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CIA review dtd 27 Jun 1998

NIS 9

(1)

NATIONAL INTELLIGENCE SURVEY

SPAIN

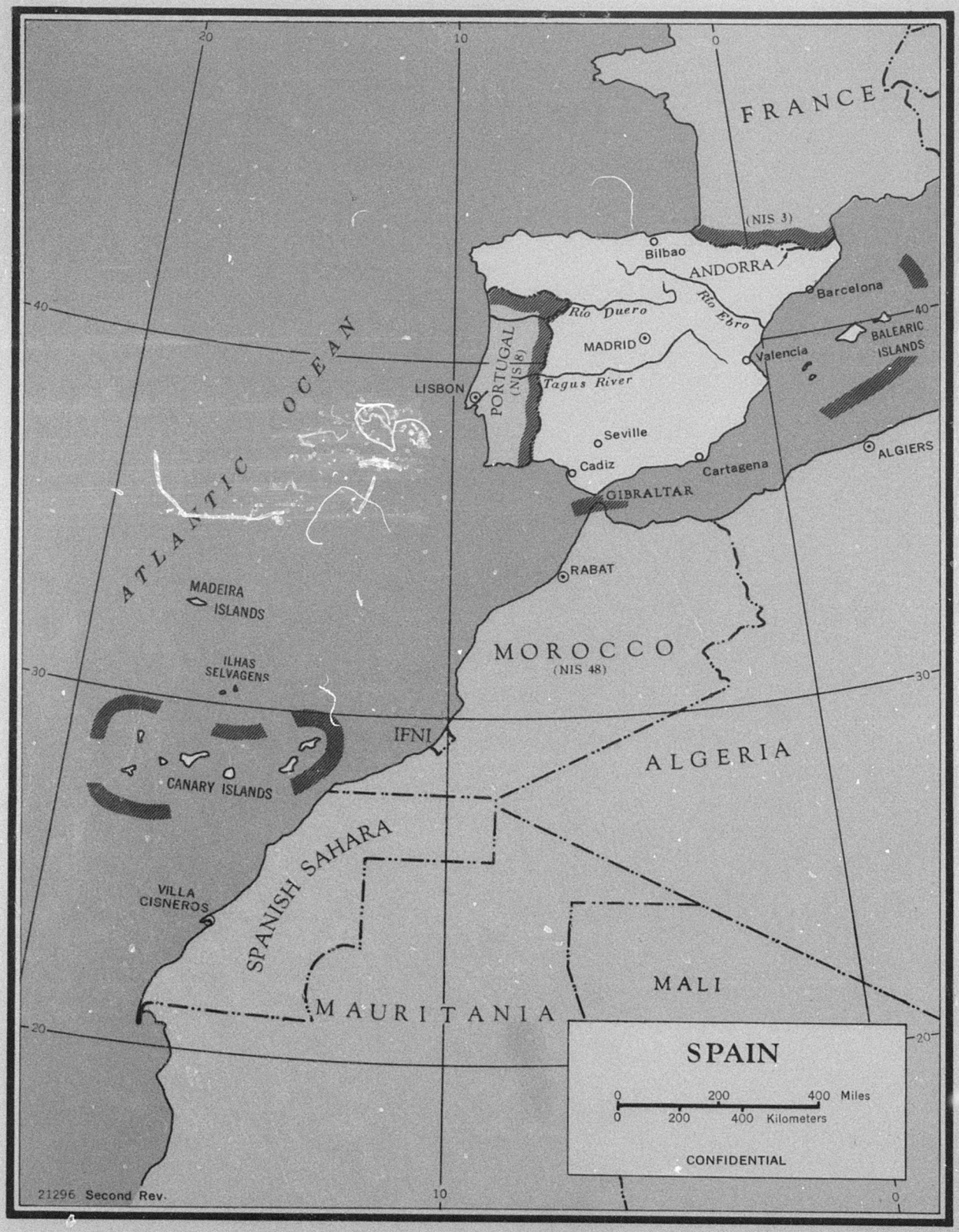
SECTION 23

WEATHER AND CLIMATE

JULY 1963

Section 23 on NIS 9 is issued under the NIS maintenance program. It and Section 23 on NIS 8 supersede the original Section 23 on NIS 8-9, dated December 1951, copies of which should be destroyed.

CENTRAL INTELLIGENCE AGENCY



CENTRAL INTELLIGENCE AGENCY
WASHINGTON, D.C. 20505

3 September 1980

Department of the Air Force
Headquarters 5 Weather Wing (MAC)
Langley Air Force Base, Virginia 23665

ATTN: IN (Captain Horn, 5901)

SUBJECT: Your Request of 24 August 1979 for Declassification of a Number of NIS Sections 23, Weather and Climate

Dear Captain Horn:

At last we can reply concerning the remaining Sections 23 listed in your subject letter, and we very much appreciate your patience while we set the interdepartmental machinery in motion for the review of these studies.

We now have contributor concurrence for the declassification of those sections noted on the attached list. You may use this letter as your authority to mark your copies accordingly.

There is one weather and climate section on your list, however, that we feel must remain classified at the CONFIDENTIAL level. It is:

NIS 3 (France) Sec 23 dated October 1952

Will you please mark this one to indicate that we are extending classification under paragraph 1-301(b) of Executive Order 12065 (protection of foreign government information). The next review will be in 1990.

We believe we have now covered all the sections listed in your letter, and, again, we thank you for your patience. If we can be of further service to you, please let us know.

Sincerely,

Donald M. Simonds
Chief, Classification Review Division
Office of Information Services
Central Intelligence Agency

DOCUMENTS PRODUCED AFTER OCTOBER 1959 (Sections 23, Weather and Climate)

Country	NIS Number	Date
Albania	20	10/63
Australia	96	4/60
Belgium	5	11/61
Burma	38	1/67
Communist China - Part III North China	39A	6/64
Communist China (Northeast China	39A-II	5/66
Communist China (South China, Hong Kong & Macao)	39A-IV	2/66
Czechoslovakia	18	7/66
Denmark	7	1/65
East Germany	13A	4/65
Ethiopia and the Somalilands	55	4/65
Finland	12	10/65
Greece	24	1/61
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Hungary	19	4/64
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India and Pakistan	35-36	12/66
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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.

23. *Weather and Climate*

A. General weather and climatic conditions

1. Introduction

The NIS 9 Area is composed of the Spanish mainland, the tiny republic of Andorra (treated herein as part of northern Spain), the Balearic Islands in the Mediterranean, and the more distant Canary Islands off the northwest African coast. As a result of its great extent the Area exhibits a wide variety of climatic conditions, ranging from cold, rainy, and cloudy weather on the north coast of Spain in winter to warm, dry semitropical weather in the Canary Islands throughout the year. Climatic conditions on the mainland coasts and on the two island groups are strongly influenced by the adjacent seas in which average temperatures range from about 50° F. in winter along the north coast of Spain to about 75° F. in summer around the Canary Islands. The central highlands of the mainland have a predominantly continental type of climate, modified at times by oceanic influences. These highlands are uncomfortably cold, damp, and windy in winter, with heavy snows in the northern mountains; in summer they are hot and dry.

The primary climatic controls in Spain, other than the oceanic influences, are its isolation both by distance and intervening mountains from the influences of the Eurasian Continent, the succession of migratory lows, bringing cloudiness and rain, which pass near or along the northern border, the strong Bermuda high-pressure cell usually overlying the Area, the peripheral mountains which restrict moist airflow into the interior, and the enhanced radiation on the high inland plateau, which magnifies both nighttime cooling and daytime heating. There are four primary controls in the Balearic Islands. Because of the location of these islands in the warm Mediterranean Sea and their small size, the oceanic influence is dominant. In addition, the mountains in southern Europe shield these islands from continental influences to the north, migratory lows occasionally affect the islands in winter, and the extension eastward of the Bermuda high in summer brings to the islands clear skies and drought conditions. The primary controls over weather in the Canary Islands are not as complex. This region is located on the southeastern edge of the Bermuda high-pressure cell where rainfall is light almost all year. Because of their small size, oceanic influences are very strong. The vast continental desert of Africa to the east and the relatively cool ocean current which flows southward through the region are also important.

Temperature conditions vary markedly in the Area. Conditions over the coasts and islands are moderated by the sea, while the interior of Spain experiences pronounced seasonal variations. Winters in the coastal lowlands, particularly on the southern coast, are relatively mild and the summers warm to hot. The interior highlands, on the other hand, are moderately cold in winter, and summers are characterized by hot, sunny days and relatively cool nights. The Balearic Islands have temperatures comparable to those along the eastern coastal lowlands, although the interior highlands of Majorca are often chilly in winter. Seasonal temperature contrasts in the Canary Islands are not pronounced; winters are very mild and summers are warm. Precipitation, both in frequency and amount, is closely related to the flow of maritime air onto the coasts and across the principal mountain systems. The Cordillera Cantabrica along the north coast and, to a lesser extent, the Pyrenees in the northeast impede the flow of moist air from the north, while the mountains of Portugal impede the flow from the west. These and other peripheral mountains in the south and east contribute to the general aridity of Spain. Annual precipitation amounts, except along the north coast and in the foothills of the Pyrenees, are below 20 inches over much of the Area and are thus about equal to amounts in semiarid South Dakota. Most of the precipitation occurs during autumn, winter, or spring and is associated with migratory lows from the North Atlantic. During summer, when the Mediterranean is dominated by higher pressure and the frequency of migratory lows is least, the rainfall is at a minimum almost everywhere, and most of the interior, the southern and eastern coasts, and the islands receive less than an inch per month in July and August. Average relative humidity is quite high in this NIS Area except over the high interior plateau during summer afternoons when values of 40% or less are not uncommon. The interior plateau also experiences very high relative humidities, with averages of 85% or more during the early morning in winter. Averages along the

coasts are, for the most part, between 55% and 85%. Cloudiness is not excessive over mainland Spain or the outlying islands. Overcast skies are most likely to occur along the north coast of Spain in winter, when low-pressure centers frequently affect this region. Average cloudiness along the north coast is about 65% to 75% in winter and 55% to 70% in summer. Cloudiness over the other regions is somewhat less during winter and considerably less during summer, except over the Canary Islands where winter averages are quite high. Ceilings below 2,000 feet are generally observed 15% to 25% of the time in all seasons along the north coast and, surprisingly enough, even more often in the Canary Islands during the winter half year. In almost all other sections, low ceilings in winter are much less frequent. Except along the north coast, ceilings are seldom below 2,000 feet in summer.

Visibility conditions are generally good over Spain and the Balearic and Canary Islands, much better than over central Europe where fog is common. Over the interior, however, fog is the principal restriction and is most likely to occur during the early morning hours. Along the coasts, particularly the north coast of Spain, poor visibilities sometimes attend the passing of a low-pressure center. Over the Spanish mainland in summer, dust haze reduces the visibility to 6 miles or less from time to time.

The Area is characterized by varied topography. The Cordillera Cantabrica borders the north coast of Spain while the Pyrenees separate Spain and France. The central part of the Area is a plateau, interspersed with small mountain ranges. The low coastal strip is relatively narrow on all coasts. Majorca, the largest of the Balearic Islands, is quite hilly and has some low mountains; Minorca and Iviza are hilly, with a few elevations over 1,000 feet. The Canary Islands are also mountainous, the exposed summits of volcanic cones.

For discussion purposes the Area has been divided into five regions, as shown on the map of station locations (FIGURE 53). These regions are based primarily on consideration of temperature, precipitation, and topography. Region I, the Northern Coast, Region II, the Interior, and Region III, the Southern and Eastern Coasts, pertain to the Spanish mainland. The Balearic Islands constitute Region IV, and the Canary Islands Region V.

The Northern Coast Region extends for the most part 10 to 30 miles inland and includes to some extent the foothills of the Cordillera Cantabrica. This region is cloudy and humid, and it is cooler in summer, warmer in winter, and wetter in all seasons than the large Interior Region. Gale-force northerly winds occasionally invade the region after the passage of a low-pressure system. Rainfall is frequent and often heavy, and snow falls on several days each winter.

The Interior Region comprises all except the narrow coastal regions of mainland Spain. The interior is, for the most part, a high plateau lying between 1,000 and 3,500 feet. It is compartmented by a number of low and high mountain ranges, with many peaks over 6,000 feet. There are several large valleys below 1,000 feet. Significant temperature differences exist between the low interior valleys and the higher mountain slopes. In summer the low valleys are often uncomfortably hot and humid during the day and warm at night. The highlands are also hot but less humid during the day while the nights are comfortably cool. Except in the northern band of mountains, the interior is generally arid or semiarid, with the driest period in summer. During winter, snow is uncommon in the lowlands and generally melts within a day or so after it falls; however, on the higher slopes in northern Spain, the snow cover may persist through the winter half year.

The Southern and Eastern Coasts Region extends inland 10 to 30 miles and includes the foothills and, in some sections, higher portions of the coastal mountain ranges. This region experiences generally mild winters and warm to hot summers. The rainfall is generally light, with a summer drought. Snow occurs only a few days each winter on the east coast and seldom on the south coast.

The Balearic Islands Region is composed of four large islands and several smaller ones situated in the Mediterranean, the closest about 50 and the remotest about 120 nautical miles east of the Spanish coast. Mountains on Majorca retard the flow of air across the island, particularly that from the northwest; in contrast strong winds tend to sweep across the less mountainous islands of Minorca, Iviza, and Isla de Formentera. Winters are generally mild with light to moderate precipitation, and summers are dry and warm except that the interior lowlands of Majorca are hot in summer.

The Canary Islands Region, located between 27° and 30° north latitude, comprises seven main islands and six islets, the easternmost about 70 and the westernmost about 240 nautical miles west of the coast of Africa. Tenerife, the largest of the seven, is about 55 miles long and 35 miles wide and contains a peak about 12,000 feet high. These islands have a subtropical climate with desert conditions except for light rainfall on windward slopes of the larger islands. Droughts are occasionally severe over the less mountainous islands. Winters are mild except at elevations above 3,000 feet.

Throughout this Section the seasons are defined as winter (December, January, and February),

spring (March, April, and May), summer (June, July, and August), and autumn (September, October, and November). The term winter half year is occasionally used and refers to the period November through April, while summer half year refers to the period May through October.

2. Climatic controls

The climate of this NIS Area is determined primarily by its location on the eastern edge of the North Atlantic where, because of the prevailing westerly wind, the moderating oceanic influence is significant. Migratory lows imbedded in this westerly flow periodically reach the Area and cause squally weather. After the passage of each low, pressures rise and the weather returns to a more settled condition. Because of their persistence, these migratory systems appear on mean pressure charts as a low centered near Iceland and a high centered near the Azores. Seasonal variations in pressure over Africa, although of secondary importance, facilitate the transport of dry, often hazy air from the Sahara to mainland Spain and the Balearic and Canary Islands. The Spanish mainland has an area large enough to develop a continental type climate of its own with pronounced seasonal variations. The peripheral mountains aid in this development in that they limit the flow of maritime air toward the interior and thereby contribute to the general aridity. In addition, they shelter interior and southern Spain from the cold air masses to the north. The location in extreme southwestern Europe also helps to isolate the Area.

a. GENERAL CIRCULATION — The general circulation across this NIS Area is determined by the interaction between two major pressure systems, the Icelandic low and the Bermuda high. FIGURE 1 shows that in January the Area lies on the eastern edge of the Bermuda high with a weak low over the west central Mediterranean; the Icelandic low is situated between the southern tip of Greenland and Iceland. This pressure distribution is representative of winter and is responsible for the prevailing northwesterly airflow across Spain and the Balearic Islands. The normal northeasterly flow across the Canary Islands is a part of the trade-wind circulation associated with the Bermuda high. During summer, pressure gradients are less pronounced and the circulation is relatively weak (FIGURE 2); the Icelandic low weakens and the low over the Mediterranean disappears. Pressures in the Bermuda high remain about the same; the east–west axis, however, is farther north in summer. The airflow across Spain and the Balearics continues from the northwest, while the flow across the Canaries in summer is almost directly from the north.

b. MIGRATORY PRESSURE SYSTEMS AND FRONTS — The general circulation as depicted in FIGURES 1 and 2 is representative of average conditions. Day-to-day variations in the weather are associated with the migratory low-pressure systems which approach the Area from the North Atlantic. Many

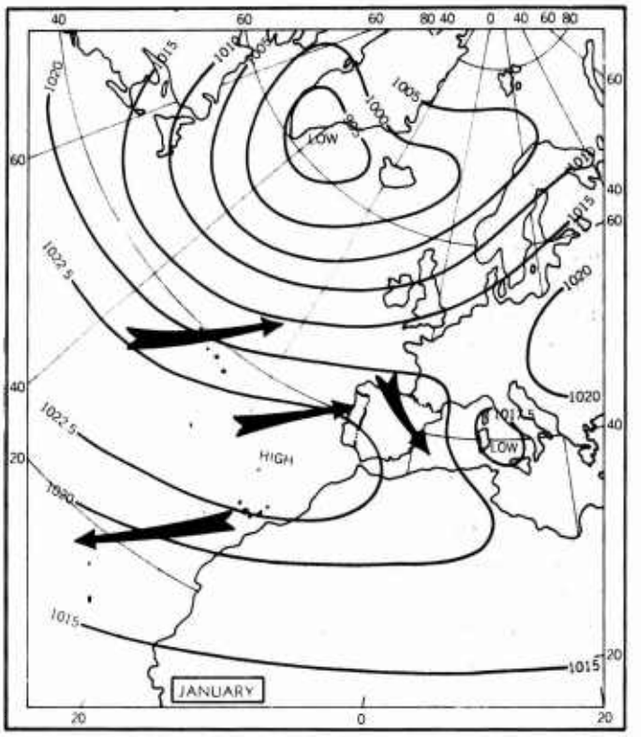

FIGURE 1. MEAN SEA-LEVEL PRESSURE (MILLIBARS) AND GENERALIZED SURFACE AIRFLOW, JANUARY

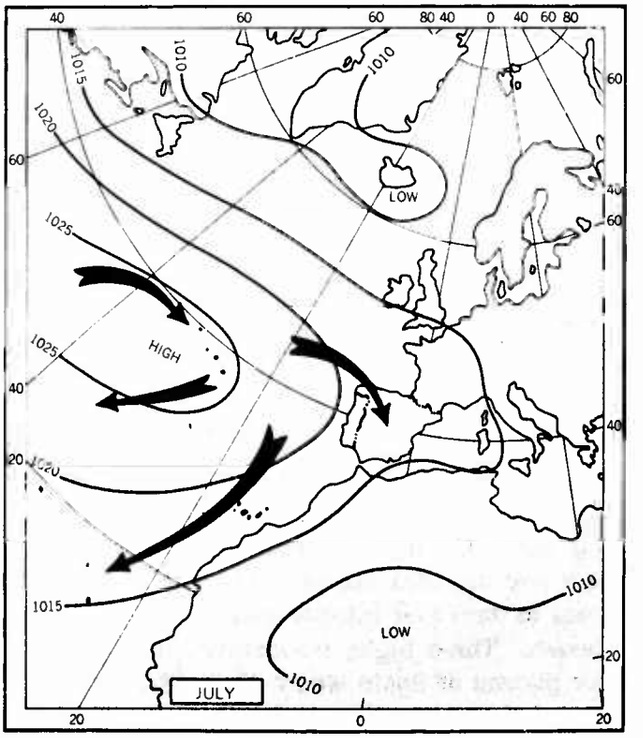

FIGURE 2. MEAN SEA-LEVEL PRESSURE (MILLIBARS) AND GENERALIZED SURFACE AIRFLOW, JULY

of these depressions cross the neck of the Iberian Peninsula from the Bay of Biscay to the Gulf of Lion, and a small number reach southern Spain and the Balearic Islands by way of the Strait of Gibraltar. The mountains of Portugal and northwestern Spain generally block those lows which would otherwise reach central Spain directly from the west. The Canary Islands lie south of the path normally taken by these depressions. However, colder air sweeping southward after the passage of a low to the north frequently causes a strengthening of the trade winds across the Canaries, accompanied by showers. Many of the disturbances which reach the Area are secondary storms which form on the cold front trailing from a more pronounced low-pressure system to the north. Lows in this category frequently intensify over the sea between the Balearic Islands and Italy. The intensification is usually associated with an outbreak of colder air from the north. The low deepens as the cold air flows out over the warmer Mediterranean. Evidence that this phenomenon occurs rather frequently can be seen on the mean pressure chart for January (FIGURE 1,) which shows a low-pressure system over the Tyrrhenian Sea to the west of Italy.

The frequency of all depressions reaches a maximum in winter. During summer when the Mediterranean is dominated by relatively high pressures, migratory lows from the North Atlantic usually affect only the north coast of Spain. In all seasons, the lows which reach the north coast cause the most pronounced weather changes. As the low approaches the coast the winds generally shift to the south, high clouds appear, and banks of lower clouds tend to form over the ridges and southward-facing slopes. After the low passes eastward, a northerly flow of cold maritime air causes overcast skies and rain along the north coast and the windward-facing slopes of the coastal ranges. Clouds also form over the northward-facing slopes in central Spain while the lee slopes in southern Spain experience clearing skies. The lows which form over the western Mediterranean tend to remain stationary at times, causing a northerly wind to persist for several days over eastern Spain and the Balearics.

Migratory highs or anticyclones normally replace each low as it moves eastward. Clear skies and good visibility are generally present in the high-pressure area except that early morning fog tends to form over interior valleys as the wind decreases. These highs frequently reach the interior plateau of Spain where they often persist for several days. At other times the lows and highs follow one another in rapid succession, particularly during the winter half year. During summer the heating of the high plateau frequently produces a weak, persistent low.

c. AIR MASSES — Air masses affecting this NIS Area range from polar maritime along the north coast of Spain to tropical maritime in the Canary Islands. Continental air masses are also observed over the Spanish mainland, varying from tropical continental in summer to polar continental in winter. Hot, dry tropical continental air masses from the Sahara occasionally reach the Spanish mainland and even the Canary Islands in summer.

Polar maritime air is found chiefly along the north coast and over the northern slopes of the Cordillera Cantabrica and to a lesser extent over the interior. It arrives with the passage of a low-pressure system. This air mass is ushered onto the coast by strong squally winds which bring overcast skies and moderate to heavy precipitation. The interior slopes are frequently shrouded by dense clouds. Flowing southward across Spain it brings cloudy to partly cloudy weather to the northern highlands, with occasional heavy snows in winter which may block the roads leading through the higher mountains. By the time this air mass reaches southern Spain it is appreciably modified, producing partly cloudy and even clear skies as it flows downslope toward the Mediterranean. As the colder air moves out over the Mediterranean it again assumes maritime characteristics and causes cloudy weather and an occasional rain squall over the Balearic Islands. On rare occasions the polar maritime air may even reach the Canary Islands, where, although greatly modified, it brings showery weather conditions.

At times modified polar maritime air reaches Spain from the southwest by way of the Strait of Gibraltar. It is most frequently observed in the lowlands of southwestern Spain, particularly in the Río Guadalquivir valley. This modified polar maritime air is appreciably warmer than that often present along the north coast; at times it causes squally weather conditions in southwestern Spain. Polar continental air masses occasionally reach Spain from the northeast and bring unusually cold weather to the central plateau. Because of its large areal extent, the high plateau of Spain tends to be a source region for moderately cold polar continental air in winter. This local air mass frequently develops out of polar maritime air reaching Spain from the North Atlantic. The modified air mass is quite cold and humid, and, because of the generally strong winds, outdoor activity on the high plateau is often unpleasant. During summer the high plateau tends to become a source region for tropical continental air. This air mass is hot and dry with generally clear skies and scanty precipitation. At times tropical continental air reaches Spain from

the Sahara and accentuates the usual summer drought conditions.

d. TOPOGRAPHY — The mountains, particularly the peripheral mountains of mainland Spain and those in Portugal, have a pronounced effect on the climate of the Area. Although maritime air often flows toward the Spanish mainland, the windward slopes of the coastal mountains receive most of the available precipitation, so that the interior is quite dry; however, winter snows on the interior ranges in the north are occasionally heavy. The northern mountains also greatly influence temperatures because they are barriers to most of the cold air masses moving southward from the Eurasian continent.

The mountains on Majorca in the Balearic Islands are also important climatically in that the north and west slopes receive most of the precipitation, while the area to the east and south of the mountains is relatively dry. The mountains also reduce the average wind speed across Majorca. In comparison, the smaller and lower island of Minorca is quite windy, with the precipitation more evenly distributed.

Mountains in the Canary Islands are also significant climatically. Slopes facing the moisture-bearing trade winds receive far greater amounts of precipitation than the southern or lee slopes. The less mountainous of the Canary Islands receive little precipitation and lack even an adequate supply of drinking water.

A second topographical effect is associated with the generally high plateau of interior Spain. Temperatures generally decrease about 3° F. for every 1,000 feet increase in elevation. The high plateau of central Spain is therefore colder than the coastlands. The greatest contrast between coast and interior occurs in winter when the plateau is on the average 10 to 15 Fahrenheit degrees colder than the coast.

e. LATITUDE AND OCEANIC EFFECTS — Latitude effects on temperature vary significantly from the north coast of Spain to the Canary Islands. The length of the day along the north coast is close to 9 hours in midwinter and 15½ hours in midsummer, as compared to 10 hours and 14 hours respectively in the Canary Islands. The seasonal variation in the intensity of solar radiation and temperature is therefore pronounced over Spain where the interior plateau is cold in winter and hot in summer. Oceanic effects on the coasts and islands are also quite pronounced, reaching a maximum in the Canary Islands Region where they combine with latitudinal effects to produce an equitable climate with small seasonal temperature variations. A secondary oceanic effect results from the Canary Current, which flows southward through the Canary Islands. This current, about 2 to 4 Fahrenheit degrees cooler than the average water temperature for the latitude, has a cooling effect on the coasts of these islands. The oceanic effect over mainland Spain is mostly limited to the coasts where the seasonal and diurnal variations in temperature are small compared to those over the interior. The north coast, in particular, is affected by the oceanic winds. As a result, this region receives moderate to heavy precipitation in all seasons, with relatively warm winters and cool summers.

3. Special phenomena

This NIS Area experiences a number of special winds which have both local and general significance. The *tramontana* is a cold, often gusty, wind from the north or northeast, frequently observed in the Río Ebro valley in northeast Spain, where in winter it is associated with dry cold weather. It is also observed over the Balearic Islands, where it is generally gusty and at times preceded by rain squalls; it may persist for days or recur intermittently for weeks. The cold air frequently reaches the Balearics by way of the Rhone valley where it is referred to as the *mistral.*

The *vendaval* is a strong southwest wind observed along the southern coast of Spain. These winds are relatively moist and are frequently accompanied by brief rain squalls. They occur immediately in front of those lows which enter the western Mediterranean across the southern tip of Spain. They are most likely to occur during the winter half year and are often the source of the beneficial spring rains.

The *levante* is a moderate to fresh east or northeast wind which occurs along the Mediterranean coast of Spain. It produces mild, very humid, overcast, and rainy weather and occurs with a depression over the western Mediterranean Sea. It is rare in summer and most frequent in February through May and in October through December.

The *leveche* is a southerly or easterly wind, unpleasantly hot and sand- and dust-laden, observed along the south coast and over the southwestern plains. It blows in front of a depression on the southeast coast of Spain, and is frequently an extension of the *sirocco,* a hot dry wind from the Sahara. In summer it may pick up moisture crossing the Mediterranean, becoming humid and sometimes bringing rain; it is then often called the *solano.*

The *galerne* is a strong, often gale-force, northwest wind observed along the north coast of Spain after the passage of a low-pressure system. This wind is generally accompanied by rain squalls and occasionally by snow showers in winter, the season of maximum frequency. In July through September, when during the afternoon the contrast between the cool ocean and the warm land is greatest, the galerne frequently strikes ab-

ruptly, causing a sharp drop in temperature, at times accompanied by rain squalls and even thunder.

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 may be 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

Operations in this category are primarily dependent on the amount and type of cloud cover, on the intensity of turbulence and icing, and on the direction and strength of upper-air winds. The Area as a whole experiences a relatively high frequency of conditions which are favorable for both high- and low-level visual operations. The summer season in particular is generally favorable. The northern coast of Spain and the adjacent Cordillera Cantabrica have the least favorable conditions, particularly in winter. The interior mountain ridges also experience adverse conditions at times, principally during the winter half year.

a. CLOUDINESS — The amount of cloudiness varies appreciably across the Area. The northern coast is frequently overcast and sky conditions are comparable to those experienced farther north in Europe. In contrast, the south coast and southern interior portions of Spain are least cloudy. Seasonal variations are relatively small along the north coast of Spain and pronounced in remaining sections, with the maximum generally in winter and the minimum in summer. The seasonal and areal variations in mean cloudiness are shown graphically in FIGURE 3 and in tabular form in FIGURE 26. In the cloudy Northern Coast Region the average cloudiness in winter is close to 65% in the morning and 75% near midday. Average cloudiness is equally high over the northern mountains but decreases markedly south of the mountains. In winter, southern Spain is the least cloudy portion, with average daily cloudiness mostly 40% to 55%. The Balearic Islands are slightly less cloudy than northern Spain in winter as suggested by the data for Mahón/San Luis Airport where averages range from about 55% to 70%. The Canary Islands are relatively cloudy in winter, with averages at Santa Cruz close to 65% to 70%. Summer is the least cloudy season. Averages are highest along the north coast where they range from about 55% to 70% in July and August. Over the remaining parts of the Area, except at some coastal stations, daily averages in July and August are generally below 30% and even below 20% at several locations. Diurnal variations are not pronounced.

The average number of clear and cloudy days, shown graphically in FIGURE 4 and in tabular form in FIGURES 27 and 28, gives an indication of the frequency of days favorable for visual and concealed air operations. The data show that in winter the number of clear days when visual operations are possible is mostly below 10 per month in the Northern Coast Region. Over the remainder of mainland Spain, averages are for the most part between 10 and 20 days. The Balearic and Canary Islands experience relatively few clear days in winter, the average number being close to 5 per month. Cloudy days are relatively frequent in winter. Approximately two-thirds of the days fall in this category along the Northern Coast Region. Over the remaining portions of mainland Spain the average is lower, between one-third and one-half the days. Cloudy days are also frequent in the Balearic and Canary Islands where one-half to two-thirds of the days are cloudy. During July and August the average number of clear days is quite high even along the north coast where close to one-third of the days fall in this category. Over the remaining parts of the Area, including the Balearic and Canary Islands, one-half to three-fourths of the days are clear in July and August. The average number of cloudy days is therefore small, generally less than 5 in July and August except along the north coast where the average is about 15 to 20 days.

b. THUNDERSTORMS AND TURBULENCE — Because there is so little moisture in the air over most of the Area, the number of days with thunderstorms is relatively small (FIGURE 29). Annual averages range from a maximum of 45 days per year to 10 or below at some coastal and northeast interior stations. The annual average at a majority of the stations in Spain lies be-

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.

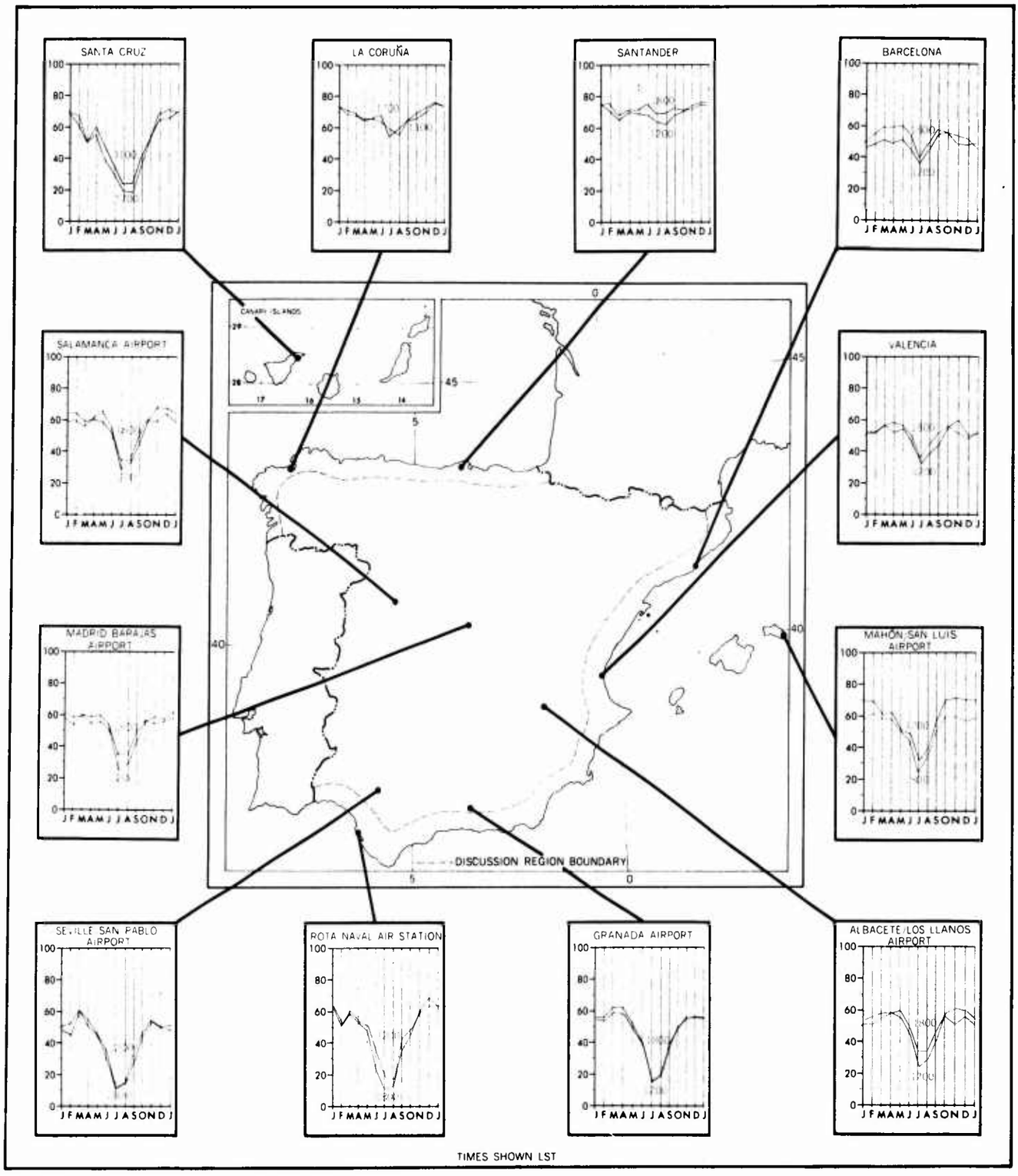

FIGURE 3. MEAN CLOUDINESS (%) NEAR MIDDAY AND EARLY EVENING. (For tabular data see FIGURE 26.)

tween 20 and 30 days. The average recorded at Washington, D.C., 36 days, is appreciably greater. Thunderstorm frequencies in Spain are thus more nearly equal to those of the arid southwestern United States. The Balearic Islands have about 20 days per year with thunderstorms, while the Canary Islands have 5 to 10 days annually. Seasonal variations are fairly regular, with the highest averages generally in May through September when many stations record thunderstorms on 6 to 8 days per month; however, monthly averages at most locations lie between 2 and 5 days. Lowest frequencies occur in November through February when many places record no activity and others

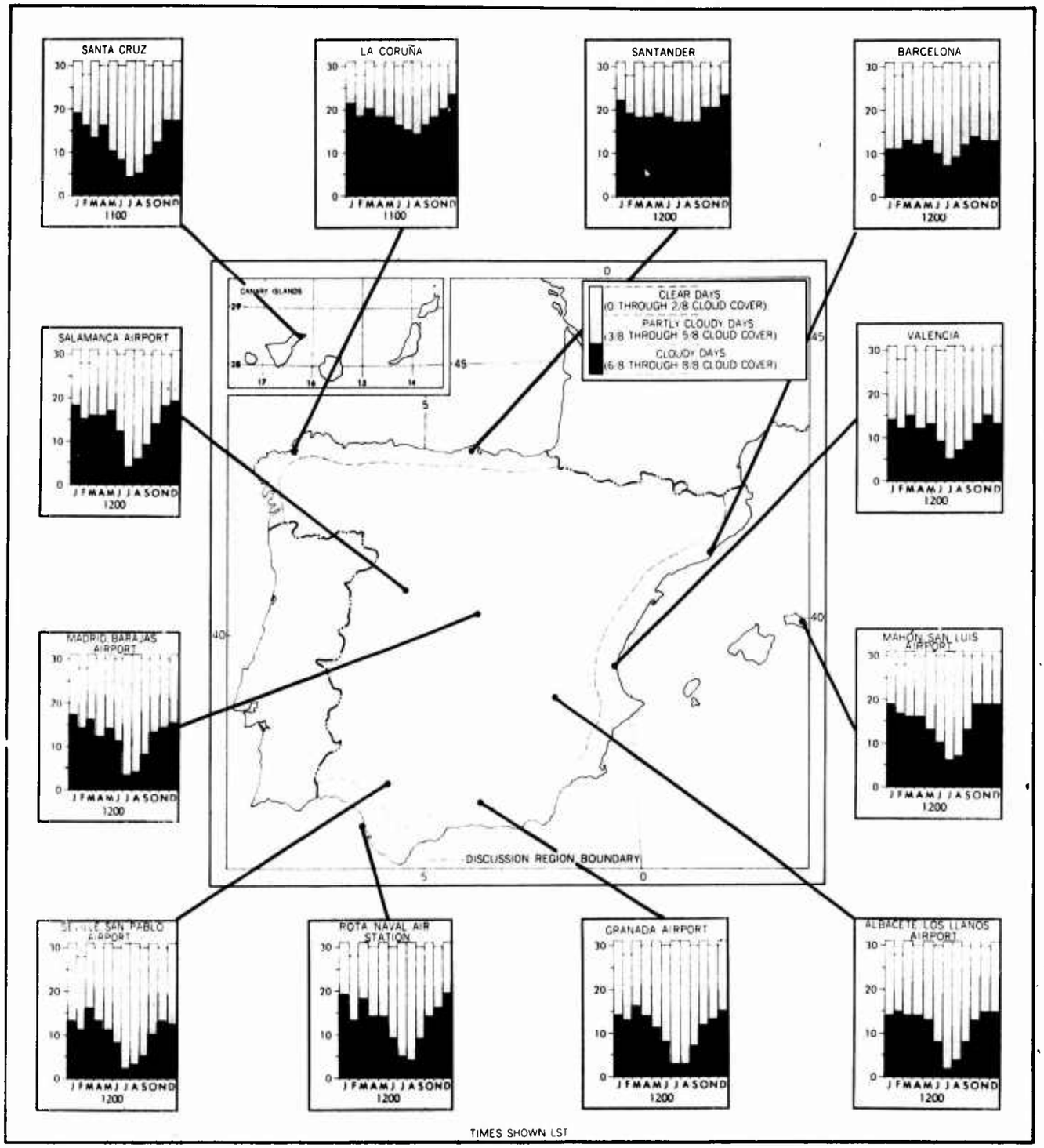

FIGURE 4. MEAN NUMBER OF CLEAR, PARTLY CLOUDY, AND CLOUDY DAYS NEAR MIDDAY.
(For tabular data see FIGURES 27 and 28.)

mostly 1 or 2 thunderstorm days per month. A majority of these thunderstorms occur during the afternoon and contain turbulence which extends up to 20,000 feet or more. Thunderstorms which occur at other times of the day are generally associated with active cold fronts and are most likely to occur in northern Spain. Turbulence in these frontal storms extends along the entire cold front and may be locally severe. Turbulent air conditions, however, are not limited to thunderstorms and may occur on any sunny afternoon with or without the visual evidence of cumulus clouds. While the thunderstorm turbulence occurs principally during the summer half year, another type of turbulence, orographic in nature, is encountered during the winter half year. This type of turbulence occurs in the cold air which rushes southward across Spain after the passage of a low-pressure system. The turbulence may be quite severe over the mountain

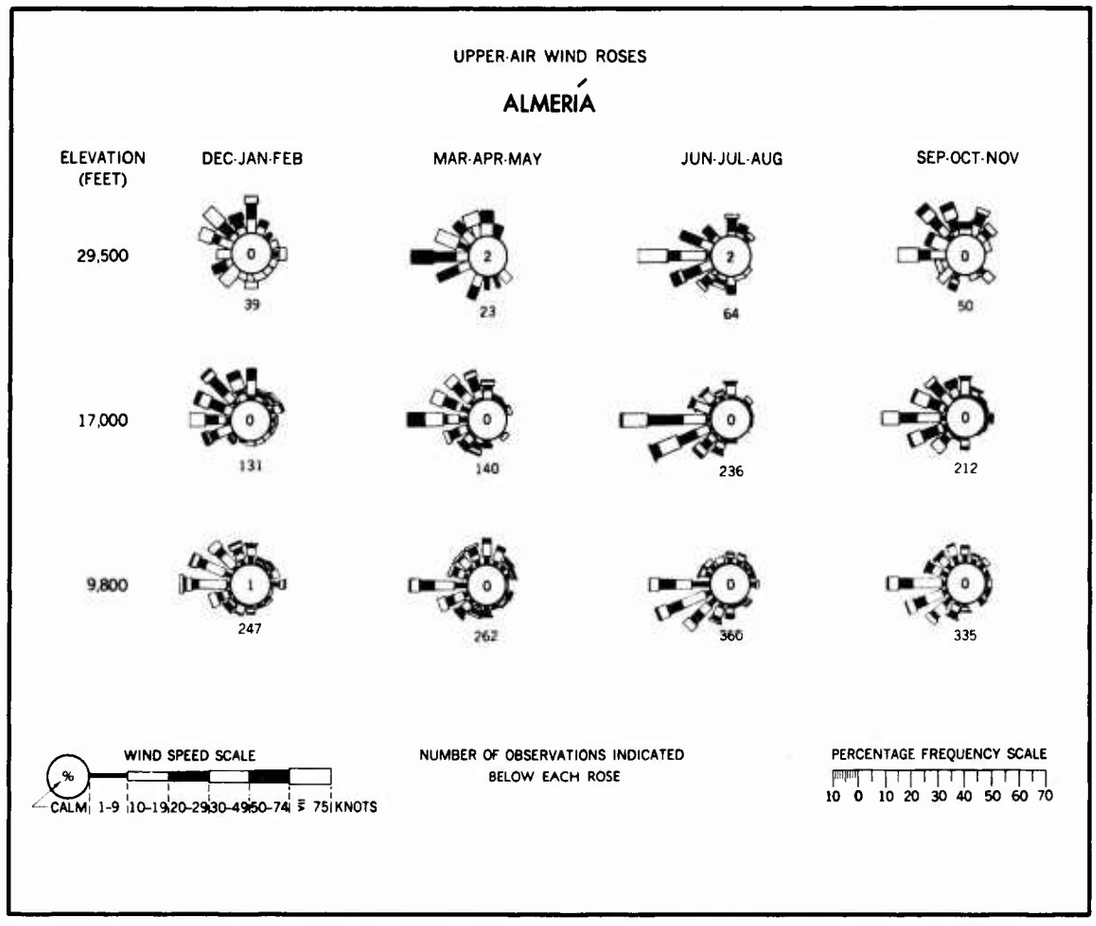

FIGURE 5. UPPER-AIR WIND ROSES, ALMERÍA

ridges. The Balearic Islands also experience this type of relatively low-level turbulence.

c. UPPER-AIR WINDS — Variations in the speed and direction of the upper-air winds over the Area are shown by means of wind roses for selected upper-air stations in FIGURES 5 through 10. The data on which these figures are based show that mainland Spain and the Balearic Islands lie in the belt of prevailing westerly winds in all seasons. These westerly winds extend from the top of the friction layer at about 3,000 feet to at least the tropopause near 40,000 feet. Their strength is not pronounced when compared to wind speeds over the Atlantic to the northwest of Spain. The seasonal variation in direction is small; however, at all stations on the Spanish mainland and Balearic Islands the westerly winds are steadier and more pronounced in summer. At most stations northwest winds become more pronounced in the winter season. A variation in speed is evident at most stations, particularly at Saragossa where the data are based on a fairly long period of record. Mean speeds at Saragossa reach a maximum in December, increasing from 20 knots at 10,000 feet to 58 knots at 30,000 feet. Above the tropopause, which is at about 40,000 feet, average speeds in the westerly flow decrease. Lowest speeds at Saragossa occur in June when the average increases from 13 knots at 10,000 feet to 30 knots at 30,000 feet. Although mean speeds are not high, they are exceeded by appreciable amounts from time to time. Thus speeds in excess of 75 knots are occasionally observed at the 30,000-foot and 40,000-foot levels. At Saragossa speeds over 75 knots occur 15% to 20% of the time at these levels in winter and 5% to 10% of the time during spring, summer, and autumn. Below 30,000 feet speeds in excess of 75 knots are rare; however, winds of 40 and even 50 knots are present even below 30,000 feet in all seasons and at all stations including those in the Canary Islands.

The Canary Islands Region, dominated at low levels by the northeast trade winds, is the only region which lies outside the belt of prevailing westerlies. The northeast trade wind circulation is present mostly between the surface and 7,000 feet, while above 7,000 feet westerly winds prevail. At times in winter the upper-level westerlies replace the lower trade winds and reach the surface. In summer the northeast trades occasionally extend upward and replace the westerly circulation at and even above 10,000 feet. The average speed of the westerly wind at 10,000 feet and 20,000 feet ranges from about 15 to 25 knots, sig-

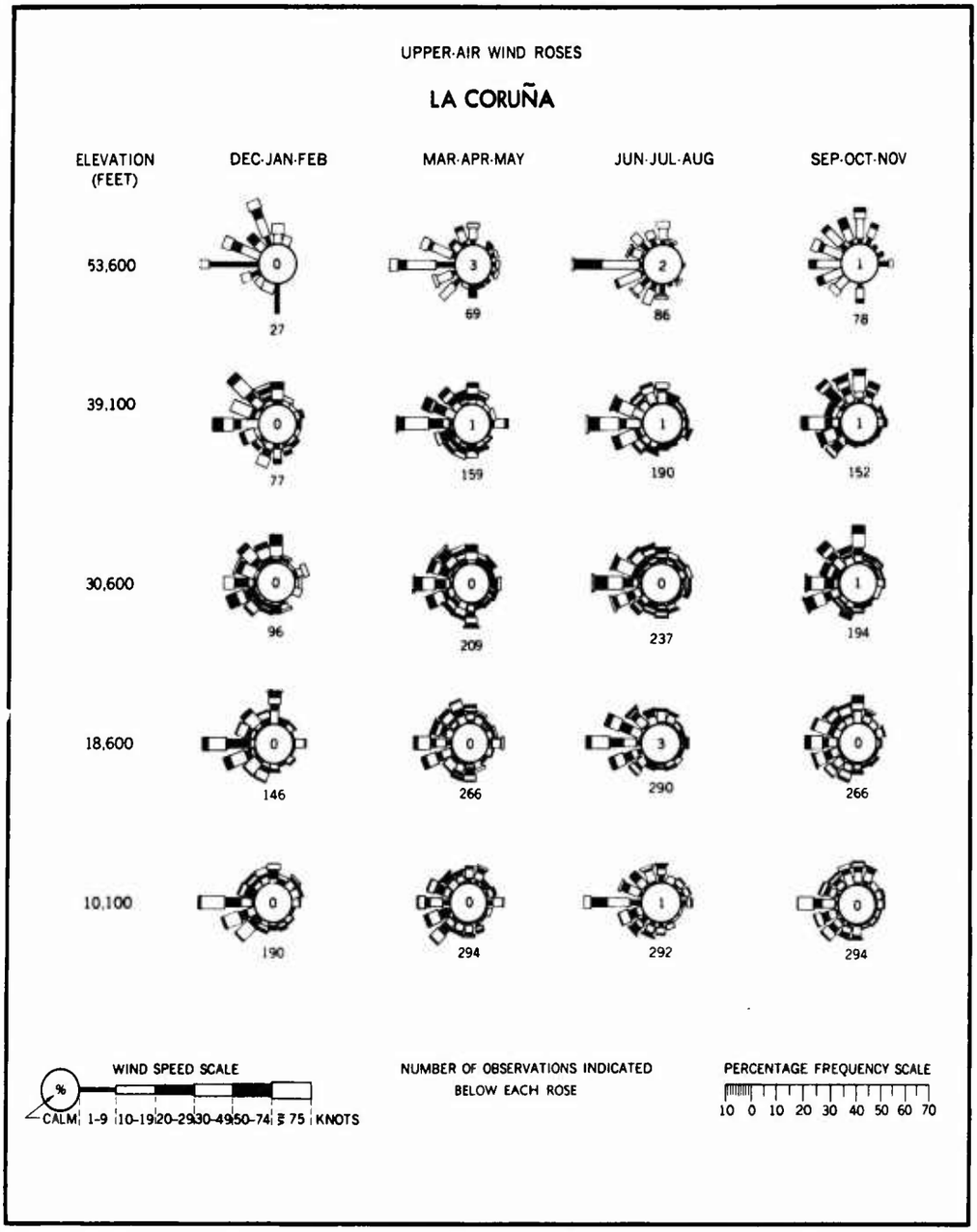

FIGURE 6. UPPER-AIR WIND ROSES, LA CORUÑA

nificantly below that experienced farther north over Spain. Above 20,000 feet speeds are close to 30 knots or more nearly equal to those over Spain at comparable levels. In the shallow trade-wind circulation below 10,000 feet average speeds reach a maximum of 17 knots at 2,000 to 3,000 feet.

d. UPPER-AIR TEMPERATURES AND AIRCRAFT ICING — The icing hazard in this NIS Area is generally associated with migratory lows from the North Atlantic. These lows are attended by extensive cloud systems in which temperature and moisture conditions are favorable for icing at fairly low levels. Their frequency and consequently the likelihood of icing decrease southward across the Area; also, the level of greatest likelihood varies with elevation, with the more favorable temperature conditions for icing occurring at low levels in the north and at intermediate levels in the south. Data on mean upper-air temperatures and pressures for La Coruña and Madrid in Spain and for Santa Cruz in the Canary Islands are presented in FIGURES 11 through 13. The data show that the mean height of the freezing level at Madrid varies from 5,000 feet above sea level in winter to 13,000 feet in summer and at La Coruña from 7,000 feet to 13,000 feet. The −10° C. isotherm is generally found about 6,000 feet above the 0° C. isotherm. This 6,000-foot layer is the one in which icing is most likely to be encountered. At levels above the −10° C. isotherm the moisture content is generally too low to produce heavy icing, while below the 0° C. isotherm the

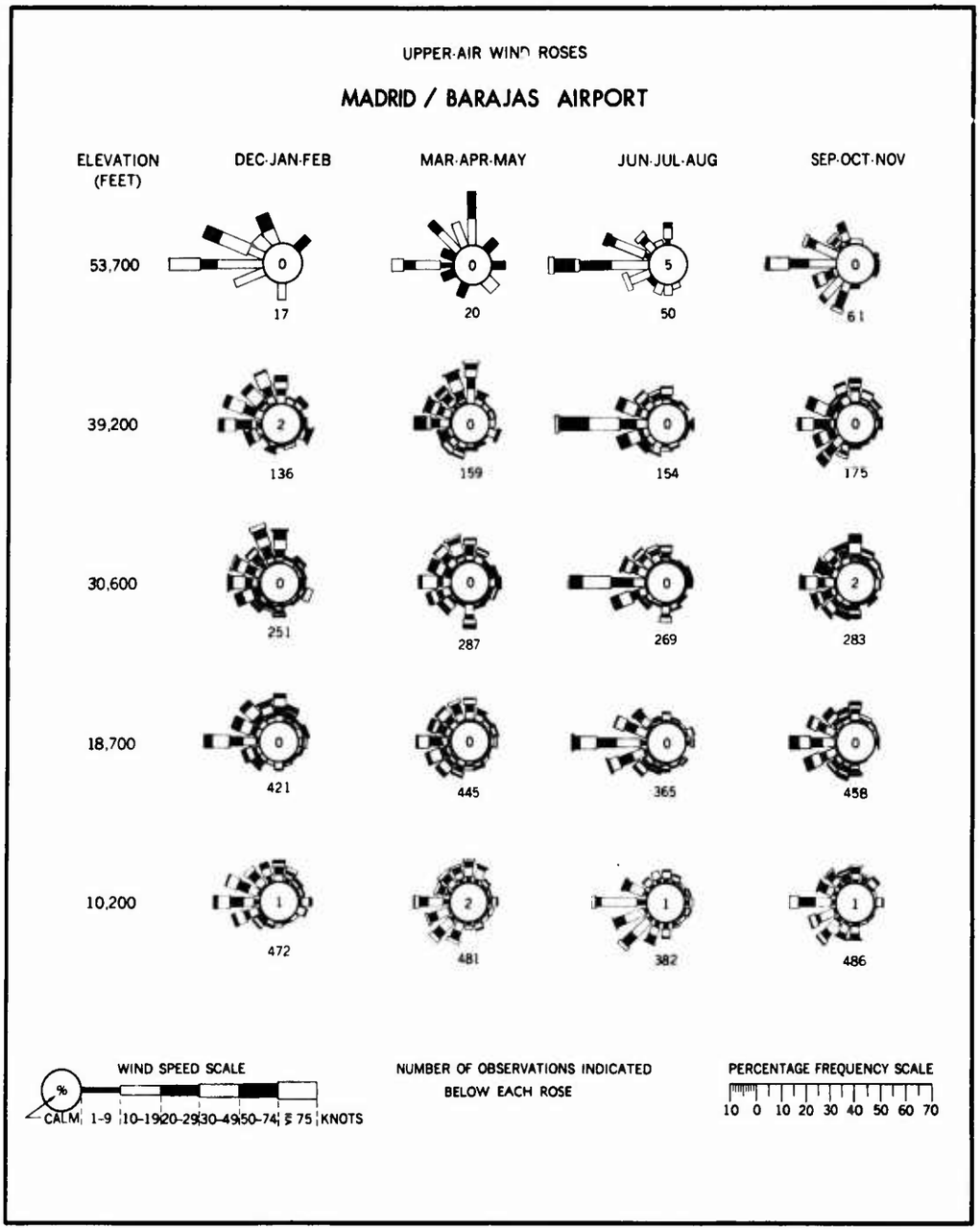

FIGURE 7. UPPER-AIR WIND ROSES, MADRID/BARAJAS AIRPORT

icing hazard decreases because of the warmth. Over the Canary Islands the area of maximum icing hazard occurs at relatively high levels, between about 11,000 feet and 16,000 feet in winter and 16,000 feet to 21,000 feet in summer.

The average height of the tropopause at Madrid is close to 37,000 feet in winter with a temperature of −60° C., while in summer it averages close to 43,000 feet with a temperature of −55° C. The average lapse rate is close to 1.8° C. per 1,000 feet in winter and 2.0° C. per 1,000 feet in summer. Over the Canary Islands the tropopause height varies from about 46,000 feet in summer to about 49,000 in winter, with an average temperature close to −65° C. The lapse rate is small, about 2.0° C. per 1,000 feet in all seasons.

2. Air-ground operations

This NIS Area is one in which conditions are frequently favorable for air-ground operations in

NOTE Air-ground operations are defined as those operations taking place within the friction layer above the earth's surface or those primarily influenced by the meteorological conditions existing within that layer. 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 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.

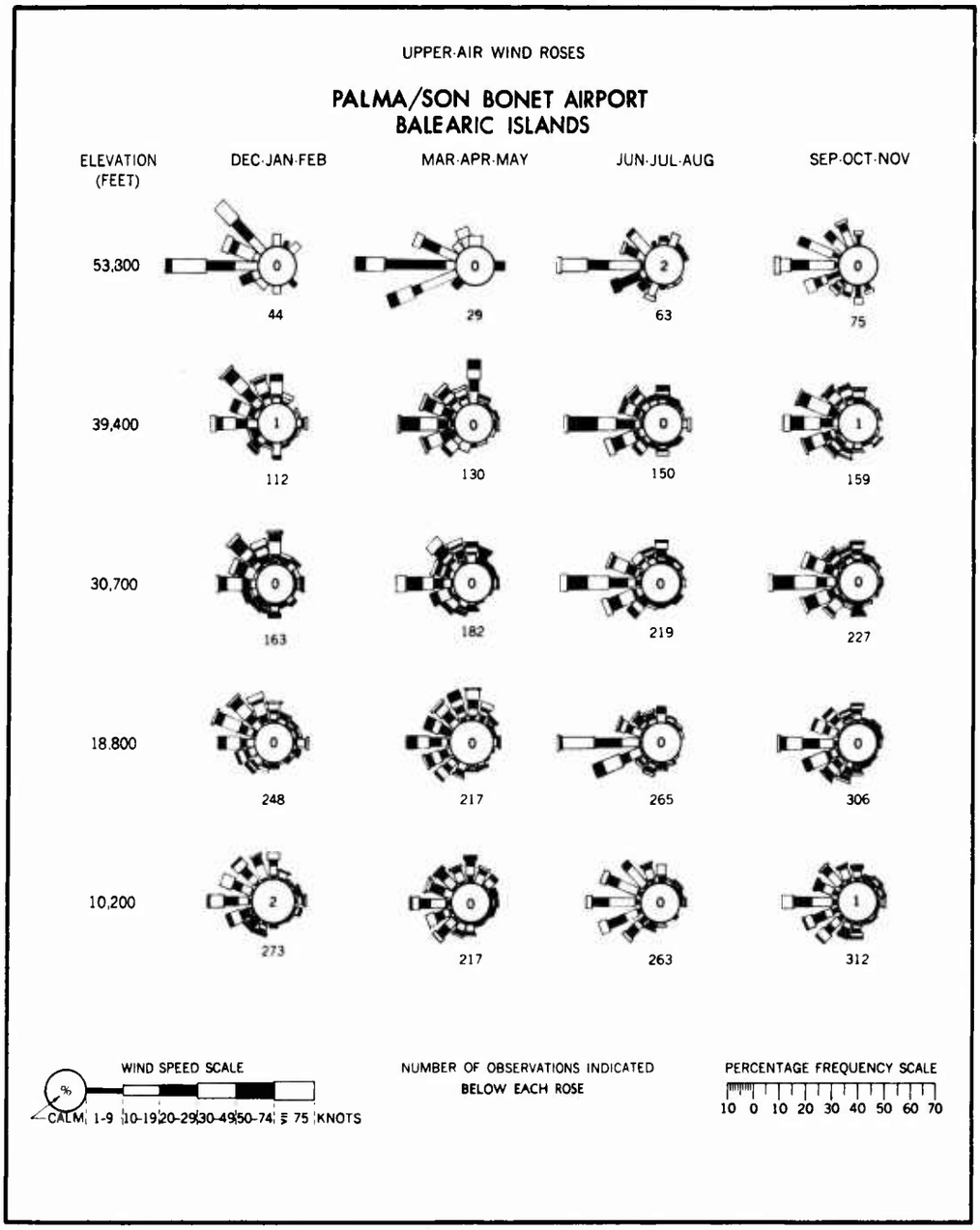

FIGURE 8. UPPER-AIR WIND ROSES, PALMA/ SON BONET AIRPORT, BALEARIC ISLANDS

all seasons. The amount of low cloudiness, the chief adverse condition, is appreciably less than that over central and northern Europe. Visibility conditions at the ground surface are also generally favorable for low-level visual operations. Strong surface winds, which are unfavorable for parachute operations, are relatively infrequent. The north coast of Spain and the northern highlands are the least favorable parts of the Area for most air-ground operations. Winter is the least favorable season except over the Northern Coast Region where the seasonal variation is small. The east coast of Spain experiences very little low cloudiness in all seasons and is therefore the most favorable part of the Area for air-ground operations.

a. LOW CLOUDINESS AND CEILINGS — Seasonal and areal variations in the frequency of ceilings less than about 2,000 feet (1,968 feet) are shown graphically in FIGURE 14 and in tabular form in FIGURE 30. The data show that in the Northern Coast Region in all seasons ceilings less than 2,000 feet occur about 10% to 20% of the time at La Coruña and 10% to 25% of the time at Santander. Ceilings are probably more frequent on the mountain slopes. Frequencies are also relatively high over the northern highlands in winter; thus at Madrid ceilings less than 2,000 feet are present 10 to 30% of the time in December and January. Surprisingly enough, ceilings less than 2,000 feet are also frequently observed in winter over the Balearic and Canary Islands. Low ceilings are

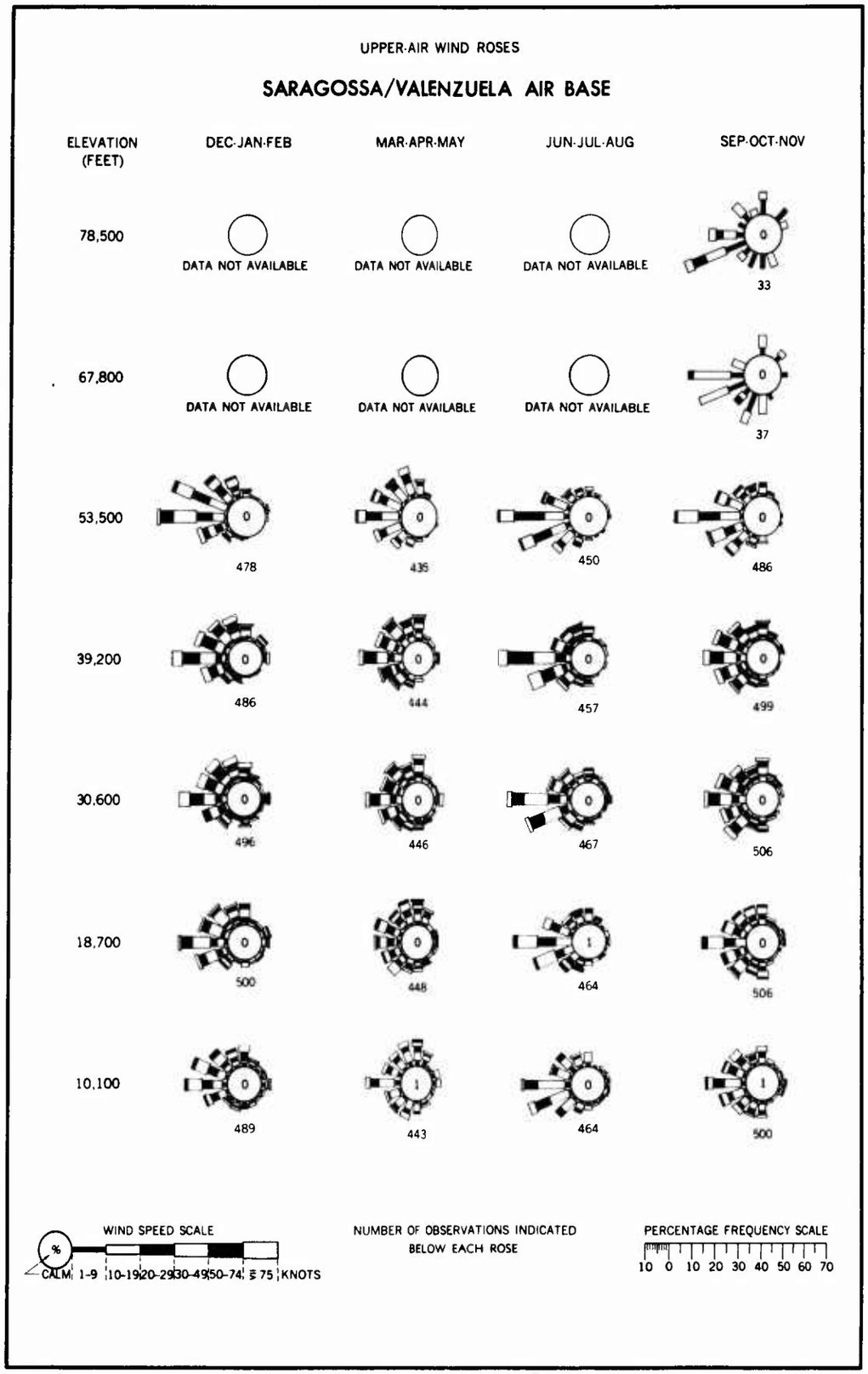

FIGURE 9. UPPER-AIR WIND ROSES, SARAGOSSA/VALENZUELA AIR BASE

least frequent in winter over the eastern coast. In contrast to winter, ceilings less than 2,000 feet are notably rare everywhere in summer except in the Northern Coast Region. The average number of days with low cloud amounts of 2-eighths or less and 6-eighths or more is shown in FIGURES 31 and 32. Days with 2-eighths or less low cloud coverage are particularly favorable for low-level visual operations. In the Northern Coast Region one-third to one-half the days fall in this category in all seasons. In all other regions the seasonal variation is pronounced, with one-half to two-thirds of

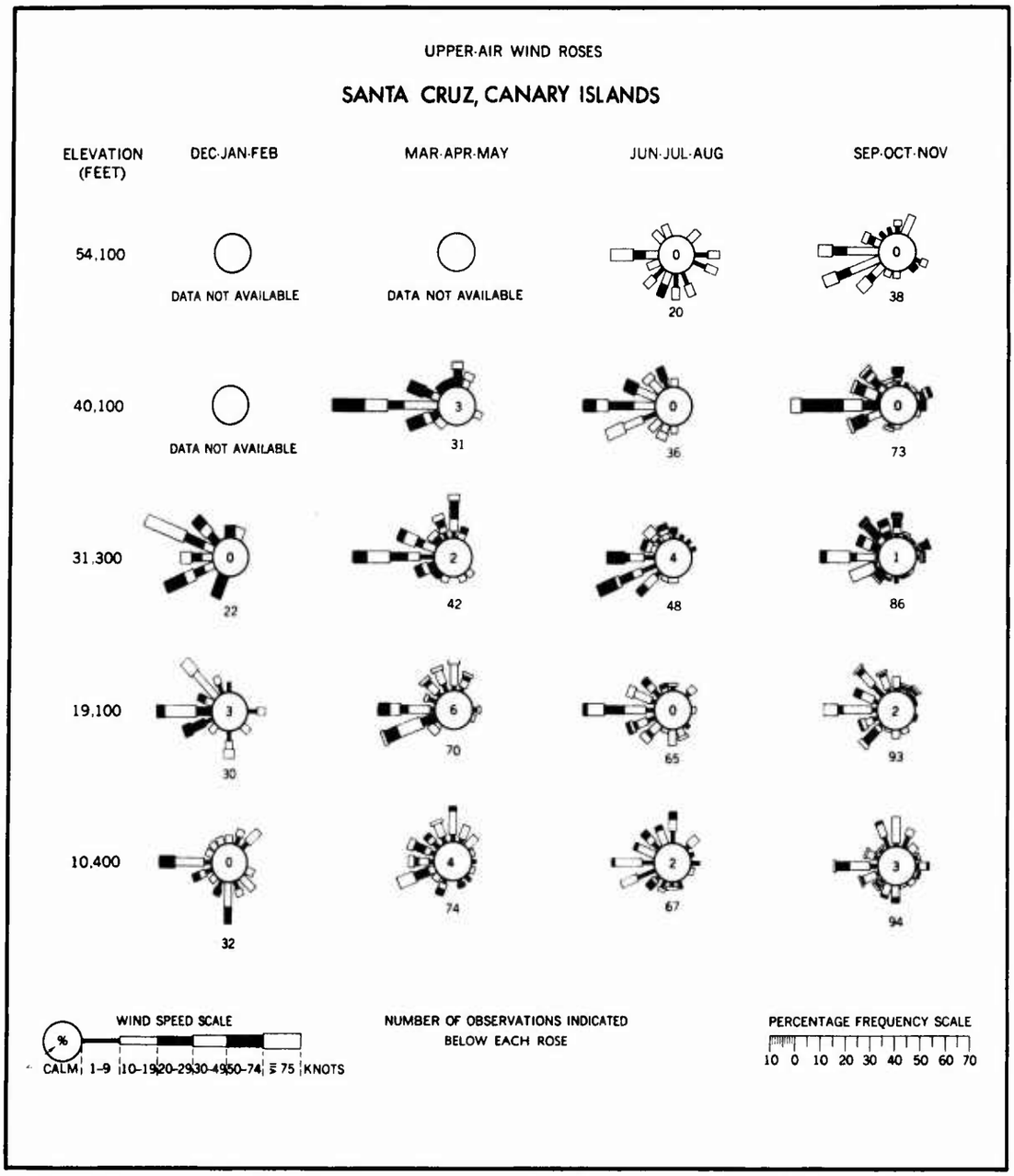

FIGURE 10. UPPER-AIR WIND ROSES, SANTA CRUZ, CANARY ISLANDS

the days in this category in winter and from two-thirds to almost every day in summer.

b. VISIBILITY — Although restricted at times by fog and haze, visibilities are appreciably better over this NIS Area than over northern and central Europe. The seasonal and areal variations are brought out in FIGURES 33 through 35. These data suggest that visibilities vary considerably with location, season, and time of day. The data in FIGURE 33 show that visibilities less than ⅝ mile are very infrequent at most locations; they are most likely to occur during the early morning hours in winter. At most stations, visibilities in this category occur 10% or less of the time, principally in winter. During spring, summer, and autumn, visibilities in this range are very rarely observed at most locations. The graphical presentation in FIGURE 15 and the data in FIGURE 34 show that visibilities less than 2½ miles are relatively common along the north coast in all seasons, with a maximum frequency at night and in early morning. Santander, centrally located on the north coast, records the highest frequencies of any location in the Area. Here visibilities of less than 2½ miles occur 56% of the time annually at 0600 LST and 36% of the time at 1200 LST. In the Interior Region, visibilities are considerably better; at most locations, visibilities are below 2½ miles less than 20% of the time in winter and less than 5% of the time in late spring,

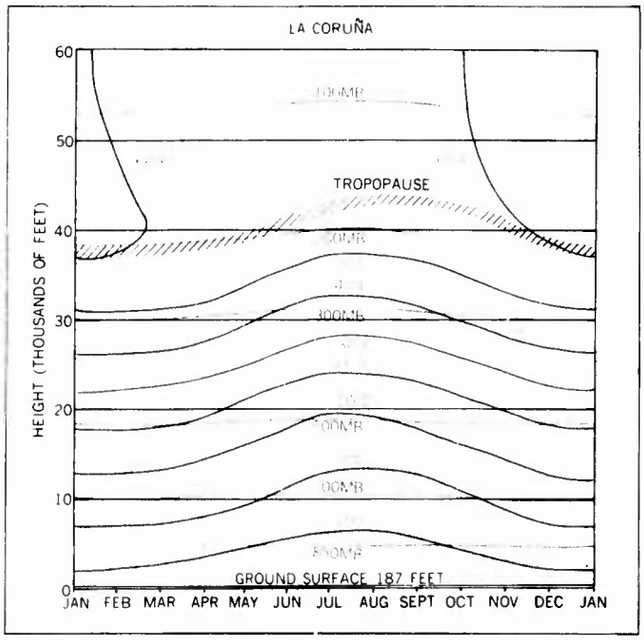

FIGURE 11. MEAN MONTHLY UPPER-AIR TEMPERATURES AND PRESSURES, LA CORUÑA

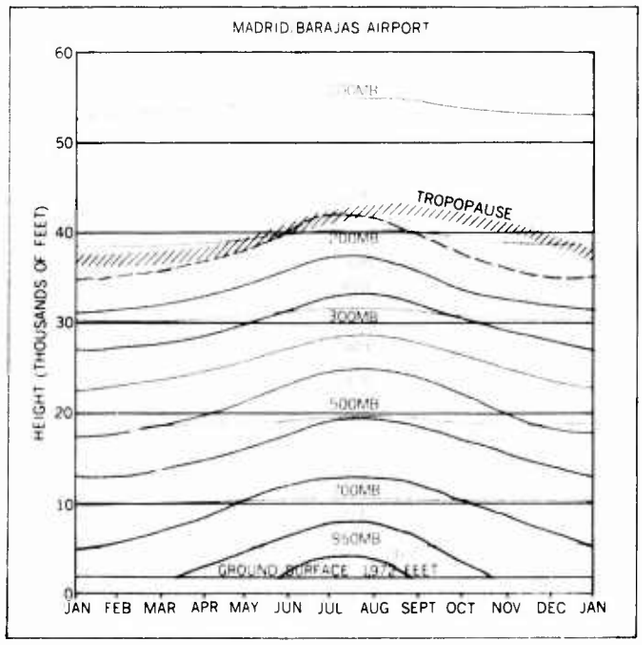

FIGURE 12. MEAN MONTHLY UPPER-AIR TEMPERATURES AND PRESSURES, MADRID/BARAJAS AIRPORT

summer, and early autumn. The Southern and Eastern Coasts as well as the Balearic and Canary Islands seldom have visibilities less than 2½ miles, although the data for Barcelona suggest that, under favorable conditions of exposure, frequencies may be relatively high. Thus at Barcelona visibilities are less than 2½ miles 20% to 30% of the time in most months at 0600 LST and in November through March at 1200 LST and 1800 LST. The frequency of visibilities less than 6 miles varies markedly from place to place (FIGURE 35). Values are fairly high along the Northern Coast in all seasons, particularly during the night and

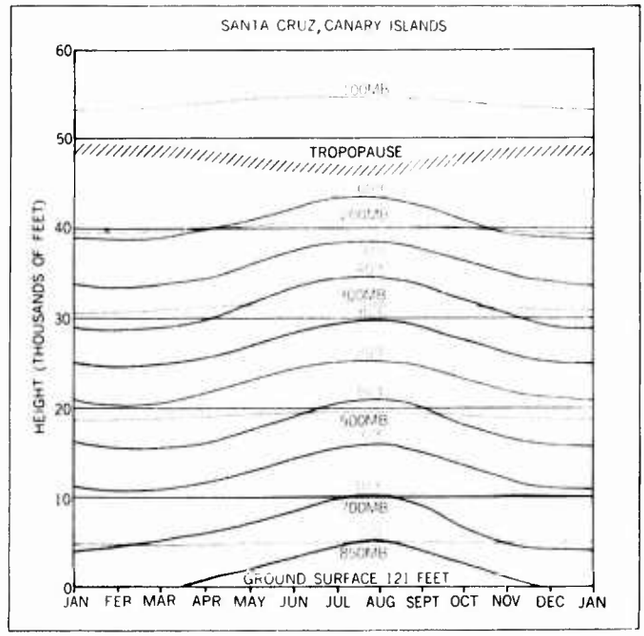

FIGURE 13. MEAN MONTHLY UPPER-AIR TEMPERATURES AND PRESSURES, SANTA CRUZ, CANARY ISLANDS

early morning. Visibilities less than 6 miles are also common over the northern interior highlands in winter. During the summer, visibilities below 6 miles are uncommon except along the coasts. Over the Canary Islands the frequency of visibilities below 6 miles seldom exceeds 10% in any month.

Fog and haze are the chief restrictions. The data in FIGURE 36 show that fog is relatively frequent at exposed locations such as Santander on the north coast. Here, fog is present at 0600 LST on one-half of the days in summer and one-third of the days in winter. Fog is less frequent at La Coruña in the westernmost part of the Northern Coast Region, but there too a summer maximum can be detected. Over remaining portions of the Area fog occurs infrequently but is most likely during the early morning hours of winter.

c. COMBINED CEILING AND VISIBILITY — The most favorable conditions for air-ground operations occur when both ceiling height and visibility are above selected limits, depending on the type of operation. Thus most air-ground operations, including landing and takeoff, can usually be accomplished with a ceiling of 1,000 feet or more and a visibility of 2½ miles or more. The frequency of this condition is shown graphically in FIGURE 16 and in tabular form in FIGURE 37. The data show that frequencies are generally highest during the summer. Over mainland Spain in summer this favorable combination is present 90% to 100% of the time at most locations, except along the north coast where frequencies are

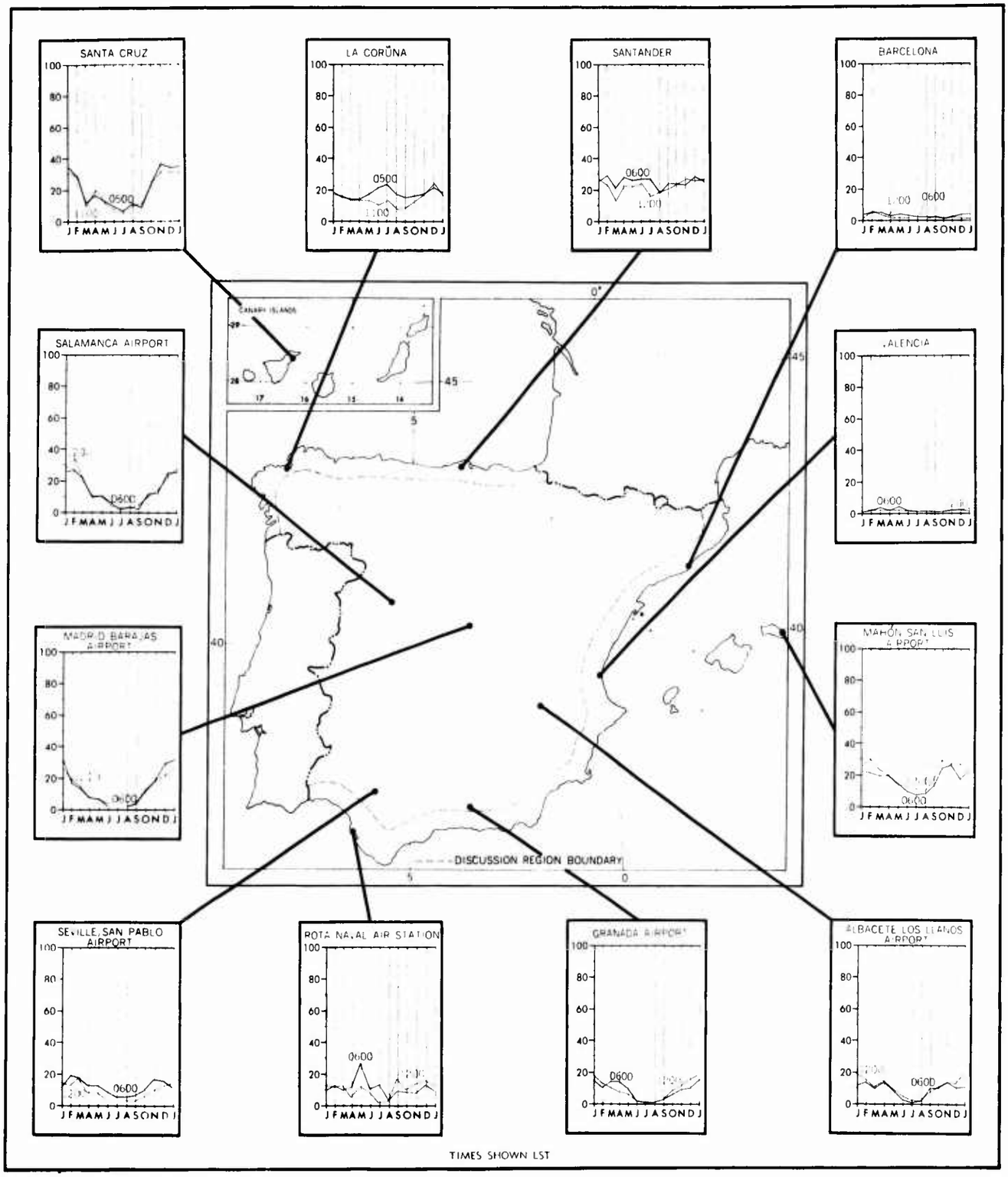

FIGURE 14. PERCENTAGE FREQUENCY OF CEILINGS ≷1,968 FEET IN EARLY MORNING AND NEAR MIDDAY. (For tabular data see FIGURE 30.)

from 65% to 95% during the day but are very low at exposed locations during nighttime hours. At Santander, centrally located on the north coast, this favorable combination is recorded only 15% to 20% of the time at midnight. Visibilities below 2½ miles are the chief reason for the low frequencies at exposed locations. In the Balearic and Canary Islands the favorable combination is present over 95% of the time at all hours.

Lowest frequencies of ceilings of 1,000 feet with visibilities of 2½ miles occur in winter, although even during this season the favorable combination is present over 80% of the time in central and southern Spain. Over the northern highlands

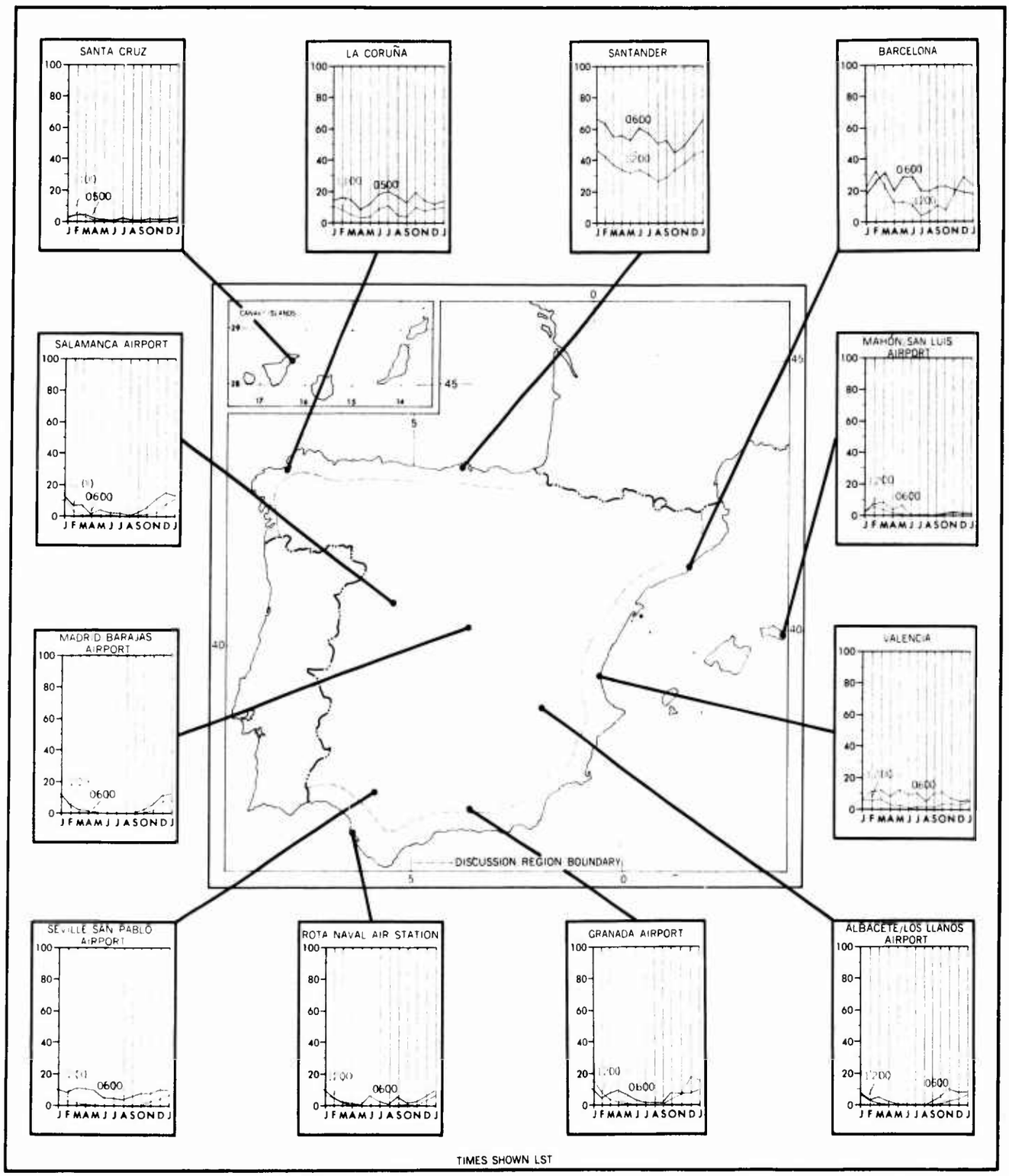

FIGURE 15. PERCENTAGE FREQUENCY OF VISIBILITIES <2½ MILES IN EARLY MORNING AND NEAR MIDDAY. (For tabular data see FIGURE 34.)

the frequencies in winter drop below 70%, while at exposed locations such as Santander on the coast they may fall below 20% at night because of fog.

A second and even more favorable combination of cloudiness and visibility for air-ground operations, a combination of total cloud cover 2-eighths or less and visibility 2½ miles or more, is given in FIGURE 38. Days when these conditions are observed are favorable for most high-level visual bombing and aerial photography missions. Summer is generally the most favorable and winter the least favorable season. On one-half to three-fourths of the days in July, total cloud cover is no

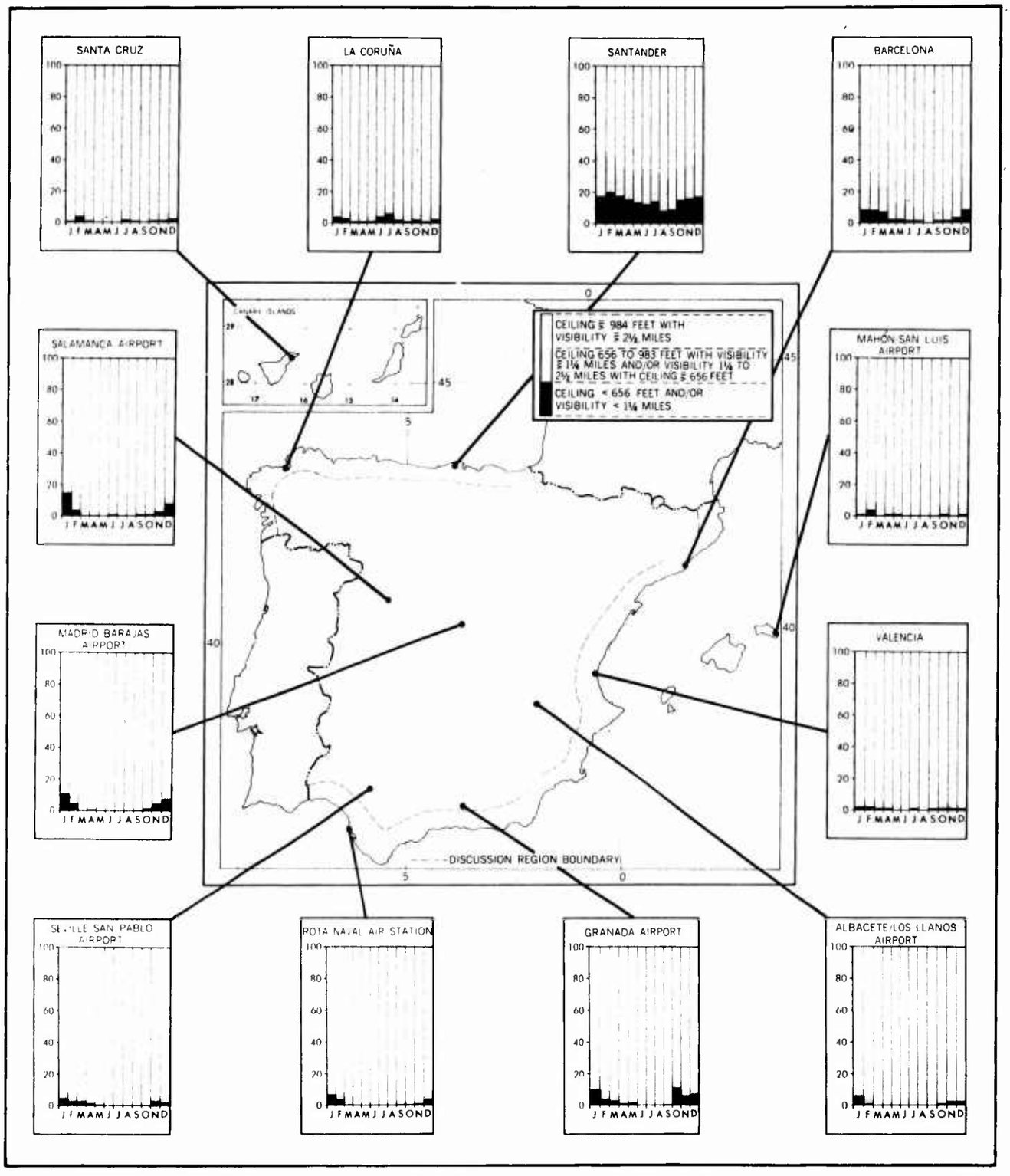

FIGURE 16. PERCENTAGE FREQUENCY OF SPECIFIED CEILING AND VISIBILITY COMBINATIONS NEAR MIDDAY. (For tabular data see FIGURE 37.)

more than 2-eighths and visibility is at least 2½ miles, except in the Northern Coast Region where these conditions are recorded on one-third or less of the days. During January, one-third to one-half the days are favorable, except along the north coast and over the Balearic and Canary Islands, which record mostly less than 10 days per month. Fewest favorable days occur in the central part of the Northern Coast Region.

d. SURFACE WINDS — FIGURES 1 and 2 suggest that northwesterly winds are prevalent over Spain in all seasons. The flow of air out of the northwest, however, is sporadic, often weak, and always subject to diversion by local terrain features. The

flow is generally initiated by the passage of a low-pressure system across Spain. If the low is well developed the flow of air out of the northwest is quite strong, particularly through the Río Ebro valley in northeast Spain. At times the Balearic Islands are affected by this air current. As a rule, however, the low-pressure centers affecting Spain are quite weak. In advance of the low, surface winds are generally light and from the south or southeast; after the low passes they shift to the northwest or west.

During the relatively frequent periods of weak pressure gradient when no low-pressure systems are over or near Spain, the winds tend to align themselves in response to local terrain and pressure influences. The most important of the local wind systems thus established are the land and sea breezes. During the day cool air from the ocean tends to flow onto the heated coastal areas. This flow reaches its maximum speed in early afternoon. As a rule the sea breeze does not extend more than a mile or two inland, but with the appearance of a low over the interior the sea breeze may develop into a full scale invasion of maritime air. In contrast to the sea breeze, the land breeze sets in after sundown when the land becomes cooler than the ocean. The land breeze usually is limited to the coastal regions except when pressures are lower over the sea. A second local effect is present in the interior highlands. During the day many of the valleys become heated, and weak upslope winds are frequently observed; at night, cooler air tends to flow down these slopes. A third more general influence can be discerned in summer when pressures are relatively low over Spain, particularly in the south. A weak cyclonic or counter clockwise circulation develops around the low, with westerly winds over southern Spain and easterly winds over the central part of the country. This type of low and its associated wind system are weakest at night. A winter counterpart of the summer low is present over central and northern Spain in the form of a weak high. The circulation about this high is clockwise, with north to northwest winds over northern and eastern Spain and east to southeast winds over central and western Spain.

The surface wind roses presented in FIGURES 17 through 20 generally confirm the rather high variability of the winds over Spain and the Balearic Islands and the greater constancy of the winds in the Canary Islands, where winds from the northeast quadrant are predominant in all seasons. Wind speeds are moderate to light with a relatively high frequency of calms.

The data in FIGURE 39 indicate that wind speeds of 28 knots or more are uncommon. They are most likely to occur at coastal stations. Along the north coast their frequency is highest in November through February; along the southern and eastern coast they may occur at any season. The frequency of calm winds varies with local topography. At Madrid/Barajas Airport, calms are present 30% to 40% of the time in all seasons, while the more exposed coastal station of Alicante experiences calms less than 10% of the time. Similarly average wind speeds vary from place to place. At the more exposed locations such as Saragossa in the Río Ebro valley, average speeds are close to 10 knots in all seasons. At more sheltered places, average speeds are as low as 4 knots. Surface wind speeds in combination with other meteorological elements have a direct effect on the success or failure of certain types of air-ground operations. FIGURES 40 through 42 give the frequency of several commonly used combinations.

e. STABILITY AND LOW-LEVEL TEMPERATURE INVERSIONS — Stable air conditions within 50 to 100 feet of the ground are necessary for the success of a number of air-ground operations. This condition is frequently present over the Interior Region. It occurs less frequently along the coast and in the Balearic Islands and is uncommon in the Canary Islands. Over the Interior Region this stability is most likely to be observed when the region is dominated by a high-pressure cell. The skies are then generally clear and the winds light. During the night the lower layers of air become quite cool and dense while above 100 or 200 feet the air remains warm. This stratification of the air tends to resist all vertical mixing. Smoke, fog, or any other contaminants in the denser surface layer tend to remain there.. After sunrise, with a warming of the lower layers, the air loses this stability and vertical mixing takes place between upper and lower levels. Contaminants in the surface layer are then dispersed into the upper air. A second form of stability occurs in summer whenever hot air from the Sahara flows northward across the relatively cool Mediterranean and is cooled in the lower layers. Reaching the Spanish coast the stability is limited to a relatively shallow surface layer. Flowing inland at night the stability may be preserved over the coastal plains. During the days the cooler air is warmed over the land and stable conditions rarely extend more than a mile or two inland. A thin cloud deck or layer of haze may occasionally mark the top of the cooler air at sea. This deck is dissipated as the air moves inland, although in those sections where the mountains approach the sea the layer may reach the coastal slopes.

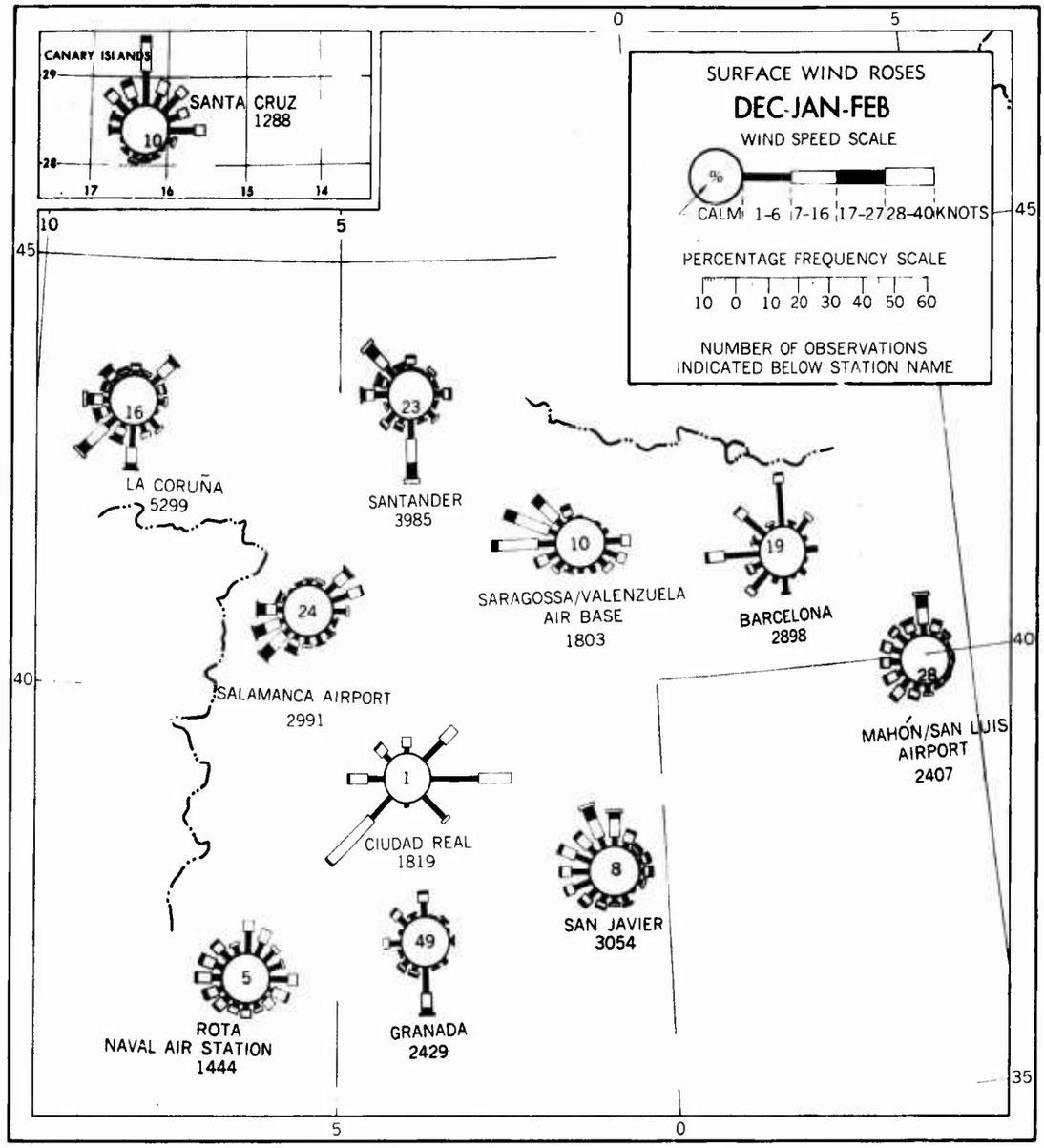

FIGURE 17. SURFACE WIND ROSES, DECEMBER–FEBRUARY

3. Ground surface operations

Surface weather conditions in mainland Spain are generally favorable for most ground surface operations. Temperatures in winter occasionally fall below 0° F. in the mountains; however, the high temperatures of summer are a more likely source of discomfort. Precipitation is generally light, although on rare occasions flash floods are present, and heavy snows in winter occasionally close the higher mountain passes. On rare occasions the combination of strong winds and below freezing temperatures makes activity on the high plateau unpleasant. The Balearic and Canary Islands are also generally favorable for most ground surface operations.

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.

a. TEMPERATURE — In general, the coasts of Spain as well as the Balearic and Canary Islands all experience the moderating influence of the surrounding seas. This influence is pronounced along the Northern Coast Region where winters are relatively mild and summers warm. Along the Southern and Eastern Coasts this influence is less pronounced except in summer when onshore winds during the afternoon frequently bring cooling relief. The oceanic influence is

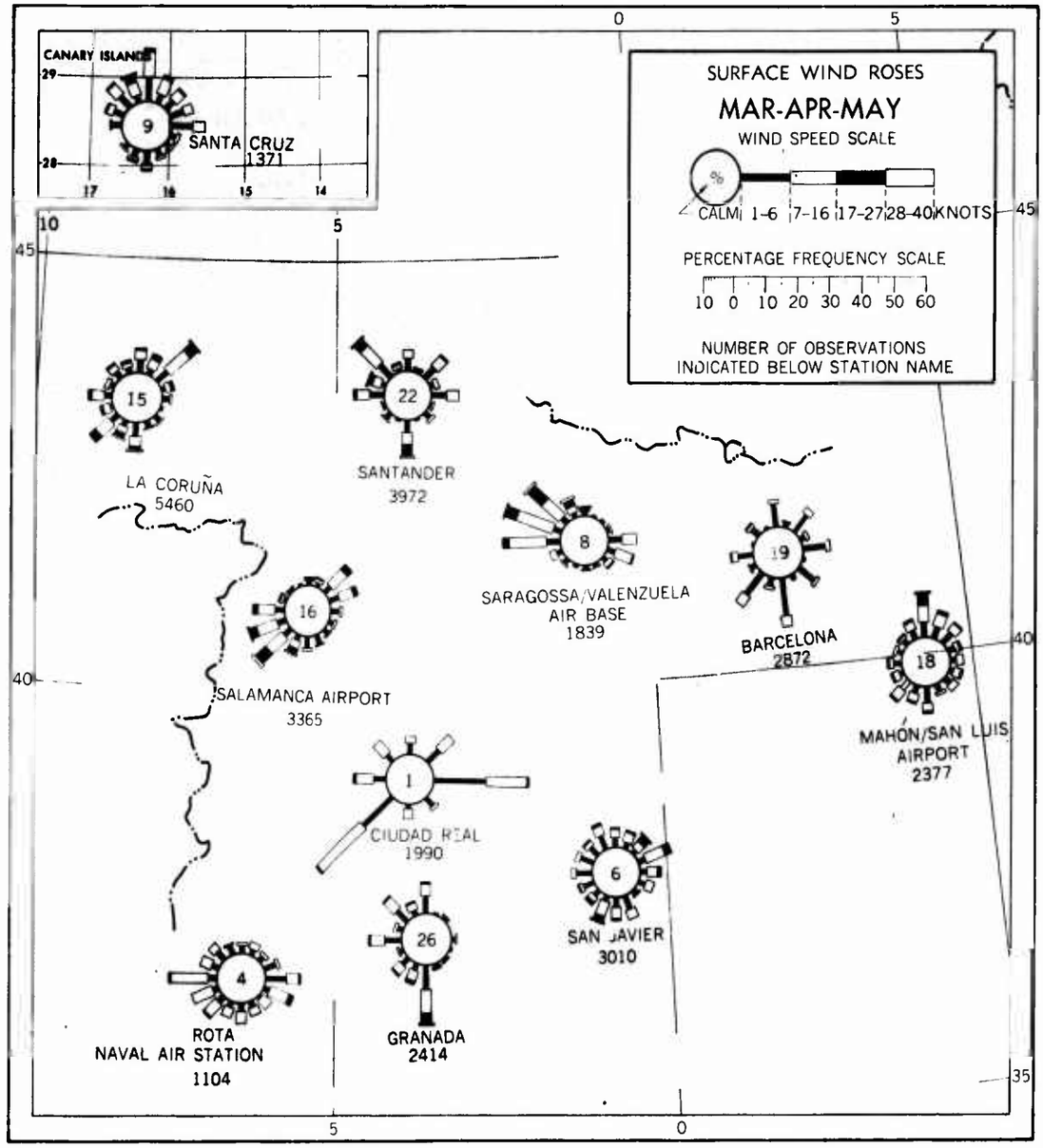

FIGURE 18. SURFACE WIND ROSES, MARCH–MAY

significant in the Balearic Islands, particularly in winter when outbreaks of cold air from the continent to the north are moderated by the intervening seas. Temperatures in the Canary Islands, which are surrounded by relatively warm water in all seasons, are warm throughout the year at low levels. Temperatures over the Interior Region range significantly from the high plateaus of the north to the lowlands in the far south. The highlands in summer experience large diurnal variations; the afternoons are moderately hot while the nights are cool. In winter, average temperatures at night over the highlands are close to freezing, with average afternoon temperatures in the 40's. In the southern interior lowlands, afternoon temperatures in summer are quite high, in the 90's, and the nights are frequently warm and uncomfortably humid. Winters here are considerably warmer than over the northern interior.

The mean daily maximum and minimum temperatures and the absolute maximum and minimum temperatures for selected stations in the Area are shown graphically in FIGURE 21 and by tabular data in FIGURES 43 and 44. The summer temperatures distribution is unique in that over every section of the Area except the Canary Islands the warmest months are July and August, with almost equal means, while June and September, again with almost identical means, are the next warmest months. This regular temperature distribution does not prevail over the Canary Islands; the warmest months there are usually August or September. In winter, January at most locations is the coldest month, with December and February the next coldest.

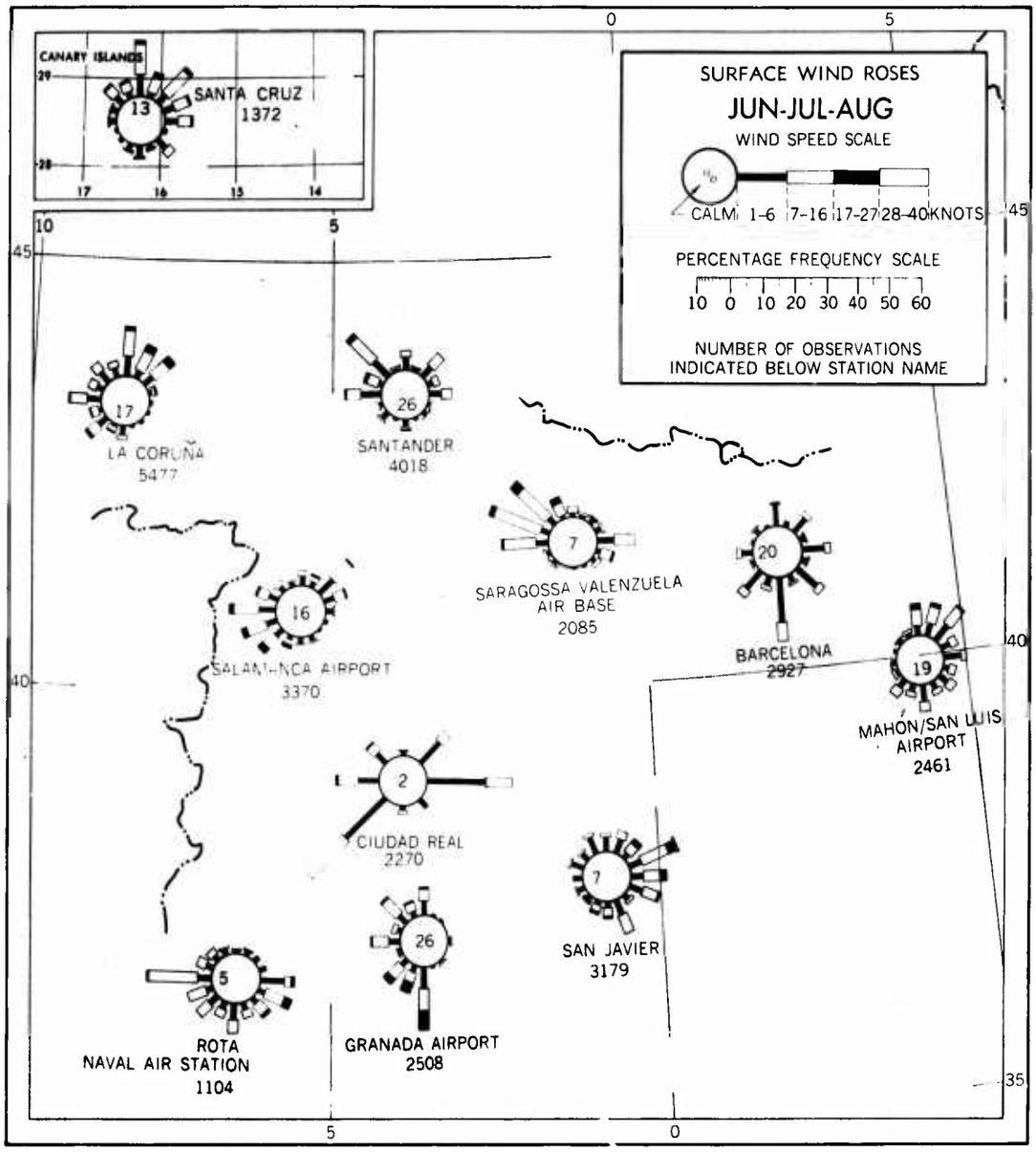

FIGURE 19. SURFACE WIND ROSES, JUNE–AUGUST

The Northern Coast Region is relatively mild in winter, with average temperatures near or slightly cooler than those experienced along the east coast and over the Balearic Islands. The average daily maximum in winter is in the 50's and the daily minimum mostly in the lower 40's. During summer, average afternoon temperatures in July and August are mostly 70° F. to 80° F., the lowest of any in the NIS Area. Average night temperatures in July and August are mostly 55° F. to 60° F., slightly higher than those over the plateau of the northern Interior Region.

For the most part, temperature data for the Interior Region are limited to stations at elevations below about 3,700 feet. The lowest temperatures are found in the north at the higher elevations. In July and August the mean daily maximums in northern portions of the region are in the 80's or upper 70's, depending mostly on elevation. Temperatures are about 6 to 10 Fahrenheit degrees higher, level for level, over southern portions, where they range from 97° F. at sea level to 89° F. at 3,000 feet. Mean minimums in July and August range from the lower 50's to the lower 60's in the north and are mostly in the 60's over the southern part of the region. In winter over the Interior Region, temperature ranges are comparable to summer ranges. Mean maximums in the north are in the 40's and lower 50's, and in the south they are about 6 to 10 Fahrenheit degrees warmer. Mean minimums are mostly in the 30's in the north and in the 30's and lower 40's in the south.

Over the Southern and Eastern Coasts Region, mean maximums are in the 80's in July and August with minimums in the 60's. These coasts

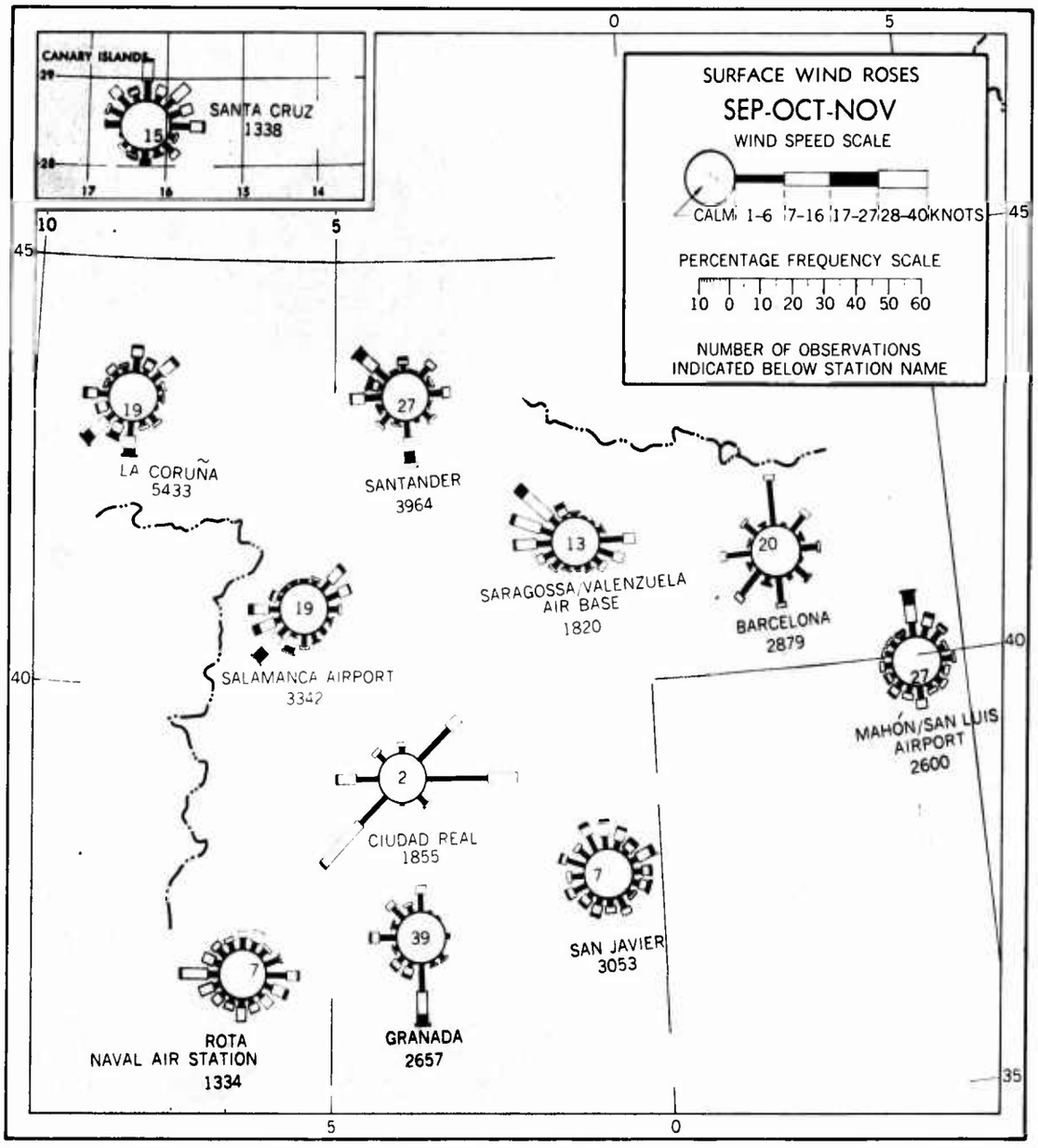

FIGURE 20. SURFACE WIND ROSES, SEPTEMBER–NOVEMBER

in summer are therefore cooler than the interior during the day, and slightly warmer at night. In winter, daily temperatures range from mean maximums of 55° F. to 62° F. to mean minimums of 40° F. to 50° F. at most locations. During winter the coasts are warmer than the interior both day and night, as a result of the moderating influence of the sea.

Temperatures in the Balearic Islands are very similar to those along the east coast, both in summer and winter. The Canary Islands experience relatively small diurnal and seasonal variations. Mean daily maximum temperatures at low levels along the coasts of the Canary Islands vary from near 70° F. in winter to 75° F. to 85° F. in summer, while minimum temperatures vary from near 60° F. in winter to near 70° F. in summer. As a rule the lower values are recorded along the north coasts which are exposed to the trade winds. Low-level stations away from the coasts are cooler at night and warmer during the day than coastal stations. On mountainous Tenerife the temperature decrease with height is significant. Thus at an elevation of 7,772 feet, daytime averages in August are about 5 Fahrenheit degrees lower than on the north coast and 10 to 15 degrees cooler than on the south coast; early morning averages are also appreciably lower.

Absolute maximum and minimum temperatures as given in FIGURE 44 and graphically in FIGURE 21 show that departures from the mean are often pronounced. The lowest temperature recorded in the Northern Coast Region is 15° F. at San Sebastian in January, while the highest temperature is 111° F. at Bilbao in July. In general, these unusual temperatures occur with offshore winds in this region.

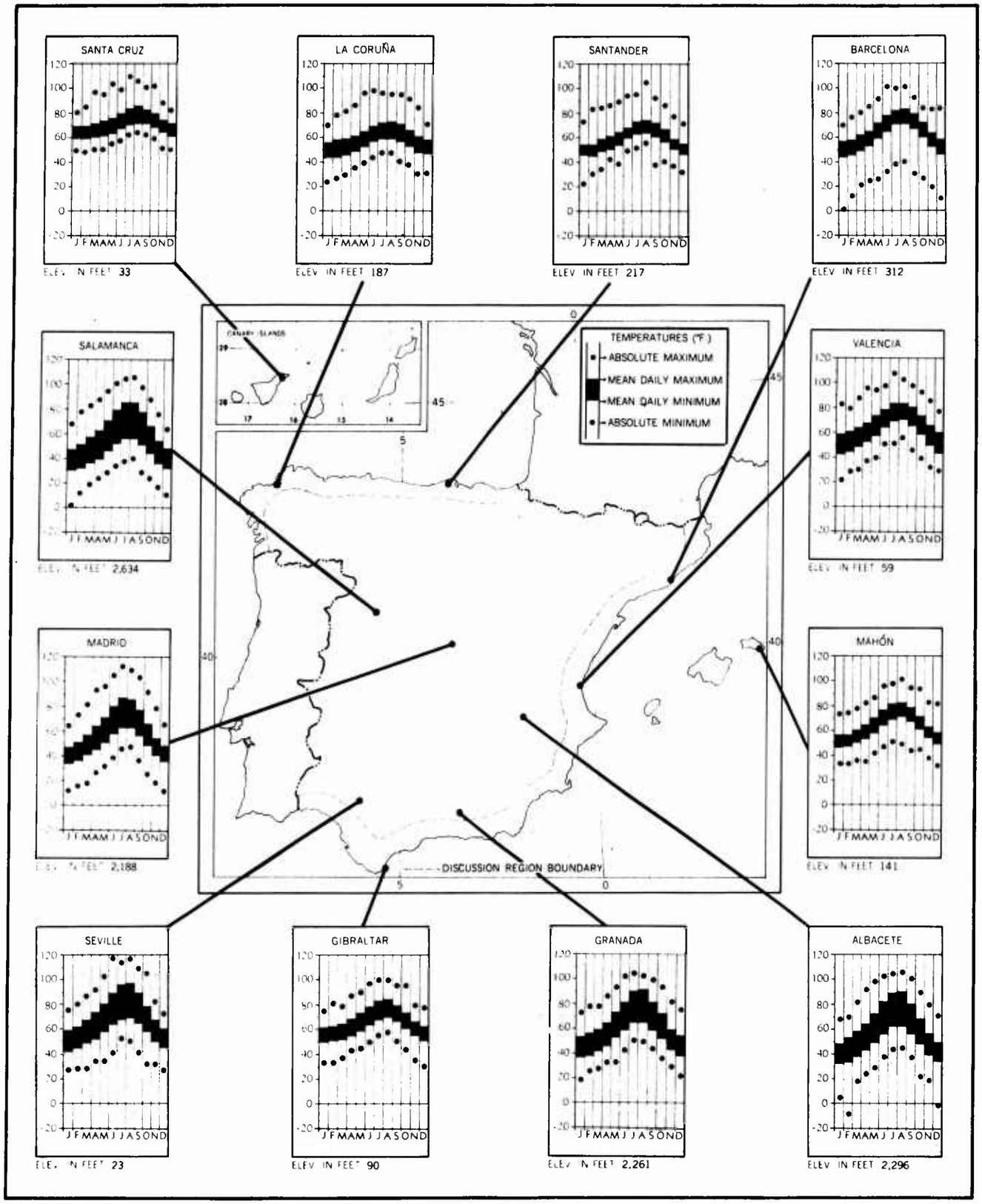

FIGURE 21. TEMPERATURES (°F.). (For tabular data see FIGURES 43 and 44.)

The Interior Region, isolated from the oceans, experiences a wider range between highest and lowest recorded temperatures. The highest recorded temperature, 117° F., occurred at Seville in the far south in June and August; the lowest, −9° F. occurred at Albacete in February. A number of other stations have recorded values above 110° F. and several had readings near or below 0° F. The Southern and Eastern Coasts Region has less pronounced extremes of temperature than the Interior Region. The highest, 110° F., occurred at Malaga in August and the lowest,

0° F., at Barcelona. The data suggest that several of the coastal stations escape freezing temperatures during most winters. In summer, temperatures exceeding 100° F. are not unusual at many locations. The extremes are generally associated with offshore winds. The Balearic Islands also have less pronounced extremes. Absolute maximum temperatures rarely exceed 100° F. in a given year. Temperatures below freezing, although uncommon, are occasionally present during outbreaks of cold air from Europe, with the cold air generally following a path down the Rhone valley in France. The Canary Islands, in spite of their location in subtropical seas, occasionally experience pronounced departures from the mean. Along the coasts, temperatures in winter occasionally fall below 50° F. Inland, particularly at higher elevations, lower temperatures are normally present. The lowest recorded at Los Rodoes (2,100 feet) was 38° F. in January, and the lowest at Izana (7,772 feet) was 19° F. in February. During summer, temperatures of 100° F. or more have been recorded in the lowlands.

The mean number of days with temperatures 90° F. or more and 32° F. or less are shown in FIGURES 45 and 46, respectively. These data confirm the temperature equability in the coastal and island regions as compared to the variability in the interior of Spain. In the North Coast Region, temperatures of 90° F. in summer and below 32° F. in winter are uncommon. They are also uncommon in the Balearic and Canary Islands. The Southern and Eastern Coasts Region experiences very few days with 32° F. or less; in contrast, days with 90° F. or more are not uncommon in summer. The Interior Region is hot in summer, particularly in the southern lowlands. At Seville, for example, there are 95 days annually when the temperature reaches 90° F. or more. Frequencies decrease northward and reach a low of 9 days annually at Burgos in the northern highlands. In contrast, the number of days annually with temperatures of 32° F. or less range from 6 at Seville to 81 at Burgos.

b. RELATIVE HUMIDITY — Spain experiences a wide range of relative humidity conditions. Over the interior plateau the air is relatively moist in winter and very dry in summer, particularly during the day. The coasts are generally dominated by moist air masses, although extremely dry air from the interior is occasionally reported. The Balearic and Canary Islands are generally quite humid. The seasonal and areal variations are shown graphically in FIGURE 22 and in tabular form in FIGURE 47. In the following paragraphs the data for July and January were selected for discussion in that they are typical of conditions in summer and winter.

The Northern Coast, swept by ocean breezes in all seasons, is the most humid of the regions. Early morning averages in July are mostly in the 80% to 90% range and midday averages close to 75%. The variation from season to season is not pronounced; March and April generally have the lowest averages. Diurnal ranges also are not pronounced in this region. The difference between monthly means at 0630 LST and 1230 LST is below 15% at most stations and often below 5% in the winter months.

The Interior Region experiences in summer some of the lowest relative humidity readings in the entire NIS Area. In July, morning averages lie between 55% and 75% and midday averages mostly between 30% and 45%. Winter is more humid with morning averages mostly 85% to 90% while midday means fall mostly in the 60% to 80% range.

The Southern and Eastern Coasts reflect the maritime influence in summer, with morning averages in July mostly from 65% to 75% and midday averages from 55% to 65%. These averages are 10% to 25% above those in the interior. During winter, the maritime influence is replaced by a continental influence, and coastal averages are below those in the interior. This results from the warming and drying effect which accompanies downslope winds from the interior.

The Balearic Islands are relatively humid in winter with averages close to those along the Northern Coast in that season. In summer the maritime influence is also present; averages, however, are more nearly equal to those along the adjacent east coast. Thus the means in July range from near 70% in the morning to 60% at noon and in January from about 80% to about 70%.

The Canary Islands experience significant areal variations in relative humidity. The coastal areas are quite humid while the interior highlands frequently project into the drier air above the trade-wind inversion. Seasonal and diurnal variations are not pronounced along the coasts. At Las Palmas, exposed to the trade winds, averages throughout the year are close to 75% regardless of the time of day. In contrast, the inland station of Tefia, elevation 656 feet, has pronounced diurnal and seasonal variations, with averages at 0600 LST ranging from 70% in April to 86% in October, and at 1200 LST from 43% in March to 57% in September and October.

c. PRECIPITATION — Most of the precipitation in this NIS Area is associated with migratory lows originating over the North Atlantic. Since the Area is located south of the main path taken by these lows, precipitation is light except over the northern coast. Moisture-laden winds from the North Atlantic which follow the passage of each

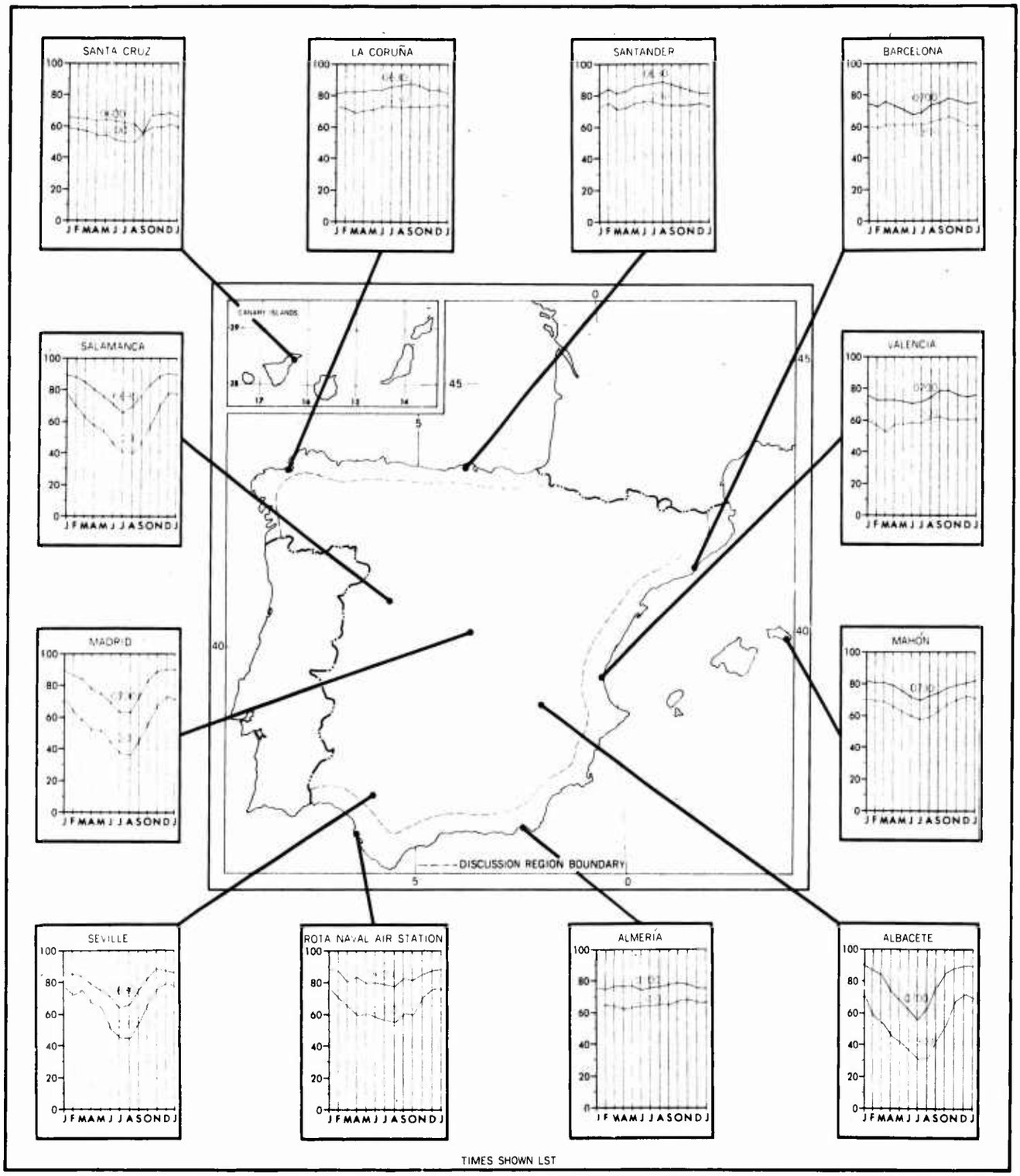

FIGURE 22. MEAN RELATIVE HUMIDITY (%) IN EARLY MORNING AND NEAR MIDDAY. (FOR TABULAR DATA SEE FIGURE 47.)

low are the source of the heavier precipitation which falls along this coast and over the adjacent slopes. These northerly winds become relatively dry after crossing the mountains, so that in the interior they generally produce light precipitation. Exceptions occur in the more mountainous portions of northern Spain, where in winter heavy snowfalls occasionally block roads through the passes.

Mountains in Portugal and western Spain are also important precipitation controls. Moist air from the west loses much of its moisture over these mountains, so that little precipitation falls over the interior. Mountains in the south

and east are not significant in this respect, in that winds from the east and south are generally dry. Air reaching Spain from the south frequently originates over the Sahara and is particularly dry. The Balearic Islands also receive light precipitation since they are cut off from the moisture-bearing winds of the North Atlantic by the mountains of Spain. Dry winds from the Sahara, on the other hand, encounter no barriers and thus contribute to the general aridity of the islands. The Canary Islands lie on the eastern edge of the North Atlantic high-pressure cell where the trade-wind inversion is frequently present. The inherent stability associated with the inversion tends to suppress any shower activity. This stability is occasionally destroyed by the cold unstable air following the passage of a deep low which has taken a more southerly course across the North Atlantic. The showery weather conditions associated with these outbreaks may persist for a day or more. Average amounts of precipitation, however, are small.

The seasonal and areal variations in precipitation are shown graphically in FIGURE 23 and in tabular form in FIGURE 48. The Northern Coast Region experiences the heaviest precipitation. Annual averages range from about 30 to 70 inches. November and December, as a rule, have the greatest amounts, with the monthly means approaching 8 inches at several stations; June, July, and August have the lowest amounts, with monthly means mostly from 1 to 3 inches.

In the Interior Region, precipitation is generally light, making it necessary, for agricultural purposes, to supplement the rainfall by irrigation. In this respect the interior of Spain resembles the semiarid plains in the United States. As a rule July and August are the driest months, with monthly averages generally between 0.1 and 0.9 inches. An exception to this pattern is found in the Pyrenees mountains in the northeast; here, rainfall amounts are greater, and January or February is the driest month. Over most of the region there are two rather indefinite wet periods, most often March through May and October through December. In the foothills and ridges of the Pyrenees, however, the time of the wet season varies from place to place. Water for irrigation in northern Spain is derived from the snow and rain which occur in winter and spring.

The Southern and Eastern Coasts Region, although exposed to winds from the Mediterranean and to a limited extent from the North Atlantic, is nevertheless mostly dry. Average annual amounts are mostly below 25 inches; only in the extreme north near the foothills of the Pyrenees and in the extreme south near the Straits of Gibraltar do averages reach 30 to 35 inches. July and August are the driest months with monthly averages generally below 0.5 inch except in the extreme north where they may exceed 2 inches. Autumn and winter are generally the wettest seasons. At Gibraltar the rainy season extends from mid autumn through winter into early spring, with monthly amounts ranging from about 3.5 to 6.5 inches. In the extreme north at Darnius a double maximum occurs, one in October and November and a secondary in March through May, although the variation between months is not great.

The seasonal precipitation pattern in the Balearic Islands conforms to that of the Mediterranean Area. The summers are very dry with monthly precipitation amounts below 1 inch; October, November, and December are the wettest months with amounts between 2 and 4 inches. Although specific data are not available, it is believed that the northward facing slopes receive amounts in excess of 4 inches per month.

The Canary Islands frequently come under the influence of the North Atlantic high-pressure cell and the rain-suppressing effect of the trade-wind inversion. Average annual amounts even on the windward slopes of mountainous Tenerife are below 25 inches. November is generally the wettest month with averages reaching 5 inches at 2 locations. The period May through September is very dry with critical shortages even in drinking water.

The amount of precipitation which may occur in any one month varies widely from year to year, as brought out in FIGURE 49. The Northern Coast Region occasionally experiences a rapid succession of lows across the coast accompanied by unusually heavy precipitation particularly along the northwestern slopes of the Pyrenees. Thus at San Sebastian, 23 inches has been recorded in both November and December. Other years experience relatively little cyclonic activity, and amounts of 0.5 inch or less have been recorded in all but three months somewhere in the region. As a rule, the unusual conditions do not persist for more than a month, so that disastrous droughts are uncommon along the north coast. Disrupting floods, however, may occur during unusually wet months.

The Interior Region is also subject to great variability in precipitation. In summer, however, unusually heavy amounts are uncommon in the south; in contrast, the slopes of the Pyrenees experience heavy precipitation at times. Thus at Puigcerdá the normal amount in July is 6 inches yet as much as 25 inches has been recorded in that month. During the wetter months in autumn and spring, when averages generally fall in the 2- to 4-inch range, two and three times these amounts may be recorded in some years. Exceptions occur in the extreme northeastern interior

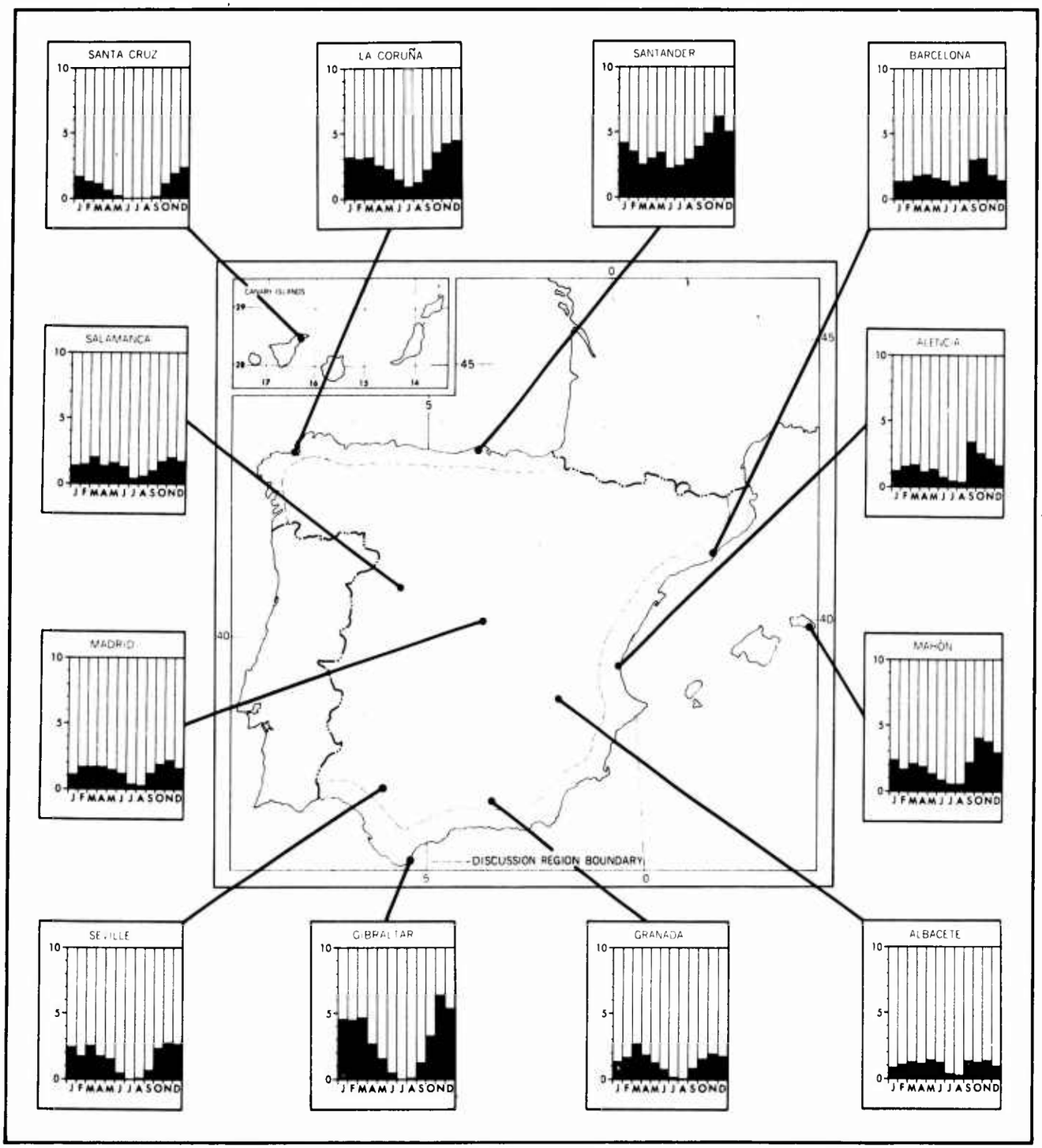

FIGURE 23. MEAN PRECIPITATION (INCHES). (For tabular data see FIGURE 48.)

where four and even five times the normal amount has occurred.

The Southern and Eastern Coasts experience similar variations. Although monthly amounts are frequently two to four times the normal, annual amounts are generally not very far from the normal. One of the most outstanding monthly departures occurred at Alicante where in January 8.4 inches was recorded as compared to a normal of 1.0 inch. Heavy rains of this magnitude, occurring in an otherwise dry month, cause the most destructive floods.

Data for the Balearic Islands are limited to that for Mahón and show that the variations although significant are not excessive. The greatest monthly amount, 9 inches, occurred in November. The Canary Islands also experience large variations from year to year. The most impressive monthly amount, 19.5 inches, occurred at the mountain observatory at Izaña in November.

During the dry summer months the rainfall is rarely excessive.

Short-period precipitation amounts, those occurring within a 24-hour period, are heavy at times as shown by the data in FIGURE 50. In the Northern Coast Region heavy rains are most likely to occur after the passage of a low, when the airflow is from the ocean. The greatest amount recorded in 24 hours in this region, 6.8 inches, occurred at Santander in June. Over the Interior Region the greatest 24-hour amounts are most likely to occur in the spring and autumn wet seasons except in the extreme northeast, particularly in the foothills of the Pyrenees, where 24-hour amounts have also been very large in summer. The greatest amount for the region as a whole, 9.9 inches, occurred at Puigcerdá in these foothills in July. Maximum 24-hour amounts in the remaining portions of the region approached 5 inches at a number of locations. Data for the Southern and Eastern Coasts suggest that the 24-hour amounts are not only heavy near the Pyrenees but also over the headlands guarding the Strait of Gibraltar. The maximum recorded at Gibraltar over a 77-year period was 7.8 inches in March. The maximum near the Pyrenees was 6.1 inches, occurring in August. Unusually heavy 24-hour amounts have also been recorded over northern portions of the east coast lowlands; at Tortosa 8.2 inches fell in 24 hours in October. In the Balearic Islands the heaviest short-period amounts are most likely to occur in autumn when they may exceed 5 inches in 24 hours. Maximum 24-hour amounts in the Canary Islands are quite high on the coasts and slopes exposed to the northerly trade wind. At the mountain station of Izaña as much as 12.6 inches has fallen in 24 hours. Even Las Palmas on the coastal lowland has experienced 9.4 inches in November.

The frequency of days with precipitation as shown in FIGURES 24 and 51 varies widely from season to season and from place to place. The Northern Coast Region in summer experiences rain on approximately one-fourth to one-third of the days and during the remaining seasons on one-third to one-half the days. Annual averages range from 177 days at Santander to 129 days at Finisterre. The number of days with precipitation is appreciably less over the Interior Region. During the summer there are relatively few rainy days, generally less than 5 per month and in many cases only 1 or 2; during the remaining seasons rain can be expected on about one-third of less of the days. Annual averages in the interior range mostly from 90 to 130 days in the north to 65 to 90 days in the south. The Southern and Eastern Coasts have relatively few rainy days; with annual averages mostly between 50 and 80 days. Summer has the fewest rainy days, mostly only 1 or 2 per month in July and August. The Balearic Islands also have relatively few rainy days, and the Canary Islands have only 30 to 65 days with precipitation.

As indicated by the data in FIGURE 52 the number of days with snowfall is not great. These data and maps contained in published atlases indicate that highest frequencies occur over the ridges to the north and west of Madrid. The average number of days with snow on these ridges lies between 20 and 30 days annually. On most of these days the snowfall is not deep and at lower elevations melts within a day or two, but at higher elevations the snow tends to accumulate. Passes through these ridges are therefore occasionally blocked by snow. The higher portions of the Cordillera Cantabrica also experience frequent snowfall; deep accumulations of snow occasionally persist into midsummer. Passes through these mountains, which have elevations for the most part between 3,200 feet and 4,500 feet, are occasionally blocked by snow in December through March. The Pyrenees also experience deep accumulations which occasionally close the passes above 5,000 feet from November through March. The Northern Coast Region experiences 5 days or less per year with snow while the Southern and Eastern Coasts Region rarely has snow. A small portion of the Sierra Nevada (37°05'N., 3°10'W.) near the south coast extends above 10,000 feet and is perpetually snow covered. Snowfall is rare in the Balearic Islands, except that flurries are not unusual over the highest ridges in winter. Snow does not occur over the Canary Islands except on the highest ridges of mountainous Tenerife.

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

(1) *Clothing*

(a) MAJOR INFLUENCES — The most important climatic factors affecting clothing requirements in this NIS Area are temperature, precipitation, wind, and relative humidity. Wide variations in temperature occur as a result of differences in location and elevation. There is also a pronounced variation in precipitation amount and frequency; the seasonal distribution, however, is similar throughout the Area. Relative humidity, except over the interior plateau in summer, is uniformly high, with small diurnal and seasonal variations.

(b) REGIONAL REQUIREMENTS — For a proper analysis of clothing requirements, the Area has been divided into five regions, which are further subdivided depending upon the range of elevations in each region. Clothing requirements for these regions (FIGURE 25) are expressed in terms of clothing assemblies that have been pre-

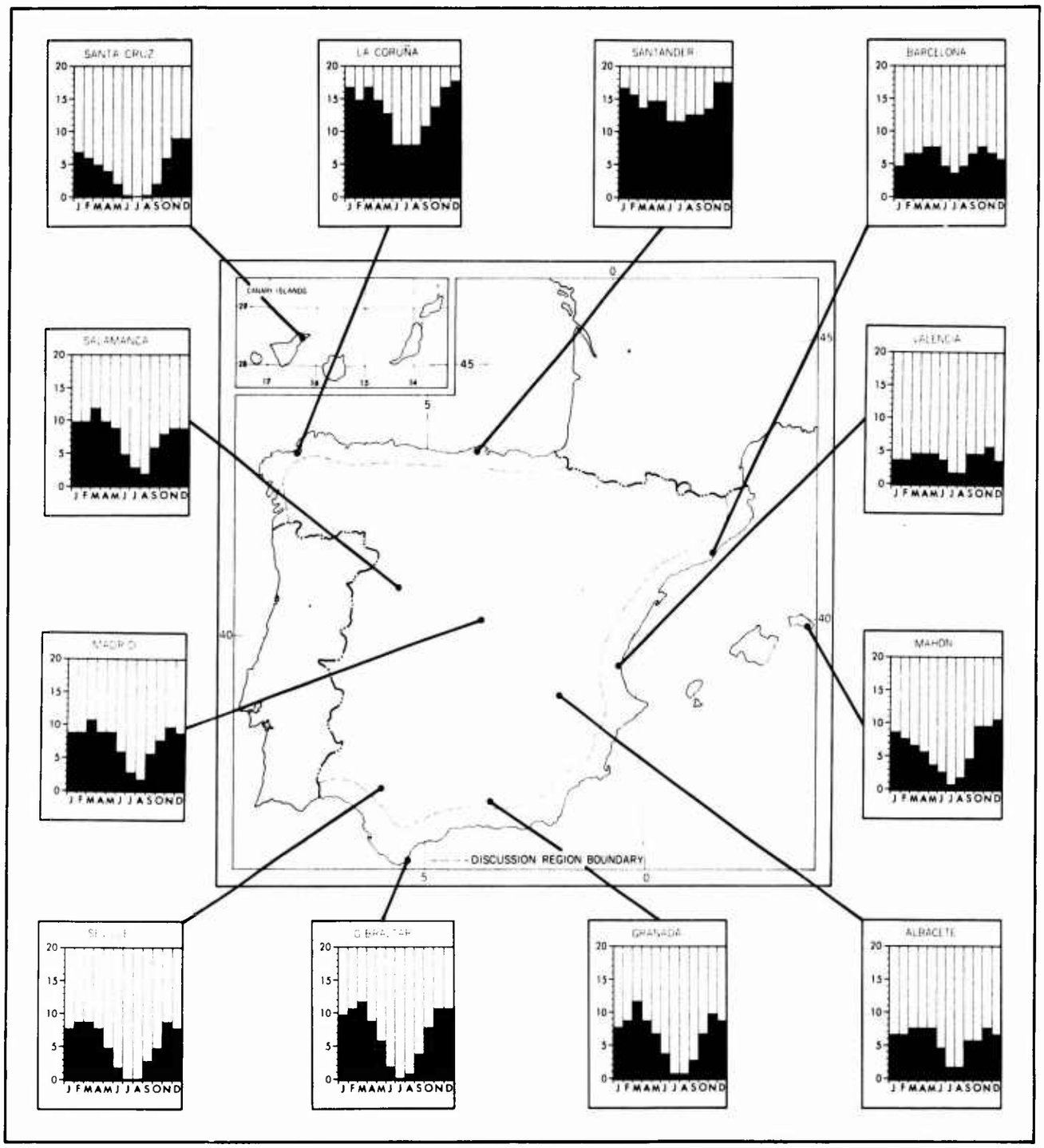

FIGURE 24. MEAN NUMBER OF DAYS WITH PRECIPITATION ≧0.004 INCH. (For tabular data see FIGURE 51.)

scribed for worldwide military use according to the following mean monthly temperatures:

CLOTHING ASSEMBLY	MEAN MONTHLY TEMPERATURES
Warm-weather	Above 68° F.
Cool-weather	50° F. to 68° F.
Cold-weather	14° F. to 50° F.
Ultra-cold-weather	Below 14° 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. Special items required because of varying climatic and environmental factors are also listed.

The warm-weather clothing assembly is a cotton outfit (visored cap, shirt, trousers, and underwear). It also includes tropical combat boots, headcloth, and poncho. A single woolen blanket is adequate sleeping equipment for use with this assembly.

FIGURE 25. CLOTHING REQUIREMENTS

REGION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Northern Coast	D	D	C	C	C	C	C	C	C	C	C	D
Interior:												
Pyrenees and Cordillera Cantabrica:												
Below 1,000 feet	D	D	D	C	C	C	W	W	W	C	C	D
1,000 to 3,000 feet	D	D	D	D	C	C	C	C	C	C	D	D
3,000 to 6,000 feet	D	D	D	D	D	C	C	C	C	D	D	D
6,000 to 9,000 feet	D	D	D	D	D	D	D	D	D	D	D	D
Above 9,000 feet	U	U	U	D	D	D	D	D	D	D	U	U
Sistema Ibérico and Andalusian Mountains:												
Below 3,000 feet	D	D	D	C	C	W	W	W	W	C	C	D
3,000 to 5,000 feet	D	D	D	D	C	C	W	W	C	C	D	D
5,000 to 7,000 feet	D	D	D	D	D	C	C	C	C	D	D	D
7,000 to 9,000 feet	D	D	D	D	D	D	C	C	D	D	D	D
9,000 to 10,000 feet	D	D	D	D	D	D	D	D	D	D	D	D
Above 10,000 feet	U	U	D	D	D	D	D	D	D	D	D	U
Interior Plateau, Lowlands, and Sierras:												
Below 1,000 feet	C	C	C	C	W	W	W	W	W	C	C	C
1,000 to 3,000 feet	D	D	C	C	C	W	W	W	W	C	C	D
3,000 to 4,000 feet	D	D	D	D	C	C	W	W	C	C	D	D
4,000 to 6,000 feet	D	D	D	D	D	C	C	C	C	D	D	D
6,000 to 8,000 feet	D	D	D	D	D	D	C	C	D	D	D	D
Above 8,000 feet	D	D	D	D	D	D	D	D	D	D	D	D
Southern and Eastern Coasts	C	C	C	C	C	W	W	W	W	C	C	C
Balearic Islands:												
Below 1,000 feet	C	C	C	C	C	W	W	W	W	C	C	C
1,000 to 2,000 feet	D	D	D	C	C	C	W	W	W	C	C	D
Above 2,000 feet	D	D	D	D	C	C	C	C	C	C	D	D
Canary Islands:												
Below 2,000 feet	C	C	C	C	C	W	W	W	W	W	C	C
2,000 to 5,000 feet	C	C	C	C	C	C	C	C	C	C	C	C
5,000 to 6,000 feet	D	D	D	D	D	C	C	C	C	C	C	D
Above 6,000 feet	D	D	D	D	D	D	D	D	D	D	D	D

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

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

The cold-weather assembly consists of cotton and wool underwear plus wool shirt and trousers. Leather combat boots are worn with this assembly except in the higher parts of the mountains, where insulated boots are required. Outer clothing includes a water-repellent wind-resistant coat and over-trousers, a poncho, a woolen pile cap, and woolen mittens. An overwhite parka, trousers, mittens, and ski boots would be required for snow-covered areas in the mountains. A mountain-type sleeping bag (down- and feather-filled) with wind-resistant water-repellent case is adequate sleeping equipment for use with this assembly.

The ultra-cold-weather clothing assembly uses the same inner insulating garments as the cold-weather clothing assembly, except for the substitution of a trousers liner in lieu of the wool trousers. The outer garments consist of an additional pair of cotton water-repellent wind-resistant trousers with a trousers liner, a parka with liner, and Arctic-type mittens. Boots with additonal insulated layers are substituted for the insulated boots used with the cold-weather assembly. An Arctic-type sleeping bag, consisting of down- and feather-filled bags with a water-repellent case, is substituted for the mountain-type sleeping bag.

(c) EXCEPTIONS AND ADDITIONS FOR INDIVIDUALS IN A PROTECTED ENVIRONMENT — The clothing assemblies described are based on the assumption that the individuals wearing them will be living in the open 24 hours a day. Clothing requirements at permanent installations may be modified; for example, a raincoat may be more practical than a poncho, and low-cut shoes with rubbers could be used in lieu of insulated boots; blankets may take the place of sleeping bags.

(d) SPECIAL REQUIREMENTS — Insects, precipitation, high humidites, blowing dust, and sun are the principal factors creating special require-

ments for the Area. Repellents, insect bars, headnets, mosquito gloves, and similar items are required for protection against mosquitos, flies, fleas, lice, ticks, and other insects and pests; mosquitos are prevalent throughout the Area, particularly in the central, southern, and coastal parts of Spain. Aside from the use of special items, proper dress would serve to shield the body from insect bites. For protection against sandflies, a fine bar (finer than the 18-mesh mosquito bar) should be used. Maximum protection against ticks may be afforded by tucking trousers into boots, buttoning sleeves at the wrists, and wearing headnets, gloves, and similar items. Waterproofed footwear, such as the kneewader, and water-repellent cotton trousers (to be worn over woolen trousers) should be worn in the wet areas in the southwest, along the eastern coast, and in the Río Ebro valley. A waterproof clothing bag is needed to protect the individual's extra clothing from rains the year round in the northern part of Spain and in autumn, winter, and spring in the remainder of the Area. Warm socks are needed at intermediate and higher elevations in the hills and mountains in winter when conditions generally are cold and wet. Cloth, rubber, and leather items should be treated to offset the damaging effects of the high humidites during the entire year. Clear goggles and some type of headcloth for protection against blowing dust would be useful in summer in the interior of Spain and in many of the islands. Tinted goggles, for protection against sunglare, and ointment, for protection against sunburn, are needed throughout the Area in summer.

(2) *Storage* — Items stored in the open would need to be protected from extremes of temperature, precipitation, and high humidity throughout many parts of the Area. At lower elevations in summer, items that are subject to damage by temperatures above 90° F., especially subsistence and medical supplies, should be protected by cold storage. When this is not possible, covering and placing of items in storage should be designed to allow maximum shade and ventilation. At elevations between about 3,000 feet and 5,000 feet, nighttime temperatures are usually below freezing for about 4 months a year so that items subject to damage by low temperatures or by alternate freezing and thawing should be kept in warehouses or heated tents or shelters. Also, at this level freezing and thawing of the ground surface may be a problem. At elevations above approximately 5,000 feet, all items that can be damaged by freezing should be kept in heated tents or shelters. Covers should be provided for open-stored items to provide maximum protection against light to moderate precipitation from early October through April in much of the Area and against heavy precipitation in the Northern Coast Region. Stored items must be protected against high humidities throughout Spain; adequate ventilation is required in and between stored items to help control corrosion, rust, mold, and mildew. Dunnage is required to insulate supplies from moist ground in the southwest where it is most prevalent, in local areas along the east coast, and in the Río Ebro valley. Storage dumps should not be located in dry stream beds and river flood plains where they are subject to flash floods during the rainy months. Storage dumps should be small and well spaced in southern Spain and on all the islands as a precaution against damaging earthquakes. Tarpaulins securely fastened are advisable for protection against blowing dust and sand in the Interior Region during summer. In mountainous areas, sites at the base of steep slopes should be avoided because of rockslides and snowslides. Protection of supplies against the depredation by rats is essential, particularly in the larger ports.

(3) *Shelter* — Protection against extremes of temperatures, precipitation, sun, disease-carrying insects, and blowing dust is necessary in this NIS Area. Shelter against precipitation is needed throughout the year in the northern part of Spain and from early October through April in most remaining portions of the Area. A tent fly (an extra layer of canvas suspended above the tent) is desirable to provide extra protection against strong insolation and heavy rains. Protection against the low temperatures of winter is required throughout most of Spain, particularly at elevations above about 5,000 feet, where subfreezing temperatures are not uncommon. Shade is desirable during the summer for personnel living in the open. Protection against disease-carrying insects and pests is required throughout the Area in summer.

The Temperate Zone U.S. Army tentage generally provides adequate protection for the entire year at the lower elevations. The addition of a heating unit is desirable in winter. Because of the prevalence of insects, tents should be screened and floored. A tent similar to the U.S. Army fly-proof kitchen tent would provide adequate protection against insects wherever food is being prepared and/or served. Tents similar to those developed by the U.S. Army for Arctic Zone operations provide the best shelter in the mountains during the winter months. Arctic Zone shelter should be utilized wherever the ultra-cold-weather clothing assembly is recommended.

4. Amphibious operations

a. BAY OF BISCAY AND ATLANTIC COASTS — Summer is the most favorable season for amphibious operations along these coasts. Temperatures are warm and there are fewer cyclonic disturbances, lighter winds, more favorable sea and swell conditions, less precipitation, and better visibilities than in other seasons. Autumn is less favorable because of the increasing frequency of cyclonic storms. Winter and spring are least favorable due to cold stormy weather, rough seas, and poor visibilities.

The Bay of Biscay and adjacent Atlantic Ocean are noted for their rough seas, particularly with gales from the west and northwest. Although the storm season extends from September to May, the sea is rarely smooth. High seas and heavy swells close many of the smaller ports in winter. Seas over 5 feet are observed more than 30% of the time in February, and about 7% of the time in August, the month when seas are calmest. Swell greater than 6 feet, generated by storms in the North Atlantic, occurs about 50% of the time in spring and summer, reaching a maximum of 75% in the winter months.

Northerly winds of about 7 knots prevail from April through September. Land and sea breezes, as well as local variations in wind caused by unever. heating of the land and water surfaces, are prevalent in the summer months. Southerly winds, however, are uncommon in summer.

The relatively high frequency with which storms and fronts affect this region in winter and early spring causes strong, variable surface winds. The most frequent winds are from the south or southwest at about 10 knots, with a secondary maximum from north or northwest. Gale-force winds are observed from less than 1% of the time in summer to about 3% of the time in winter.

The coasts, and particularly those backed by mountains extending close to the sea, have considerably more cloudiness than do the other parts of the Iberian peninsula. At most stations in this region, mean cloudiness reaches a maximum of 5-eighths or more in winter or spring, while the least occurs in July or August. Minor seasonal variations are observed at all stations.

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 Subsection on Air, Air-ground, and Ground Surface Operations.

The mean relative humidity is close to 80% throughout the year, with a minimum in midafternoon.

The rainy period over most of the coastal region begins in September or October and lasts until March or April, with the heaviest falls (greater than 4 inches monthly) occurring at most locations during November, December, and January. The remainder of the year is relatively dry with the least rainfall occurring in July or August when the monthly average is generally less than 2.5 inches. The precipitation of late autumn, winter, and early spring may last for periods of 12 to 24 hours, while the air-mass showers prevalent in the warmer half of the year are of short duration. Snow occurs on an average of 5 days annually at most coastal stations and is reported in only about 1% of the ship observations over the surrounding sea.

Thunderstorms are usually associated with passages of cold fronts and occur most frequently in May through September.

The major restrictions to visibility are fog, precipitation, and haze. Although fog is most frequently observed in late spring and summer, the highest frequency of low visibilities along the beaches is recorded at most locations in the winter months. There is considerable variation along the coast. Visibilities of less than 1 mile occur on the average about 20% of the time in winter improving to 7% of the time in midsummer. Visibilities of less than 6 miles occur on the average about 65% of the time in winter improving to about 55% of the time in midsummer. Fog along the coast is usually associated with onshore winds, and although the fog usually dissipates by noon, it occasionally persists throughout the day.

The mean air temperature ranges from about 49° F. in February to 68° F. in August. The absolute minimum temperature at many stations along the coast in winter has been about 20° F. and the absolute maximum in summer has been more than 100° F. Maximum temperatures of 75° to 80° F. have been observed in the midwinter months at coastal stations. Sea-surface temperatures range from 52° F. in February to 66° F. in August.

b. MEDITERRANEAN AND GULF OF CADIZ COASTS — Conditions are generally favorable for amphibious operations in this coastal region in all seasons. Conditions are most favorable in summer when there is less sea and swell, lighter wind, a minimum of precipitation, and good visibility. Autumn is cooler with some increase in sea and swell, wind, and precipitation; visibility, however, remains as favorable as in summer. Spring is less favorable, and winter least favorable because of low visibilities, higher sea and swell conditions, lower temperatures, and occasional invasions of extratropical storms.

Seas greater than 3 feet occur about 50% of the time west of Cabo de Gata in February, decreasing to a frequency of about 20% in August. Northeast of Cabo de Gata seas greater than 3 feet occur about 60% of the time in February, decreasing to about 15% of the time in August. Swell greater than 6 feet occurs more than 50% of the time in February, decreasing to 30% to 40% of the time in August. Sea and swell conditions are usually best south of 40 degrees north.

Along the south coast of Spain from Cabo de Gata westward, westerly winds, although prevalent, alternate with easterly winds in all seasons. Easterly winds in summer, however, may persist for 15 consecutive days. Prevailing surface winds along the coast from Cabo de Gata northeastward to Cabo Creus are offshore in winter and onshore in summer, while over the open Mediterranean westerly winds prevail from October to May and easterly winds the remainder of the year. Along all the coast, except in the Strait of Gibraltar, land and sea breezes are quite prominent during the summer months, with offshore winds at night and onshore winds during the day. The average wind velocity is about 6 to 8 knots, with slightly higher speeds in the Strait of Gibraltar. During the winter, cyclonic storms frequently invade this NIS Area, most approaching over the Bay of Biscay but some over southern Spain and the Strait of Gibraltar causing the surface winds to be quite variable. Gale-force winds are observed 1% or less of the time throughout the year, with the least frequency during the warmer half of the year, especially during June and July.

Strong southwesterly winds which precede the approach of a storm from the west may reach gale force and are often accompanied by showers or thunderstorms. These winds are known locally as *vendavals*. Waterspouts may accompany such winds when they occur at sea. Their onset is often sudden with little or no warning. The vendaval generally ends with the passage of a cold or occluded front and a sudden shifting of the wind to the west or northwest.

During summer, the least cloudy season, the average sky cover is close to 35%; a secondary minimum occurs in February, averaging 45%. Average cloudiness in the remaining months is close to 55%.

The southern coastline has hot, dry summers characteristic of the Mediterranean region. Highest mean precipitation amounts, usually 2 to 4 inches monthly, occur in autumn or spring, and minimum amounts of 1 inch or less in July and August; a secondary minimum occurs in midwinter. Precipitation usually occurs as showers and is therefore of short duration. Snow is rare except on the northeast coast where it is observed about 5 days each year at several stations.

Thunderstorms, usually of the air mass type, are most frequent during the summer months, but may occur in any season. Most stations report less than 30 thunderstorms per year.

The primary restrictions to visibility are haze and fog. Fog is most common in winter or spring when it is observed about 10% of the time during the early morning. It is rarely observed in summer and autumn. Haze is most frequently observed in late spring and summer. Visibilities of 1 mile or less occur about 6% of the time in winter and spring and less than 1% of the time from June through September. Morning visibilities may be less than 2½ miles as much as 25% of the time at several stations in winter and spring, but in summer 2½-mile visibilities are generally reported less than 10% of the time along the Mediterranean and Gulf of Cadiz coasts.

The average temperature in winter is close to 50° F., with average daily minimums generally above 40° F. Temperatures below freezing are uncommon. In summer the mean daily maximum is close to 85° F. and the minimum close to 68° F. Temperatures over 100° F. are occasionally observed in midsummer. Relative humidity varies considerably from place to place along the coast, but in general it is about 75% during the morning in winter and spring, reaching a low in summer of 65% or less during the afternoon. Sea-surface temperatures range from about 55° F. in February to an average of 75° F. in August.

Conditions on the coasts of the Balearic Islands are quite similar to those on the eastern coast of the Spanish mainland.

c. CANARY ISLANDS — Conditions are generally favorable for amphibious operations in the Canary Islands in all seasons. The south sides of the islands, sheltered from the northeast trades, are preferable in all seasons.

Island topography and the land- and sea-breeze effect considerably modify the northeast trade winds. Descending the southern slopes as dry foehn winds, the trades counteract the southerly sea breeze during the day and produce a calm for some distance to leeward. Easterly winds, common in winter, are hot, dry, and dusty, having originated over the Sahara desert. Westerly or southerly winds, generally associated with depressions passing north of the islands, are infrequent. Gale-force winds occur less than 1% of the time from autumn to early spring. They are usually associated with oceanic depressions. The average wind velocity is about 10 knots in spring and summer, decreasing to 7 knots in autumn and winter.

Sea and swell conditions vary only slightly from season to season. Seas greater than 3 feet occur 30% to 40% of the time and swells greater than 6 feet are observed about 45% of the time. However, sea and swell conditions are more favor-

able for operations on the leeward side of the islands.

The average cloud cover is close to 65% in winter, decreasing to 25% in July and August. Clouds are usually of the cumulus type and overcast skies are infrequent.

Precipitation is light and usually of the air-mass shower type. Annual rainfall ranges from 10 inches at coastal stations to 20 inches on the exposed windward slopes, with the summer months almost rainless. Thunderstorms are uncommon, occurring on only 3 to 10 days per year.

Visibilities are excellent over the ocean surrounding the Canary Islands, except when dust haze from the Sahara invades the area; as a rule, only the eastern portion of the island group is affected. Showers restrict the visibility locally, and fog is rarely observed. At coastal stations visibilities of 1 mile or less occur less than 2% of the time, and visibilities of no more than 6 miles occur 8% or less of the time in autumn and winter and less than 5% of the time in spring and summer.

The mean air temperature on the coast ranges from about 63° F. in February to 76° F. in July and August. Lowest observed temperatures near the coast are about 50° F. or higher; temperatures over 100° F. are seldom observed, although an extreme maximum of 109° F. was observed at Santa Cruz on Tenerife Island. The sea-surface temperature ranges from about 64° F. in February to about 72° F. in August.

Relative humidity over the water area and northern shores of the islands averages about 80% in summer, decreasing to about 70% in winter. On the south coasts of the islands, averages are slightly lower.

C. Meteorological facilities and organization (as of November 1962)

1. History and organization

In Spain the first meteorological observations on record were taken from 1556 to 1595 at the Academia Médico-matritense in Diego Palomino. The first continuous series of observations began in the 18th century. In 1855 the Astronomical Observatory of Madrid was designated as the coordinating center for the few existing stations. In 1859 the meteorological services were organized under the newly created Junta General de Estadística, with a network of 22 stations. The Junta's services and responsibilities were changed from time to time and passed on to successor organizations. In 1934 the meteorological services were organized as the Servicio Meteorológico Nacional (S.M.N.). Spain became a member of the World Meteorological Organization on 27 February 1951. The S.M.N. is the only meteorological organization in Spain today; this service supports civil and military aviation as well as domestic needs. Units of the U.S. Air Force Air Weather Service stationed in Spain work with the S.M.N.

The S.M.N. has an adequate network of surface and upper-air observing stations and forecast facilities. Personnel are well trained and competent. Rather poor communications facilities have resulted in slow dissemination of reports; however, this problem should be resolved with the installation of radio-teletype and radio-facsimile circuits. These communications facilities, along with the anticipated opening of the forecast center in Madrid in 1963, will further improve the service. Much of the communications equipment is already in place.

The S.M.N. is under the Directorate of Flying Safety, which is under the Air Ministry. Central Office, Retiro Park, Madrid, is the meteorological service headquarters. Colonel Luis Azcarraga serves as director, assisted by Mr. Pio Pita Suarez. The sections of the headquarters, with some of the chiefs are : 1) Aerology—José Antonio Barasoain, 2) Instruments—Miss Felisz Martin, 3) Aeronautics—Incencio Font, 4) Communications—Pedro Rodriguez Franco, 5) Research and Training—Francisco Moran, 6) Climatology—Miguel Diaz, 7) Agriculture, 8) Library and Archives, 9) Hydrology, 10) Marine, and 11) Forecasting and Observing. Some of the branches and facilities are to be relocated at the new Analysis and Forecast Center, Madrid University. Of the 18 regional offices under the S.M.N., 14 are in the NIS 9 Area. Each region has a center that collects and disseminates information in that region. Approximately 250 qualified meteorologists and 500 assistants, observers and support people work for the S.M.N. Most of these perform in a military capacity. Volunteer observers, salaried climatologists, and communication personnel are usually nonmilitary.

The synoptic network has 106 observing stations, including 35 at airfields. Upper-air stations include five rawinsonde and 15 pibal locations. Three stations operate the Sferics (radio storm detection) network. Three forecast centers meet International Civil Aviation Organization standards as Main Meteorological Offices (MMO). Five additional offices provide aviation forecasting service, dependent on the MMO's.

2. Weather observing facilities

Surface synoptic observations are taken daily by 94 stations in continental Spain. Of these, 25 report observations every 3 hours (all times are GMT). Remaining stations report synoptic observations from two to six times daily, primarily during daylight hours (0600–1800). Airport stations at Madrid, Barcelona, Valencia, Seville, and Saragossa take hourly and half-hourly observations 24 hours per day. Nineteen other stations record hourlies and/or half-hourlies between 0600 and 1800 (GMT).

The Balearic Islands have four synoptic observing stations. Two of these, Palma/Son San Juan Airport (39°33'N., 02°45'E.) and Mahón/San Luis Airport take three-hourly synoptic observations. In the Canary Islands, three-hourly synoptic observations are taken at Las Palmas, the main station, and at Tenerife/Los Rodeos Airport.

Twice-daily rawinsonde observations (0000 and 1200) are taken by Madrid, La Coruña, Saragossa, Palma/Son Bonet Airport, and Santa Cruz on Tenerife. Madrid and La Coruña also schedule pibal wind observations for 0600 and 1800 daily. Fifteen other stations in this NIS Area take from one to four pibals daily. Madrid, La Coruña, and Palma/Son Bonet Airport make up the Sferics network. In addition to the synoptic network, there are numerous rainfall and temperature measuring posts.

SCR–658 type upper-air equipment, purchased from France, is used at most rawinsonde locations. Present plans call for the installation of at least two sets of the more modern GMD–1B tracking equipment during 1963. Visibility measuring transmissometers and remote-reading temperature/humidity sets are being placed at major airports. Standard pressure, temperature, and precipitation measuring instruments are in use at most weather stations. In recent years Spain has been manufacturing some radiosonde flight instruments. A lack of equipment technicians has hampered the upper-air program. Calibration of basic instruments is seldom accomplished. There is a need for electronic cloud-measuring equipment and weather radars.

The meteorological service's communications system for collecting data relies heavily on telephone, telegraph, and CW-radio broadcasts. A micro-wave radio teletype system is being installed and, when completed, this network will expedite the collection of data from Spain and neighboring islands. Madrid is connected with the International Meteorological Teleprinter Network of Europe and regularly receives observations and forecasts from the main European terminals. Madrid acts as a relay center between stations in Spain and Paris. Madrid/Barajas airport and the USAF weather relay center at Madrid/Torrejón Air Base exchange data via teletype.

3. Weather forecasting facilities

Forecasting service to air operations is mainly the responsibility of the Main Meteorological Offices at Barcelona, Madrid, and Seville. Las Palmas (Canary Islands), Palma/Son San Juan Airport (Balearic Islands), Bilbao, Salamanca, Valencia, Saragossa, and Málaga provide aviation meteorological support under the supervision of the MMO's. Limited service is also available at the regional centers.

Air route, terminal, area, and severe weather forecasts are prepared at Barcelona, Las Palmas, Madrid, Palma/Son San Juan Airport, and Seville. Madrid/Barajas Airport and the Central Office, Retiro Park, work together in preparing forecasts for the general public. Marine and agricultural forecasts are issued at the Central Office and, to a limited extent, at regional offices. The main forecast offices prepare most standard maps and charts.

Madrid and Seville receive facsimile weather maps from the USAF facsimile center at Madrid/Torrejón Air Base as well as from England and Germany. German-made Hell-fax equipment is in use. Additional facsimile receivers and transmitters are to be installed as the S.M.N. is programming a national radio facsimile network. The Madrid Forecast Center will transmit these charts to five forecast locations, in addition to Retiro Park and the Air Ministry in Madrid.

Spanish forecast products and competence are considered good and improving.

4. Training and educational level of meteorologists

Requirements for students entering meteorological training are comparable to those in the U.S. Meteorological assistant trainees are usually of high caliber and often advance to forecasting functions. All meteorological training is given at the school in Retiro Park. There are only a few students to a class and instruction is quite individualized. Another advantage is the accessibility of the various divisions of the S.M.N. The training and competence of both forecasters and observers are adequate.

D. Climatic data tables

This Subsection contains the various climatic tables referred to in Subsections A and B. Stations in each table are listed alphabetically for each of five discussion regions as described in the introduction to Subsection A. The available data adequately described the general climatic trends. In many areas, however, the transitional zones are difficult to locate due to the sparse station network. This is particularly true along the north coast where Santandar and La Coruña are the only stations with ceiling and visibility data. A similar lack of data prevents a more accurate analysis of climatic changes between the Northern Coast Region and the Cordillera Cantabrica. Data for the Spanish Pyrenees are also inadequate. FIGURE 53, a map of meteorological station locations with an accompanying list giving latitude, longitude, and elevation of each station, appears at the end of this Section. The annual values in some tables are slightly different from the sums or means of the monthly values because of the rounding-off of fractions.

FIGURE 26. MEAN CLOUDINESS (%) AT SPECIFIED HOURS

REGION AND STATION	HOUR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
	(LST)														
Northern Coast:															
LaCoruña	2300	59	62	56	55	50	58	52	52	51	55	62	64	56	5
	0500	69	62	64	66	68	69	68	66	70	66	64	69	66	12
	1100	74	69	68	66	66	64	59	56	65	66	70	76	66	12
	1700	74	71	69	64	66	68	54	59	64	69	72	76	68	11
Santander	0000	65	60	51	62	54	68	42	58	60	56	71	70	60	2–3
	0600	64	64	68	74	70	72	71	66	69	69	69	65	69	12
	1200	76	71	65	70	69	68	64	62	68	70	74	76	70	12
	1800	74	75	68	71	71	75	69	69	72	71	71	74	71	9–10
Interior:															
Albacete/Los Llanos Airport	0000	36	34	31	41	35	31	18	18	22	38	39	40	32	3–5
	0600	45	44	44	41	41	39	21	24	36	54	52	48	42	3–5
	1200	54	56	58	58	55	44	24	29	41	58	61	59	50	3–5
	1800	51	51	55	58	60	50	34	34	46	56	51	56	50	3–5
Ciudad Real	0000	*Data not available*													
	0600	35	39	62	58	40	24	11	12	18	39	50	54	36	1–5
	1200	50	45	45	40	38	24	10	14	21	38	56	61	36	4–5
	1800	40	42	46	44	46	34	21	20	29	44	49	52	39	4–5
Granada Airport	0000	*Data not available*												*na*	
	0600	46	42	56	54	44	30	11	15	29	44	45	42	39	8–10
	1200	55	54	59	58	48	38	15	19	38	50	55	56	45	9–11
	1800	56	56	62	62	51	40	16	20	39	48	56	56	48	8–10
Madrid/Barajas Airport	0000	*Data not available*													
	0600	49	42	48	48	50	39	20	26	38	48	50	50	42	12
	1200	62	59	60	55	56	51	26	30	44	56	59	58	51	12
	1800	58	54	60	59	60	54	35	35	49	56	55	56	52	12
Madrid/Torrejón Air Base	0000	54	36	50	44	43	33	13	15	29	44	48	54	39	4–5
	0600	55	44	56	51	54	41	19	23	39	53	50	56	45	4–5
	1200	68	54	70	56	59	50	23	25	49	60	64	69	54	4–5
	1800	65	51	70	60	61	56	28	33	53	59	59	65	55	4–5
Monflorite	0000	*Data not available*													
	0600	45	41	49	45	51	44	29	38	36	42	51	49	44	3–4
	1200	52	50	54	50	59	48	29	36	36	48	54	58	48	3–4
	1800	44	50	51	48	59	46	35	36	40	44	51	50	46	3–4
Morón Air Base	0000	50	36	53	44	36	21	8	9	20	31	45	54	34	4–5
	0600	54	39	59	53	50	36	15	14	33	40	49	54	41	4–5
	1200	61	54	70	59	56	39	13	18	36	53	64	70	49	4–5
	1800	64	51	68	55	49	31	10	16	34	50	65	68	47	4–5
Salamanca Airport	0000	44	48	41	41	39	32	18	15	24	41	46	52	36	3–4
	0600	56	54	51	52	55	42	22	29	38	55	61	60	48	4–5
	1200	65	65	60	61	60	52	29	34	45	60	68	68	55	4–5
	1800	59	60	56	61	66	56	35	35	50	60	59	64	55	4–5
Saragossa Valenzuela Air Base	0000	50	39	43	44	48	40	24	23	38	51	48	54	42	5–6
	0600	49	48	56	55	59	50	33	36	58	56	59	61	52	5–6
	1200	65	63	61	58	59	53	29	31	54	61	66	70	56	5–6
	1800	63	58	64	59	61	54	35	40	58	60	64	69	57	5–6
Seville/San Pablo Airport	0000	*Data not available*													
	0600	40	40	51	49	45	31	18	19	32	41	42	40	38	10–12
	1200	49	46	61	55	46	35	12	16	30	45	54	50	41	9–11
	1800	51	52	60	50	45	31	12	15	34	46	54	50	41	10–12
Valladolid Airport	0000	54	44	42	38	41	40	16	18	28	35	51	56	39	4–5
	0600	64	55	60	56	59	50	25	34	48	58	60	72	54	12
	1200	75	66	68	69	66	59	32	39	55	64	66	79	61	12
	1800	65	60	64	62	68	59	36	41	54	59	56	71	58	12

FIGURE 26 (*Continued*)

REGION AND STATION	HOUR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
	(LST)														
Southern and Eastern Coasts:															
Barcelona	0000	*Data not available*													
	0600	41	41	49	50	51	41	32	44	52	54	54	45	46	12
	1200	46	48	51	49	51	45	36	45	54	56	54	52	49	11–13
	1800	49	54	59	59	60	54	40	49	58	56	49	48	52	8–10
Rota Naval Air Station	0000	51	36	53	44	40	23	13	8	25	31	45	53	35	3–4
	0600	53	41	55	54	54	34	25	16	28	36	45	53	41	3–4
	1200	64	53	61	54	51	34	19	18	43	49	60	64	48	3–4
	1800	63	51	59	53	48	23	11	13	35	44	60	69	44	3–4
San Javier	0000	31	32	36	40	32	30	21	22	31	39	40	35	32	4–5
	0600	38	44	52	56	51	44	39	35	45	50	50	42	45	4–5
	1200	49	48	55	55	52	39	30	34	45	58	56	56	48	4–5
	1800	46	48	58	59	54	40	26	34	46	54	54	50	48	4–5
Valencia	0000	29	29	35	42	38	30	25	25	29	35	39	38	32	4–5
	0600	39	41	54	50	54	42	39	44	48	52	52	40	46	12
	1200	52	52	56	52	54	45	32	39	44	55	59	50	49	11–13
	1800	51	51	56	58	56	50	36	44	51	56	52	48	51	12
Balearic Islands:															
Mahón/San Luis Airport	0000	*Data not available*													
	0600	56	61	59	58	51	48	26	38	52	65	65	56	52	8–10
	1200	70	69	61	62	51	49	32	39	56	70	71	70	59	9
	1800	58	61	58	58	50	44	24	34	50	59	59	56	51	8–10
Canary Islands:															
Santa Cruz	0000	*Data not available*													
	0500	64	68	51	56	44	40	25	32	38	42	62	66	49	4–5
	1100	70	68	51	61	48	36	24	25	41	52	65	66	51	4–5
	1700	69	62	50	55	39	30	19	18	34	51	68	71	48	4–5

FIGURE 27. 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	YRS REC
	(LST)														
Northern Coast:															
La Coruña	2300	10	8	12	11	12	10	12	12	12	11	8	8	124	5
	0500	7	8	8	7	7	6	7	6	5	7	8	6	80	12
	1100	4	5	5	5	6	6	8	8	5	5	6	3	67	12
	1700	4	5	6	6	6	5	10	7	6	5	5	4	71	11
Santander	0000	10	9	14	11	14	8	17	13	11	12	8	8	132	2–3
	0600	9	9	8	5	7	6	7	7	7	7	7	9	87	12
	1200	3	5	7	4	6	6	8	8	5	5	4	4	66	12
	1800	5	5	7	5	5	4	7	6	4	5	6	5	63	9–10
Interior:															
Albacete/Los Llanos Airport	0000	16	16	19	14	16	16	23	23	21	17	15	14	210	3–5
	0600	15	12	13	11	11	14	22	20	16	11	10	12	166	3–5
	1200	11	9	8	8	8	11	20	19	14	8	7	8	130	3–5
	1800	11	10	8	8	7	9	16	16	12	9	10	9	125	3–5
Ciudad Real	0600	21	17	7	8	16	23	28	29	25	16	12	14	215	1–5
	1200	15	12	15	16	16	21	28	26	22	17	10	9	207	4–5
	1800	15	14	14	14	11	16	22	23	18	12	12	11	181	4–5
Granada Airport	0600	15	14	11	11	15	19	27	25	19	15	14	16	200	8–10
	1200	11	11	10	9	13	16	26	24	15	12	10	11	166	9–11
	1800	11	9	8	8	11	16	26	23	15	13	9	11	159	8–10
Madrid/Barajas Airport	0600	14	13	13	12	11	15	23	20	16	13	13	14	177	12
	1200	8	8	8	8	9	10	20	19	12	9	8	10	130	12
	1800	10	9	7	8	7	8	16	17	11	9	9	11	122	12

See footnote at end of table.

FIGURE 27 (*Continued*)

REGION AND STATION	HOUR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
	(LST)														
Interior (*Continued*):															
Madrid/Torrejón Air Base*	0000	13	17	15	15	15	19	28	26	21	16	15	13	212	4–5
	0600	13	15	12	12	12	16	25	23	17	13	14	12	183	4–5
	1200	9	11	7	11	10	13	24	22	13	9	9	9	146	4–5
	1800	8	12	6	9	10	11	21	19	11	12	10	9	139	4–5
Monflorite	0600	15	13	12	12	10	13	20	16	14	13	10	11	158	3–4
	1200	10	8	9	10	7	10	19	15	15	11	9	8	132	3–4
	1800	14	9	10	11	7	12	18	15	14	13	10	12	143	3–4
Morón Air Base*	0000	13	17	12	15	19	23	29	29	24	20	16	12	229	4–5
	0600	14	17	11	12	14	17	26	26	19	16	14	13	199	4–5
	1200	10	12	7	10	11	16	27	25	18	13	9	8	164	4–5
	1800	10	12	7	11	13	19	27	26	19	15	8	8	175	4–5
Salamanca Airport	0000	15	13	15	15	14	17	24	26	21	14	13	11	197	3–4
	0600	12	10	12	11	10	14	21	19	15	10	7	9	150	4–5
	1200	8	6	8	7	7	9	21	17	12	7	6	6	114	4–5
	1800	10	7	10	7	5	7	17	16	11	7	8	7	112	4–5
Saragossa/Valenzuela Air Base*	0000	14	10	11	11	14	10	5	5	10	15	12	14	130	5–6
	0600	15	13	12	12	11	14	20	18	11	12	11	10	158	5–6
	1200	9	9	10	11	10	12	20	20	11	9	8	7	136	5–6
	1800	10	10	9	10	10	12	19	17	10	11	9	8	134	5–6
Seville/San Pablo Airport	0600	17	15	13	13	14	19	24	24	19	17	15	18	207	10–12
	1200	14	12	8	9	13	17	26	24	18	12	10	12	175	9–11
	1800	12	10	8	10	12	17	26	25	17	12	10	13	172	10–12
Valladolid Airport	0000	13	12	15	17	16	15	25	25	21	20	12	12	202	4–5
	0600	9	11	10	10	10	12	21	18	13	10	10	8	143	12
	1200	5	6	7	6	7	9	18	16	10	6	7	4	101	12
	1800	8	8	7	7	7	8	18	15	10	9	10	6	112	12
Southern and Eastern Coasts:															
Barcelona	0600	16	13	14	11	11	14	17	13	10	10	10	14	153	12
	1200	14	11	12	12	11	12	16	12	9	9	10	11	138	11–13
	1800	13	10	11	9	8	11	14	12	10	11	14	14	136	8–10
Rota Naval Air Station*	0000	13	16	12	15	16	23	27	29	21	20	16	13	222	3–4
	0600	13	15	12	11	11	18	22	26	20	19	16	13	196	3–4
	1200	9	11	10	11	13	18	24	24	14	15	9	9	168	3–4
	1800	9	11	11	11	14	23	27	27	18	15	9	7	182	3–4
San Javier	0000	20	17	17	14	17	17	22	22	18	17	15	19	213	4–5
	0600	17	13	11	10	10	13	16	16	11	11	11	15	154	4–5
	1200	13	11	9	9	10	15	17	17	12	7	8	9	136	4–5
	1800	15	11	9	9	10	14	22	17	13	10	10	11	151	4–5
Valencia	0000	20	18	18	15	17	18	21	22	20	18	15	17	219	4–5
	0600	17	14	10	12	11	14	16	13	12	11	11	17	157	12
	1200	11	10	9	10	10	12	17	15	13	9	9	12	137	11–13
	1800	12	10	9	8	9	11	16	14	11	9	10	13	132	12
Balearic Islands:															
Mahón/San Luis Airport	0600	10	8	10	8	12	12	21	16	10	5	5	9	124	8–10
	1200	5	5	8	7	12	11	18	15	8	3	3	4	98	9
	1800	9	8	9	9	13	13	22	18	10	7	8	10	135	8–10
Canary Islands:															
Santa Cruz	0500	7	5	10	9	13	15	21	19	17	14	8	5	143	4–5
	1100	6	5	11	7	12	17	21	22	14	11	6	6	136	4–5
	1700	5	6	10	8	15	18	23	23	17	11	5	4	145	4–5

* Clear day (≦3-tenths cloud cover).

FIGURE 28. 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
	(LST)														
Northern Coast:															
La Coruña	2300	17	16	16	13	12	14	15	14	13	14	17	18	179	5
	0500	20	16	17	17	20	19	20	18	19	18	18	19	220	12
	1100	21	18	20	18	18	16	15	14	16	18	20	23	216	12
	1700	22	19	20	17	18	17	13	15	17	19	21	22	219	11
Santander	0000	19	16	15	18	15	19	11	17	17	17	21	21	202	2–3
	0600	18	17	19	21	20	20	21	19	19	19	19	19	229	12
	1200	22	19	18	18	19	18	17	17	17	20	20	23	227	12
	1800	21	19	19	20	21	21	19	19	20	19	20	21	238	9–10
Interior:															
Albacete/Los Llanos Airport	0000	8	7	7	9	5	4	2	3	4	7	8	9	75	3–5
	0600	12	10	9	11	11	7	2	3	7	12	12	11	106	3–5
	1200	14	15	14	14	13	8	2	4	8	13	15	15	135	3–5
	1800	12	12	13	15	15	9	6	5	10	14	12	14	135	3–5
Ciudad Real	0600	9	10	16	13	7	3	1	1	2	6	12	14	93	1–5
	1200	13	10	11	9	6	2	*	1	1	7	14	16	89	4–5
	1800	7	9	11	9	8	5	2	2	3	8	10	12	87	4–5
Granada Airport	0600	12	10	15	13	11	6	2	2	6	10	11	11	110	8–10
	1200	14	13	16	14	11	8	3	3	7	12	13	15	128	9–11
	1800	14	13	17	16	13	8	2	3	8	12	14	14	133	8–10
Madrid/Barajas Airport	0600	13	9	11	11	12	8	3	4	8	11	12	13	114	12
	1200	17	14	16	12	14	11	3	4	8	13	14	15	142	12
	1800	15	11	16	14	15	11	5	6	10	14	13	14	144	12
Madrid/Torrejón Air Base**	0000	16	8	12	10	10	7	2	4	7	13	12	15	115	4–5
	0600	14	11	15	13	16	11	5	4	9	14	13	16	141	4–5
	1200	20	14	21	15	17	12	4	6	11	17	18	20	176	4–5
	1800	19	13	22	16	18	15	4	8	13	16	16	19	178	4–5
Monflorite	0600	10	6	10	10	11	8	6	7	6	7	11	11	103	3–4
	1200	12	9	11	10	14	8	4	5	7	9	13	13	113	3–4
	1800	9	9	11	10	14	9	8	4	7	10	11	11	112	3–4
Morón Air Base**	0000	13	8	14	11	10	4	1	2	5	8	12	15	102	4–5
	0600	15	10	17	14	13	9	3	2	7	11	12	14	127	4–5
	1200	17	14	21	16	16	10	2	4	8	15	18	21	161	4–5
	1800	19	14	20	13	12	6	1	2	7	14	18	20	145	4–5
Salamanca Airport	0000	13	11	11	9	8	6	2	3	3	7	10	13	94	3–4
	0600	15	14	13	12	14	10	3	4	7	13	16	16	137	4–5
	1200	18	15	16	16	17	12	4	6	9	14	18	19	164	4–5
	1800	16	13	15	17	18	12	7	5	11	14	15	17	158	4–5
Saragossa/Valenzuela Air Base**	0000	14	10	11	11	14	10	5	5	10	15	12	14	130	5–6
	0600	13	11	16	15	17	12	8	9	15	15	16	18	165	5–6
	1200	19	16	18	16	16	12	7	7	13	17	18	21	180	5–6
	1800	18	15	19	16	17	13	8	11	16	16	17	20	185	5–6
Seville San Pablo Airport	0600	11	10	13	12	11	7	4	4	7	10	11	11	111	10–12
	1200	13	11	16	13	11	8	2	3	5	10	13	12	116	9–11
	1800	13	12	15	10	10	5	2	2	6	10	13	13	110	10–12
Valladolid Airport	0000	16	9	10	9	10	7	4	3	6	9	13	16	109	4–5
	0600	19	13	16	14	16	12	5	7	10	14	16	20	162	12
	1200	22	17	20	19	19	15	6	8	14	17	18	23	199	12
	1800	18	14	17	16	19	14	8	9	12	15	14	19	176	12

* <0.5 day.

** Cloudy day (≧7-tenths cloud cover).

FIGURE 28 (*Continued*)

REGION AND STATION	HOUR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
	(LST)														
Southern and Eastern Coasts:															
Barcelona	0600	10	9	12	12	12	9	6	10	13	13	12	11	129	12
	1200	11	11	13	12	13	10	7	9	12	14	13	13	137	11–13
	1800	12	13	17	17	17	13	10	12	15	14	13	13	165	8–10
Rota Naval Air Station**	0000	13	8	14	11	11	4	3	2	6	7	11	15	105	3–4
	0600	14	9	15	14	16	7	6	4	7	10	11	14	128	3–4
	1200	19	13	18	14	14	9	5	4	9	14	16	19	154	3–4
	1800	18	12	17	14	13	5	2	2	9	11	16	21	140	3–4
San Javier	0000	7	7	8	8	6	6	2	3	5	8	8	7	75	4–5
	0600	9	9	13	14	12	9	8	5	7	10	11	9	117	4–5
	1200	13	10	13	12	12	8	3	5	8	14	12	14	122	4–5
	1800	12	10	15	15	13	9	5	7	11	12	12	12	133	4–5
Valencia	0000	8	6	8	10	9	6	4	5	6	7	8	9	87	4–5
	0600	10	9	13	13	14	9	9	10	10	12	13	10	131	12
	1200	14	12	15	12	13	9	5	7	9	13	15	13	136	11–13
	1800	13	11	14	14	14	11	8	10	12	14	13	12	146	12
Balearic Islands:															
Mahón/San Luis Airport	0600	14	14	15	15	13	11	5	9	12	16	17	14	154	8–10
	1200	19	17	16	16	13	10	6	7	13	19	19	19	175	9
	1800	14	15	14	15	12	10	4	7	11	15	15	14	145	8–10
Canary Islands:															
Santa Cruz	0500	17	18	12	13	9	9	5	7	8	9	16	17	140	4–5
	1100	19	16	13	16	10	8	4	5	9	12	17	17	146	4–5
	1700	19	16	11	13	7	5	3	3	7	13	18	19	132	4–5

* <0.5 day.

** Cloudy day (≧7-tenths cloud cover).

FIGURE 29. MEAN NUMBER OF DAYS WITH THUNDERSTORMS

REGION AND STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Northern Coast:														
Bilbao	1	*	1	1	2	3	2	2	2	1	1	1	17	35
Gijón	3	2	2	2	3	4	2	3	2	1	2	2	28	7
La Coruña	1	1	1	1	1	1	1	1	1	*	*	*	10	20
Oviedo	1	1	1	1	2	2	2	2	1	*	*	1	14	50
Pontevedra	1	1	1	1	2	2	1	1	1	1	*	*	12	8
San Sebastián	2	2	2	3	4	4	4	4	5	2	2	3	37	7
Santander	5	5	2	3	2	4	4	3	3	4	2	5	42	7
Interior:														
Albacete	1	1	2	2	3	3	4	2	2	2	1	*	23	7
Ávila	*	*	1	1	1	2	4	2	2	2	1	0	17	7
Badajoz	*	*	1	2	1	1	3	2	1	*	*	*	12	7
Burgos	*	2	4	4	4	3	5	3	5	1	0	0	30	7
Cáceres	1	1	1	1	1	1	2	1	1	1	1	*	12	7
Ciudad Real	*	3	*	1	1	1	2	1	1	3	1	*	14	7
Cuenca	*	1	1	2	3	4	3	3	5	3	2	*	28	7
Granada	*	1	1	5	1	3	3	2	3	3	1	0	24	7
Huesca	*	*	1	4	4	4	3	7	5	1	2	0	32	7
León	0	0	*	1	1	4	2	2	1	*	0	0	11	9
Madrid	0	0	*	1	3	2	1	1	2	*	*	*	11	9–10
Murcia	*	*	1	2	6	5	3	4	5	3	1	1	31	15
Orense	2	5	1	3	4	2	1	3	2	*	1	*	25	7
Pamplona	0	*	*	1	2	3	3	2	1	*	*	*	13	*na*
Puigcerdá	0	0	0	0	1	1	2	1	1	*	0	0	6	5
Ribas	0	0	0	0	1	1	2	0	0	0	0	0	4	3
Salamanca	1	*	2	1	1	2	7	2	2	1	3	0	22	7
Saragossa	*	1	*	2	4	8	4	3	5	2	0	0	30	7
Seville	*	1	2	1	3	1	*	*	1	1	1	*	12	10
Soria	2	*	1	3	2	7	10	4	3	*	*	0	34	7
Teruel	1	2	1	1	2	5	5	5	4	2	3	2	33	7
Valladolid	*	2	1	2	3	4	5	2	2	1	1	0	24	7

na Data not available.

* <0.5 day.

FIGURE 29 (*Continued*)

REGION AND STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Southern and Eastern Coasts:														
Alicante	*	2	3	7	3	4	1	6	3	2	1	1	34	7
Almería	2	0	1	1	2	*	*	2	1	*	1	1	12	7
Bagur	*	*	*	*	1	1	1	1	1	2	*	*	8	10
Barcelona	2	*	2	1	3	3	2	5	4	4	1	2	30	7
Cadiz	1	2	*	6	2	2	*	2	2	4	2	2	25	7
Gerona	0	*	1	2	2	3	2	3	3	2	*	*	18	10
Gibraltar	2	1	1	1	1	1	*	1	1	1	1	1	12	7
Málaga	0	0	*	0	1	1	1	1	*	1	*	1	7	8
Tortosa	2	1	4	4	6	5	3	8	6	2	1	3	45	7
Valencia	*	1	3	2	2	2	1	3	3	1	2	1	20	7
Balearic Islands:														
Mahón	1	2	2	2	2	2	2	2	2	3	1	2	21	7
Palma	1	2	3	2	1	1	2	2	2	2	1	2	20	7
Canary Islands:														
Izaña	*	*	2	0	0	0	0	1	0	0	3	1	8	7
Las Palmas/Gando Airport	*	2	*	0	0	0	0	0	1	0	3	3	10	7
Los Rodeos Airport	*	*	3	0	0	0	0	1	0	0	2	2	9	7
Ortava	*	*	*	0	0	0	0	0	*	1	1	*	3	*na*
Tefía	3	*	*	0	0	0	0	0	0	0	*	*	5	7

na Data not available.

* <0.5 day.

FIGURE 30. PERCENTAGE FREQUENCY OF CEILING* HEIGHT ≦1,968 FEET AT SPECIFIED HOURS

REGION AND STATION	HOUR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
	(LST)														
Northern Coast:															
La Coruña	2300	8	12	6	7	7	11	14	4	4	9	9	12	9	4–5
	0500	18	15	14	14	17	21	23	17	15	16	17	21	17	11–12
	1100	16	15	12	12	12	9	12	6	8	12	16	23	13	11–12
	1700	16	15	11	11	12	13	9	6	5	16	18	24	13	10–12
Santander	0000	14	6	7	13	8	3	0	10	13	10	12	27	10	1–3
	0600	25	28	21	28	26	27	27	18	24	24	23	28	25	11–12
	1200	26	22	12	22	21	23	15	18	20	23	26	25	21	11–12
	1800	27	25	15	22	19	24	22	20	24	25	24	24	23	8–10
Interior:															
Albacete/Los Llanos Airport	0000	8	10	8	14	5	4	2	5	5	4	9	9	7	3–5
	0600	12	14	10	14	8	3	1	2	10	11	14	11	9	3–5
	1200	19	16	11	14	10	5	2	2	7	10	13	13	10	3–5
	1800	12	16	9	14	12	8	3	7	12	8	8	12	10	3–5
Badajoz/Talavera La Real Airport	0600	16	11	13	6	5	3	1	3	1	7	11	12	7	4–5
	1200	13	6	5	4	4	1	0	1	0	3	11	14	5	4–5
	1800	7	1	5	2	1	1	0	0	1	0	2	4	2	4–5
Granada Airport	0600	15	10	14	14	10	2	1	1	3	6	10	10	8	8–10
	1200	18	13	10	7	6	2	0	0	2	8	11	15	8	9–10
	1800	13	10	7	5	5	1	**	0	1	5	5	13	5	8–10
Madrid/Barajas Airport	0000	9	11	12	6	8	1	1	1	3	7	14	9	7	4–5
	0600	31	17	13	7	6	1	**	1	3	11	17	28	11	11–12
	1200	25	18	13	6	5	2	0	1	2	10	17	20	10	9–12
	1800	21	11	9	5	5	1	**	**	1	8	13	21	8	10–12
Madrid/Torrejón Air Base	0000	16	5	6	3	1	1	0	0	1	5	9	18	5	4–5
	0600	23	12	14	7	3	1	1	1	2	8	13	25	9	4–5
	1200	25	11	9	3	2	0	0	1	1	6	14	22	8	4–5
	1800	14	2	5	3	0	0	0	0	2	4	5	17	4	4–5
Monflorite	0600	14	5	8	7	7	2	1	0	1	2	2	15	5	3–4
	1200	13	3	7	7	9	4	2	1	0	3	2	12	5	3–4
	1800	8	6	7	5	4	1	0	1	0	0	1	11	4	3–4

* Ceiling herein is defined as ≦5-eighths cloud cover except at Madrid/Torrejon Air Base, Moron Air Base, and Saragossa/Valenzuela Air Base where ceiling is defined as ≦6-tenths cloud cover.

** <0.5%.

FIGURE 30 (*Continued*)

REGION AND STATION	HOUR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
	(LST)														
Interior (*Continued*):															
Morón Air Base.....	0000	9	5	6	5	3	1	2	1	0	6	3	10	4	4–5
	0600	10	5	9	6	5	3	6	1	5	9	5	12	6	4–5
	1200	12	8	11	5	6	1	0	3	0	2	8	16	6	4–5
	1800	6	4	5	1	1	0	0	0	0	3	5	14	3	4–5
Salamanca Airport....	0000	24	16	9	7	5	1	1	1	0	2	7	16	7	3–4
	0600	25	26	21	9	10	6	1	3	1	11	12	24	12	4–5
	1200	26	32	20	8	9	3	1	1	3	9	13	22	12	4–5
	1800	28	23	13	5	6	1	1	1	3	2	12	22	10	4–5
Saragossa/Valenzuela Air Base.....	0000	7	6	5	1	1	1	0	0	1	1	4	11	3	3–5
	0600	5	12	8	3	3	1	2	1	10	4	9	15	6	9–12
	1200	8	11	3	1	1	1	0	0	1	6	9	10	4	9–12
	1800	6	5	4	1	0	0	1	0	1	1	5	9	3	9–12
Seville/San Pablo Airport.....	0000	8	12	12	2	5	3	0	1	2	5	14	11	6	3–5
	0600	11	18	17	12	12	8	5	5	6	9	16	15	11	9–12
	1200	13	11	16	7	7	2	**	2	1	4	8	11	7	9–12
	1800	10	6	11	3	6	1	1	0	1	5	11	13	6	9–12
Valladolid Airport.....	0000	15	7	1	3	1	1	0	0	0	2	3	14	4	3–5
	0600	20	8	5	2	3	4	1	**	3	5	14	31	8	11–12
	1200	16	8	4	4	7	5	1	1	3	5	11	26	8	11–12
	1800	13	6	5	4	3	3	2	1	1	4	6	20	6	11–12
Southern and Eastern Coasts:															
Barcelona.....	0600	4	5	5	3	4	3	2	2	2	1	2	4	3	11–12
	1200	1	5	3	1	1	1	**	1	2	1	2	1	2	10–12
	1800	2	3	4	2	2	**	1	2	2	3	2	1	2	7–10
Rota Naval Air Station.....	0000	10	7	9	2	11	4	5	0	3	8	7	13	7	3–4
	0600	9	12	9	11	26	10	13	3	9	8	8	13	11	3–4
	1200	12	11	12	4	11	7	1	2	16	9	13	15	9	3–4
	1800	10	7	9	6	2	2	0	1	2	6	11	18	6	3–4
San Javier.....	0000	2	0	3	1	2	1	1	1	0	1	2	2	1	3–5
	0600	1	1	5	4	3	4	5	1	1	2	2	3	3	4–5
	1200	3	3	4	4	5	1	2	2	0	1	2	3	3	4–5
	1800	3	1	5	3	2	1	1	3	0	1	1	3	2	4–5
Valencia.....	0000	0	0	3	5	3	1	1	0	2	0	0	1	1	4–5
	0600	1	2	4	2	5	2	1	1	1	1	2	2	2	11–12
	1200	3	2	2	2	2	1	1	**	**	1	2	2	2	10–12
	1800	2	2	3	3	3	2	1	2	1	1	3	2	2	11–12
Balearic Islands:															
Mahón/San Luis Airport.....	0600	23	22	20	20	15	10	8	9	13	25	27	18	18	8–10
	1200	25	30	23	20	14	13	11	10	17	29	27	27	21	9–10
	1800	24	24	16	19	13	9	4	9	12	19	22	20	16	8–10
Canary Islands:															
Santa Cruz.....	0500	34	28	11	16	13	9	6	11	8	23	36	33	19	4–5
	1100	29	27	8	17	10	5	3	8	10	22	30	29	17	4–5
	1700	38	26	6	15	8	3	3	3	6	22	38	42	18	4–5

* Ceiling herein is defined as ≧5-eighths cloud cover except at Madrid/Torrejón Air Base, Morón Air Base, and Saragossa/Valenzuela Air Base where ceiling is defined as ≧6-tenths cloud cover.

** <0.5%.

FIGURE 31. MEAN NUMBER OF DAYS WITH LOW CLOUD AMOUNT ≦2-EIGHTHS AT SPECIFIED HOURS

REGION AND STATION	HOUR (LST)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Northern Coast:															
La Coruña	2300	12	10	15	14	15	14	14	13	15	15	11	10	158	5
	0500	8	10	12	11	12	10	10	11	10	11	11	9	125	12
	1100	9	9	11	9	10	11	12	13	10	11	10	9	124	12
	1700	8	9	12	12	12	11	15	14	12	12	10	8	134	11
Santander	0000	11	12	15	12	14	8	18	14	12	12	9	9	145	2–3
	0600	12	11	13	10	11	10	9	11	12	12	11	11	130	12
	1200	10	10	13	9	13	11	12	13	11	11	10	10	132	12
	1800	10	10	14	9	12	9	10	11	10	12	9	10	128	9–10
Interior:															
Albacete/Los Llanos Airport	0000	19	18	20	17	18	19	25	24	23	19	18	17	237	3–5
	0600	15	14	15	15	17	20	25	23	19	15	13	14	205	3–5
	1200	13	11	13	14	13	16	25	23	19	14	11	13	185	3–5
	1800	13	13	11	12	13	15	21	19	17	14	14	14	175	3–5
Ciudad Real	0600	*na*	17	9	15	20	25	30	29	29	22	12	15	*na*	1
	1200	*na*	12	7	14	18	24	31	26	28	21	11	15	*na*	1
	1800	*na*	8	6	11	19	17	18	22	27	21	13	15	*na*	1
Granada Airport	0600	20	20	19	21	24	27	30	29	26	22	20	22	280	8–10
	1200	20	19	18	18	22	23	29	28	24	21	19	19	260	9–11
	1800	19	18	18	17	22	23	29	28	23	21	17	18	253	8–10
Madrid/Barajas Airport	0600	17	18	21	23	23	25	28	27	23	21	18	17	261	12
	1200	15	15	15	16	16	17	25	26	20	17	17	17	215	12
	1800	16	17	17	16	15	17	22	23	20	18	17	17	214	12
Madrid/Torrejón Air Base*	0000	18	21	22	24	24	27	30	30	27	22	22	19	289	4–5
	0600	17	20	20	23	24	27	30	29	25	21	19	18	271	4–5
	1200	18	20	15	20	21	23	29	29	24	20	20	18	257	4–5
	1800	20	23	20	21	23	25	29	29	24	23	20	18	274	4–5
Monflorite	0600	22	21	21	22	21	22	27	23	24	23	19	20	263	3–4
	1200	22	18	21	19	15	17	26	23	23	21	20	17	242	3–4
	1800	23	18	22	21	18	23	26	25	23	22	18	21	261	3–4
Morón Air Base*	0000	21	23	21	26	27	28	30	30	28	25	24	19	302	4–5
	0600	21	22	22	24	26	26	29	29	26	24	22	19	289	4–5
	1200	22	20	16	18	21	24	29	29	25	22	23	19	268	4–5
	1800	23	23	22	25	27	28	31	30	29	24	21	20	301	4–5
Salamanca Airport	0000	19	17	21	22	21	25	28	28	27	24	19	19	269	3–4
	0600	16	14	19	19	20	22	28	27	25	19	16	16	239	4–5
	1200	13	11	15	14	14	16	25	23	21	15	14	14	194	4–5
	1800	14	13	17	16	13	16	23	24	21	19	17	16	209	4–5
Saragossa/Valenzuela Air Base*	0000	22	23	24	26	25	26	30	29	26	24	24	22	302	5–6
	0600	22	20	22	24	27	26	28	28	22	21	20	19	279	5–6
	1200	22	19	23	24	23	25	30	28	25	23	20	21	283	5–6
	1800	22	22	23	25	26	26	27	27	25	24	20	21	287	5–6
Seville/San Pablo Airport	0600	22	18	20	22	22	25	28	28	25	23	20	22	274	10–12
	1200	21	18	15	17	20	21	29	28	25	21	20	21	256	9–11
	1800	20	18	18	20	23	26	30	30	26	23	19	21	273	10–12
Valladolid Airport	0000	19	21	22	23	22	24	29	30	26	26	23	22	287	4–5
	0600	17	19	21	23	23	23	28	28	23	21	19	15	260	12
	1200	13	14	16	14	15	16	24	23	19	17	15	12	196	12
	1800	18	18	19	19	18	17	23	24	22	20	20	16	233	12

See footnotes at end of table.

FIGURE 31 (*Continued*)

REGION AND STATION	HOUR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
	(LST)														
Southern and Eastern Coasts:															
Barcelona	0600	21	18	19	19	19	21	21	18	16	16	17	19	222	12
	1200	22	17	17	17	17	18	19	17	13	14	17	19	206	11–13
	1800	23	19	19	18	19	20	21	19	16	19	21	21	233	8–10
Rota Naval Air Station*	0000	21	22	22	25	23	27	29	30	26	24	23	21	293	3–4
	0600	20	20	21	20	18	24	24	29	24	23	21	18	262	3–4
	1200	21	20	21	23	21	25	27	28	22	23	21	21	272	3–4
	1800	21	21	22	24	24	28	29	30	26	27	20	18	288	3–4
San Javier	0000	26	23	26	24	27	25	25	26	26	25	26	25	304	4–5
	0600	24	22	23	23	26	23	22	23	24	24	23	24	280	4–5
	1200	22	21	23	19	23	24	22	22	21	21	21	20	259	4–5
	1800	23	21	24	21	26	25	26	26	25	26	24	22	288	4–5
Valencia	0000	24	24	24	22	25	24	24	24	22	24	23	22	282	4–5
	0600	22	21	20	21	21	22	21	19	18	19	18	22	242	12
	1200	22	20	20	19	20	21	24	22	21	19	19	21	248	11–13
	1800	21	20	21	19	20	21	22	20	19	18	19	20	241	12
Balearic Islands:															
Mohón/San Luis Airport	0600	17	15	17	18	21	22	25	23	17	13	12	18	217	8–10
	1200	12	13	16	16	22	20	22	20	15	9	10	13	187	9
	1800	17	17	20	20	24	24	28	25	19	15	15	16	239	8–10
Canary Islands:															
Santa Cruz	0500	9	7	11	10	14	17	23	21	19	16	10	6	163	4–5
	1100	9	7	14	10	15	19	24	25	18	15	12	8	175	4–5
	1700	8	9	15	11	20	21	26	27	21	15	10	7	188	4–5

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

na Data not available.

* Low cloud amount ≦3-tenths cloud cover.

FIGURE 32. 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
	(LST)														
Northern Coast:															
La Coruña	2300	12	13	12	10	9	11	12	11	10	10	12	13	136	5
	0500	15	12	12	12	12	13	15	12	12	12	13	15	155	12
	1100	14	11	10	10	10	9	9	7	8	9	11	13	122	12
	1700	14	12	11	9	10	10	8	8	8	10	13	14	128	11
Santander	0000	18	14	15	17	15	18	10	16	17	17	21	20	197	2–3
	0600	16	14	15	16	15	16	17	13	14	15	16	17	183	12
	1200	16	13	10	12	12	13	12	11	11	12	14	16	152	12
	1800	15	14	11	13	12	14	13	12	14	13	14	16	161	9–10
Interior:															
Albacete/Los Llanos Airport	0000	6	6	6	8	4	3	1	2	2	5	5	7	55	3–5
	0600	8	8	7	9	7	3	1	2	3	8	8	10	75	3–5
	1200	8	10	10	8	7	5	1	2	3	6	8	9	78	3–5
	1800	6	8	7	8	7	5	2	4	4	7	7	9	73	3–5
Ciudad Real	0600	*na*	10	8	1	1	1	0	0	1	1	5	11	*na*	1
	1200	*na*	9	6	2	3	2	0	0	0	1	3	9	*na*	1
	1800	*na*	8	9	4	1	0	0	0	0	0	3	9	*na*	1
Granada Airport	0600	7	5	7	6	4	1	*	1	2	4	6	5	48	8–10
	1200	7	5	6	5	4	3	*	*	2	3	5	8	47	9–11
	1800	8	5	6	5	3	1	*	*	2	4	6	8	49	8–10
Madrid/Barajas Airport	0600	10	6	5	3	4	2	1	1	3	5	7	9	55	12
	1200	10	6	8	5	6	4	1	1	3	6	7	7	63	12
	1800	8	4	5	4	5	2	1	1	2	6	6	8	51	12
Madrid/Torrejón Air Base**	0000	11	3	5	3	3	1	*	1	3	6	6	8	50	4–5
	0600	10	6	7	5	3	1	*	*	2	6	8	9	59	4–5
	1200	9	4	5	3	3	2	*	0	2	5	6	9	48	4–5
	1800	6	2	5	3	2	1	*	1	2	4	6	8	40	4–5

See footnotes at end of table.

FIGURE 32 (*Continued*)

REGION AND STATION	HOUR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
	(LST)														
Interior (*Continued*):															
Monflorite	0600	5	3	4	3	2	3	1	2	1	2	3	6	34	3–4
	1200	4	4	4	3	3	2	1	1	1	3	2	6	34	3–4
	1800	3	3	3	3	2	*	1	1	1	3	4	5	28	3–4
Morón Air Base**	0000	7	5	6	3	2	1	1	*	1	3	4	8	40	4–5
	0600	8	4	5	3	2	2	2	1	2	4	5	7	44	4–5
	1200	4	3	5	4	4	3	1	1	1	2	3	6	38	4–5
	1800	5	2	3	1	1	1	0	0	1	3	4	7	26	4–5
Salamanca Airport	0000	8	6	4	3	3	1	1	1	1	3	5	6	39	3–4
	0600	10	8	7	4	4	3	1	1	2	6	7	10	64	4–5
	1200	12	10	8	6	9	4	1	3	3	5	8	9	78	4–5
	1800	9	6	5	4	4	2	1	*	2	4	5	8	51	4–5
Saragossa/Valenzuela Air Base**	0000	6	5	3	2	2	2	1	1	2	5	4	6	38	5–6
	0600	8	6	6	3	2	2	2	1	5	5	6	9	53	5–6
	1200	6	5	2	2	2	1	*	1	1	4	5	5	36	5–6
	1800	7	4	3	2	1	1	2	2	1	3	6	7	38	5–6
Seville/San Pablo Airport	0600	7	7	8	5	5	3	2	2	2	5	7	6	58	10–12
	1200	7	5	9	6	4	3	1	1	1	4	5	4	50	9–11
	1800	6	5	6	3	3	1	*	*	*	2	6	6	38	10–12
Valladolid Airport	0000	8	3	1	3	2	2	1	*	*	2	4	4	30	4–5
	0600	19	13	16	14	16	12	5	7	10	14	16	20	162	12
	1200	10	7	8	7	7	5	2	2	3	6	6	12	76	12
	1800	7	5	3	3	4	4	2	1	1	4	4	9	46	12
Southern and Eastern Coasts:															
Barcelona	0600	6	5	8	6	6	4	4	6	8	8	8	6	74	12
	1200	6	6	9	6	6	5	5	6	6	8	8	7	78	11–13
	1800	5	5	8	6	6	5	5	6	8	8	5	6	73	8–10
Rota Naval Air Station**	0000	6	4	4	4	4	1	2	1	2	4	5	7	42	3–4
	0600	7	4	7	6	8	3	5	2	3	6	5	8	62	3–4
	1200	7	4	5	3	5	2	2	*	3	4	4	6	45	3–4
	1800	5	3	3	2	2	1	1	0	1	2	4	7	31	3–4
San Javier	0000	4	1	1	2	1	1	*	1	1	1	1	3	16	4–5
	0600	3	2	2	3	2	2	2	1	1	1	1	3	23	4–5
	1200	5	2	1	2	2	*	1	1	1	2	1	2	21	4–5
	1800	4	1	2	3	1	1	1	1	1	1	1	3	21	4–5
Valencia	0000	3	2	3	5	3	2	2	2	2	2	2	5	32	4–5
	0600	4	4	6	5	5	3	5	5	5	6	6	5	59	12
	1200	4	3	4	3	4	2	2	3	3	4	6	4	42	11–13
	1800	5	3	5	4	4	3	3	4	3	6	5	5	49	12
Balearic Islands:															
Mahón/San Luis Airport	0600	4	5	4	4	3	2	1	2	2	4	5	4	40	8–10
	1200	4	5	5	3	3	2	2	2	3	5	5	5	45	9
	1800	4	5	4	3	3	2	1	2	2	4	5	4	37	8–10
Canary Islands:															
Santa Cruz	0500	16	16	11	11	8	8	5	5	7	7	12	16	121	4–5
	1100	16	14	10	12	7	7	3	3	6	9	12	15	111	4–5
	1700	16	14	8	9	4	3	2	1	4	9	13	15	97	4–5

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

na Data not available.

* <0.5 day.

** Low cloud amount ≧7-tenths cloud cover.

FIGURE 33. PERCENTAGE FREQUENCY OF VISIBILITY <⅝ MILE AT SPECIFIED HOURS

REGION AND STATION	HOUR (LST)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Northern Coast:															
La Coruña	2300	2	0	3	0	1	5	5	0	1	2	1	1	2	4–5
	0500	1	2	2	1	2	5	6	5	4	2	1	1	3	11–12
	1100	1	1	0	0	*	1	3	1	0	1	0	1	1	11–12
	1700	2	*	*	0	*	2	2	1	1	2	1	0	1	10–12
Santander	0000	3	0	2	0	3	2	0	2	2	8	0	5	2	1–3
	0600	7	12	11	10	7	7	10	5	8	6	6	7	8	11–12
	1200	3	7	3	3	3	2	3	1	1	3	3	4	3	11–12
	1800	1	5	4	3	3	1	1	1	2	2	4	2	2	8–10
Interior:															
Albacete/Los Llanos Airport	0000	1	1	1	0	0	0	0	0	0	0	1	1	*	3–5
	0600	4	2	2	2	1	1	0	0	2	4	9	7	3	3–5
	1200	3	1	0	0	0	0	0	0	0	1	2	3	1	3–5
	1800	2	1	0	0	0	0	0	0	0	0	1	1	*	3–5
Badajos/Talavera La Real Airport	0600	13	10	7	4	3	0	0	0	0	5	11	14	6	4–5
	1200	6	2	1	1	0	1	0	0	0	1	0	8	2	4–5
	1800	2	0	0	0	0	0	0	0	0	0	0	3	*	4–5
Granada Airport	0600	4	3	1	1	1	*	*	1	*	1	3	2	1	8–10
	1200	3	1	*	0	0	0	0	0	0	0	2	2	1	9–10
	1800	1	*	*	*	1	*	0	0	0	0	1	...	*	8–10
Madrid/Barajas Airport	0000	1	0	0	0	0	0	0	0	0	0	1	3	*	4–5
	0600	7	2	1	*	0	0	0	0	0	1	2	9	2	11–12
	1200	3	0	0	0	0	0	0	*	*	*	0	4	1	9–12
	1800	2	*	0	0	0	0	0	0	0	0	0	2	*	10–12
Madrid/Torrejón Air Base	0000	5	0	0	0	0	0	0	0	0	0	0	1	1	4–5
	0600	9	4	0	1	0	0	0	0	0	0	1	7	2	4–5
	1200	2	0	0	0	0	0	0	0	0	0	0	3	*	4–5
	1800	2	0	0	0	0	0	0	0	0	0	0	2	*	4–5
Monflorite	0600	15	2	3	3	1	0	0	0	0	2	1	11	3	3–4
	1200	8	2	1	0	2	0	0	0	0	0	0	12	2	3–4
	1800	9	0	1	0	0	0	0	0	1	0	1	10	2	3–4
Morón Air Base	0000	2	2	0	0	0	0	0	0	0	0	0	2	1	4–5
	0600	6	1	1	0	0	0	0	0	0	0	0	4	1	4–5
	1200	1	0	0	0	0	0	0	0	0	0	1	0	*	4–5
	1800	1	0	0	0	0	0	0	0	0	0	0	0	*	4–5
Salamanca Airport	0000	7	1	1	0	0	1	0	0	0	0	2	13	2	3–4
	0600	11	3	3	1	2	1	0	0	1	3	7	12	4	4–5
	1200	8	0	0	0	0	1	0	0	0	0	1	7	1	4–5
	1800	5	1	0	0	0	0	0	0	0	0	1	7	1	4–5
Saragossa/Valenzuela Air Base	0000	3	2	0	0	0	0	0	0	0	0	2	8	1	5–6
	0600	6	6	0	0	1	0	0	0	1	1	6	12	3	5–6
	1200	7	1	0	0	0	0	0	0	0	0	3	6	1	5–6
	1800	2	0	1	0	0	0	0	0	0	0	2	3	1	5–6
Seville/San Pablo Airport	0000	1	2	0	0	0	0	0	0	0	1	2	1	1	3–5
	0600	7	5	8	5	3	*	1	1	3	4	4	5	4	9–12
	1200	1	2	*	*	0	0	0	0	0	0	*	1	*	9–12
	1800	0	0	*	0	0	0	0	0	0	0	1	1	*	9–12
Valladolid Airport	0000	10	1	0	0	0	0	0	0	1	2	5	14	3	3–5
	0600	17	6	1	0	1	3	0	*	1	5	11	21	6	11–12
	1200	15	2	0	0	0	0	0	0	0	1	5	19	4	11–12
	1800	7	1	0	0	0	0	0	0	*	1	3	12	2	11–12

* <0.5%.

FIGURE 33 (*Continued*)

REGION AND STATION	HOUR (LST)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Southern and Eastern Coasts:															
Almería	0800	3	3	1	3	1	1	3	3	0	1	2	1	2	4–5
	1400	2	2	0	0	1	0	1	1	2	1	2	1	1	4–5
	1900	1	2	1	1	0	1	1	0	0	1	0	1	1	3–5
Barcelona	0600	*	1	2	*	1	1	1	0	*	1	1	1	1	11–12
	1200	2	2	2	*	0	0	*	0	0	*	1	1	1	10–12
	1800	1	2	1	0	0	*	0	1	0	0	*	1	1	7–10
Rota Naval Air Station	0000	4	2	0	0	1	0	0	0	0	0	0	1	1	3–4
	0600	3	5	1	0	1	3	3	0	3	2	2	2	2	3–4
	1200	3	2	0	0	0	0	0	0	0	0	0	2	1	3–4
	1800	2	1	0	0	0	0	0	0	0	0	1	1	*	3–4
San Javier	0000	0	0	9	21	10	1	0	0	1	0	2	1	4	3–5
	0600	0	1	1	2	0	1	1	0	1	0	0	1	1	4–5
	1200	0	0	0	0	0	0	0	0	0	0	1	0	*	4–5
	1800	0	0	0	0	0	0	0	0	0	1	0	1	*	4–5
Valencia	0000	0	1	1	0	0	0	0	0	1	0	0	1	*	4–5
	0600	1	2	4	1	2	1	1	1	1	1	1	1	1	11–12
	1200	1	1	*	0	0	0	*	0	*	0	0	*	*	10–12
	1800	*	1	1	0	0	*	0	0	1	0	1	1	*	11–12
Balearic Islands:															
Mahón/San Luis Airport	0600	*	2	3	0	2	0	0	*	0	*	1	0	1	8–10
	1200	*	*	0	0	0	0	*	0	0	*	0	0	*	9–10
	1800	*	1	1	*	0	0	0	0	0	*	*	*	*	8–10
Canary Islands:															
Santa Cruz	0500	1	1	1	0	0	0	0	0	0	0	0	1	*	4–5
	1100	0	1	1	0	0	0	1	0	0	1	0	0	*	4–5
	1700	0	2	1	0	1	0	0	0	0	1	0	0	*	4–5

* <0.5%.

FIGURE 34. PERCENTAGE FREQUENCY OF VISIBILITY <2½ MILES AT SPECIFIED HOURS

REGION AND STATION	HOUR (LST)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Northern Coast:															
La Coruña	2300	21	22	24	12	15	18	22	19	17	30	30	28	22	4–5
	0500	14	16	15	8	12	18	20	17	13	19	14	12	15	11–12
	1100	10	8	5	3	4	9	11	5	4	10	8	9	7	11–12
	1700	9	5	7	3	4	9	7	6	6	11	9	10	7	11–12
Santander	0000	84	73	88	95	79	86	81	86	88	84	62	63	81	1–3
	0600	66	63	55	56	53	61	57	51	53	45	49	58	56	11–12
	1200	46	42	37	34	32	34	31	27	29	34	38	44	36	11–12
	1800	42	41	31	27	28	23	22	20	27	30	45	47	32	8–10
Interior:															
Albacete/Los Llanos Airport	0000	2	3	1	1	1	0	0	0	0	0	1	1	1	3–5
	0600	9	4	6	3	1	1	0	0	3	6	11	9	4	3–5
	1200	7	3	1	0	0	0	0	0	0	1	3	4	2	3–5
	1800	7	1	1	1	0	1	0	0	0	1	2	1	1	3–5
Badajoz/Talavera La Real Airport	0600	15	11	10	6	7	1	1	0	0	6	14	16	7	4–5
	1200	9	2	1	1	1	1	0	0	0	1	3	9	2	4–5
	1800	3	1	1	0	1	0	0	0	1	0	1	4	1	4–5
Granada Airport	0600	10	5	8	10	7	4	2	2	2	8	8	8	6	8–10
	1200	16	8	4	2	1	0	*	0	1	4	7	18	5	9–10
	1800	4	3	4	3	3	2	*	*	1	1	5	11	3	8–10
Madrid/Barajas Airport	0000	4	1	1	0	0	0	0	0	0	0	1	6	1	4–5
	0600	12	5	2	1	0	*	0	0	0	2	5	11	3	11–12
	1200	8	4	*	*	0	0	0	*	*	1	2	8	2	9–12
	1800	4	1	1	0	0	0	0	0	0	*	1	3	1	10–12

* <0.5%.

FIGURE 34 (*Continued*)

REGION AND STATION	HOUR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
	(LST)														
Interior (*Continued*):															
Madrid/Torrejón Air Base	0000	8	2	0	0	0	0	0	0	0	2	1	7	2	4–5
	0600	13	4	1	1	0	0	0	0	0	2	3	11	3	4–5
	1200	8	1	1	0	0	0	0	0	0	1	3	9	2	4–5
	1800	4	0	0	1	0	0	0	0	0	1	1	5	1	4–5
Monflorite	0600	15	4	6	5	1	2	0	0	0	2	2	17	5	3–4
	1200	10	3	1	0	2	0	1	1	0	2	1	15	3	3–4
	1800	10	1	2	0	0	0	1	0	1	0	2	10	2	3–4
Morón Air Base	0000	6	3	1	0	0	0	0	0	0	0	1	4	1	4–5
	0600	9	2	2	1	1	0	0	0	0	0	1	5	2	4–5
	1200	4	1	2	1	1	0	0	0	0	0	1	3	1	4–5
	1800	2	1	2	0	0	0	0	0	0	1	3	2	1	4–5
Salamanca Airport	0000	8	2	1	1	0	2	1	0	0	0	3	13	3	3–4
	0600	13	6	7	1	4	2	2	0	2	5	11	15	6	4–5
	1200	11	3	0	1	0	1	0	0	1	1	2	8	2	4–5
	1800	6	3	1	1	1	1	0	0	0	0	1	8	2	4–5
Saragossa/Valenzuela Air Base	0000	6	3	3	0	1	0	0	0	0	1	5	10	2	5–6
	0600	13	8	3	1	1	0	0	0	3	5	9	16	5	5–6
	1200	15	9	3	1	0	0	0	0	0	3	10	12	4	5–6
	1800	6	6	1	0	0	0	0	1	0	1	4	10	2	5–6
Seville/San Pablo Airport	0000	2	5	1	0	0	0	0	0	0	1	3	3	1	3–5
	0600	10	8	11	11	10	5	4	6	8	8	7	10	8	9–12
	1200	7	3	2	1	0	0	0	*	0	*	3	5	2	9–12
	1800	2	1	2	*	1	0	0	*	1	1	2	3	1	9–12
Valladolid Airport	0000	23	3	0	0	1	1	0	0	1	5	13	23	6	3–5
	0600	33	17	12	15	12	21	9	9	11	19	26	36	18	11–12
	1200	35	12	5	1	3	1	1	1	1	7	19	38	10	11–12
	1800	19	6	2	1	1	1	1	1	1	3	13	28	6	11–12
Southern and Eastern Coasts:															
Almería	0800	3	3	3	9	5	4	7	5	4	2	3	2	4	4–5
	1400	2	3	2	1	1	1	1	2	2	2	2	2	2	4–5
	1900	1	5	1	1	0	2	1	0	1	1	0	2	1	3–5
Barcelona	0600	18	26	32	20	29	29	20	20	23	23	21	19	23	11–12
	1200	23	33	23	12	13	11	4	7	11	8	19	29	16	10–12
	1800	28	29	23	11	13	6	4	7	10	17	25	29	17	7–10
Rota Naval Air Station	0000	6	4	0	0	2	0	0	0	0	0	1	2	1	3–4
	0600	10	5	3	2	1	7	3	1	6	2	3	6	4	3–4
	1200	7	5	2	0	0	0	0	0	1	1	0	4	2	3–4
	1800	5	2	3	0	0	0	0	0	0	1	3	4	2	3–4
San Javier	0000	10	4	27	28	25	18	9	5	22	20	8	10	16	3–5
	0600	3	2	5	4	3	3	3	0	2	1	2	2	3	4–5
	1200	0	1	5	3	1	1	1	0	0	1	3	3	2	4–5
	1800	0	1	4	2	1	1	0	2	0	2	1	3	1	4–5
Valencia	0000	2	3	3	4	1	1	1	1	1	1	1	2	2	4–5
	0600	7	12	13	9	13	10	11	6	11	12	8	6	10	11–12
	1200	6	6	7	3	3	1	2	2	2	4	4	3	4	10–12
	1800	5	6	4	2	2	2	1	1	2	6	6	6	4	11–12
Balearic Islands:															
Mahón/San Luis Airport	0600	3	8	9	4	7	1	1	1	*	2	3	2	3	8–10
	1200	3	6	4	2	1	0	*	0	1	2	2	2	2	9–10
	1800	4	3	6	3	1	0	*	*	*	3	5	5	3	8–10
Canary Islands:															
Santa Cruz	0500	2	4	4	2	1	0	2	0	0	1	0	1	1	4–5
	1100	3	6	3	0	1	0	2	1	0	2	1	2	2	4–5
	1700	1	7	2	0	1	0	2	0	0	1	1	0	1	4–5

* <0.5%.

FIGURE 35. PERCENTAGE FREQUENCY OF VISIBILITY <6 MILES AT SPECIFIED HOURS

REGION AND STATION	HOUR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
	(LST)														
Northern Coast:															
La Coruña	2300	64	62	58	53	49	51	51	53	48	67	64	77	58	4–5
	0500	59	64	59	38	43	43	42	42	39	52	59	64	50	11–12
	1100	39	40	33	23	22	25	24	21	19	27	28	42	29	11–12
	1700	40	36	29	24	27	26	22	19	18	30	35	47	29	11–12
Santander	0000	96	91	98	100	89	97	94	98	100	98	80	93	95	1–3
	0600	87	79	74	80	75	84	83	79	79	70	74	79	79	11–12
	1200	72	65	63	66	57	65	62	61	61	61	63	67	64	11–12
	1800	71	63	54	55	52	54	45	46	53	61	65	67	57	8–10
Interior:															
Albacete/Los Llanos Airport	0000	5	6	3	3	1	0	1	0	0	1	1	1	2	3–5
	0600	12	6	9	7	5	3	1	1	5	12	12	11	7	3–5
	1200	12	6	5	3	0	1	0	1	0	2	9	6	4	3–5
	1800	9	5	3	5	1	1	0	1	0	3	2	3	3	3–5
Badajoz/Talavera La Real Airport	0600	22	28	19	15	16	4	2	1	3	11	23	24	14	4–5
	1200	17	3	4	3	4	4	0	0	1	2	7	13	5	4–5
	1800	9	5	4	0	2	0	0	1	1	1	5	11	3	4–5
Granada Airport	0600	31	22	32	32	22	22	18	15	13	32	27	27	24	8–10
	1200	49	26	18	12	6	5	4	3	4	13	23	46	17	9–10
	1800	24	11	11	12	5	4	3	3	4	8	17	26	11	8–10
Madrid/Barajas Airport	0000	12	4	6	3	1	0	0	1	1	1	6	14	4	4–5
	0600	26	13	5	3	3	2	0	*	2	5	13	24	8	11–12
	1200	25	12	4	2	1	*	0	0	1	3	11	19	7	9–12
	1800	18	7	3	1	1	1	0	0	1	3	8	17	5	10–12
Madrid/Torrejón Air Base	0000	19	6	2	1	1	1	0	0	2	4	5	17	5	4–5
	0600	20	13	3	5	3	1	0	1	2	6	5	23	7	4–5
	1200	24	11	4	3	1	0	0	0	0	3	10	25	7	4–5
	1800	23	5	3	2	1	0	0	0	1	6	5	14	5	4–5
Monflorite	0600	17	6	10	8	2	3	2	4	3	6	3	20	7	3–4
	1200	14	7	6	3	4	2	2	2	0	2	4	19	5	3–4
	1800	13	4	6	4	1	2	2	1	1	2	2	15	4	3–4
Morón Air Base	0000	14	8	11	5	3	1	0	1	0	7	5	18	6	4–5
	0600	19	6	17	15	9	10	4	5	4	6	8	18	10	4–5
	1200	12	5	7	6	1	1	0	0	1	1	6	10	4	4–5
	1800	9	1	8	4	1	1	0	0	0	4	7	11	4	4–5
Salamanca Airport	0000	16	3	2	2	2	2	2	0	0	1	5	17	4	3–4
	0600	22	11	8	7	10	9	3	3	6	13	16	19	11	4–5
	1200	21	9	3	1	3	4	2	3	2	4	6	14	6	4–5
	1800	11	8	3	6	6	3	3	1	2	3	3	13	5	4–5
Saragossa/Valenzuela Air Base	0000	18	14	6	1	2	1	1	0	5	12	17	21	8	5–6
	0600	28	25	16	13	10	6	7	11	25	28	26	23	18	5–6
	1200	33	35	8	1	3	1	2	2	6	17	28	23	13	5–6
	1800	22	16	8	1	3	1	2	1	1	12	15	19	8	5–6
Seville/San Pablo Airport	0000	12	10	11	1	3	0	0	0	0	3	9	12	5	3–5
	0600	21	17	23	25	28	20	16	15	23	23	18	19	21	9–12
	1200	17	10	8	3	2	*	*	1	1	4	9	16	6	9–12
	1800	8	5	6	2	2	*	0	*	1	3	6	10	4	9–12
Valladolid Airport	0000	37	12	10	6	5	1	1	1	2	16	31	37	13	3–5
	0600	54	45	40	42	36	40	36	33	35	43	53	57	43	11–12
	1200	51	34	17	11	12	5	4	9	11	23	40	60	23	11–12
	1800	38	21	9	5	5	7	4	2	4	12	28	46	15	11–12

* <0.5%.

FIGURE 35 (*Continued*)

REGION AND STATION	HOUR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
	(LST)														
Southern and Eastern Coasts:															
Almería	0800	5	6	8	12	10	14	15	14	9	4	5	5	9	4–5
	1400	4	4	6	6	8	6	4	3	3	5	4	4	5	4–5
	1900	3	6	7	1	3	6	3	2	3	2	2	4	4	3–5
Barcelona	0600	79	81	84	78	86	83	81	80	83	75	82	80	81	11–12
	1200	64	68	62	47	50	42	28	30	41	45	58	73	51	10–12
	1800	74	71	60	47	44	34	21	27	44	52	78	76	52	7–10
Rota Naval Air Station	0000	18	14	15	6	5	8	5	4	6	3	11	16	9	3–4
	0600	26	16	11	12	13	21	10	5	14	10	16	24	15	3–4
	1200	28	19	8	4	9	7	5	3	11	5	10	19	11	3–4
	1800	11	7	9	4	4	9	4	2	7	4	11	16	7	3–4
San Javier	0000	28	36	46	53	38	34	32	23	46	33	33	39	37	3–5
	0600	18	21	21	21	16	12	10	10	14	12	12	20	16	4–5
	1200	7	8	15	16	12	10	7	4	4	3	8	6	8	4–5
	1800	18	8	17	17	8	7	8	6	5	9	21	30	13	4–5
Valencia	0000	18	11	21	23	11	11	18	4	11	16	8	10	14	4–5
	0600	38	44	51	42	50	48	53	46	46	38	40	42	45	11–12
	1200	27	25	33	24	28	27	29	24	22	22	21	18	25	10–12
	1800	33	31	31	23	24	17	18	17	20	27	31	33	25	11–12
Balearic Islands:															
Mahón/San Luis Airport	0600	18	23	26	27	26	18	16	10	9	16	20	13	19	8–10
	1200	11	16	18	17	13	7	4	8	5	10	13	11	11	9–10
	1800	20	20	19	16	14	9	7	8	9	13	22	18	15	8–10
Canary Islands:															
Santa Cruz	0500	2	8	5	3	2	0	5	1	1	1	3	2	3	4–5
	1100	3	9	4	1	4	0	6	4	1	2	5	4	4	4–5
	1700	5	9	4	1	4	0	5	3	0	1	4	3	3	4–5

* <0.5%.

FIGURE 36. MEAN NUMBER OF DAYS WITH FOG AT SPECIFIED HOURS

REGION AND STATION	HOUR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
	(LST)														
Northern Coast:															
La Coruña	2300	4	2	2	3	2	5	5	4	4	4	1	3	39	5
	0500	2	2	2	3	5	6	7	7	4	3	1	2	43	12
	1100	4	2	1	2	3	4	4	3	2	3	1	4	33	12
	1700	2	2	1	1	2	3	3	2	1	2	*	1	20	12
Santander	0000	14	10	18	17	13	14	22	19	19	17	8	8	177	2–3
	0600	11	9	12	13	14	16	14	14	14	11	9	11	147	12
	1200	8	6	10	8	8	8	9	8	9	9	8	9	100	12
	1800	8	7	8	8	8	7	6	6	7	7	8	9	87	9
Interior:															
Albacete/Los Llanos Airport	0000	*	0	0	0	0	0	0	0	0	0	*	*	1	3–5
	0600	2	*	2	2	1	1	1	1	4	3	2	3	23	3–5
	1200	2	*	1	*	0	0	0	0	0	*	1	1	5	3–5
	1800	1	0	0	0	0	0	0	0	0	0	*	*	2	3–5
Ciudad Real	0600	9	0	0	3	4	3	4	3	5	20	13	9	73	1–5
	1200	11	2	*	*	0	0	0	0	0	2	7	11	34	4–5
	1800	2	*	*	0	*	0	0	0	0	3	5	7	17	4–5
Granada Airport	0600	3	1	3	5	3	3	1	1	2	4	2	2	29	8–10
	1200	9	3	1	1	*	*	0	*	*	1	3	7	26	8–10
	1800	2	*	*	0	*	0	0	0	*	0	1	2	6	8–10
Madrid/Barajas Airport	0600	4	1	1	1	1	1	0	*	*	1	2	4	16	12
	1200	2	1	*	*	0	*	0	0	0	*	1	2	7	12
	1800	2	*	0	0	*	0	0	0	0	*	1	1	4	12

NOTE Definition of day with fog unknown.

* <0.5 day.

FIGURE 36 (*Continued*)

REGION AND STATION	HOUR (LST)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Interior (*Continued*):															
Madrid/Torrejón Air Base	0000	5	1	*	0	0	0	0	0	0	1	1	4	12	4–5
	0600	6	2	1	1	1	*	0	0	*	1	1	5	19	4–5
	1200	5	1	*	*	0	0	0	0	0	1	2	4	13	4–5
	1800	4	*	*	0	0	0	0	0	0	1	1	3	9	4–5
Monflorite	0600	4	1	1	1	1	1	2	1	1	2	1	5	20	3–4
	1200	3	1	0	0	0	*	1	0	0	*	*	5	11	3–4
	1800	3	1	0	0	0	0	*	0	0	*	*	3	8	3–4
Morón Air Base	0000	3	1	*	0	0	0	0	0	0	*	*	2	7	4–5
	0600	4	1	1	2	1	1	*	*	*	1	1	3	16	4–5
	1200	1	*	0	0	0	0	0	0	0	0	*	1	3	4–5
	1800	1	0	0	0	0	0	0	0	0	0	0	*	1	4–5
Salamanca Airport	0000	2	*	0	0	0	0	0	0	0	0	2	4	8	4
	0600	4	1	2	2	2	3	1	0	2	4	5	5	30	4–5
	1200	4	1	0	0	*	0	0	0	0	0	1	3	8	4–5
	1800	2	*	0	0	*	0	0	0	0	0	*	3	5	4–5
Saragossa/Valenzuela Air Base	0000	4	2	1	0	1	0	0	0	*	2	4	5	18	5–6
	0600	7	5	4	2	1	1	1	1	6	7	5	7	46	5–6
	1200	5	3	1	*	*	0	0	0	*	3	5	5	23	5–6
	1800	2	2	1	0	0	0	0	0	0	1	3	3	12	5–6
Seville/San Pablo Airport	0600	3	3	5	5	4	3	2	2	3	4	3	3	39	10–12
	1200	2	1	1	*	0	0	0	0	0	*	1	2	7	9–11
	1800	*	*	0	0	*	*	0	0	0	0	*	1	1	10–12
Valladolid	0000	6	1	0	0	0	0	0	0	*	1	4	7	19	4–5
	0600	10	4	4	5	6	7	5	5	5	7	7	10	74	12
	1200	9	3	1	*	*	*	*	1	1	2	5	11	34	12
	1800	6	1	*	*	0	*	*	*	0	1	3	7	18	12
Southern and Eastern Coasts:															
Barcelona	0600	*	*	0	*	0	0	0	0	*	0	*	*	1	12
	1200	0	*	*	0	0	0	0	0	0	0	0	0	*	12
	1800	0	0	0	0	*	0	0	0	0	*	0	0	*	8–10
Rota Naval Air Station	0000	0	0	0	0	0	0	0	0	0	0	0	1	1	3–4
	0600	0	0	0	0	0	0	0	0	0	0	0	*	*	3–4
	1200	0	*	0	0	0	0	0	0	0	0	0	0	*	3–4
	1800	0	0	0	0	0	0	0	0	0	0	0	*	*	3–4
San Javier	0000	1	*	1	1	0	0	0	*	*	*	1	1	4	4–5
	0600	1	*	*	*	0	*	*	*	1	*	0	1	4	5
	1200	2	1	1	1	1	*	0	1	*	*	1	2	9	5
	1800	1	0	1	1	*	0	0	*	1	0	1	*	5	5
Valencia	0000	0	*	0	*	*	0	0	0	0	0	*	*	1	5
	0600	1	*	*	*	0	0	0	*	0	*	*	*	2	11
	1200	1	*	1	*	0	*	0	*	0	0	*	*	3	12
	1800	*	*	*	*	0	*	0	*	0	*	*	*	1	12
Balearic Islands:															
Mahón/San Luis Airport	0600	1	*	*	*	*	0	0	0	*	*	*	1	3	8–10
	1200	1	1	*	*	*	0	0	*	0	0	1	1	3	8–10
	1800	1	*	*	*	0	0	0	0	0	0	*	1	2	8–10
Canary Islands:															
Santa Cruz	0500	*	0	*	*	0	0	0	0	0	0	0	0	1	4–5
	1100	1	0	1	0	0	0	0	0	0	0	0	*	2	4–5
	1700	0	*	*	1	*	*	*	0	*	0	0	0	2	4–5

NOTE Definition of day with fog unknown.

* <0.5 day.

FIGURE 37. PERCENTAGE FREQUENCY OF SPECIFIED CEILING* AND VISIBILITY COMBINATIONS AT SPECIFIED HOURS

REGION AND STATION	HOUR (LST)	COMBINATION**	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS. REC
Northern Coast:																
La Coruña	2300	A	79	78	76	88	85	82	78	81	83	70	70	72	79	4–5
		B	6	2	3	1	1	9	7	2	1	6	4	8	4	
Santander	0000	A	16	27	12	5	21	14	19	15	12	16	38	38	19	2–3
		B	37	18	42	63	53	36	32	26	35	32	17	23	35	
Interior:																
Albacete/Los Llanos Airport	0000	A	97	95	99	99	99	100	100	100	100	100	99	99	99	3–5
		B	3	4	1	0	0	0	0	0	0	0	1	1	1	
Madrid/Barajas Airport	0000	A	91	96	95	97	98	100	100	100	100	100	94	92	97	4–5
		B	5	1	1	0	1	0	0	0	0	0	2	6	1	
Madrid/Torrejón Air Base	0000	A	88	97	98	99	99	100	100	100	100	96	94	88	97	4–5
		B	8	2	0	1	0	0	0	0	0	0	1	5	1	
Morón Air Base	0000	A	94	96	97	99	99	100	100	100	100	98	99	92	98	4–5
		B	6	3	2	1	0	0	0	0	0	0	1	6	2	
Salamanca Airport	0000	A	87	97	98	99	100	98	99	100	100	100	97	87	97	3–4
		B	9	2	2	0	0	1	0	0	0	0	3	13		
Saragossa/Valenzuela Air Base	0000	A	93	97	97	99	99	100	100	100	100	99	95	88	97	5–6
		B	4	3	1	1	1	0	0	0	0	1	3	8	2	
Seville/San Pablo Airport	0000	A	96	93	94	100	97	100	100	99	99	98	88	91	96	3–5
		B	3	6	2	0	1	0	0	0	1	3	8	6	3	
Valladolid Airport	0000	A	77	97	100	99	99	99	100	100	99	95	87	75	94	3–5
		B	17	1	0	0	0	0	0	0	1	4	8	19	4	
Southern and Eastern Coasts:																
Rota Naval Air Station	0000	A	94	97	97	100	97	98	98	100	99	98	97	95	98	3–4
		B	6	2	0	0	3	0	0	0	0	0	1	2	1	
San Javier	0000	A	90	96	73	72	75	82	91	96	78	80	92	90	85	3–5
		B	1	0	13	23	18	11	5	0	4	4	4	2	7	
Valencia	0000	A	98	97	97	96	99	99	99	99	99	99	99	98	98	4–5
		B	0	2	1	2	0	1	0	1	1	0	0	1	1	
Northern Coast:																
La Coruña	0500	A	85	83	84	91	87	81	79	83	87	80	86	86	84	11–12
		B	6	5	6	2	6	11	12	9	6	5	3	4	6	
Santander	0600	A	34	36	44	42	46	38	42	49	47	54	50	41	44	12
		B	30	33	32	35	31	32	32	26	26	24	23	25	29	
Interior:																
Albacete/Los Llanos Airport	0600	A	92	95	93	95	99	99	100	100	97	92	89	91	95	3–5
		B	5	4	3	3	1	1	0	0	3	8	9	8	4	
Badajoz/Talavera La Real Airport	0600	A	85	88	90	93	93	98	99	100	100	94	86	83	92	4–5
		B	13	11	8	5	5	0	1	0	0	6	13	15	6	
Granada Airport	0600	A	89	92	91	87	91	96	97	98	97	91	91	90	93	8–10
		B	7	5	4	3	5	1	***	1	1	5	7	7	4	
Madrid/Barajas Airport	0600	A	78	91	94	98	98	99	100	100	100	95	91	81	94	12
		B	16	7	3	1	1	0	0	***	0	3	5	13	4	

* Ceiling herein is defined as ≦5-eights cloud cover except at Madrid/Torrejón Air Base, Morón Air Base, and Saragossa/Valenzuela Air Base where ceiling is defined as ≦6-tenths cloud cover.

** Combination:
A..... Ceiling ≦984 feet with visibility ≦2½ miles.
B..... Ceiling <656 feet and/or visibility <1¼ miles.

*** <0.5%.

FIGURE 37. CEILING AND VISIBILITY COMBINATIONS (*Continued*)

REGION AND STATION	HOUR (LST)	COMBINATION**	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS. REC
Interior (*Continued*):																
Madrid/Torrejón																
Air Base.....	0600	A	81	92	93	95	100	100	99	99	99	94	92	79	94	4–5
		B	15	6	3	1	0	0	0	0	0	3	5	12	4	
Monflorite.....	0600	A	84	96	94	95	98	98	100	100	100	98	98	84	95	3–4
		B	16	3	3	3	1	2	0	0	0	2	1	15	4	
Morón Air Base..	0600	A	89	96	97	97	99	99	99	100	99	98	96	90	97	4–5
		B	10	3	2	1	1	0	0	0	0	1	1	5	2	
Salamanca Air-																
port.....	0600	A	81	86	89	98	86	87	98	99	98	93	87	80	92	4–5
		B	12	5	5	1	3	2	1	1	1	5	9	18	5	
Saragossa Valen-																
zuela Air Base..	0600	A	87	89	95	99	99	100	99	100	95	94	91	83	94	5–6
		B	10	8	3	1	1	0	0	0	1	3	7	13	4	
Seville/San Pablo																
Airport.....	0600	A	88	87	87	84	87	91	94	93	91	89	86	86	89	9–11
		B	8	9	10	8	6	4	2	3	6	6	7	8	6	
Valladolid Air-																
port.....	0600	A	67	82	88	84	88	80	90	91	89	81	73	61	81	12
		B	25	9	4	5	4	8	2	1	2	11	18	29	10	
Southern and East-																
ern Coasts:																
Almería.....	0800	A	97	95	96	92	95	94	92	94	95	96	97	98	95	3–5
		B	3	5	2	5	3	3	5	4	3	2	3	0	3	
Barcelona.....	0600	A	82	74	67	80	71	70	80	80	77	78	79	81	77	11–12
		B	5	7	7	4	7	5	4	4	3	4	4	3	5	
Rota Naval Air																
Station.....	0600	A	89	92	96	94	94	93	94	99	92	97	95	90	94	3–4
		B	7	6	2	2	2	4	5	0	4	2	3	3	3	
San Javier.....	0600	A	97	98	94	96	97	97	97	100	98	99	98	98	97	5
		B	1	1	3	2	1	1	1	9	1	1	1	1	1	
Valencia.....	0600	A	93	88	87	92	87	90	89	94	88	88	92	94	90	12
		B	3	6	8	4	7	3	4	3	7	5	2	2	5	
Balearic Islands:																
Mahón/San Luis																
Airport.....	0600	A	93	89	88	93	90	96	98	98	97	91	90	95	93	8–10
		B	1	3	5	2	4	1	1	***	***	1	1	***	2	
Canary Islands:																
Santa Cruz.....	0500	A	95	95	96	97	99	100	98	100	100	99	93	95	97	4–5
		B	1	2	1	1	1	0	1	0	0	1	1	1	1	
Northern Coast:																
La Coruña.....	1100	A	89	92	94	97	95	91	88	95	96	90	92	89	92	12
		B	4	2	1	1	1	4	6	2	1	2	1	2	2	
Santander.....	1200	A	54	57	63	66	69	65	69	73	71	65	62	56	64	12
		B	17	20	17	15	13	12	14	8	9	15	16	17	14	
Interior:																
Albacete/Los																
Llanos Airport.	1200	A	90	94	99	98	99	100	100	100	100	98	96	96	98	3–5
		B	6	1	0	0	0	0	0	0	0	1	3	3	1	
Badajoz/Talavera																
La Real Air-																
port.....	1200	A	90	97	99	98	99	99	100	100	100	99	95	88	97	4–5
		B	7	2	1	1	0	1	0	0	0	1	1	11	2	
Granada Air-																
port.....	1200	A	81	89	94	98	98	100	100	100	99	95	90	79	94	9–10
		B	10	4	3	1	2	0	***	0	***	1	6	7	3	
Madrid/Barajas																
Airport.....	1200	A	82	90	98	98	99	100	100	100	99	97	93	88	95	11–13
		B	11	5	***	1	***	***	0	***	***	2	5	8	3	
Madrid/Torrejón																
Air Base.....	1200	A	83	97	97	99	99	100	100	100	100	98	94	84	96	4–5
		B	9	1	1	0	0	0	0	0	0	1	2	7	2	
Monflorite.....	1200	A	90	97	99	99	98	99	99	98	100	98	99	85	97	3–4
		B	10	2	1	1	2	0	0	1	0'	1	1	12	3	

See footnotes at end of table.

FIGURE 37. CEILING AND VISIBILITY COMBINATIONS (*Continued*)

REGION AND STATION	HOUR (LST)	COMBINATION**	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS. REC
Interior (*Continued*):																
Morón Air Base..	1200	A	92	97	96	98	99	100	100	100	100	100	97	94	98	4–5
		B	2	2	1	1	0	0	0	0	0	0	2	2	1	
Salamanca Airport.....	1200	A	81	86	97	99	100	98	99	100	98	97	95	88	95	4–5
		B	15	4	0	0	0	1	0	0	1	1	3	8	3	
Saragossa Valenzuela Air Base..	1200	A	84	89	97	99	100	100	100	100	100	95	88	87	95	5–6
		B	10	6	2	0	0	0	0	0	0	1	7	9	3	
Seville/San Pablo Airport.....	1200	A	90	92	95	98	99	100	100	100	100	99	95	93	97	9–11
		B	5	3	3	2	1	0	0	0	0	***	3	2	2	
Valladolid Airport.....	1200	A	64	88	95	99	97	99	99	99	98	93	80	62	89	12
		B	23	5	1	0	***	***	***	***	***	5	10	28	6	
Southern and Eastern Coasts:																
Almería.....	1400	A	97	96	96	98	97	97	98	98	98	98	99	98	98	3–5
		B	2	2	1	1	3	2	1	1	2	1	1	1	2	
Barcelona.....	1200	A	77	68	77	89	87	89	96	93	89	92	81	71	84	11–12
		B	8	8	7	2	2	1	1	0	1	1	3	8	4	
Rota Naval Air Station.....	1200	A	88	92	94	99	99	99	99	100	98	98	97	90	96	3–4
		B	7	4	0	0	0	0	0	0	0	0	1	4	1	
San Javier.....	1200	A	100	99	94	95	98	99	99	100	100	99	97	97	98	5
		B	0	0	1	1	0	0	0	0	0	0	1	1	***	
Valencia.....	1200	A	94	94	93	97	97	99	98	98	98	95	96	97	96	10–12
		B	2	2	1	1	***	0	1	0	1	1	1	1	1	
Balearic Islands:																
Mahón/San Luis Airport.....	1200	A	94	91	90	94	97	99	99	99	99	93	91	93	95	9–10
		B	1	4	***	1	1	0	***	0	***	1	0	1	1	
Canary Islands:																
Santa Cruz.....	1100	A	97	94	96	98	99	100	98	99	99	97	94	94	97	4–5
		B	1	4	1	0	0	0	2	1	0	1	1	2	1	
Northern Coast:																
La Coruña.....	1700	A	90	94	92	98	95	89	93	94	94	88	91	89	92	10–11
		B	3	1	2	1	2	5	3	3	2	5	1	2	3	
Santander.....	1800	A	57	59	69	73	72	76	79	79	73	68	55	53	68	10
		B	18	16	14	10	11	9	8	6	7	13	19	17	12	
Interior:																
Albacete/Los Llanos Airport.	1800	A	93	97	97	97	99	99	100	100	99	99	98	99	98	3–5
		B	6	1	1	0	1	1	0	0	0	0	2	1	1	
Badajoz/Talavera La Real Airport.....	1800	A	96	99	99	100	99	99	100	100	99	100	98	96	99	4–5
		B	2	0	1	0	1	0	0	0	0	0	0	3	1	
Granada Airport .	1800	A	94	95	95	97	96	98	99	100	99	99	94	87	96	8–10
		B	3	1	2	1	2	***	***	0	***	***	2	3	1	
Madrid/Barajas Airport.....	1800	A	90	96	97	99	98	99	100	100	100	98	95	91	97	11–13
		B	5	2	1	***	0	0	0	0	0	1	1	5	1	
Madrid/Torrejón Air Base.....	1800	A	92	99	98	99	100	100	100	100	100	97	97	92	98	4–5
		B	4	0	0	1	0	0	0	0	0	1	0	4	1	
Monflorite.....	1800	A	90	99	98	100	100	100	99	100	99	100	98	90	98	3–4
		B	10	0	2	0	0	0	0	0	1	0	2	10	2	
Morón Air Base..	1800	A	94	99	97	99	99	100	100	100	100	98	96	94	98	4–5
		B	3	0	1	0	0	0	0	0	0	1	0	1	1	
Salamanca Airport.	1800	A	86	89	97	99	99	99	100	99	100	99	97	88	96	4–5
		B	7	4	1	0	1	0	0	0	0	0	2	7	2	
Saragossa/Valenzuela Air Base..	1800	A	93	94	99	99	100	100	100	100	99	99	95	89	97	5–6
		B	4	2	1	0	0	0	C	0	1	0	3	8	2	

See footnotes at end of table.

FIGURE 37. CEILING AND VISIBILITY COMBINATIONS (*Continued*)

REGION AND STATION	HOUR (LST)	COMBINATION**	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS. REC
Interior (*Continued*):																
Seville/San Pablo Airport	1800	A	96	98	95	99	99	100	100	100	99	97	93	93	97	10–12
		B	2	1	3	0	1	0	0	0	1	1	2	3	1	
Valladolid Airport	1800	A	80	94	98	98	99	99	99	99	99	96	86	71	93	12
		B	11	2	***	0	***	0	***	0	***	1	5	19	3	
Southern and Eastern Coasts:																
Almería	1900	A	98	95	97	99	100	98	99	100	100	99	100	97	99	3–5
		B	1	2	2	1	0	1	1	0	0	1	0	2	1	
Barcelona	1800	A	72	71	77	89	87	94	95	93	90	83	75	71	83	7–10
		B	8	5	6	2	2	***	1	1	1	1	4	8	3	
Rota Naval Air Station	1800	A	93	97	96	99	99	99	100	99	100	98	94	92	97	3–4
		B	5	2	1	0	0	0	0	0	0	1	2	2	1	
San Javier	1800	A	99	99	95	97	99	99	100	98	100	98	99	97	98	4–5
		B	1	1	1	1	0	0	0	1	0	1	0	1	1	
Valencia	1800	A	95	94	96	98	97	99	99	99	98	94	93	94	96	11–12
		B	2	2	2	1	0	1	0	0	1	2	3	2	1	
Balearic Islands:																
Mahón/San Luis Airport	1800	A	92	92	90	94	95	97	99	98	99	94	87	91	94	8–10
		B	1	2	3	2	2	***	***	***	1	1	2	1	1	
Canary Islands:																
Santa Cruz	1700	A	96	92	97	99	99	100	98	100	100	96	94	93	97	4–5
		B	1	3	2	0	1	0	1	0	0	2	1	1	1	

* Ceiling herein is defined as ≦5-eighths cloud cover except at Madrid/Torrejón Air Base, Morón Air Base, and Saragossa/Valenzuela Air Base where ceiling is defined as ≦6-tenths cloud cover.

** Combination:
A..... Ceiling ≦984 feet with visibility ≦2½ miles.
B..... Ceiling <656 feet and/or visibility <1¼ miles.

*** <0.5%.

FIGURE 38. MEAN NUMBER OF DAYS WITH TOTAL CLOUD COVER ≦2-EIGHTHS AND VISIBILITY ≦2½ MILES AT SPECIFIED HOURS

REGION AND STATION	HOUR (LST)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Northern Coast:															
La Coruña	2300	8	6	9	10	10	9	10	10	11	8	5	4	100	5
	0500	6	7	6	6	6	5	6	5	5	6	7	5	70	12
	1100	4	5	5	5	6	6	8	8	5	4	5	3	62	12
	1700	4	5	6	6	6	5	10	7	6	5	5	3	68	11
Santander	0000	1	3	3	1	4	2	5	3	2	3	4	4	32	2–3
	0600	3	4	4	2	4	3	3	4	4	4	4	5	41	12
	1200	1	3	4	3	4	5	6	6	4	3	2	2	44	12
	1800	3	3	5	4	5	4	6	5	4	3	3	3	48	9–10
Interior:															
Albacete/Los Llanos Airport	0000	16	16	19	14	16	16	23	23	21	17	15	14	210	3–5
	0600	14	12	13	11	11	14	22	20	15	11	9	11	163	3–5
	1200	11	9	8	8	8	11	20	19	14	8	7	8	130	3–5
	1800	10	10	8	8	7	9	16	16	12	9	10	9	124	3–5
Ciudad Real	0600	20	17	6	5	15	22	28	28	23	6	7	10	186	1–5
	1200	14	12	15	16	16	21	28	26	22	17	9	9	205	4–5
	1800	15	14	14	14	11	16	22	23	18	12	11	9	178	4–5
Granada Airport	0600	15	14	11	11	15	19	26	24	19	14	14	15	195	8–10
	1200	11	10	10	9	13	16	26	24	15	12	10	10	164	9–10
	1800	11	9	7	8	11	15	26	23	15	13	9	10	158	8–10

* Cloud cover ≦3-tenths.

FIGURE 38 (*Continued*)

REGION AND STATION	HOUR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
	(LST)														
Interior (*Continued*):															
Madrid/Barajas Airport	0600	14	13	13	12	11	15	23	20	16	13	12	14	175	12
	1200	8	8	8	8	9	10	20	19	12	9	8	10	129	12
	1800	10	9	7	8	7	8	16	17	11	9	9	11	122	12
Madrid/Torrejón Air Base*	0000	13	16	15	15	15	19	28	26	21	16	15	13	211	4–5
	0600	13	15	12	12	12	16	25	23	17	13	14	12	182	4–5
	1200	9	11	7	11	10	13	24	22	13	9	9	8	146	4–5
	1800	8	12	6	9	10	11	21	19	11	12	10	9	139	4–5
Monflorite	0600	14	13	12	12	10	13	20	16	14	12	10	11	156	3–4
	1200	10	8	9	10	7	10	19	15	15	11	9	8	131	3–4
	1800	14	9	10	11	7	12	18	15	14	13	10	12	143	3–4
Morón Air Base*	0000	13	17	12	15	19	23	29	29	24	20	16	12	229	4–5
	0600	13	17	11	12	14	17	26	26	19	16	14	13	198	4–5
	1200	10	12	7	10	11	16	27	25	18	13	9	8	164	4–5
	1800	10	12	7	11	13	19	27	26	19	15	8	8	175	4–5
Salamanca Airport	0000	15	13	15	15	14	17	23	26	21	14	13	11	196	3–4
	0600	11	10	12	11	10	14	21	19	15	9	6	9	146	4–5
	1200	8	6	8	7	7	9	21	17	12	7	6	6	113	4–5
	1800	10	7	10	7	5	7	17	16	11	7	8	7	112	4–5
Saragossa/Valenzuela Air Base*	0000	14	17	16	15	14	17	24	23	18	13	14	13	197	5
	0600	14	12	12	12	11	14	20	18	10	11	10	10	155	5
	1200	8	9	10	11	10	12	20	20	11	9	8	7	135	5–6
	1800	10	10	9	10	10	12	19	17	10	11	9	8	134	5–6
Seville/San Pablo Airport	0600	16	15	13	12	13	18	24	24	17	15	15	17	198	11
	1200	14	12	8	9	1	17	26	24	18	12	10	12	175	9–11
	1800	11	10	8	10	12	17	26	25	17	12	10	12	171	11
Valladolid Airport	0000	12	12	15	17	16	15	25	25	21	18	12	10	197	4–5
	0600	7	10	8	9	9	9	19	16	11	8	8	6	120	12
	1200	3	5	7	6	7	9	18	15	10	6	5	2	93	12
	1800	7	8	7	7	7	8	17	15	10	9	9	5	108	12
Southern and Eastern Coasts:															
Barcelona	0600	13	10	9	10	8	10	13	10	7	8	8	12	118	12
	1200	11	8	9	12	10	11	16	12	8	8	9	8	122	12
	1800	11	8	9	9	8	10	14	12	9	10	11	10	120	8–10
Rota Naval Air Station*	0000	13	16	12	15	16	23	27	29	21	20	16	13	221	3–4
	0600	13	15	12	11	11	17	22	26	20	19	16	12	193	3–4
	1200	9	11	10	11	13	18	24	24	14	15	9	9	168	3–4
	1800	9	11	11	11	14	23	27	27	18	15	9	7	182	3–4
San Javier	0000	18	16	15	12	14	15	20	21	15	14	14	17	190	4–5
	0600	17	13	11	10	10	12	16	16	11	11	11	14	152	5
	1200	13	11	9	9	10	15	17	17	12	7	7	9	135	5
	1800	15	11	9	9	10	14	22	17	13	10	10	11	151	5
Valencia	0000	19	18	18	15	17	18	21	22	20	18	15	17	217	4–5
	0600	16	14	9	12	10	13	14	12	10	11	10	17	146	12
	1200	11	10	9	10	9	12	17	15	13	9	8	12	135	11–13
	1800	12	10	9	8	9	11	16	14	10	9	9	12	129	12
Balearic Islands:															
Mahón/San Luis Airport	0600	10	8	9	8	11	12	21	16	10	5	5	9	123	8–10
	1200	5	5	8	7	12	11	18	15	8	3	3	4	98	8–10
	1800	9	8	9	9	12	13	22	18	10	7	8	10	135	8–10
Canary Islands:															
Santa Cruz	0500	7	5	10	9	13	15	21	19	17	14	8	5	142	4–5
	1100	6	5	11	7	12	17	20	21	14	10	6	6	135	4–5
	1700	5	6	10	8	15	18	23	23	17	11	5	4	144	4–5

* Cloud cover ≦3-tenths.

FIGURE 39. MEAN NUMBER OF DAYS WITH SURFACE WIND SPEED ≧28 KNOTS AT SPECIFIED HOURS

REGION AND STATION	HOUR (LST)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Northern Coast:															
La Coruña	2300	2	2	1	1	1	*	0	0	*	0	2	2	10	5
	0500	1	1	1	*	*	0	0	*	*	*	1	1	6	12
	1100	1	2	1	*	*	*	0	*	0	*	1	1	7	12
	1700	1	2	1	*	1	*	*	*	*	*	1	1	7	11
Santander	0000	1	2	1	1	2	1	0	0	1	0	4	1	11	2–3
	0600	1	2	*	1	*	*	*	*	0	1	1	1	7	12
	1200	2	2	1	1	*	*	0	0	*	*	2	2	10	12
	1800	1	*	*	1	*	*	*	0	0	*	1	1	5	10
Interior:															
Albacete/Los Llanos Airport	0000	0	1	*	*	*	0	0	*	*	0	*	*	3	2–5
	0600	*	1	*	0	*	*	0	0	0	0	*	1	3	2–5
	1200	2	1	2	1	1	1	0	*	*	1	2	2	15	2–5
	1800	1	1	1	1	1	2	1	1	2	1	1	1	13	2–5
Ciudad Real	0600	0	0	2	0	0	0	0	0	0	0	1	0	3	4–5
	1200	0	0	*	0	0	0	0	0	*	0	0	*	1	4–5
	1800	0	0	0	0	0	0	0	*	0	0	0	0	*	4–5
Granada Airport	0600	*	*	*	0	0	0	*	*	*	*	*	*	2	8–10
	1200	0	1	1	*	0	0	*	*	1	*	1	0	3	9
	1800	*	*	*	*	1	*	0	1	*	0	*	*	3	8–10
Madrid/Barajas Airport	0600	*	0	*	0	0	0	0	0	0	0	*	0	*	11
	1200	*	*	*	0	0	*	0	0	0	*	*	*	1	11
	1800	0	*	*	*	0	*	0	0	0	0	0	0	1	11
Madrid/Torrejón Air Base	0000	0	0	0	0	0	0	0	0	0	0	0	*	*	4–5
	0600	0	0	0	0	0	0	0	0	0	0	0	0	0	4–5
	1200	0	*	*	*	0	0	0	0	0	0	0	*	1	4–5
	1800	0	0	*	*	0	0	0	0	0	0	0	0	*	4–5
Monflorite	0600	2	2	1	1	1	0	0	*	0	*	1	1	8	3–4
	1200	4	5	2	2	2	*	1	1	2	3	4	3	28	3–4
	1800	1	3	2	3	1	*	2	1	2	1	2	2	19	3–4
Morón Air Base	0000	0	0	*	0	0	0	0	0	0	*	1	1	2	4–5
	0600	0	0	1	0	0	0	0	0	0	0	0	1	2	4–5
	1200	*	*	*	0	*	0	0	0	0	0	1	2	3	4–5
	1800	0	0	0	0	*	0	0	0	0	0	*	1	2	4–5
Salamanca Airport	0000	1	*	*	0	0	0	0	0	0	0	1	0	2	3–4
	0600	*	1	1	*	0	0	0	0	0	*	1	1	5	4–5
	1200	2	3	2	1	1	*	0	*	0	0	1	1	12	4–5
	1800	1	2	1	*	1	0	0	*	*	0	1	0	7	4–5
Saragossa/Valenzuela Air Base	0000	0	0	0	1	*	0	0	0	0	0	0	0	1	5–6
	0600	0	0	0	1	0	0	0	0	0	0	0	0	1	5–6
	1200	1	*	0	3	1	*	*	0	0	0	*	*	6	5–6
	1800	0	0	0	3	1	*	*	1	0	0	0	0	5	5–6
Seville/San Pablo Airport	0600	*	0	*	0	*	0	0	0	0	0	*	0	1	11
	1200	*	*	1	*	0	*	0	*	0	*	*	*	3	9–11
	1800	*	*	*	*	0	*	0	0	*	*	*	*	1	11
Valladolid Airport	0000	*	*	0	0	*	0	0	0	0	0	0	*	1	4–5
	0600	*	*	*	0	0	*	*	0	0	*	*	*	1	11
	1200	*	0	*	*	*	*	*	0	0	0	*	*	2	12
	1800	*	*	*	*	0	*	*	0	*	0	*	*	1	11

* <0.5 day.

FIGURE 39 (*Continued*)

REGION AND STATION	HOUR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
	(LST)														
Southern and Eastern Coasts:															
Barcelona	0600	2	2	2	2	3	2	1	1	1	1	1	*	16	11
	1200	2	2	1	*	*	*	0	*	*	*	*	2	9	11
	1800	2	1	1	*	*	*	*	*	*	*	1	2	9	8–10
Rota Naval Air Station	0000	3	2	1	*	1	*	*	0	0	0	1	2	11	3–4
	0600	5	2	1	1	2	5	2	1	2	1	3	4	28	3–4
	1200	3	1	*	0	0	*	*	0	0	*	*	2	8	3–4
	1800	1	*	0	0	0	0	0	0	0	0	*	1	3	3–4
San Javier	0000	*	*	1	0	0	1	*	*	0	*	*	1	5	4–5
	0600	*	1	2	4	5	5	5	4	5	2	1	1	33	5
	1200	3	2	2	2	4	2	1	*	*	2	3	4	25	5
	1800	2	2	2	2	2	2	1	0	1	1	1	2	17	5
Valencia	0000	*	1	0	*	*	*	0	*	0	*	0	1	3	4–5
	0600	1	2	3	2	3	2	3	2	3	2	1	1	22	12
	1200	1	*	1	*	*	*	*	*	0	*	*	*	4	10–12
	1800	1	1	1	*	*	*	*	0	*	*	1	1	4	12
Balearic Islands:															
Mahón/San Luis Airport	0600	*	1	2	1	2	*	*	1	*	*	*	*	8	8–10
	1200	0	*	*	*	*	0	0	0	0	0	0	0	1	8–10
	1800	*	*	*	0	*	0	0	0	*	0	*	*	1	8–10
Canary Islands:															
Santa Cruz	0500	0	0	0	0	0	0	0	0	0	0	0	0	0	4–5
	1100	*	0	0	0	0	0	0	0	0	0	*	0	*	4–5
	1700	*	*	*	0	0	0	0	0	0	*	0	0	1	4–5

* <0.5 day.

FIGURE 40. MEAN NUMBER OF DAYS WITH SURFACE WIND ≥17 KNOTS WITH 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
	(LST)														
Northern Coast:															
La Coruña	2300	5	5	4	3	3	1	1	1	2	2	5	3	36	5
	0500	5	4	3	2	1	1	*	1	1	1	3	4	25	11–12
	1100	5	5	5	5	5	4	3	3	3	3	3	4	47	12
	1700	4	4	4	6	6	4	4	4	3	2	3	4	47	10–12
Santander	0000	3	5	3	0	3	0	0	1	2	1	8	4	28	2–3
	0600	4	4	3	3	2	1	1	1	1	2	3	4	26	11–12
	1200	5	6	5	5	4	2	2	2	2	3	5	5	45	12
	1800	4	4	3	2	1	1	1	1	1	3	3	4	28	9–10
Interior:															
Albacete/Los Llanos Airport	0000	2	2	3	2	3	5	2	3	2	2	2	3	30	2–5
	0600	2	3	3	1	1	2	2	1	1	*	1	3	20	2–5
	1200	8	6	7	4	6	5	4	5	4	3	6	6	64	2–5
	1800	6	4	7	6	10	12	10	10	6	2	5	4	81	2–5
Ciudad Real	0600	0	0	2	0	0	0	0	0	0	0	1	1	3	1–5
	1200	*	1	1	*	1	*	0	1	*	*	1	*	5	4–5
	1800	*	1	1	*	1	1	*	1	*	*	1	0	8	4–5
Granada	0600	*	1	*	*	0	0	*	*	*	1	*	1	4	8–10
	1200	1	2	3	2	3	3	3	4	3	1	2	1	28	8–10
	1800	2	2	5	5	4	9	9	8	4	2	1	1	50	8–10
Madrid/Barajas Airport	0600	2	1	1	1	*	*	*	*	*	*	1	1	9	11–12
	1200	3	4	3	3	2	1	1	1	1	1	3	4	27	10–12
	1800	2	3	2	3	2	2	1	1	1	1	1	1	20	11–12
Madrid/Torrejón Air Base	0000	1	1	1	1	*	*	*	0	*	*	0	1	5	4–5
	0600	*	1	*	*	*	0	0	0	0	*	1	1	4	4–5
	1200	2	3	3	2	*	1	0	*	0	1	2	2	15	4–5
	1800	1	1	2	3	2	*	1	*	0	1	*	1	12	4–5

* <0.5 day.

FIGURE 40 (*Continued*)

REGION AND STATION	HOUR (LST)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Interior (*Continued*):															
Monflorite	0600	5	3	3	2	1	*	1	3	1	2	5	4	29	3–4
	1200	9	9	9	7	4	3	5	7	4	6	8	9	79	3–4
	1800	6	7	9	10	5	6	9	11	5	5	6	4	84	3–4
Morón Air Base	0000	*	1	*	1	0	1	0	0	0	1	1	1	5	4–5
	0600	2	1	*	*	*	0	0	*	1	0	1	2	7	4–5
	1200	2	2	2	2	2	*	*	1	1	3	3	5	24	4–5
	1800	2	2	2	3	5	6	5	5	3	2	1	2	37	4–5
Salamanca Airport	0000	3	4	4	2	2	*	1	1	1	1	2	2	21	3–4
	0600	3	4	3	1	1	*	0	1	0	1	3	4	20	4–5
	1200	6	8	9	6	6	2	3	4	4	4	9	6	67	4–5
	1800	4	6	6	7	6	4	5	9	5	2	3	4	62	4–5
Saragossa/Valenzuela Air Base	0000	2	2	1	8	3	2	3	2	1	2	2	2	31	4–5
	0600	3	2	2	5	3	1	1	2	*	1	1	4	25	4–5
	1200	5	5	5	10	4	3	3	3	2	5	2	6	54	4–5
	1800	2	2	3	11	7	5	6	4	2	3	1	3	48	4–5
Seville/San Pablo Airport	0600	*	1	*	*	*	0	0	*	*	*	1	1	3	9–12
	1200	1	2	3	3	1	2	1	1	1	1	2	1	19	7–11
	1800	1	1	2	3	5	8	6	6	5	1	1	1	38	9–12
Valladolid Airport	0000	*	1	1	1	1	1	1	*	0	0	1	1	7	3–4
	0600	1	1	*	1	*	*	*	0	*	*	1	1	5	11–12
	1200	2	3	2	3	2	*	1	1	1	1	2	2	19	11–12
	1800	1	2	2	3	1	1	1	2	2	1	1	1	18	11–12
Southern and Eastern Coasts:															
Barcelona	0600	1	1	1	1	*	*	*	*	*	0	*	1	5	11–12
	1200	1	1	1	*	*	*	0	*	*	*	*	1	5	11–12
	1800	1	1	1	1	1	*	0	*	0	1	*	1	5	7–10
Rota Naval Air Station	0000	1	0	1	0	*	1	*	1	1	1	*	1	8	3–4
	0600	1	*	1	0	0	0	*	1	*	*	*	2	6	3–4
	1200	1	2	3	2	2	2	1	3	1	2	1	3	21	3–4
	1800	*	1	1	1	2	3	2	4	1	2	1	2	19	3–4
San Javier	0000	3	3	2	1	1	1	1	1	2	3	2	5	26	4–5
	0600	5	2	2	2	1	1	1	3	1	1	1	4	24	4–5
	1200	7	6	7	4	5	5	4	3	4	5	5	7	62	4–5
	1800	5	5	5	5	5	4	3	4	1	3	2	4	46	4–5
Valencia	0000	1	2	*	1	*	*	*	0	0	0	2	1	8	4–5
	0600	2	1	1	*	*	0	*	*	*	1	1	2	8	11–12
	1200	3	3	2	2	1	2	1	1	1	1	2	2	19	11–12
	1800	2	2	1	1	1	1	*	1	*	1	*	1	11	11–12
Balearic Islands:															
Mahón/San Luis Airport	0600	3	2	1	3	1	1	1	1	1	2	3	3	21	8–10
	1200	4	4	5	5	5	2	3	2	2	3	4	5	43	9–10
	1800	3	2	2	2	1	1	*	1	1	1	2	3	17	8–10
Canary Islands:															
Santa Cruz	0500	1	1	1	2	1	*	1	*	*	1	1	*	8	4–5
	1100	2	1	2	3	1	2	2	2	1	1	1	1	19	4–5
	1700	2	2	3	4	4	3	3	3	2	1	1	1	29	4–5

* <0.5 day.

FIGURE 41. MEAN NUMBER OF DAYS WITH SURFACE WIND SPEED 3 TO 10 KNOTS, TEMPERATURE >32° BUT <90°F., 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
	(LST)														
Northern Coast:															
La Coruña	2300	9	5	9	8	10	11	8	11	9	8	9	8	104	5
	0500	8	7	9	9	10	8	9	9	8	9	8	9	103	12
	1100	8	7	9	11	12	13	14	13	12	9	7	7	124	12
	1700	10	9	9	10	11	13	13	12	11	12	9	7	126	10–11
Santander	0000	5	3	3	5	4	5	5	3	5	5	7	8	57	2–3
	0600	8	7	8	8	9	7	8	10	9	9	9	10	101	12
	1200	11	11	14	13	16	16	18	18	17	16	11	10	171	12
	1800	12	8	13	14	12	16	17	18	12	14	7	8	150	2–3
Interior:															
Albacete/Los Llanos Airport	0000	5	6	10	11	10	12	12	16	12	12	12	11	129	2–5
	0600	3	6	5	10	9	12	12	15	11	12	10	9	113	2–5
	1200	7	8	13	12	14	13	9	13	14	12	11	11	134	2–5
	1800	8	10	13	12	12	7	4	8	13	15	11	11	124	2–5
Ciudad Real	0600	*na*	7	13	22	24	20	21	17	16	9	5	6	*na*	1
	1200	*na*	6	12	21	12	7	7	10	7	5	5	4	*na*	1
	1800	*na*	12	17	22	20	14	16	11	16	5	11	11	*na*	1
Granada	0600	5	6	8	8	6	4	6	5	5	5	6	6	69	8–10
	1200	6	7	11	15	15	15	11	12	14	10	7	6	129	8–10
	1800	10	11	12	11	13	8	3	7	15	14	11	8	122	8–10
Madrid/Barajas Airport	0600	5	4	5	8	6	7	6	6	6	6	6	5	69	12
	1200	6	6	10	12	16	17	15	15	14	12	8	7	137	10–12
	1800	8	9	11	11	12	14	10	11	15	10	8	9	126	12
Madrid/Torrejón Air Base	0000	7	11	13	12	12	15	15	12	8	12	13	10	137	4–5
	0600	7	7	9	11	8	7	7	6	6	9	11	9	95	4–5
	1200	10	8	11	15	17	19	19	17	15	13	10	7	162	4–5
	1800	11	13	13	14	17	16	14	14	17	16	14	12	171	4–5
Monflorite	0600	4	9	13	10	14	13	13	15	9	11	10	9	129	3–4
	1200	9	8	10	11	15	16	11	13	13	10	9	8	132	3–4
	1800	8	8	11	8	12	11	6	9	11	11	10	12	117	3–4
Morón Air Base	0000	18	14	17	19	20	18	21	20	20	21	19	17	224	4–5
	0600	16	12	13	15	16	16	17	16	18	19	18	13	189	4–5
	1200	13	12	12	14	15	16	11	11	14	12	15	11	156	4–5
	1800	16	12	15	14	10	8	3	3	7	16	17	15	134	4–5
Salamanca Airport	0000	3	5	9	12	17	17	19	15	16	14	11	10	148	3–4
	0600	4	4	9	10	10	12	14	13	14	15	11	8	123	4–5
	1200	8	8	11	12	13	17	15	14	14	13	8	10	143	4–5
	1800	14	9	13	10	10	11	12	10	13	19	15	12	147	4–5
Saragossa/Valenzuela Air Base	0000	12	12	14	9	14	12	16	15	15	14	13	12	158	5–6
	0600	14	12	15	10	12	13	18	17	13	13	13	11	161	5–6
	1200	13	12	10	10	16	15	15	16	15	12	10	11	155	5–6
	1800	14	14	11	7	10	11	7	11	13	14	15	14	139	5–6
Seville/San Pablo Airport	0600	7	7	6	7	6	6	4	4	4	6	7	8	71	10–12
	1200	10	11	11	14	13	11	6	7	10	12	11	13	126	9–11
	1800	9	12	13	13	11	5	2	2	7	10	9	9	99	10–12
Valladolid Airport	0000	6	9	13	11	15	12	16	18	11	12	13	13	149	4–5
	0600	6	6	10	11	12	11	14	14	10	10	9	8	122	12
	1200	9	10	14	16	16	18	20	17	16	14	12	9	169	12
	1800	13	13	14	14	14	15	15	15	13	13	13	13	164	12

na Data not available.

FIGURE 41 (*Continued*)

REGION AND STATION	HOUR (LST)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Southern and Eastern Coasts:															
Barcelona	0600	14	11	9	9	7	8	8	8	10	12	11	12	120	12
	1200	16	16	19	21	23	21	23	25	22	19	18	15	238	12
	1800	13	15	18	21	21	23	23	21	16	14	11	13	209	8–10
Rota Naval Air Station	0000	16	17	15	18	15	16	16	15	16	16	16	16	192	3–4
	0600	18	16	17	18	18	18	20	19	17	17	16	15	210	3–4
	1200	17	14	13	19	18	18	21	21	19	15	17	17	208	3–4
	1800	18	17	15	15	14	14	17	12	15	18	20	16	190	3–4
San Javier	0000	14	12	12	15	16	13	13	12	11	16	16	13	163	4–5
	0600	14	11	14	15	16	15	15	16	16	17	17	17	182	4–5
	1200	12	11	13	13	14	15	14	16	19	16	15	11	169	4–5
	1800	12	11	14	13	15	15	15	15	17	17	15	15	174	4–5
Valencia	0000	12	11	9	8	10	9	6	7	16	10	12	13	114	4–5
	0600	13	11	11	9	7	7	6	6	7	11	13	15	117	12
	1200	12	12	15	18	20	20	23	19	18	15	13	13	197	11
	1800	12	12	16	17	18	19	21	20	13	11	11	14	182	12
Balearic Islands:															
Mahón/San Louis Airport	0600	8	7	9	11	10	10	9	10	7	7	7	8	103	8–10
	1200	13	14	14	14	18	20	18	22	19	15	13	13	193	9–10
	1800	10	10	13	14	19	19	21	20	17	10	7	8	169	8–10
Canary Islands:															
Santa Cruz	0500	14	11	13	14	12	15	13	11	11	13	15	16	156	4–5
	1100	17	18	19	19	21	20	18	20	20	20	18	21	229	4–5
	1700	19	16	15	18	17	16	19	17	17	18	19	19	210	4–5

na Data not available.

FIGURE 42. MEAN NUMBER OF DAYS WITH CEILING* ≧984 FEET AND VISIBILITY ≧2½ MILES AND SURFACE WIND SPEED ≦10 KNOTS AT SPECIFIED HOURS

REGION AND STATION	HOUR (LST)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Northern Region:															
La Coruña	2300	16	12	16	20	19	22	20	20	21	15	12	14	206	4–5
	0500	17	15	20	21	22	21	21	22	23	21	18	17	239	11–12
	1100	17	15	19	17	17	18	18	18	21	19	18	17	211	11–12
	1700	18	15	17	16	16	17	17	16	20	19	19	17	207	10–12
Santander	0000	3	6	3	1	5	4	6	4	3	4	5	8	50	2–3
	0600	6	5	9	8	12	10	11	14	12	13	10	7	116	11–12
	1200	10	8	11	11	13	12	14	16	16	14	10	10	143	12
	1800	11	11	15	15	17	19	20	21	20	17	11	10	187	9–10
Interior:															
Albacete/Los Llanos Airport	0000	23	22	24	25	25	20	22	22	23	26	24	24	280	2–5
	0600	23	22	25	25	27	25	27	27	26	26	23	23	299	2–5
	1200	15	15	20	20	20	19	22	20	22	21	17	19	231	2–5
	1800	18	19	18	18	14	10	12	15	19	25	20	23	211	2–5
Ciudad Real	0600	*na*	17	11	5	2	18	29	27	17	7	4	7	*na*	1
	1200	*na*	16	15	21	25	24	29	24	29	26	14	14	*na*	1
	1800	*na*	14	13	18	22	22	24	23	30	27	9	15	*na*	1
Granada Airport	0600	26	24	27	25	28	29	30	30	28	27	26	26	325	8–10
	1200	23	21	24	22	22	21	21	23	23	27	24	22	271	9–10
	1800	25	20	18	17	16	10	9	13	19	24	25	24	219	8–10
Madrid/Barajas Airport	0600	21	22	26	27	29	29	30	30	29	28	24	21	316	11–12
	1200	18	17	22	21	24	25	27	26	25	24	22	20	269	10–12
	1800	22	20	22	20	20	22	24	23	25	26	24	23	270	11–12
Madrid/Torrejón Air port	0000	23	24	27	25	29	28	29	30	29	28	26	23	321	4–5
	0600	23	23	25	26	30	29	30	30	30	27	25	21	319	4–5
	1200	19	20	22	22	25	28	29	29	27	23	23	17	284	4–5
	1800	24	23	22	21	26	26	27	28	29	27	26	23	304	4–5

See footnotes at end of table.

FIGURE 42 (*Continued*)

REGION AND STATION	HOUR (LST)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Interior (*Continued*):															
Monflorite	0600	17	21	23	23	26	25	26	24	27	26	21	18	277	3–4
	1200	16	14	16	18	21	20	22	18	22	20	18	14	218	3–4
	1800	16	17	17	14	18	17	15	14	20	24	19	19	207	3–4
Morón Air Base	0000	23	24	24	26	27	26	26	26	26	25	25	21	299	4–5
	0600	22	23	24	27	27	28	29	30	28	27	24	21	310	4–5
	1200	21	20	20	20	23	24	25	26	25	20	21	17	261	4–5
	1800	24	21	18	17	15	13	13	14	13	18	21	21	208	4–5
Salamanca Airport	0000	20	18	22	22	25	25	25	26	26	26	21	22	278	3–4
	0600	17	17	22	25	26	27	28	28	28	25	19	18	279	4–5
	1200	15	12	14	15	17	19	20	19	18	18	14	18	199	4–5
	1800	19	14	16	12	13	13	16	13	15	23	19	19	193	4–5
Saragossa/Valenzuela Air Base	0000	19	19	20	15	20	19	19	20	25	22	21	17	234	5–6
	0600	19	20	22	18	21	20	23	24	26	22	21	17	251	5–6
	1200	13	14	13	13	19	19	19	21	21	17	14	13	196	5–6
	1800	19	19	18	12	16	17	14	20	23	23	21	18	220	5–6
Seville/San Pablo Airport	0600	26	22	23	24	26	27	29	28	27	27	24	25	307	9–12
	1200	23	21	22	23	25	24	27	27	27	27	22	24	291	9–10
	1800	27	24	22	21	17	13	13	13	18	27	26	26	245	9–12
Valladolid Airport	0000	21	22	27	26	27	26	25	27	27	29	23	21	300	3–4
	0600	17	19	24	24	26	23	27	27	26	24	18	15	269	11–12
	1200	13	17	21	22	23	25	27	26	26	23	17	12	251	11–12
	1800	20	20	23	20	21	24	24	24	25	26	21	17	263	11–12
Southern and Eastern Coasts:															
Barcelona	0600	24	18	20	23	21	21	25	24	23	23	23	23	266	11–12
	1200	22	15	21	24	25	25	29	26	27	27	23	19	281	11–12
	1800	20	17	21	25	25	27	28	27	26	24	22	19	280	7–10
Rota Naval Air Station	0000	26	25	23	27	23	25	27	25	25	25	25	23	297	3–4
	0600	25	22	24	24	26	26	27	28	27	26	25	21	300	3–4
	1200	19	18	16	20	20	19	23	22	19	19	22	18	234	3–4
	1800	24	19	16	16	15	14	18	12	17	19	24	22	215	3–4
San Javier	0000	22	21	18	18	20	23	26	25	22	21	22	17	253	4–5
	0600	22	21	23	24	27	26	27	27	26	25	25	22	294	4–5
	1200	19	16	18	17	17	17	18	20	20	22	20	16	219	4–5
	1800	22	17	19	15	19	19	21	20	21	23	22	21	238	4–5
Valencia	0000	27	23	29	27	30	28	30	31	28	30	27	27	336	4–5
	0600	25	21	25	26	26	26	27	29	26	26	25	26	307	11–12
	1200	24	19	23	24	25	25	28	26	26	26	24	25	294	11–12
	1800	25	21	26	25	27	25	27	28	28	28	25	25	311	11–12
Balearic Islands:															
Mahón/San Luis Airport	0600	25	20	23	23	24	26	26	27	26	24	21	23	287	8–10
	1200	19	16	16	16	19	21	20	24	23	20	19	19	231	9–10
	1800	22	21	23	21	25	25	27	26	27	25	21	22	285	8–10
Canary Islands:															
Santa Cruz	0500	27	25	27	25	28	28	28	29	28	29	26	27	325	4–5
	1100	24	23	24	22	24	21	22	22	24	25	24	25	281	4–5
	1700	25	19	21	21	21	18	22	21	23	25	25	24	264	4–5

na Data not available.

* Ceiling herein is defined as ≦5-eighths cloud cover except at Madrid/Torrejón Air Base, Morón Air Base, and Saragossa/Valenzuela Air Base where ceiling is defined as ≦6-tenths cloud cover.

FIGURE 43. MEAN DAILY MAXIMUM AND MINIMUM TEMPERATURES (°F.)

REGION AND STATION		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Northern Coast:															
Bilbao	Max	55	59	61	66	71	77	80	82	78	70	61	55	68	*na*
	Min	40	42	43	46	50	55	59	59	57	51	46	41	49	*na*
Finisterre	Max	54	55	59	63	64	69	72	73	70	65	60	55	63	10
	Min	46	45	49	51	52	56	59	61	59	55	51	46	53	10
Gijón	Max	56	55	56	58	61	67	70	72	69	65	60	56	62	6–7
	Min	43	43	44	47	51	56	59	60	57	53	48	44	51	6–7
La Coruña	Max	55	57	58	60	64	68	71	72	70	65	60	57	63	40
	Min	42	42	44	47	51	55	57	57	55	51	46	45	49	34
Oviedo	Max	51	51	53	56	64	68	71	73	71	65	58	53	61	6
	Min	37	39	40	42	49	54	57	58	54	49	43	40	47	6
Pontevedra	Max	57	59	62	66	72	76	80	80	78	69	63	58	68	33
	Min	38	40	41	45	49	54	56	56	54	48	41	39	47	33
San Sebastián	Max	53	55	57	59	66	69	73	75	73	67	59	56	63	20
	Min	40	42	43	46	52	56	59	60	57	52	46	44	50	20
Santander	Max	53	53	58	60	63	67	72	73	71	66	58	54	62	19
	Min	44	43	47	49	52	58	61	62	59	55	49	45	52	19
Interior:															
Albacete	Max	48	53	58	64	72	82	89	90	80	68	56	49	68	24
	Min	31	32	37	42	48	55	61	61	55	47	38	33	45	25
Ávila	Max	43	45	50	55	63	72	79	80	71	60	49	43	59	27
	Min	29	30	34	37	45	51	55	55	50	42	35	31	41	27
Badajoz	Max	55	58	63	69	76	86	92	93	84	74	62	56	72	30
	Min	39	40	45	48	53	60	63	64	61	54	45	40	51	30
Burgos	Max	42	46	52	57	64	72	77	78	71	61	49	43	59	29
	Min	30	31	35	38	44	49	53	54	50	43	36	33	41	29
Cáceres	Max	53	56	60	66	76	84	91	92	85	70	59	53	71	4–5
	Min	36	37	37	42	50	55	61	61	59	49	42	36	47	4–5
Ciudad Real	Max	51	55	60	66	74	84	92	92	82	71	58	51	70	29
	Min	34	34	39	43	49	56	62	62	55	47	39	34	46	30
Cuenca	Max	47	50	55	60	68	77	85	85	76	65	54	48	64	27
	Min	28	30	34	38	45	51	56	56	51	43	35	30	41	26
Granada	Max	53	56	59	64	73	81	90	91	81	72	59	54	70	22
	Min	36	37	41	45	52	58	64	64	58	51	42	37	49	22
Huesca	Max	49	51	57	62	72	81	87	88	79	68	58	50	67	6
	Min	32	34	36	41	49	56	59	61	55	48	41	35	45	6
León	Max	44	46	52	55	64	73	77	79	72	59	50	44	60	6
	Min	29	30	31	35	43	48	51	51	47	40	34	31	39	6
Madrid	Max	47	51	57	64	71	80	87	86	77	66	54	48	66	30
	Min	33	35	40	44	50	57	62	62	56	48	40	35	47	30
Murcia	Max	60	63	67	72	79	85	91	91	85	77	68	61	75	25
	Min	40	42	45	49	55	61	66	67	62	55	47	41	52	25
Orense	Max	55	57	61	66	74	82	86	88	84	70	61	55	70	6
	Min	35	38	38	42	49	54	57	57	53	48	41	38	46	6
Pamplona	Max	46	49	56	60	67	74	80	80	75	66	53	47	63	21
	Min	33	35	39	42	48	53	56	57	53	47	39	35	45	22
Salamanca	Max	47	51	57	62	70	79	85	85	77	66	54	48	65	30
	Min	30	31	35	38	45	51	55	55	50	43	35	31	42	29
Saragossa	Max	49	54	60	66	73	81	87	86	79	69	57	50	67	26
	Min	35	37	41	46	52	58	62	62	58	50	42	37	48	26
Seville	Max	59	62	67	73	80	89	96	97	89	78	67	60	77	26
	Min	41	44	48	51	57	63	67	68	64	57	49	44	54	26
Soria	Max	44	47	52	58	66	74	81	82	73	62	51	45	61	30
	Min	29	30	34	38	44	50	54	54	49	42	35	31	41	30
Teruel	Max	45	45	54	59	69	79	86	88	77	66	56	47	65	6
	Min	28	29	30	36	44	51	55	56	50	43	35	31	41	6
Valladolid	Max	45	51	57	62	70	78	85	85	77	66	53	46	65	27
	Min	31	32	37	40	46	52	56	56	51	44	36	32	43	27

na Data not available.

* Near but outside NIS Area.

FIGURE 43 (*Continued*)

REGION AND STATION		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Southern and Eastern Coasts:															
Alicante	Max	60	62	66	70	75	81	86	87	83	77	67	62	73	22
	Min	41	43	46	50	55	61	66	67	64	57	45	44	54	22
Almería	Max	60	61	65	69	74	80	84	86	82	75	65	62	72	21
	Min	47	48	51	54	59	65	69	71	68	61	54	49	58	21
Barcelona	Max	56	57	61	64	71	77	81	82	78	71	62	57	68	30
	Min	42	44	47	51	57	63	69	69	65	58	50	44	55	30
Gerona	Max	55	59	61	64	74	80	85	86	80	71	61	57	70	10
	Min	34	37	40	45	52	58	63	63	59	51	43	37	49	10
Gibraltar*	Max	61	62	64	68	73	78	83	84	79	73	66	62	71	78
	Min	49	50	51	54	58	63	67	69	66	60	54	50	58	78
Málaga	Max	61	62	64	69	74	80	84	85	81	74	67	62	72	24
	Min	47	48	51	55	60	66	70	72	68	61	53	48	58	26
San Fernando	Max	59	60	63	66	73	78	83	85	81	76	65	60	71	7
	Min	45	47	50	52	58	63	67	68	65	61	52	47	57	7
Tortosa	Max	56	59	64	69	75	81	85	86	81	73	63	57	71	27
	Min	40	42	45	50	56	63	68	68	63	56	48	42	53	27
Valencia	Max	58	60	63	67	73	78	83	83	80	73	65	59	70	26
	Min	41	43	47	51	56	63	68	69	64	57	48	42	54	27
Balearic Islands:															
Mahón	Max	56	56	60	64	70	76	81	82	78	71	63	58	68	29
	Min	45	46	49	52	57	63	68	70	66	60	53	48	56	30
Palma	Max	57	59	62	66	73	80	84	86	81	74	65	59	70	29
	Min	42	43	45	49	55	61	66	67	64	57	50	44	54	29
Canary Islands:															
Izaña	Max	46	47	48	51	55	65	71	72	65	58	53	47	57	3–4
	Min	33	34	34	36	39	49	54	57	49	45	40	35	42	3–4
Las Palmas	Max	70	71	71	71	73	75	77	79	79	79	76	72	74	45
	Min	58	58	59	61	62	65	67	70	69	67	64	60	63	45
Los Rodeos Airport	Max	60	62	63	64	62	67	71	77	72	71	69	62	67	3–4
	Min	47	46	48	50	51	55	57	60	58	56	54	48	53	3–4
Orotava	Max	65	65	66	67	69	71	73	76	76	74	70	67	70	9
	Min	54	54	55	56	58	61	64	66	65	63	60	56	59	9
Punta Orchilla	Max	72	72	74	75	78	80	83	84	84	82	78	74	78	8
	Min	59	58	60	61	62	67	65	68	68	65	65	61	63	8
Santa Cruz de la Palma	Max	70	69	71	71	72	76	77	78	79	79	75	71	74	6
	Min	59	58	59	60	62	65	67	69	69	67	64	61	63	6
Santa Cruz	Max	69	69	71	73	75	79	83	85	82	79	74	71	76	39
	Min	58	58	59	60	62	66	69	70	70	67	63	60	64	39
Tefía	Max	67	68	74	75	74	78	82	85	81	80	78	70	76	6
	Min	54	53	57	58	58	62	64	66	65	62	61	56	60	6

na Data not available.

* Near but outside NIS Area.

FIGURE 44. ABSOLUTE MAXIMUM AND MINIMUM TEMPERATURES (°F.)

REGION AND STATION		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Northern Coast:															
Bilbao	Max	77	80	87	97	103	102	111	108	109	101	82	77	111	50
	Min	19	23	25	31	37	42	46	47	41	31	20	18	18	50
Finisterre	Max	70	68	84	85	85	91	94	99	89	85	77	65	99	9
	Min	28	29	37	41	29	46	48	48	38	40	33	36	28	7
Gijón	Max	73	72	73	79	79	84	82	95	81	82	77	70	95	6–7
	Min	30	28	32	37	34	48	50	52	41	32	36	32	28	6–7
La Coruña	Max	69	77	80	85	95	97	95	94	94	90	83	69	97	50
	Min	22	25	28	34	38	42	46	46	39	36	28	29	22	50
Oviedo	Max	69	64	78	73	90	86	90	89	89	85	75	72	90	6
	Min	26	25	29	29	37	43	43	47	43	35	33	22	22	6
Pontevedra	Max	69	77	88	88	95	99	104	100	101	89	78	69	104	33
	Min	20	25	22	27	36	41	38	44	37	31	23	24	20	33
San Sebastian	Max	75	77	85	88	98	100	102	105	100	91	82	75	105	46
	Min	15	21	24	30	36	44	46	48	42	30	21	19	15	46
Santander	Max	73	82	83	85	88	93	94	104	91	85	76	70	104	22
	Min	21	29	33	41	37	48	50	54	36	39	35	30	21	22
Interior:															
Albacete	Max	67	69	81	91	98	102	104	105	100	89	79	70	105	30
	Min	4	−9	17	23	28	37	43	44	36	21	18	−2	−9	30
Ávila	Max	62	70	76	79	95	97	95	97	95	81	72	64	97	33
	Min	−5	5	17	18	24	32	37	41	33	25	14	6	−5	33
Badajoz	Max	68	74	81	93	97	106	113	110	103	96	79	68	113	35
	Min	23	24	30	32	39	43	51	52	46	36	27	23	23	35
Burgos	Max	60	68	68	77	86	97	95	99	99	89	76	66	99	9–10
	Min	16	19	19	27	30	34	39	39	34	30	23	16	16	9–10
Cáceres	Max	64	72	76	90	97	96	106	105	99	90	75	62	106	4–5
	Min	27	24	24	27	39	41	50	45	47	29	31	19	19	4–5
Ciudad Real	Max	68	77	86	93	99	106	116	108	104	90	83	68	116	29
	Min	10	12	22	28	34	41	42	46	39	28	23	16	10	30
Cuenca	Max	70	76	77	83	102	97	97	98	94	85	78	70	102	26
	Min	−1	−5	14	21	28	29	42	37	29	23	12	12	−5	26
Granada	Max	72	77	77	86	93	102	104	102	99	93	81	75	104	31
	Min	18	25	27	32	32	42	50	49	43	35	29	21	18	31
Huesca	Max	63	70	77	84	97	98	101	105	95	86	75	63	105	6
	Min	16	13	22	25	34	40	44	47	40	29	28	20	13	6
León	Max	57	64	81	80	95	93	95	100	92	79	60	62	100	6
	Min	17	13	18	23	29	35	37	36	33	24	21	9	9	6
Madrid	Max	64	73	81	93	96	105	112	109	103	91	78	65	112	50
	Min	11	15	17	26	31	38	45	47	36	25	18	11	11	50
Muncia	Max	77	82	88	99	105	106	112	113	102	99	87	77	113	30
	Min	25	14	30	35	41	47	52	54	46	36	31	26	14	30
Orense	Max	65	72	81	89	103	103	103	111	101	94	72	64	111	6
	Min	23	19	25	30	33	39	42	46	40	34	25	20	19	6
Pamplona	Max	64	70	77	86	93	100	102	102	95	86	72	70	102	25
	Min	9	11	23	27	30	39	41	45	34	25	19	1	1	25
Salamanca	Max	67	77	82	87	94	100	104	105	97	87	75	63	105	29
	Min	1	11	18	23	28	33	37	39	28	23	16	10	1	29
Saragossa	Max	69	72	79	89	96	106	104	104	95	88	75	68	106	30
	Min	5	19	25	23	36	46	46	48	40	30	22	17	5	30
Seville	Max	75	80	86	91	102	117	114	117	109	102	82	72	117	35
	Min	27	28	28	34	34	41	52	50	41	32	32	27	27	35
Soria	Max	68	71	76	84	90	94	102	106	101	90	79	65	106	30
	Min	2	11	19	19	25	32	39	39	34	26	16	2	2	30
Teruel	Max	64	69	77	85	94	100	101	103	92	86	72	72	103	6
	Min	8	7	11	15	28	37	39	43	37	23	24	14	7	6
Valladolid	Max	64	72	79	88	92	103	102	101	102	88	77	64	103	27
	Min	9	10	21	24	30	36	43	41	34	24	19	15	9	27

* Near but outside NIS Area.

FIGURE 44 (*Continued*)

REGION AND STATION		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Southern and Eastern Coasts:															
Alicante	Max	77	79	84	90	95	97	106	102	98	97	87	77	106	31
	Min	27	29	33	39	41	51	58	58	50	39	35	29	27	22
Almería	Max	77	76	80	85	93	108	108	104	96	91	82	76	108	30
	Min	35	32	34	43	39	50	50	54	50	45	40	34	32	30
Barcelona	Max	68	75	79	84	90	100	99	100	91	82	81	82	100	37
	Min	0	11	19	23	25	31	37	39	29	25	18	9	0	29
Gerona	Max	71	77	80	84	93	93	102	105	98	88	76	72	105	10
	Min	20	22	26	30	34	47	52	52	41	33	24	22	20	10
Gibraltar*	Max	75	81	78	87	90	97	100	100	95	95	79	77	100	68
	Min	33	33	37	43	45	49	55	57	50	44	35	30	30	68
Málaga	Max	74	79	84	90	100	101	109	110	97	91	83	75	110	30
	Min	32	30	32	35	46	51	55	62	52	40	36	34	30	30
San Fernando	Max	68	73	75	82	91	99	97	100	102	90	79	72	102	7
	Min	34	36	32	34	39	52	54	52	50	43	39	32	32	7
Tortosa	Max	72	77	82	93	93	97	99	104	93	90	83	75	104	33
	Min	23	24	27	28	29	41	46	57	45	38	32	23	23	33
Valencia	Max	82	78	87	95	93	97	107	102	97	92	85	76	107	35
	Min	20	27	29	36	39	50	50	55	45	38	31	28	20	35
Balearic Islands:															
Mahón	Max	72	73	77	81	86	95	97	101	94	93	82	81	101	37
	Min	32	32	35	34	41	46	50	48	43	44	37	31	31	37
Palma	Max	75	77	82	84	92	100	102	102	98	94	83	79	102	50
	Min	26	28	30	33	41	48	54	56	48	35	33	27	26	50
Canary Islands:															
Izaña	Max	59	61	66	65	70	77	82	79	79	69	65	62	82	3–4
	Min	20	19	20	24	25	32	42	39	35	31	29	22	19	3–4
Las Palmas	Max	86	84	86	91	88	89	95	99	96	95	88	85	99	45
	Min	46	47	47	50	54	58	60	62	59	56	52	47	46	45
Los Rodeos Airport	Max	76	76	83	90	78	95	96	99	86	83	84	72	99	3–4
	Min	38	39	42	42	45	49	50	55	52	49	46	41	38	3–4
Orotava	Max	77	86	88	83	74	83	77	90	93	94	86	79	94	9
	Min	48	48	47	49	52	55	57	60	58	55	52	47	47	9
Punta Orchilla	Max	81	85	89	100	94	92	108	103	95	100	92	85	108	8
	Min	51	48	51	52	53	58	59	54	55	54	55	51	48	8
Santa Cruz de la Palma	Max	80	79	83	89	88	83	85	89	91	96	89	79	96	6
	Min	53	52	55	56	57	60	63	65	64	62	59	55	52	6
Santa Cruz	Max	80	84	96	94	103	98	109	105	100	101	87	81	109	55
	Min	48	47	49	49	54	56	61	63	61	58	50	49	47	55
Tefía	Max	84	80	101	97	89	94	103	104	100	99	90	82	104	6
	Min	46	44	47	50	50	58	58	59	59	52	53	47	44	6

* Near but outside NIS Area.

FIGURE 45. MEAN NUMBER OF DAYS WITH TEMPERATURE ≥90°F.

REGION AND STATION	JAN	FEB	MAR	APR	MAY	JUN	JUI	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Northern Coast:														
Bilbao	0	0	0	0	1	1	6	2	1	0	0	0	11	3–4
Gijón	0	0	0	0	0	0	0	*	0	0	0	0	*	5–6
La Coruña	0	0	0	0	0	0	*	*	*	0	0	0	*	8–9
Santander	0	0	0	0	0	0	*	*	*	0	0	0	1	
Interior:														
Albacete/Los Llanos Airport	0	0	0	0	1	7	23	20	5	0	0	0	55	3–5
Badajoz	0	0	0	0	3	10	14	15	8	2	0	0	52	9–10
Burgos	0	0	0	0	0	1	3	5	*	*	0	0	9	9–10
Ciudad Real	0	0	0	0	1	10	27	23	8	0	0	0	68	5
Granada	0	0	0	0	*	6	20	23	5	1	0	0	55	8–9
Madrid/Barajas Airport	0	0	0	0	1	8	21	17	7	0	0	0	53	12
Monflorite	0	0	0	0	0	5	13	5	1	0	0	0	24	3–4
Morón Air Base	0	0	0	0	5	10	23	22	12	1	0	0	72	4–5
Salamanoa Airport	0	0	0	0	1	6	13	10	4	0	0	0	34	4–5
Saragossa	0	0	0	0	1	3	13	12	3	0	0	0	32	8–9
Seville/San Pablo Airport	0	0	*	*	6	14	27	28	17	2	0	0	95	12
Valladolid Airport	0	0	0	0	*	3	7	6	2	0	0	0	17	12
Southern and Eastern Coasts:														
Alicante	0	0	0	0	*	1	5	7	2	*	0	0	15	9
Almería	0	0	0	0	*	2	8	11	2	1	0	0	24	9
Barcelona	0	0	0	0	*	1	1	1	*	0	0	0	3	8
Málaga	0	0	0	0	*	2	6	8	2	0	0	0	18	8
Rota Naval Air Station	0	0	0	0	1	1	7	7	1	0	0	0	16	3–4
San Fernando	0	0	0	0	*	2	6	9	3	1	0	0	21	7
San Javier	0	0	0	0	*	1	4	7	1	*	0	0	13	5
Tortosa	0	0	0	0	*	1	7	8	1	0	0	0	17	6
Valencia	0	0	0	*	0	1	3	4	1	*	0	0	9	8–9
Balearic Islands:														
Mahón/San Luis Airport	0	0	0	0	0	*	3	2	0	0	0	0	5	8–9
Canary Islands:														
Izaña	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Santa Cruz	0	0	*	*	1	*	5	2	2	1	0	0	11	5

* <0.5 day.

FIGURE 46. MEAN NUMBER OF DAYS WITH TEMPERATURE ≦32° F.

REGION AND STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Northern Coast:														
Bilbao	6	3	1	*	0	0	0	0	0	0	1	9	20	3–4
Gijón	1	*	*	0	0	0	0	0	0	*	*	*	1	10
La Coruña	*	1	*	0	0	0	0	0	0	0	0	*	1	12
Santander	1	1	1	0	0	0	0	0	0	0	0	*	3	10–12
Interior:														
Albacete/Los Llanos Airport	26	17	12	4	*	0	0	0	0	2	5	15	82	3–5
Badajoz	7	4	*	*	0	0	0	0	0	0	*	6	18	9–10
Burgos	20	17	11	5	1	0	0	0	0	1	9	17	81	9–10
Ciudad Real	19	9	3	*	0	0	0	0	0	*	1	9	41	10
Granada	9	8	2	*	*	0	0	0	0	0	1	6	26	8–9
Granada Airport	11	9	3	*	0	0	0	0	0	0	1	8	33	8–10
Madrid/Barajas Airport	14	11	4	1	*	0	0	0	0	*	4	11	44	11–12
Monflorite	21	12	4	3	0	0	0	0	0	0	4	13	57	3–4
Morón Air Base	1	*	0	0	0	0	0	0	0	0	0	0	1	4–5
Salamanca Airport	22	17	10	8	1	0	0	0	*	1	6	15	79	4–5
Saragossa	10	8	3	*	0	0	0	0	0	*	2	7	30	8–9
Seville/San Pablo Airport	4	2	*	0	0	0	0	0	0	0	*	1	6	8–10
Valladolid Airport	17	14	6	3	*	0	0	0	0	1	8	14	61	11–12
Southern and Eastern Coasts:														
Alicante	1	1	0	0	0	0	0	0	0	0	0	*	2	9–10
Almería	0	*	0	0	0	0	0	0	0	0	0	0	*	8–9
Barcelona	1	2	*	*	*	*	0	0	*	*	*	*	4	10–11
Malaga	*	*	*	0	0	0	0	0	0	0	0	*	2	10–11
Rota Naval Air Station	1	0	0	0	0	0	0	0	0	0	0	0	1	3–4
San Fernando	0	0	*	0	0	0	0	0	0	0	0	*	*	6–7
San Javier	5	3	*	0	0	0	0	0	0	0	0	1	9	4–5
Tortosa	3	1	*	*	0	0	0	0	0	0	*	2	6	6–7
Valencia	1	1	*	0	0	0	0	0	0	0	*	*	2	12
Balearic Islands:														
Mahón/San Luis Airport	*	*	*	0	0	0	0	0	0	0	0	0	1	8–10
Canary Islands:														
Izaña	14	13	19	12	6	*	0	0	0	*	4	11	80	3
Santa Cruz	0	0	0	0	0	0	0	0	0	0	0	0	0	4–5

* <0.5 day.

FIGURE 47. 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
	(LST)														
Northern Coast:															
Finisterre	0630	86	82	81	78	83	84	85	87	85	83	85	87	84	9
	1230	83	76	74	73	76	75	75	76	76	77	83	84	77	9
Gijón	0700	76	82	80	76	81	82	79	80	81	81	79	81	80	3–4
	1800	75	80	79	74	76	78	74	74	77	75	76	77	76	3–4
La Coruña	0630	81	82	82	82	83	83	85	86	87	86	83	83	84	22
	1230	73	71	69	70	71	73	73	72	73	73	73	74	72	22
Santander	0630	80	83	81	82	85	86	87	88	87	85	83	81	84	18
	1230	73	75	71	72	75	76	76	74	74	74	74	75	74	18
Interior:															
Albacete	0700	89	86	83	73	67	61	55	62	75	84	88	89	76	15
	1300	69	57	53	45	41	36	30	32	43	52	67	71	50	15
Ávila	0630	89	88	82	74	72	66	59	63	73	79	86	90	77	18
	1230	72	69	61	54	51	46	38	40	50	60	68	76	57	17
Badajoz	0630	91	89	87	84	78	71	67	66	73	81	89	92	81	22
	1230	70	63	57	49	41	36	30	30	38	49	63	71	50	22
Burgos	0700	93	90	86	81	78	76	74	75	82	86	90	91	83	17
	1300	84	75	60	55	54	51	46	48	53	63	73	82	62	12
Ciudad Real	0630	83	82	77	73	70	65	64	64	69	74	78	82	73	20
	1230	69	67	63	60	60	56	53	55	59	63	67	70	62	20
Cuenca	0700	84	84	82	77	74	69	67	71	77	81	85	84	78	20
	1300	68	64	62	57	54	48	40	41	48	52	66	68	56	20
Granada	0700	85	78	83	78	73	67	59	57	70	77	85	85	75	14
Madrid	0700	89	87	84	78	75	69	63	63	73	83	89	90	79	23
	1300	71	64	58	52	51	43	37	36	47	57	68	73	55	22

FIGURE 47 (*Continued*)

REGION AND STATION	HOUR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
	(LST)														
Interior (*Continued*):															
Monflorite	0600	89	83	80	76	79	75	70	77	80	83	85	87	80	4
	1200	75	63	58	51	56	50	46	51	55	60	67	75	59	4
Murcia	0700	86	84	84	79	76	76	75	79	84	86	85	85	82	15
Pamplona	0700	88	87	80	80	78	77	76	79	81	83	86	86	82	14
	1300	78	72	66	64	62	60	57	62	60	57	64	74	65	15
Salamanca	0630	89	88	85	80	76	71	65	69	76	83	88	90	80	20
	1230	77	69	62	57	53	45	40	40	47	58	70	78	58	20
Saragossa	0700	87	84	80	77	74	73	71	75	80	83	85	87	80	20
	1300	71	62	55	52	51	48	46	47	54	59	64	71	57	21
Seville	0630	86	85	84	79	75	71	64	66	75	82	88	87	78	14
	1230	77	72	75	67	64	50	45	45	55	67	76	79	64	6
Soria	0700	89	88	82	73	71	68	65	69	74	80	87	89	78	13
	1300	77	71	63	61	58	47	43	44	55	61	71	79	61	8
Valladolid	0630	92	91	87	81	77	73	70	72	79	87	91	91	83	14
	1230	75	65	54	49	46	41	35	36	44	53	67	78	54	19
Southern and Eastern Coasts:															
Alicante	0700	75	72	75	71	67	66	65	71	76	78	76	74	72	19
	1300	56	52	56	54	58	57	56	58	58	56	55	57	56	19
Almería	0700	75	74	76	76	76	74	75	76	77	78	77	75	76	17
	1300	66	65	64	62	63	64	64	65	65	67	68	66	65	18
Barcelona	0700	74	72	75	72	70	67	68	73	74	77	75	73	73	22
	1300	60	59	61	61	61	61	61	63	64	66	63	60	62	22
Málaga	0630	75	73	76	71	66	66	64	62	69	74	73	76	70	17
	1230	67	67	68	64	61	61	61	59	65	69	67	67	65	17
Rota Naval Air Station	0600	88	87	80	83	79	80	78	77	82	81	85	87	82	3–4
	1200	76	70	65	59	60	58	56	55	61	60	71	76	64	3–4
San Fernando	0700	79	76	77	75	71	74	67	69	74	76	77	79	74	3–4
	1800	70	65	65	65	59	66	57	55	60	65	70	70	64	3–4
San Javier	0600	79	82	82	83	81	80	82	84	85	86	86	82	83	5
	1200	64	64	65	68	65	69	70	71	71	72	71	69	68	5
Tortosa	0700	76	73	76	72	71	70	70	73	77	79	76	74	74	22
	1300	62	58	59	57	57	57	57	59	62	62	62	63	60	22
Valencia	0700	75	72	72	72	71	70	71	74	78	78	75	74	73	15
	1300	60	56	52	57	57	58	58	61	62	60	60	60	58	15
Balearic Islands:															
Mahón	0730	81	80	80	78	75	71	69	72	74	77	79	80	76	22
	1330	70	69	68	65	62	59	57	59	63	67	70	72	65	22
Palma	0700	83	84	81	77	74	69	68	74	80	83	84	82	78	15
	1300	71	69	67	64	63	60	60	63	67	68	70	70	66	15
Canary Islands:															
Las Palmas	0800	72	74	73	73	72	73	77	75	75	75	74	73	74	26
	1500	71	72	72	72	72	74	76	76	75	74	74	73	73	19
Los Rodeos Airport	0900	83	77	78	80	87	86	83	73	83	86	72	81	81	3
Orotava	0700	71	74	77	75	76	77	78	79	76	75	74	72	75	9
	1400	66	68	71	69	71	72	74	75	73	71	71	68	71	9
Santa Cruz	0600	66	65	65	63	64	63	62	61	55	66	67	68	65	18
	1200	59	58	57	54	54	51	50	50	56	59	59	61	56	18
Tefía	0600	81	79	73	70	78	82	83	80	83	86	82	82	80	3
	1200	59	51	43	44	50	54	54	52	57	57	55	56	53	3

FIGURE 48. MEAN PRECIPITATION (INCHES)

REGION AND STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Northern Coast:														
Bilbao	4.4	3.1	4.4	4.8	4.0	2.2	1.9	1.7	3.2	4.9	4.6	5.0	44.0	10
Finisterre	4.0	1.9	3.4	2.1	2.5	1.3	0.9	1.5	2.1	3.3	4.3	5.0	32.3	10
Gijón	4.0	3.8	3.4	2.8	4.3	3.0	2.3	2.2	3.5	3.6	6.4	4.5	43.6	10
La Coruña	3.2	3.1	3.2	2.5	2.2	1.4	0.9	1.2	2.2	3.5	4.2	4.4	32.0	60
Oviedo	2.7	2.9	4.2	3.7	2.6	2.6	1.9	1.6	2.9	3.5	3.7	3.8	36.1	30
Pontevedra	6.3	6.2	6.7	4.8	4.5	2.3	1.9	1.6	7.1	3.1	6.4	7.6	59.1	60
San Sebastián	5.7	4.7	6.3	6.3	4.9	3.3	3.0	2.6	5.5	5.8	7.8	7.8	63.7	10
Santander	4.2	3.5	2.5	3.0	3.4	2.2	2.4	2.9	3.9	4.9	6.2	5.0	44.1	19
Interior:														
Albacete	0.9	1.1	1.3	1.2	1.5	1.3	0.4	0.3	1.4	1.3	1.4	1.0	13.1	25
Ávila	0.7	1.1	1.3	1.3	1.6	1.6	0.6	0.3	1.4	1.6	1.6	1.2	14.3	27
Badajoz	2.0	2.0	2.4	1.6	1.1	1.0	0.1	0.2	1.0	1.8	2.3	1.9	17.4	30
Burgos	1.5	1.5	2.1	1.9	2.4	1.7	0.8	0.7	1.4	2.0	2.2	2.0	20.2	29
Cáceres	2.9	2.0	4.1	4.4	3.3	1.1	0.2	0.5	1.8	2.8	3.3	2.7	29.1	*na*
Ciudad Real	1.1	1.8	2.0	1.8	1.3	0.9	0.1	0.1	1.0	1.6	1.9	1.3	14.9	30
Cuenca	1.4	2.1	2.3	2.3	2.6	2.1	0.7	0.7	1.6	2.0	2.1	1.9	21.8	27
Granada	1.4	1.7	2.7	1.9	1.3	0.8	0.2	0.1	0.9	1.6	2.0	1.8	16.4	22
Huesca	1.1	1.6	1.9	2.2	2.5	1.6	1.1	1.3	2.7	2.3	2.0	1.1	21.4	*na*
León	0.9	0.9	1.5	1.3	1.6	1.9	0.7	0.7	0.9	1.1	1.3	0.9	13.7	*na*
Madrid	1.1	1.7	1.7	1.7	1.5	1.2	0.4	0.3	1.2	1.9	2.2	1.6	16.5	30
Murcia	0.5	0.9	0.9	1.4	1.1	0.5	0.1	0.2	1.3	1.3	2.0	1.0	11.2	27
Orense	2.6	2.4	3.1	2.0	2.2	2.0	0.7	0.5	1.5	3.2	3.7	3.0	26.9	*na*
Pamplona	3.4	2.7	3.2	3.0	3.3	2.4	1.6	1.6	3.2	3.6	4.0	4.0	36.0	23
Puigcerdá	2.1	0.7	2.6	1.4	4.3	5.1	5.7	1.8	2.8	2.8	5.0	3.3	37.4	10
Ribas	1.1	1.8	2.4	2.8	5.6	4.8	4.6	3.7	4.2	4.4	4.3	2.1	41.7	10
Salamanca	1.4	1.5	2.0	1.4	1.6	1.3	0.4	0.6	1.0	1.7	2.0	1.7	16.6	26
Saragossa	0.5	0.7	0.9	1.4	1.5	1.2	0.9	0.7	1.2	1.2	1.2	1.1	12.4	27
Seville	2.5	1.8	2.6	1.8	1.6	0.5	0.0	0.1	0.7	2.4	2.8	2.7	19.5	35
Soria	1.5	2.0	2.1	2.2	2.6	2.1	1.1	0.9	1.8	1.8	2.2	2.1	22.4	30
Teruel	0.7	0.7	1.0	1.6	2.2	1.9	1.0	0.9	1.5	1.4	1.3	0.8	15.0	30
Valladolid	1.1	1.3	1.8	1.5	1.8	1.3	0.6	0.5	1.1	1.5	1.9	1.5	15.9	27
Vilada	1.2	4.4	4.1	2.7	3.2	2.7	1.5	1.7	3.4	4.8	5.2	1.9	36.8	10
Southern and Eastern Coasts:														
Alicante	1.0	1.0	0.9	1.1	0.9	0.5	0.2	0.4	1.8	1.2	2.0	1.3	12.3	21
Almería	0.9	1.0	0.7	0.9	0.7	0.2	*	0.1	0.6	0.9	1.5	1.1	8.6	20
Bagur	1.3	0.8	1.1	1.3	1.8	1.3	0.4	0.9	1.6	2.6	2.3	1.3	16.7	10
Barcelona	1.4	1.4	1.8	1.9	1.6	1.4	1.0	1.3	3.0	3.1	1.8	1.4	21.1	50
Cadiz	3.2	2.9	3.8	2.3	1.1	0.3	0.1	0.1	0.9	2.6	2.7	3.9	23.9	23
Cartagena	1.8	1.4	1.6	1.1	1.0	0.8	0.1	0.2	1.4	1.7	1.9	2.0	15.0	20
Darnfus	1.2	2.5	2.9	3.0	3.3	2.2	1.4	2.1	2.6	4.8	4.7	1.8	32.3	10
Gerona	1.1	1.7	2.3	2.8	2.9	2.9	1.2	2.4	3.0	4.1	3.7	1.6	29.7	10
Gibraltar**	4.6	4.5	4.7	2.7	1.6	0.5	0.0	0.1	1.3	3.3	6.4	5.4	35.1	79
Málaga	1.9	2.1	2.8	1.5	0.3	0.3	*	*	0.7	2.2	3.4	2.1	17.6	24
Tortosa	0.9	1.5	1.4	1.6	2.0	1.7	1.0	1.2	2.5	2.7	1.9	1.6	20.0	27
Valencia	1.3	1.6	1.7	1.2	1.4	0.8	0.5	0.4	3.5	2.6	2.2	1.7	18.9	30
Balcaric Islands:														
Mahón	2.4	1.7	2.1	1.9	1.4	0.9	0.6	0.6	2.2	4.1	3.8	3.0	24.7	52
Palma	1.6	1.4	1.5	1.4	1.6	0.7	0.4	0.7	2.0	3.1	2.2	2.2	18.8	56
Canary Islands:														
Izaña	2.3	2.9	2.5	1.4	0.3	*	*	0.1	0.3	1.6	4.9	2.7	19.1	10
Las Palmas/Gando Airport	1.4	0.9	0.9	0.5	0.2	*	*	*	0.2	1.1	2.1	1.6	8.6	48
Los Rodeos Airport	4.6	1.9	3.3	1.9	2.0	0.8	0.4	0.1	1.3	1.4	1.5	2.6	21.9	3
Orotava	2.2	1.7	1.9	0.7	0.9	0.4	*	0.1	0.3	2.2	3.3	2.2	15.9	9
Punta Orchilla	1.0	0.8	0.5	0.4	*	*	0.0	*	0.4	0.6	1.7	0.8	6.2	9
Santa Cruz	1.7	1.3	1.1	0.6	0.2	*	*	*	0.1	1.1	1.9	2.4	10.4	17
Santa Cruz de la Palma	3.2	1.5	1.4	0.8	0.4	*	*	0.1	0.4	1.5	5.0	3.0	17.3	9
Tefía	1.5	0.5	0.2	0.3	0.1	*	0.0	*	*	0.2	0.6	1.0	4.4	7

na Data not available.

* <0.05 inch.

** Near but outside NIS Area.

FIGURE 49. GREATEST AND LEAST PRECIPITATION (INCHES)

REGION AND STATION		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Northern Coast:															
Bilbao	Greatest	9.6	7.2	7.4	8.8	7.5	4.4	4.0	3.5	7.5	9.8	8.6	8.7	54.3	8–10
	Least	0.5	0.7	1.3	1.8	1.9	0.8	0.5	0.3	1.1	1.3	2.1	0.5	39.0	9–11
Gijón	Greatest	7.6	7.5	6.3	4.7	7.8	5.3	5.3	5.4	8.1	7.6	9.4	9.2	56.0	10
	Least	1.1	1.2	2.1	0.9	1.4	0.3	0.3	0.6	1.4	0.9	3.9	1.7	30.6	10
La Coruña	Greatest	5.7	7.4	5.2	5.9	5.3	3.5	2.9	2.8	10.1	7.3	8.4	14.4	59.0	11
	Least	1.8	0.4	0.5	1.7	0.8	*	0.5	0.1	0.3	*	3.3	0.6	28.7	10
San Sebastián	Greatest	13.3	7.8	10.7	13.4	6.5	7.2	7.4	6.4	9.4	11.2	23.0	23.2	118.6	10
	Least	0.5	0.3	1.5	2.0	3.1	1.2	0.8	0.3	1.7	1.0	1.4	2.9	36.4	10
Santander	Greatest	7.5	6.8	5.1	4.2	6.3	6.3	5.8	5.2	5.2	9.8	12.4	8.1	57.7	9–10
	Least	1.6	1.2	1.5	1.5	1.6	0.6	0.7	0.3	1.8	1.2	4.7	2.7	32.7	9–10
Interior:															
Burgos	Greatest	3.1	4.0	4.4	3.5	6.6	4.4	2.6	1.7	4.2	4.0	4.3	4.3	29.9	10
	Least	0.5	0.2	0.6	1.0	0.8	0.3	0.2	0.2	0.1	0.1	1.0	0.4	18.6	10
Granada	Greatest	2.4	4.1	4.2	3.6	3.0	4.2	0.5	0.4	5.2	3.3	3.8	4.1	19.4	10
	Least	0.1	0.2	0.9	0.1	0.1	0.0	0.0	0.0	0.0	*	0.8	0.0	11.4	10
Madrid	Greatest	3.7	2.2	3.1	2.6	2.4	2.5	1.4	0.9	2.2	5.2	4.0	5.0	20.2	10
	Least	0.1	*	0.2	0.1	0.6	0.5	*	0.1	*	0.1	1.4	0.1	12.3	10
Morón Air Base	Greatest	2.9	4.1	4.5	2.6	4.7	1.1	0.1	0.2	0.9	9.2	8.7	9.6	27.8	3–5
	Least	0.9	*	1.2	1.0	0.5	*	*	0.0	*	0.9	1.7	1.2	15.2	3–5
Puigcerdá	Greatest	12.5	2.0	10.4	2.4	12.7	20.3	24.7	5.0	10.2	8.6	27.1	16.4	118.6	10
	Least	*	0.1	0.3	0.5	1.4	0.4	0.1	0.0	0.9	0.8	0.2	0.2	15.5	10
Ribas	Greatest	5.4	6.0	3.9	6.4	9.0	8.6	10.9	8.3	7.3	13.7	9.0	5.4	61.1	10
	Least	0.1	0.0	0.8	1.0	2.2	1.2	2.7	1.0	1.1	1.0	0.0	0.1	25.2	10
Saragossa	Greatest	2.3	1.0	2.3	2.3	1.6	3.8	6.1	2.3	2.7	2.7	2.0	3.0	19.0	10
	Least	*	0.2	*	0.3	0.7	*	0.1	0.1	0.4	0.3	0.2	0.1	10.1	10
Seville	Greatest	8.5	6.2	7.5	7.1	2.3	5.1	1.4	0.8	3.1	7.2	8.6	9.3	34.4	10
	Least	*	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.7	2.2	0.1	15.3	9–10
Valladolid	Greatest	2.5	3.0	3.7	2.8	3.7	3.0	1.8	1.0	2.4	3.9	4.9	3.6	20.7	10
	Least	0.2	0.2	0.2	0.5	0.7	0.3	0.0	0.2	0.2	0.0	1.1	0.1	12.2	10
Vilada	Greatest	2.7	17.6	9.8	5.9	5.6	6.5	2.4	4.5	6.4	11.6	9.4	5.7	57.7	10
	Least	0.2	0.1	1.2	1.1	0.9	0.5	*	0.3	0.8	1.3	0.1	0.3	21.6	10
Southern and Eastern Coasts:															
Alicante	Greatest	8.4	3.0	2.7	1.6	1.6	2.7	1.4	1.2	7.4	2.7	4.5	3.7	14.9	10
	Least	*	0.1	0.1	*	0.4	0.0	0.0	0.0	*	0.3	0.3	*	7.0	10
Almería	Greatest	2.7	2.8	2.1	2.0	2.3	1.0	*	0.7	2.6	2.8	2.9	2.4	11.0	9–10
	Least	*	*	0.2	*	*	*	0.0	0.0	*	0.2	0.2	0.0	4.6	9–10
Bagur	Greatest	3.6	1.8	2.0	3.3	4.0	3.4	1.0	2.9	2.4	6.3	3.5	5.2	24.1	10
	Least	0.0	0.1	0.2	0.2	0.4	0.2	0.0	0.1	0.6	0.2	0.1	0.2	11.0	10
Barcelona	Greatest	5.4	2.2	6.4	3.3	3.0	3.1	6.3	4.2	6.2	4.8	3.8	5.4	30.7	10
	Least	*	0.2	0.2	0.2	0.9	*	*	0.1	1.1	0.3	0.1	*	16.8	10
Darnius	Greatest	4.8	9.5	7.3	7.8	7.2	4.8	2.5	8.6	6.6	13.8	13.2	6.4	40.4	10
	Least	0.0	0.1	0.5	0.4	0.3	0.3	0.4	0.3	0.7	0.8	0.1	0.1	17.6	10
Gerona	Greatest	3.2	5.0	6.9	6.7	6.4	5.2	2.5	8.2	5.0	12.5	8.7	5.3	50.2	10
	Least	0.1	0.1	0.5	0.8	0.4	0.4	0.5	0.1	1.3	0.8	*	0.1	18.3	10
Málaga	Greatest	7.8	4.4	4.5	6.3	1.1	2.1	*	0.4	1.7	5.1	7.0	6.0	23.5	10
	Least	0.0	*	0.5	*	*	*	0.0	0.0	*	0.2	0.7	0.1	11.7	10
Rota Naval Air Station	Greatest	2.7	4.4	5.6	1.7	3.7	0.2	*	0.1	1.5	8.9	14.2	12.0	31.5	3–4
	Least	1.5	0.3	3.3	0.9	1.7	*	0.0	*	0.1	1.4	2.3	1.1	16.9	3–4
Tortosa	Greatest	4.4	2.2	3.0	3.2	4.1	6.4	7.3	2.2	4.6	15.0	3.3	6.2	33.5	10
	Least	0.1	0.1	0.2	0.2	1.1	0.1	0.1	0.1	0.9	0.6	*	0.1	10.2	10
Valencia	Greatest	5.4	3.0	2.9	1.9	3.7	7.3	1.0	1.1	6.2	2.8	3.8	4.3	22.7	10
	Least	*	0.0	*	0.0	0.1	*	0.0	0.0	0.2	0.2	0.1	0.1	8.4	10
Balearic Islands:															
Mahón	Greatest	5.2	4.3	4.2	7.0	3.2	1.8	1.7	2.3	7.1	6.8	9.0	6.8	28.8	10
	Least	0.3	0.3	0.2	0.1	*	0.0	0.0	0.0	0.1	1.2	1.7	0.6	20.3	10
Canary Islands:															
Izaña	Greatest	11.2	5.8	7.5	3.6	1.4	0.5	0.1	0.9	0.8	3.4	19.5	4.6	30.1	10
	Least	0.0	*	0.7	*	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.2	10.0	10
Los Rodeos	Greatest	7.6	3.0	6.6	2.9	2.4	0.9	0.9	0.3	2.0	2.9	3.6	4.7	27.0	3
	Least	2.8	0.7	1.3	*	1.8	0.7	*	*	0.3	0.5	0.1	0.6	15.1	2–3
Santa Cruz	Greatest	8.7	2.0	2.8	2.9	1.0	0.4	0.1	0.1	1.7	2.9	3.9	4.8	16.3	10
	Least	0.1	0.0	*	*	*	0.0	0.0	0.0	*	*	0.2	*	3.9	10

* <0.05 inch.

FIGURE 50. MAXIMUM 24-HOUR PRECIPITATION (INCHES)

REGION AND STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Northern Coast:														
Bilbao	1.5	1.8	1.9	2.3	2.8	3.4	3.4	4.8	4.3	2.3	2.2	3.3	4.8	40
Finisterre	1.6	0.9	1.7	1.3	1.5	1.1	1.5	1.1	1.7	1.2	2.3	3.7	3.7	9
Gijón	1.3	3.0	1.4	1.2	2.9	2.6	1.5	2.0	4.1	2.0	2.3	2.6	4.1	9–10
La Coruña	1.2	3.2	1.8	1.1	1.2	2.0	1.4	1.7	1.6	2.2	2.2	2.2	3.2	40
Oviedo	1.1	1.3	1.5	2.7	0.9	1.0	1.3	1.1	1.5	1.1	1.6	1.9	2.7	6
Pontevedra	3.7	3.4	3.4	2.5	2.5	2.3	2.0	2.6	2.7	3.5	2.9	3.1	3.7	33
San Sebastián	2.9	2.8	1.8	3.0	3.0	1.8	2.3	2.1	2.1	2.1	2.7	2.5	3.0	10
Santander	2.4	2.4	1.2	2.2	2.9	6.8	2.2	1.9	3.0	3.0	1.9	2.4	6.8	19
Interior:														
Albacete	1.0	1.1	1.7	1.7	1.3	2.6	1.1	1.2	2.4	1.8	1.5	0.9	2.6	25
Ávila	0.7	1.1	1.1	1.6	0.9	1.2	1.1	0.9	1.5	1.2	1.7	1.0	1.7	27
Badajoz	1.8	2.9	1.5	1.3	1.7	1.7	0.5	1.1	2.3	1.7	2.7	2.0	2.9	30
Burgos	1.0	0.9	1.3	0.9	2.3	2.5	1.7	1.2	1.4	1.5	2.0	1.1	2.5	29
Cáceres	1.3	1.6	1.3	0.7	0.5	0.5	0.1	0.1	1.7	2.1	2.3	1.3	2.3	4–5
Ciudad Real	0.9	2.3	1.5	1.3	1.4	1.3	0.4	0.8	1.5	1.5	1.3	1.3	2.3	30
Cuenca	1.6	2.4	1.4	1.4	2.2	3.1	2.3	2.8	2.4	2.1	1.6	1.4	3.1	26
Granada	1.4	0.9	1.3	1.3	1.1	0.9	1.7	0.5	2.7	1.8	2.7	1.3	2.7	22
Huesca	0.7	1.1	0.9	1.0	3.8	1.1	0.8	0.7	1.3	1.3	2.4	1.3	3.8	6
León	2.0	1.4	2.5	2.7	2.8	3.0	2.5	2.0	2.8	3.9	3.2	1.5	3.9	6
Madrid	1.0	1.5	2.2	1.0	1.6	1.2	1.2	1.5	2.1	1.8	2.6	1.2	2.6	30
Murcia	1.4	1.5	1.2	2.8	2.1	3.1	1.3	1.3	2.7	4.3	4.9	2.8	4.9	26
Orense	1.9	1.3	1.1	0.7	1.5	1.5	0.9	0.5	0.7	1.9	1.2	1.5	1.9	6
Pamplona	3.1	3.3	2.3	3.1	3.8	3.1	2.8	3.5	7.1	5.4	3.1	3.9	7.1	23
Purigcerdá	7.9	1.5	4.8	0.9	4.4	8.8	9.9	3.8	3.6	2.0	7.2	7.8	9.9	10
Ribas	1.8	3.4	2.0	2.6	1.8	2.0	3.8	5.2	3.4	2.4	3.0	2.5	5.2	10
Salamanca	1.1	1.1	1.6	1.5	1.7	1.5	0.6	2.3	1.2	2.1	2.3	1.9	2.3	25
Saragossa	0.6	1.1	1.1	1.9	1.8	2.5	4.8	1.5	3.1	1.9	4.1	1.6	4.8	26
Seville	2.9	2.1	2.2	2.3	2.6	3.3	1.4	1.4	3.7	4.7	3.3	2.2	4.7	26
Soria	1.5	1.3	1.2	1.7	1.8	2.2	1.5	1.5	1.8	1.8	2.8	1.3	2.8	27
Teruel	0.7	0.7	1.3	1.7	1.5	0.9	0.8	1.1	1.8	1.3	1.1	1.0	1.8	6
Valladolid	0.7	1.0	1.2	1.7	1.6	1.2	1.3	0.9	1.4	1.4	1.7	1.1	1.7	26
Vilada	1.4	6.5	4.7	2.5	2.1	1.8	2.0	3.6	4.8	7.2	4.3	2.2	7.2	10
Southern and Eastern Coasts:														
Alicante	4.7	2.2	1.1	1.4	2.2	1.2	0.7	3.9	4.0	1.9	2.7	3.3	4.7	21
Almería	1.7	1.3	1.1	1.2	1.1	0.7	0.1	1.2	1.7	1.6	2.9	2.3	2.9	20
Bagur	1.5	1.1	1.6	0.9	1.1	2.2	0.5	2.0	2.0	1.9	1.3	1.3	2.2	9
Barcelona	2.5	5.6	3.6	1.9	1.5	3.8	3.4	3.3	3.3	5.3	2.7	3.6	5.6	40
Cadiz	3.8	1.9	2.6	1.8	2.2	0.7	0.3	1.2	2.3	3.7	2.2	3.6	3.8	23
Cartagena	2.8	2.5	1.6	2.0	2.7	3.3	0.4	0.9	4.2	3.8	2.7	2.6	4.2	20
Darnius	3.4	4.8	2.2	2.2	4.2	2.7	1.2	5.0	3.4	3.6	4.1	2.6	5.0	10
Gerona	1.7	2.3	2.1	1.5	1.7	2.4	1.5	6.1	4.3	3.3	3.5	1.5	6.1	10
Gibraltar*	7.8	4.3	7.8	6.5	2.2	2.1	0.4	1.7	5.7	5.4	6.5	6.9	7.8	77
Málaga	3.0	2.6	2.9	2.8	1.1	1.1	0.9	0.3	1.5	4.4	4.2	3.6	4.4	21
Tortosa	3.0	3.2	3.6	2.5	2.4	3.5	4.2	1.9	7.4	8.2	3.3	3.7	8.2	27
Valencia	2.6	2.6	0.6	1.3	1.7	5.2	1.3	2.1	4.9	5.0	5.0	3.3	5.2	28
Balearic Islands:														
Mahón	1.5	2.6	3.2	2.5	2.5	3.8	0.6	2.6	6.6	3.7	3.4	2.6	6.6	30
Palma	2.2	1.4	1.6	1.6	2.2	2.1	1.0	2.9	5.2	3.8	2.9	2.1	5.2	36
Canary Islands:														
Izaña	6.6	5.1	3.2	2.4	1.1	0.4	0.1	0.9	0.6	2.1	12.6	2.7	12.6	10
Las Palmas	4.6	1.5	2.4	2.0	2.5	0.3	1.1	0.6	0.7	2.7	9.4	5.7	9.4	48
Los Rodeos Airport	2.4	1.2	1.7	1.0	0.7	0.3	0.4	0.3	1.1	1.2	1.0	0.9	2.4	2–3
Orotava	1.7	1.5	1.5	0.9	3.3	0.4	**	0.2	0.4	2.8	2.0	2.9	3.3	9
Punta Orchilla	1.6	1.0	0.8	0.6	**	**	0.0	0.2	3.1	1.0	1.5	1.3	3.1	9
Santa Cruz	2.6	3.7	2.7	2.0	1.8	0.1	**	0.1	1.4	3.5	5.3	2.1	5.3	21
Santa Cruz de la Palma	3.7	2.6	2.2	0.7	0.6	0.1	**	0.3	0.5	2.6	1.9	3.7	3.7	9
Tefía	1.3	0.7	0.2	0.5	0.3	**	0	**	0.1	0.3	0.9	1.2	1.3	7

* Near but outside NIS Area.

** <0.05 inch.

FIGURE 51. MEAN NUMBER OF DAYS WITH PRECIPITATION ≧0.004 INCH

REGION AND STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Northern Coast:														
Bilboa	14	11	14	14	13	8	6	7	10	11	13	13	133	3–4
Finisterre	9	9	12	11	12	7	6	8	9	13	15	18	129	10
Gijón	15	17	14	15	15	10	8	9	9	13	18	18	161	6
La Coruña	17	15	17	15	13	8	8	8	11	14	17	18	161	30
Santander	17	16	14	15	15	12	12	13	13	14	18	18	177	19
Interior:														
Albacete	7	7	8	8	8	5	2	2	6	6	8	7	74	25
Ávila	11	10	12	11	11	7	4	2	7	10	13	12	110	22
Badajoz	10	10	12	8	7	4	1	1	4	8	10	10	85	23
Burgos	11	11	13	10	11	8	4	3	7	9	13	13	113	24
Ciudad Real	5	7	9	7	6	4	1	1	4	6	7	7	64	21
Cuenca	8	9	10	9	10	5	3	2	5	7	9	8	85	28
Granada	8	9	12	9	7	4	1	1	3	7	10	9	79	22
Madrid	9	9	11	9	9	6	3	2	6	8	10	9	91	30
Pamplona	12	11	13	13	12	9	5	6	9	11	13	13	127	23
Salamanca	10	10	12	10	9	5	3	2	6	8	9	9	93	29
Saragossa	4	5	7	7	8	5	3	3	5	6	6	7	66	27
Seville	8	9	9	8	5	2	*	*	3	5	9	8	67	26
Soria	9	10	12	11	12	8	5	4	8	9	11	12	111	29
Valladolid	8	7	11	10	10	7	3	3	6	8	10	9	92	27
Southern and Eastern Coasts:														
Alicante	4	5	6	5	5	4	1	1	5	5	8	6	55	15
Almería	4	6	6	5	3	3	1	*	3	5	7	5	48	15
Barcelona	5	7	7	8	8	5	4	5	7	8	7	6	77	24
Gibraltar**	10	11	12	9	6	2	*	1	4	8	11	11	85	79
Málaga	4	4	5	5	5	2	1	1	4	5	7	5	47	27
San Fernando	9	11	12	8	5	4	*	1	3	7	11	9	80	7–8
Tortosa	5	6	8	7	8	6	4	5	7	7	7	7	77	27
Valencia	4	4	5	5	5	4	2	2	5	5	6	4	51	28
Balearic Islands:														
Mahón	9	8	7	6	4	3	1	2	5	10	10	11	76	30
Palma	8	8	8	5	5	3	1	2	6	8	9	10	73	30
Canary Islands:														
Izaña	8	6	10	7	3	*	0	0	3	3	5	5	52	2–3
Las Palmas	8	5	5	3	1	1	1	1	1	5	7	8	46	48
Orotava	8	6	7	3	3	1	*	1	1	6	8	6	51	9
Punta Orchilla	5	4	4	3	1	*	0	*	2	2	6	4	31	9
Santa Cruz	7	6	5	4	2	*	0	*	2	6	9	9	50	31
Santa Cruz de la Palma	11	6	6	7	4	1	1	1	4	5	11	9	65	9
Tefía	7	3	2	3	1	*	0	*	1	3	5	6	31	7

* <0.5 day.

** Near but outside NIS Area.

FIGURE 52. MEAN NUMBER OF DAYS WITH SNOWFALL

REGION AND STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
Northern Coast:														
Bilbao	2	1	1	*	0	0	0	0	0	0	*	1	5	*na*
La Coruña	*	0	*	0	0	0	0	0	0	0	*	0	*	40
Oviedo	1	1	1	*	0	0	0	0	0	0	*	1	4	*na*
Pontevedra	0	*	*	0	0	0	0	0	0	0	0	0	*	*na*
San Sebastián	2	1	1	0	0	0	0	0	0	0	*	1	5	*na*
Interior:														
Albacete	1	1	1	*	0	0	0	0	0	*	*	*	3	*na*
Ávila	6	4	5	3	*	0	0	0	*	1	3	5	27	*na*
Badajoz	*	*	*	0	0	0	0	0	0	0	0	*	*	*na*
Burgos	4	3	4	2	*	0	0	0	0	*	1	3	17	*na*
Ciudad Real	*	*	1	1	0	0	0	0	0	0	*	1	4	*na*
Granada	*	1	1	*	*	0	0	0	0	1	0	*	4	*na*
Huesca	1	*	1	*	0	0	0	0	0	0	*	1	3	*na*
León	4	4	3	3	*	0	0	0	0	*	1	4	19	*na*
Madrid	1	1	1	*	0	0	0	0	0	0	*	1	4	10
Murcia	0	*	0	*	0	0	0	0	0	0	0	*	1	3–5
Orense	0	*	0	0	0	0	0	0	0	0	0	*	1	3
Pamplona	4	1	2	*	*	0	0	0	0	*	1	2	10	*na*
Puigcerdá	4	3	5	3	1	0	0	0	*	1	2	5	24	10
Ribas	2	1	3	1	0	0	0	0	0	0	1	2	10	10
Saragossa	1	1	*	0	0	0	0	0	0	0	*	1	3	*na*
Seville	*	0	0	0	0	0	0	0	0	0	0	*	*	10
Soria	4	3	3	2	*	0	0	0	0	*	2	4	18	*na*
Teruel	3	3	3	1	*	0	0	0	0	*	1	2	14	*na*
Valladolid	2	1	1	1	*	0	0	0	0	0	*	1	6	*na*
Vilada	2	1	2	1	0	0	0	0	0	*	1	1	8	10
Southern and Eastern Coasts:														
Alicante	*	0	0	0	0	0	0	0	0	0	0	*	*	*na*
Bagur	1	*	0	*	0	0	0	0	0	0	0	*	1	9
Barcelona	2	*	1	0	0	0	0	0	0	0	*	1	4	*na*
Darnius	*	*	*	0	0	0	0	0	0	0	0	*	1	10
Gerona	1	*	*	*	0	0	0	0	0	0	0	*	2	10
Málaga	0	*	0	0	0	0	0	0	0	0	0	0	*	4
Valencia	0	*	0	0	0	0	0	0	0	0	0	*	1	4–5

na Data not available.

* <0.5 day.

LIST OF STATIONS

REGION AND STATION	LATITUDE*	LONGITUDE*	ELEVATION
	° ′	° ′	*feet*
Northern Coast:			
Bilbao	43 16 N.	2 55 W.	30
Finisterre	42 53 N.	9 16 W.	489
Gijón	43 33 N.	5 39 W.	43
La Coruña	43 22 N.	8 23 W.	187
Oviedo	43 22 N.	5 50 W.	801
Pontevedra	42 26 N.	8 39 W.	79
San Sebastián	43 19 N.	1 59 W.	75
Santander	43 28 N.	3 48 W.	217
Interior:			
Albacete	39 00 N.	1 52 W.	2,296
Albacete/Los Llanos Airport	38 57 N.	1 51 W.	2,231
Ávila	40 39 N.	4 42 W.	3,753
Badajoz	38 52 N.	6 58 W.	640
Badajoz/Talavera la Real Airport	38 53 N.	6 49 W.	630
Burgos	42 20 N.	3 42 W.	2,822
Cáceres	39 29 N.	6 22 W.	1,509
Ciudad Real	38 59 N.	3 56 W.	2,060
Cuenca	40 05 N.	2 08 W.	3,074
Granada	37 09 N.	3 35 W.	2,261
Granada Airport	37 08 N.	3 39 W.	2,352
Huesca	42 07 N.	0 26 W.	1,653
León	42 36 N.	5 34 W.	2,986
Madrid	40 25 N.	3 41 W.	2,188
Madrid/Barajas Airport	40 28 N.	3 34 W.	1,972
Madrid/Torrejón Air Base	40 30 N.	3 27 W.	2,000
Monflorite	42 05 N.	0 19 W.	1,772
Morón Air Base	37 10 N.	5 35 W.	341
Murcia	37 59 N.	1 07 W.	141
Orense	42 19 N.	7 51 W.	423
Pamplona	42 49 N.	1 38 W.	1,676
Puigcerdá	42 25 N.	1 52 E.	3,904
Ribas	42 17 N.	2 08 E.	3,018
Salamanca	40 58 N.	5 39 W.	2,634
Salamanca Airport	40 56 N.	5 30 W.	2,595
Saragossa	41 39 N.	0 53 W.	778
Saragossa/Sanjurjo Airport	41 40 N.	1 01 W.	846
Saragossa/Valenzuela Air Base	41 41 N.	1 04 W.	860
Interior (*Continued*):			
Seville	37 23 N.	5 59 W.	23
Seville/San Pablo Airport	37 25 N.	5 54 W.	89
Seville/Tablada Airport	37 22 N.	6 00 W.	23
Soria	41 46 N.	2 28 W.	3,47[illegible]
Teruel	40 21 N.	1 06 W.	3,018
Valladolid	41 37 N.	4 44 W.	2,346
Valladolid Airport	41 43 N.	4 51 W.	2,766
Vilada	42 08 N.	1 56 E.	3,937
Southern and Eastern Coasts:			
Alicante	38 21 N.	0 29 W.	262
Almería	36 51 N.	2 28 W.	213
Bagur	41 58 N.	3 14 E.	361
Barcelona	41 25 N.	2 09 E.	312
Cadiz	36 32 N.	6 18 W.	98
Cartagena	37 36 N.	0 59 W.	43
Darnius	42 22 N.	2 49 E.	427
Gerona	41 59 N.	2 49 E.	312
Gibraltar**	36 06 N.	5 21 W.	90
Málaga	36 43 N.	4 25 W.	20
Rota Naval Air Station	36 39 N.	6 21 W.	88
San Fernando	36 28 N.	6 12 W.	92
San Javier	37 47 N.	0 48 W.	52
Tortosa	40 49 N.	0 31 E.	164
Valencia	39 28 N.	0 23 W.	59
Balearic Islands:			
Mahón	39 54 N.	4 16 E.	141
Mahón/San Luis Airport	39 52 N.	4 15 E.	141
Palma	39 33 N.	2 37 E.	20
Palma/Son Bonet Airport	39 36 N.	2 42 E.	115
Canary Islands:			
Izaña	28 18 N.	16 30 W.	7,772
Las Palmas	28 07 N.	15 26 W.	10
Las Palmas/Gando Airport	27 56 N.	15 23 W.	33
Los Rodeos Airport	28 29 N.	16 20 W.	2,100
Orotava	28 25 N.	16 32 W.	328
Punta Orchilla	27 43 N.	18 10 W.	656
Santa Cruz	28 28 N.	16 15 W.	33
Santa Cruz de la Palma	28 41 N.	17 46 W.	33
Tefía	28 31 N.	13 59 W.	656

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

** Near but outside NIS 9 Area.

1

10
8
6
4
44
42
40
B A Y O F
A T L A N T I C
O C E A N
LA CORUÑA
Coruña
FINISTERRE
CABO FINISTERRE
PONTEVEDRA
ORENSE
GIJÓN
OVIEDO
LEÓN
León
La Bañeza
Puebla de Sanabria
Benavente
Palencia
VALLADOLID AIRPORT
VALLADOLID
Valladolid
Toro
Zamora
Duero
Cuéllar
Medina del Campo
SALAMANCA
Salamanca
SALAMANCA AIRPORT
AVILA
MADRID
Talavera de la Reina
Toledo
CACERES
Trujillo
BADAJOZ/TALAVERA LA REAL AIRPORT
BADAJOZ
CIUDAD REAL
Barcarrota


BAY OF BISCAY
F R A
GIJÓN
OVIEDO
SANTANDER
SAN SEBASTIÁN
Bayonne
Biarritz
Agen
Garonne
Montauban
Toulouse
Pau
Tarbes
Adour
LEÓN
BURGOS
PAMPLONA
HUESCA
MONFLORITE
SORIA
SARAGOSSA SANJURJO AIRPORT
SARAGOSSA VALENZUELA AIR BASE
SARAGOSSA
VALLADOLID AIRPORT
VALLADOLID
SALAMANCA AIRPORT
AVILA
MADRID/TORREJON AIR BASE
MADRID BARAJAS AIRPORT
MADRID
TERUEL
CUENCA
TORTOSA
VALENCIA
ALBACETE
ALBACETE/LOS LLANOS AIRPORT
CIUDAD REAL
ALICANTE
Tarragona
Burgos
Palencia
Benavente
Zamora
Toro
Medina del Campo
Cuéllar
Segovia
Guadalajara
Aranda de Duero
Miranda de Ebro
Haro
Logroño
Vitoria
Tafalla
Calahorra
Tarazona
Alcañiz
Tarancón
Aranjuez
Talavera de la Reina
Toledo
Ocaña
Corral de Almaguer
Quintanar de la Orden
Alcázar de San Juan
Consuegra
Villarrobledo
La Roda
Socuéllamos
Tomelloso
Manzanares
La Solana
Campanario
Castuera
Siruela
Almadén
Valdepeñas
Hellín
Jumilla
Yecla
Tobarra
Vinaroz
Benicarló
Santa Cruz de la Zarza
Ejea de los Caballeros
Alfaro
Corella
Épila
Calatayud
Arnedo


FRANCE
Agen
Garonne
Montauban
Albi
Toulouse
Castres
Montpellier
Nimes
Avignon
Arles
Rhône
Béziers
Carcassonne
Perpignan
Tarbes
Pau
GULF OF LION
CABO CREUS
Golfo de Rosas
HUESCA
Huesca
MONFORTE
BAGUR
SARAGOSSA/SANJURJO AIRPORT
SARAGOSSA
Tárrega
Blanes
Calella
Mataró
Sedalona
BARCELONA
Sant Feliu de Llobregat
BARCELONA
Villanueva y Geltrú
Tarragona
TORTOSA
CABO TORTOSA
Vinaroz
Benicarló
Teruel
BALEARIC ISLANDS
CABO DE CABALLERIA
MINORCA
Ciudadela
CABO DE FAVAROTX
CABO BARTUCH
PALMA/SON BONET AIRPORT
MAHÓN/SAN LUIS AIRPORT
CABO DEL FREU
MAJORCA
CABO DE LA REGLA
PALMA
CABO SALINAS
VALENCIA
Requena
VALENCIA
Játiva
Ibiza
Almansa
Yecla
Elche
Caudete
CABO DE LA NAO
ISLA DE FORMENTERA
CABO BERBERIA
ALICANTE
CABO DE LAS
MEDITERRANEAN SEA
II
IV
2
4
42
44


ATLANTIC OCEAN
SALAMANCA
SALAMANCA AIRPORT
ÁVILA
MADRID
CÁCERES
BADAJOZ/TALAVERA LA REAL AIRPORT
BADAJOZ
CIUDAD REAL
MORON AIR BASE
ROTA NAVAL AIR STATION
CADIZ
SAN FERNANDO
GIBRALTAR
GULF OF CADIZ
CAPE SAINT VINCENT
CABO DA ROCA
CABO MONDEGO
CABO CARVOEIRO
TANGIER
TETUAN
MOROCCO
CANARY ISLANDS
SANTA CRUZ DE LA PALMA
LA PALMA
TENERIFE
OROTAVA
LOS RODEOS AIRPORT
SANTA CRUZ
LAS PALMAS
LAS PALMAS/GANDO AIRPORT
FUERTEVENTURA
PUNTA ORCHILLA
GRAN CANARIA
LANZAROTE
40
38
36
10
8
4
22317


SALAMANCA AIRPORT
AVILA
MADRID
MADRID BARAJAS AIRPORT
MADRID/TORREJON AIR BASE
SARAGOSSA/VALENZUELA AIR BASE
SARAGOSSA
TORTOSA
TERUEL
CUENCA
VALENCIA
ALBACETE
ALBACETE/LOS LLANOS AIRPORT
CIUDAD REAL
MURCIA
ALICANTE
SAN JAVIER
SAN PABLO AIRPORT
MORON AIR BASE
GRANADA
GIBRALTAR
La Linea
GIBRALTAR (U.K.)
IBIZA
ISLA DE FORMENTERA
CABO DE LA NAO
CABO BERBERIA
ALGERIA
Ceuta
Melilla
Boundaries are not necessarily those recognized by the U.S. Government.
Scale of this map precludes showing exact details of terrain.

STATION LOCATIONS FIGURE 53

This publication is a National Intelligence Survey component issued selectively to provide more extensive coverage on certain topical content of the General Survey (the production unit replacing Chapter I—Brief) on this NIS Area.

The General Survey is the NIS unit which provides comprehensive but concise coverage of the basic characteristics of the Area and normally consists of the following topics: Significance of the Area, Military Geography, Transportation and Telecommunications, Sociological, Political, Economic, Scientific, and Armed Forces.

The General Survey may provide the entire NIS coverage on certain or all of the basic subjects, but when appropriate for the Area and topic is selectively supplemented by separate NIS units providing more extensive coverage on principal subtopics. Such units are published separately for flexibility in production, revision, and use.

The topics which may be given more extensive treatment or may have been previously issued as NIS units, and the basic scope and nature of their content, are set forth in the NIS Standard Instructions and the NIS Reference Guide. The Reference Guide, which may be requested through official channels, is a convenient summary of the instructions designed particularly for NIS users.

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