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DOCUMENT IDENTIFICATION

Sept. 53

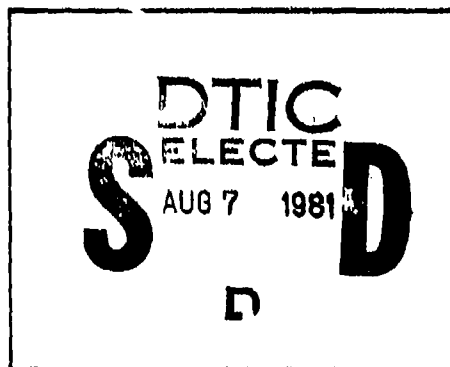
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NIS 17

NATIONAL INTELLIGENCE SURVEY

ITALY

SECTION 23

WEATHER AND CLIMATE

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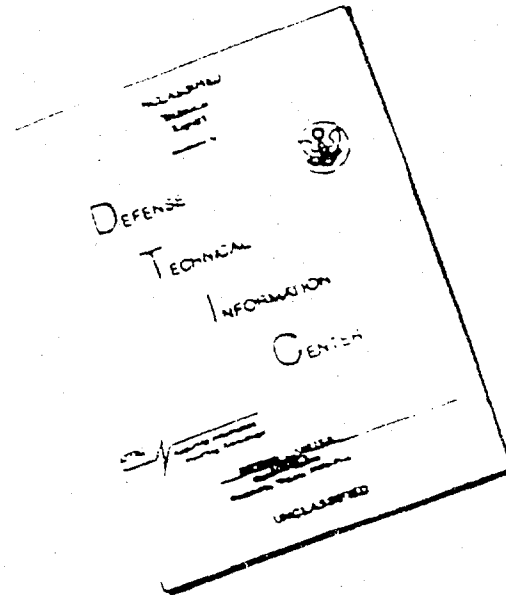
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This Section was prepared for the NIS under the general supervision of the Directorate of Intelligence, USAF, by the Air Force/Air Weather Service in coordination with the Joint Meteorological Committee. Material on amphibious operations was prepared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

23. Weather and Climate

A. General weather and climatic conditions

1. Introduction

Italy (Italia) does not have a uniform climate throughout. Large regional variations are caused by the great extent of latitude (10°), the extremely varied relief and high altitudes, and, finally, the contrast between the proximity of the sea to peninsular Italy and the distance of the Italian Alps and Po Valley from maritime influences. There are, however, certain general characteristics of the climate of the country as a whole which justify its description as Mediterranean.

The Mediterranean-type climate of this NIS Area is the result of two geographical features, the Alpine barrier and the Mediterranean Sea. The chain of the Alps, highest and most continuous in the west, from which direction most of the weather of this part of the world advances, cuts Italy off from the climatic controls affecting central and western Europe. In addition, the southward-facing slopes of the Alps are abnormally warm because of their exposure to the sun and the southerly winds.

Throughout the year, the Mediterranean Sea maintains a temperature of at least 55° F. to a depth of about 900 feet. Annual variations in the temperature of the water are limited to the upper layer. Except locally and in shallow water, mean sea-surface temperature is 76° F. in August and 55° F. in February. The warm sea greatly moderates the winter temperature of all lands within its influence. This is true of the whole of Italy, with its relatively long coastline, but especially true of the coast and the valleys exposed to winds from the sea.

Unless otherwise indicated in the discussion, the seasons in this NIS Area are broadly defined as winter (December through February), summer (June through August), and the transitional seasons—spring (March through May) and autumn (September through November).

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

2. Climatic controls

a. GENERAL CIRCULATION AND PRESSURE DISTRIBUTION

(1) *Winter* — During winter the intense anticyclone centered over central Asia (Siberian high) extends over southern U.S.S.R. and often over the northern Balkans (FIGURE 23-1). Southwest of Spain and centered over the Atlantic Ocean a less intense, but nevertheless persistent, belt of high pressure (Azores high) extends to the western Mediterranean and often penetrates North Africa as far east as Egypt. The Mediterranean, situated between the two anticyclonic centers, becomes a region of relatively low pressure, and cyclonic systems traverse the region with ease. In addition, frontal systems emanating from the low-pressure area located northwest of the British Isles (Icelandic low) and traveling across northern and central Europe tend to produce conditions favorable for cyclogenesis in the Mediterranean. Thus, during the winter months the circulation over Italy is governed by the relative position, intensity, and orientation of the Azores high, the Siberian high, and the migratory low-pressure systems passing over or near this NIS Area. Since there is a constant fluctuation in these pressure centers, no single circulation pattern is completely dominant.

(2) *Summer* — In contrast to winter conditions, the summer circulation pattern is remarkably stable (FIGURE 23-2). The Azores high is restricted to the Atlantic Ocean. Centers of low pressure exist over Iran and the interior of North Africa. The western Mediterranean is occupied by a region of gentle pressure gradient between these two extremes. A tongue of relatively low pressure extending from the southeast covers most of the country, although the west coast is affected by the higher pressure of the Tyrrhenian Sea. This relatively high pressure in the western Mediterranean and the northerly position of the Azores high confine the prevailing westerlies to the north of Spain, and depressions traveling through the Mediterranean basin are less frequent than in winter.

Although the gradient circulation during the summer months comes from the north quadrant, the topography of Italy causes a wide variation in the direction, strength, and persistence of the surface flow. These variations are common both in

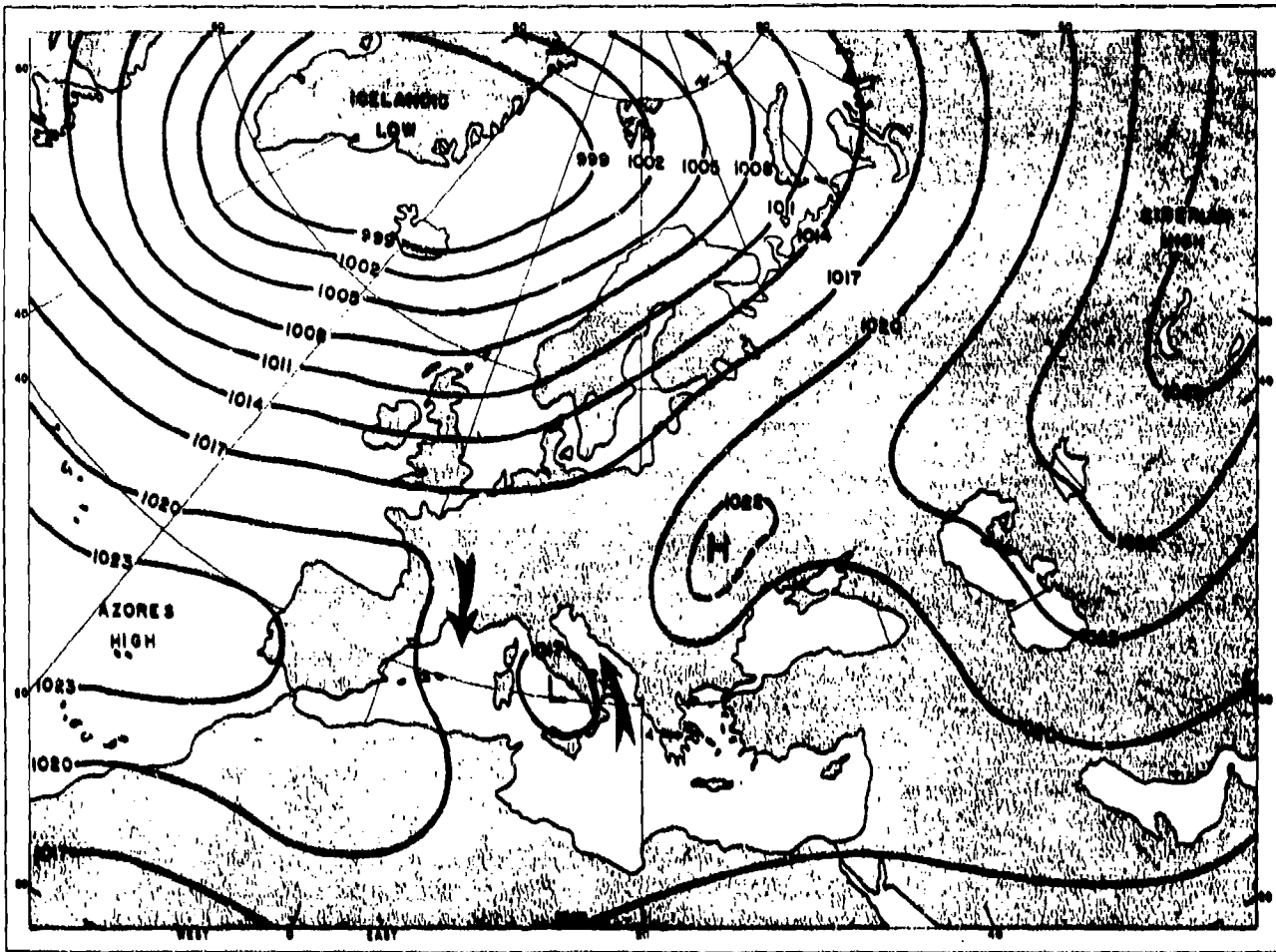


FIGURE 23-1. MEAN PRESSURE FIELD AND AIRFLOW PATTERNS, JANUARY

the interior and at coastal stations. In the latter case, there is often a diurnal variation in the surface wind direction and speed which is caused by land- and sea-breeze effects.

(3) *Transitional seasons* — The transition from the winter circulation pattern to that of summer is apparent in April and is usually well established by mid-May. Winter-type circulation patterns begin late in September and are well established by the end of October. In general, the transition from summer to winter is more abrupt than the transition from winter to summer.

b. AIR MASSES

(1) *Winter* — It is apparent from the previous subsection on general circulation that the range of air masses and their frequency of occurrence are much greater in winter than in summer. Although a number of different air masses can invade Italy during the winter months, polar maritime (*mP*), polar continental (*cP*), and tropical continental (*cT*) are the air masses which most frequently affect the country. In most cases, how-

ever, the inherent characteristics of these air masses have been considerably altered by their trajectory before reaching Italy.

Polar continental air most frequently invades Italy when the Siberian high is well developed over the North Balkan States. This invasion is known as the *bora* stream. The rather shallow stream (usually less than 6,000 feet in depth) penetrates the gaps in the mountains and generally gives clear, cold, dry weather to the northern and north-eastern parts of Italy. Winds are often strong and gusty (Subsection A, 2, d, (2)), and visibility is good except for a haze layer when there is a surface inversion. Since this polar continental air mass is shallow, the mountain barriers often prevent it from entering southern Italy.

The polar maritime air affecting the central Mediterranean regions usually comes from the North Atlantic and travels behind the eastward-moving frontal systems which sweep across the British Isles, France, and Germany. It is a comparatively deep air mass (10,000 to 20,000 feet)

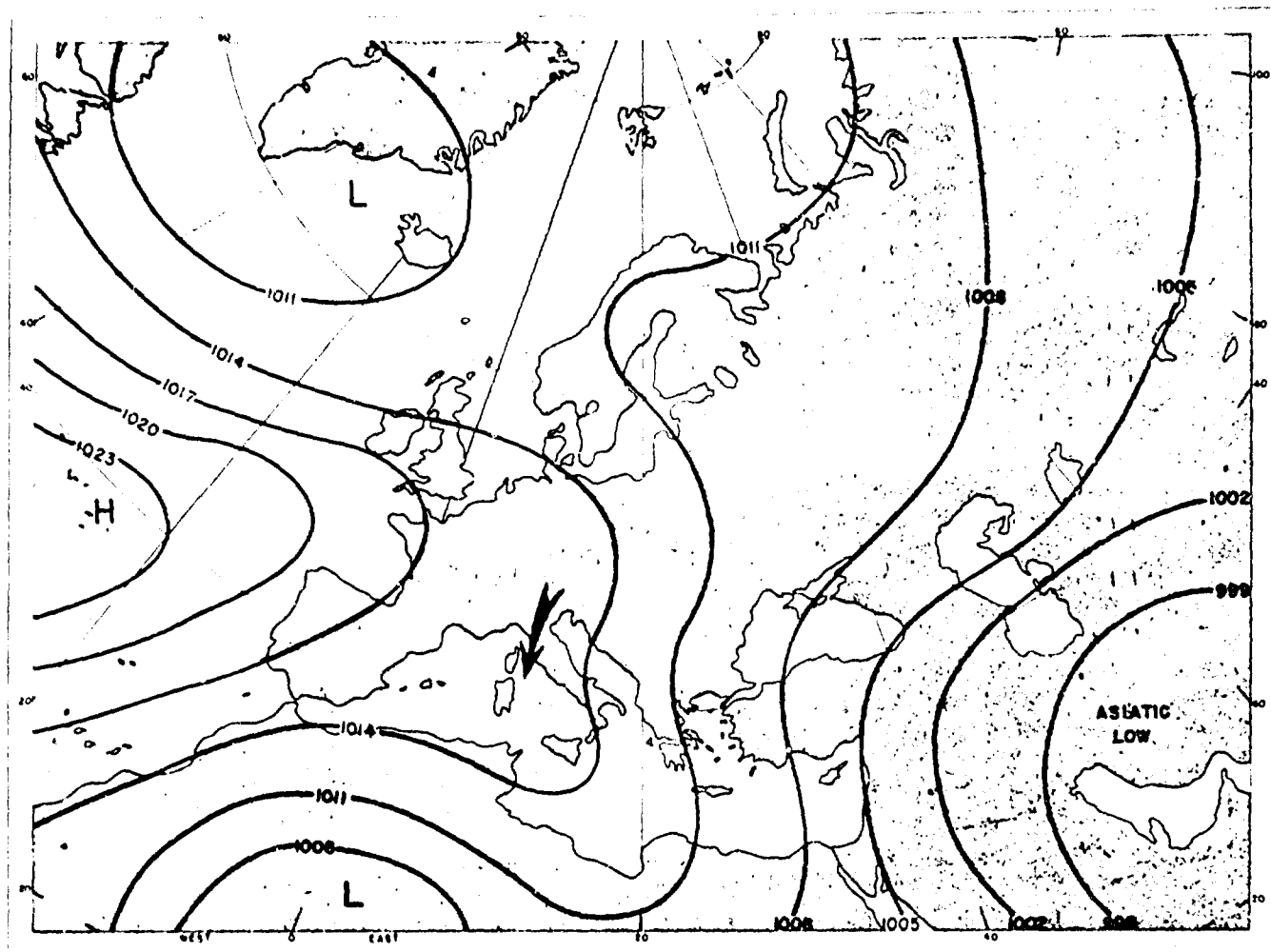


FIGURE 23-2. MEAN PRESSURE FIELD AND AIRFLOW PATTERNS, JULY

and enters the central Mediterranean mainly through the gap between the Pyrenees and the Alps. In Europe polar maritime air can act either as a cold or as a warm air mass; however, in the Mediterranean it is always colder than the surface of the sea. On entering the Mediterranean, its initial stability is decreased by surface heating.

Although the lower layers become successively warmer as the polar maritime air moves toward Italy, the stability is gradually increased by subsidence. Shower-type precipitation with occasional thunderstorms and a cumuliform cloud system are usually associated with the frontal zone. After the frontal passage, positive pressure tendencies with fresh squally west-to-northwest winds occur to approximately a hundred miles behind the cold front. Visibility is good and cloud clearing occurs at night.

Tropical continental air affecting Italy comes from the interior of North Africa. The chief characteristic of this air mass at its source region is its dryness. Over the desert, radiation causes low

temperatures in the lower layers at night, but the cold layer is shallow and the inversion breaks up a few hours after sunrise; higher up, the lapse rate is about normal. Consequently, when the air first moves out to sea, it is warm and dry. The lower layers, however, rapidly pick up moisture and become stabilized by cooling from below. Thus, if the winds are light and the distance traveled over the sea is long, the air on reaching Italy will be relatively warm and very moist. Clouds are of the stratiform type and are often accompanied by precipitation. Conversely, if the air mass travels a short distance over the water and/or the winds are strong, the tropical continental air arrives in Italy relatively unmodified. In this case the air is very dry, the sky is clear, and the air is often laden with dust from the desert regions (Subsection A, 2, d, (1)). This hot, dry, dust-laden southerly wind blowing from the Sahara is experienced particularly on the north coast of Sicily (Sicilia) and occasionally in southern Italy. For the most part, the average condition of the tropical continental air varies between the two extremes.

(2) *Summer* — The climate of Italy is dominated during summer by tropical continental air flowing southward from central Europe and the northern Balkans. At its source region, the air mass is very dry and the lapse rate approaches the dry adiabatic. Because of this dryness, evaporation takes place from the soils, streams, and vegetation and raises the moisture content of the air. Since the trajectory of the tropical continental air toward Italy is over land, its opportunity to pick up moisture is limited and it arrives in that country in a relatively dry state. The flow of continental air into Italy is seldom interrupted, and with it the temperature remains high and the skies clear. In general, visibility remains good in this air mass.

c. **MIGRATORY CYCLONES** — Most of the bad weather of Italy, especially northern Italy, is caused by depressions that either form locally or have their origin in the western Mediterranean basin. These depressions can be classified into three main groups: 1) Gulf of Genoa (Golfo di Genova) depressions or Alpine lee depressions which follow tracks 1, 2 and 3 (FIGURE 23-3); 2) Mediterranean depressions which follow track 4; and 3) North African depressions which follow track 5.

The tracks followed by these depressions vary according to seasons. There may be considerable variation also from year to year in their frequency and season of occurrence. It should be emphasized that the illustrated tracks in FIGURE 23-3 indicate the movement of the center of the lows and do not indicate the limit of storm activity.

The depressions from the Gulf of Genoa are either old depressions that have migrated to the gulf and deepened or newly formed lee depressions. In either case the process results from an influx of relatively cold air into the Mediterranean. When a depression moves east or northeast across France, Great Britain, or the Norwegian Sea, a cold front or occlusion passes southeastward across France and Germany. As the front reaches the southern mountains formed by the Alps, Cévennes, and Pyrenees, a ridge often forms in the cold air behind the front. In general, the pressure south of the mountain barrier remains more or less steady. However, over the Ligurian Sea and Po Valley, there is usually a pronounced fall in pressure at this stage. The cold front or occlusion passes through the gap between the Alps and the Pyrenees, the Cévennes being a rather minor barrier in comparison with these ranges. A current of cold air (the *mistral* stream) enters the Mediterranean and moves southeastward across Corsica and Sardinia (Sardegna), preceded by a well-defined cold front. The rise in pressure that is usually present in the cold air behind the front helps create a circulation around the lee depres-

sion, which, by this time, has a closed center around the Gulf of Genoa. As a rule, the depressions emanating from the Gulf of Genoa move southeastward down the Adriatic Sea or along the west coast of Italy (FIGURE 23-3, tracks 2 and 3). These depressions are very common from late autumn to early spring, but they are most frequent during the winter months. In some cases, however, a third path (track 1) taken by the depressions is either northeastward into the continent or eastward toward the north Balkan countries. Depressions moving along this track occur throughout the year but are uncommon in midsummer and midwinter.

The weather sequence of lee depressions is extremely variable. When first formed, the eddy is nonfrontal, but convergence and forced uplift often produce cloudiness and rain, especially over the Apennines (Appennino) and Alps. If the air mass is deep and unstable, rainfall may be very heavy. This is especially true when there is frontogenesis over the Ligurian Sea. It is quite common for a single lee depression to give 4 inches of rain at stations in Liguria or Tuscany (Toscana). The rainy period is accompanied by mild southerly or southwesterly winds in these provinces. In southern Tuscany the cold front preceding the mistral stream may also cause heavy rain. As a rule, this cold front does not affect other regions. As the lee depression moves southeastward, the bora stream spreads across the Adriatic and the mistral stream across Tuscany and the Tyrrhenian Sea. The bora and mistral streams are rather damp, cool, and unstable after their sea crossing; they often cause heavy showers along the coast and on the hills. Along the Ligurian Sea coast, good weather may be expected after the passage of a front, but along the Adriatic Sea coast and in the Apennines, heavy winter showers occur. Depressions moving out of the Gulf of Genoa are so common in winter that a map of average pressure looks like a chart of lee depressions.

The name Mediterranean depressions has been given to the broad class of cyclones traversing the major axis of the Mediterranean Sea (FIGURE 23-3, track 4). The cyclones may, on occasion, enter the Mediterranean basin from the Atlantic Ocean, or may form locally over the Mediterranean but are not directly the result of the lee processes. As a rule, they form on stationary or slow-moving fronts which generally enter the basin from the northwest. A few depressions originate on fresh-formed fronts lying in zones of frontogenesis. These cyclones are quite common in Sicily or central and southern Italy but rarely reach northern Italy. They occur most frequently during the cool season, the maximum frequency being in autumn. These cyclones are characterized by well-marked warm

sectors, and there may be an exceptional amount of rainfall accompanied by thunderstorms. Mediterranean depressions usually approach Italy from the southwest; the gradient over the whole of Italy is then for southerlies or southwesterlies, warm air being imported from the southern Mediterranean. This air import to Italy may give excessive heat waves even in winter; over the southern coast of Italy and the Tyrrhenian Sea there are much low cloudiness and drizzle. Such waves of warm air are called *siroccos* in Italy. Mediterranean depressions that reach northern Italy often give 2 or 3 days with thunderstorms in all regions.

North African depressions (FIGURE 23-3, track 5) have a definite spring bias and are most commonly encountered during March and April. They form over the desert regions of North Africa as a wave depression on a front separating air which has been over Africa for some time and has been considerably warmed from much cooler polar air that has recently crossed the Mediterranean. Since the warm air mass is very dry, the cloud system associated with this depression is usually not very extensive during the early phases of its easterly movement. When these *lows* reach Tunisia or Tripolitania they frequently turn northeastward toward Italy or the Ionian Sea. These *lows* are often associated with *sirocco*-type weather during spring.

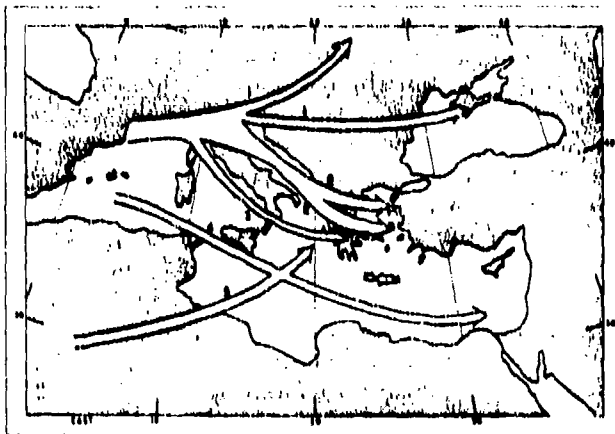


FIGURE 23-3. MEAN TRACKS OF CYCLONES

d. SPECIAL PHENOMENA

(1) *Sirocco* — The most widespread wind affecting Italy is the *sirocco*. This wind can be divided into two distinct types, the dry type and the moist type. The dry *sirocco*, the better known of the two, is a very hot, dry, dust-laden southerly wind blowing from the Sahara. Winds of this type are experienced particularly on the north coast of Sicily but also at times in southern Italy. The dryness of the wind in Sicily is due to its being warmed and dried during its descent of the mountains in the north of the island. The dry *sirocco*

also occurs on the west coast of the mainland as far north as Rome (Roma) when there is a high-pressure cell over the north or northwest Tyrrhenian. The dry *sirocco* also reaches the south coast as a strong southerly wind; its rapid passage across the Mediterranean explains the slight amount of moisture absorbed in the lower layers.

The moist *sirocco* is much more frequent, widespread, and persistent than the dry type. Originally a hot, dry wind, it picks up much moisture during its passage over the sea and strikes Italy as a warm, moist, oppressive wind. Along the Adriatic coast it is a strong southeasterly wind, often reaching gale force (≈32 m.p.h.), and is diverted to follow the axis of the sea. The moist *sirocco* sets in gradually; wind speeds, temperatures, and humidities rise, and heavy seas and stormy weather occur. On occasion, this wind may persist for more than 24 hours. Although the poorest weather is encountered along the northern Adriatic coast, the incidence of moist *sirocco* is greater along the southern Adriatic coast. The moist *sirocco* is a cool-season wind associated with the east side of depressions and with persistent high-pressure cells over the Balkans. Temperatures may fall sharply after the *sirocco*, particularly if it is followed by a *bora*.

In the northern part of the West Coast Region, the *sirocco* is a south-to-southeast wind of the moist type. It may bring cloudless but hazy weather during the day with overcast at night (as usually on the Riviera) or overcast, rainy weather (as on the Tuscany coast). Farther south along the west coast, the moist *sirocco* is a south wind lasting for several days, with drizzle and overcast skies. Inland the effects of the *sirocco* are modified, but conditions are unpleasant everywhere. Only in the Adriatic does the *sirocco* seem to be a source of gales.

(2) *Bora* — *Bora* is the name given to a very cold, dry, northerly wind affecting the Adriatic shores. Wind speeds increase as the *bora* descends the mountain slopes of Dalmatia; at Trieste a speed of about 70 m.p.h. has been recorded. Temperatures have fallen to 14° F. and relative humidities to 15%. The *bora* is much more violent along the eastern Adriatic coast, particularly the northeast extremity, than along the western Adriatic. The *bora* is strongest and most frequent at Trieste, where it blows from the northeast. From Venice (Venezia) to Vieste it is frequent, although not as violent as in the northeast, and south of Vieste the *bora* is a north wind and is infrequent. The *bora* is associated generally with a depression. In this case, the physiological sensation of cold is intensified because the warm *sirocco* precedes the *bora*. Sometimes, however, the *bora* arrives independently of any disturbance of the barometer.

In either case, the wind is comparatively persistent and may continue for some days.

(3) *Tramontana* — *Tramontana* is a local name for a cold wind from the Alps affecting the western part of northern Italy. It is usually a northeasterly or northerly wind blowing in the rear of a depression which passes from the Gulf of Lions across northern Italy. It has neither the violence nor the severity of the bora, though it may occasionally reach gale force after the passage of a cold front.

(4) *Foehn* — The foehn is a downslope wind in which the air is warmed by adiabatic heating and the relative humidity is lowered. Since the air has usually already lost a portion of its moisture content through precipitation when ascending the mountains, cloudiness and precipitation are further reduced. This effect appears most frequently with northerly or northeasterly winds over the Italian Alps and is seen in Liguria and northern Tuscany. The foehn is usually associated with the passage of a lee depression through central Italy.

3. Regional discussion of climate

The following discussion is intended to provide an overview of the seasonal trends in the weather of Italy. A more detailed analysis of climatic elements is reserved for Subsection B, Weather and Military Operations.

For ease of presentation, Italy has been divided into eight major regions as designated in Figure 23-35: 1) Italian Alps; 2) Po Valley, used in its broad sense to include the low-lying valley of the Reno and the Adige adjoining the lower Po; 3) East Coast, extending along the Adriatic Sea coast from Trieste to Brindisi; 4) West Coast, extending from the French frontier to Naples (Napoli); 5) Apennines; 6) Southern Italy; 7) Sicily; and 8) Sardinia.

a. ITALIAN ALPS — No simple statement describing the climate in these rugged mountain regions can be made. Such varied topography brings about considerable climatic differences over short distances. These variations occur primarily in a vertical direction; valley bottoms differ from ridge tops by 5,000 to 10,000 feet, causing a mountain shadow effect. The southward-facing slopes receive much sunshine, whereas the northward-facing slopes are in deep shadows.

In general, the main feature of the Alpine climate is the distribution of rainfall and temperature throughout the year. Winters are dry and cold; summers are cool to hot, with considerable thunderstorm activity; and autumn and spring are rainy seasons. Piccolo San Bernardo records only 2.1 inches of rainfall in January compared with 6.8 inches in August. At this same station, temperatures range from a mean maximum of 56° F. in July to 22° F. in January. Maniago re-

records 10.9 inches of rainfall in May and October, with a winter minimum of 4.4 inches in January. In addition, the diversity of locations, elevations, and exposures to solar radiation complicates the Alpine climate. Bolzano records a mean daily maximum temperature of 84° F. in July, with 7 days per month with thunderstorm activity in June and July. Throughout the Alps thunderstorm activity is at a maximum in summer.

b. PO VALLEY — In all of Italy, the Po Valley has the most extreme climate. Winters are cold, cloudy, and foggy. Milan (Milano), in the western part of the valley, records a mean daily maximum temperature of 38° F. in January. Fog is widespread on most nights. The western part of the Po Valley experiences more foggy days than the eastern part. In December, Milan has 20.3 days with fog at 0800 LST. The fog usually clears in the mornings, but at times it may persist into the afternoon. In the western part of the valley, the foggy weather may persist for several days at a time. This foggy weather alternates with the cold, dry northeasterly winds (called bora when they are strong), which give clear skies, good visibilities and low temperatures. Snow occurs from time to time during winter, but there is little rain. When rain does occur, there is always the possibility of glazed frost forming on roads and thus hindering mobility. This condition occurs when the rain falls from warmer air above into freezing air on the surface.

In summer, temperatures are high throughout the Po Valley, but the maxima are slightly higher in the western part. Milan has a mean daily July maximum temperature of 87° F. and Padova has 83° F. Most of the rainfall during summer is the result of thunderstorm activity. Padova records 8 days with thunderstorm activity in both June and July. As in the Alps, the Po Valley records maximum thunderstorm activity during summer.

Cloud cover is about 6- to 8-tenths in winter and 3- to 5-tenths in summer. Rainfall is at a maximum in autumn and late spring.

c. EAST COAST — This region is characterized by its cold winters in the north and mild winters in the south. The mean daily maximum temperature in January is 41° F. at Venice compared with 52° F. at Vieste. Strong northerly winds (bora), mainly in the northern half of the region, blow at any time from October through March. The occurrence of a sirocco, southeasterly or easterly, alternates with that of the northerlies. These siroccos occur all along the coast from October through May on about 2 days per month. May has the greatest frequency of such winds.

No definite circulation pattern exists during summer, and weather conditions are excellent. Pressure is usually low in the eastern Mediterra-

near, which gives light northwesterly winds to eastern Italy, especially the southern half. The few depressions that form are usually small, weak, and inactive, and there is but little break in the continuous sequence of days of little or no cloud.

d. WEST COAST—This narrow coastal region has two well-marked seasons which are based on the distribution of rainfall throughout the year—the rainy season, extending from the middle of September to the middle of May, and summer, extending from the middle of May to the middle of September.

Although there is considerable variation in weather during the rainy season, one characteristic remains at all times, i.e., the rainy spells are frequent. Genoa (Genova) reports mean monthly precipitation amounts of 6.8 inches in October, 4.5 inches in March, and 1.9 inches in August. Summers are hot and dry in this region. At Naples the July mean maximum temperature is 83° F. and the mean precipitation is 0.6 inch.

e. APENNINES—This region shows a decrease in maritime influence proportionate to distance and protection from the sea. On the whole, this region is wetter and cooler than the coastal regions, although some of the basins are remarkably hot in summer. In the north the valley of the Arno admits marine influence into the middle of the peninsula, but to the south the climate of the central region is more clearly distinguishable. The basins have a comparatively large annual rainfall (Perugia has 36.4 inches and Potenza has 25.9 inches), which, although far less than on the surrounding hills, is comparatively well distributed throughout the year. The basins tend to be cold in winter because of their height, but abnormally warm in summer. On the hills, the normal decline in temperature takes place. Precipitation (much of which falls as snow in the winter and spring) is high, especially in the north and south. Snow may remain on the ground for three or more months.

f. SOUTHERN ITALY—This region has a temperate climate, with warm, dry, sunny summers and mild winters. The transition from spring to summer is abrupt, but summerlike conditions persist even into October.

A characteristic of the summer is the almost monotonous regularity of clear skies (Taranto has less than 1.5-tenths cloud cover in July), varied only by occasional heavy cumulus clouds and showers. The winter is much more changeable, though in many places, particularly on the eastern side of the mountains, there are comparatively few days on which the sun does not shine. Bad weather in winter results primarily from disturbances which often move from the Gulf of Lions

or the northern part of Italy in a southeasterly direction or from disturbances which move along the northern coast of Africa in the direction of Crete. Days of bad weather, however, are interspersed with frequent periods of fair weather. The disturbances, important in October through March, decrease rapidly in April. Under the influence of these disturbances there are periods of showery rain, which falls principally on the windward side of the mountains.

g. SICILY—The combination of a maritime climate and the southerly position of Sicily causes this region to be very warm in both summer and winter. Since Sicily is affected only by the westerlies for a short period of time, the rainy season is from late autumn to early spring, and precipitation amounts are low. The northern and southern coasts have only 25 inches of rainfall. Sicily, especially the northern coast, is remarkable for the exceptional frequency of the dry-type sirocco, which is not infrequently accompanied by dust. The extreme dryness and warmth of the wind, in spite of its having crossed the sea, are the result of warming by descent from the northern highlands. At Palermo, temperatures as high as 114° F. have been recorded, with relative humidities of 10%. During a sirocco, midnight temperatures have reached 95° F. This effect is, however, local in this extreme form. As in all of southern Italy, land and sea breezes are well developed throughout most of the year.

h. SARDINIA—The climate of Sardinia is affected by the plateaulike relief. Temperature and rainfall distributions are comparatively uniform. Only the very narrow coastal fringe and the Campidano plain are slightly warmer and drier than the remainder of the region. Precipitation amounts are low; Cagliari has 17.7 inches of rainfall annually, and in the Monti del Gennargentu and north of Iglesias only 40 inches are reported. Rainfall occurs mostly in autumn and spring, with summer having a well-marked drought. Snowfall is rare, except on the Monti del Gennargentu summits.

Maritime influence delays the advent of the seasons and moderates the differences between them, as compared with other locations at similar latitude. Spring is warm and fairly dry and does not begin until April. Autumn is delayed until October and is somewhat cool and wet. Winters are cool and rather dry; and summers are hot, with an unremitting drought from the end of June through August.

The general prevailing wind is from the northwest throughout the year. From October through March, an easterly wind is frequent on the east coast of Sardinia, but from April through Septem-

ber a northwesterly wind predominates over the entire island.

B. Weather and military operations

This Subsection is concerned with the effects of the various meteorological elements and their variations upon military operations, which are divided into four broad groups: air, air-ground, ground surface, and amphibious. Included in each of these groups is a wide variety of specific operations. The following discussion is based on the effects of meteorological elements on each type of operation rather than on specific operations. Exceptions will be made for a few specialized operations which are notably affected by a combination of particular meteorological elements.

1. Air operations

a. **CLOUDINESS** — Cloudiness varies greatly between winter and summer. Throughout Italy, except for the Italian Alps Region, maximum cloud cover occurs during the winter months (FIGURE 23-17). In the Alps in winter the subsidence in the Alpine center of the high-pressure axis causes a minimum amount of cloudiness, although up-slope winds from valleys and surrounding plains result in an increase in cloudiness. The Alpine stations have maximum cloudiness in spring and summer.

During late spring or early summer as the frontal systems become less frequent, clearing takes place over Italy. The transition occurs in early June over most of the country, except in the Alps. In June the cloud cover diminishes from north to south, 5- to 6-tenths in the Po Valley Region to less than 3-tenths in the Southern Italy Region, and in July, Licata (Sicily) shows less than 1-tenth cloud cover.

Considerable seasonal and regional variation of cloud cover is further illustrated graphically in FIGURES 23-4 and 23-5, which show the mean number of clear, partly cloudy, and cloudy days at specified hours; additional basic data for clear and cloudy days at specified hours are given in tabular form in FIGURES 23-18 and 23-19, respectively.

During winter, the Po Valley is the cloudiest part of Italy, averaging 6- to 7-tenths cloud cover.

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

FIGURE 23-6 gives an indication of the number of days favorable for high-level visual bombing. Noteworthy is the amount of cloudiness in the Po Valley Region compared to that in other regions, especially in winter.

With the exception of the Po Valley Region, winter cloudiness would have very little effect on air operations. Formation flying, however, would be quite difficult during frontal passages or when crossing the Alps in the spring and summer where considerable cumulonimbus activity occurs.

b. THUNDERSTORMS, HAIL, AND TURBULENCE —

Two types of thunderstorms can be distinguished, the peninsular and island thunderstorms which accompany the passages of depressions and are most frequent in spring and autumn, and the thunderstorms which result from local heating and convection in summer. The latter are, by far, the more frequent. FIGURE 23-20 gives in tabular form the mean number of days with thunderstorms. A few thunderstorm days occur during all seasons. Palermo, for example, records a thunderstorm every month of the year, but the total number of thunderstorms is only 13 per year. Bolzano, in the Alps, records 20 days with thunderstorm activity during the summer and a yearly total of 27.

The Italian Alps Region and the Po Valley Region record the greatest number of thunderstorms in summer. During winter, less than 1 thunderstorm occurs in either region. With the exception of the northern coast of Sicily from Messina to Palermo, Sicily and the surrounding islands have little thunderstorm activity.

Hail may accompany either a convective thunderstorm or the passage of a depression. It may occur at any time of the year, except during winter in the Alps and Po Valley where hail occurs mostly in spring. Past records show that the occurrence of hail is about twice as common on the west side as on the east side of the peninsula, but the variation of the number of days with hail is only about 2 to 7 days per year. The Italian Alps and the southern Apennines regions record about the same number of days with hail, 3 days per year.

Turbulence could be quite severe over the mountainous regions of Italy during thunderstorm activity or during a frontal passage. Great care should be exercised in flying at low levels over the mountains because of strong updrafts, downdrafts, and turbulence, particularly in hot weather or during a frontal passage.

c. **ICING** — During winter the average height of the freezing level varies from the surface in northern Italy to 4,000 to 5,000 feet in southern Italy. Frontal passages may, however, lower the

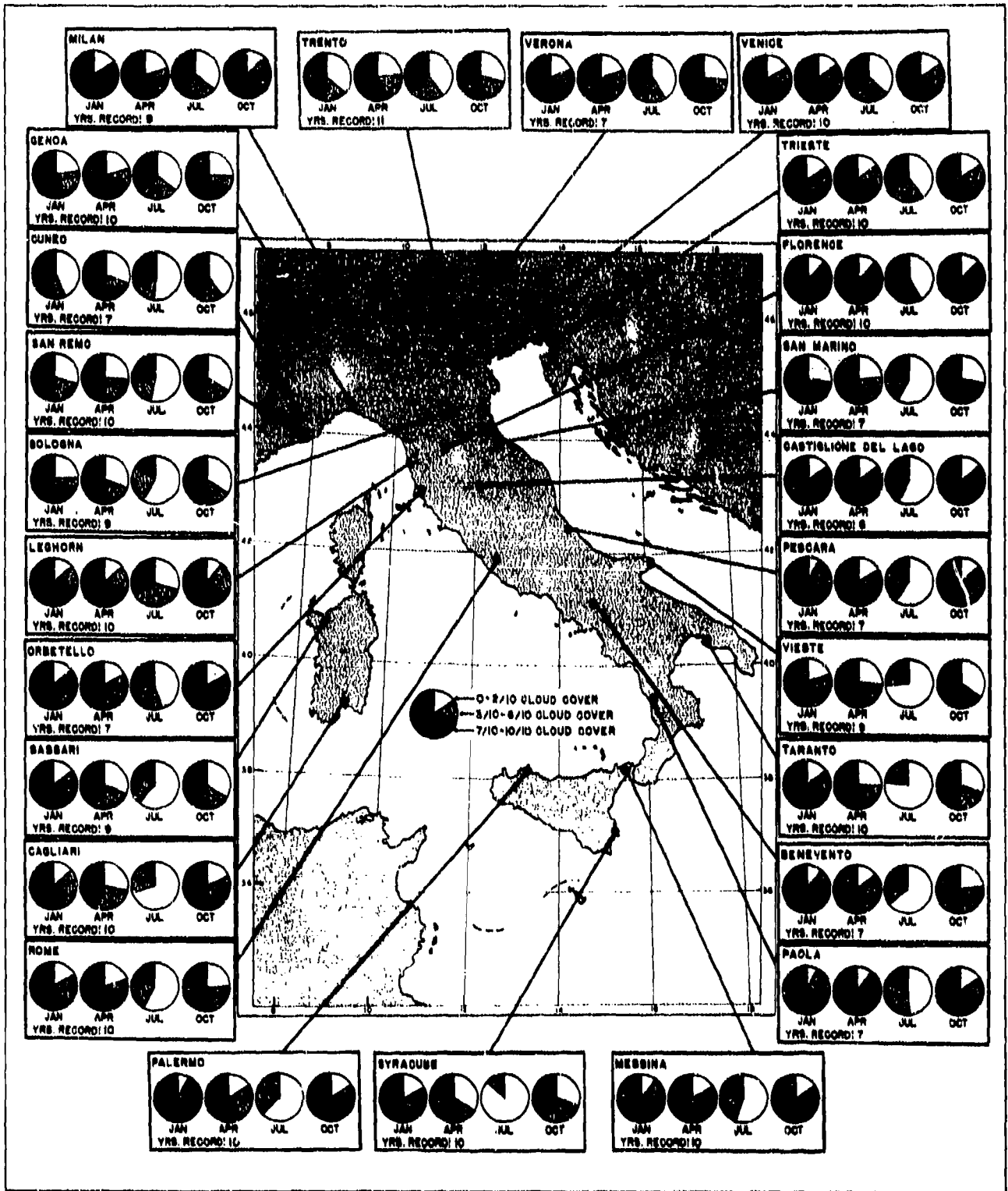


FIGURE 23-4. MEAN NUMBER OF CLEAR, PARTLY CLOUDY, AND CLOUDY DAYS AT 0800 LST. (For tabular data see Figures 23-18 and 23-19.)

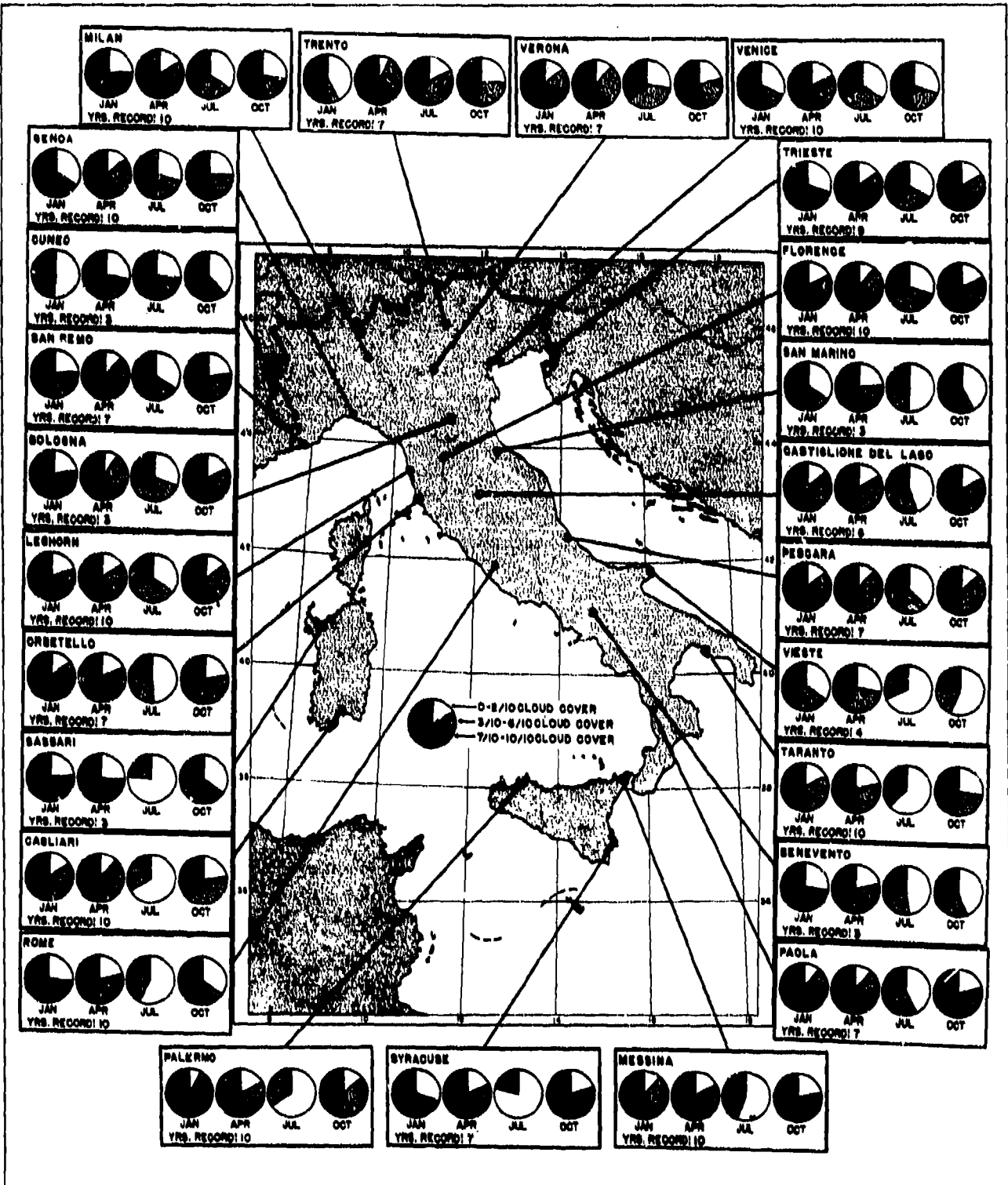


FIGURE 23-5. MEAN NUMBER OF CLEAR, PARTLY CLOUDY, AND CLOUDY DAYS AT 1900 LST. (For tabular data see FIGURES 23-18 and 23-19.)

FIGURE 23.6. MEAN NUMBER OF DAYS WITH TOTAL CLOUD COVER 3-TENTHS AND VISIBILITY 2 1/2 MILES AT SPECIFIED HOURS

REGION AND STATION	HOOR (LST)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
PO VALLEY: Milan	0800	2.0	3.2	1.8	0.3	0.2	0.3	10.4	7.5	2.8	1.0	0.9	0.0	51.4	4
	1400	4.1	5.7	8.7	0.0	0.0	9.0	13.7	12.5	8.2	6.5	3.3	1.8	87.0	4
WEST COAST Rome	0800	8.1	6.4	5.5	7.1	9.1	14.7	17.9	14.9	10.2	7.8	6.4	5.7	113.8	6
	1400	9.5	6.0	7.9	8.1	6.6	13.9	19.4	16.2	11.0	9.6	8.0	7.2	123.4	6
SOUTHERN ITALY: Taranto	0800	7.1	7.6	9.5	10.2	10.5	19.2	26.1	24.3	15.7	13.5	10.0	7.0	160.7	4
	1400	7.4	4.8	5.4	6.6	8.2	16.6	21.7	16.9	9.9	8.1	7.4	3.4	116.4	4
SICILY: Messina	0800	4.6	4.0	4.7	6.9	9.5	15.0	21.4	18.4	13.3	8.3	5.7	5.1	116.9	5
	1400	2.1	2.7	5.0	8.0	9.7	14.6	20.5	18.1	10.5	6.4	3.7	2.6	103.9	5

level to 2,000 feet in the south. In summer the freezing level averages 11,000 to 12,000 feet throughout Italy.

Operations which involve flights near or just a few degrees below the freezing level may encounter serious icing problems, especially in cumulonimbus clouds associated with thunderstorms or in dense frontal clouds of active cold fronts or occlusions.

During the winter season, the Po Valley frequently has a temperature inversion extending from the surface to about 5,000 feet, where freezing temperatures are often encountered. It is possible that low-level flights through this cold layer would encounter severe clear icing. Flights over the Italian Alps in summer may encounter severe aircraft icing in cumulus or cumulonimbus clouds at heights above 12,000 feet.

d. UPPER-AIR WINDS AND TEMPERATURES —

Upper-air winds over Italy are quite variable at low levels. At about 6,000 feet the upper-air winds are predominantly westerly to northwesterly (250° to 330°). This is true during all seasons; however, the predominance is greater in spring and summer than in autumn or winter. The upper-air flow over Italy at 18,000 feet is 275°/16 m.p.h. in winter, 245°/23 m.p.h. in spring, 265°/22 m.p.h. in summer, and 250°/21 m.p.h. in autumn. Above 18,000 feet the winds tend to become more westerly and increase in strength up to about 30,000 to 35,000 feet. Between 6,000 and 18,000 feet the winds are usually not as strong as at 18,000 feet and are less constant in direction. The following tabulation gives the average seasonal wind velocity (m p h) over Italy:

SEASON	ALTITUDE (thousands of feet)				
	Sur- face	1.6	3.2	4.7	6.3
Winter	6.5	11	11	12	14
Spring	6.7	11	12	14	14
Summer	5.4	9	9	10	11
Autumn	5.8	11	10	10	11

Very few data are available on the location of the jet stream over Italy. In general, the axis of the jet stream in January is west-east along the 20°N. latitude over Africa and has little, if any, effect over Italy. During spring and early summer the jet stream moves northward and weakens. In July the axis of the jet stream is west-east along the 38° to 40°N. latitude over the Mediterranean. The maximum wind speed associated with this stream is only about 45 knots and affects only southern Italy. It is estimated that the height of the jet stream is about 35,000 feet. After July it starts its movement southward.

The Italian weather stations do not take any upper-air soundings other than pibals. Therefore, upper-air temperature data are rare. FIGURE 23-21 gives tabular data showing upper-air temperatures at specified altitudes for Pavia and Rome. Upper-air temperatures over Pavia are representative of northern Italy, and those over Rome, of southern Italy and the islands of Sicily and Sardinia.

2. Air-ground operations

a. VISIBILITY — Surface visibility is important to many military operations because restricted surface visibility prevents or impairs visual reference

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

to the ground. Fog is the most common restriction to visibility in this NIS Area; other restrictions are rainy weather, dust and haze caused by siroccos, snowfall, and mirages.

Fog is more frequent in the north than in the south, especially during winter. The east coast has a maximum of foggy days during the winter, and the west coast, during the spring. Fog rarely occurs along the shores of the Tyrrhenian Sea, the Ionian Sea, and the southern Adriatic Sea. The Po Valley Region experiences the most fog, with a maximum during winter. Figure 23-22 gives in tabular form the mean number of days with fog at 0800 LST.

In winter, radiational cooling of the air over the Po Valley creates a deep pool of cold, foggy air in which there is little circulation. This fog belt covers almost all of the region and may persist all day in midwinter. Milan has at least 19 days with fog at 0800 LST during December and January; however, it usually thins out considerably in the afternoon. The eastern part of the Po Valley reports less fog than the western part. During December and January, Verona has 9 days with fog, Bologna has 7 days. The fog frequency diminishes in February and March, and May has very little fog. It appears again by late September or early October. Summer visibility is usually good.

Another belt of frequent winter fog is along the east coast from Trieste north. From September through March, radiation fog forms on clear nights, being most frequent in December and January. This fog is frequent between Venice and San Marino. At Venice, fog is present on about 7 mornings in December. Foggy weather alternates with bora spells, in which visibility is usually good except in rain or snow.

The west coastal regions usually have good visibility at all times and during all seasons. Morning mist or fog forms on a few days in each year and then disperses as the sun rises.

Radiation fog is quite frequent in the Apennines Region in late autumn and winter. Florence (Firenze) records 59 days per year with fog, and Benevento, 43 days. This type of fog also clears soon after sunrise. On the mountain slopes, fog caused by cloud cover occurs during October through March. This fog does not have the same marked diurnal variation as radiation fog. It occurs principally during periods of unsettled weather.

Apart from cloud envelopment and snow, visibility is generally good in the Italian Alps Region. Occasionally there are local radiation fogs in the valleys, but fogs are mainly due to cloud covering

of mountain sides. The frequency of these fogs is so localized that no generalization can be made.

The regions of Southern Italy, Sicily, and Sardinia have good visibilities except during periods of the moist-type sirocco in winter and early spring. Paola, in Southern Italy, records only 2 days per year with fog at 0800 LST; Marsala, in Sicily, records 2 days; and Sassari, in Sardinia, records 1 day.

Throughout Italy, summertime visibilities are good. The only restrictions occur during periods of thunderstorm activity.

Mirages may be encountered in all parts of Italy, especially along the coasts, in the southern part, and in Sicily, but their occurrence is infrequent. Inferior mirages occur along the coasts in the morning, when the temperature at the surface is rising rapidly. This gives the effect of a water surface above which objects are suspended or appear to be much nearer and higher than they really are. Superior mirages, on the other hand, occur mainly in the evening or they may precede a sirocco, when the surface is rapidly cooling. Under these conditions, objects beyond the normal horizon can be seen clearly.

b. CLOUDINESS AND CEILINGS—The seasonal and regional variation of cloudiness over Italy is discussed in Subsection B, 1, a. Observational data of ceiling heights are very limited, and only a few stations have data with an adequate period of record.

In general, ceilings are between 2,000 and 4,000 feet; however, there are a few exceptions. In the Po Valley in winter, ceilings may be below 1,000 feet a few hours in the morning as the stratus deck is lifting. Along the coasts, ceilings are over 1,000 feet even during a frontal passage. Occasionally in spring and summer a stratus deck will drift inland along the coasts, being impelled onshore by the sea breeze. In the northern Apennines, lifting fog in the inland valleys and basins causes considerable low ceilings during winter, but such low clouds usually dissipate by late morning. The hilly sectors may be enveloped in low clouds during rainy spells.

Data concerning ceiling heights are not available during periods of a southeasterly sirocco. It can be assumed, however, that during this period the eastern coastline of Italy and Sardinia may experience ceilings less than 1,000 feet. Such conditions may persist for at least 24 hours, and at times for 3 or 4 days.

Throughout Italy there is a general tendency for all cloud bases to lift about noon or early afternoon. Figure 23-23 gives in tabular form the mean number of days with ceiling equal to or

greater than 1,000 feet and visibility equal to or greater than 2½ miles.

c. SURFACE WINDS—The most outstanding feature of surface winds in this NIS Area is the change in direction in winter and summer. Along the Tyrrhenian Sea coast and the northern Adriatic Sea coast, offshore winds prevail in winter and onshore winds in summer. Surface wind roses for January, April, July, and October are presented in FIGURES 23-7 through 23-10. Along the Italian coast of the Adriatic Sea, winds are generally from a north to west direction in winter and from a northwest or southeast direction in summer. In the vicinity of Trieste the prevailing wind directions are northeast to east throughout the year. Spring and autumn are transitional periods. Inland the prevailing direction depends on the direction of the valleys opening to one side or the other of the peninsula. The Po Valley is a region of light winds, with an inward easterly component in summer and an outward westerly component in winter. In the Alps, surface winds vary greatly from place to place. On the most exposed summits, the wind does not differ greatly from the wind in the free atmosphere at the same height. In the valleys, winds are channeled along the main valley lines, the direction of flow being partly determined by the pressure gradient from above and partly by the local circulation system of the Alps.

Wind speeds over Italy are greatest during spring, averaging 7 m.p.h.; however, at some stations they are greatest in winter and, at others, in summer. The Po Valley wind roses show few calm days during winter, but the average speed is less than 4 m.p.h. in December and January. In the Trieste - Udine - Venice area, wind speeds as high as 80 knots occasionally occur during the bora. The winds, although violent, are of brief duration.

Along the coastal regions, a land and sea breeze is in circulation from April through September or October. The direction of land and sea breezes is determined by the form of the coast. In peninsular Italy there are many hilly areas along the coast, and flow by day tends to be onshore along the valley and to stay in that direction. The land breeze by night is guided in this way to an even greater extent. At Leghorn (Livorno) the sea breeze is from the west or southwest; at Ancona, from the southeast, and at Naples, from the west-southwest. The land breeze tends to come from the reverse direction. The sea breeze usually starts between 1000 and 1200 LST and continues until after 1700 LST, often reaching 10 to 15 m.p.h. during the afternoon. It is between 500 and 2,000 feet high. Although the land breeze may begin

at any time after dusk, it usually blows for only a short period after dawn. Its speed averages 10 m.p.h.

d. COMBINATION OF CLIMATIC ELEMENTS AFFECTING AIR-GROUND OPERATIONS—In general, chemical warfare depends on surface wind, temperature, and precipitation. For the most part, low surface wind speed and low-level stability are most desirable. Very low temperatures are undesirable because there is a danger of the contaminant freezing over, while exceedingly high temperatures cause excessive gaseous diffusion.

Air operations connected with chemical warfare would be unaffected by wind conditions throughout Italy, except for brief winds associated with fronts and the bora in northeastern Italy. Freezing temperatures occur only in the north during the winter. With the exception of the Apennines, where snow is present from late October through March, central and southern Italy and the islands are free of frost the year around. Excessive temperatures occur in Sicily and southern Italy during the summer, and precipitation would occasionally hinder air-ground operations in winter and spring. FIGURE 23-24 gives in tabular form the mean number of days with surface wind speed 4 to 12 m.p.h., temperature greater than 32° F. but less than 90° F., and no precipitation occurring.

Weather factors influencing parachute operations are much the same as those affecting low-level visual operations. In addition, low surface wind speeds are necessary. Except for winds associated with a frontal movement, bora, or sirocco, there are no constant unfavorable winds for parachute operations. Turbulence may be expected over the Alps and Apennines during a frontal passage or in clouds associated with thunderstorms. Visibility and ceilings would be limited in the north during winter. FIGURE 23-25 gives tabular data showing the mean number of days with ceilings equal to or greater than 1,000 feet, visibility equal to or greater than 2½ miles, and surface wind speed equal to or less than 12 m.p.h.

Because of the relatively infrequent occurrence of strong winds over Italy, favorable conditions for incendiary bombing are rare. The western coastline and Sicily have the maximum number of days with favorable high winds, and the Po Valley Region and mountain areas have the least. During winter and spring, the afternoon hours are predominantly the best time for incendiary bombing. FIGURE 23-26 presents in tabular form the mean number of days with surface wind speed equal to or greater than 19 m.p.h. and no precipitation occurring.

(Text continued on page 23-18)

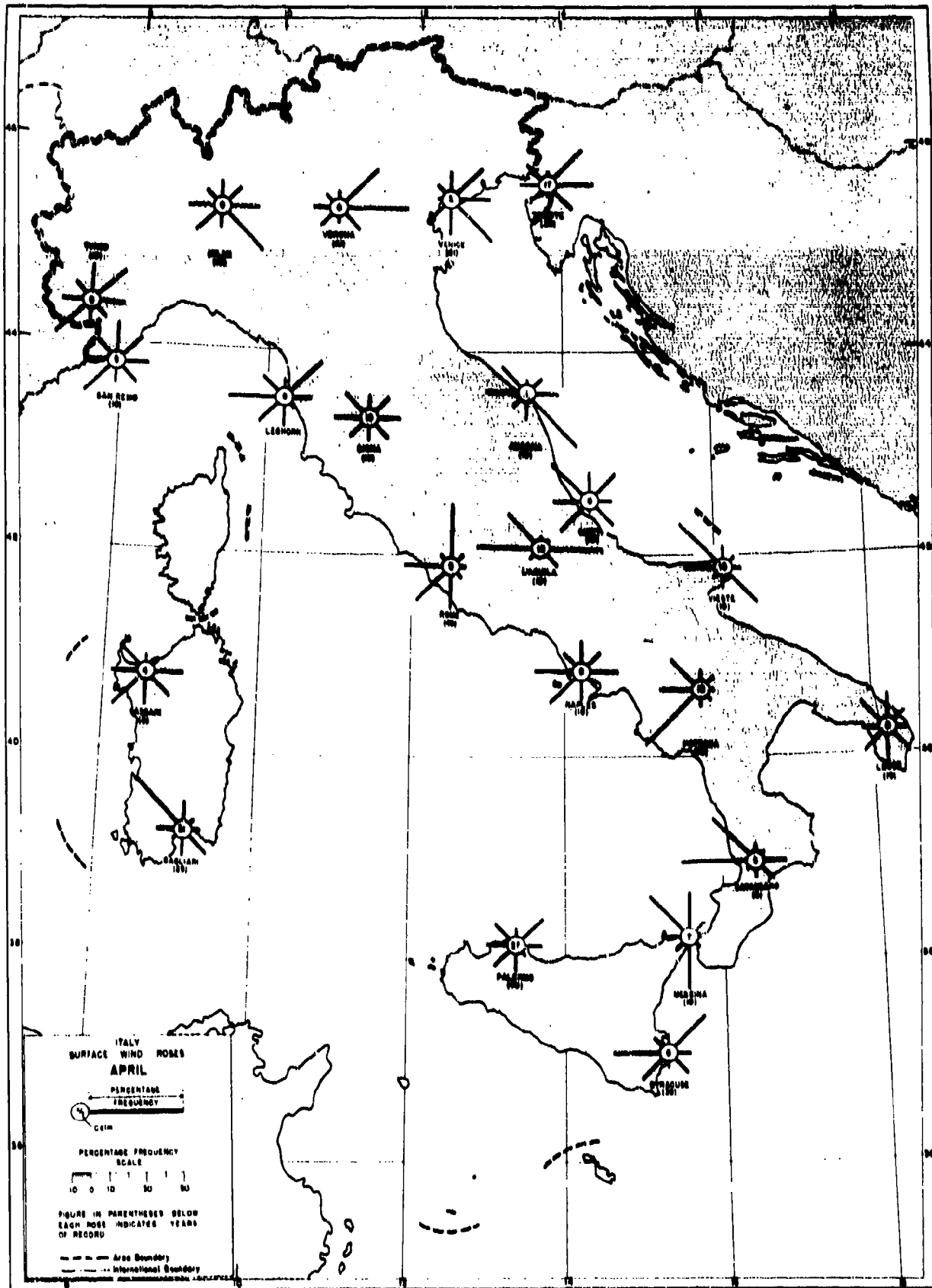


FIGURE 23-8. SURFACE WIND ROSES, APRIL



FIGURE 23-9. SURFACE WIND ROSES, JULY

3. Ground surface operations

a. **PRECIPITATION** — The relief of Italy greatly influences the amount of precipitation (FIGURES 23-11 and 23-27). The heaviest rainfall occurs in the Italian Alps. Although data are not available, it is estimated that in some sections of the Alpi Dolomitiche over 120 inches are recorded annually. The mean annual rainfall at Maniago, for example, is 92.1 inches. The least amount of precipitation (20 to 25 inches) occurs in the lowlands of southern Italy, Sicily, and Sardinia. With a few exceptions, the general movement of rain-bringing air masses is from the west; the western side of the mountains usually has the greatest amount of rainfall, and the plains on the sheltered eastern side have the least. The greater amounts of rainfall in the peninsula are found on the western side of the northern Apennines. Although data show an average of only about 30 inches in the Apennines, a few isolated localities on the western side average 60 to 70 inches in the south and up to 100 inches in the north. The West Coast Region has more rainfall (30 to 50 inches) than the East Coast Region (20 to 40 inches), especially in the southern part of the peninsula. Sicily and Sardinia are dry, averaging about 20 to 30 inches annually.

The rate at which rainfall increases with altitude is much more irregular than that for temperature. In the regions of Southern Italy, Sicily and Sardinia, the maximum amount of rainfall occurs at an altitude of about 2,500 feet; in the northern Apennines and the Alps, it occurs at 4,000 to 5,000 feet.

In peninsular Italy a severe drought occurs during summer; less than 1 inch falls in Southern Italy along the Ionian Sea and Tyrrhenian Sea as far north as Rome and in the islands of Sicily and Sardinia. The length and completeness of this summer drought tend to diminish northward. The maximum rainfall occurs during winter. Farther north along the coastlines, in the Apennines and in the Po Valley Region, there is an increasing tendency for two rainfall maxima—autumn and spring. October and November are the wettest months in these regions, but the rainfall remains comparatively high during the winter months. In the Alps and the Po Valley Region, the season of

NOTE Ground surface operations are affected, either directly or indirectly, by many meteorological elements; however, precipitation, temperature, and relative humidity are the most important. Discussion of other meteorological elements is found in Subsections on Air Operations and Air-ground Operations. Some aspects of temperature and precipitation are discussed in the Subsection on Regional Discussion of Climate.

rainfall becomes more of a continental type, with a minimum fall in winter and a maximum in spring and autumn. A few places in the Alps have their maximum amount of rainfall during the summer.

Rainfall frequency varies greatly from place to place (FIGURES 23-12 and 23-28). In general, the Alps average over 100 days per year with rain, at higher elevations the average being over 125 days; the Po Valley and Apennines, about 110 days; the East Coast and the West Coast, about 95 to 100 days; and the islands, about 100 days. Taranto, in Southern Italy, has only 68 days per year with precipitation equal to or greater than 0.004 inch.

Most of the rain falls in heavy showers, particularly in Southern Italy and the Po Valley. This is also true of the Alps during summer. On the western slopes of the Apennines and along the Tyrrhenian Sea coast, steady, continuous rain may occur with onshore winds, and drizzle is characteristic of the wet sirocco in the Adriatic. Maximum 24-hour precipitation is presented in tabular form in FIGURE 23-29, and absolute maximum and minimum precipitation is similarly presented in FIGURE 23-30.

A certain amount of precipitation, which has been included as rain, actually falls as snow. No accurate data are available on snowfall amounts. Either the period of record is doubtful or the definition of amount of snowfall is missing. Snowfall is important mainly in the mountainous regions of the north and in the Alps. FIGURE 23-31 gives tabular data showing the mean number of days with snowfall. The Alps have the greatest number of days with snowfall (33 to 56 days per year at some stations). L'Aquila, in the Apennines, has 17 days per year with snowfall. The Po Valley Region averages 6 to 8 days per year. In the peninsula, the east coast has more snow than the west coast. Trieste has 6.0 days per year with snowfall, Ancona has 4.1 days, and Venice has 2.0 days; while Genoa has 1.7 days per year, Rome has 1.6, and Naples has 1.1 days. Except for the higher mountain tops, Southern Italy, Sardinia, and Sicily average less than 2 days per year. Throughout Italy the maximum snowfall occurs in January and February.

Permanent snow cover occurs in the Alps above a height varying from 8,800 to 9,800 feet. A few places in the northern Apennines also have permanent snow cover. Monte Etna has some snow near the summit during most of the year, but at a level slightly below that of permanent snow cover. Large areas of the Apennines, as far south as the Provincia Reggio di Calabria, are snow covered for three or more months. The practical importance of the snow cover is small except for its influence on trans-Alpine routes.

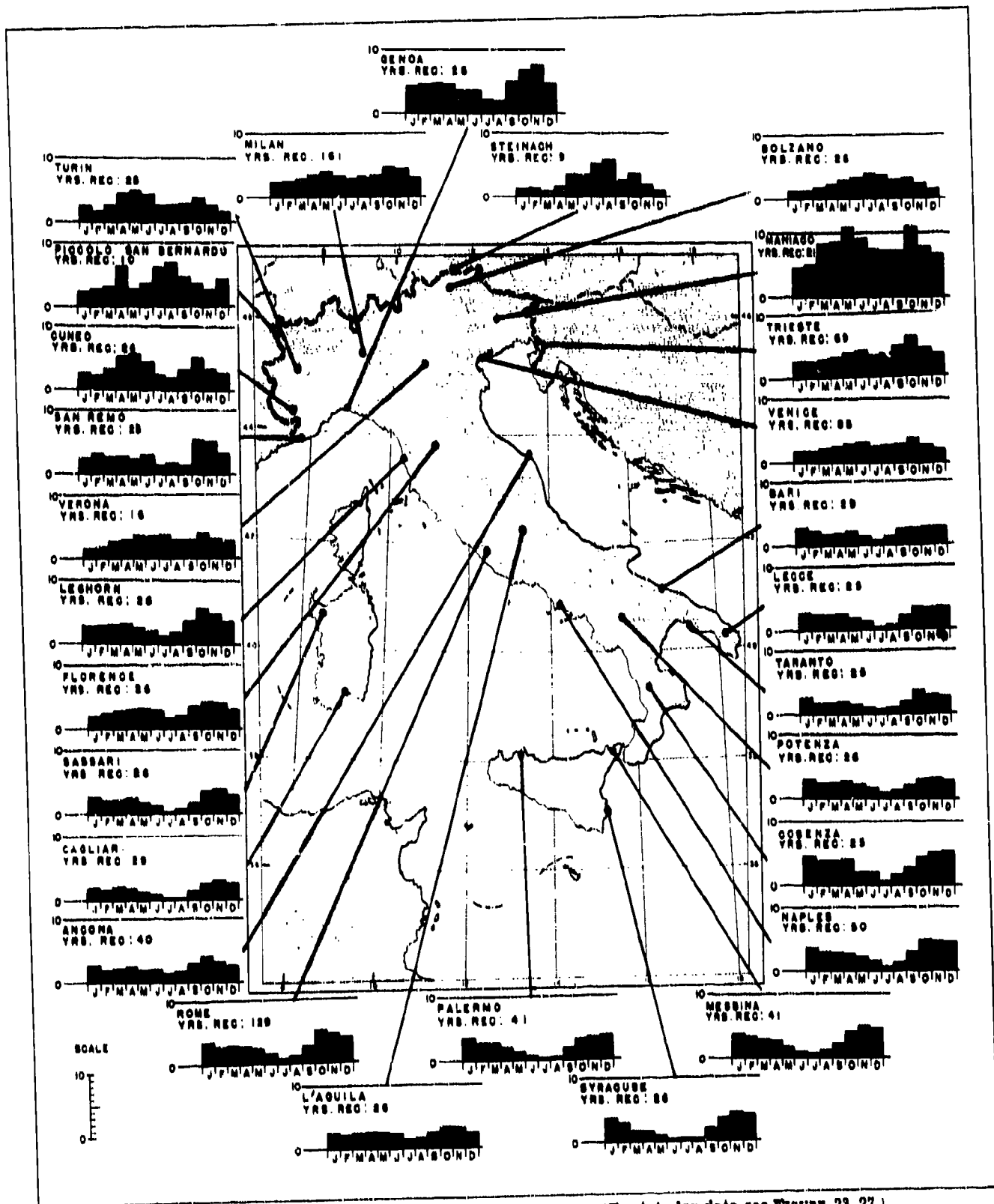


FIGURE 23-11. MEAN MONTHLY PRECIPITATION (INCHES). (For tabular data see FIGURE 23-27.)

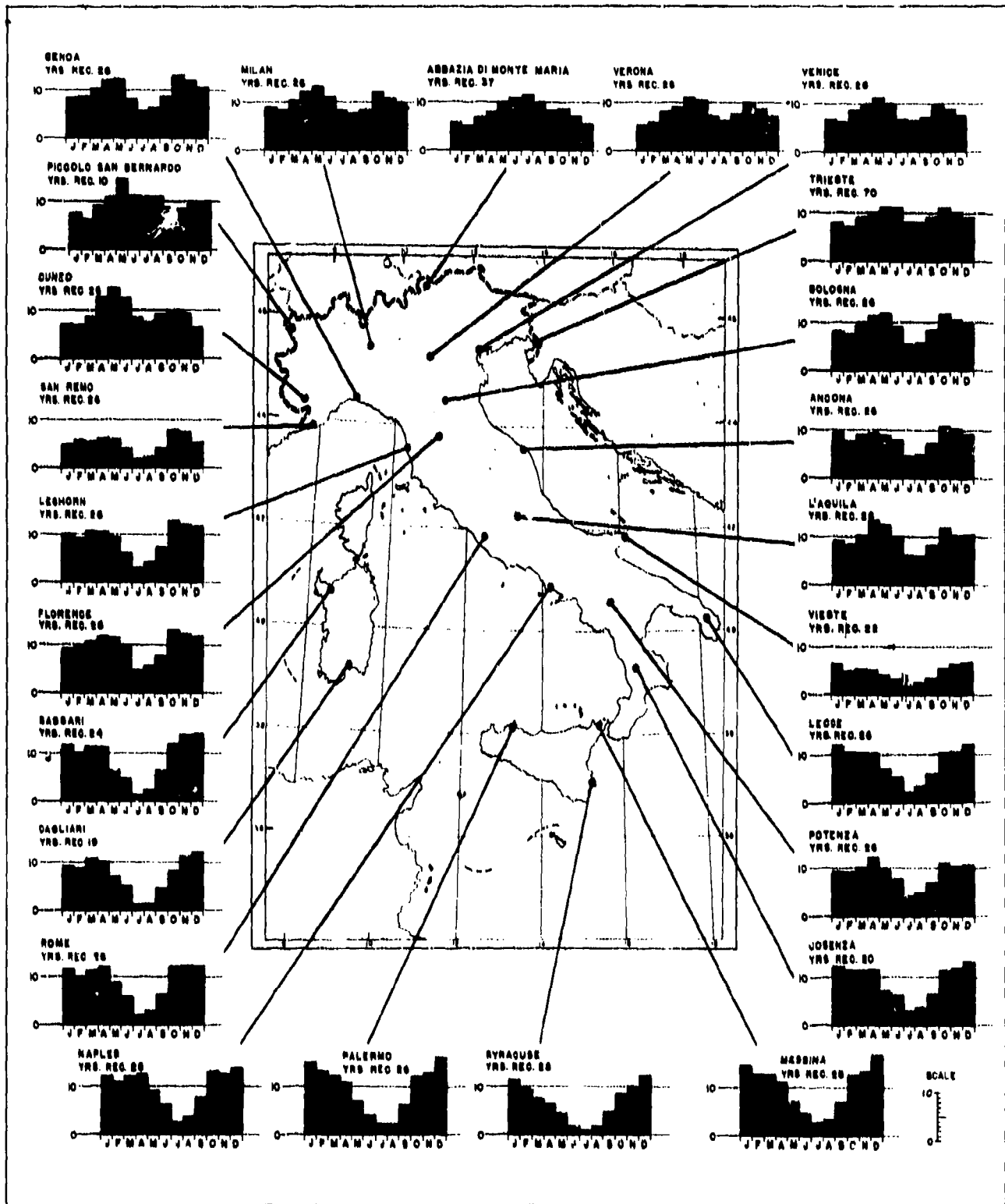


FIGURE 23-12. MEAN NUMBER OF DAYS WITH PRECIPITATION ≥ 0.004 INCH. (For tabular data see FIGURE 23-28.)

b. TEMPERATURE — Mean daily maximum and minimum temperatures are presented graphically in FIGURE 23-13 and in tabular form in FIGURE 23-32. In winter the lowest temperatures are, of course, experienced on the higher parts of the Alps and Apennines. At lower altitudes the coldest part of the country is in the Po Valley, where the average daily minimum temperatures in the western part are about 30° F. during January and February. The warmest portion is the east coast of Southern Italy and the coastal areas of Sicily (Trapani has a January daily minimum of 50° F. and a January mean of 54° F.). The West Coast Region is warmer than the East Coast Region, and the interior is colder than either coastal region. Winters are mild throughout most of the peninsula, especially the west coast. January is the coldest month.

During summer, the southern portion of Italy and Sicily have the highest mean daily temperatures. Cosenza has a mean July maximum of 93° F. and Palermo has an August maximum of 89° F. The coolest region is the Alps (Piccolo San Bernardo records a mean July maximum of 56° F.). The Po Valley, though much colder in winter, becomes almost as hot as the southern lowlands in summer. (Bologna and Milan have mean July maxima of 87° F. compared with 86° F. at Brindisi and Messina.) During July and August, the east coast and west coast maintain approximately the same mean daily maximum temperature. In the Apennines Region, mean daily maximum temperatures are a few degrees higher than those in the coastal regions, but the daily range of temperature is greater and nights are more comfortable than along the coasts. Throughout the country, temperatures normally decrease with altitude.

The absolute maximum and minimum temperatures are illustrated graphically in FIGURE 23-14 and tabularly in FIGURE 23-33. The following absolute maximum temperatures have been recorded: 107° F. at Bari in the East Coast Region, 108° F. at Rome in the West Coast Region, and 114° F. at Palermo in Sicily. Temperatures over 100° F. have occurred in the Alps (103° F. at Cuneo). Available data indicate that during the winter all stations in Italy experience subfreezing temperatures, with the exception of Messina, Sicily, where the minimum is 33° F. Steinach, in the Alps, has reported temperatures as low as -15° F. in February.

c. RELATIVE HUMIDITY — In Italy, there are wide local and seasonal variations of relative humidity (FIGURE 23-34). The annual mean is rarely above 70%, except along the northeast coast where Venice reports 73%. Throughout Italy there is a maximum in winter and a minimum in summer, and along the northwest coast (San Remo

to Genoa) is there little seasonal variation. The annual range is much greater in the interior than on the coast. Benevento records an average of 75% in January and only 54% in July, while Naples reports 61% in January and 56% in July.

One very noticeable feature of the Italian climate is the low relative humidity during the summer months; the relative humidity varies inversely with the temperature. Compared with northern Europe or the east coast of the United States, afternoon humidities are low. During the summer months, the average relative humidity at 1500 LST is 52% at Domodossola, 47% at Milan, 41% at Bologna, and 50% at Taranto. These values give an indication of why Italy, although extremely hot in summer, has tolerable heat instead of the unbearable moist heat common to some areas at similar latitudes.

The islands of Sicily and Sardinia have the same trend in relative humidity as the remainder of this NIS Area. The normal is approximately 70% in Sicily and 65% in Sardinia, with a maximum in winter and a minimum in summer.

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

(1) Clothing

(a) GENERAL REQUIREMENTS — Clothing requirements for Italy are influenced by temperature, precipitation, and strong winds. Within the Area, clothing requirements may differ considerably because of climatic changes with elevations and exposure to marine, desert, or mountain winds. Four different types of clothing assemblies are needed therefore for year-round environmental protection. The warm-, cool-, and cold-weather clothing assemblies are required for most of Italy, with the ultra-cold-weather assembly needed at high elevations during the winter. FIGURE 23-15 gives the components of each assembly. The mean monthly temperatures for each assembly are as follows:

CLOTHING ASSEMBLY	MEAN MONTHLY TEMPERATURES
Warm-weather	Above 68° F.
Cool-weather	50° to 68° F.
Cold-weather	14° to 50° F.
Ultra-cold-weather	Below 14° F.

(b) EXCEPTIONS AND ADDITIONS FOR INDIVIDUALS IN A PROTECTED ENVIRONMENT — The assemblies in FIGURE 23-15 have been computed on the assumption that the individuals wearing them will be living in the open for 24 hours a day. Requirements for individuals in permanent or semipermanent installations may differ somewhat; for instance, a raincoat may be substituted for the poncho, blankets for the sleeping bag, or a woolen jacket or overcoat for the pile field jacket. Also,

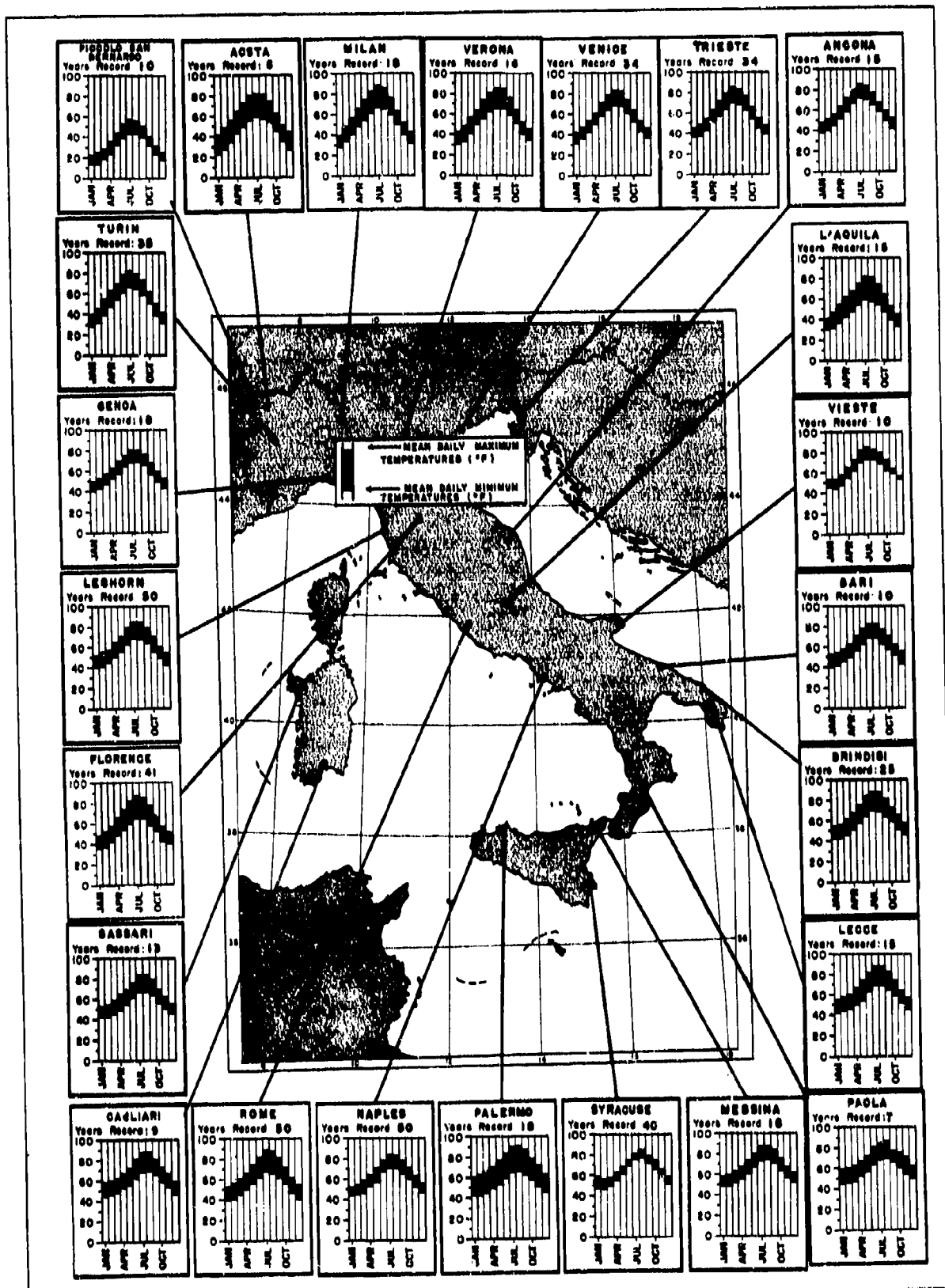


FIGURE 23-13. MEAN DAILY MAXIMUM AND MINIMUM TEMPERATURES (°F.). (For tabular data see FIGURE 23-32.)

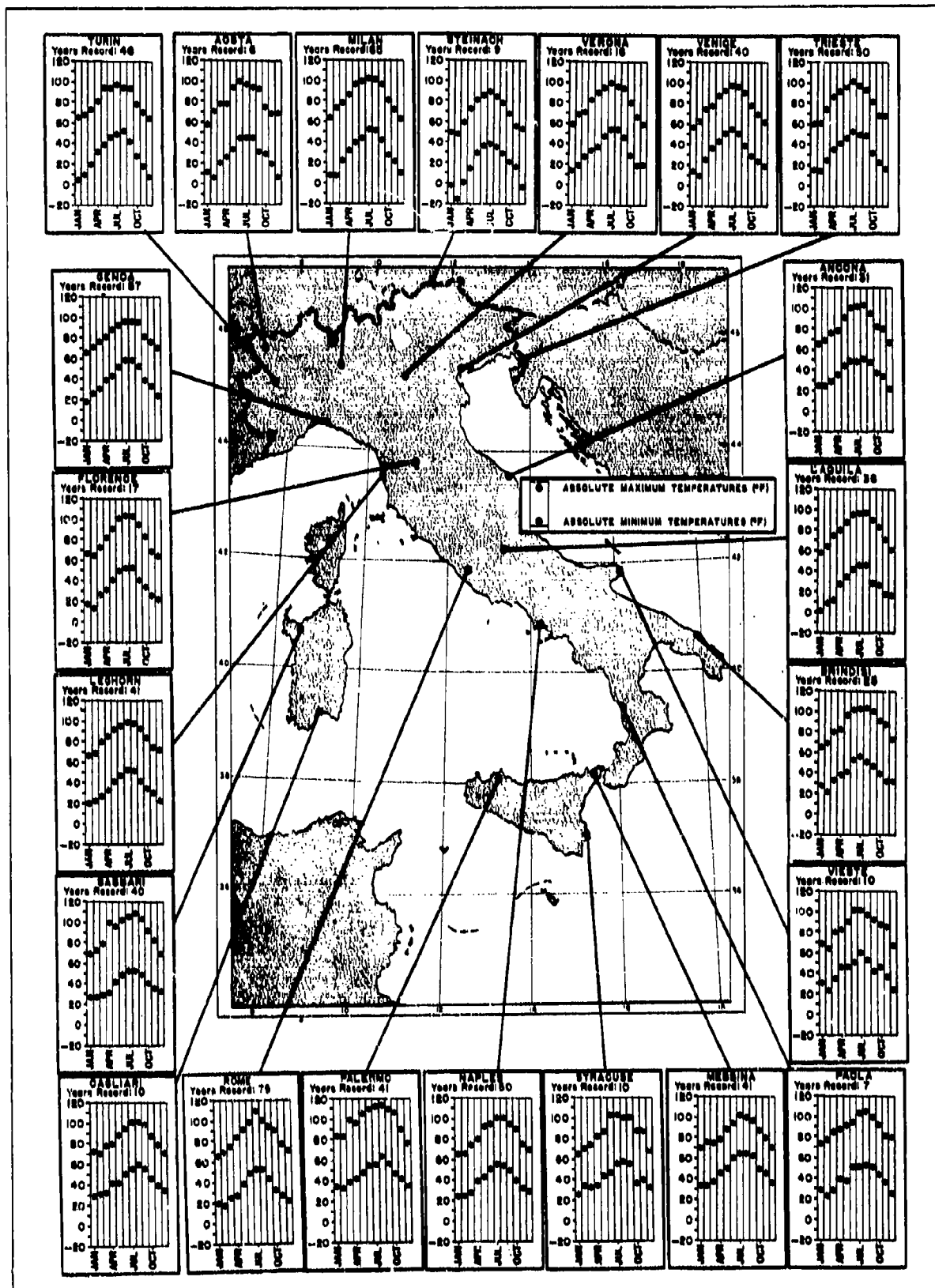


FIGURE 23-14. ABSOLUTE MAXIMUM AND MINIMUM TEMPERATURES (°F.). (For tabular data see FIGURE 23-33.)

FIGURE 23-15. CLOTHING ASSEMBLIES

ITEMS	WEATHER			
	Warm	Cool	Cold	Ultra-cold
BODY CLOTHING:				
Water-repellent, wind-resistant jacket with hood	..	X	X	X
Pile jacket to be worn under water-repellent, wind-resistant jacket	..	..	X	X
Parka-type overcoat (with pile liner) or pile parka worn under water-repellent, wind-resistant parka	..	..	..	X
Lightweight cotton shirt and trousers (poplin oxford cloth)	X	..	..	..
Cotton shirt and trousers (herringbone twill weight)	X	..	..	..
Lightweight knit shirt (all wool with long sleeves)	X	..	..	..
Flannel or woolen shirt and trousers	..	X	X	X
Water-repellent, wind-resistant, cotton trousers (to be worn over woolen trousers)	..	..	X	X
Woolen, high-neck, long-sleeve sweater	..	X	X	X
Cotton underwear	X	X	..	..
Winter undershirt and drawers	..	..	X	X
Overwhite parka and trousers (to be worn in snow-covered areas)	..	..	X	X
Lightweight poncho	X	X	X	X
FOOTWEAR:				
Similar to U.S. Army service boot or combat boot with mediumweight woolen socks	X	X	..	..
Similar to U.S. Army combat, rubber, insulated boot with one pair woolen cushion-sole socks	..	..	X	..
Similar to U.S. Army Arctic-type felt boot with one pair cushion-sole woolen socks, two pairs woolen ski socks, and one pair felt insoles; or similar to U.S. Army mukluk boot with one pair cushion-sole woolen socks, two pairs woolen ski socks, one pair felt socks, and two pairs felt insoles	..	..	..	X
HEADGEAR:				
Cotton, visored cap	X	X	..	..
Cotton, visored cap with pull-down flaps	..	..	X	X
Water-repellent, wind-resistant, pile-lined cheek protector	..	..	..	X
Wool muffler	..	..	X	X
Sun helmet	X	..	..	..
HANDGEAR:				
Leather gloves with woolen inserts	..	X	X	X
Mittens, similar to U.S. Army Arctic-type mittens with woolen inserts	..	..	..	X
Overwhite mittens (to be worn in snow-covered areas)	..	..	X	X
SLEEPING EQUIPMENT:				
Woolen blanket	X	..	..	..
Woolen sleeping bag with water-repellent case	..	X	..	..
Mountain-type sleeping bag (down and feather filled) with water-repellent case	..	..	X	..
Arctic-type sleeping bag (two down- and feather-filled cases) with water-repellent case	..	..	..	X

the service-type shoes with one pair of medium-weight woolen socks and a pair of overshoes might be more desirable than the footwear recommended in the cool-weather assembly.

(c) **REGIONAL REQUIREMENTS** — This NIS Area is divided into eight regions, each of which has its distinctive clothing requirements. The schedule of clothing requirements for each region is shown in FIGURE 23-16.

(d) **SPECIAL REQUIREMENTS** — Except in localities high in the mountains, insect repellents, headnets, mosquito gloves, and similar items may be necessary during the summer and autumn for protection against insects. Spiders, lizards, mosquitoes, flies, sandflies, ticks, fleas, and lice are found at low and moderate elevations throughout this NIS Area. For protection against sandflies, a fine bar (finer than the 18-mesh mosquito bar)

should be used. Trousers should be tucked into boots and long sleeves and collars kept buttoned. High boots or leggings should be worn as protection against snakes and scorpions.

Protection from heat and the rays of the sun is essential within this Area, particularly in the southern part of the peninsula and in Sicily. Throughout Italy tinted glasses or goggles might be needed at any time of year as a protection against sun glare.

Thorny shrubs and rough, rock surface in many regions cause greater than normal attrition of clothing. Therefore, larger than normal stocks of replacement clothing are required.

(2) **Storage** — Temperature extremes, precipitation, high wind, dust, and wet ground are the main environmental factors to be considered for protection of items stored in the open. Since sub-

FIGURE 23-16. CLOTHING REQUIREMENTS

REGIONS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
ITALIAN ALPS:												
Below 2,000 feet.....	D	D	D	C	C	C	W	W	C	C	D	D
2,000 to 5,000 feet.....	D	D	D	D	C	C	C	C	C	D	D	D
5,000 to 8,000 feet.....	D	D	D	D	D	D	D	D	D	D	D	D
Above 8,000 feet.....	U	U	D	D	D	D	D	D	D	D	D	U
PO VALLEY.....												
	D	D	D	C	C	W	W	W	C	C	D	D
EAST COAST:												
Below 1,000 feet.....	D	D	D	C	C	W	W	W	W	C	C	D
1,000 to 2,000 feet.....	D	D	D	C	C	C	W	W	C	C	D	D
Above 2,000 feet.....	D	D	D	D	C	C	C	C	C	C	D	D
WEST COAST:												
Below 1,000 feet.....	D	D	C	C	C	W	W	W	W	C	C	D
1,000 to 2,000 feet.....	D	D	D	C	C	C	W	W	C	C	D	D
Above 2,000 feet.....	D	D	D	D	C	C	C	C	C	C	D	D
APENNINES:												
Below 1,000 feet.....	D	D	D	C	C	W	W	W	W	C	C	D
1,000 to 2,000 feet.....	D	D	D	C	C	C	W	W	C	C	D	D
2,000 to 4,000 feet.....	D	D	D	D	C	C	C	C	C	C	D	D
Above 4,000 feet.....	D	D	D	D	D	C	C	C	C	D	D	D
SOUTHERN ITALY:												
Below 1,000 feet.....	D	D	C	C	C	W	W	W	W	C	C	C
1,000 to 3,000 feet.....	D	D	D	C	C	W	W	W	C	C	C	D
3,000 to 5,000 feet.....	D	D	D	D	C	C	C	C	C	C	D	D
Above 5,000 feet.....	D	D	D	D	D	C	C	C	C	D	D	D
SICILY:												
Below 1,000 feet.....	C	C	C	C	C	W	W	W	W	C	C	C
1,000 to 3,000 feet.....	D	D	D	C	C	C	W	W	W	C	C	D
Above 3,000 feet.....	D	D	D	D	C	C	C	C	C	C	D	D
SARDINIA:												
Below 1,000 feet.....	D	D	C	C	C	W	W	W	W	C	C	D
1,000 to 2,000 feet.....	D	D	D	C	C	C	W	W	C	C	C	D
Above 2,000 feet.....	D	D	D	D	C	C	C	C	C	C	D	D

NOTE W - warm-weather clothing assembly, C - cool-weather clothing assembly, D - cold-weather clothing assembly, U - ultra-cold-weather clothing assembly.

freezing temperatures occur throughout the Area in winter and at high elevations in the mountains during the summer, subsistence supplies should be protected from damage caused by alternate freezing and thawing. Protection against high temperature is needed throughout the Area in summer, particularly in the south. Subsistence items should be protected by cold-storage facilities, if possible, or should be covered and well spaced to obtain maximum ventilation.

Protection against rain, hail, and/or snow is required throughout this Area the year around.

Winds such as the bora along the northeastern and eastern coasts and the sirocco in the south reach velocities which require special precautions to prevent damage to supply coverings, and in the case of the sirocco protection is needed against contamination by dust.

Stream valleys should be avoided as storage sites because of the danger of flash floods which are associated with the common heavy thundershowers. River deltas should likewise be avoided because of

the danger of soft, wet ground. If supplies must be stored in marshy or poorly drained sections, they should be given maximum protection against wet ground. Wood for dunnage is usually available in limited quantities in the mountains. Wood is more plentiful in the north than in the south.

(3) *Shelter* - Shelter should be provided throughout the year. Except along some coasts there is a considerable daily range in temperature; even in the summer it often becomes cold at night. Tents similar to those developed by the U. S. Army for temperate zone operations, such as the squad or wall tents, would provide adequate protection if heated. They are needed also for protection against rain or snow and for shade during the day.

A tent similar to the flyproof kitchen tent developed by the U. S. Army for use in the tropics should be used wherever food is being served. Floors for tents are desirable in all seasons, and screening is necessary during the summer and autumn. Timber for construction is available in limited quantities in the mountains.

4. Amphibious operations

For ease of discussion, the Italian coastline has been divided into five different regions. It should be noted that the figures given in the following subsections deal only with the immediate coastline and adjacent waters.

a. ISLAND OF SARDINIA — The island of Sardinia is in a sea area in which west-to-northwest winds predominate the year around. This is especially true on the western side of the island. On the eastern side of the island, the winds are fairly evenly distributed around the compass from October through March; during the remainder of the year, southwest-to-northwest winds are most frequent, even though the winds are usually light and variable. During summer land and sea breezes are well developed. The average wind speed is Beaufort force 3 in spring and summer and force 4 during the remainder of the year. Wind speeds equal to or greater than Beaufort force 8 are recorded in about 10% of the observations from late autumn to early spring on the western side of the island and about 4% to 6% on the eastern side. During the remainder of the year they are recorded in less than 2% of the observations.

Moderate to rough seas are prevalent from late autumn to early spring. Rough seas do occur in summer but with only about one-third the frequency of winter. About 85% of the observations during summer show calm to light seas.

The amount of cloudiness is greatest in winter and least in summer. In winter, the mean cloud amount is 5- to 6-tenths, decreasing in summer to 2- to 3-tenths.

In general, the visibility is good in this region. The main restrictions to visibility are heavy rain, fog, dust, or haze. Haze and fog have a maximum occurrence during the spring and summer months. May and June have the worst visibility over the sea areas, with 1% to 5% of the observations to the west and north of the island showing visibilities less than $\frac{1}{2}$ mile.

The coolest sea-water temperature is about 55° F. in February, and the warmest, about 75° F. in August.

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

b. LIGURIAN SEA COAST OF ITALY FROM SAN REMO TO ISOLA D'ELBA — The winter season in this region is characterized by northwest to northeast winds. These northerly winds, often strong and squally, may give clear, dry, cold weather or bring overcast skies with rain or snow in the Gulf of Genoa. To the south in the vicinity of Leghorn and Elba, the north winds are not so frequent and strong winds from southerly directions are occasionally experienced. About 60% of the wind observations show a speed equal to or less than Beaufort force 2 to 3 and 10% show speeds equal to or greater than force 8.

During spring, there is a transition from northerly winds of winter to southerly winds of summer. This transition is more than half completed during the spring season. The prevailing winds during summer are from the southeast in the northern part of the region and from the west in the southern part. Diurnal land and sea breezes are well developed, and strong winds are rare during this season. Over 80% of the observations show wind speeds equal to or less than Beaufort force 3 and less than 2% of the observations have a speed equal to or greater than force 8.

The autumn season is a transitional period from summer to winter conditions. The transition is more than half completed by the end of November. In general, wind speeds of autumn are less than those of spring; however, occasional strong winds can be expected.

There is great variability in sea and surf conditions in this region because of the change in wind direction from winter to summer and the varying exposure of the coastline. The sea condition is slight or calm about 80% of the time. In general, the frequency of rough seas is greater in spring than in winter, and autumn has the greatest frequency of all seasons.

Mean cloudiness in spring, the cloudiest time of the year, is approximately 7-tenths.

Visibility is generally good in this region. During the months of March, June, August, and September, 1% to 5% of the observations show a visibility less than $\frac{1}{2}$ mile; during the remainder of the year, visibility less than $\frac{1}{2}$ mile is shown in less than 1% of the observations. Visibility conditions vary from place to place along this coastline. For example, at Genoa spring is the most foggy season of the year, while the visibility at Leghorn improves from winter to spring.

The mean sea-water temperature varies from a mean of about 53° F. in February to a mean of about 76° F. in August.

c. **TYRRHENIAN SEA COAST OF ITALY AND SICILY** — During winter this region has no predominant wind direction, the wind direction being fairly evenly distributed around the compass. In the nearshore waters of this region as far south as Naples, winds from the north and northeast occur more frequently than from other directions. About 55% to 60% of the wind observations in the coastal waters record a speed equal to or less than Beaufort force 2 to 3 and 10% record a speed equal to or greater than force 8.

Wind directions of spring are essentially transitional between winter and summer conditions, but in general they are more like the winds of summer. Winds from a southeast through west-to-northwest direction become more frequent. During spring, 70% to 90% of the observations show a wind speed equal to or less than Beaufort force 3 and less than 2% show a speed equal to or greater than force 8.

During summer, the prevailing winds in the coastal waters are from a direction between southwest and north. Land and sea breezes are well established during this season, and calms are much more frequent. There is a general tendency for more onshore winds, which would increase the surf zone. About 90% of the observations record a speed equal to or less than Beaufort force 3 and less than 2% show a speed equal to or greater than force 8.

Autumn is a transitional period from summer to winter conditions. Wind directions become more evenly distributed around the compass. About 55% to 70% of the observations show wind speeds equal to or less than Beaufort force 3. The coastal waters from 40°N. to Messina have less than 2% of the observations with a wind speed equal to or greater than force 8; the remainder of the region has 2% to 10% of the observations with wind speeds equal to or greater than force 8.

Observations of sea condition are often misleading since often the observation applies only to the vicinity where it is taken. The sea condition is slight (height less than 3 feet) or calm about 50% of the time in this region in winter. In summer, the sea condition is slight or calm about 80% to 85% of the time. In some sections, spring has more rough seas, or slightly fewer rough seas and more moderate seas than winter.

Cloudiness in the coastal waters of this region is greatest in winter and least in summer. The mean total cloud amount varies from 50% to 75% in winter to less than 25% in the months of July and August. Spring and autumn are transitional periods between these two extremes.

Visibilities in this region are generally good. Fog is rather infrequent and rarely persists until mid-

day. Visibilities less than ½ mile are recorded in March, May, and June in 1% to 5% of the observations; during the remainder of the year, visibilities less than ½ mile occur less than 1% of the time.

The mean sea-water temperature for the coastal waters of this region for one representative month of each of the four seasons is as follows: February, 56° F.; May, 64° F.; August 78° F.; and November, 64° F.

d. **SOUTH AND EAST COASTS OF SICILY AND IONIAN SEA COAST OF ITALY** — During winter, wind directions are uniformly distributed around the compass, except in the coastal waters off southern Sicily where west and northwest winds are more frequent. About 60% of the observations in this region show wind speeds equal to or less than Beaufort force 3, and 2% to 10% of the observations show speeds equal to or greater than force 8.

The wind directions in spring are similar to those of winter. About 60% to 80% of the observations show a wind speed equal to or less than Beaufort force 3, and less than 2% show a speed equal to or greater than force 8.

During summer, the most frequent wind directions in the coastal waters of eastern Sicily and southern Italy are southwest, northwest, and north, while off southwestern Sicily the most frequent direction is west to northwest. About 80% to 90% of the observations record a wind speed equal to or less than Beaufort force 3.

The winds during autumn are similar to those in spring. Autumn is a transitional period from summer to winter conditions.

The sea and surf conditions in the coastal waters of this region are quite variable, depending upon the exposure of the beach to open water and the wind direction. In general, moderate and rough seas are more frequent in the waters off southern Sicily than off eastern Sicily and southern Italy. The following is the percentage of observations with calm or slight seas in the coastal waters off southern and eastern Sicily and southern Italy, respectively: February, 50% and 65%; May, 65% and 80%; August, 85% and 85%; and November, 65% and 65%.

The cloudiness in this region follows the same pattern as in the remainder of the Mediterranean, with winter being the cloudiest season and summer having very little cloudiness. The mean total cloud amount is about 5- to 6-tenths in winter and 1- to 2-tenths in summer.

Visibility in the coastal waters of this region is generally good. Although fog is infrequent throughout the year, it is more frequent in spring and early summer than during other seasons. Reduced visibility may occur with sirocco winds in any month of the year. About 1% to 5% of the

observations for the months February through April and June through August have visibilities less than $\frac{1}{2}$ mile in the coastal waters of southern and eastern Sicily.

The mean sea-water temperature for the coastal waters of this region for one representative month of each season is as follows: February, 57° F.; May, 64° F.; August, 78° F.; and November, 62° F. off southern Italy and 68° F. off southern Sicily.

6. ADRIATIC SEA COAST OF ITALY AND TRIESTE —

During winter, the winds in the coastal waters of this region show great variability, depending on the location. The prevailing wind in the vicinity of Trieste is from the southeast to northeast; near Venice they are from the northwest to northeast; southward along the coast they are from the west to northwest. A cold, dry northeast wind (the bora) is prevalent in the northern part of the region. The warm southeast sirocco also occurs frequently and brings much low cloud and rain. Winds of Beaufort force 3 or less account for 60% to 70% of the observations; 2% to 10% of the observations show wind speeds equal to or greater than force 8.

During spring, the prevailing winds are different from one location to another in this region. At Trieste the prevailing direction is southeast to northeast; near Venice it is north to south through east, and southward along this coast the directions are fairly evenly distributed around the compass. The wind speed shows a decrease in spring; 70% to 90% of the observations have a speed equal to or less than force 3. Less than 2% of the observations show a speed equal to or greater than force 8.

In summer, the winds are very similar to those of spring. About 80% of the observations have a speed equal to or less than force 3 and less than 2% have a speed equal to or greater than force 8. Land and sea breezes are well developed during this season, and the land breeze usually persists until noon.

During the first part of autumn, the winds are transitional from summer to winter conditions. Winds of this season are, in general, the same as those of winter. About 60% to 70% of the observations show a speed equal to or less than Beaufort force 3, and 2% to 10% have a speed equal to or greater than force 8.

Sea, swell, and surf conditions in this region are as variable as the wind. The bora gives heavy seas and surf on this coast. The sirocco blows more or less parallel to this coast and gives rough seas and surf, increasing in violence toward the north. The percentages of observations of calm or slight sea conditions for 1 month of each season

in this region are as follows: February, 65%; May, 80%; August, 90% to 95%; and November, 70%. In general, more rough and moderate seas are experienced in the southern half of the region.

Cloudiness in this region is more variable than in most places in the Mediterranean. For example, in the north the climate resembles the continental-type climate of interior Europe; the average cloudiness is 5- to 6-tenths for the year, varying from 6- to 7-tenths in winter to 3- to 4-tenths in July and August. Toward the south, where the climate is of the Mediterranean type, the yearly mean cloud amount is 4- to 5-tenths, varying from 5- to 6-tenths in winter to 1- to 2-tenths in July and August.

The visibility in this region is not as good as in other parts of the Mediterranean. Fog is frequent during winter in the northern part of the region. During this period, 1% to 5% of the observations show a visibility less than $\frac{1}{2}$ mile and 10% to 20% less than 5 miles. During spring the visibility improves and is generally good during summer. In autumn, the visibility returns to wintertime conditions.

There is a greater difference in the mean sea-water temperature in this region than in other parts of the Mediterranean. The mean sea-water temperature for one representative month of each season for the northern and southern parts of the region, respectively, is as follows: February, 47° F. and 56° F.; May, 66° F. and 63° F.; August, 78° F. and 77° F.; and November, 59° F. and 61° F.

For this entire NIS Area, summer would offer the optimum conditions for a successful amphibious operation. Sea conditions are the least disturbed, and gale-force winds are at a minimum. Land and sea breezes are well developed, which would give the desired offshore wind during the night and early morning. One unfavorable feature would be the minimum cloudiness, which would not protect the operation from observation and attack from aircraft. Amphibious operations on a limited scale could successfully be carried out in other seasons at various locations, depending upon the synoptic situation present.

C. Meteorological facilities and organization (as of 1952)

1. Organization and personnel

The Italian Weather Service, known as the Servizio Meteorologico (SM), is organized as a division under the Inspectorate of Telecommunications and Assistance to Flight, a division of the Ministry of Air Defense. The Central Office of the SM is divided into four sections: Organization, Materiel, Research and Climatological, and Forecasting.

The Central Office supervises six regional meteorological offices. They are located in the Directorates of Telecommunications of the four Air Regions of Italy (Milan, Venice, Rome, and Brindisi) and the Air Commands of Sicily (Catania) and Sardinia (Cagliari). Under the jurisdiction of these regional offices are the following: UMA—Ufficio Metro, Aeroportuate (dependent meteorological office), PIM—Posto Informazioni Meteorologiche (supplementary meteorological office), and Stazione di Osservazioni (observing station). The 7 UMA's, 43 PIM's, and 194 observing stations are controlled by the regional offices as follows:

REGIONAL OFFICE	UMA	PIM	OBSERVING STATIONS
Milan	1	10	31
Venice	0	13	38
Rome	4	7	41
Brindisi	1	5	34
Catania	1	6	26
Cagliari	0	2	24

Authorized personnel for the Italian Weather Service are as follows:

	METEOROLOGISTS	ASSISTANTS	OBSERVERS
Central Office	22	44	59
Milan	10	20	21
Venice	5	14	17
Rome	21	42	47
Brindisi	6	16	20
Catania	7	16	13
Cagliari	7	10	13
Scientific-Experimental Observatories	6	6	
Totals	84	168	190

The 194 observing stations are made up of three classes. The number in each class and the service rendered is given in the following tabulation:

CLASS	NUMBER	SERVICE
1st	53	24-hour service
2nd	113	0300-2100Z only
3rd	28	0400-1800Z only

There are three research centers, which are located at Messina, Monte Cimone, and Sopralzano.

Information on broadcast frequencies, power, code forms, and stations normally broadcasting may be found in publications of the *World Meteorological Organization*.

2. Evaluation

The accuracy and reliability of surface weather forecasts up to 24 hours are good. Forecasts for over 48 hours are only in the experimental stages.

The accuracy and reliability of upper-air forecasts are only fair, because of the inexperience of

the personnel working in upper-air sections, the lack of data, and the unsatisfactory communication system. Almost all upper-air forecasts are for the lower 10,000 feet.

The Italian Weather Service does not have any unmanned observing stations nor does it have any aerial weather reconnaissance. The only source of in-flight reports are from commercial aircraft and a few military aircraft.

Upper-air balloon soundings are made twice daily at 0200Z and 1400Z, using U.S. radiosonde equipment. The Air Ministry has a workshop in which it repairs the reclaimed instruments.

3. Training

No universities in Italy offer courses leading to a degree in meteorology. A few weeks study of meteorology is required for some university courses in geophysics. Meteorologists for the Air Ministry Weather Service are obtained through the examination of candidates who have completed university training and obtained a degree in engineering, mathematics, or physics. Successful candidates are usually commissioned in the weather service as career weather officers. These officers are given postgraduate training by personnel of the Air Ministry. In the past, a regular academic course of approximately one year in duration has been pursued. There are no pilot weather officers in the Italian Weather Service.

4. Research

In the studies and climatology section of the central office, a research group of approximately 20 people has the responsibility for the theoretical and experimental studies for the weather service. At present, three projects have been initiated: 1) cloud seeding and artificial precipitation studies, a project being carried on experimentally at Monte Cimone and using balloons carrying carbon dioxide or silver iodide which is released within the clouds; 2) cloud chamber studies, the study of the formation of cumulus-type clouds; and 3) infrared studies. A spectroscopic analysis in the infrared portion of the solar spectrum is being made with a view toward determining the integrated value of the water vapor in the atmosphere as an index to weather.

D. Climatic data tables

The various climatic data tables referred to in Subsections A and B are contained in this Subsection. Stations listed in the tables are arranged by regions, i.e., Italian Alps, Po Valley, East Coast, West Coast, Apennines, Southern Italy, Sicily, and

Sardinia. Climatic data are given for an Austrian station close outside the geographic boundaries of NIS 17, because of the absence of data from the northernmost part of the NIS Area.

FIGURE 23-35, a map of station locations with an accompanying list giving latitude, longitude, and elevation of the stations mentioned in Subsections A, B, and D, appears at the end of the Section.

FIGURE 23-17. MEAN CLOUDINESS (TENTHS) AT SPECIFIED HOURS

REGION AND STATION	HOOR (LST)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
ITALIAN ALPS:															
Cuneo.....	0800	5.0	4.9	6.4	5.9	6.0	5.0	4.1	4.3	5.6	5.1	5.9	5.6	5.3	7
	1900	4.4	3.9	6.1	6.3	6.6	6.1	6.0	6.3	6.1	5.3	5.3	5.3	5.6	3
Trento.....	0800	5.2	4.9	6.1	6.4	6.3	5.1	4.3	4.8	6.0	5.6	5.9	5.5	5.5	11
	1900	5.0	4.5	5.9	7.4	7.8	7.4	5.8	5.9	6.0	6.0	5.7	5.5	6.1	7
PO VALLEY:															
Bologna.....	0800	6.7	6.3	6.6	5.9	5.7	4.4	2.8	3.0	5.1	5.7	7.0	7.6	5.6	9
	1900	6.9	6.5	6.9	7.1	6.8	5.3	3.8	4.8	5.3	6.1	6.6	7.8	6.2	3
Milan.....	0800	7.8	7.0	7.0	6.6	6.8	5.0	4.7	5.0	6.6	7.7	8.7	8.4	6.8	10
	1900	7.0	5.7	5.9	6.7	7.1	5.7	4.7	4.7	5.7	5.9	7.2	7.7	6.2	9
Parma.....	0800	7.5	6.7	6.9	6.4	6.6	5.0	4.0	4.5	5.9	6.7	7.7	8.0	6.3	10
	1900	7.0	6.1	6.3	7.1	7.5	6.0	4.8	5.6	6.0	6.3	7.5	7.8	6.5	8
Turin (Torino).....	0800	8.3	7.4	7.2	7.1	7.4	6.2	5.4	5.8	7.4	7.8	8.7	8.4	7.3	10
	1900	6.6	5.7	6.4	7.0	7.4	6.7	5.7	5.7	6.4	6.2	7.1	7.5	6.5	10
Verona.....	0800	6.9	5.8	6.6	6.3	6.4	5.0	4.4	4.7	5.5	6.5	7.2	7.4	6.1	9
	1900	7.4	6.7	6.8	7.1	7.9	6.3	4.0	5.9	6.4	6.5	6.4	7.7	6.6	7
EAST COAST:															
Pescara.....	0800	7.4	6.6	7.0	6.1	6.4	3.8	2.4	3.2	5.1	6.3	7.2	8.1	5.8	7
	1900	7.3	6.3	7.1	6.8	7.0	5.9	3.8	5.0	5.9	6.4	6.8	7.7	6.3	7
San Marino.....	0800	6.5	6.8	6.5	5.7	5.0	4.1	2.8	2.5	4.6	5.6	6.5	6.7	5.3	7
	1900	6.0	5.3	6.3	6.2	5.7	3.9	3.1	3.8	3.5	4.6	5.0	6.7	5.0	3
Trieste.....	0800	7.0	6.0	6.7	3.9	6.1	5.3	4.3	4.8	6.1	6.8	7.1	7.4	6.2	10
	1900	6.2	5.4	6.7	6.9	7.1	5.9	4.5	5.2	5.5	6.5	6.6	6.8	6.1	9
Udine.....	0800	6.1	5.5	6.1	6.9	6.1	5.2	4.2	4.5	5.5	6.0	6.5	6.9	5.8	7
	1900	6.5	5.0	6.4	7.3	7.4	6.2	4.9	5.3	5.2	6.0	6.0	6.2	6.1	3
Venice.....	0800	7.3	6.4	7.0	7.2	6.8	5.5	4.3	4.8	6.0	7.0	7.2	7.4	6.4	10
	1900	6.2	5.3	6.7	6.7	7.3	6.0	4.4	5.0	5.0	5.7	5.8	6.7	5.9	10
Vieste.....	0800	6.1	6.4	6.3	5.3	4.4	3.0	1.8	1.8	3.6	4.9	6.2	7.1	4.7	9
	1900	5.0	5.0	5.6	5.0	4.6	3.5	1.8	2.0	2.6	3.2	5.2	6.3	4.2	4
WEST COAST:															
Genoa.....	0800	6.2	6.2	6.7	6.8	7.4	6.0	5.0	4.7	6.0	6.5	6.7	6.9	6.3	10
	1900	5.7	5.8	6.5	7.1	7.2	6.3	5.2	5.3	6.3	6.2	6.3	6.3	6.2	10
Laghorn.....	0800	7.3	6.8	7.5	7.4	7.5	6.0	4.6	4.9	6.2	7.1	7.3	7.7	6.7	10
	1900	6.4	6.4	7.0	6.9	7.1	5.9	4.4	4.9	6.1	6.6	6.4	7.0	6.3	10
Orbetello.....	0800	6.5	6.4	6.7	6.3	6.4	4.5	3.3	3.9	5.0	6.0	6.8	7.2	5.8	7
	1900	6.3	6.1	6.4	6.4	7.0	4.8	3.2	4.2	5.0	5.8	6.0	7.3	5.7	7
Rome.....	0800	6.4	6.6	6.8	6.3	6.0	4.3	2.7	3.2	4.8	5.8	6.3	7.2	5.6	10
	1900	5.4	5.7	6.6	5.9	6.3	4.8	2.9	3.1	4.4	4.7	5.1	5.9	5.1	10
San Remo.....	0800	5.5	5.4	6.2	5.7	6.0	4.8	3.5	3.8	4.9	5.4	5.8	6.3	5.3	10
	1900	6.0	6.4	6.7	7.3	7.4	6.1	4.5	5.6	6.4	6.2	6.1	6.5	6.3	7
APENNINES:															
Benevento.....	0800	7.6	7.1	7.5	6.5	6.0	4.3	2.3	2.4	4.3	6.1	7.7	8.5	5.9	7
	1900	5.7	5.9	7.0	6.0	6.1	5.0	3.0	3.4	3.6	4.5	5.5	6.7	5.2	3
Castiglione Del Lago.....	0800	7.0	6.9	6.9	6.9	6.3	4.2	2.6	3.5	4.6	6.6	7.3	7.7	5.9	6
	1900	6.7	6.2	6.6	6.9	7.3	6.0	4.3	5.2	5.4	5.8	6.1	7.7	6.2	6
Florence.....	0800	7.5	7.0	7.3	7.5	7.0	5.5	4.0	4.3	6.2	7.4	8.1	8.2	6.7	10
	1900	7.0	6.7	7.2	7.2	7.2	6.0	4.3	5.2	6.1	6.6	6.6	7.8	6.5	10
Perugia.....	0800	4.9	5.1	5.8	5.5	5.1	3.6	2.4	2.2	4.3	4.9	5.9	6.2	4.7	7
	1900	4.3	4.4	5.6	5.6	5.2	4.6	3.1	2.9	4.3	4.0	4.9	5.9	4.5	7
SOUTHERN ITALY:															
Paola.....	0800	7.6	7.4	7.7	7.5	7.3	5.4	3.3	4.1	5.3	6.6	7.4	8.4	6.5	7
	1900	7.2	7.3	7.6	7.6	7.0	5.5	3.6	4.3	5.6	6.0	6.7	6.9	6.4	7
Taranto.....	0800	6.6	6.7	6.6	5.6	5.5	3.3	1.4	1.8	3.8	6.2	6.2	7.2	5.0	10
	1900	5.9	6.3	6.5	5.9	6.0	4.7	2.3	2.6	4.4	4.8	5.5	6.3	5.1	10

FIGURE 23-17 (Continued)

REGION AND STATION	HOOR (LST)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
SICILY:															
Licata.....	0800	5.7	5.9	5.5	4.7	4.4	2.5	0.9	1.6	3.2	4.3	5.4	5.9	4.2	9
	1900	4.6	4.7	5.1	4.4	3.6	2.2	0.6	1.4	2.9	3.5	4.4	5.1	3.5	6
Marsala.....	0800	7.3	7.4	6.8	6.0	6.0	4.4	2.4	3.4	4.0	6.4	6.7	7.4	5.7	5
	1900	6.2	6.4	6.0	5.8	5.5	3.6	1.4	2.3	5.0	6.1	6.0	6.8	5.1	5
Messina.....	0800	7.4	7.6	7.5	6.5	6.3	4.5	2.6	3.5	5.3	6.3	7.0	7.8	6.0	10
	1900	7.2	7.7	7.4	6.7	6.2	4.6	2.7	3.3	5.5	5.9	6.4	7.4	5.9	10
Palermo.....	0800	7.4	7.4	7.2	6.2	5.7	3.8	2.1	2.8	4.6	6.0	6.5	7.3	5.6	10
	1900	7.3	7.5	7.3	6.1	5.4	na	1.9	2.8	5.0	6.1	6.8	7.4	na	10
Syracuse.....	0800	5.9	5.9	5.5	4.6	4.6	2.6	0.8	1.6	3.5	4.6	5.8	6.3	4.3	10
	1900	4.9	5.8	6.1	5.8	5.6	3.3	1.2	2.5	4.8	5.2	5.8	5.8	4.7	7
SARDINIA:															
Cagliari.....	0800	6.4	6.4	6.0	5.4	5.2	4.0	2.0	2.7	4.5	5.5	6.2	6.5	5.1	10
	1900	6.2	6.5	6.8	6.4	5.7	3.8	2.0	3.1	5.2	5.4	5.8	6.6	5.3	10
Sassari.....	0800	6.9	6.7	6.0	5.3	5.0	4.3	2.5	2.2	4.5	5.3	6.6	7.0	5.2	9
	1900	5.7	5.1	5.1	5.0	4.1	2.5	1.4	2.2	3.1	4.5	5.8	6.5	4.3	3

na Data not available.

FIGURE 23-18. MEAN NUMBER OF CLEAR (CLOUD COVER ≤ 2 -TENTHS) DAYS AT SPECIFIED HOURS

REGION AND STATION	HOOR (LST)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
ITALIAN ALPS:															
Cuneo.....	0800	13.2	11.9	8.1	9.7	10.0	11.6	15.9	15.4	10.1	12.3	10.1	11.0	139.3	7
	1900	15.8	15.8	9.6	8.5	6.2	6.8	8.6	7.4	5.9	11.5	13.2	12.2	124.5	3
Trento.....	0800	11.4	10.9	9.2	7.2	7.1	10.0	12.5	11.0	7.6	9.3	8.7	9.7	114.6	11
	1900	12.4	12.7	9.0	2.5	1.9	2.5	5.7	5.9	6.5	7.8	10.0	11.1	88.0	7
PO VALLEY:															
Bologna.....	0800	7.7	7.9	7.6	9.0	9.0	12.4	18.0	17.6	10.9	10.0	7.0	5.2	122.3	9
	1900	6.3	5.0	3.3	2.3	3.7	5.4	9.5	7.5	5.4	5.9	5.6	4.0	63.9	3
Milan.....	0800	5.0	6.2	6.8	6.7	5.8	7.0	11.0	9.5	6.0	4.2	2.3	3.0	73.5	9
	1900	7.4	9.4	8.8	5.5	3.4	6.8	10.5	10.4	7.5	7.7	6.5	5.4	89.1	10
Parma.....	0800	5.8	6.2	6.3	7.1	6.4	9.9	14.4	12.3	7.6	6.0	4.8	3.9	90.7	10
	1900	6.8	8.2	7.6	3.8	2.2	6.5	9.2	7.8	6.5	7.7	5.5	5.1	77.1	8
Turin (Torino).....	0800	2.6	4.1	5.5	5.3	4.2	6.1	9.1	8.0	4.4	4.4	2.4	2.5	58.6	10
	1900	8.1	9.1	8.9	4.3	2.5	4.1	6.8	6.7	5.0	7.1	5.4	5.6	70.8	10
Verona.....	0800	6.0	8.0	7.2	6.8	6.7	9.3	12.1	11.1	9.6	8.1	5.1	4.4	94.4	9
	1900	4.7	7.8	4.7	3.2	0.9	3.8	8.8	6.1	4.4	6.4	7.2	3.9	61.9	7
EAST COAST:															
Pescara.....	0800	2.3	5.2	4.2	5.9	4.4	11.6	15.5	14.8	9.1	4.8	3.5	1.6	86.9	7
	1900	4.4	5.8	3.9	3.6	2.3	4.9	11.0	6.1	5.0	4.4	4.7	3.2	59.3	7
San Marino.....	0800	8.7	8.6	6.7	7.8	10.6	12.0	18.6	19.9	11.8	9.4	6.6	7.8	125.5	7
	1900	10.6	10.5	8.2	7.1	7.6	12.1	15.0	12.6	17.1	12.5	12.5	8.3	134.1	3
Trieste.....	0800	5.8	7.6	7.0	5.8	6.0	8.2	12.3	10.5	6.6	5.4	5.2	4.1	84.5	10
	1900	9.0	10.1	6.1	4.6	2.7	6.4	10.4	7.8	7.5	5.9	7.2	7.2	84.9	9
Udine.....	0800	8.3	10.0	8.7	5.9	7.8	10.0	14.1	12.3	10.1	9.1	6.5	5.7	105.5	10
	1900	8.4	10.7	4.8	2.6	1.1	3.8	8.7	5.9	7.3	7.0	8.7	8.8	77.8	10
Venice.....	0800	5.7	7.1	6.3	5.2	5.2	8.5	11.5	11.2	6.5	5.8	5.8	4.2	83.0	10
	1900	9.8	9.9	5.8	5.0	2.0	6.9	10.0	8.5	8.5	9.2	9.8	8.3	94.6	10
Vicenza.....	0800	6.1	6.8	7.0	8.9	11.6	15.5	22.5	22.0	14.3	10.4	8.9	8.6	134.8	9
	1900	10.4	10.2	8.7	8.6	11.1	14.9	21.9	20.6	15.8	17.2	9.1	5.8	157.3	4
WEST COAST:															
Genoa.....	0800	7.1	6.9	6.9	6.5	4.0	6.8	10.7	10.4	7.0	7.3	6.0	5.3	84.9	10
	1900	10.8	8.9	7.1	4.9	4.1	6.8	9.1	8.9	5.3	7.2	6.9	7.8	87.8	10
Leghorn.....	0800	4.6	6.1	4.8	4.3	3.1	6.8	9.9	8.6	6.0	3.3	3.6	3.1	64.2	10
	1900	6.6	6.4	4.7	4.8	3.5	5.7	10.3	8.0	5.2	4.1	5.9	4.6	69.8	10
Orbetello.....	0800	4.3	6.0	6.3	5.5	6.6	11.8	13.9	13.9	9.0	5.9	4.1	3.6	96.9	7
	1900	4.5	6.1	5.9	5.7	3.0	8.9	14.4	9.6	7.2	6.3	5.3	3.0	79.9	7
Rome.....	0800	5.6	5.9	6.0	6.2	7.0	11.1	17.6	17.0	10.8	7.5	6.0	4.4	105.1	10
	1900	8.3	8.0	5.6	5.5	4.5	9.3	17.0	15.4	9.8	10.4	10.4	8.2	113.4	10
San Remo.....	0800	9.8	9.3	8.4	8.8	8.8	11.4	16.0	14.9	10.4	10.3	8.3	6.9	123.3	10
	1900	7.2	6.0	4.8	3.9	3.3	5.9	10.7	6.0	5.0	6.1	6.8	6.9	72.6	7

FIGURE 23-18 (Continued)

REGION AND STATION	HOUR (LST)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
APENNINES:															
Benevento.....	0800	3.8	4.4	3.8	4.8	5.2	10.0	10.4	18.2	11.0	7.0	3.2	1.5	93.8	7
	1000	8.3	7.2	5.1	6.0	3.4	7.0	14.0	12.1	13.8	13.1	8.0	4.0	102.0	3
Castiglione Del Lago.....	0800	4.2	5.5	6.0	4.2	6.3	11.0	17.4	14.8	10.7	4.0	4.4	3.3	92.7	6
	1000	4.3	6.0	6.3	5.5	6.6	11.8	13.0	13.0	9.0	5.9	4.1	3.6	90.9	6
Florence.....	0800	4.3	4.0	5.3	4.0	4.0	8.3	12.0	12.7	6.7	4.6	2.8	3.0	74.4	10
	1000	5.4	6.0	4.0	3.0	2.9	5.5	9.4	7.1	5.0	5.3	5.7	4.1	64.0	10
Perugia.....	0800	11.7	9.6	8.1	7.7	10.0	13.0	20.2	21.0	12.0	11.0	7.5	6.7	138.7	7
	1000	13.3	11.0	9.2	7.4	7.5	10.8	14.8	16.0	11.1	13.3	10.4	10.4	135.9	7
SOUTHERN ITALY:															
Paola.....	0800	2.4	4.0	2.7	3.0	3.4	6.7	14.0	11.3	6.1	5.1	3.8	1.7	64.8	7
	1000	3.4	3.4	2.7	3.5	4.5	7.2	12.9	11.3	5.3	6.5	5.4	1.7	67.8	7
Taranto.....	0800	4.1	5.0	5.0	8.4	7.7	15.0	23.3	21.4	13.3	9.4	6.1	3.4	122.1	10
	1000	5.4	5.2	4.8	6.7	5.2	9.2	19.4	17.6	8.8	8.9	8.2	5.0	104.4	10
SICILY:															
Licata.....	0800	7.0	6.7	9.1	11.6	13.1	18.2	26.7	24.0	16.4	11.6	7.6	6.6	158.0	9
	1000	11.3	10.7	10.0	12.2	14.2	18.7	27.2	23.9	16.6	15.5	11.6	10.3	182.1	6
Marsala.....	0800	1.2	1.4	3.0	5.1	4.2	10.6	17.7	14.2	7.8	4.0	2.5	1.8	74.4	5
	1000	4.4	3.4	5.0	5.4	7.4	14.8	22.5	19.1	6.5	4.3	3.0	3.4	100.1	5
Messina.....	0800	3.5	2.7	2.8	5.4	6.5	10.6	17.9	13.3	8.0	5.7	4.2	1.8	82.4	10
	1000	3.8	2.2	2.8	5.0	5.0	10.9	17.8	13.0	6.3	6.4	5.1	2.6	82.4	10
Palermo.....	0800	2.3	2.0	3.4	5.5	7.4	12.6	19.3	16.3	8.6	5.3	3.5	1.5	87.7	10
	1000	2.6	1.8	2.6	5.3	6.9	na	20.0	16.4	8.2	4.5	3.1	1.7	na	10
Syracuse.....	0800	5.3	5.2	8.4	10.8	11.7	18.1	26.7	23.0	14.3	9.7	6.3	3.8	143.3	10
	1000	9.4	5.5	5.3	5.7	6.6	15.0	24.2	17.9	7.7	6.7	7.6	6.7	118.3	7
SARDINIA:															
Cagliari.....	0800	4.1	4.6	5.9	8.2	9.2	13.7	21.0	17.5	9.5	5.7	3.5	2.8	105.7	10
	1000	4.4	3.7	3.2	3.8	5.8	12.4	20.6	16.3	6.3	6.0	5.9	3.9	92.3	10
Sassari.....	0800	4.7	6.2	8.1	9.3	11.0	12.6	19.9	19.0	11.9	10.3	5.8	5.2	124.9	9
	1000	7.5	8.6	9.2	8.7	12.0	17.6	23.1	19.0	15.8	10.5	6.1	4.3	142.4	3

na Data not available.

FIGURE 23-19. MEAN NUMBER OF CLOUDY (CLOUD COVER ≥ 7 -TENTHS) DAYS AT SPECIFIED HOURS

REGION AND STATION	HOUR (LST)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
ITALIAN ALPS:															
Cuneo.....	0800	13.0	12.3	18.0	15.6	16.7	12.8	10.6	12.1	14.0	14.6	15.7	14.8	171.7	7
	1000	13.1	6.8	17.1	17.7	19.0	16.1	16.9	18.8	16.1	14.8	14.4	15.1	189.0	3
Trento.....	0800	14.7	11.9	18.2	17.7	17.9	12.8	10.6	12.1	16.3	16.0	16.0	14.7	178.9	11
	1000	14.0	11.0	16.8	20.7	23.2	21.1	14.1	16.0	16.2	15.8	15.7	15.9	201.1	7
PO VALLEY:															
Bologna.....	0800	19.5	17.0	19.2	16.4	15.9	10.6	8.8	6.4	12.8	16.3	20.0	22.5	182.4	9
	1000	20.0	16.3	19.0	19.0	19.0	11.5	7.8	10.2	12.0	15.2	17.4	22.7	190.1	3
Milan.....	0800	23.2	18.5	20.2	19.0	19.8	14.3	12.2	13.4	18.2	22.7	25.8	24.7	232.0	9
	1000	21.0	14.0	16.0	18.1	19.9	14.0	11.7	12.3	14.2	16.4	20.4	23.3	202.8	10
Parma.....	0800	22.4	17.6	20.1	17.6	19.5	12.7	10.0	10.9	16.3	19.3	22.2	24.3	212.9	10
	1000	21.0	15.7	17.3	20.0	21.1	16.0	11.8	15.0	14.9	17.8	21.5	23.4	216.1	8
Turin (Torino).....	0800	24.0	19.1	21.1	20.1	21.7	15.8	14.5	15.4	21.2	23.8	25.6	25.5	248.0	10
	1000	19.5	14.9	18.0	18.7	20.7	15.5	14.1	15.7	17.0	16.5	20.0	22.4	216.0	10
Verona.....	0800	20.1	14.4	20.0	17.4	18.1	12.5	11.7	12.7	15.1	18.7	19.9	21.3	201.9	9
	1000	21.6	14.0	19.8	18.8	24.2	15.5	11.1	15.8	17.0	17.5	17.4	22.0	215.7	7
EAST COAST:															
Pesceara.....	0800	21.2	17.7	21.2	16.0	17.2	7.9	4.1	6.5	13.1	17.3	19.8	24.2	180.2	7
	1000	21.0	15.7	20.4	17.0	19.6	15.4	8.0	11.5	14.6	16.0	17.7	22.7	200.8	7
San Marino.....	0800	19.1	17.0	18.8	14.3	12.6	8.5	5.9	5.3	10.9	14.6	17.5	19.4	163.9	7
	1000	18.1	13.7	17.8	17.3	16.2	8.0	6.2	9.0	8.3	11.0	14.1	21.0	161.3	3
Trieste.....	0800	20.0	15.0	19.4	19.5	19.0	13.0	10.5	12.4	17.2	19.2	20.4	21.5	208.0	10
	1000	18.5	13.6	18.7	18.5	19.7	15.4	10.6	14.1	13.6	17.0	19.3	20.2	198.8	9
Udine.....	0800	17.7	14.5	18.2	19.8	17.9	13.8	11.8	11.8	14.7	17.6	17.0	20.2	195.9	10
	1000	19.0	14.2	17.4	21.8	20.8	15.7	12.9	11.9	12.2	16.1	15.8	17.6	195.4	10
Venezia.....	0800	21.8	16.6	20.9	20.5	19.6	14.4	10.4	12.1	15.8	19.3	20.2	21.7	213.3	10
	1000	18.3	12.8	19.3	18.4	21.0	16.2	10.0	13.0	11.5	15.2	16.2	19.3	191.2	10
Vieste.....	0800	16.6	16.0	17.0	13.0	10.3	5.5	3.5	3.4	8.1	13.3	16.5	20.0	144.7	9
	1000	12.5	11.9	15.0	12.3	12.1	8.2	3.5	4.9	5.9	7.5	12.9	17.4	124.7	4

FIGURE 23-19 (Continued)

REGION AND STATION	HOUR (LST)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
WEST COAST:															
Genoa.....	0800	17.3	15.7	19.3	20.0	21.9	15.9	12.9	11.2	16.7	20.0	19.4	19.6	209.9	10
	1900	16.2	14.9	19.0	19.8	21.7	17.9	13.6	14.2	17.4	17.0	17.5	18.1	207.3	10
Laghorn.....	0800	21.5	17.0	22.7	21.1	21.0	15.7	10.8	11.1	17.1	20.1	20.2	23.5	222.7	10
	1900	17.6	16.0	20.0	19.1	19.6	15.2	10.4	11.4	15.6	17.5	16.4	20.2	199.0	10
Orbetello.....	0800	17.4	16.3	19.2	16.6	18.8	11.9	7.0	10.4	12.3	16.4	18.1	20.4	184.8	7
	1900	17.4	15.6	17.4	17.0	19.6	11.3	6.7	8.9	10.4	13.8	15.1	20.0	173.2	7
Rome.....	0800	18.4	17.3	19.5	17.3	16.2	9.3	5.1	7.8	12.2	15.3	17.0	20.7	176.1	10
	1900	13.9	13.6	18.2	15.7	16.7	11.5	4.7	5.8	9.2	11.2	12.9	15.9	149.3	10
San Remo.....	0800	15.1	14.3	18.2	15.2	16.8	11.9	8.1	9.6	12.2	14.9	15.4	17.3	169.0	10
	1900	15.9	16.9	18.7	21.1	21.3	16.7	11.5	14.8	17.9	16.1	18.2	19.0	206.1	7
APENNINES:															
Benevento.....	0800	22.8	18.8	22.5	17.9	15.2	10.6	3.7	4.8	10.3	10.9	22.5	25.3	191.3	7
	1900	15.8	13.5	18.7	14.3	15.5	13.0	5.8	6.5	8.7	11.4	14.9	19.1	157.2	3
Castiglione Del Lago.....	0800	20.8	17.6	20.8	10.6	19.2	10.4	5.9	5.2	11.6	18.9	20.4	22.2	195.6	6
	1900	17.4	16.3	19.2	16.6	18.5	11.9	7.0	13.4	12.3	16.4	18.1	20.4	184.8	6
Florence.....	0800	21.5	15.0	21.9	22.0	20.7	15.3	10.4	11.4	17.2	22.3	23.5	24.8	229.0	10
	1900	20.3	17.5	21.3	10.7	20.5	16.1	9.2	13.4	15.4	18.9	15.1	22.5	213.2	10
Perugia.....	0800	13.0	12.3	15.3	14.1	12.7	7.2	5.4	5.2	10.4	12.8	15.8	16.6	140.8	7
	1900	11.5	10.3	15.1	13.9	11.8	11.3	5.6	5.3	8.8	8.6	12.2	13.9	128.3	7
SOUTHERN ITALY:															
Paola.....	0800	21.2	20.1	22.4	21.3	20.3	13.2	5.8	9.0	12.8	18.4	21.2	25.5	211.2	7
	1900	19.1	17.8	21.7	22.2	21.3	14.0	7.1	9.8	12.7	15.3	18.0	22.8	201.8	7
Taranto.....	0800	18.3	17.2	17.9	15.2	14.4	7.3	1.8	2.9	9.1	14.0	17.1	20.0	155.2	10
	1900	14.7	15.2	16.9	15.3	16.1	11.3	4.7	4.5	8.4	11.5	13.5	16.4	148.5	10
SICILY:															
Licata.....	0800	15.0	15.1	15.4	11.6	11.9	5.4	2.3	4.1	7.3	10.6	13.0	16.3	128.0	9
	1900	11.8	11.8	13.1	10.8	8.5	4.3	0.7	2.9	6.0	5.2	10.4	13.7	102.2	6
Marsala.....	0800	20.2	20.3	15.0	15.4	15.5	8.8	3.7	7.2	11.8	17.7	17.3	20.0	177.7	5
	1900	16.3	14.7	15.6	13.8	13.2	8.4	1.6	3.9	9.9	16.8	14.3	18.3	146.5	5
Messina.....	0800	22.0	19.9	21.5	17.9	18.1	10.7	5.1	6.4	13.8	17.0	20.0	24.1	107.1	10
	1900	19.6	19.8	21.3	17.8	17.0	12.1	5.4	7.1	14.1	16.0	17.0	21.0	155.8	10
Palermo.....	0800	22.4	20.3	21.1	18.1	15.8	9.7	3.4	4.0	10.6	16.4	18.4	22.2	183.3	10
	1900	20.5	19.2	20.5	16.4	13.2	na	2.8	5.4	11.7	15.4	19.2	21.4	na	10
Syracuse.....	0800	15.3	14.4	15.7	11.1	12.7	6.1	1.2	3.2	7.3	10.5	14.7	16.8	129.0	10
	1900	12.5	13.3	15.9	13.8	15.1	8.4	2.2	4.3	10.3	12.7	14.7	13.3	136.5	7
SARDINIA:															
Cagliari.....	0800	17.1	15.9	14.8	13.2	13.0	9.8	3.4	5.3	10.5	13.6	15.4	16.9	149.5	10
	1900	15.0	15.2	18.1	15.4	14.1	8.0	3.4	8.0	11.2	12.6	14.7	17.1	153.4	10
Sassari.....	0800	19.1	18.0	16.4	13.0	12.5	10.2	5.5	5.0	10.9	13.7	17.8	20.0	163.0	9
	1900	14.3	12.2	11.6	11.6	8.1	3.9	1.4	3.5	6.1	9.9	14.1	16.7	113.4	3

na Data not available.

FIGURE 23-20. MEAN NUMBER OF DAYS WITH THUNDERSTORMS

REGION AND STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC	
ITALIAN ALPS:															
Abbasia di Monte Maria.....	0	0	0	0	*	1	4	3	1	0	0	0	5	37	
Bolzano.....	0	0	0	1	3	7	7	6	2	1	*	0	27	10	
Cuneo.....	0	0	0	2	4	6	5	3	2	1	0	0	23	11	
Domodossola.....	0	0	0	0	3	4	5	5	0	0	1	0	18	na	
Sondrio.....	0	0	0	0	1	4	4	3	1	0	0	0	13	na	
Steinach, Austria**.....	0	*	0	*	2	4	5	4	1	*	0	0	16	9	
PO VALLEY:															
Bologna.....	0	0	1	2	4	5	3	3	2	1	0	0	21	na	
Milan.....	0	0	*	1	4	6	5	5	2	1	*	*	25	50	
Padova.....	0	0	1	3	6	8	8	6	4	1	0	0	37	40	
Turin (Torino).....	0	0	0	2	3	4	5	2	2	1	0	0	19	19	
EAST COAST:															
Bari.....	0	0	0	1	1	2	1	1	2	1	1	1	11	na	
Trieste.....	*	*	*	1	2	4	5	4	3	2	1	*	23	60	
Udine.....	*	*	*	1	4	6	6	4	2	2	*	*	20	7	
Venice.....	0	0	*	1	1	3	3	3	3	2	*	*	17	28	

FIGURE 23-20 (Continued)

REGION AND STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
WEST COAST:														
Genoa.....	0	*	1	1	1	2	1	2	1	1	1	*	10	7
Naples.....	0	0	1	1	1	2	1	1	1	1	1	1	11	na
Rome.....	1	1	1	1	2	3	2	3	3	3	2	1	23	128
APENNINES:														
Florence.....	0	0	1	1	1	3	1	1	2	1	0	0	11	10
Perugia.....	0	*	1	2	1	2	1	1	*	0	0	*	8	6
Potenza.....	0	0	0	1	2	2	2	2	3	0	1	0	13	na
Sienna.....	0	0	1	1	2	2	1	1	1	1	0	0	10	na
SOUTHERN ITALY:														
Catanzaro.....	1	1	1	*	0	1	2	1	1	1	2	1	12	4
SICILY:														
Messina.....	1	1	1	1	1	1	1	1	2	2	2	2	10	7
Palermo.....	1	1	1	1	1	1	1	1	1	2	1	1	13	na
SARDINIA:														
Cagliari.....	0	0	0	1	1	1	0	0	0	1	1	0	5	na
Sassari.....	0	0	1	0	1	0	0	0	1	1	0	0	4	na

na Data not available.

* <0.5 day.

** Near but outside NIS 17 Area.

FIGURE 23-21. UPPER-AIR TEMPERATURES (°C.) AT SPECIFIED ALTITUDES FOR SELECTED STATIONS

REGION AND STATION	ALTITUDE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YRS REC
PO VALLEY:														
Pavia.....	3,000	-1	3	3	3	9	15	15	14	14	10	5	2	14
	7,000	-3	-1	-2	-3	3	9	9	8	8	4	1	-4	
	10,000	-8	-6	-7	-8	-3	4	3	2	2	-2	-4	-8	
	13,000	-13	-12	-14	-14	-9	-2	-4	-4	-4	-8	-11	-15	
	16,000	-20	-18	-22	-21	-13	-9	-9	-9	-10	-12	-10	-20	
	20,000	-27	-27	-30	-28	-23	-10	-10	-17	-17	-21	-20	-30	
	23,000	-35	-33	-37	-33	-32	-23	-24	-24	-27	-30	-34	-38	
	26,000	-42	-40	-45	-40	-38	-30	-32	-31	-32	-37	-41	-45	
	29,000	-51	-47	-50	-47	-46	-30	-40	-38	-30	-44	-47	-50	
	43,000	-57	-54	-53	-52	-52	-47	-47	-46	-46	-50	-53	-54	
50,000	-58	-57	-52	-51	-53	-55	-55	-55	-55	-58	-57	-55		
WEST COAST:														
Rome.....	3,000	4	5	7	4	13	18	21	22	19	14	9	7	14
	7,000	-4	0	1	3	7	11	14	15	15	9	3	1	
	10,000	-6	-4	-4	-1	2	4	8	10	9	4	-2	0	
	13,000	-12	-10	-9	-6	-4	-1	1	5	2	-3	-8	-9	
	16,000	-20	-16	-15	-12	-10	-8	-5	-1	-4	-8	-15	-15	
	20,000	-24	-22	-22	-17	-16	-15	-12	-6	-10	-15	-21	-20	
	23,000	-30	-29	-27	-23	-21	-22	-19	-11	-17	-23	-26	-26	
	26,000	-37	-35	-36	-28	-26	-30	-23	-20	-24	-32	-30	-29	
	29,000	-40	-45	-40	-33	-34	-38	-31	-26	-32	-38	-37	-32	
	33,000	-46	-52	-44	-38	-39	-44	-37	-31	-37	-45	-44	-33	
50,000	na	na	na	-47	-42	-53	-47	-40	na	na	-54	-41		

na Data not available.

FIGURE 23-22. MEAN NUMBER OF DAYS WITH FOG (VISIBILITY < 1/4 MILE) AT 0800 LST

REGION AND STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS RMO
ITALIAN ALPS:														
Cuneo.....	1.6	2.1	0.7	0.5	0.0	0.4	0.5	0.4	0.6	1.5	3.5	2.6	14.4	5
Trento.....	1.6	0.8	0.3	0.0	0.1	0.2	0.2	0.0	0.2	0.6	0.9	1.5	6.4	9
PO VALLEY:														
Bologna.....	6.7	6.0	3.8	0.5	0.8	0.1	0.1	0.3	0.9	3.2	6.9	8.6	37.9	8
Milan.....	18.8	13.3	11.1	3.9	2.3	1.1	0.5	2.0	7.2	13.0	16.9	20.3	110.4	10
Parma.....	15.0	8.2	4.2	3.2	1.2	0.0	0.3	1.3	2.0	7.2	12.9	15.6	72.3	10
Verona.....	8.9	6.3	2.2	1.6	0.5	0.0	0.0	0.1	0.7	3.1	8.3	10.5	42.2	8
EAST COAST:														
Pescara.....	3.0	1.2	0.9	0.8	0.4	0.0	0.0	0.0	0.5	2.3	2.0	2.5	13.6	5
San Marino.....	6.5	4.3	5.0	3.2	3.1	1.4	1.2	1.0	3.0	4.8	4.6	5.2	43.3	6
Trieste.....	6.4	4.5	4.1	0.8	0.5	0.1	0.0	0.2	0.5	1.0	3.0	4.7	25.8	9
Udine.....	1.9	2.1	0.6	0.3	0.2	0.2	0.0	0.0	0.5	0.5	1.2	2.3	9.8	6
Venice.....	6.6	6.2	3.4	1.9	0.5	0.1	0.2	0.4	1.6	4.1	5.4	7.3	37.7	9
Vieste.....	0.3	0.1	0.0	0.5	0.4	0.0	0.1	0.1	0.1	0.0	0.0	0.2	1.9	8
WEST COAST:														
Genoa.....	0.3	0.1	0.5	0.8	0.7	0.2	1.1	0.4	0.3	0.4	0.4	0.2	5.4	9
Leghorn.....	0.6	0.9	0.3	0.5	0.6	0.1	0.0	0.4	0.7	0.7	1.1	1.2	7.1	9
Orbetello.....	0.0	0.2	0.6	0.0	0.0	0.3	0.0	0.3	0.0	0.2	0.3	0.0	1.9	5
Rome.....	1.9	2.5	3.3	1.4	1.6	1.1	1.2	0.7	1.8	2.4	2.1	2.6	22.6	9
San Remo.....	0.0	0.1	0.1	0.0	0.4	0.2	0.3	0.3	0.1	0.0	0.1	0.2	1.8	9
APENNINES:														
Benevento.....	6.3	1.6	3.2	1.8	1.9	0.2	0.7	0.7	2.6	6.5	7.7	0.8	43.0	6
Castiglione Del Lago.....	3.9	4.7	1.3	0.6	1.1	1.2	0.0	0.0	1.4	3.0	7.9	5.5	30.6	5
Florence.....	7.8	5.5	2.8	3.5	2.3	1.3	0.7	1.0	4.4	8.2	11.2	10.2	58.9	9
Perugia.....	1.5	0.6	1.2	1.3	1.8	0.7	0.2	0.0	0.6	1.5	2.3	1.9	13.5	5
SOUTHERN ITALY:														
Paola.....	0.2	0.2	0.2	0.2	0.0	0.2	0.2	0.2	0.0	0.2	0.0	0.0	1.6	6
Taranto.....	1.3	0.4	0.5	0.8	0.2	0.2	0.1	0.2	0.2	0.4	0.5	0.9	5.7	9
SICILY:														
Marsala.....	0.0	0.0	0.0	0.0	0.2	0.7	0.7	0.2	0.0	0.0	0.0	0.2	2.0	4
Messina.....	0.1	0.1	0.0	0.3	0.2	0.7	0.1	0.0	0.0	0.1	0.0	0.0	1.6	9
Palermo.....	0.2	0.0	0.2	0.5	0.0	0.0	0.0	0.2	0.0	0.0	0.1	0.2	1.4	9
Syracuse.....	0.3	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.8	8
SARDINIA:														
Cagliari.....	1.8	1.6	1.4	0.9	0.9	0.6	0.4	0.5	0.9	0.7	1.8	2.1	13.6	10
Sassari.....	0.1	0.0	0.0	0.4	0.1	0.1	0.0	0.0	0.0	0.1	0.3	0.1	1.2	8

FIGURE 23-23. MEAN NUMBER OF DAYS WITH CEILING \leq 1,000 FEET AND VISIBILITY \leq 1/4 MILES

REGION AND STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS RMO
PO VALLEY:														
Milan.....	7.7	11.3	15.6	21.0	24.0	25.8	27.7	25.1	21.2	16.2	8.0	4.7	208.3	4
WEST COAST:														
Genoa.....	26.3	22.3	25.6	23.2	25.0	25.3	27.4	27.6	26.9	25.6	24.3	20.2	303.7	5
Rome.....	26.7	23.4	27.1	26.5	28.7	28.6	29.5	28.2	27.4	27.7	26.8	25.3	325.0	6
APENNINES:														
Florence.....	20.1	21.6	26.2	26.6	26.9	27.5	29.0	27.4	25.0	24.6	22.2	16.3	293.4	3
SOUTHERN ITALY:														
Taranto.....	28.1	25.2	27.8	27.9	28.8	28.9	30.2	30.4	28.8	29.9	27.6	28.0	341.6	4
SICILY:														
Messina.....	29.3	26.6	29.7	28.8	29.9	29.2	30.6	30.5	29.2	29.9	27.9	28.2	349.5	5

FIGURE 23-24. MEAN NUMBER OF DAYS WITH SURFACE WIND SPEED 4 TO 12 M. P. H., TEMPERATURE $>32^{\circ}$ F. BUT $<90^{\circ}$ F., AND NO PRECIPITATION OCCURRING

REGION AND STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
PO VALLEY:														
Milan.....	5.0	5.0	6.8	4.3	8.8	10.2	9.1	7.3	6.5	4.6	3.8	3.1	75.1	4
EAST COAST:														
Perugia.....	11.0	8.3	14.1	15.1	13.3	16.8	19.0	18.7	17.3	14.1	13.3	13.8	177.0	5
Trieste.....	7.6	5.5	7.5	9.4	10.9	11.1	12.0	10.9	8.3	8.2	9.4	6.6	107.0	9
WEST COAST:														
Genoa.....	8.0	6.2	9.2	8.5	8.5	9.9	9.3	8.5	9.3	10.5	8.2	7.9	104.6	5
Rome.....	11.7	11.4	13.9	13.6	15.9	15.2	15.8	15.6	15.4	15.9	14.9	12.9	172.2	6
APENNINES:														
Florence.....	6.4	6.8	6.4	8.8	5.6	9.2	9.7	6.1	6.4	6.3	5.0	4.0	81.3	3
SOUTHERN ITALY:														
Taranto.....	12.5	11.5	12.6	14.2	14.1	15.5	14.2	14.4	16.4	13.6	14.7	13.3	167.5	4
SICILY:														
Messina.....	11.2	9.4	10.1	12.2	12.6	14.8	16.7	17.8	13.9	12.7	8.8	9.4	149.6	5
SARDINIA:														
Cagliari.....	10.4	7.7	11.0	9.8	10.4	9.7	10.8	10.4	9.9	11.4	9.8	8.0	110.0	8

FIGURE 23-25. MEAN NUMBER OF DAYS WITH CEILING $\leq 1,000$ FEET, VISIBILITY $\leq 2\frac{1}{2}$ MILES, AND SURFACE WIND SPEED ≥ 12 M. P. H.

REGION AND STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
PO VALLEY:														
Milan.....	7.2	9.9	14.5	18.5	22.3	25.0	26.1	23.2	20.5	14.0	7.6	4.0	193.7	4
WEST COAST:														
Genoa.....	14.2	11.9	17.1	17.4	20.0	21.5	23.0	23.0	19.9	17.5	14.5	12.3	212.9	5
Rome.....	16.2	15.2	15.4	17.1	21.3	21.6	21.6	22.0	21.0	19.3	19.7	17.4	227.8	6
APENNINES:														
Florence.....	16.8	18.8	23.0	24.0	24.8	26.1	27.5	26.3	23.4	23.1	18.0	13.4	266.1	3
SOUTHERN ITALY:														
Taranto.....	19.3	16.2	16.8	18.8	20.7	21.4	21.0	21.2	22.7	21.7	19.6	20.6	241.0	4
SICILY:														
Messina.....	22.3	18.0	18.6	18.2	18.2	20.7	21.0	23.7	21.7	23.4	20.4	20.7	248.7	5

FIGURE 23-26. MEAN NUMBER OF DAYS WITH SURFACE WIND SPEED ≤ 10 M. P. H. AND NO PRECIPITATION OCCURRING

REGION AND STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
PO VALLEY:														
Milan.....	0.1	1.3	0.9	1.1	0.8	0.3	0.7	0.2	0.1	0.7	0.2	0.2	6.6	4
EAST COAST:														
Perugia.....	1.1	0.8	2.0	1.2	0.7	0.0	0.3	0.5	0.3	1.4	0.1	1.4	10.3	5
San Marino.....	3.4	3.4	3.9	5.2	3.7	3.3	3.4	2.7	1.6	4.3	5.2	3.2	43.6	4
Trieste.....	6.1	7.7	5.9	3.8	2.0	2.3	2.4	2.0	3.4	4.0	4.2	7.5	80.9	9
Vieste.....	2.3	6.0	2.8	2.6	2.1	1.8	1.8	1.4	1.2	1.8	2.5	3.4	29.9	5
WEST COAST:														
Genoa.....	8.1	7.7	6.2	4.5	3.1	2.9	2.5	1.9	4.3	4.0	6.3	9.3	61.7	5
Rome.....	6.8	4.9	7.3	5.4	3.3	2.4	3.3	2.9	2.9	4.8	4.1	5.4	53.5	6
APENNINES:														
Florence.....	1.5	1.1	1.1	1.2	1.2	0.9	0.5	0.3	0.3	1.2	2.1	1.0	13.3	3
SOUTHERN ITALY:														
Taranto.....	4.1	5.4	6.6	3.9	3.6	3.7	3.9	3.9	2.6	3.7	3.8	3.7	48.9	4
SICILY:														
Messina.....	7.8	6.9	9.3	6.1	5.7	5.0	2.6	3.0	4.9	4.8	5.8	0.8	72.0	4
Messina.....	3.6	4.1	6.4	6.7	6.7	4.1	2.8	2.1	3.9	3.6	3.6	4.7	52.3	5
SARDINIA:														
Sassari.....	1.5	2.8	1.5	2.0	1.1	0.4	0.5	0.9	1.6	1.5	0.9	1.7	16.7	5

FIGURE 23-27. MEAN MONTHLY PRECIPITATION (INCHES)

REGION AND STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
ITALIAN ALPS:														
Aosta.....	1.3	1.3	1.4	2.0	2.3	1.3	1.4	1.6	1.8	2.4	4.0	2.3	24.0	9
Bolsano.....	1.0	1.0	1.7	2.2	2.8	3.2	3.8	3.6	2.8	3.1	2.1	1.3	29.1	26
Cuneo.....	2.5	2.0	3.2	5.2	5.6	4.3	2.2	1.8	3.1	5.0	3.6	2.6	41.8	26
Domodossola.....	3.0	3.0	3.7	5.4	6.4	4.8	3.5	4.5	5.2	7.0	4.8	3.1	55.3	26
Maniago.....	4.4	4.9	8.2	8.4	10.9	9.0	7.4	7.0	7.0	10.9	7.7	6.3	92.1	21
Piccolo San Bernardo.....	2.1	2.5	3.0	6.1	2.7	3.6	6.0	6.8	4.5	3.5	2.6	4.2	47.9	10
Sondrio.....	1.7	1.7	2.6	2.5	3.9	2.8	3.1	3.8	3.4	4.1	3.1	1.9	34.4	26
Steinach, Austria*	1.1	1.2	0.8	1.4	3.5	3.4	5.1	5.7	2.5	3.5	1.7	1.0	30.9	9
PO VALLEY:														
Bologna.....	1.7	1.7	2.2	2.5	2.5	2.1	1.8	1.5	2.1	3.5	3.1	2.2	27.0	36
Milan.....	2.4	2.3	2.8	3.4	3.9	3.2	2.8	3.1	3.4	4.7	4.2	3.0	39.4	161
Padova.....	2.0	1.9	2.4	3.0	3.3	3.4	2.6	2.6	3.0	3.9	3.3	2.5	33.9	45
Parma.....	2.5	2.0	2.6	3.5	3.5	2.9	1.5	1.9	2.7	4.7	3.3	2.6	33.5	35
Turin (Torino).....	2.3	1.5	2.4	4.4	4.9	4.2	2.4	2.7	2.8	3.7	2.6	1.6	35.5	25
Verona.....	1.4	1.6	2.6	2.8	3.5	3.3	3.6	2.9	2.9	3.9	3.0	2.5	33.9	16
EAST COAST:														
Ancona.....	2.5	1.8	2.0	2.2	1.9	1.9	1.3	1.6	2.8	3.9	3.0	2.4	27.3	40
Bari.....	2.6	2.0	1.6	1.7	2.0	1.1	0.6	1.1	2.2	2.4	2.6	2.6	22.5	29
Brindisi.....	3.9	2.5	2.2	2.3	1.6	0.9	0.5	1.1	2.1	3.3	3.2	3.7	27.3	32
Chieti.....	4.6	3.3	2.6	3.3	3.4	2.9	1.7	2.0	2.8	4.3	4.7	3.3	39.5	26
Trieste.....	2.4	2.3	2.8	3.0	3.7	4.0	3.2	3.7	4.7	6.0	4.1	3.1	43.0	69
Udine.....	2.6	3.1	4.6	5.4	5.9	6.9	4.8	4.9	6.5	7.0	4.8	3.7	61.0	26
Urbino.....	4.4	2.1	2.8	3.9	4.1	3.3	1.9	1.9	2.6	5.3	3.7	3.0	39.6	26
Venice.....	1.6	1.6	2.0	2.4	2.9	3.0	2.3	2.5	2.8	3.6	2.7	1.9	29.3	55
Vieste.....	2.0	1.3	1.7	1.8	1.1	1.1	0.7	1.5	3.0	2.9	2.9	2.0	20.5	25
WEST COAST:														
Genoa.....	4.1	4.4	4.5	4.4	3.5	3.5	2.0	1.9	4.9	6.8	7.4	4.6	52.8	28
Leghorn.....	2.7	2.7	2.8	2.9	2.4	1.9	1.0	1.7	3.4	5.6	4.8	3.6	35.8	26
Naples.....	3.7	2.9	2.8	2.8	2.0	1.4	0.6	1.1	2.9	4.6	4.5	4.4	33.4	50
Rome.....	3.3	2.6	2.9	2.6	2.2	1.5	0.7	1.0	2.5	5.0	4.5	3.9	32.7	129
San Remo.....	2.2	3.0	2.5	2.7	2.1	1.9	1.1	0.7	2.2	5.3	5.0	3.1	31.8	25
APENNINES:														
Benevento.....	3.3	2.3	2.5	3.1	2.2	1.7	1.3	1.4	2.3	4.1	3.7	3.8	31.8	25
Florence.....	1.9	2.1	2.7	2.9	3.0	2.7	1.5	1.9	3.3	4.0	3.9	2.8	33.0	26
L'Aquila.....	2.2	2.0	2.2	2.6	2.4	2.1	1.2	1.5	2.2	3.3	3.1	2.2	27.3	26
Perugia.....	2.0	2.1	3.2	3.6	3.1	3.4	1.4	1.9	2.8	5.2	4.3	2.7	36.4	26
Potenza.....	2.8	2.1	2.1	2.5	2.0	1.5	0.9	1.1	1.9	2.9	3.0	2.8	25.9	26
Sienna.....	1.9	1.7	2.5	2.5	3.0	2.8	1.3	1.4	2.6	4.0	3.6	2.5	30.4	26
SOUTHERN ITALY:														
Cosenza.....	4.8	3.7	3.7	4.0	1.9	1.9	0.6	1.5	2.5	4.3	5.0	5.2	37.8	25
Lecco.....	2.7	2.2	2.1	2.3	1.7	1.1	0.4	0.7	2.0	3.3	3.1	3.3	25.9	25
Reggio Di Calabria.....	2.7	1.8	1.6	1.9	1.2	0.3	0.3	0.6	1.2	3.5	3.1	2.8	21.3	25
Taranto.....	2.4	1.5	1.5	1.8	1.3	0.8	0.5	0.8	1.8	3.5	2.5	2.6	20.9	25
SICILY:														
Caltanissetta.....	4.0	3.1	2.1	1.8	1.5	0.4	0.2	0.6	1.1	2.5	2.9	3.8	24.1	26
Messina.....	3.7	3.3	2.9	2.6	1.5	0.9	0.5	1.0	2.0	3.9	4.8	4.3	26.2	41
Palermo.....	3.4	2.7	2.7	1.9	1.1	0.6	0.2	0.4	1.8	3.2	3.3	3.7	21.1	41
Syracuse.....	3.6	2.8	1.6	1.5	0.8	0.2	0.3	0.3	1.9	3.5	4.3	4.0	25.1	26
Trapani.....	2.8	2.2	1.8	1.7	0.8	0.3	0.2	0.3	1.4	3.5	3.3	3.4	21.6	25
BARDINIA:														
Cagliari.....	1.9	1.4	2.0	1.6	1.1	0.7	0.1	0.1	1.2	2.4	3.0	2.2	17.7	29
Sassari.....	2.4	1.9	2.0	2.2	1.7	1.1	0.2	0.6	1.5	3.4	3.9	2.8	24.1	26

* Near but outside NIS 17 Area.

FIGURE 23-28. MEAN NUMBER OF DAYS WITH PRECIPITATION \geq 0.004 INCH

REGION AND STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
ITALIAN ALPS:														
Abbazia di Monte Maria . . .	5.7	5.1	6.8	7.0	9.0	10.7	11.2	10.9	8.3	8.6	7.0	5.6	97.7	37
Aosta	4.0	4.2	5.5	7.0	7.2	6.2	7.1	7.8	6.6	7.5	7.5	6.2	78.6	10
Cuneo	7.1	6.8	8.0	12.6	14.5	12.5	8.4	7.3	9.0	10.0	9.2	6.4	112.3	26
Domodossola	6.5	6.0	8.1	10.9	12.6	12.5	10.2	10.0	10.2	11.2	8.4	7.2	114.4	26
Piccolo San Bernardo	7.4	6.1	9.1	10.8	14.6	11.1	10.9	10.0	8.6	8.4	9.7	9.7	117.3	10
Sondrio	5.6	5.0	7.5	8.0	12.4	11.3	10.0	9.2	7.7	10.1	7.5	5.4	100.3	21
Steinach, Austria*	8.0	7.0	6.0	10.0	16.0	15.0	15.0	14.0	12.0	12.0	8.0	7.0	130.0	9
Po VALLEY:														
Bologna	8.1	7.7	9.7	11.2	11.7	9.1	5.3	5.7	8.3	11.6	10.5	9.5	108.3	26
Milan	8.0	8.4	10.2	12.1	13.4	11.0	8.3	7.7	8.3	12.0	10.8	9.6	120.7	26
Padova	7.5	7.1	10.1	11.5	13.9	12.1	8.5	7.9	9.0	11.5	9.8	8.9	117.8	26
Parma	8.9	8.3	10.3	11.0	11.8	9.7	5.0	5.7	7.4	12.3	11.9	10.4	112.7	26
Turin (Torino)	6.7	6.4	8.1	12.9	13.9	13.0	9.5	8.2	9.0	10.4	9.4	7.1	114.6	26
Verona	5.1	5.8	8.0	9.0	11.0	10.5	7.0	6.3	7.7	9.8	8.6	7.0	95.8	26
EAST COAST:														
Ancona	9.4	7.6	8.8	9.3	8.8	7.8	4.5	4.0	7.3	10.9	10.3	9.0	98.6	26
Bari	12.1	10.7	10.1	10.6	8.4	5.1	3.0	4.2	6.2	10.0	10.8	13.1	104.3	22
Brindisi	10.0	7.3	6.4	7.4	4.7	2.6	1.4	2.4	4.0	8.0	7.2	9.1	70.5	26
Chieti	11.0	8.5	8.8	10.0	8.9	8.2	4.7	5.2	6.1	8.7	11.0	10.4	101.4	19
Trieste**	8.0	7.0	9.0	10.0	11.0	11.0	8.0	8.0	9.0	11.0	10.0	9.0	110.0	70
Udine	7.1	6.0	10.5	11.5	15.5	13.8	11.0	10.4	10.4	13.1	9.8	8.7	128.7	26
Venice	6.0	6.2	8.6	9.5	11.2	9.7	6.7	6.4	7.3	9.9	8.9	7.6	98.0	26
Vicenza	6.4	4.9	5.4	5.1	4.0	3.1	1.6	2.5	3.4	5.4	6.2	6.6	54.6	22
WEST COAST:														
Genoa	9.5	8.7	11.1	12.0	12.2	9.3	5.7	6.4	8.7	13.1	12.0	10.6	119.3	26
Laghorn	6.8	9.1	10.6	10.4	9.3	6.0	2.0	4.1	7.3	12.9	11.8	11.6	105.8	26
Naples	12.1	10.8	12.0	12.5	9.0	6.2	2.6	3.7	7.6	13.0	12.0	13.8	115.9	26
Rome	11.4	9.4	11.3	12.0	8.7	5.8	2.0	2.0	6.3	12.0	12.3	12.2	106.2	26
San Remo	4.7	5.6	5.5	6.0	5.8	3.8	1.8	2.1	3.8	7.7	7.2	5.3	59.3	26
APENNINES:														
Benevento	10.8	8.5	10.1	10.8	7.8	5.2	3.5	3.7	5.9	10.3	10.5	10.7	97.8	26
Florence	9.0	9.3	10.7	11.9	11.5	9.6	4.7	5.4	7.7	13.0	12.2	11.7	116.7	26
L'Aquila	9.3	8.5	10.1	13.5	12.4	9.9	5.9	5.8	8.2	11.0	10.1	10.2	115.7	26
Potenza	9.3	9.1	10.0	12.3	9.7	7.0	4.0	4.7	6.9	10.9	10.3	11.5	106.3	26
Siena	8.3	7.2	9.2	10.2	10.2	7.8	4.1	4.3	6.8	10.8	9.8	9.4	98.1	26
SOUTHERN ITALY:														
Comana	12.0	11.2	11.2	11.3	7.1	6.0	2.8	3.5	6.3	11.2	11.8	13.1	107.5	20
Lecco	12.0	10.4	10.3	10.2	6.9	5.3	2.1	3.5	5.9	10.3	10.6	12.0	99.5	26
Taranto	6.5	6.0	6.4	7.5	5.4	4.1	1.9	2.6	4.8	7.0	7.4	7.5	67.7	26
SICILY:														
Catania	10.1	10.3	8.4	8.2	5.3	2.2	1.0	1.0	4.3	7.5	9.0	11.3	79.5	26
Messina	14.6	12.8	12.7	11.1	7.0	4.5	3.3	3.3	6.9	12.5	13.2	16.6	117.8	25
Palermo	15.1	13.1	12.2	10.0	6.8	3.8	2.1	2.2	6.3	12.0	12.9	16.1	112.5	20
Syracuse	11.4	9.4	7.5	6.3	4.5	1.8	0.9	1.7	4.8	8.5	9.8	12.2	78.8	26
Trapani	14.6	11.7	10.6	9.5	5.2	2.5	1.5	1.6	4.8	10.9	13.0	15.8	101.7	25
SARDINIA:														
Cagliari	9.2	8.0	10.0	10.0	7.0	5.1	1.2	1.2	4.4	8.2	11.2	12.0	89.3	19
Sassari	11.7	10.0	11.4	11.3	8.3	4.8	1.2	2.3	6.3	11.9	13.9	14.0	107.1	24

* Near but outside NIS 17 Area.

** Trace or more.

FIGURE 23-29. MAXIMUM 24-HOUR PRECIPITATION (INCHES)

REGION AND STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
ITALIAN ALPS:														
Steinach, Austria*	1.0	1.0	0.8	0.9	1.1	1.1	2.0	2.6	1.6	1.7	1.0	1.1	2.6	9
Po VALLEY:														
Bologna	2.1	1.9	2.2	2.5	2.4	2.0	2.8	2.4	4.0	4.4	3.1	4.2	4.9	52
Milan	1.7	2.0	2.4	2.1	2.7	3.1	2.6	3.2	3.5	2.9	4.1	2.1	4.1	29
Turin (Torino)	3.0	2.2	4.0	3.5	2.5	2.6	2.8	4.0	3.3	3.8	2.4	1.4	4.9	24
EAST COAST:														
Ancona	1.0	3.1	1.2	1.2	1.4	2.0	1.6	1.4	4.7	2.5	2.3	1.2	4.7	21
Trieste	2.0	2.8	3.5	2.8	3.7	3.3	2.6	4.0	3.0	5.4	3.6	2.2	5.4	60
Venice	2.6	1.9	1.7	2.8	3.3	2.0	2.0	2.5	5.0	3.2	2.0	3.1	5.0	40
WEST COAST:														
Genoa	5.7	2.4	4.0	4.1	2.4	5.6	3.6	4.8	5.2	4.1	6.9	3.3	6.9	16
Naples	2.2	1.6	3.0	2.0	2.1	2.3	2.5	2.0	2.7	2.6	2.7	3.6	3.6	34
Rome	5.1	2.0	2.3	2.6	3.3	2.6	1.8	3.0	4.2	5.7	6.2	2.5	6.2	85
SOUTHERN ITALY:														
Catanzaro	0.0	3.0	2.6	1.8	1.2	2.0	0.9	1.0	1.3	2.0	2.6	2.5	6.0	5
SICILY:														
Messina	1.3	2.8	2.2	1.8	1.7	1.3	0.8	1.2	4.0	1.8	1.9	1.7	4.0	6
Palermo	1.7	1.8	1.1	1.8	2.0	1.2	0.7	1.5	1.7	5.1	2.5	3.9	5.1	16
Syracuse	2.4	1.5	2.0	1.4	1.5	0.4	1.2	0.6	2.7	4.1	6.5	1.8	6.5	6
SARDINIA:														
Cagliari	1.4	2.5	1.3	1.1	1.3	2.4	0.5	0.5	1.3	2.1	7.0	2.4	7.0	14
Sassari	0.8	1.2	1.1	1.2	1.7	0.7	0.7	0.4	1.7	1.6	2.2	2.5	2.5	6

* Near but outside NIS 17 Area.

FIGURE 23-30. ABSOLUTE MAXIMUM AND MINIMUM PRECIPITATION (INCHES)

REGION AND STATION:		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
ITALIAN ALPS:															
Cuneo	Max	9.0	6.3	10.1	9.8	14.4	8.0	5.1	4.9	9.1	14.3	10.9	8.1	60.8	26
	Min	0.1	0.1	*	0.6	0.9	0.4	*	0.2	0.3	0.5	0.2	*	27.1	26
Domodossola	Max	9.0	10.0	13.4	14.0	14.9	12.2	7.3	12.4	18.6	25.3	17.1	8.5	73.7	26
	Min	*	0.2	0.3	0.3	1.3	1.6	0.5	0.2	0.9	0.6	0.2	0.1	32.8	26
Bondrio	Max	5.5	5.7	7.6	5.2	8.5	6.5	6.0	9.7	9.6	11.7	8.9	9.8	46.8	20
	Min	0.0	0.0	0.3	0.4	1.5	0.7	1.2	0.2	0.1	*	0.1	*	21.6	20
Po VALLEY:															
Bologna	Max	5.0	5.5	7.2	6.1	6.1	5.7	5.0	7.5	10.8	9.9	8.7	9.0	50.9	38
	Min	*	0.0	0.0	0.3	0.1	0.3	0.0	0.0	0.3	*	0.1	*	14.5	38
Milan	Max	7.7	7.6	10.4	11.1	13.4	10.6	8.6	8.9	13.1	12.4	12.4	9.6	53.6	55
	Min	0.1	0.0	0.0	0.5	0.7	0.0	0.1	0.1	0.1	0.0	0.2	0.1	16.8	55
Parma	Max	6.2	7.1	10.0	7.7	8.9	9.5	5.7	8.1	7.3	13.8	8.0	6.9	58.5	26
	Min	*	0.0	0.2	0.9	1.0	0.2	*	0.0	0.0	0.5	0.4	0.5	24.0	26
EAST COAST:															
Ancona	Max	0.7	10.0	3.0	4.8	4.6	5.7	3.9	2.9	6.1	13.8	7.6	6.3	35.3	26
	Min	0.1	0.3	0.4	0.4	0.1	0.3	*	0.2	0.2	3.4	0.6	0.7	17.4	26
Bari	Max	8.1	5.4	3.8	5.0	4.4	3.3	2.9	4.8	6.0	9.6	6.9	7.7	31.4	20
	Min	0.3	0.3	0.4	0.3	0.3	0.2	*	0.0	0.1	0.5	0.5	0.7	4.5	20
Brindisi	Max	9.5	5.9	5.5	5.3	5.0	3.4	1.5	6.3	9.6	11.5	9.9	10.6	42.4	24
	Min	0.6	0.4	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.4	0.3	0.3	15.7	24
Udine	Max	7.9	9.2	9.5	12.2	13.2	10.4	8.5	12.6	19.7	15.5	11.6	11.3	74.0	26
	Min	*	0.0	0.7	0.3	2.0	0.9	2.6	0.5	0.2	2.1	0.1	0.3	44.1	26
Venice	Max	4.5	8.8	5.2	4.3	8.4	5.7	4.5	5.4	7.4	8.2	6.4	3.5	38.2	26
	Min	0.0	*	0.0	0.2	0.1	0.0	0.1	0.3	0.1	0.4	0.0	0.1	18.9	26
WEST COAST:															
Genoa	Max	10.9	12.8	15.5	10.0	7.5	9.8	8.3	7.1	17.3	14.9	18.7	14.6	75.0	26
	Min	0.2	0.1	0.7	0.7	0.2	0.3	*	*	0.3	0.4	0.6	*	34.3	26
Leghorn	Max	12.2	7.1	5.9	5.4	5.5	6.3	4.1	11.0	9.1	12.8	14.5	10.7	54.5	26
	Min	0.2	0.3	0.2	0.3	0.1	0.1	0.0	*	0.2	0.9	0.5	0.5	17.1	26
Naples	Max	7.6	5.9	7.3	6.5	4.3	5.7	2.2	2.5	6.3	8.2	10.2	9.6	44.2	26
	Min	0.9	*	0.6	0.2	0.9	*	0.0	0.0	0.1	1.8	0.4	0.6	16.3	26
Rome	Max	8.9	8.6	6.8	7.2	5.5	5.3	4.5	3.2	10.2	13.9	14.7	10.8	57.9	55
	Min	0.5	0.0	0.0	*	*	*	0.0	0.0	*	0.7	0.5	0.2	21.2	55
APENNINES:															
Benevento	Max	10.5	8.2	6.9	6.3	5.3	5.0	5.3	4.4	6.8	12.2	9.4	9.4	42.2	26
	Min	0.4	*	0.5	0.4	0.1	*	0.0	0.0	0.1	1.1	0.7	0.7	17.3	26
Florence	Max	6.6	5.0	6.0	6.5	7.5	6.1	5.9	6.2	10.1	9.1	10.7	6.8	44.8	26
	Min	0.1	0.1	0.1	0.9	0.9	0.5	0.0	*	0.1	0.5	0.3	0.7	15.8	26

FIGURE 23-30 (Continued)

REGION AND STATION		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
APENNINES (Con.):															
L'Aquila	Max	7.7	4.1	6.5	5.6	5.5	5.2	4.2	3.7	6.5	6.1	9.0	0.0	37.3	26
	Min	0.3	0.1	0.2	0.0	1.1	0.6	0.1	*	0.1	1.0	0.7	0.1	10.0	26
Perugia	Max	5.5	6.2	6.4	8.9	6.4	10.4	5.8	5.0	11.4	13.6	14.8	7.2	47.3	26
	Min	0.3	0.0	0.3	1.5	0.8	1.2	*	0.0	0.2	1.5	0.5	0.0	26.1	26
Potenza	Max	6.1	6.8	7.8	5.1	4.4	4.2	2.2	2.7	4.2	6.5	5.7	9.1	35.0	26
	Min	0.2	0.2	0.7	0.4	0.1	0.1	*	0.0	0.1	0.7	0.2	0.3	16.6	26
SOUTHERN ITALY:															
Lecco	Max	0.0	5.1	4.8	5.0	4.3	3.5	1.4	3.9	7.4	8.3	6.8	8.4	38.9	26
	Min	0.7	0.2	0.2	0.5	0.1	0.1	0.0	0.0	0.1	0.3	0.3	0.4	17.8	26
Taranto	Max	0.0	4.2	3.3	4.0	3.2	2.8	3.7	3.5	10.0	12.8	9.6	7.8	33.5	26
	Min	0.4	0.1	*	0.3	0.1	0.0	0.0	0.0	0.0	0.1	0.3	0.2	12.2	26
SICILY:															
Messina	Max	10.4	0.0	7.6	5.0	3.0	4.0	3.2	3.2	4.8	9.4	8.8	6.0	44.2	25
	Min	1.2	0.8	0.8	0.4	0.4	*	0.0	0.0	0.3	0.8	1.5	0.6	21.7	26
Syracuse	Max	8.1	9.4	4.2	4.4	2.4	1.0	4.3	1.2	9.6	8.9	9.2	8.2	43.0	26
	Min	0.1	0.1	*	*	0.0	0.0	0.0	0.0	*	0.5	0.1	0.4	10.0	26
Trapani	Max	7.4	4.9	4.3	4.8	3.8	1.3	0.6	2.3	4.2	8.3	9.2	6.0	33.8	26
	Min	0.6	0.1	0.3	0.3	*	0.0	0.0	0.0	*	1.2	0.8	0.5	12.2	26
SARDINIA:															
Cagliari	Max	4.8	3.2	5.2	3.1	3.4	3.4	0.7	0.7	3.6	4.4	8.1	4.6	40.7	18
	Min	0.1	*	0.5	0.2	*	0.0	0.0	0.0	*	0.3	0.1	0.7	13.1	18
Sassari	Max	6.7	5.7	4.2	4.9	3.9	3.5	1.5	1.9	4.5	8.5	10.6	6.7	38.2	23
	Min	0.5	0.1	0.1	0.3	*	*	0.0	0.0	*	0.6	0.4	0.7	10.7	23

* <0.05 inch.

FIGURE 23-31. MEAN NUMBER OF DAYS WITH SNOWFALL.

REGION AND STATION		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
ITALIAN ALPS:															
Abbasia di Monte Maria		5.3	5.1	5.0	4.0	1.3	0.2	0.0	0.0	0.2	1.3	4.7	5.3	33.3	27
Bolzano		3.0	2.0	1.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	1.0	3.0	10.2	10
Cuneo		2.8	3.0	1.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	10.4	5
Domodossola		2.0	2.2	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	6.8	5
Piccolo San Bernardo		7.0	5.2	6.5	9.7	3.5	1.5	0.0	1.2	1.7	5.2	5.7	7.5	50.0	4
Sondrio		2.4	1.2	0.6	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	2.4	7.0	5
Steinach, Austria*		7.0	7.0	4.0	4.0	3.0	0.0	0.0	0.0	0.0	4.0	4.0	6.0	38.0	9
Tronto		1.8	0.8	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	4.6	5
PO VALLEY:															
Bologna		2.0	1.8	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	5.4	5
Milan		2.7	2.3	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	2.1	9.1	5
Parma		2.4	1.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.0	5.2	5
Turin (Torino)		3.0	2.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	3.0	10.0	na
EAST COAST:															
Ancona		1.5	1.1	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.8	4.1	na
Trieste		2.0	1.0	1.0	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.7	1.0	6.0	60
Udine		1.0	0.3	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	3.0	7
Urbino		3.6	2.4	1.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.3	8.7	na
Venice		0.6	0.4	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2	2.0	8
WEST COAST:															
Genoa		0.3	0.6	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	1.7	na
Naples		0.4	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.1	35
Rome		0.8	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.6	na
APENNINES:															
Florence		0.7	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	2.7	3
L'Aquila		4.1	3.5	3.5	3.9	0.0	0.0	0.0	0.0	0.0	0.4	1.4	2.0	17.0	na
Perugia		1.0	2.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	1.0	5.4	10
Potenza		2.0	1.2	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	1.8	7.8	3
SOUTHERN ITALY:															
Catanzaro		0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	2.1	5
SICILY:															
Messina		0.7	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	1.8	6
Palermo		0.3	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.8	na
SARDINIA:															
Cagliari		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15

na Data not available.

* Near but outside NIS 17 Area.

FIGURE 23-32. 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
ITALIAN ALPS:															
Aosta.....	Max	41	47	55	63	71	79	81	80	73	61	49	43	62	6
	Min	23	27	34	42	48	55	58	56	51	43	35	20	41	6
Bolsano.....	Max	40	46	55	64	71	80	84	82	74	63	50	41	62	15
	Min	29	32	39	47	53	60	63	62	57	47	40	31	47	15
Cuneo.....	Max	42	46	53	60	68	76	82	80	72	60	49	44	61	41
	Min	29	32	38	45	50	58	63	62	57	47	38	32	45	41
Piccolo San Bernardo.....	Max	32	24	27	35	43	51	56	55	49	39	30	24	38	10
	Min	13	13	19	23	32	38	43	43	39	31	23	17	28	10
Sondrio.....	Max	40	46	55	64	70	78	83	80	73	61	50	42	62	15
	Min	29	32	38	46	51	58	62	60	56	47	38	31	46	15
Trento.....	Max	40	45	55	63	71	79	83	81	74	62	50	42	62	11
	Min	27	29	37	45	52	58	61	59	55	44	37	30	44	11
Po VALLEY:															
Bologna.....	Max	41	44	54	63	72	82	87	85	76	64	52	42	64	14
	Min	34	35	43	50	58	66	70	69	63	54	45	36	44	14
Milan.....	Max	38	46	55	64	73	82	87	85	75	62	50	41	63	18
	Min	28	33	40	47	54	61	66	65	59	49	40	32	48	18
Padova.....	Max	41	46	53	62	71	78	83	81	74	63	51	43	62	45
	Min	30	34	40	47	55	62	65	64	59	50	40	34	48	45
Parma.....	Max	39	45	55	64	71	80	84	84	76	64	51	42	63	15
	Min	30	33	40	48	54	62	67	66	60	51	42	33	49	15
Turin (Torino).....	Max	39	44	53	61	68	77	81	78	72	60	48	40	60	35
	Min	28	32	39	46	54	60	65	64	58	48	37	30	47	35
Verona.....	Max	41	46	55	63	73	80	84	84	75	63	51	44	64	16
	Min	30	33	40	49	55	62	65	65	59	50	40	35	48	16
EAST COAST:															
Ancona.....	Max	47	50	58	63	70	79	84	83	76	67	56	50	65	15
	Min	38	40	48	51	58	66	71	70	65	58	49	41	54	15
Bari.....	Max	52	53	57	62	69	76	81	81	76	70	61	54	66	10
	Min	40	41	48	49	56	63	68	68	63	57	49	42	58	10
Brindisi.....	Max	54	55	60	66	74	83	86	86	80	72	64	56	70	25
	Min	42	42	48	50	57	64	69	68	64	58	50	45	56	25
Chieti.....	Max	47	49	55	59	67	75	82	80	74	65	56	50	63	15
	Min	31	32	37	42	49	57	63	61	56	48	40	35	46	15
Pescona.....	Max	52	54	59	65	70	80	86	84	78	70	62	54	68	7
	Min	35	36	41	44	50	57	61	61	57	51	44	38	48	7
Ravenna.....	Max	43	49	58	64	72	80	85	84	78	68	58	45	65	15
	Min	30	32	38	44	51	58	63	61	57	50	41	39	47	15
Trieste.....	Max	44	47	53	62	70	78	84	82	75	64	53	46	63	34
	Min	36	37	42	50	56	63	68	67	62	54	45	38	52	34
Udine.....	Max	44	47	55	61	71	78	84	83	76	64	54	45	63	7
	Min	34	34	40	46	53	59	63	63	58	50	43	36	48	7
Urbino.....	Max	41	44	51	58	65	74	80	79	72	61	50	43	60	15
	Min	32	34	38	44	51	58	64	63	59	50	42	35	47	15
Venice.....	Max	41	46	52	60	70	77	82	81	73	63	51	44	61	34
	Min	32	36	42	49	58	64	68	67	60	52	42	36	51	34
Vicenza.....	Max	52	52	57	64	71	81	84	82	76	71	63	55	67	10
	Min	45	44	47	54	61	69	72	72	68	61	50	42	63	10
WEST COAST:															
Genoa.....	Max	49	52	56	62	68	74	80	80	75	66	58	51	64	18
	Min	40	43	46	52	57	64	68	69	65	57	49	43	54	18
Leghorn.....	Max	51	54	57	64	69	78	83	83	78	69	59	53	67	50
	Min	40	41	44	49	55	62	68	67	63	55	48	42	53	50
Naples.....	Max	51	53	58	63	69	77	83	82	77	69	61	54	66	50
	Min	43	44	48	52	57	64	69	69	65	59	52	46	55	50
Rome.....	Max	52	55	59	65	73	81	87	86	80	70	60	53	68	50
	Min	39	40	44	49	55	61	66	65	61	55	48	40	52	50
San Remo.....	Max	56	56	60	63	69	77	80	82	77	70	63	57	67	10
	Min	44	44	47	51	56	64	68	68	64	57	51	46	55	10
APENNINES:															
Benevento.....	Max	50	54	59	65	73	80	87	86	81	70	60	52	68	15
	Min	36	37	41	46	51	58	63	62	58	52	45	39	49	15
Castiglione Del Lago.....	Max	49	53	58	65	72	83	89	87	80	69	60	51	66	6
	Min	34	34	38	42	48	55	59	58	54	48	41	36	46	6
Florence.....	Max	47	51	57	65	73	81	86	85	77	67	56	50	66	41
	Min	35	37	42	48	54	60	65	65	58	52	43	39	50	41

FIGURE 23-32 (Continued)

REGION AND STATION		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YR REC
APENNINES (Con.):															
L'Aquila	Max	40	45	53	60	60	74	81	80	73	63	51	44	61	15
	Min	29	31	36	42	47	54	59	58	54	47	39	33	44	15
Perugia	Max	44	44	52	59	69	77	84	84	73	64	53	43	63	10
	Min	35	33	38	43	52	58	63	68	57	51	43	36	48	10
Potenza	Max	42	45	50	56	63	71	78	77	72	62	52	45	59	15
	Min	32	33	37	41	47	54	59	58	55	49	41	35	45	15
Sienna	Max	40	49	55	62	68	77	83	82	76	65	55	48	62	15
	Min	35	36	40	46	52	59	65	64	59	52	44	48	59	15
SOUTHERN ITALY:															
Catanzaro	Max	53	54	57	63	70	77	82	84	80	71	62	54	67	5
	Min	42	44	45	50	57	53	67	68	63	57	50	44	54	5
Cosenza	Max	54	55	63	70	76	88	93	93	80	75	66	56	73	10
	Min	39	40	45	48	55	63	68	67	62	56	43	33	53	10
Lecce	Max	54	59	66	66	73	81	80	80	81	73	63	56	70	15
	Min	42	43	45	50	55	63	68	68	64	58	51	45	54	15
Paola	Max	58	59	62	66	72	79	84	85	76	74	66	61	70	7
	Min	44	45	49	52	59	63	67	68	65	59	54	48	59	7
Taranto	Max	54	54	58	64	71	80	86	86	80	72	65	57	69	10
	Min	43	43	47	52	58	66	71	71	67	60	55	47	57	10
SICILY:															
Caltanissetta	Max	49	51	58	65	73	81	86	85	80	72	62	51	68	15
	Min	37	38	42	47	53	61	66	67	65	56	48	40	52	15
Licata	Max	56	57	66	64	70	79	84	84	79	74	67	60	70	10
	Min	45	44	47	50	55	63	67	68	64	59	53	48	55	10
Messina	Max	57	58	62	66	72	79	86	86	82	74	66	60	71	10
	Min	48	48	51	55	60	67	73	74	70	63	56	51	60	10
Palermo	Max	60	61	65	69	75	82	88	89	85	77	70	62	73	18
	Min	42	42	44	48	53	59	64	65	62	57	50	44	53	18
Syracuse	Max	58	55	57	62	67	74	80	83	78	73	64	57	67	40
	Min	47	47	49	55	61	69	75	76	71	65	57	50	61	40
Trapani	Max	59	60	63	67	71	78	83	83	82	76	68	62	71	15
	Min	50	50	51	55	59	66	72	73	71	65	58	53	60	15
BARDINIA:															
Cagliari	Max	57	58	61	66	72	80	80	80	80	72	65	58	70	9
	Min	44	45	47	51	55	61	67	68	65	58	52	45	55	9
Sassari	Max	52	53	58	63	68	74	83	83	78	68	61	54	66	13
	Min	41	41	45	48	54	60	66	66	63	55	49	44	53	13

FIGURE 23-33. ABSOLUTE MAXIMUM AND MINIMUM TEMPERATURES (°F.)

REGION AND STATION		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YR REC
ITALIAN ALPS:															
Aosta	Max	57	70	77	77	93	99	96	93	91	74	67	68	100	0
	Min	11	0	20	20	33	44	44	44	31	29	19	7	0	0
Bolzano	Max	58	64	76	84	91	93	100	97	90	78	69	60	100	10
	Min	14	-3	24	32	38	45	49	51	42	33	27	15	-3	10
Cuneo	Max	60	70	79	77	89	103	96	95	89	79	71	70	103	9
	Min	13	10	20	30	37	48	53	53	43	33	27	19	10	9
Steinach, Austria*	Max	49	48	59	72	81	85	89	84	78	68	59	53	89	9
	Min	-2	-15	0	14	29	36	38	35	29	21	16	-3	-15	9
Trento	Max	55	61	75	81	88	87	87	100	88	78	68	60	100	11
	Min	1	10	23	25	34	34	43	46	32	21	17	-2	-2	11
PO VALLEY:															
Bologna	Max	60	63	72	80	89	99	98	99	102	81	70	63	102	35
	Min	10	11	22	32	40	48	54	50	44	33	20	15	10	35
Milan	Max	62	72	77	85	95	98	101	100	95	80	71	62	101	65
	Min	7	7	21	31	39	43	52	51	41	27	21	10	7	65
Padova	Max	57	61	70	82	88	93	95	93	90	77	66	63	95	37
	Min	7	16	23	31	41	49	53	53	39	27	21	8	7	37
Parma	Max	59	66	77	82	88	102	97	98	91	85	68	57	102	10
	Min	5	0	19	25	28	43	45	50	36	30	23	-4	-4	10
Turin (Torino)	Max	64	67	72	80	93	93	96	93	92	77	69	63	96	46
	Min	4	9	19	31	38	45	48	51	41	27	17	7	4	46
Verona	Max	58	68	76	82	89	94	98	95	93	79	65	58	98	10
	Min	14	18	27	33	36	47	53	53	45	28	18	19	14	10

* Near but outside NIS 17 Area.

Figure 23-33 (Continued)

REGION AND STATION		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
EAST COAST:															
Ancona.....	Max	64	68	75	77	89	99	100	102	94	81	79	66	102	31
	Min	24	24	28	35	43	48	47	50	47	36	33	21	21	31
Bari.....	Max	66	72	79	82	91	101	103	107	101	93	77	70	107	25
	Min	23	24	29	34	40	49	57	53	45	37	32	21	21	25
Brindisi.....	Max	64	68	79	81	95	100	101	102	99	90	87	72	101	25
	Min	27	21	32	37	40	52	55	50	46	39	32	32	21	25
Pescona.....	Max	73	72	81	86	84	93	98	104	91	90	79	75	104	7
	Min	9	23	23	30	32	45	48	50	41	34	30	19	9	7
Trieste.....	Max	60	60	73	85	90	95	100	96	92	80	67	67	100	50
	Min	15	14	24	35	40	45	52	49	48	31	22	16	14	50
Udine.....	Max	61	60	71	80	86	101	94	98	89	83	68	59	101	7
	Min	15	15	26	32	38	49	52	50	46	37	30	17	15	7
Venice.....	Max	56	62	73	77	86	91	97	95	89	77	69	61	97	40
	Min	14	9	24	36	42	50	54	50	38	28	23	18	9	40
Vicenza.....	Max	68	63	79	81	89	100	100	96	91	86	84	66	100	10
	Min	30	23	34	45	45	50	59	52	41	45	36	23	23	10
WEST COAST:															
Genoa.....	Max	65	70	75	79	87	91	95	95	93	80	75	70	95	57
	Min	17	25	29	38	42	51	57	57	51	38	32	23	17	57
Leghorn.....	Max	66	65	79	84	91	94	98	97	92	83	73	71	98	41
	Min	20	22	27	32	41	46	52	51	41	34	30	22	20	41
Naples.....	Max	65	65	73	79	91	93	99	99	93	88	73	68	99	50
	Min	24	24	27	38	42	50	55	53	48	38	31	28	24	50
Rome.....	Max	65	68	74	83	90	97	108	99	93	90	76	70	108	79
	Min	19	17	25	27	35	48	52	52	43	32	26	21	17	79
San Remo.....	Max	68	64	77	79	84	89	99	102	86	79	79	69	102	10
	Min	27	34	34	37	44	43	54	59	50	39	34	28	27	10
APENNINES:															
Benevento.....	Max	64	68	77	90	91	104	104	102	106	85	75	64	106	9
	Min	21	23	28	28	36	45	50	50	41	34	27	21	21	9
Castiglione Del Lago.....	Max	61	66	72	82	90	102	104	99	95	84	72	64	104	6
	Min	10	18	19	21	32	39	46	46	41	28	18	16	10	6
Florence.....	Max	66	64	72	81	90	100	102	102	94	82	68	63	102	17
	Min	17	13	26	31	40	49	52	52	40	33	26	21	13	17
L'Aquila.....	Max	57	64	74	79	86	94	95	96	89	82	70	60	96	36
	Min	1	9	12	27	34	41	45	45	28	26	17	16	1	36
Perugia.....	Max	64	60	66	72	85	92	94	100	90	81	66	63	100	10
	Min	18	14	24	28	36	44	52	52	39	37	22	18	14	10
SOUTHERN ITALY:															
Catanzaro.....	Max	67	64	69	76	86	91	99	102	95	87	80	68	102	5
	Min	24	35	32	39	42	54	54	58	52	48	28	29	24	5
Paola.....	Max	73	77	84	86	90	93	102	104	98	91	81	79	104	7
	Min	28	23	28	39	37	50	50	52	50	43	36	25	23	7
Taranto.....	Max	64	68	70	77	84	99	102	102	93	88	79	66	102	10
	Min	27	28	32	36	41	50	61	57	50	43	41	28	27	10
SICILY:															
Licata.....	Max	63	70	73	81	86	102	102	97	99	86	84	68	102	10
	Min	32	37	32	36	43	50	52	55	52	46	43	37	32	10
Messina.....	Max	69	75	74	77	87	93	100	98	95	85	78	69	100	41
	Min	33	33	36	45	49	59	63	63	61	48	44	35	33	41
Palermo.....	Max	82	82	98	95	104	108	113	114	108	106	89	75	114	41
	Min	34	32	38	42	47	54	55	63	56	46	41	34	32	41
Syracuse.....	Max	64	70	73	81	86	102	102	99	99	86	86	68	102	10
	Min	25	34	32	34	43	46	55	57	55	36	39	32	25	10
SARDINIA:															
Cagliari.....	Max	71	69	77	78	87	93	99	99	97	86	77	69	99	10
	Min	28	30	31	41	41	49	54	58	54	45	38	33	28	10
Sassari.....	Max	68	72	78	98	95	101	104	107	102	91	81	68	107	40
	Min	26	26	29	31	41	45	52	52	48	40	35	32	26	40

FIGURE 23-34. MEAN RELATIVE HUMIDITY (%) AT SPECIFIED HOURS

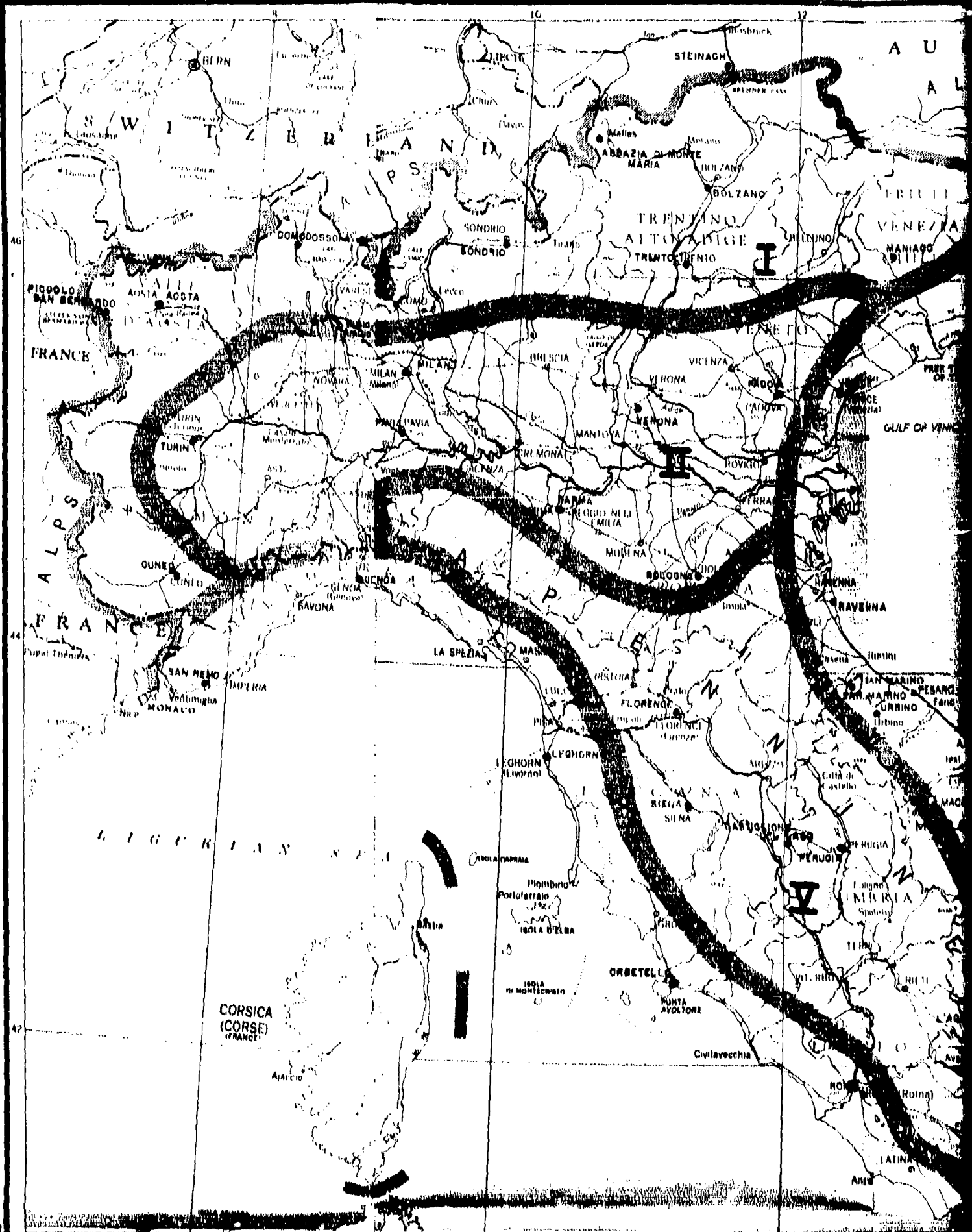
REGION AND STATION	HOUR (LMT)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS REC
ITALIAN ALPS:															
Cuneo.....	0900	57	61	58	59	58	56	56	54	09	07	02	57	58	5
	1500	48	53	46	48	47	46	45	45	53	58	54	51	40	5
	2100	56	62	60	02	01	03	02	00	08	72	08	50	03	5
Domodossola.....	0900	84	85	78	72	72	71	74	74	81	88	84	84	79	5
	1500	66	66	48	49	51	51	53	54	61	62	00	62	56	5
	2100	85	82	71	69	70	09	74	70	84	87	83	83	79	5
PO VALLEY:															
Bologna.....	0900	75	77	67	66	59	58	53	55	02	08	75	72	60	5
	1500	71	67	63	53	48	47	39	41	50	59	08	08	55	5
	2100	75	71	62	61	55	55	48	51	39	61	72	70	62	5
Milan.....	0900	78	79	69	70	62	59	61	60	05	72	73	74	60	5
	1500	72	71	57	58	50	47	47	47	53	02	70	68	59	5
	2100	78	77	66	68	63	61	02	61	69	75	77	75	69	5
Parma.....	0900	83	82	75	72	65	64	58	58	70	76	81	80	72	5
	1500	73	66	57	58	52	52	47	47	54	02	70	71	59	5
	2100	83	78	72	51	66	68	63	63	70	78	83	81	73	5
EAST COAST:															
Chieta.....	0900	77	75	70	65	60	59	55	54	65	71	77	75	67	5
	1500	76	71	68	66	61	58	54	51	63	72	74	73	65	5
	2100	77	76	71	70	65	64	61	66	58	74	78	74	70	5
Urbino.....	0900	85	84	76	74	63	60	54	56	69	78	84	86	72	5
	1500	81	80	72	70	61	60	53	51	65	73	84	82	69	5
	2100	84	83	78	75	67	66	57	60	73	78	85	84	74	5
Venice.....	0900	82	83	82	81	74	71	69	70	77	80	70	79	77	5
	1500	75	78	75	73	67	63	62	61	68	73	74	76	70	5
	2100	80	79	77	76	75	72	69	70	77	79	70	78	76	5
WEST COAST:															
Leghorn.....	0900	74	74	73	73	69	65	63	64	69	74	73	74	71	5
	1500	69	68	67	68	66	62	60	62	68	68	68	69	66	5
	2100	73	74	72	74	70	69	67	67	69	73	73	73	71	5
Naples.....	0900	68	70	64	62	56	56	58	57	60	63	68	69	62	5
	1500	56	60	53	57	46	50	51	49	54	57	61	60	54	5
	2100	67	69	68	69	65	65	64	62	67	71	72	70	67	5
Rome.....	0900	76	77	71	67	57	52	50	55	67	73	77	76	67	5
	1500	60	62	56	56	58	46	41	44	52	59	64	65	55	5
	2100	73	75	74	75	70	67	65	67	73	75	77	75	72	5
San Remo.....	0900	61	64	60	65	63	64	62	65	66	68	61	65	64	5
	1500	58	58	58	61	58	61	59	61	62	64	55	60	59	5
	2100	60	64	62	66	63	60	65	65	65	68	58	64	64	5
APENNINES:															
Benevento.....	0900	82	80	75	70	62	58	56	59	68	77	83	85	71	5
	1500	69	68	62	61	53	51	43	48	54	59	74	75	60	5
	2100	81	79	75	72	70	67	63	63	70	77	83	81	72	5
Florence.....	0900	83	81	75	72	66	59	56	59	69	78	81	82	72	5
	1500	68	64	57	59	50	48	41	44	55	59	67	70	57	5
	2100	81	79	73	76	68	64	58	58	73	77	82	83	72	5
Perugia.....	0900	80	81	77	77	73	71	67	65	75	79	81	81	75	5
	1500	80	78	74	73	70	66	60	58	67	77	81	80	72	5
	2100	76	78	75	73	66	63	54	54	68	74	80	80	70	5
SOUTHERN ITALY:															
Taranto.....	0900	75	74	72	67	61	54	52	52	61	70	77	76	60	4
	1500	65	62	59	59	51	48	41	45	55	59	68	63	50	4
	2100	77	78	73	72	63	58	52	57	69	71	76	77	69	4
SICILY:															
Caltanissetta.....	0900	79	78	74	74	69	68	65	64	68	71	74	77	72	5
	1500	78	77	75	74	68	67	63	64	68	70	74	75	71	5
	2100	79	77	75	75	69	68	65	65	68	71	75	76	72	5
Messina.....	0900	69	70	67	67	62	60	59	59	61	69	70	70	65	5
	1500	66	68	66	64	57	56	51	54	57	66	70	67	62	5
	2100	72	74	73	72	72	69	67	69	71	75	70	73	72	5
Trapani.....	0900	74	74	71	69	67	68	66	66	67	73	73	75	71	5
	1500	70	69	66	66	67	68	70	67	66	68	70	70	68	5
	2100	73	73	70	71	71	72	74	70	71	74	72	73	72	5
SARDINIA:															
Cagliari.....	0900	77	76	73	69	59	53	52	56	64	73	75	78	67	5
	1500	64	63	58	57	51	48	46	48	53	60	65	65	50	5
	2100	75	76	71	70	64	61	61	65	68	73	71	74	69	5

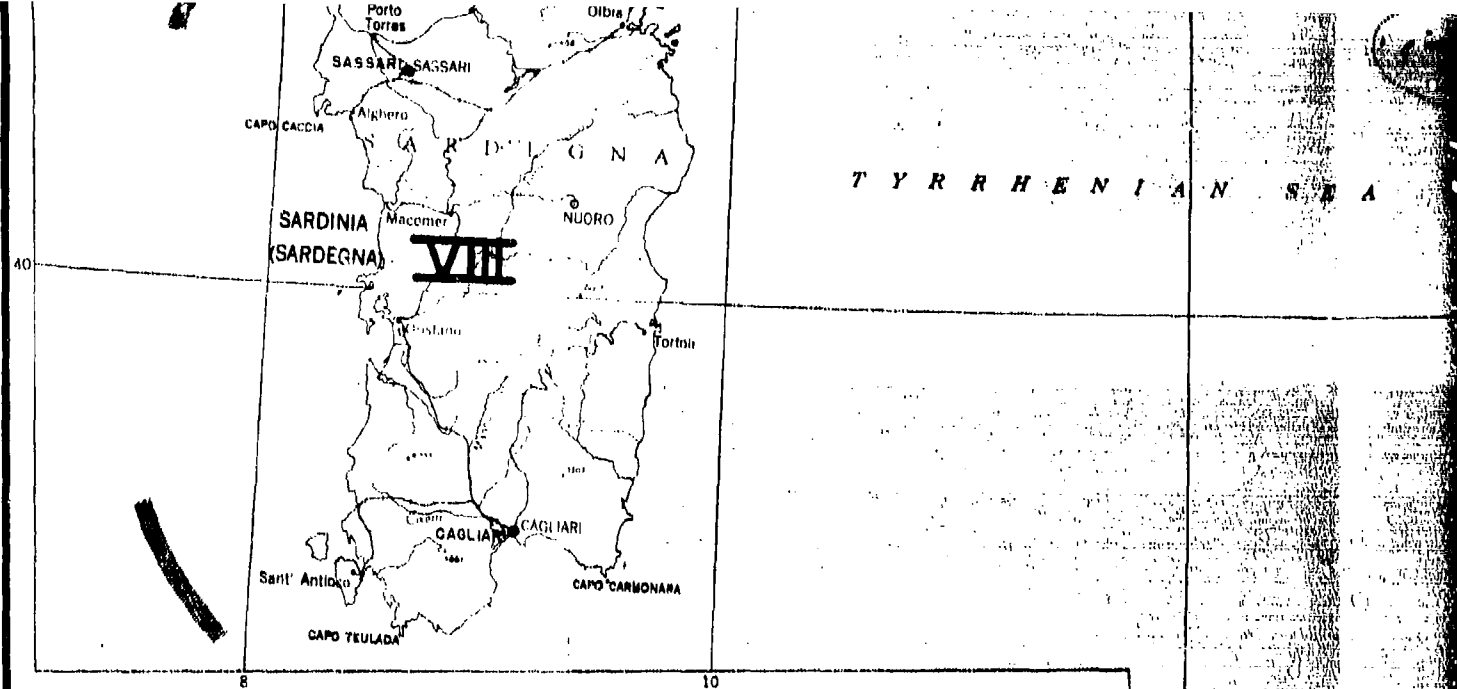
LIST OF STATIONS

REGION AND STATION	LATI- TUDE*	LONGI- TUDE*	ELEVA- TION	REGION AND STATION	LATI- TUDE*	LONGI- TUDE*	ELEVA- TION
	° 'N	° 'E	feet		° 'N	° 'E	feet
ITALIAN ALPS:				WEST COAST:			
Abbazia di Monte Maria	46 43	10 41	1,331	Genoa	44 24	8 54	177
Aosta	45 44	7 19	1,013	Leghorn	43 32	10 18	79
Bolzano	46 25	11 13	778	Naples	40 50	14 15	82
Cuneo	44 22	7 33	1,820	Orbetello	42 26	11 13	62
Domodossola	46 00	8 18	681	Rome	41 52	12 33	207
Montago	46 00	2 43	651	San Remo	43 40	7 50	30
Piccolo San Bernardo	45 10	0 55	7 087	APENNINES:			
Sondrio	46 10	9 52	997	Benevento	41 08	14 45	581
Stemnach, Austria**	47 05	11 28	3,511	Castellione Del Lago	43 08	12 02	803
Trento	46 04	11 08	1,021	Florence	43 48	11 12	240
PO VALLEY:				SOUTHERN ITALY:			
Bologna	44 20	11 20	151	L'Aquila	42 13	13 24	2,305
Milan	45 28	9 12	483	Perugia	43 07	12 23	1,679
Padova	45 25	11 33	82	Potenza	40 38	16 48	2,749
Parma	44 47	10 20	292	Stena	43 10	11 10	1,198
Pavia	45 10	7 10	209	SICILY:			
Turin	45 03	7 36	606	Catanzaro	38 55	16 20	1,000
Verona	45 22	10 51	220	Cosenza	39 17	16 17	510
EAST COAST:				Lecce			
Ancona	43 38	13 30	52	40 14	18 00	200	
Bari	41 08	16 51	92	40 22	16 02	138	
Brescia	46 38	17 50	92	38 06	18 30	40	
Como	42 24	11 09	1,119	40 28	17 17	52	
Pescara	42 28	11 13	52	SARDINIA:			
Ravenna	44 24	12 19	26	Cagliari	39 13	9 07	245
San Marino	43 56	12 27	2,336	40 43	8 33	709	
Trieste	45 39	13 16	85				
Udine	46 03	13 11	305				
Urbino	43 17	12 39	1,083				
Venice	45 26	12 23	177				
Vieste	41 53	16 11	107				

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

** Near but outside NIS 17 Area.





ITALY AND THE FREE TERRITORY OF TRIESTE STATION LOCATIONS

● METEOROLOGICAL STATION

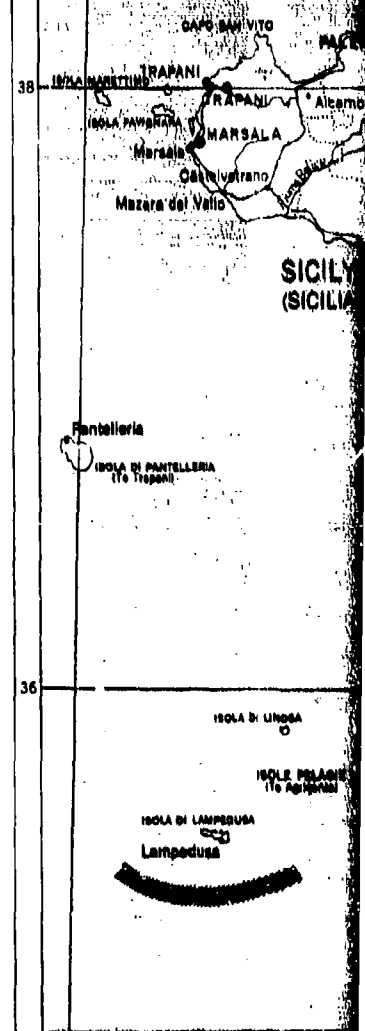
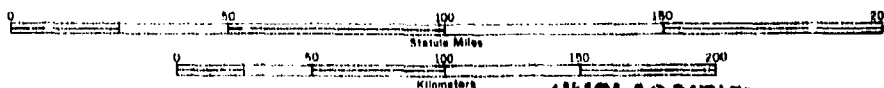
Locations are shown only for stations for which data are presented in text or tables.

DISCUSSION REGIONS

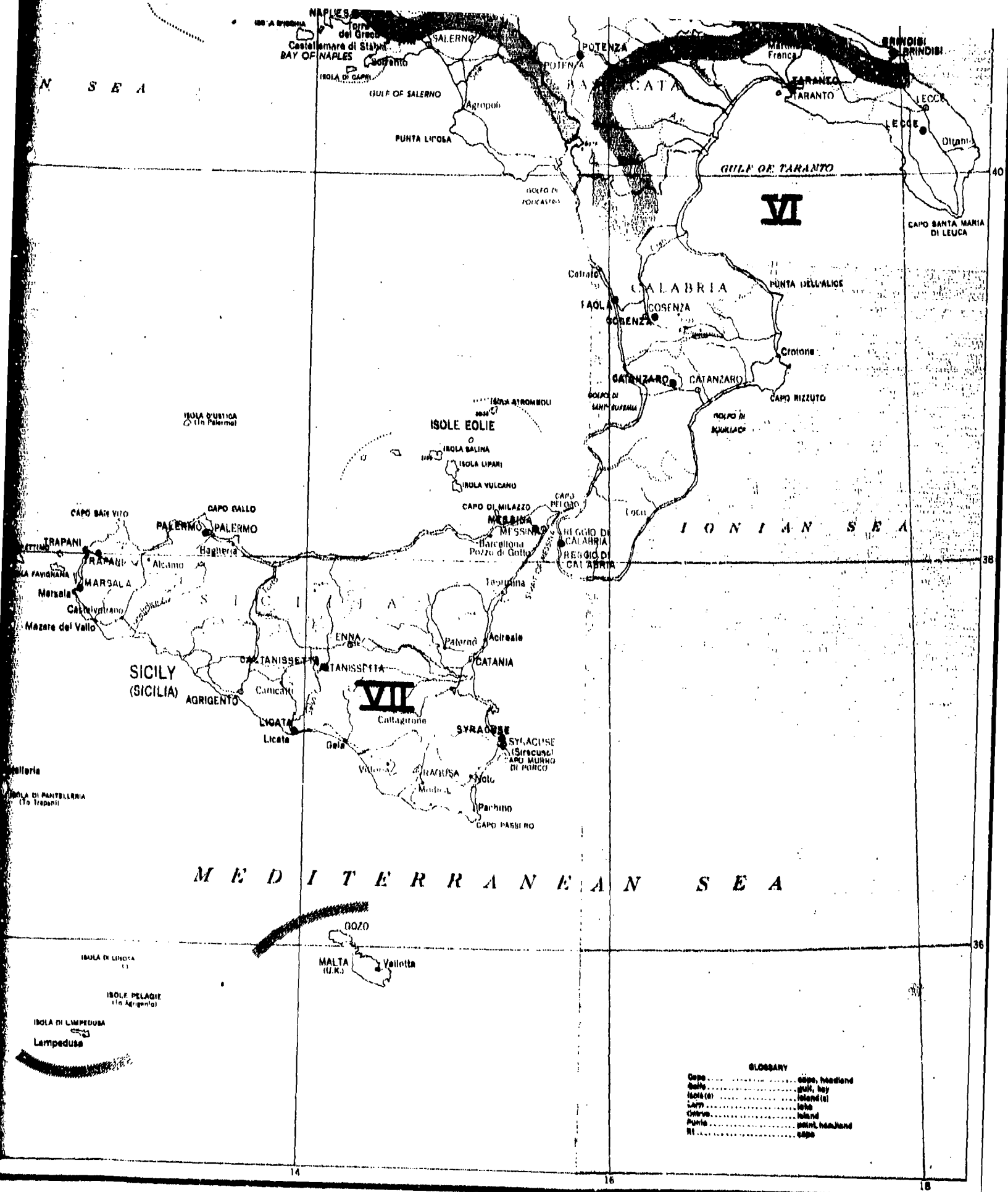
- | | |
|-----------------|--------------------|
| I. ITALIAN ALPS | V. APENNINES |
| II. PO VALLEY | VI. SOUTHERN ITALY |
| III. EAST COAST | VII. SICILY |
| IV. WEST COAST | VIII. SARDINIA |

- GENERAL BASIC INFORMATION
- — — — — International boundary
 - — — — — Regional boundary
 - — — — — Provincial boundary
provincial capitals are the same as the provincial capital
 - ⊙ National capital
 - ⊙ Provincial capital
 - — — — — Railroad standard gauge
 - — — — — Railroad narrow gauge
 - ⊙ Town
 - ⊙ Capital
 - ⊙ Spot height (m)

▨ NIS Area boundary



UNCLASSIFIED



4

STATION LOCATIONS FIGURE 23-3