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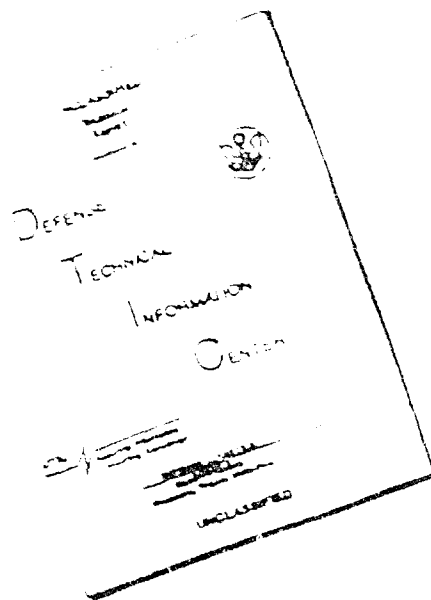
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NATIONAL
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NETHERLANDS ANTILLES
AND FRENCH WEST INDIES

WEATHER AND CLIMATE

MAY 1965

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This Section was prepared for the NIS by the Defense Intelligence Agency with a contribution on amphibious operations from the Office of the U.S. Naval Weather Service.

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Weather and Climate

A. General weather and climatic conditions

1. Introduction

The Netherlands Antilles and French West Indies, components of the Lesser Antilles, are located in the eastern Caribbean Sea. The climate of the northeastern islands is characteristically tropical, with persistently high temperatures and humidities, prevailing easterly trade winds, and considerable rainfall. The climate of the islands in the southwest is much the same, except that rainfall is very scanty. The primary climatic control is the circulation around the Azores high, which produces an almost constant easterly flow of tropical maritime air across the Area. Other important influencing factors include recurring migratory pressure systems, rugged topography on some islands, the tropical latitude, and the surrounding warm ocean waters.

Although temperatures and humidities are quite high throughout the year, the weather is rarely enervating because of the alleviating effect of the trade winds. Temperatures vary little from month to month. In general, days are moderately hot and nights are warm at most low-level locations; mountain locations are slightly cooler. Over most of the lowlands, mean daily maximum temperatures fall in the 80° F. to 90° F. range and mean daily minimum temperatures are between 65° F. and 80° F. Relative humidity is persistently high in all months, ranging from about 65% to 95%. Precipitation varies greatly in this Area where most climatic elements remain remarkably constant. Over the northeastern islands, mean annual rainfall ranges from about 40 inches on the smaller islands to well over 100 inches on the mountainous portions of the larger islands, with a wet season over most sections in May through November and a comparatively dry season in December through April. Over the islands in the southwest, mean annual amounts are between 5 and 25 inches. Here, the period February through June is very dry, with totals increasing after June to a maximum in November or December. Rainfall occurs most often in the form of showers. Cloudiness is not great, usually averaging about 35% to 55% in winter and 40% to 65% in summer. Ceiling and visibility limits are usually adequate for most military operations except on the windward slopes of the mountainous islands. However, during the passage of migratory disturbances such as easterly waves, tropical storms, and hurricanes, operations may be adversely affected over many sections for a day or even longer. Most of the Area is influenced by these storms from time to time, but the islands

in the southwest are affected much less frequently than those in the northeast. The frequency of migratory disturbances is generally greatest in summer and autumn. Thunderstorms occur most often in May through November, though they may be observed in any month. Surface winds of a destructive nature seldom occur and are usually associated with tropical storms or hurricanes.

The Netherlands Antilles and French West Indies comprise numerous islands of various sizes and shapes and are part of a crescent shaped group in the eastern Caribbean Sea known as the Lesser Antilles. Many of the islands in the northeast are mountainous, with several volcanic peaks reaching 4,800 feet or more; in the southwest, the islands are relatively flat, with maximum elevations about 1,200 feet. For discussion purposes, the Area is divided into two island groups or regions (Figure 47): 1) Northeast Group and 2) Southwest Group. This division is based primarily on precipitation, although location and topography are also considerations.

The Northeast Group is made up of eight main islands and a number of smaller islands, which are part of a north-south volcanic chain located in the eastern Caribbean Sea between about 14° and 18°N. latitude. Guadeloupe covers about 585 square miles and is divided roughly in half by a narrow tidal channel filled with mangrove. The western half is made up mostly of rugged mountains and contains the highest peak in the Lesser Antilles, extending to over 4,800 feet. The eastern half consists mostly of low plains, with elevations below about 400 feet. Martinique covers approximately 385 square miles and is also quite mountainous, with the highest peak rising to about 4,800 feet. The remaining islands in the Northeast Group are much smaller; most of them are partially mountainous, but the peaks are much lower. Throughout the year, temperature and humidity in the Northeast Group are persistently high, although the prevailing trade winds offer considerable relief from the heat. Precipitation is generally adequate on the smaller and relatively flat islands. It is abundant in the mountains of the larger islands, particularly in May through November when this region is most susceptible to migratory disturbances such as easterly waves, tropical storms, and hurricanes. Mean cloudiness is not great, averaging about 53% annually and increasing slightly from winter to summer. Cloud heights and visibilities are rarely very low.

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The Southwest Group consists of three major islands far removed from the Northeast Group. They are part of an east-west chain of islands lying near the northern coast of Venezuela just north of 12°N. latitude. Curaçao, the largest of the three islands, is roughly 38 statute miles long and 7 miles wide at its broadest place and covers approximately 175 square miles. The other two islands are similarly shaped but much smaller. All three islands are devoid of any significant topographic features and consist mostly of flat plains which merge in places with low hills and ridges. Curaçao has the highest elevation, hills rising to about 1,200 feet in the north, whereas the highest ridges on the other islands are less than 800 feet in height. As in the Northeast Group, temperature and humidity remain quite high during the year, but are moderated somewhat by the almost constant easterly winds. Rainfall is very light and supports only limited vegetation. The Southwest Group lies south of the major storm tracks and therefore is only infrequently affected by migratory disturbances. Mean cloudiness is slightly less than in the Northeast Group and shows a similar small increase from winter to summer. Cloud ceilings are rarely very low, and visibility is generally excellent the year round.

For ease of discussion, the normal midlatitude seasons are used throughout this Section: winter (December, January, February), spring (March, April, May), summer (June, July, August), and autumn (September, October, November). Since there are reasonably distinctive wet and dry periods over much of the Area, the terms "wet season" and "dry season" may also be used. Although the length of these seasons varies slightly from place to place, a generally consistent division can be made. In the Northeast Group the wet season starts in May and lasts through November, and the dry season occurs in December through April. The Southwest Group is relatively dry all year, with no true wet season; however, there is generally an increase in precipitation starting in July, with average rainfall reaching a maximum in November or December and decreasing again by the end of January. Therefore for convenience the period July through January may at times be referred to as the wet season. The more pronounced dry season begins in February and lasts through June.

2. Climatic controls

The climate of this Area is controlled by several factors. The major controls are the airflow resulting from the Azores high-pressure cell and the composition and frequency of the air masses observed over the islands. Convergence zones and migratory pressure systems such as tropical cyclones and easterly waves cause infrequent departures from average conditions. The effects of topography, latitude, and the surrounding tropical ocean are also important.

a. GENERAL CIRCULATION — The Netherlands Antilles and French West Indies are located in a region dominated by the anticyclonic circulation around the Azores high. This major semipermanent pressure center is the Atlantic cell of the high-pressure belt that encircles the

oceans at about 30°N. Generally, this high-pressure belt follows the annual march of the sun, moving a few degrees of latitude southward and weakening in winter and returning northward and intensifying in summer. The general circulation on the southern side of the Azores high is easterly throughout the year. Consequently, since the Area lies in the southwestern quadrant of the high, the easterly flow, commonly called the trade winds, is dominant during all months of the year. Seasonal changes in the prevailing directions are only slight, varying between east-northeast in January and east in July (FIGURES 1 and 2). This persistent flow throughout the year, with its long trajectory over water which has a small annual temperature range, results in little seasonal change in most climatic elements.

b. MIGRATORY PRESSURE SYSTEMS AND FRONTS — Although the climate of the Area is dominated by persistent, year-round trade winds, the constancy of the climate is interrupted for brief periods by migratory

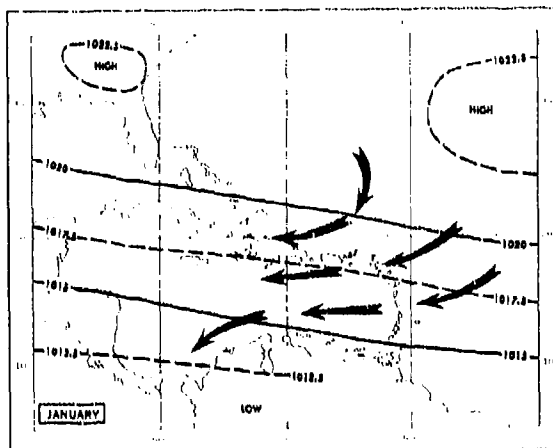


FIGURE 1. MEAN SEA-LEVEL PRESSURE (MILLIBARS) AND GENERALIZED SURFACE AIRFLOW, JANUARY

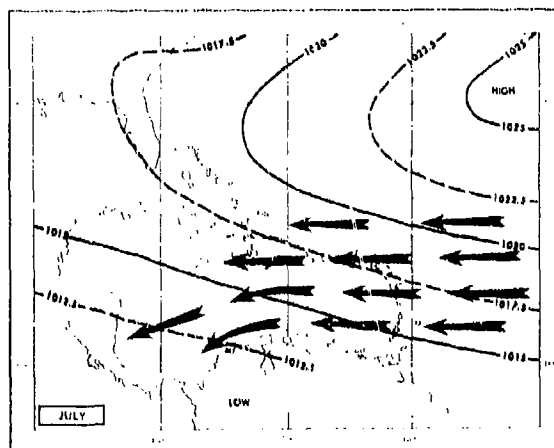


FIGURE 2. MEAN SEA-LEVEL PRESSURE (MILLIBARS) AND GENERALIZED SURFACE AIRFLOW, JULY

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disturbances. In summer and autumn, disturbances such as easterly waves, tropical storms, hurricanes, and occasionally the Intertropical Convergence Zone (ICZ) influence the climate. In winter the regularity of the trade-wind climate is interrupted only by an occasional penetration of midlatitude cold fronts from the North American continent.

(1) *Easterly waves*—The easterly wave is the most frequent of the migratory pressure systems influencing the climate of the Area. These waves are possible at any time from late May to late November, and their intensity and frequency may vary considerably. In general, a wave in the easterlies is present over some part of the Caribbean almost every day in June through September, with a somewhat lesser frequency in May, October, and November. An easterly wave is a migratory disturbance of the trade winds. Although its most pronounced characteristic is a wavelike pattern in the wind field, the easterly wave also consists of a weak trough of low pressure. The trough line (axis) of an easterly wave is oriented in a general north-south direction and moves slowly from east to west with an average speed of about 13 knots. The axis of an easterly wave should not be construed as a boundary comparable to midlatitude fronts. It represents a transition zone 50 to 100 miles wide in which the weather changes gradually. Ahead of the axis of the wave is a zone of low-level divergence with fair weather, and to the rear, a zone of low-level convergence with stormy weather. Although conditions vary from one wave to another, the cloud and weather accompanying the passage of a typical easterly wave is usually similar to the following pattern: In the forward zone are easterly surface winds becoming northeasterly and trade-wind cumulus clouds of average height, with no precipitation. Ahead of the axis are scattered patches of cumulus, strong haze, northeasterly surface winds, and no precipitation. Close to the axis are found cumulus of above average development, some cirrus and altocumulus, improving visibility, scattered rain showers, and surface winds becoming variable. At the axis, towering cumulus and cumulonimbus occur, with broken to overcast middle and high clouds, variable surface winds, and frequent showers or rain. To the rear of the axis, there are usually towering cumulus and cumulonimbus with layers of low, middle, and high clouds, frequent moderate to heavy showers and light rain between showers, southeasterly surface winds, and thunderstorms. Finally, in the eastern outskirts are found showers, thunderstorm activity, and broken clouds, decreasing and becoming scattered cumulus as conditions return to the normal easterly trade-wind flow.

These waves in the easterlies are usually quite deep, often extending to more than 15,000 feet. During the passage of a strong easterly wave, as much as 8 inches of rain may fall in a 24-hour period. Over the mountainous parts of the Area, this typical weather pattern may be greatly distorted by orographic influences, resulting in abundant precipitation and cloudiness on the

windward slopes whereas the lee slopes are much drier and less cloudy. Easterly waves occasionally intensify into tropical cyclones.

(2) *Tropical cyclones*—Although loss of life and property damage have resulted from such weather conditions as flash floods, cloudbursts, and thunderstorms, the most catastrophic events in this Area have been associated with tropical storms and hurricanes, collectively known as tropical cyclones. In 1928, the eastern half of the island of Guadeloupe was devastated by a hurricane in which 1,500 people were killed. It has been estimated that, in the 25-year period 1920 through 1944, more than 10,000 lives and billions of dollars in property damage were lost in the Caribbean—Central America—Mexico region because of these storms. In this part of the world, tropical cyclones are primarily summer and autumn phenomena.

In general, tropical cyclones influencing the Area originate in the southern part of the North Atlantic Ocean, between the Cape Verde Islands and the West Indies. They usually move westward with the prevailing easterly flow before recurving northward, in parabolic fashion, within or near the West Indies. However, some continue generally westward until they strike the coasts of Central America or Mexico, whereas others recurve northward over the Gulf of Mexico, sometimes striking the United States. The western Caribbean is also a spawning ground for tropical cyclones. However, these storms do not affect the Area but move generally northward or westward over Cuba or the Gulf of Mexico.

By international agreement, tropical cyclones in the Atlantic have been classified according to their wind speeds as follows: 1) tropical depression, a cyclone with winds less than 34 knots, 2) tropical storm, winds 34 to 64 knots, and 3) hurricane, winds 65 knots or greater. Tropical depressions in the vicinity of the Area are rare since they are an early stage in the development of a tropical cyclone and usually occur nearer the point of origin, east of the Area. Therefore, they are not included in the following discussion.

The characteristics of tropical storms and hurricanes include a generally circular configuration, strong winds blowing cyclonically around a center of low pressure, and extensive turbulent clouds, thunderstorms, and torrential rainfall. These storms vary in size, with diameters ranging from 60 miles to over 800 miles in the larger hurricanes. Although the winds blowing around the center of a tropical cyclone are strong, the forward speed of the system in the vicinity of the West Indies is comparatively slow, normally averaging between 10 and 15 miles per hour. Wind speeds in Caribbean hurricanes have been measured at speeds over 135 knots, and peak gusts have been estimated over 200 knots by experienced observers. Strong winds such as these will uproot trees and demolish all but the strongest dwellings and structures. Although rainfall varies from storm to storm, the total amount which occurs at any one place during the passage of a hurricane is frequently

quite large. Totals of 20 inches are fairly common during the passage of a fully developed hurricane. The most important effects of such enormous amounts of rain are flooding of river valleys and other low-lying sections, destruction of bridges and roadways by overflowing rivers, and destruction of access routes by mountain landslides.

Among the most serious effects of a hurricane is the damage done along coasts by high tides and ocean waves. As a hurricane approaches a coastline the strong onshore winds cause water to pile up along the shore, so that the hurricane high tide may rise as much as 10 feet above the normal high tide. The high tides are most pronounced on concave shorelines which do not readily permit the escape of water that has been piled up on the shore. These abnormally high tides cross the shoreline and flood the low-lying sections. In addition, the enormous ocean waves may break with great force, producing severe damage to docks, breakwaters, and installations of all types located near sea level along the coast.

The frequency of tropical cyclones varies greatly from place to place throughout the West Indies. Within this Area, the Northeast Group lies in the path of a relatively large number of tropical cyclones, while the Southwest Group is positioned far enough south to be only rarely influenced by such storms. Figure 3 presents an isoline analysis of the total number of hurricanes (winds 65 knots or greater) and tropical storms (winds 34 to 64

knots) within 5-degree squares for 72 years. It can be seen from this illustration that the frequency of tropical cyclones differs greatly from one discussion region to the other. The Northeast Group lies in the southeastern extension of a high-frequency ridge, and the Southwest Group is located in the southern and weakest part of a low-frequency trough.

A tabulation of tropical storm and hurricane occurrences in the vicinity of the Area over a 78-year period is given in Figure 22. These data show that the frequency of tropical storms and hurricanes affecting the Northeast Group was more than 8 times the frequency of storms affecting the Southwest Group. During this 78-year period the Northeast Group experienced a combined total of 108 tropical storms and hurricanes, averaging nearly $1\frac{1}{2}$ per year. However, the frequency of storms varied considerably from year to year; 22 years of the period had no occurrences while other years had as many as 5. August and September were by far the worst months, accounting for 73% of all storms affecting the Northeast Group, whereas 24% occurred in July, October, and November. Only one storm occurred in each of the months December, January, and March, and none in the remaining months. In the 78-year period the Southwest Group was affected by only 13 tropical storms and hurricanes combined, averaging only one every 6 years. Storms occurred in June through December, with July, August, and October accounting for 68% of all storms.

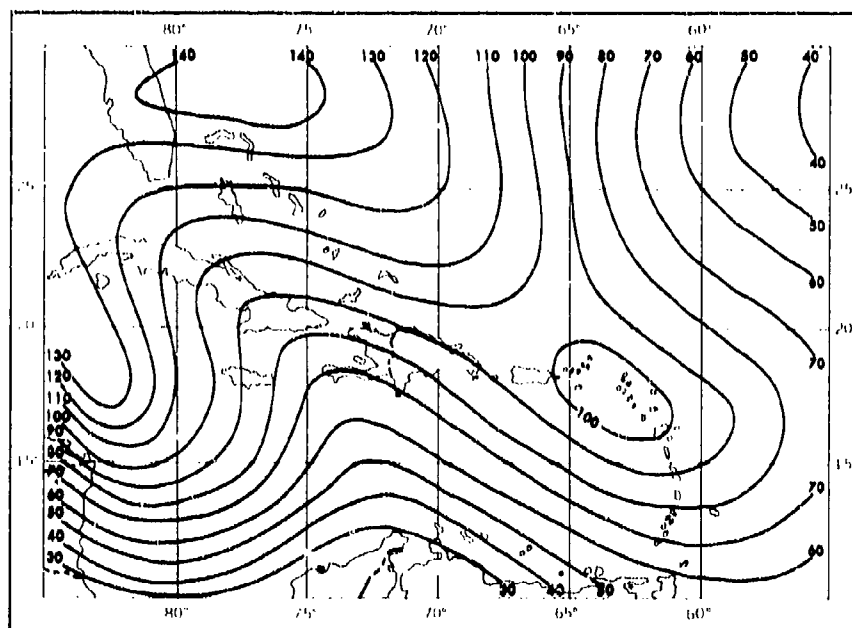


FIGURE 3. TOTAL NUMBER OF HURRICANES AND TROPICAL STORMS WITHIN 5-DEGREE SQUARES FOR 72 YEARS (1886-1957)

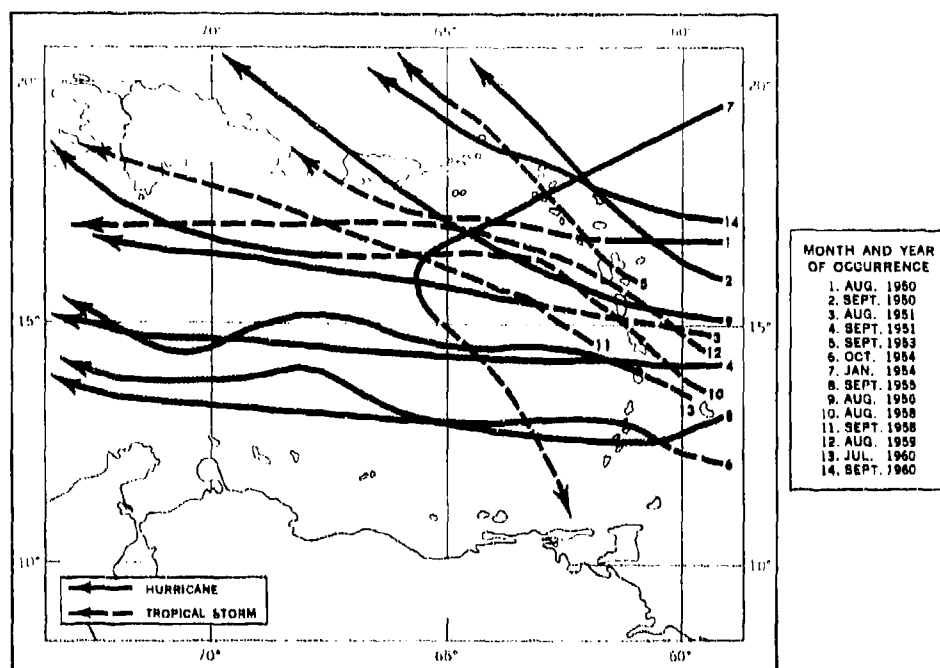


FIGURE 4. TRACKS OF THE CENTERS OF HURRICANES AND TROPICAL STORMS AFFECTING THE NETHERLANDS ANTILLES AND FRENCH WEST INDIES IN 1950 THROUGH 1960

FIGURE 4 shows the tracks of the centers of hurricanes and tropical storms which have crossed or passed close to the Netherlands Antilles and French West Indies during the years 1950 through 1960. These samplings illustrate the remarkable diversity of the tracks of individual storms. North of the Area, storms have followed tracks which form a complete loop.

(3) *Fronts* — In comparison to midlatitude conditions, frontal activity in this Area is rare. The Inter-tropical Convergence Zone (ICZ), generally defined as the boundary zone between air masses originating in the Northern and Southern Hemispheres, is normally south of the Caribbean Sea throughout the year. However, during summer and autumn day-to-day oscillations occasionally bring it far enough north to affect the weather of the Area, particularly the southern part of the Northeast Group. The influence of the ICZ on the Southwest Group is very slight, since it is seldom very active north of the east-west mountain ranges in northern Venezuela. The weather associated with the ICZ varies greatly, depending on the intensity of convergence within the zone. At times the ICZ consists of a continuous band of bad weather, while at other times it consists of several bands of bad weather, with improved conditions between. The weather within the zone may vary from a narrow wall of towering cumulus or cumulonimbus with intense thunderstorm activity to only scattered storms of small intensity with no definite boundary.

During the colder months, primarily winter, residual cold fronts trailing from midlatitude Atlantic migratory

lows occasionally affect the Area. This situation usually arises when the strength of the west to east upper-air circulation over the continent is weak and there is a marked north-south transport of air. Under these conditions it is not uncommon for the polar front (frontal zone between air masses of polar origin and those of tropical origin) to move into the Atlantic off the east coast of North America, assuming a northeast-southwest position with the southern end curving westward across southern Florida and into the Gulf of Mexico. A cold front in this position is often subjected to a series of marked wave developments especially in the Gulf of Mexico, with each wave developing into a depression of major proportions. Following the last wave of the series, the cold air often breaks through into subtropical latitudes. By the time the cold front reaches the Area, the cold air has lost most of its polar continental characteristics because of modification by the relatively warm ocean waters on its long southward trajectory. Therefore, the front often reaches the Area as a discontinuity in the wind field rather than as a true front. The usual effect of midlatitude disturbances entering the Caribbean is to lift, weaken, or destroy the trade-wind inversion. If the disturbance is weak, all that may occur is an increase in the normal cloudiness and perhaps a little light rain. On the other hand, a strong disturbance can give rise to extensive cloudiness and heavy rain.

(4) *Anticyclones* — Fronts in this Area are usually followed by a migratory high pressure cell or anticyclone of originally dry polar air, which has undergone

considerable modification before reaching the Area. These anticyclones generally merge with the warm Azores high and serve primarily to increase the pressure and to increase subsidence (the descending motion of air), thereby drying out the air and bringing about a day or two of nearly cloudless skies. These migratory highs have a similar effect on the large-scale seasonal pressure pattern of the Area, as seen in FIGURES 1 and 2. In winter, although the center of the Azores high is weakest, the pressure over the Area is greatest, because the western lobe of the Azores high is strengthened by the absorption of these migratory highs from the northwest. Subsidence aloft is increased, thereby contributing to the overall dryness of the winter season.

c. AIR MASSES — Although greatly modified mid-latitude air masses, particularly polar continental (cP), occasionally reach the southern part of the Area, the predominant air mass overlying the Area throughout the year is tropical maritime (mT). This tropical maritime air is warm and moist in the lower layers but dry aloft. The dryness aloft is caused by the subsiding air within the upper layers of the Azores high. The vertical extent of the moist lower layers of air varies seasonally, being highest in summer and lowest in winter. Vertical temperature measurements through the trade winds indicate a zone in which there is an inversion, a marked increase in temperature with increased altitude. This trade-wind inversion is as much a moisture discontinuity as a temperature discontinuity. Below the inversion the air is moist, and above, dry. The inversion is strongest where its base is lowest, and weakest where its base is highest. The trade-wind inversion has a marked effect on the climate of the Area. Below the inversion the air is convectively unstable (thermodynamic state of a layer of air which will become unstable if given sufficient lift). If the inversion is relatively strong, however, the instability is seldom realized because of the inversion cap on convection; that is, a strong inversion limits cloud buildups and acts to dissipate, because of the dryness aloft, such cloudiness as may occasionally penetrate the inversion layer. In addition, dust, smoke, and salt particles are frequently trapped by the inversion, resulting in haze in the lower layers.

The trade-wind inversion occurs throughout the year, but its frequency, intensity, and height vary both daily and seasonally. Over this Area the frequency is greatest during winter, the inversion occurring about 85% of the time, and decreases only slightly in spring to about 75% of the time. It is least in summer and autumn, roughly 30% of the time. The thickness of the inversion layer can vary from less than 200 feet to more than 1,600 feet but on the average is about 900 to 1,000 feet. There is a rough inverse correlation of the height of the inversion with surface pressure; that is, when the surface pressure is high the inversion is low and strong, while the converse is true when the

surface pressure is low. For example, during winter, the period of highest surface pressure, the trade-wind inversion is at its maximum intensity and minimum height. The average height of the base of the inversion during winter is about 7,000 to 9,000 feet and it is relatively continuous. The inversion begins to weaken and rise during spring. It is weakest and at its maximum elevation (generally above 9,000 feet) during the summer, when it is generally discontinuous. At this time the tropical maritime air is very moist and often convectively unstable to high levels. For short periods in midsummer, however, southwestward extensions of the Azores high temporarily strengthen and lower the inversion, bringing back some of the dryness and stability aloft characteristic of winter.

d. TOPOGRAPHY — The topography has pronounced effects on the climate of much of this Area; in fact, the height and exposure of a place often has more effect on its climate than its location. The persistent trade winds bring great quantities of moisture into the Area, and the extent to which the moisture falls as rain depends considerably on the steepness and height of the features which lift the moist air. A very evident result of topography is the very large variation in amount of rainfall received on the mountainous islands, particularly when mountain ranges lie directly across the path of the moist northeast trades. Thus, the exposed windward slopes and mountain ridges usually receive much more cloudiness and rainfall than do the leeward slopes and sheltered lowlands. An excellent example is on the island of Martinique in the Northeast Group where Deux-Choux, a mountain station on the exposed windward slope, has a mean annual rainfall of 211 inches, and Le Carbet, located in the lee of the mountains near sea level and less than 10 miles away, averages only 52 inches annually.

The topography of the islands also influence other climatic elements, such as temperature and surface winds, but to a much lesser extent. In general, temperature in this Area decreases approximately 3 Fahrenheit degrees for each 1,000-foot increase in elevation. Therefore temperatures in the mountains are usually more agreeable throughout the year than those at lower elevations. Surface winds are usually more variable on the islands which have the roughest topographic features, often being deflected from the prevailing north-east direction to follow the orientation of the adjacent mountains.

e. LATITUDE AND OCEANIC INFLUENCES — Most of the Netherlands Antilles and French West Indies are between 12°N. and 18°N. latitude, well within the tropics. The low latitude results in strong insolation throughout the year, giving rise to high temperatures with only minor seasonal variations.

The influence of ocean waters upon the climate of the Area is also quite important. The persistently high

temperature and moisture content of the trade winds are the result of their long trajectory over the warm tropical portion of the Atlantic Ocean. The air passes over an ocean surface with little annual temperature variation, thereby contributing to the small annual temperature range over much of the Area, particularly at lower elevations.

3. Special phenomena

a. **NORTHERS** — At times during the colder months an unusually strong cold front from the northwest pushes southeastward across the West Indies. The relatively cold polar continental air behind the front produces below-normal temperatures and strong, gusty northerly surface winds. These winds are known locally as *northers*, which sometimes reach gale force (28 knots or greater). These northers normally last only a day or two because the warm tropical waters rapidly modify the cold air masses.

b. **FLOODING** — Heavy rainfall and rainshowers constitute much of the precipitation received in the Area. As a result, flooding may occur from time to time, particularly during the hurricanes, which are often accompanied by torrential rainfall. The enormous amounts of rain may cause flooding of river valleys and other low-lying sections, destruction of bridges and roadways by overflowing rivers, and obstruction of access routes by landslides on the rain-soaked mountain slopes.

c. **HAIL** — Information on hail occurrence is scanty and supports only a very brief, generalized discussion. Although the occurrence of hail in this Area is unusual and localized, it has been reported at various times on some of the islands. In general, there is a greater chance of its occurrence over mountainous parts of the larger islands in the Northeast Group. The frequency of occurrence of hail follows the trend of thunderstorm frequency.

B. Weather and military operations

This Subsection is concerned with the effects of the meteorological elements upon military operations, which are here divided into four basic groups: air, air-ground, ground surface, and amphibious. Under each group are discussed the weather elements primarily relevant to the operations in that group. However, weather elements which are considered most applicable to one basic group may also affect operations in others. In such cases, reference should be made to the appropriate subsection. The meteorological information contained herein is organized to highlight conditions that are pertinent factors in planning. Discussion of the effects of weather on specific operations is not attempted since the weather factor in an operation is subject to change with the changing requirements of the operation itself.

1. Air operations

a. **CLOUDINESS** — As in other parts of the world, cloudiness may often be an important factor in planning military operations. However, unlike many middle and high latitude locations, this Area seldom has completely clear or overcast sky conditions which persist for an entire day or more. Mean cloudiness is not great, averaging on the whole about 50% annually. FIGURE 5 shows regional and monthly variations in mean cloudiness during afternoon and evening, and FIGURE 23 presents in tabular form the distribution of mean cloudiness at 4 hours of the day. Regional and seasonal variations of cloud cover are not distinctive. In general, however, annual cloudiness is slightly greater in the Northeast Group where it averages 53% than in the Southwest Group where it averages 47%. Although there is, for the most part, an increase in cloud cover from winter to summer, the increase is not pronounced. Mean cloudiness in the Northeast Group increases from a winter minimum of about 40% to 55% to a summer maximum of about 55% to 65%. In the Southwest Group cloudiness averages roughly 35% to 50% in winter and 40% to 60% in summer. The amount of cloudiness at any place is influenced by many factors, such as elevation, location on a windward or a leeward slope in regard to the prevailing winds, exposure to land and sea breezes, and the frequency of tropical storms. Therefore, large-scale differences in cloud cover between the various islands may be less pronounced than local differences between stations with different exposures on the same island.

Diurnal variations in mean cloudiness are about 10% to 15% over the smaller islands of the Northeast Group and 15% to 30% over the larger northeastern islands and all islands of the Southwest Group. Generally, in all seasons, most cloudiness is experienced during the day, often reaching a maximum in the afternoon, and least cloudiness is observed at night, usually reaching a minimum in the evening before midnight. However, the diurnal cloud pattern is also influenced by such factors as location and exposure. As a general rule, over the open sea the maximum cloud development occurs between midnight and dawn. Therefore windward coasts and slopes may at times receive maximum cloudiness during the early morning hours as clouds drift over the islands with the prevailing winds.

In all seasons, clouds are most often cumuliform. Trade-wind cumulus is the prevalent type, usually starting to form shortly after sunrise and reaching maximum development in the afternoon. The height of the base of the trade-wind cumulus is quite uniform over most

NOTE Air operations are defined as those operations taking place primarily above the frictional influence of the surface terrain on atmospheric circulation. The meteorological elements discussed in this Subsection are those which are of primary importance to such operations as high-level visual bombing, radar bombing, aerial photography, most types of aerial reconnaissance, and fighter support and interception.

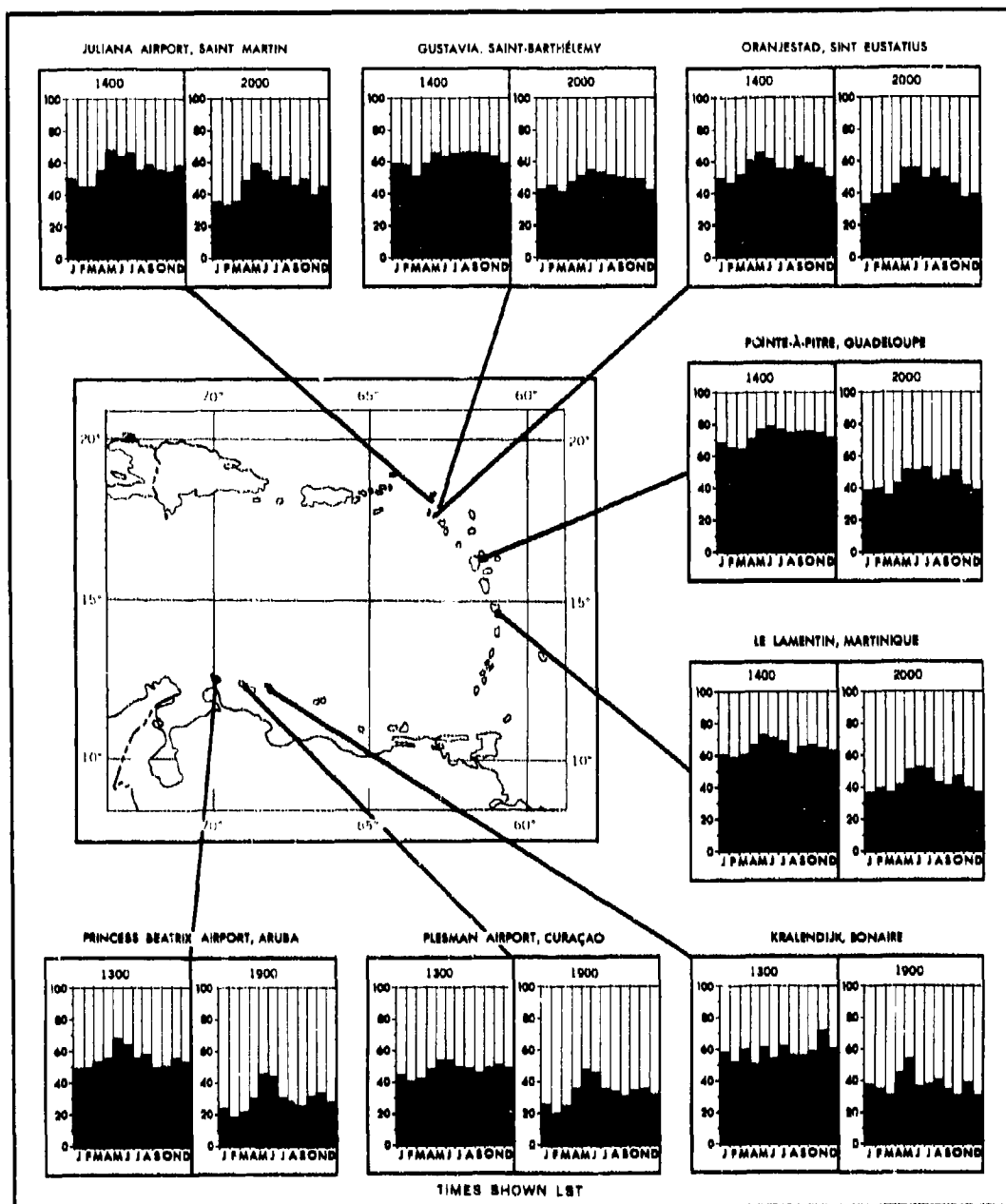


FIGURE 5. MEAN CLOUDINESS (%) IN AFTERNOON AND EVENING. (For tabular data see FIGURE 23.)

of the Area, averaging 2,000 to 3,000 feet. The tops of these cumulus clouds most often range from about 6,000 to 8,000 feet in winter to about 8,000 to 12,000 feet in summer. At times, however, particularly during summer and autumn, extensive vertical development produces towering cumulus or cumulonimbus, with tops extending to great heights. These clouds are frequently observed in connection with disturbances such as easterly waves and tropical cyclones. Cirrus and cirrostratus often develop as residual clouds from cumulonimbus.

The frequency of clear days (2-eighths or less cloud cover) and cloudy days (6-eighths or more cloud cover) may also be of primary importance in the planning of air operations. Data of this type are shown graphically in FIGURE 6 and in tabular form in FIGURES 24 and 25. Regional variations in clear and cloudy days are generally small. Variations between islands or between stations on the same island with different exposures may be much more significant. Although seasonal variations are not great throughout the Area, usually clear conditions are most frequent in winter, averaging for the day as a whole about 10 to 15 days a month; they are least frequent in summer with monthly averages around 5 to 10 days. Conversely, cloudy days are most common in summer when the monthly averages are roughly 8 to 15 days, and least common in winter, averaging about 5 to 10 days a month. At almost all locations the variation between afternoon and night frequencies of clear conditions is greater than either the regional or seasonal variation, because of the predominance of cumulus clouds, which reach their maximum development in the afternoon. However, deviations from this diurnal pattern may well be expected on windward coasts and slopes, because of the effects of the diurnal cloudiness regime over the open sea.

The feasibility of air operations such as high-level visual bombing and aerial photography depends on the availability of days with little cloud cover combined with good visibility. The frequency of one such combination, giving the mean number of days with total cloud cover equal to or less than 2-eighths and visibility equal to or greater than 2½ miles, is presented in FIGURE 26. In general, these data show conditions favorable for this type of air operation to be most frequent in winter and least frequent in summer. Diurnally, during all seasons, nights are most favorable and days, particularly afternoons, are least favorable. Favorable conditions occur very infrequently in the afternoon at most locations in summer.

b. THUNDERSTORMS AND TURBULENCE — Thunderstorms are usually associated with the various migratory disturbances which affect the Area, although isolated air-mass thunderstorms also occur. The seasonal and regional distribution of days with thunderstorms are shown graphically in FIGURE 7 and in tabular form in FIGURES 27. Although thunderstorms may be observed at any time of the year, they are infrequent in December through April, with most locations averaging less than 1 thunder-

storm per month. Thunderstorms during this period are almost exclusively associated with the movement of fronts or related systems into the Area. Maximum thunderstorm frequency is experienced in summer and autumn when disturbances such as easterly waves and tropical cyclones are active. The frequency of thunderstorms starts to increase in May, reaches a maximum in late summer or early autumn, and decreases rather abruptly near the end of November. During this period, frequencies vary considerably from place to place, ranging up to about 10 days per month with thunderstorms. Local terrain features are an important factor in thunderstorm development, with mountain slopes often furnishing the lift necessary for cumulonimbus formation. Therefore, in general, the low flat islands in both the Northeast and Southwest Groups experience fewer thunderstorms than the mountainous islands, particularly on the windward slopes. The Southwest Group, only infrequently affected by migratory disturbances, has a very low frequency of thunderstorms. Information concerning the intensity and vertical development of thunderstorms in this Area is limited. Generally, cumulonimbus clouds in the Tropics develop to higher altitudes than in more northerly latitudes, tops sometimes exceeding 50,000 feet. The most intense thunderstorms and greatest vertical development of cumulonimbus clouds are most often associated with migratory disturbances during the summer and autumn.

Turbulence is seldom a serious problem over the Area. Severe turbulence is limited primarily to thunderstorms, easterly waves, and tropical cyclones, which are infrequent in winter and early spring and can usually be avoided in air operations. Light to moderate turbulence is sometimes found where the trade winds are forced over mountain ridges. In the lower levels, turbulence may result from strong surface heating, especially over the larger islands during summer afternoons. Also, light to moderate turbulence often occurs within the transitional zone between the trades and the westerly winds in the upper air.

c. UPPER-AIR WINDS — Three reasonably distinctive wind systems overlie most of the Area below about 90,000 feet (FIGURES 8 through 10). All three of these systems exist, to varying degrees, throughout the year. The lowest is the easterly trade-wind layer. Above the trades is a zone of westerly winds, and overlying the westerlies is a zone of upper easterly flow. The depth of the lower easterlies varies both seasonally and latitudinally. Over the Northeast Group, this layer is shallowest in winter and spring, extending from the surface to above 10,000 feet, and deepest in summer and autumn, reaching to above 20,000 feet. Over the Southwest Group, the easterlies are fairly persistent throughout the year to above 20,000 feet. Over the entire Area in all seasons, mean wind speeds in this layer are mostly 10 to 20 knots; occasionally, the easterly winds reach 30 knots or more. A layer of variable winds usually separates the trades from the overlying westerlies. This

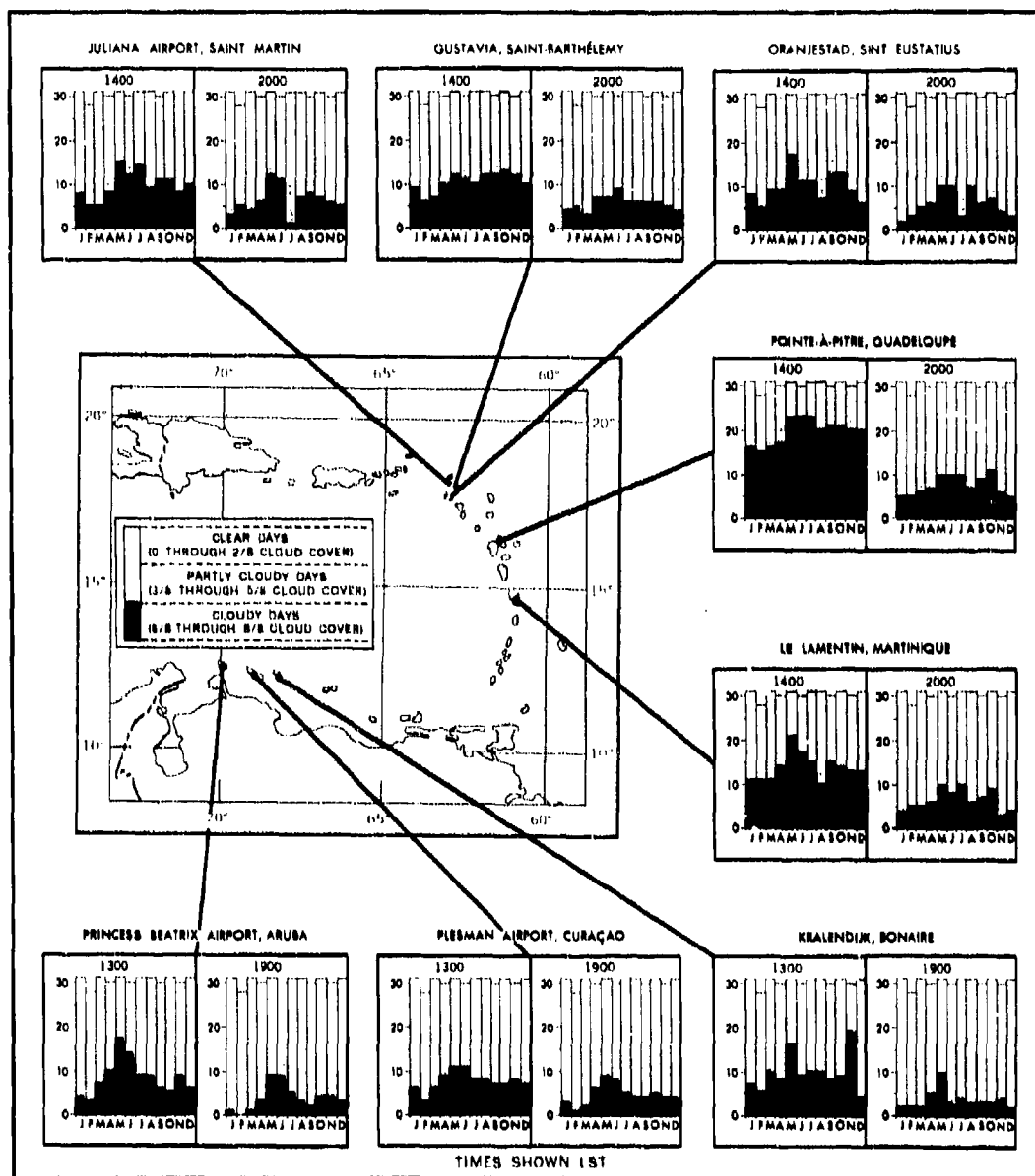


FIGURE 6. MEAN NUMBER OF CLEAR, PARTLY CLOUDY, AND CLOUDY DAYS IN AFTERNOON AND EVENING. (For tubular data see FIGURES 24 and 25.)

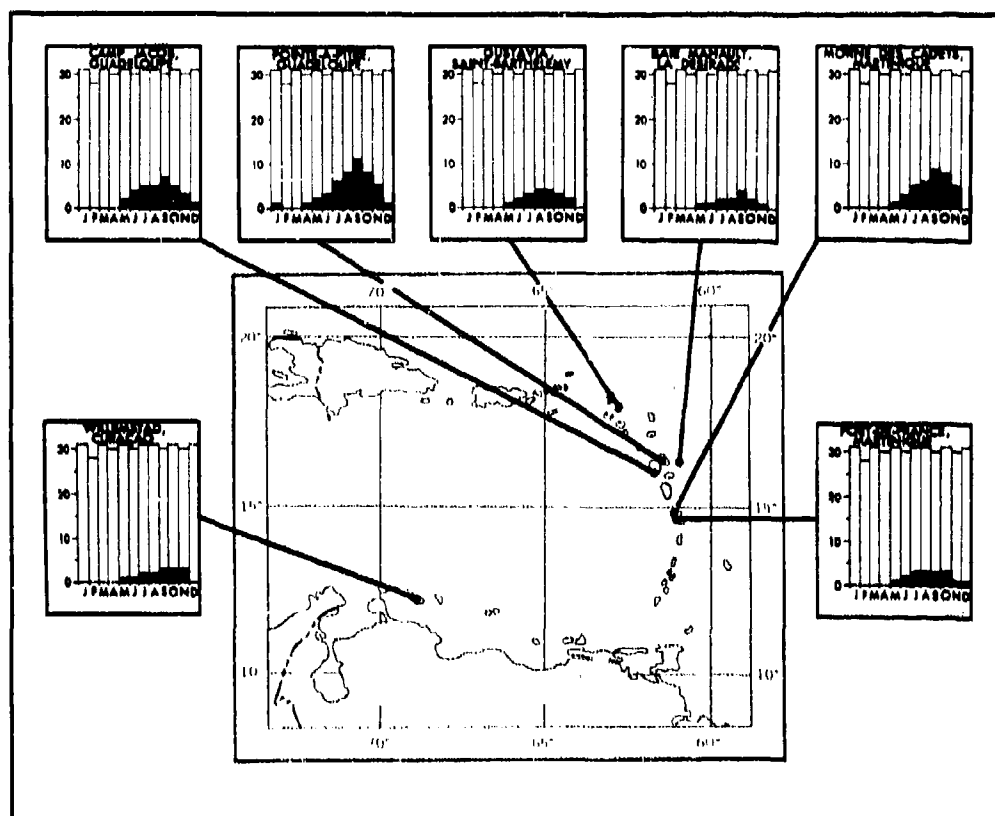


FIGURE 7. MEAN NUMBER OF DAYS WITH THUNDERSTORMS. (For tabular data see FIGURE 27.)

transition zone is a region of turbulent and shifting winds. The westerlies are strongest in winter and spring, when they extend from about 25,000 to nearly 60,000 feet. Mean winds speeds of all directions are about 20 to 40 knots, although speeds from the west occasionally exceed 74 knots. In summer and autumn a layer of variable, or light westerly winds extends to about 40,000 feet. Mean speeds in this layer are about 15 to 30 knots, with stronger speeds from the prevailing direction occasionally reaching 74 knots. The upper easterlies are weakest in winter and spring, when they extend from about 60,000 feet to above 90,000 feet. Mean speeds from all directions are about 15 to 20 knots, with speeds from the east occasionally exceeding 50 knots. The upper easterlies prevail from about 45,000 feet in summer and about 55,000 feet in autumn to at least 90,000 feet. Considering all directions, mean speeds are about 15 to 40 knots, with speeds in the prevailing easterly quadrant mostly from 30 to 74 knots, but sometimes higher.

Maximum wind speeds in the Area are found near 40,000 feet in winter and spring over the northern part

of the Area where they exceed 74 knots as much as 5% of the time. Easterly winds of this strength and frequency also occur in summer near 90,000 feet over the entire Area. Speeds exceeding 100 knots seldom occur.

d. UPPER-AIR TEMPERATURES AND AIRCRAFT ICING — Graphical presentations of the mean monthly upper-air temperatures, pressures, and tropopause heights are shown in FIGURES 11 and 12 for Pointe-à-Pitre in the Northeast Group and Plesman Airport in the Southwest Group. As shown by these graphs, the mean temperature at any given level remains essentially constant throughout the year up to the tropopause, with only slight variations at higher levels. Also, latitudinal variation in upper-air temperatures for any given month is very small. In general, temperature decreases with altitude up to the tropopause, then slowly increases. The mean height of the tropopause ranges from about 54,000 feet in July to about 56,000 feet in January. The mean temperature at the tropopause is approximately -73°C . in July and -78°C . in January. Mean temperatures increase slowly above the tropopause to about -50°C . and -53°C . during these months at 80,000 feet.

UPPER-AIR WIND ROSES

JULIANA AIRPORT, SAINT MARTIN

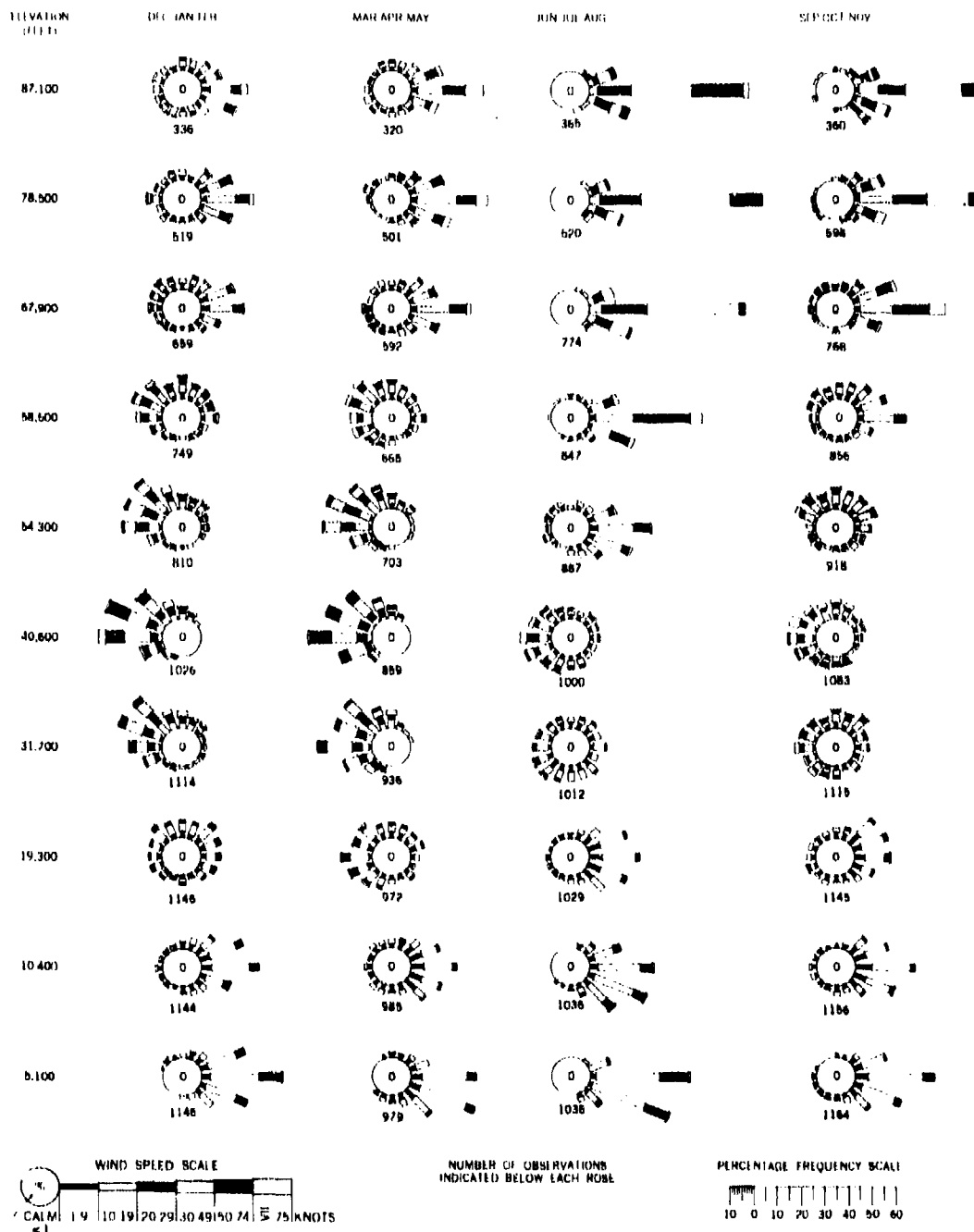


FIGURE 6. UPPER-AIR WIND ROSES, JULIANA AIRPORT, SAINT MARTIN

UPPER-AIR WIND ROSES POINTE-À-PITRE, GUADELOUPE

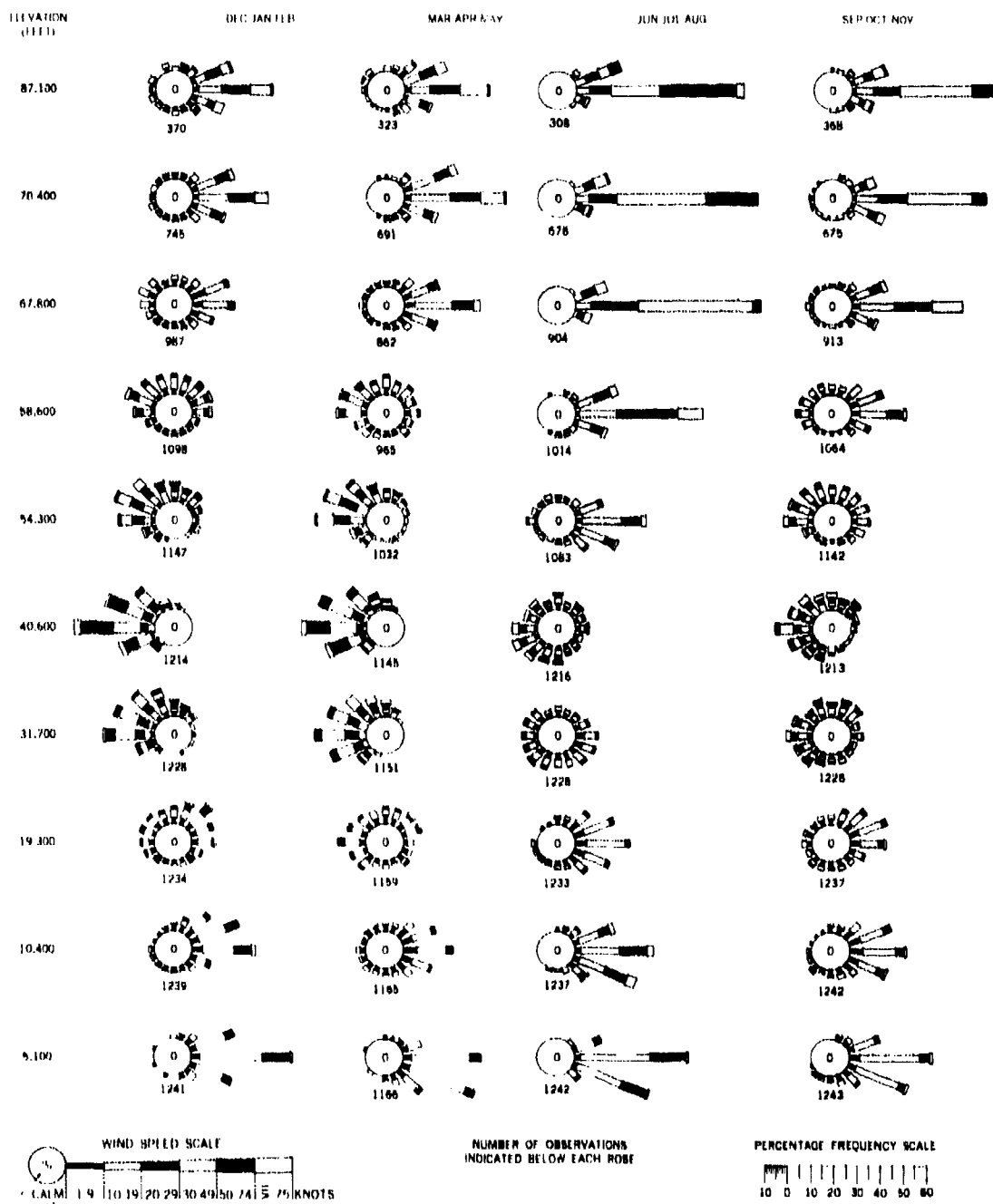


FIGURE 9. UPPER-AIR WIND ROSES, POINTE-À-PITRE, GUADELOUPE

UPPER-AIR WIND ROSES

PLESMAN AIRPORT, CURAÇAO

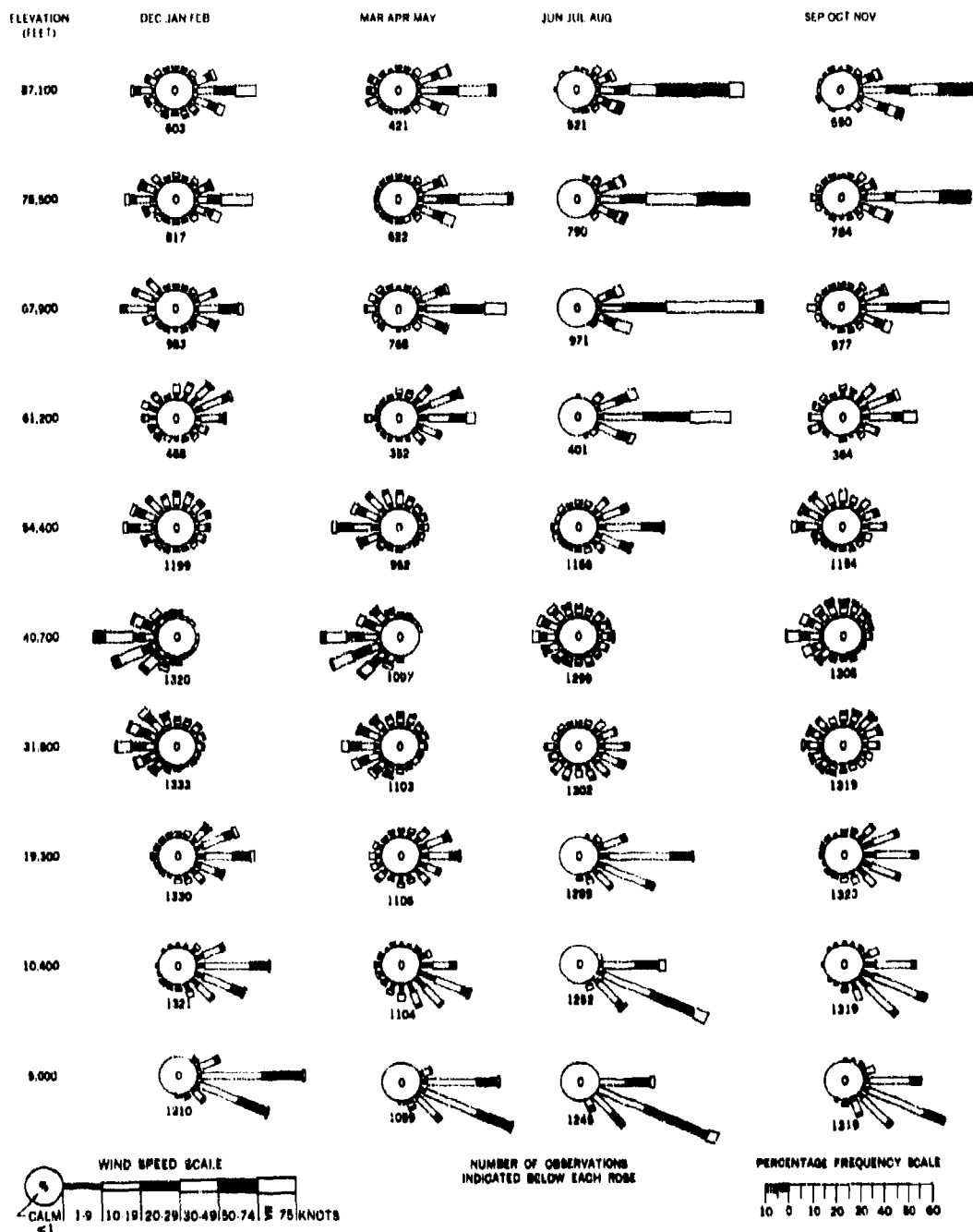


FIGURE 10. UPPER-AIR WIND ROSES, PLESMAN AIRPORT, CURAÇAO

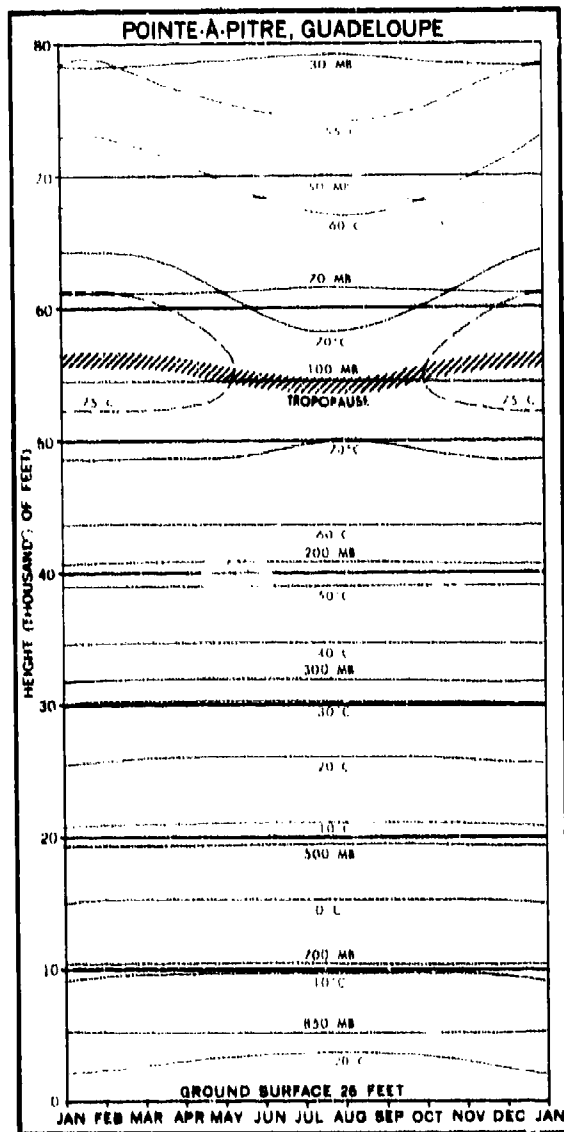


FIGURE 11. MEAN MONTHLY UPPER-AIR TEMPERATURE AND PRESSURE AT POINTE-À-PITRE, GUADELOUPE

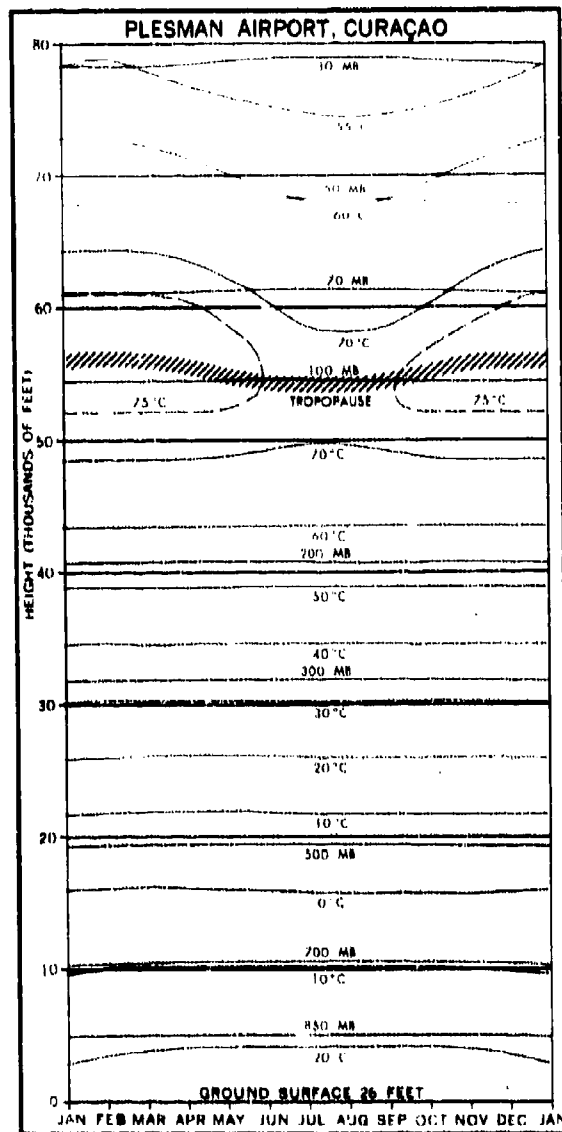


FIGURE 12. MEAN MONTHLY UPPER-AIR TEMPERATURE AND PRESSURE AT PLESMAN AIRPORT, CURAÇAO

The mean height of the freezing level over the Area is fairly constant throughout the year, varying from about 15,000 feet above mean sea level in the north to about 16,000 feet in the south. In order for aircraft icing to occur, the air temperature must be at or below freezing and sufficient moisture must be present. Because the freezing level rarely drops below 15,000 feet icing is not likely to occur below this level. Over this Area, there is normally little moisture in the air above the freezing level. However, on occasions when thunder-

storms are present, a severe icing hazard may exist to great heights in the cumulonimbus clouds. Stratiform clouds sometimes found above the freezing level are usually either composed of ice crystals or contain insufficient moisture to cause other than light icing. Generally, aircraft icing would be least likely in winter and spring and most likely in summer and autumn, with the most severe icing associated with easterly waves or tropical cyclones.

2. Air-ground operations

a. **LOW CLOUDINESS AND CEILINGS** — Low cloudiness should seldom hinder air-ground operations over the Netherlands Antilles and French West Indies. Many air-ground operations require certain cloud ceiling heights for their successful accomplishment. Frequencies of cloud ceilings at or below 4,920 feet (roughly 5,000 feet) are shown graphically in FIGURE 13 in the afternoon and evening. FIGURE 28 gives tabular data for cloud ceilings at or below 983 feet (about 1,000 feet) and at or below 4,920 feet at four observation times.

As shown by the data, ceilings below 1,000 feet are rare, occurring on the average about 1% of the time or less over most of the Area, with a maximum monthly frequency of about 5%; seasonal and diurnal variations are very minor. It is reasonable to assume, however, that ceilings this low are significantly more frequent on many windward slopes of the mountainous islands in the Northeast Group.

The frequency of ceilings below 5,000 feet does not follow a well-defined pattern, either seasonally or regionally, but varies from month to month and from place to place depending on such factors as location, elevation, and exposure. In general, ceilings below 5,000 feet are observed most often in summer and are most frequent over the Northeast Group. Diurnal variations are considerable, with frequencies at most locations in the Northeast Group ranging from a minimum of 25% or less in the evening to a maximum of about 15% to 70% usually in the afternoon. The diurnal pattern in the Southwest Group varies considerably from island to island. However, here also a marked minimum is observed during the evening and a maximum during the day; variations are similar to those over the Northeast Group.

In some types of air-ground operations, the frequency of clear and cloudy conditions, based on the cloudiness at low levels, may also be important. Tabular data on the frequency of clear days, based on low-level cloudiness, are presented in FIGURE 29. Days in this category have 2-eighths or less low clouds, which are defined as the lowest existing cloud layer reported, excluding cirrus type clouds. These days are normally favorable for most types of air-ground operations. The data in FIGURE 29 indicate that clear days are reasonably frequent over much of the Area, although frequencies vary widely from place to place and from time to time. In general, how-

NOTE Air-ground operations are defined as those operations taking place in, or primarily influenced by, the meteorological conditions existing within the friction layer above the earth's surface. The meteorological elements discussed in this Subsection are those which are of primary importance to such operations as parachute drops, chemical and biological warfare, tactical support, low-level reconnaissance, and air rescue. The success or failure of many of these operations may also depend to a large degree upon the behavior of elements above the friction layer or near the surface. A detailed discussion of such elements may be found in Subsections B, 1 and B, 3.

ever, favorable conditions are most frequent over the Southwest Group during the evening hours, occurring on about 15 to 30 days per month at 1900 LST. Over the Northeast Group, frequencies are generally lower. The data in FIGURE 30 show that cloudy days at low levels are relatively infrequent over most of the Area at all hours. Cloudy conditions are generally greatest during the day, peaking at about 10 afternoons per month and decreasing to a minimum of less than 5 evenings per month at most locations. Seasonal variations are not significant, and, regionally, the frequency of low-level cloudiness is generally least over the Southwest Group.

b. **VISIBILITY** — Visibility is generally excellent throughout the Area. Although limited restrictions occur from time to time during the year, very low visibility which would prevent or seriously hinder air-ground operations is rare. The percentage frequency of visibility less than 6 miles in the afternoon is shown in FIGURE 14. Tabular information concerning visibilities below 2½ miles and 6 miles is given in FIGURE 31.

Throughout the Area, visibility below 2½ miles occurs 1% or less of the time in practically all months; regional, seasonal, and diurnal variations are insignificant. Visibility below 6 miles occurs on less than 10% of the observations at any hour in the Northeast Group and with very few exceptions on 2% or less of the observations in the Southwest Group.

The causes of restricted visibility over the Area are primarily rain showers, low clouds impinging on mountain slopes, occasional fog, and haze. The most frequent cause of very low visibility is the heavy rain showers which often accompany disturbances such as easterly waves and tropical cyclones. During these times, visibility may be restricted to a few hundred yards for brief periods. Visibility may also be considerably reduced at times by clouds on the windward mountain slopes. Although fog is rare, local patches of shallow fog may form during the night but normally dissipate rapidly after sunrise. Both horizontal and air-to-ground visibilities are restricted to some extent by haze below the trade-wind inversion, primarily during winter and spring. However, the haze seldom lowers visibility below about 5 miles.

c. **COMBINED CEILING AND VISIBILITY** — The simultaneous occurrence of ceilings and visibilities above or below specific limits may be important to several types of air-ground operations. For example, conditions are favorable for certain types of air-ground operations, including the landing and departure of many aircraft, when the ceiling is approximately 1,000 feet or higher and visibility is 2½ miles or greater. The frequency of this favorable combination, together with data on the frequency of an adverse combination, is given in FIGURE 32. These data illustrate the excellent flying weather found over the Area most of the time. The favorable conditions occur more than 95% of the time over the Northeast Group and more than 97% of the time over the Southwest Group. Seasonal variations are not sig-

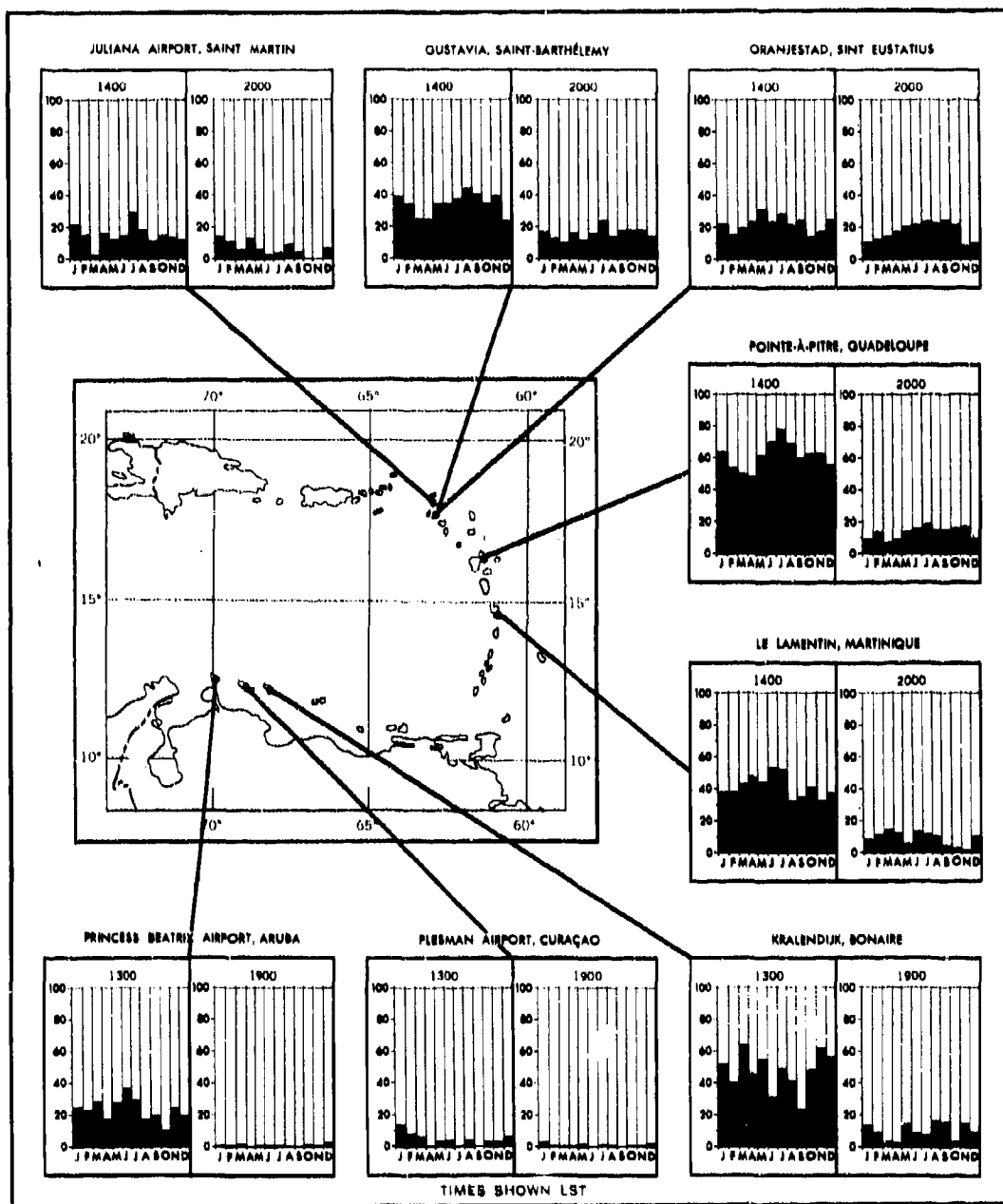


FIGURE 13. PERCENTAGE FREQUENCY OF CEILING HEIGHT $\geq 4,920$ FEET IN AFTERNOON AND EVENING. (For tabular data see Figure 28.)

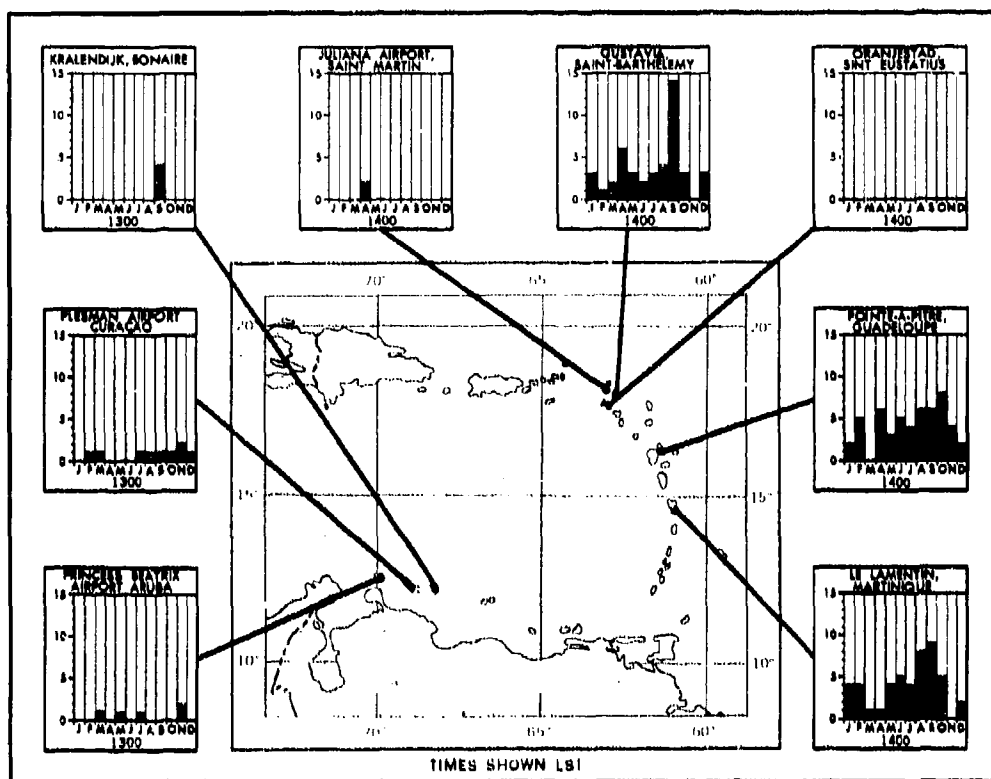


FIGURE 14. PERCENTAGE FREQUENCY OF VISIBILITY <6 MILES IN AFTERNOON. (For tabular data see Figure 31.)

nificant. The only time that combinations of ceiling and visibility would be extremely adverse for extended periods is during the passage of a tropical storm or hurricane.

d. **SURFACE WINDS** — Many types of air-ground operations are to some extent affected by surface wind. Although the surface winds over the Area are influenced by a number of factors, they are controlled primarily by the easterly flow of air around the southern side of the Azores high. This easterly flow, commonly called the trade winds, is dominant throughout the year. Figure 15 presents the distribution of wind directions and speeds by means of surface wind roses for December through February; Figure 16 gives wind roses for June through August. As may be seen from these figures, the winds blow with remarkable constancy from easterly directions, particularly in the Southwest Group which has low relief. A seasonal variation of wind direction is apparent only in the Northeast Group, and even there the shift is minor, from east-northeast in winter to east or east-southeast in summer. However, this easterly flow may be interrupted by mountain barriers on some islands of the Northeast Group, causing considerable variability in the surface wind direction at some locations.

The strength of the trades is quite uniform throughout the year, increasing only slightly from winter to summer. In the Northeast Group, wind speed averages about 5 to 10 knots. Speeds exceed 16 knots, on the average, less than 5% of the time, and 27 knots less than 1% of the time. In the Southwest Group, the trades are considerably stronger; mean wind speeds range between about 10 and 20 knots. Speeds above 16 knots occur here, on the average, about 30% of the time in winter and about 50% of the time in summer. In both seasons, speeds in excess of 27 knots are rare, occurring less than 1% of the time. The mean number of days with specified surface wind speed is given in Figure 33. These data, mostly from short periods of record, are another indication of the very low frequency of gale-force winds (wind speed 28 knots or greater) during all seasons. Exceptionally strong winds are associated with the migratory disturbances which occasionally invade the Area, such as fronts, easterly waves, tropical storms, and hurricanes. Because these disturbances are distributed throughout the year, strong winds may occur in any month. However, the strongest winds affecting the Area accompany hurricanes, which in general are most frequent in summer and autumn. Hurricane winds may exceed 100 knots and cause considerable damage. Although the frequency of these strong winds is low,

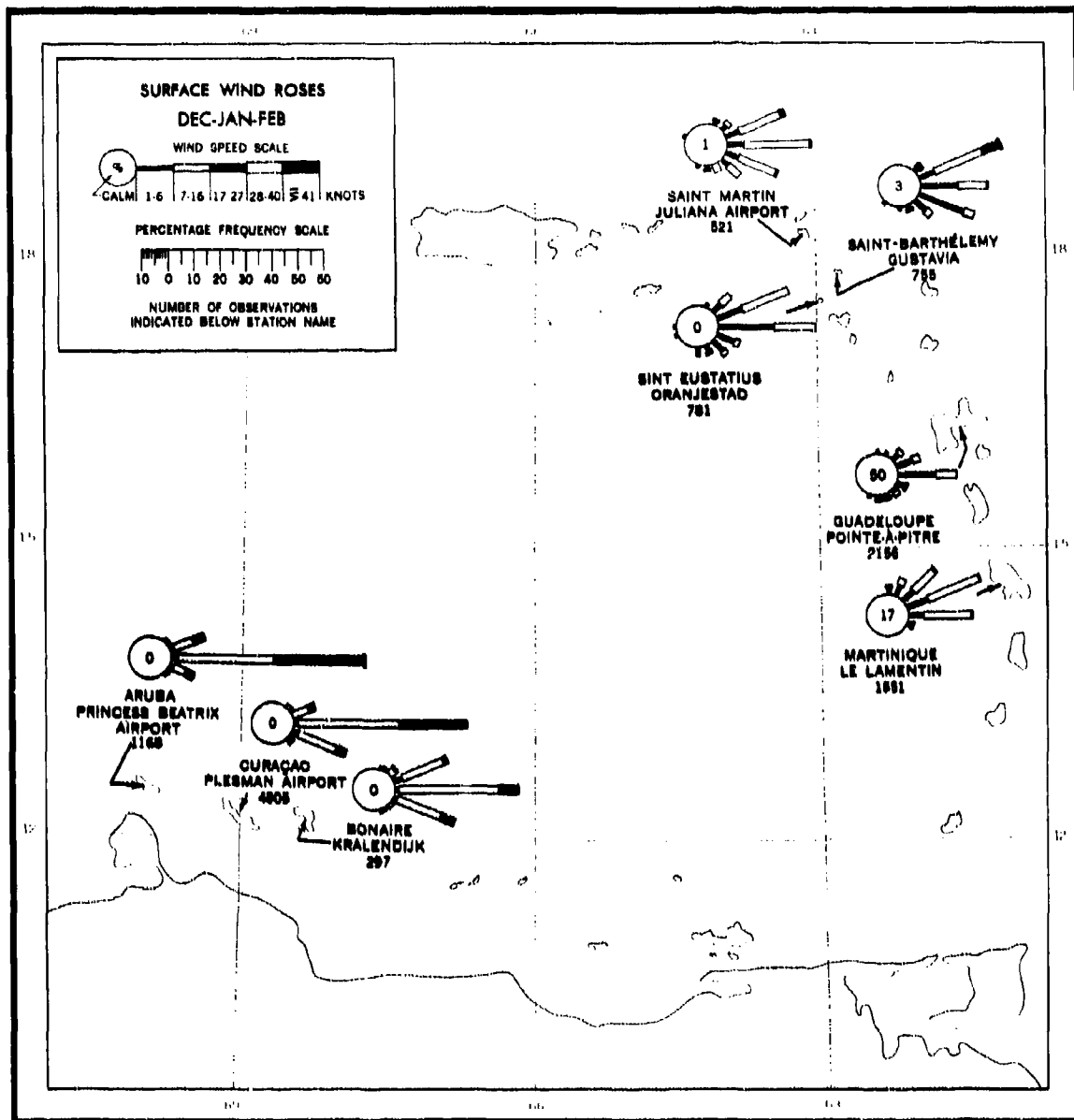


FIGURE 15. SURFACE WIND ROSES, DECEMBER - FEBRUARY

their damaging effect is such that they should be considered in any planned operation. Throughout the year, calm conditions are rare in the Southwest Group and on the small islands of the Northeast Group. However, sheltered locations in the Northeast Group, especially on the larger islands, may experience calm conditions up to about 50% of the time at night, particularly in winter.

Land and sea breezes are felt to some extent over much of the Area, especially on the larger islands.

The sea breeze, usually reaching a maximum in the afternoon, acts to increase the easterly trades on the windward side of the islands and to decrease them on the leeward side. The land breeze effect is slight, even on the larger islands. For a few hours during the night and early morning the land breeze may sometimes be felt, but soon afterwards its influence is masked by the trades.

Several types of air-ground operations are dependent upon combinations of climatic factors which include

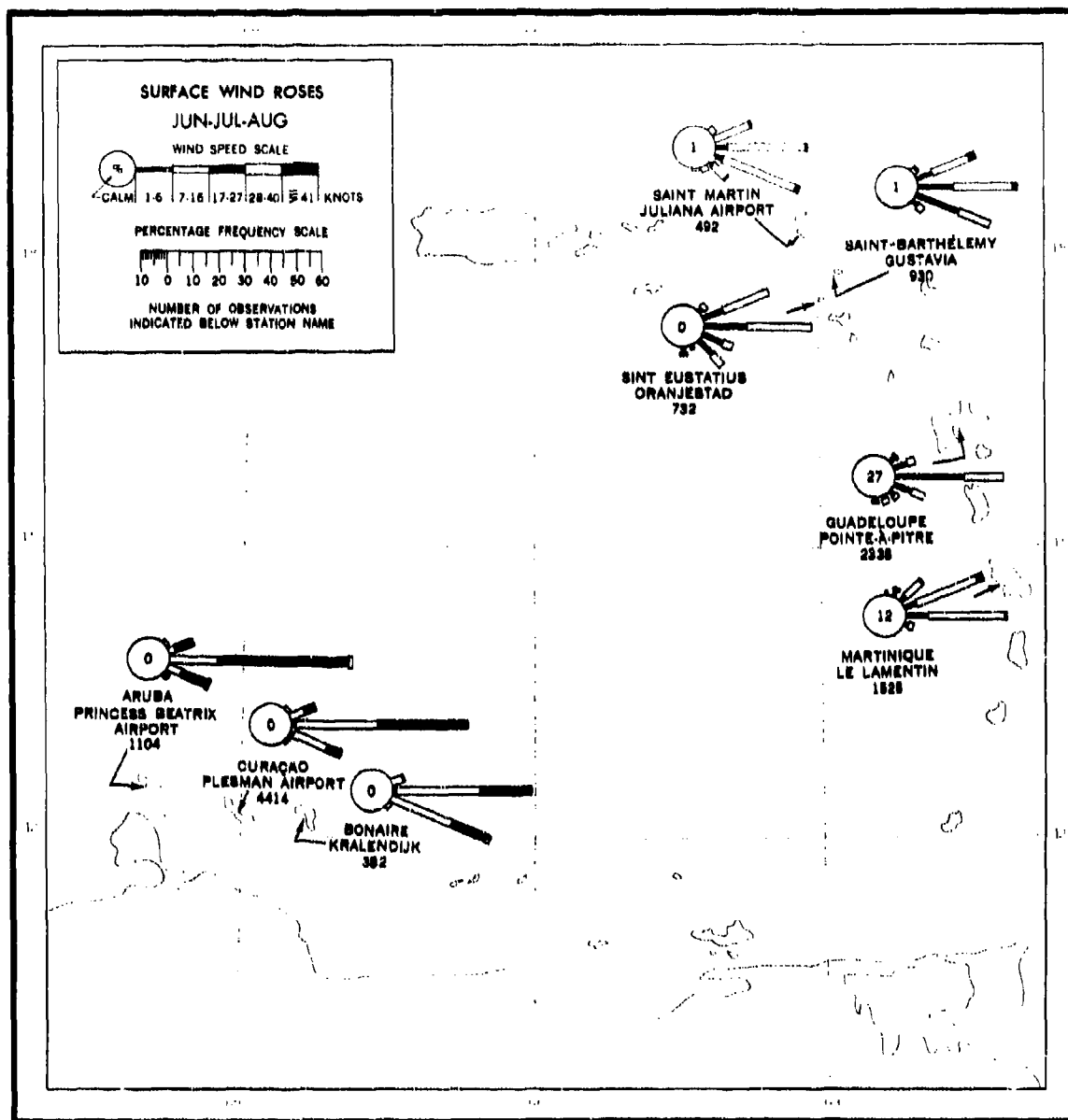


FIGURE 16. SURFACE WIND ROSES, JUNE - AUGUST

surface winds. The frequencies of three such combinations are given in Figures 34 through 36. These data may be used to approximate the feasibility of some types of incendiary bombing, chemical warfare, and parachute operations, as well as of other allied operations. As shown by the data, the frequency of these combined climatic factors varies little, diurnally or seasonally, in comparison to the pronounced regional variations between the Northeast and Southwest Groups.

e. STABILITY AND LOW-LEVEL TEMPERATURE INVERSIONS — The air near the earth's surface is seldom very

stable in this Area. Stable conditions, which are ideal for low-level temperature inversions of any significant depth, are probably limited to sheltered locations on the larger islands of the Northeast Group. Over the smaller islands and in the Southwest Group they rarely, if ever, occur. Frequencies of these stable conditions should be greatest on winter nights when winds are most often near calm. Low-level inversions in this Area are usually short-lived, forming during the night and rapidly dissipating after sunrise.

3. Ground surface operations

a. TEMPERATURE — The strong insolation resulting from the location well within the Tropics, along with the effects of surrounding warm ocean waters, produces a remarkably uniform temperature regime in the Netherlands Antilles and French West Indies. Although local variations occur as a result of topography, exposure, and other factors, these variations are small in comparison to those of a more temperate climate. Seasonal and regional variations are equally small. In general, days are moderately hot and nights are warm at most low-elevation locations throughout the year. However, temperatures in the mountains are usually cooler than at lower elevations; the temperature decreases about 3 Fahrenheit degrees for each 1,000-foot increase in elevation.

FIGURE 17 graphically presents the mean daily maximum and minimum and the absolute maximum and minimum temperatures for various locations over the Area. Additional data are presented in tabular form in FIGURES 27 through 40. At most lower elevations, mean daily maximum temperatures range from the lower 80's (°F.) in the coolest months to the higher 80's or near 90° F. in the hottest months. Available data at mountain stations between about 1,500 and 2,000 feet elevation show mean daily maximums ranging seasonally from the upper 70's to the lower 80's. On the mountain ridges and peaks, which extend to over 4,800 on the larger islands of the Northeast Group, mean daily maximums probably drop to the low 70's.

Mean daily minimum temperatures at most lower elevations range from the upper 60's or lower 70's in the coolest months to the mid or upper 70's in the warmest months. Daily minimums are slightly lower at some sheltered locations on the larger islands, where nighttime calm and stable conditions occur most often. At elevations between about 1,500 and 2,000 feet, mean daily minimums range in the 60's throughout the year and on the mountain peaks may drop to the 50's in the coolest months.

Diurnal temperature variations throughout the Area are more pronounced than either the seasonal or regional variations. The diurnal temperature range (difference between mean daily maximum and minimum temperatures) varies between about 10 to 15 Fahrenheit degrees at most places. Although the difference is slight, the diurnal range is smaller during the summer at many locations. As a rule, the diurnal temperature range is greatest on the larger islands.

NOTE Ground surface operations are defined as those operations taking place primarily at or very near the earth's surface. The meteorological elements discussed in this Subsection are those which are of primary importance to such operations as movement of troops and vehicles, selection of clothing and equipment, storage of supplies, and maintenance of armament and equipment. Some meteorological elements which may also have an effect upon this type of operation are discussed in Subsections B, 1 and B, 2.

Exceptionally high or low temperatures are almost unknown in this Area. Most locations at lower elevations have recorded temperatures in the 90's during the hottest months and some locations have experienced such temperatures throughout the year. However, 96° F. is the highest temperature that has been recorded at any location during the period for which records are available. FIGURE 41 gives tabular information on the mean number of days with maximum temperatures at or above 90° F. Such days are infrequent in the Northeast Group, less than 5 per month, even during the hottest months. In the Southwest Group, the frequency of 90° F. days ranges up to about 15 to 25 per month in late summer and early autumn. However, the period of record is extremely short in this region, possibly indicating a higher mean frequency of 90° F. days than is the actual case. Absolute minimum temperatures in the 60's have been recorded during the coolest months at most locations. On the larger islands, even at low elevations, absolute minimums have been observed in the 50's in the coolest months and in the 60's in the remaining months.

b. RELATIVE HUMIDITY — The moist tropical maritime air prevalent over the Area produces high relative humidity throughout the year. As illustrated in FIGURES 18 and 42, diurnal variations, although small, are more pronounced than regional or seasonal variations. In general, the early morning hours usually have the highest values of relative humidity; most locations have averages between about 75% and 95% throughout the Area. During the afternoon, values are usually lowest, ranging between about 65% and 75% at lower elevations in the Northeast Group and mostly in the 60's in the Southwest Group. At mountain locations in the Northeast Group, relative humidity seldom drops below 80%, even during the afternoon. Generally speaking, this high relative humidity in combination with the high temperatures is an undesirable climatic feature, accelerating decay of many materials and being conducive to fungus growth. However, the weather is seldom enervating because of the alleviating effects of the persistent trade winds.

c. PRECIPITATION — In this Area, where most climatic elements exhibit remarkably little diversity, precipitation shows significant variations, both regionally and seasonally. FIGURE 19 shows graphically the regional and seasonal variations in mean precipitation for selected stations. Tabular data in FIGURE 43 give a more complete areal coverage. In general, in the Northeast Group rainfall is adequate on the smaller and relative flat islands and abundant in the mountains of the larger islands; reasonably well-pronounced wet and dry seasons also exist. The Southwest Group is relatively dry and sun baked in most months, with mean rainfall sufficient to support only stunted desert-type vegetation. With the exception of the sometimes extended periods of heavy rainfall or rainshowers which accompany the more severe tropical disturbances, rain usually falls as brief showers in the Area. However, it is often ineffective, particularly

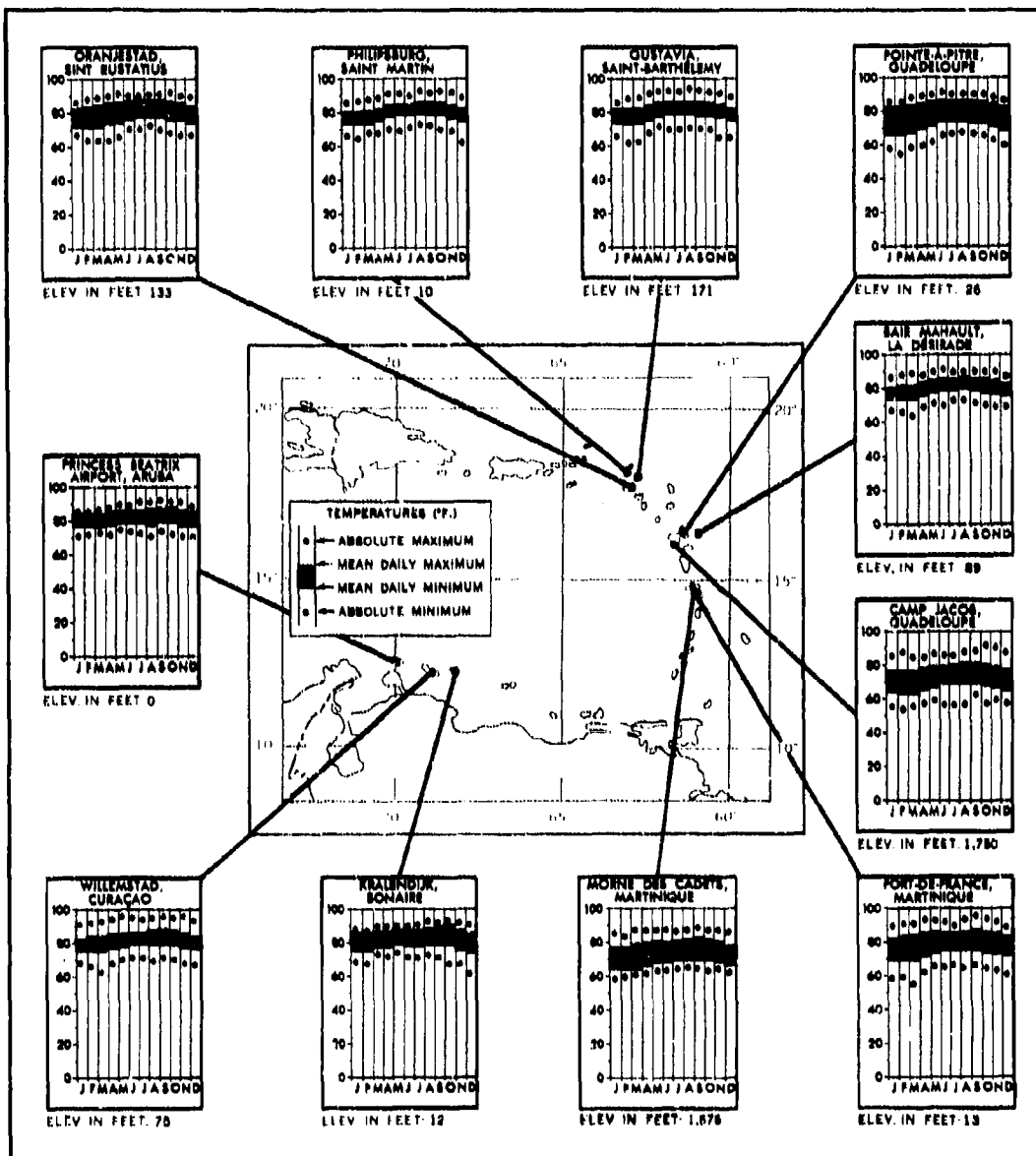


FIGURE 17. TEMPERATURES (°F.). (For tabular data see Figures 37 through 40.)

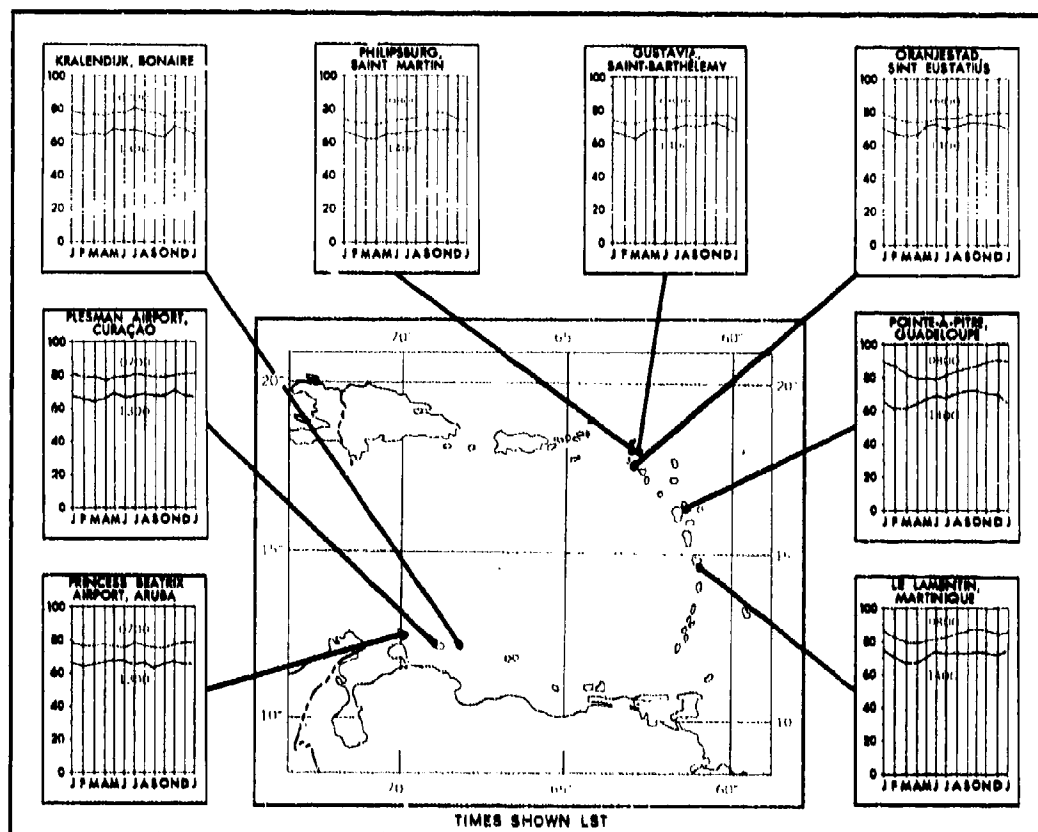


FIGURE 18. MEAN RELATIVE HUMIDITY (%) IN MORNING AND AFTERNOON. (For tabular data see Figure 48.)

in the Southwest Group, because the strong solar radiation and persistent windflow unite to quickly evaporate excess surface moisture.

The rainfall pattern of the Northeast Group is reasonably typical of the West Indies. Although most locations receive a considerable amount of rainfall throughout the year, there is a well-defined wet season, May through November, closely aligned with the period of maximum migratory disturbances affecting the region. Mean annual rainfall ranges from about 40 inches on the smaller islands to well over 100 inches in the mountainous parts of the larger islands. In fact, the records show that Deux-Choux, a mountain station at nearly 2,000 feet elevation on the island of Martinique, receives an average of over 200 inches annually. Although reliable records are not available for comparison, this total is probably typical of exposed locations near the peaks and ridges of the higher mountains. In the Northeast Group, monthly means during the wet season range between about 3 and 12 inches at most lower elevations and sheltered locations. However, the windward slopes and higher mountains average approximately 10 to 25 inches per month in the wettest months. During the dry season, December through April, most lower eleva-

tions and sheltered locations average about 1.5 to 5 inches per month. Monthly means on exposed slopes and in the mountains vary generally between 5 and 10 inches; however, at some locations the monthly precipitation has averaged as much as 20 inches.

The rainfall of the Southwest Group is surprisingly small considering its location within tropical waters. Mean annual amounts are generally between 5 and 25 inches, depending on location and exposure. Although rainfall is meager throughout the year, a wet season is discernible in July through January, when monthly amounts are usually greater than during the remainder of the year. Several factors contribute to the rainfall deficiency in these islands, with low relief and comparative freedom from migratory disturbances among the most significant. Upwelling of cool ocean waters as well as both horizontal divergence and anticyclonic shear in the controlling airflow have also been suggested by various writers as contributing factors. Upwelling of ocean waters is most prominent where persistent wind blows parallel to a coastline, so that the resultant wind-driven ocean current sets away from the coast. The consequent movement of cold water to the surface stabilizes the air in the lower layers, thereby restricting to

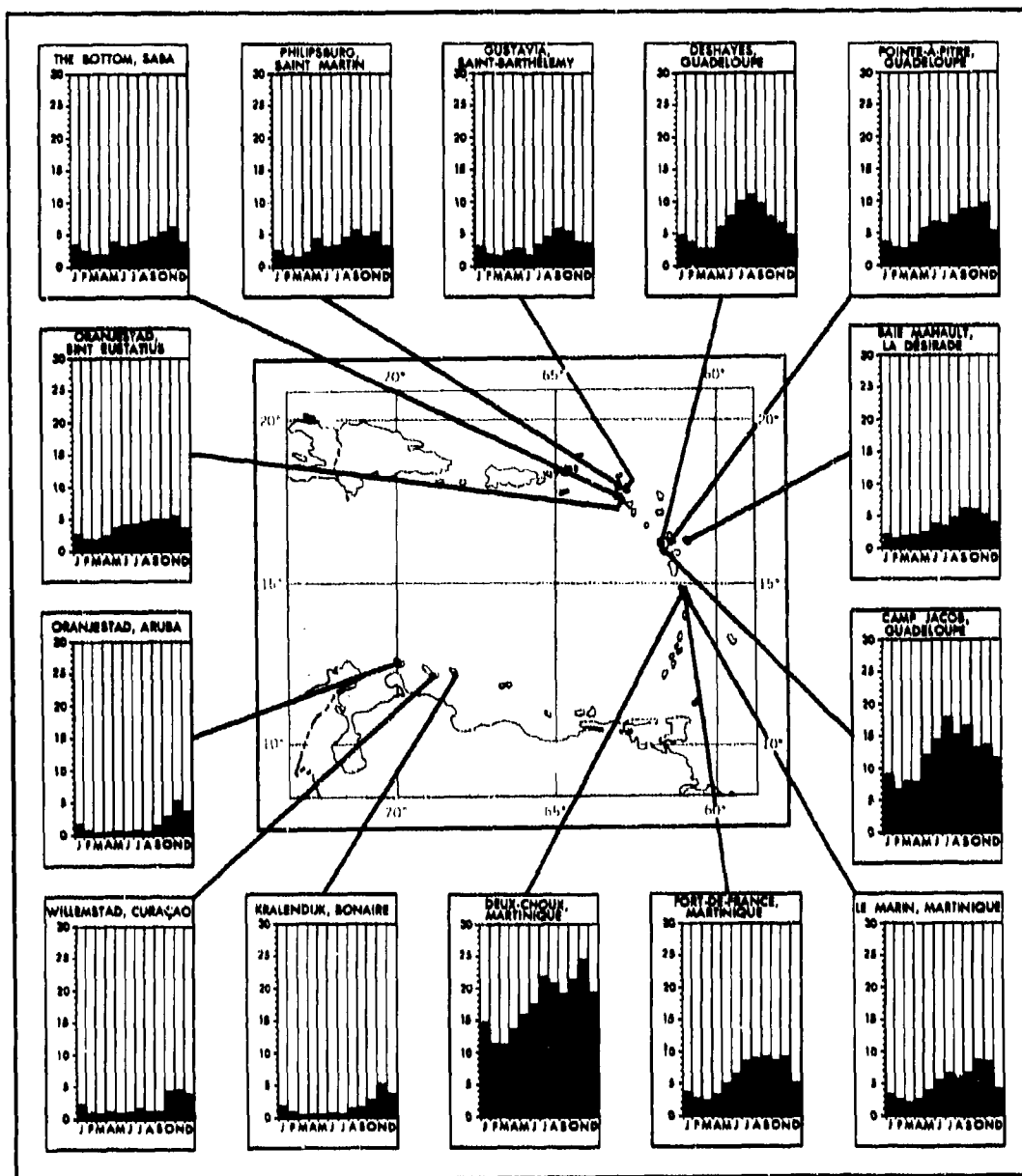


FIGURE 19. MEAN PRECIPITATION (INCHES). (For tabular data see FIGURE 43.)

some extent convective activity and cloud formation. Low-level horizontal divergence and anticyclonic shear are dynamic processes in the atmosphere which retard or hamper convective activity and cloud formation. In the Southwest Group, most locations average about 1 to 5 inches of rainfall in each of the wet season months; the larger monthly means usually occur in October, November, and December. At some locations such as Willemstoren on the southern tip of the island of Bonaire, mean monthly rainfall does not exceed 1 inch even during the wettest months. February through June is the dry season, with most locations averaging less than 1 inch of rainfall per month.

Topography is a primary factor in the distribution of rainfall over much of the Northeast Group, particularly over the larger islands where the mountain peaks extend to nearly 5,000 feet. The persistent trade winds bring great quantities of moisture into the Area; however, the amount of rainfall depends considerably on the steepness and height of the terrain which lifts the moist air. When the moisture-laden trades are forced to rise over a range of considerable elevation, the resulting cloudiness and rainfall extends some distance to windward, because the cumulus clouds tend to build back into the wind. The mountain tops and even the upper leeward slopes of mountains often receive large amounts of rainfall if the clouds tower well above the crest of the mountain range. However, as the air descends the lee slopes, most clouds are rapidly dissipated, so that the windward slopes and mountain ridges usually receive much more rainfall than do the leeward slopes and sheltered lowlands. An excellent example is on the island of Martinique where Deux-Choux, an exposed mountain station, averages 211 inches of rainfall annually while Le Carbet, less than 10 miles away but located in the lee of the mountains near sea level, averages only 52 inches annually. The lack of topographic features in the Southwest Group contributes greatly to the dryness of these islands.

Monthly and annual rainfall amounts vary considerably from year to year in this Area. The greatest and least monthly and annual amounts of precipitation are presented in Figure 44. Several stations in the Northeast Group have experienced more than 25 inches variation in the rainfall of a given month from one year to another. Some locations have recorded annual variations from year to year in excess of 100 inches. In the Southwest Group these year-to-year variations are much smaller since the mean rainfall is considerably less.

Much of the rain falls as showers or as heavy continuous rainfall for short periods. The intensity of the rainfall varies considerably, and at times, particularly during a tropical cyclone, violent cloudbursts may dump large amounts of water in one section within a very short time. As a result, flooding may occur at various locations throughout the Area. Figure 45 gives the maximum observed 24-hour precipitation for a number of stations. In the course of 24 hours, more than 5 inches of precipitation have fallen at many locations over the Area. Le Vauclin on the island of Martinique has

recorded as much as 13 inches in a 24-hour period in September. Some locations may receive as much rainfall in a single 24-hour period as is normally expected for the entire month. At New Port on Curaçao in the Southwest Group, for example, 7.1 inches was recorded in a 24-hour period in September, whereas the mean monthly amount is 1.3 inches.

Another indication of the regional and seasonal variability of rainfall in this Area is the frequency of days with measurable precipitation. These data are shown in graphic form in Figure 20, and Figure 46 gives a more complete listing in tabular form. The mean annual number of days with precipitation ranges between about 100 and 300 days at most locations in the Northeast Group. As would be expected, the greatest frequencies usually occur on the windward slopes and in the mountains. In the Southwest Group, rainfall is much less frequent. The annual number of days with precipitation averages below 75 at most locations. In both regions the seasonal pattern coincides closely with that of mean precipitation.

Snow has never been observed at any of the recording stations in this Area and is very unlikely even on the highest mountain peaks.

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

(1) Clothing

(a) MAJOR INFLUENCES — The most significant climatic factors in determining clothing requirements in the Netherlands Antilles and French West Indies are temperature, relative humidity, and precipitation. The generally warm to hot tropical climate is characterized by seasonal uniformity of most climatic elements. However, there are local variations because of altitude, location, and exposure, and occasional weather extremes caused by tropical storms and hurricanes and by outbreaks of colder air from the north. The year-round strong solar radiation and persistent winds would also govern clothing choices.

(b) REGIONAL REQUIREMENTS — Clothing requirements for the Area are given in Figure 21. These requirements are expressed in terms of U.S. Army clothing assemblies that have been prescribed for worldwide military use depending upon the occurrence of mean monthly temperatures, as follows:

CLOTHING ASSEMBLY	MEAN MONTHLY TEMPERATURES
Warm-weather	Above 68° F.
Cool-weather	50° F. to 68° F.

Appropriate service regulations list the exact nomenclature and the basis for issue of various components of these clothing assemblies. For planning purposes, however, the clothing assembly components are described in general terms. Also listed are special items which may be necessary because of varying climatic factors.

The warm-weather assembly is a cotton outfit (visored cap, shirt, trousers, and underwear). It also includes

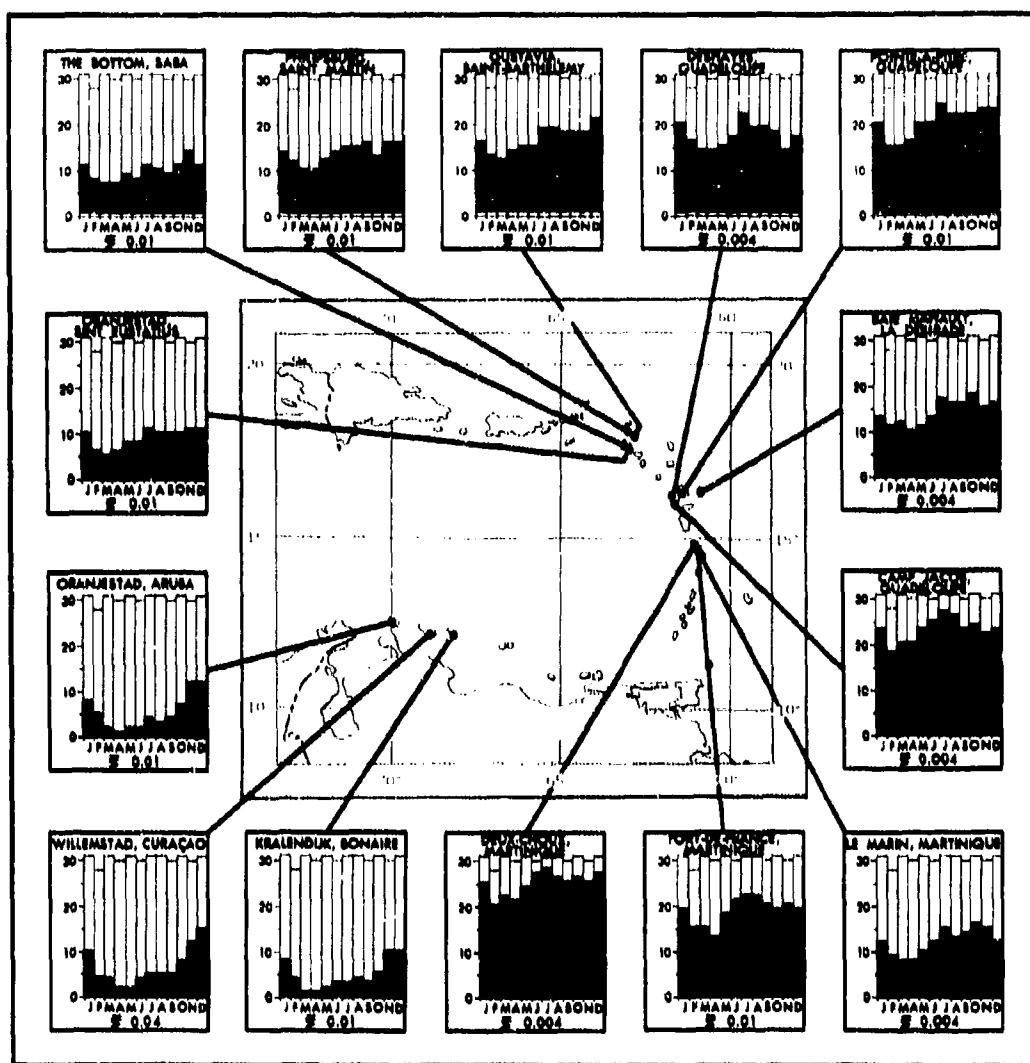


FIGURE 20. MEAN NUMBER OF DAYS WITH SPECIFIED PRECIPITATION AMOUNTS (INCHES). (For tabular data see Figure 46.)

FIGURE 21. CLOTHING REQUIREMENTS

REGION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Sea level to 2,500 feet.....	W	W	W	W	W	W	W	W	W	W	W	W
Above 2,500 feet.....	C	C	C	C	W	W	W	W	W	W	C	C

W - Warm-weather clothing assembly; C - Cool-weather clothing assembly.

tropical combat boots and a poncho. A single woolen blanket is adequate sleeping equipment for use with this assembly.

The cool-weather assembly supplements the warm-weather assembly with a hooded water-repellent wind-resistant coat. Leather combat boots replace the tropical combat boots. Two woolen blankets or a lightweight sleeping bag are adequate sleeping equipment for use with this assembly.

(c) EXCEPTIONS AND ADDITIONS FOR INDIVIDUALS IN A PROTECTED ENVIRONMENT — The clothing assemblies previously described are based on the assumption that the individuals wearing them will be living in the open 24 hours a day. Clothing assemblies for use at permanent installations may be modified to suit a less demanding environment. For example, service-type oxfords with rubbers might be more serviceable than high-cut boots, a raincoat may be preferable to a poncho, and blankets may be substituted for the sleeping bag.

(d) **SPECIAL REQUIREMENTS** — Protection against insects, such as mosquitoes, flies, fleas, lice, and chiggers, is needed throughout the year, particularly at low elevations. Insect bars, repellents, headnets, mosquito gloves, and similar items should be used as required. Aside from the use of these special items, proper dress would serve to shield the body from insect bites. Protection is also required against poisonous spiders and snakes which inhabit parts of the Area. Insulated headgear, neckshields, chap sticks, sunburn cream and sunglasses are needed for protection against sunburn, sunglare, and high temperatures throughout the year. Special gloves may be desirable for handling metal objects which are exposed to the sun for long periods. Waterproofed footwear may be desirable during the wet season, especially in the islands of the Northeast Group. Unless properly protected, cloth, leather, and rubber will deteriorate rapidly because of the constantly high humidity.

(2) **Storage** — The main climatic factors affecting items stored in the open are temperature, humidity, precipitation, and occasional strong winds. Maximum air circulation in and between stacks is required for protection against high temperatures and against corrosion, mold, and mildew caused by constantly high humidities. Items most subject to damage by high temperatures, especially subsistence and medical supplies, should be protected by cold storage. Tarpaulins or some type of covering would be required throughout the year for protection against the sun and also against the rain, mainly during the wet season. Storage sites should be located in well-drained sections, especially during the wet season and during the entire year in the mountains of the Northeast Group. Protection is particularly necessary against the heavy rain and strong winds which accompany tropical storms and hurricanes. Dunnage is required for maximum protection of supplies against wet or flooded ground. Dunnage material may be scarce in the Southwest Group but should be reasonably plentiful in the Northeast Group where it is most often needed.

(3) **Shelter** — Shelter is required for protection against strong solar radiation and insects throughout the year. Shelter is also needed against rain, especially during the wet season and during the entire year in the mountains of the Northeast Group. The Temperate Zone U.S. Army tentage generally provides adequate protection throughout the year. Tent flies (extra layers of canvas suspended above the tents) are also necessary to provide additional protection from the strong rays of the sun. Screening or netting and flooring of tents may be desirable for protection against disease-carrying insects. Tents should be properly located and securely anchored as protection against the high winds and heavy rain associated with tropical storms and hurricanes. A tent similar to the U.S. Army flyproof kitchen tent, developed for use in the tropics, would provide protection against insects wherever food is being prepared or served.

4. Amphibious operations

The persistent light easterly winds, uniformly warm temperatures, good visibilities, adequate ceilings, and the moderate sea and swell conditions make amphibious operations favorable in this Area throughout the year. Only during occasional periods of tropical cyclone activity are conditions encountered which are detrimental to amphibious operations.

Tropical storms and hurricanes, accompanied by torrential rains, destructive winds, and heavy sea and swell conditions, occasionally invade the Area. These storms occur primarily in summer and autumn and offer the greatest threat to the islands of the Northeast Group, which lie in a zone of relatively frequent tropical cyclone activity. Although the Southwest Group is not free from the danger of tropical cyclones, the frequency of occurrence is much lower.

The prevailing winds are easterly and average about 8 knots in most months near the islands of the Northeast Group. However, wind direction and speed vary slightly with locality due to topographical and land and sea breeze effects. Near the islands of the Southwest Group, easterly winds prevail and average about 15 knots throughout the year. Over all sections, land and sea breezes have a considerable bearing on surface winds, particularly over the larger islands. In general the land breeze blows offshore during the night and early morning. Later in the day the stronger sea breeze begins, reaching a maximum in the afternoon; it serves to reinforce the trades on the windward sides of the islands and to decrease them on the leeward sides. Gale-force winds occur less than 1% of the time and are normally associated with migratory disturbances such as fronts, easterly waves, tropical storms, and hurricanes.

Thunderstorms and squalls are relatively common in the Area and are most frequent in the vicinity of land. Where the coasts are backed by mountains, cold air from these thunderstorms may rush down the mountainsides and out over the harbors with sufficient force to capsize small boats. Thunderstorms occur chiefly in May through November.

Mean rainfall, and its distribution over land and sea, varies greatly. Over the open sea, precipitation is mainly of the light showery type while heavy orographic or convective showers are more common over land, particularly on the windward sides of the larger islands. Showers occur chiefly at night or during the early morning hours over the open sea and in the afternoon over land. The average annual rainfall along the coast varies between about 40 and 80 inches in the Northeast Group.

NOTE Amphibious operations are defined as those operations involving the movement of troops and equipment onto a beach and the associated protective measures. The meteorological elements discussed in this Subsection are those which are of primary importance to such operations as helicopter troop transport, waterborne troop and cargo landing, underwater demolition, air support, and naval gunfire support. Further discussion of some of the elements may be found in the Subsections on Air, Air-ground, and Ground Surface Operations.

and between about 10 and 20 inches in the Southwest Group. Although no period is without precipitation, a wet season occurs in May through November in the Northeast Group and in July through January in the Southwest Group. Tropical cyclones may produce torrential rains locally, but they contribute only a small portion of the total rainfall received in this Area.

Air and sea temperatures are fairly uniform throughout the Area. The mean annual air temperature on the coast is about 80° F. and the mean annual range between the warmest and coldest months is only about 5 Fahrenheit degrees. Sea surface temperatures are normally 1 or 2 Fahrenheit degrees lower than the air temperatures. Relative humidity along the coast averages between about 75% and 95% in the early morning and between about 60% and 75% in the afternoon.

Visibility is normally good. Visibilities of less than 1 mile are observed less than 1% of the time, and visibilities below 6 miles occur less than 5% of the time. The most frequent restriction is rain, which may reduce visibility to a few hundred yards for an hour or so. Although fog is rare, it does occur occasionally along the coasts during the evening and near sunrise. Haze occurs chiefly as the result of salt particles thrown up by rough seas. The average cloud cover in the Area is about 50%, with little diurnal or seasonal variation. The most common type of cloud is the trade-wind cumulus, which is most extensive over windward shores and least extensive on leeward sides of the islands. Clear skies or completely overcast conditions which persist for an entire day are seldom recorded.

Because of the persistence of the prevailing trade winds, sea and swell are predominantly easterly. However, within a few miles of the coast of all the islands, sea and swell conditions vary greatly from the exposed eastern sides of the islands to the sheltered western sides. In the Northeast Group, the eastern exposure has seas less than 3 feet 47% of the time in winter and 56% of the time in summer. Seas less than 6 feet in this group occur 77% of the time in winter and 87% of the time in summer. Swells less than 6 feet occur 44% and 50% of the time, respectively, in these seasons. Swells are less than 12 feet 82% of the time in winter and 86% of the time in summer. On the western side of the islands of the Northeast Group, seas are less than 3 feet 82% of the time in winter and 88% of the time in summer. Seas are less than 6 feet 97% of the time in each season. Throughout the year, swells are rare; calm conditions are observed more than 98% of the time.

In the Southwest Group, the northeast exposure has seas less than 3 feet 46% of the time in winter and 51% of the time in summer. Seas are less than 6 feet 81% and 84% of the time, respectively, in winter and summer. Swells less than 6 feet occur approximately 50% of the time in each season. Swells are less than 12 feet 82% of the time in winter and 79% of the time in summer. On the sheltered southwestern side of these islands, sea and swell conditions are very favorable

throughout the year. Seldom would they adversely affect amphibious operations since sea and swell rarely exceed 3 feet. The very infrequent hazardous conditions on the southwest exposure are most likely when tropical cyclones are near and when strong cold fronts from the north reach the islands.

Tsunamis, destructive waves and surges resulting from earthquake and volcanic activity, are also a possible threat to the Netherlands Antilles and French West Indies.

C. Meteorological facilities and organization (as of March 1965)

1. History and organization

Meteorological services for the Netherlands Antilles and the French West Indies are furnished jointly by the U.S. Weather Bureau, the Meteorological Service of the Netherlands Antilles, and the National Meteorological Service of France. The U.S. Weather Bureau provides equipment and supplies for the Dutch station at Plesman Airport on the island of Curaçao and for the French station at Pointe-à-Pitre, Guadeloupe. Also, by special agreement with the Netherlands government, the United States is solely responsible for operating the station at Juliana Airport on Saint Martin. All other weather stations in the French West Indies are operated by the French and the rest of those located in the Netherlands Antilles are operated by the Dutch.

The Meteorological Service of the French West Indies is a regional subsidiary of the French National Meteorological Service with headquarters in Paris. Regional headquarters for the French West Indies, as well as for French Guiana, is located at Fort-de-France, Martinique. The regional office supervises the weather stations throughout the French West Indies through a sub-regional office at Pointe-à-Pitre, Guadeloupe.

The Meteorological Service of the Netherlands Antilles is a state organization of the government, operating under the Department of Communications with its headquarters located at Plesman Airport, Curaçao.

2. Weather observing facilities

There are 5 weather stations in the French West Indies and 5 in the Netherlands Antilles currently engaged in taking scheduled weather observations. Two of the stations in the French West Indies take surface synoptic observations 24 hours a day while the other 3 stations take surface synoptic observations during daylight hours only. The weather station at Pointe-à-Pitre, Guadeloupe, takes radiosonde observations at 0000 and 1200 GMT. Daily pilot wind measurements are made at Gustavia, Saint-Barthélemy, at 1200 and 1800 GMT and at Fort-de-France, Martinique, every 6 hours, starting at 0000 GMT.

The weather station at Plesman Airport, Curaçao, is the only station in the Netherlands Antilles operating 24 hours a day. The other 4 stations are open during selected hours only. Plesman Airport takes surface observations every hour, radiosonde observations twice

daily, and pihals at least once a day. Princess Beatrix Airport, Aruba, records hourly observations from 1100 to 0300 GMT each day. Surface synoptic observations are also made every 3 hours between 1200 and 2400 GMT at Kralendijk, Bonaire; Oranjestad, Sint Eustatius; and at Juliana Airport, Saint Martin. The content and schedule of observations made by all observing stations are listed in the World Meteorological Organization Publication No. 9, Technical Publication 4, Volume A.

In addition to the regularly scheduled observations being taken at the 10 synoptic weather stations, there are approximately 128 limited observing sites scattered throughout the Area. About 85 of these sites are located in the French West Indies and the remaining 43 are in the Netherlands Antilles. These stations are run by cooperative observers who record maximum and minimum temperatures as well as precipitation amounts on a daily basis.

3. Weather forecasting facilities

Surface synoptic maps, upper-air charts, and forecasts are prepared at Pointe-à-Pitre, Guadeloupe, and Fort-de-France, Martinique, in the French West Indies and at Plesman Airport, Curaçao, in the Netherlands Antilles. Surface maps are analyzed every 6 hours and upper-air charts are prepared every 12 hours. Upper-air charts are analyzed for constant pressure heights starting at 850 millibars and continuing through the 700-, 500-, 300-, and 200-millibar levels. Prognostic charts are prepared twice a day depicting the 300- and 200-millibar wind-flow patterns 24 hours in the future. These current maps, charts, and upper-level windflow prognostic charts are used to make forecasts for the public as well as to support military and civilian aircraft operations in the Area. To supplement locally prepared charts and forecasts, the station at Plesman Airport also receives facsimile weather maps and forecasts from the United States and Europe.

4. Training and educational level of meteorologists

French and Dutch personnel operating weather stations in the Area are highly skilled in all phases of meteorological activities. Forecasters and observers in the French West Indies are trained in France by the

National Meteorological School, operated by the National Meteorological Service of France. The Dutch observers and forecasters are trained at the Royal Netherlands Meteorological Institute at De Bilt, Netherlands. Both schools provide excellent training and the graduates are capable of performing any task assigned in the field of meteorology.

5. Weather communications

Weather data are collected and distributed throughout the Netherlands Antilles and French West Indies by radio, teletype, and facsimile. Small stations at some of the more isolated locations depend exclusively on radio, while larger stations, located near metropolitan sections, have the capability of using one or all of these communication media. Plesman Airport, for example, receives and transmits on radioteletype and at the same time continuously intercepts facsimile transmissions from the United States and Europe. The content and frequency of all meteorological transmissions are listed in the World Meteorological Organization Publication No. 9, Technical Publication 4, Volume C.

D. Climatic data tables

This Subsection contains the climatological data tables referred to in Subsections A and B. For most of the climatic elements, tabular data prepared by machine methods were available for only 8 weather stations. These stations are all located near the coast; therefore much of the interior and mountains are not adequately represented. In addition, the means are based on very short periods of record in some cases. However, an excellent areal coverage of rainfall data, based on relatively long periods of record, was collected from other sources, and where available, data for several of the other climatic elements, notably for temperature, were also incorporated. In all cases, the data used are the best available and are considered to be reasonably reliable. A map of station locations (FIGURE 47), with an accompanying list giving latitude, longitude, and elevation of stations mentioned in Subsections A, B, and D, appears at the end of the Section. Annual values in some tables may differ slightly from the sums or means of the monthly values because of the rounding-off of fractions.

FIGURE 22. NUMBER OF OCCURRENCES OF TROPICAL STORMS AND HURRICANES IN THE VICINITY OF THE NETHERLANDS ANTILLES AND FRENCH WEST INDIES IN 78 YEARS (1886-1963)

REGION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Northeast Group:													
Tropical storms*	0	0	0	0	0	0	7	20	22	12	2	1	64
Hurricanes**	1	0	1	0	0	0	1	15	22	4	0	0	44
Total	1	0	1	0	0	0	8	35	44	16	2	1	108
Monthly percent of 78-year total	1	0	1	0	0	0	7	32	41	15	2	1	100
Southwest Group:													
Tropical storms*	0	0	0	0	0	0	1	0	0	1	0	1	3
Hurricanes**	0	0	0	0	0	1	2	2	1	3	1	0	10
Total	0	0	0	0	0	1	3	2	1	4	1	1	13
Monthly percent of 78-year total	0	0	0	0	0	8	23	15	8	30	8	8	100

* Storms with wind speed 34 to 64 knots while the center is within 50 miles of the Area.

** Storms with wind speed ≥ 65 knots while the center is within 75 miles of the Area.

FIGURE 23. MEAN CLOUDINESS (%) AT SPECIFIED HOURS

REGION AND STATION	HOUR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Northeast Group:	(LST)														
Guadeloupe:															
Pointe-à-Pitre.....	0200	41	44	35	48	52	51	50	45	45	48	45	45	46	4-6
Martinique:															
Le Lamentin.....	0200	46	44	48	40	52	60	59	56	45	46	44	40	50	2-4
Southwest Group:															
Curaçao:															
Plesman Airport....	0100	30	28	28	36	39	36	32	31	29	31	32	31	32	6-7
Northeast Group:															
Saint Martin:															
Juliana Airport.....	0800	45	45	40	55	61	55	61	59	54	56	50	51	54	2-4
Saint-Barthélemy:															
Gustavia.....	0800	50	59	59	50	65	65	64	61	59	60	58	61	61	3-5
Sint Eustatius:															
Oranjestad.....	0800	46	45	40	49	58	59	54	50	49	48	50	51	50	3-5
Guadeloupe:															
Pointe-à-Pitre.....	0800	54	55	52	61	71	68	61	60	62	59	52	54	59	11-13
Martinique:															
Le Lamentin.....	0800	49	56	54	59	66	66	61	56	55	56	51	52	57	8-10
Southwest Group:															
Aruba:															
Princess Beatrix Air- port.....	0700	45	44	49	60	68	61	50	52	55	60	58	51	54	5-7
Curaçao:															
Plesman Airport....	0700	41	40	45	58	62	58	51	51	49	52	51	49	51	6-7
Bonaire:															
Kralendijk.....	0700	55	52	55	54	64	55	59	55	56	59	62	58	57	1-2
Northeast Group:															
Saint Martin:															
Juliana Airport.....	1400	50	45	45	55	68	64	55	59	55	55	54	58	56	1-2
Saint-Barthélemy:															
Gustavia.....	1400	58	58	50	58	65	62	64	65	65	64	62	58	61	1-3
Sint Eustatius:															
Oranjestad.....	1400	49	46	51	60	65	61	55	54	62	58	55	49	55	1-3
Guadeloupe:															
Pointe-à-Pitre.....	1400	68	65	64	70	75	78	76	74	75	75	74	71	72	3-5
Martinique:															
Le Lamentin.....	1400	60	58	60	66	72	70	68	60	65	66	64	62	64	2-4
Southwest Group:															
Aruba:															
Princess Beatrix Air- port.....	1300	50	50	54	56	69	65	56	59	50	51	56	54	56	2-4
Curaçao:															
Plesman Airport....	1300	45	41	42	48	54	54	50	49	46	49	51	49	49	6-7
Bonaire:															
Kralendijk.....	1300	58	52	60	51	61	54	62	66	55	59	72	61	59	1
Northeast Group:															
Saint Martin:															
Juliana Airport.....	2000	35	32	35	48	59	54	48	50	45	49	39	44	45	1-2
Saint-Barthélemy:															
Gustavia.....	2000	42	44	40	46	50	54	52	50	49	48	48	41	47	2-4
Sint Eustatius:															
Oranjestad.....	2000	32	38	38	45	55	55	48	54	49	45	36	38	44	1-2
Guadeloupe:															
Pointe-à-Pitre.....	2000	38	39	35	42	51	50	52	44	46	50	41	38	44	3-5
Martinique:															
Le Lamentin.....	2000	36	39	36	41	50	59	51	42	40	46	39	36	42	2-4
Southwest Group:															
Aruba:															
Princess Beatrix Air- port.....	1900	24	19	22	31	45	45	39	29	26	32	34	28	31	2-4
Curaçao:															
Plesman Airport....	1900	26	20	25	36	48	46	36	34	31	35	36	32	34	6-7
Bonaire:															
Kralendijk.....	1900	38	35	31	45	54	36	38	41	35	31	39	31	38	1-2

FIGURE 24. MEAN NUMBER OF CLEAR DAYS (≥ 2 -EIGHTHS CLOUD COVER) AT SPECIFIED HOURS

REGION AND STATION	HOUR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YHA REC
Northeast Group:	(LST)														
Guadeloupe:															
Pointe-à-Pitre.....	0200	15	13	10	11	10	10	10	14	12	11	13	12	150	4-6
Martinique:															
Le Lamentin.....	0200	11	10	10	10	9	6	6	6	11	11	11	11	112	2-4
Southwest Group:															
Curaçao:															
Plesman Airport.....	0100	20	19	20	16	15	14	19	19	18	18	19	17	217	6-7
Northeast Group:															
Saint Martin:															
Juliana Airport.....	0800	9	8	8	4	3	1	1	3	5	5	7	8	61	2-4
Saint-Barthélemy:															
Gustavia.....	0800	1	2	2	1	*	1	1	1	2	1	0	2	16	3-5
Sint Eustatius:															
Oranjestad.....	0800	10	11	11	11	7	5	7	9	9	11	9	10	109	3-5
Guadeloupe:															
Pointe-à-Pitre.....	0800	8	7	7	4	2	2	4	4	4	6	7	6	61	11-18
Martinique:															
Le Lamentin.....	0800	9	6	5	3	2	2	2	4	6	6	8	8	60	8-10
Southwest Group:															
Aruba:															
Princess Beatrix Air- port.....	0700	11	10	9	4	4	3	8	7	5	5	4	8	70	6-7
Curaçao:															
Plesman Airport.....	0700	13	13	11	5	3	4	6	6	7	7	8	10	92	6-7
Bonaire:															
Kralendijk.....	0700	2	3	2	2	1	4	3	3	1	2	4	4	30	1-2
Northeast Group:															
Saint Martin:															
Juliana Airport.....	1400	7	0	8	4	1	1	1	3	2	7	6	3	51	1-2
Saint-Barthélemy:															
Gustavia.....	1400	2	2	7	2	*	1	1	1	0	*	0	4	20	1-3
Sint Eustatius:															
Oranjestad.....	1400	11	10	9	2	1	2	6	7	4	5	5	8	72	1-3
Guadeloupe:															
Pointe-à-Pitre.....	1400	1	3	3	1	0	0	*	*	*	1	*	1	11	3-5
Martinique:															
Le Lamentin.....	1400	2	2	2	1	*	*	*	1	1	2	1	1	14	2-4
Southwest Group:															
Aruba:															
Princess Beatrix Air- port.....	1300	3	3	4	5	2	2	5	2	6	5	4	2	43	2-4
Curaçao:															
Plesman Airport.....	1300	10	10	11	10	9	6	8	10	11	9	7	8	100	6-7
Bonaire:															
Kralendijk.....	1300	2	4	2	8	6	5	1	4	4	2	0	0	38	1
Northeast Group:															
Saint Martin:															
Juliana Airport.....	2000	14	18	17	10	5	6	3	5	12	10	17	11	128	1-2
Saint-Barthélemy:															
Gustavia.....	2000	11	10	12	9	7	6	5	6	8	7	7	11	99	2-4
Sint Eustatius:															
Oranjestad.....	2000	18	14	18	9	7	6	7	6	9	13	16	17	140	1-2
Guadeloupe:															
Pointe-à-Pitre.....	2000	16	16	19	15	11	10	10	15	13	12	14	18	169	3-5
Martinique:															
Le Lamentin.....	3000	17	13	17	13	12	7	10	12	17	13	13	16	150	2-4
Southwest Group:															
Aruba:															
Princess Beatrix Air- port.....	1900	23	23	23	18	11	18	19	20	20	18	17	21	225	2-4
Curaçao:															
Plesman Airport.....	1900	22	23	21	15	11	10	16	17	18	17	16	19	203	6-7
Bonaire:															
Kralendijk.....	1900	13	15	18	9	6	14	14	12	16	18	14	17	166	1-2

* < 0.5 day.

FIGURE 25. MEAN NUMBER OF CLOUDY DAYS (≥ 6 -EIGHTHS CLOUD COVER) AT SPECIFIED HOURS

REGION AND STATION	HOUR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Northeast Group:	(LST)														
Guadeloupe:															
Pointe-à-Pitre.....	0200	7	8	5	7	11	10	9	9	7	8	7	8	96	4-6
Martinique:															
Le Lamentin.....	0200	7	6	9	9	11	12	13	10	7	7	5	7	103	2-4
Southwest Group:															
Curaçao:															
Plesman Airport.....	0100	3	1	2	5	6	3	4	3	2	4	4	2	35	6-7
Northeast Group:															
Saint Martin:															
Juliana Airport.....	0800	4	5	7	10	14	13	12	10	9	10	9	9	114	2-4
Saint-Barthélemy:															
Gustavia.....	0800	10	9	11	7	14	13	12	9	10	11	9	12	127	3-5
Sint Eustatius:															
Oranjestad.....	0800	7	7	9	8	12	11	9	7	8	8	9	8	103	3-5
Guadeloupe:															
Pointe-à-Pitre.....	0800	11	11	10	15	19	18	14	14	15	13	10	10	160	11-13
Martinique:															
Le Lamentin.....	0800	8	10	8	14	15	15	13	10	10	12	8	10	132	8-10
Southwest Group:															
Aruba:															
Princess Beatrix Air- port.....	0700	7	5	8	13	16	12	9	10	10	14	11	9	124	5-7
Curaçao:															
Plesman Airport.....	0700	5	5	7	11	14	10	8	8	7	9	9	9	102	6-7
Bonaire:															
Kralendijk.....	0700	7	5	8	5	13	6	9	9	6	8	12	10	99	1-2
Northeast Group:															
Saint Martin:															
Juliana Airport.....	1400	8	5	5	8	15	12	14	9	11	11	8	10	116	1-2
Saint-Barthélemy:															
Gustavia.....	1400	9	6	7	10	12	11	10	12	12	13	12	10	123	1-3
Sint Eustatius:															
Oranjestad.....	1400	8	5	9	9	17	11	11	7	13	13	9	6	118	1-3
Guadeloupe:															
Pointe-à-Pitre.....	1400	16	15	16	17	23	23	23	20	21	21	20	20	235	3-5
Martinique:															
Le Lamentin.....	1400	11	11	11	14	21	17	15	10	15	14	13	13	164	2-4
Southwest Group:															
Aruba:															
Princess Beatrix Air- port.....	1300	4	3	7	10	17	14	9	9	6	5	9	6	98	2-4
Curaçao:															
Plesman Airport.....	1300	6	3	6	9	11	11	8	8	7	7	8	7	90	6-7
Bonaire:															
Kralendijk.....	1300	7	5	10	8	16	9	10	10	8	9	10	4	110	1
Northeast Group:															
Saint Martin:															
Juliana Airport.....	2000	3	5	4	6	12	11	1	7	8	7	6	5	75	1-2
Saint-Barthélemy:															
Gustavia.....	2000	4	5	3	7	7	9	6	6	6	6	5	4	68	2-4
Sint Eustatius:															
Oranjestad.....	2000	2	3	5	6	10	10	3	10	6	7	4	3	68	1-2
Guadeloupe:															
Pointe-à-Pitre.....	2000	5	5	6	7	10	10	10	7	9	11	6	5	90	3-5
Martinique:															
Le Lamentin.....	2000	4	5	5	6	10	8	10	6	7	9	8	4	78	2-4
Southwest Group:															
Aruba:															
Princess Beatrix Air- port.....	1900	1	*	1	3	9	9	5	3	2	4	4	3	45	2-4
Curaçao:															
Plesman Airport.....	1900	3	1	2	6	9	8	5	4	4	5	4	4	54	6-7
Bonaire:															
Kralendijk.....	1900	2	2	2	5	10	3	4	3	3	3	4	2	43	1-2

* <0.5 day.

FIGURE 28. MEAN NUMBER OF DAYS WITH TOTAL CLOUD COVER $\geq 2/8$ THS AND VISIBILITY $\geq 2 1/4$ MILES AT SPECIFIED HOURS

REGION AND STATION	HOUR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Northeast Group:	(LST)														
Guadeloupe:															
Pointe-à-Pitre.....	0200	15	13	10	12	10	10	10	14	12	12	13	12	152	4-5
Martinique:															
Le Lamentin.....	0200	11	10	10	10	9	8	6	6	11	11	11	11	112	2-4
Southwest Group:															
Curaçao:															
Plesman Airport....	0100	20	19	20	16	15	14	19	19	18	19	19	17	215	6-7
Northeast Group:															
Saint Martin:															
Juliana Airport.....	0800	9	8	8	4	3	1	1	3	5	5	7	8	61	2-4
Saint-Barthélemy:															
Gustavia.....	0800	1	2	2	1	*	1	1	1	2	1	2	2	16	3-5
Sint Eustatius:															
Oranjestad.....	0800	10	11	11	11	7	5	7	9	9	11	9	10	100	3-5
Guadeloupe:															
Pointe-à-Pitre.....	0800	8	7	7	4	2	2	4	4	4	6	7	6	61	11-13
Martinique:															
Le Lamentin.....	0800	9	6	5	3	2	2	2	4	6	6	8	8	60	8-10
Southwest Group:															
Aruba:															
Princess Beatrix Air- port.....	0700	11	10	9	4	4	3	5	7	5	5	5	8	79	5-7
Curaçao:															
Plesman Airport....	0700	13	12	11	5	3	4	6	6	7	7	8	10	92	6-7
Bonaire:															
Kralendijk.....	0700	2	3	2	2	1	4	3	3	1	2	4	4	30	1-2
Northeast Group:															
Saint Martin:															
Juliana Airport.....	1400	7	9	8	4	1	1	1	3	2	7	6	3	51	1-2
Saint-Barthélemy:															
Gustavia.....	1400	2	2	7	2	*	1	1	1	0	*	0	4	20	1-3
Sint Eustatius:															
Oranjestad.....	1400	11	10	9	2	1	2	6	7	4	5	5	8	70	1-3
Guadeloupe:															
Pointe-à-Pitre.....	1400	1	3	3	1	0	0	*	*	*	1	*	1	11	3-5
Martinique:															
Le Lamentin.....	1400	2	2	2	1	*	*	*	1	1	2	1	1	14	2-4
Southwest Group:															
Aruba:															
Princess Beatrix Air- port.....	1300	3	3	4	5	2	2	5	2	6	5	4	2	43	2-4
Curaçao:															
Plesman Airport....	1300	10	10	11	10	9	6	8	10	11	9	7	8	109	6-7
Bonaire:															
Kralendijk.....	1300	2	4	2	8	6	5	1	4	4	2	0	0	38	1
Northeast Group:															
Saint Martin:															
Juliana Airport.....	2000	14	18	17	10	5	6	3	5	12	10	17	11	127	1-2
Saint-Barthélemy:															
Gustavia.....	2000	11	10	12	9	7	6	5	6	8	7	7	11	99	2-4
Sint Eustatius:															
Oranjestad.....	2000	18	15	17	9	7	6	7	7	9	13	16	17	140	1-2
Guadeloupe:															
Pointe-à-Pitre.....	2000	16	16	19	15	11	10	10	15	13	12	14	18	160	3-5
Martinique:															
Le Lamentin.....	2000	17	13	17	12	12	8	10	12	17	13	13	16	159	2-4
Southwest Group:															
Aruba:															
Princess Beatrix Air- port.....	1900	23	23	23	18	11	13	19	20	20	18	17	21	225	2-4
Curaçao:															
Plesman Airport....	1900	22	23	21	15	11	10	16	17	18	17	15	19	203	6-7
Bonaire:															
Kralendijk.....	1900	13	15	18	9	6	14	14	12	16	18	14	17	166	1-2

* <0.5 day.

FIGURE 27. MEAN NUMBER OF DAYS WITH THUNDERSTORMS

REGION AND STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Northeast Group:														
Saint-Barthélemy:														
Gustavia.....	0	0	0	*	1	2	3	4	4	3	2	*	19	6
Guadeloupe:														
Camp Jacob.....	*	*	0	*	2	4	5	5	7	5	3	1	32	8-9
Pointe-à-Pitre.....	1	*	*	1	2	3	6	8	11	8	5	1	46	6
La Désirade:														
Bale Mahault.....	0	0	0	0	1	1	2	2	4	2	1	*	13	3-5
Martinique:														
Fort-de-France.....	*	*	*	*	1	2	3	3	3	3	1	1	18	20
Morne des Cadets.....	0	0	0	*	1	3	5	6	9	8	5	*	37	17
Southwest Group:														
Curacao:														
Willemstad.....	0	0	0	0	1	1	2	2	3	3	3	*	15	5

* <0.5 day.

FIGURE 28. PERCENTAGE FREQUENCY OF SPECIFIED CEILING* RANGES AT SPECIFIED HOURS

REGION AND STATION	HOUR	RANGE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Northeast Group:	(LST)	feet														
Guadeloupe:																
Pointe-à-Pitre.....	0200	AE 983	0	0	0	1	0	0	0	1	0	0	0	1	**	4-5
		AE 4,020	24	24	15	30	25	30	25	22	20	25	27	29	25	4-5
Martinique:																
Le Lamentin.....	0200	AE 983	0	0	1	0	1	0	4	2	0	0	0	0	1	2-4
		AE 4,020	28	24	28	32	23	40	40	30	14	21	15	27	27	2-4
Southwest Group:																
Curacao:																
Plesman Airport.....	0100	AE 983	0	0	0	0	0	0	0	0	0	0	0	0	0	5-7
		AE 4,020	6	7	8	6	2	5	6	6	2	3	4	4	5	5-7
Northeast Group:																
Saint Martin:																
Juliana Airport.....	0800	AE 983	0	0	1	1	2	2	0	0	0	0	1	0	1	2-4
		AE 4,020	10	6	9	12	10	25	25	21	21	14	4	12	14	2-4
Saint-Barthélemy:																
Gustavia.....	0800	AE 983	0	0	0	1	0	1	0	0	0	0	0	0	**	3-5
		AE 4,020	34	37	32	28	29	37	44	35	24	32	29	38	33	3-5
Sint Eustatius:																
Oranjestad.....	0800	AE 983	1	0	0	0	0	0	0	0	0	1	0	0	**	3-5
		AE 4,020	18	14	22	30	19	28	20	19	17	13	11	25	19	3-5
Guadeloupe:																
Point-à-Pitre.....	0800	AE 983	0	0	0	0	0	0	**	0	1	**	0	**	**	11-13
		AE 4,020	18	15	16	23	34	31	24	18	17	14	15	18	20	11-13
Martinique:																
Le Lamentin.....	0800	AE 983	1	2	0	2	1	1	**	2	1	1	1	1	1	8-10
		AE 4,020	18	26	16	24	25	34	23	15	12	12	13	15	19	8-10
Southwest Group:																
Aruba:																
Princess Beatrix Air- port.....	0700	AE 983	1	0	0	0	1	1	0	0	0	0	0	0	**	5-7
		AE 4,020	11	9	8	13	13	13	7	7	10	12	13	7	10	5-7
Curacao:																
Plesman Airport.....	0700	AE 983	0	0	0	0	0	0	0	0	0	1	0	1	**	6-7
		AE 4,020	4	11	11	12	9	13	11	7	7	0	0	8	9	6-7
Bonaire:																
Kralendijk.....	0700	AE 983	0	0	0	0	0	0	0	0	0	0	0	0	0	1-2
		AE 4,020	30	42	22	36	51	40	48	42	43	40	47	39	41	1-2

FIGURE 2A (Continued)

REGION AND STATION	HOUR	RANGE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
	(LST)	feet														
Northeast Group:																
Saint Martin:																
Juliana Airport.....	1400	AE 083 4,920	0	3	0	2	3	0	0	0	0	0	0	0	1	1-3
Saint-Barthélemy:																
Gustavia.....	1400	AE 083 4,920	21	15	2	16	12	14	29	18	11	14	13	11	15	1-3
Sint Eustatius:																
Oranjestad.....	1400	AE 083 4,920	0	0	0	0	0	0	1	1	2	0	0	0	**	1-3
Guadeloupe:																
Pointe-à-Pitre.....	1400	AE 083 4,920	39	34	24	24	34	34	37	44	40	34	39	23	34	1-3
Martinique:																
Le Lamentin.....	1400	AE 083 4,920	0	0	0	0	0	0	2	0	0	0	0	0	**	1-3
Southwest Group:																
Aruba:																
Princess Beatrix Air- port.....	1300	AE 083 4,920	22	15	10	23	31	23	28	21	24	14	17	24	22	1-3
Curaçao:																
Plesman Airport.....	1400	AE 083 4,920	1	0	0	1	1	0	0	0	0	0	0	0	**	3-5
Bonaire:																
Kralendijk.....	1400	AE 083 4,920	64	54	50	48	62	70	78	69	60	63	63	55	61	3-5
Northeast Group:																
Saint Martin:																
Juliana Airport.....	1400	AE 083 4,920	3	1	1	1	1	0	1	3	0	1	0	2	1	2-4
Saint-Barthélemy:																
Gustavia.....	1400	AE 083 4,920	38	38	43	48	44	53	52	32	35	41	32	37	41	2-4
Sint Eustatius:																
Oranjestad.....	1300	AE 083 4,920	0	0	0	0	1	0	0	0	0	0	0	0	**	2-4
Guadeloupe:																
Pointe-à-Pitre.....	1300	AE 083 4,920	25	23	29	18	28	37	30	18	20	11	25	20	24	2-4
Martinique:																
Le Lamentin.....	1300	AE 083 4,920	0	1	0	0	0	0	0	1	0	0	0	1	**	6-7
Southwest Group:																
Aruba:																
Princess Beatrix Air- port.....	1300	AE 083 4,920	15	9	7	1	4	5	2	5	1	4	4	7	5	6-7
Curaçao:																
Plesman Airport.....	1300	AE 083 4,920	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Bonaire:																
Kralendijk.....	1300	AE 083 4,920	53	41	65	47	56	32	50	42	24	49	63	57	48	1
Northeast Group:																
Saint Martin:																
Juliana Airport.....	2000	AE 083 4,920	0	0	0	0	0	0	0	0	0	0	0	0	0	1-2
Saint-Barthélemy:																
Gustavia.....	2000	AE 083 4,920	14	11	6	13	6	3	4	9	4	0	0	7	6	1-2
Sint Eustatius:																
Oranjestad.....	2000	AE 083 4,920	0	0	0	0	0	0	0	0	0	0	0	0	0	2-4
Guadeloupe:																
Pointe-à-Pitre.....	2000	AE 083 4,920	17	13	10	16	12	16	24	14	18	18	18	14	16	2-4
Martinique:																
Le Lamentin.....	2000	AE 083 4,920	0	0	0	0	0	0	0	0	0	0	0	0	0	1-2
Southwest Group:																
Aruba:																
Princess Beatrix Air- port.....	2000	AE 083 4,920	10	12	14	17	20	21	23	22	24	21	8	10	17	1-2
Curaçao:																
Plesman Airport.....	2000	AE 083 4,920	0	0	0	0	0	0	0	1	1	1	1	1	**	3-5
Bonaire:																
Kralendijk.....	2000	AE 083 4,920	0	14	7	9	14	16	19	15	15	16	17	10	13	3-5
Northeast Group:																
Saint Martin:																
Juliana Airport.....	2000	AE 083 4,920	0	0	2	0	0	0	0	2	0	0	0	0	**	2-4
Saint-Barthélemy:																
Gustavia.....	2000	AE 083 4,920	9	12	15	13	6	14	12	11	5	3	2	11	9	2-4
Sint Eustatius:																
Oranjestad.....	1900	AE 083 4,920	0	0	0	0	0	0	0	0	0	0	0	0	0	2-4
Guadeloupe:																
Pointe-à-Pitre.....	1900	AE 083 4,920	1	1	2	0	1	2	2	1	0	2	1	3	1	2-4
Martinique:																
Le Lamentin.....	1900	AE 083 4,920	1	0	0	0	2	0	0	0	0	1	0	1	**	6-7
Southwest Group:																
Aruba:																
Princess Beatrix Air- port.....	1900	AE 083 4,920	3	1	1	1	2	0	1	1	0	1	1	2	1	6-7
Curaçao:																
Plesman Airport.....	1900	AE 083 4,920	0	0	0	0	0	0	0	0	0	0	0	0	0	1-2
Bonaire:																
Kralendijk.....	1900	AE 083 4,920	14	10	4	3	15	9	8	17	16	4	15	10	10	1-2

* Ceiling herein is defined as $\frac{1}{8}$ 5-eighths cloud cover.

** <0.5%.

FIGURE 29. MEAN NUMBER OF DAYS WITH LOW CLOUD AMOUNT ≥ 2 -EIGHTHIS AT SPECIFIED HOURS

REGION AND STATION	HOOR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
	(LST)														
Northeast Group:															
Guadeloupe:															
Pointe-à-Pitre.....	0200	18	16	21	14	18	14	13	15	14	14	15	15	185	4-6
Martinique:															
Le Lamentin.....	0200	13	11	12	13	14	9	9	8	15	14	14	12	144	2-4
Southwest Group:															
Curacao:															
Plesman Airport.....	0100	23	20	23	21	22	22	24	23	23	25	24	21	270	6-7
Northeast Group:															
Saint Martin:															
Juliana Airport.....	0800	16	12	15	11	12	6	5	8	11	11	14	12	134	2-4
Saint-Barthélemy:															
Gustavia.....	0800	5	4	5	3	4	3	2	3	3	3	5	4	44	3-5
Sint Eustatius:															
Oranjestad.....	0800	15	15	14	17	14	11	12	15	15	17	16	14	174	3-5
Guadeloupe:															
Pointe-à-Pitre.....	0800	14	12	12	9	8	8	7	10	10	13	13	12	127	11-13
Martinique:															
Le Lamentin.....	0800	15	11	11	8	8	6	6	11	15	14	16	13	135	8-10
Southwest Group:															
Aruba:															
Princess Beatrix Airport.....	0700	17	12	16	12	13	13	14	14	14	14	13	16	171	5-7
Curacao:															
Plesman Airport.....	0700	20	17	19	16	14	13	15	16	15	15	19	19	197	6-7
Bonaire:															
Kralendijk.....	0700	6	5	5	3	2	5	5	4	3	2	7	4	51	1-2
Northeast Group:															
Saint Martin:															
Juliana Airport.....	1400	11	10	14	12	9	8	6	7	11	13	11	4	116	1-2
Saint-Barthélemy:															
Gustavia.....	1400	5	4	10	3	5	3	3	3	3	2	2	7	54	1-3
Sint Eustatius:															
Oranjestad.....	1400	13	13	13	11	9	9	11	14	9	11	11	14	137	1-3
Guadeloupe:															
Pointe-à-Pitre.....	1400	3	3	4	3	2	1	1	1	2	2	2	1	26	3-5
Martinique:															
Le Lamentin.....	1400	4	3	5	1	4	3	3	3	5	5	6	5	47	2-4
Southwest Group:															
Aruba:															
Princess Beatrix Airport.....	1300	4	6	6	10	8	7	11	7	12	10	6	6	93	2-4
Curacao:															
Plesman Airport.....	1300	14	12	19	21	20	20	17	16	22	19	15	16	211	6-7
Bonaire:															
Kralendijk.....	1300	2	4	4	8	9	9	0	6	5	4	0	0	59	1
Northeast Group:															
Saint Martin:															
Juliana Airport.....	2000	16	20	22	15	14	9	8	9	18	16	10	15	181	1-2
Saint-Barthélemy:															
Gustavia.....	2000	13	11	14	14	14	12	7	9	12	11	12	16	145	2-4
Sint Eustatius:															
Oranjestad.....	2000	20	18	20	15	12	11	16	12	15	20	22	22	203	1-2
Guadeloupe:															
Pointe-à-Pitre.....	2000	19	19	23	19	17	17	14	18	19	18	17	21	221	3-5
Martinique:															
Le Lamentin.....	2000	20	18	20	20	22	14	16	21	23	23	22	22	240	2-4
Southwest Group:															
Aruba:															
Princess Beatrix Airport.....	1900	27	25	28	26	26	26	27	27	28	24	25	28	317	2-4
Curacao:															
Plesman Airport.....	1900	26	26	29	28	26	28	27	28	28	28	26	26	324	6-7
Bonaire:															
Kralendijk.....	1900	16	16	19	15	16	19	20	17	19	22	16	19	215	1-2

Note Low cloud herein is defined as the lowest cloud layer reported, excluding cirrus type clouds.

FIGURE 30. MEAN NUMBER OF DAYS WITH LOW CLOUD AMOUNT ≥ 6 -EIGHTHS AT SPECIFIED HOURS

REGION AND STATION	HOUR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Northeast Group:	(LMT)														
Guadeloupe:															
Pointe-à-Pitre.....	0200	5	3	4	4	4	5	4	4	3	4	4	5	49	4-8
Martinique:															
Le Lamentin.....	0200	4	4	6	5	5	7	8	4	2	3	2	5	55	2-4
Southwest Group:															
Curacao:															
Plesman Airport.....	0100	1	*	1	1	1	0	1	1	*	1	*	*	7	6-7
Northeast Group:															
Saint Martin:															
Juliana Airport.....	0800	1	1	1	2	1	3	3	2	2	2	*	1	19	2-4
Saint-Barthélemy:															
Gustavia.....	0800	6	4	4	3	4	4	4	2	4	2	3	5	44	3-5
Sint Eustatius:															
Oranjestad.....	0800	3	2	4	2	4	5	3	3	2	2	1	4	35	3-5
Guadeloupe:															
Pointe-à-Pitre.....	0800	3	3	3	3	4	3	4	3	3	2	1	2	34	11-13
Martinique:															
Le Lamentin.....	0800	2	3	2	3	3	3	2	1	1	1	1	2	24	8-10
Southwest Group:															
Aruba:															
Princess Beatrix Airport.....	0700	1	1	1	2	2	1	1	1	1	1	2	2	16	5-7
Curacao:															
Plesman Airport.....	0700	1	2	2	1	1	1	1	1	1	*	0	1	12	6-7
Bonaire:															
Kralendijk.....	0700	5	4	4	3	3	5	9	6	3	6	4	3	64	1-2
Northeast Group:															
Saint Martin:															
Juliana Airport.....	1400	4	1	0	2	2	2	2	3	1	4	0	1	21	1-2
Saint-Barthélemy:															
Gustavia.....	1400	3	4	2	3	3	1	2	4	4	3	5	3	37	1-3
Sint Eustatius:															
Oranjestad.....	1400	4	3	1	3	7	4	5	2	4	1	1	3	38	1-3
Guadeloupe:															
Pointe-à-Pitre.....	1400	11	8	0	9	8	12	15	14	8	10	12	9	125	3-5
Martinique:															
Le Lamentin.....	1400	6	6	6	5	7	7	8	4	6	5	2	4	65	2-4
Southwest Group:															
Aruba:															
Princess Beatrix Airport.....	1300	2	1	3	2	2	1	3	2	1	0	3	2	24	2-4
Curacao:															
Plesman Airport.....	1300	1	1	1	0	1	*	0	1	0	0	*	1	6	6-7
Bonaire:															
Kralendijk.....	1300	6	4	10	3	10	4	8	7	2	7	10	3	73	1
Northeast Group:															
Saint Martin:															
Juliana Airport.....	2000	1	2	1	3	1	0	1	1	1	0	0	1	12	1-2
Saint-Barthélemy:															
Gustavia.....	2000	2	2	1	2	1	2	2	2	3	1	3	2	23	2-4
Sint Eustatius:															
Oranjestad.....	2000	1	2	3	3	3	4	1	2	3	4	1	2	28	1-2
Guadeloupe:															
Pointe-à-Pitre.....	2000	1	2	2	2	2	2	3	3	3	3	2	1	26	3-5
Martinique:															
Le Lamentin.....	2000	1	*	3	2	*	3	2	1	1	1	0	1	16	2-4
Southwest Group:															
Aruba:															
Princess Beatrix Airport.....	1900	0	0	*	0	*	*	*	*	0	*	0	*	2	2-4
Curacao:															
Plesman Airport.....	1900	*	0	*	0	1	0	*	0	*	*	*	*	2	6-7
Bonaire:															
Kralendijk.....	1900	1	1	0	0	2	1	1	2	2	1	2	1	14	1-2

NOTE: Low cloud herein is defined as the lowest cloud layer reported, excluding cirrus type clouds.

* <0.5 day.

FIGURE 31. PERCENTAGE FREQUENCY OF SPECIFIED VISIBILITY RANGES AT SPECIFIED HOURS

REGION AND STATION	HOOR	RANGE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
	(LMT)	miles														
Northeast Group:																
Guadeloupe:																
Pointe-A-Pitre.....	0200	<2½ <6	1 2	0 1	0 2	0 7	0 5	1 4	0 4	0 2	1 0	1 3	0 4	0 1	* 3	4-5 4-5
Martinique:																
Le Lamentin.....	0200	<2½ <6	0 4	0 1	0 0	0 1	0 2	0 0	0 1	0 2	0 1	0 0	0 0	0 0	0 1	2-4 2-4
Southwest Group:																
Curaçao:																
Pleasant Airport.....	0100	<2½ <6	0 0	0 0	0 1	0 0	0 1	0 0	0 2	0 1	0 1	0 0	0 0	0 0	0 1	5-7 5-7
Northeast Group:																
Saint Martin:																
Julliana Airport.....	0800	<2½ <6	0 0	0 0	0 0	0 1	0 0	0 2	0 0	0 1	0 1	0 0	0 0	0 0	0 *	2-4 2-4
Saint-Barthélemy:																
Gustavia.....	0800	<2½ <6	0 3	0 0	0 4	0 1	0 3	0 7	0 6	1 5	0 6	0 4	0 5	1 4	* 4	3-5 3-5
Sint Eustatius:																
Oranjestad.....	0800	<2½ <6	0 0	0 0	0 0	0 1	0 0	0 1	0 0	0 0	0 0	0 0	0 1	0 1	0 *	3-5 3-5
Guadeloupe:																
Pointe-A-Pitre.....	0800	<2½ <6	* 3	0 3	* 2	0 2	* 4	0 3	* 4	0 4	* 5	1 2	1 4	0 5	* 3	11-13 11-13
Martinique:																
Le Lamentin.....	0800	<2½ <6	0 2	0 4	0 2	1 4	* 4	0 4	1 3	1 4	0 2	0 2	0 3	0 3	* 3	8-10 8-10
Southwest Group:																
Aruba:																
Princess Beatrix Airport..	0700	<2½ <6	0 0	0 0	0 0	0 0	0 1	0 0	0 0	0 0	0 1	0 2	1 1	0 0	* *	5-7 5-7
Curaçao:																
Pleasant Airport.....	0700	<2½ <6	0 0	0 1	0 1	0 1	1 1	0 0	0 1	0 1	0 0	0 0	0 2	0 1	* 1	6-7 6-7
Bonaire:																
Kralendijk.....	0700	<2½ <6	0 4	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 *	1-2 1-2
Northeast Group:																
Saint Martin:																
Julliana Airport.....	1400	<2½ <6	0 0	0 0	0 0	2 2	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	* *	1-3 1-3
Saint-Barthélemy:																
Gustavia.....	1400	<2½ <6	0 3	0 1	0 2	0 6	0 3	0 2	0 3	0 4	0 14	0 3	0 0	0 3	0 4	1-3 1-3
Sint Eustatius:																
Oranjestad.....	1400	<2½ <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	0 0	1-3 1-3
Guadeloupe:																
Pointe-A-Pitre.....	1400	<2½ <6	0 2	0 5	0 0	0 6	1 3	0 5	1 4	0 6	0 6	1 8	0 4	0 2	* 4	3-5 3-5
Martinique:																
Le Lamentin.....	1400	<2½ <6	0 4	0 4	0 1	0 1	2 4	0 5	0 4	4 8	1 9	0 5	0 0	0 2	1 4	2-4 2-4
Southwest Group:																
Aruba:																
Princess Beatrix Airport..	1300	<2½ <6	0 0	0 0	0 1	0 0	0 1	0 0	1 1	0 0	0 0	0 0	0 2	0 0	* *	2-4 2-4
Curaçao:																
Pleasant Airport.....	1300	<2½ <6	0 0	1 1	0 1	0 0	0 0	0 0	0 1	0 1	0 1	0 1	0 2	0 1	* 1	6-7 6-7
Bonaire:																
Kralendijk.....	1300	<2½ <6	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 4	0 0	0 0	0 0	0 *	1 1

FIGURE 31 (Continued)

REGION AND STATION	HOOR	RANGE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
	(LAT)	miles														
Northeast Group:																
Saint Martin:																
Jullana Airport.....	2000	<2½ <6	0	0	2	0	0	0	0	0	4	0	0	0	1	1-2
			0	0	2	0	0	0	0	0	4	0	0	0	1	1-2
Saint-Barthélemy:																
Gustavia.....	2000	<2½ <6	0	0	0	0	0	0	0	0	1	0	0	0	*	2-4
			1	5	4	2	1	6	4	5	9	4	3	1	4	2-4
Sint Eustatius:																
Oranjestad.....	2000	<2½ <6	0	0	0	0	0	0	0	0	0	2	0	0	*	1-2
			0	0	0	0	0	0	0	0	0	2	0	0	*	1-2
Guadeloupe:																
Pointe-à-Pitre.....	2000	<2½ <6	0	0	0	0	0	0	0	1	1	1	0	0	*	3-5
			1	4	2	3	3	5	5	6	5	3	2	1	3	3-5
Martinique:																
Le Lamentin.....	2000	<2½ <6	0	0	0	1	0	0	0	1	0	0	1	0	*	2-4
			0	0	2	1	3	2	1	2	3	3	1	1	2	2-4
Southwest Group:																
Aruba:																
Princess Beatrix Airport..	1900	<2½ <6	0	0	0	0	1	0	0	0	0	0	0	0	*	2-4
			0	0	0	0	1	0	0	0	0	0	1	0	*	2-4
Curacao:																
Plesman Airport.....	1900	<2½ <6	0	0	0	0	0	0	0	0	0	0	0	0	0	6-7
			1	0	1	0	1	0	0	0	0	0	0	0	*	6-7
Bonaire:																
Kralendijk.....	1900	<2½ <6	0	0	0	0	0	0	0	0	0	0	0	0	0	1-2
			0	0	0	0	0	0	0	0	0	0	2	0	*	1-2

* <0.5%.

FIGURE 32. PERCENTAGE FREQUENCY OF SPECIFIED CEILING* AND VISIBILITY COMBINATIONS AT SPECIFIED HOURS

REGION AND STATION	HOUR	COM- BINA- TION**	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
(LAT)																
Northeast Group:																
Guadeloupe:																
Pointe-à-Pitre.....	0200	A	99	100	100	99	100	99	100	99	99	99	100	99	99	4-5
		B	0	0	0	0	0	0	0	0	0	1	0	0	***	4-5
Martinique:																
Le Lamentin.....	0200	A	100	100	99	100	99	100	98	98	100	100	100	100	99	2-4
		B	0	0	0	0	0	0	0	0	0	0	0	0	0	2-4
Southwest Group:																
Curaçao:																
Plesman Airport.....	0100	A	100	100	100	100	100	100	100	100	100	100	100	100	100	5-7
		B	0	0	0	0	0	0	0	0	0	0	0	0	0	5-7
Northeast Group:																
Saint Martin:																
Juliana Airport.....	0800	A	100	100	99	99	98	98	100	100	100	100	99	100	99	2-4
		B	0	0	1	0	0	1	0	0	0	0	1	0	***	2-4
Saint-Barthélemy:																
Gustavia.....	0800	A	100	100	100	99	100	99	99	99	100	100	100	99	100	3-5
		B	0	0	0	0	0	1	0	0	0	0	0	0	***	3-5
Sint Eustatius:																
Oranjestad.....	0800	A	99	100	100	100	100	100	100	100	100	99	100	100	100	3-5
		B	0	0	0	0	0	0	0	0	0	0	0	0	0	3-5
Guadeloupe:																
Pointe-à-Pitre.....	0800	A	100	100	100	100	100	100	100	100	99	100	99	100	100	11-13
		B	***	0	0	0	0	0	0	0	0	0	0	0	***	11-13
Martinique:																
Le Lamentin.....	0800	A	99	98	100	98	99	99	99	97	99	99	99	99	99	8-10
		B	***	0	0	***	1	0	0	1	***	***	0	0	***	8-10
Southwest Group:																
Aruba:																
Princess Beatrix Airport.....	0700	A	99	100	100	100	99	99	100	99	100	100	99	100	100	5-7
		B	0	0	0	0	0	1	0	0	0	0	1	0	***	5-7
Curaçao:																
Plesman Airport.....	0700	A	100	100	100	100	99	100	100	100	100	100	100	99	100	6-7
		B	0	0	0	0	1	0	0	0	0	0	0	0	***	6-7
Bonaire:																
Kralendijk.....	0700	A	100	100	100	100	100	100	100	100	100	100	100	100	100	1-2
		B	0	0	0	0	0	0	0	0	0	0	0	0	0	1-2
Northeast Group:																
Saint Martin:																
Juliana Airport.....	1400	A	100	97	100	97	97	100	100	100	100	100	100	100	99	1-3
		B	0	0	0	0	0	0	0	0	0	0	0	0	0	1-3
Saint-Barthélemy:																
Gustavia.....	1400	A	100	100	100	100	100	100	99	99	99	100	100	100	100	1-3
		B	0	0	0	0	0	0	0	0	0	0	0	0	0	1-3
Sint Eustatius:																
Oranjestad.....	1400	A	100	100	100	100	100	100	98	100	100	100	100	100	100	1-3
		B	0	0	0	0	0	0	0	0	0	0	0	0	0	1-3
Guadeloupe:																
Pointe-à-Pitre.....	1400	A	99	100	100	99	99	100	99	100	100	99	100	100	100	3-5
		B	0	0	0	1	1	0	0	0	0	0	0	0	***	3-5
Martinique:																
Le Lamentin.....	1400	A	97	99	99	99	97	100	99	98	99	99	100	99	99	2-4
		B	0	0	0	0	1	0	0	1	0	0	0	0	***	2-4
Southwest Group:																
Aruba:																
Princess Beatrix Airport.....	1300	A	100	100	100	100	99	100	99	100	100	100	100	100	100	2-4
		B	0	0	0	0	0	0	0	0	0	0	0	0	0	2-4
Curaçao:																
Plesman Airport.....	1300	A	100	100	100	100	100	100	100	100	100	100	100	100	100	6-7
		B	0	0	0	0	0	0	0	0	0	0	0	0	0	6-7
Bonaire:																
Kralendijk.....	1300	A	100	100	100	100	100	100	100	100	100	100	100	100	100	1
		B	0	0	0	0	0	0	0	0	0	0	0	0	0	1

FIGURE 32 (Continued)

REGION AND STATION	HOUR	COM- BINA- TION**	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Northeast Group:	(LST)															
Saint Martin:																
Juliana Airport.....	2000	A	100	100	98	100	100	100	100	100	98	100	100	100	100	1-2
		B	0	0	0	0	0	0	0	0	0	0	0	0	0	1-2
Saint-Barthélemy:																
Gustavia.....	2000	A	100	100	100	100	100	100	100	100	99	100	100	100	100	2-4
		B	0	0	0	0	0	0	0	0	0	0	0	0	0	2-4
Sint Eustatius:																
Oranjestad.....	2000	A	100	100	100	100	100	100	100	100	100	98	100	100	100	1-2
		B	0	0	0	0	0	0	0	0	0	0	0	0	0	1-2
Guadeloupe:																
Pointe-à-Pitre.....	2000	A	100	100	100	100	100	100	100	99	99	99	99	99	100	3-5
		B	0	0	0	0	0	0	0	0	0	0	1	0	***	3-5
Martinique:																
Le Lamentin.....	2000	A	100	100	98	99	100	100	100	97	100	100	99	100	99	2-4
		B	0	0	0	1	0	0	0	0	0	0	0	0	***	2-4
Southwest Group:																
Aruba:																
Princess Beatrix Airport.....	1900	A	100	100	100	100	99	100	100	100	100	100	100	100	100	2-4
		B	0	0	0	0	1	0	0	0	0	0	0	0	***	2-4
Curacao:																
Plesman Airport.....	1900	A	99	100	100	100	98	100	100	100	100	100	100	100	100	6-7
		B	1	0	0	0	0	0	0	0	0	0	0	0	***	6-7
Bonaire:																
Kralendijk.....	1900	A	100	100	100	100	100	100	100	100	100	100	100	100	100	1-2
		B	0	0	0	0	0	0	0	0	0	0	0	0	0	1-2

* Ceiling herein is defined as $\frac{5}{8}$ -eighths cloud cover.

** Combination:

A..... Ceiling ≥ 984 feet with visibility $\geq 2\frac{1}{2}$ miles.B..... Ceiling < 656 feet and/or visibility $< 1\frac{1}{4}$ miles.*** $< 0.5\%$.

FIGURE 33. MEAN NUMBER OF DAYS WITH SPECIFIED SURFACE WIND SPEED

REGION AND STATION	SPEED	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Northeast Group:	knots														
Saint Martin:															
Juliana Airport*.....	≥ 28	**	0	0	0	0	0	0	0	0	0	0	0	**	1-4
Saint-Barthélemy:															
Gustavia.....	≥ 31	2	**	1	**	**	**	1	1	0	**	0	2	7	6
Sint Eustatius:															
Oranjestad*.....	≥ 28	**	0	0	0	0	0	0	0	0	0	0	0	**	1-5
Guadeloupe:															
Camp Jacob.....	> 29	0	0	0	0	0	0	0	**	**	0	**	0	**	11-13
Pointe-à-Pitre.....	≥ 31	**	**	0	**	1	1	2	1	3	2	1	**	11	6
La Désirade:															
Baie Mahault.....	≥ 31	0	0	0	0	0	1	0	0	**	0	0	**	1	3-4
Martinique:															
Fort-de-France.....	≥ 28	0	0	**	0	0	0	0	0	0	**	0	0	**	20
Le Lamentin*.....	≥ 28	0	0	0	0	0	0	0	0	0	0	0	**	**	2-10
Southwest Group:															
Aruba:															
Princess Beatrix Air- port*.....	≥ 28	**	**	2	1	1	1	1	1	1	0	**	**	8	2-7
Curacao:															
Plesman Airport*.....	≥ 28	0	0	**	**	0	0	**	**	0	0	0	0	1	6-7
Bonaire:															
Kralendijk*.....	≥ 28	0	0	**	0	**	**	**	0	0	0	0	0	2	1-2

* Means based on 3 to 4 observations per day.

** < 0.5 day.

FIGURE 34. MEAN NUMBER OF DAYS WITH SURFACE WIND SPEED ≥ 16 KNOTS AND NO PRECIPITATION OCCURRING AT SPECIFIED HOURS

REGION AND STATION	HOUR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Northeast Group:	(LAT)														
Guadeloupe:															
Pointe-à-Pitre:	0200	0	0	0	0	0	0	0	0	0	0	0	0	0	4-5
Martinique:															
Le Lamentin:	0200	2	2	1	1	2	3	3	2	*	1	0	1	19	2-4
Southwest Group:															
Curaçao:															
Plesman Airport:	0100	4	6	6	5	4	6	3	1	2	1	1	4	43	6-7
Northeast Group:															
Saint Martin:															
Juliana Airport:	0800	1	1	1	1	1	*	1	1	0	2	0	1	10	2-4
Saint-Barthélemy:															
Guayama:	0800	4	2	1	2	1	1	2	1	2	*	1	3	20	3-5
Sint Eustatius:															
Oranjestad:	0800	0	0	*	1	*	*	*	0	*	0	0	*	2	3-5
Guadeloupe:															
Pointe-à-Pitre:	0800	0	0	0	*	*	0	*	*	0	0	0	*	*	11-13
Martinique:															
Le Lamentin:	0800	*	*	*	0	0	*	*	*	0	0	0	*	2	8-10
Southwest Group:															
Aruba:															
Princess Beatrix Air- port:	0700	8	11	18	19	19	23	18	16	12	9	6	5	163	5-7
Curaçao:															
Plesman Airport:	0700	4	5	7	13	12	14	8	5	2	2	2	2	75	6-7
Bonaire:															
Kralendijk:	0700	1	2	5	9	15	17	4	6	3	0	0	1	64	1-2
Northeast Group:															
Saint Martin:															
Juliana Airport:	1400	3	1	2	3	1	2	2	2	0	1	1	3	21	1-2
Saint-Barthélemy:															
Guayama:	1400	4	2	3	3	2	3	2	1	1	1	0	5	27	1-3
Sint Eustatius:															
Oranjestad:	1400	1	0	2	1	0	2	0	1	0	0	0	0	6	1-3
Guadeloupe:															
Pointe-à-Pitre:	1400	1	*	1	*	*	*	1	*	1	1	0	0	5	3-5
Martinique:															
Le Lamentin:	1400	4	3	2	*	*	4	2	3	*	0	1	1	21	2-4
Southwest Group:															
Aruba:															
Princess Beatrix Air- port:	1300	23	22	27	24	24	28	26	24	19	16	10	19	262	2-4
Curaçao:															
Plesman Airport:	1300	10	19	25	26	26	28	26	24	22	20	11	16	262	6-7
Bonaire:															
Kralendijk:	1300	16	14	13	17	20	26	18	11	7	13	2	6	163	1
Northeast Group:															
Saint Martin:															
Juliana Airport:	2000	0	0	0	1	0	2	3	0	0	1	0	0	6	1-2
Saint-Barthélemy:															
Guayama:	2000	2	2	7	2	*	1	1	1	0	*	0	4	20	2-4
Sint Eustatius:															
Oranjestad:	2000	1	0	2	0	0	0	0	0	1	0	0	0	4	1-2
Guadeloupe:															
Pointe-à-Pitre:	2000	0	0	0	0	0	0	0	0	0	0	0	0	0	3-5
Martinique:															
Le Lamentin:	2000	0	*	1	0	0	0	0	*	0	0	0	0	1	2-4
Southwest Group:															
Aruba:															
Princess Beatrix Air- port:	1900	13	13	21	19	20	27	24	21	21	14	8	11	213	2-4
Curaçao:															
Plesman Airport:	1900	9	14	17	18	18	21	14	13	16	15	8	8	167	6-7
Bonaire:															
Kralendijk:	1900	2	5	10	8	12	17	7	5	3	5	0	5	79	1-2

* <0.5 day.

FIGURE 33. MEAN NUMBER OF DAYS WITH SURFACE WIND SPEED 3 TO 10 KNOTS, TEMPERATURE $>32^{\circ}\text{F.}$ BUT $<90^{\circ}\text{F.}$, AND NO PRECIPITATION OCCURRING AT SPECIFIED HOURS

REGION AND STATION	HOOR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
	(GMT)														
Northeast Group:															
Guadeloupe:															
Pointe-à-Pitre	0200	9	8	7	6	8	9	9	5	2	6	6	6	81	4-5
Martinique:															
Le Lamentin	0200	12	12	11	15	10	13	8	10	19	15	17	15	156	2-4
Southwest Group:															
Curaçao:															
Plesman Airport	0100	9	7	8	7	5	4	9	10	15	15	15	12	115	6-7
Northeast Group:															
Saint Martin:															
Juliana Airport	0800	16	16	18	17	17	13	15	14	22	19	19	17	204	2-4
Saint-Barthélemy:															
Gustavia	0800	19	19	25	24	23	23	21	23	18	25	22	20	262	3-5
Sint Eustatius:															
Oranjestad	0800	23	20	22	22	22	22	23	24	22	23	21	22	266	3-5
Guadeloupe:															
Pointe-à-Pitre	0800	8	11	15	19	20	24	21	14	9	10	7	9	167	11-13
Martinique:															
Le Lamentin	0800	16	12	15	18	18	15	17	16	11	13	13	14	178	8-10
Southwest Group:															
Aruba:															
Princess Beatrix Air- port	0700	8	5	9	9	8	1	2	3	4	7	11	9	87	5-7
Curaçao:															
Plesman Airport	0700	15	9	4	3	2	1	5	5	9	10	13	12	88	6-7
Bonaire:															
Kralendijk	0700	6	12	10	8	3	1	7	10	9	12	11	12	100	1-2
Northeast Group:															
Saint Martin:															
Juliana Airport	1400	10	14	11	12	13	12	6	14	15	22	16	13	158	1-2
Saint-Barthélemy:															
Gustavia	1400	17	21	20	20	25	20	16	19	21	25	26	23	253	1-3
Sint Eustatius:															
Oranjestad	1400	13	18	19	20	21	16	21	19	23	20	23	23	243	1-3
Guadeloupe:															
Pointe-à-Pitre	1400	18	14	15	18	18	17	17	19	21	19	19	18	213	3-5
Martinique:															
Le Lamentin	1400	7	9	10	8	10	4	8	9	12	15	16	14	118	2-4
Southwest Group:															
Aruba:															
Princess Beatrix Air- port	1800	2	1	1	1	1	*	1	1	1	6	6	1	21	2-4
Curaçao:															
Plesman Airport	1800	1	1	*	1	1	*	1	1	1	1	4	2	13	6-7
Bonaire:															
Kralendijk	1800	2	1	1	3	1	0	1	0	0	1	10	3	23	1
Northeast Group:															
Saint Martin:															
Juliana Airport	2000	23	21	21	24	25	19	23	23	20	22	22	22	265	1-2
Saint-Barthélemy:															
Gustavia	2000	18	19	23	24	23	23	20	21	19	25	21	20	256	2-4
Sint Eustatius:															
Oranjestad	2000	20	16	21	16	25	23	20	23	16	16	19	20	240	1-2
Guadeloupe:															
Pointe-à-Pitre	2000	9	6	12	12	10	13	14	7	5	6	6	7	106	3-5
Martinique:															
Le Lamentin	2000	18	16	11	17	15	17	15	13	8	11	9	14	163	2-4
Southwest Group:															
Aruba:															
Princess Beatrix Air- port	1900	3	2	1	3	3	0	1	2	1	5	8	5	33	2-4
Curaçao:															
Plesman Airport	1900	5	3	1	2	3	1	2	3	2	3	6	6	37	6-7
Bonaire:															
Kralendijk	1900	9	10	5	6	5	0	1	3	4	5	16	13	77	1-2

* <0.5 day.

FIGURE 36. MEAN NUMBER OF DAYS WITH CEILING* ≥ 984 FEET, VISIBILITY $\geq 2\frac{1}{4}$ MILES, AND SURFACE WIND SPEED ≥ 10 KNOTS AT SPECIFIED HOURS

REGION AND STATION	HOURLY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
	(LST)														
Northeast Group:															
Guadeloupe:															
Pointe-à-Pitre.....	0200	31	28	31	30	31	30	31	30	30	30	30	31	361	4-5
Martinique:															
Le Lamentin.....	0200	18	17	17	22	18	17	13	17	27	18	20	20	224	2-4
Southwest Group:															
Curacao:															
Pleasant Airport.....	0100	9	7	8	8	6	4	10	10	15	15	17	13	121	6-7
Northeast Group:															
Saint Martin:															
Juliana Airport.....	0800	18	19	20	18	19	14	15	17	24	22	23	19	228	2-4
Saint-Barthélemy:															
Gustavia.....	0800	22	21	26	25	27	24	21	24	23	28	26	23	290	3-5
Sint Eustatius:															
Oranjestad.....	0800	27	26	28	27	30	26	27	28	29	28	30	28	331	3-5
Guadeloupe:															
Pointe-à-Pitre.....	0800	31	28	30	28	30	29	30	31	29	30	29	31	354	11-13
Martinique:															
Le Lamentin.....	0800	26	21	24	22	24	19	20	25	28	28	28	27	290	8-10
Southwest Group:															
Aruba:															
Princess Beatrix Air- port.....	0700	8	5	2	2	3	1	2	3	6	10	13	10	65	5-7
Curacao:															
Pleasant Airport.....	0700	15	9	4	4	3	1	5	6	9	12	15	14	97	6-7
Bonaire:															
Kralendijk.....	0700	8	12	10	9	5	1	7	11	9	14	11	14	111	1-2
Northeast Group:															
Saint Martin:															
Juliana Airport.....	1400	10	15	12	13	14	12	7	13	20	23	17	15	176	1-2
Saint-Barthélemy:															
Gustavia.....	1400	18	22	20	21	25	20	17	21	23	26	27	23	262	1-3
Sint Eustatius:															
Oranjestad.....	1400	20	23	20	22	23	20	22	23	29	27	26	27	281	1-3
Guadeloupe:															
Pointe-à-Pitre.....	1400	18	15	17	19	19	18	19	21	24	22	23	20	237	3-5
Martinique:															
Le Lamentin.....	1400	7	10	10	9	11	5	6	10	18	17	18	15	134	2-4
Southwest Group:															
Aruba:															
Princess Beatrix Air- port.....	1300	2	1	1	2	1	**	1	1	2	7	9	1	27	2-4
Curacao:															
Pleasant Airport.....	1300	1	1	1	1	1	**	1	1	1	2	6	2	19	6-7
Bonaire:															
Kralendijk.....	1300	2	1	1	5	3	0	1	2	5	3	14	3	40	1
Northeast Group:															
Saint Martin:															
Juliana Airport.....	2000	27	23	22	25	25	20	23	23	25	25	26	24	286	1-2
Saint-Barthélemy:															
Gustavia.....	2000	22	22	26	25	26	23	20	24	24	27	26	25	291	2-4
Sint Eustatius:															
Oranjestad.....	2000	30	28	24	24	28	30	26	31	29	30	30	30	339	1-2
Guadeloupe:															
Pointe-à-Pitre.....	2000	31	28	31	30	31	30	30	30	29	30	30	31	360	3-5
Martinique:															
Le Lamentin.....	2000	25	25	25	25	30	23	26	26	29	29	29	29	322	2-4
Southwest Group:															
Aruba:															
Princess Beatrix Air- port.....	1900	3	2	1	3	3	0	1	2	1	5	10	5	36	2-4
Curacao:															
Pleasant Airport.....	1900	5	3	1	2	3	1	2	3	2	5	7	6	37	6-7
Bonaire:															
Kralendijk.....	1900	9	10	5	6	5	0	1	3	4	6	16	13	79	1-2

* Ceiling herein is defined as ≥ 5 -eighths cloud cover.

** < 0.5 day.

FIGURE 37. MEAN DAILY MAXIMUM TEMPERATURE (°F.)

REGION AND STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Northeast Group:														
Saint Martin:														
Juliana Airport.....	84	85	86	87	87	89	89	89	89	88	87	85	87	4
Philipburg.....	81	81	82	83	85	86	86	87	87	87	85	83	84	14
Saint-Barthélemy:														
Gustavia.....	82	82	83	85	86	87	87	87	87	86	85	82	85	11-13
Sint Eustatius:														
Oranjestad.....	83	84	85	86	86	87	88	88	88	87	86	84	86	4
Guadeloupe:														
Camp Jacob.....	77	77	77	79	80	80	81	82	82	81	80	78	79	19-22
Neuf-Château.....	78	78	77	80	81	82	82	84	85	82	82	79	81	1
Pointe-à-Pitre.....	83	83	84	85	86	87	87	87	87	86	85	83	85	11-13
La Désirade:														
Baie Mahault.....	81	82	82	84	85	86	86	87	86	86	85	83	84	9
Martinique:														
Fort-de-France.....	83	84	85	86	87	86	86	87	88	87	86	84	86	22
Le Lamentin.....	83	83	84	85	86	86	85	87	87	86	85	83	85	9-10
Morne des Cadets.....	78	78	80	81	82	81	82	83	84	83	82	79	81	9
Southwest Group:														
Aruba:														
Princess Beatrix Airport....	85	85	85	86	87	87	87	88	89	89	87	86	87	2
Curaçao:														
Plesman Airport.....	84	84	85	85	86	87	88	89	89	88	86	85	86	2-4
Willemstad.....	83	84	84	86	86	87	87	88	89	88	86	84	86	32
Bonaire:														
Kralendijk.....	86	86	87	87	88	88	88	89	90	91	88	86	88	2

FIGURE 38. MEAN DAILY MINIMUM TEMPERATURE (°F.)

REGION AND STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Northeast Group:														
Saint Martin:														
Juliana Airport.....	72	72	73	74	75	77	77	77	76	76	74	73	75	4
Philipburg.....	73	73	73	75	77	78	78	79	78	78	76	74	76	14
Saint-Barthélemy:														
Gustavia.....	73	72	73	74	76	78	78	78	77	77	76	74	76	11-13
Sint Eustatius:														
Oranjestad.....	71	71	71	73	73	75	76	76	76	75	75	73	74	5
Guadeloupe:														
Camp Jacob.....	64	63	63	65	67	69	69	69	69	68	67	65	67	20-22
Neuf-Château.....	65	65	64	69	71	72	72	72	71	71	71	68	69	1
Pointe-à-Pitre.....	66	66	67	69	71	73	73	73	72	72	70	68	70	11-13
La Désirade:														
Baie Mahault.....	73	73	73	75	77	78	78	79	78	77	76	75	76	9
Martinique:														
Fort-de-France.....	69	69	69	71	73	74	74	74	74	73	72	71	72	22
Le Lamentin.....	70	70	70	72	74	75	75	74	73	73	72	71	72	8-10
Morne des Cadets.....	64	64	64	66	68	68	69	69	69	69	68	66	67	9
Southwest Group:														
Aruba:														
Princess Beatrix Airport....	76	76	76	77	78	78	78	77	79	79	76	76	77	2
Curaçao:														
Plesman Airport.....	74	73	74	76	77	78	78	79	79	78	76	75	76	2-4
Willemstad.....	74	74	74	76	77	78	78	78	78	78	76	75	76	32
Bonaire:														
Kralendijk.....	74	74	76	76	78	77	77	78	78	76	75	73	76	2

FIGURE 39. ABSOLUTE MAXIMUM TEMPERATURE (°F.)

REGION AND STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Northeast Group:														
Saint Martin:														
Juliana Airport.....	93	89	89	91	93	93	94	94	95	92	91	89	95	4
Phillipsburg.....	86	87	88	89	91	91	90	93	92	93	92	89	93	15
Saint-Barthélemy:														
Gustavia.....	86	88	89	91	92	93	92	94	93	92	91	89	94	11-13
Sint Eustatius:														
Oranjestad.....	86	88	89	90	91	90	90	91	91	92	90	89	92	9
Guadeloupe:														
Camp Jacob.....	86	88	88	88	87	86	86	88	89	92	91	88	92	17-22
Pointe-à-Pitre.....	86	86	88	89	90	91	90	90	90	90	88	87	91	11-13
La Désirade:														
Bale Mahault.....	87	88	89	88	90	91	90	90	90	90	90	87	91	9
Martinique:														
Fort-de-France.....	90	91	91	94	93	92	90	94	96	94	92	89	96	22
Le Lamentin.....	86	86	90	91	90	90	90	91	90	90	89	88	91	9-10
Morne des Cadets.....	86	84	88	88	88	88	87	88	90	88	88	87	90	9
Southwest Group:														
Aruba:														
Princess Beatrix Airport....	86	86	87	88	90	89	91	91	92	91	91	88	92	2
Curacao:														
Plesman Airport.....	88	86	86	88	89	89	93	94	93	91	91	88	94	2-4
Willemstad.....	91	92	93	94	96	95	94	95	96	95	96	93	96	28-29
Bonaire:														
Kralendijk.....	88	87	90	90	90	90	91	93	92	93	92	91	93	2

FIGURE 40. ABSOLUTE MINIMUM TEMPERATURE (°F.)

REGION AND STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Northeast Group:														
Saint Martin:														
Juliana Airport.....	64	66	67	68	70	71	71	69	68	69	68	66	64	4
Phillipsburg.....	67	65	66	68	70	69	71	73	72	70	69	62	62	15
Saint-Barthélemy:														
Gustavia.....	66	62	63	68	71	69	69	70	70	70	69	66	62	11-13
Sint Eustatius:														
Oranjestad.....	67	64	64	64	66	70	70	72	70	69	67	67	64	9
Guadeloupe:														
Camp Jacob.....	56	54	56	58	60	57	57	57	63	58	60	58	54	18-22
Pointe-à-Pitre.....	58	55	59	60	62	66	67	68	67	66	63	60	55	11-13
La Désirade:														
Bale Mahault.....	67	66	64	69	71	70	73	73	71	70	69	69	64	9
Martinique:														
Fort-de-France.....	59	60	56	63	66	66	68	66	68	65	64	61	56	22
Le Lamentin.....	58	58	61	66	67	69	68	68	67	66	64	60	58	8-10
Morne des Cadets.....	59	60	61	62	64	64	65	66	65	64	65	63	59	9
Southwest Group:														
Aruba:														
Princess Beatrix Airport....	71	72	73	72	75	74	73	71	74	72	71	70	70	2
Curacao:														
Plesman Airport.....	68	69	68	71	70	70	71	72	72	71	71	70	68	2-4
Willemstad.....	68	66	63	68	70	71	71	69	71	70	68	67	63	28-29
Bonaire:														
Kralendijk.....	69	68	73	72	74	71	71	73	71	68	68	62	62	2

FIGURE 41. MEAN NUMBER OF DAYS WITH MAXIMUM TEMPERATURE $\geq 90^{\circ}$ F.

REGION AND STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Northeast Group:														
Saint-Barthélemy:														
Gustavia.....	0	0	0	*	2	4	2	4	4	3	1	0	20	11-13
Guadeloupe:														
Pointe-à-Pitre.....	0	0	0	0	*	1	1	1	1	*	0	0	4	11-13
La Désirade:														
Bale Mahault.....	0	0	0	0	0	0	*	1	*	1	*	0	3	4-6
Martinique:														
Le Lamentin.....	0	0	*	*	*	*	*	*	*	*	0	0	2	8-10
Southwest Group:														
Aruba:														
Princess Beatrix Airport....	0	0	0	0	1	2	7	24	28	17	1	0	80	1-2
Curacao:														
Plesman Airport.....	0	0	0	0	0	0	2	11	14	4	1	0	32	2-4

* <0.5 day.

FIGURE 42. MEAN RELATIVE HUMIDITY (%) AT SPECIFIED HOURS

REGION AND STATION	HOUR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
	(LAT)														
Northeast Group:															
Guadeloupe:															
Pointe-à-Pitre.....	0200	90	90	88	90	89	89	89	92	93	92	93	92	91	4-5
Martinique:															
Le Lamentin.....	0200	86	85	86	87	88	89	90	89	90	90	90	89	88	2-4
Southwest Group:															
Curacao:															
Plesman Airport....	0100	82	81	83	82	83	84	85	84	84	83	83	83	83	6-7
Northeast Group:															
Saint Martin:															
Juliana Airport.....	0800	75	74	71	75	75	74	73	76	75	75	74	76	74	2-4
Philipsburg.....	0800	74	72	72	71	73	74	74	75	77	78	77	74	74	14
Saint-Barthélemy:															
Gustavia.....	0800	74	72	72	74	75	75	76	77	77	77	77	77	75	3-5
Sint Eustatius:															
Oranjestad.....	0800	79	76	74	74	74	76	76	76	79	78	79	79	77	3-5
Guadeloupe:															
Camp Jacob.....	0700	83	82	82	82	85	83	83	82	84	84	84	85	83	0
Pointe-à-Pitre.....	0800	89	87	82	80	80	79	82	84	86	87	89	90	85	11-13
Martinique:															
Fort-de-France.....	0600	90	88	88	88	88	89	90	91	91	92	92	91	90	23
Le Lamentin.....	0800	86	83	80	80	81	82	83	85	87	87	87	85	84	8-10
Morne des Cadets...	0600	91	91	91	91	91	91	92	92	92	92	92	92	92	9
Southwest Group:															
Aruba:															
Princess Beatrix Air- port.....	0700	79	77	77	78	77	76	79	77	76	76	78	79	77	5-7
Curacao:															
Plesman Airport....	0700	81	79	79	77	79	79	81	80	79	79	80	81	79	6-7
Willemstad.....	0800	80	77	78	78	78	78	78	77	76	77	80	80	78	10
Bonaire:															
Kralendijk.....	0700	79	77	77	76	78	78	81	79	78	76	78	78	78	1-2

FIGURE 42 (Continued)

REGION AND STATION	HOUR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
	(LST)														
Northeast Group:															
Saint Martin:															
Juliana Airport.....	1400	68	65	62	66	67	66	65	66	66	67	67	69	66	1-2
Phillipsburg.....	1400	66	64	62	62	65	65	66	66	68	67	68	67	66	14
Saint-Barthélemy:															
Gustavia.....	1400	67	65	63	67	69	68	69	71	70	71	72	70	68	1-3
Sint Eustatius:															
Oranjestad.....	1400	70	67	65	66	71	72	70	71	73	73	73	72	70	1-3
Guadeloupe:															
Pointe-A-Pitre.....	1400	65	61	61	64	67	69	68	70	72	72	71	70	68	3-5
Martinique:															
Fort-de-France.....	1600	77	73	72	71	74	77	78	78	79	80	81	79	77	23
Le Lamentin.....	1400	74	70	67	67	69	73	72	72	72	73	73	72	71	2-3
Morne des Cadets.....	1600	84	80	78	79	80	83	82	83	83	84	85	85	82	9
Southwest Group:															
Aruba:															
Princess Beatrix Air- port.....	1300	66	64	65	66	67	67	65	66	63	65	67	66	66	2-4
Curacao:															
Plesman Airport.....	1300	67	65	64	65	69	66	67	68	67	67	70	68	67	6-7
Willemstad.....	1300	68	65	64	65	66	66	64	63	63	67	72	71	66	10
Bonaire:															
Kralendijk.....	1300	65	64	65	64	68	67	67	66	64	63	69	68	66	1
Northeast Group:															
Saint Martin:															
Juliana Airport.....	2000	79	76	74	77	77	79	77	79	84	81	81	78	79	1-2
Phillipsburg.....	1800	72	71	71	71	73	74	74	74	76	76	75	73	73	14
Saint-Barthélemy:															
Gustavia.....	2000	75	74	74	77	77	78	78	80	78	80	79	76	77	2-4
Sint Eustatius:															
Oranjestad.....	2000	79	81	75	78	79	79	80	82	81	84	83	81	80	1-2
Guadeloupe:															
Camp Jacob.....	1700	80	77	75	76	77	76	76	75	78	81	79	81	78	4
Pointe-A-Pitre.....	2000	85	82	79	81	84	83	83	86	87	89	89	88	85	4-5
Martinique:															
Le Lamentin.....	2000	83	85	82	83	84	84	86	87	89	88	90	88	86	2-4
Southwest Group:															
Aruba:															
Princess Beatrix Air- port.....	1900	76	76	76	78	79	78	80	77	78	77	78	77	78	2-4
Curacao:															
Plesman Airport.....	1900	79	77	80	79	81	80	81	81	80	80	79	80	80	6-7
Bonaire:															
Kralendijk.....	1900	76	77	77	78	79	80	80	78	77	77	79	78	78	1-2

FIGURE 43. MEAN PRECIPITATION (INCHES)

REGION AND STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Northeast Group:														
Saint Martin:														
Juliana Airport.....	2.4	1.7	1.9	5.4	3.6	2.0	3.3	4.6	4.3	3.9	5.4	3.9	42.4	4
Phillipsburg.....	2.6	1.7	1.4	2.2	4.3	3.0	3.1	4.4	5.8	4.7	5.5	3.2	41.9	47
Saint-Barthélemy:														
Gustavia.....	3.1	1.8	1.7	2.2	2.6	1.6	3.2	4.5	5.7	5.3	3.8	3.5	39.0	9
Saba:														
Sint John.....	4.0	1.7	1.6	3.0	6.3	3.0	4.1	4.8	4.4	4.4	6.9	3.8	48.0	10-11
The Bottom.....	3.4	2.5	1.9	1.9	4.0	3.1	3.6	4.0	4.7	5.4	6.1	3.9	44.5	41
Windwardside.....	3.9	1.8	1.4	3.2	7.3	3.3	4.0	4.6	4.6	4.7	7.8	4.2	50.8	9-10
Sint Eustatius:														
Oranjestad.....	2.7	1.8	1.8	2.1	3.6	3.9	4.1	4.5	4.8	4.9	5.2	3.4	42.8	60

FIGURE 43 (Continued)

REGION AND STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Northeast Group (Continued):														
Guadeloupe:														
Anse-Bertrand.....	2.5	1.9	1.9	3.0	3.4	3.4	4.0	5.2	6.1	6.8	6.7	4.2	49.1	31
Basse-Terre.....	3.8	1.9	1.6	2.6	4.4	7.9	7.4	7.3	7.6	7.5	7.4	4.8	64.2	9
Camp Jacob.....	9.0	6.4	7.9	7.7	11.9	14.3	17.9	15.1	16.5	13.0	13.4	11.3	144.4	20-22
Capoterre.....	6.1	3.9	4.1	4.7	6.1	6.8	8.4	11.3	12.2	14.3	10.6	8.6	97.1	18
Clugny.....	3.2	2.1	2.2	2.9	4.5	4.5	5.4	6.9	6.2	7.9	7.8	4.2	57.8	36
Deshayes.....	4.9	3.7	2.7	2.8	6.0	7.7	10.1	11.1	9.6	7.7	3.6	4.8	77.7	9
Gosier.....	2.7	2.0	1.4	1.4	4.2	4.5	6.0	4.8	8.2	9.4	6.8	5.4	56.8	11
Le Lamentin.....	3.1	2.2	2.0	2.7	6.3	5.5	7.7	8.7	8.4	9.7	9.5	4.4	70.2	20
Le Moule.....	2.0	1.9	2.4	2.1	4.0	5.1	4.7	6.7	7.9	9.5	5.1	4.8	56.2	10
Nnuf-Château.....	12.2	8.7	6.8	11.5	18.0	12.6	13.4	14.3	21.3	20.6	16.8	17.6	173.8	10
Petit-Bourg.....	3.7	2.5	2.5	3.7	7.3	8.4	6.5	9.7	10.8	11.7	11.1	5.7	83.3	26
Petit-Canal.....	2.5	1.9	2.3	2.7	4.5	4.9	5.3	7.4	8.8	7.1	5.5	5.2	57.9	12
Pigeon.....	3.8	3.1	2.4	3.3	4.2	8.2	10.6	9.1	8.2	7.2	5.2	4.6	70.0	10
Pointe-à-Pitre.....	3.7	2.8	2.4	3.3	5.7	6.6	6.2	7.7	8.5	8.7	9.3	5.2	70.1	17
Port-Louis.....	2.6	2.0	2.1	2.3	4.5	4.1	5.1	7.0	6.1	7.2	7.7	4.6	55.3	28
Sainte-Anne.....	2.0	1.1	1.9	2.3	4.5	4.2	5.0	7.3	7.7	6.6	5.6	3.5	51.8	7
Sainte-Rose.....	3.8	3.2	3.4	5.0	6.1	8.1	8.7	11.6	10.0	11.1	10.6	6.5	88.1	30
Saint-François.....	2.0	1.4	1.9	2.6	3.9	4.4	4.7	5.6	6.5	6.7	4.8	3.3	47.7	16
La Désirade:														
Baie Mahault.....	2.0	1.3	1.6	1.9	2.2	3.5	5.1	4.6	6.0	5.9	5.0	3.8	40.8	10
Grande Anse.....	1.4	2.2	1.3	3.6	1.7	3.1	2.6	4.9	6.2	5.6	4.6	2.4	39.7	10
Marie-Galante:														
Grand-Bourg.....	3.0	2.2	1.8	3.2	4.9	5.6	5.7	6.7	7.8	6.0	6.7	4.6	57.6	23
Pirogue.....	3.5	2.2	2.3	2.4	3.9	4.5	4.3	6.3	8.1	9.3	6.7	4.0	57.8	11
Martinique:														
Ajoupa-Bouillon.....	6.9	4.8	6.0	6.8	9.7	10.4	13.8	14.1	12.6	14.4	20.7	12.5	131.2	5-15
Basse-Pointe.....	3.1	3.4	2.4	4.4	5.6	5.6	7.4	8.4	9.2	9.6	12.8	5.6	77.4	24
Deux-Choux.....	14.9	11.4	11.2	13.7	15.9	17.5	21.8	20.8	19.1	21.2	24.4	19.3	211.2	23
Fort-de-France.....	3.8	2.7	2.3	3.2	5.0	6.3	8.4	8.9	9.1	8.7	9.1	5.0	72.6	30
Gallion.....	3.2	2.1	1.7	2.9	5.3	5.7	7.4	8.3	8.4	9.8	12.3	4.8	72.0	23
Le Carbet.....	2.6	2.0	1.2	1.4	2.0	5.0	6.7	11.0	6.4	5.9	5.5	2.3	52.0	14
Le Lamentin.....	3.8	3.5	2.7	4.2	5.3	7.2	9.5	9.2	10.7	8.8	8.1	6.3	79.3	9-12
Le Marin.....	3.2	2.3	2.0	2.4	3.9	5.4	6.5	6.0	6.7	8.5	8.3	4.1	59.2	23
Le Précheur.....	3.0	2.1	2.2	0.8	1.8	4.7	6.0	8.3	6.1	6.2	7.9	3.3	52.4	5-15
Les Anses d'Arlet.....	1.3	0.9	1.1	2.4	2.2	3.7	7.5	4.5	9.4	7.0	4.6	3.5	48.2	5
Le Vauclin.....	3.1	2.1	1.7	3.5	5.0	6.0	5.7	7.3	8.6	10.0	11.3	4.6	68.9	23
Morne des Cadets.....	8.0	7.0	6.1	6.3	8.1	11.1	16.2	13.1	12.8	12.7	13.1	10.0	124.5	14
Petit-Bourg.....	4.1	3.3	2.5	3.3	5.2	6.5	8.0	9.0	9.1	9.0	10.7	5.4	76.0	23
Quartier Rabuchon.....	6.3	4.5	4.6	5.9	9.1	9.7	11.5	12.1	12.6	11.8	15.3	8.3	111.7	23
Sainte-Marie.....	3.3	2.9	2.5	4.4	4.9	6.1	6.3	10.2	10.0	11.4	10.1	7.0	79.1	8
Southwest Group:														
Aruba:														
Lago Terrein.....	1.7	0.8	0.2	0.2	0.7	0.6	1.5	0.9	1.0	2.8	3.2	3.2	18.8	5-9
Oranjestad.....	1.7	0.7	0.4	0.4	0.6	0.4	0.7	0.5	1.4	2.8	5.2	3.7	18.5	26
Princess Beatrix Airport.....	1.4	0.2	0.1	0.3	0.7	0.7	1.5	1.2	0.6	1.7	2.1	2.2	12.7	4
Santa Cruz.....	1.1	0.6	0.1	0.0	0.6	0.4	1.3	0.8	1.1	2.0	3.9	3.1	15.1	7
Savaneta.....	1.1	0.8	0.1	0.1	0.4	0.5	1.3	1.0	1.1	1.5	3.8	2.9	14.6	7
Westpunt.....	1.2	0.3	0.3	0.2	0.6	0.3	1.4	1.2	0.5	1.7	1.5	2.2	11.4	4
Curacao:														
Groot Sint Joris.....	2.1	1.5	0.9	1.2	0.5	0.6	1.0	0.9	1.0	4.0	4.8	3.1	21.6	17
Hofje Abau.....	2.2	1.1	0.6	1.0	0.9	0.9	1.0	1.3	1.5	2.9	6.4	4.4	24.3	20
New Port.....	2.0	0.9	0.6	0.5	0.8	0.8	1.3	1.4	1.3	3.6	6.4	3.5	23.2	22
Noordkant.....	2.0	0.4	0.3	0.3	0.7	0.5	1.1	3.5	1.1	1.5	3.0	2.8	17.2	4
Plesman Airport.....	2.1	1.0	0.5	0.6	0.9	1.4	1.0	1.3	1.2	3.2	5.4	4.2	22.8	40
Sabana Westpunt.....	2.4	1.1	0.8	0.6	0.6	0.8	1.1	1.1	1.5	3.8	6.2	4.8	24.8	26
Savonet.....	1.9	0.8	0.3	0.5	0.4	1.3	1.9	2.3	1.6	1.9	2.7	4.1	19.7	4
Sint Willebrordus.....	2.5	0.6	0.5	0.4	0.3	0.9	1.0	1.5	1.7	3.5	4.8	4.3	22.1	20
Willemstad.....	2.1	1.0	0.8	1.1	0.8	1.0	1.5	1.2	1.1	4.2	4.4	3.9	23.1	70
Bonaire:														
Boven Bolivia.....	1.0	0.7	0.5	0.7	0.7	0.9	0.4	1.2	1.2	2.3	5.0	3.2	17.7	12
Kralendijk.....	1.9	0.9	0.5	0.6	0.6	0.7	0.6	1.2	1.5	2.8	5.2	3.7	20.3	26
Rincon.....	2.4	0.9	0.7	0.6	1.0	0.9	0.8	1.1	1.6	3.1	6.0	4.3	23.4	26
Washington.....	0.6	0.3	0.1	0.3	0.5	0.2	1.8	1.7	0.3	1.0	2.4	2.9	12.1	4
Willemsteden.....	0.8	0.5	0.1	0.1	0.6	0.2	1.0	0.8	0.6	0.5	0.2	1.0	6.4	2-3

FIGURE 44. GREATEST AND LEAST PRECIPITATION (INCHES)

REGION AND STATION		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Northeast Group:															
Saint Martin:															
Juliana Airport.....	Greatest	3.3	2.1	2.9	12.0	6.2	3.8	5.5	0.6	7.3	0.0	0.1	0.0	54.7	4-6
	Least	1.3	1.1	0.7	1.3	2.0	1.2	2.0	3.3	1.0	2.5	2.1	1.8	32.0	4-6
Phillipsburg.....	Greatest	6.0	4.6	4.8	7.6	14.5	8.3	6.6	10.2	14.3	8.5	10.4	7.3	57.8	18
	Least	0.7	0.1	0.2	0.2	0.5	0.8	1.2	1.1	2.1	0.9	1.6	0.8	30.1	18
Saint-Barthélemy:															
Gustavia.....	Greatest	5.9	4.2	5.0	4.9	5.4	4.2	5.9	10.3	10.5	8.2	7.2	9.8	53.0	11-16
	Least	0.5	0.5	0.6	0.8	1.1	0.6	1.3	1.3	2.1	1.0	0.8	1.9	24.9	11-16
Saba:															
Sint John.....	Greatest	8.3	3.7	2.8	13.7	16.7	7.5	8.4	8.7	9.6	8.8	13.9	7.2	na	13-14
	Least	1.6	0.4	0.5	0.6	0.5	1.0	0.8	0.8	1.2	0.7	0.7	2.5	na	13-14
The Bottom.....	Greatest	8.3	5.4	4.2	13.6	19.1	8.1	8.1	11.0	10.6	8.8	13.9	7.9	74.2	22
	Least	1.6	0.3	0.1	0.4	0.6	1.2	0.7	0.5	1.3	0.8	1.8	0.5	26.9	22
Windwardside.....	Greatest	8.6	3.2	2.8	15.5	15.4	8.0	8.6	10.7	12.9	8.1	14.3	7.0	58.1	7-10
	Least	1.1	0.8	0.5	0.3	0.8	1.0	1.0	0.7	1.0	0.5	3.8	1.5	43.7	7-10
Sint Eustatius:															
Oranjestad.....	Greatest	6.7	3.5	5.3	4.3	14.5	27.2	8.5	8.7	12.1	8.1	16.3	7.0	76.4	20
	Least	0.5	0.6	0.1	0.3	0.8	0.9	1.6	1.3	1.0	1.2	1.5	0.3	27.6	20
Guadeloupe:															
Anse-Bertrand.....	Greatest	5.2	4.5	2.1	5.6	8.5	8.0	6.4	9.3	8.2	9.2	13.5	5.1	54.0	7-10
	Least	1.1	0.3	0.2	0.8	0.2	0.8	0.8	1.9	2.0	2.1	2.2	0.9	19.7	7-10
Basse-Terre.....	Greatest	9.6	2.7	4.4	4.8	6.3	12.7	10.2	11.0	11.7	13.0	11.4	9.3	70.3	7
	Least	1.2	0.8	0.5	1.1	2.2	3.2	3.3	5.3	3.0	3.1	3.5	0.5	46.2	7
Camp Jacob.....	Greatest	23.0	15.4	9.3	12.5	22.8	22.6	24.0	14.8	20.9	23.6	17.0	20.5	161.7	8
	Least	6.0	1.9	2.3	4.5	7.2	6.5	9.4	7.3	11.1	8.1	10.9	2.0	135.7	8
Clugny.....	Greatest	7.6	6.9	4.6	6.0	8.0	9.7	8.6	16.6	16.1	13.2	11.8	10.7	86.7	12
	Least	1.4	0.6	0.3	0.3	1.4	0.9	2.6	4.6	4.8	3.2	2.3	1.8	37.0	12
Deshayes.....	Greatest	11.5	11.6	5.3	4.7	8.9	11.4	17.6	15.2	13.7	14.4	10.7	8.3	83.5	7
	Least	3.0	2.2	0.9	1.5	2.0	4.7	6.0	4.1	6.2	2.5	1.9	1.9	66.5	7
Le Lamentin.....	Greatest	8.9	3.7	5.2	6.9	11.0	8.7	9.8	15.8	17.3	18.5	13.0	8.1	96.3	12
	Least	0.6	0.5	0.7	0.7	2.6	1.1	2.1	4.3	7.4	5.3	3.5	2.0	52.7	12
Neuf-Château.....	Greatest	13.6	10.9	12.0	15.4	25.7	13.7	14.6	14.0	26.2	37.8	24.1	23.2	na	6
	Least	7.2	5.3	5.1	8.8	8.4	9.3	8.4	10.2	12.7	14.0	13.0	10.7	na	6
Petit-Bourg.....	Greatest	6.9	4.7	8.6	8.8	15.4	14.1	12.7	19.8	22.5	24.6	17.3	12.1	120.3	12
	Least	1.5	1.4	1.3	1.0	4.8	3.7	3.1	5.0	3.5	5.0	5.2	3.0	64.0	12
Pointe-à-Pitre.....	Greatest	9.1	6.7	6.4	10.7	13.1	16.8	11.9	24.1	20.4	20.4	21.9	12.3	na	30
	Least	0.7	0.7	0.5	0.6	1.1	1.5	3.4	2.4	3.7	3.2	2.3	1.3	na	30
Sainte-Rose.....	Greatest	5.0	5.3	4.9	10.5	13.6	14.4	15.9	14.9	17.4	12.4	12.3	6.6	88.7	6-8
	Least	1.0	1.3	0.7	1.2	3.1	4.2	3.0	4.3	3.3	5.2	0.8	1.9	55.6	6-8
La Désirade:															
Baie Mahault.....	Greatest	4.1	3.4	4.6	2.5	3.1	6.2	6.0	7.4	10.8	10.9	6.0	7.1	52.9	10
	Least	0.6	0.3	0.4	0.7	1.0	1.5	1.2	1.9	2.4	2.0	1.4	1.7	24.0	10
Mario-Galante:															
Pirogue.....	Greatest	5.4	3.5	7.0	6.6	8.0	7.7	6.1	13.1	14.1	20.7	11.4	6.8	64.6	12
	Least	1.3	1.1	0.6	0.7	1.7	1.8	1.6	3.0	2.4	4.4	3.1	2.8	43.1	12
Martinique:															
Basse-Pointe.....	Greatest	13.1	11.0	5.9	9.0	18.1	9.8	10.9	15.2	17.0	16.8	30.3	11.5	116.7	25
	Least	1.2	1.3	0.6	0.8	0.7	1.8	3.1	5.3	2.5	2.8	3.2	2.0	54.4	25
Deux-Choux.....	Greatest	28.6	25.0	19.3	28.6	33.5	25.5	31.3	37.9	28.7	29.2	37.9	35.5	280.7	24
	Least	3.9	2.2	3.4	4.5	6.5	9.8	14.3	11.4	9.9	10.4	10.9	7.6	160.8	24
Fort-de-France.....	Greatest	10.4	5.9	10.9	8.1	26.1	16.7	18.2	18.2	21.4	14.5	18.7	13.9	124.5	25
	Least	1.4	0.2	0.1	0.3	0.9	2.2	0.8	2.6	3.5	2.4	2.2	1.3	53.7	25
Gallion.....	Greatest	11.4	6.8	5.1	8.0	22.2	11.4	13.6	14.0	16.7	21.7	24.8	10.2	96.1	24
	Least	1.2	0.6	0.1	0.7	0.2	1.3	3.6	4.7	3.2	3.1	4.9	2.6	52.0	24
Le Carbet.....	Greatest	6.9	4.7	4.9	2.9	4.8	9.7	12.2	17.9	17.3	12.4	10.5	6.9	60.5	15
	Least	0.7	0.2	0.7	0.6	0.4	2.2	2.6	3.7	2.2	0.7	1.7	0.8	36.0	15
Le Lamentin.....	Greatest	6.0	7.0	5.0	6.9	14.3	12.0	14.9	13.1	20.1	13.8	15.8	8.8	182.7	9-12
	Least	1.8	0.7	0.2	1.8	2.3	4.2	5.3	3.0	2.8	4.0	3.0	3.7	69.2	9-12
Le Marin.....	Greatest	6.6	5.6	4.2	7.8	6.7	11.5	13.1	10.7	14.0	16.0	21.1	8.2	92.8	24
	Least	0.7	0.3	0.2	0.1	0.5	1.5	3.1	3.0	2.8	3.0	2.8	2.1	41.5	24
Les Anses d'Arlot..	Greatest	4.1	3.9	2.0	4.8	4.7	4.4	12.2	6.1	12.2	13.4	6.1	5.4	51.9	6
	Least	1.0	0.1	0.7	0.0	1.3	2.8	3.7	2.5	3.9	3.7	2.8	2.3	43.8	6
Le Vauclin.....	Greatest	10.6	6.0	3.5	14.2	15.6	11.9	13.2	16.6	17.0	21.2	32.0	9.1	118.0	24
	Least	0.5	0.4	0.4	0.4	0.2	1.7	1.1	2.2	2.8	0.9	2.0	0.8	29.1	24

FIGURE 44 (Continued)

REGION AND STATION		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YR RNG
Northern Group (Con.):															
Martinique (Con.):															
Morne des Cadets...	Greatest	19.8	15.3	12.4	17.4	14.6	21.2	25.0	25.6	18.7	19.9	20.2	19.7	162.4	15
	Least	3.1	1.1	1.1	1.9	4.2	4.3	8.2	4.8	3.2	6.5	4.0	4.9	66.8	15
Petit-Bourg.....	Greatest	9.4	6.6	7.1	8.1	14.8	12.5	16.0	15.8	17.0	13.3	24.2	11.4	108.1	24
	Least	1.3	0.2	0.3	0.3	1.0	3.4	2.1	1.4	4.0	2.4	5.4	0.3	59.8	24
Quartier Rabuchon...	Greatest	16.7	8.0	9.3	12.0	19.1	17.2	19.2	18.2	25.8	19.6	39.2	12.1	142.1	24
	Least	3.1	1.4	1.3	2.8	1.4	4.0	5.4	5.2	4.1	3.3	5.9	2.1	63.5	24
Southwest Group:															
Aruba:															
Lago Terrein.....	Greatest	3.6	3.4	0.5	0.5	1.3	0.9	6.4	3.2	3.5	7.1	7.4	9.0	29.7	8-9
	Least	0.3	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.4	0.4	0.2	10.8	8-9
Oranjestad.....	Greatest	2.5	2.4	0.7	2.1	4.5	1.9	2.9	2.7	5.3	9.1	15.9	8.8	29.7	9-10
	Least	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.8	0.5	5.2	9-10
Princess Beatrix Airport.....	Greatest	2.8	0.5	0.4	0.8	1.6	1.0	4.2	2.1	1.7	2.8	5.7	6.5	23.1	4-6
	Least	0.7	0.0	0.0	0.0	0.0	0.6	0.3	0.3	0.0	0.4	0.4	0.1	6.7	4-6
Santa Cruz.....	Greatest	3.3	2.9	0.4	0.4	2.8	0.8	5.3	1.8	3.1	3.4	8.2	7.4	23.8	7
	Least	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.1	0.2	6.0	7
Savaneta.....	Greatest	2.8	2.3	0.4	0.5	2.9	1.8	5.7	2.9	3.6	2.3	6.7	6.5	20.3	7
	Least	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.2	0.3	10.6	7
Westpunt.....	Greatest	1.8	0.4	1.0	0.6	1.9	0.6	4.0	1.9	1.1	2.4	4.1	6.0	20.1	4-6
	Least	0.6	0.0	0.0	0.0	0.0	0.0	0.2	0.8	0.0	0.3	0.0	0.0	3.1	4-6
Curaçao:															
Groot Sint Joris....	Greatest	6.2	2.8	4.7	1.9	0.9	1.7	4.2	2.7	3.0	8.6	6.6	10.0	24.8	11-12
	Least	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.7	0.0	6.3	11-12
Hofje Abau.....	Greatest	5.0	2.2	1.2	3.8	7.1	3.1	3.1	3.4	6.7	6.3	13.0	10.3	46.7	9-10
	Least	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	1.5	0.4	8.6	9-10
New Port.....	Greatest	5.5	3.0	1.2	2.7	6.4	3.4	2.8	3.1	10.4	10.0	10.9	13.6	42.9	8-9
	Least	0.1	0.0	0.0	0.0	0.1	0.0	0.3	0.5	0.5	1.1	2.3	0.3	11.8	8-9
Noordkant.....	Greatest	3.1	1.1	0.7	0.7	0.5	0.9	2.4	8.1	3.6	6.4	7.7	5.2	24.9	4-6
	Least	1.2	0.2	0.0	0.0	0.0	0.0	0.4	1.4	0.0	0.4	0.0	0.4	11.1	4-6
Plesman Airport...	Greatest	6.4	4.5	2.2	3.4	6.3	7.3	3.4	7.4	8.8	8.4	11.5	10.8	na	30
	Least	0.2	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.2	0.1	0.3	na	30
Sabana Westpunt...	Greatest	6.7	3.5	1.4	1.9	3.0	2.0	6.2	4.0	4.8	9.1	10.2	11.4	na	21
	Least	1.0	0.0	0.0	0.0	0.0	0.1	0.5	0.0	0.0	0.5	0.7	0.2	na	21
Savonet.....	Greatest	2.8	1.4	0.9	1.3	1.3	2.3	4.1	4.6	3.3	4.2	5.7	6.6	27.6	4-6
	Least	1.2	0.2	0.0	0.2	0.0	0.5	1.0	0.7	0.0	0.3	0.4	0.4	14.8	4-6
Sint Willebrordus...	Greatest	7.1	1.6	1.2	1.2	1.6	5.1	4.5	3.4	9.5	10.1	9.7	11.6	na	10-12
	Least	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.3	0.0	na	10-12
Bonaire:															
Boven Bolly a.....	Greatest	2.7	1.2	0.8	3.5	5.8	4.0	2.5	4.5	4.1	3.6	14.8	8.1	38.8	8-9
	Least	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.6	1.0	0.4	9.2	8-9
Kralendijk.....	Greatest	5.7	2.2	1.2	5.2	4.3	2.3	1.1	4.6	6.9	5.3	12.5	10.4	36.7	10-11
	Least	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.3	2.2	0.3	8.4	10-11
Rincon.....	Greatest	6.6	1.8	2.0	2.0	9.7	3.2	1.2	5.2	5.5	6.2	15.2	9.4	36.7	10-11
	Least	1.3	0.0	0.0	0.1	0.0	0.1	0.0	0.2	0.2	0.0	2.0	0.4	12.6	10-11
Washington.....	Greatest	1.4	0.7	0.4	1.2	1.3	0.8	3.5	2.3	1.1	1.4	8.1	6.0	22.2	4-6
	Least	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.5	0.0	1.3	7.3	4-6
Willemstoren.....	Greatest	0.9	0.5	0.3	0.2	1.2	0.4	3.5	1.3	1.7	0.9	0.3	2.7	16.1	2-4
	Least	0.7	0.5	0.0	0.0	0.0	0.0	1.1	0.5	0.0	0.0	0.1	1.3	6.7	2-4

na Data not available.

FIGURE 45. MAXIMUM 24-HOUR PRECIPITATION (INCHES)

REGION AND STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Northeast Group:														
Saint Martin:														
Juliana Airport.....	1.1	0.0	1.0	5.8	2.0	0.5	1.7	1.7	3.7	3.3	3.6	3.9	5.8	4
Phillipsburg.....	0.8	0.0	1.0	1.6	1.6	0.7	1.5	1.7	7.2	1.4	3.2	0.7	7.2	6
Saint-Barthélemy:														
Gustavia.....	1.3	1.7	1.2	2.0	2.4	1.3	1.4	1.6	1.7	3.7	2.1	2.4	3.7	7-12
Saba:														
Sint John.....	3.0	1.2	1.0	6.0	5.6	2.2	4.3	4.5	3.5	1.1	5.1	2.7	8.6	6-8
The Bottom.....	3.0	2.8	1.3	6.1	5.3	2.1	4.2	4.3	4.5	1.7	5.1	2.7	6.1	12-15
Windwardside.....	3.1	1.4	0.0	6.5	6.3	2.2	4.2	4.3	3.1	3.7	5.3	2.7	6.5	5-8
Sint Eustatius:														
Oranjestad.....	1.5	1.6	2.4	4.0	6.6	3.2	2.8	3.1	5.4	2.3	2.8	2.8	6.6	10
Guadeloupe:														
Anse-Bertrand.....	0.0	1.7	0.8	2.6	3.4	2.3	2.4	2.0	2.6	3.5	4.3	1.6	4.3	5-7
Basse-Terre.....	1.4	1.6	1.7	2.0	1.6	3.5	2.0	3.0	3.2	2.2	3.8	2.2	3.8	7
Camp Jacob.....	2.8	2.7	5.1	3.6	5.3	5.2	8.5	8.7	9.2	10.3	6.6	4.7	10.3	11-13
Clugny.....	1.0	2.0	1.0	1.4	2.4	3.5	4.4	7.6	8.2	3.9	4.0	2.8	8.2	12
Deshayes.....	2.0	3.7	1.5	1.7	4.3	4.0	2.8	4.8	4.8	3.6	2.7	1.7	4.8	7
Le Lamentin.....	1.5	1.7	1.7	2.8	5.0	3.5	3.1	5.5	5.1	6.0	5.7	1.8	6.0	12
Neuf-Château.....	3.0	3.7	3.8	4.6	5.6	5.4	2.5	3.1	4.1	5.1	5.8	6.0	6.0	5
Petit-Bourg.....	1.0	1.6	2.2	3.0	5.7	7.0	3.5	3.0	7.7	5.3	4.8	3.0	7.7	12
Pointe-à-Pitre.....	2.0	2.3	2.7	3.2	2.8	2.4	2.7	3.8	2.3	3.2	2.0	3.5	3.8	8-12
Sainte-Rose.....	0.9	1.3	2.0	3.6	2.6	3.0	2.6	2.4	1.5	3.3	5.7	2.4	5.7	5-7
La Désirade:														
Bale Mahault.....	2.6	1.0	1.0	1.4	0.8	1.8	2.3	2.8	3.0	3.5	2.6	1.5	3.0	2-5
Marie-Galante:														
Pirogue.....	2.4	1.0	4.8	6.5	4.1	3.0	1.0	5.6	5.2	5.6	4.6	2.3	6.5	12
Martinique:														
Basse-Pointe.....	4.1	4.1	1.8	4.1	8.5	3.9	4.4	3.8	5.2	6.7	10.6	3.0	10.6	25
Doux-Choux.....	5.1	6.5	3.7	5.8	5.0	4.4	4.3	4.8	6.7	7.6	9.1	5.8	9.1	24
Fort-de-France.....	2.7	1.6	2.4	2.1	4.4	3.5	4.3	7.8	6.1	4.2	4.8	3.6	7.8	23
Galion.....	4.2	1.8	1.0	4.6	7.6	5.0	3.1	4.5	5.2	5.7	6.7	2.6	7.6	24
Le Carbet.....	2.0	1.7	1.8	1.6	2.5	3.2	3.0	4.0	5.5	3.2	4.0	1.1	5.5	15
Le Lamentin.....	1.3	1.3	2.0	3.3	2.4	2.7	3.3	3.2	3.5	3.5	3.8	2.0	3.8	9-12
Le Marlin.....	2.4	1.6	1.5	1.9	2.4	3.8	5.1	3.3	3.0	3.5	3.5	3.5	5.1	24
Les Anses d'Arlot.....	1.4	1.7	0.8	1.0	2.0	1.7	3.8	1.0	6.4	3.2	1.8	2.3	0.4	6
Le Vauclin.....	3.1	2.2	2.0	6.0	5.0	4.3	4.7	5.1	13.0	0.8	0.8	4.3	13.0	24
Morne des Cadets.....	4.1	2.8	2.8	2.8	3.6	3.0	6.0	7.0	4.7	4.4	3.5	3.7	7.0	15
Petit-Bourg.....	2.0	2.8	1.6	2.8	3.6	4.5	3.2	4.2	6.1	4.5	4.5	4.4	6.1	24
Quartier Rabuchon.....	5.0	2.8	3.5	4.1	7.2	4.1	4.3	4.5	7.1	6.1	8.6	4.3	8.6	24
Southwest Group:														
Aruba:														
Oranjestad.....	1.1	1.3	0.4	1.8	4.3	1.6	2.3	1.4	3.7	3.1	5.7	1.6	5.7	9-10
Princess Beatrix Airport.....	1.0	0.1	0.4	0.8	0.4	0.5	3.1	0.7	1.4	2.3	1.2	2.5	3.1	2
Curaçao:														
Hofje Abau.....	1.2	1.1	0.6	2.7	4.4	2.4	1.4	1.1	2.2	2.6	3.2	5.6	5.6	7-10
New Port.....	1.0	0.4	0.3	0.3	0.6	1.6	0.0	1.3	7.1	1.7	3.7	2.1	7.1	2-5
Plesman Airport.....	1.3	0.4	1.1	2.7	1.7	1.8	0.4	3.1	2.4	2.2	2.4	1.0	3.1	2-5
Sabana Westpunt.....	1.3	1.1	0.7	1.0	1.0	1.5	0.5	0.8	1.0	3.4	4.6	3.0	4.6	7-10
Sint Willebrordus.....	1.9	0.7	0.5	1.0	1.1	2.3	0.5	1.5	3.3	1.6	3.0	3.4	3.4	5-7
Willemstad.....	1.7	0.8	1.0	1.3	1.7	2.0	1.6	2.4	3.6	5.1	6.2	3.0	6.2	26-29
Bonaire:														
Boven Bolivia.....	0.6	0.6	0.4	3.5	2.0	3.0	0.3	2.2	0.8	2.3	4.7	2.1	4.7	3-5
Kralendijk.....	2.0	0.7	1.0	5.2	2.4	1.4	2.0	3.4	3.8	2.6	4.2	4.2	5.2	10-12
Rincon.....	1.8	1.0	0.0	2.0	0.6	1.3	1.0	3.4	4.0	2.7	4.1	2.8	6.6	8-10

FIGURE 46. MEAN NUMBER OF DAYS WITH SPECIFIED PRECIPITATION AMOUNTS

REGION AND STATION	AMOUNT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
	inches														
Northeast Group:															
Saint Martin:															
Juliana Airport.....	VE 0.04	14	9	8	12	13	12	14	16	13	14	14	15	154	4
Philipsburg.....	VE 0.01	14	12	10	10	12	14	15	15	16	13	16	16	163	18
Saint-Barthélemy:															
Gustavia.....	VE 0.01	16	13	12	14	15	15	19	10	18	18	18	21	198	11-13
Saba:															
Sint John.....	VE 0.01	11	6	6	7	9	7	10	10	11	10	12	11	110	8-9
The Bottom.....	VE 0.01	11	8	7	7	9	8	11	10	9	11	14	11	116	8-9
Windwardside.....	VE 0.01	9	7	6	6	10	8	10	10	9	9	12	10	106	7-8
Sint Eustatius:															
Oranjestad.....	VE 0.01	10	6	5	6	8	8	11	10	10	10	11	11	106	10
Guadeloupe:															
Anse-Bertrand.....	VE 0.01	7	5	5	5	7	6	7	8	8	8	10	7	83	8-10
Basse-Terre.....	VE 0.004	18	14	12	14	18	20	24	22	21	19	18	17	217	6
Camp Jacob.....	VE 0.004	23	18	20	20	23	25	27	26	23	24	22	23	274	10-22
Capesterre.....	VE 0.01	18	14	14	14	17	19	21	24	23	22	20	18	224	2-4
Clugny.....	VE 0.004	16	11	10	11	12	11	16	17	17	18	17	17	173	11
Deshayes.....	VE 0.004	20	16	14	14	15	17	22	19	19	18	14	17	205	6
Le Lamentin.....	VE 0.004	13	9	9	9	11	11	14	16	17	17	13	15	184	11
Neuf-Château.....	VE 0.004	22	16	17	21	21	21	26	33	23	26	24	23	262	5
Petit-Bourg.....	VE 0.004	15	11	11	12	16	16	19	17	21	21	18	17	194	11
Petit-Canal.....	VE 0.01	7	5	6	5	10	6	12	15	13	12	13	10	114	2-4
Pointe-à-Pitre.....	VE 0.01	20	15	15	16	20	20	24	22	22	22	23	23	241	11-13
Port-Louis.....	VE 0.01	7	9	9	8	11	8	13	16	11	10	8	8	118	2-4
Sainte-Rose.....	VE 0.01	18	14	13	13	15	19	18	18	18	18	21	18	203	8-9
La Désirade:															
Bale Mahault.....	VE 0.004	13	11	12	10	11	13	17	16	16	18	15	16	168	9
Marie-Galante:															
Grand-Bourg.....	VE 0.004	20	13	5	9	9	7	14	13	17	18	18	18	161	3
Pirouge.....	VE 0.004	8	6	5	4	6	6	8	9	9	10	10	8	89	11
Martinique:															
Basse-Pointe.....	VE 0.004	14	12	12	12	14	16	18	20	18	18	19	15	187	24
Deux-Choux.....	VE 0.004	25	20	22	21	24	27	28	26	25	26	25	27	296	23
Fort-de-France.....	VE 0.01	19	15	15	13	18	21	22	22	20	19	20	19	223	23
Gallon.....	VE 0.004	11	9	7	8	11	13	16	16	17	17	16	14	155	23
Le Carbet.....	VE 0.004	9	5	8	4	6	11	17	16	13	13	11	9	122	14
Le Lamentin.....	VE 0.01	21	18	17	19	21	24	27	25	23	24	21	24	264	10-12
Le Marin.....	VE 0.004	12	9	8	8	10	12	15	13	14	16	15	12	144	23
Les Anses d'Arlet.....	VE 0.004	9	8	6	9	8	12	15	13	15	12	10	9	126	5
Le Vauclin.....	VE 0.004	10	8	6	8	9	9	13	14	13	13	14	11	128	23
Morne des Cadets.....	VE 0.004	23	21	21	18	22	24	29	27	24	24	24	26	284	14
Petit-Bourg.....	VE 0.004	15	11	11	10	14	17	19	18	17	17	17	16	181	23
Quartier Ra- bouchon.....	VE 0.004	19	16	16	17	21	22	25	24	23	22	22	22	248	23

FIGURE 46 (Continued)

REGION AND STATION	AMOUNT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
	inches														
Southwest Group:															
Aruba:															
Lago Terrein.....	VE 0.04	8	3	1	1	2	4	4	7	3	4	6	7	50	4
Oranjestad.....	VE 0.01	8	5	2	1	2	2	4	3	4	7	12	12	62	10
Princess Beatrix															
Airport.....	VE 0.04	6	3	*	1	2	4	4	5	3	5	7	6	46	4
Santa Cruz.....	VE 0.04	6	2	1	1	2	3	2	5	2	3	7	6	40	4
Savanota.....	VE 0.04	9	4	2	1	2	2	6	5	3	5	7	8	54	4
Westpunt.....	VE 0.04	6	3	1	1	2	1	3	6	2	4	6	5	40	4
Curaçao:															
Hofje Abau.....	VE 0.01	5	3	2	2	2	2	4	4	2	5	10	10	51	8-10
New Port.....	VE 0.01	9	5	2	1	3	3	6	9	4	8	16	14	80	3-6
Noordkant.....	VE 0.04	7	2	2	1	2	3	4	4	2	4	8	7	44	4
Pleaman Airport..	VE 0.01	11	10	5	4	7	6	8	8	7	9	14	15	104	2-4
Sahana Westpunt..	VE 0.01	8	4	3	3	3	3	5	4	4	7	13	12	69	8-10
Savonet.....	VE 0.04	10	5	3	3	2	4	8	6	3	4	7	7	62	4
Sint Willebrordus..	VE 0.01	7	3	2	1	2	3	3	4	3	7	11	7	53	5-8
Willemstad.....	VE 0.04	10	4	4	2	2	4	5	5	5	8	12	15	76	11-16
Bonaire:															
Boven Bolivia....	VE 0.01	3	1	1	1	1	1	1	2	1	3	7	5	27	4-6
Kralendijk.....	VE 0.01	8	4	1	1	2	3	3	4	3	5	10	10	54	9-11
Rincon.....	VE 0.01	9	4	2	2	2	4	3	5	3	6	12	11	63	9-11
Washington.....	VE 0.04	3	2	1	*	2	2	4	4	1	3	7	7	36	4
Willemstoen.....	VE 0.04	5	3	1	*	2	1	5	4	2	1	7	8	39	2-3

* <0.5 day.

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E. Comments on principal sources

1. Evaluation

Recent climatological data for a limited number of stations in the Area were machine summarized by the Environmental Technical Applications Center, Air Weather Service. They provided the only available information on upper-air wind, pressure, and temperature, as well as on several other elements such as ceiling, visibility, surface wind, and combinations of these elements. The period of record is very short for some of these data. Sources 1, 3, 7, 8, 9, and 14 provided most of the data on precipitation, temperature, and thunderstorms; these data, in many cases, were available for reasonably long periods of record. A combination of tabular, descriptive, and graphical material were found in Sources 6, 10, 13, 15, and 16. Sources 2, 4, and 5 provided general descriptive information on the climate of this Area. Sources 11 and 12 provided information for amphibious operations.

2. List of sources

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LIST OF STATIONS

REGION AND STATION	LATI- TUD ^a	LONGI- TUD ^a	ELEVA- TION	REGION AND STATION	LATI- TUD ^a	LONGI- TUD ^a	ELEVA- TION
	" 'N	" 'W	feet		" 'N	" 'W	feet
Northeast Group:				Northeast Group (Continued):			
Saint Martin:				Martinique (Continued):			
Juliana Airport.....	18 02	63 08	0	Deux-Choux.....	14 44	61 06	1,998
Philipburg.....	18 01	63 04	**16	Fort-de-France.....	14 36	61 05	13
Saint-Barthélemy:				Gallion.....	14 43	60 58	16
Gustavia.....	17 54	62 52	171	Le Carbet.....	14 43	61 11	33
Saba:				Le Lamentin.....	14 36	61 00	16
Sint John.....	17 37	63 14	**180	Le Marin.....	14 28	60 53	16
The Bottom.....	17 38	63 15	**800	Le Précheur.....	14 48	61 14	25
Windwardside.....	17 38	63 14	**1,300	Les Anses d'Ariet.....	14 20	61 05	25
Sint Eustatius:				Le Vauclin.....	14 33	60 51	33
Oranjestad.....	17 29	62 59	133	Morne des Cadets.....	14 44	61 09	1,676
Guadeloupe:				Petit-Bourg.....	14 33	60 58	13
Anse-Bertrand.....	16 28	61 31	41	Quartier Rabuchon.....	14 40	61 04	1,312
Basse-Terre.....	16 00	61 44	59	Sainte-Marie.....	14 47	61 00	32
Camp Jacob.....	16 01	61 42	1,750				
Capesterre.....	16 03	61 34	**80	Southwest Group:			
Clugny.....	16 19	61 24	**75	Aruba:			
Doshayes.....	16 18	61 48	492	Lago Terroin.....	12 26	69 53	**125
Gouler.....	16 13	61 29	**25	Oranjestad.....	12 32	70 03	**25
Le Lamentin.....	16 16	61 38	**250	Princess Beatrix Airport.....	12 30	70 01	0
Le Moule.....	16 20	61 21	10	Santa Cruz.....	12 31	69 59	**150
Neuf-Château.....	16 05	61 36	820	Savaneta.....	12 27	69 57	**25
Petit-Bourg.....	16 12	61 36	82	Westpunt.....	12 36	70 03	**10
Petit-Canal.....	16 23	61 29	85				
Pigeon.....	16 09	61 47	278	Curacao:			
Pointe-à-Pitre.....	16 16	61 32	26	(root Sint Joris.....	12 08	68 51	**100
Port-Louis.....	16 25	61 32	10	Hofje Abau.....	12 18	69 07	**150
Sainte-Anne.....	16 14	61 23	**20	New Port.....	12 04	68 50	**25
Sainte-Rose.....	16 20	61 42	55	Noordkant.....	12 10	68 54	**150
Saint-François.....	16 15	61 17	16	Pleasant Airport.....	12 11	68 59	26
La Désirade:				Sabana Westpunt.....	12 22	69 10	**50
Baie Mahault.....	16 20	61 01	89	Savonet.....	12 21	69 07	**75
Grande Anse.....	16 18	61 04	7	Sint Willebrordus.....	12 13	69 05	**175
Marie-Galante:				Willemstad.....	12 06	68 56	75
Grand-Bourg.....	15 53	61 19	**75				
Pirogue.....	15 54	61 17	**125	Honolulu:			
Martinique:				Boven Holiva.....	12 12	68 13	**75
Ajoupa-Bouillon.....	14 50	61 08	836	Kralendijk.....	12 09	68 17	12
Basse-Pointe.....	14 52	61 07	164	Rincon.....	12 15	68 20	**150
				Washington.....	12 18	68 23	**250
				Willemstoren.....	12 02	68 14	**10

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

^a Approximate elevation.

2 NETHERLANDS ANTILLES AND FRENCH WEST INDIES

STATION LOCATIONS

● METEOROLOGICAL STATION

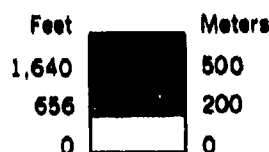
Locations are shown only for stations for which data are presented in text or tables.

DISCUSSION REGIONS

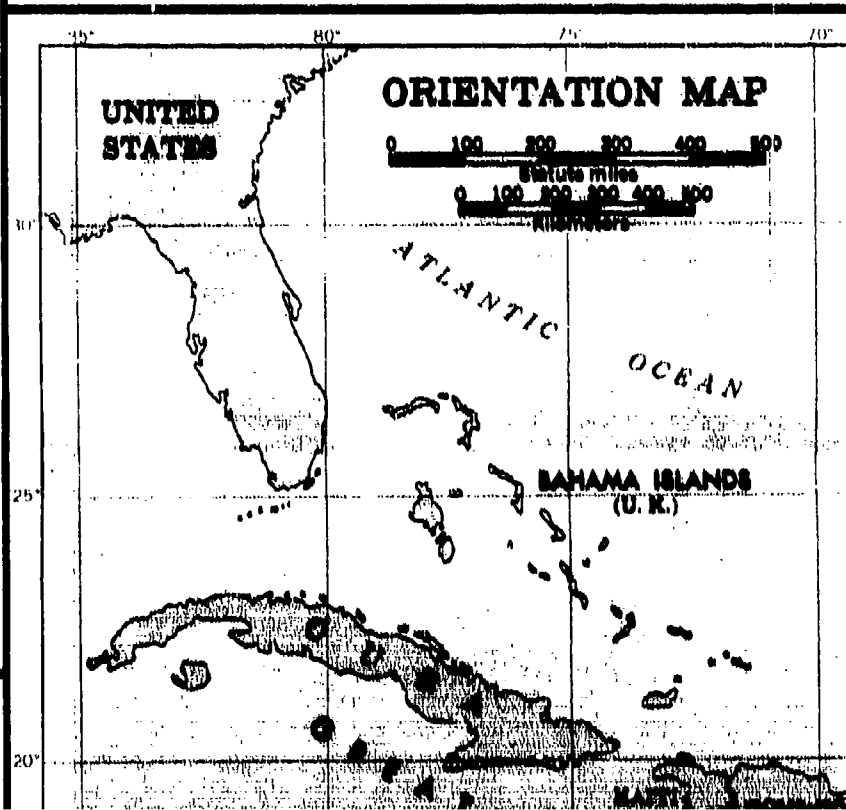
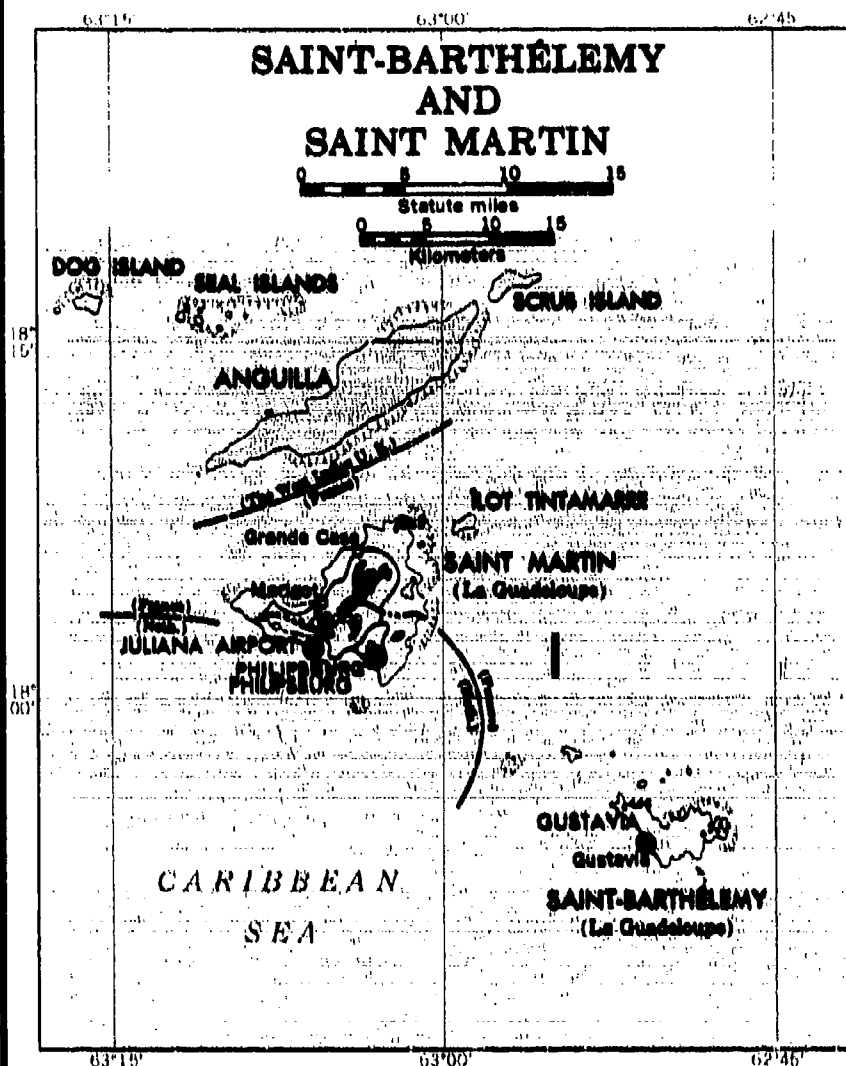
I NORTHEAST GROUP

II SOUTHWEST GROUP

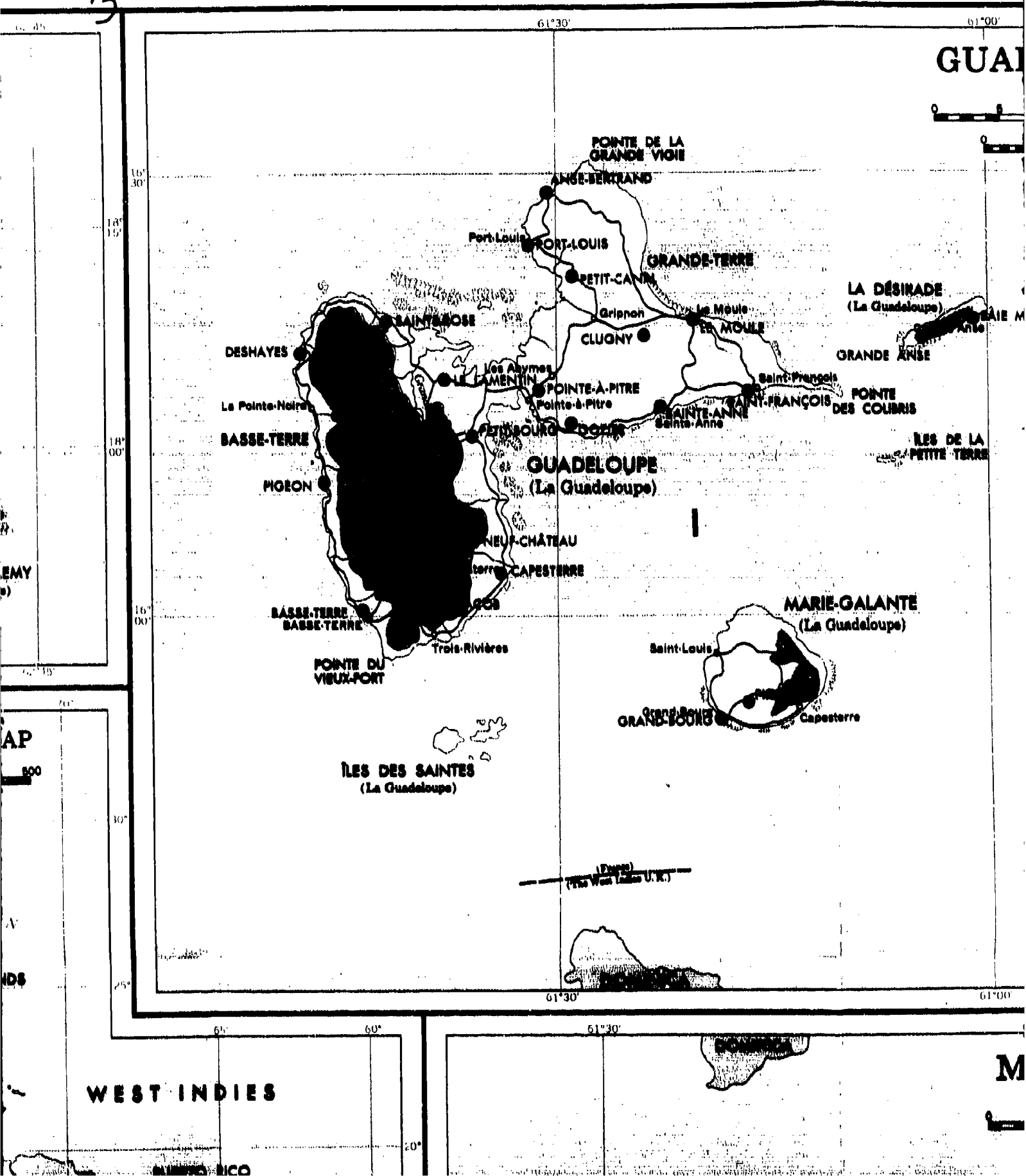
ELEVATIONS



• 423 Spot Height (feet)

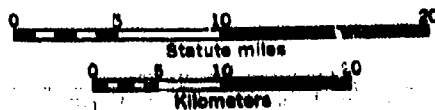


3



61°00'

GUADELOUPE



LA
GIE

ANDE-TERRE

Le Moule
LE MOULE
Saint-François
SAINT-FRANÇOIS
SAINT-ANNE
Sainte-Anne

LA DESIRADE
(La Guadeloupe)

MAHAULT

GRANDE ANSE

POINTE
DES COURBS

LES DE LA
PETITE TERRE

ATLANTIC
OCEAN

MARIE-GALANTE
(La Guadeloupe)

Int-Louis
Capesterre

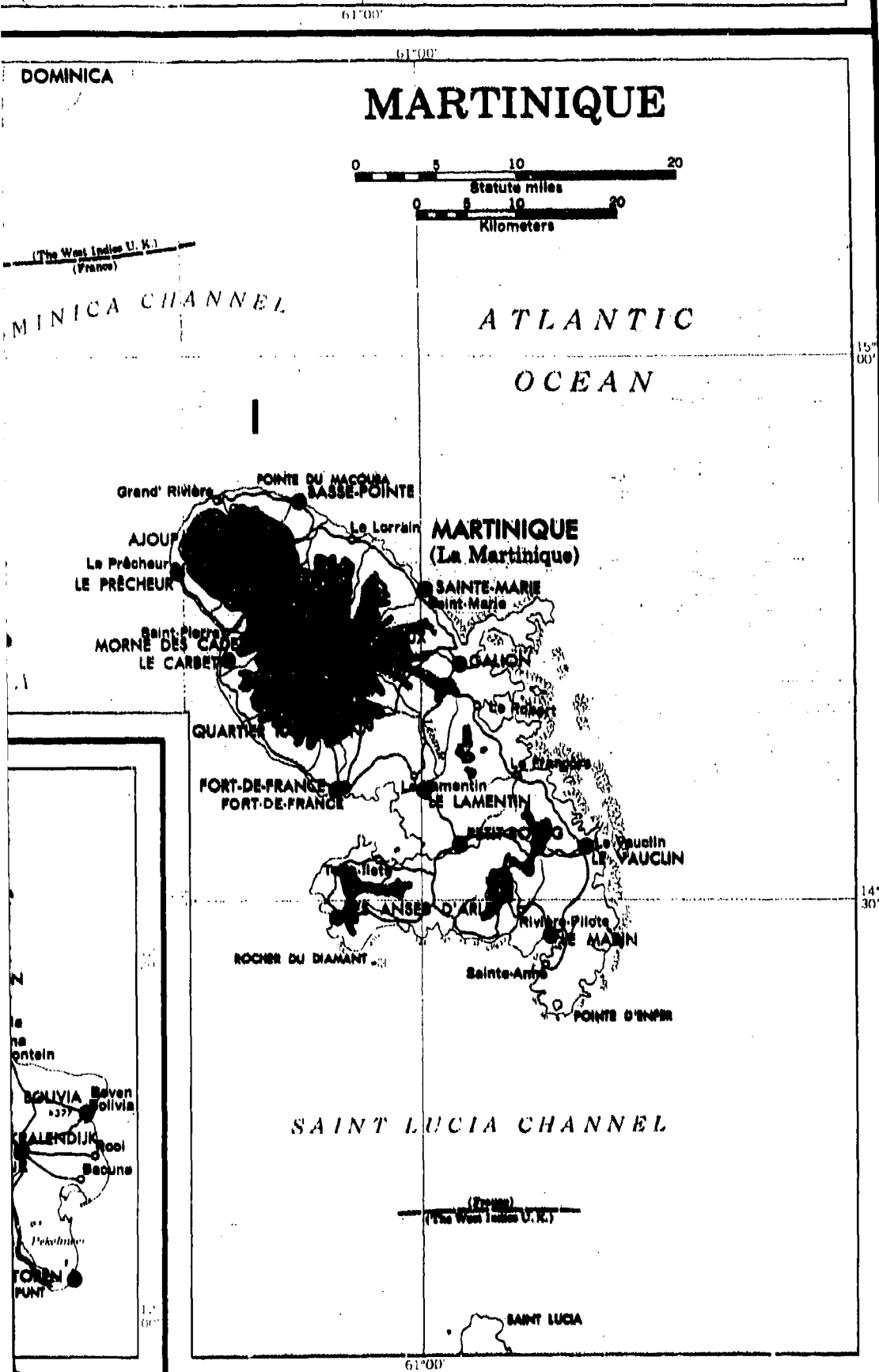
ICA

61°00'

DOMINICA

61°00'

MARTINIQUE



STATION LOCATIONS FIGURE 47

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