparently engages only in normal operational intelligence activities. Each of the forces has a section in its ministry for dealing with Communism. Also, the Anti-Communist Intelligence System, separate from existing army intelligence, has recently been organized to combat Communism among army personnel; but no information is available as to its exact method of operation. It is also believed that the Military, Naval, and Air Intelligence services have secret intelligence police.

The headquarters of the Federal Directorate of Public Security is divided into four main sections: the Political and Social Police Division (political order, social order, arms-control); the Technical Police Division (police-training and improvement of techniques); the Maritime and Frontier and Air Police Division (frontier security and the control of foreigners); and the Division of Traffic and Coordination (foreign police liaison, control of telecommunications traffic). This headquarters organization is substantially duplicated in the field, with the addition of a secret-service section, controlling plain-clothes agents.

The Brazilian Radio Monitoring System, *Radio Escuta do Brasil*, while an auxiliary organization of the Directorate of Public Security, functions under the Director of Telegraphs, who is responsible to the Minister of Transportation and Public Works. This system, considered adequate and self-contained, rendered the US valuable services in locating and controlling clandestine enemy transmitters during World War II. The Division of Posts and Telegraphs was also charged during World War II with the censorship of telephone, postal, cable, and radio communications; its foreign censorship was very thorough, but domestic traffic was merely spotchecked; information as to its present status is not available.

The National Department of Information was organized in 1945 under the Ministry of Justice and Interior, with the mission of coordinating, orienting, and superintending foreign and domestic propaganda and acting as an auxiliary information unit to this ministry; it controlled theater, radio, sports events, and the press. Information as to its present status is not available.

Because national policy dictated close collaboration with the US, Brazilian Intelligence as a whole performed incidental services of great value to the US Government during the war, and it is believed that it will continue to lend cordial cooperation to our own services. With the close of the war, the major interest of Brazilian intelligence has been centered again on native subversive elements, and potentially dangerous neighbors, notably Argentina and Paraguay.

o
l
s
c
a
n

o
S
g
tu
te
m
ve

di
int
an
div
var
tac
by
act
int

of w
two
and
equi
troo
com
(For
table
of 11
a me

office

4. ORGANIZATION, STRENGTH, AND DISPOSITION OF THE VARIOUS ARMED FORCES.

a. *Army.*

The Minister of War (under the President, who is Commander in Chief of the Armed Forces), is responsible for all army matters. Directly subordinate to the Minister of War are the Army General Staff, the General Administrative Department, the Technical and Production Department, the Secretariat General of the Ministry of War, and other organs and special commissions. The General Staff is responsible for the elaboration of plans of organization, mobilization, and employment of the army, directing all types of instruction for all Army troops, both regular and reserve, directing the choice of ordnance and other equipment for times of peace and war, and supervising the General Administrative and the Technical and Production Departments.

The Brazilian General Staff functions correspond approximately to those of the US Army General Staff prior to World War II; functions performed by the US Special Staff and by administrative and technical staffs and services are in Brazil grouped under the General Administration Department, which is responsible for virtually all administrative and service functions of the Brazilian Army except for technical aspects of procurement (handled by the Technical and Production Department); it has engineer, quartermaster, ordnance, personnel, recruiting, remount and veterinary, medical, and signal sections.

All tactical groupings and territorial administrative organizations are subordinate to the General Staff. For purposes of administrative control, Brazil is divided into ten military regions. Each military region is commanded by a general officer and includes the command headquarters, one or more large units (infantry or cavalry divisions), troop and service units, recruiting and mobilization organs, schools of various categories, and administrative, transportation, and maintenance units. For tactical purposes only, the ten regions are grouped into four military zones, commanded by lieutenant generals, who are responsible for the inspection and coordination of activities of the region commanders, and for preparation of plans for combining regions into theaters of operations.

The tactical units of the Brazilian Army include six infantry divisions (two of which are US-equipped), three cavalry divisions, one armored division (US-equipped), two detachments of divisional status, one mixed brigade, seven independent regiments, and forty-one independent battalions. (The independent battalions include six US-equipped field artillery battalions, four US-equipped light tank companies, and a para-troop nucleus.) Conversion to US tables of organization is being accomplished; present composition and strength of units fall, however, somewhat short of US requirements. (For example, the average strength of the infantry division is 10,500, as against a table-of-organization strength of 14,043, and the cavalry divisions average 7,500 instead of 11,676. The cavalry divisions are comparable to a US horse-cavalry brigade with a mechanized squadron.)

The total strength of the Brazilian Army is 140,000, of which about 6,800 are officers. The officers have high morale and efficiency and are well trained. Many

have had the advantage of practical application of staff theory, troop training, and combat tactics during training and actual employment of the Brazilian Expeditionary Force in Italy. Although the physical stamina of the Brazilian soldier is low, his training is fairly complete. Continued improvement of the service schools and increasing emphasis on practical work are producing constantly better trained personnel, both enlisted and officer.

Brazilian weapons are adequate in number for present forces, but are, except for small arms, largely imported. One infantry division and the armored elements of the armored division are equipped with US World War II matériel, furnished for use of the Brazilian Expeditionary Force. Since the war, another infantry division has received US equipment under the inter-American allocations program. Brazilian-manufactured equipment includes revolvers (inferior, as the metal is of poor quality), Mauser rifles, machine guns, mortars, and small-arms ammunition. No artillery is Brazilian-made. Matériel, all obsolete, from sources other than US includes German-made Mauser rifles and French artillery. All fire-control equipment, transport vehicles (of modern design), engineer equipment, and demolitions equipment are of US origin.

The Brazilian Army is at present the largest, best-trained, and best-equipped armed force in Latin America. While basic qualities of enlisted personnel may place Brazil at a disadvantage as compared with Argentina, it is anticipated that Brazil, assuming continuance of the US guidance and assistance responsible for its present lead, should be able to maintain an army at least the equal of any in Latin America.

b. *Navy.*

The Minister of the Navy is responsible for all naval matters. Directly subordinate to the Minister of the Navy is the Naval General Staff. With the exception of the Hydrographic Office and the Bureau of Communications, which are under the direct command of the Minister, the administrative organization, including the district commandants, is subordinate to the Naval General Staff.

Brazil is divided into six naval districts with headquarters located at the following strategic points; Belém, Recife, Bahia, Rio de Janeiro, Florianópolis, and Ladario. Of these Rio de Janeiro is the most important. The districts maintain close liaison with one another and are under the command of officers of flag rank who have jurisdiction over all naval affairs within their commands.

The tactical organization, also subordinate to the Naval General Staff, includes the Fleet and various craft assigned to the naval districts. The Fleet is organized into a battleship division (one battleship), a destroyer force (consisting of one flotilla of three destroyers and one flotilla of eight destroyer escorts), a submarine flotilla, and a subchaser flotilla. The Amazon River Flotilla and the Mato Grosso Flotilla are assigned to the command of the Fourth and Sixth Naval Districts, respectively. Eight small vessels assigned to the Hydrographic Office and seven assigned to the Bureau of Communications operate directly under the Ministry of the Navy.

The Brazilian Navy has 78 units, with a total approximate tonnage of 108,000. These include one battleship, three destroyers, eight destroyer escorts, eight patrol craft, four submarines, sixteen subchasers, and three river monitors, as well as numerous

o
p
p
g
cc
th
th
ve
lir

str
W
ab
the
sm
tag
ves
Nav
tial

nate
man
cept

auxiliary vessels. (A second battleship and a cruiser were decommissioned in August 1947.) The battleship, of 19,200 tons, is obsolete, in poor condition, and the guns have not been fired for years. The destroyers (1,500 tons) and destroyer escorts (1,275 tons) are modern according to Latin American standards (ex-US or built on US or modified US designs) and constitute the main strength of the navy. The submarines are obsolete. The river monitors are of shallow draft and suitable only for river navigation; they are located at Ladario, on the Upper Paraguay River.

In addition to these units, six destroyers and three subchasers are under construction. The destroyers range from sixty-nine to ninety-five percent complete; because of shortage of funds for labor and material, however, dock trials of the first ship are not expected before January 1949.

Total active naval personnel strength of about 16,000 includes 1,600 officers; in addition, the Marine Corps has a strength of roughly 100 officers and 4,000 men. The Brazilian Navy reports a reserve strength of 10,000, which is not utilized because regular naval rolls are maintained at a higher figure than actually required. Officer personnel is alert and competent in duties for which they have been trained. Enlisted personnel are considered low in basic mental qualifications but fairly efficient in the performance of duty.

The Brazilian Navy has a sizeable navy yard on Ilha das Cobras in the harbor of Rio de Janeiro, and facilities for more limited repairs at Natal. The Natal base, the position of which is one of the utmost strategic importance, has not been fully completed, though two destroyers can be handled per month; work on the proposed graving dock is at a standstill, and, for planning purposes, this dock should not be considered for at least five years. The Navy Yard on Ilha das Cobras is superior to those of the rest of Latin America, which fact may be attributed to the influence of the US Naval Mission in Brazil; it has facilities for making major repairs to naval vessels of 35,000-ton-battleship size, but its facilities for repairing heavy armor are limited.

The Brazilian Navy is one of the significant navies of Latin America; its strength lies in destroyer forces, all of which participated in escort work during World War II. Although it has a strength in major combat vessels—destroyer escorts and above—of only 33,900 tons, as compared to Argentina's 103,000 tons and Chile's 40,000, the superior firing power, mobility, speed, and endurance of Brazil's modern fleet of small vessels as compared with the older Argentine destroyers neutralizes the advantage Argentina might be thought to have with its preponderant strength in heavier vessels. The Brazilian Navy is considered about equal in strength to the Argentine Navy, and the six destroyers (totaling 8,040 tons) under construction will substantially increase its effectiveness.

c. *Air Force.*

The Air Minister is in command of all Brazilian aviation. Directly subordinate to him are a general staff, a cabinet, the air services, and the operational commands. The Air General Staff is charged with the formulation of the strategic concept of air warfare and with the logistical and tactical preparations of the air force

HARRY S. TRUMAN LIBRARY
Papers of
HARRY S. TRUMAN
PRESIDENT'S SECRETARY FILE

for performing its mission, either separately or in conjunction with the other armed forces. The cabinet is a group of advisers to the Air Minister. The air services consist of seven directorates for the supervision of personnel, *intendencia* (administrative, quartermaster, and finance services), health services, works, matériel, air routes, and civil aeronautics (Brazil's civil aviation in general is under the direction and control of the Directorate of Civil Aviation). Under a planned reorganization, the Directorate of Air Routes of the Air Ministry will have jurisdiction over the organization and operation of the federal airways and their services.

For purposes of territorial organization, the country is divided geographically into five air zones: Northern, Northeastern, East Central, West Central, and Southern. For purposes of tactical organization, the air force is broken down into air-zone commands, groups, squadrons, and air base units. Air-zone commands are the high command bodies of the Brazilian Air Force and exercise direct authority over forces and activities within the geographical limits of the respective zones. Under the zone commands are groups and squadrons analagous to those of the US Air Force. Groups comprise one or two squadrons: the squadron is the basic tactical unit. Base units perform all maintenance.

As of 1 September 1948, the total military aircraft of 1,133 included 124 fighter planes, 16 attack planes, 115 light bombardment planes, 20 reconnaissance planes, 194 transport planes, 50 liaison planes, and 614 trainer planes. In addition there are 782 civilian aircraft, including aviation club planes. Tactical units are 2 patrol squadrons, 2 transport squadrons, 2 light bombardment squadrons, 6 medium bombardment squadrons, and 3 fighter squadrons.

Aircraft is almost totally of US manufacture and has been procured since 1941. Brazilian air force equipment is considered efficient; because parts and facilities are scarce, however, maintenance is inadequate. Although definite information is not available, it is estimated that only from 60 to 70 percent of the combat aircraft are operational.

The total personnel strength of the regular air force is 20,091. On 1 September 1948 air personnel included 1,786 officers (of which 998 are pilots) and 18,305 enlisted men. In addition, the air force maintains a total of about 2,000 trained civilians as a part of its ground establishment. Brazilian pilots are probably the best in South America and are considered good when measured by US standards. Training is conducted along US lines with the advice of US Air Force personnel. Many pilots have been trained in the US, and there is a nucleus of combat-seasoned veterans of the Brazilian Expeditionary Force who saw service with the US Air Force in Italy. Ground personnel are also considered the best in South America and have received excellent instruction from US civilian instructors both in the US and in Brazil.

There are 337 air facilities of various types in Brazil—323 airfields, and 14 facilities for sea planes. Of the 323 airfields, only 23, or less than one-tenth, have hard-surfaced runways. Furthermore, the airfields in general are lacking in navigational aids, weather-reporting facilities, and night-flying installations. Military airfields of modern-base proportions have been constructed all along the coast of the

n
fi
si
W
ca
m
h

tr
ai
th
an
ca
ba
th
so
ba
inc
Th

for
tic
anc
way
offe
63
Abil

ber
cent
to tl
earl

000
with
Seve
consi
area
troop
inclu
lishrr
head

northern region, mostly with the aid and support of the US Government. Three airfields, Val de Cans near Belém, Tirirical near Sao Luiz, and Parnamirim near Natal, support loads of 120,000 lbs. or more and were used as ferry stops or patrol bases during World War II. Down the east coast there is one field, Gravataí near Porto Alegre, also capable of supporting loads of 120,000 lbs. or more. Recent reports indicate that maintenance of some of these fields is poor, and in the eventuality of a war they would have to be extensively improved before they could be utilized.

The Brazilian Air Force is the dominant air force in South America and is triple the present size and effectiveness of the Argentine Air Force. In numbers of aircraft and personnel, it ranks within the first ten air powers of the world; however, the small proportion of combat craft relegates it to the position of a minor air power and limits its activities largely to defensive operations. Brazil's long-range offensive capabilities are limited to the employment of its patrol bombers. Operating from bases at Belém, Florianópolis, Pelotas, and an auxiliary seaplane station at Manaus, these aircraft could strike anywhere in South America with the exception of the southernmost parts of Argentina and Chile. From the southern and southwestern bases the range of the tactical bombers extends throughout the River Plate estuary, including Buenos Aires, all of Uruguay, Paraguay, and the eastern section of Bolivia. The operation of short-range craft is limited to the Uruguayan and Argentine border.

The utilization of this offensive capacity is limited by the inadequate capacity for maintenance (due to the scarcity of parts and facilities), by the considerable logistical problem presented by the activation and employment of the necessary bases, and by the lack of mobility resulting from the scarcity of railroads and adequate highways and the inadequate air lift capacity. It is estimated that the maximum initial offensive capacity would not exceed approximately 20 PBV-5's, 78 light bombers, and 63 fighters, and that full-scale operations could be sustained for a few weeks only. Ability to sustain operations longer would depend on US assistance in all these respects.

Brazil has a small number of first-line interceptor aircraft and a limited number of modern AA guns which probably would be sufficient to protect some important centers from air attack by any of her immediate neighbors, but could not be moved to the defense of border areas. Air defense is handicapped by the lack of an efficient early-warning system and effective passive defenses.

d. Distribution of Forces.

The Brazilian Army is deployed in three major concentrations. Of the 140,000 troops, approximately 20,000 are stationed in northern and northeastern Brazil, with slightly less than 10,000 in the vicinity of Recife; this concentration includes the Seventh Infantry Division with headquarters at Recife and the Natal Detachment, and consists for the most part of infantry troops supplemented by artillery. The second area of concentration, around Rio de Janeiro and Sao Paulo, has approximately 50,000 troops and includes: the First Infantry Division, the armored division, school troops including the paratroop nucleus, coast and antiaircraft defenses, and service establishments, with headquarters at Rio de Janeiro; the Second Infantry Division with headquarters at Sao Paulo; and the Santos Detachment of coast and antiaircraft de-

HARRY S. TRUMAN LIBRARY
Papers of
HARRY S. TRUMAN
PRESIDENT'S SECRETARY FILE

fenses. More than half of this concentration is infantry troops; the remaining forces are fairly evenly proportioned numbers of artillery, armored, and engineer troops. The third troop concentration is in the southern area and contains approximately 60,000 troops, including the First, Second, and Third Cavalry Divisions (25,000 troops) with headquarters at Santiago, Uruguaiana, and Bagé, respectively, the Third Infantry Division at Porto Alegre, the Fifth Infantry Division with headquarters at Curitiba, and several independent units. The Fourth Infantry Division with headquarters at Belo Horizonte, the Mixed Brigade at Corumbá, and various independent units scattered throughout the country account for the remaining 10,000 troops.

The entire Brazilian fleet is normally located in Rio de Janeiro harbor, except for one or two despatch vessels stationed in the ports of Belém, Recife, and Sao Salvador, and the river monitors located at Ladario on the Paraguay River.

The Brazilian Air Force squadrons are all located on the coast. The First and Second Patrol Squadrons are stationed at Belém in the Amazon delta. The First and Second Light Bombardment Squadrons are based at Sao Paulo. The Third and Fifth Medium Bombardment Squadrons are located at Natal, and the First, Second, Fourth, and Sixth at Recife, Sao Salvador, Fortaleza, and Curitiba, respectively. Fighter squadrons are concentrated in the southern sector, the First and Second at Santa Cruz near Rio and the Third at Porto Alegre, approximately 200 miles north of the Uruguayan border.

e. Quasi-Military Organizations.

Quasi-military forces in Brazil include the Federal District and state military police and the fire departments of the larger cities (militarily organized and trained but in peacetime under the control of the Minister of Justice in the Federal District and the state Secretaries of Justice in the other states). Normally, an army officer is in command of each of these organizations. Although these officers are responsible to the above-mentioned civil authorities in time of peace, they are all responsible to the Minister of War in time of war, and the units they command are organized and trained to serve as "home guard" units to relieve completely the army forces from all duties of internal policing and defense against sabotage or enemy attacks in small numbers. The total of all these quasi-military forces is a little under 80,000. While some of the organizations are of dubious value, they would be used to overcome insurrection against the government and do constitute a definite factor in assuring the stability of the government. It is possible that many of these troops could serve in front-line capacities, although they cannot be rated the equal of better trained and more unified forces, such as the Chilean Carabineros.

5. GENERAL ESTIMATE OF MILITARY CAPABILITIES.

a. Adequacy of Present Forces.

Brazilian military forces are estimated (in terms of their presumed mission as stated in Section 3. a., p. 54) to be: (1) adequate for the maintenance of internal security; (2) adequate for the maintenance of territorial integrity against attacks by

l
l
V
r
t
i
tl
a
tl
Ir
in
pe
wl

th
on
fro
to
mo

ind
the
con
sho
mee
unse
com
of S
deter
tina
that

achie

a combination of South American neighbors; (3) not adequate for defense against an attack by a strong extra-Hemisphere power; and (4) adequate for the maintenance of existing facilities for use of reinforcing Hemisphere troops. Brazilian forces also have some offensive capabilities.

The Brazilian armed forces are entirely capable of maintaining internal order in the country, and it is therefore unlikely that subversive elements outside the armed forces could overthrow or take possession of a government supported by the military. While the possibility of defection within the ranks of the military cannot be discounted entirely, it is true that the Brazilian Army has generally acted as a unit; the officers have shown themselves loyal to their chiefs and the enlisted men to their officers. It is therefore improbable that revolt of an officer faction—such as occurred in Venezuela in 1944 and was attempted in Paraguay in 1947—would break the solid military front and lead to the overthrow of the government. The political policy of the army as a whole is quite another matter; a military seizure of power or a military intervention between two competing groups is always a possibility. The loyalty of the subordinate ranks in the army is to their leaders and to the civilian authorities; as the determining factor in national policy, rather than to the concept of the army therefore, the direction of military influence can be determined by very few men. In this sense, the army is an element opposed to stability rather than one guaranteeing stability. It has interfered in the past (most recently in 1945) and may be expected to do so in the future, if the policies of the civil leaders do not coincide with what the military consider to be the true national interest.

Brazilian policy-makers, in looking to the accomplishment of that phase of their mission relative to preservation of territorial integrity, need give serious thought only to threats posed by Argentina. The factors protecting Brazil from local attack from any direction except the south (see Section 1, pp. 49, 50) would operate also to make Argentine alliance with, for example, Peru or the northern countries, little more threatening than Argentine power alone.

Relations between Brazil and Argentina have been outwardly friendly, though indications of jealousy occasionally crop out. Brazilians have not taken kindly to the recent *rapprochement* between Argentina and the US, and have shown an obvious concern lest US assistance, which previously enabled them to maintain a decisive lead, should, if it favored Argentina or even treated both countries alike, enable Argentina to meet and possibly surpass Brazil in military forces. There are, however, no important unsettled issues between the two countries; the rivalry is not so much over territory or commercial concessions as it is over prestige involved in aspirations to the leadership of South America. It seems reasonable, therefore, that present Argentine arming is determined by questions of prestige rather than by aggressive intentions, that Argentina will not seek to extend her armaments beyond approximate parity with Brazil, and that Argentina has no intention of attacking Brazilian territory.

In addition, it is doubtful whether Argentina, despite certain advantages, could achieve within the reasonable future sufficient superiority over Brazil to justify plans

HARRY S. TRUMAN LIBRARY
Papers of
HARRY S. TRUMAN
PRESIDENT'S SECRETARY FILE

for attack. The Brazilian Army is at present the largest force in South America and should be able to maintain a position at least the equivalent of Argentina's.

The Brazilian Navy is rated as the equal of the Argentine Navy, though their strengths are not, strictly speaking, comparable—that of Argentina consisting in capital ships and that of Brazil being concentrated in destroyers. In addition, the Brazilian Navy has many officers and men with valuable operational experience with the US fleet in patrol operations in World War II.

Brazil is at present superior to Argentina in air power, although it is true that the planned rapid expansion in the Argentine air force will, failing similar expansion on the part of Brazil, eventually bring the two nations closer to parity. At present, Brazil has 15 squadrons (179 tactical aircraft) while Argentina has 8 squadrons (187 tactical aircraft) in the air force proper and 6 squadrons (47 tactical aircraft) in the naval air arm. This Argentine numerical superiority, however, is more than offset by the tactical superiority of the Brazilian aircraft; the majority of the Argentine tactical aircraft were obsolescent before World War II, while the Brazilian tactical aircraft are of the same types that were in use by the US Air Force at the close of that war. Argentina's financial capacity for additional purchases may be greater than Brazil's. The situation, however, will not change immediately, because Brazil's World War II combat aircraft will be worth more tactically than Argentina's Gloster Meteors until Argentina has thoroughly trained pilots and mechanics and adequate maintenance facilities for the new planes. Brazil now has a total of 1,133 aircraft of all types, compared with Argentina's over-all total (including the naval air arm) of 905. Brazil is also superior in personnel, in a ratio of approximately three to one. Neither country at the present time has the manufacturing facilities to maintain its air force in action.

Brazilian forces can carry out the third aspect of their presumed mission (coastwise-shipping defense and delaying action against invasion) only to a limited extent. The Brazilian Navy is capable, as it was in World War II, of valuable assistance in patrolling; it does not have the strength to maintain its long coastal-shipping lanes free from serious interruption against a major power, even if that power should be operating at a long distance from its bases. Brazilian forces in the Bulge, including forces brought in by air, could contain a strong enemy attack only for a short time, and would almost certainly, by their efforts alone, be unable to keep the coastal lanes open to their power centers in the south.

Execution of the fourth aspect of the mission (assistance to Hemisphere forces operating in Brazil) lies well within the range of present Brazilian capabilities with respect to maintenance of the reasonably adequate World War II bases and staging areas already existing in this vicinity. Maintenance of local security of the area could also be well accomplished by Brazilian forces. Any extensive additions to facilities, however, such as improvement of interior communications, would have to be with US assistance.

Brazil's capabilities in furnishing expeditionary forces are discussed under subsection b. *Maximum Capabilities*, below.

HARRY S. TRUMAN LIBRARY
Papers of
HARRY S. TRUMAN
PRESIDENT'S SECRETARY FILE

Brazilian forces, as at present constituted, have some offensive capabilities. The air force, as was pointed out in Section 4, c., p. 65, is much superior to that of any neighbor and has limited offensive capabilities over most of South America, though it cannot be maintained in action by Brazilian resources. The Brazilian Army has sufficient superiority over most of its neighbors to indicate on paper great offensive capabilities against any of them except Argentina. The same factors, however, that serve to protect Brazil from the west and north and reduce her defensive problems would, of course, increase the difficulty of any offensive operations in these areas. It is doubtful whether Brazil's present superiority over Argentina would be great enough to promise success in offensive operations, and there is no evidence that Brazil contemplates such operations against Argentina, or, for that matter, against any of its neighbors.

b. *Maximum Military Capabilities.*

It is believed that the present Brazilian forces are about as large as the country's economy can stand, since they consume already about one-third of the annual budget. Military capabilities can unquestionably be increased by assistance of other powers, primarily, of course, by the US. The amount of this increase, however, would be far less than the numbers of potential Brazilian manpower would indicate. US standards had to be relaxed in putting together the Brazilian Expeditionary Force even though the entire army was combed for personnel, and this experience is not encouraging for the formation of any large force capable of competing on an equal basis with an expeditionary force of similar size originating from a first-class military power. The performance of the Brazilian Expeditionary Force in Italy was mediocre—about the equal of the poorest of the US combat divisions. The officers showed an ability to assimilate training, a reasonable capacity for leadership, and excellent personal military qualities; they displayed, however, a lack of aggressiveness that amounted to tactical timidity when opposed to German troops, standing in such awe of the German reputation that their capacity for assuming the initiative was impaired. The Brazilian soldiers were adaptable to various terrain and climatic conditions but made an extremely poor showing in physical stamina and health; the venereal disease rate was exceptionally high, and the total effectives available for duty—for this and other reasons—were correspondingly low.

Brazil is cognizant of the poor showing made by the Brazilian Expeditionary Force in Italy, and has profited by the lessons learned there. The Brazilian Army has converted completely to US training methods, organization, and doctrine. The war experience, the training received by many Brazilian officers in US service schools, and the work of the Joint Brazil-US Military Commission have been the principal factors in this conversion. Brazil now has a school system paralleling that of the US, adequate school troops, and a system of replacement training centers. Two US-equipped infantry divisions, an armored division, and other miscellaneous troops have contributed materially to increasing the combat effectiveness of the Brazilian Army.

The problem, however, is unfortunately not primarily military, but socio-logical—that is, it consists not so much in making a better soldier out of the Brazilian

HARRY S. TRUMAN LIBRARY
Papers of
HARRY S. TRUMAN
PRESIDENT'S SECRETARY FILE

CHAPTER V

STRATEGIC CONSIDERATIONS AFFECTING US SECURITY

So far as strategic considerations affecting US security are concerned, Brazil must be viewed as two distinct areas—a fact which colors many of the political, economic, and military elements involved in evaluating Brazil's strategic importance. That part of the country including the "Bulge" and the territory north and west of it lies within or on the margin of the zone of effective US military predominance. The southern—and to Brazilians the most important—part of the country, containing 70 percent of the population and most of the major political and economic centers, lies outside the zone of effective US military predominance. Brazil is the only Latin American country so situated as to contain both a strategic area within the zone of US military predominance and important centers outside that zone.

The political significance of Brazil's peculiar geographic position lies in the fact that Brazilian policy is determined in that part of the country lying outside the zone of US military predominance. The Brazilian Government, therefore, has a considerable latitude for independent action.* In this respect, it is in a situation similar to that of the governments of Argentina and Chile, and quite unlike, for example, those of Venezuela and Mexico. Brazil shares with Argentina—and, to a smaller extent, with Chile—capabilities for counter-balancing US strength by collaboration with extra-Hemisphere forces, or for rallying the more remote countries of the Hemisphere to an anti-US cause or program.

Brazilian policy has tended generally to parallel that of the US in both World Wars, and Argentine-Brazilian collaboration in any action unfavorable to the US is a rather remote contingency. But it would not be prudent to rule out completely the possibility of such collaboration or of other action that, while not necessarily unfriendly, would be adverse to US interests. This is demonstrated in previous ABC (Argentina-Brazil-Chile) action, and recent Brazilian independent positions on some economic matters, such as the Geneva ITO conversations and the question of the development of the oil industry by US capital. In the light either of probable continuing rivalry between the two large countries or of the much more remote possibility of a united anti-US front, the decision as to whether the US should assist either Brazil or Argentina to gain predominance over the other, or should work toward maintaining a balance between them, is a most important political strategic consideration. Brazil, therefore, shares with Argentina the position of greatest political importance among the Latin countries to US strategic policy.

Economic considerations of strategic importance to the US include the presence of strategic and critical minerals, the availability of other essential materials not now

* "The Intelligence Organization of the Department of State does not concur in the above statement. We believe that the statement is misleading and that the implication that countries lying within the zone of U.S. military predominance do not have considerable latitude for independent action in international affairs is untrue."

HARRY S. TRUMAN LIBRARY
Papers of
HARRY S. TRUMAN
PRESIDENT'S SECRETARY FILE

critical, and the possibility of a firm and balanced economy contributing to the welfare and stability of a probable ally. The economic strength, like the political strength, lies principally in the southern part of the country.

Brazil has relatively large mineral reserves which are of strategic value to the US. For example, Brazil is a very important source of piezo electric quartz and tantalite which are used in radar equipment, and for thorium and beryllium, used in atomic energy research. The pressing need for Brazilian materials in World War II, combined with the lack of previously planned methods for meeting this need, impelled the US to divert to Brazil a great amount of capital, machinery, and technical personnel sorely needed elsewhere. This experience suggests the desirability of a different method of approach for the procurement of strategic minerals in some future emergency.

The mineral occurrences in Brazil present particular characteristics in that they are generally widespread and shallow, are frequently quite limited with respect to individual volume, and are often irregular as to volume, shape, and grade. Because of these fundamental characteristics, the exploitation of the deposits of most minerals usually requires a high degree of selectivity in mining and generally the adoption of surface-mining operations as distinct from underground operations. For the same reasons, the deposits are seldom adapted to exploitation by methods of mass production involving the use of heavy mechanical equipment. Therefore, the greatest chance for successful procurement seems to lie in programs that begin and continue as long as practicable on the simplest possible commercial basis, making maximum use of existing producing and marketing channels, strengthened when necessary by financial assistance in the form of loans or grants. Further assistance through the provision of machinery, operating supplies, or technical advice would probably be helpful only to a limited degree. Price considerations are of primary importance in the stimulation of production, which will be achieved only if the price structure is able to stand on its own feet without the complications resulting from subsidies and tie-ins between various products.

In addition to the strategic minerals obtained in quantity by the US in World War II, Brazil has resources of deep-seated minerals which would be of value to the US if their development were well under way before an emergency arose. From the US point of view, the most important of these are manganese, nickel, and bauxite, of which there are substantial reserves. However, the outlook for the exploitation of these resources (which would require large-scale mining development) is unfavorable because: (1) transportation facilities are inadequate; (2) Brazil is badly deficient in fuel and power; (3) Brazilian capital and enterprise in general can find profitable employment with less risk in industry and therefore are not interested in mining; (4) mining legislation and taxation make investment in mining enterprises unattractive to foreign capital; and (5) cooperation in large-scale exploitation of Brazilian mineral reserves by the US and Brazilian governments has, in the past, left much to be desired (See Chapter II, Section 2. a. (2), Iron, p. 26).

Because it is well stocked with raw materials, Brazil would seem to have better prospects for industrialization, with the possible exceptions of Argentina and Mexico,

HARRY S. TRUMAN LIBRARY
Papers of
HARRY S. TRUMAN
PRESIDENT'S SECRETARY FILE

than any other Latin American country. In some respects its industrial structure is well advanced. But certainly within the foreseeable future (if ever) Brazil cannot, owing to its serious deficiency in coal, achieve any development in the heavy industries of sufficient significance to make it a worthy enemy, or an ally from whom the US could obtain any important supplies of manufactured war matériel. In light industry, prospects are more favorable; from present indications, as time goes on, Brazilian industry will be able more and more to supply the domestic demand for consumer and capital goods of relatively simple manufacture. These manufactures will contribute to the economic stability of the country, and a stable Brazil is of importance to the US whether the latter be at peace or at war. Moreover, even this type of industrial development would benefit the US particularly in wartime, should Brazil be either neutral or an ally at such time; for it would relieve the US of the necessity of shipping (for reasons of high political and military policy) many manufactured goods it can ill afford to export in time of crisis.

Brazil presents two strategic considerations of importance from the military point of view: first, Brazil, by size of population, and by historical and present policies of cooperation, may be in a position to furnish expeditionary forces or other troops to assist US forces in combat or join in a general Hemisphere effort; and, second and more important, a portion of Brazilian territory, the Bulge, is the nearest point of the Western Hemisphere to the Afro-Eurasian land mass.

The capacities of Brazil to furnish an expeditionary or other large military force of real value are (see Chapter IV, Section 5. *b. Maximum Military Capabilities*, pp. 69, 70) not large. In certain situations, however, Brazilian troops might be useful, and their participation would at least be a valuable symbol of unity. Therefore, the ability to furnish a force of possibly 50,000 men is of strategic importance to the US, and merits inclusion in considerations affecting the drafting of US policy.

Brazilian territory, as was pointed out at the beginning of this chapter, is so extensive—extending from points easily within the US zone of military predominance to centers of population and industry just as obviously beyond the region over which the US can exercise effective control—that it can be thought of strategically as really two distinct areas. A further peculiarity is that the northern portion, of particular interest to the US because it is the nearest point of the Western Hemisphere to the Afro-Eurasian land mass, is so effectively isolated from the rest of the country as to constitute practically an island.

This "island"—the territory from Recife and Natal to the Guianas—is roughly equidistant from Brazilian power-centers at Rio de Janeiro and Sao Paulo, from present and possible future US bases in the Caribbean, and from the coast of Africa at Dakar. It has practically no land communications with the rest of Brazil or of South America; it is not self-supporting in food supply, and has, with the exception of some textiles and sugar refining, no essential industries. It can be reached, barring interference, about equally easily from any of the three points mentioned above, and the power seizing or holding this territory must expect to be able to meet attacks from at least one of the other two directions, from hostile forces whose logistic problems need not

HARRY S. TRUMAN LIBRARY
Papers of
HARRY S. TRUMAN
PRESIDENT'S SECRETARY FILE

be any greater than its own; that is, it would be as easy to supply a force holding the Bulge from West Africa (assuming adequate West African land bases had previously been developed) as from the Caribbean, and the task of dislodging a hostile force by Caribbean-based attack would be little if any easier than by an African-based attack.

Because of its location and its island characteristics, the strategic importance of the Bulge must be considered in two sets of circumstances—its value to an enemy as a “stepping-stone” to attack the Panama Canal and the US position in the Caribbean generally, and its value to the US as an advance base for offensive or defensive action.

Since the resources of the Bulge itself are extremely limited, and since an important problem for an attacking enemy would be fuel supply, it may be assumed that this enemy attack would strive to reach, as quickly as possible, the Venezuelan oil fields on the north coast of South America; thus the enemy's principal interest in the Bulge would be not to occupy it for his own use, but to deny its use to US forces which might interfere with his cross-Atlantic effort. That is, while an enemy probably would not expend the effort to seize and hold a practically empty Bulge, it would be necessary for him to plan to reduce any strong US forces—which it is assumed would include aviation—in the Bulge, before venturing to proceed with an attack on the Caribbean.

Similarly, while the Bulge may be less important to the US as a possible stepping-stone to Africa and Europe than it was during World War II, it does remain important for any US trans-Atlantic effort that the Bulge be in friendly hands, to obviate interference with such effort. But from the US point of view, possibly the greatest importance of the Bulge is its part in the defensive picture. It lies on the flank of the most probable line of enemy attack against the Caribbean, and provides an important outpost on the circumference of a 3,000-mile-radius defensive circle from the Panama Canal.

Because of the considerations of the preceding two paragraphs, it seems reasonable to attach high military strategic importance to the Brazilian Bulge. Adequate maintenance of existing facilities (a contribution to Hemisphere defense lying generally within the capabilities of Brazil) and joint arrangements both for any necessary improvements and for the quick transfer of US forces to this territory in case of emergency, would notably increase the strategic security of the US.

In summary, Brazil is strategically important to the US because: (1) its geographic location makes for capabilities for independent action shared only by Argentina and Chile, and thus US Brazilian policy may be said to be central to US Latin American policy; (2) Brazil is one of the most important of the Latin countries as a source for strategic and critical materials not obtainable elsewhere, and shares with Venezuela, Chile, Bolivia, and possibly Cuba, a position as supplier of prime wartime necessities; (3) Brazilian territory includes that portion of the Western Hemisphere closest to the Afro-Eurasian land mass of vital importance to forces moving north and south in, or across, the south Atlantic.

HARRY S. TRUMAN LIBRARY
Papers of
HARRY S. TRUMAN
PRESIDENT'S SECRETARY FILE

APPENDIX A

TOPOGRAPHY AND CLIMATE

Brazil, with an area of 3,286,170 square miles, 90 percent of which lies within the tropics, constitutes 45 percent of the continent. From north to south the greatest distance is 2,670 miles, from east to west 2,690 miles. Forests cover about 58 percent of this area, and only 3.5 percent of the land is cultivated. The country has 3,642 miles of coastline, most of which is flat and tillable.

Brazil's greatest rivers are important not only for transportation, but as a potential source of hydroelectric power. The country claims 10,000 miles of rivers navigable by large steamers and from 20,000 to 30,000 miles of waterways which are usable at least part of the year by light-draft steamers. The Amazon, the world's largest river, is regularly navigated by large ocean-going ships for 1,000 miles and by smaller vessels for 2,000. About half of the 200 tributaries of the Amazon also are navigable. The rivers which fall from the Central Plateau in a series of rapids and falls offer good sites for hydroelectric installations; a large number of these sites are close enough to the population centers along the east coast and in the south of Brazil to make their development feasible and desirable.

Brazil may conveniently be divided into five physical regions: (a) the *Amazon Lowlands*, comprising 770,000 square miles of heavily forested sedimentary plain; (b) the *Interior Lowlands and Plateau*, a roughly triangular area in the central and western part of the country which includes the drainage basin of the Paraná-Paraguay River system as well as the upper reaches of the southern Amazon tributaries; (c) the *Eastern Plateau*; (d) the *Coastal Plain*; and (e) the *Guiana Highlands*.

The Amazon basin comprises one-third of the total area of Brazil. It is largely uninhabited and unexplored. The few people—less than 10 percent of the total population—are mainly concentrated around Sao Luiz in Maranhao and Belém in Pará. The rest of the basin is sparsely inhabited by Indians. Although the forests abound in a great variety of products of commercial value such as gums, rubber, nuts, roots, cabinet woods and skins of rare animals, they are inefficiently exploited, hence their contribution to the Brazilian economy is quite small. Rainfall is heavy, and much of the forest is so dense as to be described as impenetrable. Temperatures seldom exceed 95° F. because of shielding clouds, but rainfall is heavy throughout, exceeding 80 inches in the upper Amazon lowlands. There is very little temperature variation during the year. Most of the basin has an elevation of less than 800 feet.

The Interior Lowlands and Plateau consist of tropical lowland plain and the low plateau of Mato Grosso. About one-third is forest and the remainder consists of grassland and swampland on which cattle graze. The entire area has only 375,000 people (about one person per square mile), most of whom make their living from cattle raising. Rainfall (50-60 inches) is heavy from November through March, while the period May through September is characterized by a marked dry season. Since the entire

HARRY S. TRUMAN LIBRARY
Papers of
HARRY S. TRUMAN
PRESIDENT'S SECRETARY FILE

region is isolated by the lack of transportation, the area is of little importance to Brazil's economy except for its cattle.

The Eastern Plateau slopes toward the interior from a steep 1,000-mile escarpment which faces the sea. This plateau is drained by the tributaries of the Amazon and the Paraná rivers. The plateau averages about 2,500 feet in elevation, but its mountain ranges rise to 8,000 feet. The northern portion of the Eastern Plateau consists largely of semi-arid savannas. The central portion, which contains the three richest states, Sao Paulo, Minas Gerais, and most of Rio de Janeiro, has a more equable climate than is found in the north. The southern part of the Eastern Plateau with its temperate climate has been described as the area best suited for human habitation.

Brazil's "coastal plain" is a clearly defined topographic feature only from the Bulge of Brazil southward to Rio de Janeiro. In the extreme north the coast of Amapá is a wet tropical alluvial lowland which merges with the Amazon floodplain along the coast of the state of Pará. Continuing eastward, lowland country extends to Brazil's Bulge through the state of Rio Grande do Norte and has few people and little produce.

From Rio Grande do Norte south to Salvador in the state of Bahia there is a coastal stratified zone of sandstone and shale, the natural cover of which is semi-deciduous forest. Inland from the coast are hilly uplands. In this area the coastal strip varies in width from a few miles to over 100 miles, the greatest depth being found in northern Bahia. In southern Bahia, however, the strip again is narrow and southward coastal terraces alternate with coastal lowlands of varying widths. Where the rivers Paraíba and Doce come to the sea the strip breaks inland to include the alluvial river valley bottoms. Inland from the coastal strip are crystalline hilly uplands, tabular uplands or—as is the case at Rio de Janeiro—low mountains, known as the Great Escarpment. Southward from southern Bahia the Great Escarpment follows the coast for over 1,000 miles. Between Rio de Janeiro and Tubarao in Santa Catarina much of it comes to the water's edge and here the coastal strip disappears completely in many places. From Santos in Sao Paulo the strip is narrow to Sao Francisco do Sul in Paraná; it becomes wider at the mouth of the Rio Negro, only to narrow again as the Serra do Mar comes close to the shore near Florianópolis in the state of Santa Catarina. From this point southward the coastal strip is a narrow zone of lowland which widens abruptly and merges into the lowlands and prairie country of southern Rio Grande do Sul.

The Guiana Highlands in northern Brazil are for the most part forested, but part of their slopes consists of savannas. Deeply incised valleys have broken most of the region into a confusion of features. This area drains into the Amazon basin, but the rivers are shorter than other tributaries of the Amazon because the land north of the river rises rapidly to the Guiana highlands and the continental divide. In general, altitudes vary from 600 feet in the south to about 4,000 feet in the north.

HARRY S. TRUMAN LIBRARY
Papers of
HARRY S. TRUMAN
PRESIDENT'S SECRETARY FILE

APPENDIX C

POPULATION CHARACTERISTICS AND STATISTICS

The Brazilian population is a mixture of diverse races, the miscegenation of which has been greatly facilitated by a traditional lack of race prejudice in the country. Indian, Negro, and various European and Near Eastern strains are intermingled. Official statistics on the racial composition of the population are unavailable because the law forbids distinction of race or color in the census. The most conspicuous of the important areas, ethnically speaking, are: the Amazon Valley, which is largely Indian; the central coast from Pernambuco to Bahia, the population of which is estimated to be more than 60 percent negroid; the high plateau area in the northeast part of the country, inhabited by a mixture of white and Indian; and the southern states, about three-fourths white.

A salient feature of Brazilian society is the absence of a large middle class. The upper class is determined by family, professional standing, and to some extent by wealth. The remnant of the imperial aristocracy in Rio de Janeiro maintains an exclusive circle. The *nouveau riche* are primarily concentrated in the state of Sao Paulo.

Another characteristic of Brazilian life, in any class, is the intense family feeling. There is an almost religious obligation to take care of relatives, retainers, servants, as well as friends, which accounts for the unblushing nepotism found in Brazil.

Typical Brazilians vary from one region to another more than the people of the US. There is a strong local patriotism or sense of belonging to a regional group of a degree not approximated in the US except possibly among Texans.

HARRY S. TRUMAN LIBRARY
Papers of
HARRY S. TRUMAN
PRESIDENT'S SECRETARY FILE

1. POPULATION BY STATES (1940 CENSUS).

STATE	POPULATION	DENSITY PER SQ. KM.
BRAZIL	41,565,083	4.9
Alagoas	957,628	33.5
Amazonas	453,233	0.3
Bahia	3,938,909	7.4
Ceará	2,101,325	14.1
Federal District	1,781,567	1,526.6
Espírito Santo	758,535	17.7
Goiás	832,869	1.3
Maranhao	1,242,721	3.6
Mato Grosso	434,265	0.3
Minas Gerais	6,798,647	11.6
Pará	956,870	0.6
Paraíba	1,432,618	25.6
Paraná	1,248,536	6.3
Pernambuco	2,694,616	27.2
Plauí	826,320	3.4
Rio de Janeiro	1,862,900	43.9
Rio Grande do Norte	774,464	14.8
Rio Grande do Sul	3,350,120	12.3
Santa Catarina	1,184,838	12.5
Sao Paulo	7,239,711	29.3
Sergipe	545,962	25.3

2. SIGNIFICANTLY LARGE ALIEN GROUPS (1940 CENSUS).

NATIONALITY	NUMBER
Portuguese	354,311
Italian	285,029
Spanish	147,897
Japanese	140,602
German	45,784
Other	309,210
TOTAL	1,282,833

HARRY S. TRUMAN LIBRARY
Papers of
HARRY S. TRUMAN
PRESIDENT'S SECRETARY FILE

APPENDIX D
BIOGRAPHICAL DATA

1. *EURICO GASPAR DUTRA.*

Age 63. General Dutra, a native of Mato Grosso, was elected to the presidency of Brazil in December 1945.

While Dutra's shrewdness should not be discounted, he seems to have made his way largely by dint of hard work and stubborn perseverance. He entered the army in 1902 as a student in a military preparatory school in Rio Grande do Sul, and went from there to the national military academy. Although the record is obscure, he seems to have been expelled from the academy and obliged to finish his studies elsewhere. He was commissioned a second lieutenant in 1910.

Throughout the early twenties, when younger army officers such as Eduardo Gomes, Luiz Carlos Prestes, and Canrobert Pereira da Costa, were active in armed revolts against the Bernardes administration, Dutra was unswervingly loyal to the government. Moreover he took no part in the Vargas revolution (1930) and, as a penalty for failing to support the winning side, he was assigned to one of the worst posts in the country, on the Paraguayan border. Fortunately, his commanding officer, General Bertoldo Klingler, befriended Dutra and placed him on his staff. When the Sao Paulo Revolution broke out in 1932, Dutra was as usual on the side of the government. His regiment marched into Sao Paulo under Góes Monteiro. Dutra's conduct in this campaign restored him to favor and he was made a brigadier general and placed in command of the Second Infantry Brigade in Rio.

From 1936 to 1945 Dutra served as Vargas' Minister of War where he acquired a reputation as a man of determination and integrity. Nevertheless, he was for some time regarded as a figurehead for Góes Monteiro. In 1940, Vargas began to give Dutra more and more responsibility in order to build him up as a counterweight to Góes Monteiro's political influence and power. The removal of Góes as Chief of Staff in 1943 placed Dutra in a very strong position.

When Dutra was selected as the PSD's presidential candidate in 1945 it was erroneously assumed that he would be a Vargas puppet. The part that Dutra played in the *coup* of 29 October 1945, which forced Vargas to resign, clearly belied the earlier misconception of Dutra's dependence upon the former dictator.

Dutra's present relations with General Góes Monteiro and the relative influence of each with the army are open questions. There were unconfirmed rumors last year that the two were on very bad terms and that Dutra had lost prestige with the army. An August 1948 report, however, states that the two generals are good friends. While Góes is obviously a "strong man" and does much to foster this impression, it is well to remember that Dutra, during his long service as War Minister, was able to place many of his personal appointees in important army posts.

2. OSWALDO ARANHA.

Age 54. Aranha, a native of Rio Grande do Sul, attended the Military Academy in Rio and the Ecole des Hautes Etudes Sociales in Paris. He also has a degree from the Law Faculty of Rio de Janeiro. After graduation from the latter institution, Aranha returned to his native state to practice law and enter politics. He held various state offices and also participated in the suppression of two local rebellions.

Aranha's association with Vargas began in 1929 when he accepted a post from Vargas in the state government. Aranha took a leading part in the revolution of 1930, and was a close associate of Vargas throughout most of the latter's presidency. He served successively as Minister of Justice, Finance Minister, Ambassador to Washington (1934-1938), and Foreign Minister (1938-1944). To Aranha goes much of the credit for the policy of Western Hemisphere solidarity that Brazil enunciated before Pearl Harbor. During the time that the Brazilian Army was conspicuously pro-German and that Vargas himself appeared to have a strong Axis orientation, Aranha was unflinching in his cordiality toward the US and in the expression of his desire that the two countries work together.

Aranha resigned from the Cabinet in 1944 and the following year he supported the presidential candidacy of Eduardo Gomes.

In 1947, Aranha was named to succeed Leao Velloso as head of the Brazilian UN delegation and Brazilian representative on the Security Council. He was elected President of the UN General Assembly at its special session in April of 1947 and again at the regular session in September.

Many Brazilians feel that Oswaldo Aranha is their foremost citizen internationally. His charm and open manner have won friends throughout the world. He is generally regarded as the best friend of the US in Brazil. However, it must be kept in mind that Aranha is an ambitious man and a none too scrupulous one where personal fortunes are at stake.

3. ADHEMAR PEREIRA DE BARROS.

Age 47. Barros is Governor of Sao Paulo, the richest state in Brazil. He is the son of a Santos coffee exporter. Barros is a man of great energy whose crowning ambition is to win the presidential election in 1950. He is extremely resourceful in his efforts to appear to be all things to all men at all times.

From 1934 to 1937, Barros was a deputy in the Sao Paulo state legislature. In 1936 there was some evidence that he was a member of a Communist underground organization in Sao Paulo. However, in 1938 Vargas selected him as Federal Interventor for Sao Paulo, an appointment causing general astonishment throughout the State. Barros was in desperate financial straits at the time of this appointment. When he left the interventorship he was a rich man and reportedly the owner of a textile mill, a chocolate factory, a distillery, and other properties. His former Secretary of Finance charged that he had misappropriated public funds. These charges and the supporting evidence were filed away by Getulio Vargas for future use. Attempts

HARRY S. TRUMAN LIBRARY
Papers of
HARRY S. TRUMAN
PRESIDENT'S SECRETARY FILE

have since been made to press the charges, but now that Barros is governor, the courts are likely to avoid hearing such a case.

4. PEDRO AURELIO DE GOES MONTEIRO.

Age 59. Góes Monteiro, the ranking general in the Brazilian Army, is one of the most powerful figures in national politics. He comes from a military family in Alagoas which rules that state with an autocratic hand. Two of his brothers, Edgard and Ismar, were federal interventors under Vargas. A third, Silvestre Pericles, is now governor. Pedro Aurelio and Ismar are PSD senators from Alagoas. Silvestre has lately joined the PST, which also supports President Dutra.

Pedro Aurelio was born in Sao Luiz de Quitunde, Alagoas, in 1889. At 15 he enlisted in the Army and served six years as a private before entering the Military Academy. In 1914 he was commissioned a second lieutenant. His career received its greatest impetus in 1930 when he took command of Vargas' successful rebel forces in Rio Grande do Sul. In 1931 he was promoted in quick succession to colonel and brigadier general. The Sao Paulo Revolution broke out the following year. As Commander in Chief of the Federal forces, Góes crushed the rebellion in less than three months, and was immediately promoted to major general. Between 1933 and 1943 he was successively Commander of the First Group of Military Regions, Minister of War, Commander of the First and Second Group of Military Regions, and Chief of Staff of the Army.

In 1943 Góes was relieved as Chief of Staff and sent to Montevideo as Brazilian delegate to the Emergency Committee on Political Defense. His initial reluctance to cooperate with the Allies in the war as well as his political power in Brazil probably caused Vargas to take this action. In November 1944 he returned to Brazil on leave and began agitating for direct general elections and freedom of the press. When Dutra resigned from the War Ministry to run for President, Góes was appointed to succeed him. He announced that the armed forces would guarantee the elections, and on 29 October 1945 led the *coup* that deposed Vargas.

President Dutra made Góes Monteiro Minister of War in 1946, but because of his poor health he later resigned in favor of his assistant and protégé, General Canrobert. Góes returned to his former post in Montevideo. While there he was elected senator from Alagoas.

Now a whole-hearted advocate of cooperation with the US, Góes Monteiro was a member of the Brazilian delegation to the Rio Conference in 1947. He used to be bitterly anti-Argentine, but his growing fear of the USSR has tempered his attitude toward Argentina.

HARRY S. TRUMAN LIBRARY
Papers of
HARRY S. TRUMAN
PRESIDENT'S SECRETARY FILE

APPENDIX E CHRONOLOGY

- 1500 Discovery of Brazil by the Portuguese navigator Pedro Alvares Cabral.
- 1789-1792 Minas Gerais Conspiracy, an unsuccessful independence movement.
- 1808 Transfer of the Portuguese court to Rio de Janeiro.
- 1821 Return of King Joao VI to Portugal.
- 1822 Declaration of independence; Dom Pedro proclaimed Constitutional Emperor of Brazil.
- 1831 Abdication of Pedro I in favor of his son.
- 1831-1840 Regency of José Bonifacio de Andrada.
- 1840-1889 Reign of Pedro II as Constitutional Emperor of Brazil.
- 1865-1870 Paraguayan War.
- 1888 Emancipation of the slaves.
- 1889 Proclamation of the Republic.
- 1891 Enactment of the Republican Constitution drafted by Ruy Barbosa; presidency and forced resignation of Marshal Deodoro da Fonseca.
- 1891-1894 Presidency of Marshal Floriano Peixoto.
- 1894-1898 Presidency of Prudente de Moraes (of Sao Paulo).
- 1898-1902 Presidency of Campos Salles (of Sao Paulo).
- 1902-1906 Presidency of Rodrigues Alves (of Sao Paulo).
- 1906-1909 Presidency of Affonso Pena (of Minas Gerais).
- 1909-1910 Presidency of Nilo Peçanha.
- 1910-1914 Presidency of Marshal Hermes da Fonseca (of Rio Grande do Sul).
- 1914-1918 Presidency of Wenceslau Braz (of Minas Gerais).
- 1917 Brazil enters World War I on side of Allies.
- 1918 Re-election of Rodrigues Alves (of Sao Paulo) who died before assuming presidency.
- 1918-1919 Interim presidency of Delfim Moreira (of Minas Gerais).
- 1919-1922 Presidency of Epitacio Pessoa (of Paraíba).
- 1922 Military revolt following election of Artur Bernardes.
- 1922-1926 Presidency of Artur Bernardes (of Minas Gerais).
- 1924-1925 Military rebellion centering in Sao Paulo.
- 1926-1930 Presidency of Washington Luiz (of Sao Paulo).
- 1930 (Mar.) Getulio Vargas (of Rio Grande do Sul) defeated in presidential election by Julio Prestes de Albuquerque (of Sao Paulo).
- 1930 (Oct.) Revolution led by Getulio Vargas.
- 1930 (Nov.) Abrogation of Constitution of 1891, Vargas assumes dictatorial powers.
- 1930-1945 Presidency of Getulio Vargas.
- 1932 Sao Paulo Revolt.

HARRY S. TRUMAN LIBRARY
Papers of
HARRY S. TRUMAN
PRESIDENT'S SECRETARY FILE

- 1934 Enactment of new Constitution by Vargas-picked Constituent Assembly; election of Vargas by Assembly for four-year term as President; transformation of Assembly into Congress.
- 1935 Abortive revolt of Communist-led National Liberation Alliance.
- 1937 (Oct.) Congressional authorization for the establishment of martial law and press censorship.
- 1937 (Nov.) Vargas *coup*; cancellation of scheduled elections; dissolution of Congress; proclamation of new Constitution legalizing dictatorship by Vargas for indefinite period.
- 1937 (Dec.) Decree outlawing the *Integralistas*.
- 1938 (May) Unsuccessful *putsch* by *Integralistas*.
- 1942 (Aug.) Brazil enters World War II on side of Allies.
- 1945 (May) New electoral decree and granting of political amnesty.
- 1945 (Oct.) Army *coup* ousting Vargas.
- 1945 (Oct.)- Interim presidency of Chief Justice José Linhares.
- 1946 (Jan.)
- 1945 (Dec.) Election of General Eurico Gaspar Dutra.
- 1947 (May) Decision of Superior Electoral Tribunal outlawing Communist Party.
- 1947 (Oct.) Break of relations with USSR.
- 1948 (Jan.) Passage of law withdrawing mandates of Communist Party office-holders.

NATIONAL INTELLIGENCE SURVEY

BRAZIL - I
SOUTHEAST BRAZIL

SECTION 23
WEATHER AND CLIMATE

CENTRAL INTELLIGENCE AGENCY
Washington, D. C.

SANITIZED COPY

Content UNCLASSIFIED
per 000266
date 18 OCT 1977

CHAPTER II



TABLE OF CONTENTS FOR SECTION 23

	<i>Page</i>
A. General weather and climatic conditions	23 - 1
1. Introduction	23 - 1
2. Synoptic aspects of the climate	23 - 1
a. General circulation	23 - 1
b. Air masses	23 - 2
B. Weather and military operations	23 - 2
1. Air operations	23 - 3
a. Cloudiness	23 - 3
b. Upper winds	23 - 3
(1) Winter	23 - 3
(2) Summer	23 - 3
c. Upper-air temperatures	23 - 3
d. Turbulence	23 - 4
2. Air-ground operations	23 - 4
a. Ceiling	23 - 4
b. Visibility	23 - 4
c. Low-level turbulence	23 - 4
3. Ground surface operations	23 - 5
a. Precipitation	23 - 5
b. Temperature	23 - 5
c. Relative humidity	23 - 7
d. Surface winds	23 - 7
e. Overall effect of surface weather phenomena on clothing, storage, and shelter	23 - 7
(1) Clothing	23 - 7
(2) Storage	23 - 14
(3) Shelter	23 - 15
4. Amphibious operations	23 - 15
a. North of Natal	23 - 15
b. Natal south to 20°S.	23 - 15
c. South of 20°S.	23 - 15
C. Meteorological facilities and organization	23 - 16
1. Organization	23 - 16
2. Operation	23 - 16
D. Climatic data tables	23 - 16
E. Comments on principal sources	23 - 30

Content UNCLASSIFIED

per 006266

date 18 OCT 1977



SANITIZED COPY

LIST OF FIGURES

			<i>Page</i>
Fig. 23-1	Map	Circulation pattern, July	23 - 2
Fig. 23-2	Map	Circulation pattern, January	23 - 2
Fig. 23-3	Map	Mean monthly precipitation	23 - 6
Fig. 23-4	Map	Mean daily maximum and minimum temperatures	23 - 8
Fig. 23-5	Map	Absolute maximum and minimum temperatures	23 - 9
Fig. 23-6	Map	Surface wind roses, January	23 - 10
Fig. 23-7	Map	Surface wind roses, April	23 - 11
Fig. 23-8	Map	Surface wind roses, July	23 - 12
Fig. 23-9	Map	Surface wind roses, October	23 - 13
Fig. 23-10	Table	Clothing requirements	23 - 14
Fig. 23-11	Table	Mean cloudiness	23 - 17
Fig. 23-12	Table	Mean number of clear days	23 - 18
Fig. 23-13	Table	Days with thunderstorms	23 - 18
Fig. 23-14	Table	Average winds at specified altitudes	23 - 19
Fig. 23-15	Table	Mean temperature at specified altitudes	23 - 19
Fig. 23-16	Table	Frequency of specified ceilings and visibilities	23 - 19
Fig. 23-17	Table	Days with ceilings <1,000 feet	23 - 20
Fig. 23-18	Table	Days with visibility <1 mile	23 - 20
Fig. 23-19	Table	Frequency of specified visibilities at 0900 LST	23 - 20
Fig. 23-20	Table	Mean precipitation	23 - 21
Fig. 23-21	Table	Maximum 24-hour precipitation	23 - 22
Fig. 23-22	Table	Days with precipitation ≥ 0.01 inch	23 - 23
Fig. 23-23	Table	Mean daily temperature	23 - 24
Fig. 23-24	Table	Mean daily maximum and minimum temperatures	23 - 25
Fig. 23-25	Table	Absolute maximum and minimum temperatures	23 - 27
Fig. 23-26	Table	Mean daily relative humidity	23 - 29
Fig. 23-27	Table	Mean daily surface wind velocity	23 - 29
Fig. 23-28	Table	Prevailing direction of surface wind	23 - 30
Fig. 23-29	Map	Station locations	<i>follows</i> 23 - 31

This Section was prepared for the NIS under the general supervision of the Directorate of Intelligence, USAF, by the Air Force/Air Weather Service in coordination with the Joint Meteorological Committee. Material on amphibious operations was prepared by the Office of Naval Intelligence and material on clothing, storage, and temporary shelter by the Office of the Quartermaster General.

23. Weather and Climate

A. General weather and climatic conditions

1. Introduction

The climate of the NIS 94-I Area, which extends from the Equator to 33°S., is generally tropical in nature. Periods of heavy rain, consistently high temperatures and relative humidities, and light surface winds are characteristic.

Of sixteen separate states located within Southeast Brazil, 15 share portions of the 3,500-mile coastline. The Area can be divided into three regions. The northern region, roughly one-third of the Area, is composed of coastal lowlands which seldom reach elevations of more than 500 feet. The central and southern regions, though similar to each other in terrain, are distinguished by certain climatic differences. These regions consist of a high plateau averaging 3,000 feet in elevation and containing a few mountain peaks over 6,000 feet high. The highest mountain peak, Pico da Bandeira, is 9,462 feet and is located 175 miles northeast of Rio de Janeiro. The plateau reaches its maximum elevation in the interior of the central region, sloping gently toward the coast in the north and toward the Rio Paraná and Rio Paraguaí in the west and south. The eastern edge of the plateau is a well-defined escarpment (The Great Escarpment) which extends from approximately 30°S. to 12°S. North of 12°S. the coastal plain rises gently toward the inland plateau. The small climatic variations in this Area are due primarily to the differences in elevation.

Typhoon or hurricane seasons typical of other tropical climates are nonexistent in this portion of the world. These violent storms breed in every tropical ocean in the world except the South Atlantic, an interesting meteorological fact and an important practical advantage for the coastal areas of Southeast Brazil. Snow occurs infrequently in the Area; its occurrence is limited to the higher elevations in the extreme southern portion of the territory.

NOTE Requests for solutions to specific problems involving the interpretation of the weather factor in the user's unique operational terms should be directed to the Commander, Air Weather Service, MATS, USAF, Washington 25, D. C.

2. Synoptic aspects of the climate

a. **GENERAL CIRCULATION** — The climate of this Area is controlled primarily by the Southern Hemisphere trade winds, which originate in the South Atlantic anticyclone (FIGURES 23-1 and 23-2). The center of this high-pressure cell changes geographical position in different seasons of the year. The change of position effects a change in the airflow over Southeast Brazil. In winter (June, July, August), for example, when the center of the cell is relatively close to the coast, southeasterly winds are common to the northern portion of the Area and north to northeasterly winds predominate over the south. In summer (December, January, February), on the other hand, the center is farther out to sea, and the trade winds assume an easterly direction over the northern and central portions of the Area and a northeasterly direction over the southern portion.

During the winter season the South Atlantic *high* moves to the north; consequently, the trade winds over the southern portion of the Area lose their intensity and are interrupted by migratory low-pressure cells moving north from the polar regions. These *lows* bring changing weather to the Area. In the height of the winter season a cold outbreak from the south may be expected once every 6 days. These storms (called *friagem*s) and their associated fronts bring cooler temperatures, rain, and considerable cloudiness to southern Brazil. Although these storms normally remain south of the 20th parallel, an unusually strong outbreak may advance as far north as the Equator. This is the only place in the world where such a phenomenon has been observed. Such an occurrence is rare even in Southeast Brazil; but occasionally the temperature may drop 5 to 6 Fahrenheit degrees, and when it does the natives shiver and are liable to catch colds because of this slight drop from the normal.

For the greater portion of the Area the climate is essentially tropical in nature. The weather varies little from season to season; changes that do occur are slow and gradual. Regional and seasonal variations in climate are functions of local terrain rather than of changes in the circulation pattern.

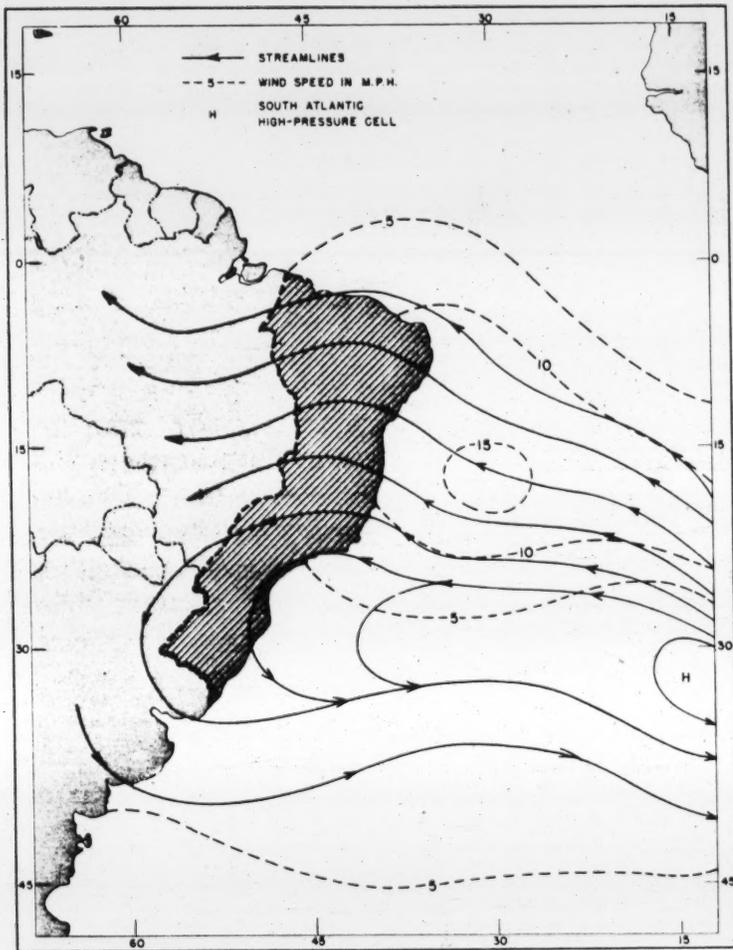


FIGURE 23-1. CIRCULATION PATTERN, JULY

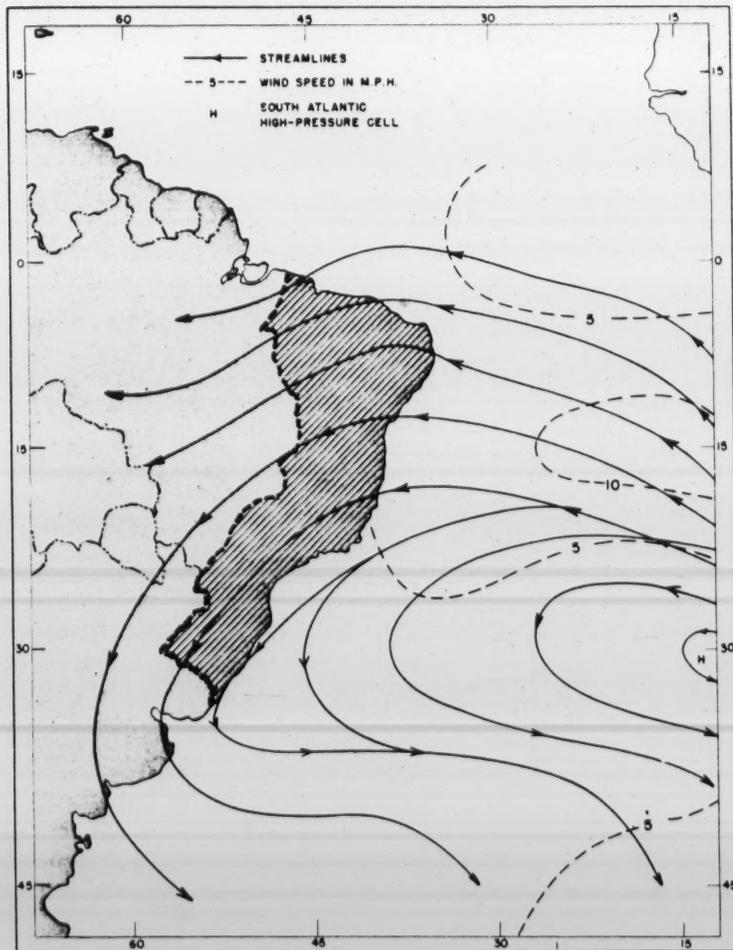


FIGURE 23-2. CIRCULATION PATTERN, JANUARY

b. **AIR MASSES** — Three air masses are common in this NIS Geographic Area: equatorial, tropical maritime, and polar maritime. Equatorial air is found over the northern portion of the Area during the summer months. This air mass originates near the Equator and is carried over northeastern Brazil by the trade winds. Cumulus clouds building up to afternoon thunderstorms, excellent visibilities except in rain showers, occasional early morning fog, consistently high temperatures, high relative humidities, and instability are characteristic of this air mass.

Tropical maritime air is prevalent over this entire Area except in the north in summer and in the south in winter. It originates in the South Atlantic anticyclone and, like equatorial air, is transported to the Brazilian coast by the trade winds. Subsidence within the source region reduces the moisture content of the air and causes the principal difference between tropical and equatorial air—the almost complete absence of thunderstorm activity in tropical air. Although heavy rain seldom occurs over locations dominated by this air mass, the air contains enough moisture to follow the cloud pattern established by equatorial air. The afternoon cloud maximum is apparent as swelling cumulus rather than cumulonimbus, and light rain showers rather than thunderstorms result. Other weather features characteristic of equatorial air are inherent in tropical air.

Polar maritime air originates in the polar regions of the south and is carried over the southern portion of this Area by migratory storm centers, especially during the winter season. Cool temperatures, fair weather, and excellent visibilities prevail in this air mass when the effects of frontal weather have passed. The leading edge of this air mass is marked by an active cold front, generating thunderstorms, precipitation, and extensive cloudiness in the frontal zone. The duration and intensity of frontal weather is dependent upon the strength of the outbreak and, to a lesser extent, the season of the year. Polar maritime air seldom exists as such for any length of time; it is quickly modified and loses its identity to the predominant tropical air mass of the north.

B. Weather and military operations

This Subsection is concerned with the effects of various meteorological elements and their variations upon military operations, which are subdivided into four groups: air, air-ground, ground surface, and amphibious. Included in each of these groups is a wide variety of specific operations. The discussion which follows is not, for the most part, broken down by specific operations, but by the meteorological elements as they affect each

group as a whole. Climatic elements are discussed individually under the type of operation for which they appear to be of primary importance.

1. Air operations

a. **CLOUDINESS** — The annual average cloudiness over the entire NIS 94-I Area is between 5- and 7-tenths, although the cloudiness within specific regions may vary considerably from these means. The maximum of coastal cloudiness is found near 16°S., where the 7-tenths annual average is normal throughout most of the year; the minimum of 5-tenths is common in the Natal region in the north and the Rio Grande region in the south. The largest seasonal range of cloudiness is generally found in the areas of minimum annual cloudiness, where a range from 7-tenths cloudiness in summer to 3-tenths cloudiness in winter exists. Of interest is the fact that the season of maximum cloudiness is winter near Natal, while spring has the high cloud average at Rio de Janeiro. FIGURES 23-11 and 23-12 give tabular information on cloudiness.

Clouds are predominantly cumuliform in nature over Southeast Brazil, though stratus-type clouds do occur with winter frontal conditions and along portions of the coast during all seasons. Bases of the prevailing cumuliform clouds are normally about 4,000 feet, lowering to 2,000 feet in precipitation; cloud tops extend to 15,000 feet during the afternoon hours at the peak of their development. The cumuliform clouds grow to large swelling cloud masses but seldom mature to the thunderstorm stage.

Aircraft will generally encounter heavy turbulence in these cumulus clouds; heavy icing at upper-air temperatures below 0° C. is also possible. Flight around rather than through these clouds is advisable and easy to accomplish since cloud cover is seldom overcast. The conical nature of cumulus clouds makes circumnavigation easier at the higher altitudes.

Thunderstorms, while more infrequent than cloud conditions indicate, can be violent in this portion of the world. At times cumulonimbus clouds push up as high as 50,000 feet, breeding

NOTE Air operations are defined as those taking place above the frictional influence of the terrain on atmospheric circulation. Some of the specific operations which can be included in this category are: high-level visual bombing, radar bombing, aerial reconnaissance, and fighter support and interception. In most cases these operations are concerned primarily with upper-air meteorological phenomena such as cloudiness and aircraft icing; but in some instances, surface meteorological conditions can become extremely important. Detailed descriptions of surface conditions may be found in the Subsections on Air-ground and Ground Surface Operations.

violent turbulence, excessive lightning, heavy rain, and possibly heavy hail. The danger of heavy ice accretion is present at altitudes above the freezing level. Flight through these storms should be avoided if possible. The mean number of days with thunderstorms is given tabularly in FIGURE 23-13.

b. **UPPER WINDS** — Winds above 15,000 feet are more consistent in speed and direction than winds at lower levels. The steady character of these winds is best presented in tabular form. FIGURE 23-14 shows the seasonal mean winds at altitudes above 15,000 feet over this Area. The following discussion pertains to winds up to altitudes of 15,000 feet. Winds in this stratum of the atmosphere show variation in direction and speed relative to season and geographical location.

(1) *Winter* — During the winter season (June, July, August), upper-air winds over Southeast Brazil are predominantly easterly from 10°S. to the northern coastline. They are of sufficient strength to penetrate inland to the western boundary of the Area and dominate the entire northern portion. The easterly winds continue their dominance between 10° and 20°S., but their vertical extent and inland penetration is less than over the more northerly portion of the Area. Vertically they predominate to 8,000 feet, and inland regions show considerable variation in direction.

South of 20°S. the prevailing direction swings around to the north and extends up to 15,000 feet; farther south at the boundary of the Area the northerly winds extend to 5,000 feet. The prevailing westerlies of the Southern Hemisphere are found above this wedge-shaped layer of northerly winds. Wind speeds in all zones seldom reach 41 knots; they are usually in the 15- to 28-knot range.

(2) *Summer* — The summer season (December, January, February) is marked by a weakened circulation pattern, a consequent reduction in wind speeds, and more variation in wind direction. North of 10°S. the prevailing direction becomes northeasterly. Between 10° and 20°S. the prevailing direction remains easterly but with considerably more variation in direction, while south of 20°S. a prevailing northeasterly direction is normal. Summer wind speeds seldom exceed 30 knots and are usually in the 10- to 20-knot range.

c. **UPPER-AIR TEMPERATURES** — FIGURE 23-15 shows the mean upper-air temperatures for specified altitudes and months at stations in the Area. Of significance is the rapid drop in temperature over the southern region during the winter season. The effect of the intrusion of cold air from the south is particularly evident in these upper-air data for levels below 30,000 feet. Also evident is

the fact that the freezing level is most often found above 10,000 feet over the major portion of the Area. As previously mentioned, aircraft icing problems are only of concern above 10,000 feet in the cumuliform clouds. The values given in FIGURE 23-15 are average values; individual situations may show wide variation from the average. While averages are adaptable to general planning, they are of little value to a specific operation.

d. **TURBULENCE** — Turbulence in Southeast Brazil is experienced in thunderstorms and cumuliform clouds and in air heated by the earth's surface. Although the turbulence created by cumulus and cumulonimbus clouds is the more dangerous, it is more easily avoided. The turbulence caused by the heat of the sun being reflected from the earth's surface is annoying but not dangerous. This type of turbulence, common to all tropical climates, reaches a maximum in the afternoon and becomes insignificant at night. Such turbulence is not necessarily marked by cloudiness and may be encountered in clear air. The lush vegetation of the Brazilian jungle has a damping effect on this phenomenon; over rocky or barren areas its effect may be noticeable at altitudes as high as 10,000 feet, although it is more evident in the lower 5,000 feet of the atmosphere.

2. Air-ground operations

a. **CEILING** — In Southeast Brazil, ceilings within the frictional layer, the lower 2,000 feet of the atmosphere, vary significantly with the season and the region. North of 10°S., ceilings less than 2,000 feet occur infrequently. Fortaleza has an annual average of 2 days per year with ceilings 2,000 feet or lower. This order of magnitude holds true for all of this portion of Brazil. The frequency of such ceilings increases steadily toward the south; typical figures show 15 days at Salvador, 66 days at Rio de Janeiro, and 100 days at Porto Alegre. As the number of days with ceilings 2,000 feet or less increases, a seasonal maximum becomes

NOTE Air-ground operations are defined as those taking place in, or primarily influenced by, the meteorological conditions within the frictional layer above the earth's surface. Operations such as tactical support, low-level reconnaissance, parachute drops, chemical and biological warfare, and incendiary bombing are included within this definition. Although many of these operations may originate above the frictional layer, their success or failure would, to a large degree, depend upon the conditions at or near the surface. For example, aircraft carrying chemical agents might fly at a high altitude, but surface wind, surface temperature, and stability of the lower layers would determine the degree to which the contaminant could be dispersed. A description of surface conditions may be found in the Subsection on Ground Surface Operations.

evident. June, July, and August furnish most of these ceilings at Salvador; the same months record a maximum at Rio de Janeiro, while at Florianópolis the maximum occurs during September, October, and November. In all cases, the period of maximum occurrence is responsible for at least 75% of all occurrences.

Unlimited ceilings are uncommon because of the extensive coverage of cumuliform clouds that persists over the Area. Ceilings of 5,000 to 6,000 feet are almost always observed, especially during the daylight hours. The usual daily pattern is a constant buildup in cloudiness to an afternoon maximum. Activity, such as aerial photography, that is concerned with amount of cloud will find the early morning the most advantageous time.

Statistical information on ceiling heights and cloud cover is given in FIGURES 23-16 and 23-17. These figures, concerned with established minimums for aircraft operation, identify the more restrictive flying regions in the Area. The Florianópolis, Pelotas, Porto Alegre, and São Paulo regions, according to FIGURE 23-16, are the most often affected by ceilings below 1,000 feet.

b. **VISIBILITY** — Southeast Brazil is favored by unusually good visibilities; the most common restriction is precipitation. During rainy periods, early morning fog is a frequent occurrence but it rarely lasts for more than a few hours. The heat of the day dissipates the fog before 2,000 LST.

Restricted visibilities exhibit geographical and seasonal variations. The southern portion of the Area has a greater frequency of restricted visibility than other portions of the Area. This particular region, in the highlands of the south and close to the coast, experiences the worst flying weather in all of Southeast Brazil. This maximum of poor flying conditions is caused mostly by maritime air rapidly lifted by the terrain.

The remainder of the Area is favored by unrestricted visibility 90% of the time. Restricted visibility for 10% of the time results from rain showers that occur during the summer season. Visibility data are presented tabularly in FIGURES 23-18 and 23-19.

In summary, air-ground operations would seldom be handicapped by restricted visibility; the small percentage of the time that visibility is restricted is confined to the rainy periods. In the southern portion of the Area, poor visibility and low ceilings are usually a result of frontal weather during the winter season.

c. **LOW-LEVEL TURBULENCE** — This Area, located almost entirely in the tropical zone where temperature variation is generally slight, experiences almost constant low-level turbulence and instability during the afternoon hours. Opera-

tional activity handicapped by low-level turbulence and instability should be planned for night or early morning hours.

3. Ground surface operations

a. **PRECIPITATION** — As far as precipitation is concerned, the climate of Southeast Brazil can be divided into wet and dry seasons. These seasons are not simultaneous in all regions but shift from summer to winter in different locations throughout the country. Along the northeast coast, for example, the wet season is in winter, and farther south in the vicinity of Rio de Janeiro the wet season is in summer; still farther south near the boundary of Uruguay the seasons lose their identity. Further differentiation in the wet season is apparent in an inland direction, where the wet season tends to occur in summer.

Most stations in Southeast Brazil report an annual average rainfall of 30 to 80 inches. The heaviest amounts of rain occur in the southern highlands, where an annual average of 147 inches is normal. Of unusual interest is the interior of the northeast part of the Area. Here, the yearly rainfall may be as low as 10 inches per year compared to 60 to 80 inches a year in the surrounding regions. For 2 or 3 consecutive years there is an abundance of rainfall, then for 2 or 3 years practically no rain falls. The paralyzing effect of these rainless years on agriculture, stock raising, and human endeavor can readily be imagined.

Throughout the Area, precipitation is mainly in the form of showers. While actual thunderstorms are comparatively rare, the cumulus clouds common to the Area are large enough to create numerous rain showers. Large amounts of rain confined to relatively short periods of time present drainage problems, especially in the highland regions. The more level portions of the northeast readily absorb large amounts of moisture, alleviating these problems. The danger of flash floods in the highlands where thunderstorms are more common is always a hazard during the wet season. FIGURES 23-20 through 23-22 present precipitation data in tabular form. Mean monthly precipitation for selected stations is shown graphically in FIGURE 23-3.

Although snow has occurred as far north as Rio de Janeiro, its occurrence cannot be considered normal in any portion of this Area. The possibility of occasional snow during the winter season

NOTE Many of the climatic elements, acting either alone or in combination, affect ground surface operations. The most important are precipitation, temperature, relative humidity, and surface winds. Reference can be made to Subsections B, 1 and B, 2 for discussions of other meteorological elements affecting surface operations to some degree.

does exist in the extreme south, but even here many years pass without snowfall being recorded.

For the effect of precipitation on the state of the ground and the resulting effect on the mobility of equipment and troops, reference should be made to SECTION 24, Topography.

b. **TEMPERATURE** — This portion of Brazil has remarkably uniform temperatures in spite of its wide latitudinal range. Along the coast and north of the Tropic of Capricorn the annual average temperature varies between 75° and 80° F. In the extreme southern portion of the Area the annual average falls to 65° F. The 15-degree areal range in annual temperature is quite small considering the 30-degree latitudinal range of the Area.

Throughout most of the Area the range between summer and winter average temperatures is about 10° F. (FIGURE 23-23). The extreme southern portion of the Area experiences the only deviation from this general picture; here a range of 20° to 30° F. is normal. Temperatures in the highland regions inland from the coast average 5° F. less than temperatures in corresponding regions on the coast itself.

FIGURE 23-24, which presents mean maximum and minimum temperatures for selected locations in Southeast Brazil, is of interest to planners of ground operations for a number of reasons. Information such as the expected range of daily temperatures, the limits between which the temperature can be expected to vary, and the seasonal trends of temperature are readily apparent in the table. These factors are of interest to construction, storage, sanitation, troop comfort, and possibly many other ground activities. Generally speaking, the northern and central sectors experience relatively high mean maximum temperatures during all months; the southern sector experiences its high mean maximum in the summer. Jet aircraft operating in areas where high surface temperatures are frequent require longer runways than conventional aircraft. The mean maximum temperatures common to this entire Area during the summer and to the northern and central sectors during all seasons, combined with the high frequency of light surface winds, identify the Area as one where long runways will be necessary if jet operations are contemplated.

Mean minimum temperatures are lowest in the southern sector and become progressively warmer in a northerly direction. Incursions of cold air from the south during the winter season are reflected in the winter depression of mean minimum temperatures in southern sectors. This winter minimum is also evident in the central and northern sectors but is not as pronounced as in the south. Minimum temperatures are also relatively high

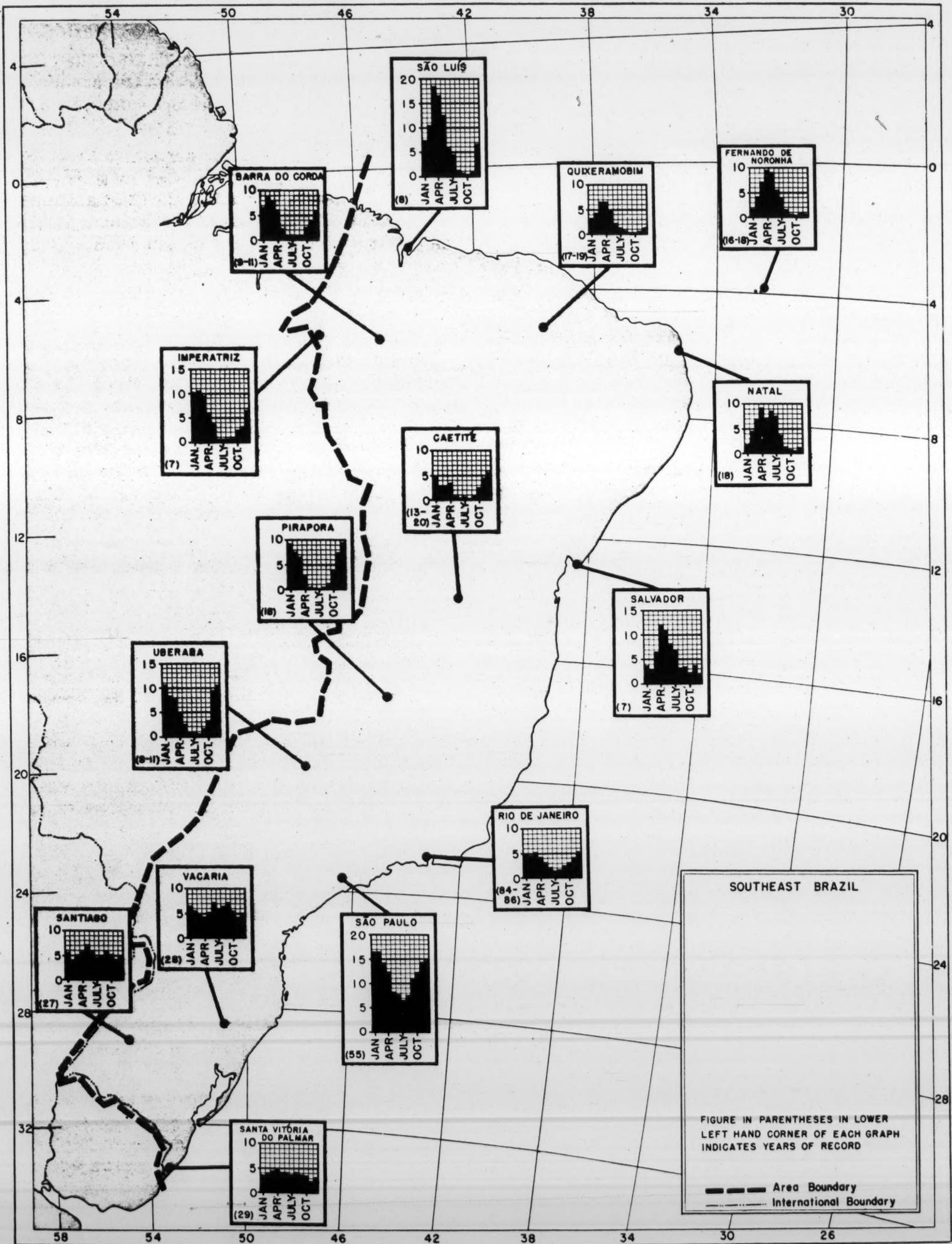


FIGURE 23-3. MEAN MONTHLY PRECIPITATION (INCHES). (For tabular data see FIGURE 23-20.)

NOT REPRODUCIBLE TO FOREIGN NATIONALS

throughout the Area as the tropical nature of the climate would indicate.

FIGURE 23-25, a table of absolute maximum and minimum temperatures, is included primarily for the information it presents on freezing temperatures. Freezing temperatures are confined to the southern portion of the NIS Area and are reported infrequently even in this region. The extreme low from the data presented is 20° F.; since this table is one of absolute minimums, 20° F. temperature can be reasonably called an unusually low temperature. The mildness of the temperature regime in the Rio de Janeiro area is indicated by the fact that minimum temperatures have never been below 50° F. in 49 years of record.

Graphical presentation of mean and absolute maximum and minimum temperatures appear in FIGURES 23-4 and 23-5.

c. RELATIVE HUMIDITY — Relative humidities maintain a high annual average for most locations in Southeast Brazil as indicated in FIGURE 23-26. Excluding Quixeramobim where the annual average is 61%, all stations listed in the table have annual averages of 70% or greater, a positive indication of high moisture content in the air masses that dominate the Area.

Seasonal trends in relative humidity are hard to distinguish on a monthly basis; monthly variation of relative humidity is apparently a function of geographic location and local wind direction. Generally, relative humidities are high throughout the region with rather nominal month-to-month variation.

The combination of high temperatures and high relative humidities results in oppressive and uncomfortable living conditions in the greater portion of this Area. The same combination favors rapid decay of perishables, mildew and rust of equipment, and health problems due to stagnation, fatigue, and sanitation. Operations planned for this Area should include countermeasures against these conditions.

The persistently large quantity of water vapor in the air causes copious amounts of dew to form in many places during nocturnal hours; moisture penetrating the soil for a depth of 4 inches has been measured after a particularly heavy dew.

d. SURFACE WINDS — In Southeast Brazil, surface winds are extremely weak. FIGURES 23-27 and 23-28 give tabularly the mean daily surface wind velocity and the prevailing direction of surface winds, respectively. Surface wind roses for 4 months representative of the 4 seasons are illustrated in FIGURES 23-6 through 23-9. In the northern and southern regions, wind speeds average 5 to 8 knots; in the central region, the annual average is 3 to 4 knots. This entire Area has a

high frequency of calm conditions; high wind speeds are related to thunderstorm activity, during which speeds as high as 40 knots may be attained for short periods of time.

Surface wind directions in Southeast Brazil are dependent largely on local terrain. Most of the coast is affected by land and sea breezes, which, though weak in character, do serve to make more comfortable living conditions.

e. OVERALL EFFECT OF SURFACE WEATHER PHENOMENA ON CLOTHING, STORAGE, AND SHELTER

(1) *Clothing* — Throughout the Area, clothing requirements which are most significantly influenced by temperature, humidity, and precipitation, differ as a result of the climatic changes associated with elevation and latitude. The latitudinal range is more than 30°, and altitude varies from sea level to almost 9,500 feet. In spite of these factors, the range of clothing items needed for year-round environmental protection is not as great as might be expected. The fact that most of the Area is within the tropics has an equalizing effect on clothing requirements. Some special items are required because of the prevalence of disease-carrying insects and pests.

FIGURE 23-10 gives the clothing assembly most desirable for wear in certain regions during each month of the year. The regions, each of which has its own distinctive clothing requirements, are the Coastal Lowlands, discontinuous bits of coastal plains, and the Eastern Plateau, the highlands which make up most of the Area.

The clothing requirements tabulated in FIGURE 23-10 are expressed in terms of the following three clothing assemblies, which have been prescribed for worldwide use depending upon the occurrence of the specified mean monthly temperatures:

CLOTHING ASSEMBLY	MEAN MONTHLY TEMPERATURE
Warm-weather	Above 68° F.
Cool-weather	50° to 68° F.
Cold-weather	14° to 50° F.

For planning purposes the components of the clothing assemblies* are described in general terms. The warm-weather assembly is a cotton outfit (visored cap, shirt, trousers, and underwear). It also includes a lightweight woolen knit shirt, primarily for night wear; a sun helmet; and lightweight canvas high-top boots. A single woolen blanket is adequate sleeping equipment for use with this assembly.

In the cool-weather clothing assembly, flannel or woolen items are substituted for the cotton shirt and trousers, high-top leather boots, for the canvas

* Appropriate service regulations list the exact nomenclature and the basis for issue of the various components of the clothing assemblies.

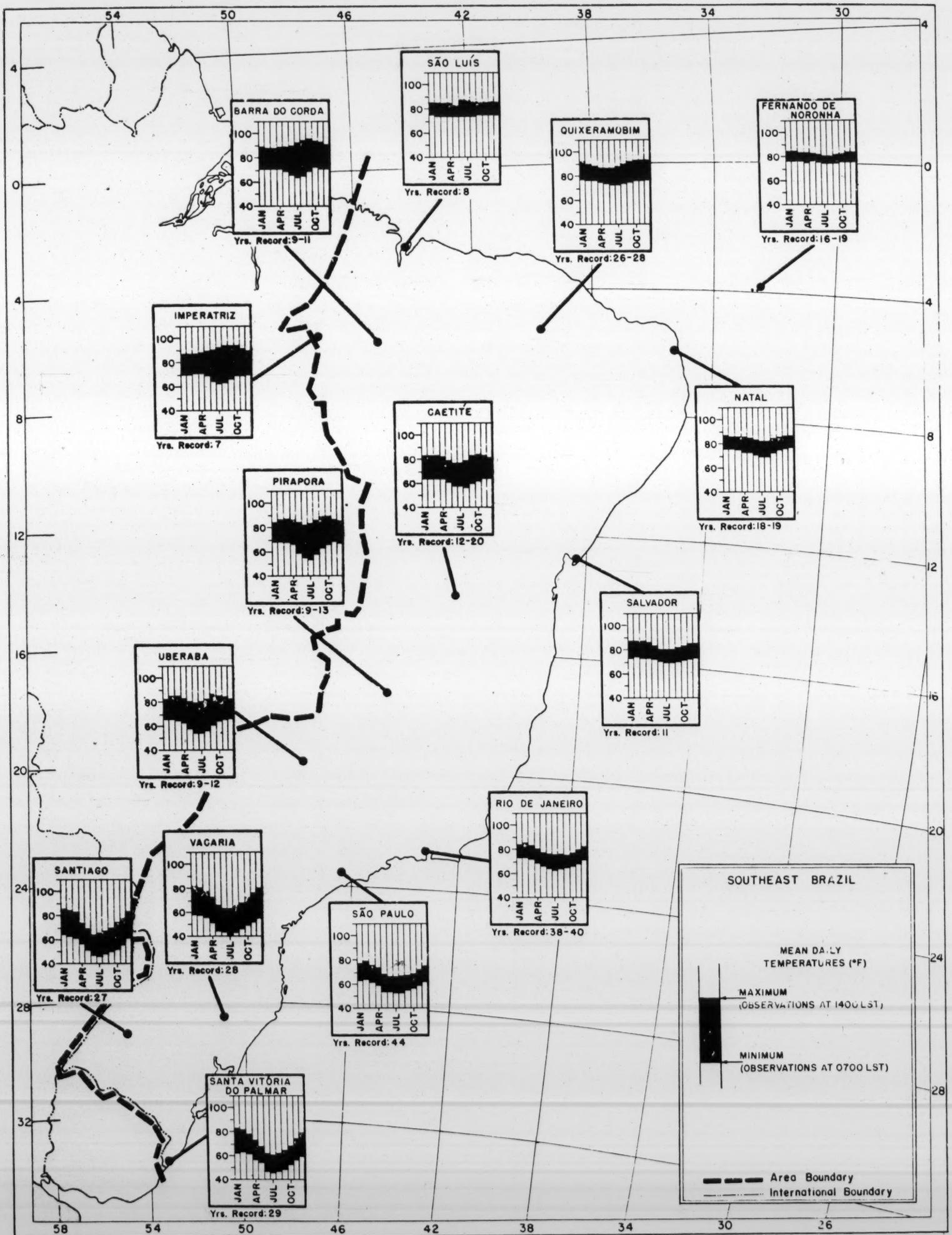


FIGURE 23-4. MEAN DAILY MAXIMUM AND MINIMUM TEMPERATURES (°F.). (For tabular data see FIGURE 23-24.)

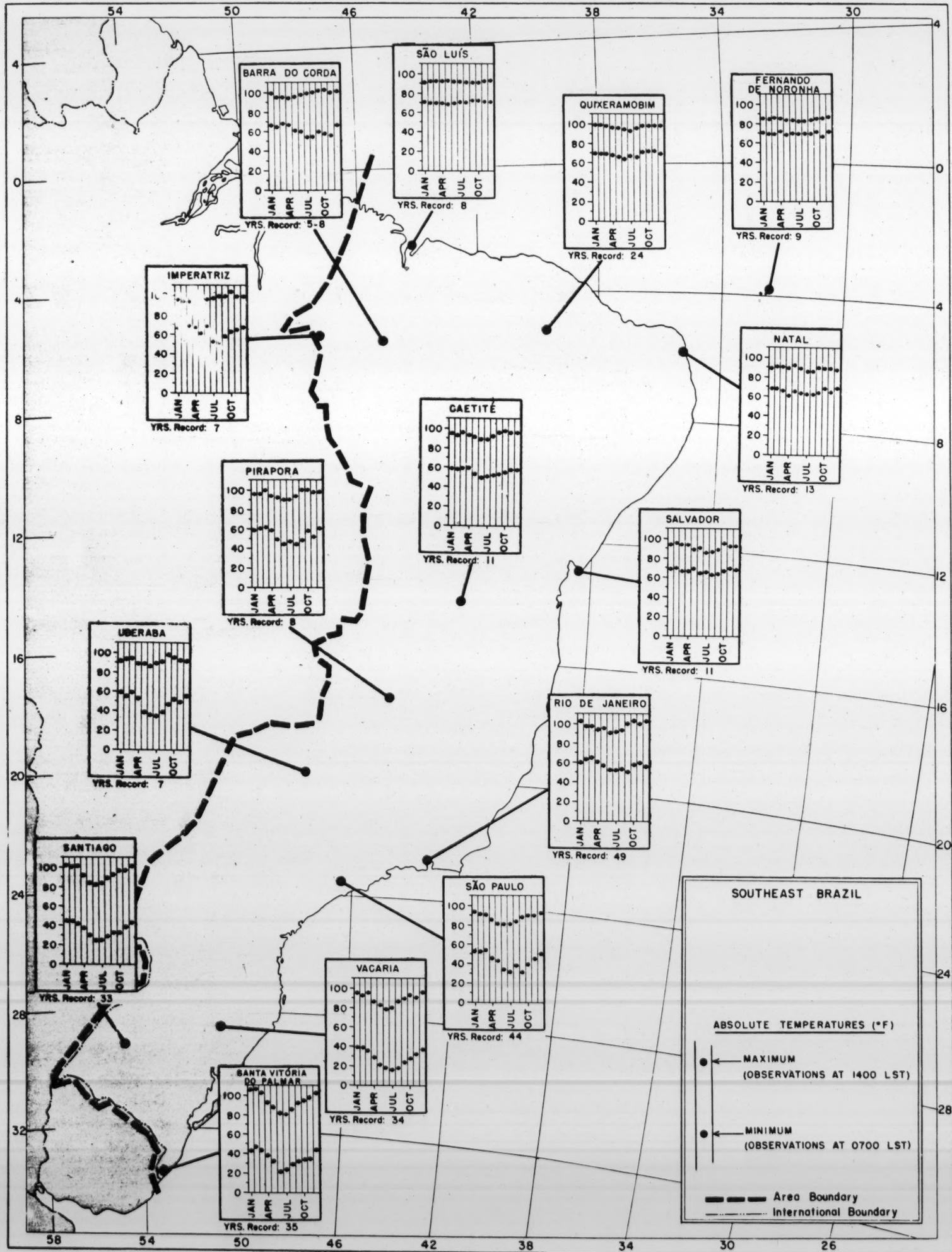


FIGURE 23-5. ABSOLUTE MAXIMUM AND MINIMUM TEMPERATURES (°F). (For tabular data see FIGURE 23-25.)

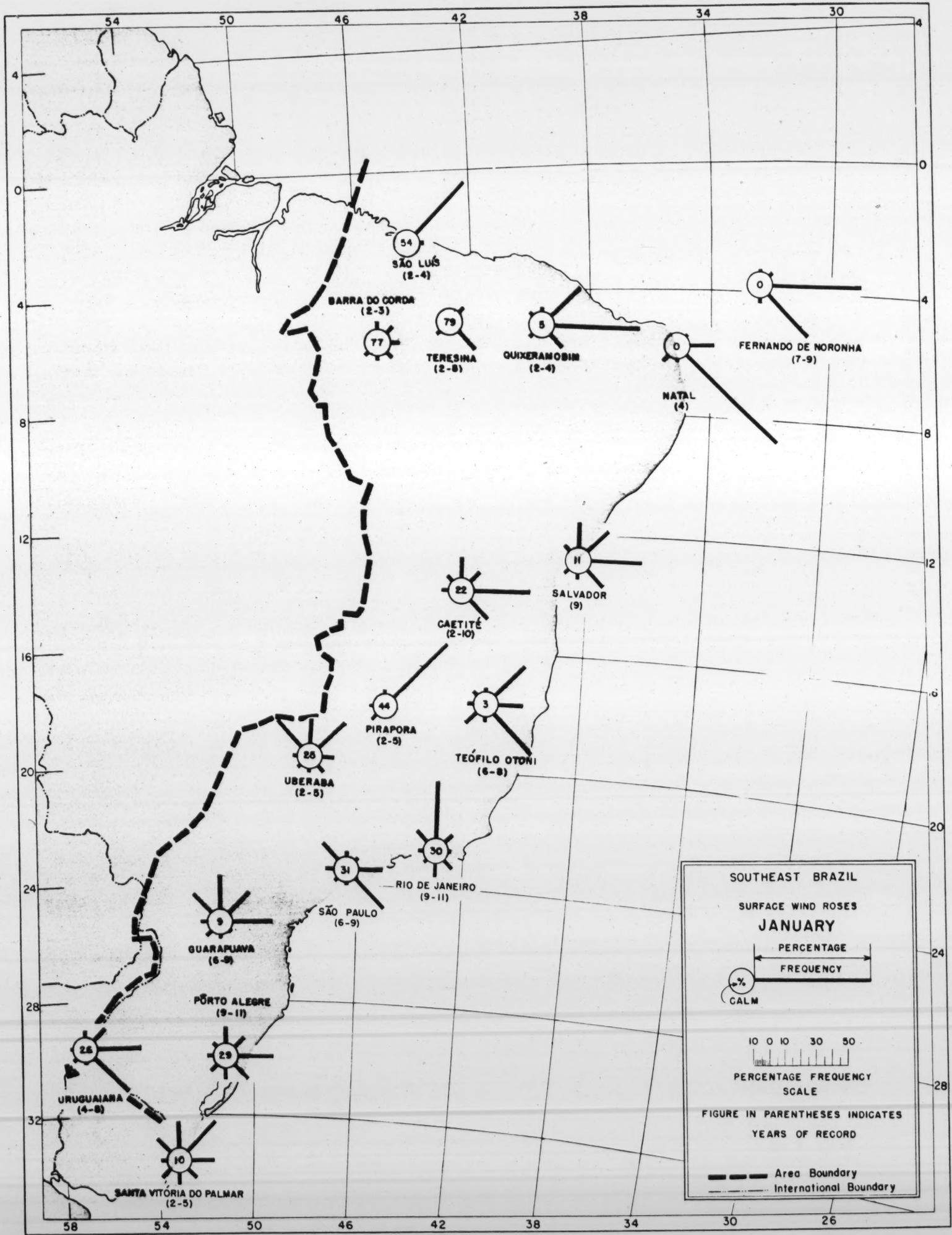


FIGURE 23-6. SURFACE WIND ROSES, JANUARY

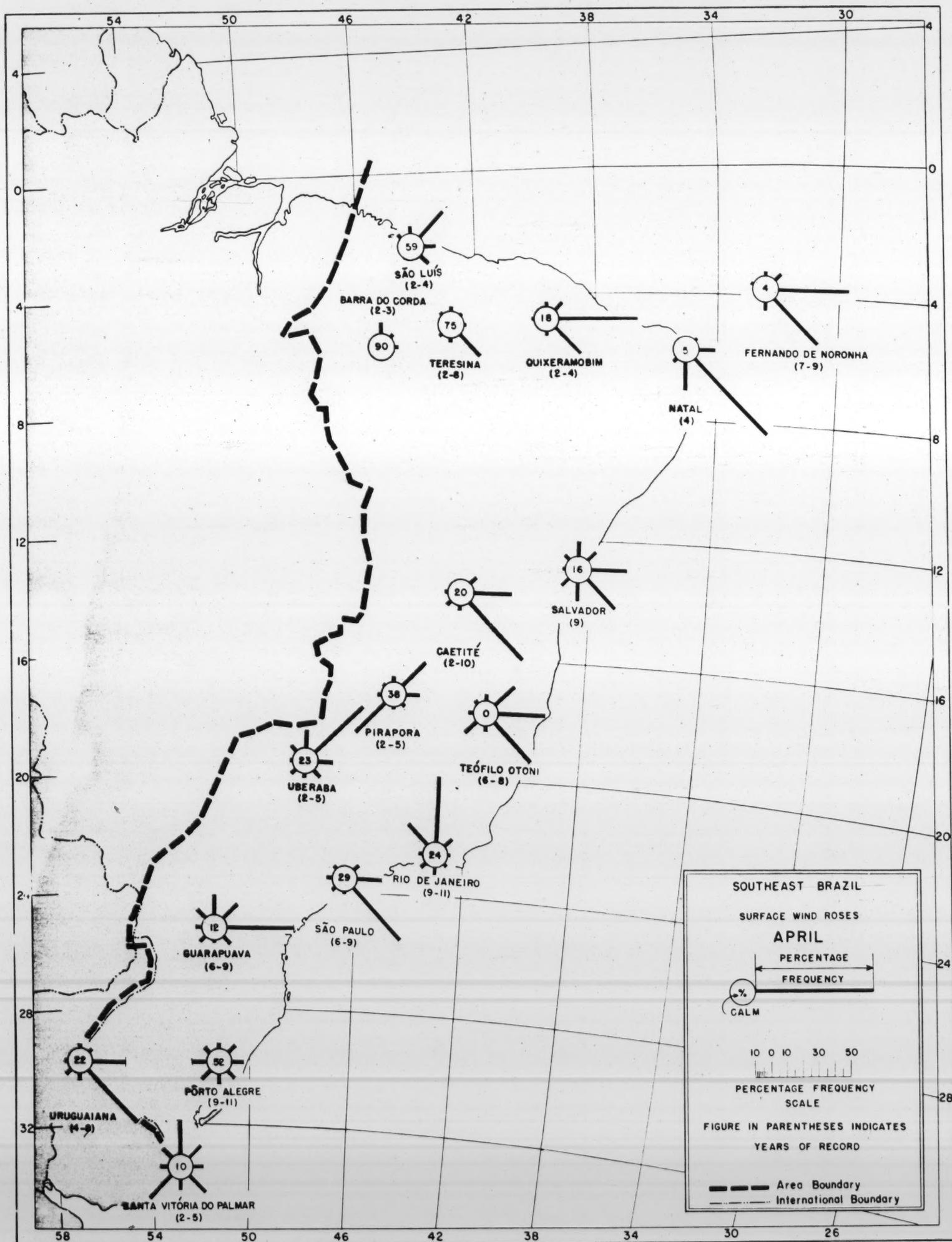


FIGURE 23-7. SURFACE WIND ROSES, APRIL

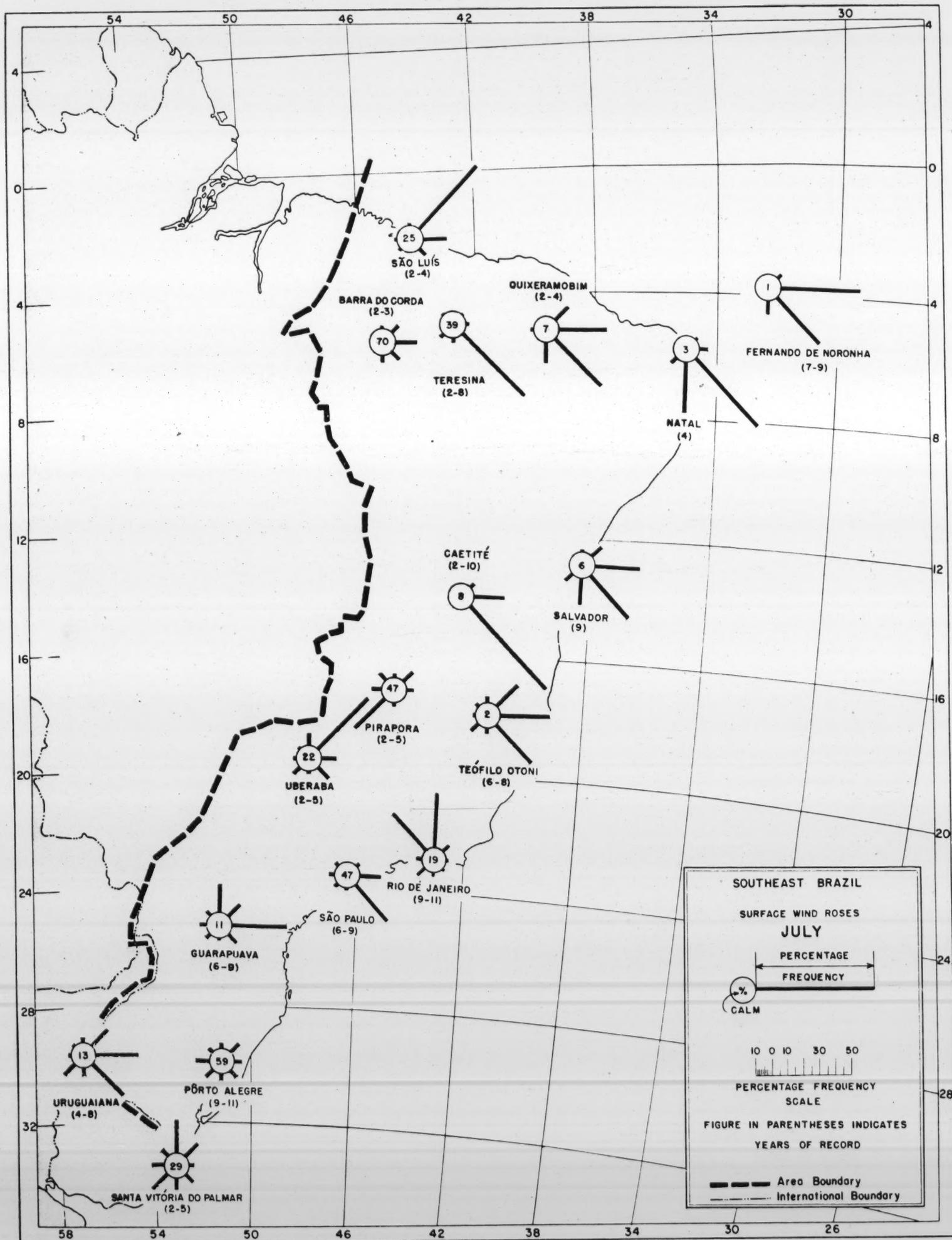


FIGURE 23-8. SURFACE WIND ROSES, JULY

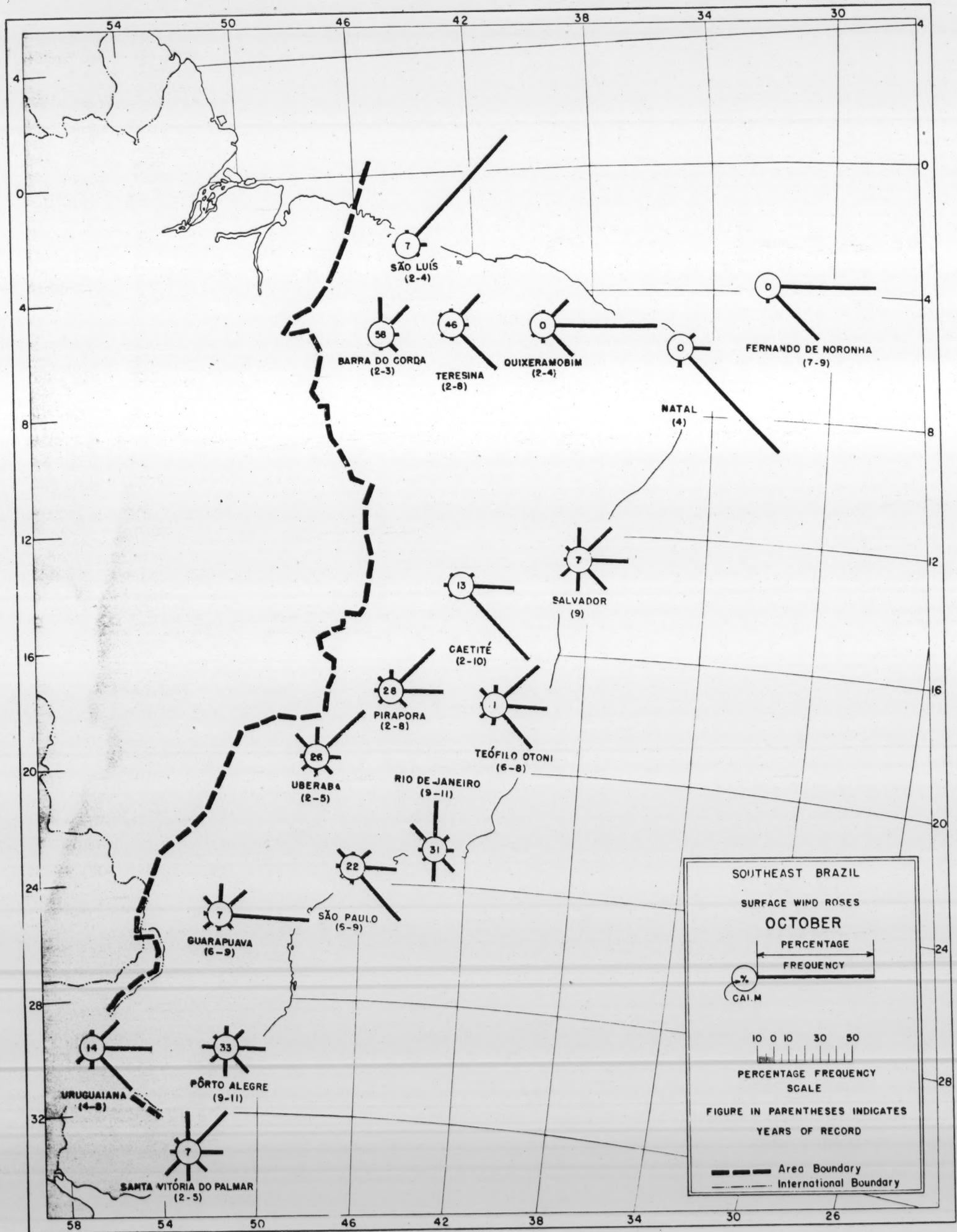


FIGURE 23-9. SURFACE WIND ROSES, OCTOBER

boots, and a high-necked, long-sleeved sweater for the woolen knit shirt. A hooded, water-repellent, wind-resistant jacket and leather gloves with woolen inserts are included. A woolen sleeping bag with a water-repellent case is adequate sleeping equipment for use with this assembly.

The cold-weather assembly includes the items of the cool-weather assembly plus a pile jacket to be worn under the water-repellent, wind-resistant jacket; water-repellent, wind-resistant cotton trousers to be worn over the woolen trousers; a woolen muffler; and white parka, trousers, and mittens to be worn over the outer clothing items in snow-covered regions. Winter underwear is substituted for the cotton underwear; a cotton visored cap with pull-down flaps for the cotton visored cap; and boots similar to the U.S. Army combat, rubber, insulated boot with one pair of woolen cushion sole socks for the high-top leather boots. A mountain-type sleeping bag (down- and feather-filled) with a water-repellent case is normally used with this assembly.

A lightweight poncho is desirable with each assembly for protection against rain.

These clothing assemblies have been computed on the assumption that the individuals wearing them will be living in the open for 24 hours a day. Requirements for individuals in permanent installations may differ somewhat; for instance, a raincoat may be more practical than the poncho, and the service-type shoes with one pair of mediumweight woolen socks and a pair of overshoes might be more desirable than the high-top leather boots.

The prevalence of insects and pests (mosquitoes, flies, ticks, lice, fleas, gnats, scorpions, centipedes, and tarantulas), and snakes make certain special items necessary. For example, repellents, insect bars, headnets, mosquito gloves, and similar items afford some protection against insects and pests. High-top boots or leggings afford some protection against snakes.

Numerous swamps along the coast and in the interior, particularly in the southern portion of the Area, may impose a requirement for some type of waterproofed footwear during the winter. Blowing dust and sand is a nuisance in the northern interior, particularly during the summer. Some type of face and neck shield gives some protection against this condition.

The long periods of brilliant sunshine in the Area suggest a requirement for tinted glasses. Generally, winter is the sunniest season except in the extreme northern and southern portions, where summer is the sunniest.

High humidities cause rapid deterioration of untreated cloth or leather items throughout the year along the coast and during summer in the interior.

(2) *Storage* — Extremes of temperature, precipitation, high humidity, and strong winds are the main environmental factors to be considered for protection of open-stored items in the NIS 94-I Area.

Open-stored subsistence supplies, unless protected, are subject to damage from alternate freezing and thawing during the winter in the southern portion of the Area, particularly above 2,000 feet on the plateau. Also, they suffer damage from high temperatures throughout the Area except at higher elevations and, during the winter, in the southern portion (above 2,000 feet on the plateau).

Protection of open-stored items against rain is desirable throughout the Area during the entire year, except during the summer in the extreme north. Except in the interior during winter, stored items are subject to damage from rust and mildew because of high humidity.

Flood plains adjacent to rivers are dangerous for use as storage sites, especially during the rainy seasons. Marshes and swamps, mostly in the south, also limit the availability of storage sites. Wood for dunnage is available throughout most

FIGURE 23-10. CLOTHING REQUIREMENTS

REGION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
COASTAL LOWLANDS:												
North of Cabo Frio.....	W	W	W	W	W	W	W	W	W	W	W	W
South of Cabo Frio.....	W	W	W	W	C	C	C	C	C	C	W	W
EASTERN PLATEAU:												
Northern portion:												
Below 2,000 feet.....	W	W	W	W	W	W	W	W	W	W	W	W
2,000 to 5,000 feet.....	W	W	W	W	C	C	C	C	C	W	W	W
Above 5,000 feet.....	C	C	C	C	C	C	C	C	C	C	C	C
Southern portion:												
Below 2,000 feet.....	W	W	W	C	C	C	C	C	C	C	W	W
2,000 to 5,000 feet.....	C	C	C	C	C	C	C	C	C	C	C	C
Above 5,000 feet.....	C	C	C	C	D	D	D	D	D	C	C	C

W - warm weather clothing assembly; C - cool weather clothing assembly; D - cold weather clothing assembly.

of the Area; it is scarce or lacking in the north and central interior and in the extreme south.

(3) *Shelter* — Shelter is needed throughout the year. Tents similar to the U.S. Army squad and wall tent provide adequate protection throughout most of the Area. Heat is desirable at higher elevations throughout the year and in the south during winter. Tents are needed for protection against rain and cool temperatures as well as for shade. The prevalence of insects and pests throughout the Area makes screened tents desirable.

Timber for construction of improvised shelter and for framing or flooring of tents is available throughout most of the Area; it is lacking or scarce in the north and central interior and in the extreme south.

4. Amphibious operations

a. **NORTH OF NATAL** — Off the coast of Fortaleza, northeasterly winds prevail from January through April, and southeasterlies, from June through November. The mean wind speed is less than 11 m.p.h. during all seasons. The northeast trades are strengthened by a sea breeze during the day, and a weak southwesterly land breeze develops for a few hours during the night. Gales (winds speeds over 28 m.p.h.) occur in less than 1% of the observations.

Southeast swells and seas prevail 50% to 70% of the time from March through October, 50% of the time from December through January, and 35% to 40% of the time in November and February. Northeasterly swells and seas are at a maximum in November, when 60% is observed, and at a minimum in July and August, with 20% being observed. During other months, northeasterly swells and seas prevail about 30% to 40% of the time. Slight to moderate swells and seas prevail 82% to 98% of the time except from January through April, when heavy or confused swells and rough seas are reported in 10% to 17% of the observations.

Mean sea-surface temperatures of 79° to 82° F. are reported throughout the year.

b. **NATAL SOUTH TO 20°S.** — Off the coast southward to the latitude of Ilhéus, southeast trade winds predominate during all seasons, with north-

NOTE Amphibious operations include all phases of operations involving the movement of troops and equipment onto a beach and the associated protective measures. The discussion of coastal weather covers such pertinent elements as surface winds, swells and seas, and temperature. Discussion of other pertinent meteorological elements such as cloudiness, visibility, and precipitation may be found in the Subsections on Air, Air-ground, and Ground Surface Operations.

east to southeast winds occurring 90% to 95% of the time. South of Ilhéus this condition holds 70% of the time, with a tendency for north winds to prevail during the remaining 30%. Land and sea breezes are weak, and the land breeze does not exist at all south of Salvador. On the coast, wind directions are variable due to topographic features. Mean wind speeds average 11 m.p.h. Gales occur in less than 1% of the observations.

Swells and seas from the northeast to southeast quadrants prevail throughout the year, being observed 80% to 95% of the time, with slight to moderate intensity. Heavy or confused swells and rough seas are experienced 17% to 10% of the time from January through April and less than 9% of the time from May through December.

North of 10°S. the sea-surface temperatures average 78° F. from July through November and 81° F. from December through June. Farther south the temperatures remain about 80° to 81° F. from December through April, decreasing to 73° F. during the period June through November.

c. **SOUTH OF 20°S.** — Winds offshore are predominantly northeast during all seasons except south of Porto Alegre from May through August, when winds from the southwest quadrant prevail. Mean wind speeds are 8 to 10 m.p.h. from Vitória to Santos, increasing steadily southward to a mean of 11 to 14 m.p.h.

Wind conditions on the coast are characterized by a high frequency of calms at sheltered ports, prevailing wind directions varying with the specific location, and occasional high winds of a local nature. Mean wind speeds are under 10 m.p.h. in all seasons. Gales occur in less than 5% of all observations. The greatest frequency of gale winds are observed from May through August between Cabo de São Tomé (21°59'S., 40°58'W.) and Cabo Frio (22°53'S., 42°01'W.) and in the vicinity of Rio de Janeiro. When squalls are observed they normally last for 5 to 6 hours. Gale winds are occasionally associated with the thunderstorms of southern Brazil's winter season and the more intense cyclones that penetrate the coast from more southerly latitudes.

Swells and seas from the northeast to southeast quadrants occur 70% to 85% of the time from September through November and from February through March, with 40% to 65% in the remaining months. From the west quadrant, swells and seas are observed 20% to 25% of the time in December, January, July, and August. Swells and seas of slight to moderate intensity prevail 55% to 70% of the time. Percent occurrence of heavy or confused swells and rough seas is 25% to 35% from June through August and

less than 10% the remainder of the year except for a secondary increase in December.

Mean sea-surface temperatures range north-south 79° to 72° F. from December through April and 77° to 62° F. from May through November.

D. Climatic data tables

The climatic data tables referred to in Subsection B are contained in this Subsection. Most of the data are limited to one, two, or three observations per day. Some of the data are limited to short periods of record. Data on ceiling heights and visibility restrictions are limited by both short periods of record and paucity of stations at which they are recorded.

Due to rounding off of decimal values, annual totals or means may not agree exactly with the sum or mean of the monthly values.

The meteorological stations referred to in this Section are indicated in FIGURE 23-29, a map of station locations with an accompanying list giving latitude, longitude, and elevation of each station. The coordinates given are those of the meteorological stations and not necessarily those of the cities, settlements, or other geographical features for which they are named.

The data contained in the tables in Subsections B and D were obtained from unclassified sources.

FIGURE 23-11. MEAN CLOUDINESS (%)

STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Aracaju	46	51	48	48	58	59	58	53	47	42	43	45	50	11-18
Araguari	75	62	60	46	31	26	20	25	51	55	63	61	48	6
Araranguá	55	74	63	56	61	58	54	na	61	64	64	57	na	2-4
Barra	60	58	52	44	39	20	25	22	25	37	54	54	42	2-7
Belo Horizonte	62	53	55	48	40	38	35	33	43	54	63	68	49	16-21
Cabo Frio	64	60	58	62	53	43	45	47	70	70	67	70	59	9-11
Caetité	58	55	53	58	52	50	50	52	36	52	59	61	53	15-21
Camocim	78	76	76	60	56	42	41	39	59	68	72	71	62	2-3
Campos	67	56	60	62	53	46	47	50	61	72	75	77	61	14-21
Caravelas	67	68	71	68	64	62	67	60	68	73	74	73	68	6-8
Catalão*	73	67	59	42	31	27	24	23	38	51	67	79	48	10-14
Coruripe	64	65	64	60	57	54	67	na	50	60	53	62	na	2-3
Curvelo	49	42	37	37	22	22	22	31	34	41	53	58	37	6
Diamantina	65	69	69	66	59	58	57	44	64	72	78	75	65	3-5
Fernando de Noronha	52	58	56	62	59	51	48	45	42	44	46	51	51	17-19
Florianópolis	68	60	64	59	59	60	58	56	63	73	67	60	62	3-4
Fortaleza	66	72	71	68	62	54	43	33	44	51	55	57	56	7-8
Franca	66	64	63	47	43	42	33	35	47	62	63	65	52	11
Garanhuns	60	62	63	66	73	78	78	72	62	57	50	54	63	10-12
Guarabira	53	57	58	57	58	61	60	58	52	49	51	53	56	8
Guarapuava	65	61	54	54	52	46	48	40	54	55	54	60	54	6-9
Iguatu	60	67	70	60	55	49	41	38	37	42	45	52	52	8-11
Ilhéus	59	61	61	62	61	60	63	59	64	64	61	71	62	17-20
Imperatriz	68	69	62	57	38	25	32	20	31	40	42	60	45	7
Iraí	52	na	na	53	na	48	na	na	52	55	57	58	na	2
Itapeva	63	57	50	40	46	43	39	38	53	57	57	58	50	17-19
Jaboatão	53	55	51	54	62	63	62	58	51	45	44	52	54	8
Januária	55	39	44	36	24	21	22	16	22	42	61	61	37	12-16
João Pessoa	53	57	57	56	62	66	57	52	46	43	48	49	54	8
Maceió	46	49	43	52	64	58	62	54	48	38	38	42	50	10
Natal	51	54	51	58	58	61	51	47	42	41	44	50	51	9
Nazaré da Mata	56	64	59	59	63	61	59	57	51	46	48	49	56	10
Palmas	67	66	61	62	65	56	58	49	58	59	56	58	60	3-11
Paranaguá	61	67	61	58	62	59	66	69	72	71	67	66	65	20-23
Passo Fundo	55	58	59	52	56	53	54	51	57	48	47	50	53	9-10
Pelotas	59	55	63	61	65	59	71	64	70	66	59	60	63	7
Pirapora	69	58	59	47	34	35	27	28	34	52	64	69	48	9-13
Pôrto Seguro	66	76	68	72	71	67	70	60	72	75	83	71	71	2-3
Propriá	55	66	70	59	65	64	69	67	60	60	58	46	62	2-5
Quixeramobim	60	62	66	63	56	49	42	34	35	37	45	53	51	28-30
Recife	50	56	55	54	59	61	61	58	48	45	44	45	53	15-20
Resende	72	66	67	65	59	56	54	54	66	69	72	75	64	19-20
Rio de Janeiro	66	59	60	59	56	53	50	56	70	69	69	68	62	40-42
Rio Grande	36	47	46	50	52	57	55	49	50	56	56	35	49	2-4
Salvador	63	66	66	59	68	65	76	65	65	65	67	66	66	3-4
Santa Maria	na	48	56	55	55	54	58	na	58	49	58	na	na	10-13
Santa Vitória do Palmar	44	49	49	47	53	47	57	na	58	54	47	45	na	10-12
São Carlos	71	68	57	50	45	44	35	39	53	57	62	68	54	14-18
São Luís	74	73	82	67	62	na	56	60	62	65	68	66	na	12
São Paulo	67	67	65	62	64	59	58	59	70	73	67	68	65	24-27
Teófilo Otoni	71	65	67	70	70	66	69	70	66	74	75	76	70	15-17
Teresina	66	72	72	65	49	na	23	26	37	44	46	41	na	2-8
Uberaba	75	67	62	53	40	39	32	34	45	58	67	76	54	9-12
Urussanga	48	na	na	na	42	45	40	34	57	48	57	51	na	2
Xanxerê	48	58	45	46	42	40	43	36	47	43	43	37	44	3-8

na Data not available.

* Near but outside NIS 94-I Area.

FIGURE 23-12. MEAN NUMBER OF CLEAR DAYS (CLOUD COVER \leq 2-TENTHS)

STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Fernando de Noronha.....	4	2	3	2	2	6	5	3	7	5	5	1	45	9
Franca.....	1	1	2	5	5	6	12	11	7	1	3	1	55	11
Garanhuns.....	2	1	2	0	0	0	1	0	2	3	4	3	18	6
Guarabira.....	0	0	0	0	1	1	1	1	1	1	1	1	8	8
Guaramiranga.....	1	1	1	1	2	2	2	3	2	3	2	1	21	9
Iguatu.....	4	3	1	2	3	4	9	9	8	7	7	5	62	7
Ilhéus.....	2	1	1	1	3	3	2	3	2	2	1	2	23	11
Imperatriz.....	3	5	6	5	15	22	22	23	16	12	8	5	142	7
Itapeva.....	3	3	5	7	9	8	12	11	6	6	5	4	79	10
Jaboatão.....	2	1	3	2	1	1	1	2	2	3	4	2	24	8
Januária.....	8	13	7	13	19	18	22	20	21	12	4	5	162	7
João Pessoa.....	1	1	1	1	0	0	0	1	2	1	1	1	10	8
Natal.....	5	3	3	3	4	4	5	7	8	5	5	4	56	5
Passo Fundo.....	7	6	5	7	5	9	8	7	4	7	7	8	80	7
Pirapora.....	2	2	3	4	10	10	16	15	15	6	2	2	87	8
Pôrto Alegre.....	7	7	7	8	6	5	6	7	5	7	11	8	84	10
Quixeramobim.....	3	2	2	2	6	7	12	14	12	12	7	5	84	24
São Carlos.....	0	1	1	4	7	6	10	10	7	5	2	1	54	9
Teófilo Otoni.....	1	2	2	1	1	1	1	1	3	2	1	1	17	9

FIGURE 23-13. MEAN NUMBER OF DAYS WITH THUNDERSTORMS

STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Aracaju.....	1	0	0	0	0	0	0	0	0	0	0	1	2	9
Araguari.....	13	4	6	2	1	0	1	0	1	2	5	4	39	6
Bagé.....	3	2	2	2	2	3	2	3	2	2	2	3	28	30
Barra.....	4	5	5	4	1	0	0	1	1	3	3	5	32	8
Barra do Corda.....	4	5	6	4	1	na	na	1	1	3	3	5	na	10
Belo Horizonte.....	3	2	2	2	na	na	na	na	1	3	3	2	na	10
Cetité.....	2	1	1	1	1	0	0	0	1	3	4	3	17	11
Camocim.....	2	2	3	7	7	1	1	0	1	1	1	1	28	4-5
Campos.....	3	1	0	0	0	0	0	0	0	1	0	1	6	10
Catalão*.....	1	1	2	0	0	0	0	0	1	0	1	2	8	8
Caxias do Sul.....	4	3	2	1	1	1	1	2	2	2	2	3	24	30
Curvelo.....	4	2	4	1	na	na	na	na	1	2	1	3	na	6
Fernando de Noronha.....	0	1	0	0	1	0	0	0	0	0	0	0	2	11
Florianópolis.....	4	2	3	2	2	1	1	2	3	2	3	2	27	8
Fortaleza.....	1	2	2	2	1	0	0	0	0	0	0	0	8	9
Foz do Iguaçu.....	na	1	1	3	3	4	na	3						
Garanhuns.....	0	1	1	0	0	0	0	0	0	0	1	1	5	6
Guaramiranga.....	1	1	2	1	0	2	0	0	0	0	0	0	7	10
Guarapuava.....	16	12	9	8	4	3	5	8	11	19	9	13	117	5
Imperatriz.....	4	7	6	7	3	1	1	2	3	6	7	7	54	7
Iraí.....	6	4	4	2	3	3	3	3	3	4	5	4	44	6
Itaqui.....	5	4	5	3	3	3	2	4	4	4	3	4	44	28
Itatiaia.....	3	3	1	1	1	1	0	1	1	3	4	2	21	8
Januária.....	1	1	1	1	1	0	0	0	0	0	2	2	9	7
Natal.....	0	1	1	1	0	0	0	0	0	0	0	0	3	14
Nazaré da Mata.....	1	2	1	0	0	0	0	0	0	0	0	0	4	8
Palmas.....	12	14	3	6	2	5	4	5	11	10	10	15	96	3
Paranaguá.....	2	0	0	0	0	0	0	1	0	1	1	1	6	10
Passo Fundo.....	3	3	2	2	1	2	1	2	3	2	2	3	26	29
Pelotas.....	3	2	2	3	2	2	2	3	11	1	4	6	41	2
Pirapora.....	2	1	3	7	0	0	0	0	0	1	2	3	19	8
Pôrto Alegre.....	4	3	3	2	2	3	3	4	4	3	3	4	38	32
Propriá.....	11	10	9	2	3	2	1	3	4	4	3	13	66	3
Quixeramobim.....	11	16	15	19	6	2	1	1	0	2	4	8	85	24
Recife.....	0	1	1	1	0	0	0	0	0	0	0	0	3	10
Rio de Janeiro.....	7	6	5	2	1	0	0	1	2	3	4	5	36	31
Rio Grande.....	3	3	3	2	2	3	3	3	2	2	2	3	31	30
Salvador.....	3	2	3	2	1	1	0	1	1	1	1	2	18	7-8
Santa Maria.....	5	5	4	3	3	3	3	4	4	4	4	4	46	30
Santa Rosa.....	4	4	3	4	4	4	2	4	5	4	3	5	46	20

na Data not available.

* Near but outside 94-I Area.

FIGURE 23-14. AVERAGE WINDS AT SPECIFIED ALTITUDES, BY DIRECTION AND SPEED (DEGREES/KNOTS)

	ALTITUDE	WINTER	SPRING	SUMMER	AUTUMN
	<i>feet</i>				
North of 10°S...	20,000	330/5	360/4	010/5	010/3
	30,000	090/6	090/5	090/4	090/5
10°S. to 20°S....	20,000	330/7	360/3	V/5	010/3
	30,000	270/6	270/3	V/4	270/5
South of 20°S....	20,000	290/15	270/9	270/12	300/8
	30,000	270/25	270/20	270/15	270/20

V - Variable.

FIGURE 23-15. MEAN TEMPERATURE (°C.) AT SPECIFIED ALTITUDES

STATION	ALTITUDE	JAN	APR	JUL	OCT	STATION	ALTITUDE	JAN	APR	JUL	OCT
	<i>feet</i>										
Belo Horizonte.....	10,000	8	10	6	9	Natal.....	10,000	8	10	8	10
	18,000	-8	-4	-10	-7		18,000	-8	-4	-6	-6
	30,000	-32	-32	-34	-33		30,000	-32	-31	-32	-31
	40,000	-53	-52	-52	-52		40,000	-52	-52	-54	-53
	45,000	-64	-63	-62	-61		45,000	-64	-66	-64	-66
	55,000	-72	-70	-69	-69		55,000	-76	-76	-72	-76
Camocim.....	10,000	8	10	8	10	Pôrto Alegre.....	10,000	6	7	1	5
	18,000	-8	-4	-6	-6		18,000	-8	-8	-16	-12
	30,000	-32	-30	-32	-30		30,000	-34	-37	-41	-38
	40,000	-53	-52	-54	-53		40,000	-53	-54	-52	-50
	45,000	-64	-66	-64	-67		45,000	-61	-60	-58	-53
	55,000	-76	-77	-72	-76		55,000	-67	-63	-62	-60
Caravelas.....	10,000	8	10	7	10	Rio de Janeiro.....	10,000	7	9	4	7
	18,000	-8	-4	-8	-6		18,000	-8	-6	-12	-10
	30,000	-32	-32	-33	-32		30,000	-32	-34	-38	-35
	40,000	-52	-52	-52	-52		40,000	-53	-53	-52	-51
	45,000	-64	-64	-63	-62		45,000	-63	-62	-60	-56
	55,000	-73	-72	-70	-71		55,000	-70	-66	-66	-64
Maró.....	10,000	8	10	8	10	Santa Vitória do Palmar...	10,000	5	4	-1	3
	18,000	-8	-4	-6	-6		18,000	-8	-10	-18	-14
	30,000	-32	-31	-32	-31		30,000	-36	-38	-44	-40
	40,000	-52	-52	-53	-53		40,000	-53	-55	-52	-50
	45,000	-64	-65	-64	-64		45,000	-60	-59	-56	-52
	55,000	-75	-74	-72	-74		55,000	-64	-61	-60	-58

FIGURE 23-16. PERCENTAGE FREQUENCY OF SPECIFIED CEILINGS AND VISIBILITIES

STATION		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YRS REC
Camocim.....	Ceiling <1,000 feet or visibility <3 miles.	0.2	0.0	0.2	0.2	0.9	0.0	0.2	0.0	0.0	0.0	0.0	0.0	1
	Ceiling <500 feet or visibility <1 mile.	0.0	0.0	0.0	0.0	0.3	0.0	0.2	0.0	0.0	0.0	0.0	0.0	1
Fernando de Noronha.	Ceiling <1,000 feet or visibility <3 miles.	0.3	0.4	0.7	1.4	1.8	1.3	3.6	0.2	0.3	0.2	0.0	0.2	2
	Ceiling <500 feet or visibility <1 mile.	0.0	0.0	0.0	0.6	0.2	0.1	0.4	0.0	0.0	0.0	0.0	0.0	2
Ibura.....	Ceiling <1,000 feet or visibility <3 miles.	0.4	0.2	0.3	1.1	4.4	4.1	3.5	1.9	0.9	0.3	0.2	0.2	3
	Ceiling <500 feet or visibility <1 mile.	0.1	0.0	0.0	0.1	0.5	0.4	0.4	0.2	0.2	0.0	0.0	0.0	3
Ipirá.....	Ceiling <1,000 feet or visibility <3 miles.	0.6	0.1	0.3	3.0	3.2	2.0	0.8	1.2	3.6	3.9	2.4	1.2	2
	Ceiling <500 feet or visibility <1 mile.	0.1	0.0	0.0	0.6	0.8	0.3	0.0	0.1	0.5	0.1	0.5	0.3	2
Parnamirim...	Ceiling <1,000 feet or visibility <3 miles.	1.0	0.9	0.7	1.8	1.8	7.8	5.6	2.3	1.1	0.3	0.1	0.1	3
	Ceiling <500 feet or visibility <1 mile.	0.2	0.1	0.1	0.1	0.5	1.1	0.6	0.2	0.1	0.0	0.0	0.0	3

FIGURE 23-17. MEAN NUMBER OF DAYS WITH CEILINGS <1,000 FEET

STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Belo Horizonte.....	7.3	6.3	2.8	1.0	1.6	0.0	0.4	0.4	1.6	3.2	5.8	9.8	40.2	4-5
Camocim.....	1.8	3.3	4.0	3.0	1.0	0.8	1.2	1.6	1.8	3.6	4.4	4.8	31.3	4-5
Florianópolis.....	8.3	8.1	6.4	7.4	6.3	7.6	7.0	8.7	10.1	11.9	10.3	7.9	100.0	9
Fortaleza.....	0.2	0.8	0.9	0.4	0.3	0.6	0.2	0.1	0.1	0.0	0.0	0.2	3.8	9
Foz do Iguaçú.....	na	7.7	8.0	4.7	4.3	3.3	na	3						
Paranaguá.....	3.5	2.8	4.2	5.4	6.5	6.1	7.1	8.2	6.9	6.6	6.4	5.8	69.5	8
Pelotas.....	10.5	8.5	7.5	13.5	12.0	10.0	11.5	10.5	10.0	8.5	8.0	4.0	114.5	2
Pôrto Alegre.....	4.4	4.8	5.6	8.6	12.8	9.5	12.2	13.0	9.6	8.6	5.8	5.2	100.1	8
Recife.....	0.3	1.0	2.7	2.3	4.0	4.3	6.7	6.5	0.8	1.0	1.3	0.3	31.2	6-7
Rio de Janeiro.....	5.0	3.1	4.1	5.1	6.4	7.1	5.2	6.8	5.9	5.1	4.6	4.9	63.3	7-8
Rio Grande.....	1.3	3.3	3.4	3.7	5.7	4.7	6.9	10.0	3.9	2.7	2.3	2.7	50.6	7
São Paulo.....	12.5	14.0	11.3	14.3	16.0	12.7	16.5	13.5	15.8	14.0	15.3	13.8	169.7	2.4

na Data not available.

FIGUR. 23-18. MEAN NUMBER OF DAYS WITH VISIBILITY <1 MILE

STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Belo Horizonte.....	0.5	0.3	0.4	0.4	0.8	0.2	0.6	0.0	3.2	1.0	1.2	0.8	9.4	4-5
Camocim.....	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	4-5
Fortaleza.....	0.6	1.2	2.4	1.2	0.8	0.6	0.4	0.1	0.0	0.0	0.0	0.1	7.4	9
Foz do Iguaçú.....	na	14.3	7.7	3.3	1.0	2.7	na	3						
Paranaguá.....	1.0	0.6	1.2	2.6	2.1	3.1	3.6	3.5	2.1	1.0	1.5	0.6	22.9	8
Pelotas.....	3.0	2.5	1.5	6.0	6.0	6.0	5.5	7.5	3.5	4.0	3.0	1.5	50.0	2
Pôrto Alegre.....	0.9	1.5	1.0	3.6	7.8	5.5	6.6	5.6	1.0	1.8	0.8	0.6	36.7	8
Recife.....	0.2	0.2	0.7	0.5	0.5	1.2	0.8	0.7	0.3	0.0	0.0	0.0	5.1	6-7
Rio de Janeiro.....	0.6	0.4	0.3	0.6	1.9	3.5	1.5	2.0	2.0	0.5	0.4	0.4	14.1	7-8
Rio Grande.....	0.3	0.4	1.0	1.6	4.4	2.0	6.0	6.4	1.6	0.7	0.1	0.6	25.1	7
São Paulo.....	2.5	4.3	7.3	4.7	8.0	7.3	9.0	3.0	6.8	4.8	2.3	1.8	61.8	2-4

na Data not available.

FIGURE 23-19. PERCENTAGE FREQUENCY OF SPECIFIED VISIBILITIES AT 0900 LST

STATION	RANGE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Belo Horizonte.....	miles												
	<1	0.9	0.0	0.0	0.0	0.8	0.0	0.8	0.0	5.4	2.2	0.0	0.7
	<3	3.6	0.0	0.0	0.0	0.8	0.8	0.8	1.5	22.3	14.7	5.3	4.2
Florianópolis.....	<1	0.0	0.0	0.0	1.1	0.0	0.0	1.6	0.0	0.0	0.0	0.8	0.0
	<3	0.0	0.0	0.8	1.1	0.0	0.0	1.6	0.9	4.2	1.6	3.4	0.8
	<6	0.0	0.0	6.6	1.1	0.0	0.8	2.4	8.2	5.0	4.8	10.9	2.5
Pelotas.....	<1	3.6	0.0	3.2	3.3	7.0	11.7	9.7	9.8	3.4	4.8	0.0	0.0
	<3	17.9	3.6	9.7	15.0	14.0	21.7	25.8	24.6	18.6	14.5	5.4	1.7
	<6	32.1	12.7	22.6	33.3	26.3	33.3	38.7	49.2	32.2	21.0	17.9	6.8
Pirapora.....	<1	0.0	0.0	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<3	0.0	0.0	3.2	0.0	0.0	0.0	0.0	0.0	3.4	0.0	5.0	3.2
	<6	0.0	0.4	3.2	10.0	0.0	0.0	0.0	0.0	10.2	17.7	6.7	8.1
São Luís.....	<1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uberaba.....	<1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.5	0.0
	<6	0.0	0.0	0.0	10.0	0.0	0.0	0.0	5.0	12.5	5.6	12.5	0.0

NOTE Years of record not known.

FIGURE 23-20. MEAN PRECIPITATION (INCHES)

STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Aracaju	1.5	1.8	3.3	4.2	7.4	7.0	5.8	3.1	2.1	2.8	1.3	1.9	42.1	11-18
Araguari	12.8	11.9	9.8	6.6	0.9	0.6	0.8	0.5	1.7	7.8	10.1	16.5	80.0	6
Araranguá	4.6	na	na	3.4	3.1	3.6	1.1	4.2	5.4	2.8	6.1	4.7	na	1-4
Bagé	4.3	4.3	4.0	4.5	5.5	5.6	4.4	4.9	6.3	4.3	3.6	3.8	55.6	30
Barra	7.9	2.7	2.3	1.9	2.0	0.8	0.2	0.2	1.4	0.4	5.2	9.6	34.6	2-5
Barra do Corda	6.7	8.7	8.0	6.1	2.3	1.0	0.7	0.7	1.0	2.5	3.9	5.7	47.2	9-11
Belo Horizonte	11.5	7.6	4.9	4.0	0.9	0.4	0.5	0.8	1.6	5.1	9.1	12.5	58.8	18-21
Cabo Frio	5.2	2.6	3.0	3.4	3.7	1.4	1.0	2.0	2.1	3.0	4.9	5.1	37.4	9-11
Caetité	4.8	2.9	3.0	3.5	0.6	0.4	0.5	0.3	0.9	2.5	4.6	5.6	29.6	13-20
Camocim	4.0	9.1	11.8	9.1	8.3	1.4	1.0	0.1	0.1	0.2	0.1	0.2	45.5	3-4
Carapós	7.1	4.7	4.5	3.9	2.7	1.7	2.4	1.5	2.2	4.5	5.6	7.4	48.2	22-24
Caravelas	5.8	3.3	7.2	7.7	6.1	5.1	4.5	2.7	3.4	6.0	8.4	8.1	68.3	8
Catalão*	11.7	10.2	8.8	3.7	1.1	0.3	0.5	0.3	2.3	6.1	8.2	14.9	68.1	10-13
Caxias do Sul	5.8	5.3	6.0	5.5	6.3	6.9	6.1	6.6	7.2	5.4	5.5	5.1	71.6	30
Coruripe	7.2	na	5.5	10.3	13.1	na	9.6	na	na	2.3	3.3	6.9	na	2-3
Curvelo	9.4	4.5	6.7	4.4	0.6	0.4	0.5	0.6	1.6	3.4	8.3	10.5	50.8	7
Diamantina	10.7	5.1	5.3	3.4	1.1	0.5	0.9	0.9	2.3	6.1	9.6	10.9	56.8	3-5
Fernando de Noronha	1.8	4.3	7.3	9.7	9.2	5.4	3.9	1.5	0.4	0.3	0.8	0.6	45.3	16-18
Florianópolis	7.3	5.5	5.5	3.8	3.4	2.7	1.9	3.2	4.0	4.1	4.6	3.7	49.8	17-19
Fortaleza	3.4	6.9	11.8	13.5	9.6	4.7	2.1	1.1	0.7	0.5	0.6	1.5	56.3	72
Foz do Iguaçu	na	na	2.6	4.2	7.5	7.3	na	3						
Franca	9.3	6.6	6.5	2.5	1.3	0.8	0.7	0.9	2.4	5.1	5.3	11.1	52.6	11
Garanhuns	2.7	2.6	3.8	3.3	5.2	5.7	5.4	4.6	1.8	1.1	1.2	1.8	39.0	8-10
Guarabira	2.6	5.1	5.9	5.0	5.8	9.4	6.4	6.7	1.6	0.3	0.5	0.7	50.0	8
Guaramirange	7.1	9.9	11.2	8.1	9.8	6.2	2.7	4.0	2.9	1.4	2.0	3.1	68.4	9
Guarapuava	8.7	5.8	5.4	4.5	4.6	6.5	2.7	3.6	4.6	6.9	6.6	6.1	6.6	5-9
Iguape	8.1	6.3	7.4	4.4	4.6	3.7	2.6	3.1	4.1	4.4	4.3	6.0	59.1	36
Iguatu	5.1	6.9	9.8	5.1	3.4	1.0	0.7	0.6	0.6	1.1	0.6	2.6	37.5	8-10
Ilhéus	5.8	7.3	8.8	10.2	7.9	6.3	6.4	5.4	4.8	3.8	6.7	7.3	80.7	20
Imperatriz	10.1	10.4	9.7	6.0	3.7	0.5	0.5	0.8	0.9	2.5	3.3	6.5	54.9	7
Iraí	5.0	na	7.3	1.5	na	7.9	na	2.4	4.5	4.0	10.0	7.4	na	2
Itapeva	6.3	6.8	3.7	2.2	2.6	3.5	2.1	2.3	3.5	3.9	5.2	6.5	48.6	17-19
Itaquí	5.2	3.7	5.5	6.5	6.0	5.0	3.6	3.8	5.2	6.0	5.1	5.0	60.4	30
Itatiaia	15.0	12.1	10.6	7.7	2.1	2.1	2.2	2.0	2.8	7.9	10.2	13.3	87.8	6
Jaboatão	4.6	7.5	7.4	7.1	13.0	14.7	11.3	8.8	3.5	1.3	1.4	1.9	82.4	8
Januária	8.8	3.9	4.6	2.9	1.1	0.1	0.5	0.3	1.4	3.4	8.8	10.0	45.7	12-16
João Pessoa	3.6	5.9	6.4	6.5	11.4	14.0	8.8	6.4	2.5	0.8	1.3	1.9	69.4	8
Maceió	3.0	3.2	6.0	7.0	11.7	9.9	8.2	5.1	3.4	1.6	1.3	2.1	62.5	21
Natal	1.9	4.8	7.0	9.2	7.1	8.7	7.7	3.8	1.4	0.8	0.7	1.1	54.2	18
Nazaré da Mata	6.2	4.5	6.0	4.2	7.4	7.7	7.0	5.1	1.7	1.4	2.3	1.4	55.0	8
Palmas	7.2	6.2	5.8	6.6	6.5	7.0	3.8	4.5	5.8	8.7	5.5	8.0	75.5	9-14
Paranaguá	10.7	10.6	5.9	4.9	4.6	2.7	2.9	4.7	5.4	5.0	6.3	8.2	72.0	18-21
Pelotas	3.7	4.4	4.7	3.2	3.4	4.1	6.7	3.5	5.9	4.1	3.9	3.5	51.1	7
Pirapora	9.4	7.7	6.7	2.9	0.3	0.2	0.1	0.4	1.3	4.0	7.5	9.5	50.0	18
Pôrto Alegre	4.0	3.5	3.7	4.6	4.9	5.1	4.8	5.3	4.8	4.0	3.6	3.6	51.9	32
Pôrto Seguro	2.8	6.4	6.8	9.6	10.2	5.4	8.7	2.5	3.8	4.4	4.8	7.1	72.4	2-3
Propriá	3.3	4.4	6.7	6.7	4.9	2.1	1.3	0.6	0.2	0.2	0.6	1.2	32.1	17-19
Quixeramobim	3.3	4.4	6.7	6.7	4.9	2.1	1.3	0.6	0.2	0.2	0.6	1.2	32.1	17-19
Recife	2.1	3.5	6.6	8.6	10.9	11.3	9.9	6.2	2.7	1.4	1.2	1.3	65.5	52-57
Resende	11.2	10.6	7.3	3.6	1.7	1.1	1.0	1.3	2.4	4.5	7.3	9.3	61.2	21-24
Rio de Janeiro	4.9	4.8	5.1	4.2	3.1	2.1	1.6	1.7	2.6	3.1	4.1	5.4	42.6	84-86

* Near but outside 94-I Area.

FIGURE 23-20 (Continued)

STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Rio Grande.....	3.7	4.8	4.1	4.2	4.5	4.2	4.2	4.3	4.1	3.9	3.0	2.7	47.7	30
Salvador.....	3.8	2.9	6.5	12.0	10.9	8.1	7.0	3.2	3.3	2.1	3.7	1.9	65.3	7
Santa Maria.....	5.7	5.5	5.1	6.2	7.5	6.4	5.3	5.7	6.4	6.0	4.8	5.1	69.5	30
Santa Rosa.....	6.2	4.9	5.9	7.6	7.8	7.2	5.2	5.7	7.1	7.4	5.0	6.3	76.1	20
Santa Vitória do Palmar.....	3.8	4.1	4.6	4.9	4.2	4.2	3.8	4.3	3.8	3.8	2.4	3.1	47.0	29
Santiago.....	5.6	4.0	5.2	5.8	7.1	5.8	4.6	4.7	5.9	5.1	4.1	4.6	62.5	27
São Carlos.....	12.6	8.5	6.2	2.6	1.9	2.2	1.0	1.2	2.9	5.0	6.6	9.8	60.5	18-22
São Luís.....	7.4	10.4	18.5	16.6	12.4	5.8	4.5	1.1	0.5	0.4	0.7	6.5	84.8	8
São Paulo.....	16.6	16.6	14.2	12.3	8.3	7.8	6.5	7.7	10.9	12.2	14.3	14.6	142.0	55
Teófilo Otoni.....	7.5	4.9	6.1	4.5	3.0	1.1	1.2	0.8	1.3	4.0	7.9	9.4	51.8	15-17
Teresina.....	13.7	8.4	12.3	6.9	2.8	0.9	0.3	0.2	0.4	1.0	2.2	3.3	52.3	2-7
Uberaba.....	10.6	8.3	7.8	4.9	2.5	1.0	0.8	0.7	1.6	3.3	9.5	10.6	61.6	8-11
Urussanga.....	6.2	na	na	na	na	4.0	2.4	2.1	6.1	1.9	8.3	5.2	na	2
Vacaria.....	6.5	5.4	4.7	4.3	5.1	7.2	6.0	6.8	7.2	5.6	4.2	4.5	67.5	28
Xanxerê.....	8.5	11.6	9.2	6.6	9.1	9.0	3.7	3.4	7.9	6.7	6.3	4.8	86.8	3-7

na Data not available

FIGURE 23-21. MAXIMUM 24-HOUR PRECIPITATION (INCHES)

STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Aracaju.....	2	2	5	2	3	2	2	2	1	4	2	2	5	3-11
Belo Horizonte.....	7	5	3	2	1	1	2	1	2	3	3	3	7	10
Catalão.....	3	3	4	3	3	**	2	1	2	3	4	3	4	7
Fernando de Noronha.....	3	4	3	4	4	2	2	1	**	**	**	1	4	9
Florianópolis.....	11	3	6	3	2	3	1	2	5	5	2	3	11	8
Fortaleza.....	7	7	10	10	6	4	3	3	2	2	2	5	10	59
Natal.....	2	4	5	5	3	7	3	4	3	1	1	1	7	9
Pirapora.....	6	2	3	3	1	**	**	2	1	2	2	5	6	8
Pôrto Alegre.....	4	3	3	3	3	4	2	3	3	2	3	5	5	10
Rio de Janeiro.....	4	5	5	9	2	2	2	2	2	2	3	7	9	22
Salvador.....	2	3	3	3	4	4	3	2	2	3	3	5	5	11
Santa Vitória do Palmar.....	3	3	4	3	3	2	3	3	3	3	3	3	4	7

* Near but outside 94-I Area.

** <0.5 inch.

FIGURE 23-22. MEAN NUMBER OF DAYS WITH PRECIPITATION ≥ 0.01 INCH

STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS RE
Aracaju.....	6	8	11	13	17	17	18	13	10	7	5	5	127	13-20
Araguari.....	23	16	16	10	4	1	2	3	6	11	13	21	126	6
Araranguá.....	9	na	na	6	7	10	5	4	9	6	9	11	na	2-4
Bagé.....	7	7	7	7	9	9	9	9	8	8	7	7	94	30
Barra.....	12	8	4	2	4	1	0	1	2	1	8	11	53	2-6
Barra do Corda.....	16	18	18	14	11	5	2	3	4	7	8	12	116	9-11
Bejo Horizonte.....	17	11	10	9	3	3	2	3	5	10	15	19	106	18-21
Cabo Frio.....	9	7	9	10	11	6	6	7	9	11	12	13	108	9-11
Caetité.....	13	8	10	9	7	7	5	5	4	7	15	14	103	13-20
Camocim.....	8	13	20	24	16	5	3	1	1	1	1	1	94	3-4
Campos.....	13	9	11	12	10	8	8	8	9	12	14	16	128	17-19
Caravelas.....	12	12	19	17	18	17	17	13	12	14	16	13	180	6-8
Catalão*.....	20	14	14	7	3	1	1	1	4	10	11	18	104	7
Caxias do Sul.....	13	12	13	11	11	11	10	11	12	11	11	11	137	30
Coruripe.....	12	na	15	18	18	na	18	na	na	17	11	6	na	2-3
Curvelo.....	14	6	10	9	3	1	1	2	3	9	16	16	90	6
Diamantina.....	13	9	11	10	6	5	5	3	6	10	18	16	111	3-5
Fernando de Noronha.....	7	9	14	19	16	12	9	6	3	2	2	4	103	9
Florianópolis.....	13	14	13	11	10	9	7	8	11	12	12	12	131	17-19
Fortaleza.....	7	12	16	19	15	10	6	4	4	4	3	4	102	59
Franca.....	17	13	15	7	3	3	2	3	5	11	13	17	109	11
Garanhuns.....	8	7	10	13	22	22	20	20	12	7	4	7	150	8-10
Guarabira.....	6	7	11	10	13	17	15	12	6	2	2	4	105	8
Guaramiranga.....	17	18	23	20	19	15	11	11	11	10	12	13	180	10-12
Guarapuava.....	13	12	11	8	8	7	6	7	10	11	9	14	116	10-14
Iguatu.....	10	13	16	11	7	6	4	3	1	3	2	5	81	8-10
Ilhéus.....	11	16	18	17	16	14	17	16	13	12	13	13	176	17
Imperatriz.....	21	19	20	16	3	5	3	3	4	8	9	15	126	7
Iraí.....	13	12	12	10	10	10	10	10	11	10	10	11	129	6
Itapeva.....	12	12	8	5	6	6	4	4	7	9	9	11	93	17-19
Itaqui.....	6	5	7	7	7	8	6	7	7	8	6	7	81	28
Itatiaia.....	27	22	23	17	10	6	6	8	10	17	22	25	193	8
Jaboatão.....	19	18	19	21	26	27	26	25	18	11	11	14	235	8
Januária.....	13	6	7	5	1	0	2	1	3	7	11	14	70	12-16
João Pessoa.....	15	15	16	17	22	26	25	23	16	8	8	11	202	8
Maceió.....	10	10	15	18	22	22	22	19	15	8	8	10	179	21
Natal.....	10	12	15	17	17	18	18	14	8	5	6	7	147	21
Nazaré da Mata.....	14	14	15	13	20	23	23	21	14	8	10	7	175	9-10
Palmas.....	12	12	9	10	8	9	8	6	10	11	9	13	116	9-14
Paranaguá.....	10	11	12	7	5	2	4	6	6	8	7	18	96	3
Pelotas.....	10	12	12	9	10	8	12	10	10	11	8	8	120	7
Pirapora.....	16	13	14	7	2	1	1	2	3	9	15	18	101	18
Pôrto Alegre.....	10	9	10	10	10	12	10	12	11	11	9	9	123	32
Pôrto Seguro.....	9	13	13	18	18	21	23	14	15	16	17	16	192	2-3
Propriá.....	11	10	14	12	10	8	5	3	1	0	2	4	79	26-28
Quixeramobim.....	11	10	14	12	10	8	5	3	1	0	2	4	79	26-28
Recife.....	10	12	14	17	21	21	22	19	11	8	7	6	167	15-20
Resende.....	20	16	16	14	11	9	8	8	10	14	17	21	165	21-24
Rio de Janeiro.....	13	11	12	10	10	7	7	7	11	13	13	14	128	84
Rio Grande.....	9	9	10	9	10	10	10	11	9	9	7	7	110	30
Salvador.....	8	10	13	15	20	18	13	14	11	6	9	5	143	7
Santa Maria.....	9	8	9	9	10	11	10	10	10	10	8	9	113	30
Santa Rosa.....	8	6	7	8	8	10	7	8	9	8	6	7	92	20
São Carlos.....	16	14	11	6	4	4	2	3	6	9	12	15	101	14-18
São Luís.....	14	17	23	25	22	16	12	5	4	2	3	7	150	10
São Paulo.....	18	16	15	12	11	10	8	10	13	16	16	16	161	48
Teófilo Otoni.....	13	11	14	13	10	10	9	6	5	8	14	16	126	15-17
Teresina.....	14	13	16	13	6	4	2	1	3	4	4	7	87	2-7
Uberaba.....	23	16	16	10	5	3	3	4	6	12	16	21	134	9-12
Urussanga.....	11	na	na	na	na	9	9	6	16	9	15	17	na	2
Xanxerê.....	11	13	12	8	7	8	6	5	8	8	7	8	100	3-7

na Data not available.

* Near but outside 94-I Area.

FIGURE 23-23. MEAN DAILY TEMPERATURE (°F.)

STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Aracaju	80	81	81	80	79	77	76	76	77	78	79	80	79	14-21
Araranguá	75	74	69	67	63	58	55	54	59	65	68	71	65	2-4
Bagé	75	74	71	65	59	54	54	56	59	62	68	72	64	30
Barra	na	81	80	80	77	75	75	76	80	83	82	na	na	2-7
Barra do Corda	80	80	80	80	79	78	78	79	82	83	82	81	80	12-14
Belo Horizonte	73	73	73	72	66	64	64	66	70	71	72	72	70	21-24
Cabo Frio	78	78	78	76	73	70	70	70	70	72	73	76	74	9-11
Caetité	73	74	74	73	70	67	67	68	72	73	73	73	71	15-23
Camocim	81	81	81	81	81	82	82	82	83	82	82	81	82	1
Campos	79	80	79	76	72	70	69	70	71	73	75	77	74	19-21
Caravelas	79	79	78	77	74	71	70	71	72	75	76	77	75	6-8
Catalão*	73	73	73	72	69	67	68	70	73	74	74	72	72	11-15
Caxias do Sul	69	68	66	62	57	53	53	55	56	59	63	67	61	30
Coruripe	82	81	81	80	79	77	75	na	78	79	81	83	na	2-3
Curvelo	75	75	75	73	68	66	66	69	73	74	74	73	72	10
Diamantina	71	71	70	68	65	61	60	64	64	65	67	67	66	3-5
Fernando de Noronha	80	80	80	79	79	78	77	77	78	78	79	79	79	17-19
Florianópolis	77	77	75	69	68	64	63	63	64	68	71	74	69	17-19
Fortaleza	80	80	81	80	79	79	78	79	80	81	81	82	80	4
Franca	72	73	71	69	65	64	64	67	69	70	72	71	69	11
Garanhuns	72	72	77	75	69	66	65	66	67	71	73	73	71	10-12
Guarabira	80	81	81	80	80	78	78	77	78	79	80	78	79	8
Guaramiranga	70	70	70	71	69	68	67	68	69	69	70	71	69	10-12
Guarapuava	69	68	66	62	57	54	55	57	58	62	65	68	62	11-14
Iguatu	82	81	78	79	78	81	82	83	82	83	83	83	81	8-10
Ilhéus	79	79	79	78	76	74	73	73	75	76	78	79	77	17-20
Imperatriz	76	76	76	76	76	73	73	74	76	77	76	77	76	9
Irái	75	74	72	67	62	59	57	61	62	66	69	73	66	6
Itapeva	74	78	73	70	64	60	61	63	65	68	70	73	68	17-19
Itaqui	78	76	74	68	62	58	57	59	62	66	71	76	67	28
Itatiaia	57	57	56	53	51	49	49	50	54	54	55	55	53	8
Jacatão	77	78	78	77	76	74	73	73	74	75	76	77	76	8
Januária	76	77	78	76	74	71	71	73	76	79	77	76	75	13-16
João Pessoa	79	80	80	79	78	76	75	75	76	78	79	79	78	8
Maceió	80	81	81	79	78	76	76	75	77	78	79	80	78	2-6
Natal	82	81	81	80	79	77	75	76	78	80	81	82	79	18
Nazaré da Mata	79	78	78	79	71	74	72	73	75	77	78	79	76	9-10
Palmas	70	69	67	62	56	54	54	55	58	62	65	67	62	9-13
Paranaguá	77	78	74	70	65	61	63	65	65	69	72	77	70	3
Pelotas	74	74	70	67	61	55	56	55	59	62	67	71	64	7
Pirapora	76	77	78	76	72	69	68	72	76	78	77	76	74	9-13
Pôrto Alegre	76	76	74	68	62	58	57	59	62	65	70	74	67	32
Pôrto Seguro	78	78	78	76	74	72	71	71	72	74	75	76	75	2-3
Propriá	84	84	84	82	80	77	75	75	78	81	83	86	81	2-5
Quixeramobim	84	83	82	81	81	80	80	82	83	84	85	85	83	28-31
Recife	81	81	81	79	78	77	76	76	77	79	80	81	79	15-20
Resende	74	74	73	70	65	61	60	62	66	70	72	73	68	18-20
Rio de Janeiro	79	79	78	75	72	70	69	70	70	71	74	77	73	79-81
Rio Grande	74	74	72	67	61	56	55	56	59	62	67	71	64	30
Salvador	80	80	80	79	77	75	74	74	76	77	78	79	77	11
Santa Maria	77	76	73	67	61	58	57	59	62	65	70	75	67	30
Santa Rosa	77	76	74	67	61	59	57	60	64	66	71	75	67	20
São Carlos	72	73	71	69	65	63	63	65	67	69	71	72	68	14-17
São Luís	80	79	79	79	79	79	79	79	80	80	80	80	80	10
São Paulo	70	71	69	66	61	60	59	60	61	62	66	68	64	44
Teófilo Otoni	78	78	78	75	71	70	67	69	72	75	75	77	74	15-17
Teresina	81	81	81	81	80	81	80	82	84	85	84	85	82	2-8
Uberaba	75	75	75	73	69	67	67	69	74	74	74	74	72	11-14
Urussanga	76	na	na	na	62	59	57	60	63	68	69	72	na	2
Xanxerê	70	71	67	62	57	53	52	53	55	62	66	69	61	3-8

na Data not available.

* Near but outside NIS 94-I Area.

FIGURE 23-24. MEAN DAILY MAXIMUM (OBSERVATIONS AT 1400 LST) AND MINIMUM (OBSERVATIONS AT 0700 LST) TEMPERATURES (°F.)

STATION		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Aracaju.....	Max	85	86	86	86	84	82	81	81	82	83	84	85	84	13-20
	Min	75	75	75	75	73	72	71	71	72	73	74	75	73	13-20
Araguari.....	Max	82	82	83	83	77	73	76	80	86	85	83	82	81	6
	Min	64	64	67	64	58	54	54	56	60	62	61	62	61	6
Araranguá.....	Max	85	83	80	79	75	70	70	72	70	76	76	74	77	2-4
	Min	66	na	na	60	57	53	49	50	53	58	59	61	na	2-4
Bagé.....	Max	86	85	82	75	69	64	64	66	69	73	79	86	75	30
	Min	64	64	61	56	51	47	46	42	49	52	57	61	55	30
Barra.....	Max	na	91	91	92	89	89	89	91	94	96	93	na	na	2-6
	Min	70	70	70	68	64	60	60	61	66	70	71	71	67	2-6
Barra do Corda.....	Max	89	88	88	89	89	90	92	94	95	94	93	91	91	9-11
	Min	71	71	71	71	69	66	64	65	69	72	71	71	69	9-11
Belo Horizonte.....	Max	81	81	82	81	76	76	76	78	81	81	80	79	79	18-21
	Min	65	65	64	62	56	52	52	55	59	62	63	64	60	18-21
Cabo Frio.....	Max	83	84	84	81	78	77	76	75	75	77	78	81	79	9-11
	Min	72	73	72	70	67	64	64	64	66	67	68	71	68	9-11
Caetité.....	Max	83	83	83	82	79	77	77	79	83	84	83	81	81	12-20
	Min	64	64	64	64	61	58	56	57	60	62	64	64	61	12-20
Camocim.....	Max	88	88	88	87	88	89	90	91	93	91	89	89	90	1
	Min	74	74	74	74	74	74	74	74	74	74	74	73	74	1
Campos.....	Max	87	88	87	84	81	80	79	79	80	81	83	84	83	17-19
	Min	71	71	70	68	64	61	59	60	63	65	68	70	66	17-19
Caravelas.....	Max	86	87	85	84	82	79	78	79	80	81	82	84	82	6-8
	Min	71	71	71	70	67	64	63	63	65	68	70	71	68	6-8
Catalão*.....	Max	81	82	82	82	80	78	79	82	84	84	82	80	81	9-14
	Min	65	65	65	63	59	56	57	58	62	64	65	65	62	9-14
Caxias do Sul.....	Max	80	79	77	72	66	63	63	65	67	70	75	78	71	30
	Min	61	61	59	54	50	46	45	47	49	51	54	58	53	30
Coruripe.....	Max	88	87	86	85	83	82	80	na	83	84	86	88	na	2-3
	Min	69	na	70	70	70	na	68	na	na	68	70	69	na	2-3
Curvelo.....	Max	85	87	87	85	81	81	81	84	86	87	85	84	85	10
	Min	64	63	64	61	54	52	50	54	59	60	62	63	59	10
Diamantina.....	Max	79	79	78	77	73	70	69	75	71	72	73	72	74	3-5
	Min	62	62	61	60	56	52	51	53	56	58	60	61	58	3-5
Fernando de Noronha.....	Max	85	85	83	83	82	81	80	80	81	82	83	83	82	16-19
	Min	76	76	76	74	77	76	76	76	77	78	78	78	77	16-19
Florianoópolis.....	Max	83	82	81	74	73	69	68	68	70	73	76	79	75	17-19
	Min	72	72	70	64	63	58	57	57	59	63	66	69	64	17-19
Foz de Taquara.....	Max	87	87	87	87	87	86	86	86	86	87	87	88	87	4
	Min	74	74	74	74	72	72	70	71	73	75	75	75	73	4
Foz de Taquara.....	Max	80	82	80	79	76	75	76	79	81	80	81	80	79	11
	Min	63	64	62	59	55	53	53	55	57	60	61	62	59	11
Garanhuns.....	Max	82	82	82	80	76	72	72	73	75	81	85	83	79	8-12
	Min	62	63	63	62	63	60	59	59	60	61	62	62	61	8-12
Guarabira.....	Max	89	92	91	90	90	88	87	86	87	89	91	86	89	8
	Min	71	70	70	70	70	69	68	68	69	69	70	70	70	8
Guaramiranga.....	Max	80	80	79	78	77	76	77	79	81	82	82	82	79	10-12
	Min	65	65	65	65	65	63	62	62	62	63	64	64	64	10-12
Guarapuava.....	Max	79	78	76	73	67	64	66	70	69	74	77	79	73	11-14
	Min	61	62	58	55	49	46	47	48	50	53	55	59	54	11-14
Iguatu.....	Max	92	90	86	87	86	87	89	92	95	96	95	94	91	8-10
	Min	72	72	71	71	69	74	75	75	70	70	72	72	72	8-10
Ilhéus.....	Max	87	87	87	86	84	81	81	80	82	84	84	86	84	17-20
	Min	72	72	72	71	69	67	66	65	67	69	71	72	69	17-20
Imperatriz.....	Max	87	87	87	88	89	90	92	92	93	93	91	89	90	7
	Min	70	70	71	70	69	64	62	63	66	68	69	70	68	7
Iraí.....	Max	90	89	87	79	75	70	70	76	77	82	86	90	81	6
	Min	63	63	60	57	53	50	46	49	50	53	57	61	55	6
Itapeva.....	Max	84	92	86	82	77	71	74	77	76	80	81	84	80	17-19
	Min	63	64	60	57	52	49	47	49	53	56	59	61	56	17-19
Itaqui.....	Max	91	90	86	79	73	67	67	70	74	77	84	89	79	28
	Min	67	66	64	59	53	50	49	50	53	56	60	54	57	28

FIGURE 23-24 (Continued)

STATION		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Itatiaia.....	Max	62	62	61	59	57	56	57	57	61	60	60	61	60	6
	Min	51	51	50	47	44	42	42	43	46	47	48	50	47	6
Jaboatão.....	Max	85	85	85	85	82	81	79	80	81	83	85	85	83	8
	Min	70	70	70	70	70	68	67	67	67	68	68	69	69	8
Januária.....	Max	86	89	89	88	86	85	85	89	92	92	88	85	88	12-16
	Min	66	66	67	65	61	57	57	58	61	66	67	66	63	12-16
João Pessoa.....	Max	87	87	88	87	85	83	82	82	84	86	87	87	85	8
	Min	71	72	72	72	71	70	69	68	69	69	71	71	71	8
Maceió.....	Max	87	87	87	85	84	82	81	81	84	85	87	88	85	2-6
	Min	73	75	75	73	73	71	70	69	71	72	72	73	72	2-6
Natal.....	Max	87	86	86	86	85	83	82	82	84	85	86	86	85	18-19
	Min	76	76	75	73	73	71	69	69	72	75	76	77	74	18-19
Nazaré da Mata.....	Max	89	87	87	87	83	74	80	81	83	86	87	89	84	9-10
	Min	70	70	70	70	69	66	65	65	65	66	68	68	68	9-10
Palmas.....	Max	82	80	78	73	66	64	66	67	69	73	77	80	73	9-13
	Min	59	58	56	51	46	43	43	43	46	51	53	55	50	9-13
Pelotas.....	Max	83	82	78	76	70	64	64	64	66	69	75	80	73	7
	Min	65	66	61	58	52	45	49	47	52	55	58	61	56	7
Pirapora.....	Max	84	86	87	86	84	82	83	86	89	89	86	85	86	9-13
	Min	68	68	68	66	59	55	54	58	63	66	68	67	63	9-13
Pôrto Alegre.....	Max	87	86	83	78	71	67	66	68	70	74	80	84	76	32
	Min	68	68	65	60	54	50	49	51	54	57	60	64	58	32
Pôrto Seguro.....	Max	84	84	85	82	80	78	76	78	79	80	80	82	81	2-3
	Min	71	71	72	70	68	66	65	65	66	68	70	71	69	2-3
Propriá.....	Max	92	93	93	91	88	84	82	83	87	90	91	94	89	2-5
	Min	70	69	68	<i>n a</i>	65	62	63	59	61	65	67	70	<i>n a</i>	2-5
Quixeramobim.....	Max	92	90	88	87	87	87	88	90	92	93	93	93	90	26-28
	Min	77	76	76	75	74	73	73	74	75	76	76	77	75	26-28
Recife.....	Max	86	86	86	85	83	82	81	81	82	84	85	86	84	4-9
	Min	77	76	75	74	73	71	71	71	73	74	75	76	74	4-9
Rio de Janeiro.....	Max	84	85	83	80	77	76	75	76	75	77	79	82	79	38-40
	Min	73	73	72	69	66	64	63	64	65	66	68	71	68	38-40
Rio Grande.....	Max	81	81	79	77	68	62	62	62	64	68	72	76	71	30
	Min	68	68	66	61	55	51	50	51	54	57	60	65	59	30
Salvador.....	Max	87	87	87	86	83	80	80	80	82	83	85	85	84	11
	Min	73	74	73	73	72	70	69	69	70	71	72	73	72	11
Santa Maria.....	Max	89	88	84	78	72	67	67	67	72	76	80	87	77	30
	Min	66	65	63	58	53	50	49	50	53	55	59	63	57	30
Santa Rosa.....	Max	91	89	87	79	73	69	69	73	76	79	85	89	80	20
	Min	65	64	62	57	51	50	47	49	52	54	59	62	56	20
Santa Vitória do Palmar.....	Max	83	81	77	73	68	62	60	62	64	66	72	78	71	29
	Min	62	64	61	58	56	48	47	48	49	52	56	58	55	29
Santiago.....	Max	86	84	82	73	70	63	64	65	68	72	74	85	72	27
	Min	65	63	61	57	51	48	47	49	50	52	54	60	55	27
São Carlos.....	Max	82	84	82	80	76	75	75	78	80	81	82	82	80	14-18
	Min	62	62	60	58	54	51	50	52	54	57	59	61	57	14-18
São Luís.....	Max	85	85	85	85	83	87	87	86	86	86	86	86	86	8
	Min	75	74	74	74	74	74	74	74	75	75	75	75	75	8
São Paulo.....	Max	77	79	76	73	68	66	66	67	67	68	72	75	71	44
	Min	63	64	62	59	54	54	53	53	55	57	59	62	58	44
Teófilo Otoni.....	Max	86	86	85	82	79	79	76	78	81	83	83	84	82	14-17
	Min	70	70	70	68	64	61	59	60	63	67	68	69	66	14-17
Teresina.....	Max	90	89	88	89	90	91	92	95	96	97	95	96	92	2-8
	Min	72	72	73	73	70	70	68	68	71	73	73	74	71	2-8
Uberaba.....	Max	83	85	85	83	80	79	80	82	86	85	84	82	83	9-12
	Min	66	66	65	63	58	54	54	56	61	64	65	66	61	9-12
Urussanga.....	Max	<i>n a</i>	<i>n a</i>	<i>n a</i>	<i>n a</i>	74	73	71	75	<i>n a</i>	79	79	<i>n a</i>	<i>n a</i>	2
	Min	65	<i>n a</i>	<i>n a</i>	<i>n a</i>	<i>n a</i>	53	49	50	55	58	59	61	<i>n a</i>	2
Vacaria.....	Max	82	80	78	75	68	66	66	68	69	72	75	80	73	28
	Min	58	57	55	50	44	43	41	43	46	48	50	54	49	28
Xanxerê.....	Max	82	80	79	74	70	70	66	73	72	72	77	81	74	3-8
	Min	60	60	57	53	48	45	43	43	46	51	54	56	51	3-8

n a Data not available.

* Near but outside the 94-I Area.

FIGURE 23-25. ABSOLUTE MAXIMUM (OBSERVATIONS AT 1400 LST) AND MINIMUM (OBSERVATIONS AT 0700 LST) TEMPERATURES (°F.)

STATION		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Aracaju.....	Max	89	90	97	91	91	91	88	88	87	86	88	87	97	9
	Min	70	69	71	70	70	66	66	66	66	68	68	70	66	9
Bagé.....	Max	106	104	111	97	87	84	85	88	94	98	97	104	111	36
	Min	44	44	42	35	30	23	23	27	31	33	38	43	23	36
Barra do Corda.....	Max	99	95	95	94	95	97	99	100	102	103	100	102	103	5-8
	Min	66	64	68	66	61	59	54	54	59	57	55	66	54	5-8
Belo Horizonte.....	Max	95	91	95	89	87	84	85	88	94	92	93	91	95	10
	Min	58	57	55	49	41	36	36	42	41	49	54	55	36	10
Caetité.....	Max	95	93	95	93	91	89	89	91	96	97	95	95	97	11
	Min	59	58	59	59	53	49	50	51	53	54	57	57	49	11
Camocim.....	Max	94	92	92	92	92	94	94	96	98	98	94	94	98	1
	Min	71	73	71	73	69	69	71	69	71	71	71	71	69	1
Campos.....	Max	100	95	98	98	94	94	88	98	94	97	99	102	102	8
	Min	63	60	60	53	50	46	45	46	47	49	58	52	45	8
Catalão*.....	Max	91	89	91	87	88	86	87	90	95	94	91	91	95	8
	Min	60	58	59	55	40	35	43	38	41	55	53	57	35	8
Caxias do Sul.....	Max	96	95	95	87	83	80	83	86	88	91	91	96	96	36
	Min	41	41	39	31	26	21	20	23	28	30	36	38	20	36
Curvelo.....	Max	94	95	93	91	90	88	88	99	97	97	96	96	99	6
	Min	52	55	55	51	47	34	40	39	45	50	50	53	34	6
Fernando de Noronha.....	Max	86	85	86	85	84	84	83	83	84	85	85	86	86	9
	Min	70	69	69	71	68	69	69	69	69	70	66	70	66	9
Florianópolis.....	Max	93	92	89	86	85	78	84	<i>na</i>	83	84	89	91	<i>na</i>	8
	Min	59	65	59	58	46	36	34	39	46	52	57	60	34	8
Fortaleza.....	Max	91	91	93	91	91	89	91	91	91	91	91	91	93	4
	Min	70	70	68	70	68	68	64	66	68	70	70	70	64	4
Franca.....	Max	92	96	93	90	87	84	86	90	98	96	95	94	98	11
	Min	52	58	55	41	40	37	34	33	35	45	50	53	33	11
Guarabira.....	Max	101	104	104	97	<i>na</i>	94	98	98	93	98	103	104	<i>na</i>	8
	Min	67	65	65	66	64	64	59	63	63	64	65	65	59	8
Guaramirim.....	Max	87	87	87	88	86	85	83	85	85	88	89	87	89	9
	Min	60	60	62	61	61	59	56	58	59	59	59	61	56	9
Guara.....	Max	93	90	90	83	78	73	73	78	82	85	88	91	93	5
	Min	46	52	50	39	33	23	27	32	36	42	43	49	23	5
Iguatu.....	Max	99	100	95	91	92	94	93	97	99	99	102	100	102	7
	Min	67	63	63	65	62	<i>na</i>	<i>na</i>	<i>na</i>	61	60	62	67	<i>na</i>	7
Ilhéus.....	Max	101	93	92	92	92	90	87	86	87	88	89	91	101	11
	Min	<i>Data not available</i>													
Imperatriz.....	Max	95	94	93	94	93	95	96	98	98	103	98	98	103	7
	Min	66	65	67	66	61	57	53	52	58	63	64	66	52	7
Iraí.....	Max	105	104	104	93	91	87	91	93	99	101	102	106	106	12
	Min	42	42	39	33	32	23	23	24	30	35	38	43	23	12
Itaqui.....	Max	107	104	104	98	91	85	89	95	97	100	103	107	107	34
	Min	47	48	45	37	30	24	23	29	33	36	38	45	23	34
Itatiaia.....	Max	69	71	70	66	70	65	68	66	74	72	70	70	74	6
	Min	40	36	39	33	34	23	21	26	28	32	34	37	21	6
Jaboatão.....	Max	91	89	92	90	87	86	83	84	86	89	91	90	92	8
	Min	65	66	64	65	64	62	60	61	60	62	62	64	60	8

FIGURE 23-25 (Continued)

STATION		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Januária.....	Max	98	100	102	95	95	94	93	98	102	102	101	102	102	7
	Min	58	56	57	53	47	44	44	46	47	54	54	57	44	7
João Pessoa.....	Max	93	93	94	94	89	87	87	85	91	91	91	93	94	8
	Min	65	67	67	66	67	66	63	64	64	65	63	65	63	8
Natal.....	Max	89	90	90	89	91	89	87	87	89	89	89	88	91	13
	Min	68	68	66	61	65	64	63	63	64	68	65	68	61	13
Nazaré da Mata.....	Max	96	94	95	93	90	88	85	87	89	92	94	92	96	8
	Min	65	60	64	63	66	55	58	62	52	60	60	62	52	8
Palmas.....	Max	95	92	89	84	78	73	75	78	82	84	89	93	95	3
	Min	43	44	47	32	23	20	24	21	25	36	41	45	20	3
Paranaguá.....	Max	95	91	95	90	77	78	78	79	74	82	90	92	95	3
	Min	68	72	60	48	46	40	47	43	38	55	54	70	38	3
Pelotas.....	Max	100	98	97	98	90	86	85	72	73	95	96	102	102	7
	Min	45	54	46	43	35	30	28	28	36	38	43	46	28	7
Pirapora.....	Max	96	96	100	94	93	90	90	94	100	100	99	99	100	8
	Min	58	60	61	58	49	44	46	44	48	58	51	60	44	8
Pôrto Alegre.....	Max	105	105	102	97	92	88	91	92	97	100	100	103	105	38
	Min	51	52	48	40	30	28	25	30	32	39	44	46	25	38
Quixeramobim.....	Max	99	99	98	96	95	94	93	95	98	98	98	98	99	24
	Min	69	69	69	68	66	64	66	65	70	71	71	69	64	24
Rio de Janeiro.....	Max	102	98	97	94	95	90	91	93	100	102	100	102	102	49
	Min	60	63	64	60	56	52	52	53	50	57	59	56	50	49
Rio Grande.....	Max	106	99	100	92	86	93	82	89	85	93	95	98	106	36
	Min	52	50	50	37	34	31	31	33	38	40	41	44	31	36
Salvador.....	Max	94	95	94	94	89	90	85	86	88	95	92	92	95	11
	Min	68	69	66	66	68	64	65	62	63	66	68	67	62	11
Santa Maria.....	Max	106	104	103	100	91	87	92	94	98	41	104	106	106	36
	Min	49	48	46	38	31	28	27	32	35	37	41	46	27	36
Santa Rosa.....	Max	103	103	103	96	89	85	87	95	93	98	100	104	104	26
	Min	43	24	24	34	23	24	21	24	29	31	41	43	21	26
Santa Vitória do Palmar.....	Max	106	107	102	92	88	80	79	83	90	91	93	100	107	35
	Min	42	48	43	39	33	20	22	28	30	31	31	38	20	35
Santiago.....	Max	102	100	101	92	82	81	82	88	90	92	93	100	102	33
	Min	44	40	40	38	30	24	24	28	30	31	36	40	24	33
São Carlos.....	Max	93	92	91	89	86	83	86	89	96	94	94	93	96	9
	Min	48	51	46	46	37	30	32	33	32	37	42	42	30	9
São Luís.....	Max	90	91	91	91	92	91	91	90	90	90	91	92	92	8
	Min	70	69	69	69	68	69	70	70	72	72	71	70	68	8
São Paulo.....	Max	93	91	90	86	82	81	81	84	88	90	90	93	93	44
	Min	52	52	53	46	43	34	32	37	32	39	45	50	32	44
Teófilo Otoni.....	Max	93	94	94	88	88	89	85	89	93	93	95	93	95	9
	Min	62	62	64	58	54	45	46	46	46	55	57	61	45	9
Teresina.....	Max	94	96	95	95	94	94	93	95	96	100	97	97	100	8
	Min	60	59	61	61	68	68	65	67	68	68	67	68	59	8
Uberaba.....	Max	91	93	94	89	89	86	89	90	97	95	92	91	97	7
	Min	59	55	59	53	38	36	34	38	46	52	49	55	34	7
Vacaria.....	Max	95	93	95	88	82	79	80	87	89	91	90	92	95	34
	Min	39	39	37	30	21	20	20	20	26	30	32	37	20	34

n a Data not available.

* Near but outside 94-I Area.



FIGURE 23-26. MEAN DAILY RELATIVE HUMIDITY (%)

STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Aracaju.....	80	79	80	80	83	74	82	80	79	79	79	81	80	9
Araguari.....	90	85	90	87	83	80	78	74	75	81	84	87	83	6
Barra do Corda.....	84	85	86	86	84	80	75	71	70	72	75	80	79	8
Belo Horizonte.....	77	76	76	76	72	69	70	69	68	71	71	75	72	10
Caetité.....	75	70	74	76	75	73	69	66	63	67	73	76	71	11
Campos.....	82	81	84	84	83	82	80	81	80	83	81	82	82	10
Catalão*.....	83	80	81	79	75	72	65	62	63	70	77	83	74	8
Curvelo.....	88	83	85	85	84	82	80	76	66	74	83	82	81	6
Fernando de Noronha.....	84	85	86	87	87	84	82	81	81	80	81	83	83	9
Florianópolis.....	79	79	81	81	80	82	81	80	81	81	79	78	80	8
Franca.....	81	79	80	76	72	70	63	58	59	71	74	78	72	11
Garanhuns.....	80	80	82	85	88	91	91	90	88	81	77	78	84	6
Guarabira.....	75	78	79	79	81	84	84	84	81	78	76	75	80	8
Guaramiranga.....	86	88	89	90	90	89	86	83	81	80	81	82	86	9
Guarapuava.....	78	77	78	79	80	80	77	72	77	78	72	77	77	5
Iguatu.....	72	79	86	89	87	80	71	66	64	60	61	66	73	7
Ilhéus.....	88	89	91	93	92	92	92	91	88	89	88	88	90	11
Imperatriz.....	95	95	92	95	95	93	90	86	84	85	88	92	91	7
Itapeva.....	75	79	77	77	77	80	75	74	75	73	72	74	76	10
Jaboatão.....	84	84	84	86	87	87	86	85	83	82	79	81	84	8
Januária.....	93	90	88	88	85	84	83	80	78	82	88	92	86	7
João Pessoa.....	81	82	83	84	87	88	87	na	85	82	80	81	na	8
Natal.....	76	76	76	80	80	81	81	78	76	76	75	75	78	9
Palmas.....	84	87	86	90	89	88	87	83	83	81	77	83	85	3
Parangará.....	77	77	83	82	85	83	85	83	84	83	80	82	82	3
Passo Fundo.....	83	82	84	83	84	84	85	85	84	83	85	86	84	7
Pelotas.....	75	80	81	81	82	79	83	82	82	79	76	73	79	7
Pirapora.....	81	76	77	78	76	73	69	63	58	63	74	79	72	8
Pôrto Alegre.....	70	72	73	76	78	79	80	78	77	74	72	69	75	na
Quixeramobim.....	60	65	70	71	69	64	59	56	54	53	54	55	61	24
Recife.....	72	73	74	74	77	77	77	76	72	70	71	71	74	11
Resende.....	82	81	83	83	82	81	80	76	77	78	78	80	80	10
Rio de Janeiro.....	78	78	80	80	79	80	78	76	79	79	79	78	79	29
Rio Grande.....	76	78	78	79	82	81	83	82	81	79	76	74	79	10
Salvador.....	83	83	83	84	84	84	83	83	83	83	83	84	83	11
Santa Maria.....	75	75	80	80	81	80	78	77	79	79	76	73	78	7
Santa Vitória do Palmar.....	78	81	82	85	87	87	88	85	86	83	80	76	83	7
São Carlos.....	79	77	77	74	72	74	65	64	67	70	73	76	73	9
São Luís.....	82	83	85	87	86	84	83	82	79	77	77	80	82	8
São Paulo.....	82	83	81	82	80	79	75	73	77	78	80	80	79	16
Teófilo Otoni.....	83	83	84	87	86	87	86	86	82	82	80	85	84	9
Uberaba.....	81	77	78	77	74	70	61	58	58	67	73	78	71	7

* Near but outside 94-I Area.

FIGURE 23-27. MEAN DAILY SURFACE WIND VELOCITY (KNOTS)

STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Catalão*.....	3.9	3.5	3.7	2.9	2.9	3.7	3.3	4.1	4.5	4.1	3.9	4.3	3.6	7
Fernando de Noronha.....	13.2	11.7	11.1	12.4	13.2	14.8	15.5	14.8	14.0	13.8	13.4	12.6	13.4	9
Florianópolis.....	5.7	5.3	4.9	4.9	4.9	5.3	4.9	6.0	7.6	7.2	7.6	7.2	6.0	8
Natal.....	7.0	6.0	5.8	5.8	6.0	6.6	6.4	7.4	8.0	8.0	7.6	7.6	6.9	6
Pirapora.....	1.8	1.9	1.8	1.9	1.9	1.9	2.1	1.9	2.1	2.3	2.5	2.7	2.1	2.5
Pôrto Alegre.....	3.5	2.7	3.1	2.1	1.8	1.6	1.9	3.1	4.3	3.3	3.1	3.3	2.8	10
Rio de Janeiro.....	6.4	6.0	6.0	6.0	5.2	4.6	5.0	5.4	5.8	6.2	6.6	6.4	5.8	5

* Near but outside 94-I Area.

FIGURE 23-28. PREVAILING DIRECTION OF SURFACE WIND (SUMMATION OF 0700, 1400, AND 2100 LST OBSERVATIONS)

STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Araranguá.....	C	C	C	C	C	C	C	C	C	C	C	C	C	2-4
Bagé.....	SE	SE	SE	SE	NE	NE	NE	NE	SE	SE	SE	SE	SE	36
Barra.....	N	N	N	N	SE	SE	SE	E	N	N	N	N	N	8
Barra do Corda.....	C	C	C	C	C	C	C	C	C	C	C	C	C	2-3
Belo Horizonte.....	SE	SE	NE	NE	NE	SE	NE	NE	NE	NE	SE	S	NE	10
Cabo Frio.....	NE	9-11												
Caetité.....	SE	8												
Campos.....	N	N	N	C	C	C	C	C	C	C	C	C	C	9-11
Car velas.....	NE	NE	C	NE	NW	C	C	C	N	NE	NE	NE	NE	6-8
Catalão*.....	C	C	SE	C	E	E	E	E	E	E	C	E	E	7
Caxias do Sul.....	SE	SE	SE	SE	NW	NW	NW	NW	SE	SE	SE	SE	SE	36
Coruripe.....	NE	SE	SE	SE	SE	SE	SE	na	NE	SE	NE	NE	SE	2-3
Curvelo.....	NE	SE	NE	E	SW	SW	SE	SE	SW	SE	NE	SE	SE	6
Diamantina.....	NE	NE	SE	NE	SE	3-5								
Fernando de Noronha.....	E	S	E	E	E	E	S	E	E	S	E	E	E	9
Florianópolis.....	S	S	N	S	S	S	S	S	S	S	S	S	S	8
Fortaleza.....	SE	C	C	SE	E	E	SE	2-5						
Franca.....	NE	11												
Garanhuns.....	E	E	SE	NE	E	NE	E	E	E	NE	SE	SE	E	6
Guarabira.....	SE	8												
Guarapuava.....	C	C	E	E	E	E	E	E	E	E	E	E	E	6-9
Iguatu.....	C	C	C	C	C	SE	2-3							
Ilhéus.....	NE	NE	E	E	SW	SW	SW	SW	E	NE	NE	NE	E	2-9
Imperatriz.....	C	C	C	C	C	C	C	C	C	C	C	C	C	7
Iraí.....	SE	SE	SE	E	SE	E	SE	SE	S	SE	SE	NW	SE	12
Itapeva.....	C	C	SE	SE	C	C	C	C	C	SE	SE	C	C	6-9
Itaqui.....	E	E	E	E	NE	NE	NE	E	E	E	E	E	E	34
Itatiaia.....	NW	NW	NW	N	W	NW	W	NW	NW	NW	NW	NW	NW	6
Laboatão.....	SE	8												
Januária.....	E	E	E	E	E	E	E	E	E	E	E	E	E	7
João Pessoa.....	C	C	C	C	C	C	C	C	C	C	C	C	C	8
Maceió.....	NE	E	E	C	C	C	C	E	E	E	NE	NE	E	2-6
Natal.....	SE	E	E	SE	SE	SE	SE	14						
Nazaré da Mata.....	SE	NE	SE	8										
Palmas.....	NE	NE	NE	NE	C	C	C	C	NE	NE	NE	NE	NE	6-10
Paranaguá.....	SE	SW	S	S	S	S	S	SW	S	SW	SW	SW	S	10
Pelotas.....	NE	7												
Pirapora.....	N	N	N	NE	SW	N	NW	SE	N	N	NE	NE	N	8
Pôrto Alegre.....	E	ESE	ESE	E	E	W	W	E	ESE	ESE	ESE	ESE	ESE	38
Pôrto Seguro.....	NE	NE	S	S	W	W	W	W	NE	NE	NE	NE	NE	2-3
Propriá.....	E	E	E	E	E	SE	SE	SE	E	E	E	E	E	2-4
Quixeramobim.....	NE	NE	NE	SE	SE	SE	SE	SE	NE	NE	NE	NE	NE	24
Rio de Janeiro.....	N	N	N	N	N	N	N	N	C	C	C	C	N	9-11
Rio Grande.....	NE	36												
Salvador.....	E	E	E	SE	SE	SE	SE	SE	E	E	NE	E	E	9
Santa Maria.....	E	E	E	E	E	E	E	E	E	E	E	E	E	36
Santa Rosa.....	S	S	S	S	N	N	N	NE	NE	S	S	S	S	26
São Carlos.....	NE	5-9												
São Luís.....	C	C	C	C	C	NE	2-4							
São Paulo.....	SE	C	C	C	C	C	C	SE	SE	SE	SE	SE	C	2-6
Teófilo Otoni.....	SE	E	NE	NE	SE	SE	SE	6-8						
Teresina.....	C	C	C	C	C	C	E	E	E	E	E	NE	C	8
Urussanga.....	C	na	na	na	C	C	C	C	C	C	C	C	C	2
Xanxerê.....	C	C	C	C	C	C	C	C	C	C	C	C	C	3-7

na Data not available.
 * Near but outside 94-I Area.

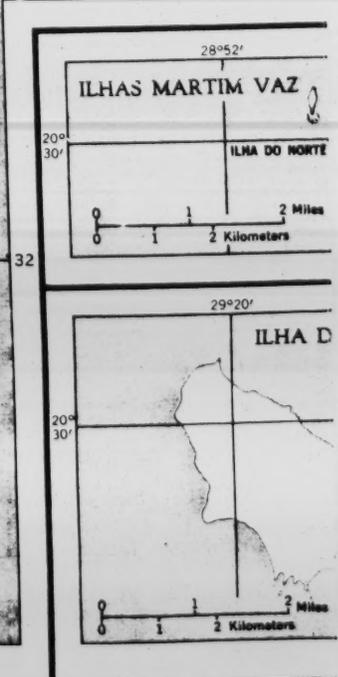
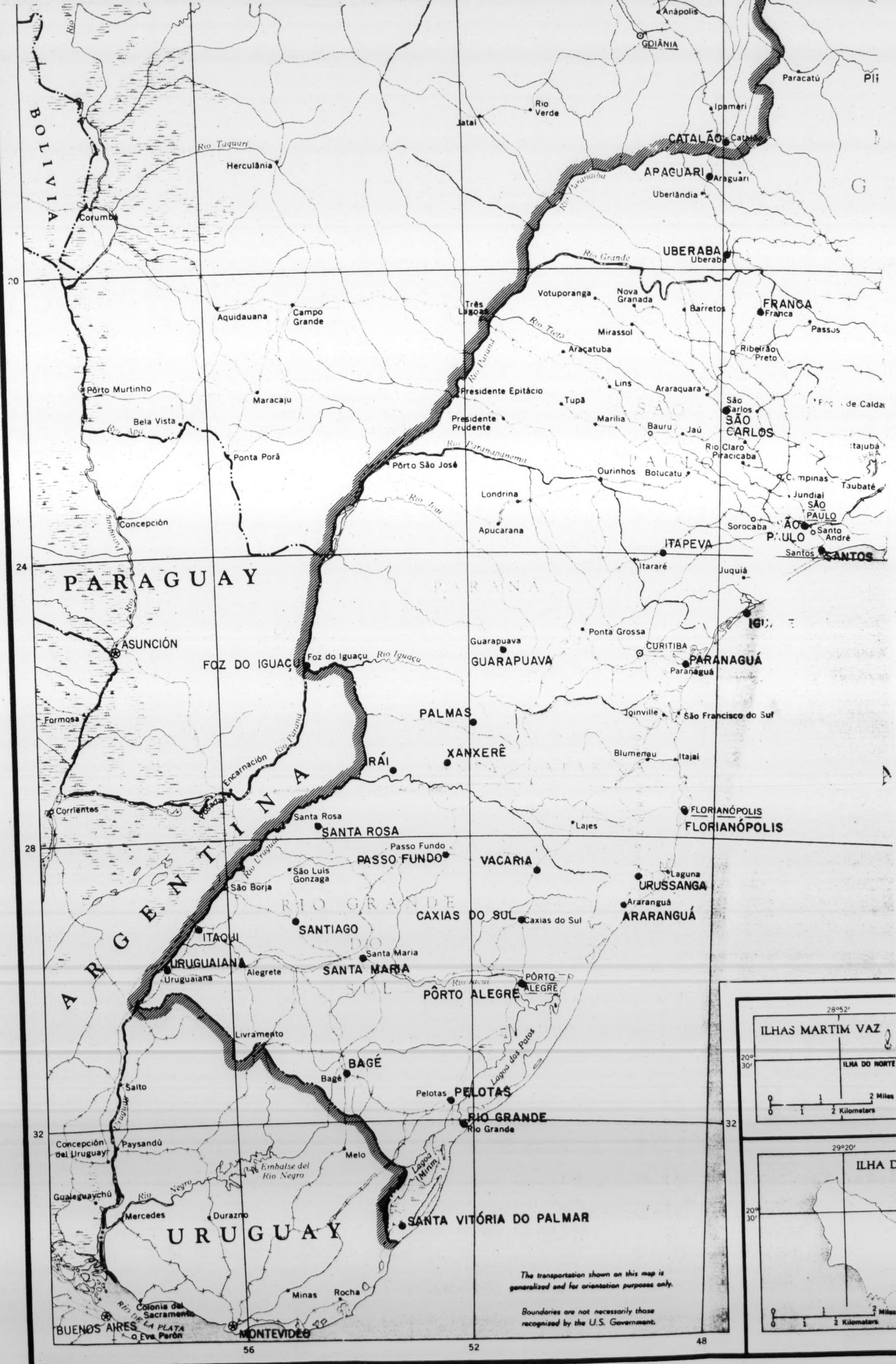
LIST OF STATIONS

STATION	LATI- TUDE*	LONGI- TUDE*	ELEVA- TION	STATION	LATI- TUDE*	LONGI- TUDE*	ELEVA- TION
	° 'S.	° 'W.	feet		° 'S.	° 'W.	feet
Aracaju.....	10 55	37 04	33	Januária.....	15 29	44 21	1,440
Araguari.....	18 38	48 11	3,036	João Pessoa.....	7 06	34 52	177
Araranguá.....	28 56	49 29	<i>n a</i>	Maceió.....	9 39	35 44	151
Bagé.....	31 20	54 06	653	Natal.....	5 47	35 12	26
Barra.....	11 05	43 09	1,339	Nazare da Mata.....	7 44	35 15	271
Barra do Corda.....	5 30	45 15	267	Palmas.....	26 28	51 58	3,643
Belo Horizonte.....	19 50	43 56	3,005	Paranaguá.....	25 31	48 30	33
Cabo Frio.....	22 53	42 01	10	Parnamirim.....	8 06	39 34	163
Caetité.....	14 04	42 29	2,881	Passo Fundo.....	28 15	52 24	1,995
Camocim.....	2 54	40 50	22	Pelotas.....	31 45	52 21	22
Campos.....	21 45	41 18	43	Pirapora.....	17 21	44 56	1,650
Caravelas.....	17 42	39 09	13	Pôrto Alegre.....	30 01	51 13	79
Catalão **.....	18 10	47 57	2,805	Pôrto Seguro.....	16 26	39 05	<i>n a</i>
Caxias do Sul.....	29 10	51 12	2,477	Propriá.....	10 12	36 52	115
Coruripe.....	10 09	36 11	<i>n a</i>	Quixeramobim.....	5 16	39 15	259
Curvelo.....	18 45	44 25	2,017	Recife.....	8 04	34 48	99
Diamantina.....	18 15	43 36	4,147	Resende.....	22 28	44 28	1,424
Fernando de Noronha.....	3 51	32 25	137	Rio de Janeiro.....	22 54	43 14	89
Florianópolis.....	27 35	48 34	115	Rio Grande.....	32 01	52 05	16
Fortaleza.....	3 43	38 30	89	Salvador.....	12 59	38 31	30
Foz do Iguaçu.....	25 33	54 38	509	Santa Maria.....	29 41	53 48	466
Franca.....	20 32	47 24	3,399	Santa Rosa.....	27 51	54 27	1,181
Garanhuns.....	8 54	36 31	2,782	Santa Vitória do Palmar.....	33 31	53 21	23
Guarabira.....	6 48	35 28	330	Santiago.....	29 11	54 53	1,398
Guaramiranga.....	4 16	39 01	2,782	Santos.....	23 55	46 20	26
Guarapuava.....	25 23	51 27	3,635	São Carlos.....	22 01	47 54	2,805
Ibura.....	7 16	37 43	35	São Luís.....	2 31	44 16	66
Iguape.....	24 42	47 32	20	São Paulo.....	23 32	46 34	2,608
Iguatu.....	6 21	39 18	696	Teófilo Otoni.....	17 51	41 30	1,083
Ilhéus.....	14 49	39 02	151	Teresina.....	5 05	42 49	259
Imperatriz.....	5 31	47 26	312	Uberaba.....	19 45	47 55	2,454
Ipirá.....	12 10	39 45	22	Uruguaiana.....	29 45	57 05	184
Irái.....	27 06	53 18	709	Urussanga.....	2 33	49 20	<i>n a</i>
Itapeva.....	23 58	48 52	2,228	Vacaria.....	28 42	50 54	3,133
Itaqui.....	29 08	56 32	174	Vitória.....	20 19	40 21	118
Itatiaia.....	22 30	44 35	7,152	Xanxerê.....	26 53	52 23	<i>n a</i>
Jaboatão.....	8 07	34 59	165				

n a Data not available.

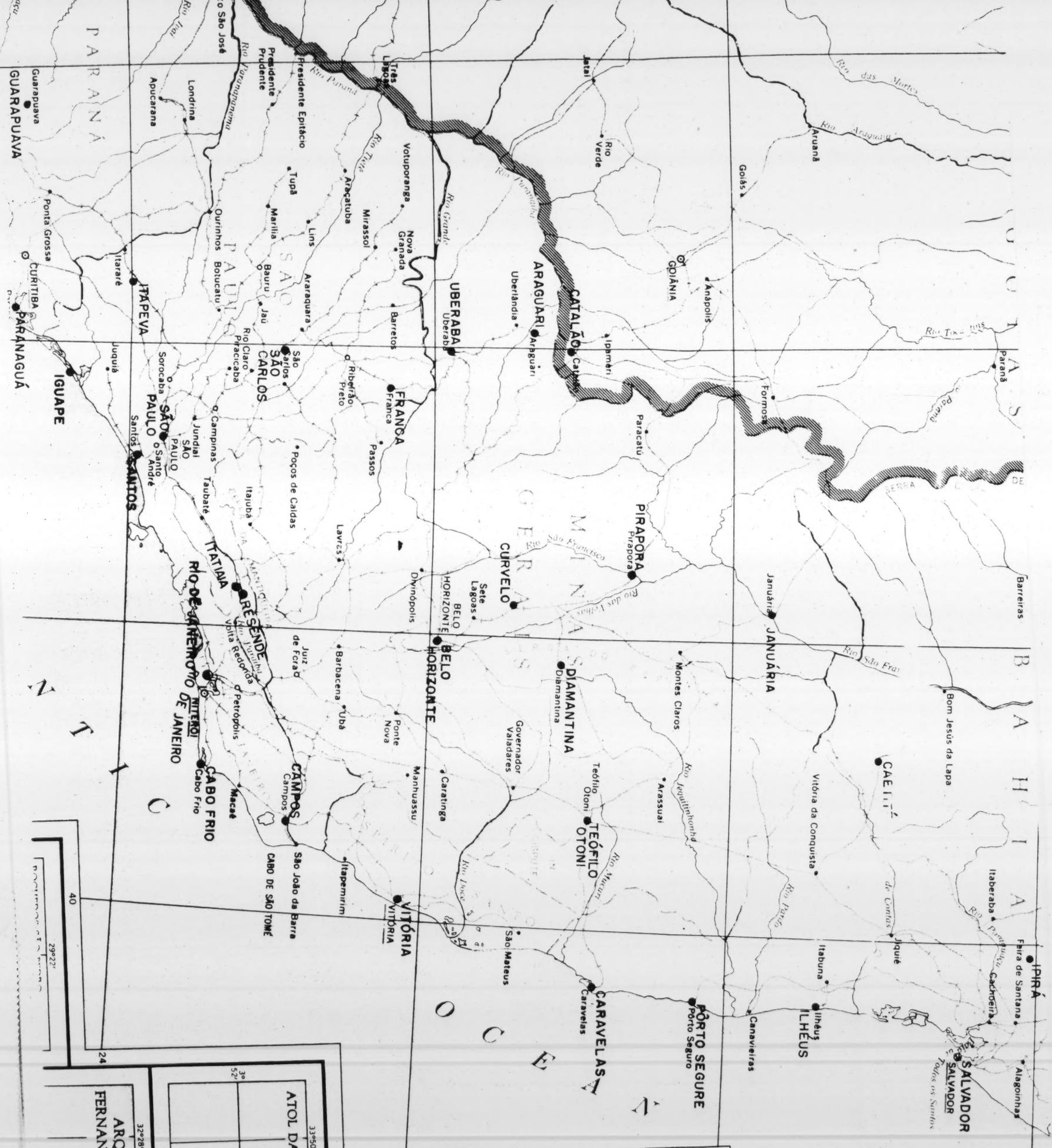
* Coordinates give locations of weather stations and do not correspond necessarily to those for populated places.

** Near but outside NIS 94-I Area.



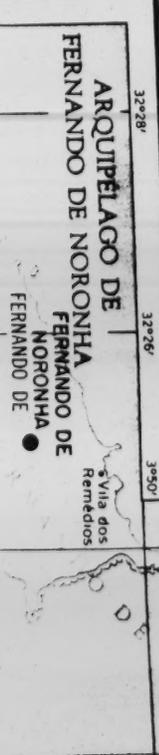
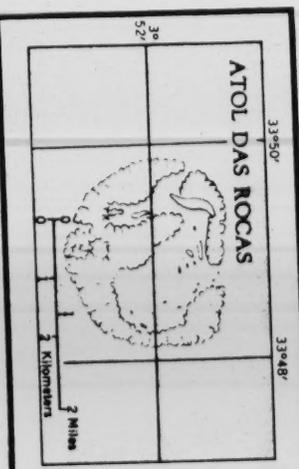
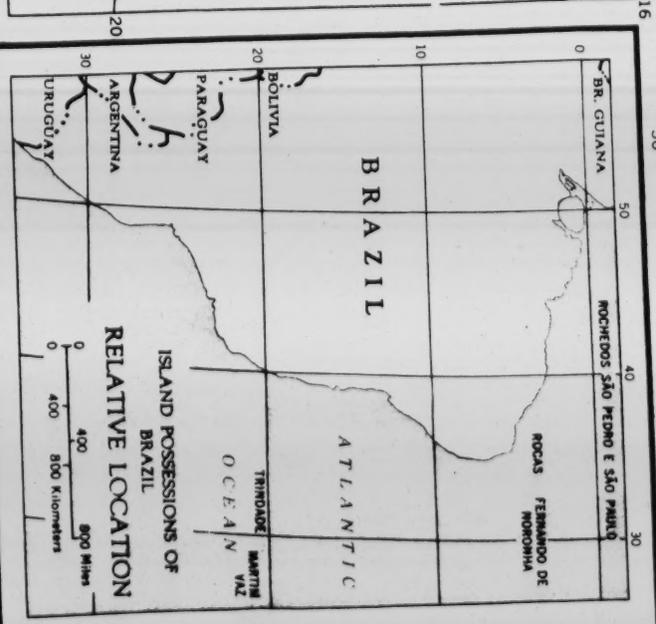
The transportation shown on this map is generalized and for orientation purposes only.

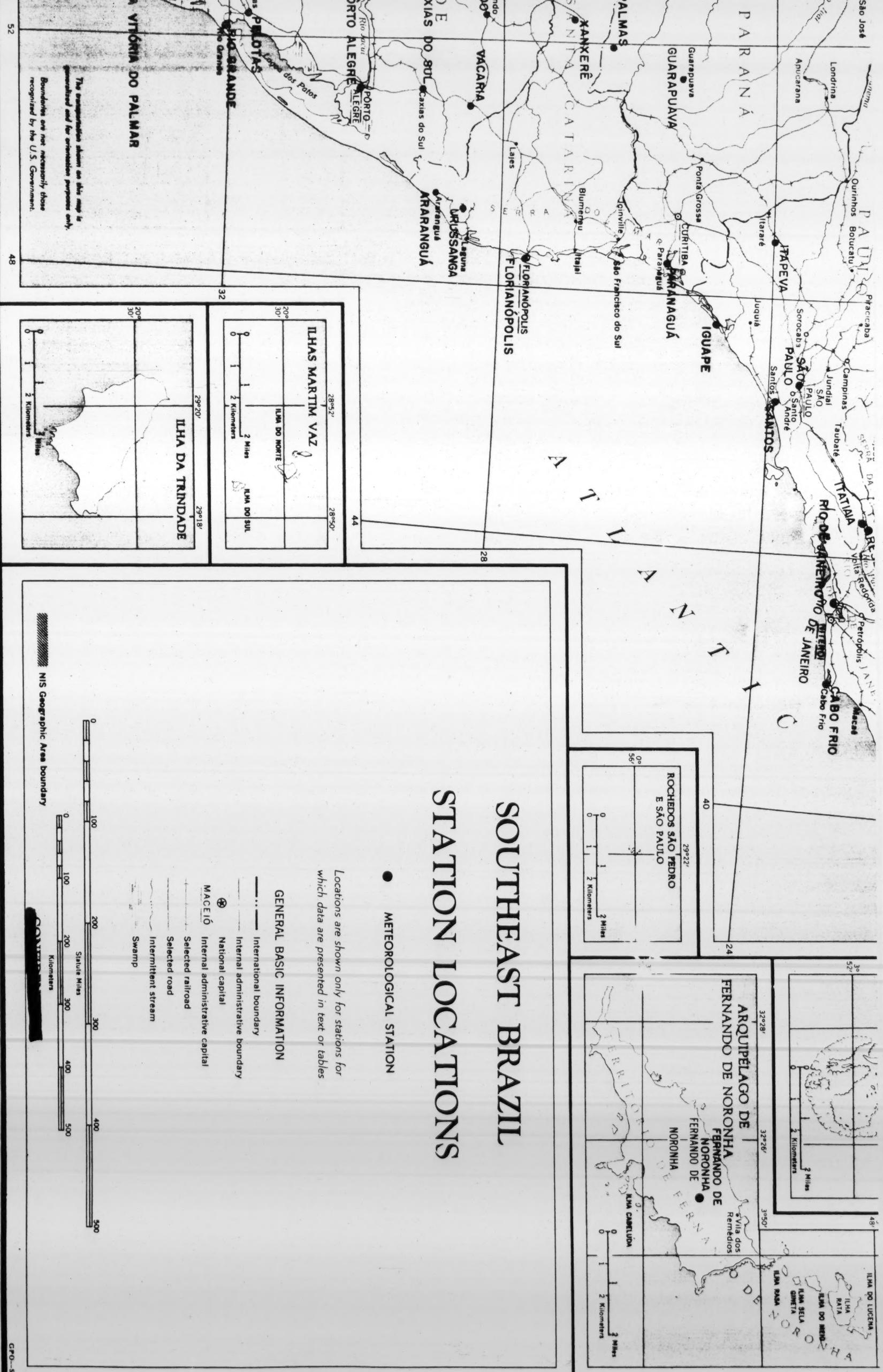
Boundaries are not necessarily those recognized by the U.S. Government.



GLOSSARY

arquipélago	group of islands
atol	atoll
baiá	bay
cabo	cape, point
ilha	island
lagoa	lagoon, lake
rio, rio	stream
rochedos	rocks
serra	hill (range), mountain (range)
território	territory





SOUTHEAST BRAZIL

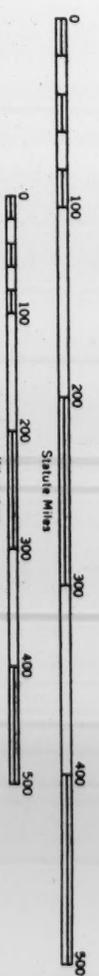
STATION LOCATIONS

● METEOROLOGICAL STATION

Locations are shown only for stations for which data are presented in text or tables

GENERAL BASIC INFORMATION

- · — · — International boundary
- — — Internal administrative boundary
- ⊕ National capital
- ⊙ Internal administrative capital
- Selected railroad
- Selected road
- Intermittent stream
- Swamp



/// NIS Geographic Area boundary

STATION LOCATIONS FIGURE 23-29

NATIONAL INTELLIGENCE SURVEY

BRAZIL-II

NORTHWEST BRAZIL

SECTION 23

WEATHER AND CLIMATE

CENTRAL INTELLIGENCE AGENCY

Washington, D. C.

SANITIZED COPY

Content UNCLASSIFIED

per 006266

Date 18 OCT 1977



TABLE OF CONTENTS FOR SECTION 23

	<i>Page</i>
A. General weather and climatic conditions	23 - 1
1. Introduction	23 - 1
2. Synoptic aspects of the climate	23 - 2
a. Climatic seasons	23 - 2
b. Year-to-year variation in precipitation	23 - 2
c. Migratory cyclones and anticyclones	23 - 3
d. Air masses	23 - 3
e. Effect of topography	23 - 3
B. Weather and military operations	23 - 4
1. Air operations	23 - 4
a. Individual climatic factors	23 - 4
(1) Cloudiness	23 - 4
(2) Thunderstorms and turbulence	23 - 5
(3) Aircraft icing and upper-air temperatures	23 - 7
(4) Winds aloft	23 - 8
b. Combinations of climatic factors	23 - 8
2. Air-ground operations	23 - 8
a. Individual climatic factors	23 - 8
(1) Low cloudiness	23 - 8
(2) Visibility	23 - 9
(3) Turbulence	23 - 9
b. Combinations of climatic factors	23 - 10
3. Ground surface operations	23 - 11
a. Individual climatic factors	23 - 11
(1) Precipitation	23 - 11
(2) Temperature and relative humidity	23 - 11
(3) Surface winds	23 - 14
(4) Visibility	23 - 17
(5) Flood conditions	23 - 17
b. Overall effect of surface weather phenomena on clothing, storage, and shelter	23 - 17
(1) Clothing	23 - 17
(2) Storage	23 - 18
(3) Shelter	23 - 18
4. Amphibious operations	23 - 18
a. Wet season	23 - 18
b. Dry season	23 - 19
C. Meteorological facilities and organization	23 - 19
1. Organization	23 - 19
2. Operation	23 - 20
D. Climatic data tables	23 - 20
E. Comments on principal sources	23 - 28



LIST OF FIGURES

			<i>Page</i>
Fig. 23-1	Map	Precipitation and airflow, February	23 - 2
Fig. 23-2	Map	Precipitation and airflow, August	23 - 2
Fig. 23-3	Map	Annual number of cloudy days	23 - 5
Fig. 23-4	Map	Annual number of clear days	23 - 5
Fig. 23-5	Map	Seasonal variation in clear days	23 - 6
Fig. 23-6	Map	Days with thunderstorms	23 - 7
Fig. 23-7	Diag.	Days with visibility <3 miles at Belém	23 - 9
Fig. 23-8	Map	Days with fog	23 - 10
Fig. 23-9	Map	Mean monthly precipitation	23 - 12
Fig. 23-10	Map	Days with precipitation ≥ 0.01 inch	23 - 13
Fig. 23-11	Map	Lowest observed temperature	23 - 14
Fig. 23-12	Map	Daily temperature variation	23 - 15
Fig. 23-13	Map	Mean relative humidity	23 - 16
Fig. 23-14	Table	Clothing requirements	23 - 18
Fig. 23-15	Table	Mean precipitation	23 - 21
Fig. 23-16	Table	Highest, lowest, and mean annual precipitation	23 - 22
Fig. 23-17	Table	Number of cloudy days	23 - 22
Fig. 23-18	Table	Number of clear days	23 - 23
Fig. 23-19	Table	Days with total cloud cover ≥ 2 -tenths at specified hours	23 - 23
Fig. 23-20	Table	Days with thunderstorms	23 - 24
Fig. 23-21	Table	Maximum 24-hour precipitation	23 - 24
Fig. 23-22	Table	Days with precipitation ≥ 0.01 inch	23 - 25
Fig. 23-23	Table	Absolute maximum and minimum temperatures	23 - 26
Fig. 23-24	Table	Mean daily maximum and minimum temperatures	23 - 27
Fig. 23-25	Table	Days with calm 0900 LST	23 - 28
Fig. 23-26	Map	Station Locations	<i>follows</i> 23 - 28

This Section was prepared for the NIS under the general supervision of the Directorate of Intelligence, USAF, by the Air Force/Air Weather Service in coordination with the Joint Meteorological Committee. Material on amphibious operations was prepared by the Office of Naval Intelligence and material on clothing, storage, and temporary shelter by the Office of the Quartermaster General.

23. Weather and Climate

A. General weather and climatic conditions

1. Introduction

The NIS 94-II Area lies almost wholly within the Tropics. Pronounced day-to-day and season-to-season changes which characterize the temperate latitudes are absent. Cooler air from the South Temperate Zone occasionally reaches Northwest Brazil in winter. Such outbursts of cool air are infrequent, however, and are not pronounced when compared to those affecting North America.

A comparison of conditions resulting from the location of the tropical portion of Mexico, in the Northern Hemisphere, and that of Northwest Brazil, almost entirely in the Southern Hemisphere, explains this difference in the winter weather patterns. The huge land mass of North America extends northward from Mexico into the polar regions, or approximately to 70°N. Cold air periodically flows southward across this land mass in winter. Although not all of these outbreaks reach the Tropics, there are an appreciable number of occasions when the polar air does reach Mexico, bringing showers and cooler weather.

In contrast, the continent of South America narrows toward the Antarctic and terminates at about 55°S. In its passage over the open sea, the cold air from the Antarctic is warmed to a temperature generally above 32° F. before it reaches the tip of South America. The air continues to flow northward and undergoes further modification as it moves across the relatively narrow land mass of Argentina. These factors tend to limit severely the number of occasions when cool air is able to penetrate the tropical lowlands of Northwest Brazil.

While the comparison just cited is limited to the northern and southern winters, another comparison pertains to the northern and southern summers. Both Mexico and Northwest Brazil have summer rainy seasons. The rainy season of

NOTE Requests for solutions to specific problems involving the interpretation of the weather factor in the user's unique operational terms should be directed to the Commander, Air Weather Service, MATS, USAF, Washington 25, D. C.

Mexico generally reaches a maximum about August, and that of interior Northwest Brazil, about February. The summer maximum in each area results from the intrusion of warm, moist air from the Atlantic. During summer in the Northern Hemisphere, moist tropical air flows toward lower pressure over Mexico and brings copious rainfall. During the Brazilian summer, lower pressure develops over Northwest Brazil. In response to this pressure gradient the moist trade winds approaching the northeast coast are induced to flow far into the interior. The moist air becomes unstable over the heated land, and frequent showers and thunderstorms occur.

The role of the trade winds decreases in both areas during their respective winters. Higher pressures build up over the interiors and the flow of moist air gradually diminishes. An additional climatic control tends to further decrease the amount of rainfall received in interior Northwest Brazil in winter. The mountains and highlands located in southeastern Brazil impede the low-level flow of moist oceanic air which is directed toward Northwest Brazil from the southeast.

In summer, similar shielding effects are afforded by the mountains north of the Amazon Basin. From December through February when the northeast trade winds prevail and most of Northwest Brazil is experiencing rainy weather, the regions shielded by the Guiana Highlands experience a distinct dry season.

FIGURE 23-1 shows the mean monthly precipitation in February, when the flow of moist air from the tropical Atlantic is well developed. The shielding effect of the mountains in British Guiana is well illustrated at Boa Vista, in north-central Brazil, where the average February precipitation is only 1.3 inches.

The mean precipitation during August, when the predominant airflow is from the southeast, is illustrated in FIGURE 23-2. Immediately west of the highlands of eastern Brazil, precipitation is light. The air picks up moisture as it drifts northwestward across the Amazon Basin, and rainfall amounts increase over the northern and western portions of Brazil.

SANITIZED COPY

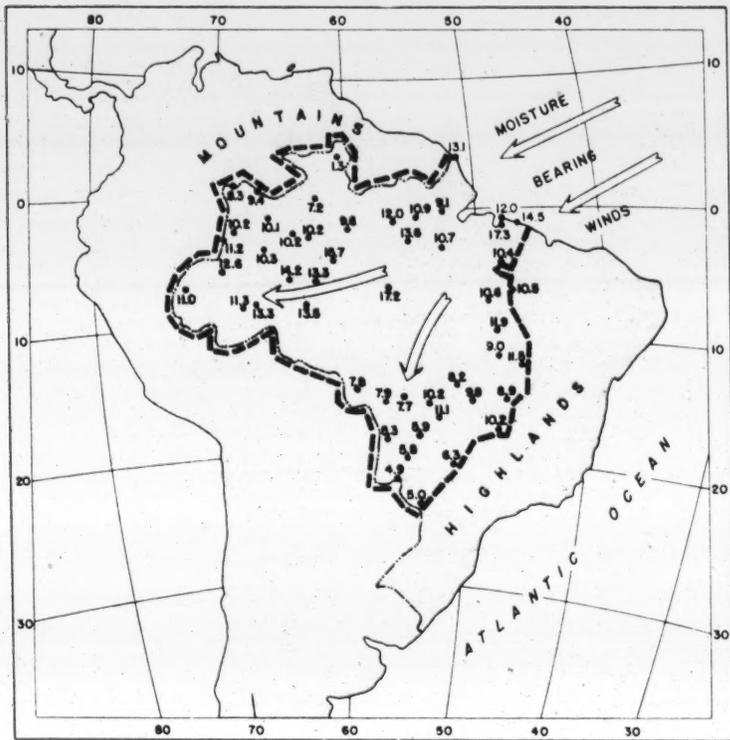


FIGURE 23-1. MEAN PRECIPITATION (INCHES) AND AIRFLOW, FEBRUARY



FIGURE 23-2. MEAN PRECIPITATION (INCHES) AND AIRFLOW, AUGUST

2. Synoptic aspects of the climate

a. CLIMATIC SEASONS — There are certain seasonal changes in the climate of this NIS Geographic Area. Because of the scarcity of other types of data, the following discussion of seasonal trends is based on rainfall and temperature data.

Over the southern portion of Northwest Brazil, the rainy season begins in late spring and extends through summer into early fall. In winter, or

more exactly from May through September, precipitation is very light.

Progressing northward across the Amazon Basin, the rainy season sets in at an increasingly later date. Along the 6°S. parallel, the rainy season generally reaches its peak in February or March. Farther north, March through April are the rainiest months, while at Boa Vista, one of the northernmost precipitation stations, June marks the midpoint of the rainy season.

As can be seen from the tabular data in FIGURE 23-15, the dry season is well marked at many points in this Area. Of the 57 stations listed, 25 have months in which the average precipitation is 1 inch or less. At most of these 25 points, this low average is maintained for 3 consecutive months.

The data show also that at a majority of the stations the wet season is pronounced. For example, 47 of the 57 selected stations have at least 1 month with an average rainfall of 10 inches or more. At Benjamin Constant, in extreme western Brazil, there are 8 months with an average of 10 inches or more. At a majority of the stations, however, there are 3 to 5 such months during the year. The decrease in precipitation is often abrupt. At Formosa and Goiás, in the southeast portion of this Area, precipitation decreases sharply from April to May.

Seasonal changes in temperature are not as distinct as those for precipitation. This is true particularly over the Amazon Basin, where the average maximum temperature varies from a little above 90° F. in June through November to a little below 90° F. from December through May. The slightly higher temperature in winter results from the lighter rainfall and minimum cloudiness of winter. The minimum temperature varies between 70° and 75° F. during the year.

Over the southern portion of the Area the seasonal variation in temperature is more pronounced. Average maximum temperatures vary from about 90° F. in summer to 80° F. in winter, while the minimum temperatures vary from 70° F. to somewhat less than 60° F. During outbreaks of cold air from the south, freezing temperatures, although rare, are occasionally experienced in the south.

b. YEAR-TO-YEAR VARIATION IN PRECIPITATION — Many of the stations show a marked variation in annual precipitation from year to year. FIGURE 23-16 gives tabularly the highest, lowest, and mean annual amounts received during a 25-year period. Those places that receive relatively large amounts (over 80 inches) annually rarely experience a drought. However, those with annual averages close to 50 inches or less occasionally receive only half that amount.

Rainfall amounts for a given month also vary significantly from year to year. For example, at Cuiabá in March the average is 8 inches but as little as 2 inches and as much as 15 inches have been recorded. Although the average for June at Pôrto Velho is 1.4 inches, as much as 4.0 inches and as little as 0.1 inch are reported. Similar variations have occurred at other stations in the Area.

C. MIGRATORY CYCLONES AND ANTICYCLONES — Low-pressure systems occasionally skirt the extreme southern portion of Northwest Brazil. Over the major portion, however, only their indirect effects are felt. The low-pressure centers generally make their first appearance over Argentina and then travel eastward over the Atlantic Ocean. The center of higher pressure which normally follows the *low* takes a northward course along the eastern coast of South America. Ordinarily, the center of higher pressure cannot be followed north of Rio de Janeiro. The indirect effect felt in the Amazon Basin consists of a northward flow of cooler, drier air. Its depth has been measured and on one occasion reached the 3,000-foot level. The advance of the leading edge of the cold air can be followed northward. Wave or secondary low-pressure systems rarely form on this edge or cold front, but showers and thunderstorms are common.

Over the southern portion of the Area the effects of *lows* are more direct and dynamic. Warmer air from the north flows toward the southern portion of the Area as the *low* develops. This flow is in turn replaced by one of cooler air from the south as the *low* moves eastward. Showers occur along the frontal surface between the two air masses. The frontal surface marks the leading edge of the cold air and is generally oriented northwest to southeast. Its direction of movement is normally toward the northeast.

The intensity of *lows* and consequently the strength of the opposing air currents vary. Occasionally they are well developed and rain occurs over a wide region. At such times the rush of cooler air northward will carry to the Equator. An examination of the Brazilian daily weather maps indicates that the majority of the *lows* are weak. It is difficult to estimate their frequency, although published Brazilian summaries indicate that high-pressure centers move across southern Brazil at the rate of 4 or 5 per month.

d. AIR MASSES — Three main air-mass types affect Northwest Brazil. The first of these consists of warm, moist air which flows into Brazil from the tropical North Atlantic during summer when pressures are relatively low over the interior. This airstream has had a long trajectory over the

ocean and is fairly deep. The air becomes unstable as it flows across the heated interior. Cumulus clouds form during the late morning, frequently building into cumulonimbus with thunderstorms by afternoon. The flow varies from weak to pronounced and is sporadic in nature. Under the influence of those low-pressure centers which cross Argentina, the flow of warm air often reaches the southernmost portion of this NIS Geographic Area.

The second air mass is also tropical in nature and is present during the winter. It has its origin in the South Atlantic high-pressure cell, which frequently extends into Brazil during the winter. The air flows northwestward from this cell across the eastern Brazilian Highlands. It is warmed as it descends the western slopes and arrives over the Amazon Basin as fairly warm, dry air. Lower pressures over the Guiana Highlands cause the flow to continue northward. Over the Amazon Basin this relatively shallow air mass is capped by subsiding warm air associated with the high-pressure cell. Convective activity and shower conditions are therefore at a minimum during winter. The influence of the subsiding warm air does not extend to extreme northern Brazil, however; here heavy showers are commonplace as the air moves up-slope out of the Amazon Basin.

The third air mass affecting Northwest Brazil is composed of cold air which periodically flows toward the Tropics from the South Temperate Zone. These outbreaks of cold air have their greatest frequency in winter, when they occasionally bring freezing temperatures to the extreme southern portion of the Area. Their influence decreases northward, and only once or twice a year do they reach the Equator.

Showers and thunderstorms accompany the flow of cold air as it moves northward. If the flow is weak, thunderstorm activity is sparse and the decrease in temperature is moderate. In either event, the air is less humid for several days after the frontal passage. The flow of cold air normally does not last for more than a day or two. The stagnating air mass forms rather quickly and gradually loses its invigorating quality of dryness.

e. EFFECT OF TOPOGRAPHY — Three mountain systems, the Brazilian Highlands to the southeast, the Andes to the west, and the Guiana Highlands to the north, affect the climate of Northwest Brazil. There are also three low-level openings to the Amazon Basin. The first of these is the mouth of the Amazon Basin through which Atlantic maritime air enters the lowland interior. The second opening lies in the south and serves as a pathway

for cold air to flow from Argentina toward the Amazon Basin. Through the third opening in the northwest, moist air flows out of the Amazon Basin toward the plains of Colombia.

Of the three mountain systems affecting the climate of the NIS 94-II Area, the Brazilian Highlands are probably the most significant. These highlands impede the free exchange of air at low levels between the Atlantic Ocean and the interior lowlands. This role is a secondary one. Of greater significance is the fact that, during winter, cooler air forms over the plateau and favors the extension of the South Atlantic high-pressure cell across the Brazilian Highlands. From this extended cell, relatively dry air flows across the Amazon Basin during the winter. In addition, the warm air present at upper levels tends to suppress convection and shower activity. As a result, rainfall over the highlands and in the Amazon Basin, particularly the southern portion, is rather light in winter. During summer when the sun reaches its southernmost position, the warmer temperatures aid the establishment of lower pressure over the highlands. Moist air from the Amazon is then able to reach these highlands. Convection is not impeded by the presence of a temperature inversion at upper levels, and showers or thunderstorms are frequent.

The Andes Mountains likewise influence the climate of Northwest Brazil, although their role is less distinct. The Território do Acre, in extreme western Brazil, lies on the approaches to the Peruvian Andes. The flow of air onto these approaches during the northeast monsoon produces heavy rains. These rains as well as the heavy rains which fall on the Andean slopes of Colombia, Ecuador, and Peru feed the tributaries of the Amazon River. The southern Andes play a somewhat different role. They tend to disrupt the circulation around low-pressure centers which approach the coast of Chile from the Pacific area. These *lows* normally regenerate over northern Argentina and then move eastward. Cooler air sweeps northward into Brazil after the *lows* move to the Atlantic. Were it not for the blocking action of the Andes of Chile, cooler air from the Pacific would more frequently affect southern Brazil.

Climatic influences attributable to the Guiana Highlands are discussed in the introduction to this Subsection. It was pointed out that, during the season of northeast airflow, many points on the lee side of these highlands experience distinct dry seasons. In contrast, during the period of southeast airflow, many points on the windward slopes receive heavy precipitation.

B. Weather and military operations

This Subsection is concerned with the effects of the various meteorological elements and their variations upon military operations, which are here divided into four broad groups: air, air-ground, ground surface, and amphibious. The discussion is not, for the most part, broken down by specific operations, but by the meteorological elements as they affect each group as a whole. The meteorological information is, therefore, organized to highlight conditions that may be considered as factors in planning. Discussion of the effects of weather on specific operations is avoided since the weather factor in an operation is subject to change with the changing requirement of the operation itself.

1. Air operations

a. INDIVIDUAL CLIMATIC FACTORS

(1) *Cloudiness* — Cloud conditions in the NIS 94-II Area are frequently favorable for a variety of aerial operations. The level at which a visual mission can be carried out depends, to a large extent, on cloud type as well as coverage and height. Unlike areas in the temperate latitude, an extended overcast in this Area is unusual. The most common type of cloudiness is the towering cumulus, which is evidence of instability in the air. During the afternoon, particularly in summer, this type of cloudiness frequently culminates in thunderstorm activity.

The frequency of cloudy skies varies considerably across Northwest Brazil. FIGURE 23-3 presents in graphic form the mean annual number of cloudy days, and FIGURE 23-17 gives tabular data showing the monthly values. Most of the stations in the southern portion of the Area have 100 or more cloudy days annually. The average is also high in the northwest portion. The frequency of cloudy days appears to decrease downstream in

NOTE Air operations are defined as those taking place above the frictional influence of the surface terrain on the atmospheric circulation. Some of the special operations which may be considered in this category are: high-level bombing, aerial reconnaissance, and fighter aircraft support and interception. These operations are largely influenced by, or may be subject to, modification because of conditions of cloudiness, upper-level winds, thunderstorm activity, or ice accretion. In most cases, these operations are affected primarily by upper-air meteorological phenomena. In some cases, meteorological conditions on the surface may be extremely important. Surface conditions that are considered in combination with upper-air phenomena are treated in this Subsection; otherwise they are presented in the Subsections on Air-ground and Ground Surface Operations.

the Amazon Basin, except near the coast where averages again become high. FIGURE 23-3 also indicates that cloud conditions depend, to some degree, on exposure of the individual station; rather large variations in cloud conditions between neighboring stations are apparent.

FIGURE 23-4 presents graphically the mean annual number of clear days, and the monthly frequencies are given tabularly in FIGURE 23-18. Days in this category can be considered favorable for visual operations. A comparison of FIGURES 23-3 and 23-4 reveals that over most regions there are appreciably fewer clear days than cloudy days. The effects of local conditions on the number of clear days are pronounced; for example, at Imperatriz there are 147 clear days annually, while at Carolina, not too far to the north, there are only 63 such days.

There is a distinct seasonal trend in cloud conditions. Minimum cloudiness occurs during winter, the season of minimum rainfall. FIGURE 23-5 showing the monthly frequency of clear days highlights this variation at 14 selected points.

In addition to the seasonal variation, there exists a pronounced day-to-day variation in cloudiness. During winter, each outbreak of cooler air from the south is attended by an increase in cloudiness. Thunderstorm clouds attend the passage of the front followed by a short period of a day or two with stratus clouds. During the next 2 or 3 days, clear skies are present, after which there is a return to the more familiar cumulus types.

During summer, bands of cloudy, showery weather move across Northwest Brazil at irregular intervals. These bands are generally ascribed to the presence of the intertropical front or convergence zone. Outside these bands fair-weather cumulus are predominant.

There is little information on the daily variation in cloud amount. Limited data indicate that cumulus clouds begin to form in the morning, reach a maximum during the afternoon, and tend to dissipate after sunset. FIGURE 23-19 gives tabularly the average number of days with total cloud cover equal to or less than 2-tenths at 0900 and 2100 LST.

Low stratus clouds occasionally form over the tropical forests about the time of sunrise. However, the cloud layer lifts and then dissipates within an hour or two after sunrise. Limited observations indicate that the stratus layer does not form over the rivers along which many of the airfields are located.



FIGURE 23-3. MEAN ANNUAL NUMBER OF CLOUDY DAYS (CLOUD COVER \geq 8-TENTHS)



FIGURE 23-4. MEAN ANNUAL NUMBER OF CLEAR DAYS (CLOUD COVER \leq 2-TENTHS)

(2) *Thunderstorms and turbulence* — Turbulent air conditions are frequently present over this Area during all seasons. Cumulus clouds, which provide visual evidence of this turbulence, range from isolated patches to towering cumulus associated with thunderstorms. The small patches contain moderate turbulence and can be circumnavigated. Thunderstorms, however, contain areas of extreme turbulence; they too can normally

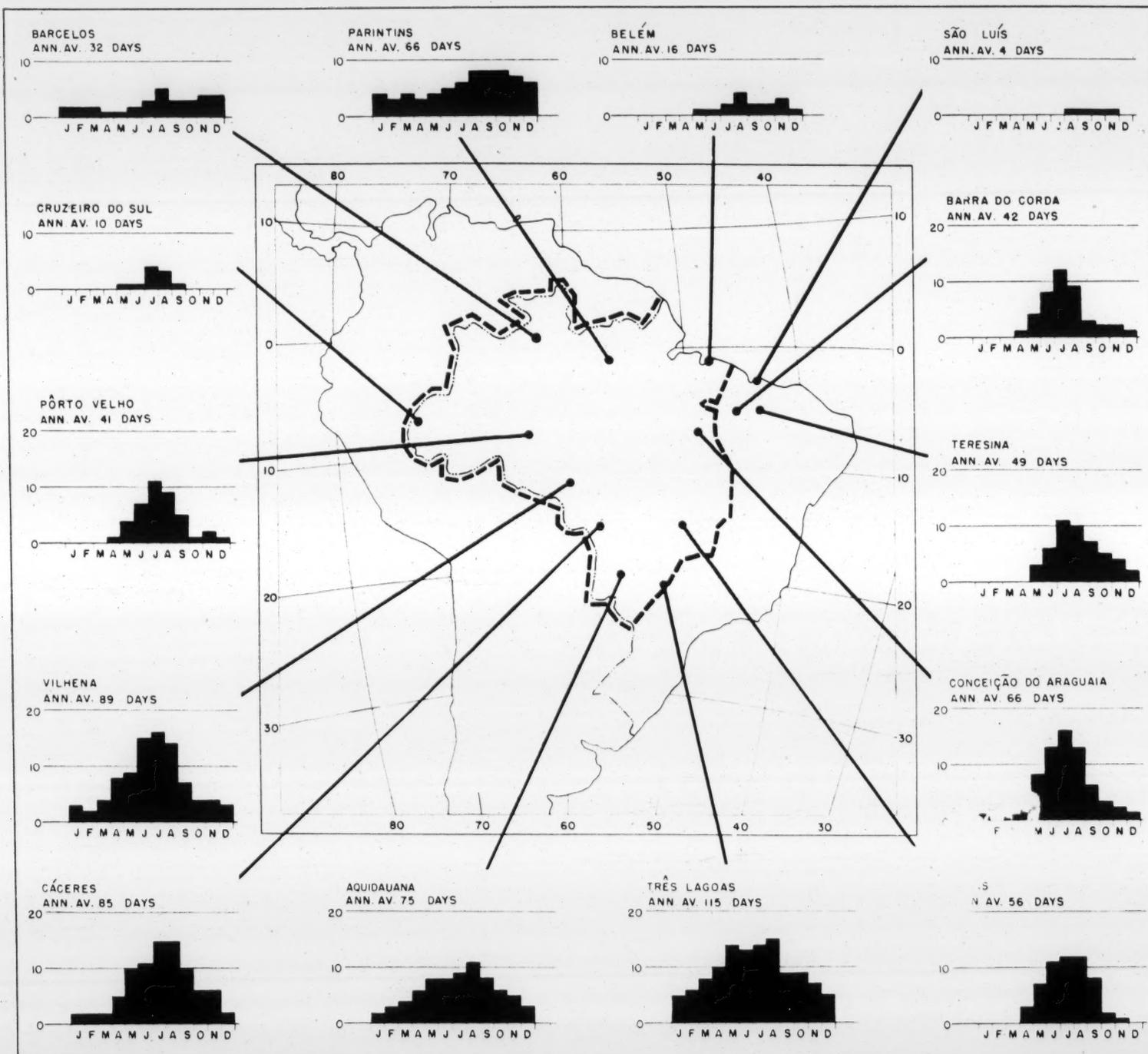


FIGURE 23-5. SEASONAL VARIATION IN CLEAR DAYS (CLOUD COVER ≤ 2 -TENTHS). (For tabular data see FIGURE 23-18.)

be avoided during daylight flight. It is more difficult to avoid the turbulence at night, although the greatest lightning activity generally outlines the storm center.

There is a definite seasonal variation in thunderstorm activity. The greatest frequency occurs from October through April, when moist air from the tropical Atlantic flows into the Area. FIGURE 23-6 presents graphically the average number of days with thunderstorms at stations within or near the Area. Similar data are given tabularly in FIGURE 23-20. At most stations, June, July, and August have the least number of days with thunderstorms. The influence of the ocean is evident at Belém, where there are 64 days with

thunderstorms annually and substantial activity in all months.

There are very few data available on diurnal variations. Much of the literature states that thunderstorms are more likely to occur during the afternoon. However, those thunderstorms associated with outbreaks of cold air from the south are independent of the time of day, although they tend to be more violent in regions where the arrival of the cold air or cold-frontal passage takes place during the afternoon or early evening. Frontal passages are more commonplace in the southern portion of the Area.

At Belém, near the coast, 4 years of hourly observations show that the time of greatest thunder-

storm frequency varies from early afternoon in February and March to late afternoon in June, July, and August and that only from November through March are there any early morning storms. At São Luís, on the coast about 300 miles east of Belém, early morning storms are more likely to occur in February through April, with the afternoon being the most favorable time of day. From August through November there are few thunderstorms at São Luís.

Vertically, thunderstorm turbulence extends to at least 20,000 feet. Along the coast and in the extreme western portion, near the Andes, the turbulence exceeds this altitude. Over the interior in January, February, and March, a high-level thermal anticyclone tends to limit the turbulence to

20,000 feet. Those thunderstorms associated with outbreaks of cooler air from the south also extend up to at least 20,000 feet.

(3) *Aircraft icing and upper-air temperatures* — The average height of the freezing level over all except the extreme southern portion of Northwest Brazil is about 15,000 feet. In thunderstorms the freezing level may occur at slightly lower levels. Since icing generally occurs in cloud areas where the temperature is 32° F. or less, it is evident that below 15,000 feet there is little danger of encountering this hazard.

Outbreaks of cold air occasionally sweep northward across the southern portion of this NIS Geographic Area. Temperatures in the moving air rarely fall below 32° F. After the flow stops, tem-

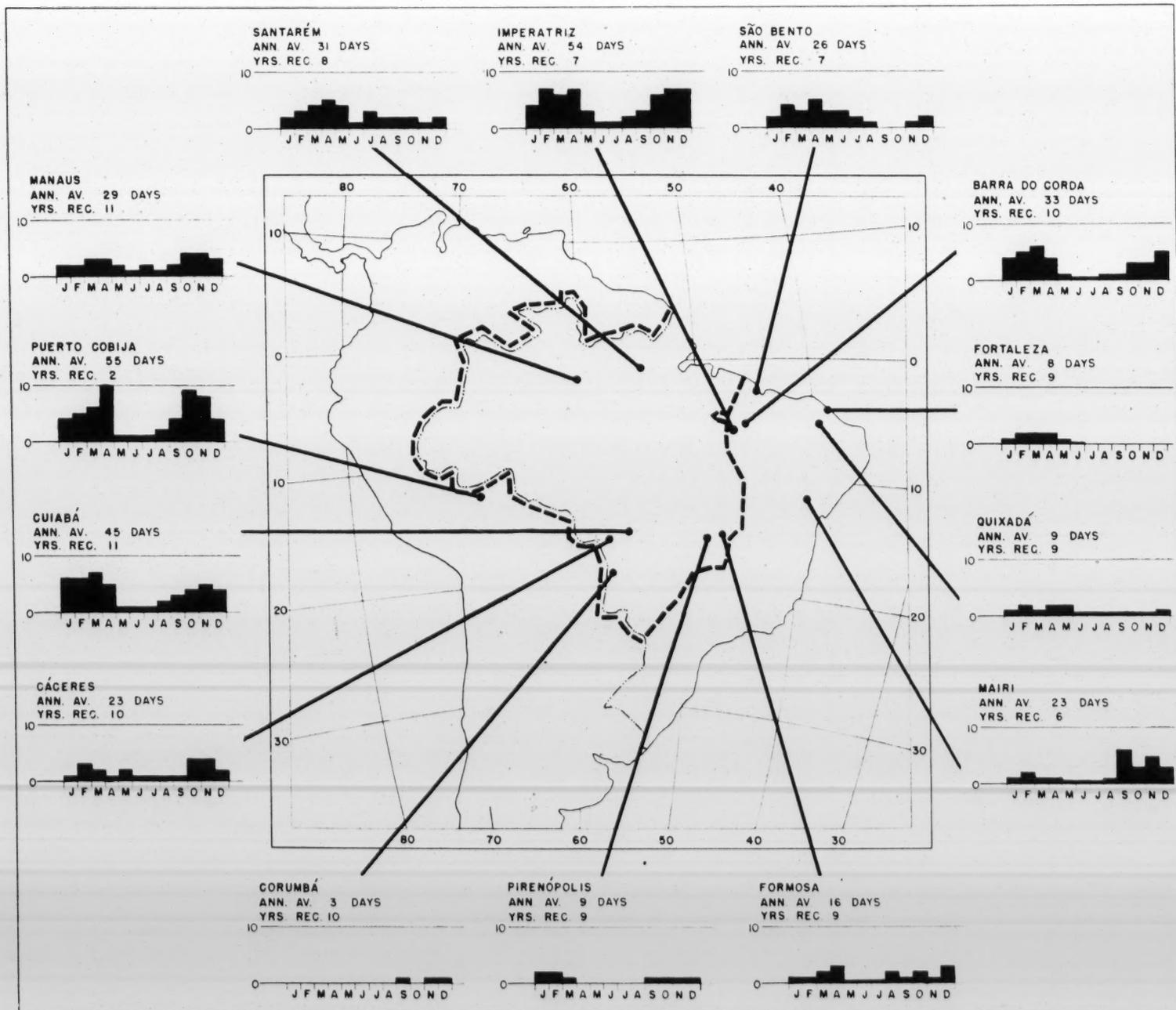


FIGURE 23-6. MEAN NUMBER OF DAYS WITH THUNDERSTORMS. (For tabular data see FIGURE 23-20.)

peratures occasionally go below freezing during the early morning. The cold air is generally limited to a shallow layer near the ground, with warmer air above. Normally the freezing level is located near the 8,000-foot level in the extreme southern portion of the Area during winter.

(4) *Winds aloft* — Data concerning the upper-air circulation over Northwest Brazil are scarce. At Belém, easterly winds prevail to at least 15,000 feet during all seasons. This flow seems to extend westward across the Amazon Basin. Westerly winds, although rare, have been recorded in the Area during winter and spring.

The region south of the Amazon Basin lies outside of the easterly airflow. Data for Cuiabá, in the west central portion of the Area, indicate that winds with a northerly component are predominant except above 10,000 feet where westerly winds prevail in winter and spring.

The strength of the easterly winds is strongest near the coast. At Belém the speed increases from the surface to 6,000 or 7,000 feet where the average is about 20 m.p.h. in all seasons. Above these levels, speeds again decrease to at least 16,000 feet. At Manaus, in the interior, the maximum speed of the easterly winds occurs at slightly lower levels, with the average close to 15 m.p.h.

b. COMBINATIONS OF CLIMATIC FACTORS — For many operations conducted at high levels, the simultaneous occurrence below flight level of minimum cloud cover and maximum surface visibility might be desirable. Such operations might include high-level visual bombing or high-level photographic reconnaissance. For specialized operations such as incendiary bombing from high levels, two additional features, surface wind and precipitation, need to be considered. Depending upon the needs of a specific mission, other widely varying climatic criteria may be defined.

In general, high-level operations which require visual contact with the ground would be limited in Northwest Brazil. The most favorable time of the year generally coincides with the dry season. The best time of the day would be the morning, after the dissipation of any ground fog and before the formation of cumulus clouds. The formation of cumulus clouds often begins in midmorning, particularly in the Amazon Basin. In many instances, cloudiness at levels too low for high-level visual operations does not preclude low-level operations.

2. Air-ground operations

Weather in Northwest Brazil is frequently favorable for air-ground operations during all seasons. Due to varying cloud amounts and cloud heights, the level at which visual operations can be carried out varies appreciably. Cloud bases below 1,000 feet are generally associated with heavy afternoon showers. Fog and low stratus clouds occasionally restrict visibilities during the early morning. Operations requiring light wind and stable air should be planned for the early morning, while incendiary operations can be more favorably carried out during the afternoons of the dry season. Air support to ground operations can normally be given during all seasons, except that heavy showers may be a limiting factor locally.

a. INDIVIDUAL CLIMATIC FACTORS

(1) *Low cloudiness* — The amount of low cloud varies significantly not only from summer to winter but also from morning to afternoon. Minimum cloudiness occurs from June through August, when a relatively dry air mass occupies the entire Area. Cumulus clouds form during the morning, becoming towering masses by the afternoon. Only on those occasions when colder air reaches the Area from the south do they culminate in thunderstorms. Under these conditions, cloud bases descend to 1,000 and even 500 feet; ordinarily bases range from 2,000 to 6,000 feet. Although cumulus clouds are predominant, stratus types are occasionally present. They are most likely to be in evidence during the first morning after the passage of a cold front from the south. Since the frequency of cold-front passage decreases northward, stratus clouds from this cause are rare north of the Amazon River.

In contrast to that of winter, the predominant air mass over the Area in summer is quite humid and unstable. Cumulus clouds form during mid-morning and frequently culminate in thunderstorms by noon or early afternoon. Cloud bases are much lower in summer than in winter, ranging in height from 1,000 to 3,000 feet. Within ac-

NOTE Air-ground operations are defined as those taking place within the frictional influence of the surface terrain on the atmospheric circulation. Some of the special operations which may be included in this category are: aircraft landings or takeoffs, parachute drops, tactical support, low-level aerial reconnaissance, and air rescue. These operations are affected primarily by low-level meteorological phenomena. In some cases, meteorological conditions on the surface may be extremely important. Surface conditions that are treated in combination with low-level atmospheric phenomena are discussed in this Sub-section; otherwise they are presented in the Sub-section on Ground Surface Operations.

tive shower areas, cloud bases below 1,000 feet and even 500 feet are the rule. A limited amount of evidence indicates that, due to upslope air motion, low cloudiness is more frequent in the southern part of the Amazon Basin than in the north and central parts. Cumulus clouds are the predominant daytime type, but stratus clouds are present, especially during the early morning. They are most likely to form after a day of heavy shower activity.

(2) *Visibility* — Data on air-to-ground visibilities are not available, and horizontal measurements are available for only a few points. However, hourly observations taken at Belém and São Luís, on the Atlantic coast, show that at both points restricted visibilities are uncommon.

FIGURE 23-7 presents graphically the frequency of visibilities less than 3 miles at each hour of the day at Belém. Such visibilities reach a maximum during the periods 0600 through 0700 LST and 1400 through 1700 LST. Restricted visibilities are about four times as frequent from December through May as during the remaining half year. Other data show that showers are the principal cause of the restriction during the afternoon, and fog or showers are the principal causes during the morning.

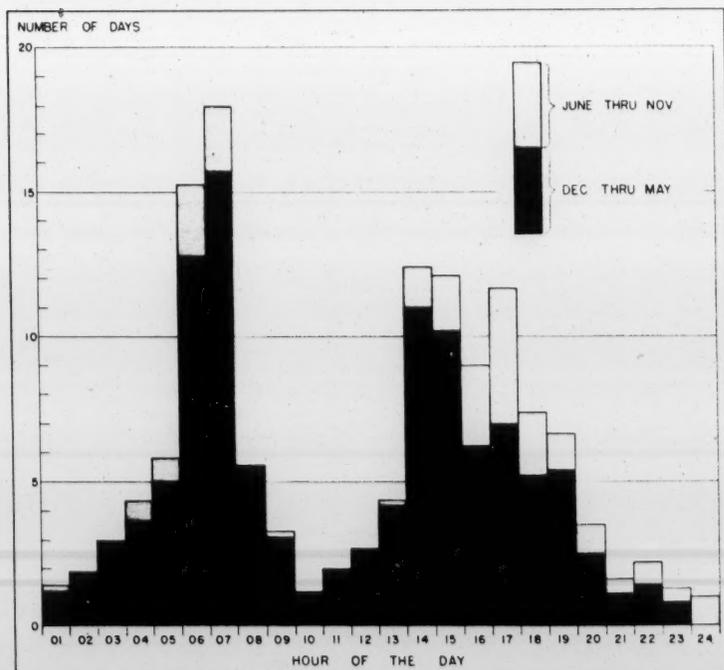


FIGURE 23-7. MEAN NUMBER OF DAYS WITH VISIBILITY < 3 MILES AT BELÉM

Data for São Luís show a seasonal and diurnal variation similar to that at Belém except that the overall frequency at São Luís is about one-third that at Belém.

The few data available indicate that, along the Amazon River, fog is uncommon. FIGURE 23-8 shows the frequency of fog at a number of points

in the Area. Since it is unknown whether the fog is light or dense, comparison of fog frequency between stations is questionable. However, the indicated seasonal variation at individual stations is valid. Fog is rare at Manaus and Santarém, two stations on the river, where fog is reported to be less frequent than over the surrounding forest. Over the forest at treetop level, fog forms during the night, occasionally becoming dense by early morning only to dissipate an hour or two after sunrise. This type of fog occurs during all seasons in the Amazon Basin.

Data for most other points in the Area show definite seasonal trends. At Barra do Corda there are 63 days annually with fog, the frequency increasing during the rainy season (November through April) and reaching a maximum during May or June, the first two months of the dry season. A similar relationship between fog and rainfall exists at Imperatriz. At Formosa (elevation 3,000 feet) the fog persists into the dry season.

Restrictions due to fog are mostly a morning phenomenon. In contrast, restricted visibilities due to heavy showers are an afternoon phenomenon. Cloud bases extend downward beneath the heavy rain and produce fairly local areas of low cloudiness and restricted visibility.

(3) *Turbulence* — Turbulent air is generally associated with afternoon thunderstorms (see Subsection B, 1 a (2)). The turbulence associated with these storms affects the lower as well as the upper levels. Downdrafts of cold air near areas of heavy precipitation are particularly turbulent and extend down to the ground.

Many points show two periods of maximum thunderstorm frequency—February through April and October through December. The least number of thunderstorms occurs in June, July, and August. Limited data indicate that thunderstorms are less frequent along the immediate Atlantic coast than at points several miles inland. For example, there are 4 thunderstorm days annually at São Luís, while at São Bento, several miles inland, there are 26 such days (FIGURE 23-6).

Except under thunderstorm conditions, surface winds over the Amazon Basin are rarely strong enough to produce turbulence. Strong winds are occasionally present in the fringe area of the basin, particularly where the mountains or highlands are nearby. In the Território do Acre, gusty winds occasionally sweep down from the Peruvian Andes. Similarly, turbulent flow from the Guiana Highlands affects the northernmost portion of the Amazon Basin.

Over the southern portion of the NIS 94-II Area, turbulent flow generally accompanies the outbreak of cold air from the south in winter. Thunder-

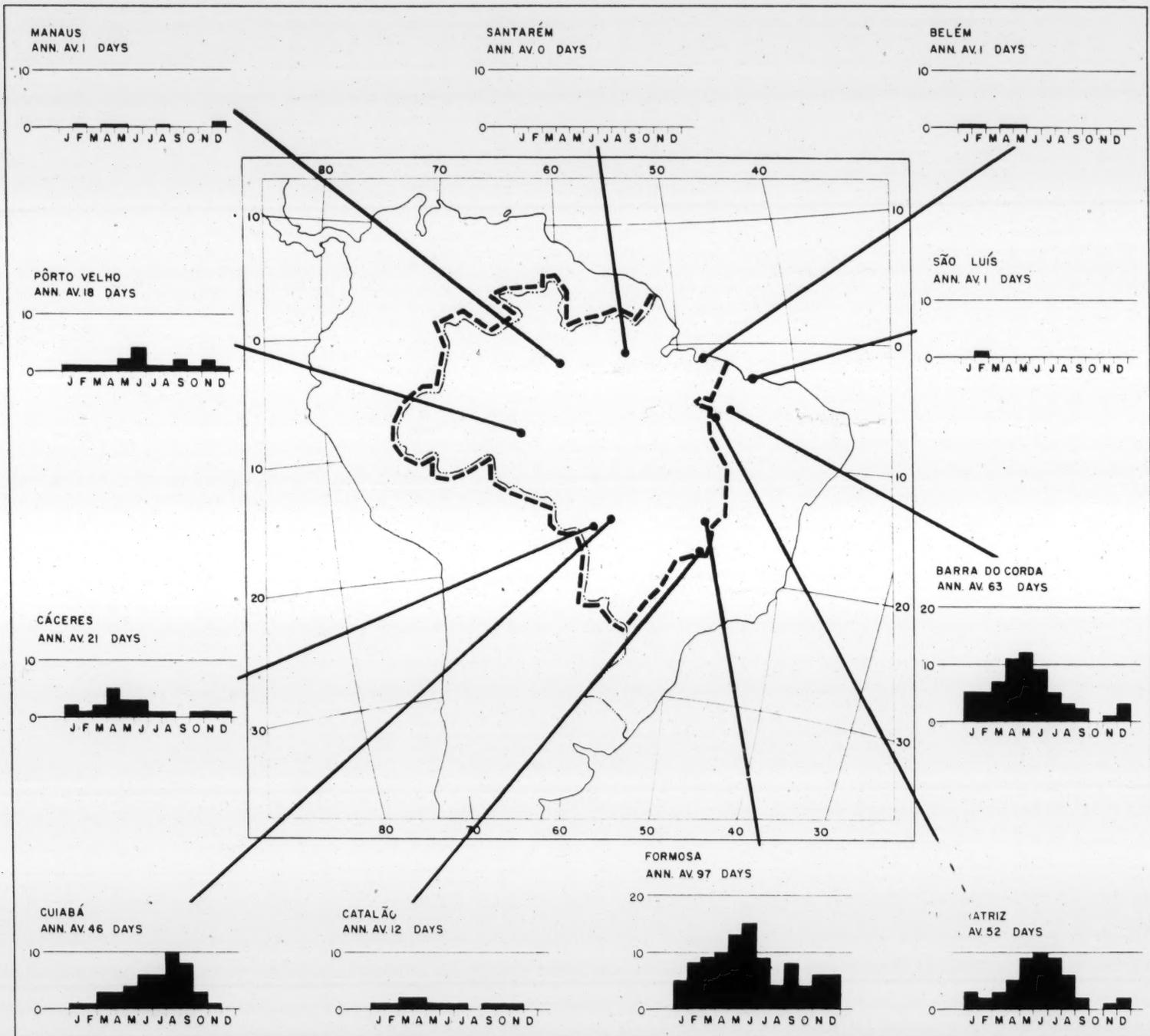


FIGURE 23-8. MEAN NUMBER OF DAYS WITH FOG

storms are often present along the leading edge of this cold airflow. Unlike those of the Amazon Basin, frontal thunderstorms in the southern part of the Area are not limited to the afternoon and early evening.

b. COMBINATIONS OF CLIMATIC FACTORS — For many operations within the friction layer, both maximum surface visibility and minimum low cloudiness are desirable features. Such operations include landing and takeoff, low-level visual bombing, and tactical air support. In addition, these operations may be dependent on other surface weather phenomena. Low air densities necessitate long takeoff runs and therefore longer runways than normal. The runway length for jet aircraft is

dependent, among other factors, on the temperature at which a certain density exists.

In general, weather favorable for air-ground operations is more frequent in this Area than in most areas of the Temperate Zone. Landings and takeoffs generally require cloud bases of 1,000 feet or more and visibility 1 mile or more. These conditions occur about 95% of the time over most sections of Northwest Brazil. Thunderstorms in which the cloud conditions and visibility are unfavorable restrict operations locally at times.

Operation of aircraft from airfields in the plateau region would be affected by lower air densities. At Luziânia (elevation 3,143 feet) the air density is 15% to 20% less than the standard sea-level atmosphere. At lower elevations this effect is less pro-

nounced, with densities 5% to 10% below the standard. The cooler morning hours are least affected by this phenomenon. Low air density increases the length of the run required for aircraft takeoff. The preponderance of light winds in the region frequently magnifies this problem.

3. Ground surface operations

Weather factors affecting ground operations vary appreciably in time and space across this NIS Geographic Area. The seasonal variation in rainfall is pronounced, with most sections having distinct dry periods. The soil is then dry and firm, and most rivers can be forded. In contrast, the rainy season is decidedly unfavorable for operations over most of the Amazon Basin, with flooded rivers and soft ground conditions. Although temperatures are not excessively high in the Amazon Basin, the air remains relatively humid throughout the year. Many fabrics and materials deteriorate under these conditions.

The southern portion of Northwest Brazil has greater variability of climatic elements, particularly temperature. In addition to a distinct dry season, the Area has a period of moderate temperature. A portion of the southern section is composed of elevated tableland, where the air is less humid and nighttime temperatures are appreciably lower than those of the day.

a. INITIAL CLIMATIC FACTORS

(1) *Precipitation* — The seasonal variation in precipitation is outstanding over much of this Area. Many stations having monthly amounts of 10 inches or more during the rainy season have almost negligible amounts during the dry season. Of the 57 stations listed in FIGURE 23-15, 25 have 1 or more months with precipitation amounts of 1 inch or less.

Over the southern two-thirds of the Area, June, July, and August are the least rainy months. Proceeding northward across the northern third, the dry season occurs at an increasingly later date. Along the Equator, including most of the Atlantic coastal strip, the dry season occurs in September, October, and November, while in the extreme northern portion the dry season, or more exactly the

NOTE Planning of ground surface operations includes consideration of such items as mobility, personnel comfort, clothing, supplies and storage, shelter, engineering construction, mechanical maintenance, observation, communications, logistics, and camouflage. Ground surface operations are affected, either directly or indirectly, by many meteorological elements; however, precipitation, temperature, and relative humidity are the most important factors. Other pertinent factors are surface winds and visibility.

less rainy period, is delayed until January, February, and March.

The extreme northwestern part of the Area is somewhat of an exception in that rainfall amounts are fairly heavy even during the dry season. At many points the average of the driest month is about 5 inches, while the average of the wettest month exceeds 10 inches. Many features of the rainfall pattern can be seen in FIGURE 23-9. The complete reversal of seasonal trends is strikingly obvious if we compare the profile at Boa Vista with that of many of the other stations.

Although the dry and wet seasons are fairly well defined over most of the Area, there is some variation in rainfall amounts from year to year. Data for Cuiabá show that the average for July is 0.4 inch, yet as much as 3.6 inches have been recorded. Similarly, the mean in January is 8.7 inches but as little as 2.6 inches have been recorded. Similar variations occur at most other stations in the Area.

Rainfall is mostly of the shower type. Steady rains are infrequent and confined more or less to the southern portion. FIGURE 23-21 gives tabularly the maximum 24-hour precipitation. Heavy showers occasionally occur even during the dry season. At Taguatinga the monthly average in July is 0.2 inch but as much as 1.7 inches have occurred during a 24-hour period. During those months when the monthly average exceeds 3 inches, 24-hour amounts rarely exceed the monthly average.

The foregoing suggests that during some years the rainfall in a given month of the dry season may be received on a few days. This is true only occasionally during the rainy season, as indicated by the data in FIGURE 23-22 which shows the average number of days with precipitation. At most stations precipitation occurs on one-half to two-thirds of the days during the rainy season, while during the dry season, particularly in those regions where the average monthly precipitation is less than 1 inch, the total precipitation may occur on 1 or 2 days in a given month. FIGURE 23-10 presents graphically the average number of days with precipitation.

(2) *Temperature and relative humidity* — Except for the extreme southern tip, the NIS 94-II Area lies within the Tropics. Across the vast Amazon Basin the air is hot and humid throughout the year, and ground operations would suffer because of the adverse weather effects on personnel. In addition, the hot, humid air hastens the deterioration of many fabrics and metals. Even during the rainless period the air remains relatively humid, a condition not without some beneficial economic effects in that the forests do not become

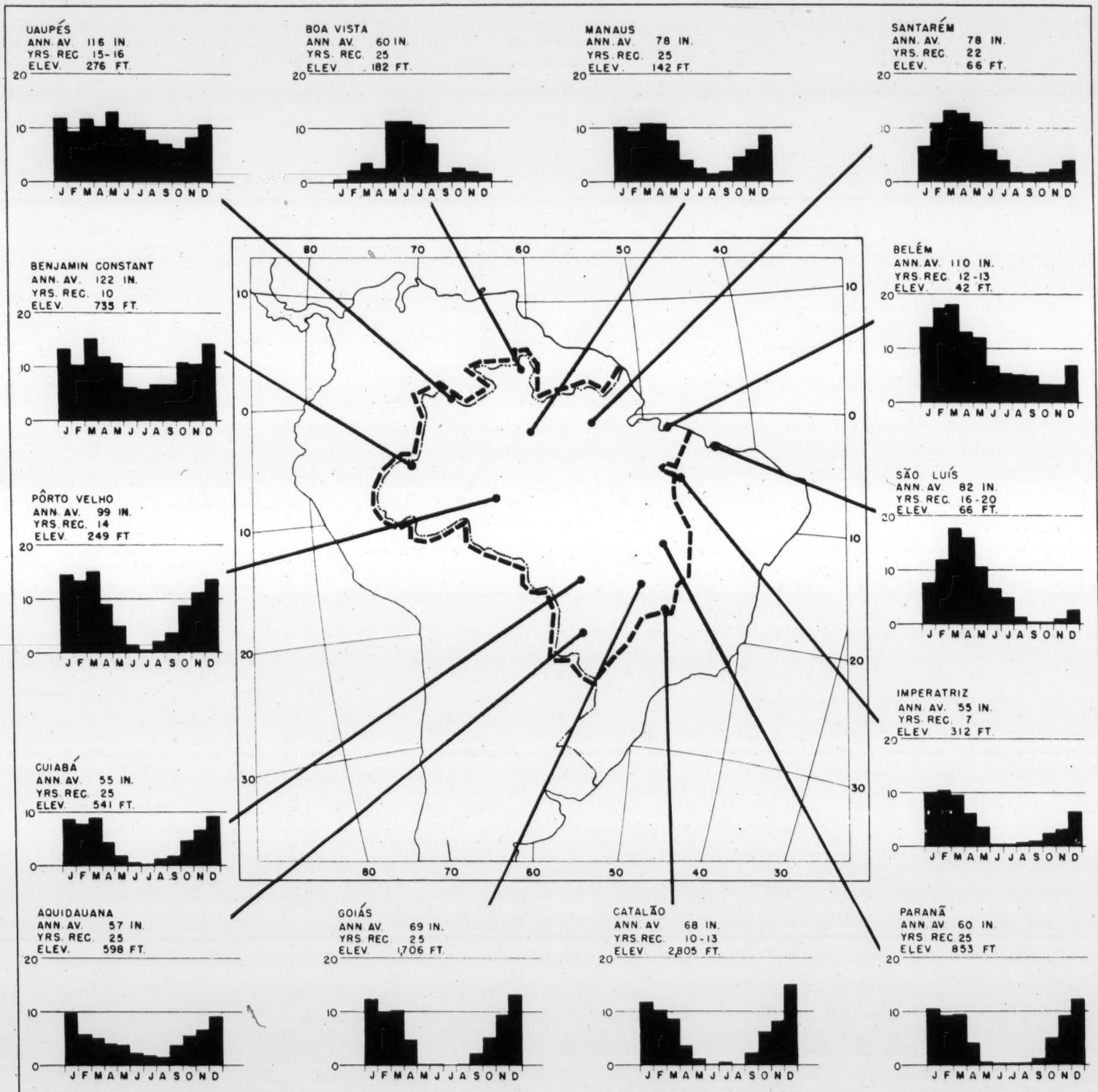


FIGURE 23-9. MEAN MONTHLY PRECIPITATION (INCHES). (For tabular data see FIGURE 23-15.)

dry and therefore susceptible to fire. The difference in mean temperature between the warmest and coolest months is only about 4° F. over the northern and western sections of the Area. This difference increases southward across the southern third of the Area, where it reaches a high of 14° F.

Outbreaks of cooler air occasionally sweep northward across Northwest Brazil during winter. The effects of these outbreaks are more noticeable in the south. The lowest observed temperatures are presented graphically in FIGURE 23-11 for 14 selected stations. It should be noted that, at some

of the southernmost stations, freezing or near freezing temperatures have been recorded. This cooler air is, however, greatly modified by the time it reaches the Tropics. In the western portion of the Area, temperatures occasionally fall below 60° F., a condition which is said to cause the natives much distress.

Diurnal variations over the tropical portions of Northwest Brazil, although small, are appreciably greater than the seasonal variations. While the difference between the average temperature of the coolest and warmest month is only 4° F., the aver-

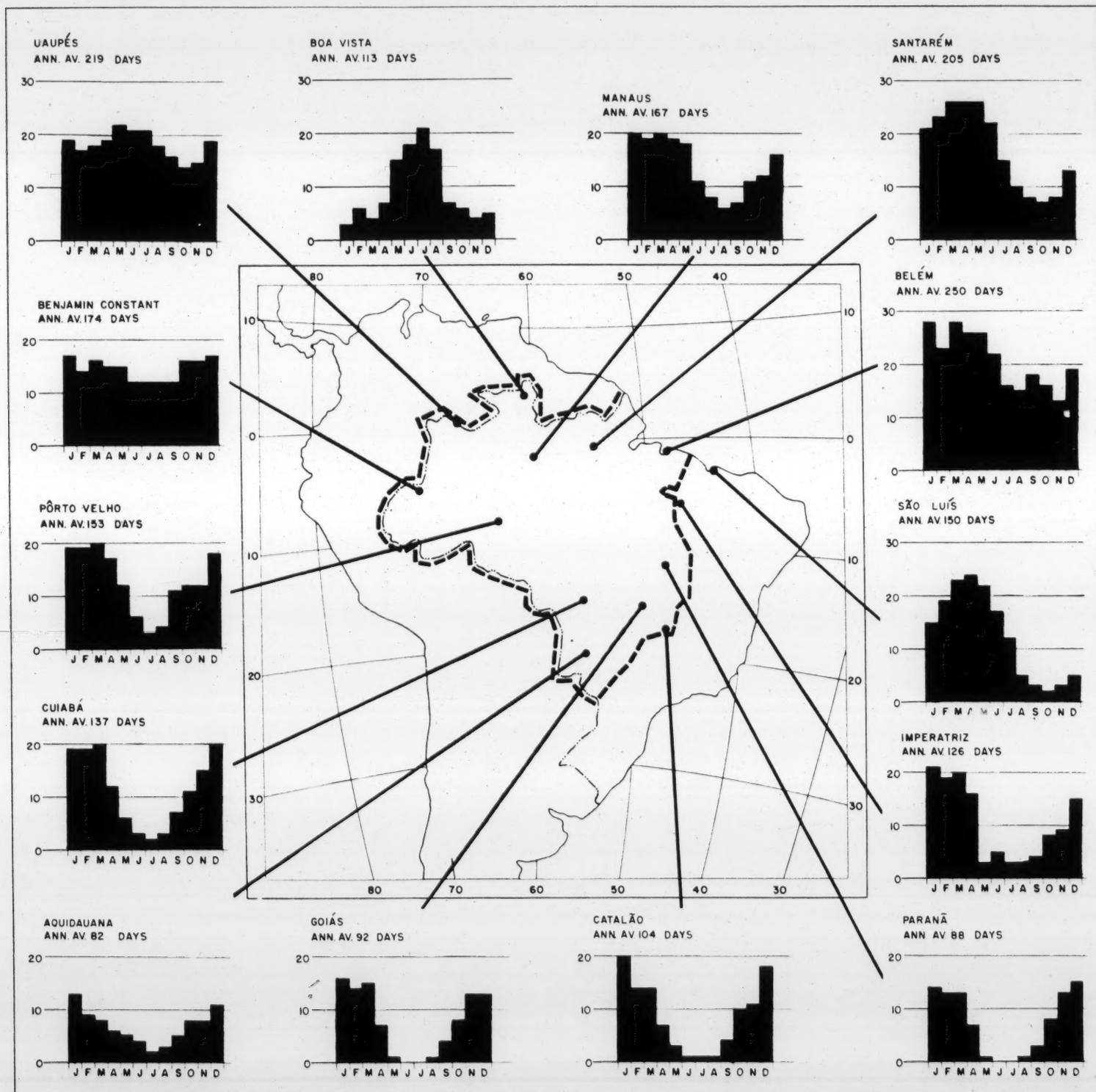


FIGURE 23-10. MEAN NUMBER OF DAYS WITH PRECIPITATION ≥ 0.01 INCH. (For tabular data see FIGURE 23-22.)

age difference between the warmest and coolest part of the day is close to 16° F., except along the immediate coast where due to the influence of the ocean the variation is closer to 12° F. Over the southern portion the daily variation is more pronounced, ranging, on the average, from slightly less than 20° F. in summer to close to 30° F. in winter. FIGURE 23-12 presents graphically the daily temperature variation at 13 selected points. The greatest daily temperature variation at most stations occurs during the Southern Hemisphere winter and early spring. This is the dry season, when air from the subtropical high-pressure cell

flows northwestward across Northwest Brazil. The air being less humid allows greater warming during the day and cooling at night.

This association of temperature variability with humidity becomes evident if we compare FIGURE 23-12, which shows daily temperature fluctuation by months, with FIGURE 23-13, which gives the average monthly humidities. We see that lowest humidity and highest temperature variability occur over the southern portion of this Area in winter. Over the Amazon Basin, humidities are high and there is little seasonal variation, while the temperature variability is small. Here too, the daily tem-

perature fluctuation is least during the more humid months.

Excessively high temperatures such as are observed in summer in Saudi Arabia, India, Australia, the Sahara, and southwestern United States are unknown in this Area. The effectiveness of humid air with its attendant cloudiness in screening out the sun's heat is again demonstrated. Thus, highest temperatures are not recorded over the humid Amazon Basin, but over the drier steppe area in the south where temperatures above 100° F. are much more frequent than near the Equator. FIGURE 23-23 gives in tabular form the highest and lowest observed temperatures, while FIGURE 23-24

gives averages of the highest and lowest temperatures observed each day. The highest temperature observed in Northwest Brazil is 108° F. (FIGURE 23-23), recorded at Bela Vista near 22°S. in November, while the highest average is 97° F. (FIGURE 23-24), recorded at both Carolina near 8°S. and Pôrto Nacional near 10°S. in August and September, respectively. Thus, while highest individual readings occur in the extreme southern portion of the Area, highest averages occur in the east-central portion.

(3) *Surface winds* — Two predominant air-flow patterns can be discerned in the free atmosphere over Brazil. The first of these occurs during

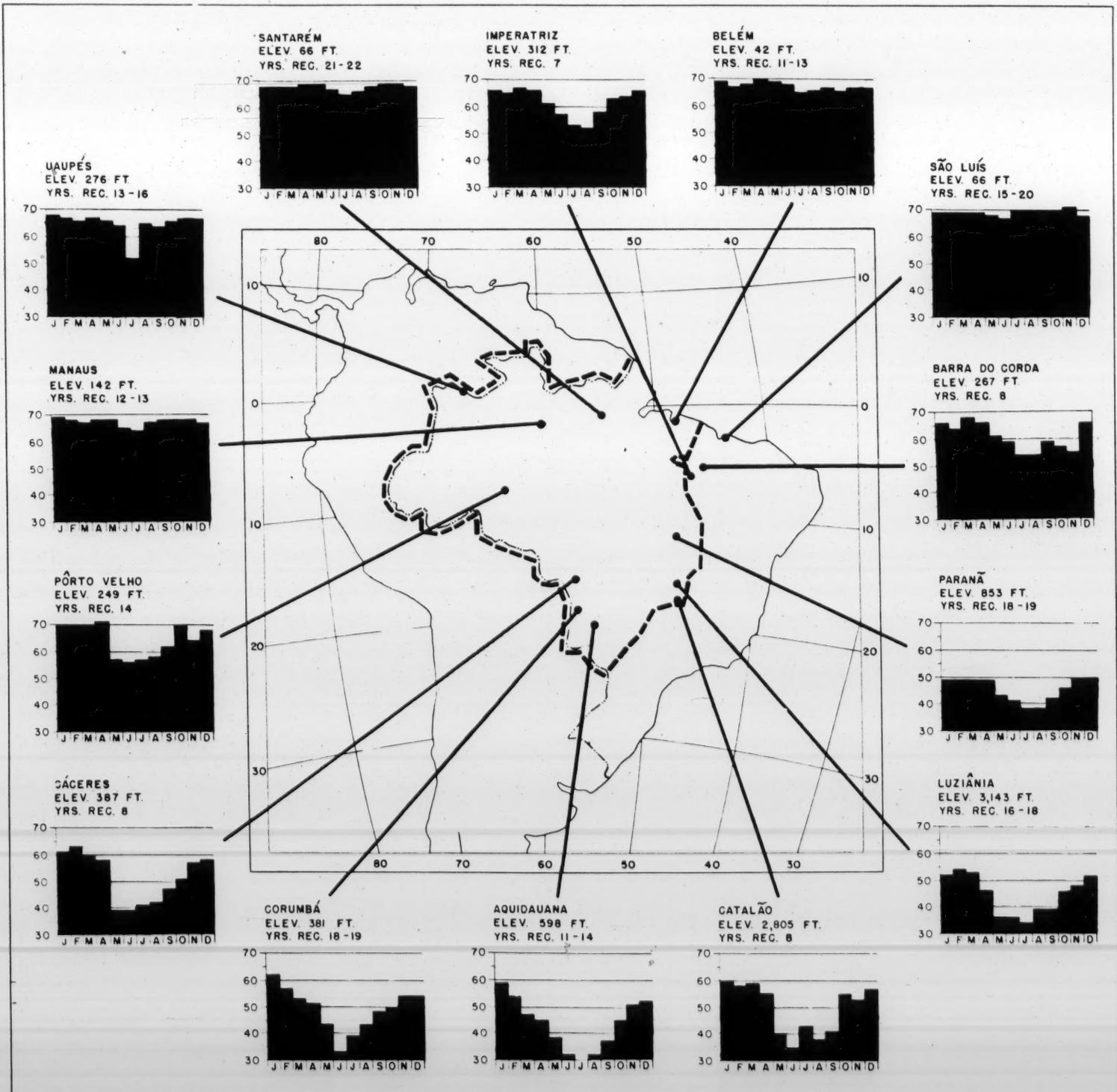


FIGURE 23-11. LOWEST OBSERVED TEMPERATURE (°F.). (For tabular data see FIGURE 23-23.)

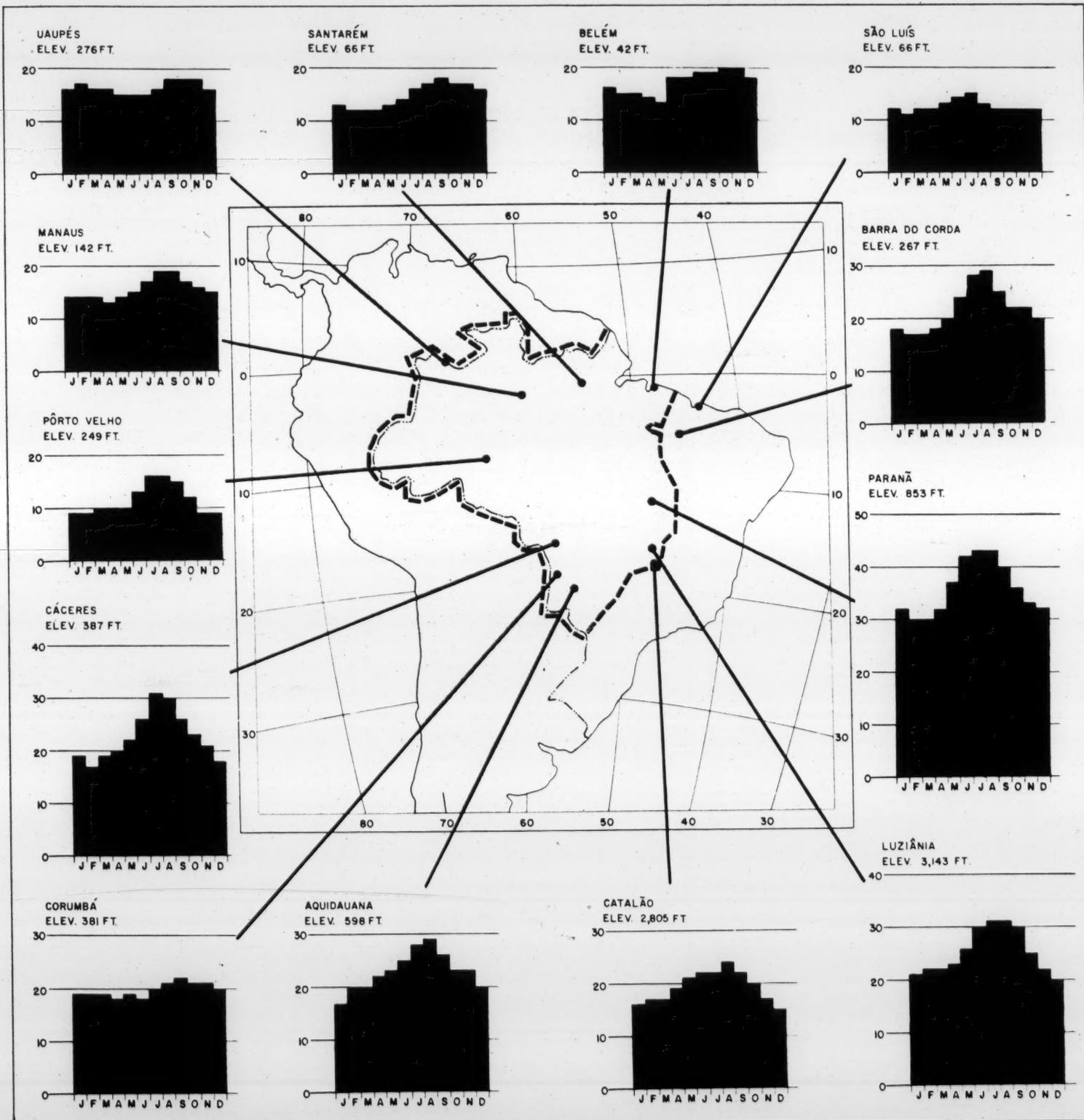


FIGURE 23-12. DAILY TEMPERATURE VARIATION (°F.). (For tabular data see FIGURE 23-24.)

the South American summer, when lower pressures are present over Brazil, particularly the southern portion. In response to this pressure gradient, moist air from the tropical Atlantic periodically flows westward into the Amazon Basin, then southward across the highlands of the Mato Grosso.

The second airflow pattern is present during the South American winter, when higher pressures over Brazil discourage the flow of moist air into the interior from the tropical Atlantic. The center of lower pressure is displaced toward extreme

northern Brazil, while the South Atlantic high-pressure cell frequently extends eastward into Brazil. This pressure alignment produces a relatively weak flow of air from the southeast across all but the southern third of Brazil. The latter region is frequently affected by migratory low-pressure centers, and the winds are more variable, with northerly winds predominating in some sections.

Local topography, of course, plays an important role in deflecting or masking the two major airflow

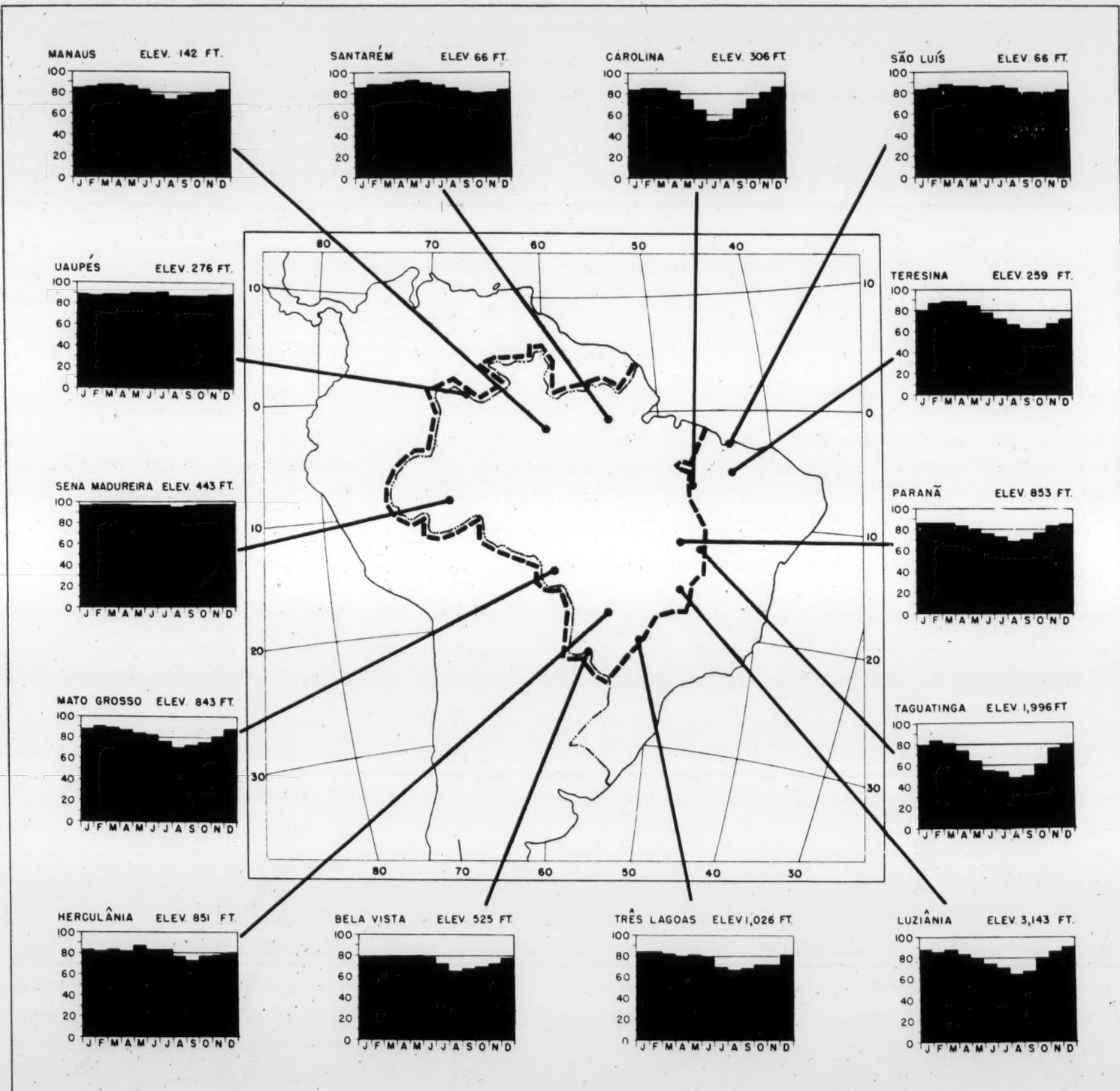


FIGURE 23-13. MEAN RELATIVE HUMIDITY (%)

patterns. The following paragraphs are devoted to the surface winds at a number of locations in this Area.

At Aquidauana, in the extreme southern portion of the Area, the flow is primarily from the south in winter and from the north in summer. The southerly winds of winter are due, in part, to the flow of cooler air from the Temperate Zone. The frequency of calm wind conditions is quite high during most months at Aquidauana. FIGURE 23-25 shows that at Aquidauana calm winds are present on one-third to one-half of the days at 0900 LST during most months.

At points in the eastern highlands of Northwest Brazil, topographic effects such as the blocking action of hills and ridges and the channeling effects of valleys generally mask the overall flow patterns. At Luziânia, for example, downslope or winds from the east prevail throughout the year, while calm air conditions are relatively infrequent. The expected flow from the northeast in summer occurs infrequently. The surface airflow at many other points is due primarily to local topographic effects.

Strong winds are uncommon in Northwest Brazil. In the Amazon Basin they are most likely to occur during thunderstorm conditions. A downward

~~RESTRICTED TO FOREIGN NATIONALS~~

rush of air is created by the falling rain, which gives rise to gusty local winds. In forested areas the energy of the wind is dissipated at treetop level and the air remains relatively calm at ground level. Over the extreme southern portion, wind speeds occasionally exceed 20 m.p.h. during outbreaks of cooler air from the south. Along the coast a brisk sea breeze is present during the afternoon. This flow decreases inland due to convective activity which disperses the energy upward through a greater mass of air.

(4) *Visibility* — Visibilities are generally good over Northwest Brazil. Fog and rain are the principal restrictions. Fog occurs mostly during the morning but dissipates within an hour or two after sunrise. Restricted visibilities due to showers are more likely to be encountered during the afternoon. In hilly country the attendant low cloudiness occasionally sweeps across at treetop level and effectively limits visual observation.

(5) *Flood conditions* — Two factors combine to make the Amazon Basin susceptible to annual flooding. The first is heavy precipitation, and the other, sluggish runoff due to the flatness of the basin. The average annual precipitation in the upper Amazon ranges from 80 to 140 inches. In the central Amazon Basin the rains which eventually lead to prolonged flood conditions commence in November. The area of precipitation intensifies and extends toward the headwaters during December and January and continues through February and March. During the latter months the level of the Amazon gradually rises.

At Pôrto Velho, high water is present during March, April, and May, begins to fall in June, and reaches the lowest levels during August through December. At Manaus, about halfway up the basin, the river begins to rise in December and reaches highest levels in May through August; during September and October the river falls and reaches the lowest readings in November. It is evident that at Manaus the high water continues well into the dry season. This slow fall is due to the flatness of the basin, which at the end of the rainy season resembles a series of swamplike lakes which require several months to drain.

b. OVERALL EFFECT OF SURFACE WEATHER PHENOMENA ON CLOTHING, STORAGE, AND SHELTER

(1) Clothing

(a) *MAJOR INFLUENCES* — Clothing requirements for Northwest Brazil are influenced most significantly by temperature, humidity, and precipitation.

Because of its tropical location and low elevation, the climatic variation affecting clothing requirements is small. Only at moderate elevations in the

southern part of the Area is the climatic variation great enough to require seasonal changes in clothing requirements. Some special items are required because of the prevalence of insects and pests.

(b) *REGIONAL REQUIREMENTS* — The NIS 94-II Area can be divided into two regions, the Amazon Lowlands and the Southwestern Interior, each of which has distinctive clothing requirements. FIGURE 23-14 indicates the clothing assembly most desirable for each region during each month of the year. The clothing requirements tabulated in FIGURE 23-14 have been computed on the basis of mean monthly temperatures, as follows: warm weather, above 68° F.; and cool weather, between 50° and 68° F.

For planning purposes, the components of the clothing assemblies* are described in general terms. The warm-weather assembly is a cotton outfit (visored cap, shirt, trousers, and underwear). It also includes a lightweight, woolen knit shirt, primarily for night wear; a sun helmet; and lightweight, high-top canvas boots. A single woolen blanket is adequate sleeping equipment for use with this assembly.

In the cool-weather clothing assembly, flannel or woolen items are substituted for the cotton shirt and trousers; high-top leather boots for the canvas boots; and a high-necked, long-sleeved sweater for the woolen knit shirt. A hooded, water-repellent, wind-resistant jacket and leather gloves with woolen inserts are included also. A woolen sleeping bag with a water-repellent case is adequate sleeping equipment for use with this assembly.

A lightweight poncho is desirable with each assembly for protection against rain.

(c) *EXCEPTIONS AND ADDITIONS FOR INDIVIDUALS IN A PROTECTED ENVIRONMENT* — The clothing assemblies described in the previous paragraphs have been computed on the assumption that the individuals wearing them will be living in the open for 24 hours a day. Requirements for individuals in permanent installations may differ somewhat; for instance, a raincoat may be more practical than the poncho, and the service-type shoes, with one pair of mediumweight woolen socks, and a pair of overshoes might be more desirable than either the high-top canvas or leather boots.

(d) *SPECIAL REQUIREMENTS* — Insects and pests, such as mosquitoes, flies, fleas, ticks, lice, scorpions, and centipedes, and poisonous snakes make special items necessary. For example, repellents, insect bars, headnets, mosquito gloves, and similar items afford some protection against insects and pests, and high-top boots or leggings

* Appropriate service regulations list the exact nomenclature and the basis for issue of the various components of the clothing assemblies.

afford some protection against snakes. In addition, blood-sucking vampire bats and vicious piranha fish are native to the Amazon Lowlands. Their presence requires that some form of protection be provided against them.

Swampy conditions and periodic floods along the main river valleys, particularly in the Amazon Lowlands, may require some type of waterproofed footwear. In contrast, the frequent occurrence of blowing dust and sand during the dry season in the scrub-covered sections, particularly in the Southwestern Interior, suggests the need for some type of face or neck shield.

Normal clothing attrition is increased, particularly in the Southwestern Interior, where excessive damage to clothing items can be anticipated in the large sections covered with thorny scrub and bare rock. High humidities cause rapid deterioration of untreated cloth or leather items throughout the year in the Amazon Lowlands and during the summer in the Southwestern Interior.

Tinted glasses should be worn throughout the Area for protection against the brilliant sunshine and sunglare.

(2) *Storage* — Extremes of temperature, precipitation, and high humidities are the main environmental factors to be considered for the protection of open-stored items in this Area.

Open-stored subsistence supplies suffer damage from high temperatures. Such damage can be anticipated in the south except during winter and in the remainder of the Area throughout the year. Possible damage from alternate freezing and thawing in the extreme southern part of the Area can be expected.

Protection of open-stored items against rain is desirable all year throughout Northwest Brazil. Maximum dunnage would be required on river floodplains and in the many marshes and swamps. Wood for dunnage is available in these sections.

Because of the high humidities, stored items would be subject to damage from rust and mildew all year throughout most of Northwest Brazil. Ex-

ceptions are parts of the Southwestern Interior during winter.

(3) *Shelter* — Shelter is needed throughout the year to provide shade and for protection against rain and occasionally low temperatures. Tents similar to the U.S. Army squad and wall tent would provide adequate protection throughout the Area. Heat may be desirable only at higher elevations in the south during winter. The prevalence of insects and pests throughout the Area makes screening and flooring of tents desirable.

Timber for the construction of improvised shelter and for the flooring of tents is available throughout most of Northwest Brazil but may be in short supply in the scrub sections of the Southwestern Interior.

4. Amphibious operations

Weather and sea conditions would not preclude amphibious operation in any month in this NIS Geographic Area. However, the wet season (January through June) is less favorable than the dry season (July through December), particularly for personnel and equipment. North of the Equator, landings would be hampered during January and February by heavy or confused swell which occurs over 40% of the time. High air temperature and relative humidity and high water temperature are unfavorable features throughout the year.

a. *WET SEASON* — During the wet season the weather is controlled by the doldrum belt. During this season, calms are prevalent along the coast, particularly in sheltered bays, occurring as much as 40% to 60% of the time with maximum

NOTE Amphibious operations include all phases of operations involving the movement of troops and equipment onto a beach and the associated protective measures. The discussion of coastal weather covers such pertinent elements as surface winds, cloudiness, precipitation, visibility, and temperature. A more detailed consideration of these elements individually and in combination may be found in the Subsections on Air, Air-ground, and Ground Surface Operations.

FIGURE 23-14. CLOTHING REQUIREMENTS

REGIONS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Amazon Lowlands.....	W	W	W	W	W	W	W	W	W	W	W	W
Southwestern Interior:												
Northern portion:												
Below 2,000 feet.....	W	W	W	W	W	W	W	W	W	W	W	W
2,000 to 4,000 feet.....	W	W	W	W	W	C	C	W	W	W	W	W
Above 4,000 feet.....	W	W	W	W	C	C	C	C	W	W	W	W
Southern portion:												
Below 2,000 feet.....	W	W	W	W	W	W	W	W	W	W	W	W
2,000 to 4,000 feet.....	W	W	W	W	C	C	C	C	W	W	W	W
Above 4,000 feet.....	W	W	W	C	C	C	C	C	C	C	W	W

W—warm-weather clothing assembly; C—cool-weather clothing assembly.

frequency in March. During the remainder of the season, light, unsteady winds blow from northeast to east, usually as sea (onshore) breezes during the afternoon. Occasionally a weak southwesterly land (offshore) breeze develops for a few hours during the night. Gales (wind speed over 32 m.p.h.) are uncommon and occur in less than 1% of the observations.

Swells and seas from the northeast quadrant are predominant north of the Equator, with slight to moderate intensity occurring over 80% to 90% of the time except in January and February when heavy or confused swells and rough seas occur over 40% of the time. Off the mouth of the Amazon River and south of the Equator, swells and seas from the northeast quadrant prevail 70% to 90% of the time, with slight to moderate intensity reported 80% to 90% and heavy or confused swells and rough seas occurring in less than 20% of the observations.

Mean cloudiness during the wet season averages 60% to 80% and is almost double that of the dry season. Cloud cover reaches a maximum in March, with 74% reported at Belém and 82% at São Luís. Ceilings less than 1,000 feet are reported on 8 days per month during March and April and on 3 to 6 days per month during the remainder of the wet season.

Rain falls on 18 to 24 days a month; the rainiest months, February through May, receive monthly amounts of 10 to 18 inches. Thunderstorms and heavy showers are frequent during these months. At Belém there are 37 thunderstorm days from January through June, an average of 1 every 4 or 5 days. São Luís has 14 thunderstorm days, with an average of 2 to 3 days per month.

Visibility is unlimited over 90% of the time. Heavy rains are the only cause of seriously reduced visibility, sometimes to less than a mile, but these are of short duration. Dense fog is very uncommon, averaging less than 1 day during this period.

In the temperature regime there is no significant seasonal variation. Monthly means hold near 80° F. Daily maximum temperatures average 85° to 88° F. and rarely go above 90° F., while daily minima are 71° to 75° F. Relative humidity averages 85% to 95%. Sea-water temperatures average 80° to 82° F. except north of the Equator during the month of January when the temperature is 78° F.

b. DRY SEASON — In the dry season the doldrum belt lies north of this NIS Geographic Area, and east to southeast trades prevail 85% of the time south of the Equator. North of the Equator, local influences tend to draw the wind flow onshore from the northeast. From July through September these winds occur over 70% of the time, while

southeast winds strong enough to resist local influences are reported 15% to 20% of the time. Mean wind speed is 6 to 9 m.p.h. The trades are strengthened by a sea breeze during the day; a weak land breeze may develop for a few hours during the night. Gales (wind speed over 32 m.p.h.) occur in less than 1% of the observations.

Swells and seas are from the northeast 50% to 80% of the time north of the Equator. Their intensity is slight to moderate over 90% of the time except in June when heavy or confused swells and rough seas are observed 25% of the time. Off the mouth of the Amazon River, swells and seas from the northeast quadrant occur over 50% to 60% of the time except in August and September when the direction swings to the southeast. Swells and seas of slight to moderate intensity are observed 80% to 90% of the time, while frequency of heavy or confused swells and rough seas ranges from 15% in June to less than 10% in the remainder of the months. South of the Equator, the frequency of swells and seas from the northeast quadrant is 60% to 90%. Swells and seas of slight to moderate intensity are reported over 80% of the time. Heavy or confused swells and rough seas are experienced less than 7% of the time.

The mean cloudiness averages 35% to 55%. Ceilings lower than 1,000 feet occur only 1 day per month. Rain falls on an average of 7 to 15 days a month during this season. The average monthly precipitation is 3 to 6 inches, while during the driest months (September through November), only 1 inch or less of rain is reported. Thunderstorms occur on an average of 4 to 5 days per month at Belém; São Luís has 1 to 2 thunderstorm days per month, increasing to 4 days per month in October and November.

Visibility is good during this season. Absence of fog, except in inland valleys, is characteristic. Rain showers are the usual limitations on visibility.

There is a continuation of the evenly high temperatures—monthly means near 80° F.; daily maxima, 86° to 92° F.; and daily minima, 71° to 75° F. Relative humidity averages 75% to 90%. Sea-water temperatures average 80° to 81° F.

D. Climatic data tables

The various climatic data tables referred to in Subsections A and B are contained in this Subsection. Stations listed in the tables are arranged alphabetically. Climatic data for nearby stations outside the geographic boundaries of NIS 94-II are included, in the absence of satisfactory records or parts of the designated NIS Geographic Area. Cloud height and visibility data of value were parse.

A map of station locations, with an accompanying list giving latitude, longitude, and elevation of the stations

FIGURE 23-15. MEAN PRECIPITATION (INCHES)

STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Almeirim	5.8	9.1	10.1	11.8	12.1	7.7	6.9	3.8	2.5	1.6	1.6	3.8	76.8	25
Altamira	9.9	10.7	11.9	10.1	6.2	3.8	1.9	1.1	1.6	2.1	2.3	4.8	66.4	25
Alto Araguaia	11.8	11.1	11.5	4.5	1.9	0.9	1.0	0.4	3.2	5.2	9.8	10.4	71.7	8-9
Aquidauana	9.8	5.8	4.7	4.8	3.9	2.1	1.6	1.4	3.3	5.0	6.4	8.3	57.1	25
Araguaia	8.5	8.2	9.8	2.6	1.8	0.3	0.4	0.4	1.5	5.8	7.6	8.7	55.6	6
Barcelos	7.0	7.2	9.6	10.0	11.4	10.0	7.8	5.2	4.9	5.3	4.7	5.4	88.5	25
Bela Vista	6.3	4.9	4.4	4.6	4.8	2.8	1.5	1.8	2.9	5.0	5.8	6.7	51.5	25
Belém	13.9	17.3	18.0	13.1	12.0	6.8	5.4	5.2	4.9	3.4	3.4	7.0	110.4	12-13
Benjamin Constant	13.3	11.2	15.2	11.6	10.6	6.0	5.8	6.5	6.5	10.8	10.6	14.3	122.4	10
Boa Vista	1.1	1.3	1.4	3.3	11.2	13.0	12.8	6.8	3.1	2.6	1.9	1.5	60.0	25
Cáceres	6.2	7.9	4.5	2.6	1.6	0.6	0.2	0.7	1.6	3.2	5.4	5.9	40.4	9-12
Carauari	11.6	10.3	12.8	12.5	8.3	4.0	2.5	3.3	6.6	8.9	8.1	10.9	99.8	25
Carolina**	9.7	10.5	11.1	7.0	2.2	0.4	0.2	0.6	1.5	4.9	6.9	8.1	63.1	25
Catalão	11.7	10.2	8.8	3.7	1.1	0.3	0.5	0.3	2.3	6.1	8.2	14.9	68.1	10-13
Conceição do Araguaia	10.3	10.6	11.8	7.0	2.4	0.4	0.2	0.7	3.1	5.8	7.6	7.7	67.6	11
Corumbá	7.3	5.3	4.5	3.2	2.6	1.4	0.8	0.8	2.3	3.8	4.9	7.0	43.9	25
Cruzeiro do Sul	8.6	11.0	10.5	7.7	5.1	4.1	2.3	3.5	5.5	10.5	8.0	10.5	87.3	25
Cuiabá	8.7	7.7	8.9	4.1	1.8	0.5	0.4	1.2	1.9	4.7	6.4	8.6	54.9	25
Eirunepé	12.0	12.6	12.1	8.8	5.3	3.1	2.0	3.2	6.4	8.6	9.2	11.1	94.4	25
Floriano Peixoto	14.2	13.3	11.8	7.5	4.8	2.8	1.2	1.8	3.9	7.7	9.5	11.9	90.4	25
Fonte Boa	11.7	10.1	11.5	10.2	13.1	9.1	7.3	6.1	5.8	6.7	8.7	8.0	108.3	25
Formosa	10.4	8.9	8.0	4.0	0.8	0.2	0.1	0.4	1.3	5.6	9.0	14.0	62.7	25
Goiás	12.7	9.8	10.0	4.3	0.7	*	0.1	0.6	2.0	6.2	9.5	13.2	69.1	25
Guaíra**	8.3	5.0	4.5	5.1	6.2	4.6	2.5	3.6	4.2	6.2	5.7	5.7	61.6	25
Herculândia	8.3	5.9	7.1	4.4	2.7	1.3	1.3	0.4	4.5	4.6	7.0	6.9	54.4	46
Humaitá	15.2	13.3	15.7	11.2	6.0	1.9	1.3	2.6	4.8	7.0	9.5	13.1	101.6	25
Imperatriz**	10.1	10.4	9.7	6.0	3.7	0.5	0.5	0.8	0.9	2.5	3.3	6.5	54.9	7
Itaituba	11.8	13.6	9.6	7.9	6.5	2.9	2.1	1.8	2.3	4.6	4.8	6.2	74.1	25
Iuaretê	9.3	8.3	8.8	14.5	13.2	12.5	12.0	9.7	10.2	10.5	7.8	7.1	123.9	25
Lábrea	13.2	14.2	12.8	11.0	7.4	2.8	1.2	3.6	4.1	7.3	9.0	11.8	98.4	25
Luziânia	11.8	9.6	10.3	4.5	1.1	0.6	0.2	0.4	1.4	6.3	10.0	13.2	69.4	25
Manaus	10.2	9.6	10.8	10.7	7.6	4.1	2.5	1.5	2.4	4.6	5.9	8.6	78.5	25
Manicoré	16.2	15.7	13.1	10.4	9.2	3.6	1.5	3.3	5.8	7.7	8.0	12.0	106.5	25
Mato Grosso	9.1	7.8	8.6	3.9	2.2	1.2	0.8	0.7	1.2	3.9	5.1	7.9	52.4	6.8
Missão do Cururu	15.8	17.2	16.5	12.3	3.8	1.5	1.6	1.8	5.0	7.8	12.7	13.0	109.0	25
Oiapoque	16.9	13.1	15.7	18.3	20.3	13.3	8.3	4.2	1.6	1.5	3.7	11.7	128.6	25
Paraná	10.8	9.0	9.1	4.0	0.5	*	0.1	0.2	0.8	5.1	8.9	11.8	60.3	25
Parintins	10.0	12.0	13.7	12.1	9.7	6.6	4.6	2.7	2.1	2.4	5.1	7.2	88.2	25
Pirenópolis	11.7	9.4	10.9	4.9	1.7	0.2	0.7	0.5	1.4	5.6	8.6	11.0	66.6	8-10
Pôrto de Moz	8.1	11.8	11.7	13.1	13.3	8.6	6.6	3.2	3.1	2.2	1.5	4.2	87.4	25
Pôrto Nacional	12.1	11.9	11.8	6.0	1.7	0.2	0.1	0.2	1.7	5.5	9.5	11.4	72.1	18-20
Pôrto Velho	14.6	13.5	15.0	8.9	5.0	1.4	0.6	2.1	3.7	8.9	11.2	13.8	98.7	14
Presidente Murtinho	11.8	10.2	11.1	5.4	2.2	0.3	0.4	0.7	3.7	6.4	10.4	12.6	75.2	11-12
Quarí	10.7	10.2	11.8	12.3	9.1	5.2	2.5	2.7	3.7	6.1	6.3	9.2	89.8	25
Salinópolis	7.0	12.0	14.9	15.2	9.2	5.3	3.7	1.0	0.3	0.1	0.3	1.9	70.9	25
Santa Cruz	10.5	11.1	9.7	4.5	1.8	0.2	0.4	0.3	2.4	4.7	8.5	11.6	65.7	22-23
Santarém	6.8	10.9	13.2	12.9	11.3	6.9	4.1	1.7	1.5	1.9	2.3	4.1	77.6	22
São Luís**	7.7	12.0	17.7	16.0	11.6	6.5	5.1	1.3	0.4	0.4	0.9	2.6	82.2	16-20
São Paulo de Olivença	12.9	10.2	12.8	12.0	11.8	7.0	5.6	6.6	6.4	7.1	7.9	10.2	110.5	25
Sena Madureira	11.2	11.3	10.2	9.4	4.1	2.2	1.1	1.5	4.0	7.0	7.5	11.7	81.2	18
Taguatinga	11.0	11.5	11.3	5.1	0.8	*	0.2	0.3	1.5	4.6	11.0	11.7	69.0	18-20
Taracá	13.2	10.7	11.8	15.6	16.7	12.7	12.5	9.7	8.4	7.8	9.2	10.7	139.0	25
Tefé	7.0	10.2	9.8	9.8	10.1	6.6	3.9	3.4	4.3	5.9	7.1	7.9	86.6	25
Tocantinópolis	10.6	11.8	12.6	8.6	4.3	0.8	0.2	0.8	1.3	3.8	6.5	8.3	69.6	15-17
Tracuateua	6.6	14.5	14.5	16.8	13.2	7.4	7.6	4.3	1.3	0.2	0.5	1.9	88.8	25
Três Lagoas	8.0	6.3	5.3	4.1	3.2	2.2	1.0	1.5	2.9	4.5	5.2	7.4	51.6	25
Uaupés	11.9	9.4	11.7	10.3	13.1	10.1	9.9	7.7	7.0	6.3	8.1	10.9	116.4	15-16

* <0.05 inch.

** Near but outside NIS 94-II Area.

FIGURE 23-16. HIGHEST, LOWEST, AND MEAN ANNUAL PRECIPITATION (INCHES) FOR THE PERIOD 1914 THROUGH 1938

STATION	HIGHEST	LOWEST	MEAN
Altamira	91.7	39.3	66.4
Aquidauana	84.8	40.4	57.1
Barcelos	117.0	66.3	88.5
Bela Vista	72.9	35.9	51.5
Belém	132.0	80.2	110.4
Boa Vista	85.4	33.3	60.0
Carauari	150.2	41.1	99.8
Carolina*	90.2	46.7	63.1
Corumbá	61.2	24.6	43.9
Cruzeiro do Sul	125.9	48.8	87.3
Cuiabá	66.7	39.0	54.9
Florianópolis	130.2	53.0	90.4
Goiás	93.1	42.4	69.1
Humaitá	155.1	52.3	101.6
Iuaretê	149.6	97.4	123.9
Luziânia	113.2	36.3	69.4
Manaus	105.2	56.0	78.5
Missão do Cururu	150.8	74.4	109.0
Oiapoque	153.0	103.7	128.6
Paraná	79.8	33.3	60.3
Três Lagoas	95.9	28.9	51.6

* Near but outside NIS 94-II Area.

FIGURE 23-17. MEAN NUMBER OF CLOUDY DAYS (CLOUD COVER \geq 8-TENTHS)

STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
Altamira	6	7	8	5	3	1	1	1	1	1	3	3	40
Aquidauana	17	14	13	10	9	9	7	7	9	12	12	15	134
Barcelos	12	9	10	13	13	13	11	6	5	8	7	7	114
Bela Vista	11	10	7	7	9	11	8	6	10	9	7	10	105
Belém	12	16	15	12	9	5	3	2	1	2	3	7	87
Boa Vista	16	14	16	17	18	15	15	11	10	14	13	15	174
Cáceres	14	12	11	8	6	4	3	3	6	9	9	13	98
Carolina*	11	12	11	7	2	0	0	0	2	5	8	12	70
Catalão	17	14	12	6	3	2	1	2	5	10	14	19	105
Conceição do Araguaia	12	13	13	6	2	1	0	1	3	7	10	10	78
Corumbá	15	14	14	8	6	4	3	3	6	10	12	16	111
Cruzeiro do Sul	22	19	20	17	14	9	7	8	13	16	17	19	181
Cuiabá	15	14	14	8	6	4	3	3	6	10	12	16	111
Goiás	21	17	17	8	3	1	2	2	6	12	17	21	127
Hamaitá	14	15	14	10	6	2	2	2	5	7	10	13	100
Imperatriz*	14	13	10	7	5	1	1	2	4	8	3	10	78
Manaus	11	11	12	11	9	6	5	5	6	8	8	10	102
Óbidos	6	8	8	6	3	1	1	1	1	1	3	3	42
Oiapoque	13	11	11	12	15	8	3	2	0	1	2	10	88
Paraná	8	10	7	3	1	0	0	0	2	6	10	10	57
Parintins	10	10	10	8	8	7	6	4	3	4	4	7	81
Pirenópolis	20	15	14	8	1	1	1	2	6	15	18	19	120
Pôrto Nacional	24	24	22	16	11	4	6	11	17	22	23	24	204
Pôrto Velho	12	12	13	11	6	4	4	3	6	8	8	11	98
Presidente Murtinho	16	16	13	7	5	2	2	2	5	12	12	17	109
Santarém	7	9	12	10	8	4	3	1	0	3	3	6	66
Sena Madureira	9	7	9	7	4	4	3	2	4	6	6	8	69
Três Lagoas	10	9	7	5	4	5	3	5	8	9	8	12	85
Uaupés	16	14	16	17	18	15	15	11	10	14	13	15	174
Utiariti	15	13	0	0	4	2	2	1	5	10	13	14	79
Vilhena	7	6	6	3	1	1	1	1	2	3	4	5	40

NOTE Period of record: unknown.

* Near but outside NIS 94-II Area.

FIGURE 23-18. MEAN NUMBER OF CLEAR DAYS (CLOUD COVER \geq 2-TENTHS)

STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
Altamira.....	2	3	2	3	6	6	7	9	6	7	4	5	60
Aquidauana.....	2	3	4	6	8	8	9	11	8	6	5	3	75
Barcelos.....	2	2	2	1	1	2	3	5	3	3	4	4	32
Barra do Corda*.....	0	0	0	1	4	8	12	9	3	2	2	1	42
Bela Vista.....	3	4	6	7	9	8	11	12	8	8	7	5	88
Belém.....	0	0	0	0	1	1	2	4	2	2	3	1	16
Boa Vista.....	0	0	0	0	0	0	0	1	0	0	0	0	1
Cáceres.....	2	2	2	5	10	11	15	15	10	6	6	2	85
Carolina*.....	0	0	0	1	7	13	16	15	7	2	1	1	63
Catalão.....	2	2	3	7	11	14	17	19	13	6	2	1	97
Conceição do Araguaia.....	1	0	1	2	8	13	16	13	6	3	2	1	66
Corumbá.....	1	1	1	3	9	11	15	13	7	4	2	1	68
Cruzeiro do Sul.....	0	0	0	0	1	1	4	3	1	0	0	0	10
Cuiabá.....	1	1	1	3	9	11	15	13	7	4	2	1	68
Goiás.....	0	0	0	3	7	11	12	12	8	2	1	0	56
Humaitá.....	0	0	0	0	3	9	14	11	4	1	0	1	43
Imperatriz*.....	3	5	6	5	15	22	22	23	16	12	8	5	142
Manaus.....	0	0	0	0	0	1	2	2	1	0	0	0	6
Óbidos.....	0	0	0	0	0	0	0	1	1	0	0	0	2
Oiapoque.....	0	0	0	0	0	0	1	1	2	3	3	0	10
Paraná.....	1	1	1	4	8	13	14	14	7	2	1	1	67
Parintins.....	4	3	4	3	4	5	6	8	8	8	7	6	66
Pirenópolis.....	0	1	1	6	11	17	15	15	11	4	1	1	83
Pôrto Nacional.....	0	0	0	0	1	2	2	2	1	0	0	0	8
Pôrto Velho.....	0	0	0	1	4	7	11	9	5	1	2	1	41
Presidente Murinho.....	0	0	1	3	7	11	15	15	8	2	1	0	63
Santarém.....	2	0	2	0	2	4	10	13	12	11	9	4	69
São Luís*.....	0	0	0	0	0	0	0	1	1	1	1	0	4
Sena Madureira.....	1	1	1	1	4	7	10	11	6	2	2	1	47
Teresina*.....	0	0	0	0	3	6	11	10	7	5	4	2	49
Três Lagoas.....	5	6	8	10	14	13	14	15	9	9	7	5	115
Uaupés.....	0	0	0	0	0	0	0	1	0	0	0	0	1
Utiariti.....	0	0	0	1	6	7	12	12	5	1	0	0	44
Vilhena.....	3	2	4	8	9	15	16	14	7	4	4	3	89

NOTE Period of record: 7 years for Imperatriz; unknown for all other stations.

* Near but outside NIS 94-II Area.

FIGURE 23-19. MEAN NUMBER OF DAYS WITH TOTAL CLOUD COVER \geq 2-TENTHS AT SPECIFIED HOURS

STATION	HOOR (LST)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
Aquidauana.....	0900	7	4	10	9	11	14	11	17	10	8	9	5	115
	2100	<i>Data not available</i>												
Belém.....	0900	2	1	2	1	5	9	10	9	4	2	1	2	48
	2100	2	1	1	*	3	3	6	5	11	16	11	7	66
Campo Grande.....	0900	2	4	6	5	8	9	11	13	11	7	6	6	88
	2100	7	4	10	12	14	17	18	17	17	14	8	10	148
Corumbá.....	0900	11	7	10	10	13	12	15	18	12	10	8	7	133
	2100	10	10	16	17	19	17	20	22	18	14	12	14	189
Cuiabá.....	0900	5	5	6	9	15	16	18	19	14	7	6	4	124
	2100	5	6	8	11	16	22	16	22	16	14	8	2	146
Goiás.....	0900	6	5	6	12	18	22	22	24	15	10	4	2	146
	2100	<i>Data not available</i>												
Manaus.....	0900	*	1	1	1	1	3	5	8	4	3	2	2	31
	2100	1	1	2	1	3	5	8	8	6	5	6	2	48

NOTE Period of record: unknown.

* < 0.5 day.

FIGURE 23-20. MEAN NUMBER OF DAYS WITH THUNDERSTORMS

STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Barra do Corda**	4	5	6	4	1	0	0	1	1	3	3	5	33	10
Belém	6	5	9	7	6	4	4	4	5	5	4	5	64	9
Cáceres	1	3	2	1	2	1	1	1	1	4	4	2	23	10
Catalão	1	1	2	0	0	0	0	0	1	0	1	2	8	8
Corumbá	0	0	0	0	0	0	0	0	1	0	1	1	3	10
Cuiabá	6	6	7	5	1	1	1	2	3	4	5	4	45	11
Formosa	1	1	2	3	*	*	*	2	1	2	1	3	16	9
Fortaleza**	1	2	2	2	1	0	0	0	0	0	0	0	8	9
Goiás	1	0	0	0	0	0	0	0	0	0	0	0	1	10
Imperatriz**	4	7	6	7	3	1	1	2	3	6	7	7	54	7
Mairi**	1	2	1	1	0	0	0	1	6	3	5	3	23	6
Manaus	2	2	3	3	2	1	2	1	2	4	4	3	29	11
Pirenópolis	2	2	1	0	0	0	0	0	1	1	1	1	9	9
Pôrto Velho	7	6	3	3	4	4	2	6	10	8	8	10	71	4-5
Puerto Cobija**	4	5	6	10	1	1	1	2	4	9	8	4	55	2
Quixadá**	1	2	1	2	2	0	0	0	0	0	0	1	9	9
Santarém	2	3	4	5	4	1	3	2	1	2	2	2	31	8-9
São Bento**	2	4	3	5	3	3	2	1	0	0	1	2	26	7

* <0.5 day.

** Near but outside NIS 94-II Area.

FIGURE 23-21. MAXIMUM 24-HOUR PRECIPITATION (INCHES)

STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Alto Araguaia	2.6	5.1	3.1	2.5	1.7	1.3	2.4	1.1	1.9	2.4	2.4	2.4	5.1	8-9
Aquidauana	3.5	3.3	3.2	5.2	3.0	2.4	2.7	2.3	2.6	2.8	3.6	3.8	5.2	14-27
Bela Vista	3.8	2.7	2.8	2.6	2.6	3.9	2.8	2.5	2.8	2.6	2.6	2.6	3.9	19-21
Belém	3.8	4.8	4.0	3.4	4.9	2.8	2.8	2.0	1.9	1.9	1.6	3.1	4.9	12-13
Benjamin Constant	3.4	5.1	6.0	3.9	3.5	2.7	1.9	4.5	2.1	6.2	4.6	7.9	7.9	10
Carolina*	2.6	2.7	2.6	3.0	2.4	0.9	1.1	2.5	0.9	2.6	2.5	2.5	3.0	10
Catalão	3.1	2.7	3.6	2.5	2.7	0.4	1.5	1.1	2.4	2.5	3.6	3.3	3.6	7
Conceição do Araguaia	4.0	2.8	3.9	2.5	2.5	1.5	1.4	1.3	2.6	2.8	2.6	3.7	4.0	11
Corumbá	7.1	3.8	4.1	3.5	4.1	2.7	2.9	3.9	2.5	3.1	4.1	5.2	7.1	23-24
Cuiabá	3.8	4.6	3.7	3.1	3.0	1.2	2.1	5.3	2.6	5.0	4.2	4.9	5.3	25
Fonte Boa	2.5	0.8	2.0	2.1	2.1	2.4	1.1	1.0	1.8	2.5	2.7	2.5	2.7	1-3
Herculândia	2.8	2.7	2.3	2.5	2.2	1.2	2.4	0.7	2.2	2.5	2.9	2.5	2.9	4-6
Luziânia	2.8	3.0	2.8	2.5	2.0	1.3	0.8	1.4	1.3	2.8	3.3	2.8	3.3	17-18
Manaus	3.8	4.0	4.7	3.7	3.4	2.9	2.7	2.0	1.5	3.6	3.5	3.3	4.7	25
Mato Grosso	2.6	2.4	2.5	2.4	3.7	2.2	1.4	1.7	1.3	2.9	2.9	2.6	3.7	6-8
Oiapoque	2.6	3.5	3.5	2.7	2.6	2.6	2.5	2.4	1.5	1.2	2.5	2.8	3.5	13-14
Paraná	4.4	3.9	2.8	2.7	2.1	0.2	0.7	0.9	1.4	3.7	3.1	3.4	4.4	18-19
Pôrto Nacional	3.0	2.8	2.6	2.7	1.9	0.1	0.9	1.1	2.6	2.6	2.5	3.0	3.0	18-20
Presidente Murtinho	2.6	3.1	2.6	4.4	2.6	1.4	2.4	2.6	2.4	2.6	3.7	3.7	4.4	11-12
Quarf	3.5	4.2	4.8	4.7	5.6	2.7	2.5	2.2	1.9	3.8	2.5	3.6	5.6	10
Santa Cruz	3.5	5.5	3.3	2.7	3.3	0.7	2.1	1.1	1.9	3.1	3.0	8.7	8.7	22-23
Santarém	3.3	4.4	6.9	3.4	3.4	3.0	2.7	1.2	1.6	3.8	3.5	3.9	6.9	22
Sena Madureira	3.4	3.5	2.8	2.7	3.4	1.6	2.1	1.6	3.6	2.4	2.7	2.8	3.5	18
Taguatinga	3.0	3.4	3.4	3.1	2.6	0.1	1.7	1.6	2.2	3.0	3.3	2.8	3.4	18-20
Tocantinópolis	4.3	4.5	3.5	3.3	3.3	1.9	0.6	2.0	1.4	3.0	6.3	4.4	6.3	15-17
Três Lagoas	3.4	2.3	2.8	8.7	7.9	2.2	1.7	2.2	2.3	2.2	2.9	2.7	8.7	14-20
Uaupés	4.4	2.5	6.1	3.0	3.0	4.3	3.3	2.4	2.5	2.4	2.7	2.8	6.1	15-16

* Near but outside NIS 94-II Area.

FIGURE 23-22. MEAN NUMBER OF DAYS WITH PRECIPITATION ≥ 0.01 INCH

STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Alto Araguaia.....	23	21	22	14	10	8	5	3	9	12	18	22	167	8-9
Aquidauana.....	13	9	8	6	5	4	2	3	5	8	8	11	82	14-17
Bela Vista.....	13	11	10	8	8	7	5	5	6	9	9	11	102	19-21
Belém.....	28	23	28	26	26	22	16	15	18	16	13	19	250	12-13
Benjamin Constant.....	17	14	16	15	15	12	12	12	12	16	16	17	174	10
Boa Vista.....	3	6	4	7	15	18	21	17	7	6	4	5	113	6
Céceres.....	17	17	15	8	5	3	2	3	6	9	13	16	114	9-12
Carolina*.....	15	16	18	13	4	1	0	1	6	9	11	13	107	10
Catalão.....	20	14	14	7	3	1	1	1	4	10	11	18	104	7
Conceição do Araguaia.....	17	18	18	13	5	1	1	2	6	10	14	13	118	11
Corumbá.....	13	11	10	7	4	3	2	3	5	8	8	12	86	23-24
Cuiabá.....	19	19	20	12	6	3	2	3	7	11	15	20	137	25
Fonte Boa.....	22	14	18	17	19	14	15	17	12	16	16	17	197	1-3
Formosa.....	21	16	18	12	5	2	1	3	7	12	19	23	139	9
Goiás.....	16	14	15	7	1	0	0	1	4	8	13	13	92	11-14
Herculândia.....	13	10	10	6	4	3	2	3	7	8	8	10	84	4-6
Imperatriz*.....	21	19	20	16	3	5	3	3	4	8	9	15	126	7
Luziânia.....	18	16	17	9	3	1	1	1	4	13	18	21	122	17-18
Manaus.....	20	19	20	19	18	11	8	6	7	11	12	16	167	25
Mato Grosso.....	22	19	20	13	6	5	2	3	6	11	16	20	143	6-8
Oiapoque.....	24	22	24	21	28	24	21	14	6	6	9	22	221	13-14
Paraná.....	14	13	13	7	1	0	0	1	3	8	13	15	88	18-19
Pirenópolis.....	22	18	19	10	4	1	1	2	4	11	16	20	128	8-10
Pôrto Nacional.....	21	19	21	15	5	0	0	1	5	12	17	19	135	18-20
Pôrto Velho.....	19	19	20	17	12	6	3	4	11	12	12	18	153	3-4
Presidente Murtinho.....	26	23	25	21	15	10	5	2	8	17	21	25	198	11-12
Quarí.....	20	16	19	20	18	15	11	9	9	13	13	15	178	10
Santa Cruz.....	21	20	19	11	4	1	1	1	6	13	16	21	134	22-23
Santarém.....	21	23	26	26	26	22	15	10	8	7	8	13	205	22
São Luís*.....	15	19	23	24	22	17	12	5	3	2	3	5	150	16-20
Sena Madureira.....	18	16	17	15	8	7	5	5	8	11	12	16	138	18
Taguatinga.....	18	17	17	10	2	0	0	0	3	9	17	17	110	18-20
Tocantinópolis.....	22	22	24	21	15	8	2	2	6	10	12	18	162	15-17
Três Lagoas.....	15	13	10	6	4	4	3	4	7	8	9	15	98	14-20
Uaupés.....	19	17	18	19	22	21	21	18	16	14	15	19	219	15-16

* Near but outside NIS 94-II Area.

FIGURE 23-23. ABSOLUTE MAXIMUM AND MINIMUM TEMPERATURES (°F.)

STATION		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Alto Araguaia.....	Max	92	93	92	91	90	89	89	94	97	98	96	95	98	8-9
	Min	55	55	54	52	40	33	33	39	41	51	55	55	33	8-9
Aquidauana.....	Max	100	101	101	100	95	95	96	103	105	104	103	103	105	12-14
	Min	59	54	47	45	38	32	30	32	37	45	51	52	30	11-14
Barra do Corda*.....	Max	99	95	95	94	95	97	99	100	102	103	100	102	103	5-8
	Min	66	64	68	66	61	59	54	54	59	46	54	66	54	5-8
Bela Vista.....	Max	105	104	101	101	97	98	94	101	105	103	108	106	108	18-20
	Min	50	51	36	37	28	21	20	26	32	34	36	47	20	17-21
Belém.....	Max	94	93	94	93	94	94	92	95	94	94	95	94	95	11-13
	Min	69	67	68	70	69	68	65	66	67	66	67	67	65	11-13
Cáceres.....	Max	99	98	96	98	95	94	96	101	105	105	103	101	105	8
	Min	61	63	60	58	39	39	41	42	47	51	57	58	39	8
Carolina*.....	Max	97	94	94	94	96	97	100	101	102	103	97	96	103	9-10
	Min	61	62	62	62	56	56	52	53	59	62	61	62	52	9-10
Catalão.....	Max	91	89	91	87	88	86	87	90	95	94	91	91	95	8
	Min	60	58	59	55	40	35	43	38	41	55	53	57	35	8
Conceição do Araguaia..	Max	96	95	95	96	96	96	99	101	101	100	99	98	101	10-11
	Min	64	66	66	64	63	57	54	56	61	64	63	64	54	10-11
Corumbá.....	Max	101	101	100	99	95	93	94	101	104	105	104	104	105	18-19
	Min	62	57	53	51	43	33	39	43	48	50	54	54	33	18-19
Cuiabá.....	Max	100	98	97	98	96	97	98	103	103	104	101	99	104	25
	Min	64	59	60	56	44	34	42	42	45	54	58	62	34	25
Fonte Boa.....	Max	88	90	86	90	90	86	86	86	88	88	89	88	90	1-3
	Min	66	67	66	68	65	67	68	68	69	68	68	67	65	1-3
Goiás.....	Max	99	100	98	99	96	95	96	101	104	104	102	101	104	8
	Min	55	55	56	55	52	43	41	49	55	50	54	52	41	8
Herculândia.....	Max	99	99	100	97	96	95	97	100	104	103	104	102	104	2-25
	Min	57	55	61	54	37	36	36	41	37	48	54	56	36	3-6
Imperatriz*.....	Max	95	94	93	94	93	95	96	98	98	103	98	98	103	7
	Min	66	65	67	66	61	57	53	52	58	63	64	66	52	7
Luziânia.....	Max	91	90	90	91	90	90	87	95	96	96	97	93	97	16-18
	Min	52	54	53	46	36	36	34	39	39	46	48	52	34	16-18
Manaus.....	Max	99	100	94	94	92	93	95	98	99	100	99	98	100	11-13
	Min	69	68	67	68	68	65	64	67	68	68	68	67	64	12-13
Mato Grosso.....	Max	98	97	96	96	95	93	95	100	103	101	101	101	103	6-8
	Min	62	61	58	58	49	44	44	40	52	54	58	60	40	6-8
Oiapoque.....	Max	94	92	93	92	92	93	96	96	97	102	98	98	102	13-14
	Min	62	62	62	64	64	62	61	63	63	63	63	65	61	12-14
Paraná.....	Max	101	97	98	99	98	97	97	100	105	104	100	103	105	17-19
	Min	49	49	49	49	43	41	38	38	42	46	50	50	38	18-19
Pirenópolis.....	Max	91	91	91	90	88	88	90	92	98	97	95	91	98	7
	Min	61	61	59	60	49	48	52	48	51	58	57	60	48	7
Pôrto Nacional.....	Max	100	100	100	103	101	104	99	102	104	105	101	101	105	17-20
	Min	57	65	65	62	59	52	49	54	56	58	60	65	49	18-20
Pôrto Velho.....	Max	96	96	96	96	96	96	96	100	100	104	98	97	104	14
	Min	70	70	70	71	57	56	57	58	62	70	64	68	56	14
Presidente Murinho.....	Max	96	95	98	92	92	92	94	100	101	101	97	95	101	11-12
	Min	59	58	57	46	36	24	29	40	46	49	55	59	24	9-11
Santa Cruz.....	Max	100	96	95	95	95	93	95	99	102	103	99	96	103	22-23
	Min	60	62	63	50	46	30	39	44	48	56	57	59	30	21-33
Santarém.....	Max	96	92	92	91	94	94	95	96	99	98	97	96	99	18-19
	Min	68	68	68	69	69	67	65	66	68	69	69	68	65	21-22
São Luís*.....	Max	91	90	94	91	93	91	92	92	94	93	93	95	95	14-20
	Min	69	69	69	69	68	67	70	70	70	70	71	68	67	15-20
Sena Madureira.....	Max	99	99	99	99	98	98	99	99	100	99	100	99	100	15-18
	Min	62	59	60	58	54	45	47	41	46	57	57	63	41	15-18
Taguatinga.....	Max	97	98	96	98	96	96	95	98	100	102	100	99	102	18-20
	Min	61	61	62	63	62	57	59	61	62	64	63	63	57	10-12
Tocantinópolis.....	Max	94	93	95	94	97	98	98	100	100	100	98	96	100	8-11
	Min	64	65	66	65	62	57	54	53	59	61	62	64	53	9-11
Três Lagoas.....	Max	104	102	102	102	102	98	96	99	106	103	103	104	106	14-19
	Min	54	59	50	46	40	41	35	39	42	47	50	45	31	14-18
Uaupés.....	Max	97	100	98	97	98	98	96	96	100	99	100	98	100	13-14
	Min	68	67	66	67	66	64	52	65	64	66	67	67	52	13-16

* Near but outside NIS 94-II Area.

FIGURE 23-24. MEAN DAILY MAXIMUM AND MINIMUM TEMPERATURES (°F.)

STATION		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Alto Araguaia.....	Max	85	85	85	86	83	83	84	87	88	88	85	85	85	8-9
	Min	67	67	67	64	57	53	49	53	61	64	66	67	62	8-9
Aquidauana.....	Max	89	91	90	88	83	82	82	87	89	89	91	91	88	12-14
	Min	71	71	70	66	60	57	54	58	63	66	68	71	65	11-14
Barra do Corda*.....	Max	89	88	88	89	89	90	92	94	94	94	93	91	91	9-11
	Min	71	71	71	71	69	66	64	65	69	72	71	71	69	9-11
Bela Vista.....	Max	91	91	89	85	79	78	77	82	85	87	89	91	85	18-20
	Min	67	66	65	61	55	52	49	52	58	61	63	66	60	17-21
Belém.....	Max	88	87	87	87	89	90	90	90	90	91	91	90	89	11-13
	Min	72	72	72	73	73	72	72	71	71	71	71	72	72	11-13
Cáceres.....	Max	91	89	91	90	87	86	90	91	92	93	92	90	90	9-12
	Min	72	72	72	70	65	60	59	61	66	70	71	72	68	9-12
Carolina*.....	Max	88	87	87	89	91	93	94	97	96	92	83	88	90	9-10
	Min	69	69	69	69	67	64	62	65	68	70	66	69	67	9-10
Catalão.....	Max	81	82	82	82	80	78	79	82	84	84	82	80	81	9-14
	Min	65	65	65	63	59	56	57	58	62	64	65	65	62	9-14
Conceição do Araguaia..	Max	87	87	87	89	90	92	93	96	95	92	90	89	91	17-11
	Min	70	70	70	70	68	65	62	64	68	69	70	70	68	10-11
Corumbá.....	Max	91	91	90	87	83	80	80	84	89	90	91	92	87	18-19
	Min	72	72	71	69	64	62	60	63	67	69	70	72	68	18-19
Cuiabá.....	Max	88	88	88	89	86	86	87	90	92	91	90	89	89	25
	Min	74	74	74	72	68	64	62	66	71	73	74	74	70	25
Fonte Boa.....	Max	84	85	84	84	83	83	83	84	85	85	85	85	84	1-3
	Min	72	73	72	72	71	71	71	72	73	72	73	73	72	1-3
Goiás.....	Max	86	89	89	91	90	90	90	93	94	94	90	87	90	11-12
	Min	63	63	63	63	60	55	56	59	63	63	63	62	61	11-14
Herculândia.....	Max	92	92	92	91	87	91	89	92	94	94	94	93	92	2-5
	Min	70	70	70	67	59	55	51	53	62	64	67	69	63	3-6
Imperatriz*.....	Max	87	87	87	88	89	90	92	92	93	93	91	89	90	7
	Min	70	70	71	70	69	64	62	63	66	68	69	70	68	7
Luziânia.....	Max	82	83	83	82	81	80	80	83	87	86	83	82	83	16-18
	Min	61	61	61	59	55	50	49	52	57	61	61	62	57	16-18
Manaus.....	Max	87	87	87	86	87	87	89	91	92	91	90	88	88	11-13
	Min	73	73	73	73	73	72	72	72	73	74	74	73	73	12-13
Mato Grosso.....	Max	87	87	87	88	85	84	85	90	91	89	89	86	87	6-8
	Min	72	72	72	71	65	63	58	61	68	70	72	72	68	6-8
Oiapoque.....	Max	85	85	85	86	85	86	88	90	93	94	92	87	88	13-14
	Min	69	69	69	70	70	69	69	69	68	68	69	69	69	12-14
Paraná.....	Max	90	89	89	90	91	91	91	93	95	94	91	90	91	17-19
	Min	58	59	59	58	54	49	48	50	55	58	58	58	55	18-19
Pirenópolis.....	Max	82	83	84	84	83	82	83	86	89	86	84	82	84	8-10
	Min	65	65	65	64	61	58	58	61	64	65	65	66	63	8-10
Pôrto Nacional.....	Max	89	88	88	90	91	93	93	96	97	93	90	88	91	17-20
	Min	70	70	71	70	67	62	60	63	68	71	71	70	68	18-20
Pôrto Velho.....	Max	85	85	86	86	86	86	88	90	91	88	87	85	87	14
	Min	76	76	76	76	76	73	72	74	76	76	76	76	75	14
Presidente Murtinho.....	Max	85	85	86	87	85	86	85	89	91	88	87	85	87	11-12
	Min	66	66	62	63	57	53	49	53	60	64	65	65	60	7
Santa Cruz.....	Max	85	85	86	87	86	86	87	90	92	90	87	85	87	22-23
	Min	69	69	69	67	62	58	56	59	65	68	69	69	65	21-33
Santarém.....	Max	86	85	85	85	86	86	87	89	91	90	90	89	87	18-19
	Min	73	73	73	73	73	72	71	72	73	73	73	73	73	21-22
São Luís*.....	Max	85	85	85	85	83	87	87	86	86	86	86	86	86	8
	Min	75	74	74	74	74	74	74	74	75	75	75	75	74	8
Sena Madureira.....	Max	92	92	91	91	90	90	91	93	94	93	93	93	92	15-18
	Min	69	69	69	68	67	65	64	65	68	69	69	70	68	15-18
Taguatinga.....	Max	87	85	86	87	88	88	87	90	93	92	87	86	88	18-20
	Min	70	70	70	71	69	68	68	70	73	72	70	70	70	10-12
Tocantinópolis.....	Max	88	87	88	89	90	91	93	95	94	93	91	89	91	8-11
	Min	70	70	71	70	68	64	61	62	66	68	70	70	68	9-11
Três Lagoas.....	Max	90	90	90	87	83	81	82	84	87	89	90	89	87	14-19
	Min	71	71	69	66	60	57	55	57	62	66	68	70	64	14-18
Uaupés.....	Max	88	89	88	88	87	86	85	87	89	89	90	88	88	13-14
	Min	72	72	72	72	72	71	70	71	71	71	72	72	71	13-16

* Near but outside NIS 94-II Area.

FIGURE 23-25. MEAN NUMBER DAYS WITH CALM AT 0900 LST

STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Aquidauana.....	9	10	12	10	10	15	12	15	9	6	6	6	120	4
Belém.....	12	13	13	13	9	6	6	4	2	2	2	5	87	5-8
Cáceres.....	31	26	30	28	28	29	29	28	27	30	29	27	342	2-4
Campo Grande.....	3	4	3	3	1	3	4	3	2	4	3	3	36	4-5
Carolina*.....	30	26	28	27	22	16	17	18	14	23	25	27	273	1-3
Corumbá.....	11	8	10	9	7	8	7	8	8	8	8	8	100	7-8
Cuiabá.....	9	10	13	14	18	19	18	17	11	7	7	7	150	8-9
Goiânia.....	20	18	17	17	11	16	20	18	15	10	13	16	191	2-3
Goiás.....	14	13	12	11	3	4	4	3	4	10	13	17	108	3-5
Luziânia.....	7	6	8	3	7	8	6	7	1	3	7	6	69	2-3
Manaus.....	15	13	17	17	17	19	18	17	15	14	12	15	189	3-6
Oiapoque.....	31	27	28	23	28	27	27	30	25	25	24	29	324	1-2
Pirenópolis.....	27	26	24	20	20	14	12	16	15	20	23	23	240	1-3
Pôrto Nacional.....	17	17	22	21	19	18	14	15	14	12	16	18	203	1-2
Presidente Murtinho.....	10	8	10	19	22	17	20	19	15	11	7	8	166	2-3
Rio Branco.....	15	13	11	9	8	8	6	4	6	5	10	18	113	1-2
Soure.....	7	4	12	6	1	2	0	0	0	0	0	1	33	1-2
Suçupara.....	1	1	2	2	2	2	6	5	2	6	8	8	45	2-3
Três Lagoas.....	2	3	3	2	3	1	0	2	1	1	0	1	19	2-3

* Near but outside NIS 94-II Area.

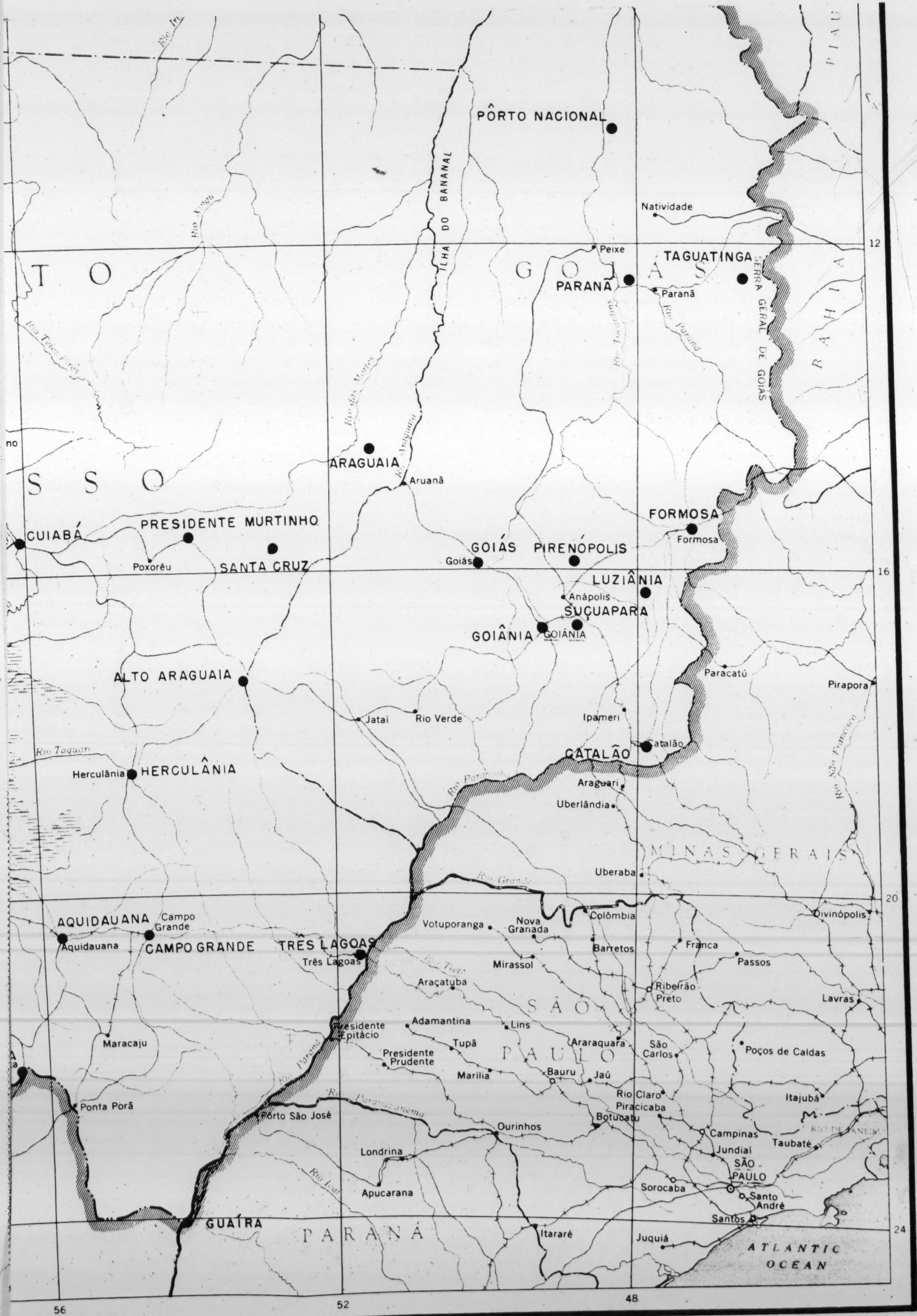
LIST OF STATIONS

STATION	LATI- TUDE*	LONGI- TUDE*	ELEVA- TION	STATION	LATI- TUDE*	LONGI- TUDE*	ELEVA- TION
	° /	° /	feet		° /	° /	feet
Almeirim.....	1 32 S.	52 34 W.	16	Manaus.....	3 08 S.	60 01 W.	142
Altamira.....	3 12 S.	52 45 W.	262	Manicoré.....	5 49 S.	61 18 W.	72
Alto Araguaia.....	17 19 S.	53 13 W.	2,362	Mato Grosso.....	15 00 S.	59 57 W.	843
Aquidauana.....	20 29 S.	55 48 W.	598	Missão do Cururu.....	7 20 S.	57 30 W.	325
Araguaia.....	14 30 S.	51 30 W.	1,608	Óbidos.....	1 55 S.	55 31 W.	60
Barcelos.....	0 58 S.	62 53 W.	118	Oiapoque.....	3 49 N.	51 50 W.	207
Barra do Corda**.....	5 30 S.	45 15 W.	267	Paraná.....	12 26 S.	48 06 W.	853
Bela Vista.....	22 06 S.	56 22 W.	525	Parintins.....	2 36 S.	56 44 W.	95
Belém.....	1 28 S.	48 27 W.	42	Pirenópolis.....	15 55 S.	48 51 W.	2,461
Benjamin Constant.....	4 21 S.	70 10 W.	735	Pôrto de Moz.....	1 54 S.	52 13 W.	33
Boa Vista.....	2 48 N.	60 42 W.	182	Pôrto Nacional.....	10 35 S.	48 20 W.	778
Cáceres.....	16 00 S.	57 41 W.	387	Pôrto Velho.....	8 46 S.	63 53 W.	249
Campo Grande.....	20 27 S.	54 37 W.	1,841	Presidente Murtinho.....	15 39 S.	53 54 W.	2,052
Carauari.....	4 57 S.	66 54 W.	266	Puerto Cobija**.....	11 00 S.	69 30 W.	492
Carolina**.....	7 20 S.	47 34 W.	306	Quarí.....	4 07 S.	63 08 W.	135
Catalão.....	18 10 S.	47 57 W.	2,805	Quixadá**.....	4 58 S.	39 00 W.	594
Conceição do Ar.....	8 15 S.	49 12 W.	525	Rio Branco.....	9 58 S.	67 48 W.	446
Corumbá.....	18 59 S.	57 39 W.	381	Salinópolis.....	0 39 S.	47 23 W.	46
Cruzeiro do.....	7 38 S.	72 36 W.	558	Santa Cruz.....	15 43 S.	52 45 W.	1,572
Cuiabá.....	15 36 S.	56 06 W.	541	Santarém.....	2 25 S.	54 42 W.	66
Eirunepé.....	6 41 S.	69 56 W.	341	São Bento**.....	2 40 S.	44 50 W.	42
Florian Peixoto.....	9 01 S.	67 26 W.	367	São Luís**.....	2 31 S.	44 16 W.	66
Fonte Boa.....	2 32 S.	66 10 W.	150	São Paulo de Olivença.....	3 28 S.	68 57 W.	302
Formosa.....	15 32 S.	47 18 W.	2,999	Sena Madureira.....	9 04 S.	68 39 W.	443
Fortaleza**.....	3 43 S.	38 30 W.	89	Soure.....	0 40 S.	48 33 W.	36
Goiânia.....	16 41 S.	49 17 W.	2,402	Suçupara.....	16 39 S.	48 50 W.	n a
Goiás.....	15 58 S.	50 04 W.	1,706	Taguatinga.....	12 26 S.	46 38 W.	1,996
Guafrá**.....	24 05 S.	54 12 W.	722	Taracuaá.....	0 04 S.	68 14 W.	325
Herculândia.....	18 29 S.	54 46 W.	851	Tefé.....	3 22 S.	64 41 W.	174
Humaitá.....	7 32 S.	63 01 W.	164	Teresina**.....	5 05 S.	42 49 W.	259
Imperatriz**.....	5 31 S.	47 26 W.	312	Tocantinópolis.....	6 19 S.	47 30 W.	514
Itaituba.....	4 19 S.	55 35 W.	148	Tracuateua.....	1 05 S.	47 10 W.	118
Iuaeté.....	0 18 N.	68 54 W.	400	Três Lagoas.....	20 47 S.	51 42 W.	1,026
Lábrea.....	7 15 S.	64 50 W.	253	Uaupés.....	0 08 S.	67 05 W.	276
Luziânia.....	16 15 S.	47 56 W.	3,143	Utiariti.....	13 02 S.	58 14 W.	1,263
Mairi**.....	11 45 S.	40 05 W.	2,283	Vilhena.....	12 43 S.	60 07 W.	n a

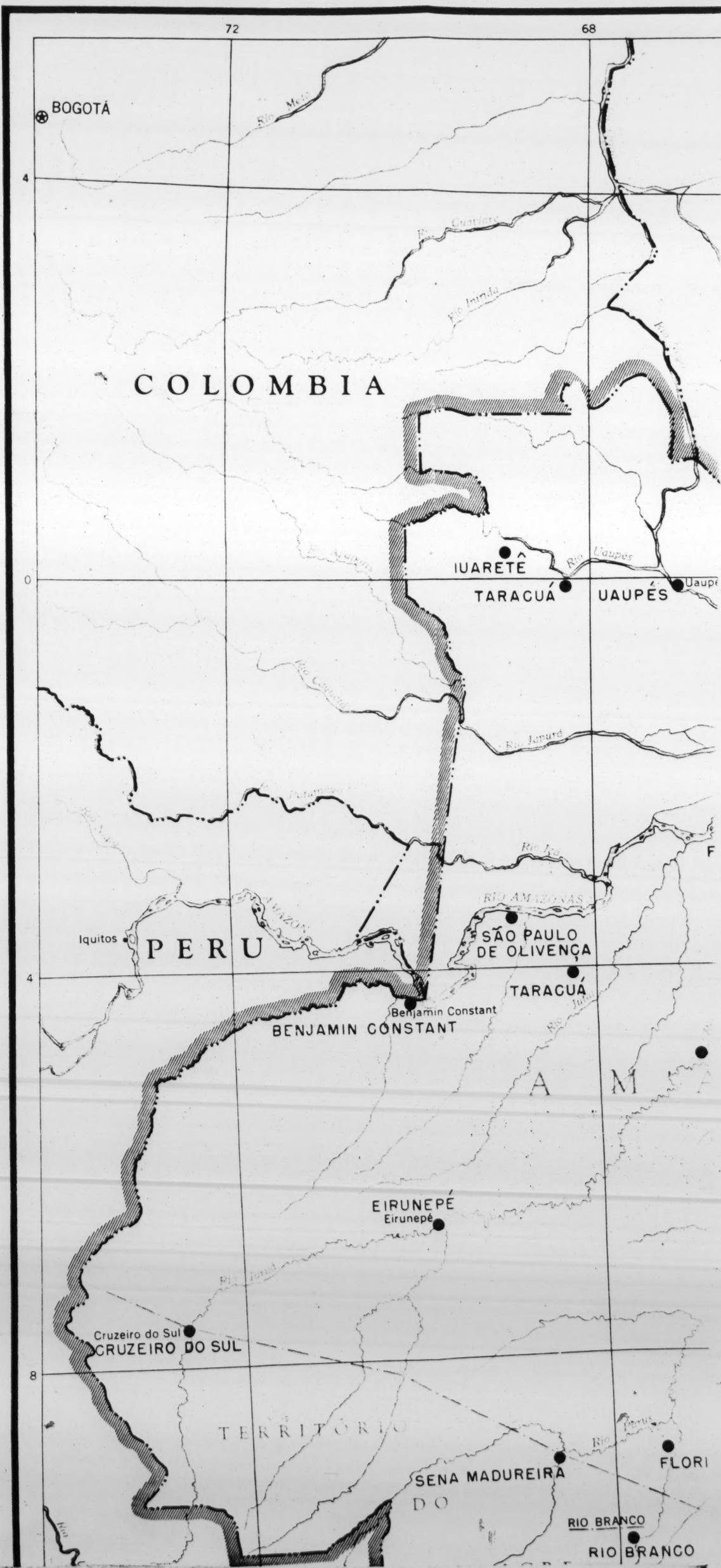
n a Data not available.

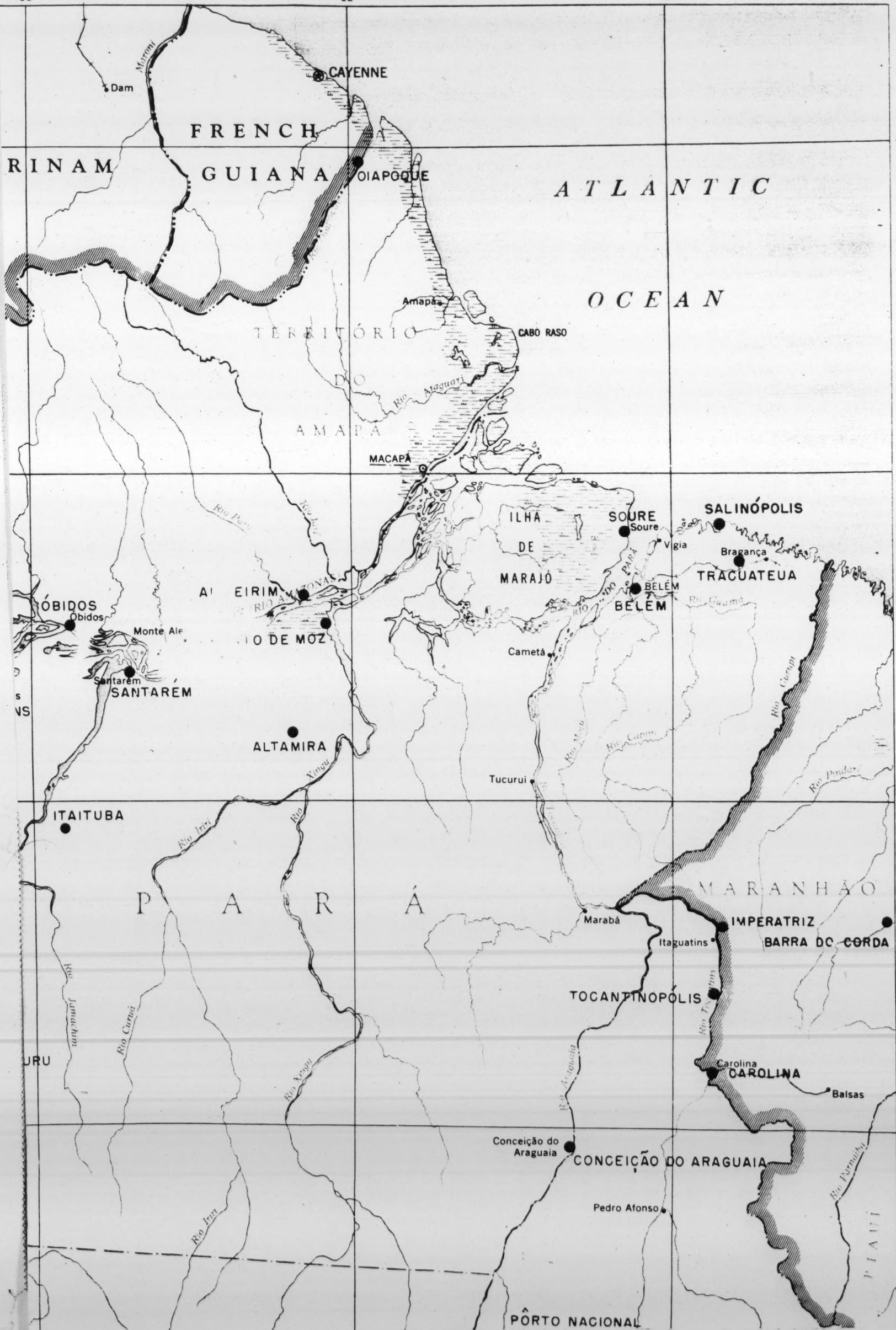
* Coordinates give locations of weather stations and do not correspond necessarily to those for populated places.

** Near but outside NIS 94-II Area.



STATION LOCATIONS FIGURE 23-26





RINAM

FRENCH GUIANA

ATLANTIC OCEAN

TERRITÓRIO DO AMAPÁ

AMAPÁ

OBIDOS

Monte Ale

SANTAREM

ALTO DE MOZ

ALTAMIRA

ITAITUBA

PARÁ

URU

ILHA DE MARAJÓ

SOURCE

SALINÓPOLIS

TRACUATEUA

BELEM

Cametá

Tucurui

MARANHÃO

IMPERATRIZ

BARRA DO CORDA

TOCANTINÓPOLIS

CAROLINA

Conceição do Araguaia

CONCEIÇÃO DO ARAGUAIA

Pedro Afonso

PÓRTO NACIONAL

PIAUI

70.

~~CONFIDENTIAL~~
CENTRAL INTELLIGENCE AGENCY
OFFICE OF CENTRAL REFERENCE
BIOGRAPHIC REGISTER

GOULART, João Belchior Marques

BRAZIL

João Goulart, a relatively wealthy lawyer and rancher, is commonly known by his nickname "Jango". Vice President of Brazil since 31 January 1956, he was re-elected to that position on 3 October 1960, and since June 1952 he has been national chairman of the left-of-center Brazilian Labor Party (Partido Trabalhista Brasileiro-PTB). Active in national politics for only a little over a decade, Goulart owes his rapid rise to his status as a protege of the late President Vargas from boyhood until Vargas' death. He received most of his political training from Vargas, was one of his most intimate and influential advisers, and has sought to use the Vargas "mystique" to his own political advantage by identifying himself with the people through demagogic appeals. Although not considered ultra-nationalistic, Goulart accepts support from ultra-nationalists, shifts his position according to the needs of the moment, and has been referred to as a shrewd politician whose most significant political trait is that of opportunism.

Goulart's attitude toward the United States, which he visited in 1956, has been as opportunistic and "mercurial" as that exhibited elsewhere throughout his career. In a May 1961 interview with a U. S. official, he stated that the Cuban invasion had cost the United States considerable prestige and added that the Russians knew how to do these things.

Goulart was born 12 March 1918 at São Borja, Rio Grande do Sul, into a well-to-do ranching family of Portuguese and French descent, and after obtaining a law degree from the University of Rio Grande do Sul at Porto Alegre in 1939, he is believed to have practiced law for some years. In 1945 he was elected to the State Legislative Assembly of Rio Grande do Sul and in that year he helped Vargas found the powerful, leftist PTB. He entered national politics in 1950 through election from Rio Grande do Sul as a national deputy on the PTB ticket. In January 1951 he returned to Rio Grande do Sul to become provincial Secretary of the Interior, and using this post as a vehicle, he rose rapidly within the party. After Goulart became national chairman of the PTB in June 1952, he worked successfully for one year to unseat Minister of Labor José de Segadas Vianna, who strongly objected to Goulart's backing of dissident elements. His labors were rewarded, and in June 1953 Vargas appointed him Minister of Labor. Attempting to gain control of the trade unions by courting elements of all sorts, Goulart's tenure was marked by a growth of Communist strength in the labor movement, and his generally leftist and demagogic activities aroused the ire of the military, who eventually forced his resignation in February 1954.

~~CONFIDENTIAL~~

Declassified by 058375
date 21 JAN 76

~~CONFIDENTIAL~~

CENTRAL INTELLIGENCE AGENCY
OFFICE OF CENTRAL REFERENCE
BIOGRAPHIC REGISTER

GOULART, João Belchior Marques (Cont.)

BRAZIL

Juscelino Kubitschek accepted Goulart as a running mate in the 1955 elections in return for PTB support, and he was elected by a large margin. As a price for supporting Kubitschek's Social Democratic government, Goulart was given the prerogative of naming and controlling top appointees to the Ministries of Labor and Agriculture. In attempts to head off his rivals within the Labor Party and the labor movement, he dealt extensively with Communist unions. In December 1959 he publicly supported a 24-hour "general strike" in São Paulo, which Kubitschek had denounced, and reports indicate that his actions had been cleared beforehand with War Minister Marshal Lott. Goulart reportedly told labor leaders at that time that the strike had marked the beginning of a revolutionary movement in Brazil and said that he would see that arms would be furnished as soon as violence flared up.

In July 1960 Goulart was accused by Dante Pellacani, secretary general of the São Paulo State Trade Union Council, of bottling up legislation, which, if passed, would have made a unified social security system possible. Goulart publicly advocated the passage of the legislation, but in reality he did all in his power to prevent its enactment in order to retain his control. Late in 1960 Quadros apparently hoped to split the Labor Party enough to unseat Goulart as chairman and to break his influence in labor and agriculture, both as a matter of principle and to free the patronage controls for his own purposes, but Goulart moved to head this off by trying to "pack" various social agencies with four-year appointees. Quadros made derogatory allegations in presidential investigative reports and rejected a letter written to him by Goulart, who complained that he had been implicated without an opportunity to defend himself. Congress subsequently authorized Goulart to absent himself from the country, thus opening the way for him to visit Red China in July 1961, and after he had declined Quadros' offer to make the visit official, he was authorized instead to negotiate commercial and payment agreements.

TNR/CS/BR

25 August 1961

~~CONFIDENTIAL~~

OUT
9995
ULK-76-16
#1

AUG 25 23 07-261

FM

RGR K
SFI-004/25
PP ESF
DE ESI
P 252253Z ✓
FM DIRECTOR CIA
TO WHITE HOUSE

PASS PRESIDENTIAL PARTY AT HYANNISPORT, ATTENTION COL. MC HUGH,
FOR DELIVERY TO PRESIDENT KENNEDY

C O N F I D E N T I A L

FOLLOWING MEMORANDUM ON QUADROS' RESIGNATION PREPARED BY CIA:

1. QUADROS' ATTENTIONS TO THE CHE GUEVARA AND GAGARIN, AND MORE GENERALLY HIS MANIFEST TENDENCIES TO DRAW CLOSER TO THE BLOC, HAVE AROUSED STRONG EXPRESSIONS OF DISAPPROVAL FROM THE ARMY AND FROM CONSERVATIVE ELEMENTS IN BRAZIL. WE THINK IT LIKELY THAT HE RESIGNED IN THE EXPECTATION OF PROVOKING A STRONG MANIFESTATION OF POPULAR SUPPORT, IN RESPONSE TO WHICH HE WOULD RETURN TO OFFICE IN A BETTER POSITION AGAINST HIS OPPONENTS. (FIDEL CASTRO RESIGNED ONCE FOR THIS PURPOSE, AND PERON MORE THAN ONCE). ALTHOUGH THE HIGHER RANKS OF THE ARMY DISLIKE QUADROS, THEY WOULD PROBABLY NOT BLOCK HIS RETURN IN SUCH CIRCUMSTANCES.

2. IF QUADROS DOES NOT COME BACK, WE BELIEVE THAT THE NEXT GOVERNMENT WILL FOLLOW CONSERVATIVE THOUGH NATIONALIST POLICIES, BECAUSE THE ARMY WILL NOT TOLERATE ANYTHING ELSE.

3. VICE PRESIDENT GOULART, THE CONSTITUTIONAL SUCCESSOR, HAD JUST LEFT BY SEA FROM COMMUNIST CHINA, AND WILL NOT BE ON HAND FOR AT LEAST A FEW DAYS. HE IS STRONGLY LEFTIST, AND THE ARMY WOULD BE UNLIKELY TO ALLOW HIM TO EXERT REAL CONTROL OF BRAZILIAN POLICY.

4. THE POSSIBILITY OF TROUBLE IN BRAZIL, DUE TO QUADROS' FLIRTATION WITH THE BLOC AND HIS TENDENCY TO HASTY AND DRAMATIC ACTION, HAS BEEN RECOGNIZED FOR SOME TIME; USIB DREW ATTENTION TO IT ON 24 AUGUST, IN A "SURVEY OF COLD WAR CRISIS SITUATIONS", AND IN A NATIONAL INTELLIGENCE ESTIMATE ON 8 AUGUST.

1812 1812
25/2303Z AUG

Declassified by 058375
date JAN 21, 1976

ALL-76-1011A
21 JAN 76

~~SECRET~~

CENTRAL INTELLIGENCE AGENCY
OFFICE OF CENTRAL REFERENCE
BIOGRAPHIC REGISTER

DANTAS, Francisco Clementino de Santiago

BRAZIL

Permanent Representative to the United Nations

One of Brazil's most prominent jurists, and the ideological adviser of Vice President João Goulart as well as the Partido Trabalhista Brasileiro (Brazilian Labor Party--PTB), Santiago Dantas was named in August 1961 as Brazil's Permanent Representative to the United Nations. Dantas entered politics relatively late in his career, having first established a lucrative practice as a corporation lawyer and a solid academic reputation as a member of the faculty of the University of Brazil, but he is now considered to be a brilliant political theoretician.

Born on 30 October 1911 in Rio de Janeiro, Dantas graduated from the Law School of the University of Brazil and later served on the University faculty as a professor of civil law and (for a short time) as director of the School of Philosophy. In 1951, as economic adviser to the Brazilian delegation to the OAS Foreign Ministers' Conference in Washington, he visibly influenced his own delegation and impressed U.S. representatives as a competent and diligent worker. In 1955 Dantas was appointed the Brazilian member of the Inter-American Juridical Committee, was subsequently elected chairman of the Committee and in 1957 he was re-elected to the position. When the Juscelino Kubitschek administration was inaugurated in January 1956 it was rumored that Dantas was in line for the Foreign Ministry portfolio, but his comparative youth apparently discouraged the President from offering him this cabinet position. Later that year he was chosen chairman of a committee to study constitutional reforms, and in 1957 Dantas assumed the directorship of the venerable, conservative Jornal do Comercio, a venture which increased his prestige but proved to be a considerable financial drain; he was forced to relinquish the post two years later.

In October 1958, when still a relative newcomer to the ranks of the PTB, Dantas won a decisive electoral victory in the race for a seat as national deputy from Minas Gerais. His previous record as a successful corporation lawyer, his close identification with foreign business interests, and his former connection with the fascist Integralist Party apparently did not discourage Dantas from moving into labor and socialist circles when these seemed to be politically most profitable. Reliable sources reported at this

~~SECRET~~

Declassified by 053375
date 21 JAN 76

~~SECRET~~CENTRAL INTELLIGENCE AGENCY
OFFICE OF CENTRAL REFERENCE
BIOGRAPHIC REGISTERDANTAS, Francisco Clementino de SantiagoBRAZIL

time that it was believed Dantas intended to use the PTB as the channel either to the Presidency itself or to a position from which he could effectively influence the incumbent of the presidential office. Chosen in 1959 as secretary general of the PTB's Minas Gerais provincial council and as third vice president of the national party, in March of that year Dantas delivered an intellectual justification of the party program which won for him both recognition as the party's outstanding intellectual and the personal support of Vice President Goulart. It is felt that Dantas will support Goulart until the moment when he (Dantas) calculates that his next step up the political ladder is opportune. In April 1961 Dantas was described as one of the PTB members of a three-party coalition commission organized to study the legalization of the Brazilian Communist Party, and his work on the commission is believed to have had Goulart's full approval.

A civil law specialist with a brilliant legal mind, Dantas has been described as broad-minded, an original thinker and receptive to new and different approaches to given problems. According to responsible U.S. sources, he appears to have a better understanding of Brazilian economic and political issues than that which is generally found among PTB leaders. In 1956 Dantas was described as "well-disposed" toward the United States, but somewhat unfamiliar with United States policy objectives. Dantas who is of Portuguese extraction, speaks both English and French fluently.

INR/CS/BR

26 August 1961

~~SECRET~~

~~CONFIDENTIAL~~

CENTRAL INTELLIGENCE AGENCY
OFFICE OF CENTRAL REFERENCE
BIOGRAPHIC REGISTER

KUBITSCHKEK de Oliverira, Juscelino

Senator from Ceias

Juscelino Kubitschek, President of Brazil from 1956 to 1961, captured the Senate seat from the State of Ceias in June 1961 with an astounding electoral victory which gave him almost ninety percent of the votes cast.

During his own presidential term (1956-61) Kubitschek displayed a great and consuming interest in Brazil's economic development, laboring (somewhat recklessly, perhaps, in view of Brazil's economic straits) to implement an extensive program of national development. His principal project, and that of which he is most proud, was the new capital of Brasilia, but his last days in office were studded with inaugurations of impressive, grandiose, and incomplete development projects. Kubitschek's preoccupation with economic progress together with his belief that Brazil should be recognized as a ranking member of the nations of the Western Hemisphere led him to support an imaginative and ambitious foreign policy, the chief manifestation of which was "Operation Pan America" (OPA), a broad proposal for economic development in Latin America. His initial senatorial oration was primarily a defense of his administration which, he declared has provided a "developmental revolution" bringing Brazil to "economic sovereignty". His speech was interlarded with rebukes for the alleged parsimony of the United States, circuitous attacks on his successor's economic conservatism, and praise for OPA, which he termed "a plan so opportune that the United States had to adopt it even though under the name 'Alliance for Progress'". He has been very critical of the "cumbersomeness" of the Alliance for Progress.

Born on 12 September 1902 in Diamantine, Minas Gerais, into an impoverished family, Kubitschek was only two years old when his father died and he has always used his mother's maiden name, which is of Czech origin. Earning his way through preparatory and medical schools as a telegraph operator, he received his degree in medicine from the University of Minas Gerais in 1927, and the following year he borrowed the money to do postgraduate work in Paris, Vienna, and Berlin, as well as travel throughout the Middle East. Upon his return to Brazil in 1930 Kubitschek reportedly took part in the October revolution

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

-2-

KUBITSCHEK de Oliverira, Juscelino (continued)

BRAZIL

which brought the late Getulio Vargas to power. His political ascent began in 1933, when he became secretary to Benedito Valladares, then the governor of Minas Gerias, and after having held various political and appointive offices in his home state he quickly attained the top rung of the political ladder. In 1951 Kubitschek was elected governor of Minas Gerais, and five years later he was inaugurated as President of Brasil.

Kubitschek has supported Brazil President Goulart's quest for a return to the presidential system in Brazil. He will very probably run for President in 1965 and at this stage would appear a likely winner.

Quick-witted and intelligent, Juscelino Kubitschek is a man of considerable personal charm, extraordinary energy, boundless optimism, and an excellent sense of humor. Astute as a politician, and gifted and effective as a public speaker, he has always shown himself to his best advantage in the field of public relations, and although he was relatively obscure on the national political stage at the time he became President the reception he has received at his recent public appearances and his impressive electoral victory demonstrate that he offers sincere appeal for the Brazilian votes. This appeal has been well-described by Don Jaime Camara, Cardinal of Rio de Janeiro, who has characterized Kubitschek as the last and greatest of the Brazilian banisirantes, a term connoting a courageous and swashbuckling pioneer.

Kubitschek is married to Sarah Lemos de Kubitschek and is the father of two teen-age daughters, Marcia and Maristela, the latter of whom is adopted. He speaks French and has some knowledge of Spanish and English.

~~CONFIDENTIAL~~

*Duplicate
to
discharge*

~~SECRET~~
~~NOFORN~~

DLK-96-16
#6 *Buize*
(322)

CENTRAL INTELLIGENCE AGENCY
OFFICE OF CURRENT INTELLIGENCE
27 September 1961

OCI No. 4064/61 Copy No.

CURRENT INTELLIGENCE MEMORANDUM

SUBJECT: Communist Inroads in the Brazilian Government

1. President Joao Goulart has a long history of working with Communists in an effort to increase his political strength, particularly in labor groups. Since Goulart's inauguration there have been reports that the Communists are having considerable success in obtaining jobs in the federal government. However, the inadequacy of information on names and jobs thus far allows only an incomplete appraisal of the extent of Communist inroads.

2. On 25 September the American Embassy stated that it is concerned over the emerging pattern of Goulart appointments "which appears so far significantly weighted in favor of the Communists." The embassy noted that it was still too early to draw conclusions but that it was "difficult entirely to exclude the possibility that we may be witnessing the early stages of an attempted slow-motion coup in which Goulart, wittingly or unwittingly, is paving the way for effective Communist infiltration designed as a prelude to an eventual takeover."

3. Raul Riff, a Communist party member, has been appointed private secretary to Goulart. Evandro Lins, who accompanied Goulart on his visit to Communist China this summer, has been appointed attorney general. Lins has a long history of supporting Communist causes although his most recent reported activity prior to the trip to China was five years ago.

Declassified by 058375
date 22 AUG 1971

~~SECRET~~
~~NOFORN~~

~~SECRET~~
~~NOFORN~~

4. Other reports state that Colonel Carlos Cairoli, a pro-Communist, has been appointed chief of police in Brasilia and that, as of 23 September, it was very likely that General Oromar Osorio, the highest-ranking Communist fellow-traveler in the armed forces, would be appointed as commander of the strategic Vila Militar army garrison in Rio de Janeiro. Both Cairoli and Osorio have been reported several times in recent years as pro-Communist. The reports of their appointments have not been confirmed. General Osorio was dismissed from a key post in March 1960 by President Kubitschek in a general move to oust pro-Communists and ultra-nationalists from key commands.

5. The appointments of Cairoli and Osorio would be particularly serious because Communist penetration of the Brazilian army, while slight, is greater than in other Latin American military establishments. The division is not clear-cut, but Communists, pro-Communists and ultra-nationalists in the Brazilian army have tended since Getulio Vargas' election campaign in 1950 to belong to the faction which supported Vargas and has since supported those considered his heirs, such as Kubitschek, Goulart and Neves.

6. Some reports of Communist appointments have proved to be erroneous. Pompeu de Souza, reported as a Communist who was appointed press secretary, belongs to the Social Democratic party of former President Kubitschek and has been associated from 1953 at least until 1960 with Diario Carioca, an anti-Communist newspaper. In 1960 Pompeu was director of Diario Carioca. Hermes Lima, who was appointed chief of the civil household, a post usually occupied by the president's political "fixer," was reported to be pro-Communist. He has been reported critical of the US economic system. Lima does not appear to be pro-Communist however, and has stated that he felt that the American system was being modified in a direction he thought favorable. Politically, Lima commented, Brazil had no choice but to align itself with the United States. In 1955 Lima was described in a Communist party meeting as "an enemy of the party."

~~SECRET~~
~~NOFORN~~

~~SECRET~~
~~NOFORN~~

7. Uncertainty as to the orientation of the new government is accentuated by ambiguity in the relationship between President Goulart and Prime Minister Neves and by the opportunistic character of many of the members of the Council of Ministers. In accordance with the constitutional amendment of 2 September which established a parliamentary system of government, Neves should be Brazil's chief executive and Goulart should be divested of almost all power. Evidence now available, while not conclusive, suggests that in fact Goulart is acting as chief executive and that Neves may be helping him rather than competing for power.

8. The members of the Council of Ministers are characterized by the embassy as "political opportunists of the old school." Neves is said to be regarded by his associates in Minas Gerais as anti-Communist, but he accepted Communist support in his political campaign for governor of the state in 1960. He has an equivocal record in the field of public finance. The labor minister seems to be a "neutralist" both in international affairs and in such domestic affairs as the struggle between Communists and non-Communists for control of the labor movement. The minister of industry is described by the embassy as "a sometime ultranationalist whose politics seem to be as changeable as his socks." The ministers of mines and of health are both ultranationalists and the foreign minister is a former fascist now known as a key intellectual leader of the left.

~~SECRET~~
~~NOFORN~~

4/1-3/12 Mr. Schriener

SNIE 93-2-61

7 December 1961

RECEIVED
N. S. C.

DEC 14 4 20 PM '61

~~SECRET~~

NLK-76-199

3

SPECIAL
NATIONAL INTELLIGENCE ESTIMATE
NUMBER 93-2-61

SHORT-TERM PROSPECTS FOR BRAZIL
UNDER GOULART

Submitted by the

DIRECTOR OF CENTRAL INTELLIGENCE

The following intelligence organizations participated in the preparation of this estimate: The Central Intelligence Agency and the intelligence organizations of the Departments of State, Defense, the Army, the Navy, the Air Force, The Joint Staff, and NSA.

Concurred in by the

UNITED STATES INTELLIGENCE BOARD

on 7 December 1961. Concurring were The Director of Intelligence and Research, Department of State; Director, Defense Intelligence Agency; the Assistant Chief of Staff for Intelligence, Department of the Army; the Assistant Chief of Naval Operations (Intelligence), Department of the Navy; the Assistant Chief of Staff, Intelligence, USAF; the Director for Intelligence, Joint Staff; and the Director of the National Security Agency. The Atomic Energy Commission Representative to the USIB, and the Assistant Director, Federal Bureau of Investigation, abstained, the subject being outside of their jurisdiction.

Declassified by 058375
date 12 MAY 1976

~~SECRET~~

No. 15

CENTRAL INTELLIGENCE AGENCY

DISSEMINATION NOTICE

1. This estimate was disseminated by the Central Intelligence Agency. This copy is for the information and use of the recipient and of persons under his jurisdiction on a need to know basis. Additional essential dissemination may be authorized by the following officials within their respective departments.

- a. Director of Intelligence and Research, for the Department of State
- b. Director, Defense Intelligence Agency
- c. Assistant Chief of Staff for Intelligence, Department of the Army
- d. Assistant Chief of Naval Operations for Intelligence, for the Department of the Navy
- e. Director of Intelligence, USAF, for the Department of the Air Force
- f. Director for Intelligence, Joint Staff, for The Joint Staff
- g. Director of Intelligence, AEC, for the Atomic Energy Commission
- h. Assistant Director, FBI, for the Federal Bureau of Investigation
- i. Director of NSA, for the National Security Agency
- j. Assistant Director for Central Reference, CIA, for any other Department or Agency.

2. This copy may be retained or destroyed by burning in accordance with applicable security regulations, or returned to the Central Intelligence Agency by arrangement with the Office of Central Reference, CIA.

3. When an estimate is disseminated overseas, the overseas recipients may retain it for a period not in excess of one year. At the end of this period, the estimate should either be destroyed, returned to the forwarding agency, or permission should be requested of the forwarding agency to retain it in accordance with IAC-D-69/2, 22 June 1953.

4. The title of this estimate when used separately from the text, should be classified:
FOR OFFICIAL USE ONLY

WARNING

This material contains information affecting the National Defense of the United States within the meaning of the espionage laws, Title 18, USC, Secs. 793 and 794, the transmission or revelation of which in any manner to an unauthorized person is prohibited by law.

DISTRIBUTION:

White House
National Security Council
Department of State
Department of Defense
Atomic Energy Commission
Federal Bureau of Investigation

~~SECRET~~

SHORT-TERM PROSPECTS FOR BRAZIL UNDER GOULART

THE PROBLEM

To estimate the outlook for Brazil up to the October 1962 elections, with special reference to the orientation and prospects of the Goulart government.

CONCLUSIONS

1. The constitutional compromise which enabled Goulart to succeed to the Presidency after Quadros' resignation in August 1961 has left a confused atmosphere in which the locus of executive power is uncertain. Nevertheless, Goulart has emerged as considerably more than a figurehead President and his principal concern will be to maintain and, if possible, to increase the prestige and power of the Presidency and of his Brazilian Labor Party (PTB). To this end, he will exploit his influence in labor and leftist circles while seeking to avoid undue offense to conservative elements, particularly the military, who continue to view him with suspicion because of his long record of collaboration with the Communists. Meanwhile, the various political forces will be jockeying for control of the executive power and for victory in the October 1962 elections. (Paras. 5-11, 15-16, 19, 23-24)

2. In these circumstances the short-range prospects for the growth of Communist influence in Brazil are favorable. The Communists will benefit by the toler-

ance not only of Goulart but of many other Brazilian political leaders. They will probably encounter little effective competition or governmental restriction in their efforts to entrench themselves in areas where agrarian and social unrest is most acute and will also benefit to some extent by the entry of additional party members or sympathizers into the bureaucracy. However, it is unlikely that Communist infiltration of the government will go so far as to give the Communist Party a significant influence on the formulation and execution of policy within the period of this estimate. (Paras. 12, 18, 25-26)

3. The initial indecisiveness of the new government and the blow to national confidence engendered by the succession crisis have caused a new decline in Brazil's economic and financial situation. Nevertheless, given the continued disbursement of the credits called for in the May 1961 aid package, the government can probably keep going financially until the fall of 1962, though no substantial im-

~~SECRET~~

provement in the basic causes of the country's financial disequilibrium is likely. Although legislation on the reforms promised by Quadros and espoused by the current administration will probably be enacted, it is not likely to be sufficient to assuage popular discontent. Thus the regime is likely to be plagued by recurring political crises and possibly by breakdowns in public order. On balance, however, we believe that Goulart and the present constitutional system will probably survive up to the October 1962 elections. It is less likely that the present Council of Ministers will last that long. (Paras. 20-22, 27-29)

4. The present government will continue to emphasize the "independent" character of its foreign policy, but the need for US financing, as well as domestic political considerations, will probably render it less truculent toward the US than was the Quadros administration. Although Brazil has already re-established diplomatic relations with the USSR, development of diplomatic and economic ties with Bloc countries will probably not go much beyond the existing framework. Brazil will almost certainly continue to oppose sanctions against Castro, though if most major Latin American states were disposed to take some limited action, it would probably go along. (Para. 31)

DISCUSSION

I. INTRODUCTION

5. The sudden resignation of President Janio Quadros on 25 August 1961 plunged Brazil into a constitutional crisis. Although Brazilians take considerable pride in the fact that the crisis was resolved without bloodshed, Brazil did suffer a serious national setback, the effects of which will be felt for some time to come. Abroad, Brazil's ability to enlarge its role in international affairs has been reduced, at least for the time being, and inside Brazil the prestige of the armed forces—the traditional guarantors of constitutional order—has been diminished. The political crisis occasioned a loss of public confidence which undermined steps taken by Quadros toward greater financial stability through budget cuts, elimination of import subsidies, and similar short-run reforms. Occupied since it came to office principally with adjustment to a new form of government and a realignment of power groups, the present administration has not moved decisively regarding the array of basic reforms which Quadros promised but was unable to implement. In-

flation is again on the increase and political tensions are rife.

6. Quadros' resignation after only seven months in office appears to have been the reaction of an unstable personality, ambitious for power, but frustrated by the difficulties of coping effectively with Brazil's chronic problems. Some of his reforms had damaged influential special interests; Congress and politicians of all stripes had become disturbed over his growing tendency to centralize power in his own hands; and the normally easy going Brazilians began to resent his efforts to apply stricter moral standards to many aspects of public life. He came under increasingly heavy fire from the military and other conservatives over what they regarded as his partiality for the Bloc and Cuba. Thus, although Quadros had come to office with a popular mandate and great hopes, he found himself laboring in an atmosphere of criticism and obstruction. Always emotional and sensitive, Quadros quit, probably counting on being recalled immediately with strengthened powers. However, to his apparent great sur-

prise, Congress quickly accepted his resignation.

7. In the ensuing political struggle between those who favored constitutional succession and those opposed to Vice President Joao ("Jango") Goulart, civil conflict seemed near. The Ministers of War, Navy, and Air strongly opposed Goulart because of his long record of collaboration with the Communists in labor and politics. Most of the armed forces remained loyal to their ministers. A major exception was the powerful Third Army in Rio Grande do Sul, which supported Governor Leonel Brizola's¹ campaign on Goulart's behalf. Additionally, there were manifestations of indiscipline in other military elements. Over several days it became apparent that both public and congressional opinion backed a solution along constitutional lines, even though Goulart himself was not notably popular. These pressures, combined with divisions within the military, forced the military leaders to accept a compromise.

8. This compromise was embodied in a hastily drawn constitutional amendment which established a parliamentary form of government, patterned along European lines, in place of the traditional Brazilian system in which the Presidency has been predominant. Presidential powers were drastically curtailed and executive power was placed in the hands of a Council of Ministers responsible to the Chamber of Deputies. Goulart accepted this arrangement, and was installed on 8 September 1961 to serve until 31 January 1966. Tancredo Neves, a member of ex-President Kubitschek's Social Democratic Party, became President of a Council of Ministers in which all major parties were represented in proportion to their strength in Congress.²

¹Goulart's brother-in-law and Governor of Goulart's home state of Rio Grande do Sul. Brizola—heretofore unimportant as a national figure—has long been a supporter of leftist and ultranationalist causes.

²Brazil's three principal parties are the Social Democratic Party (PSD), the National Democratic Union (UDN), and the Brazilian Labor Party (PTB). These parties are heterogeneous in makeup and ideology, and party discipline is notably lacking in each.

II. THE CURRENT SITUATION

A. General

9. In the first two months after Goulart assumed office, the Council of Ministers and the Congress were occupied with adapting to unfamiliar roles, and the President was exploring the reorganized system of relationships among the various governmental powers. During this difficult period of adjustment, the new administration as a whole was faced by the same political and economic obstacles which had frustrated Quadros' efforts to tackle basic social and economic reforms. In addition, it was handicapped by less popular confidence and less clear lines of authority than the preceding administration. The resulting lack of action has contributed to a pervasive atmosphere of political uncertainty with particularly adverse effects on the economic situation. However, during the past month there have been some indications that the Council of Ministers may be coming to grips with the most critical immediate problems, notably inflation.

B. President Goulart

10. Goulart has emerged as considerably more than a figurehead President. His ability to use his appointive power has been reinforced by his position as head of the Brazilian Labor Party (PTB). He has been aided by the fact that Prime Minister Tancredo Neves has not chosen to engage in open dispute on the issue of executive powers. Neves is a relatively colorless example of an old-line opportunistic Brazilian politician.

11. There are significant personal as well as constitutional and political limits to Goulart's influence and freedom of action. In part these restrictions stem from his character and reputation. A confirmed opportunist even by Brazilian standards, the wealthy Goulart has yet to reveal any strongly-held political or economic philosophy, and has been frequently linked with corruption. He owes much of his rapid political rise to former dictator Getulio Vargas, who permitted him to build a personal following in the important PTB by the use of government funds and patronage. Even

though Goulart still heads the PTB and has been vocal on behalf of ultranationalist and popular reform issues, some leftist elements continue to suspect his motives.

12. Goulart is not known to be a Communist, but he has a long history of seeking and receiving Communist support, and has given the Communists considerable freedom of action within the labor movement in return for electoral backing. His recent appointments, although designed principally to entrench himself and his party, have included a number of other figures frequently associated with pro-Communist fronts or causes. He has appointed as his own private secretary an avowed Communist, Raul Ryff. In the eyes of conservatives and most of the military, these appointments justify the deep distrust with which they view Goulart, and reinforce their conviction that they must keep a close watch on him.

13. Despite these limitations, however, Goulart has over many years demonstrated a capacity for political survival, shrewd judgment, and expedient action, motivated by strong personal ambition—formidable assets in the arena of Brazilian politics.

C. Political Considerations

14. Any Brazilian administration confronts a wide variety of entrenched interests working at cross-purposes on both the national and state levels. Thirteen heterogeneous political parties, as well as powerful agricultural, commercial, industrial, labor, military, and Church interests, compete for power and influence. The situation is further complicated by the existence of strong regional interests and loyalties which often conflict, notably as between the backward agricultural north and the modern industrialized south. Under the Brazilian federal system, considerable power remains in the hands of the State Governments. The controversial personality of the new President has tended to exacerbate the friction with these powerful interest groups and to restrict Goulart's authority.

15. Conditioned to Brazil's former system of a strong Presidency along US lines, Congress has not yet established the implementing machinery for parliamentary government envisaged in the hastily devised constitutional amendment. Nor have Neves and the Council of Ministers as yet taken any major initiative in the exercise of their newly won executive power. The Council was selected to provide a broad representation of the political parties in Congress, and has thus far shown little ability to undertake strong action on its own initiative. In these circumstances, neither the Congress nor the Council of Ministers appears eager at this time for an open test of strength with the President.

16. The constitutional amendment of September does not clearly spell out the lines of executive authority and this has intensified jockeying along traditional party and special interest lines. Even were the locus of authority clear, the administration would be unable to count on a stable parliamentary majority.^a For the moment, an arrangement between the PSD, of which Neves is a member, and the UDN provides the required majority. However, strong conservative elements in these two parties are particularly unhappy about Neves' apparent submissiveness to Goulart. Meanwhile, the more leftist PTB, apparently taking its cue from the President, has reserved its position toward the Neves cabinet (although supplying two ministers) in order to escape blame for current difficulties.

17. With the approach of the campaign for the October 1962 election, the government has come under increased political sniping from

***PRESENT COMPOSITION OF THE BRAZILIAN CONGRESS**

(Party discipline is poor and changes in party affiliation are frequent during parliamentary sessions.)

PARTY	CHAMBER OF	
	DEPUTIES	SENATE
Social Democrats (PSD)	114	20
Democratic National Union (UDN)	72	19
Brazilian Labor Party (PTB)	64	17
Social Progressive Party (PSP)	26	1
Minor Parties	50	6
Total	326	63

all sides. The entire lower house of the legislature, two-thirds of the Senate, and half the State Governors are to be elected. Already, ultranationalists and confirmed leftists, led by Brizola, Governor Borges Teixeira of Goias, and the Communist Mayor of Recife, Miguel Arraes, have formed the extremist National Liberation Front to unite the forces of radical nationalism behind a program for immediate and far-reaching social and economic reforms in an effort to win control of Congress. Meanwhile, former President Janio Quadros awaits an opportune time to return to national political life, possibly in alliance with these leftist forces.

18. The present situation offers increased opportunities for Communist advances. In association with the National Liberation Front and the Peasant Leagues of the northeast, the PCB is in good position to exploit popular discontent over current economic hardships. Meanwhile, the PCB is moving ahead with its campaign to re-establish itself as a legal party. The PCB has attacked Goulart in terms similar to those used against Quadros ("entreguista," or one who hands over the national patrimony to foreigners).

D. The Armed Forces

19. The armed forces remain an important political factor despite serious internal divisions and loss of prestige as a result of their leaders' abortive effort to bar Goulart from office. The military leaders have accepted Goulart as the President, but they still mistrust him, and he knows it. Thus, they constitute a major check on any Goulart disposition to swing Brazil significantly to the left in domestic or foreign affairs. Goulart has been careful to refrain from antagonizing the military. Although he has removed officers hostile to him, he has been careful to replace them, in almost every case, with competent professional officers acceptable to their peers. Nevertheless, military foes of Goulart, including the recently resigned Ministers of Air and Navy, are actively plotting against him and are seeking civilian backing.

E. Economic

20. The serious economic and financial difficulties which had been building up in Brazil over the last few years were abated to some extent in mid-1961, primarily through the negotiation of a \$1.3 billion foreign aid and debt extension package in May. However, the political crisis precipitated by Quadros' resignation led to a new decline. Inflationary pressures, reflected in cost-of-living increases of 39 and 30 percent in 1959 and 1960, respectively, have sharply revived. Over the past 12 months price indexes have risen by 35 percent. Prices on some staples have risen as much as 38 percent since late August, partly in expectation of increases in the minimum wage, which were approved in October. Workers already receiving above the minimum wage have meanwhile struck for commensurate increases to maintain their relative incomes. In the wake of a flight of capital during the crisis, a gold-buying spree, and continuing speculative pressure, the *cruzeiro* has dropped from 260 to about 350 to the US dollar. The *cruzeiro* remains under pressure despite improvement in the basic trade position and the inflow of financial aid under the May 1961 agreement.

21. Neves and the capable Minister of Finance, Moreira Salles, are encountering substantial political obstacles in their efforts to control inflation. They have felt impelled to grant a 40 percent increase in the minimum wage, but even this may not suffice to hold down labor demands. Curbs on easy bank credit are politically difficult to impose and enforce. The monetary authorities have taken some steps to limit money issuance until the end of the year, and new exchange regulations have been issued to curb financial speculation and the depreciation of the currency. However, the modification of the free-exchange system which Quadros had instituted may open the door to a return of the costly import subsidies which are popular with the public at large. In addition to keeping credit expansion under control and restraining speculation, the government is seeking to reduce the budget deficit. It is also pressing for continuation of external assistance under the May 1961 agree-

ment—principally from the US. The situation is complicated by the fact that since June Brazil has not met some of the conditions laid down by the International Monetary Fund (IMF) in connection with this agreement.

22. It is still too early to assess the effectiveness of the government's emergency measures. There is a continuing threat of strikes for higher wages, and public dissatisfaction over the current high rate of inflation persists. Meanwhile, ambitious plans for putting through agrarian, tax and banking reforms, antitrust and banking legislation, and other measures designed to correct basic weaknesses in the Brazilian economic and financial structure have bogged down as a result of the political preoccupations and uncertainties which have followed Quadros' resignation. On the other hand, the government is pressing Congress to enact a new tax program and is making progress on a constructive coffee policy. The task of remedying traditionally inflationary credit practices, annual budget imbalances, and yearly trade and balance of payments deficits is so large as to presage a long period of continuing economic difficulties.

III. THE OUTLOOK

23. President Goulart is a shrewd and flexible politician who is intent on remaining in office and would like to expand his authority. Although his tendency to rely on political agility as a substitute for policy is likely to handicap him, he can marshal an impressive array of assets. His long identification with organized labor will continue to make him highly acceptable to the left generally—and will also provide him with some leverage in dealing with labor demands. The ultranationalist stand he has taken on such issues as public ownership of key industries and utilities is well-known and popular. He has been largely successful in disclaiming responsibility for Brazil's current difficulties and will benefit from the widespread desire of most Brazilians to avoid another national crisis.

24. Goulart's reputation for leftward proclivities is a liability both in many influential circles and in his relations with other countries important to Brazil, notably the US.

However, he is well aware of this impression and is making some efforts to dispel it. Although the armed forces will continue to watch him closely, the military, for the most part, appear ready to permit Goulart to remain in office so long as he respects the present constitutional limitations on his executive powers and avoids extreme leftist intrigues and alliances.

25. Goulart will probably avoid associations with the Communists or other ultraleftists of a kind likely to stir up strong opposition on the part of the military. By the same token, however, he is unlikely to have any qualms about cooperating with the Communists or their sympathizers when it appears to serve his purpose. His appointments will probably continue to include some individuals who have records of sympathy with the Communists. Despite the criticism now being leveled at him by PCB spokesmen, he will probably continue to take a generally tolerant position toward the party and, where local circumstances justify it, his PTB will continue to work with the Communists in particular elections and on various issues. On occasion, Goulart is likely to advocate policies also endorsed by the Communists, arguing that they should not be allowed to assume leadership of the reform movement by default.

26. Thus the short-range prospects for the growth of Communist influence in Brazil are favorable. The Communists will benefit by the tolerance not only of Goulart but of many other Brazilian political leaders. They will probably encounter little effective competition or governmental restriction in their efforts to entrench themselves in areas where agrarian and social unrest is most acute and will also benefit to some extent by the entry of additional party members or sympathizers into the bureaucracy. However, it is unlikely that Communist infiltration of the government will go so far as to give them a significant influence on the formulation and execution of policy within the period of this estimate. Moreover, the PCB still labors under the handicap of not being a legal party, and though efforts are being made to secure official recognition, it is unlikely that the legal obstacles can be over-

come in time for the Communists openly to run their own candidates in the 1962 elections. They will offset this handicap, as in the past, by some infiltration of the slates of legal parties and by political bargains with opportunist non-Communist elements. The Communists have probably achieved some penetration of the armed forces, principally at the noncommissioned officer level, and this might prove to be a useful asset under conditions of major civil disturbance.

27. In view of the central importance of the economic situation in influencing popular attitudes, much will depend on how much success the government has in obtaining credits, development capital, debt postponements, and other forms of external assistance for Brazil. Given the continued disbursement of the credits called for in the May 1961 aid package, the government can probably keep going financially until the fall of 1962, though no substantial improvement in the basic causes of the country's financial disequilibrium is likely.

28. Although legislation on the reforms promised by Quadros and espoused by the current administration will probably be enacted, it is not likely to be sufficient to assuage popular discontent. Powerful special interest groups will oppose significant reforms or any far-reaching attack on the root causes of Brazil's economic difficulties. Thus we believe that the regime is likely to be plagued by recurring political crises and possibly by breakdowns in public order.

29. In such crisis situations, Goulart's actions would be of major importance. His first inclination would be to ride out the storm, taking no action that would jeopardize the electoral chances of his partisans. If he felt compelled to take affirmative action, he would probably be disposed to press for increasingly leftist solutions and to seek greater Presidential powers. He would nevertheless, probably attempt to work out with the military leaders some sort of agreed action, thus minimizing the risk of a military takeover. He might, though we consider it unlikely, resign, castigating conservative opposition and

Congressional inaction. On balance, we believe that Goulart and the present constitutional system will probably survive up to the October 1962 elections. It is less likely that the present Council of Ministers will last that long.

30. The present regime will face its first electoral test in the October 1962 elections for Congress and for State Governors. Given the multiplicity of political parties and interests in Brazil, the results are likely to be inconclusive. It is possible that the elections may provide opportunity for a political comeback by ex-President Quadros, who could legally become Prime Minister if his supporters control the new Congress. Despite the bad taste left in many mouths by his sudden resignation, Quadros has apparently not completely lost the magnetic appeal which swept him into office in early 1961. Ex-President Kubitschek, who has retained his personal popularity, is now a Senator and seems to have his eye on the Presidency in 1965 with restoration of full powers. Goulart might also emerge in a significantly strengthened position, especially since the growth of pressure for social and economic change might result in election of a new Congress considerably more leftist in orientation than the present one.

31. During the period of this estimate Brazilian foreign policy will probably be less venturesome than it promised to be under Quadros. At least until the October 1962 elections, the need for large-scale US financial assistance will pose some restraint on Brazilian policy. For this reason, and because of domestic political considerations, the present government will probably not have as truculent an attitude toward the US as did Quadros. Although Brazil has already re-established diplomatic relations with the USSR, development of diplomatic and economic ties with Bloc countries will probably not go much beyond the existing framework. Brazil's aspirations to great power status have obviously been set back, at least for the present, and the problem of getting along with Brazil's Latin American neighbors will loom larger in Brazilian thinking. Nevertheless, Brazil will

~~SECRET~~

8

probably continue to emphasize the "independent" character of its foreign policy. For these reasons it will almost certainly continue to oppose sanctions against Castro, although

it would probably agree to some kind of limited action if it seemed certain that most of the major Latin American states were disposed to take such steps.

~~SECRET~~

1961

1-a

SANITIZED COPY

BRAZIL AS AN INSTRUMENT OF WESTERN INFLUENCE IN AFRICA

1. An intense spirit of nationalism shared by virtually all the politically articulate is the predominant factor in Brazilian politics today. Brazilians are convinced that their country is fast becoming a world power, and as such is entitled to a voice in international affairs commensurate with its stature. A concomitant of this attitude is the demand for a more "independent" foreign policy, i.e., less automatic cooperation with the US in international matters. No political group in Brazil is strong enough to oppose this demand which, although it pre-dated the Goulart administration, has received much new impetus from the



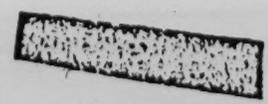
B(3)
and
(S)(5)

2. Brazil has unique qualifications for constructive relations with the Africans. There is a significant degree of interest in and sympathy for Brazil among West African leaders, particularly in the former French territories. Brazil's domestic racial policies are widely hailed by African politicians, and Brazil has racial and cultural ties with both West Africa and Portuguese Africa. Also, Brazil's struggle for economic development -- in many ways paralleling

SANITIZED COPY

Content UNCLASSIFIED

per _____
date 15 MAR 1976



[REDACTED]

that of Africa -- is another important factor in the eyes of African leaders. Finally, as Brazil continues to develop its industries it will increasingly seek African markets as new outlets. It already seeks good relations with the Africans to encourage the latter's association with Latin American states in international coffee commodity agreements for mutual benefits.

3. In terms of US interests, the Brazilian economic model -- rapid development under a free economy -- provides a sharp contrast and a visible alternative to Soviet and Chinese Communist methods which have proved attractive to many African leaders. Moreover, Brazil is potentially another channel through which Western influences could flow to the neutralist Africans, who might for one reason or another, shy away from intimate ties with the US.

(b)(3)
4. [REDACTED]

(S) (U) / B (1)

4. Since taking office Janio Quadros has moved rapidly to pave the way for new Brazilian relationships with Africa. Thus far he has:

- a. Indicated his belief that Brazil could assume the role of a "bridge" between the West and Africa. (This theme, incidentally,

[REDACTED]

has received strong support in the Brazilian press during the past year.) The Foreign Minister is now speaking of an "Afro-Atlantic Community" in which Brazil would have a leading role.

b. Instructed his Foreign Minister to "elaborate" Brazilian policy vis-a-vis Africa. Quadros stated that the policy "must be re-examined" particularly with regard to its "political, economic, and cultural aspects."

c. Instructed the Foreign Minister to constitute a working group to prepare Brazilian diplomatic representation in the new African states. The Foreign Minister revealed that the working group will consider not only new missions but also ways and means of "introducing the African world with democracy."

d. Proposed a scholarship program to foster Brazil's relations with Africa, i.e., African students to study in Brazil (this despite Quadros austerity program).

5. Brazil's aspirations to become a world power exceed its current capabilities; it lacks financial assets for a comprehensive educational, social, and cultural program directed at the Africans.

[REDACTED]

(13)(3)
5(4)(5)

Brazil's developing
economy and modern society provide many opportunities to assist
Africans in obtaining knowledge and skills required for the economic
growth leading to stability in their new countries.

(S)
and
(S)/B(3)

~~SECRET~~

~~NOFORN~~

116
CWI
ALK-176-33
#2
Bryce

CENTRAL INTELLIGENCE AGENCY
OFFICE OF CURRENT INTELLIGENCE
30 March 1962

OCI No. 1260/62

Copy No. 7

CURRENT INTELLIGENCE MEMORANDUM

SUBJECT: Brazilian President Joao Goulart

1. Inaugurated President on 7 September 1961 following the resignation of Janio Quadros, Joao Goulart is a rich and energetic landholder and lawyer. Despite considerable apparent training for the presidency as political protégé of former President Getulio Vargas and vice president under both Juscelino Kubitschek and Quadros, Goulart apparently assumed the office with no clear ideas on national policy. He has conciliated much of the strong opposition to him which threatened Brazil with civil war immediately prior to his inauguration. In recent months he has largely allayed the fears aroused by his past political associations with the Communists, although he has not taken any decisive steps against them. Goulart has not, however, made his domestic policies clear. In foreign affairs, he is following the "independent" line initiated by Quadros, although his regime has not indulged in Quadros' petty harassment of US officials.

2. Goulart, who is commonly known by his nickname "Jango," was born 12 March 1918 at Sao Borja, Rio Grande do Sul, into a well-to-do ranching family of Portuguese and French descent. He obtained a law degree from the University of Rio Grande do Sul in 1939 but did not emerge on the political scene until 1945 when he was elected to the State Legislative Assembly of Rio Grande do Sul. In the same year he helped Vargas found the leftist Brazilian Labor Party, now one of the country's three most powerful parties. Goulart became national chairman of the party in 1952, and in 1953 became Minister of Labor under Vargas. Goulart's tenure was marked by a growth of Communist strength in the labor movement. This growth and an effort by Goulart to change the relationship between labor's minimum wage and the pay of army enlisted men in favor of labor aroused the military who forced his ouster from the cabinet in February 1954.

Declassified by 058375
date 6 NOV 1975

~~NOFORN~~

~~SECRET~~

~~SECRET~~

~~NOFORN~~

3. Juscelino Kubitschek accepted Goulart as a running mate in the 1955 elections in return for support from the Labor Party which Goulart has continued to control. Despite their success in the election, relations between the two men did not become close. During the Kubitschek regime, however, Goulart was allowed to exercise government influence in the labor movement in his own behalf, and he dealt extensively with Communist labor leaders.

4. Goulart ran for the vice presidency in 1960 on a ticket which ostensibly opposed the presidential candidacy of Janio Quadros. There was considerable cooperation between the two candidates, however, and both were elected under the Brazilian system which permits election of a president and vice president from opposing tickets. After the election, Quadros made derogatory allegations against Goulart in presidential investigative reports and considerable hostility developed between the two. In the last weeks of the Quadros regime, Goulart visited Poland, the USSR, and Communist China where he went out of his way to praise the successes of Mao Tse-tung and the Chinese Communists.

5. Goulart's attitude toward the United States, which he visited in 1956, has been changeable. He is usually more willing to make friendly remarks about the United States in private conversation than in public. In a May 1961 conversation with a US official, however, he stated that the Cuban invasion had cost the United States considerable prestige and added that the Russians knew how to do these things.

6. Goulart is married to Maria Teresa Fontela. They have a five-year-old son, Joao Vicente, and a three-year-old daughter, Denise. Goulart's sister is the wife of Rio Grande do Sul Governor Leonel Brizola. Goulart is fluent in Spanish as well as Portuguese but is reported to speak no English.

- 2 -

~~NOFORN~~

~~SECRET~~

TELEGRAM INFORMATION REPORT TELEGRAM

CENTRAL INTELLIGENCE AGENCY

NLK-176-67 #1

This material contains information affecting the National Defense of the United States within the meaning of the Espionage Laws, Title 18, U.S.C. Secs. 793 and 794, the transmission or revelation of which in any manner to an unauthorized person is prohibited by law.

CLASSIFICATION - DISSEMINATION CONTROLS

COUNTRY BRAZIL

REPORT NO. TDCS-3/512,257

SUBJECT STATEMENTS OF FINANCE MINISTER WALTER MOREIRA SALLES CONCERNING POSSIBLE CHANGE IN BRAZILIAN NATIONAL LEADERSHIP

DATE DISTR. 29 MAY 1962

PRECEDENCE ROUTINE

FILE

DATE OF INFO. 26-27 MAY 1962

REFERENCES IN 42548

PLACE & DATE ACQ. APPRAISAL 2 (REPORTORIAL ACCURACY)

(27 MAY 1962)

TDCS-3/511,595

FIELD REPORT NO. 1

THIS IS UNEVALUATED INFORMATION. SOURCE GRADINGS ARE DEFINITIVE. APPRAISAL OF CONTENT IS TENTATIVE.

SOURCE

1. DURING LATE MAY 1962, FINANCE MINISTER WALTER MOREIRA SALLES SAID THAT IN MID-MAY PRES JOAO GOULART HAD DEFINITELY DECIDED TO RESIGN BUT HAD APPARENTLY CHANGED HIS MIND. SALLES BELIEVED IF GOULART REQUESTED AND WAS GRANTED A LEAVE OF ABSENCE BECAUSE OF HIS HEART CONDITION, THE PRESIDENT PRO TEMPORE MAY BE SUBJECT TO STRONG INFLUENCE FROM THE MILITARY. HE SAID THAT, IN HIS OPINION, IF PRIME MINISTER TANCREDO NEVES LEFT HIS POST, NEVES WOULD BE REPLACED BY A MEMBER OF THE MILITARY. SALLES SAID GOULART HAD OFFERED HIM PRIME MINISTERSHIP AND, ALTHOUGH HE HAD NOT REFUSED POSITION, HE BELIEVED IT UNLIKELY THAT HE WOULD BE ABLE TO ASSUME THIS POST BECAUSE OF POLITICAL OPPOSITION. SALLES ADDED THERE WAS A POSSIBILITY THAT IF

CLASSIFICATION - DISSEMINATION CONTROLS

STATE ARMY/ACSI NAVY AIR JCS SECDEF NSA NIC USIA OCI ONE OCR ORR OO DIA

EXO

TELEGRAM INFORMATION REPORT TELEGRAM

SANITIZED COPY

6 DEC 1975

(When Filled In)

ECONOMIC AND POLITICAL CONDITIONS CONTINUED TO WORSEN, THERE WOULD BE NO ELECTIONS IN OCTOBER 1962. HE QUALIFIED THIS STATEMENT BE ADDING IF GOULART REMAINED AS PRESIDENT, AND IF THE CABINET WERE REORGANIZED AND STAFFED WITH COMPETENT INDIVIDUALS, THE CHANCES WERE GOOD ELECTIONS WOULD BE HELD AS SCHEDULED.

2. FIELD DISSEM: STATE CINCLANT CINCARIB.

END OF MESSAGE

NLK-76-71 #1

TELEGRAM INFORMATION REPORT TELEGRAM

CENTRAL INTELLIGENCE AGENCY

Brazil

This material contains information affecting the National Defense of the United States within the meaning of the Espionage Laws, Title 18, U.S.C. Secs. 793 and 794, the transmission or revelation of which in any manner to an unauthorized person is prohibited by law.

CLASSIFICATION — DISSEMINATION CONTROLS

(When Filled In)

RETAIN OR DESTROY

COUNTRY BRAZIL

REPORT NO. TDCS-3/515,678

SUBJECT PLANS OF BRAZILIAN GOVERNMENT TO CANCEL CON-
CESSION OF HANNA CORPORATION AS FIRST
STEP IN EXPROPRIATING ITS LAND AND PHYSICAL
ASSETS

DATE DISTR. 3 JULY 1962

FILE

PRECEDENCE PRIORITY

DATE OF INFO. 25 JUNE 1962

REFERENCES IN 21169

PLACE & DATE ACQ. APPRAISAL 3

(28 JUNE 62)

FIELD REPORT NO. 1

THIS IS UNEVALUATED INFORMATION. SOURCE GRADINGS ARE DEFINITIVE. APPRAISAL OF CONTENT IS TENTATIVE.

SOURCE

- SMITH-BUNDY
- DUNCAN
- KAYSEN
- KILDUFF
- PETERSEN
- SCHLESINGER
- TAYLOR
- BELK
- FORESTAL
- JOHNSON
- KUEN
- KOMEIR
- RASKIN
- SACHS

1. On 28 JUNE 62 A BUSINESS ASSOCIATE OF PRESIDENT JOAO GOULART SAID THAT ON 25 JUNE GOULART HAD SIGNED A DECREE CANCEL-
LING THE MINERAL CONCESSION OF THE HANNA CORPORATION IN BRAZIL.
THE DECREE IS EXPECTED TO BE ISSUED WITHIN TWO WEEKS, THE EXACT
TIMING TO BE DETERMINED BY GOULART.

ACCORDING TO

GOULART'S BUSINESS ASSOCIATE, THIS ACTION ON THE PART OF THE
FEDERAL GOVT WAS TO BE FOLLOWED BY A SIMILAR /PORTION GARBLED -

CLASSIFICATION — DISSEMINATION CONTROLS

STATE ARMY/ACSI NAVY AIR JCS SECDEF NSA NIC USIA OCL ONE OCR ORR OO DIA FBI

I&NS, EXO, SECRET SERVICE DD

TELEGRAM INFORMATION REPORT TELEGRAM

SANITIZED COPY

6 DEC 1975

(When Filled In)

BEING SERVICED* INSPIRED BY POLITICAL MOTIVES SINCE THE ACTION IS SCHEDULED TO TAKE PLACE JUST BEFORE THE VISIT OF PRESIDENT KENNEDY TO BRAZIL, THUS LEAVING IT OPEN TO BE CONSTRUED AS A CALCULATED ATTEMPT TO CAUSE THE CANCELLATION OF THE PRESIDENT'S VISIT.

3. | COMMENT: THE DIARIO OFFICIAL PUBLISHED A "DESPACHO", SIGNED BY THE LATE MINISTER OF MINES AND ENERGY GABRIEL PASSOS ON 14 JUNE 62, CANCELLING IRREGULARLY-REGISTERED MINING RIGHTS AND PROVIDING FOR OPERATION OF PROPERTIES BY GOVERNMENT-CONTROLLED ENTERPRISES. IT IS POSSIBLE THAT THE ABOVE REPORT IS BASED ON THIS "DESPACHO".

4. | DISSEM: STATE ARMY NAVY AIR FBI.

*HEADQUARTERS COMMENT: MISSING PORTION WILL BE DISSEMINATED ONLY IF IT MATERIALLY AFFECTS THE SENSE OF THIS REPORT.

END OF MESSAGE

CLASSIFICATION - DISSEMINATION CONTROLS

TELEGRAM INFORMATION REPORT TELEGRAM

Leeds, Roger
F 75-6126

CENTRAL INTELLIGENCE AGENCY

Brizel

This material contains information affecting the National Defense of the United States within the meaning of the Espionage Laws, Title 18, U.S.C. Secs. 793 and 794, the transmission or revelation of which in any manner to an unauthorized person is prohibited by law.

CLASSIFICATION — DISSEMINATION CONTROLS

COUNTRY BRAZIL
SUBJECT HESITANCY OF PRESIDENT GOULART TO TAKE ACTION IN PRESENT CRISIS
DATE OF INFO. EARLY AUGUST 1962
GRADE & DATE ACQ.
APPRAISAL 3

RETAIN OR DESTROY

REPORT NO. TDCS -3/519,745
DATE DISTR. 15 AUGUST 1962
PRECEDENCE ROUTINE
REFERENCES IN 45569

THIS IS UNEVALUATED INFORMATION. SOURCE GRADINGS ARE DEFINITIVE. APPRAISAL OF CONTENT IS TENTATIVE.

SOURCE

1. IN EARLY AUGUST PRESIDENT GOULART WAS NOT SURE WHAT HIS NEXT MOVE WOULD BE IN HIS MANEUVERINGS WITH THE FEDERAL CONGRESS. HE BELIEVED THAT, BY GRANTING POLITICAL FAVORS WITHIN THE CONGRESS, HE COULD WIN ENOUGH VOTES TO INSURE THE GRANTING OF SPECIAL POWERS TO PRIME MINISTER BROCHADO DA ROCHA AND TO HAVE AN EARLY DATE SET FOR THE PLEBISCITE TO RETURN TO THE PRESIDENTIAL SYSTEM. HOWEVER, SINCE HE FELT THAT FOR POLITICAL REASONS HE COULD NOT ENTER INTO NEGOTIATIONS WITH AMARAL PEIXOTO, PRESIDENT OF THE DEMOCRATIC SOCIALIST PARTY (PSD), HE HESITATED TO UNDERTAKE THIS. (SOURCE COMMENT: THAT THE POLITICAL REASONS MENTIONED ARE IS UNKNOWN. SINCE THERE IS NO QUESTION THAT GOULART COULD PURCHASE THE VOTES OF MANY MEMBERS OF THE OPPOSITION BY GRANTING POLITICAL FAVORS, THE REASONS FOR HIS HESITANCY ARE UNCLEAR. POSSIBLY HE DOES NOT WANT TO TIP HIS

CLASSIFICATION — DISSEMINATION CONTROLS

STATE ARMY/ACSI NAVY AIR JCS SECDEF NSA NIC USIA OCI ONE OCR ORR OO DIA EXD

TELEGRAM INFORMATION REPORT TELEGRAM

SANITIZED COPY

HAND AT THIS TIME.)

2. LIKEWISE HE HESITATED TO USE THE MILITARY TO SUPPORT HIS POSITION ON THE .LEBISCITE AND THE DELEGATION OF SPECIAL POWERS TO THE PRIME MINISTER, ALTHOUGH HE FELT THAT HE HAD THE MILITARY LEADERS UNDER HIS CONTROL.

(SOURCE COMMENT: MILITARY LEADERS IN BRASILIA DO NOT GIVE THE IMPRESSION THAT PRESIDENT GOULART HAS THE DEGREE OF MILITARY SUPPORT WHICH HE CLAIMS.)

3. FIELD DISSEM: STATE, CINCARIS.

TELEGRAM INFORMATION REPORT TELEGRAM

CENTRAL INTELLIGENCE AGENCY

Boyer NLK-7 #

This material contains information affecting the National Defense of the United States within the meaning of the Espionage Laws, Title 18, U.S.C. 793 and 794, the transmission or revelation of which in any manner to an unauthorized person is prohibited by law.

CLASSIFICATION -- DISSEMINATION CONTROLS

(When Filled In) SANITIZED COPY

COUNTRY	BRAZIL	REPORT NO.	TCDS -3/532,579
SUBJECT	PRESIDENT GOULART'S PLAN FOR IMPROVING BRAZIL-U.S. RELATIONS	DATE DISTR.	1 JANUARY 1963
PRECEDENCE	ROUTINE	REFERENCES	FILE IN 42985
DATE OF INFO.	22 DECEMBER 1962	FIELD REPORT NO.	
PLACE & DATE ACQ.			
APPRAISAL			

THIS IS UNEVALUATED INFORMATION. SOURCE GRADINGS ARE DEFINITIVE. APPRAISAL OF CONTENT IS TENTATIVE.

SOURCE

1. ON 22 DECEMBER ROBERTO POMPEU DE SOUZA, PRESS SECRETARY OF THE COUNCIL OF MINISTERS, SAID THAT PRESIDENT JOAO GOULART PLANS TO USE SAN THIAGO DANTAS, FORMER FOREIGN MINISTER, ROBERTO CAMPOS, BRAZILIAN AMBASSADOR TO THE UNITED STATES, AND AMERICAN AMBASSADOR LINCOLN GORDON AS A BASIS FOR IMPROVING RELATIONS WITH THE UNITED STATES IN ORDER TO GET THE NEEDED FINANCIAL AID. DANTAS, CAMPOS, AND AMBASSADOR GORDON ARE TO GET THE OFFICIAL BACKING OF THE BRAZILIAN GOVT.

2. ACCORDING TO SOUZA, CRITICISM OF THE UNITED STATES

- SMITH-BUNDY
- BELK
- BURPIS
- DAVIS
- DUNGAN
- FELDMAN
- FORRESTAL
- HIRSCH
- JOHNSON
- KAYSEN
- KILDUFF
- KLEIN
- KOMER
- LEGERE
- PARROTT
- PETERSEN
- SAUNDERS
- SCHWENINGER

CLASSIFICATION -- DISSEMINATION CONTROLS

STATE/INR	BIA	ARMY/ACSI	NAVY	AIR	JCS	SECDEF	NSA	NIC	AID	USIA	OCI	ONE	OCR	ORR	OBI	OO
STATE/DIR																

TELEGRAM INFORMATION REPORT TELEGRAM

Content UNCLASSIFIED

FORM 1K OBSOLETE PREVIOUS EDITIONS

date 9 MAR 1976

(When Filled In)

TDCS -3/532,579

IN

PAGE

TO BE MADE BY JUSCELINO KUBITSCHK, FORMER PRESIDENT OF BRAZIL WHO IS A MEMBER OF A TWO-MAN TEAM INVITED BY PRESIDENT KENNEDY TO REVIEW THE PROGRAMS OF THE ALLIANCE FOR PROGRESS. KUBITSCHK WILL CONTINUE TO SUPPORT THE IDEA THAT THE ALLIANCE FOR PROGRESS MUST BE A TOOL FOR DEVELOPMENT, NOT AN ARM TO FIGHT SOCIAL PROBLEMS. SOUZA SAID THAT GOULART HAS REPORTS THAT ALBERTO LLERAS CAMARGO, FORMER PRESIDENT OF COLOMBIA, WHO IS THE OTHER MEMBER OF THE TEAM, WILL ACT IN THE SAME WAY. (FIELD COMMENT: LLERAS CAMARGO PLANNED TO ARRIVE IN RIO DE JANEIRO ON 4 JANUARY. HE EXPECTED TO SPEND A MONTH IN BRAZIL GIVING ASSISTANCE TO KUBITSCHK.)

3. FIELD DISSEM: STATE ARMY NAVY AIR FBI CINCARIB CINCLANT

END OF MESSAGE