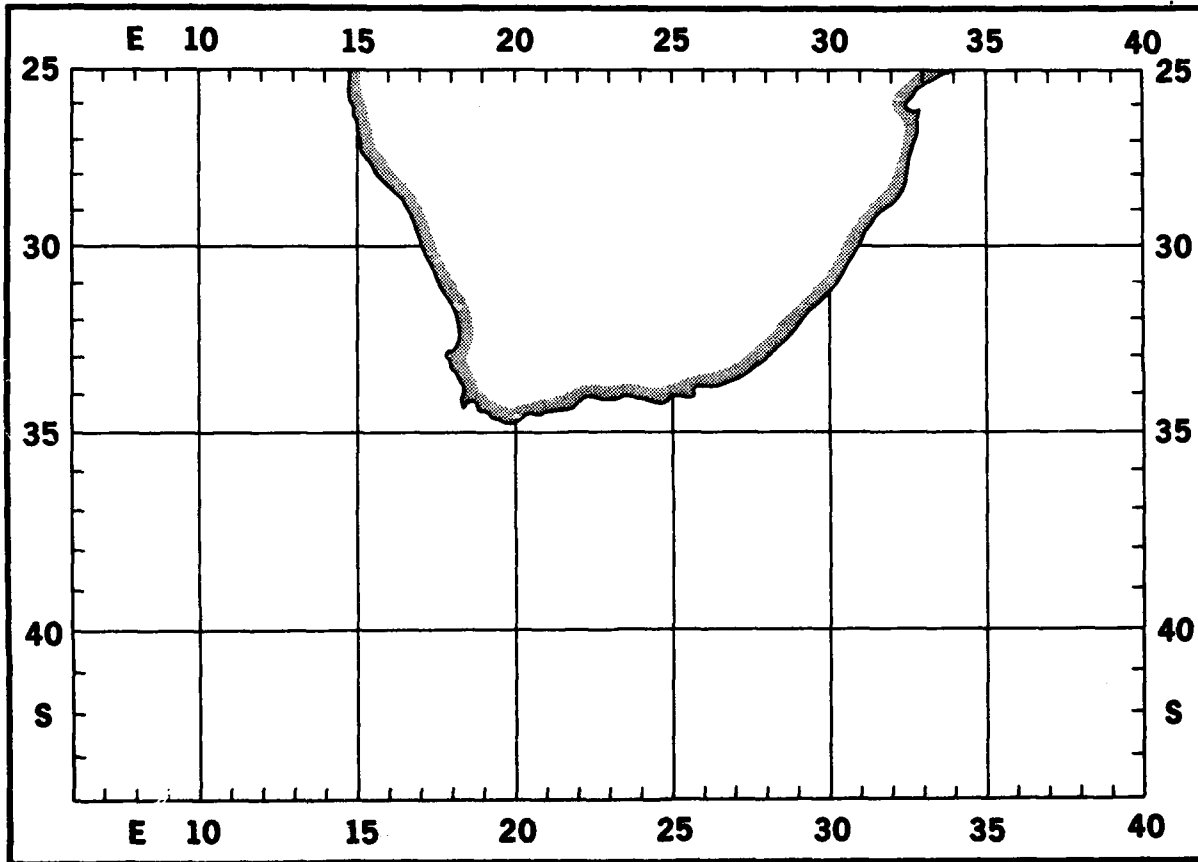


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U.S. NAVY REGIONAL CLIMATIC STUDY OF SOUTHERN AFRICAN WATERS

MARCH 1989

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PREPARED BY
NAVAL OCEANOGRAPHY COMMAND DETACHMENT,
ASHEVILLE, N.C.

PREPARED UNDER THE AUTHORITY OF
COMMANDER, NAVAL OCEANOGRAPHY COMMAND

STENNIS SPACE CENTER, MS 39529-5000

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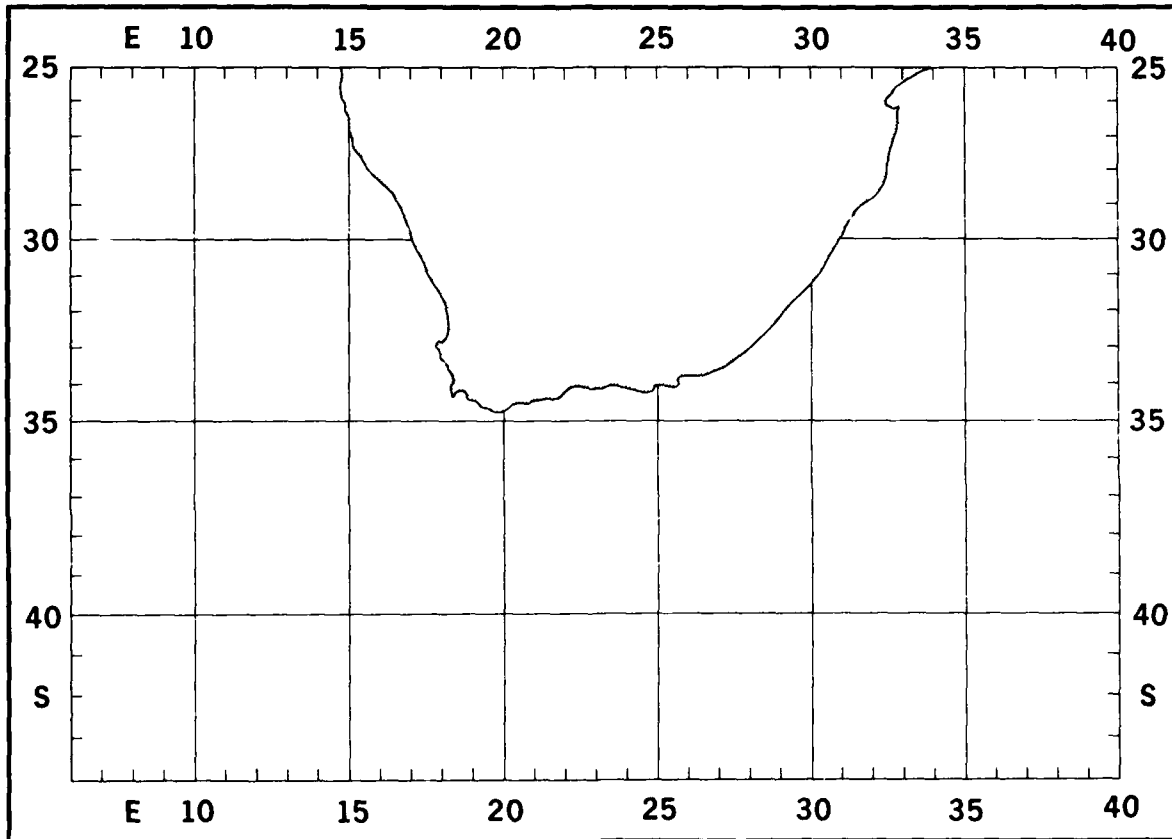
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U.S. Navy Regional Climatic Study of Southern African Waters

The U.S. Navy Regional Climatic Study of the Southern African Waters was prepared by the Officer in Charge, Naval Oceanography Command Detachment, Asheville, North Carolina, under authority of Commander, Naval Oceanography Command. The work was performed at the National Climatic Data Center (NCDC). Specific acknowledgement of the NCDC staff is made to Mr. J. D. Elms, project leader; Mr. P. M. Steurer, for his data analysis; Messrs C. N. Williams, Jr., R. G. Baldwin and Ms. P. L. Franks for data processing and digital graphics; Mr. M. J. Changery and Dr. W. J. Koss for technical review; and Messrs M. G. Burgin and S. J. Miller for their drafting skills.

Geographical and Data Coverage

This study, entitled the U.S. Navy Regional Climatic Study of the Southern African Waters, is for the region which comprises the waters around southern Africa from 25°S to 44°S and 60°E to 40°E. The selected limits allow for a small overlap between this region and that of the study for the Mozambique Channel, (NAVAIR 50-1C-549). Most emphasis in this study was placed on the marine areas, with only a few coastal station summaries included in the text and final section of this publication. Figure 1 outlines the study area and shows the location of the land station summaries and bathymetry information.

Surface marine observation statistics are presented on monthly charts in the forms of graphs, tables and isopleth maps. Land station data appear graphically and in Station Climatic Summary tables. The marine data (mostly from ships of opportunity) were summarized and machine plotted by one-degree quadrangle. The graphs and tables for the marine areas are also presented by one-degree quadrangles (for visibility, wave heights, wind roses and ocean currents). The geographical area for the tables, ocean currents, and wind roses had to be divided and presented on four pages for clarity. However, the two poleward charts covering visibilities, wave heights, and ocean currents were not included in this publication. After reviewing, the charts showed that too few observations were present for representative statistics. These graphs and tables represent the objective compilation of available ship data; the data were not adjusted for suspected bias (low observation count, heavy weighting of observations during a short time interval, biases in coding, etc.), and differences may be found when comparing the graphical data with isopleth analyses. The total number of observations for a given one-degree square should always be considered when interpreting the data, as there may be an insufficient number to permit representative statistics.

Approximately a million and a quarter surface marine observations were used in computing the statistics. These data were collected by ships of various registry traveling in the area. Many of the ship's observations are presently transmitted over the Global Telecommunications System, captured and archived. However, many are digitized from ship log forms by various participating members of the World Meteorological Organization, and exchanged under international agreement among the various maritime nations of the world. Data for this study date back to 1854 and run through 1984. The bulk of the observations are from the last 30 years, which is significant because more recent observations contain more elements than pre-1948 reports. The density of observations is greatest along the major shipping routes which, in this area, run around the Cape of Good Hope. There the overwhelming majority of the observations lie within 3 degrees of latitude of the south coast of Africa and fan out from the east and west coasts.

The mean sea current charts were obtained from available ship's "set and drift" measurements that had been forwarded to the Naval Oceanographic Office from ships of various registry. The data were summarized to give the primary and secondary current directions and mean speeds.

Physical Features

The study area lies just south of the Tropic of Cancer. It covers the southern tip of Africa, which includes most of the Republic of South Africa, and the lower portions of Southwest Africa (Namibia), Botswana and Mozambique. Along the west coast lies the Atlantic Ocean and on the east coast the Indian Ocean. These two important oceans merge along the south coastal region.

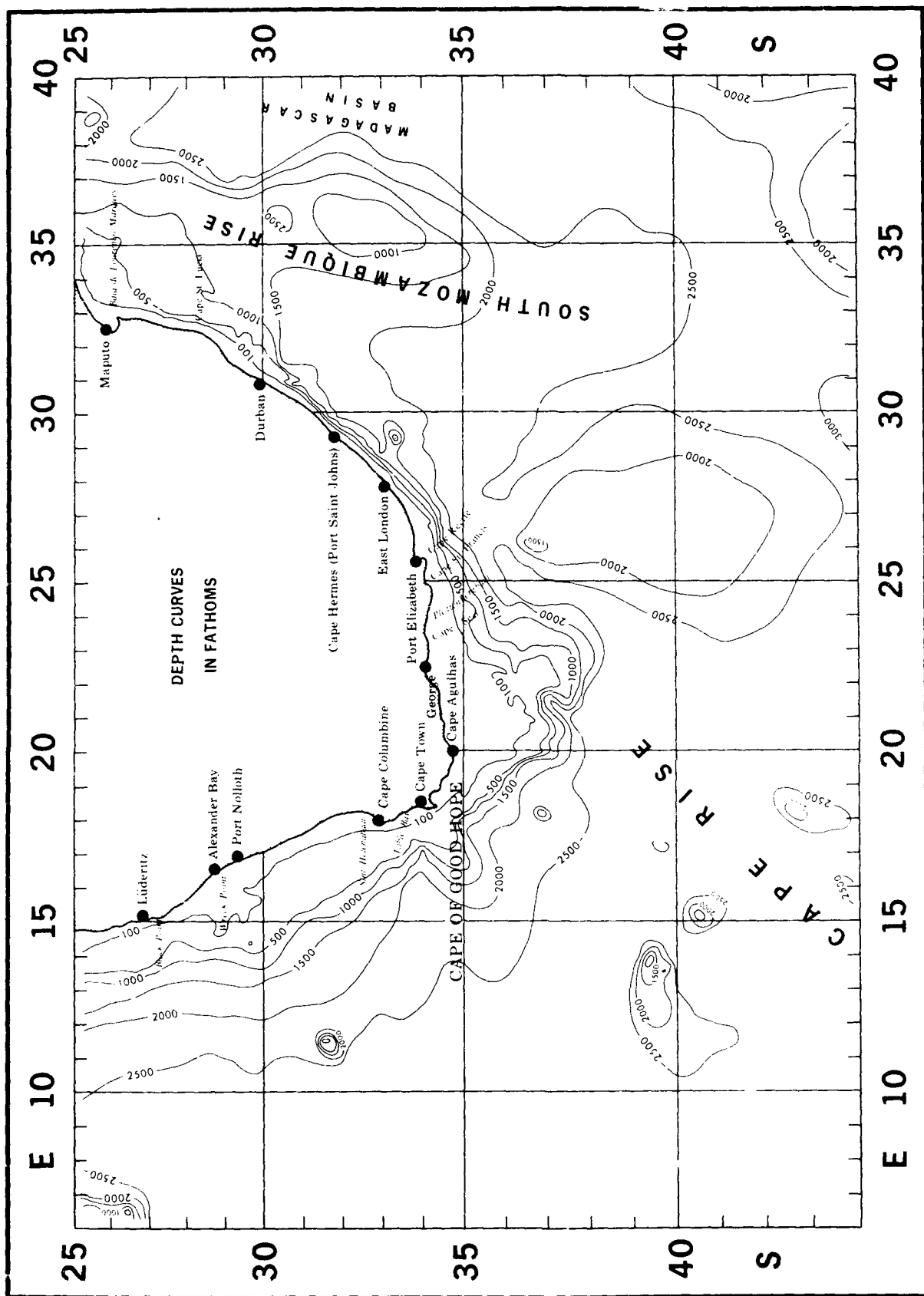


FIGURE 1. Study Area Locator Map and Bathymetry Chart

A narrow coastal belt rings southern Africa with a vast plateau comprising the interior region. A relatively steep escarpment, generally rising above 4500 feet, separates the coast and the plateau in most sections. There are numerous rivers around the perimeter of southern Africa which flow from the edge of the plateau down the escarpment into the ocean. However, these are all practically useless for either irrigation or for navigation. The major river system is the Orange River which flows westward some 1200 miles before reaching the Atlantic Ocean. It drains about 400,000 square miles of the South African Plateau region. The western part of its basin is so prone to dry conditions and the feeder tributaries are so seasonal that occasionally the flow does not reach the mouth of the river during the dry season. The only other principal river system is the Limpopo which flows through southern Mozambique into the Indian Ocean.

Because of the cold Benguela current and upwelling off the southwest African coast, little precipitation occurs in that region. The Namib Desert along the coast and the Kalahari Desert across the western plateau are a result of the lack of precipitation.

Mountain ranges are found along the rim of the escarpment. The Drakensberg Mountains in the southeast are the most distinctive and have the highest peak, Thabana Ntlenyana, at 11,425 feet. In the Cape region a number of smaller mountain ranges, known as the Cape Ranges, are found; they are named the Swartberg Mountains, Outeniqua Mountains, Nuweveld Range, and Roggeveld. The Roggeveld has the highest peak, Compass Berg, at 8215 feet. Along the west coast a number of relatively low mountains are also found along the escarpment, with most peaks within the study area below 7000 feet. The highest peak, Karas Mountain at 7224 feet, is located to the northeast of Alexander Bay. Figure 2 gives a generalized view of the regional topography.

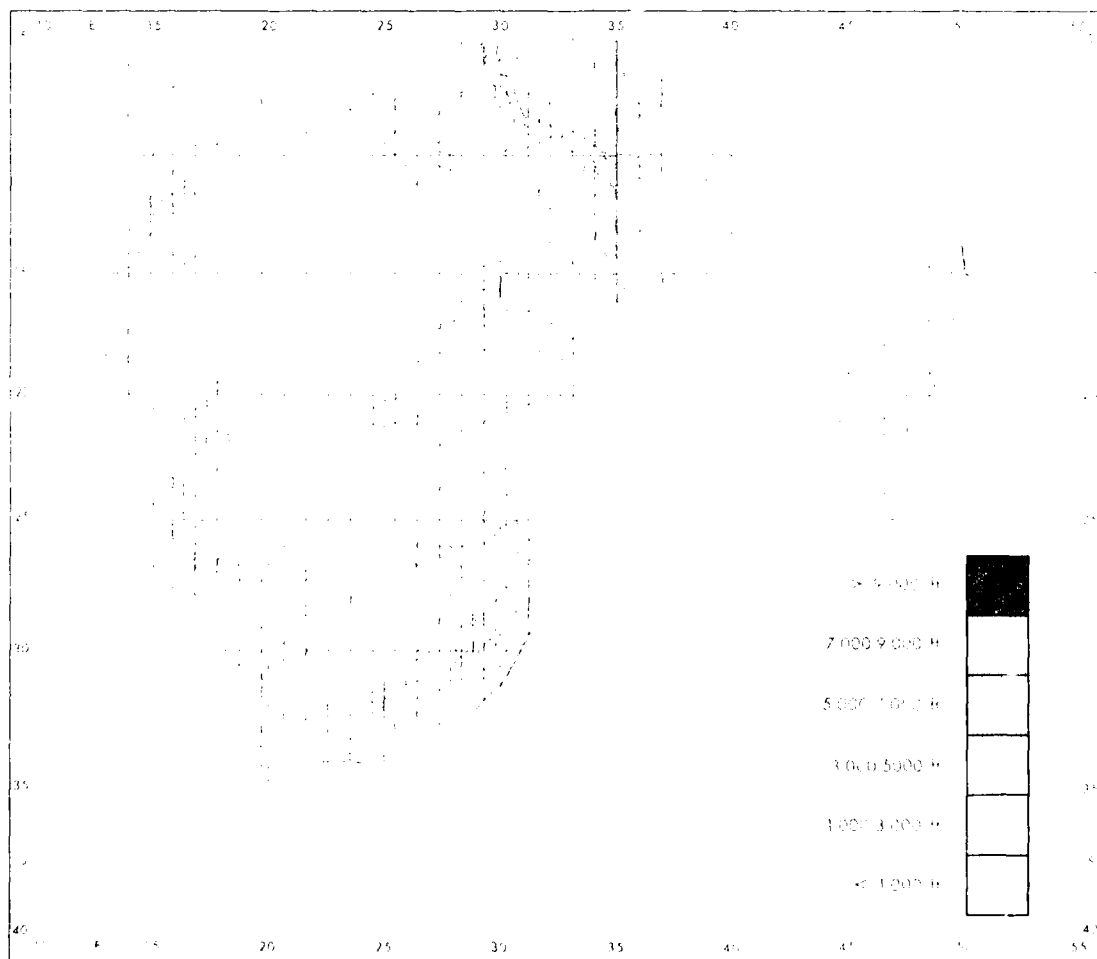


FIGURE 2. Topographic Chart

The cool Benguela current flows from south to north off the west coast of southern Africa. Most of the coolness is derived from local subsurface water upwelling, rather than from the transport of cooler waters by the southern ocean current from the Antarctic region. Along the east coast is the southward flowing current which is known as the Mozambique current in and just south of the Mozambique Channel, and the Agulhas current along most of the southeast coast of South Africa. The Agulhas current is also somewhat strengthened by the South Equatorial current which flows just south of the southern edge of Madagascar. See Figure 3 for a pictorial of the regional ocean currents.

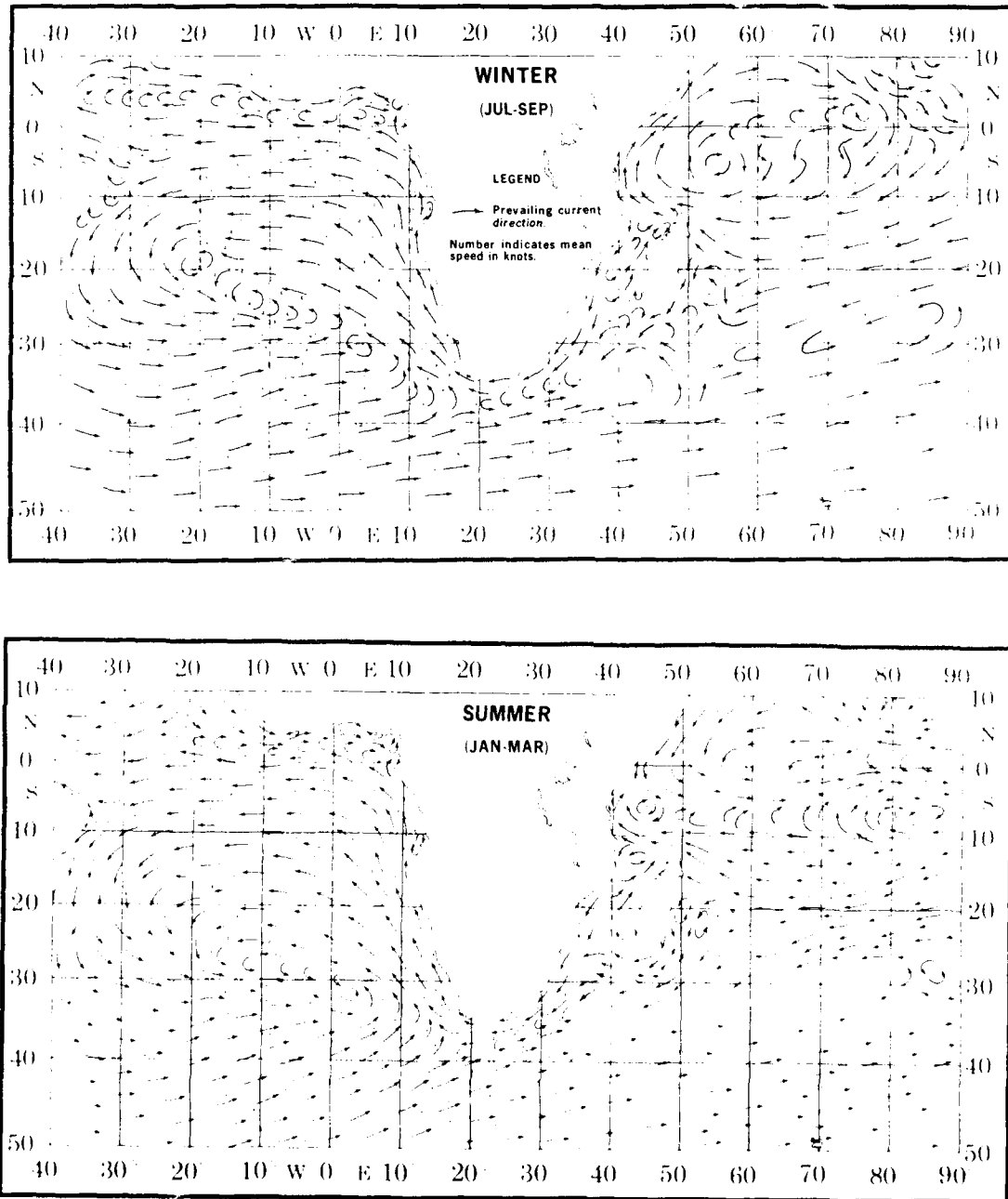


FIGURE 3. Surface Currents (winter and summer)

Waves, known as rollers, come from a distant source (swells) and form large breaker waves on exposed coasts. These are best known on the islands of St. Helena and Ascension in the South Atlantic Ocean, but they also effect the southern coasts of Africa. Sometimes unusually high swells, estimated to be as high as 70 feet, have affected the South African Coast. They are known as Cape Rollers. Those freak waves have been known to do catastrophic damage to ships. The southeastern coast of Africa has the necessary physical feature which, under certain synoptic meteorological conditions, produces those rare high waves: a narrow continental shelf with a steep bathymetric gradient. When unimpeded swells from the open waters to the south encounter the swift Agulhas current which runs southward parallel to the continental shelf, Cape Rollers of enormous size can develop with the potential for destructive damage to any ship within their paths.

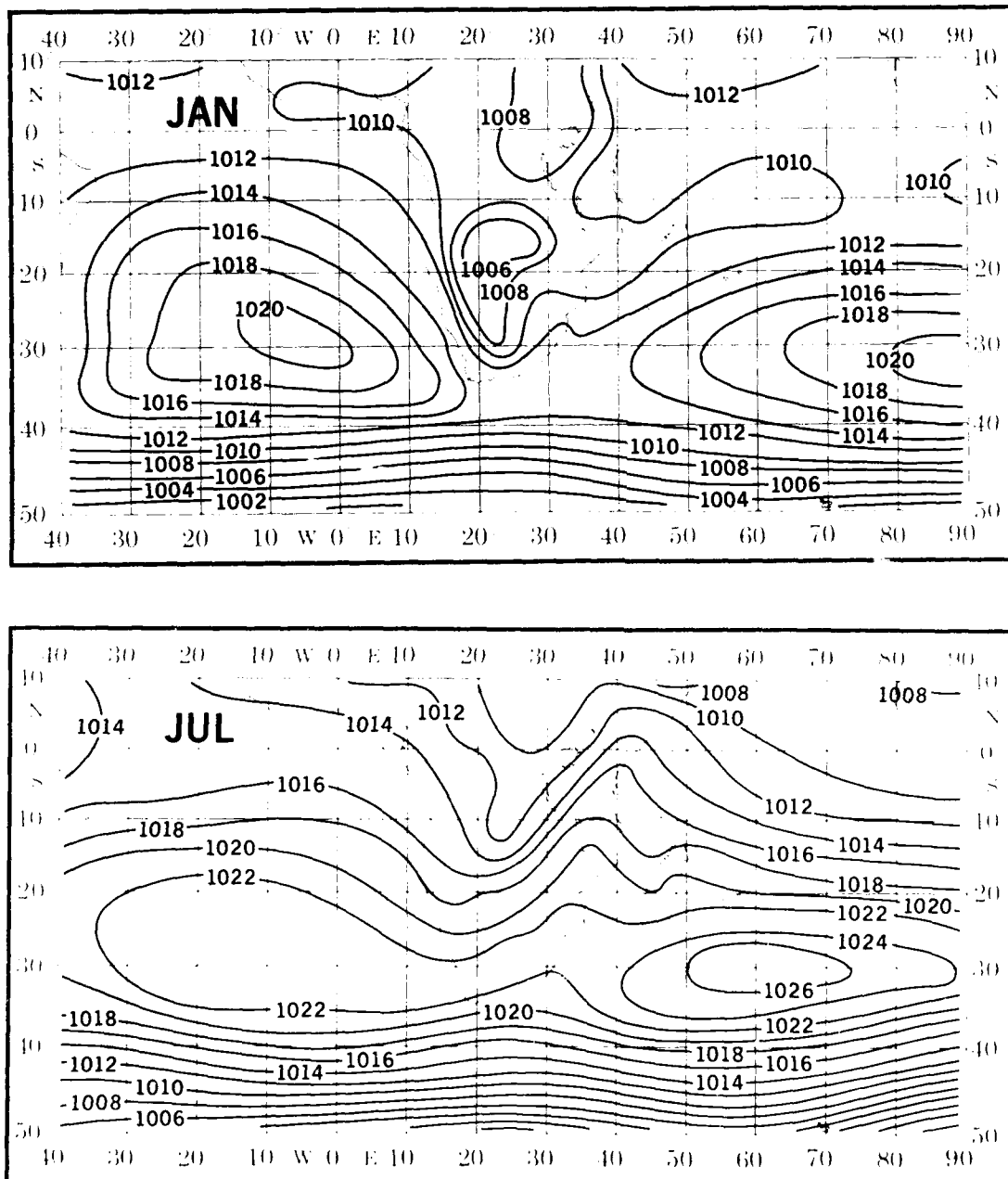


FIGURE 4. January and July Mean Sea-Level Pressure

Climate

The study area lies almost totally within the subtropical high pressure belt of the Southern Hemisphere (Figure 4). The high pressure belt is the main climate influence, and is the reason why the region is largely arid to semi-arid. The temperatures of southern Africa are cooler than those for most regions at the same latitude, and the uniformity of those temperatures is most remarkable. Because of the high interior plateau, the rise in elevation towards the equator offsets the increase in temperatures due to lower latitudes. Also, being surrounded by the southern oceans, the region is influenced by cool maritime air and the climate stability produced by the nearness of a large body of water. The coolest region is found along the great escarpment in the southeast, while the warmest temperatures are experienced in the low-lying valleys of the western interior along the Orange river (Figure 5).

The subtropical high off the west coast shows little annual variation, and this, along with the coastal upwelling, is mainly responsible for the lack of precipitation in the western part of southern Africa. Low clouds and fog often form along the coast; however, rarely does any rain fall. This also keeps the temperatures much cooler than normal for locations at these latitudes. Occasionally, however, warm abnormal temperatures appear with hot, dry "berg" winds which flow off the interior plateau.

Precipitation is usually in the form of rain with the greatest amounts falling in the east, and most of it falling during the summer. A wintertime maximum occurs at Cape Town, whereas the monthly distribution is somewhat evenly divided for locations along the south coast in the vicinity of Port Elizabeth. The effect of the orographic lift is significant as annual precipitation amounts along parts of the eastern escarpment increase in the order of one inch per 100 feet of elevation. The annual rainfall can vary considerably from year to year, with periodic droughts which are sometimes severe and prolonged.

In the region which has the summer precipitation maximum, most of the precipitation comes from thunderstorms and instability showers. However, along the escarpment, moist maritime air associated with anticyclonic flow can produce orographically induced rain and drizzle. Much of the precipitation in the southern coastal region comes from frontal passages as maritime low pressure systems move south of the continent from west to east, generally in the "roaring" forties flow, with the trailing fronts often just skirting South Africa. Figure 5 presents the mean monthly precipitation amounts and temperatures for a few select

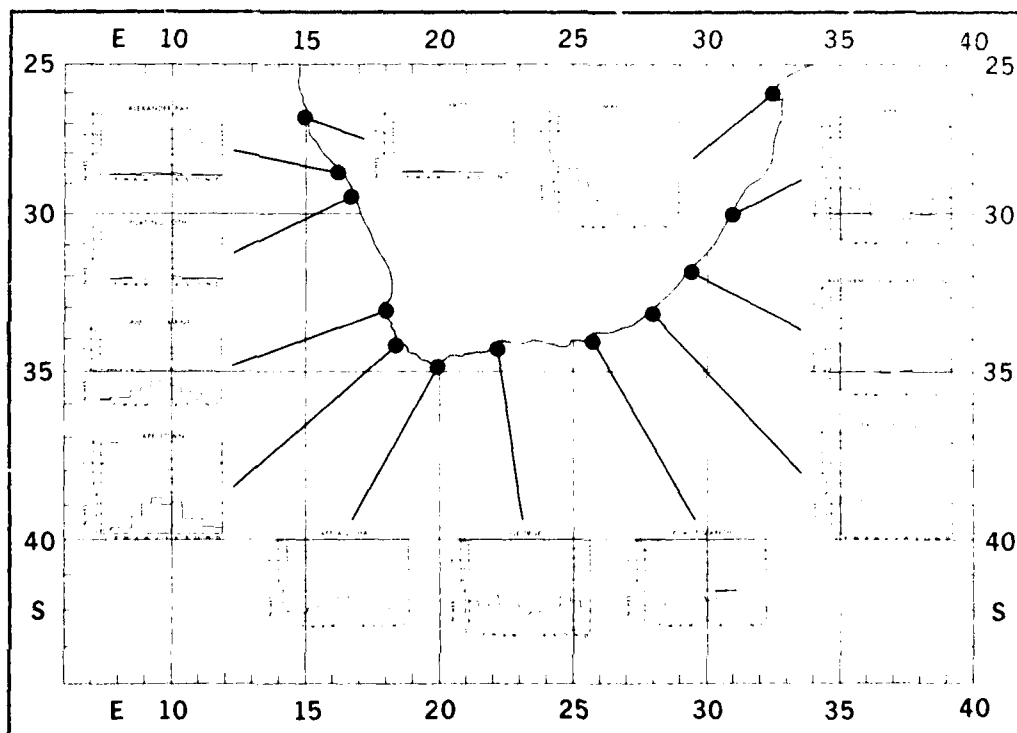


FIGURE 5. Mean Annual Air Temperature and Precipitation

stations. Severe hailstorms occasionally accompany thunderstorms in the eastern high plateau region. This has lead the government to support cloud-seeding projects in hopes of lessening some of the damage. On occasion, severe flooding has also occurred in southern Africa, causing damage to crops, roads, and bridges.

Extreme low temperatures between 10°F and 20°F have been observed at most stations in the eastern and southern highlands south of 21°S. Freezing temperatures are recorded during the summer at the higher elevations. Although many areas have fairly cold temperatures during the late evening to early morning hours of winter, the afternoons are often mild or even warm. Summertime maximum temperatures of 90°F or higher are most frequent at the interior plateaus and the eastern lowlands. However, the highest temperatures have been observed in the western valleys of the Orange river.

Frost is not an uncommon event in the higher plateaus and valleys of southern Africa from mid-May to mid-September. All regions of the high plateaus, south of 23°S, are subject to at least one day of frost each winter. Snow is also limited to the areas south of 23°S, with most snowfalls occurring during June and July in the higher mountains of southern and southeastern South Africa.

Marine Climatological Elements

Precipitation

Of the elements recorded in the marine data base, precipitation is the one most subject to error in both the way it is observed and the way it is interpreted. For example, it is often inferred in the literature that ships often try to avoid foul weather and thereby bias the data towards fair weather with fewer precipitation observations. Elms (1986) compared the Volunteer Observing Ship (VOS) observations to other sources of data such as Ocean Station Vessel (OSV) and buoys, finding little evidence that "fair weather bias" is a serious problem for most applications of marine climatic data. With the introduction in 1982 of a present weather indicator (ix) to the international Ship Synoptic Code FM13-VII, users have to be careful not to bias the data, especially that from between January 1983 and March 1985 when the indicator was inadvertently left out of the international data exchange format.

In comparing the frequencies given on the precipitation charts in this volume to those in the U.S. Navy Marine Climatic Atlas of the World, Volume III, Indian Ocean (Revised 1976) and Volume IV, South Atlantic Ocean (Revised 1978), one will generally see a smaller percentage of present weather observations reporting precipitation. The major reason for this is that in the earlier publication the weather codes 20-27 (precipitation in the past hour) were counted in the precipitation frequencies in order to help correct an apparent observation bias. For this regional climatic study it was decided to present the data as reported. The higher frequencies (20-27 code included) certainly seem to agree better with those for land stations and OSV sites for most regions of the globe. The 1982 code change may also affect the frequencies. A more in-depth study is needed to help decide which method best represents the climate. At this point, however, it is possible only to bring the issue to the attention of the data users. Even without the coding problems, assessing oceanic rainfall data is a major problem because transit ships are unable to take quantitative precipitation measurements. A number of studies have been conducted in efforts to predict precipitation amounts, or rates of fall, based on estimates derived from the use of present weather observations from ships of opportunity (Gorohn, et al., 1984) and readings from satellites (Rao, et al., 1976).

Air Temperature

Air temperature is one of the elements most frequently observed by mariners. It should be noted that on many ships the heating effect of the ship's structure has a tendency to produce higher than actual ambient air temperature readings because of instrument exposure (Folland et al., 1984; Wright, 1986). This is especially true under fair, sunny conditions. Therefore, some ship temperature observations have a warm bias; however, the aggregate is relatively representative after erroneous outliers have been eliminated and the numerous nighttime observations and unbiased daytime observations are included. Also, true extremes are rarely captured since continuous observations are not made at most ocean locations. It is highly unlikely that a ship-of-opportunity would be taking its synoptic weather observation at the exact time that an extreme was occurring.

Sea-Surface Temperature

Sea-surface temperatures are recorded with a fairly high frequency in marine observations. The principle methods for sampling are with ship water-intake thermometers and by leading the temperature of sea water retrieved with the buckets. Even though the two methods can produce slightly different results (Barnett, 1984), the data can be used with considerable confidence when examining the long-term means.

Surface Winds

Surface wind is one of the most commonly observed elements. Many of the observations from the NCDC data base are visual observations based on the roughness of the sea. In recent years, more ships acquired anemometers and reported measured winds. Prior to 1963, many observed wind speeds were recorded in the Beaufort scale; such estimates have proven to be quite reliable and can be used with a high degree of confidence. Five sets of wind speed isopleths are presented: the scalar mean speed and the percent of frequency of winds less than 11 knots, from 11 to 21 knots, from 22 to 33 knots, and greater than or equal to 34 knots. Also given are wind roses for one-degree squares.

Visibility

Visibilities are difficult to measure at sea because of the lack of distance reference points. Climatically, many low visibility observations are probably missed because the observer is too busy with other duties (a contrasting form of fair weather bias). However, the coarseness of visibility (code) intervals helps to minimize the problem, thereby permitting the summarized data to be relatively consistent.

Clouds

A survey of the cloud data (total and low cloud amount) from the surface marine observation data base shows that the number of total cloud reports are significantly greater than that of low cloud amounts. This is because many of the early marine observations contain only total cloud amount. For the two presentations (total cloud amount $\leq 2/8$, and low cloud amount $\geq 5/8$), only those observations reporting both total and low cloud amounts were summarized. This helps eliminate problems introduced as a result of different size data sets (N-count). The use of satellite data helps to bolster confidence in the total cloud analyses because they show fairly close agreement with these analyses (U.S. Department of Commerce and United States Air Force, 1971).

Ceiling and Visibility

Aircraft-type ceilings are not available from marine observations. The ceilings are estimated from the height of the lowest cloud when low clouds cover more than half the sky. When the sky is totally obscured by rain, fog, dust, or other phenomena, the total obscuration is considered a ceiling with a height of zero. Mid-range ceiling and visibility charts (ceiling less than 1000 feet and/or visibility less than 5 nautical miles; ceiling less than 8000 feet and/or visibility less than 10 nautical miles) and low-range ceiling and visibility charts (ceilings less than 300 feet and/or visibility less than 1 nautical mile; ceiling less than 600 feet and/or visibility less than 2 nautical miles) are presented.

Wave-Heights

Wave-heights have been recorded in a consistent quantitative code since the late 1940's. The reluctance of many observers to take wave observations in the earlier years and the difficulty in estimating waves, especially in confused seas, make wave observations one of the least commonly observed elements. The observations are also subject to biases. Generally, the heights are too low, the periods too short, and the sea-swell discrimination poor (Quayle, 1980). The data in this study have not been adjusted for the suspected biases, but were processed through a quality control procedure wherein an internal check was made between wind speed and sea height. The data were also matrix-arrayed and apparent erroneous outlier data values were deleted from both the sea and swell data. Wave-height presentations include isopleth maps showing percent frequencies of wave-heights ≥ 3 feet and ≥ 8 feet. In addition, wave-height tables by one-degree square show frequencies by six wave-height categories. In these presentations, the higher of the sea or swell was selected for summarization. If heights were equal, the wave with the longer period was selected.

Ocean Currents

The ocean current charts were compiled from ship drift reports that were forwarded by the various merchant marines to the U.S. Naval Oceanographic Office. From those drift observations, the prevailing and secondary current directions, mean current speed, percent of total observations used to compute the primary and secondary directions, and the total observation count are presented by one-degree square. This information is presented on monthly charts with the study area being divided into four sections (pages) to ensure readability. However, the southernmost two charts were not included in the final publication because the data were too sparse to provide representative statistics. The density of the observations is greatest along the major shipping routes and the reliability of the current charts is best in those areas. The data are considered most useful when used collectively, such as in summaries where a large number of observations are available.

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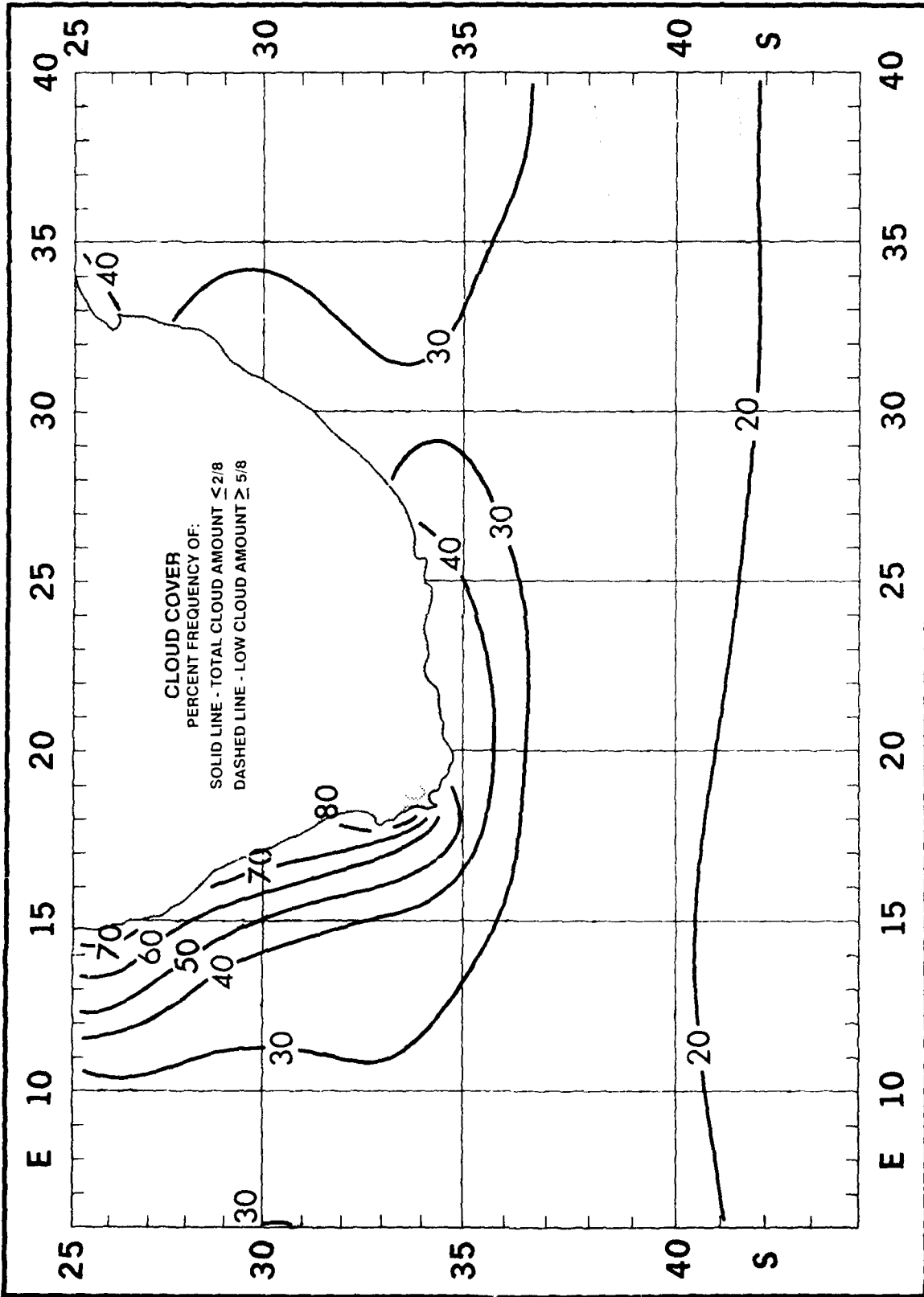
PAGE INDEX

EXAMPLE: The 'MEAN SCALAR WIND SPEED' for July is found on page 129.

MONTH	CLOUDS	PRECIPITATION	VISIBILITY-TABLES	CEILING-VISIBILITY (low range)	CEILING-VISIBILITY (mid range)	WIND-VISIBILITY (low range)	MEAN SCALAR WIND SPEED	WIND SPEED < 11 and ≥ 34 KNOTS	SURFACE WIND ROSES	AIR AND SEA TEMPERATURE	WAVE HEIGHT-ISOPLETHS	WAVE HEIGHT-TABLES	SURFACE CURRENTS	STATION CLIMATIC SUMMARIES
JANUARY	2	3	4	6	7	8	9	10	11	12	16	17	18	20
FEBRUARY	22	23	24	26	27	28	29	30	31	32	36	37	38	40
MARCH	42	43	44	46	47	48	49	50	51	52	56	57	58	60
APRIL	62	63	64	66	67	68	69	70	71	72	76	77	78	80
MAY	82	83	84	86	87	88	89	90	91	92	96	97	98	100
JUNE	102	103	104	106	107	108	109	110	111	112	116	117	118	120
JULY	122	123	124	126	127	128	129	130	131	132	136	137	138	140
AUGUST	142	143	144	146	147	148	149	150	151	152	156	157	158	160
SEPTEMBER	162	163	164	166	167	168	169	170	171	172	176	177	178	180
OCTOBER	182	183	184	186	187	188	189	190	191	192	196	197	198	200
NOVEMBER	202	203	204	206	207	208	209	210	211	212	216	217	218	220
DECEMBER	222	223	224	226	227	228	229	230	231	232	236	237	238	240
														242 thru 251

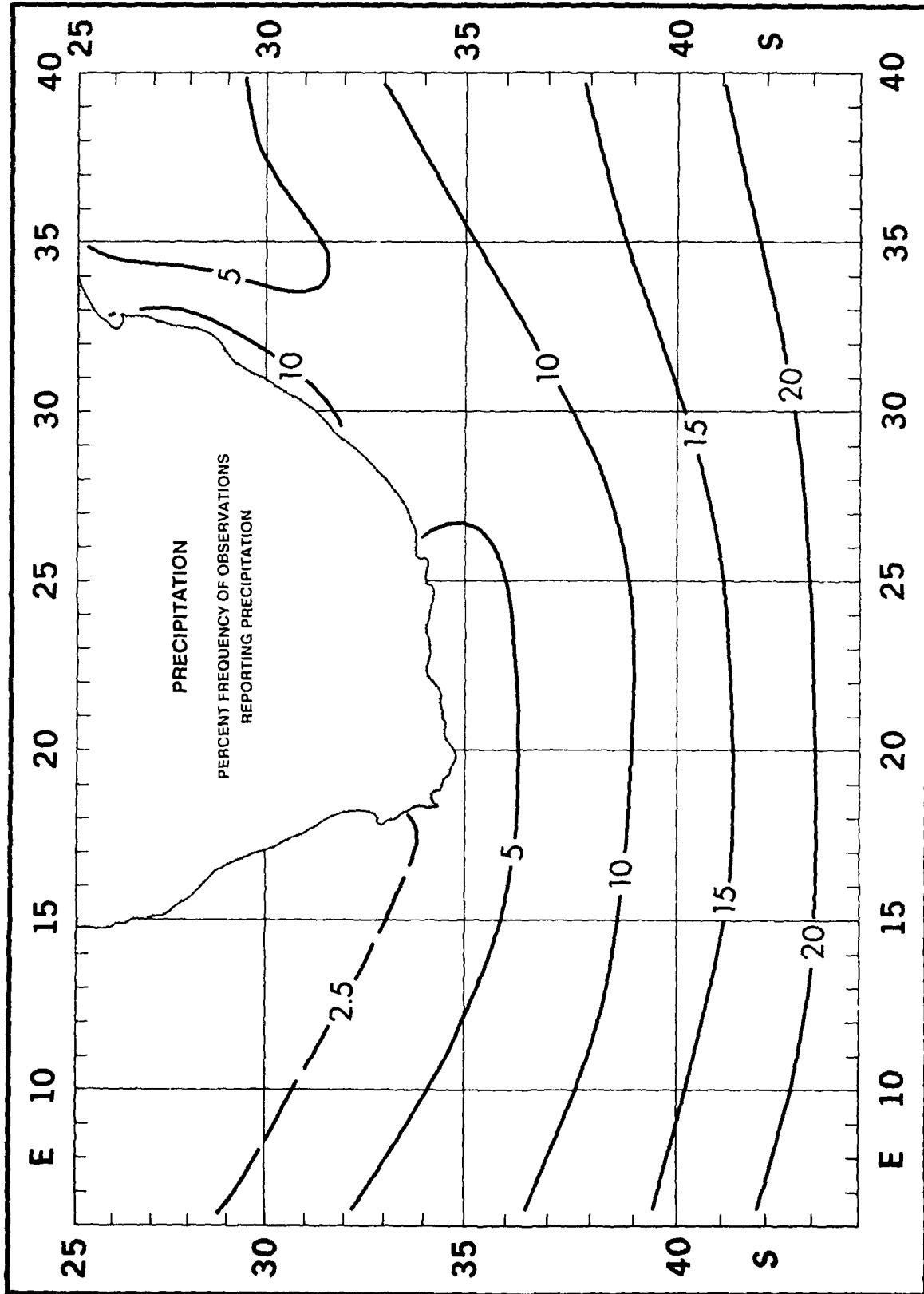
January

Clouds



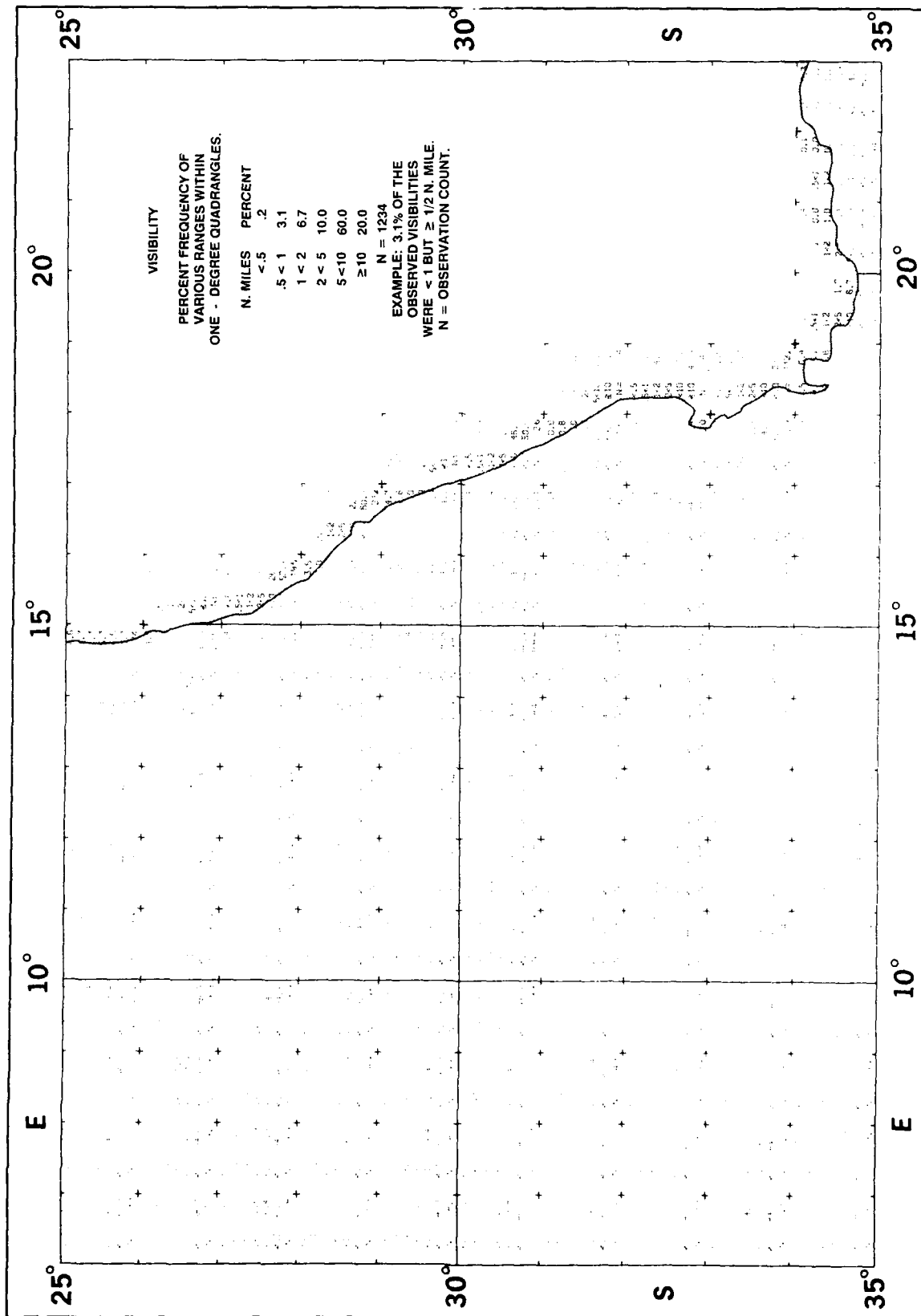
January

Precipitation



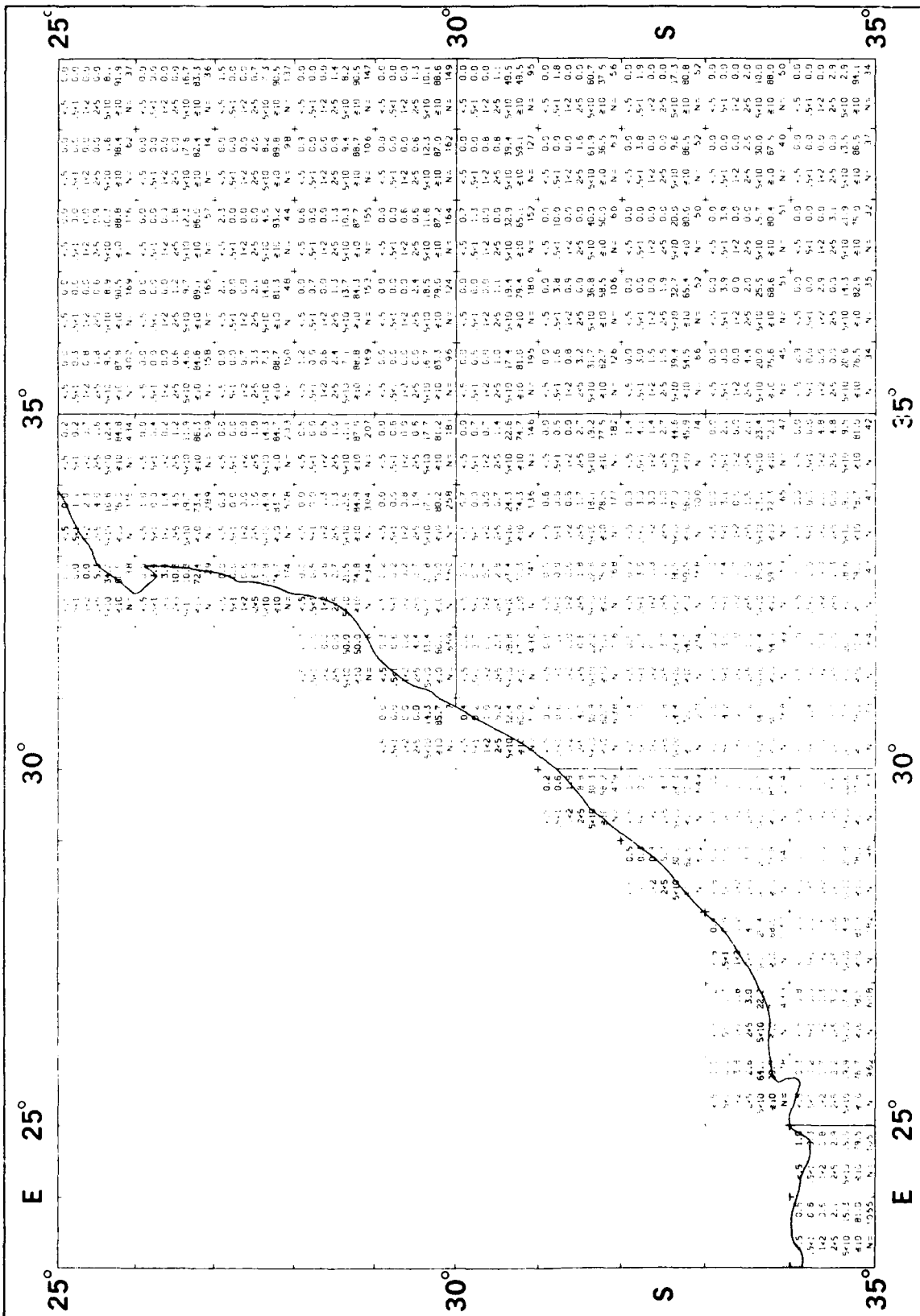
January

Visibility



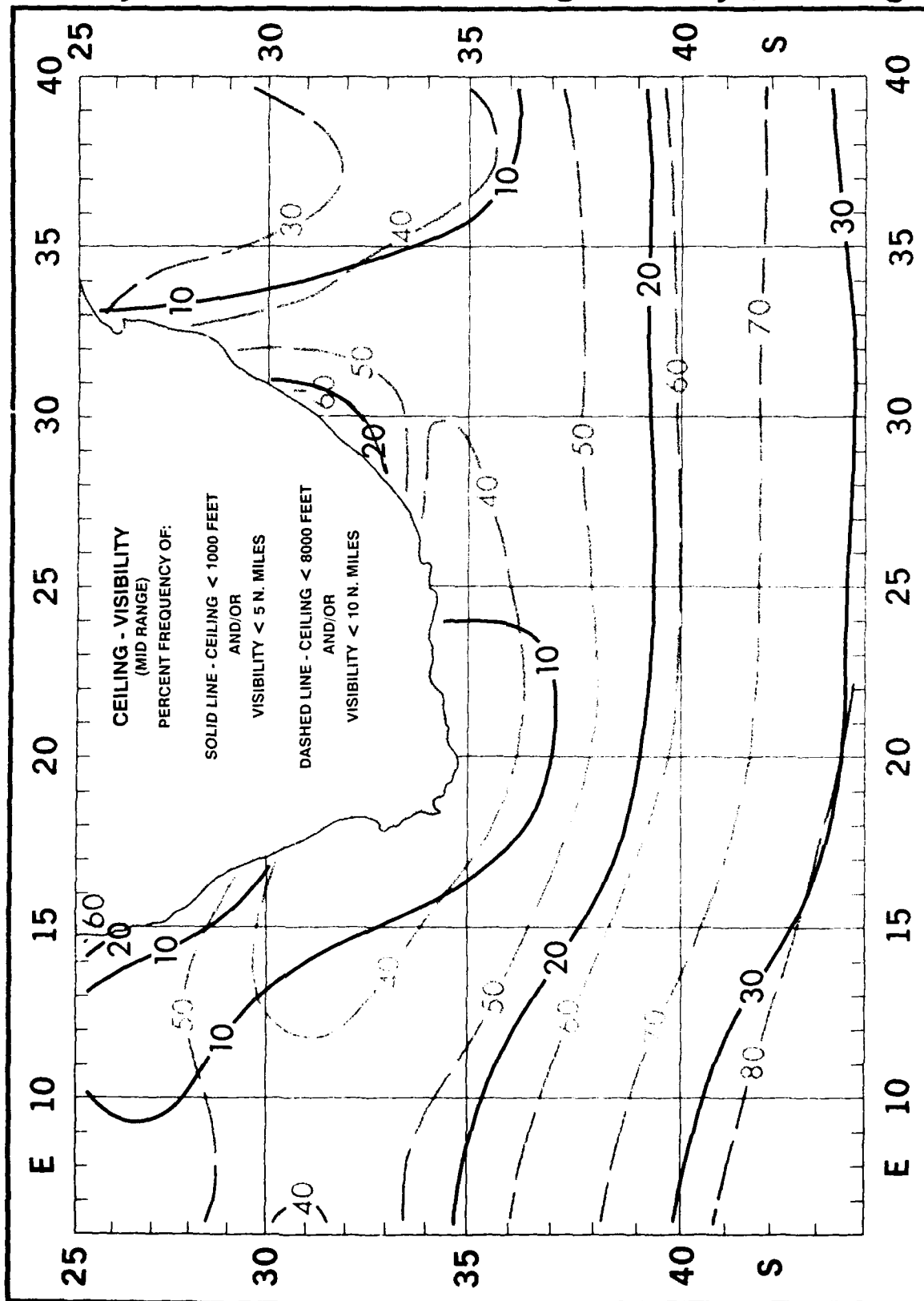
January

Visibility



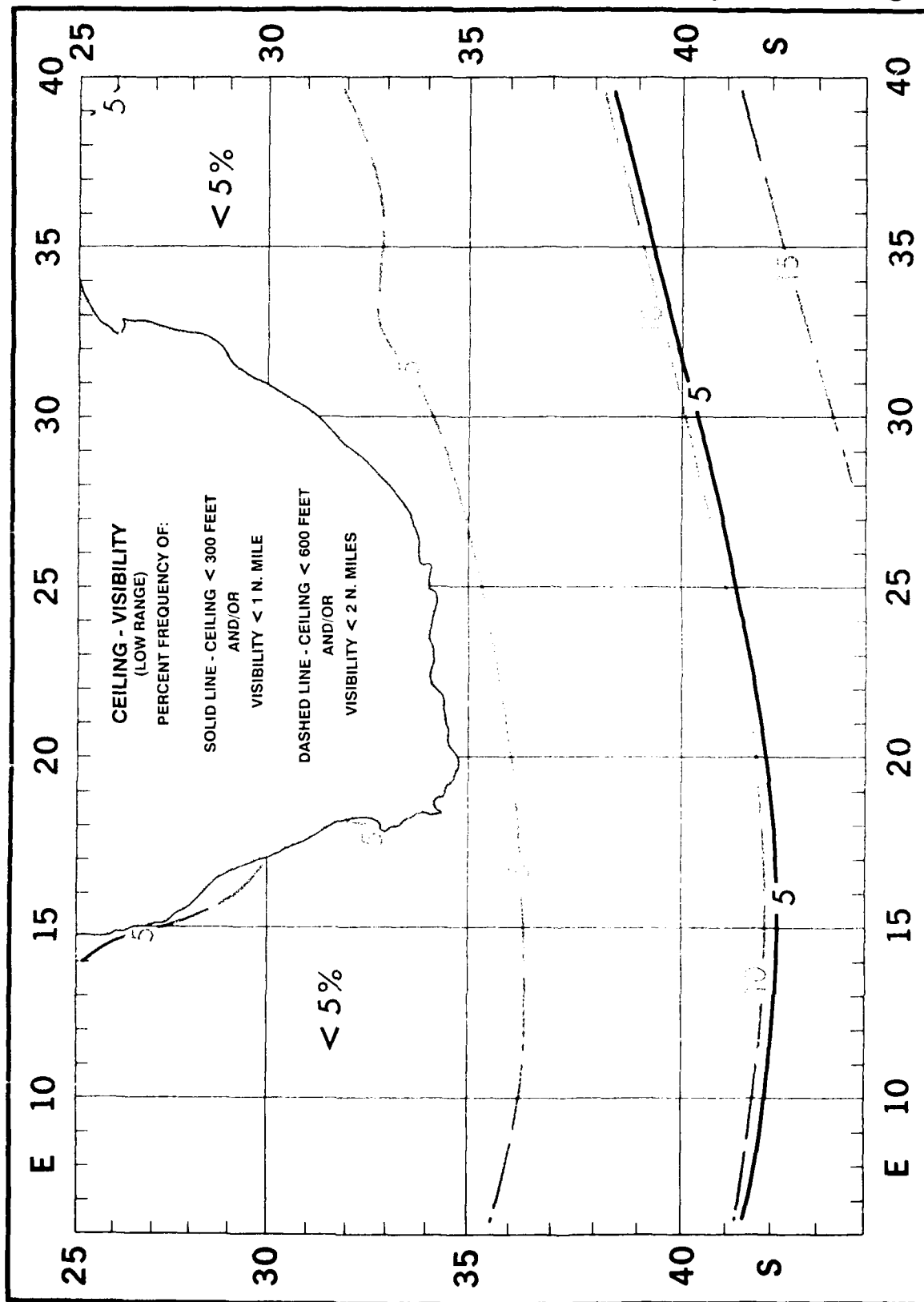
January

Ceiling - Visibility (Mid Range)



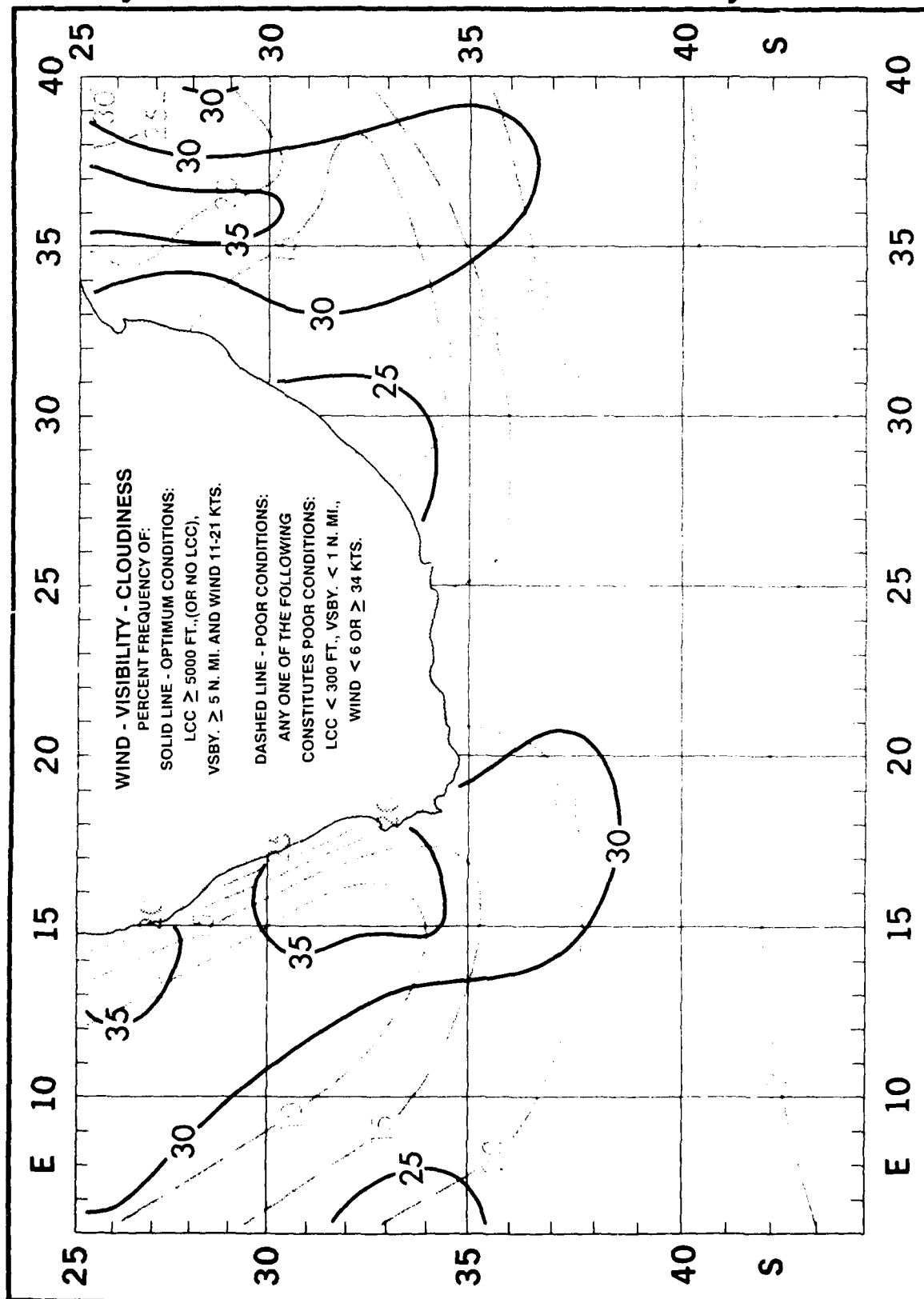
January

Ceiling - Visibility (Low Range)



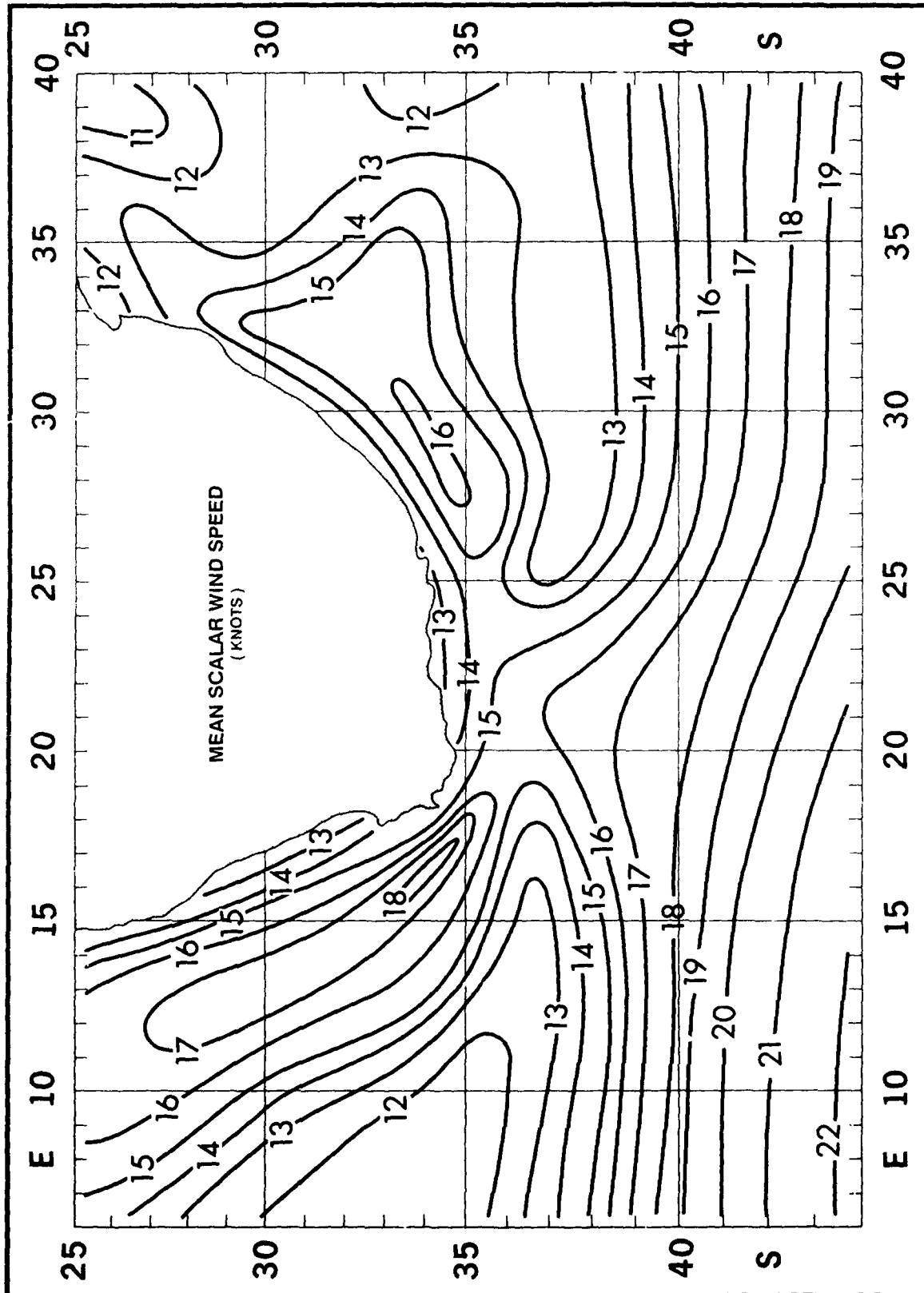
January

Wind - Visibility - Cloudiness



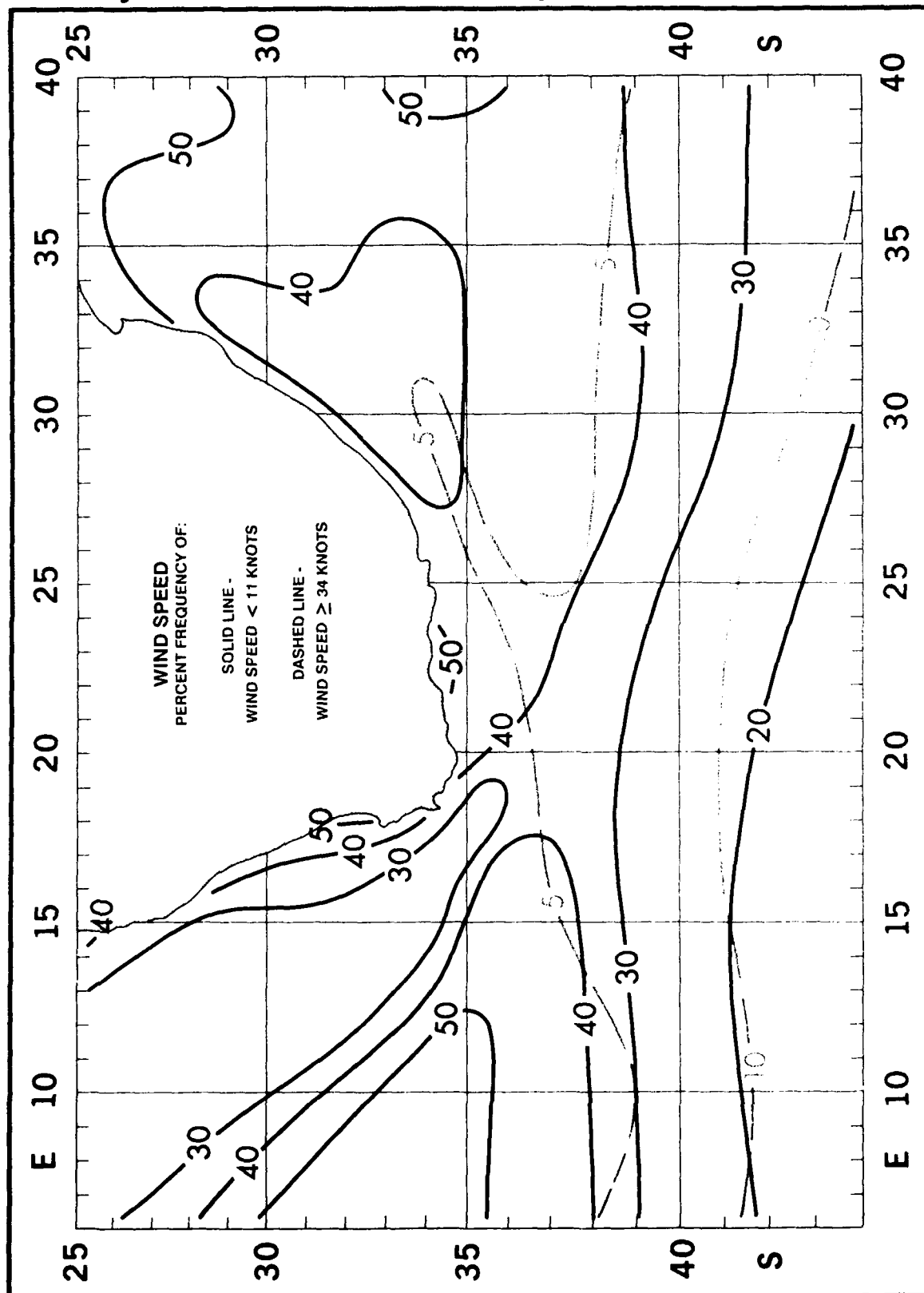
January

Mean Scalar Wind Speed



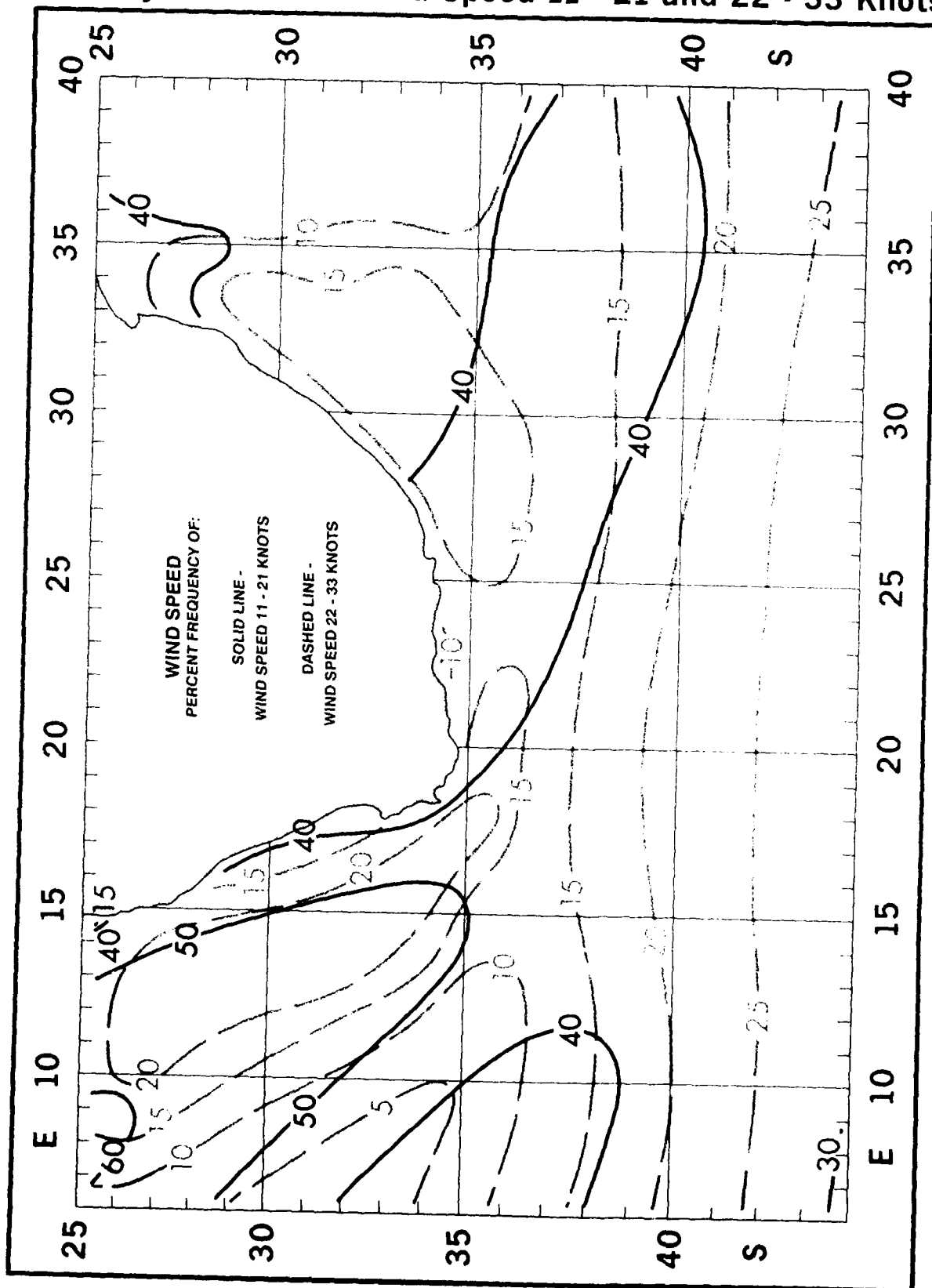
January

Wind Speed < 11 and ≥ 34 Knots



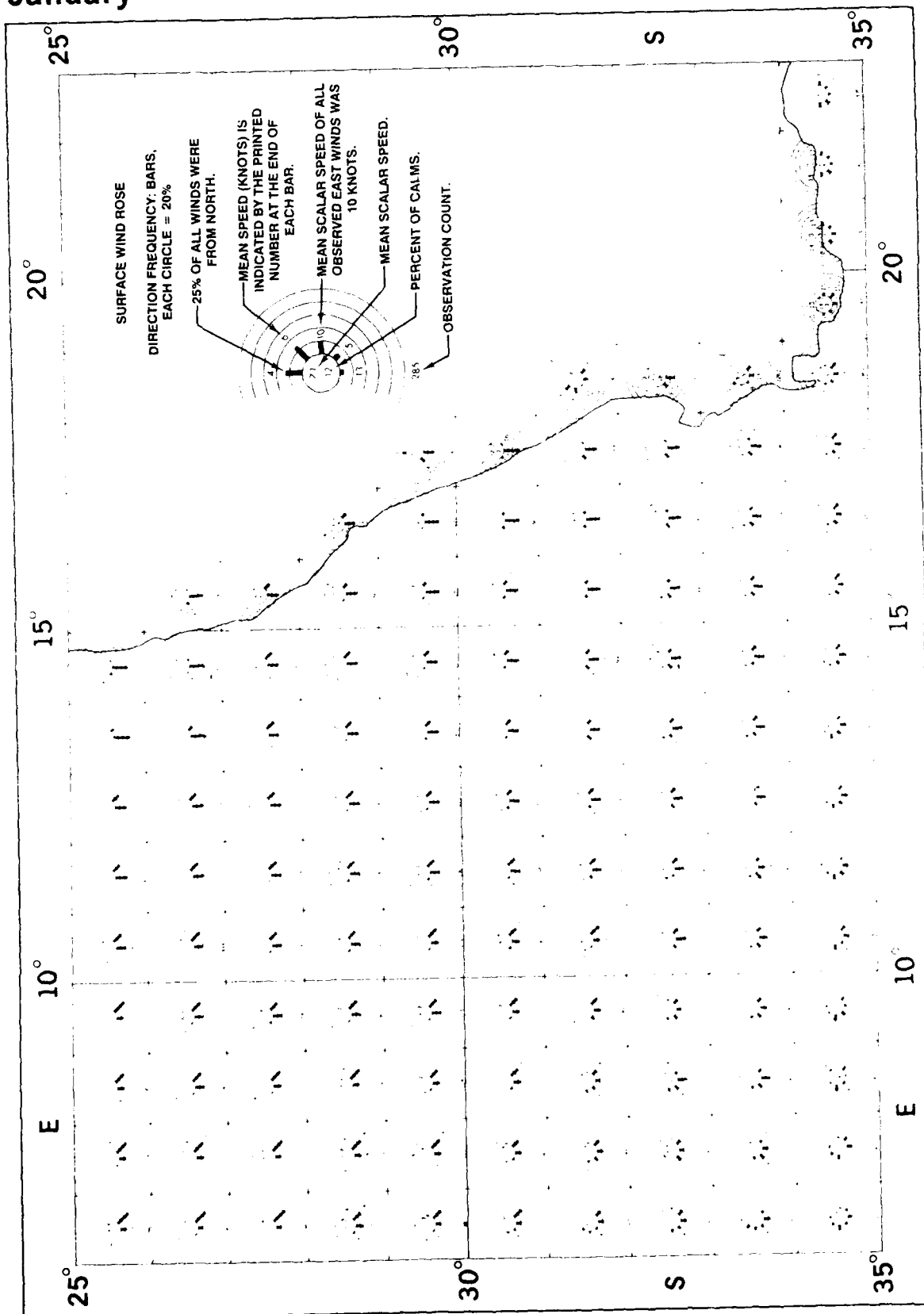
January

Wind Speed 11 - 21 and 22 - 33 Knots



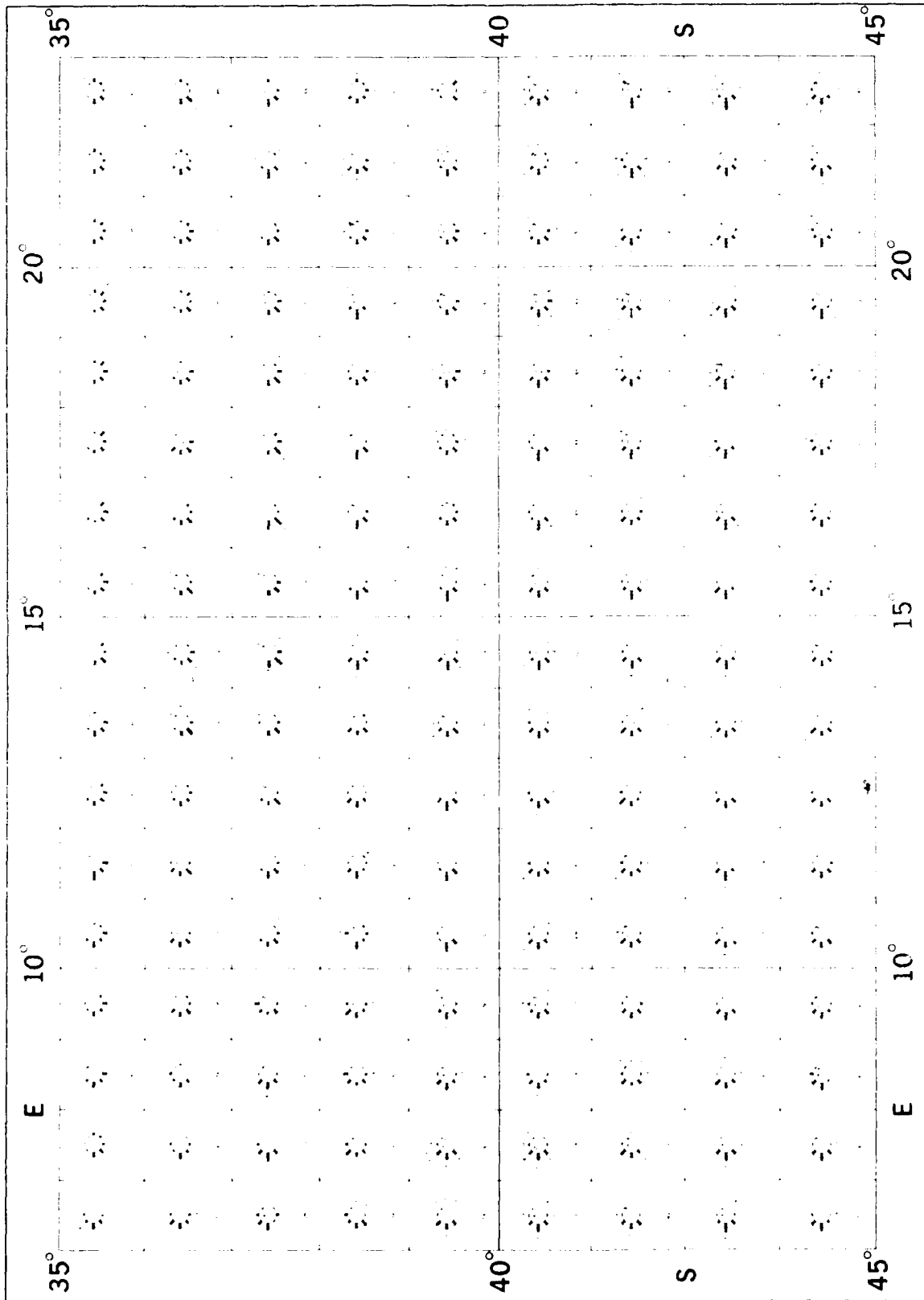
January

Surface Wind Roses



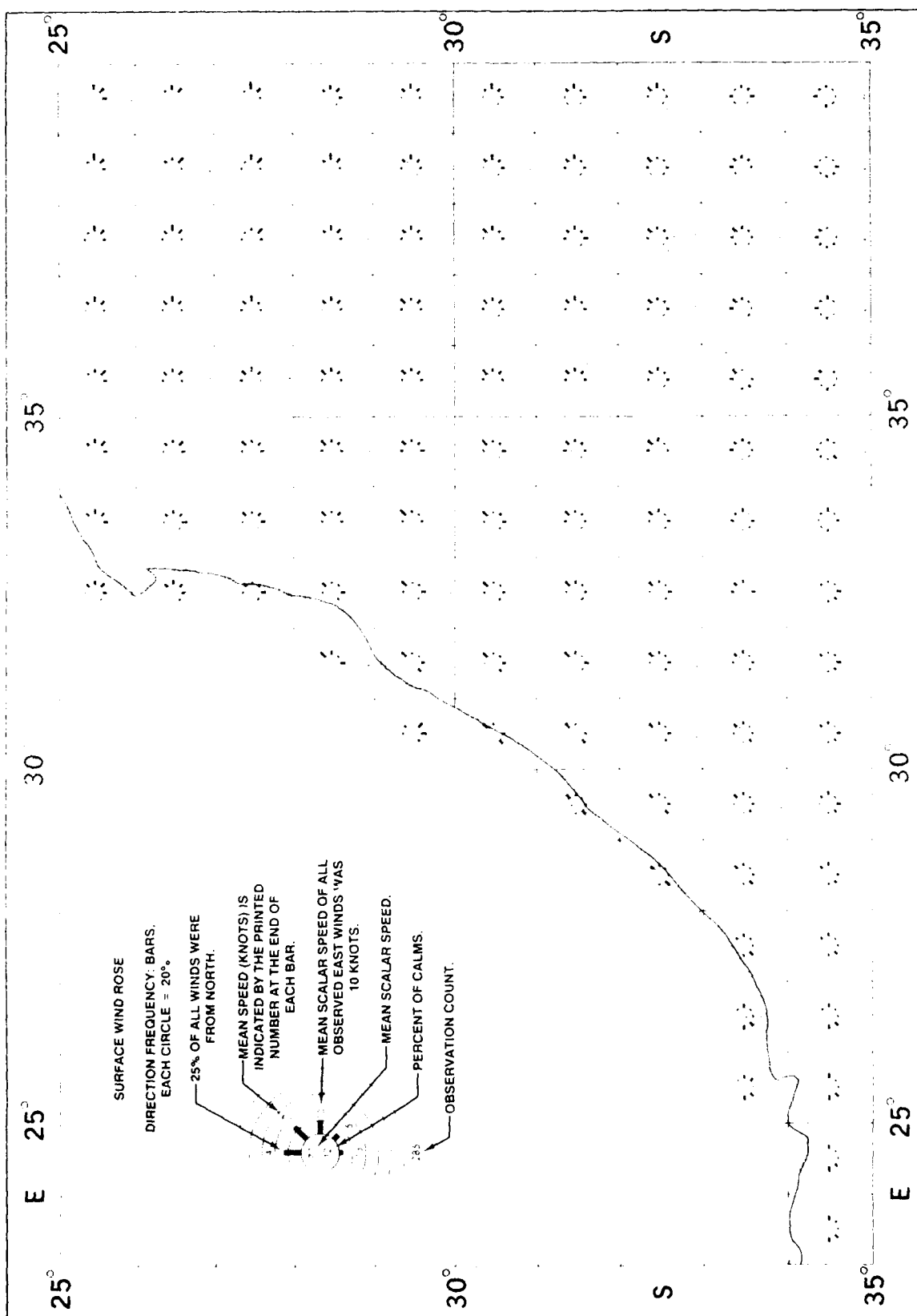
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Surface Wind Roses



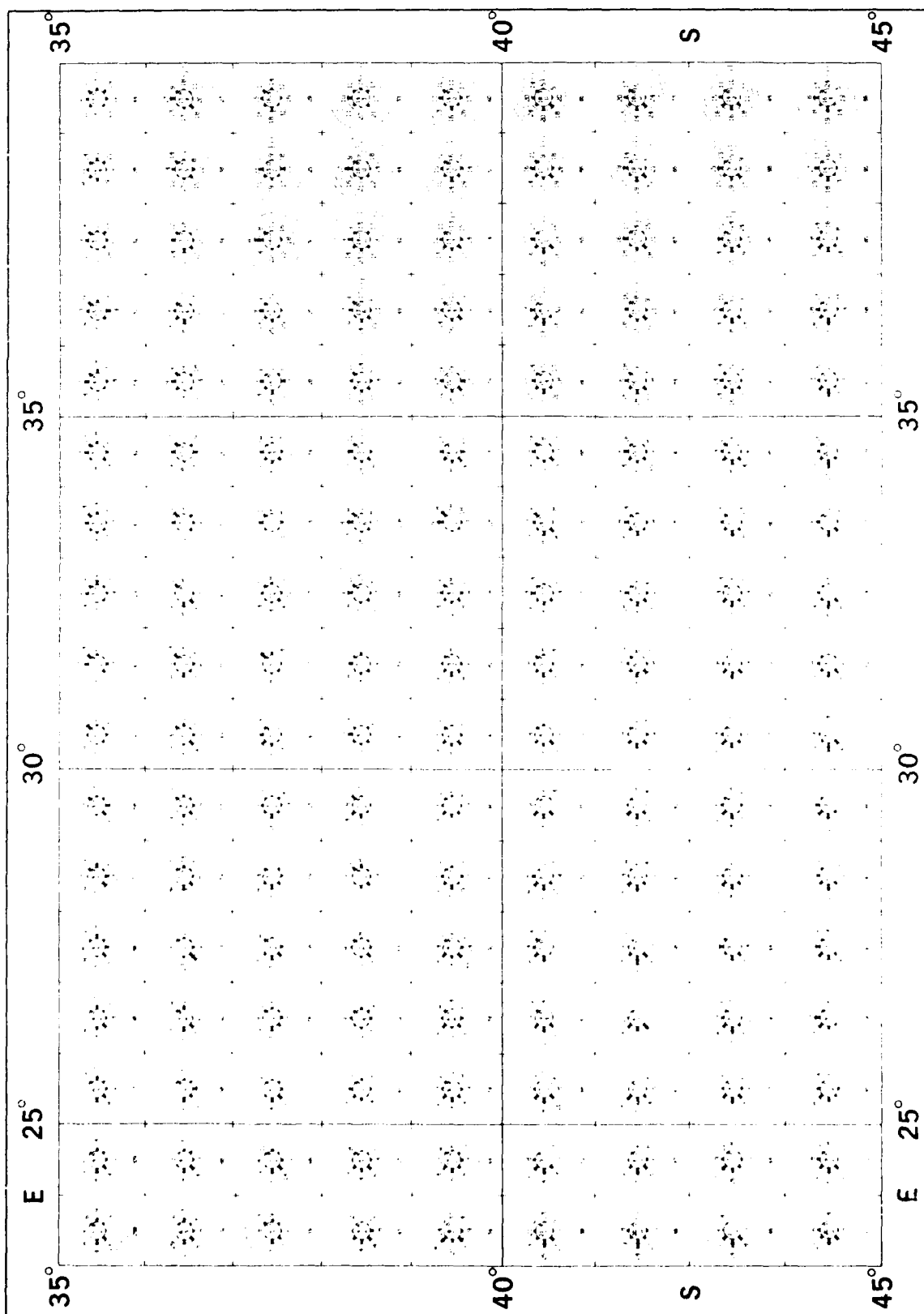
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Surface Wind Roses



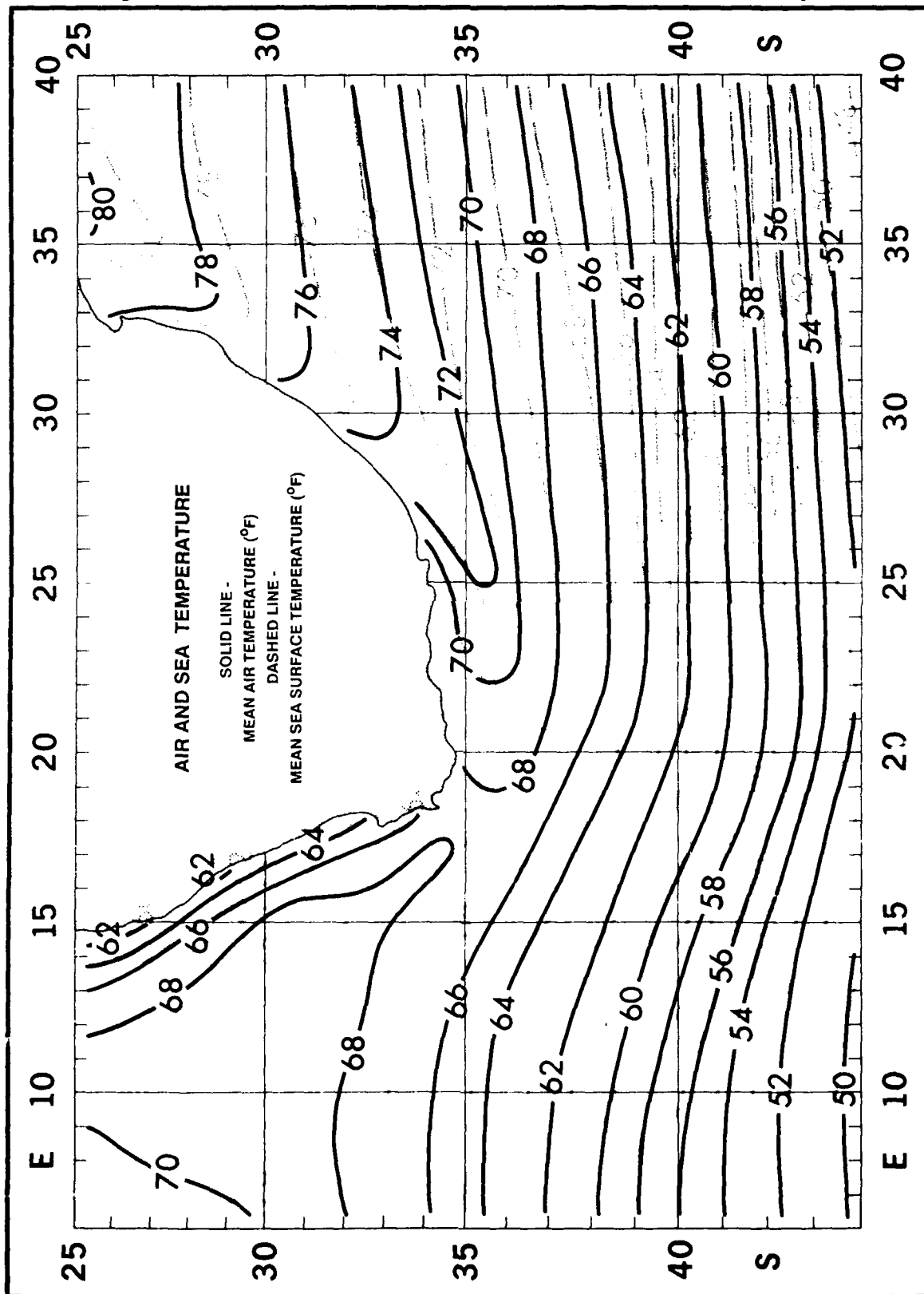
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Surface Wind Roses



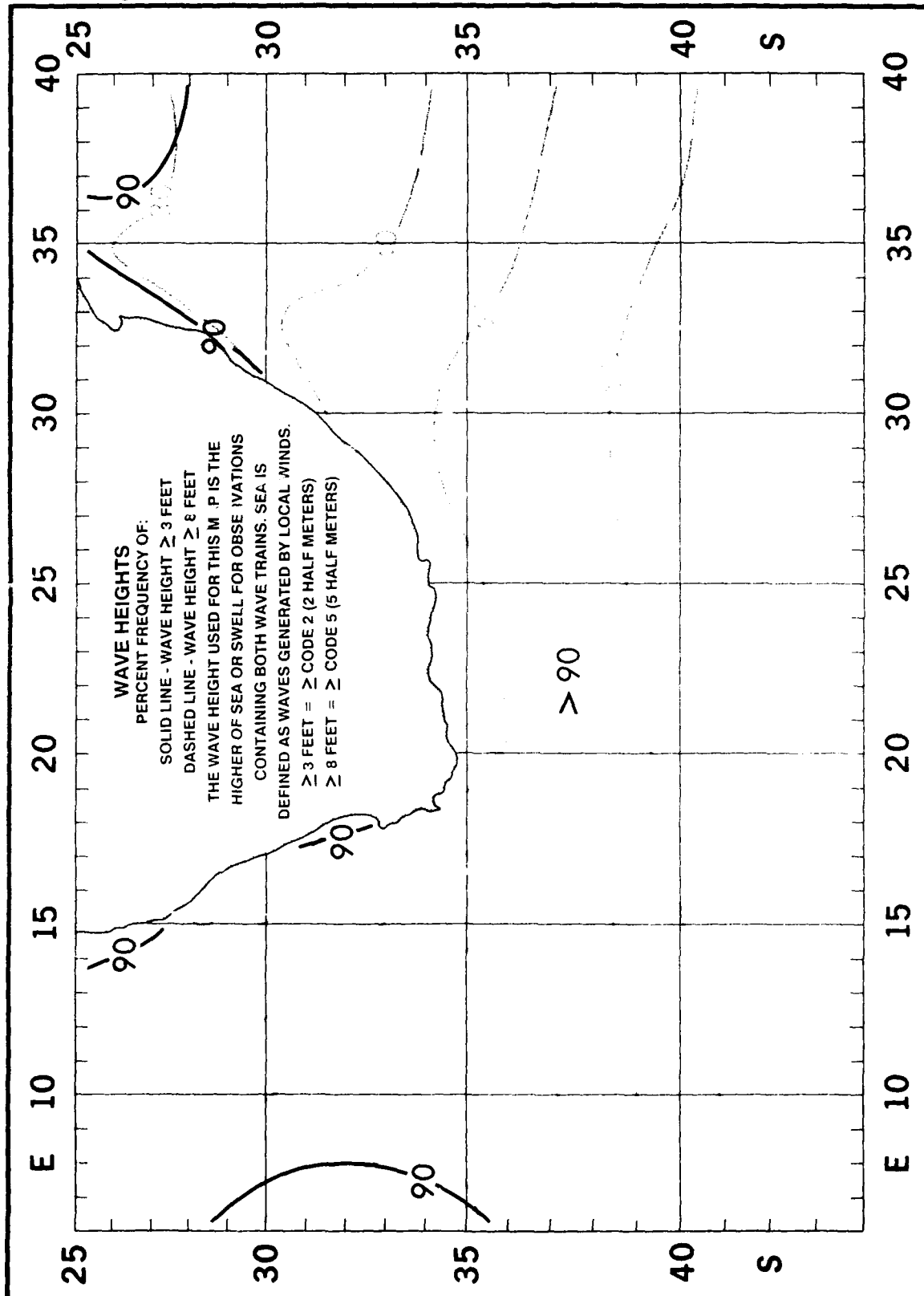
January

Air and Sea Temperature



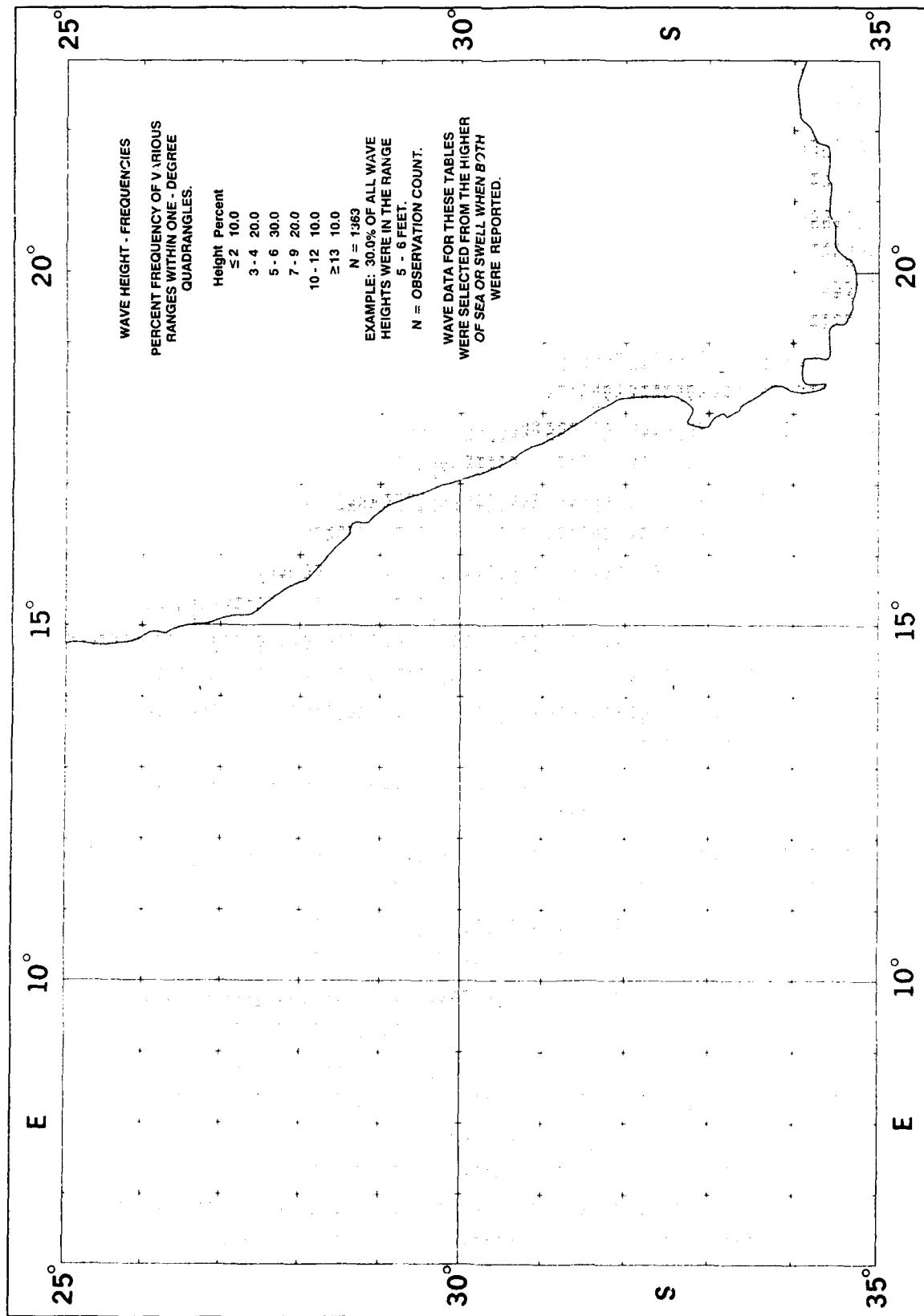
January

Wave Height



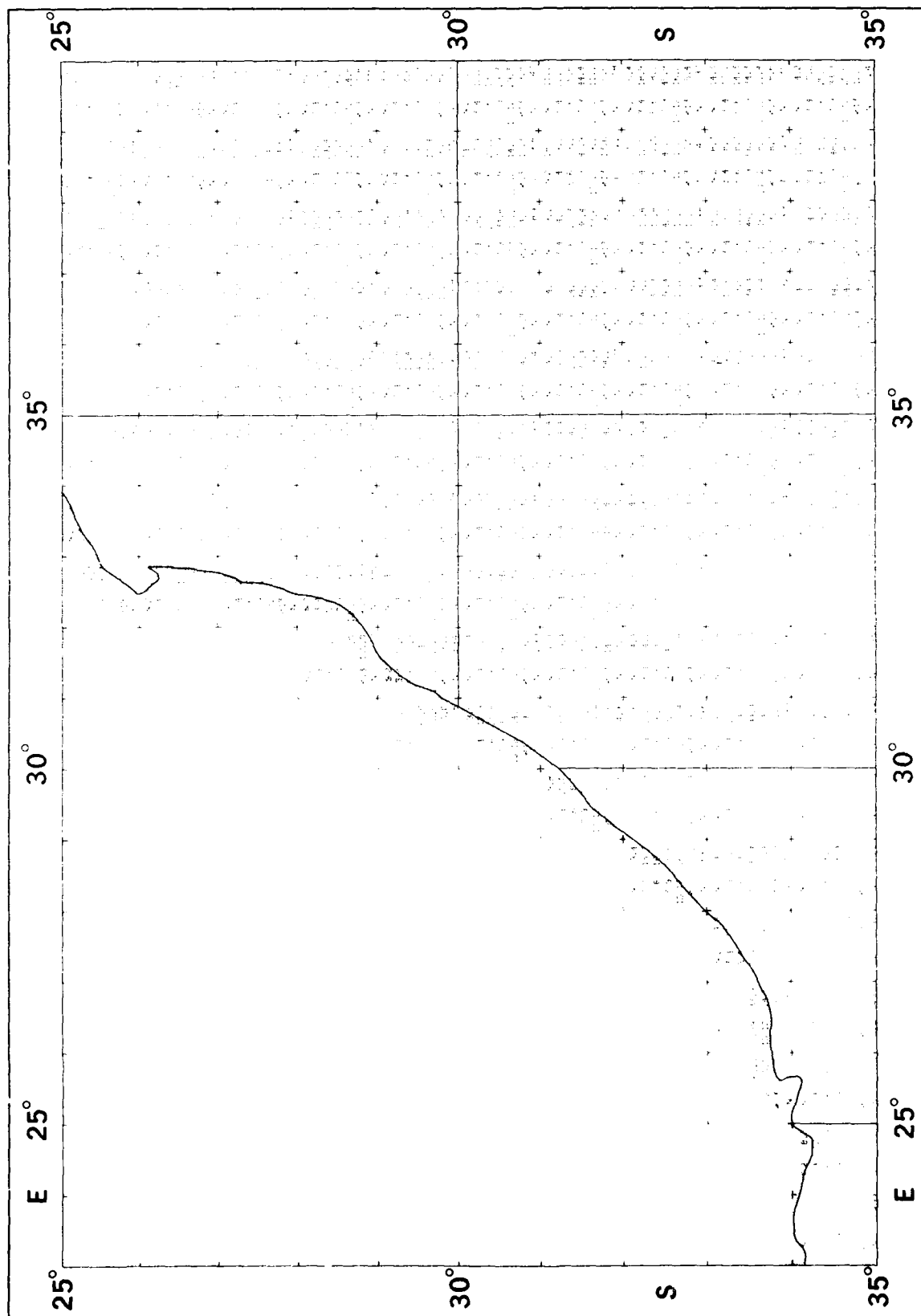
January

Wave Height



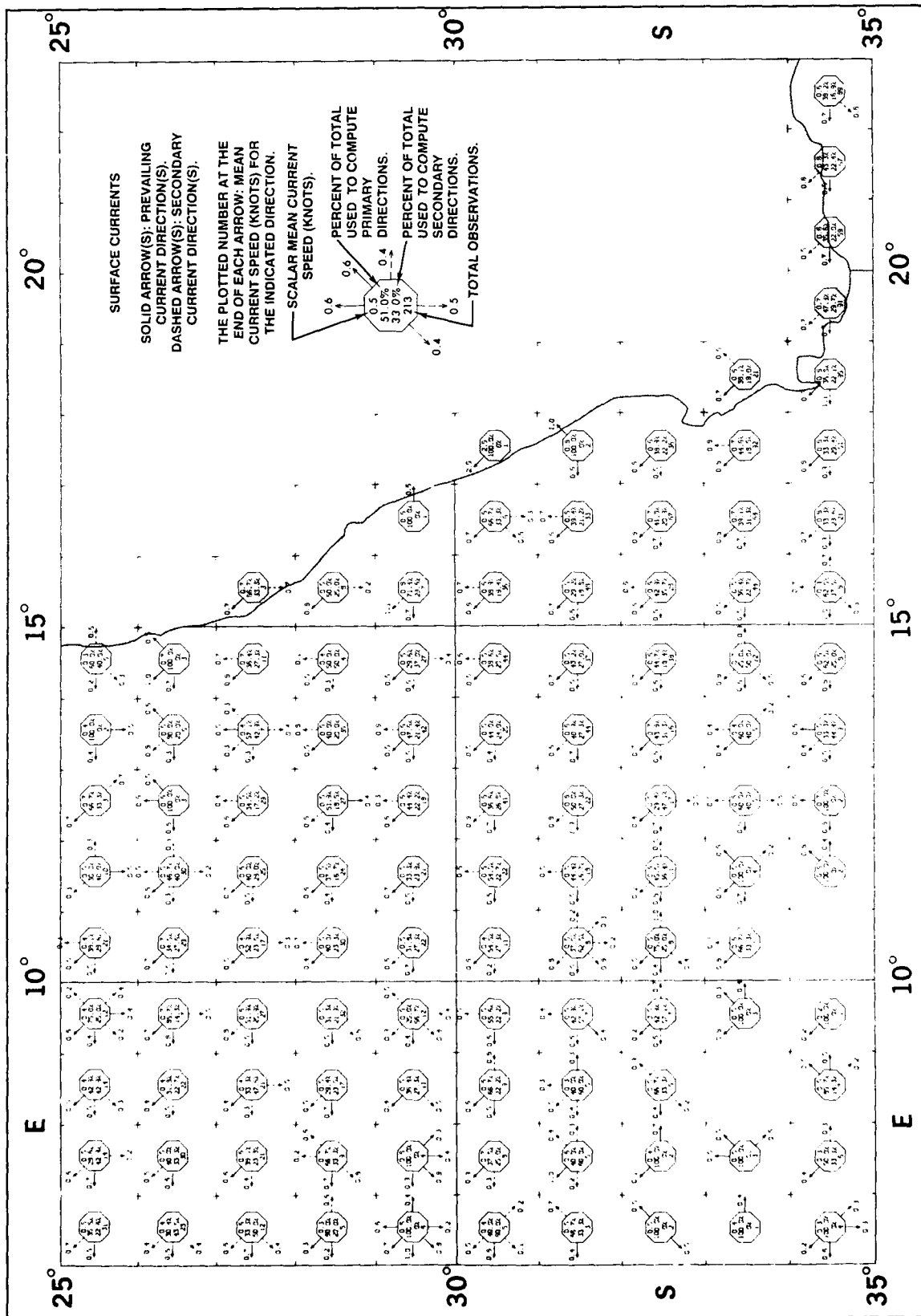
January

Wave Height



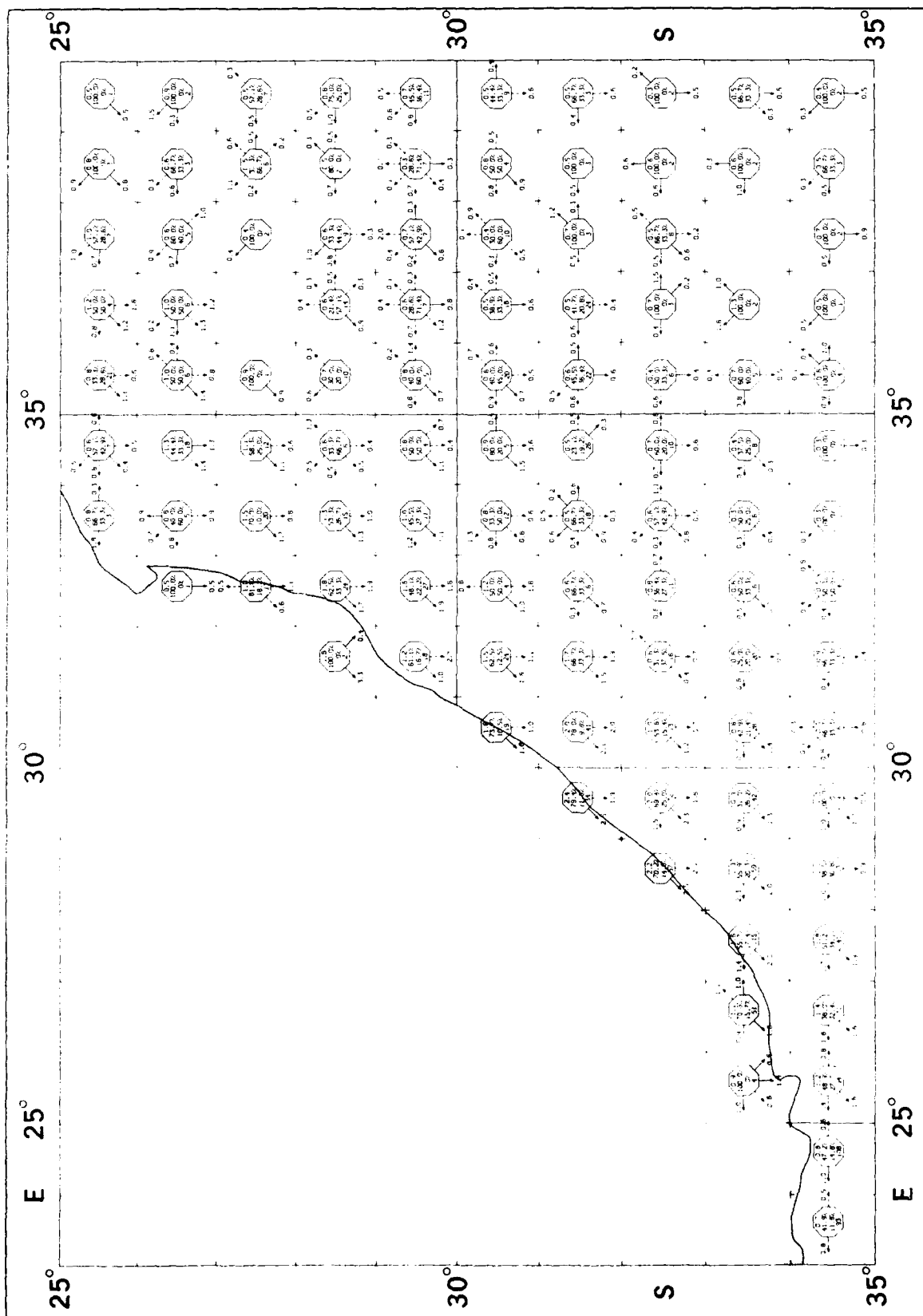
January

Surface Currents



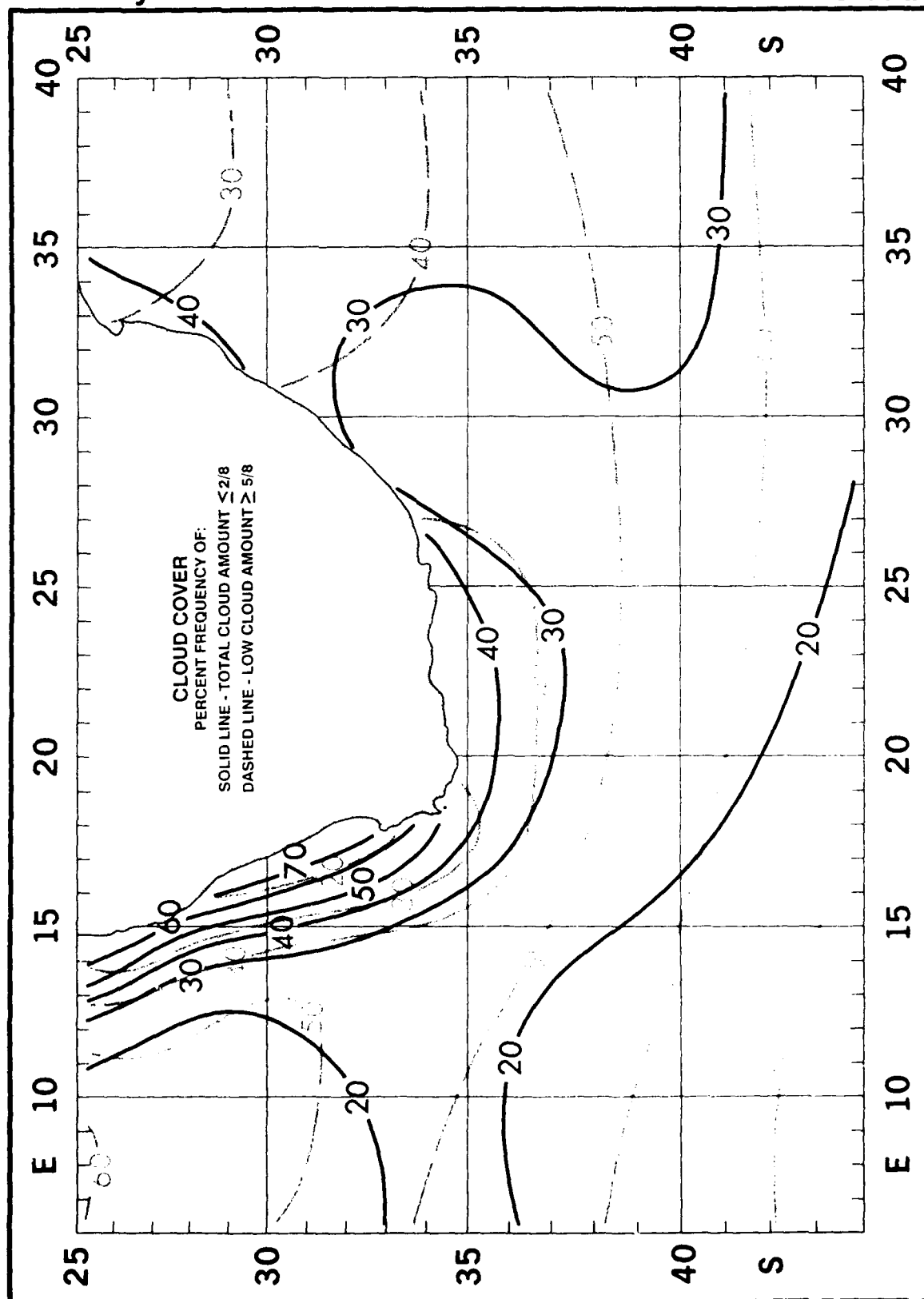
January

Surface Currents



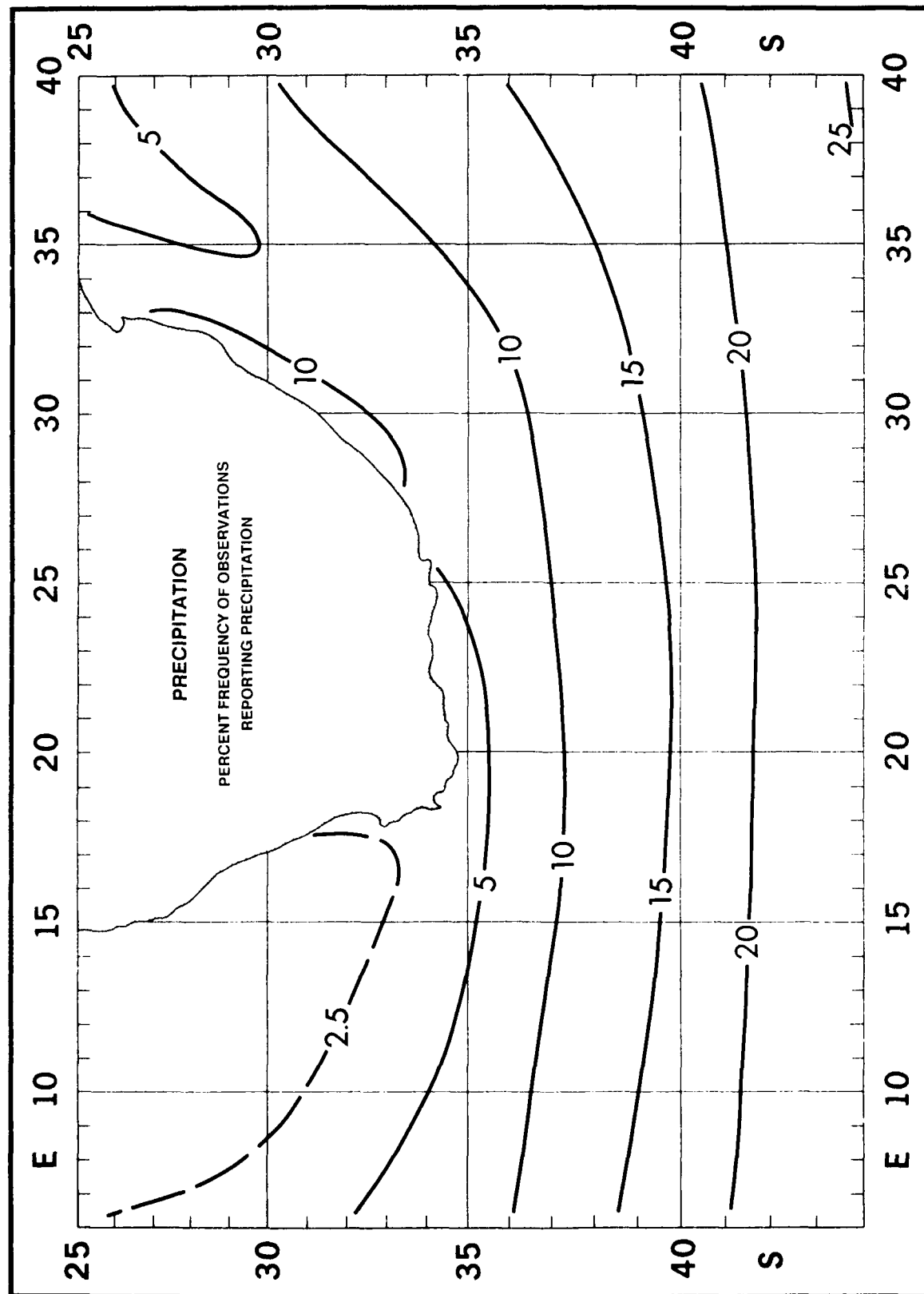
February

Clouds



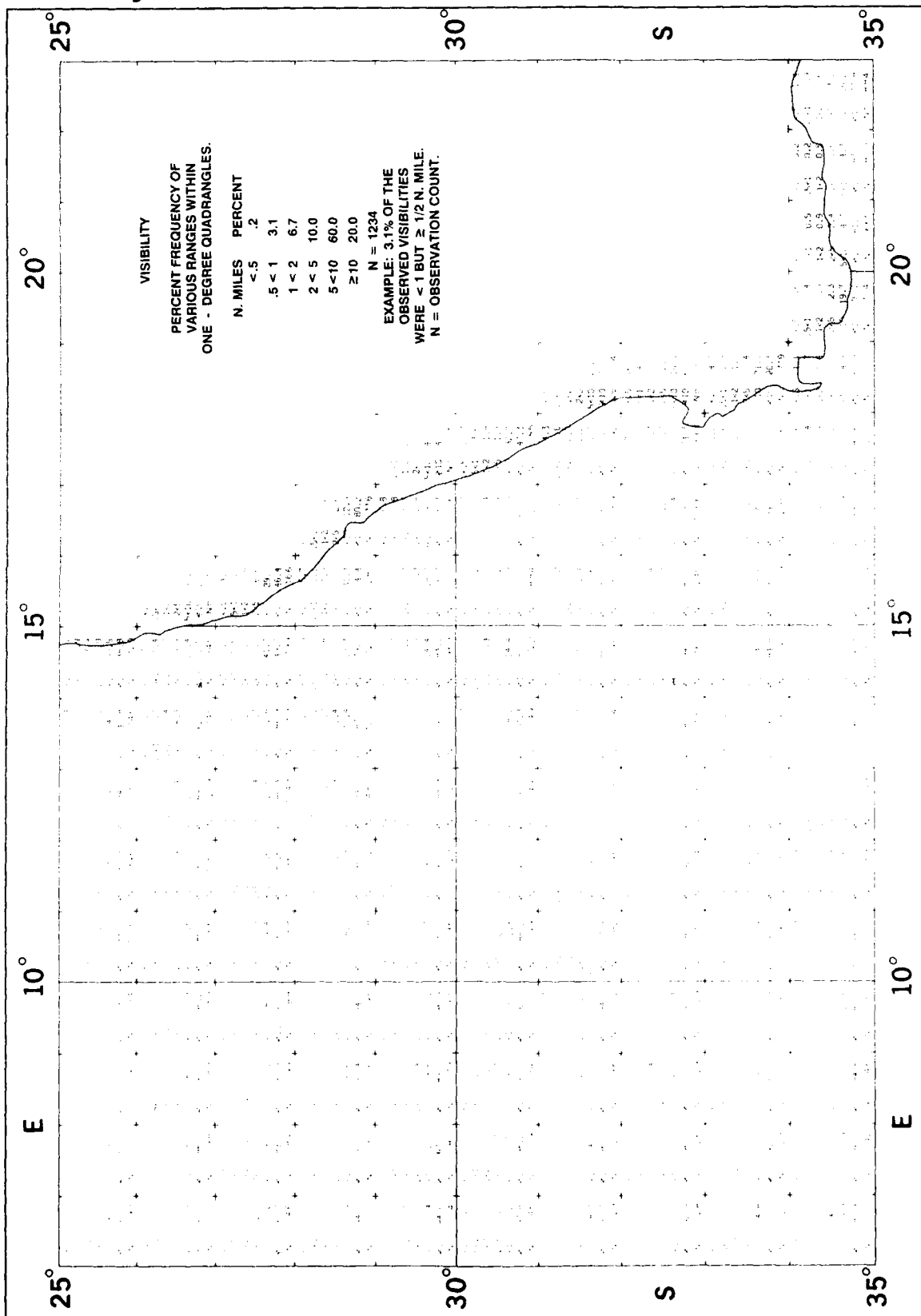
February

Precipitation



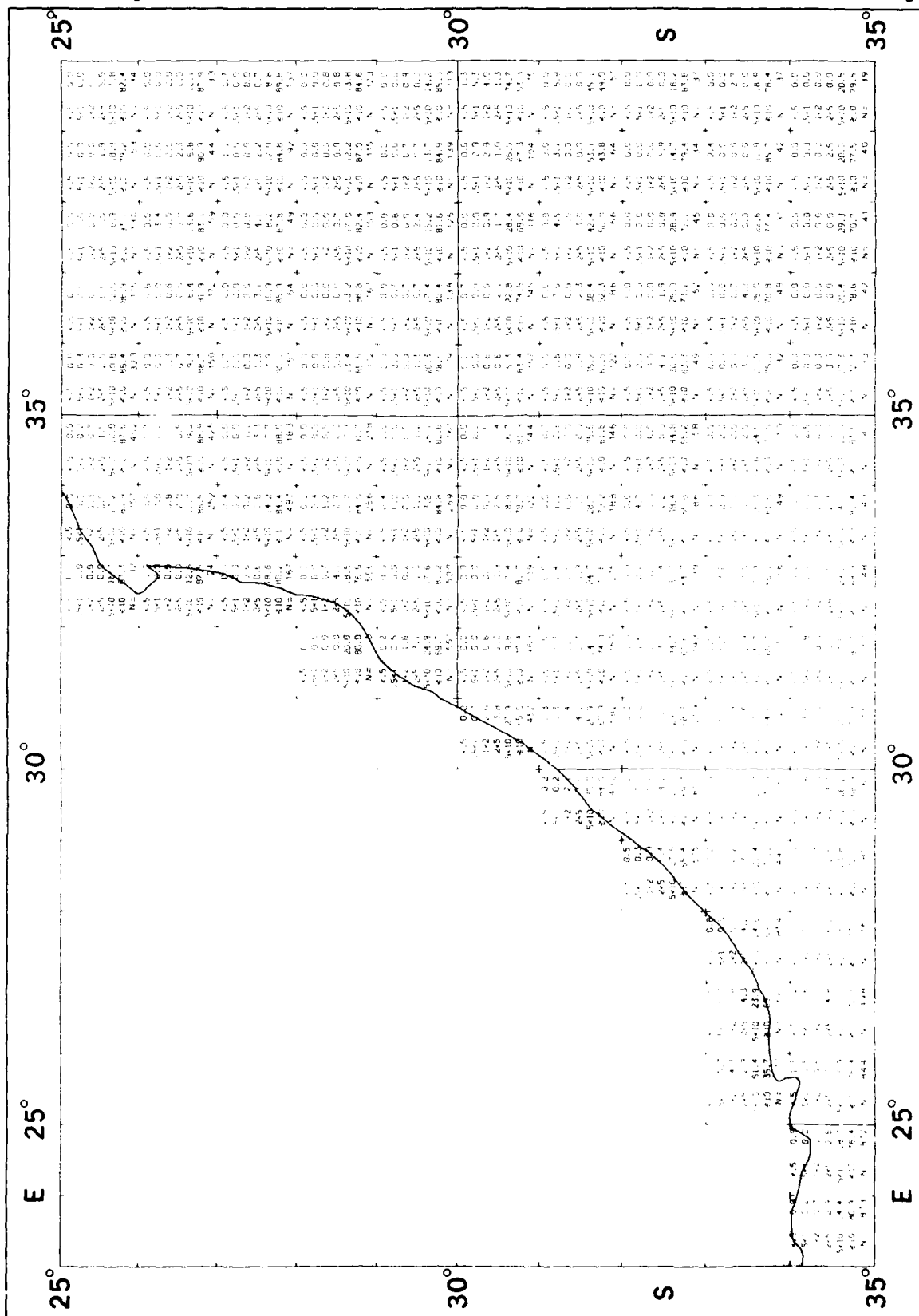
February

Visibility



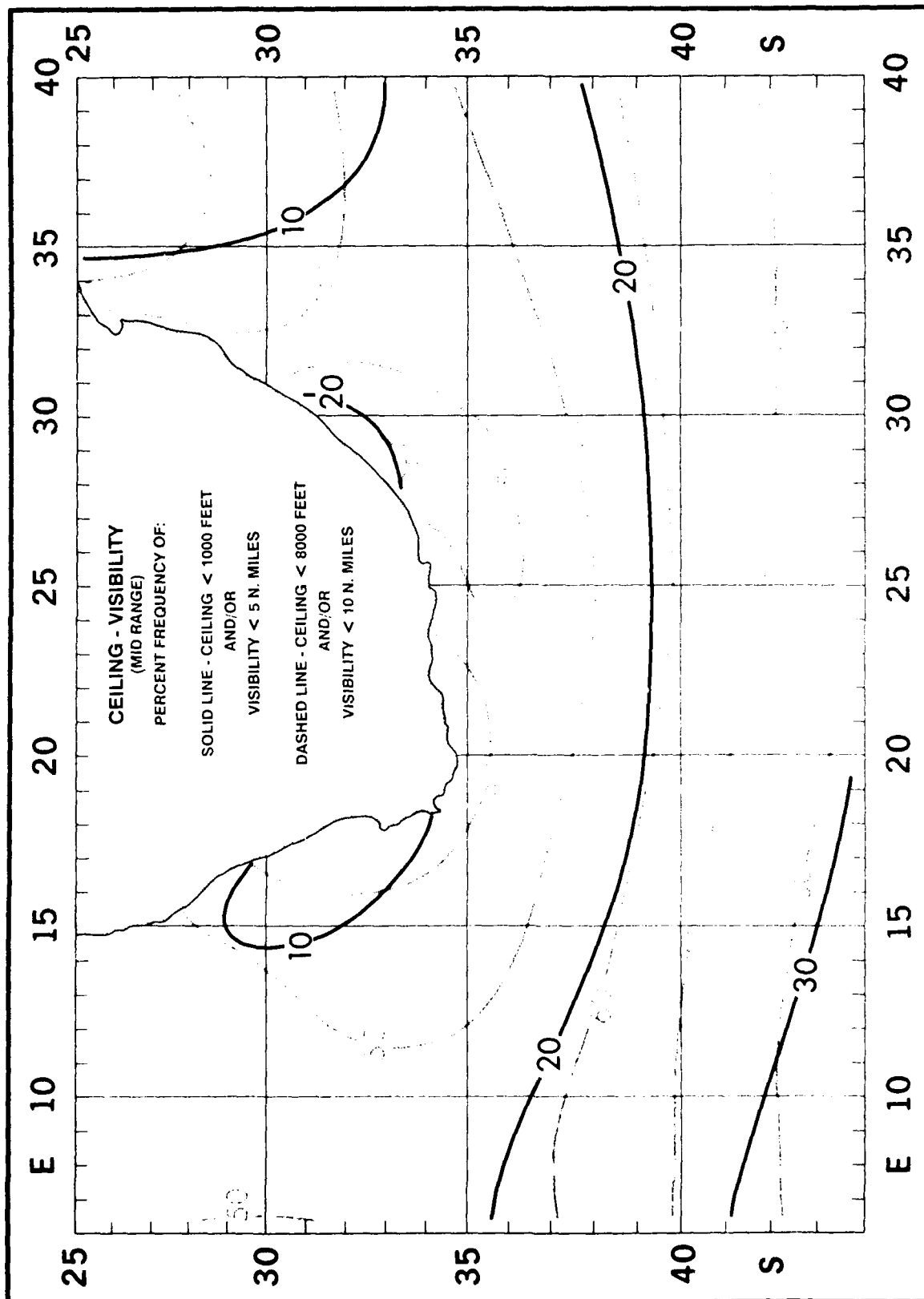
February

Visibility



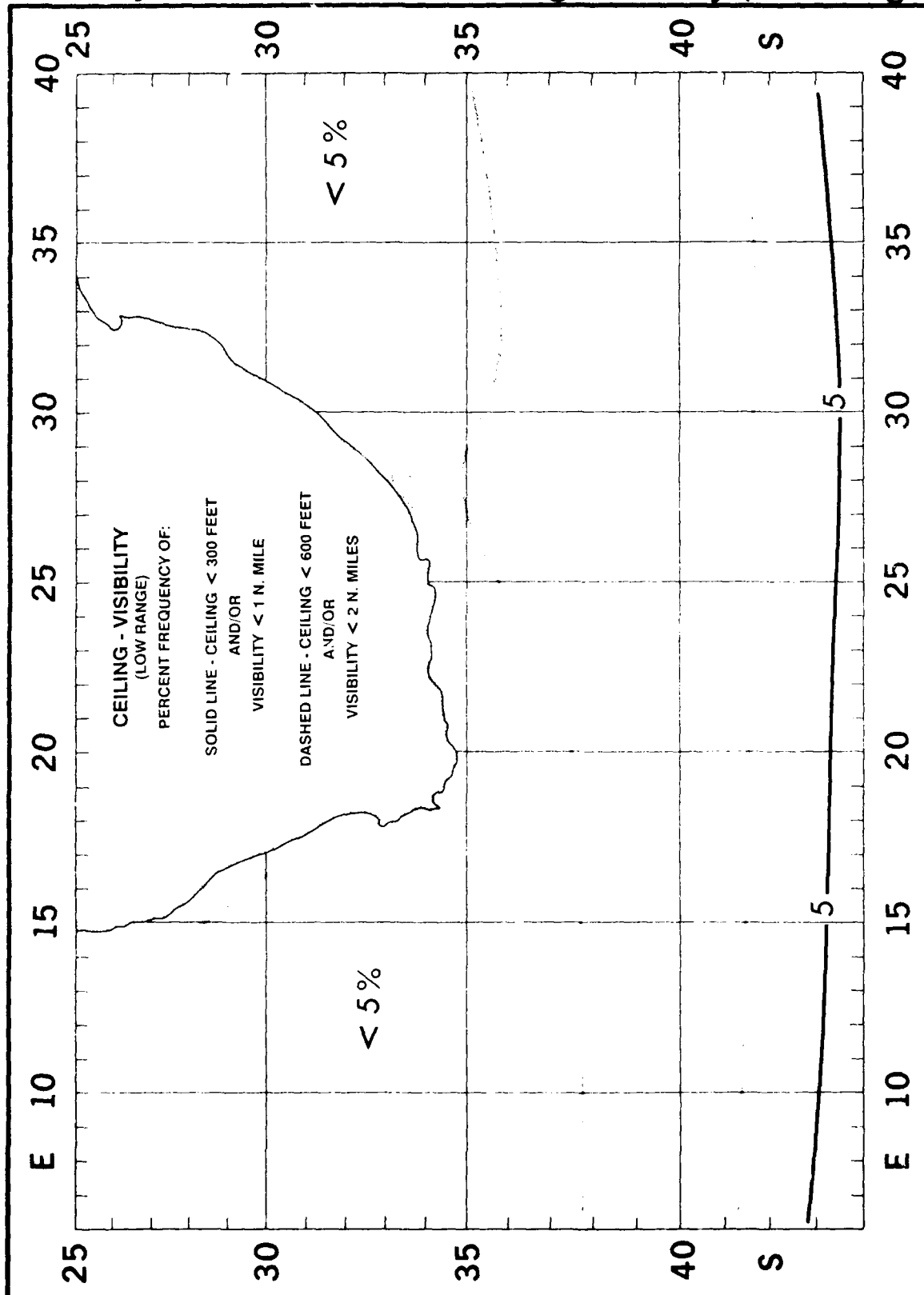
February

Ceiling - Visibility (Mid Range)



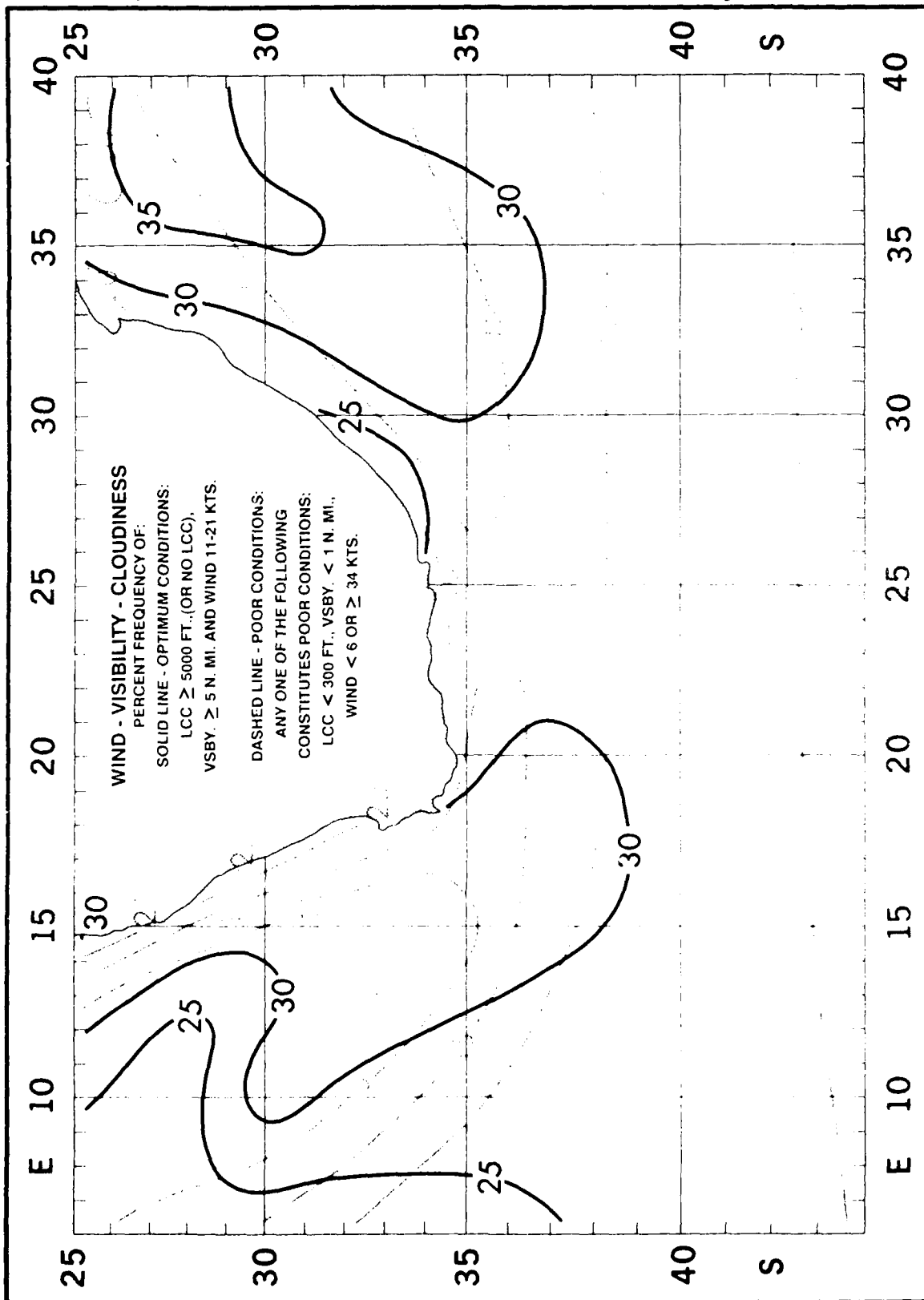
February

Ceiling - Visibility (Low Range)



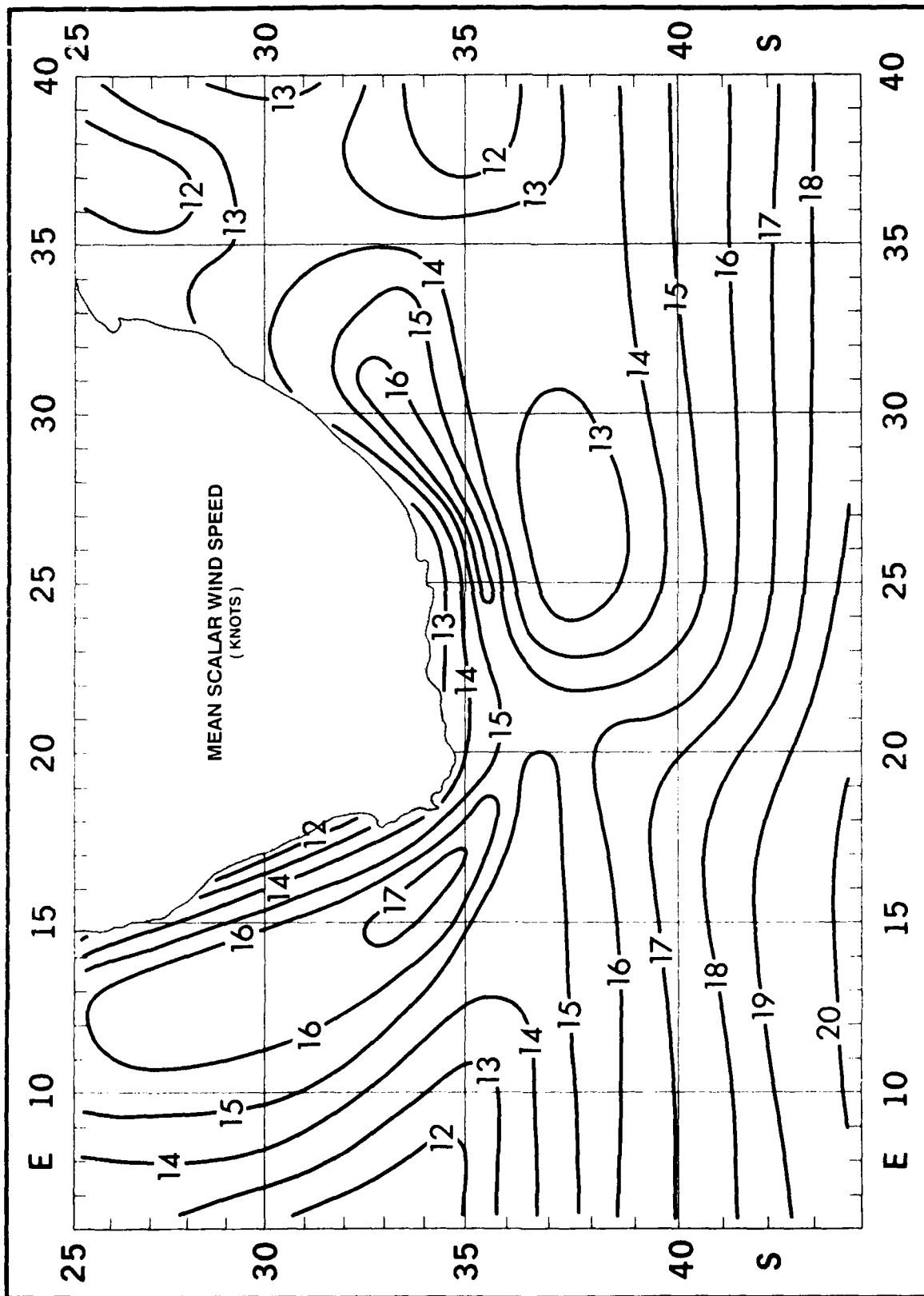
February

Wind - Visibility - Cloudiness



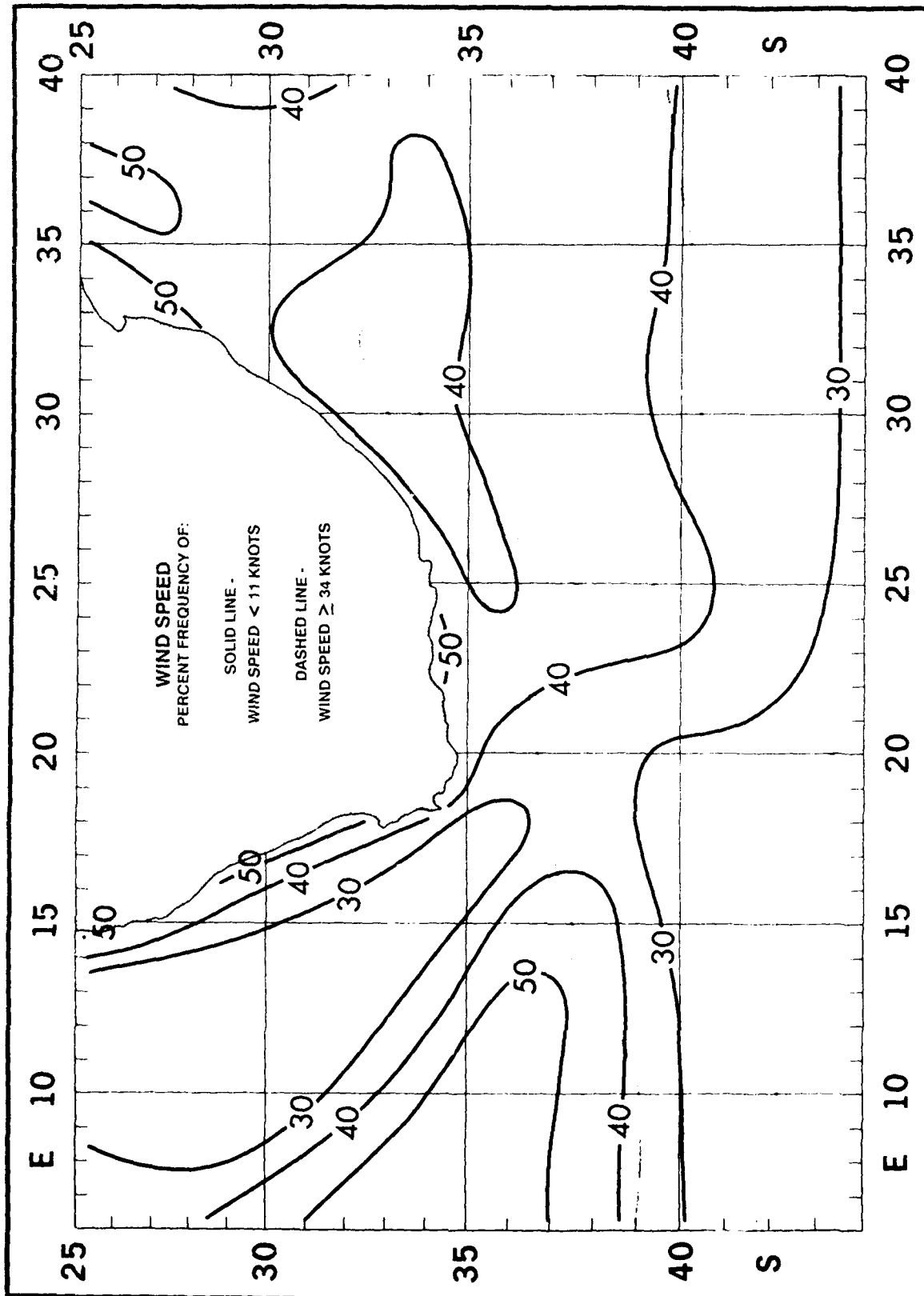
February

Mean Scalar Wind Speed



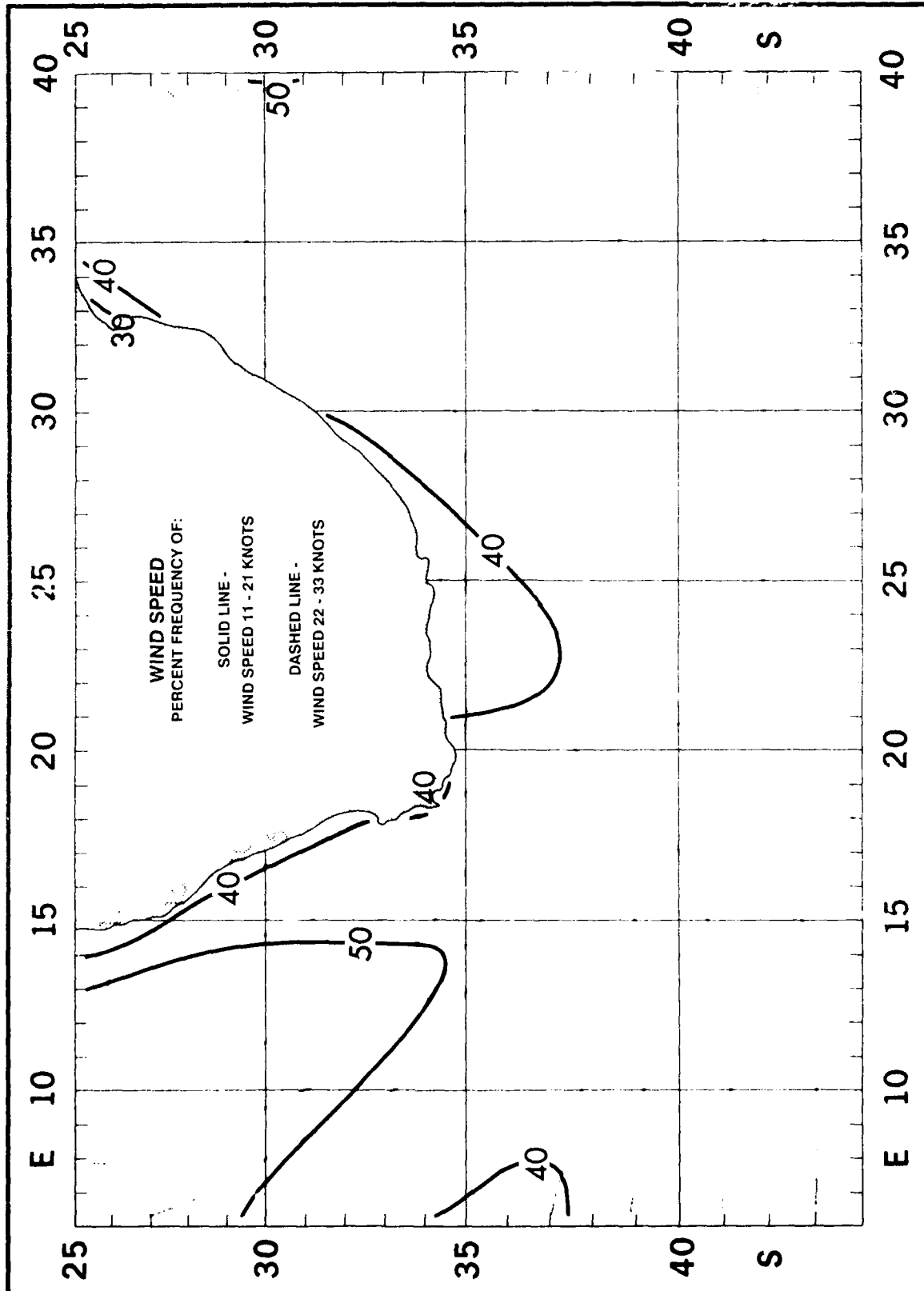
February

Wind Speed < 11 and ≥ 34 Knots



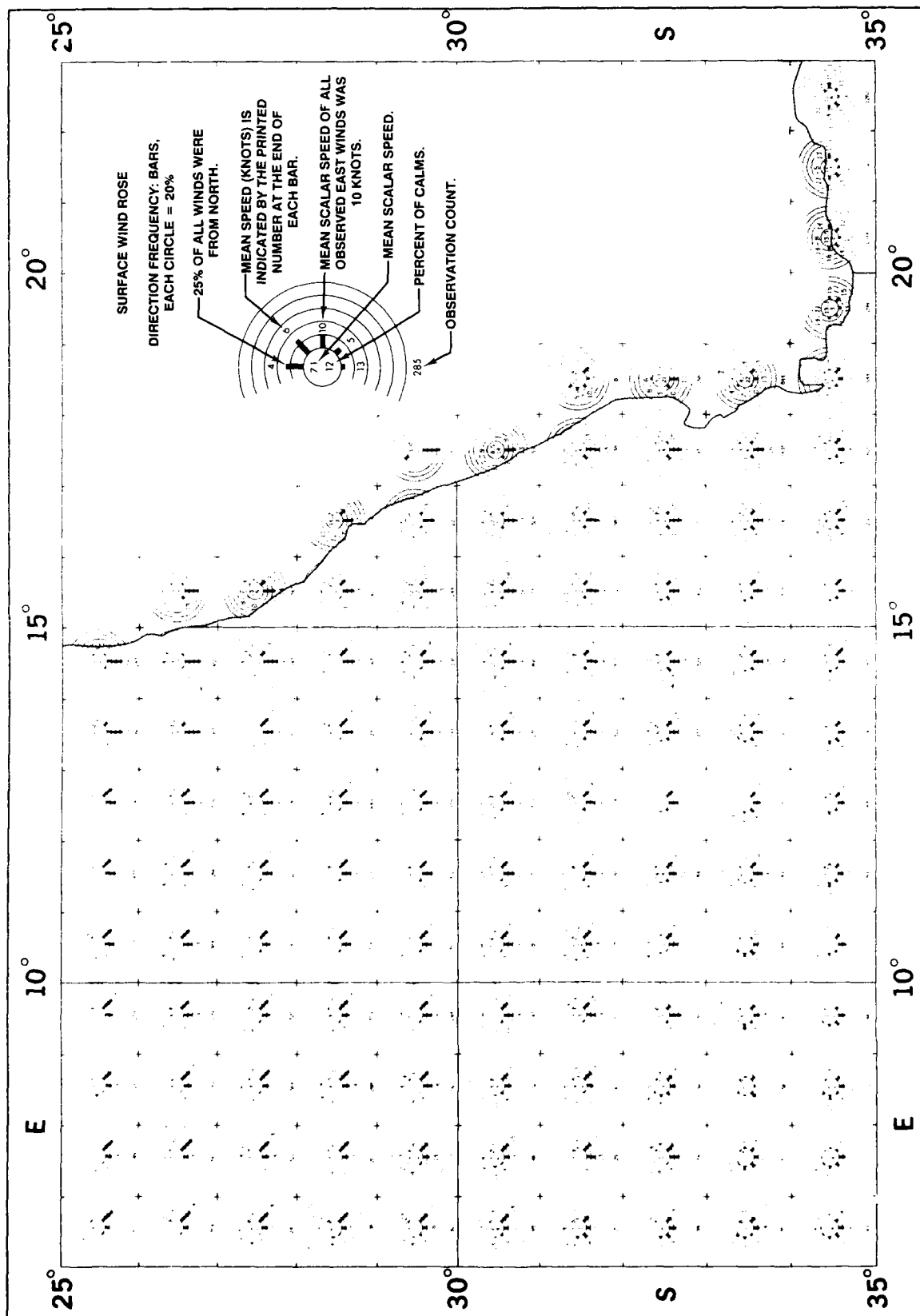
February

Wind Speed 11 - 21 and 22 - 33 Knots



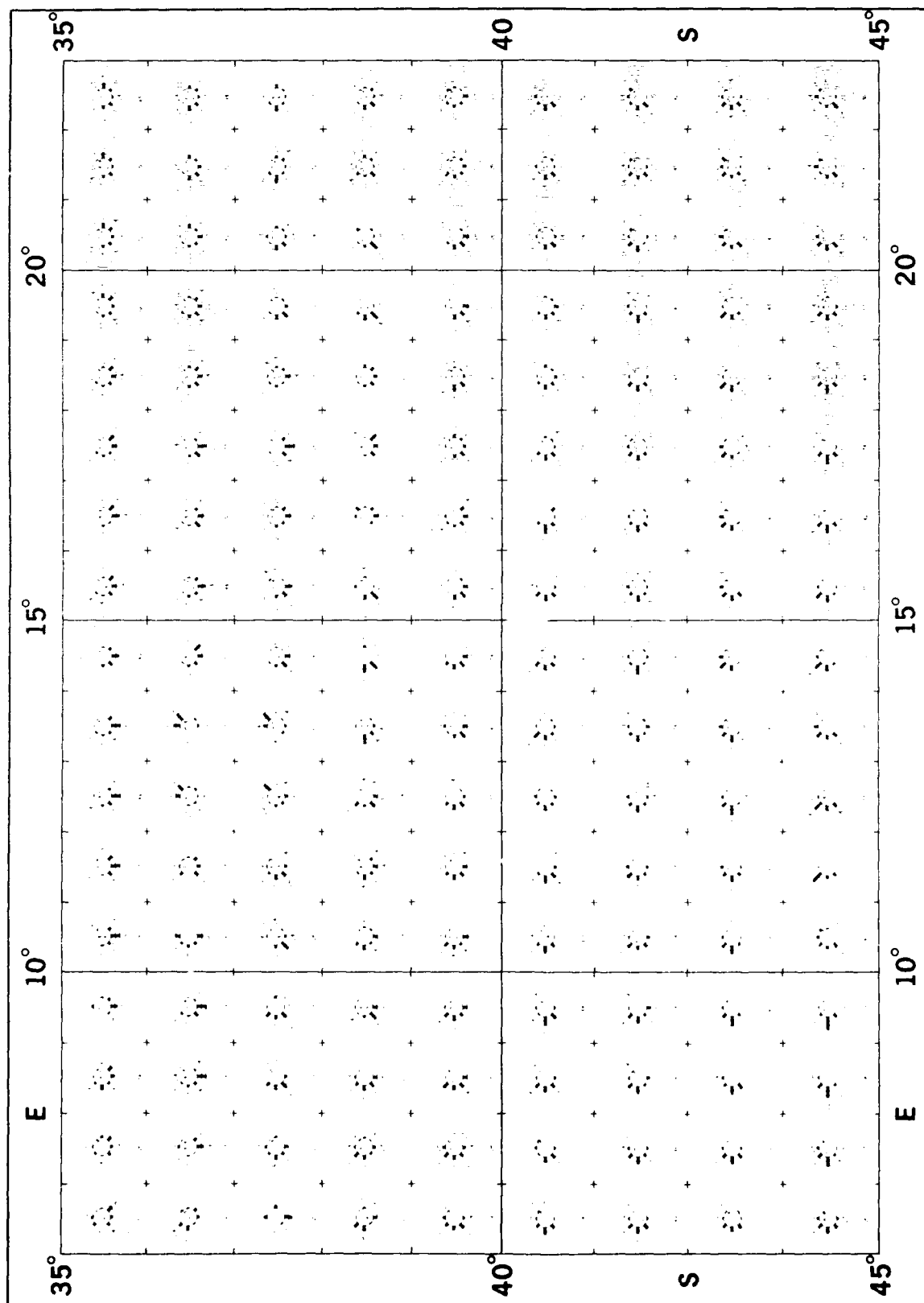
February

Surface Wind Roses



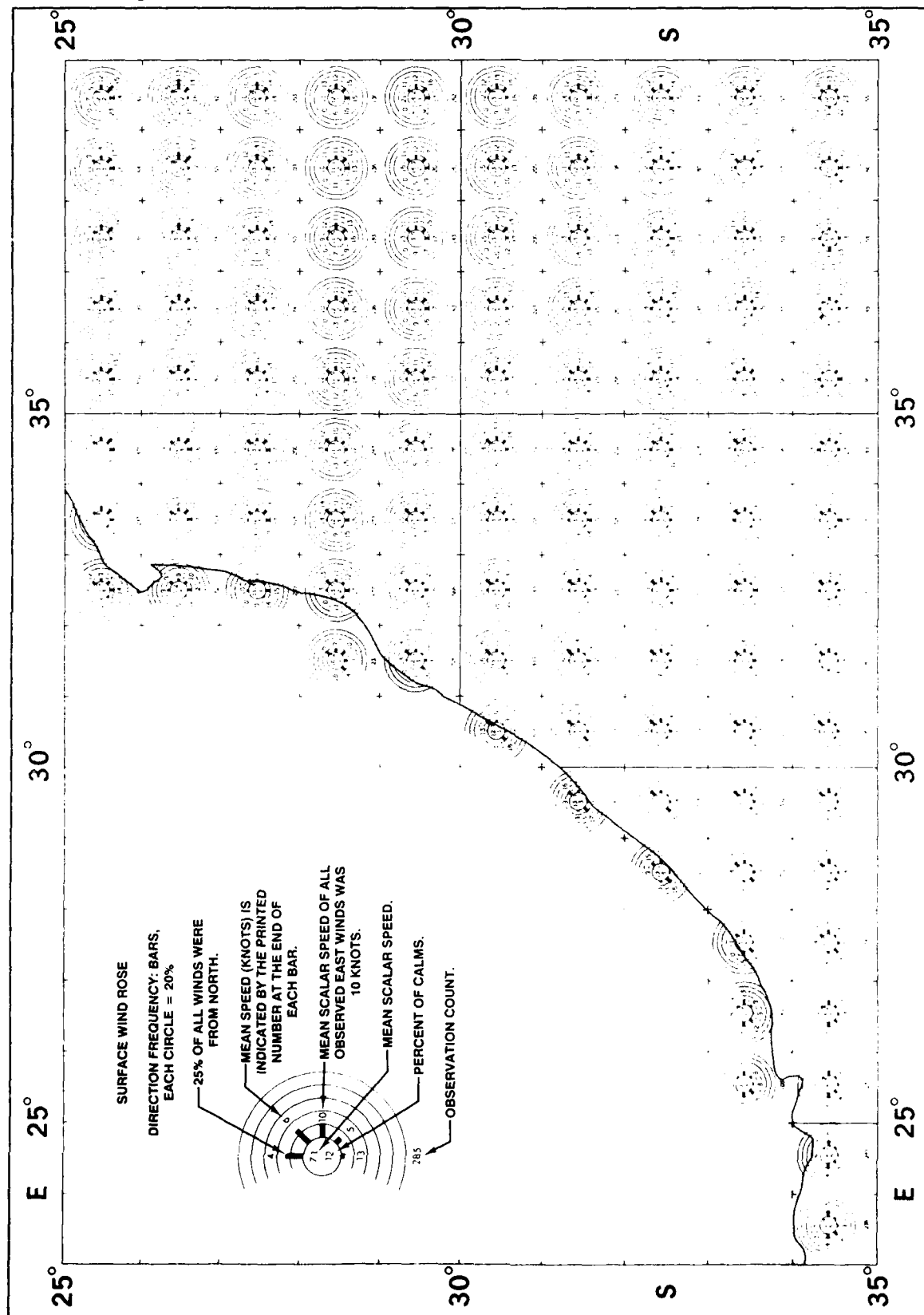
February

Surface Wind Roses



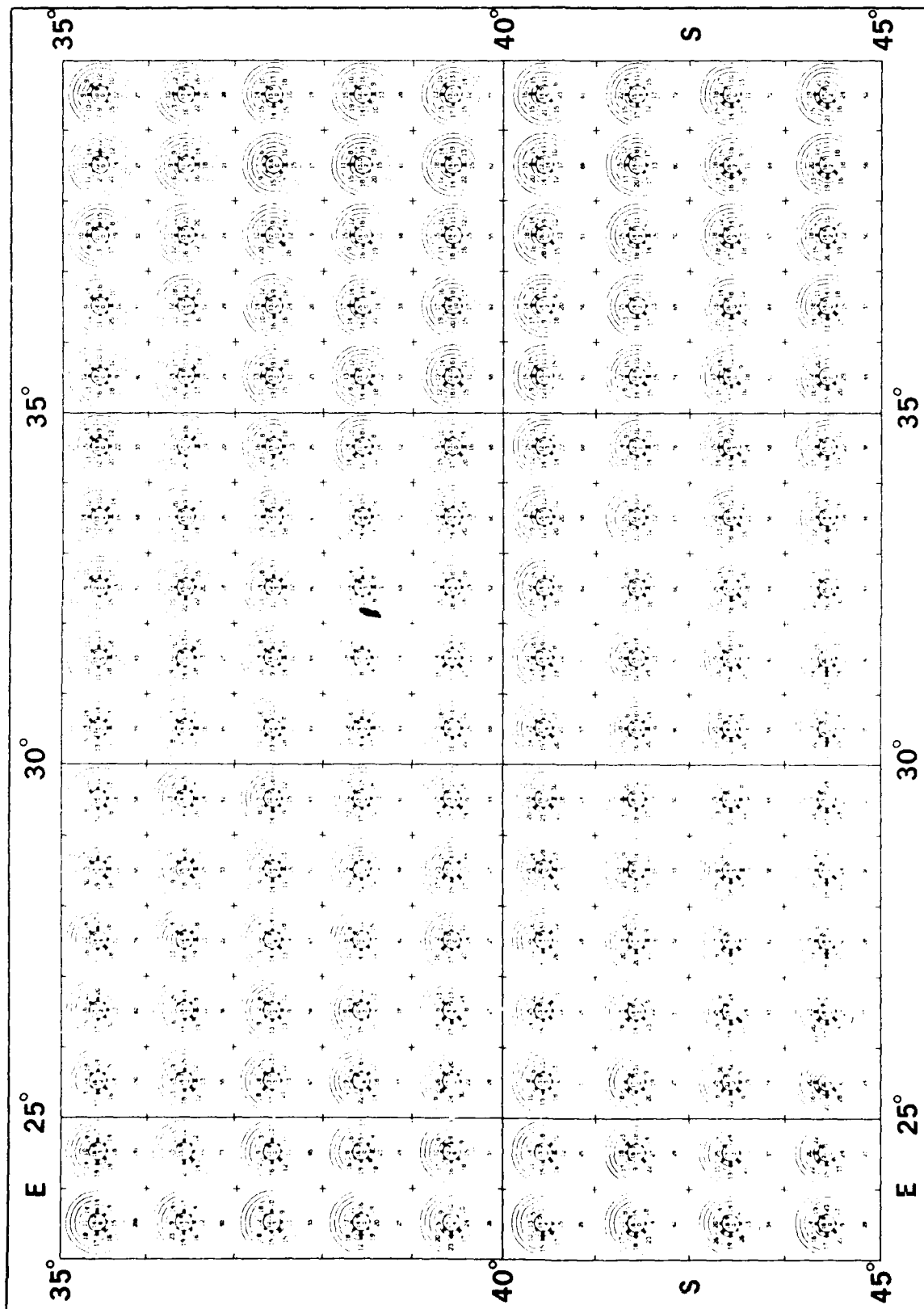
February

Surface Wind Roses



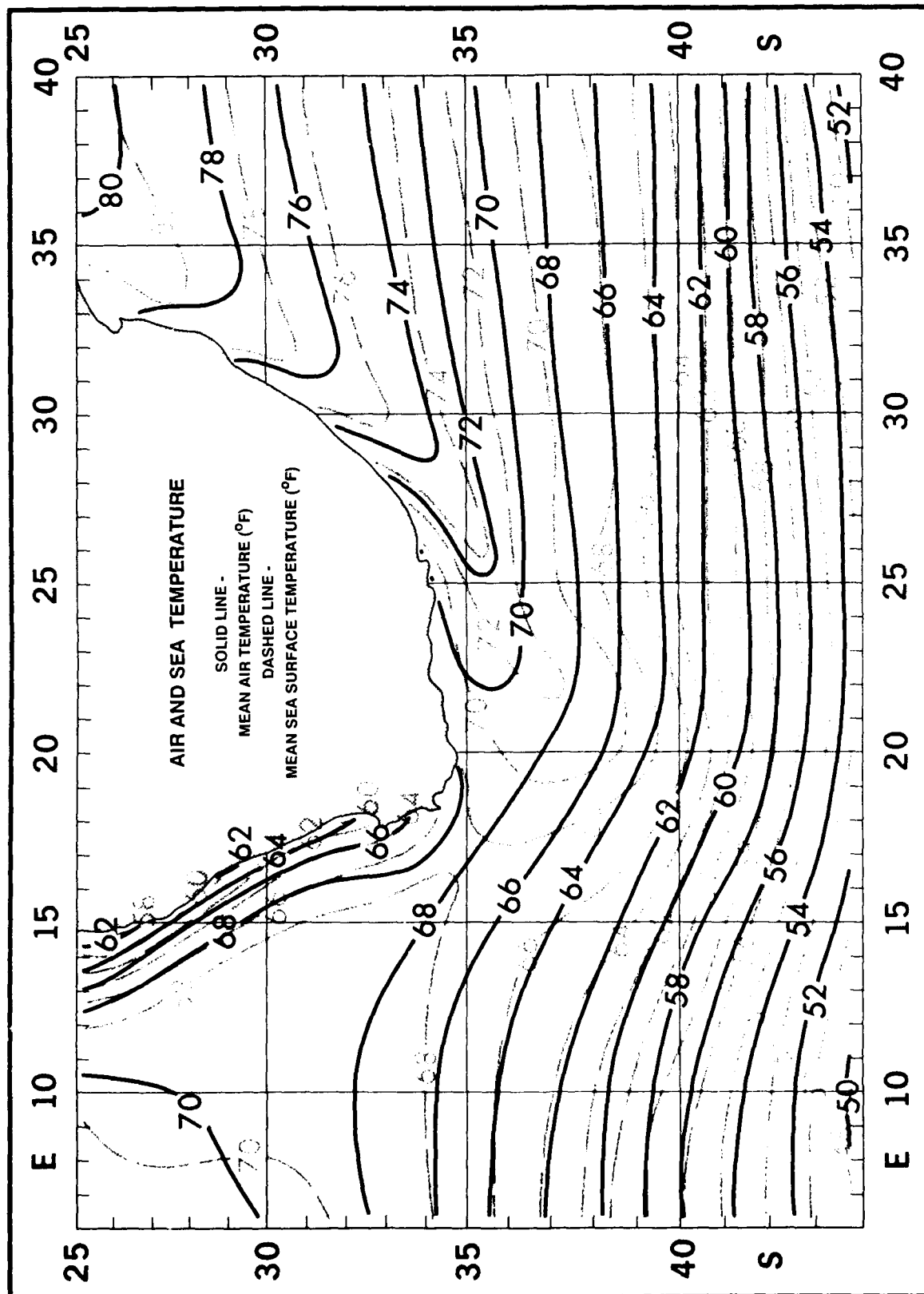
February

Surface Wind Roses



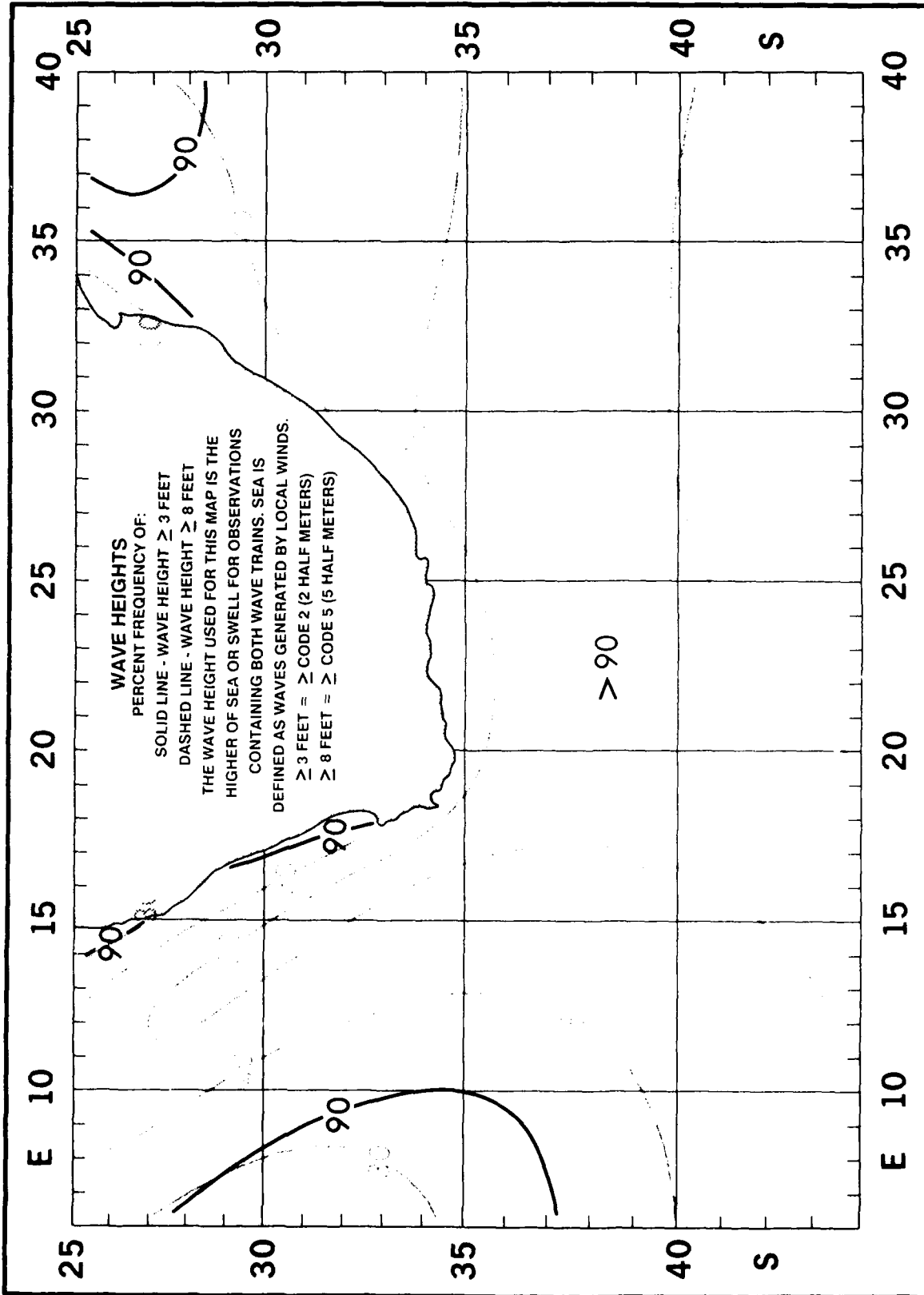
February

Air and Sea Temperature



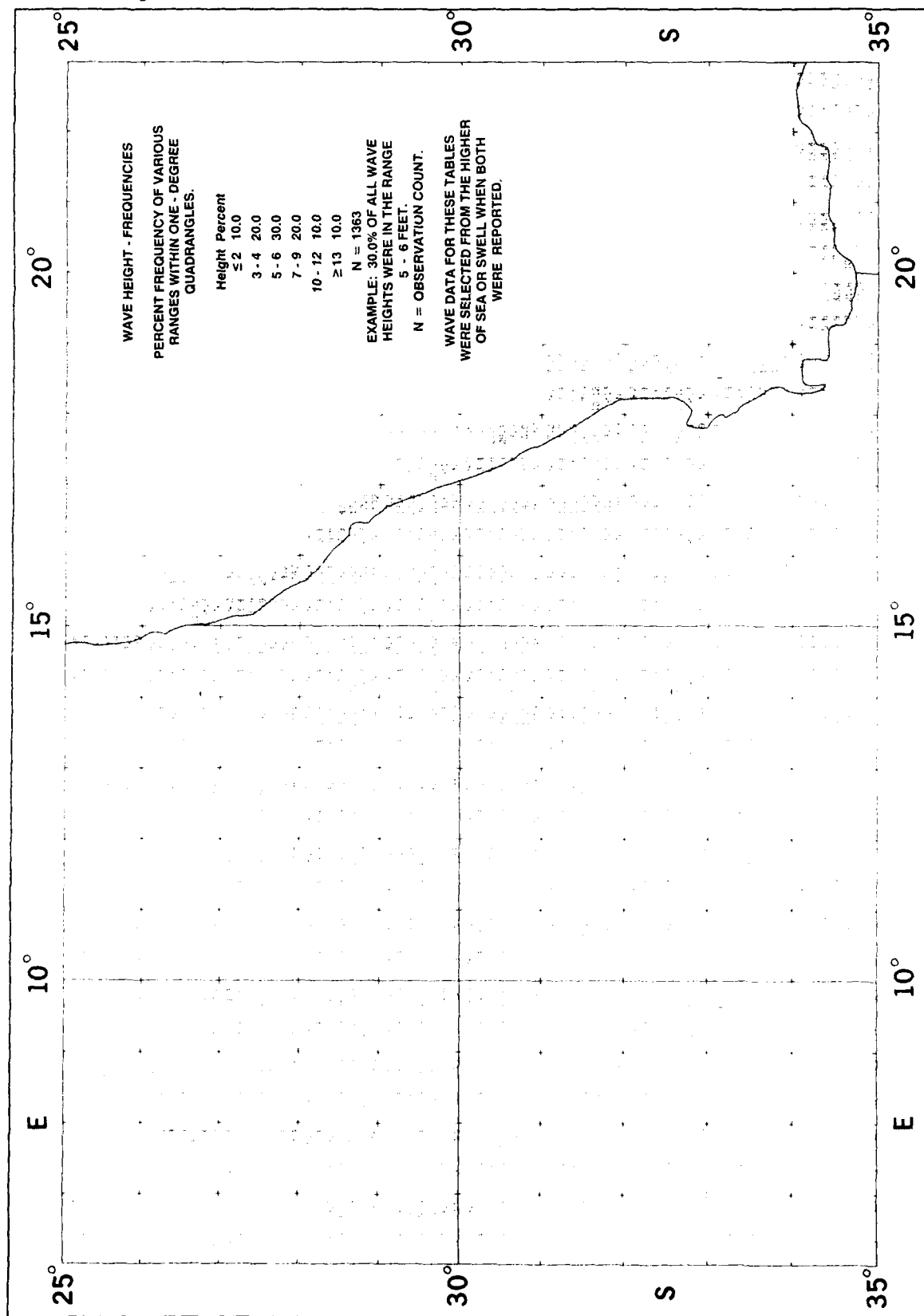
February

Wave Height



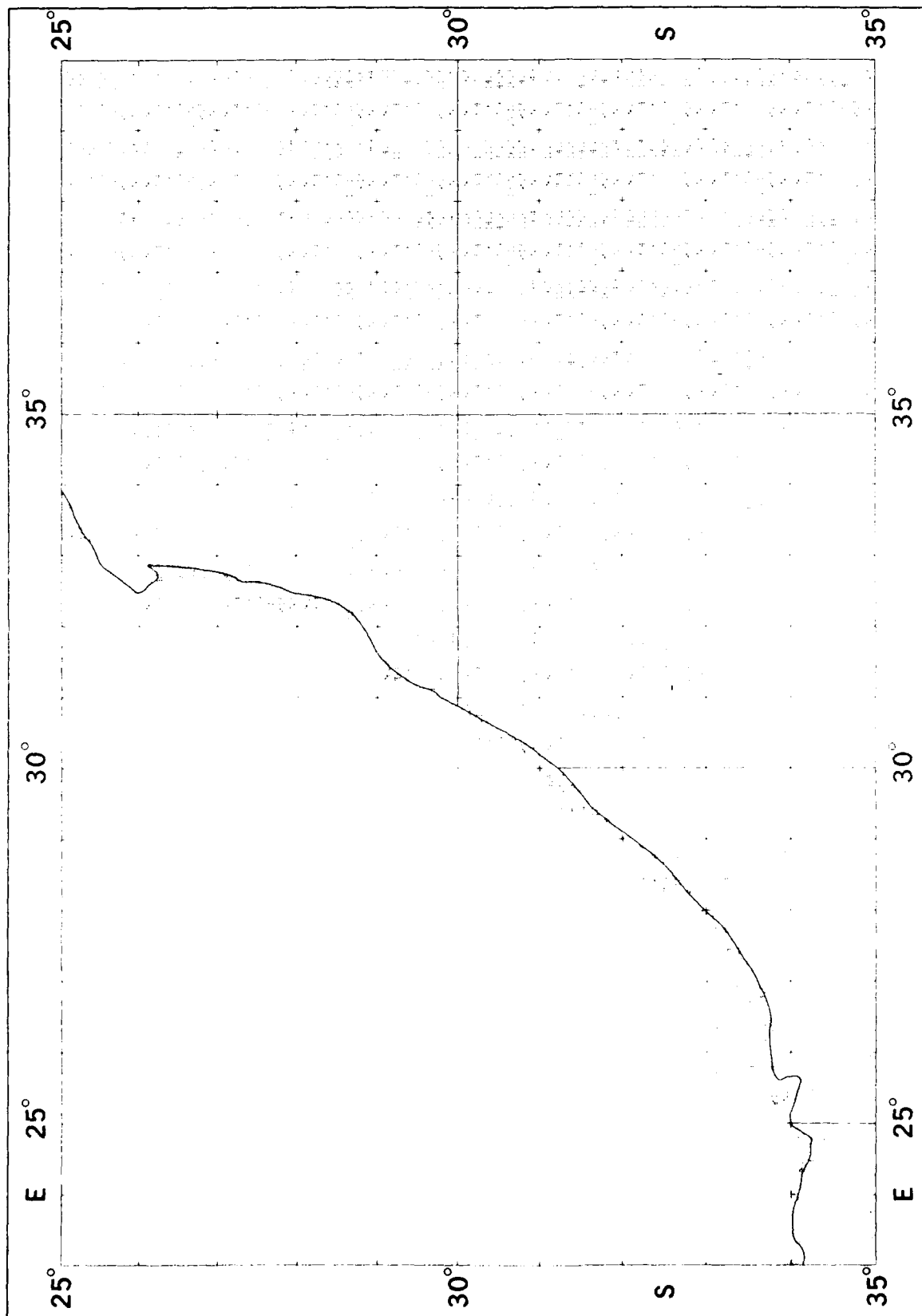
February

Wave Height



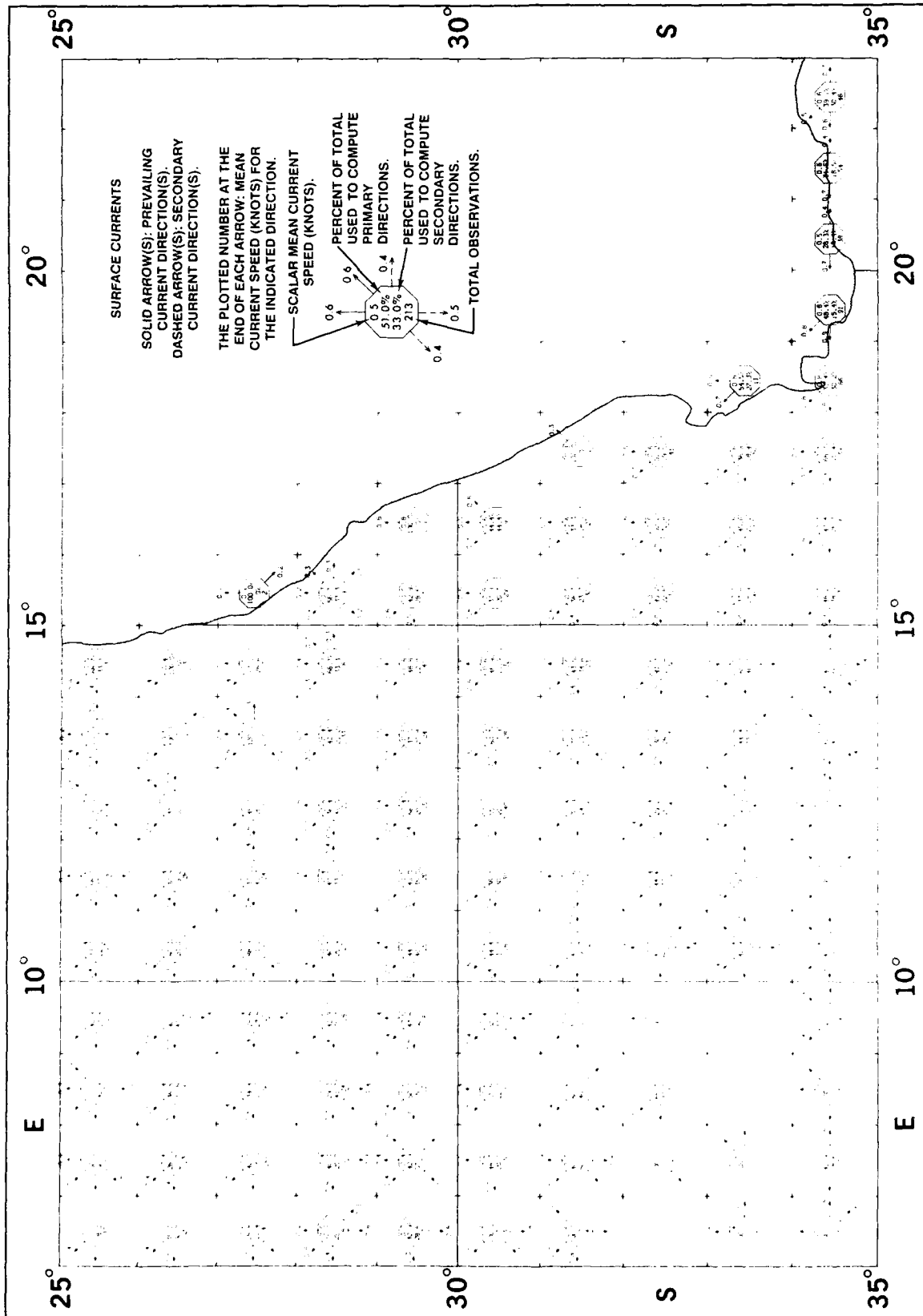
February

Wave Height



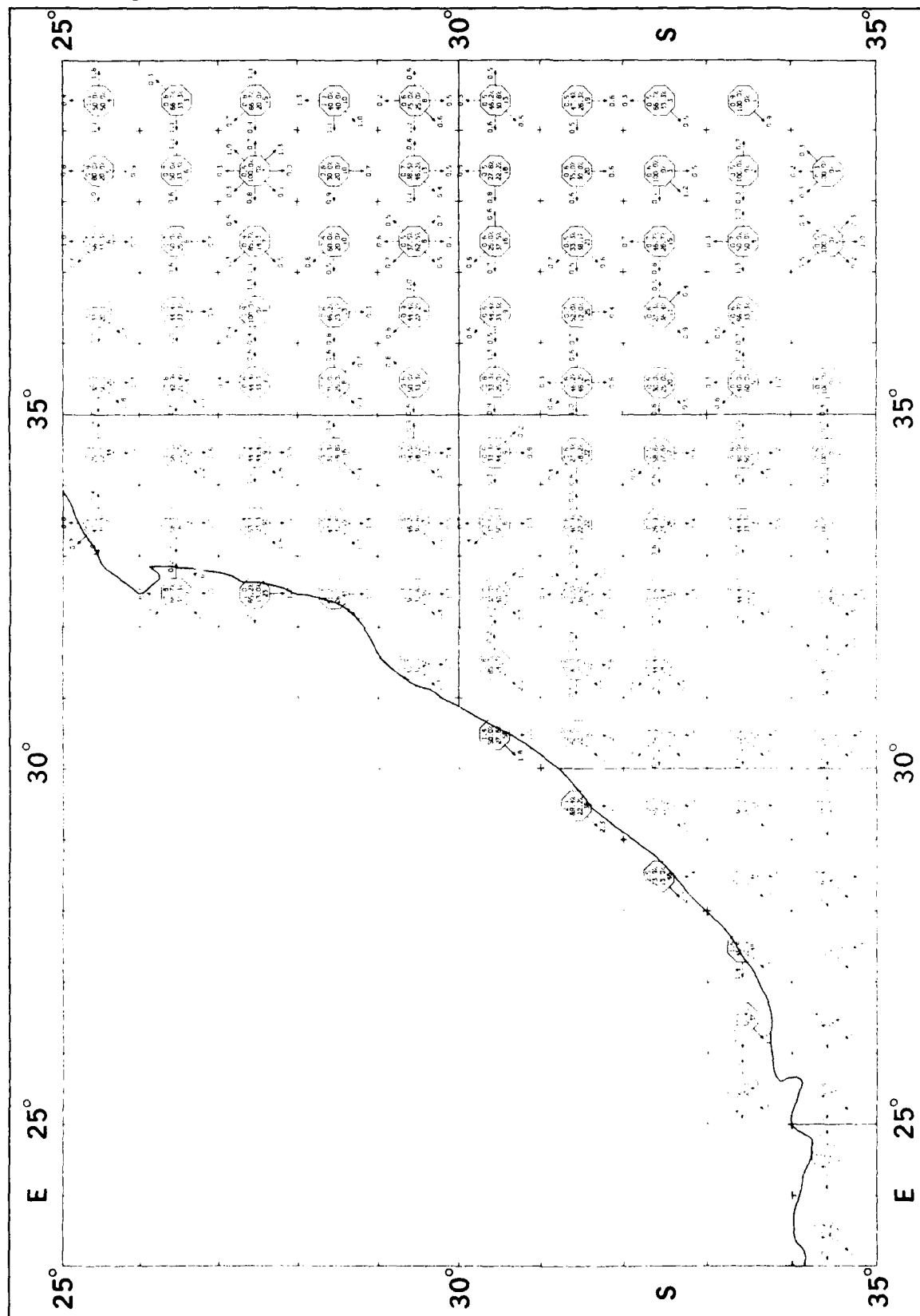
February

Surface Currents



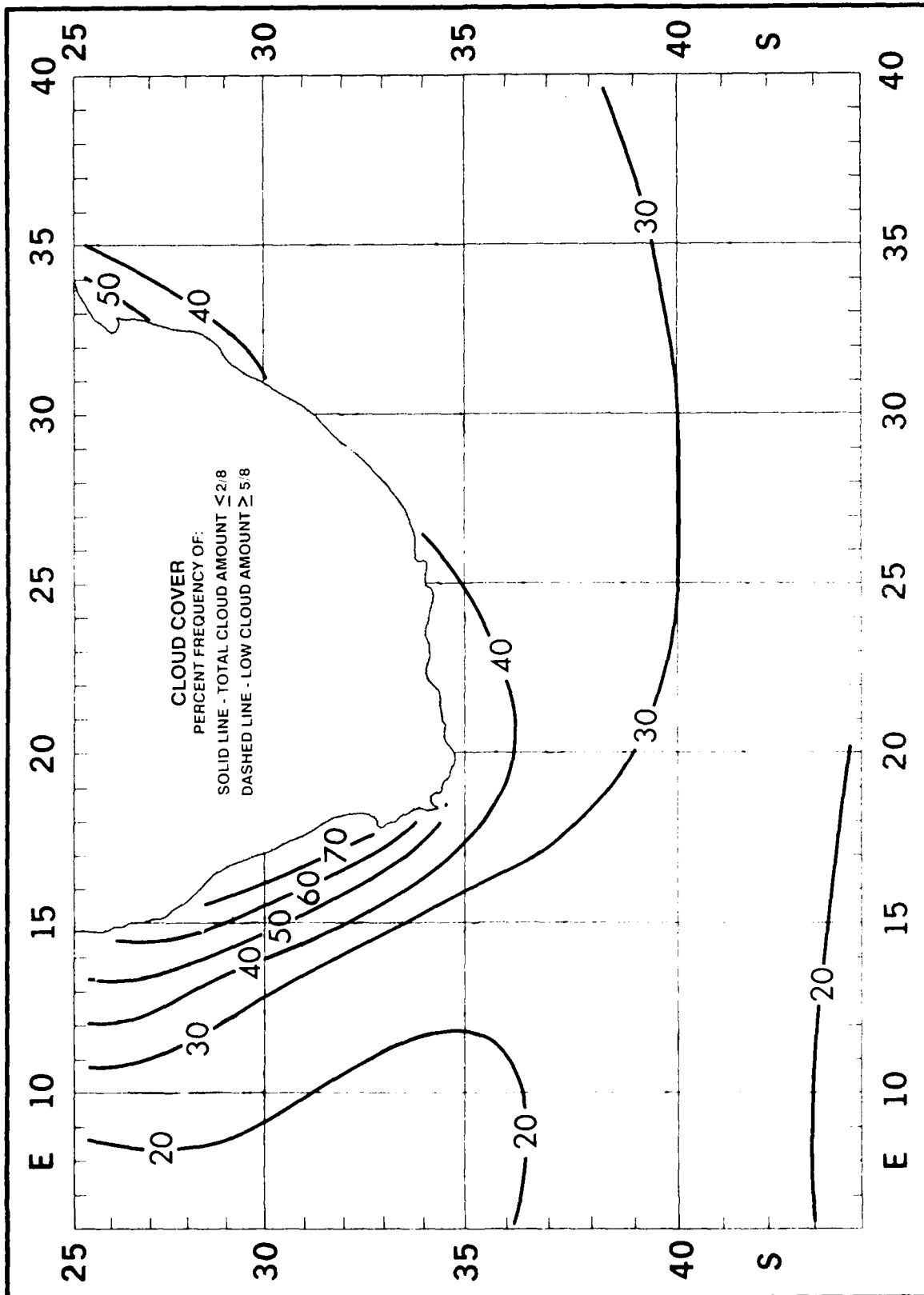
February

Surface Currents



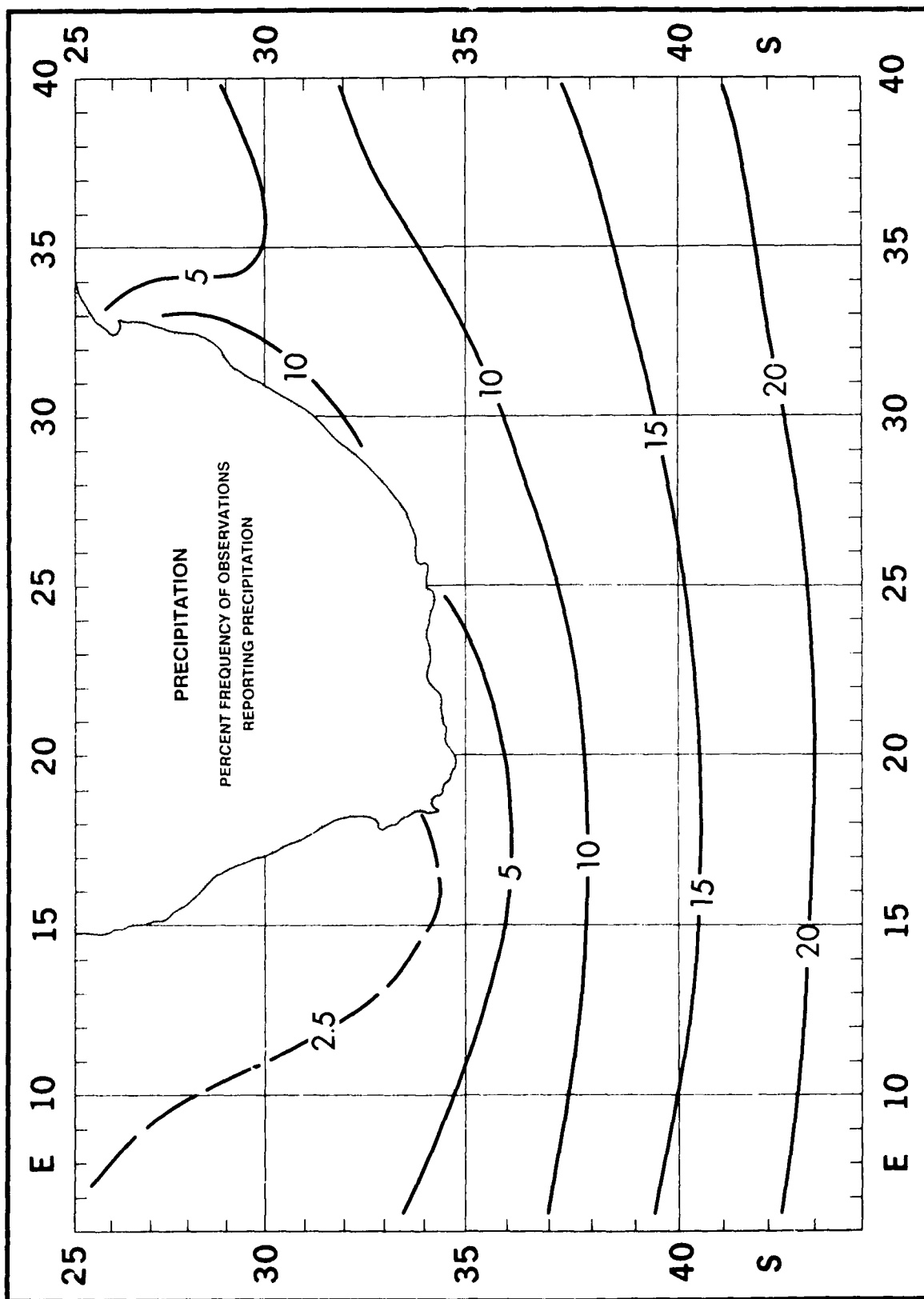
March

Clouds



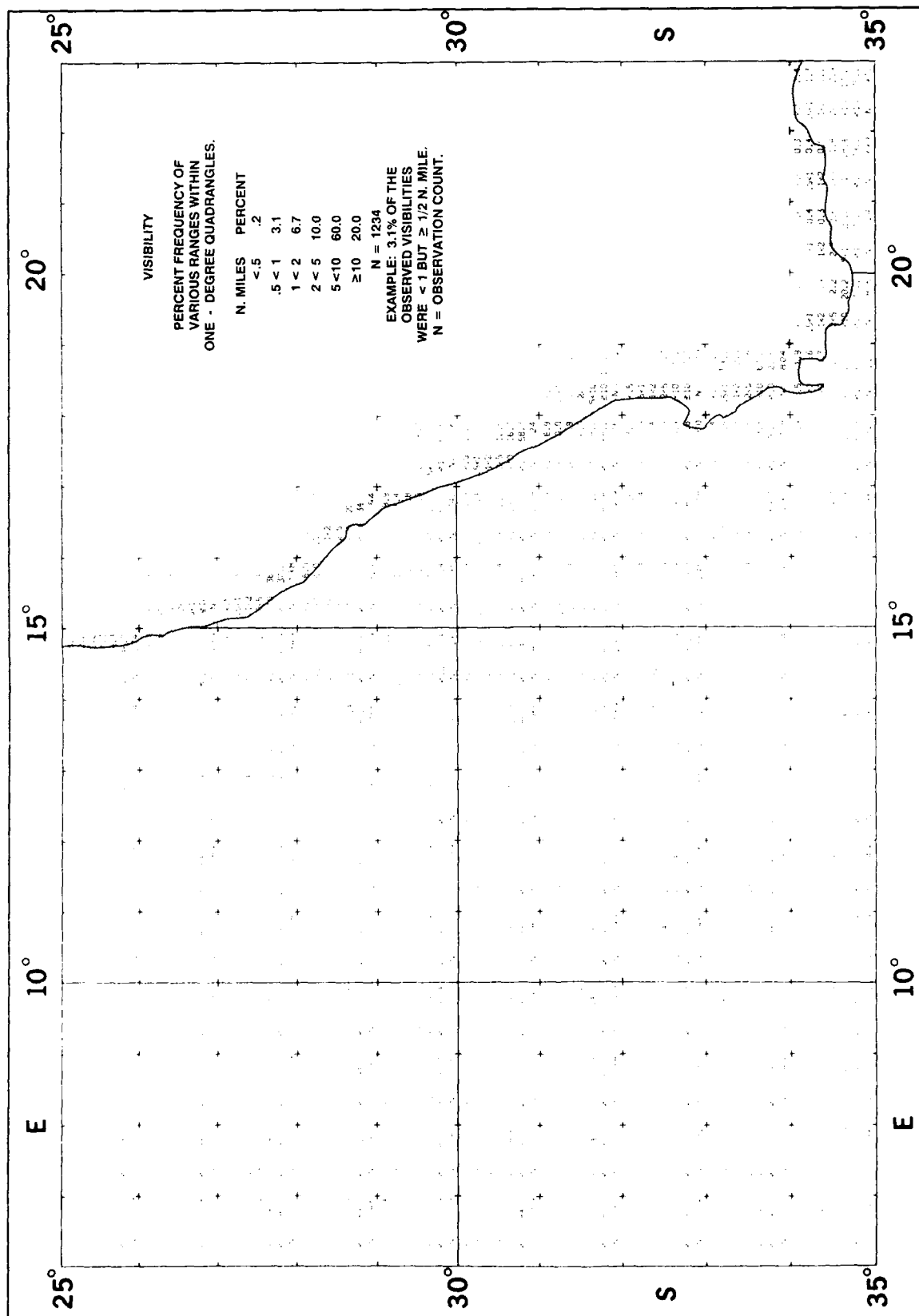
March

Precipitation



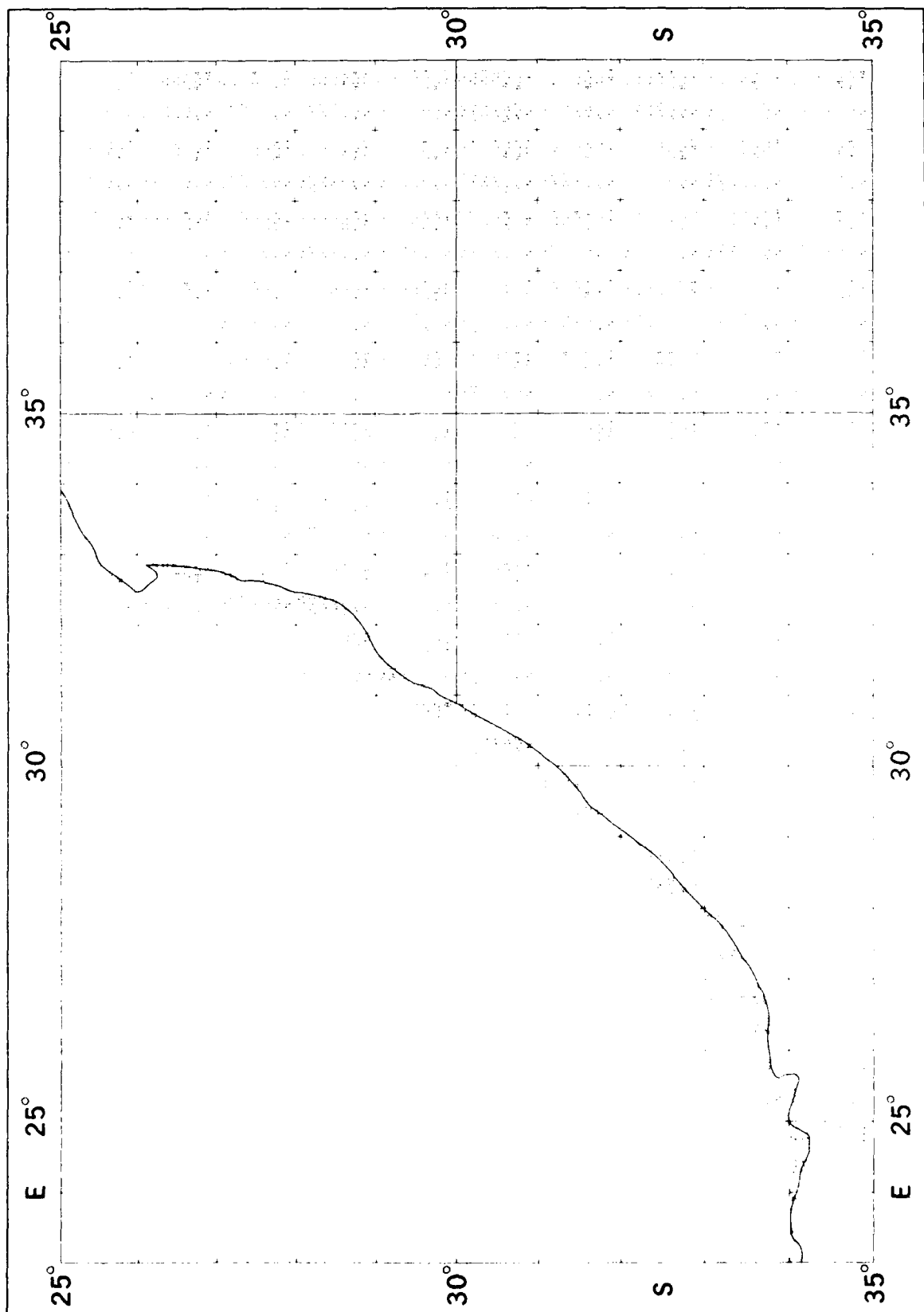
March

Visibility



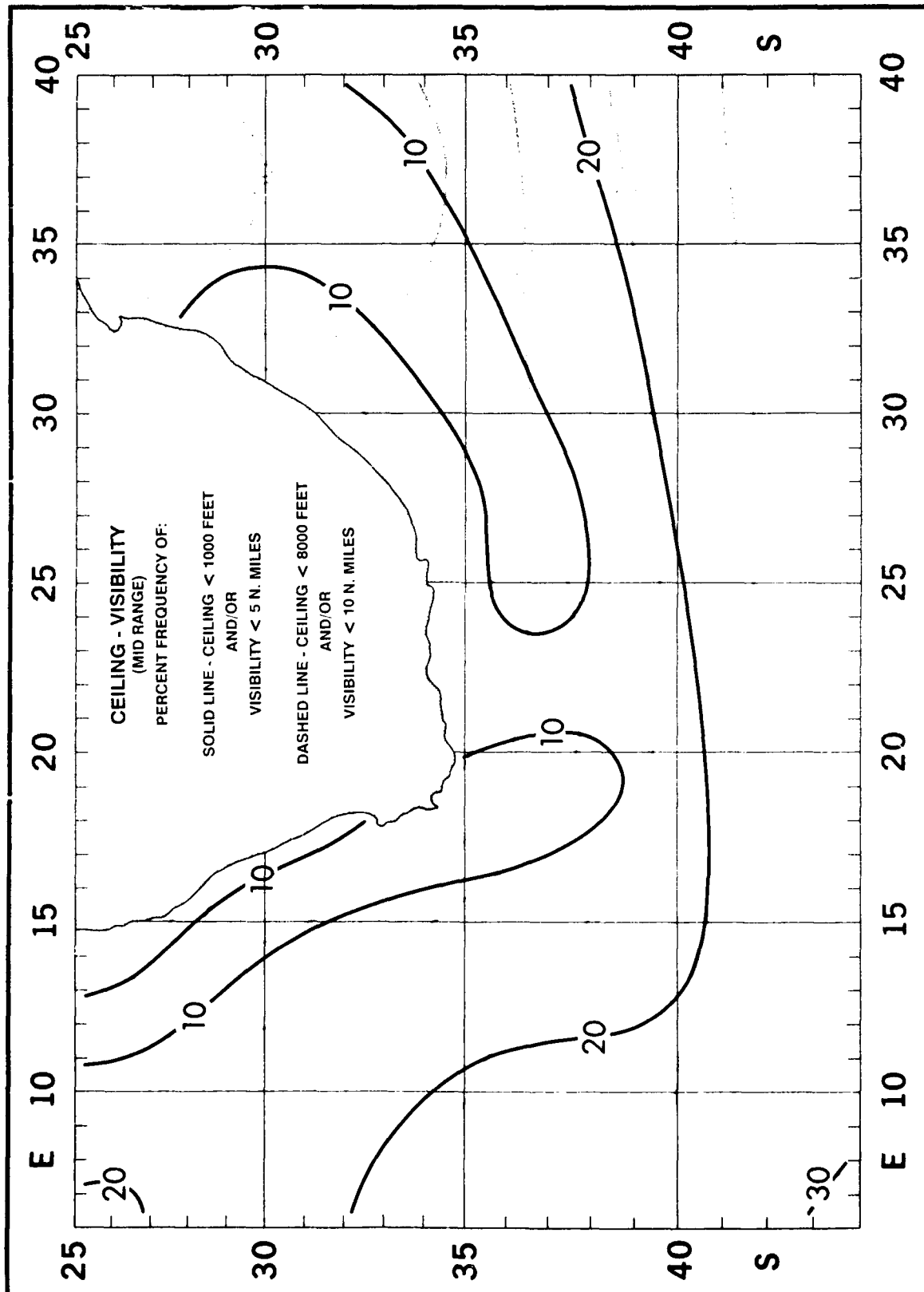
March

Visibility



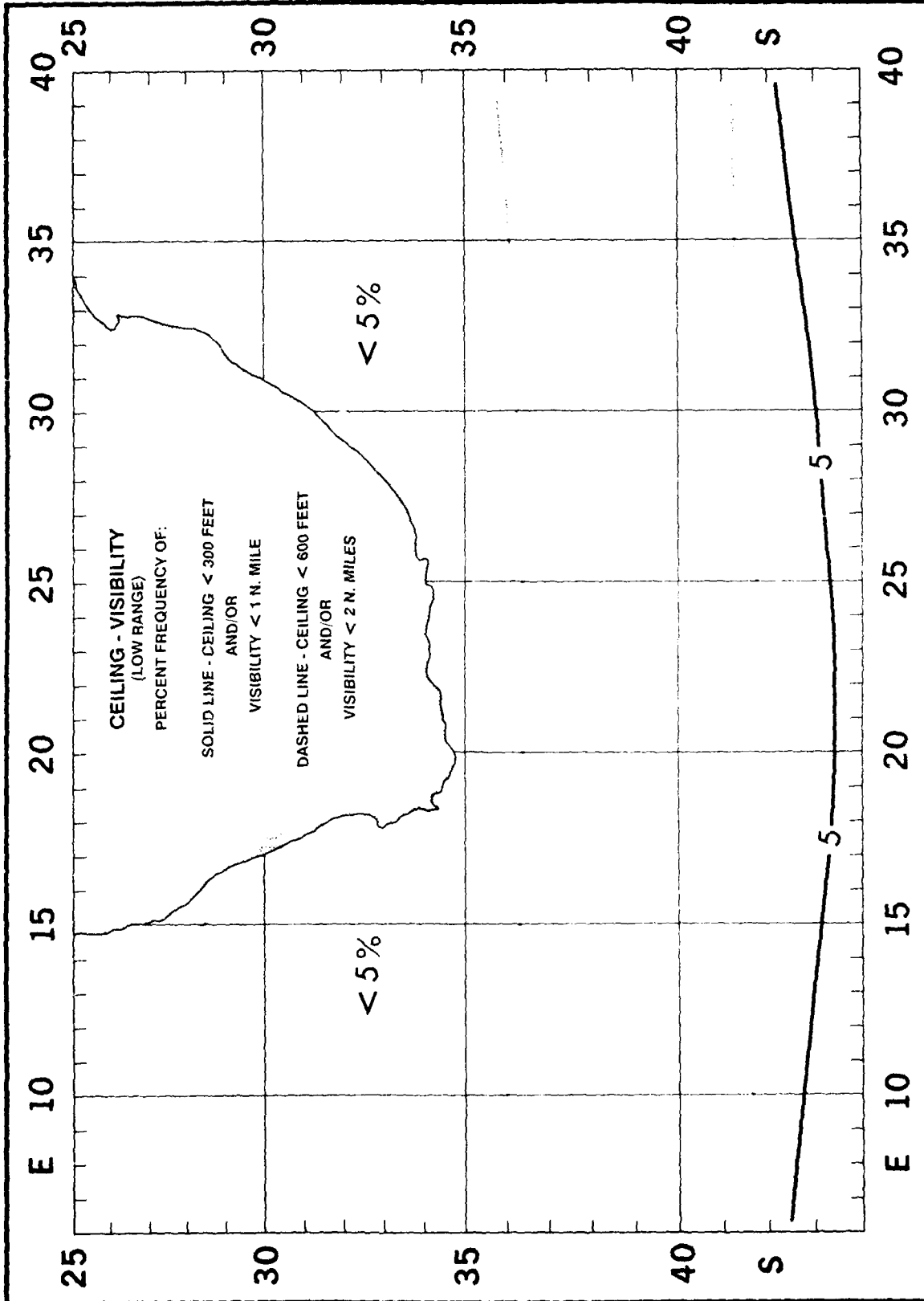
March

Ceiling - Visibility (Mid Range)



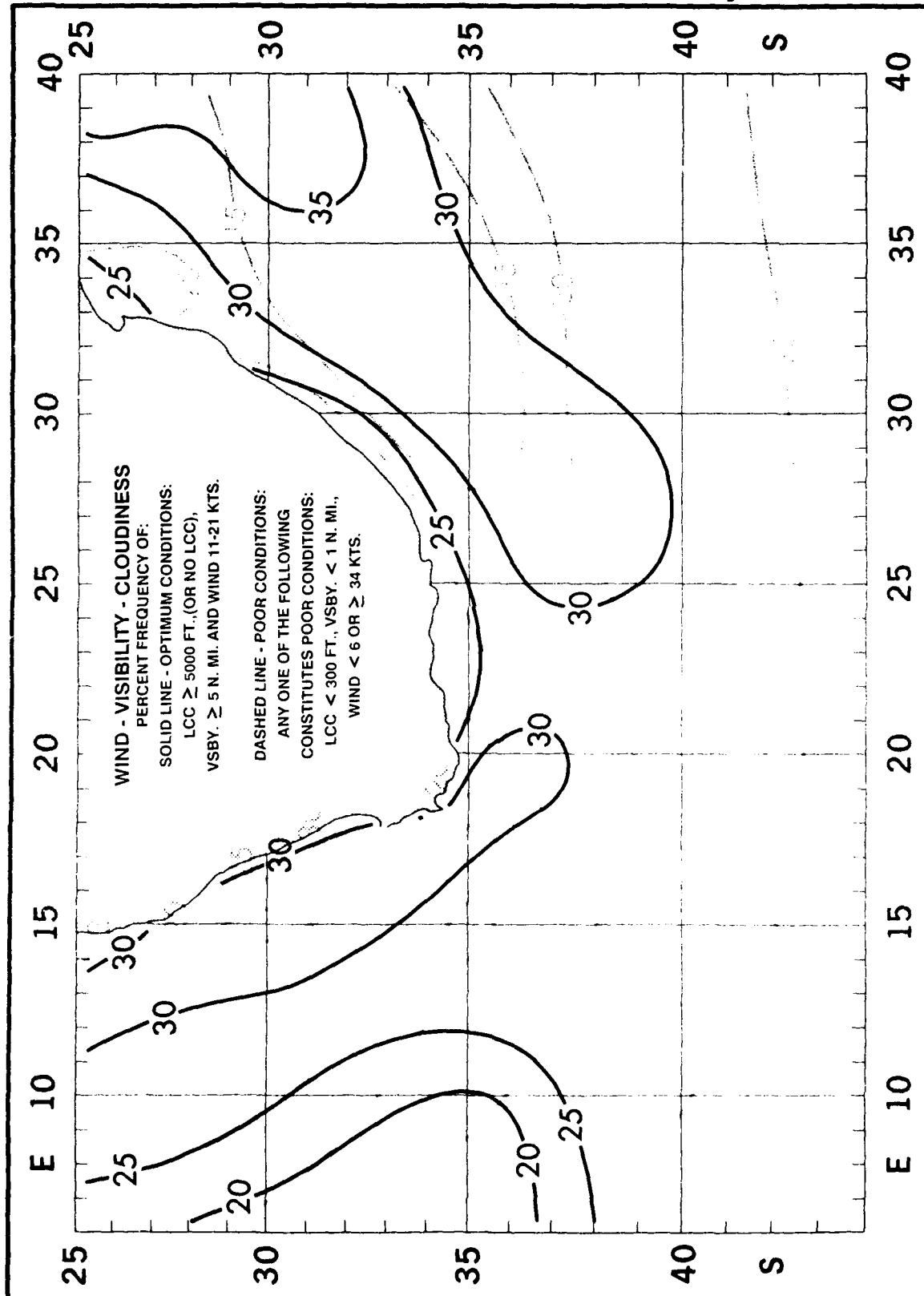
March

Ceiling - Visibility (Low Range)



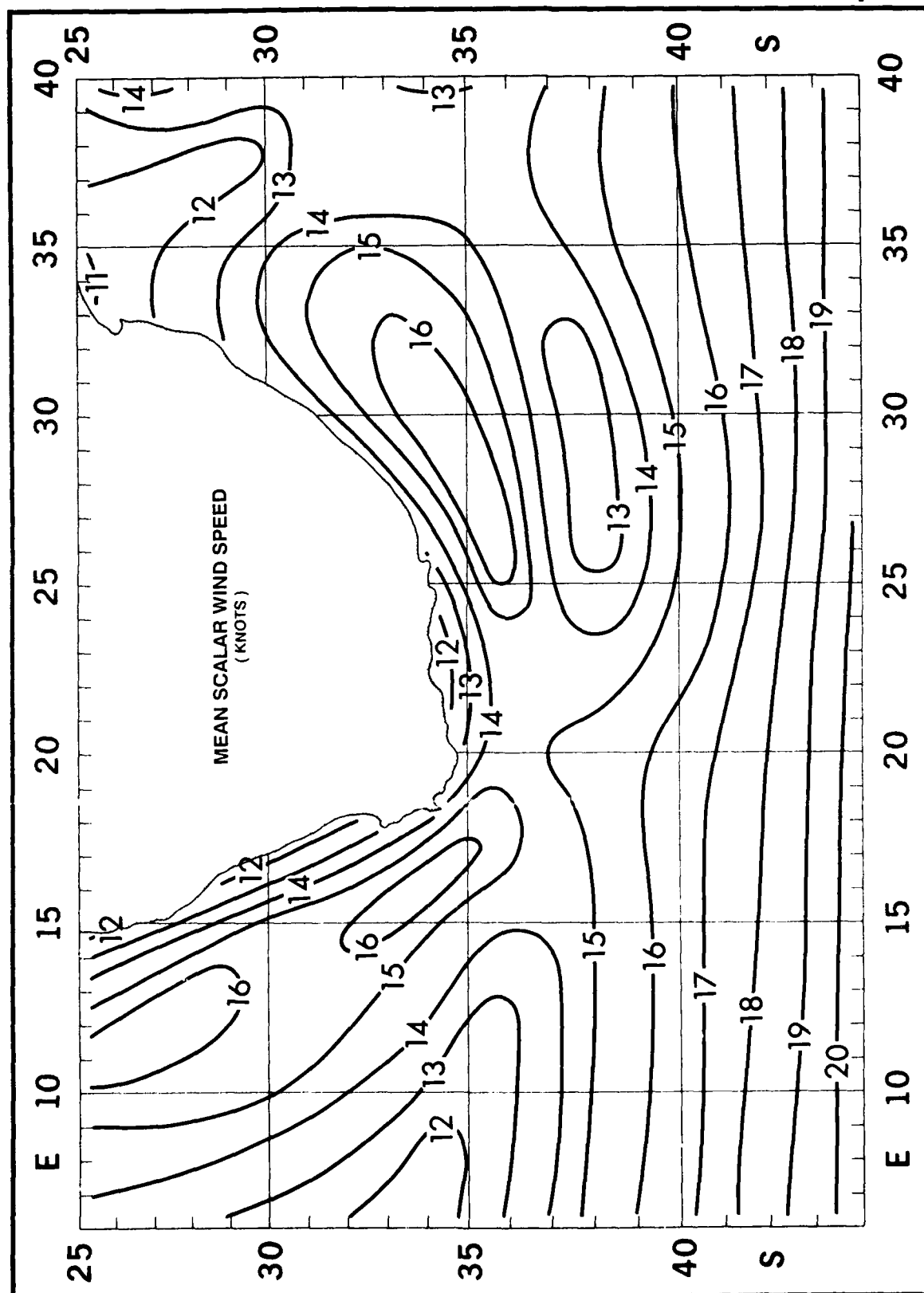
March

Wind - Visibility - Cloudiness



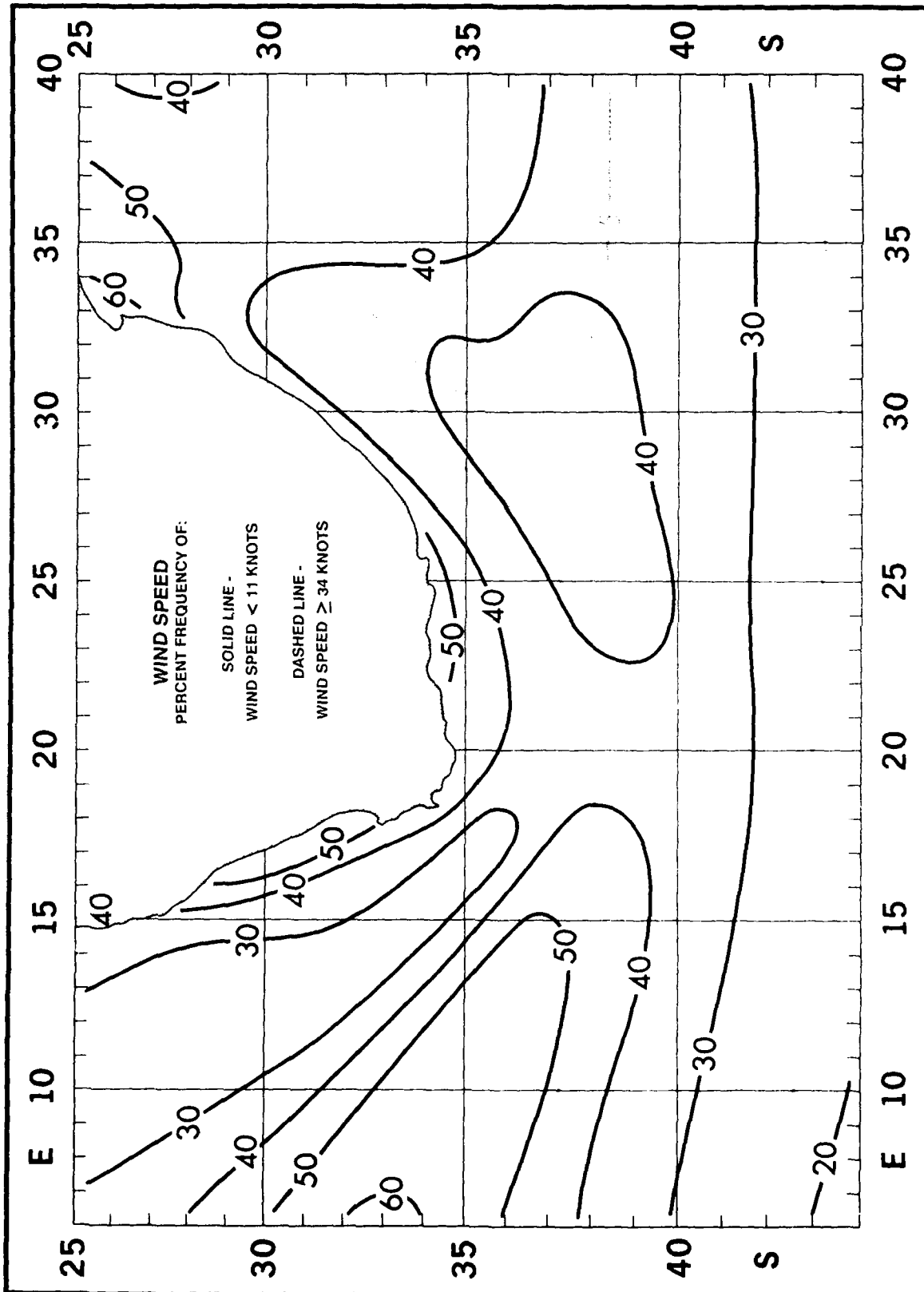
March

Mean Scalar Wind Speed



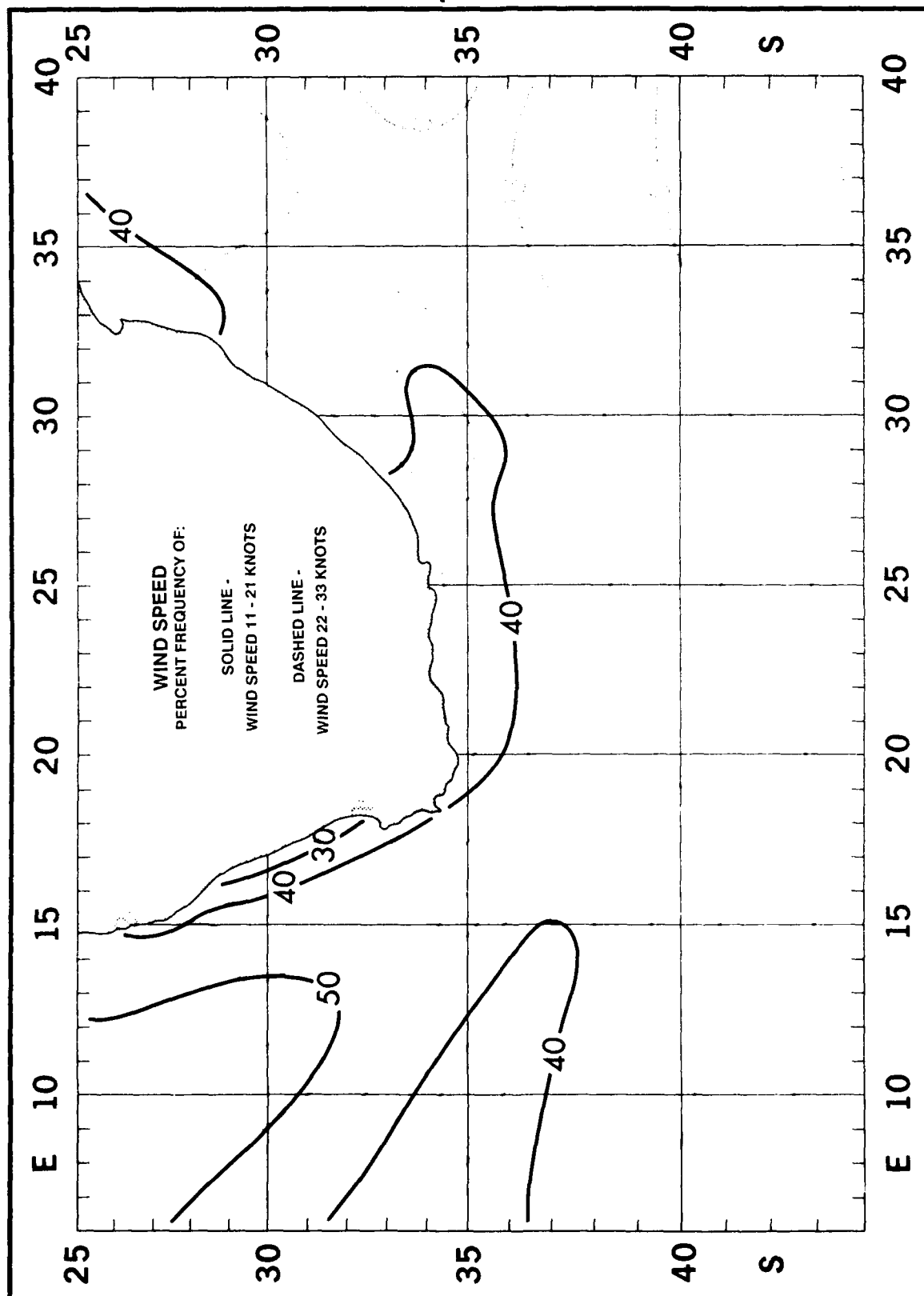
March

Wind Speed < 11 and ≥ 34 Knots



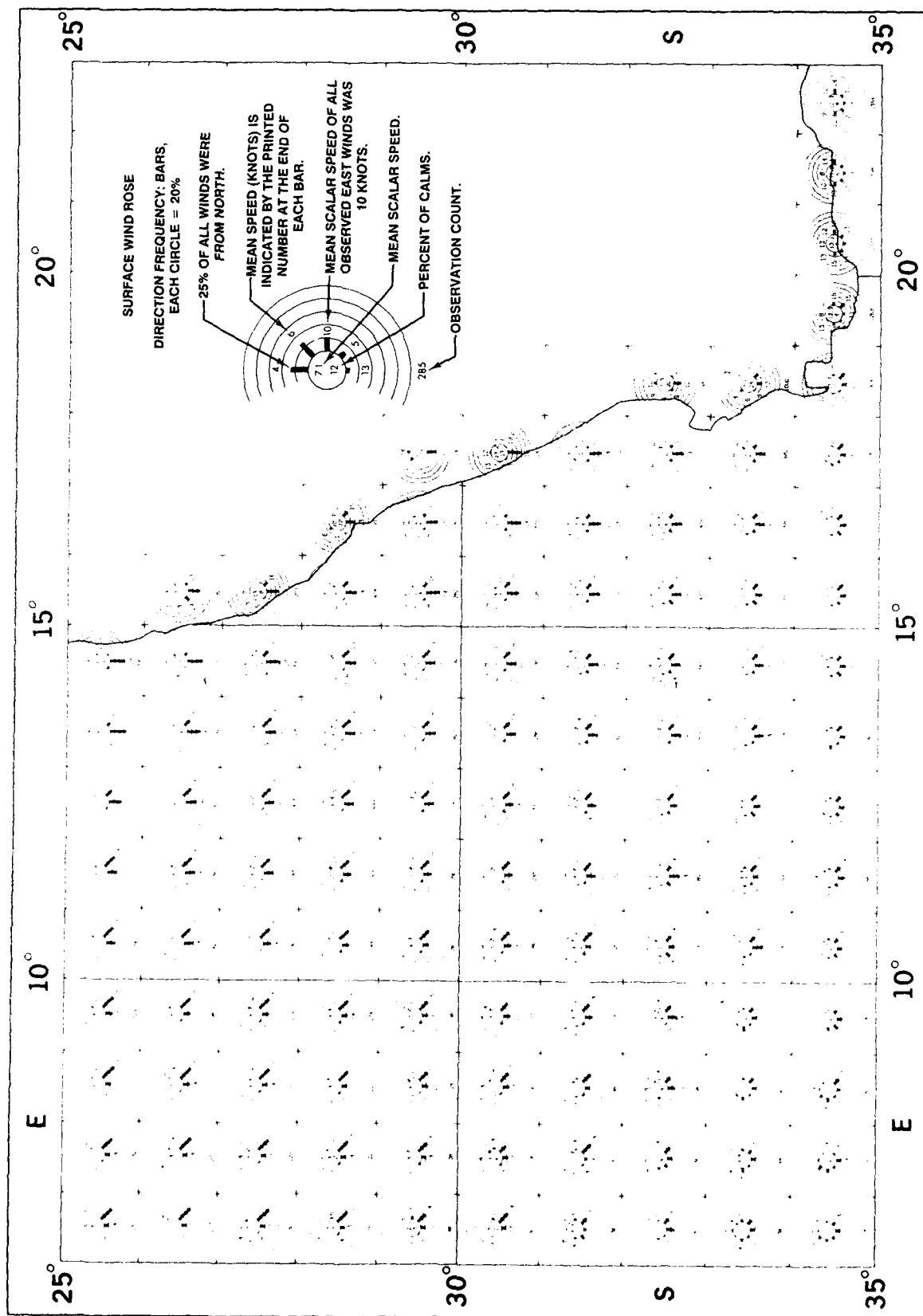
March

Wind Speed 11 - 21 and 22 - 33 Knots



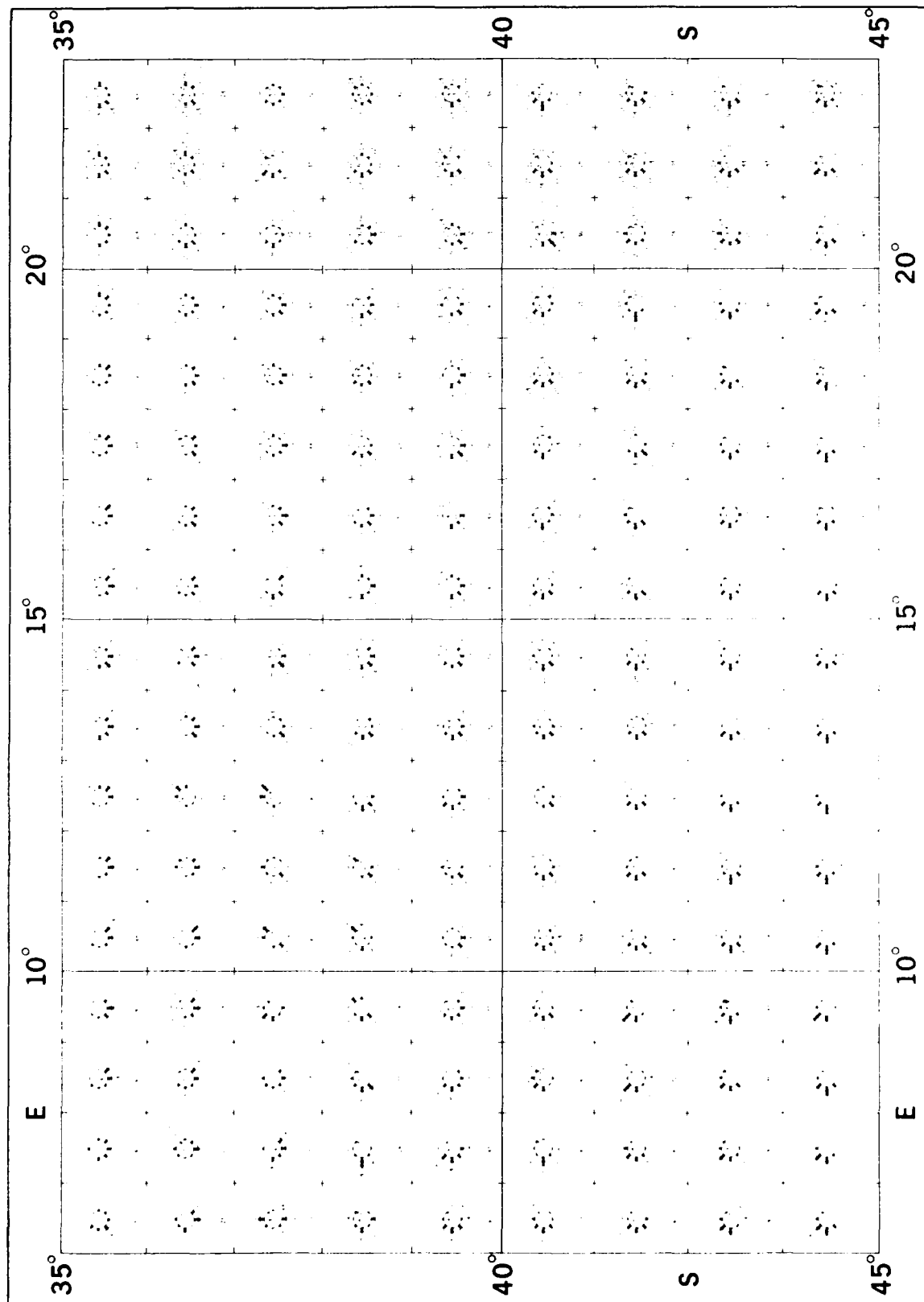
March

Surface Wind Roses



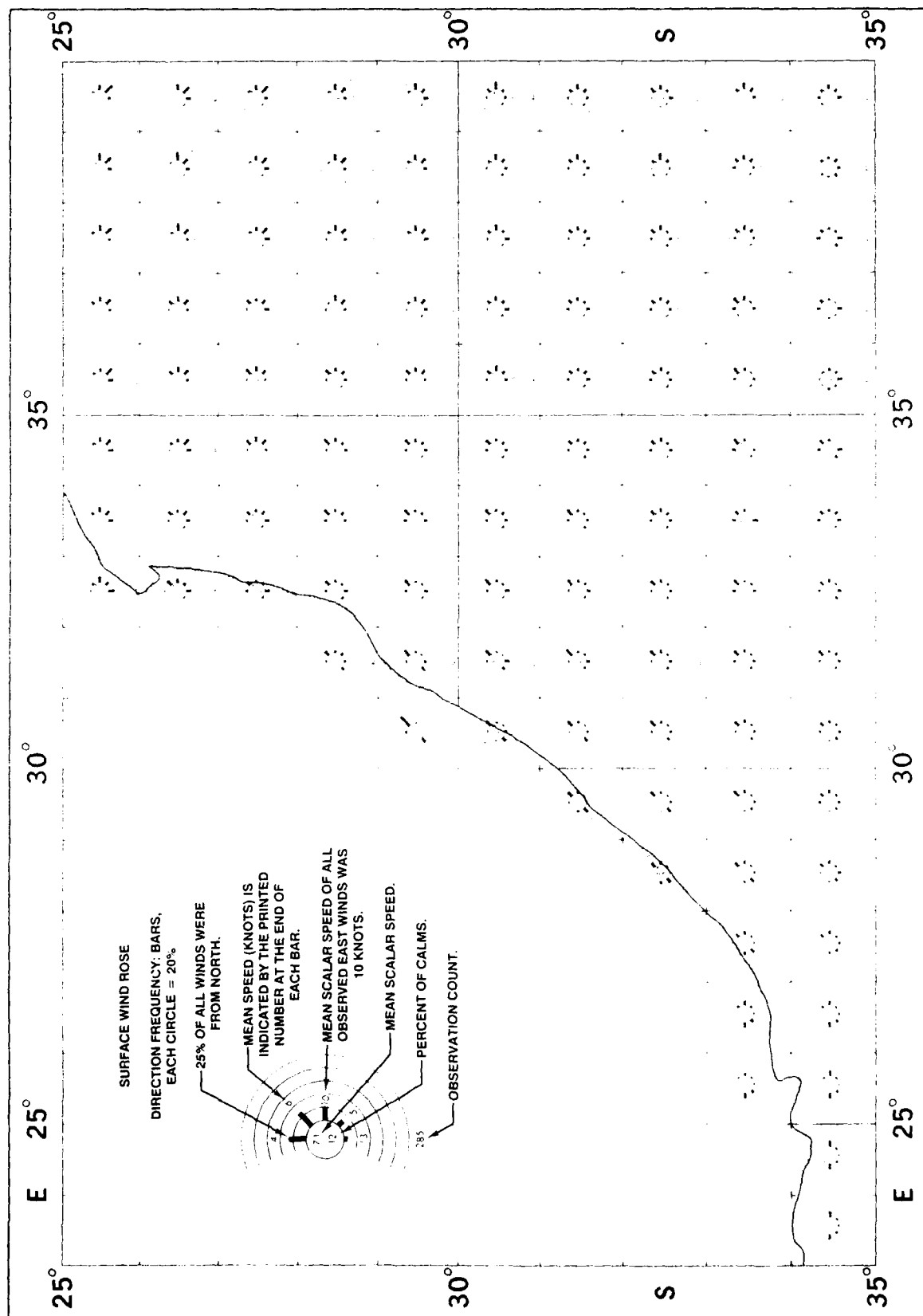
March

Surface Wind Roses



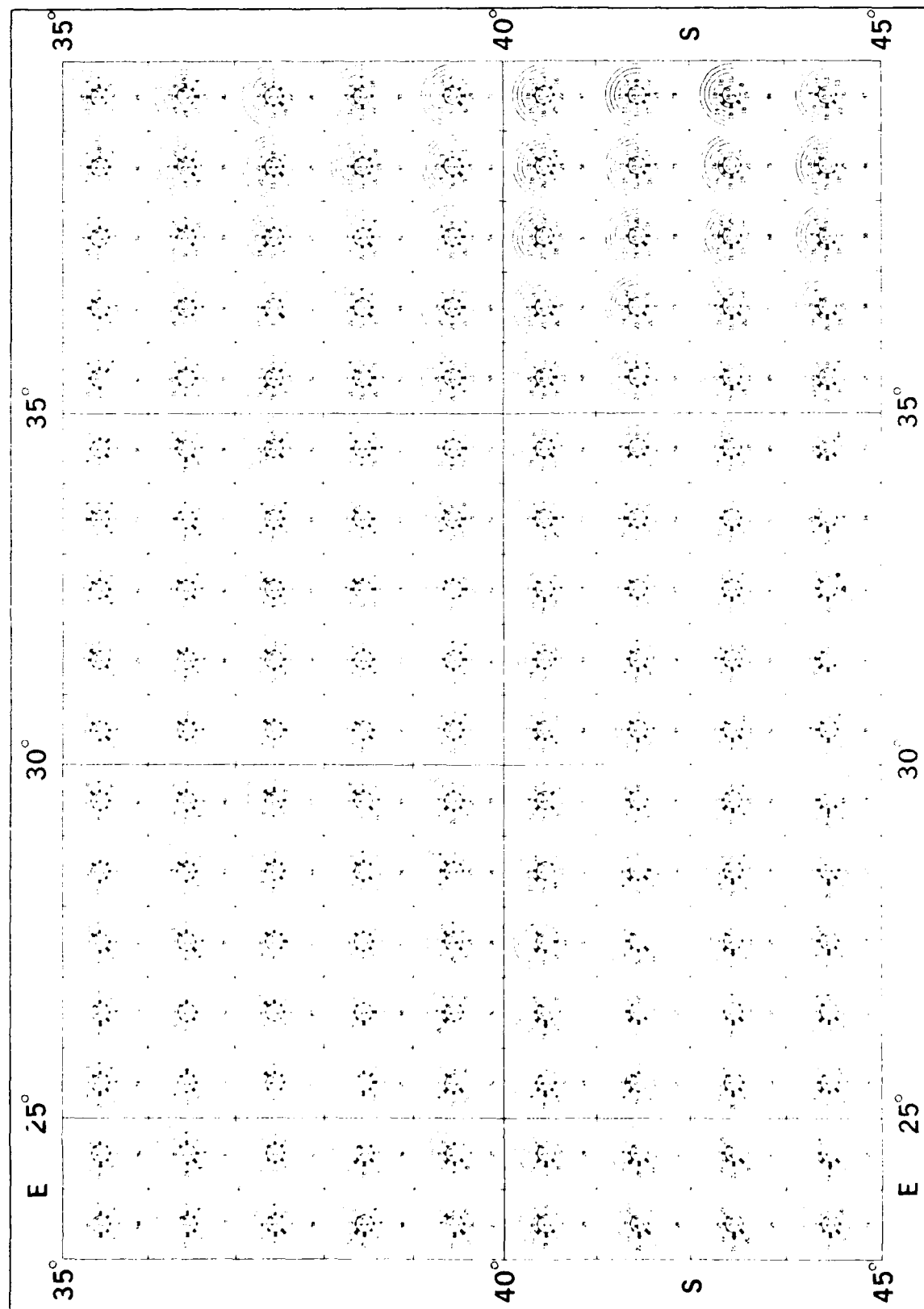
March

Surface Wind Roses



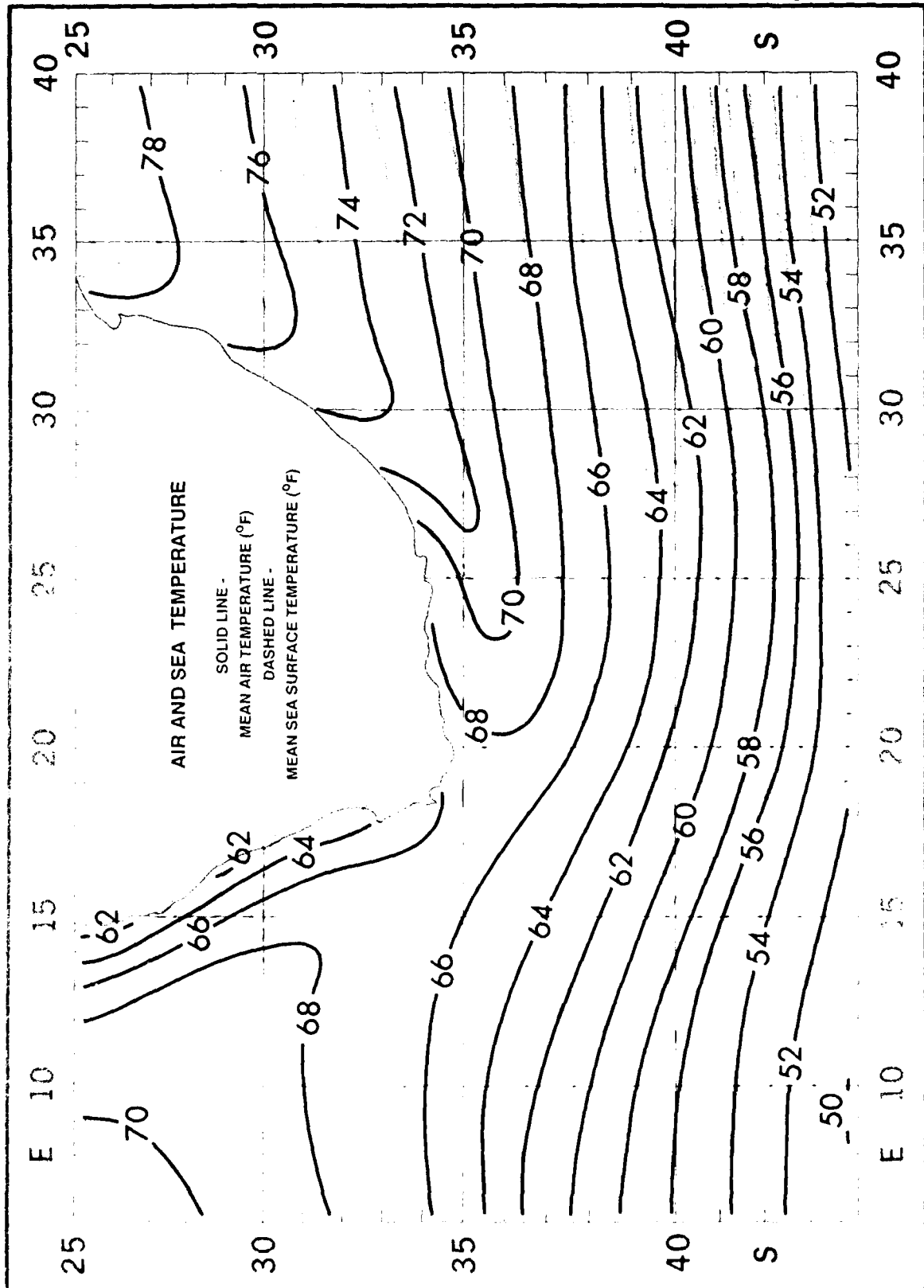
March

Surface Wind Roses



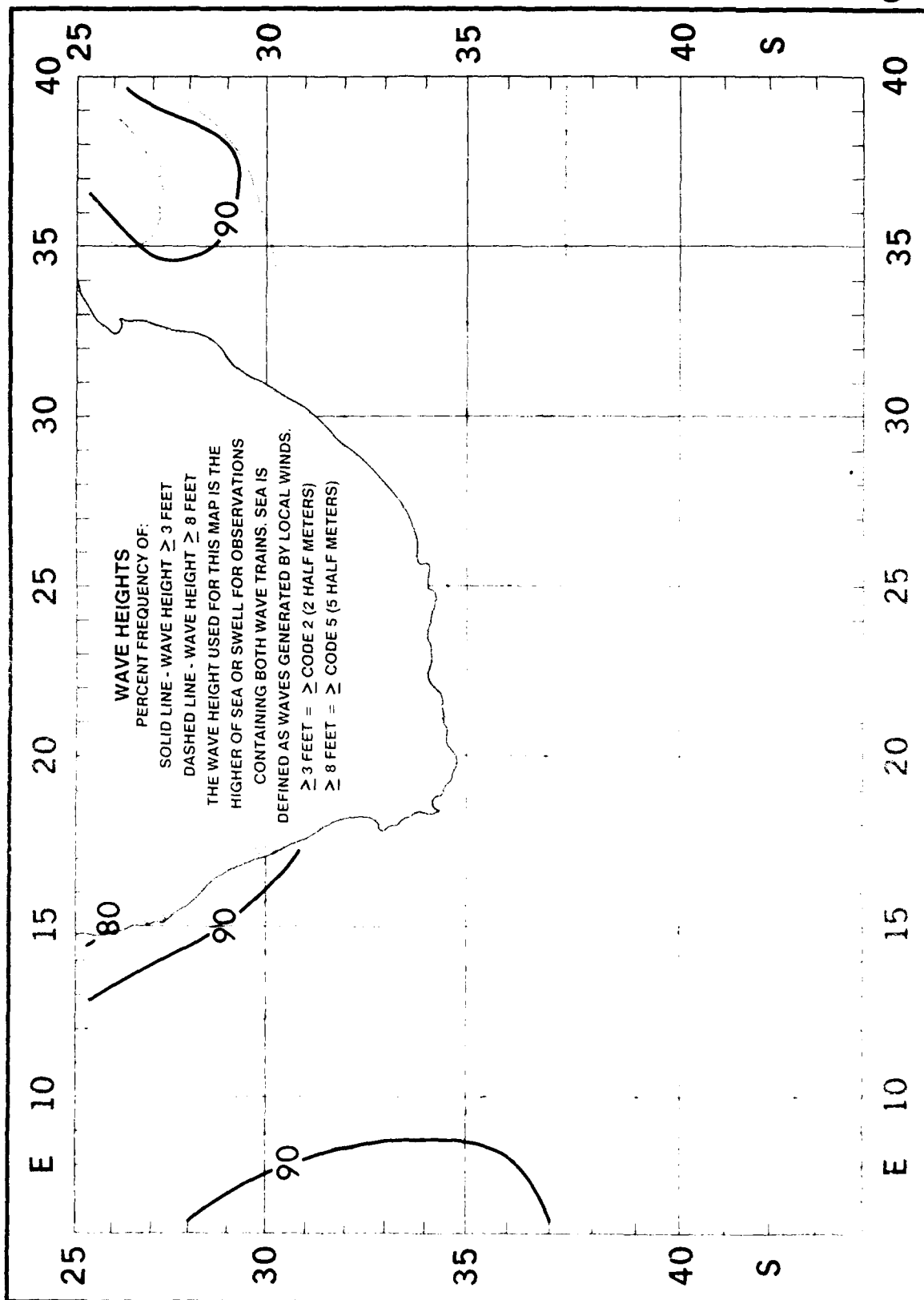
March

Air and Sea Temperature



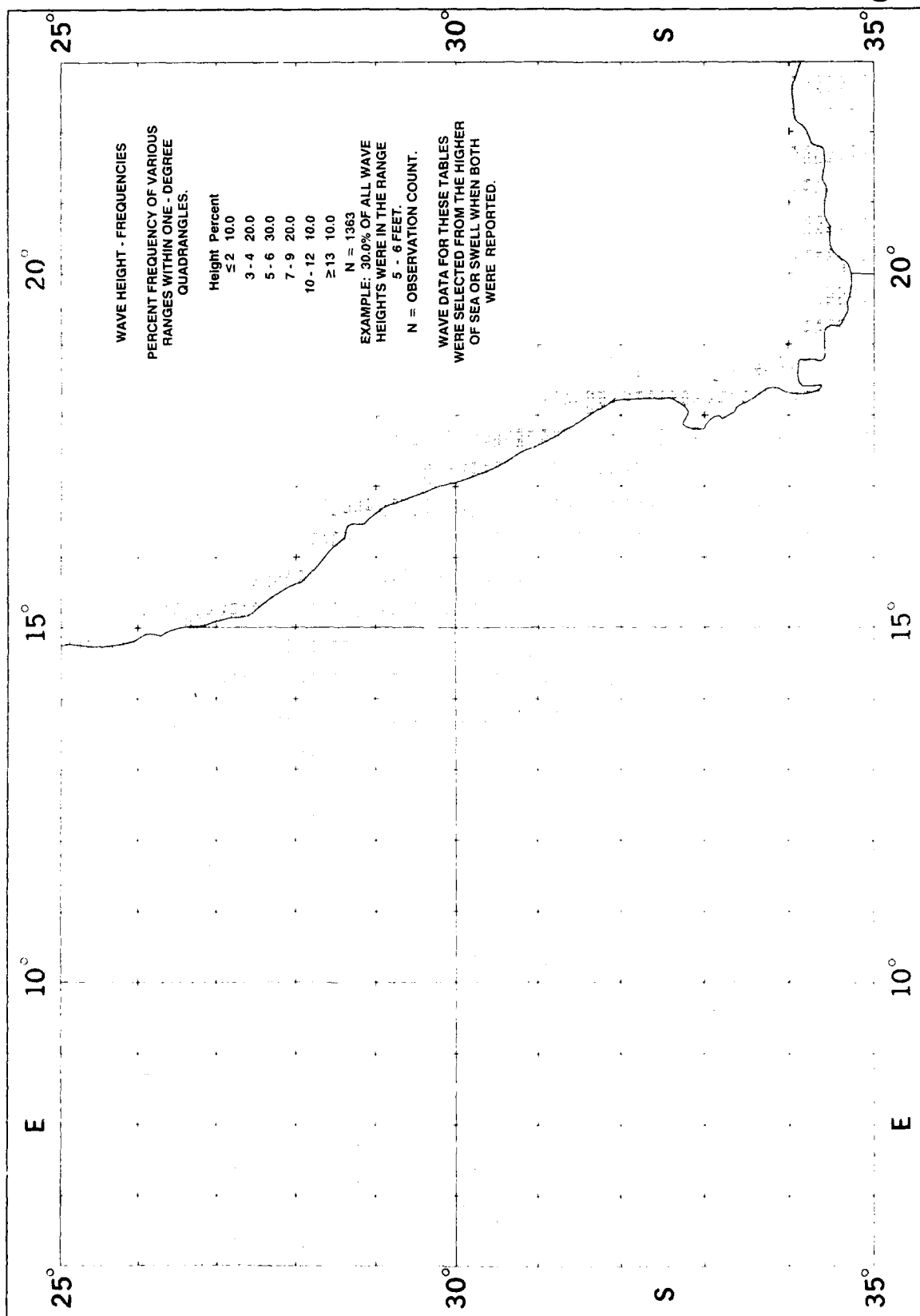
March

Wave Height



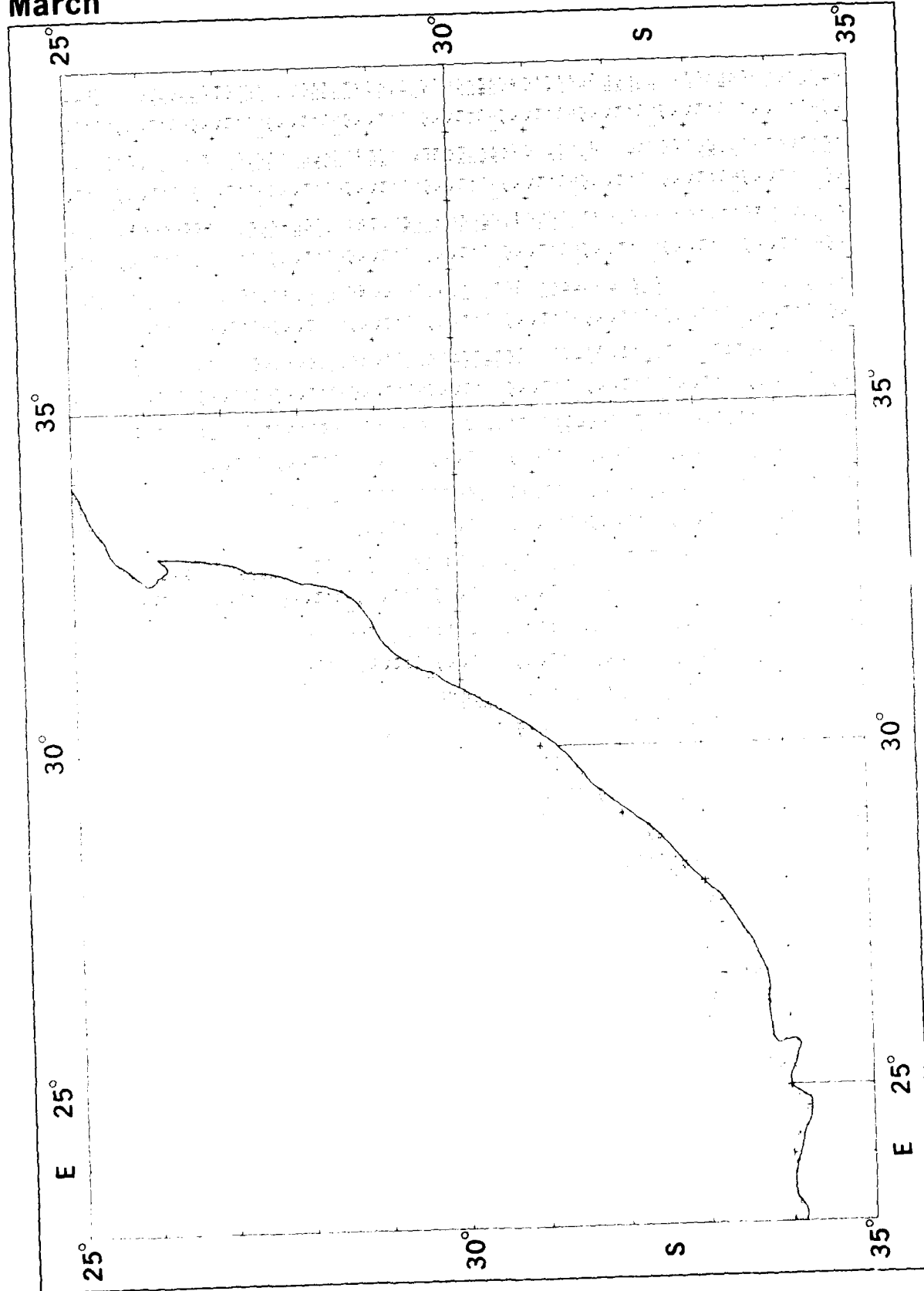
March

Wave Height



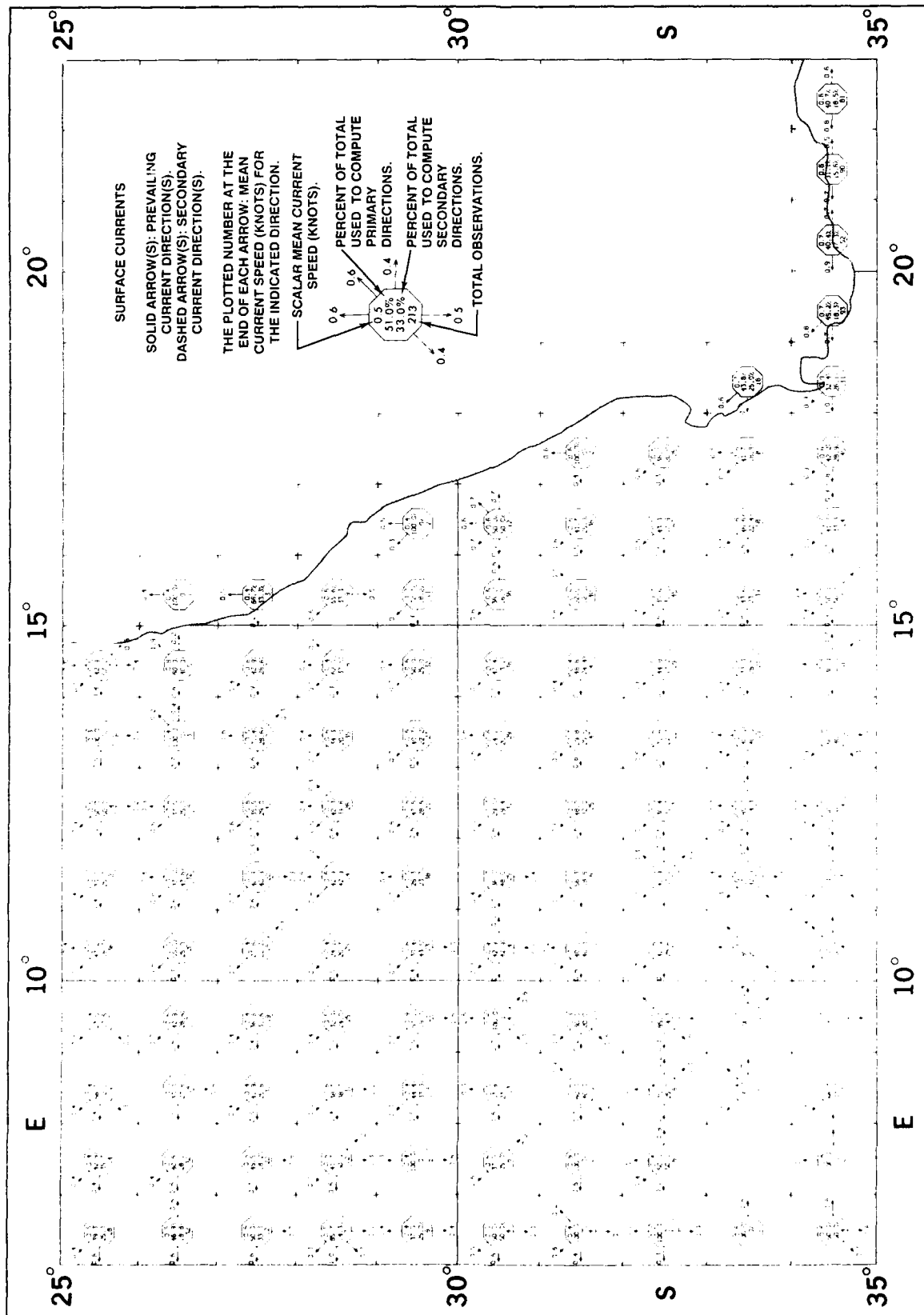
March

Wave Height



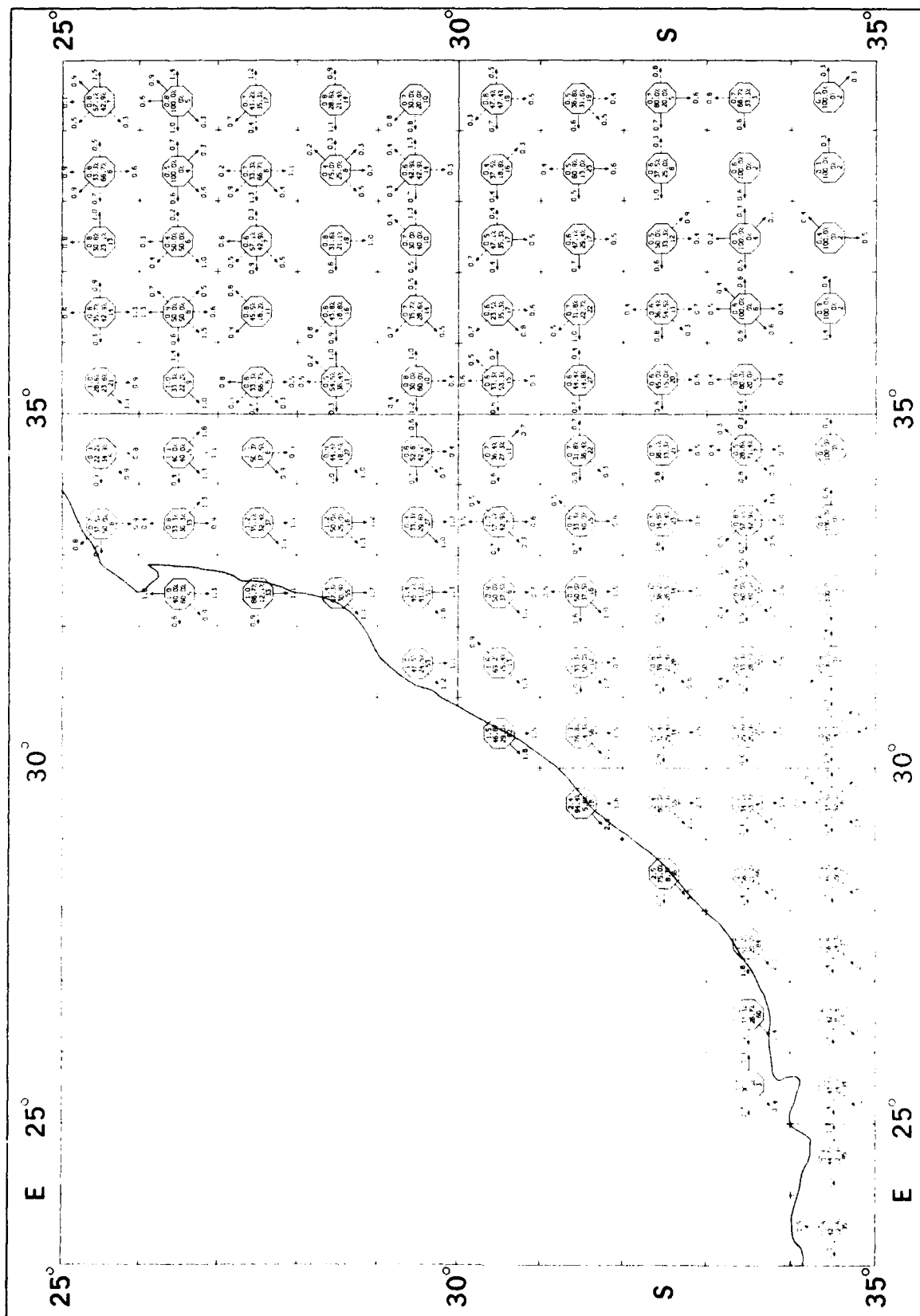
March

Surface Currents



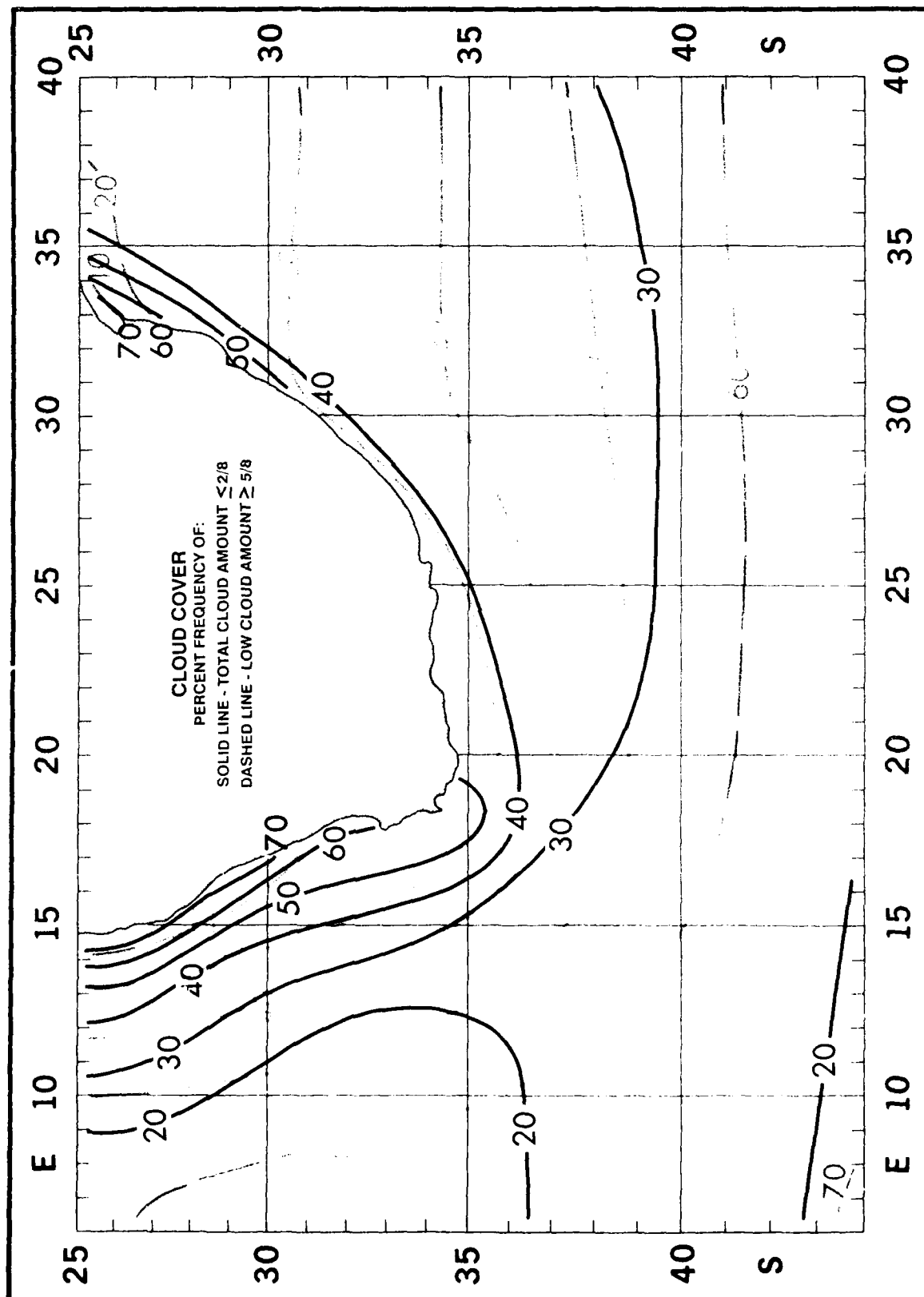
March

Surface Currents



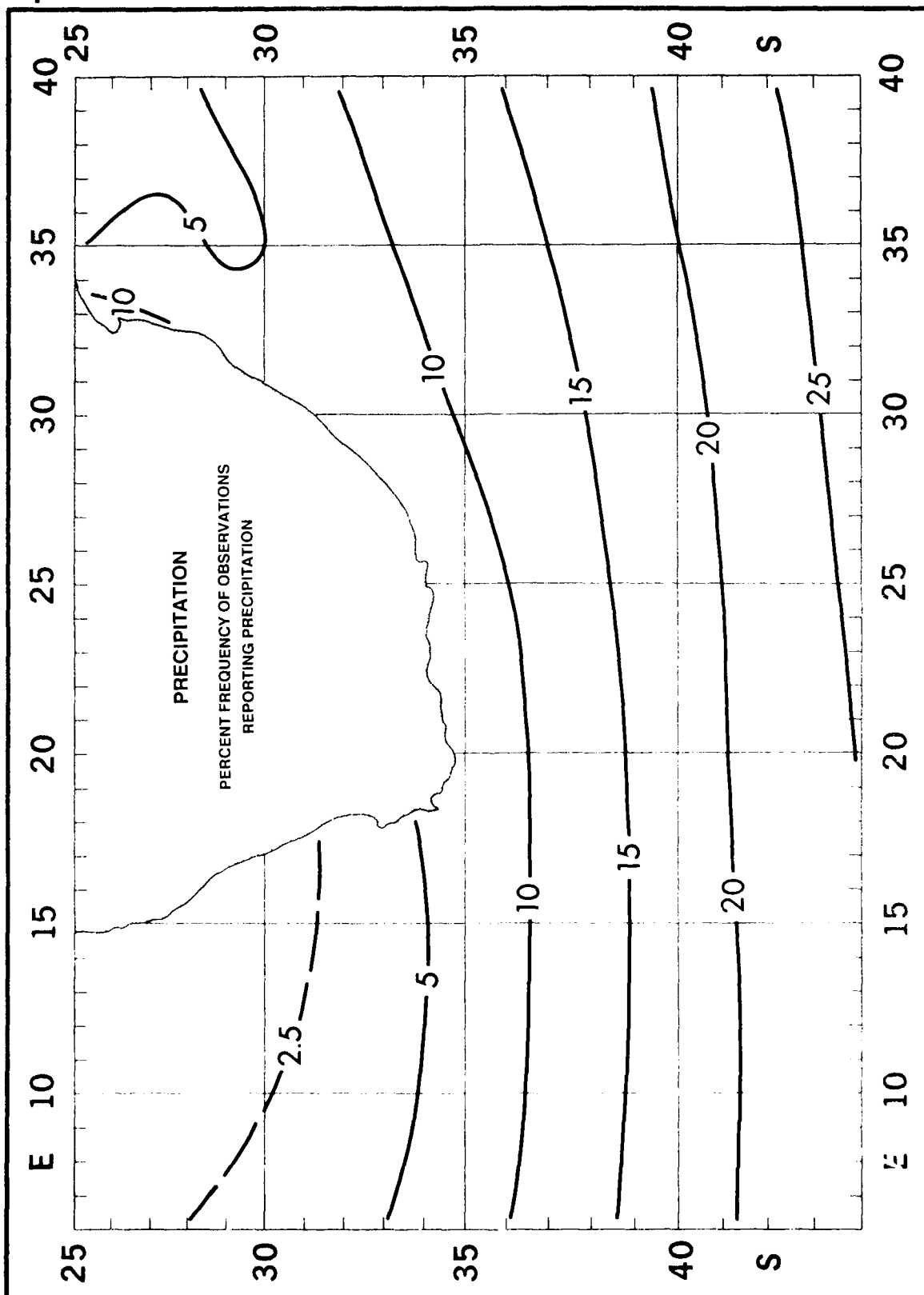
April

Clouds



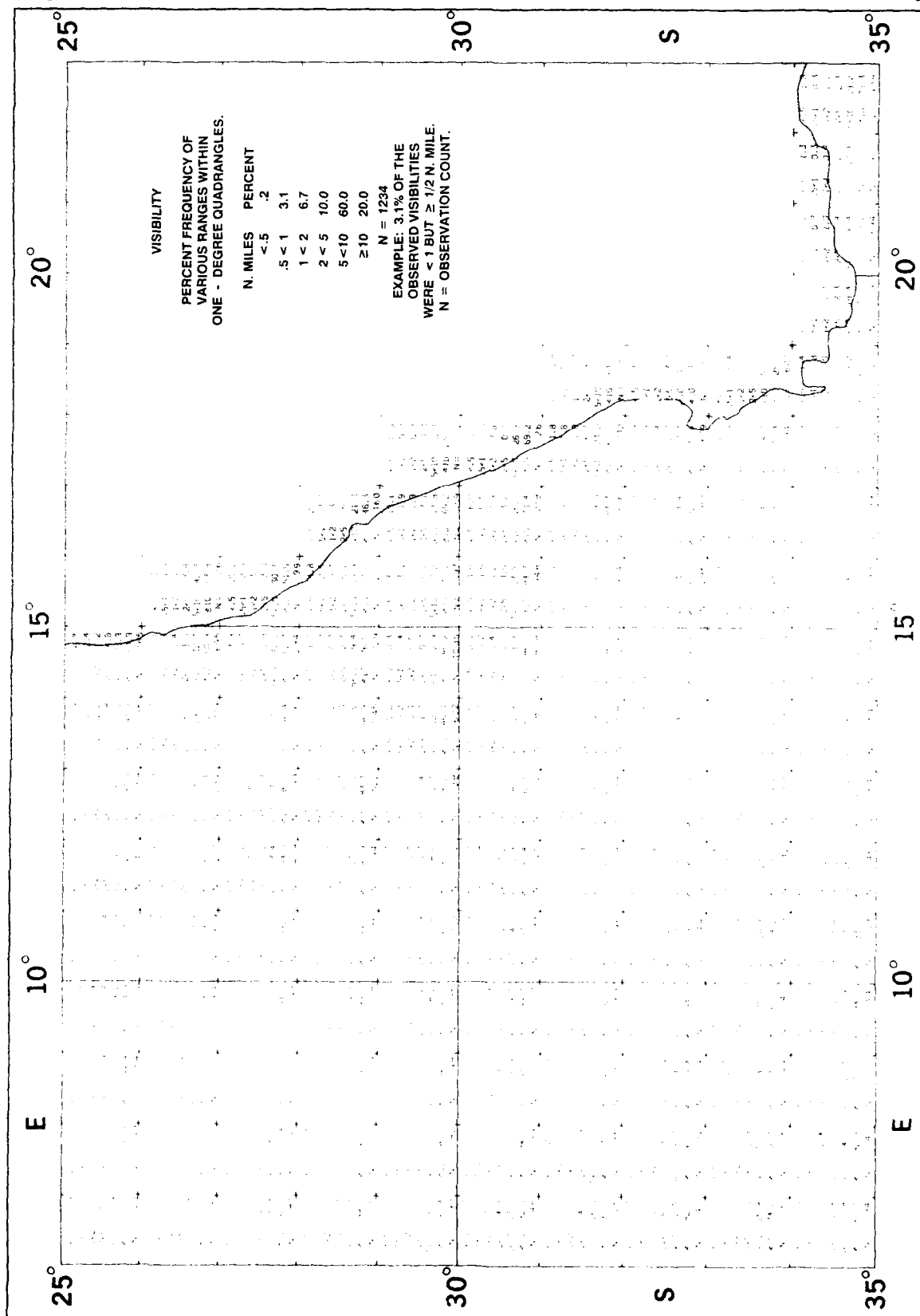
April

Precipitation



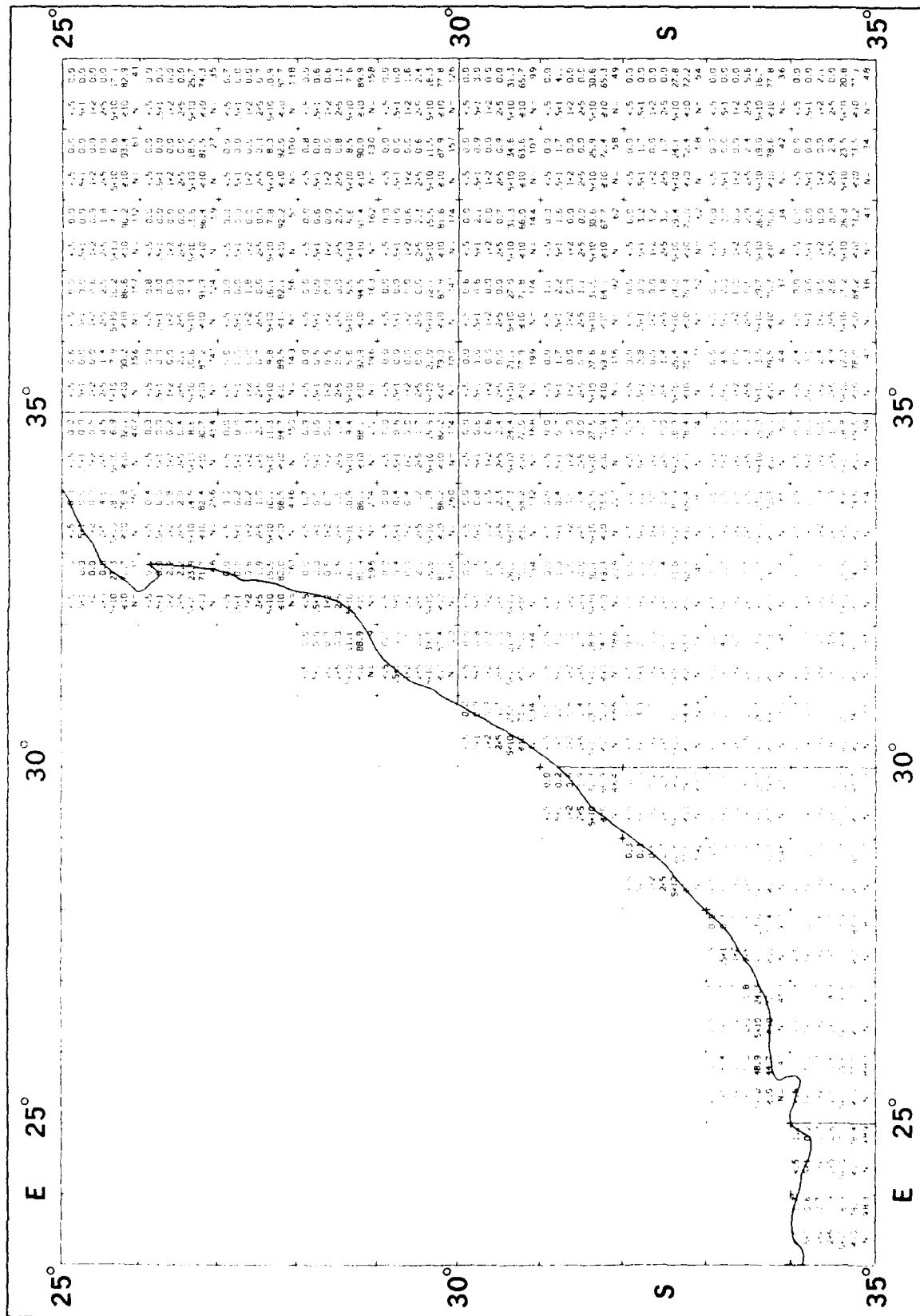
April

Visibility



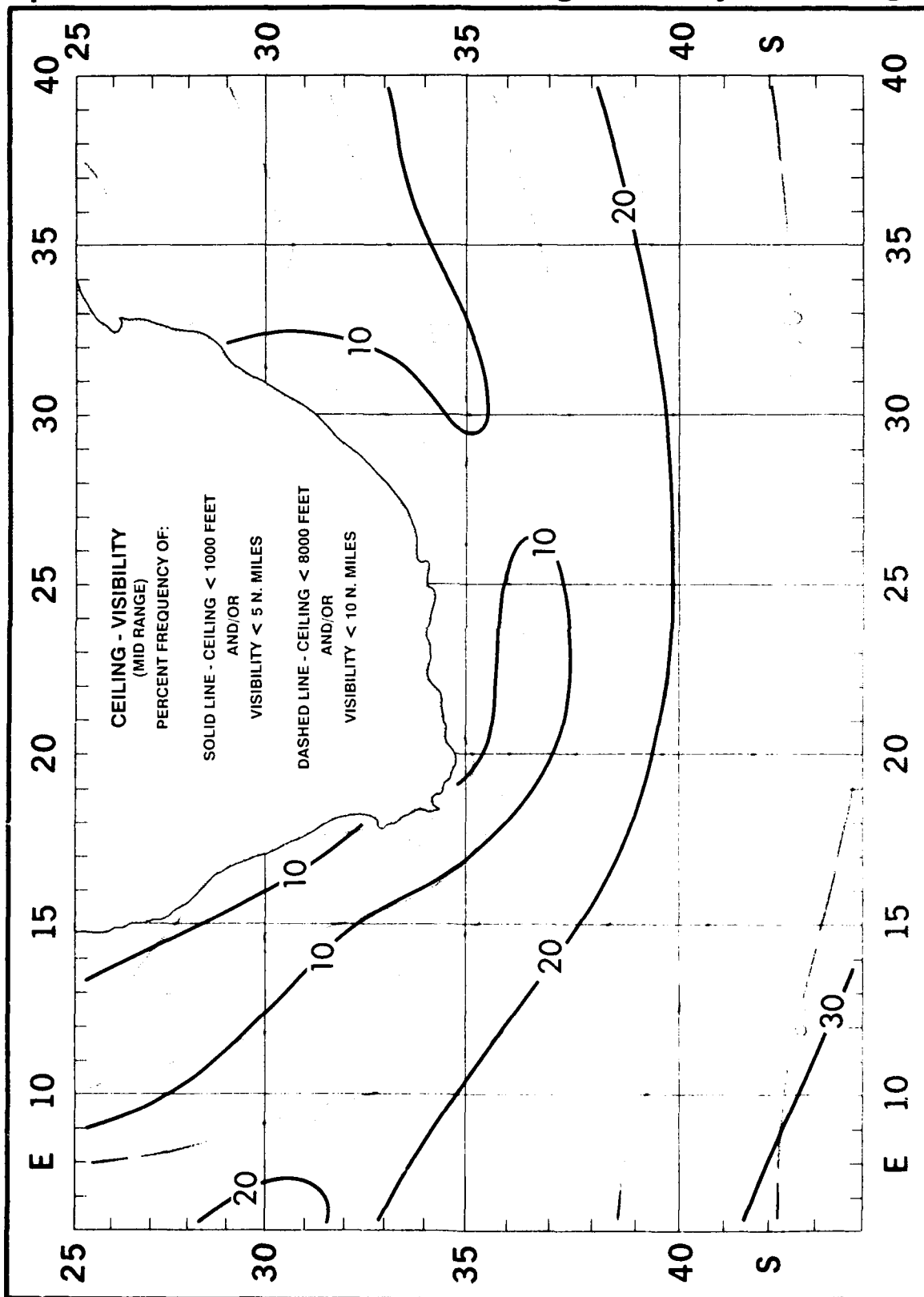
April

Visibility



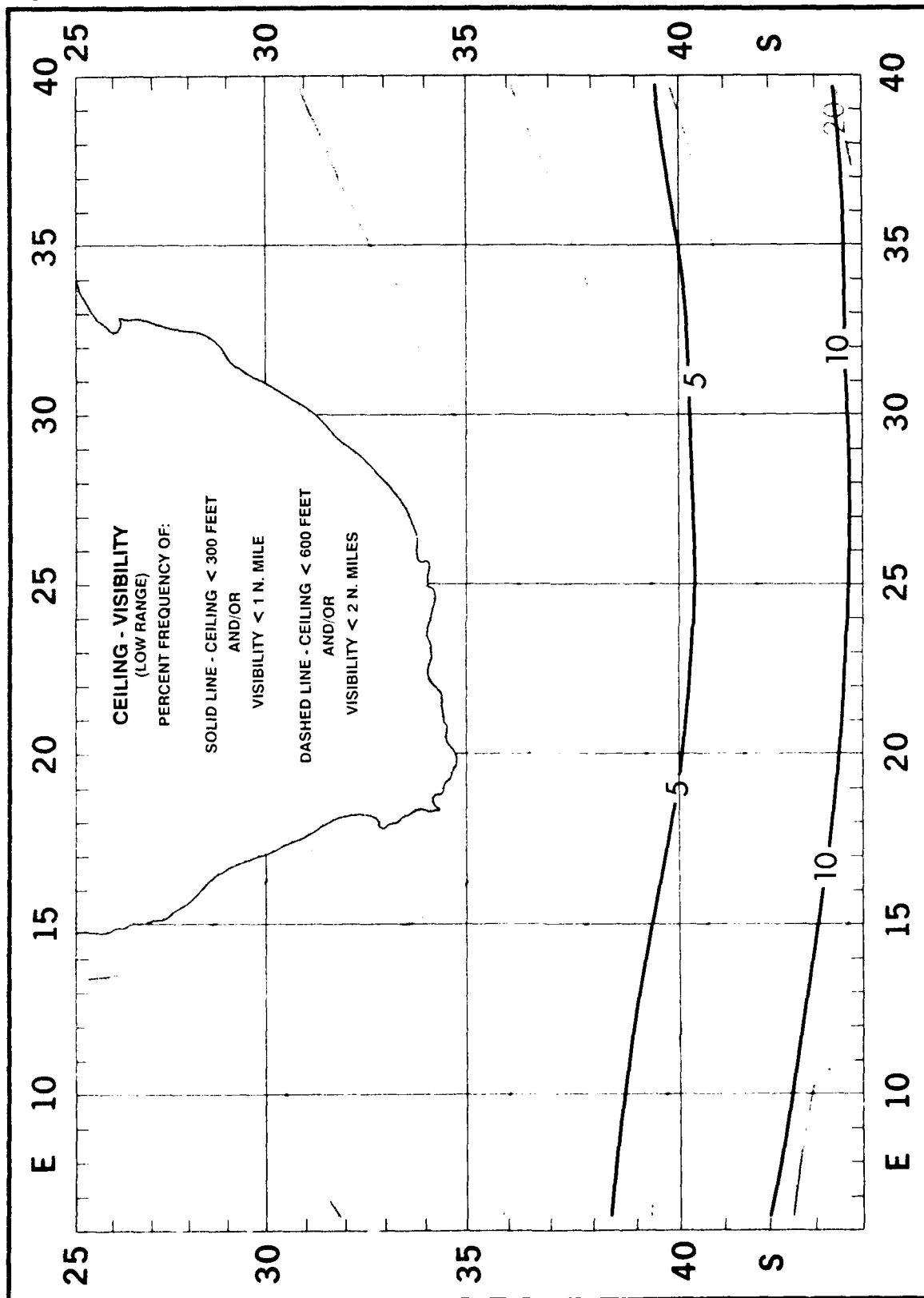
April

Ceiling - Visibility (Mid Range)



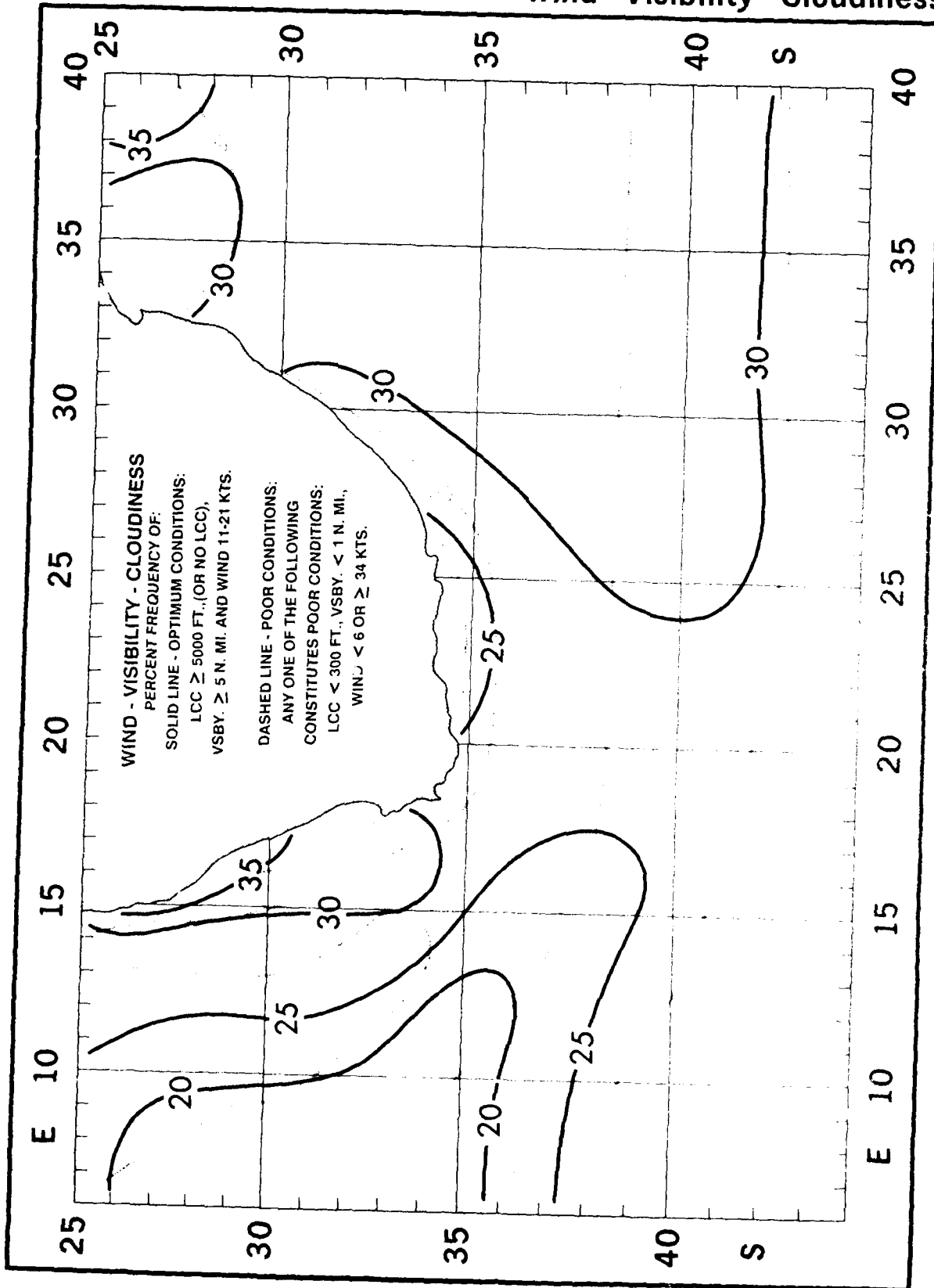
April

Ceiling - Visibility (Low Range)



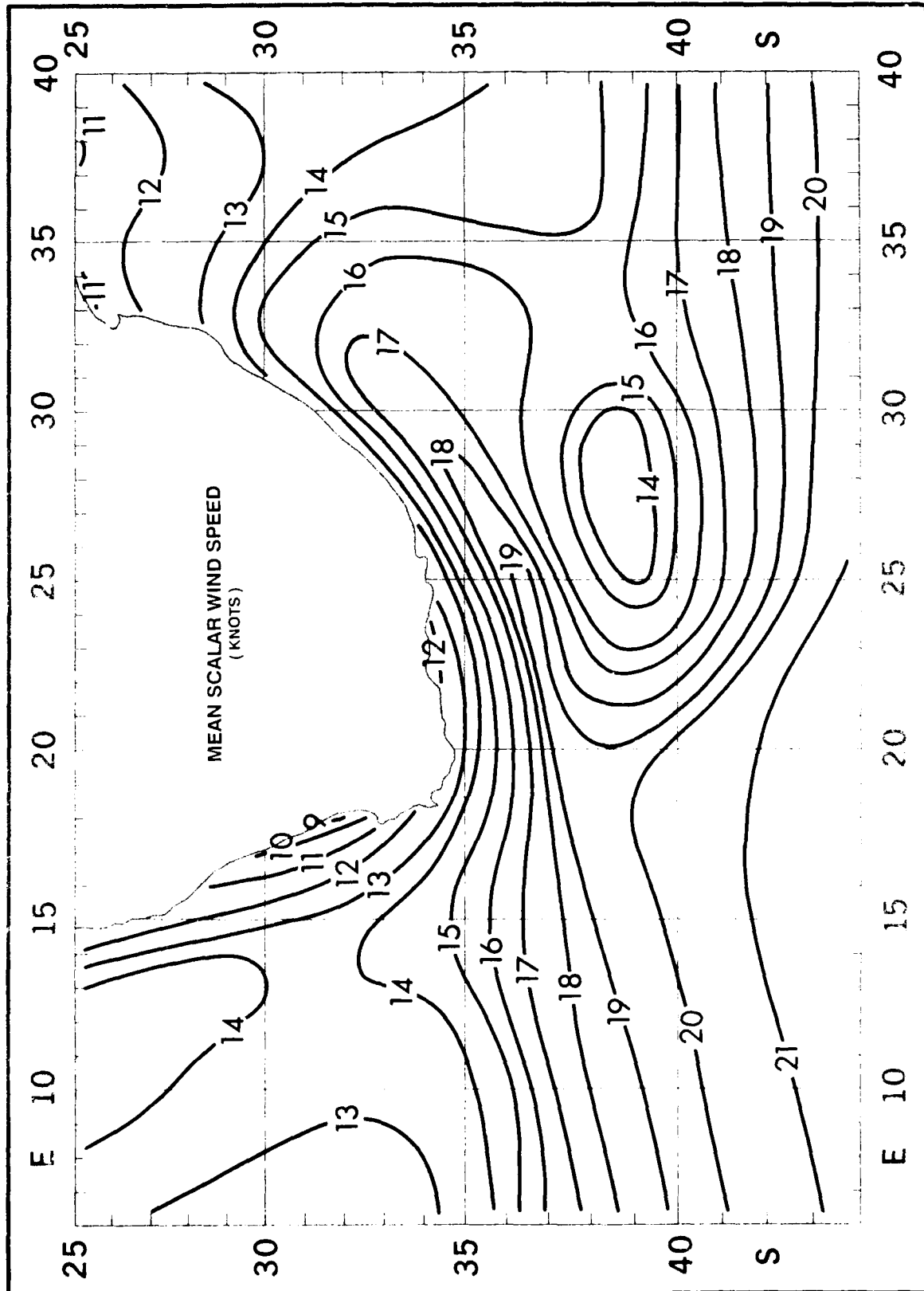
April

Wind - Visibility - Cloudiness



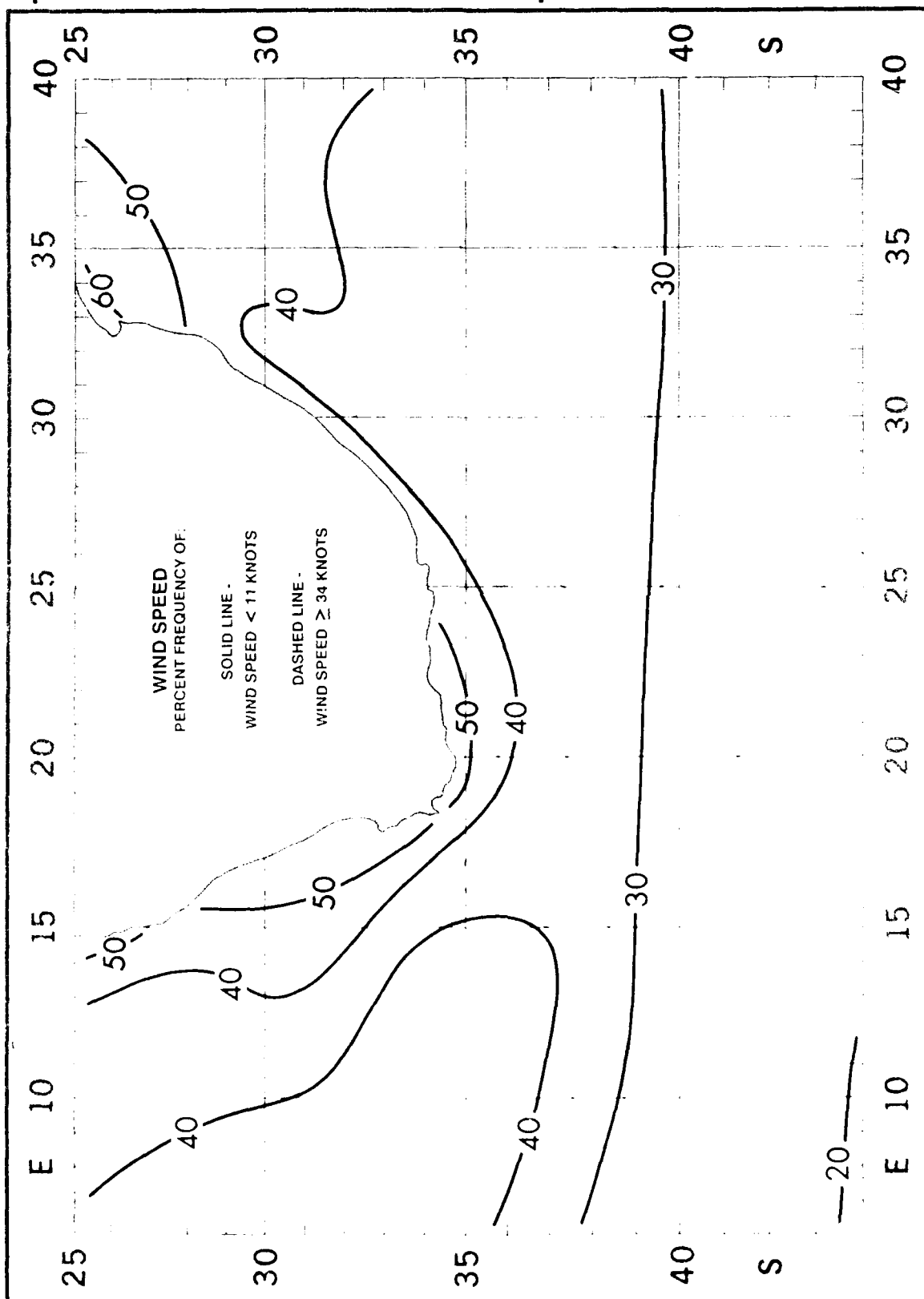
April

Mean Scalar Wind Speed



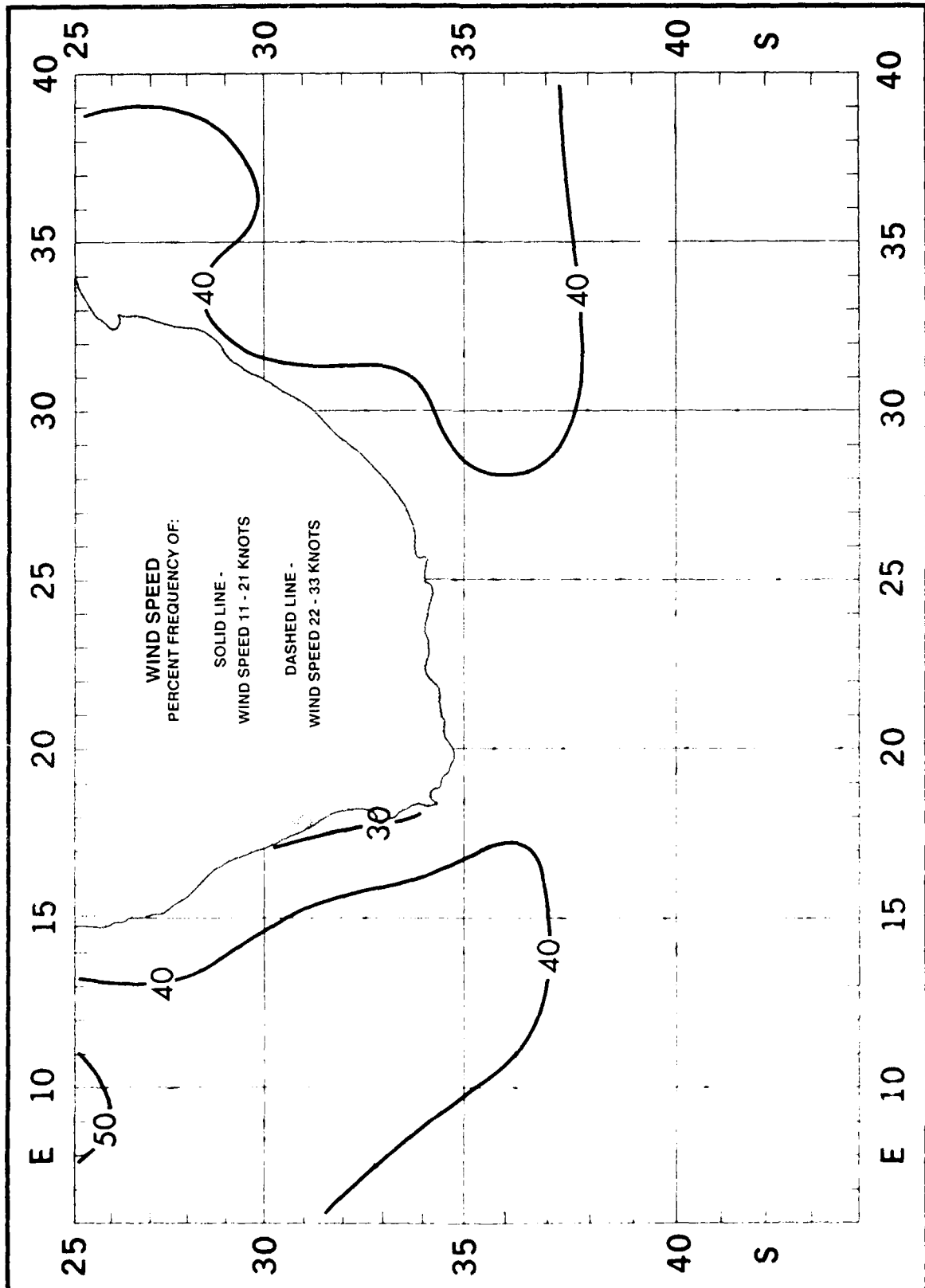
April

Wind Speed < 11 and ≥ 34 Knots



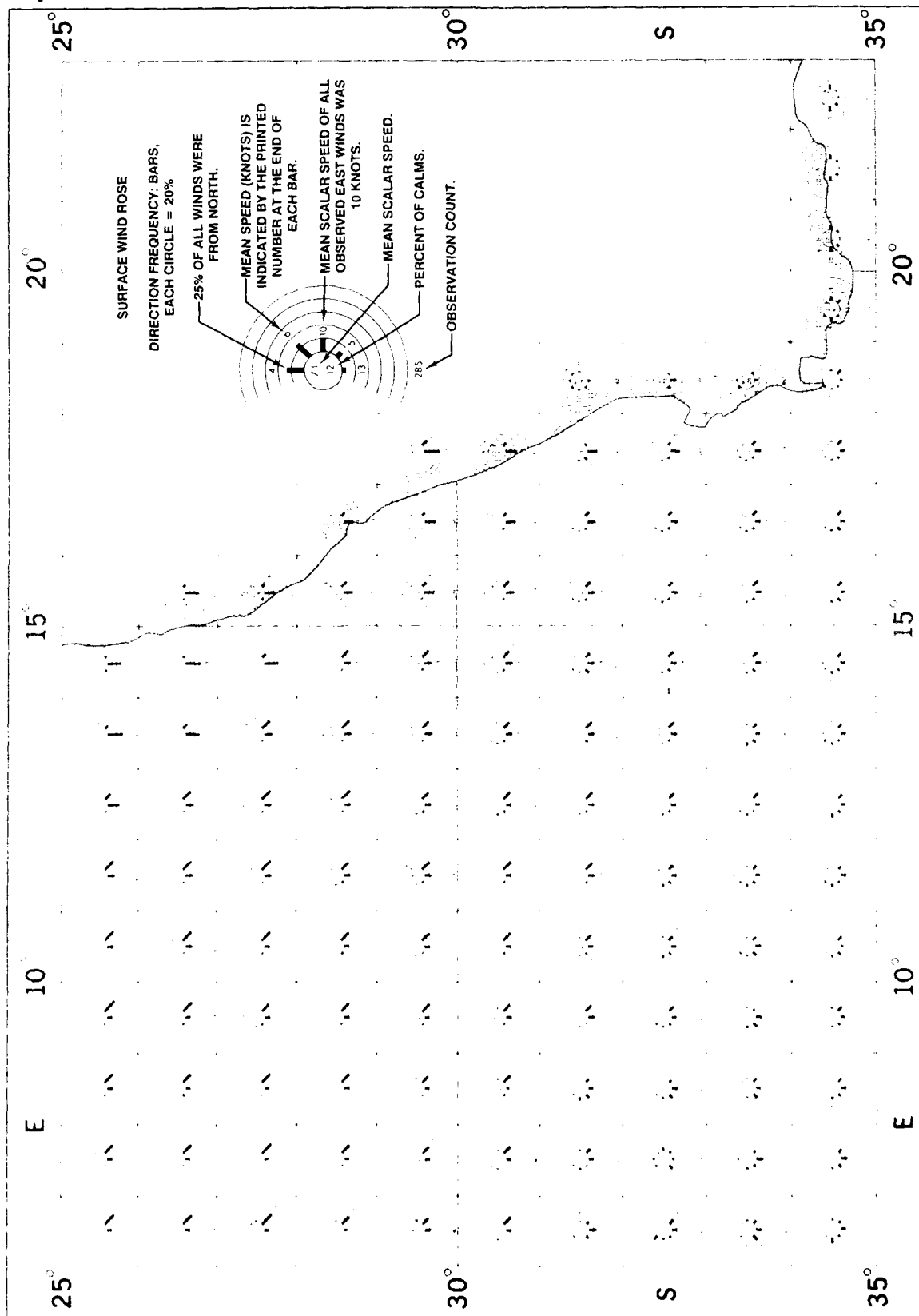
April

Wind Speed 11 - 21 and 22 - 33 Knots



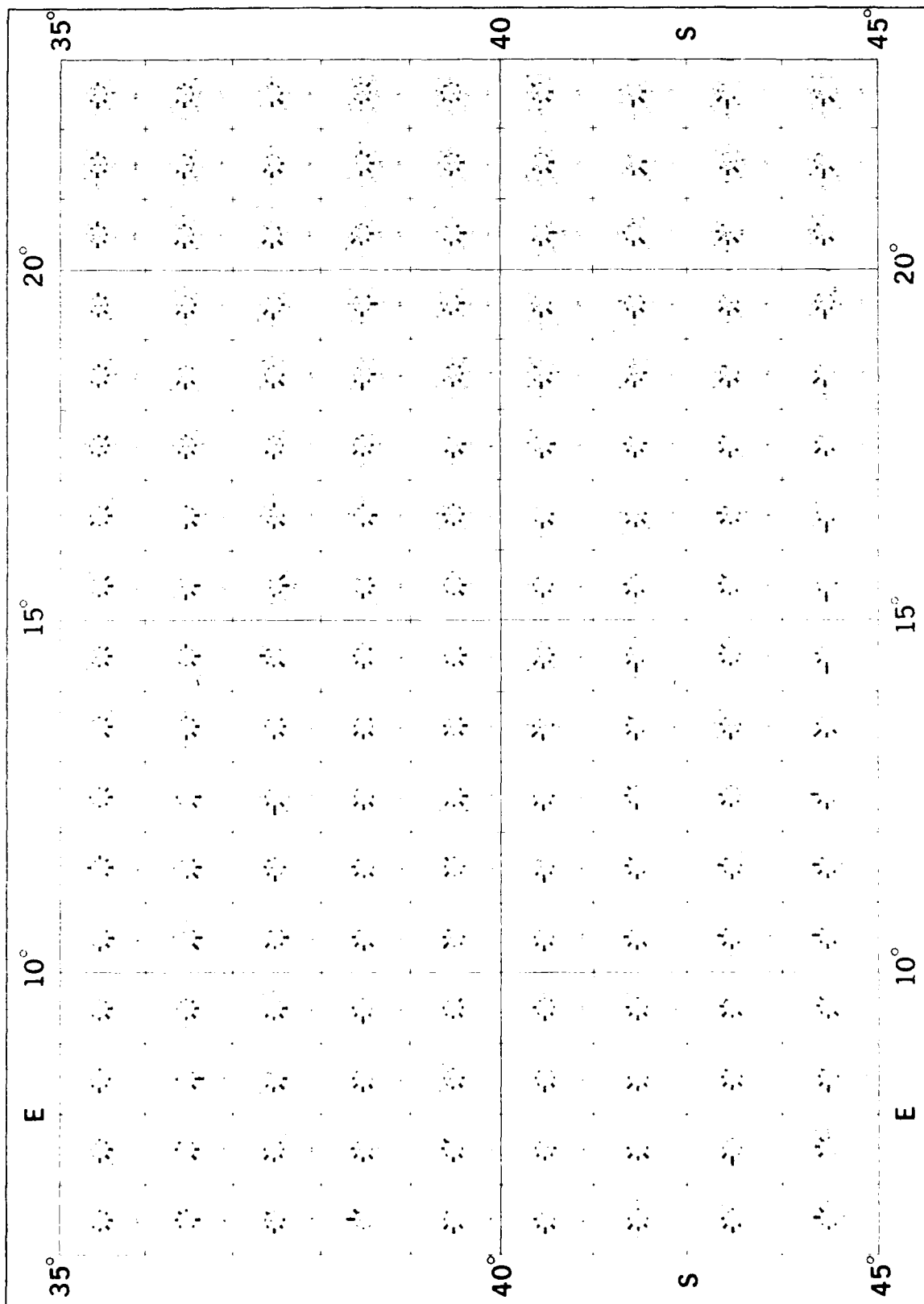
April

Surface Wind Roses



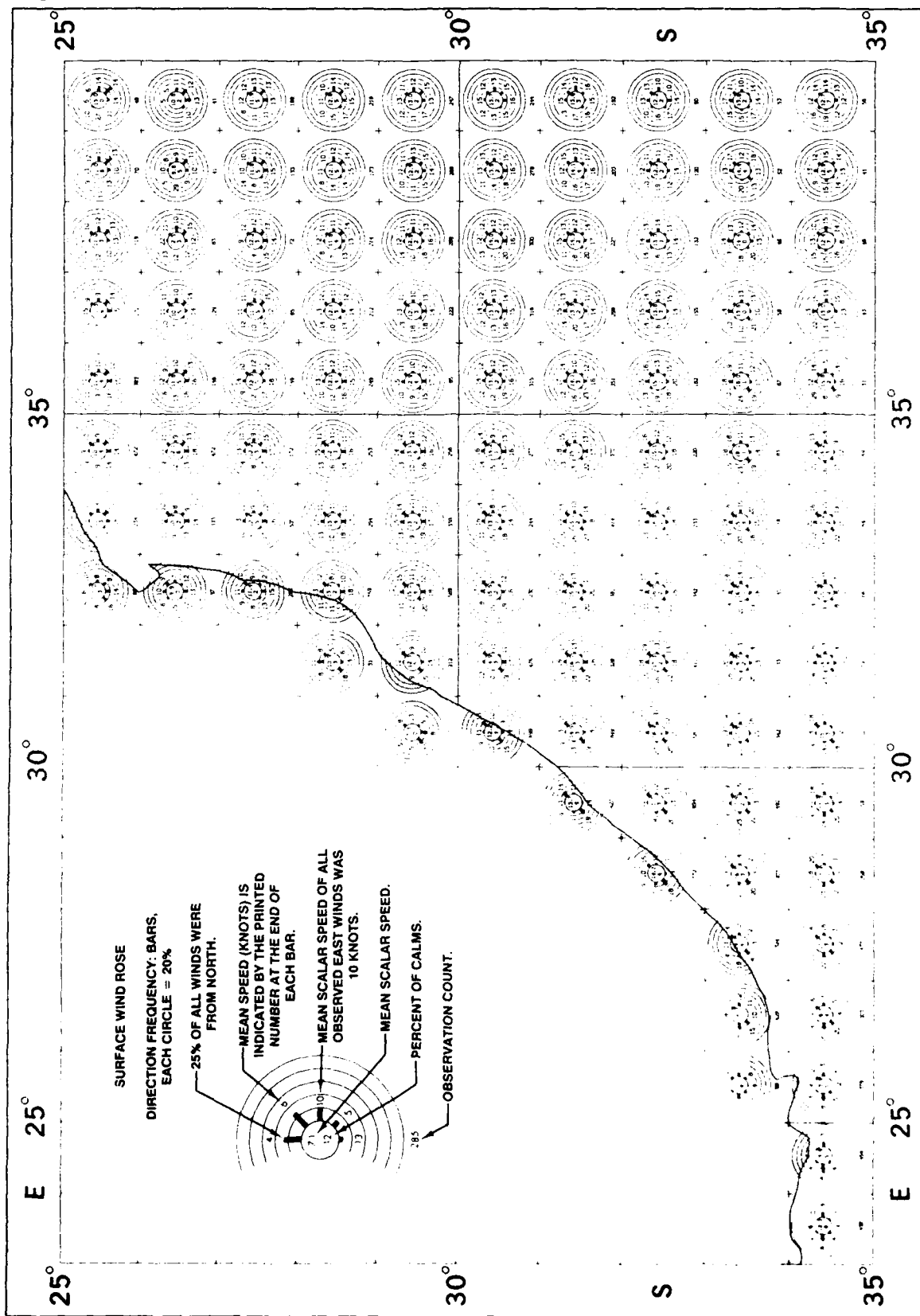
April

Surface Wind Roses



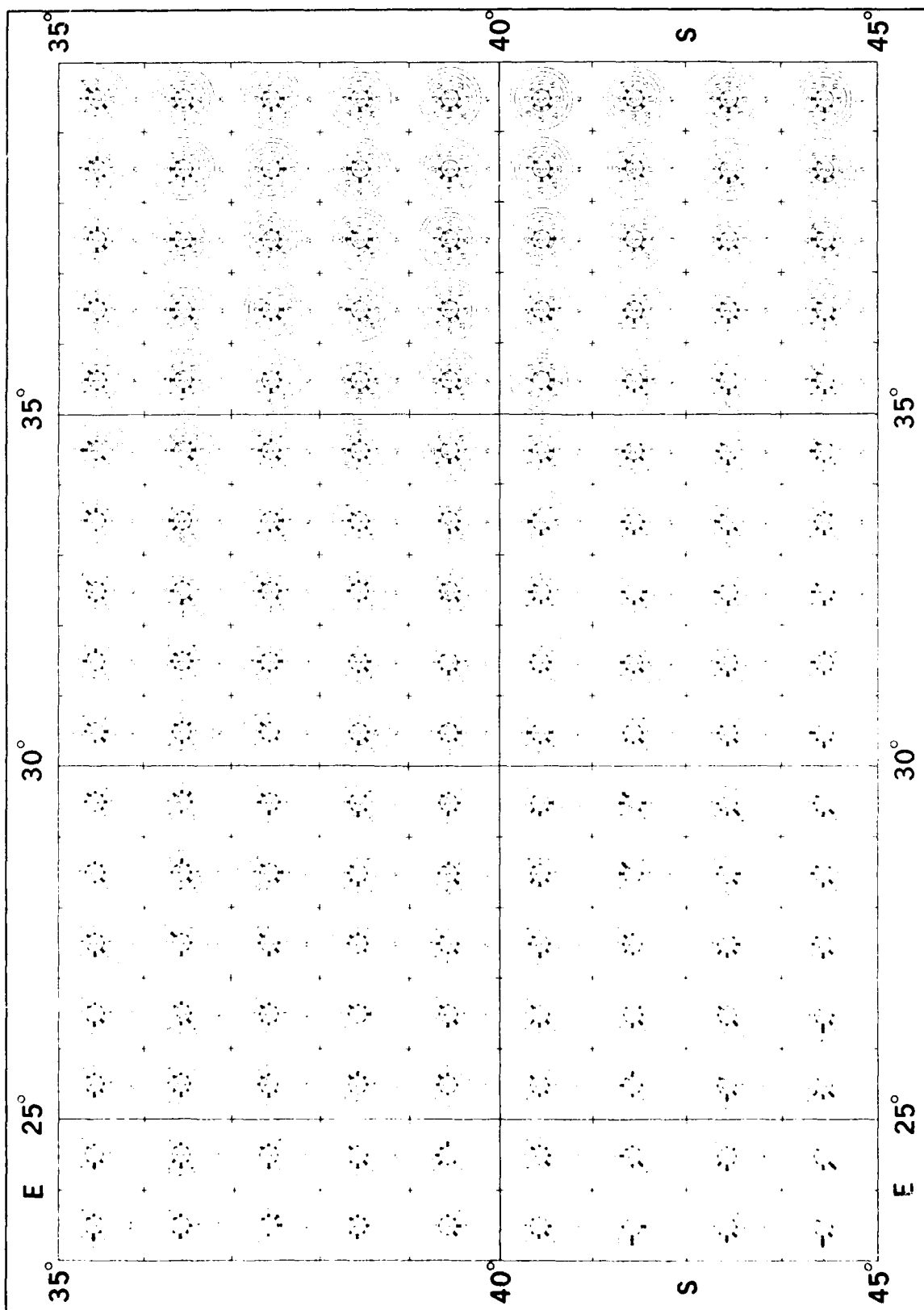
April

Surface Wind Roses



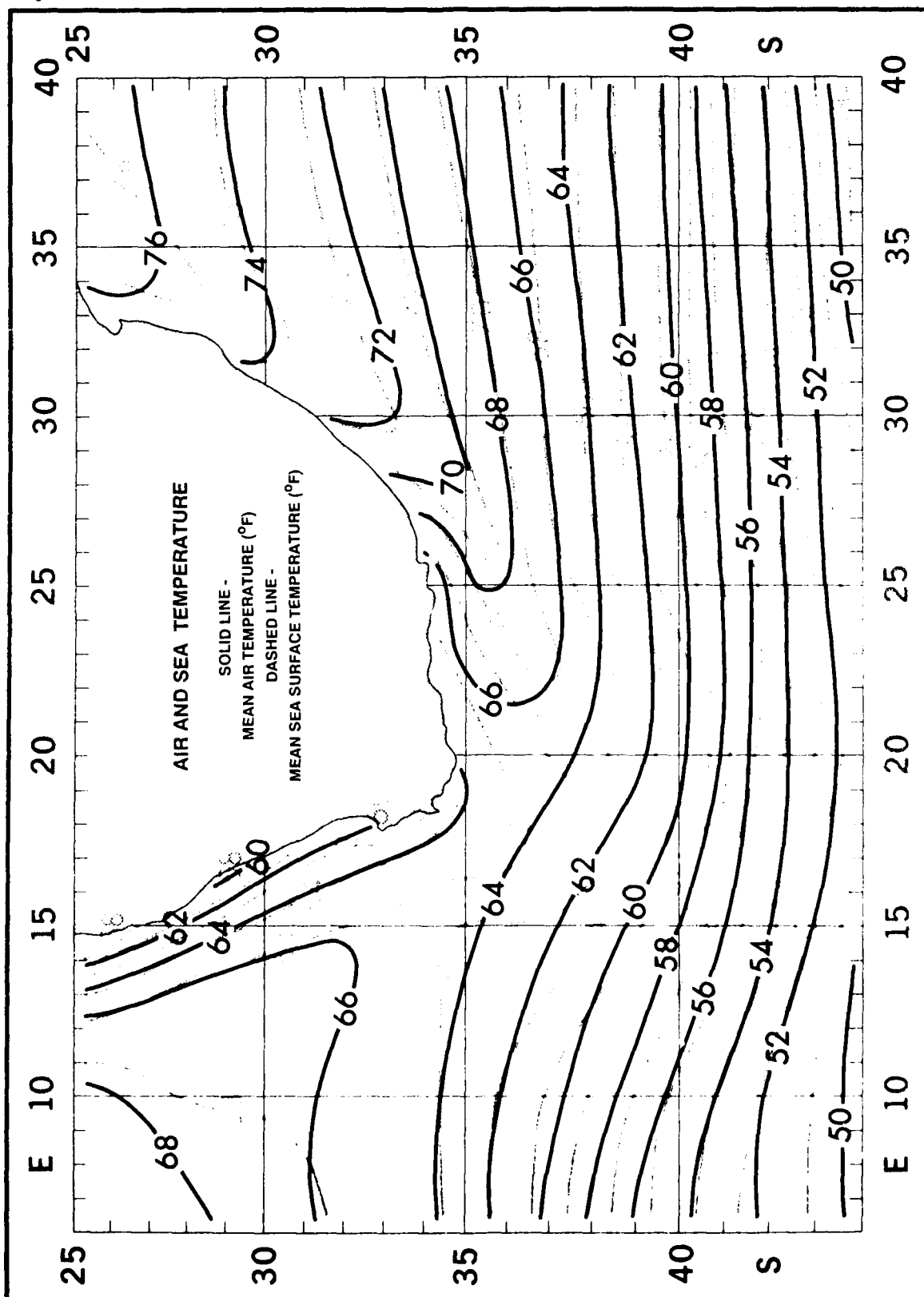
April

Surface Wind Roses



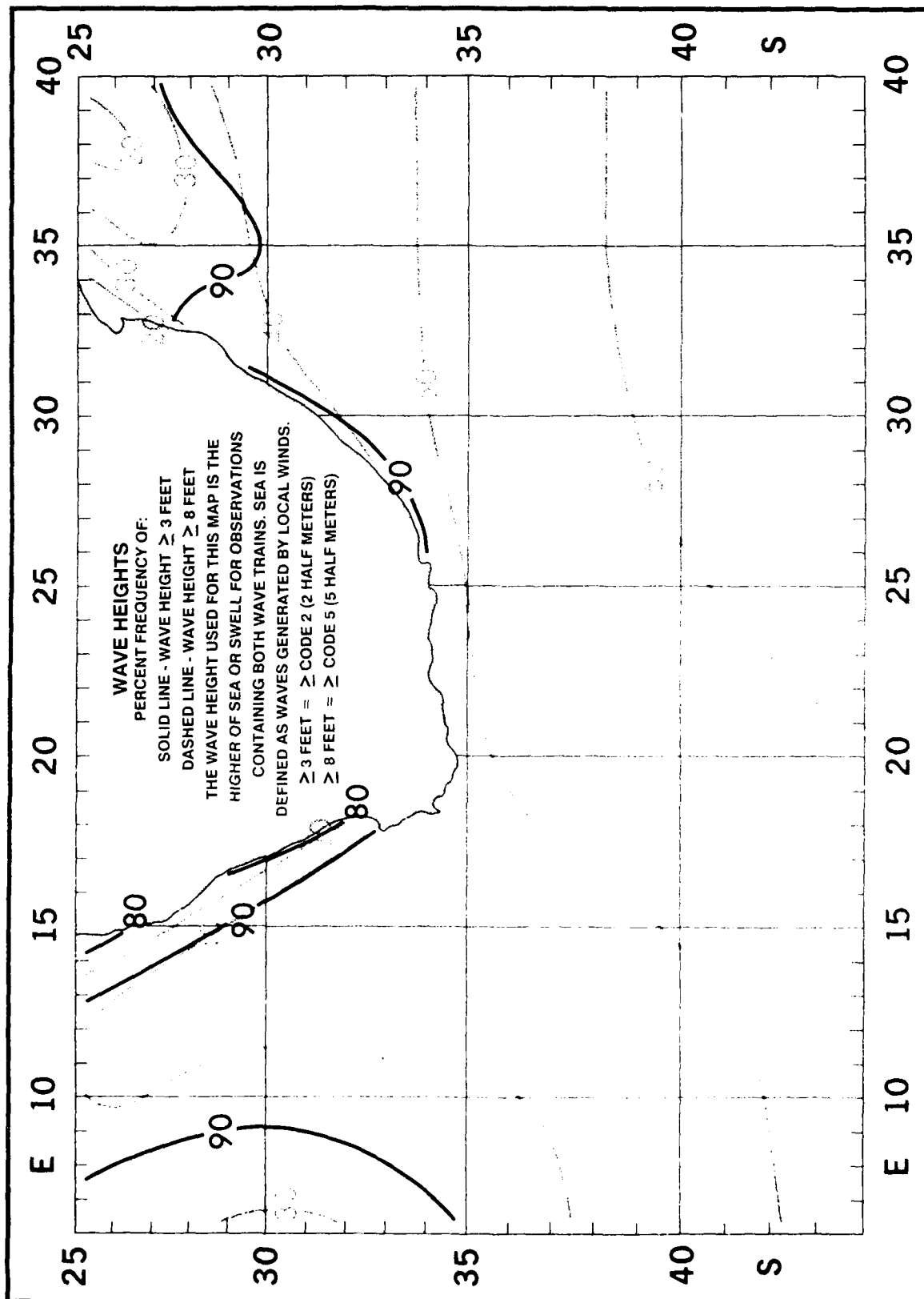
April

Air and Sea Temperature



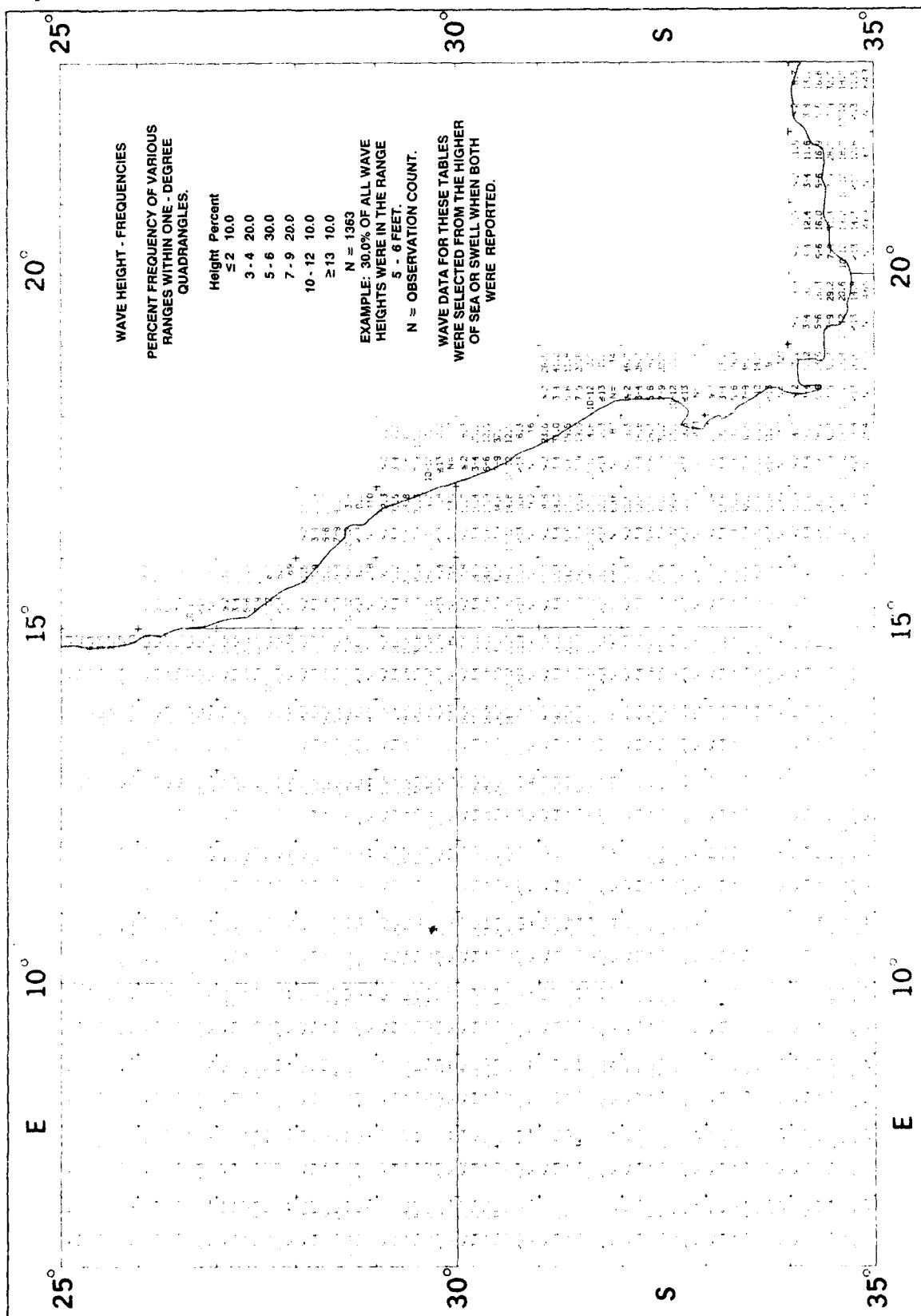
April

Wave Height



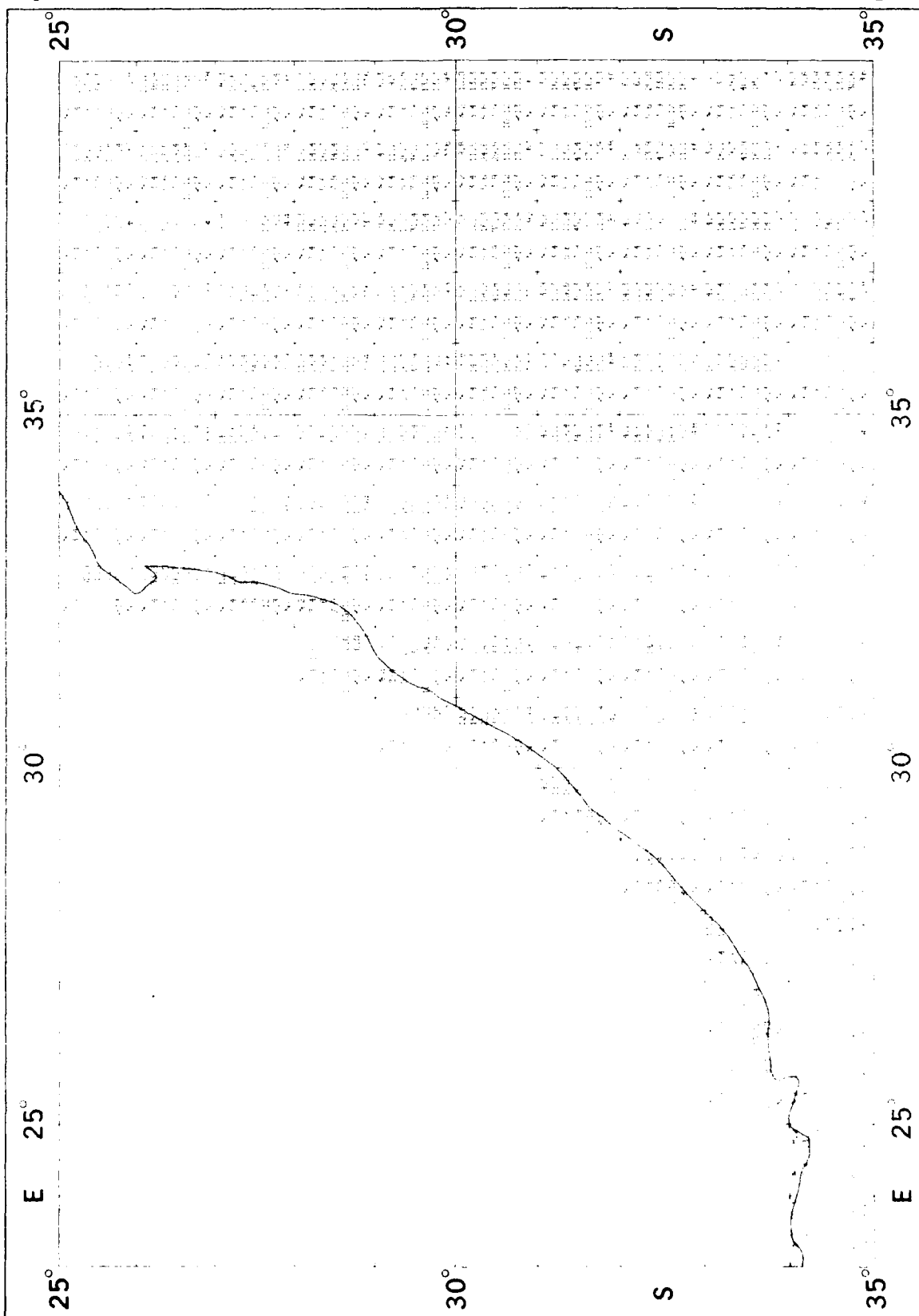
April

Wave Height



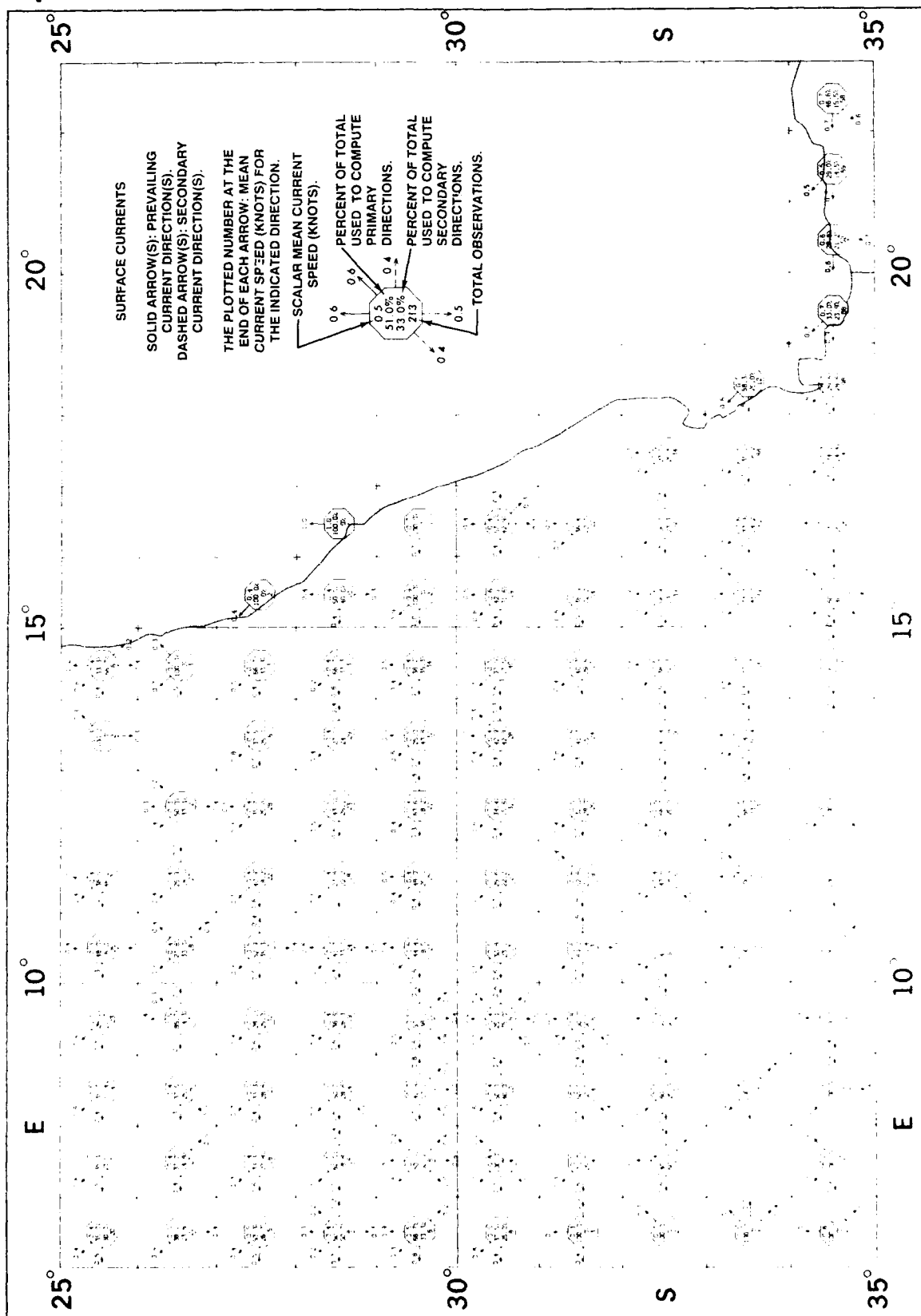
April

Wave Height



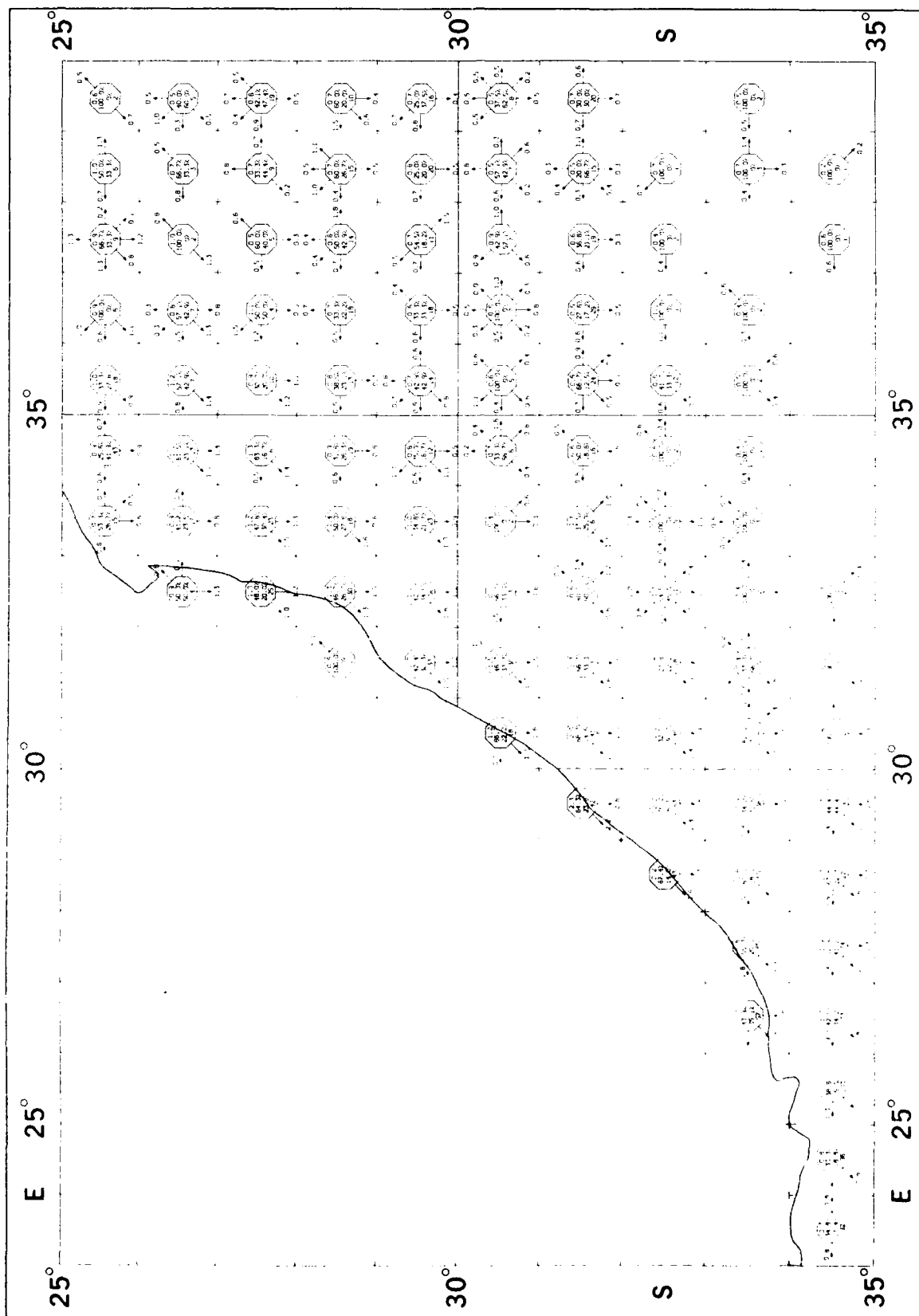
April

Surface Currents



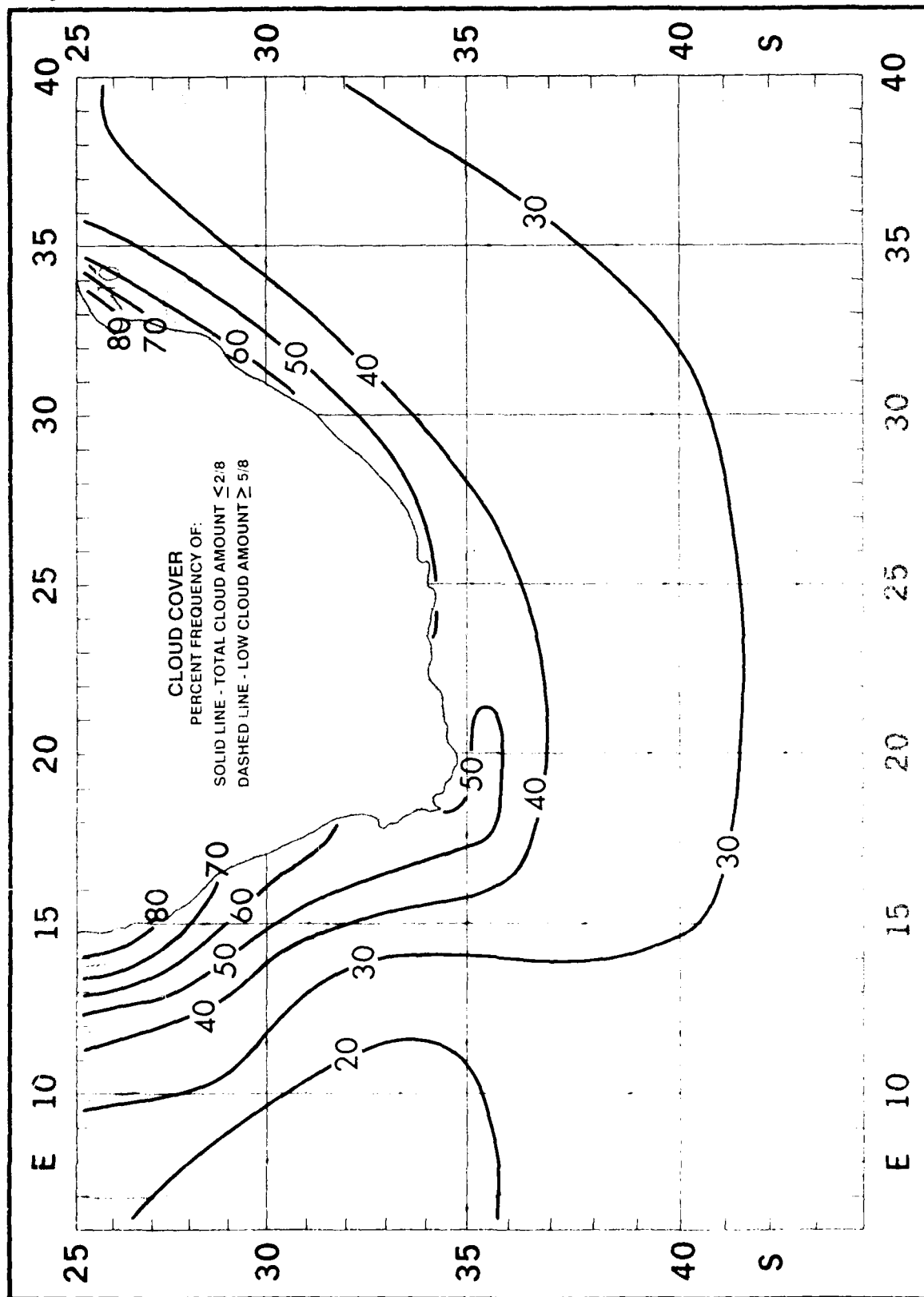
April

Surface Currents



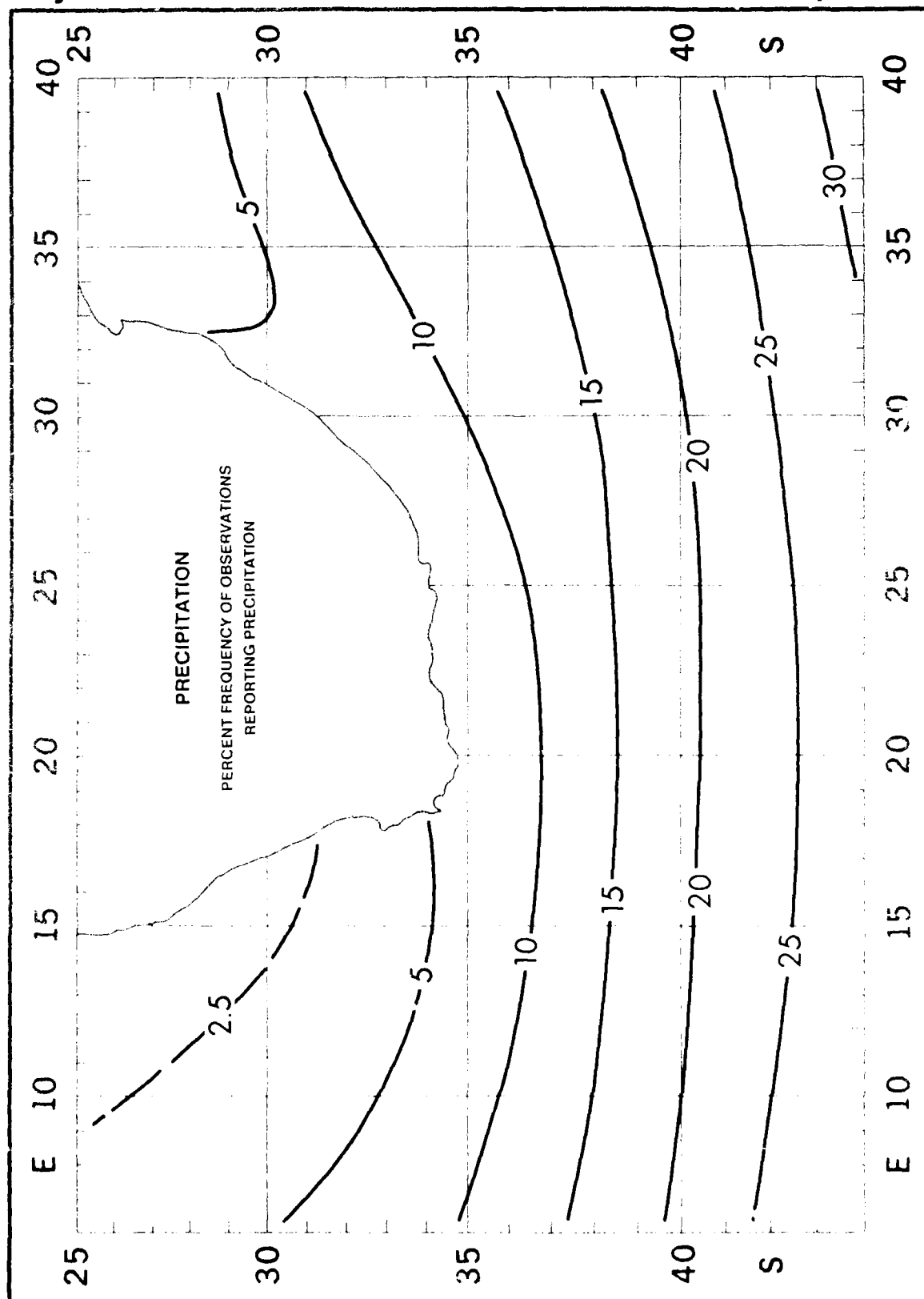
May

Clouds



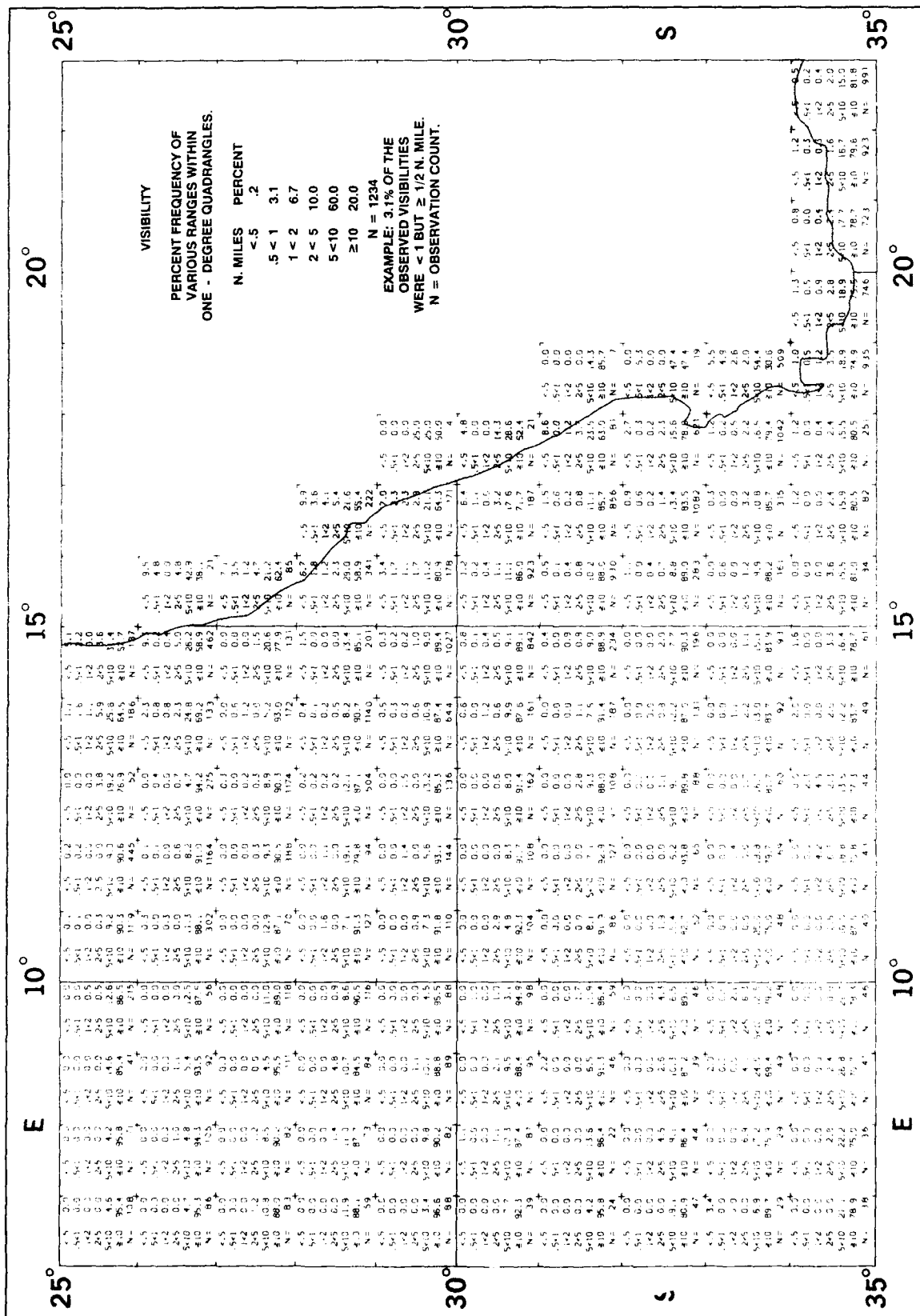
May

Precipitation



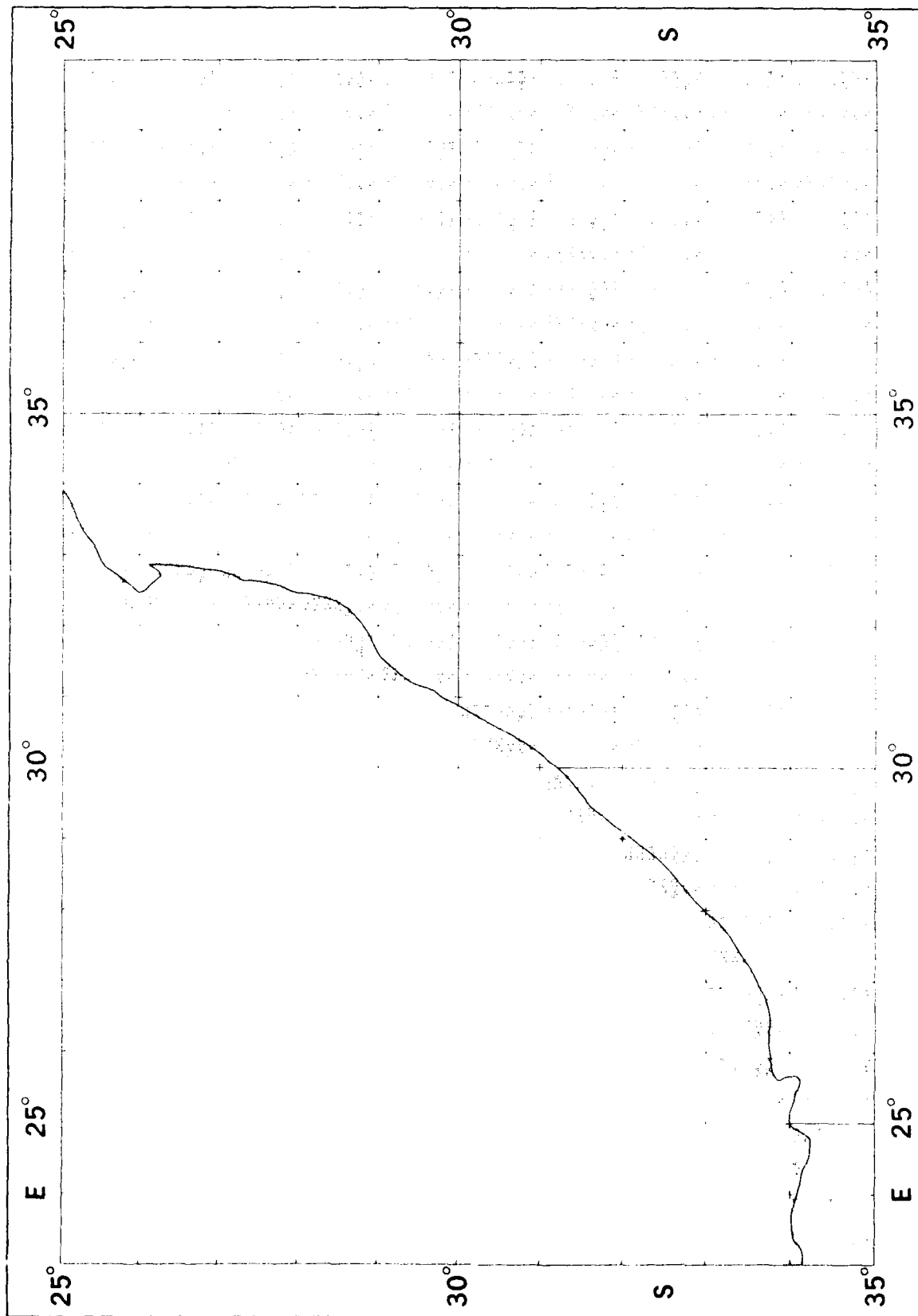
May

Visibility



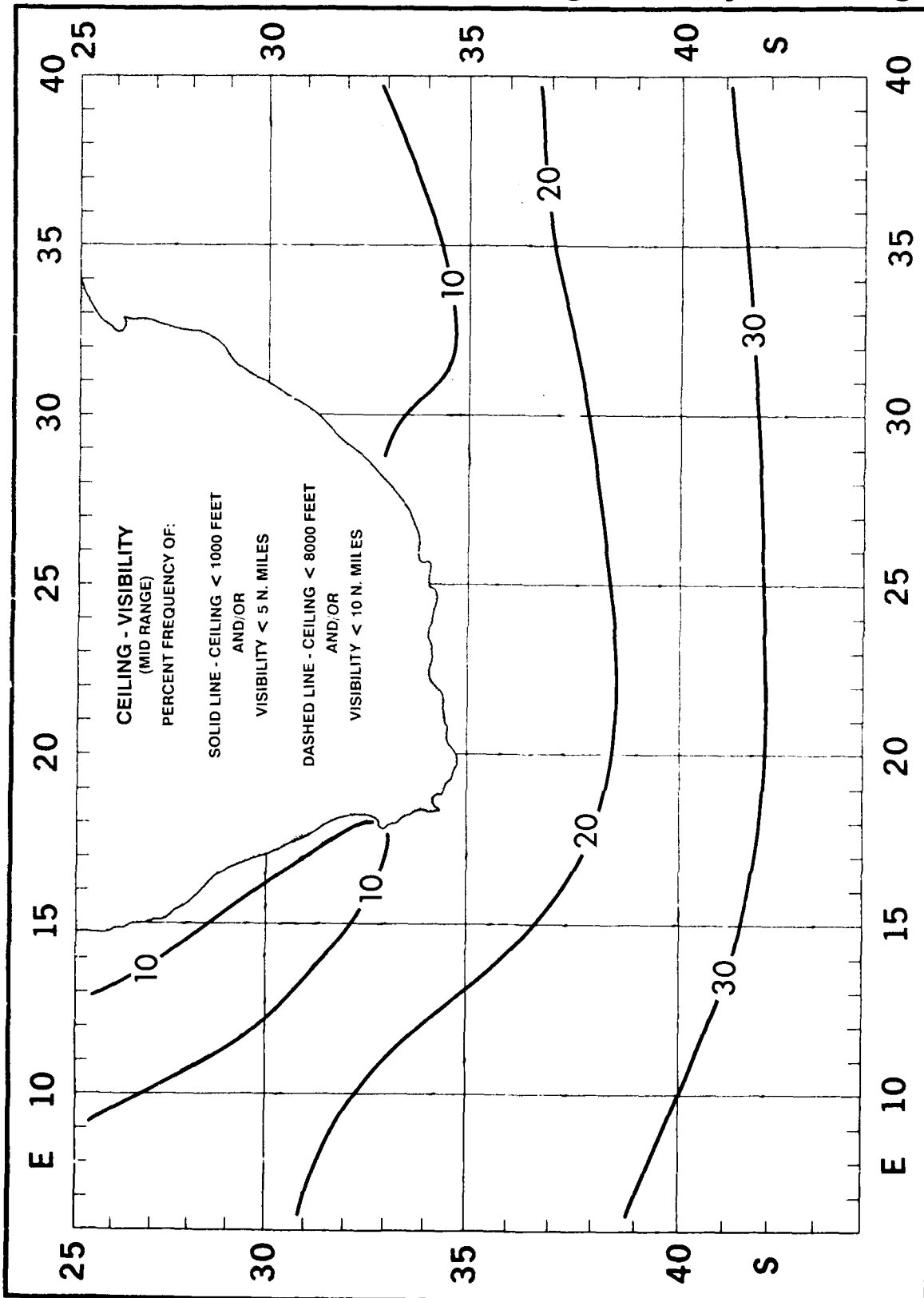
May

Visibility



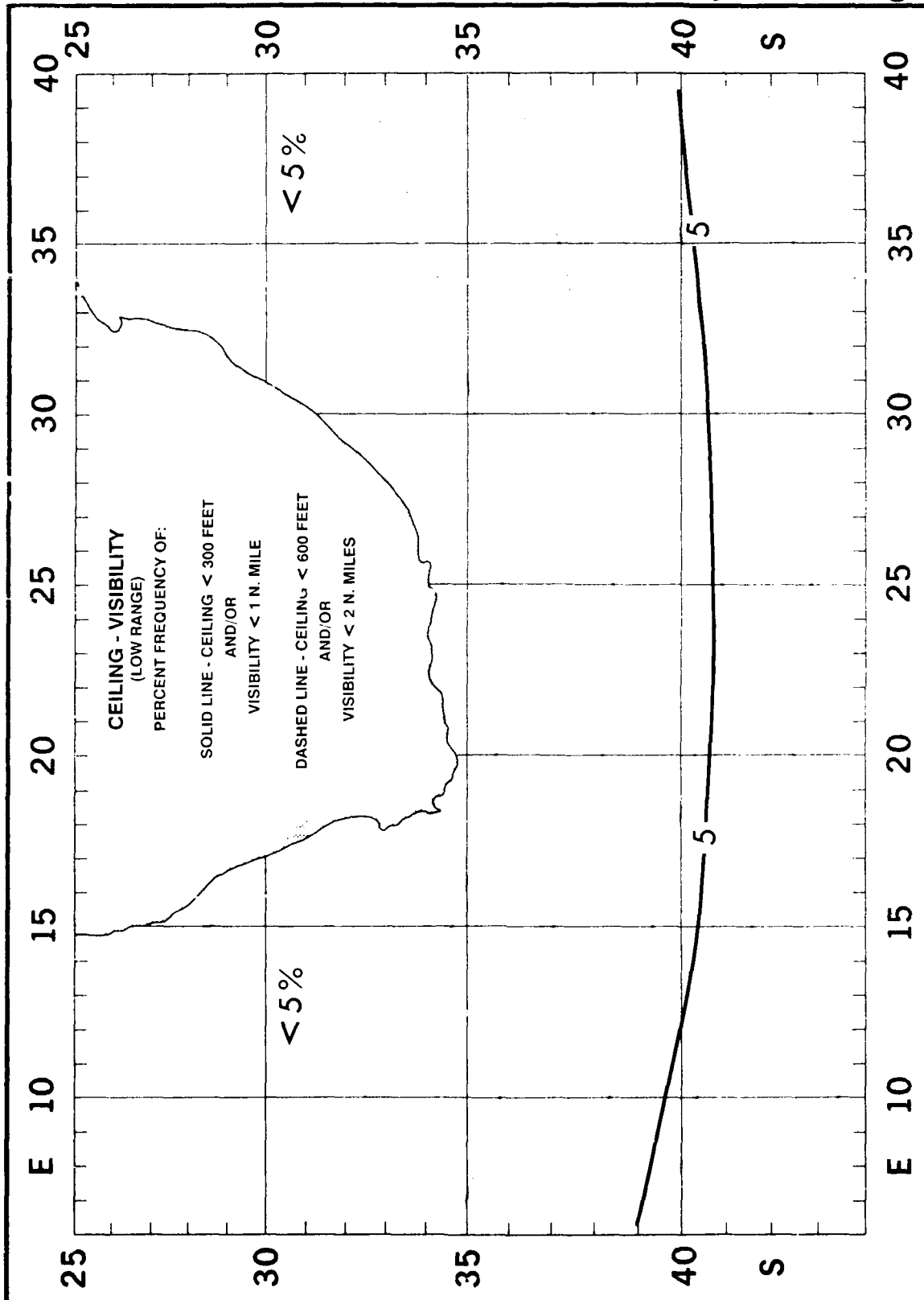
May

Ceiling - Visibility (Mid Range)



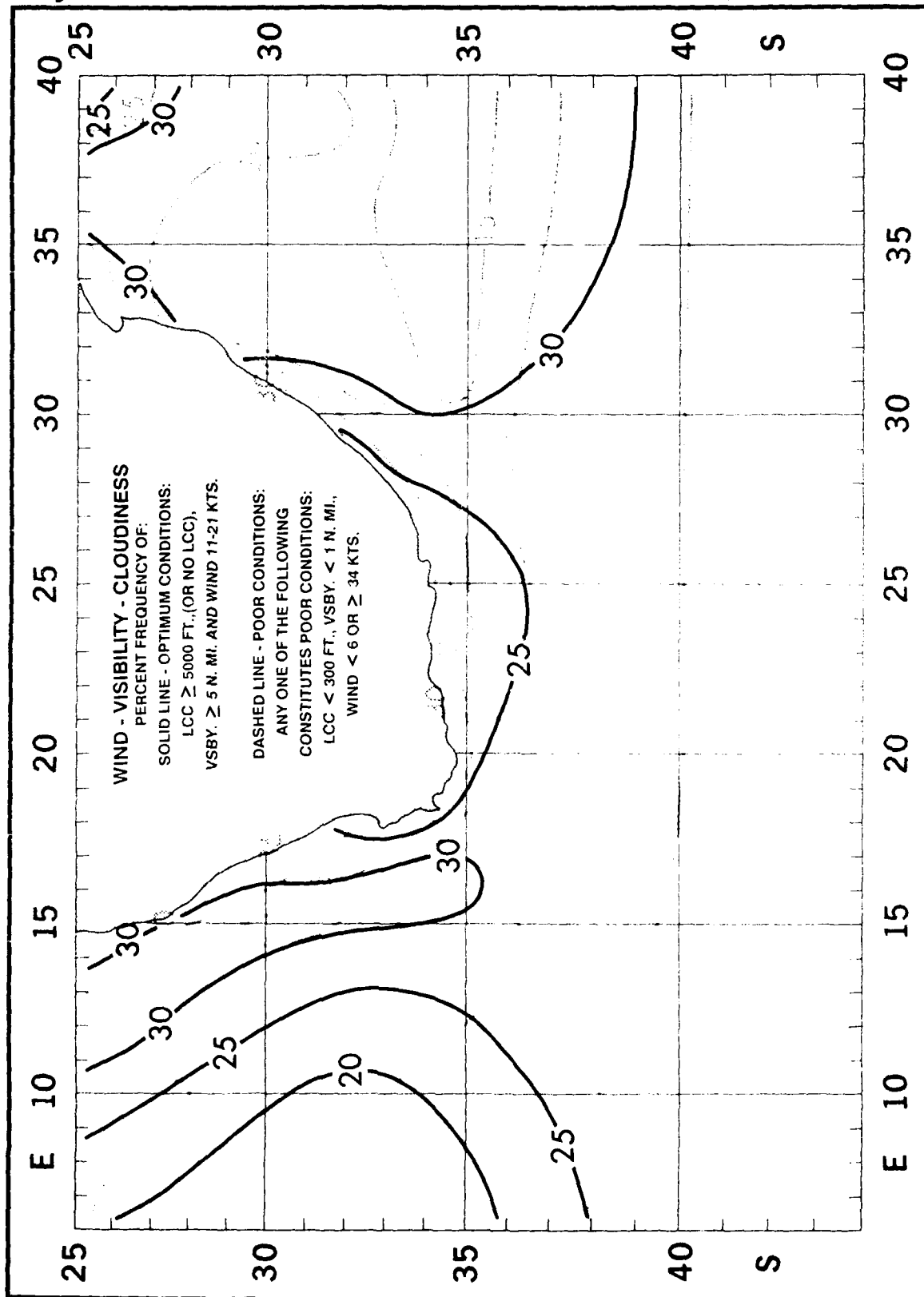
May

Ceiling - Visibility (Low Range)



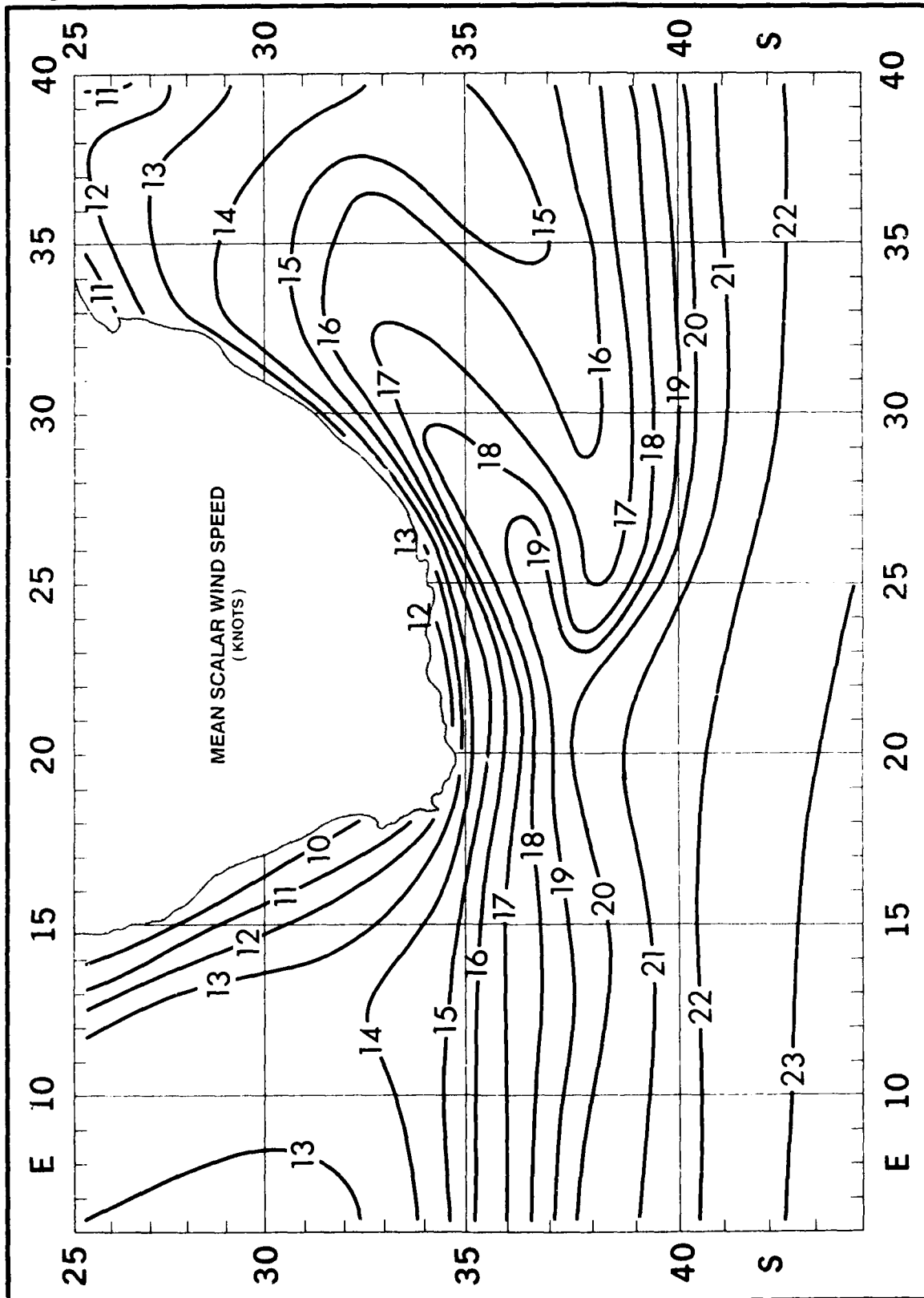
May

Wind - Visibility - Cloudiness



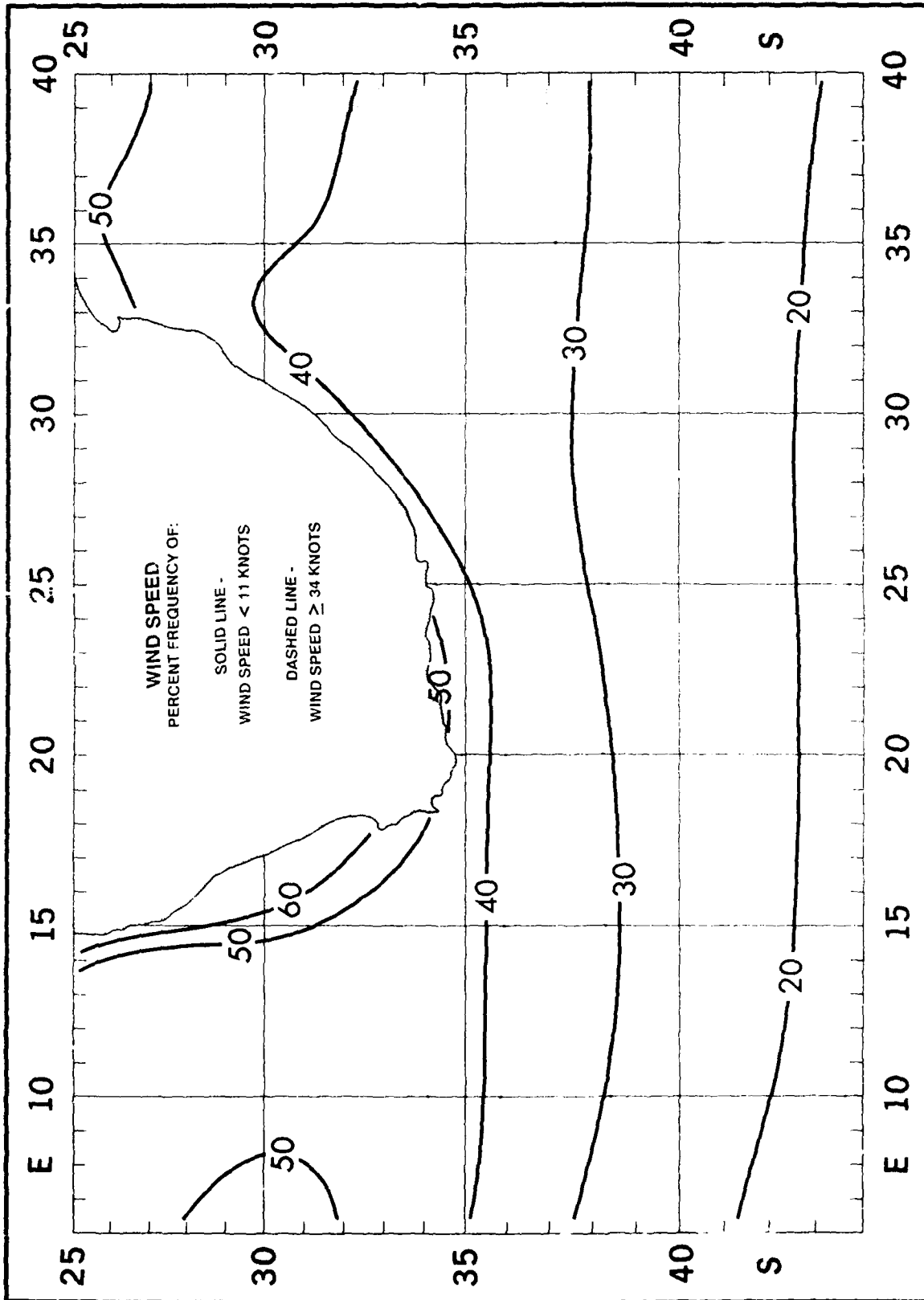
May

Mean Scalar Wind Speed



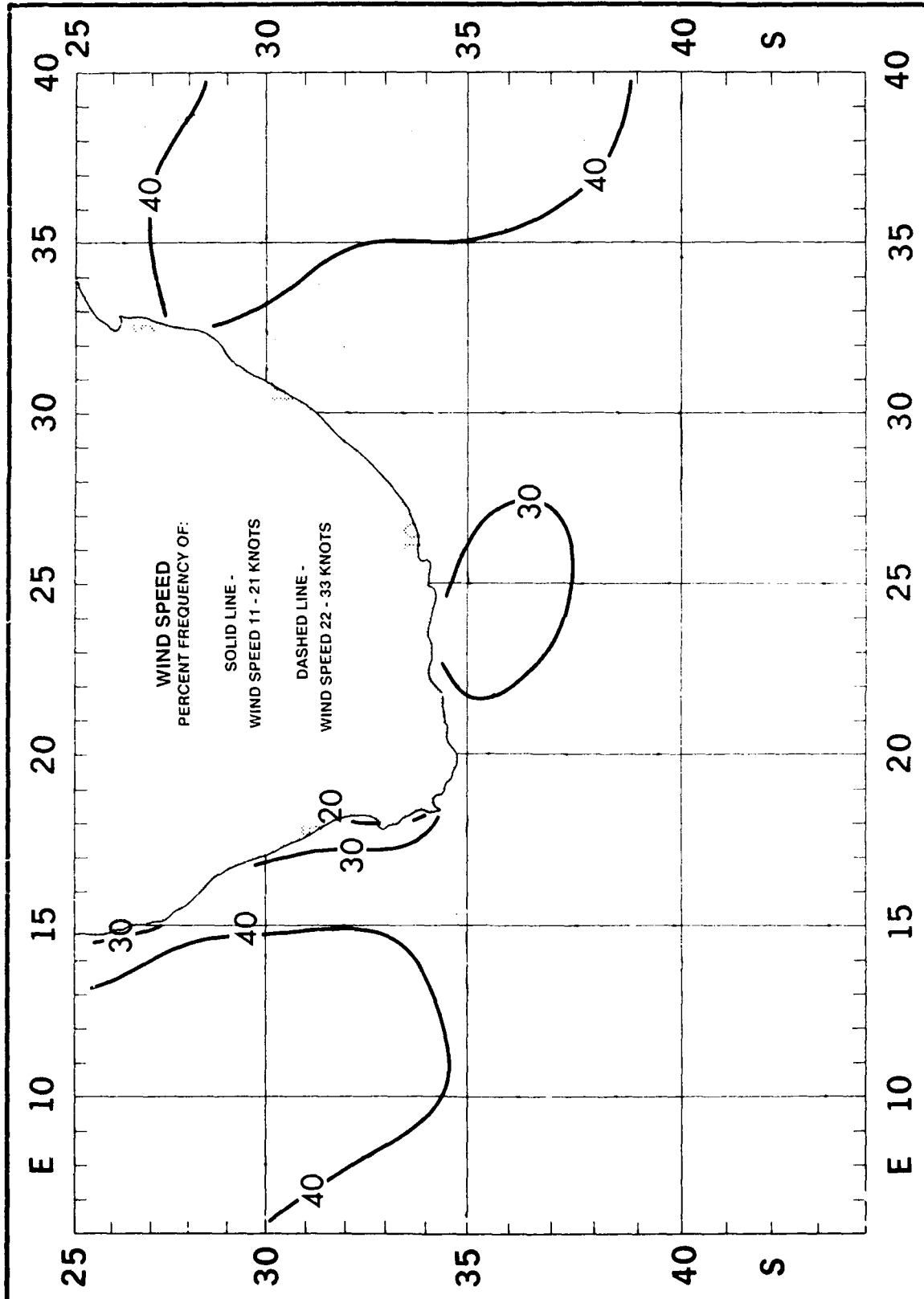
May

Wind Speed < 11 and ≥ 34 Knots



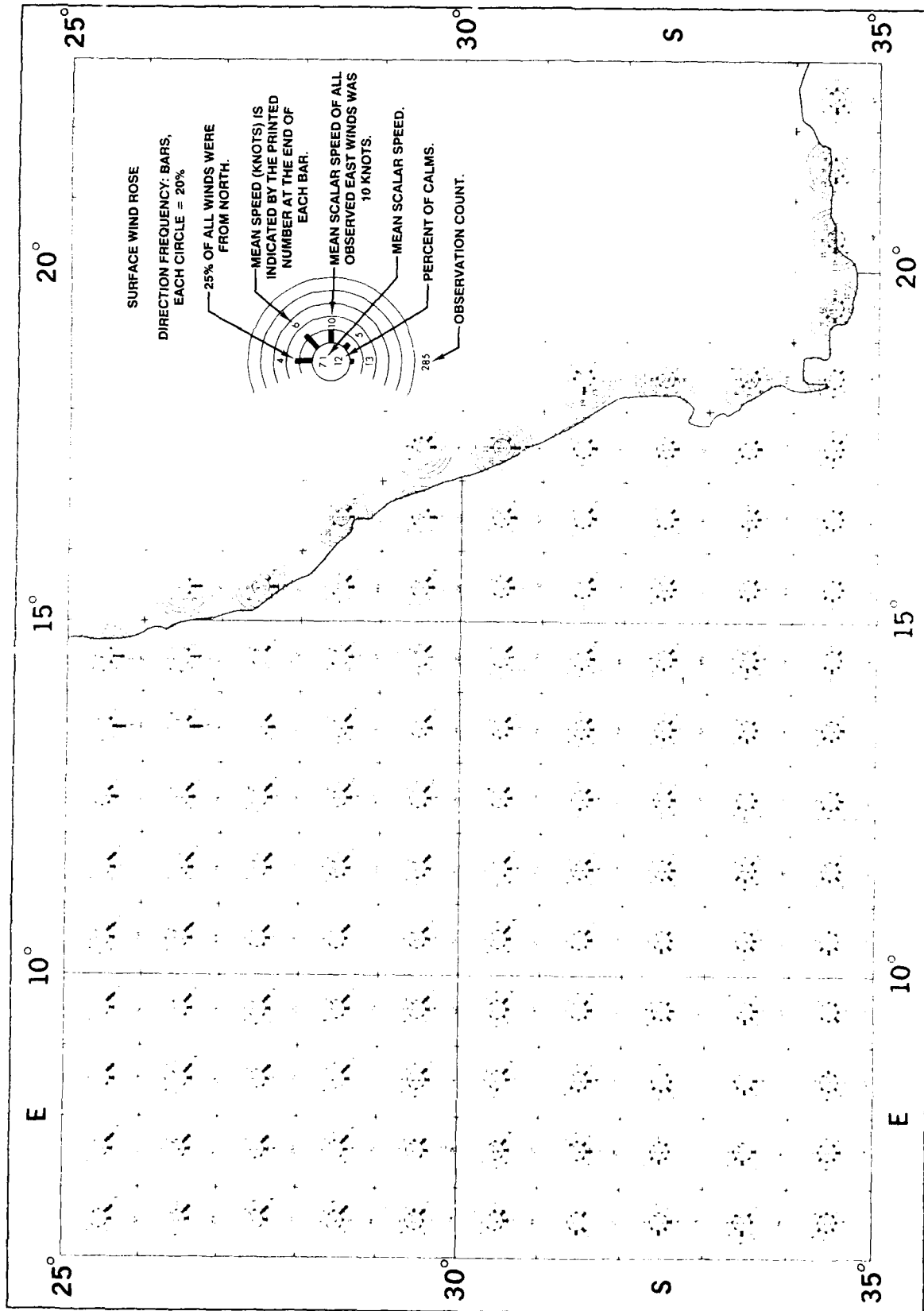
May

Wind Speed 11 - 21 and 22 - 33 Knots



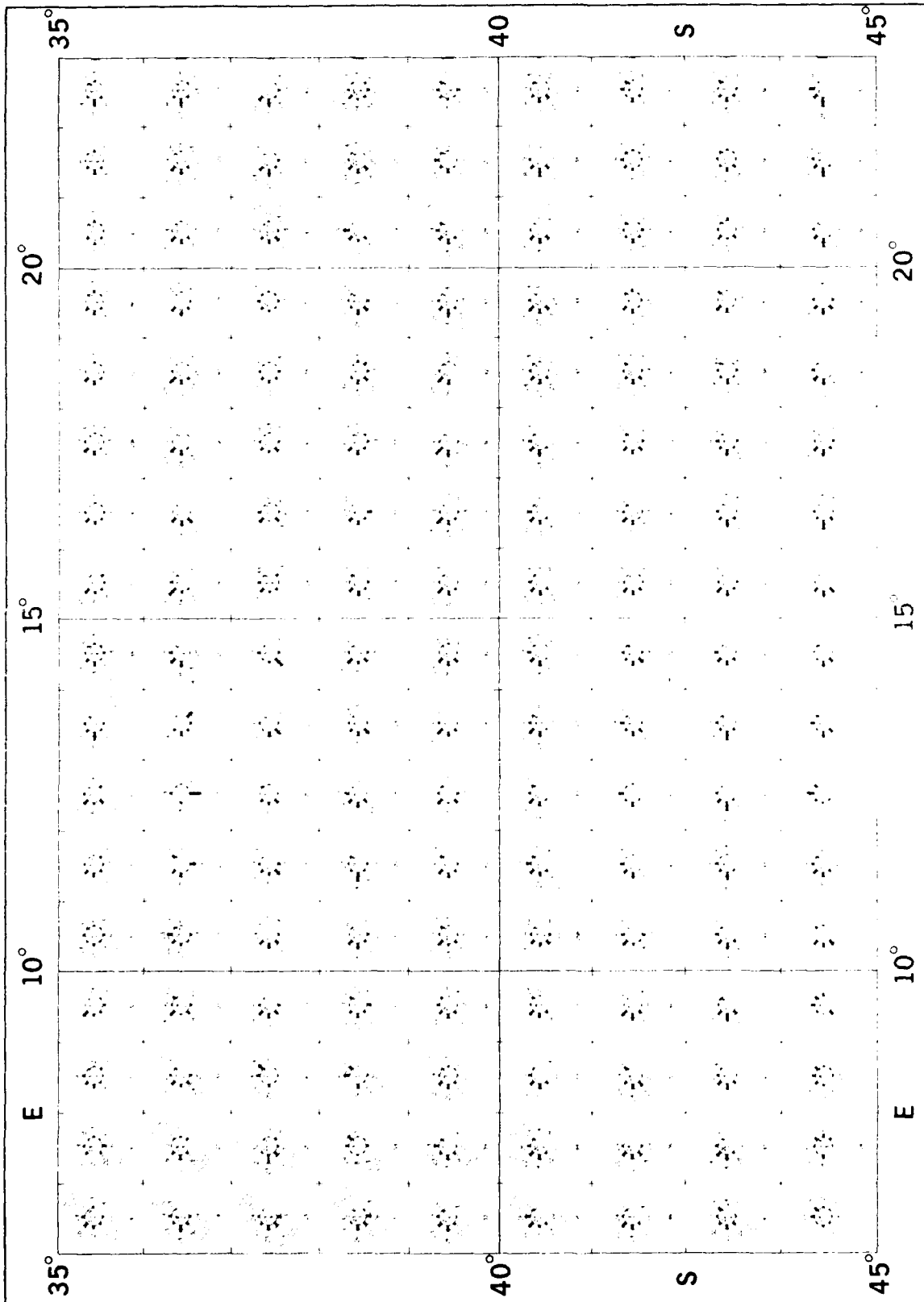
May

Surface Wind Roses



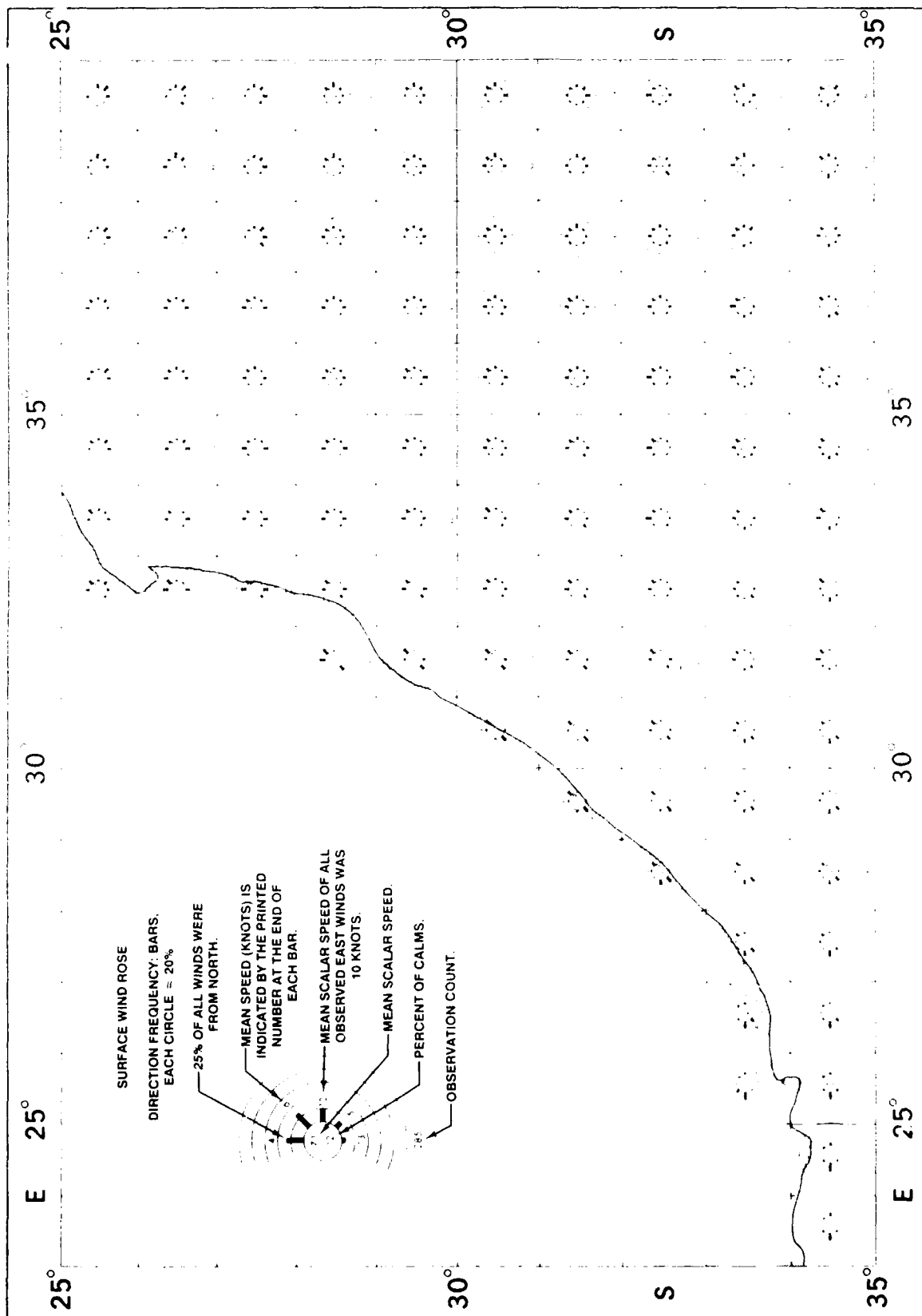
May

Surface Wind Roses



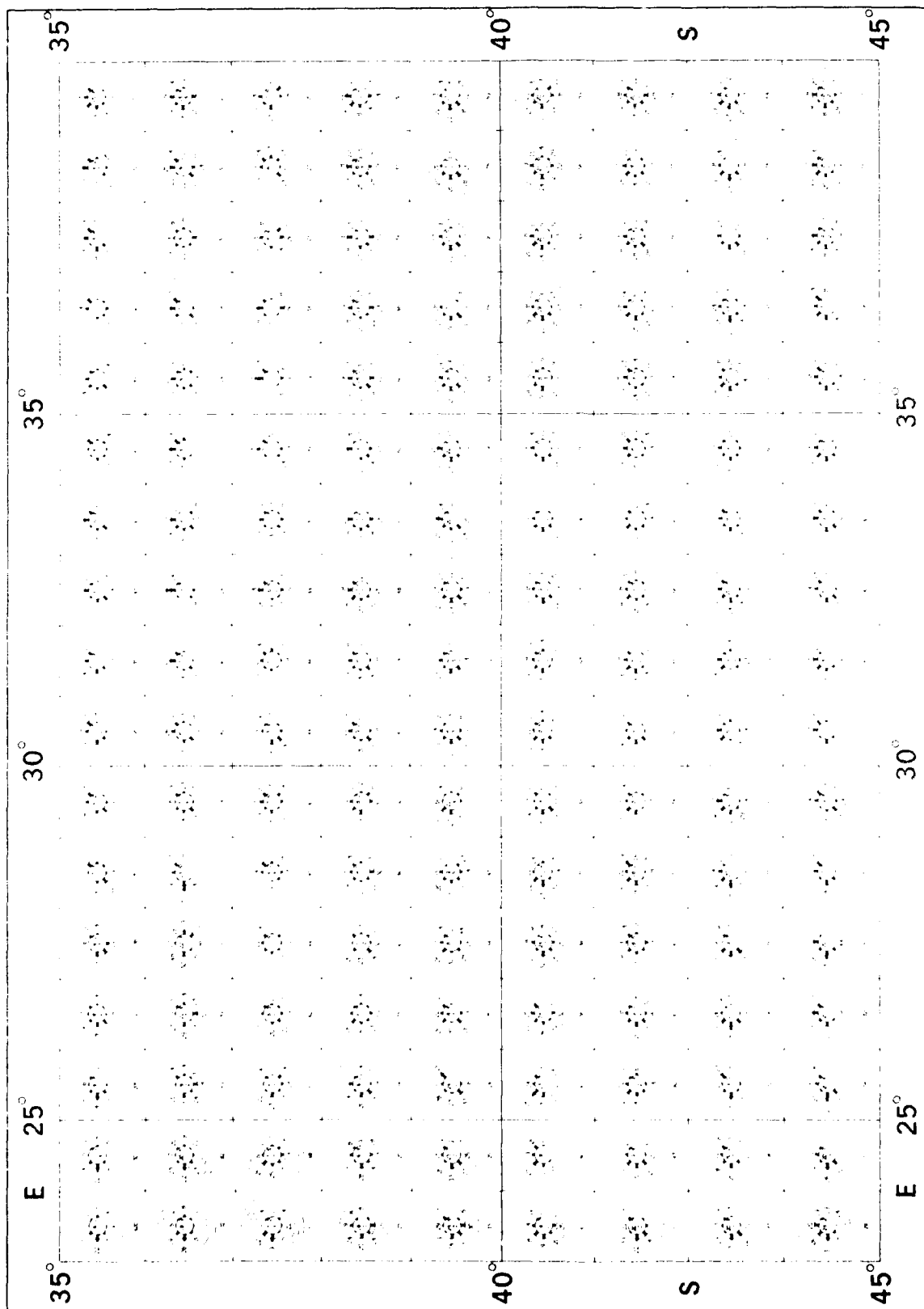
May

Surface Wind Roses



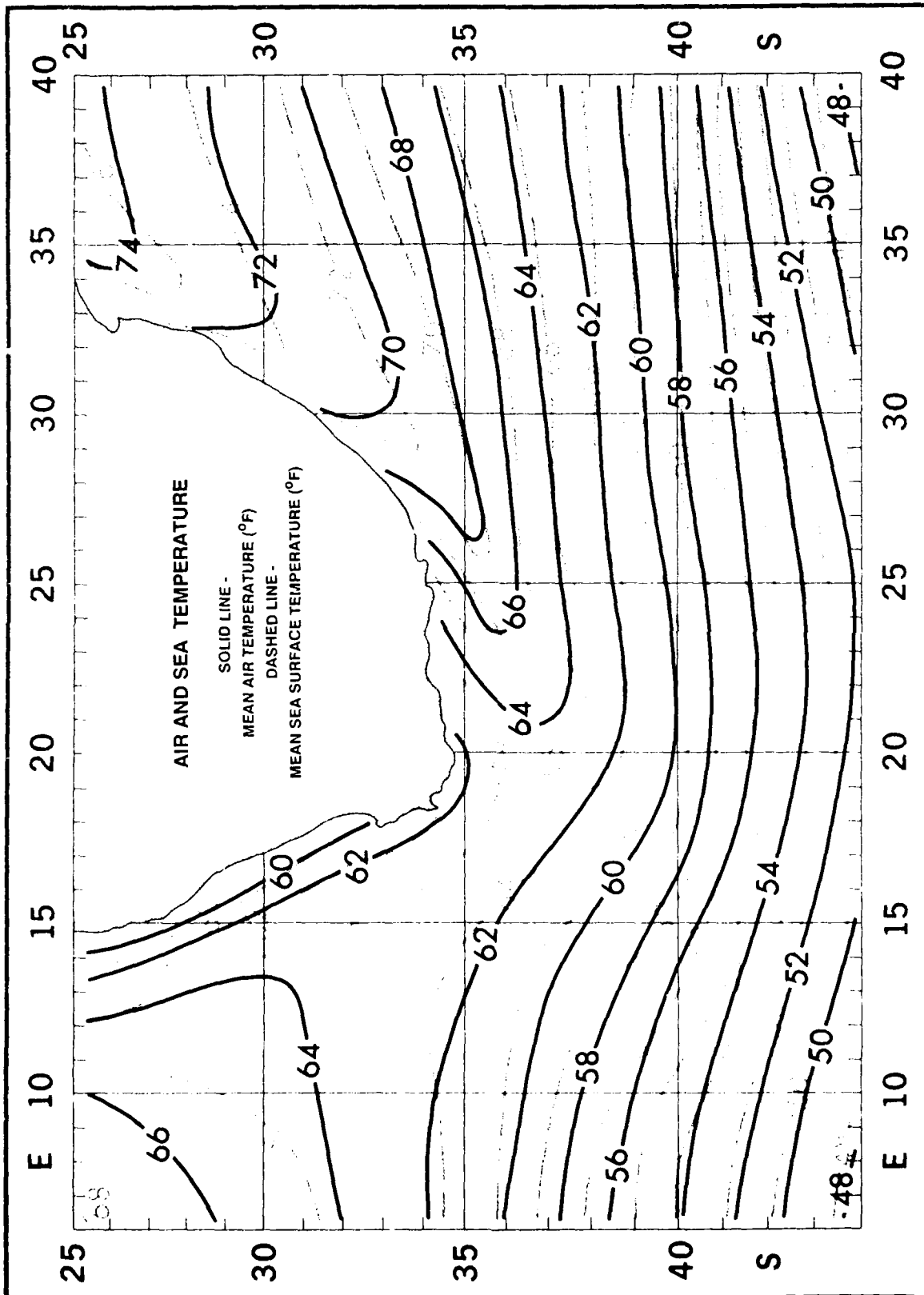
May

Surface Wind Roses



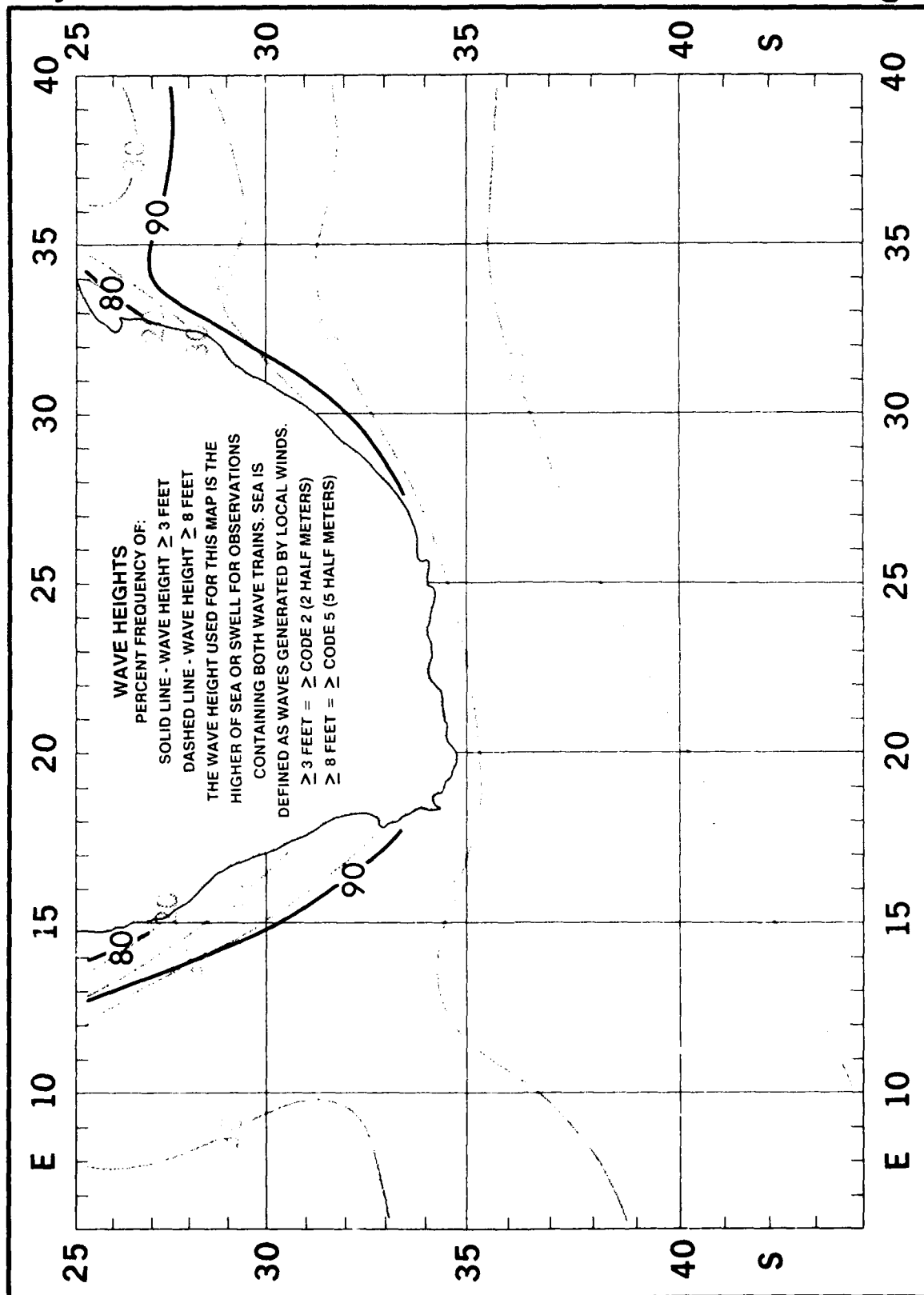
May

Air and Sea Temperature



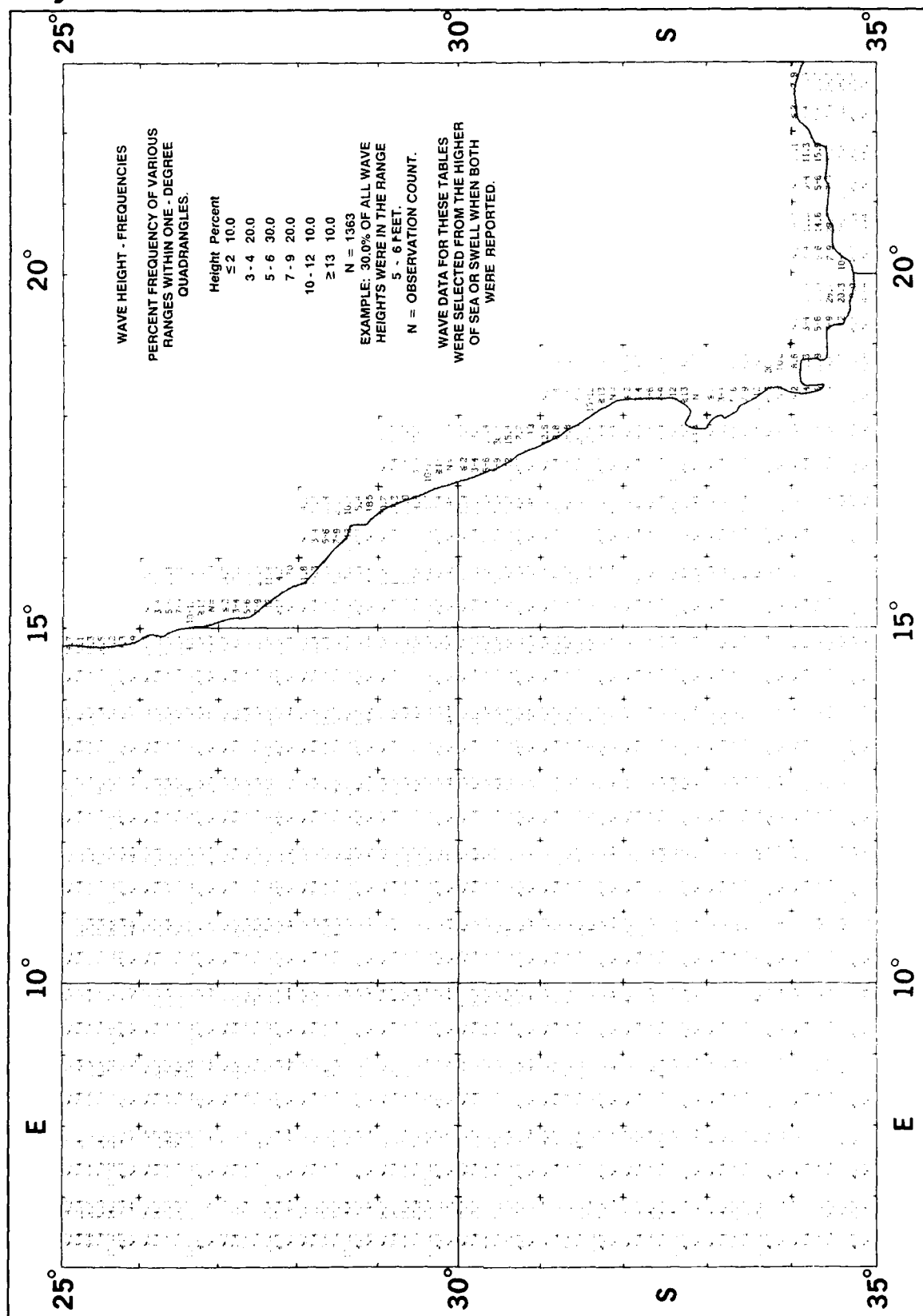
May

Wave Height



May

Wave Height

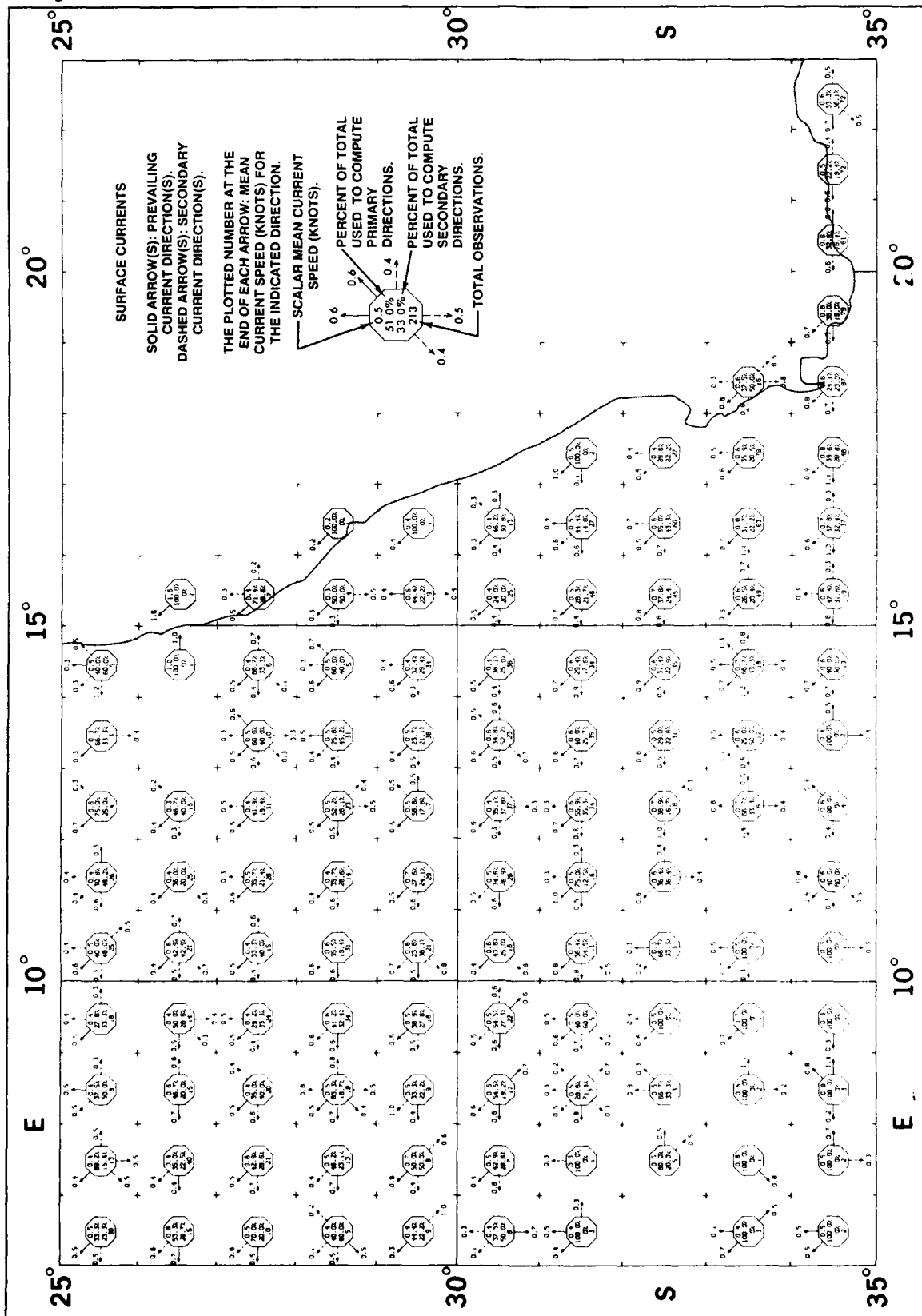


Wave Height



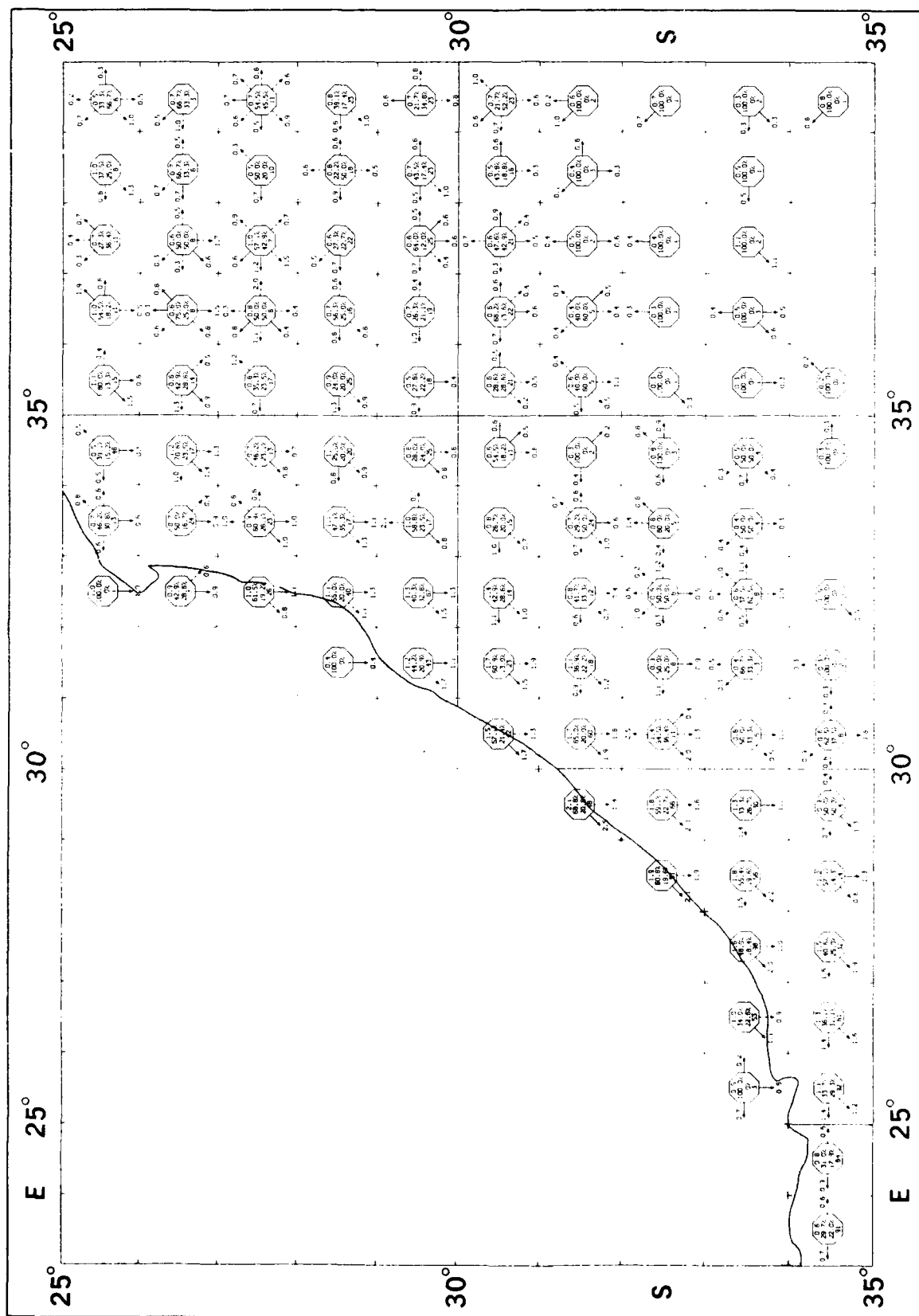
May

Surface Currents



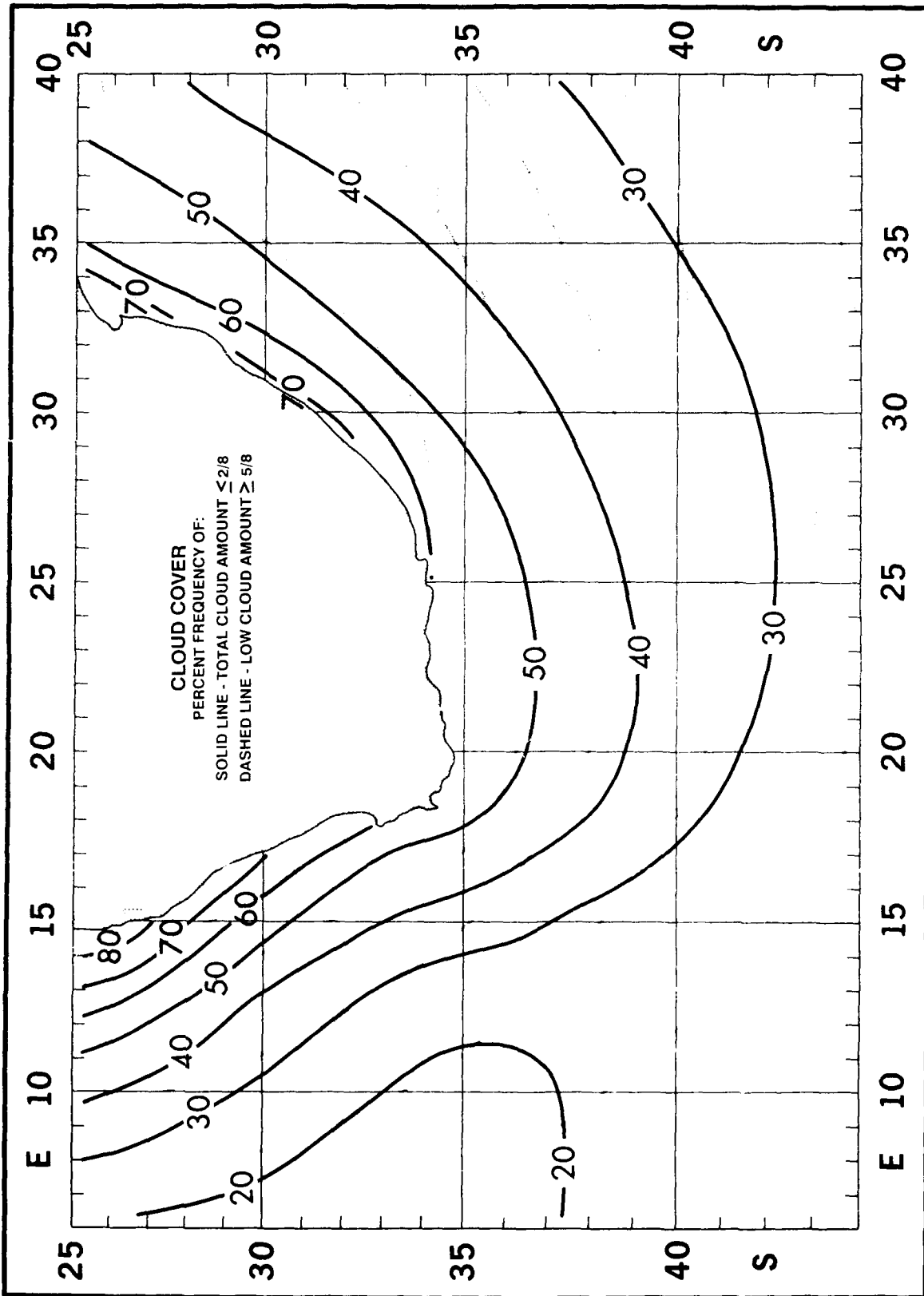
May

Surface Currents



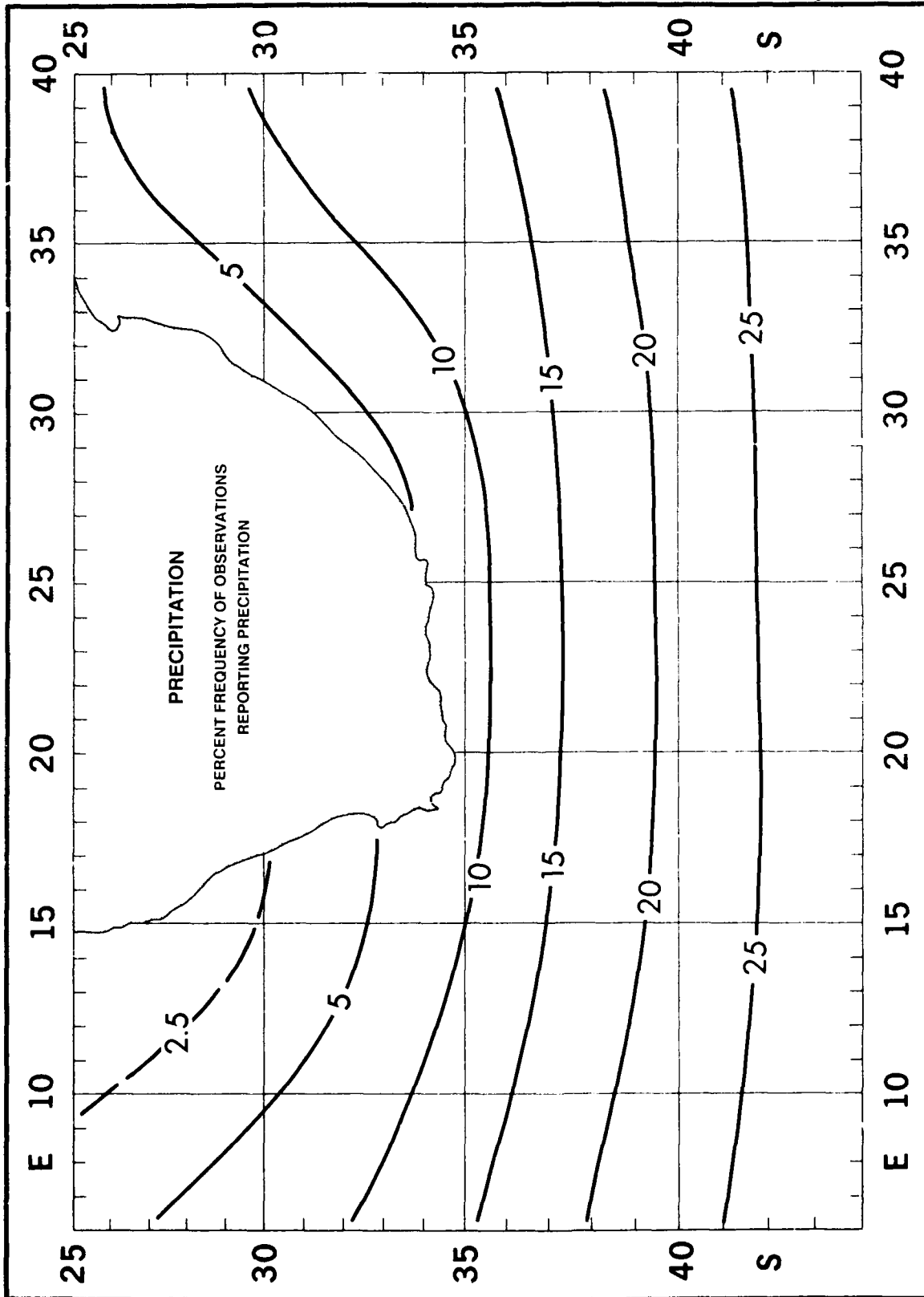
June

Clouds



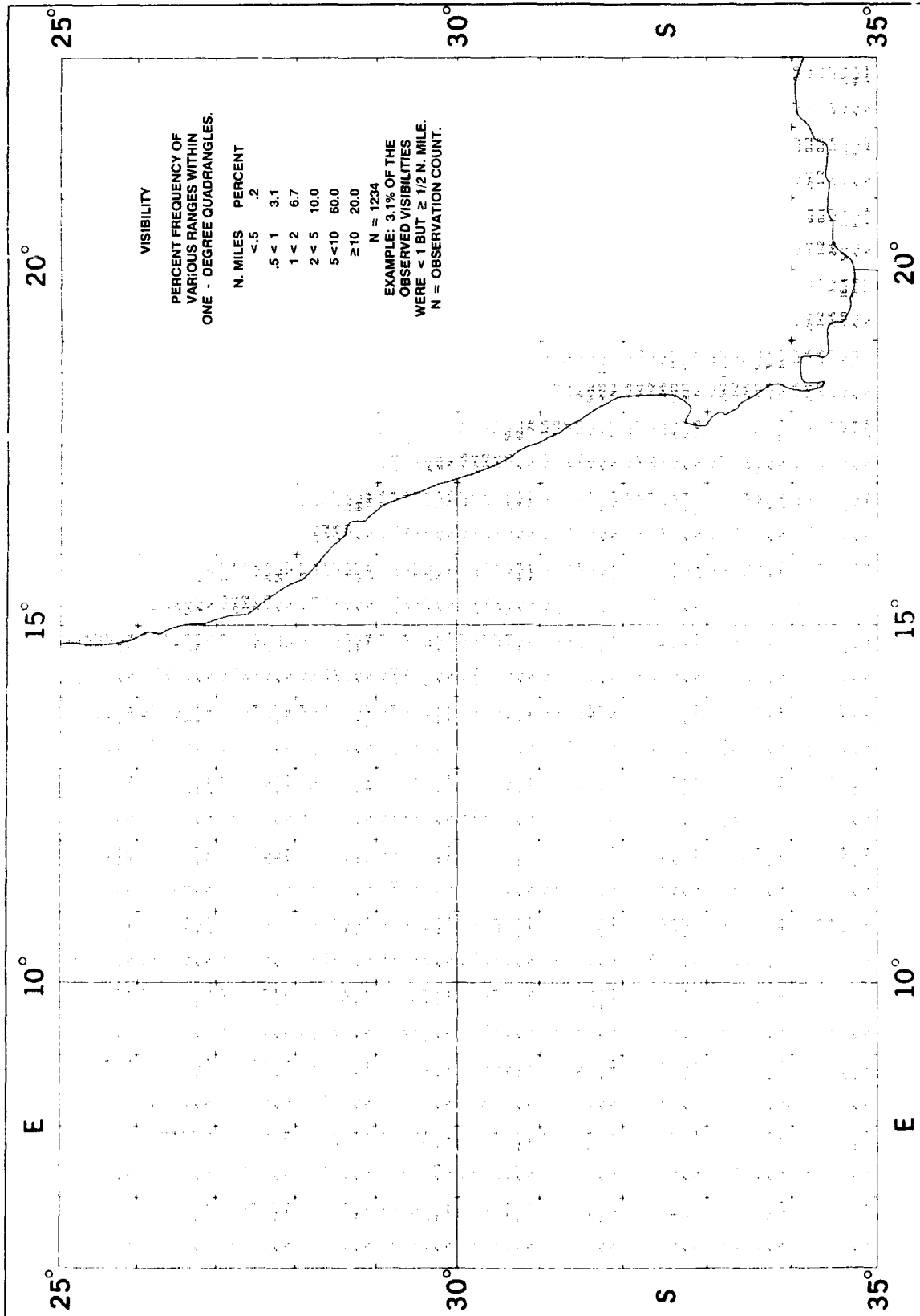
June

Precipitation



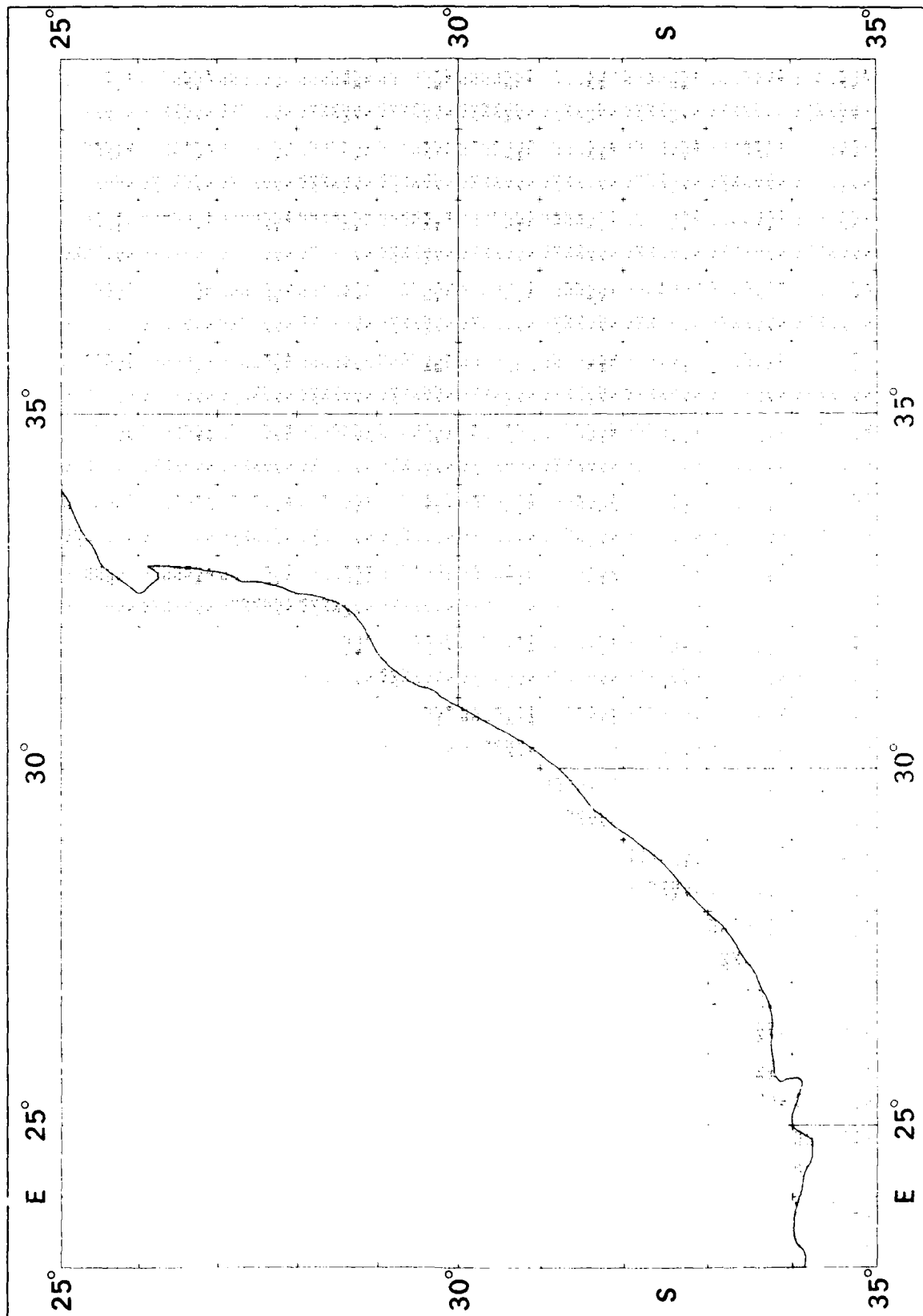
June

Visibility



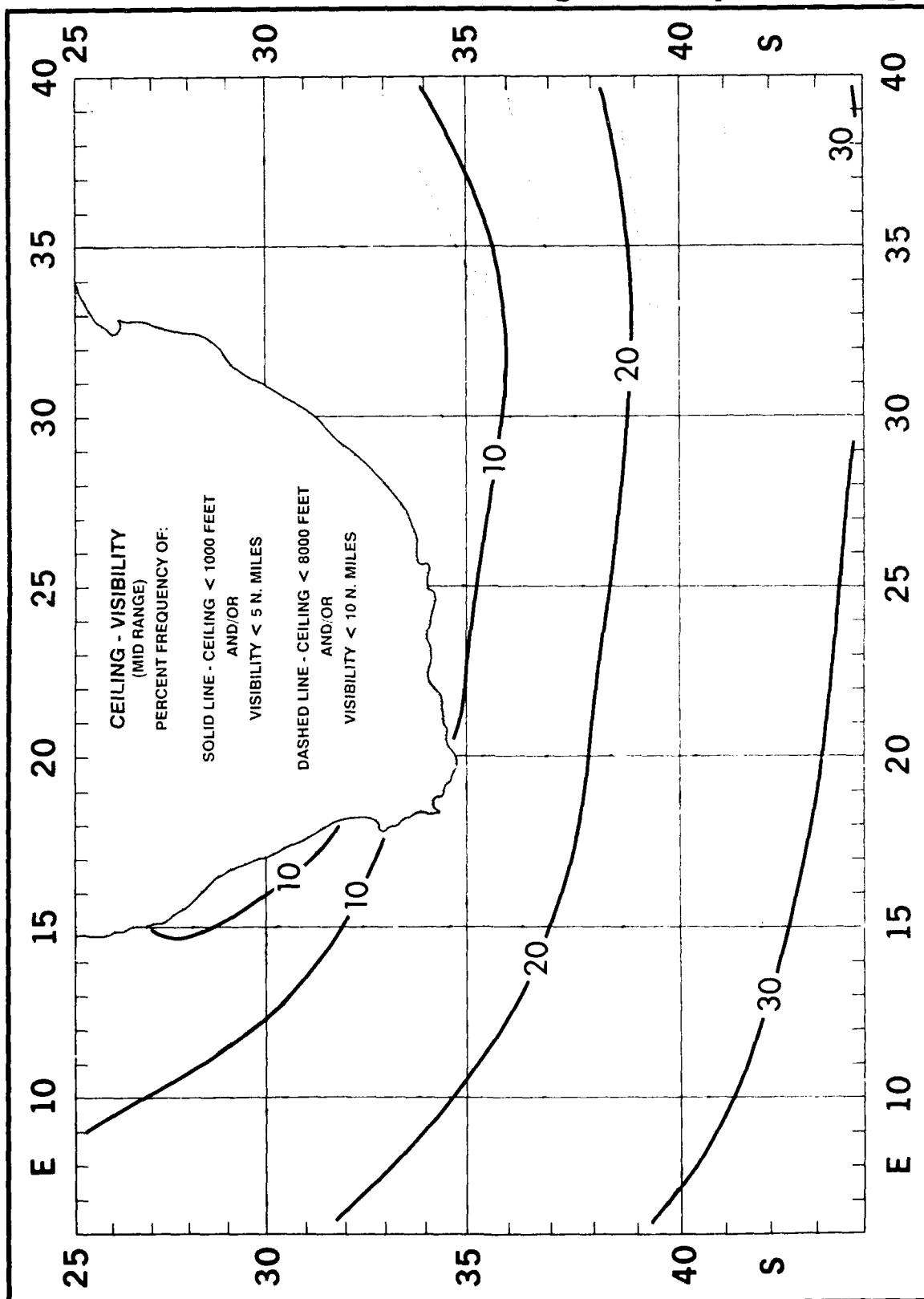
June

Visibility



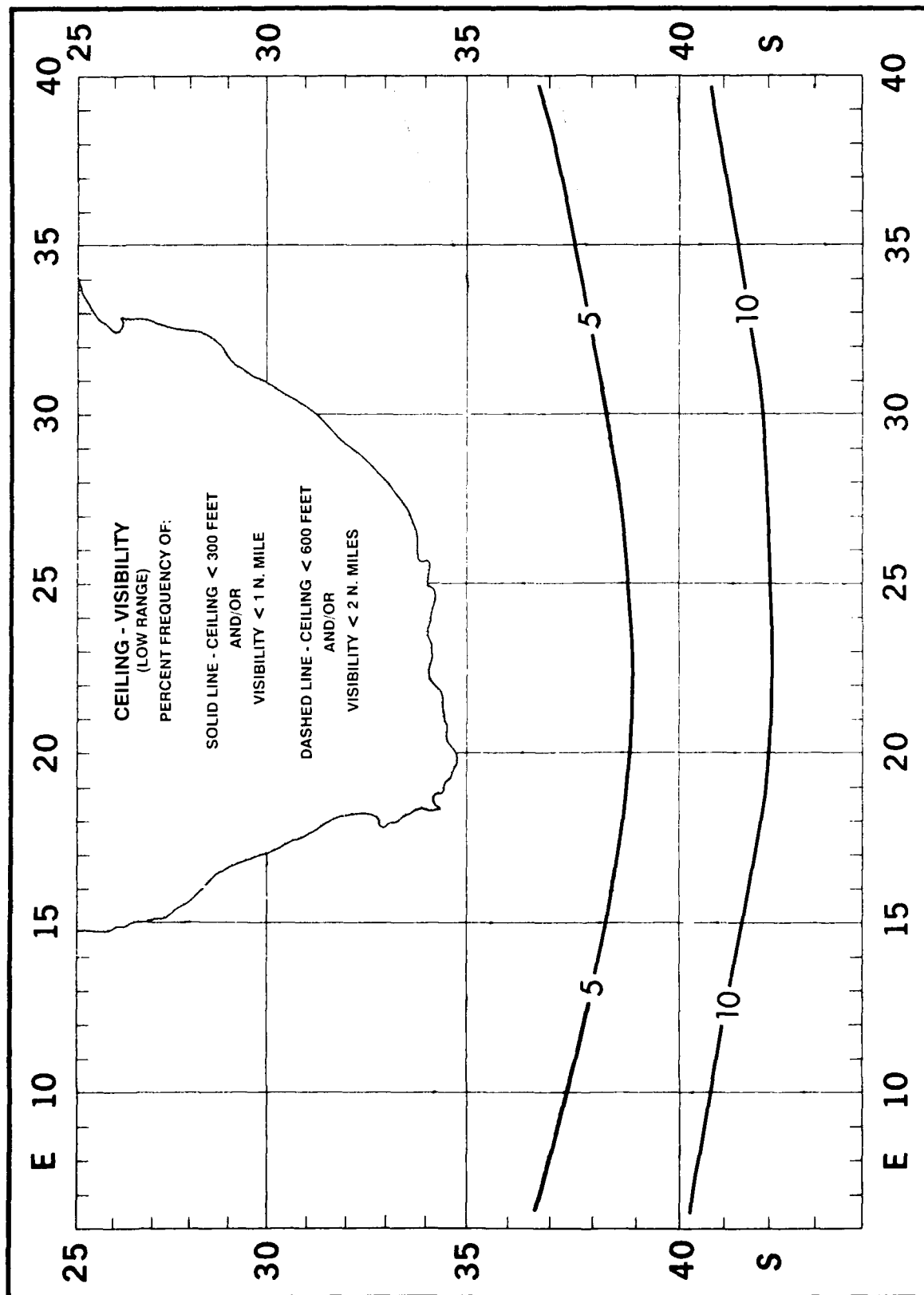
June

Ceiling - Visibility (Mid Range)



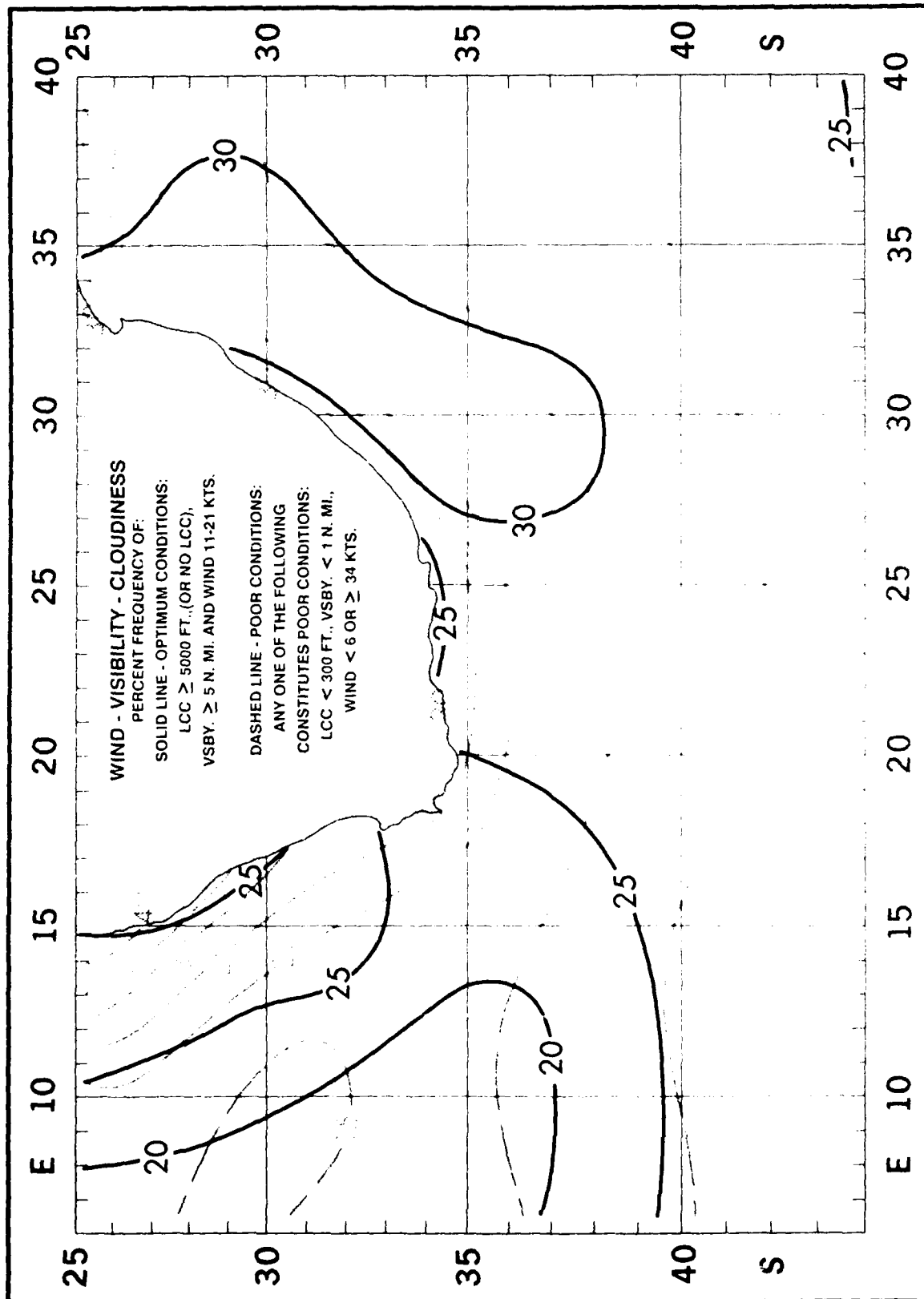
June

Ceiling - Visibility (Low Range)



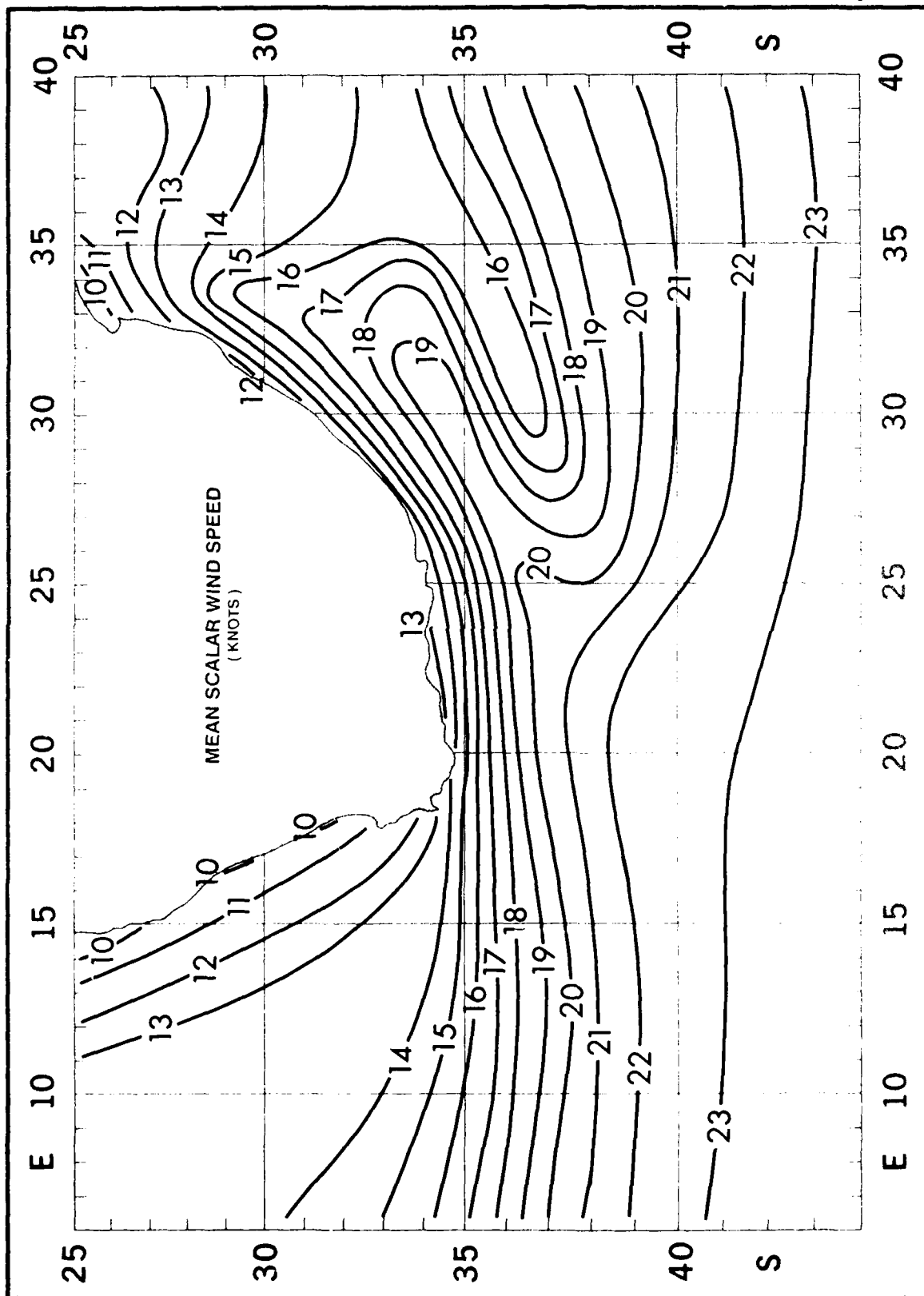
June

Wind - Visibility - Cloudiness



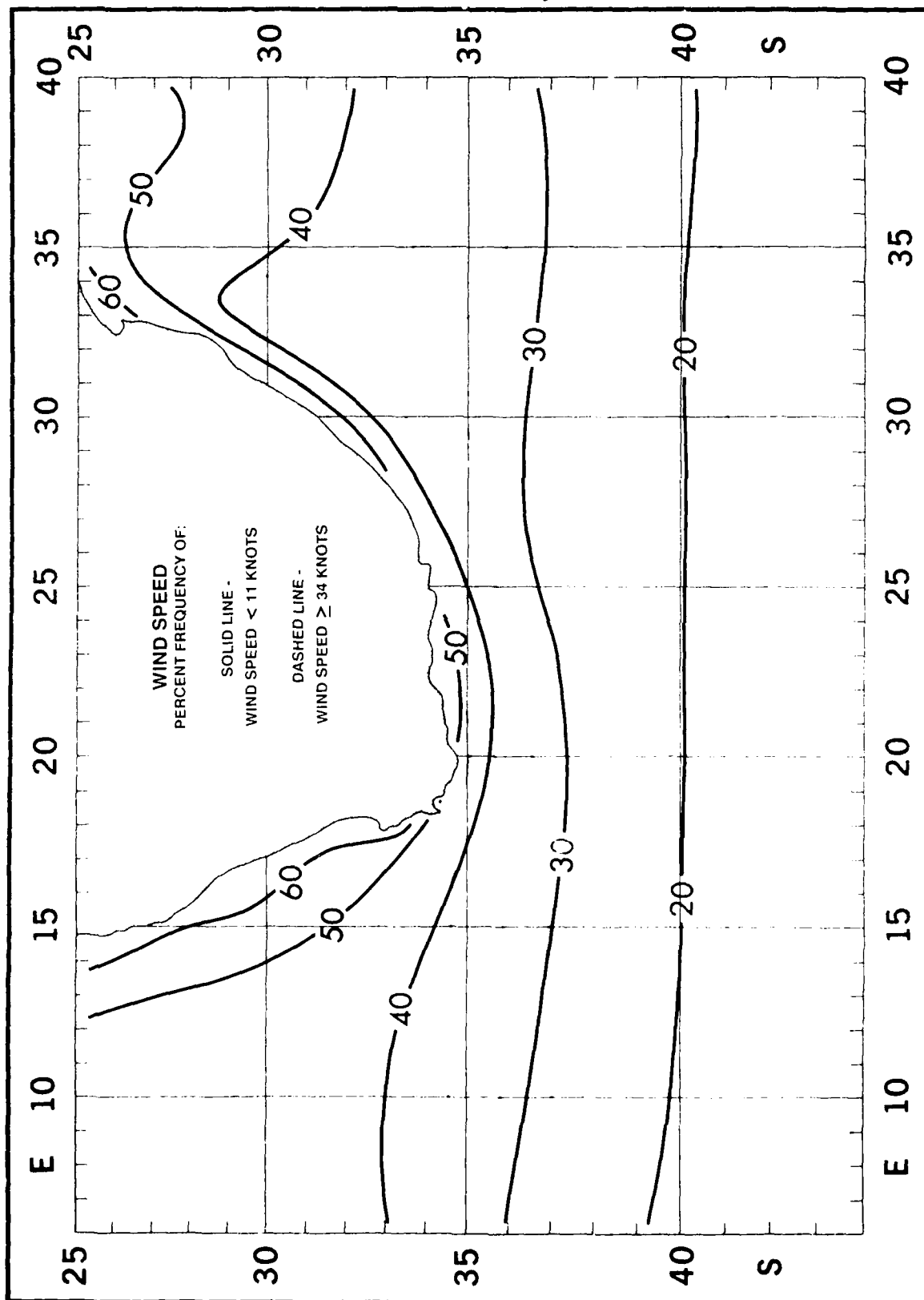
June

Mean Scalar Wind Speed



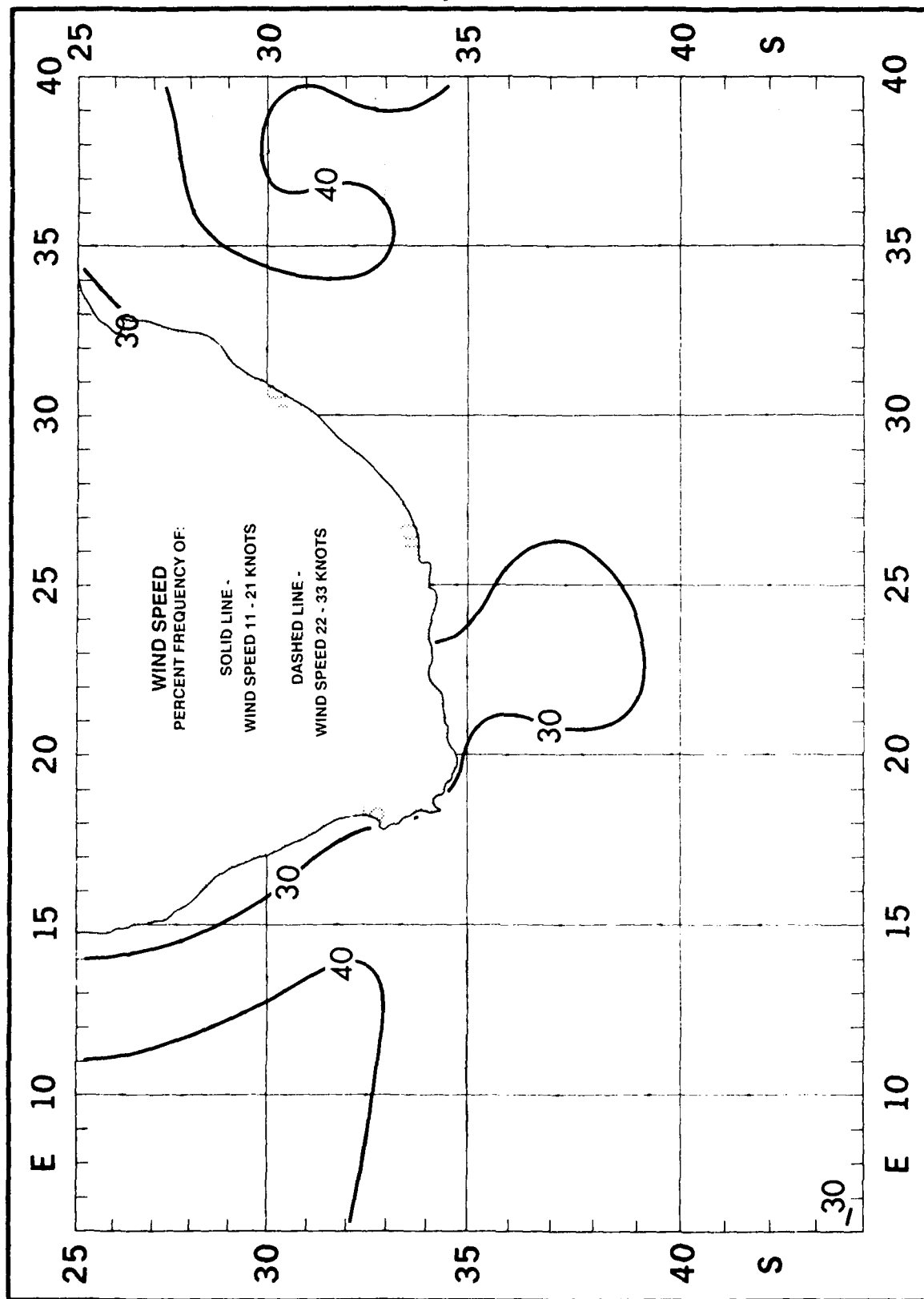
June

Wind Speed < 11 and ≥ 34 Knots



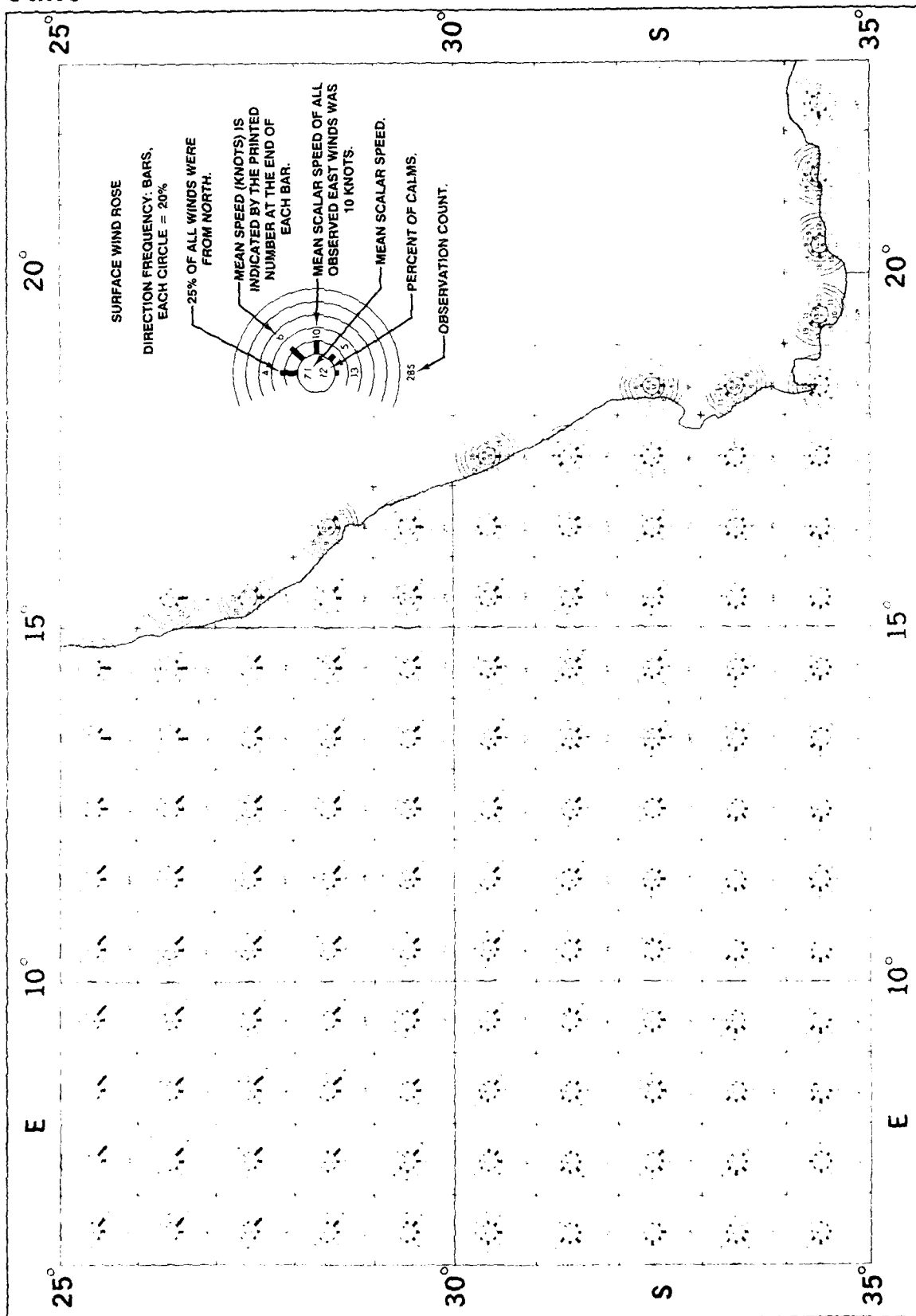
June

Wind Speed 11 - 21 and 22 - 33 Knots



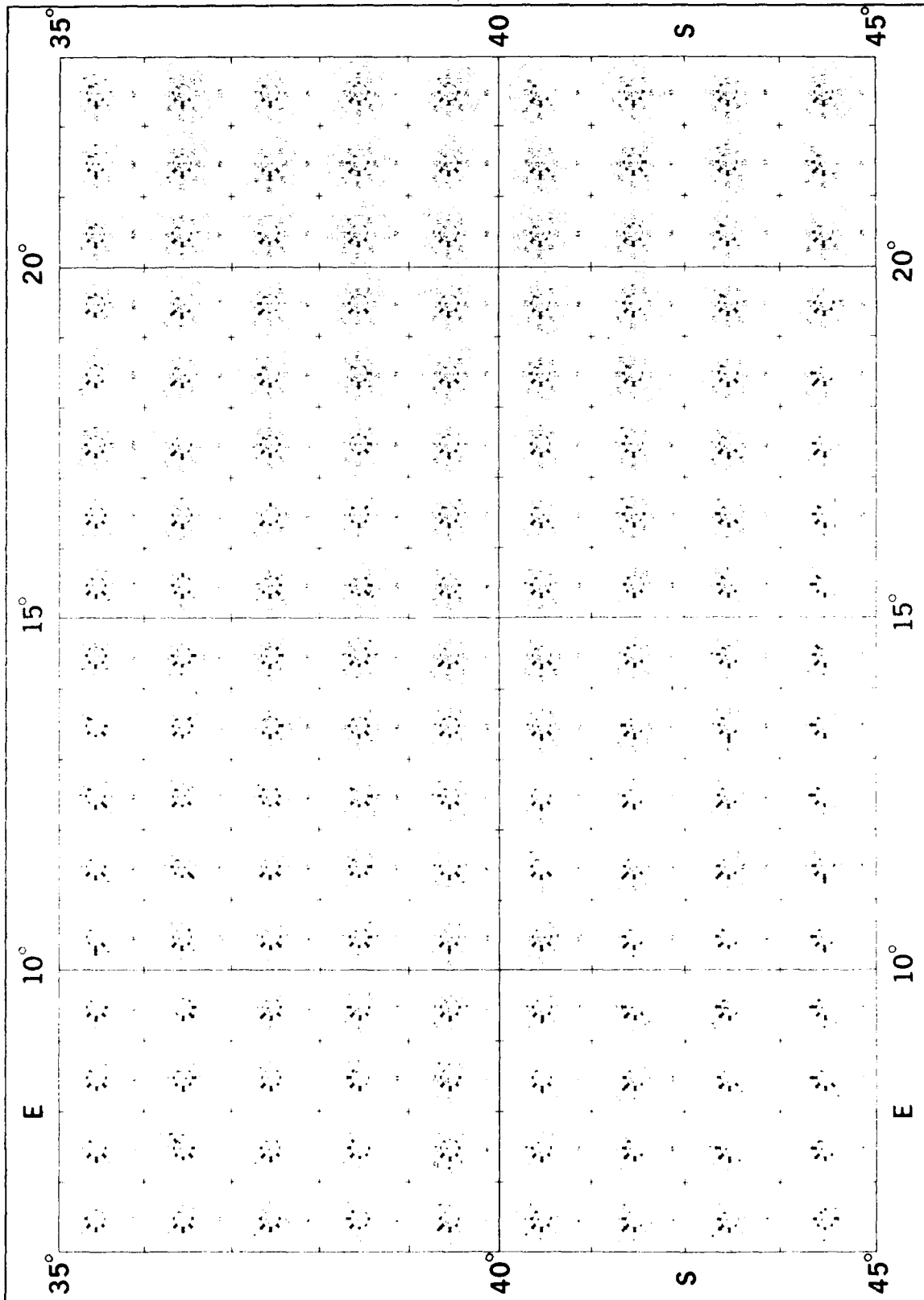
June

Surface Wind Roses



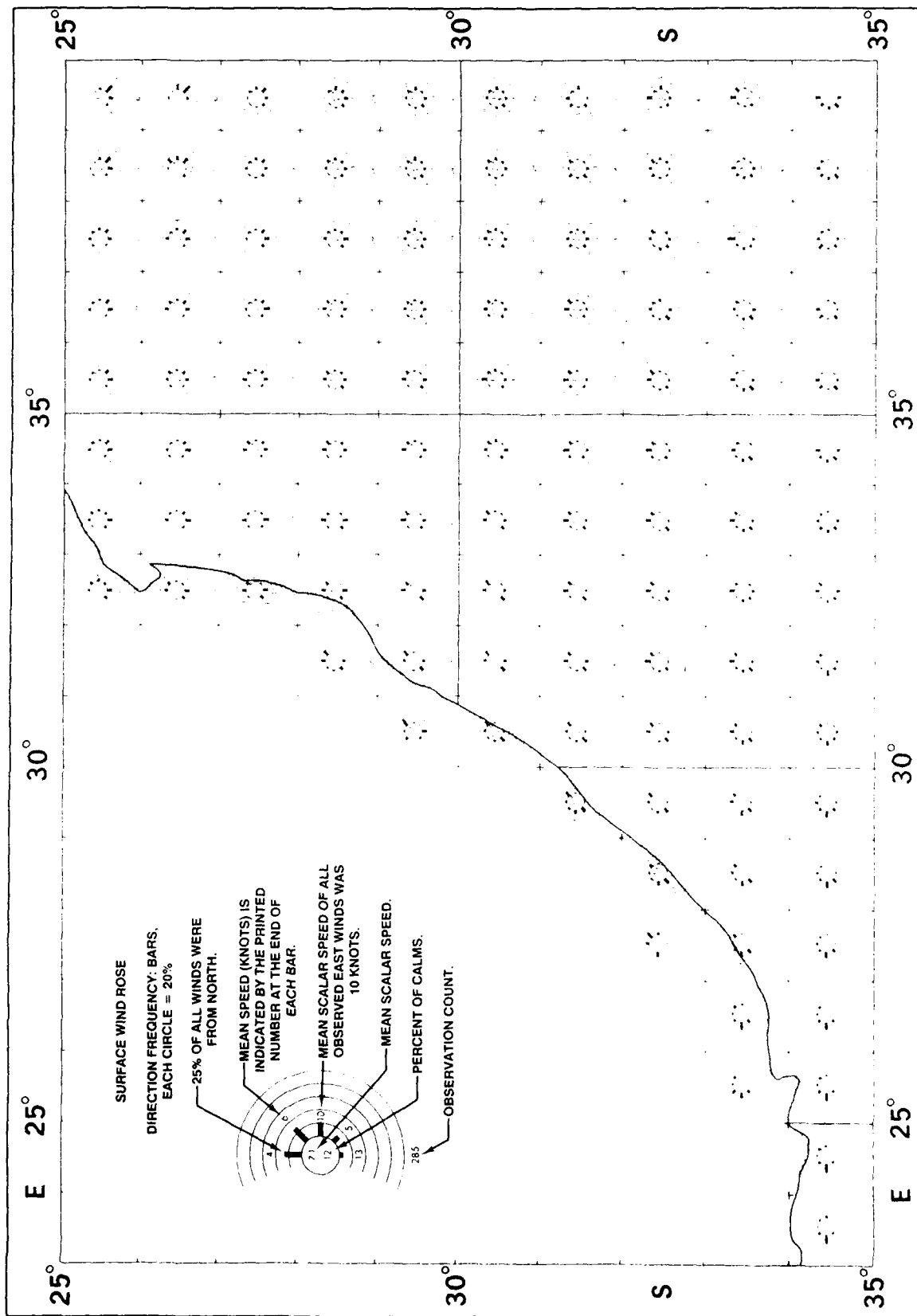
June

Surface Wind Roses



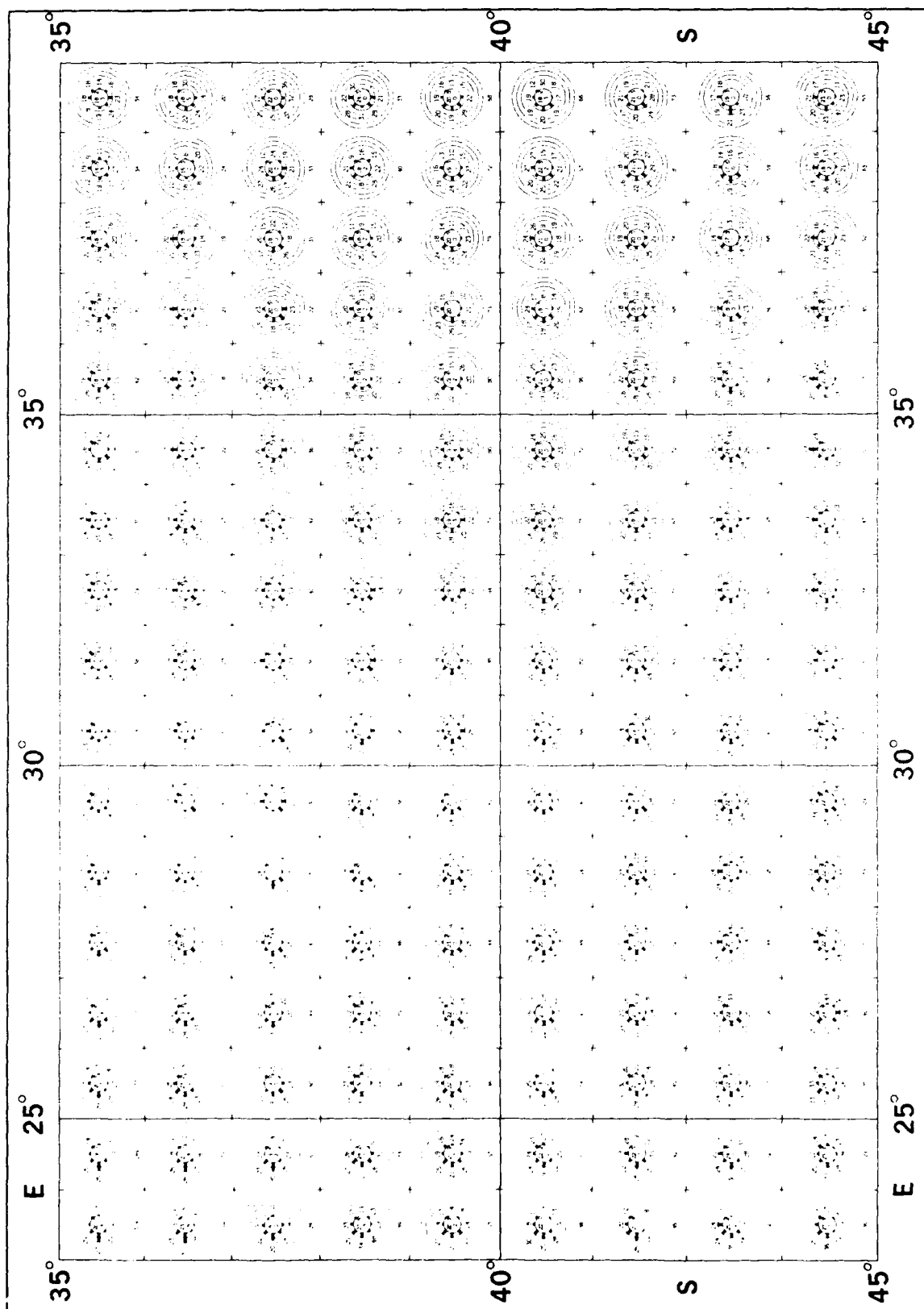
June

Surface Wind Roses



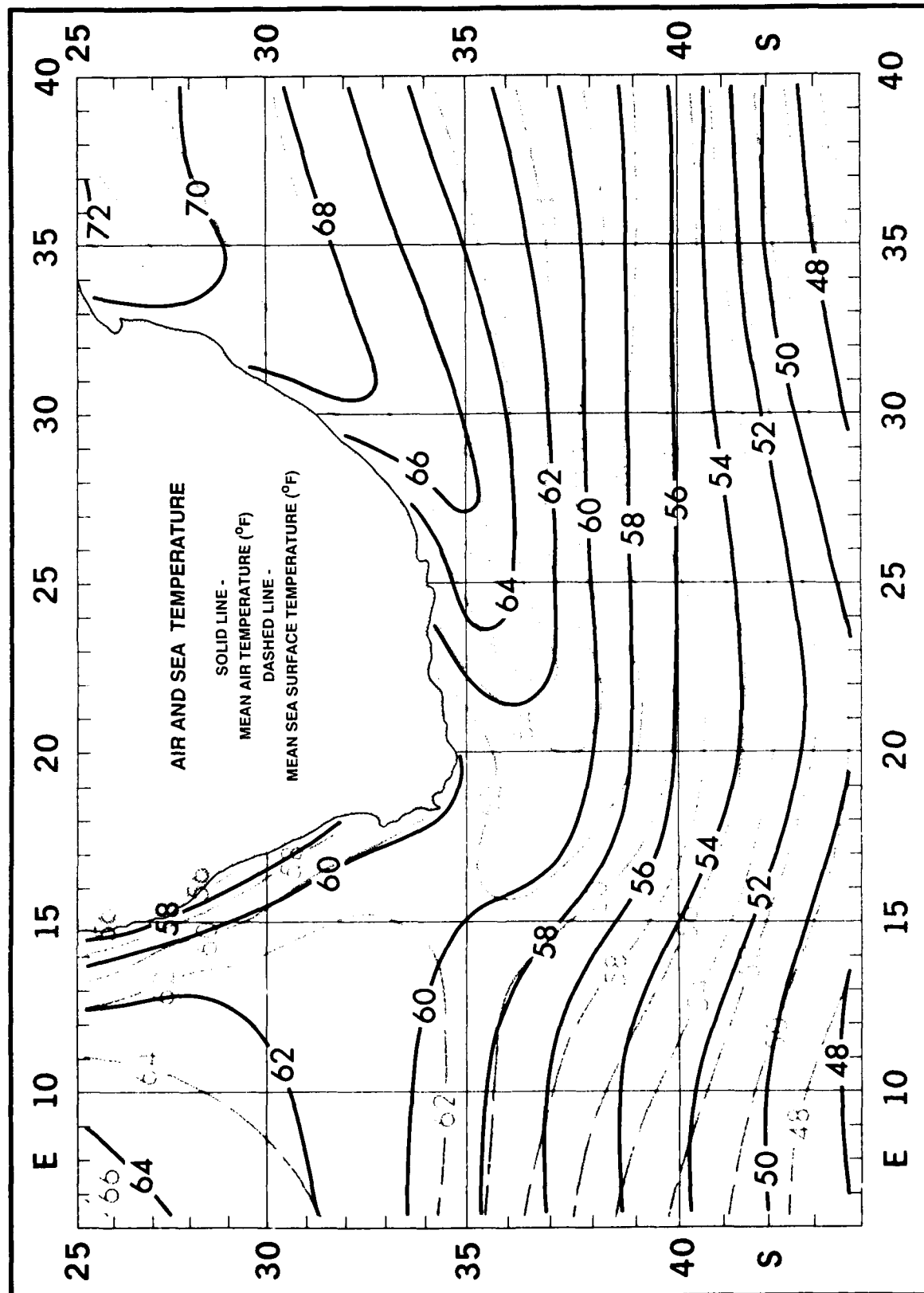
June

Surface Wind Roses



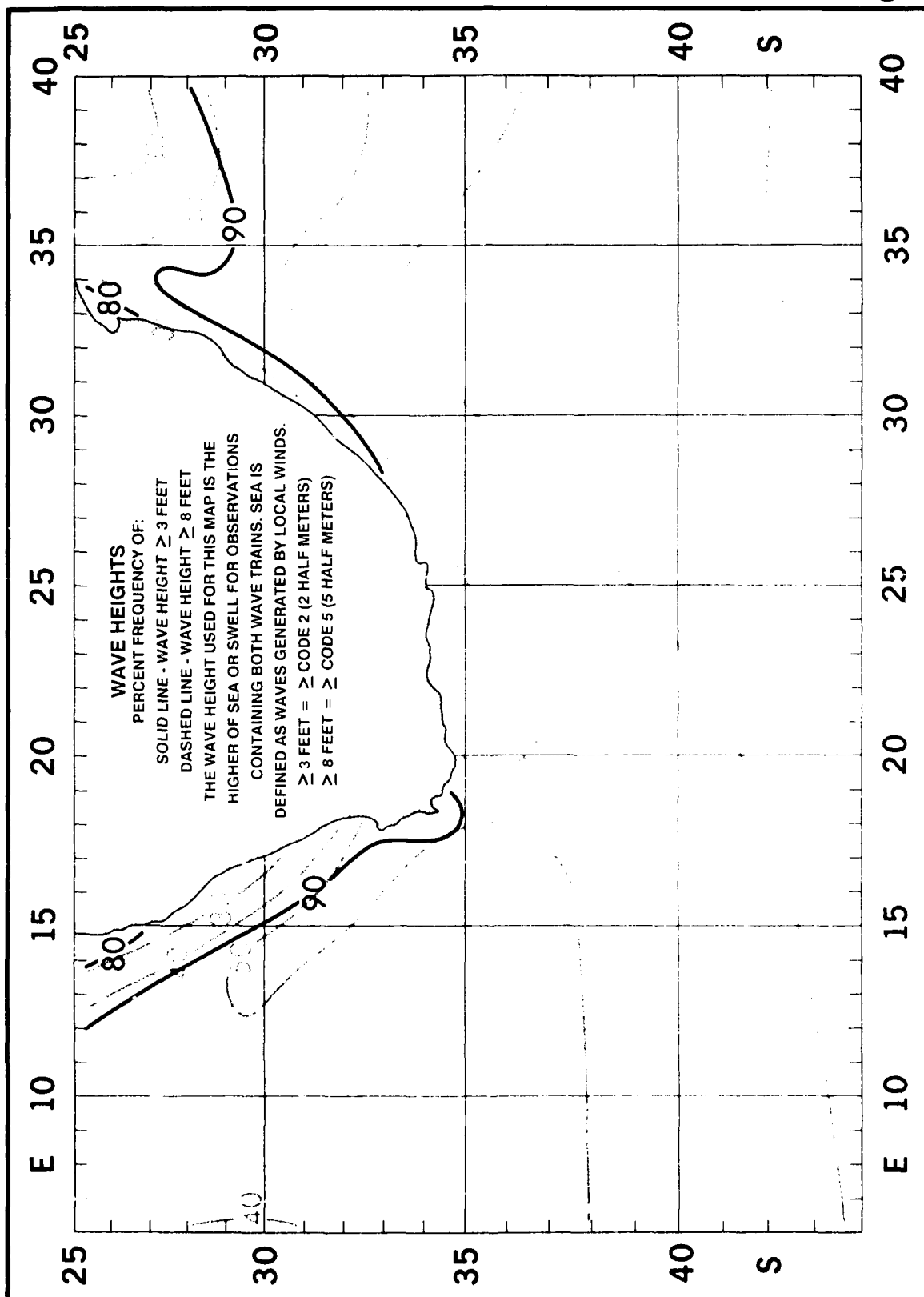
June

Air and Sea Temperature



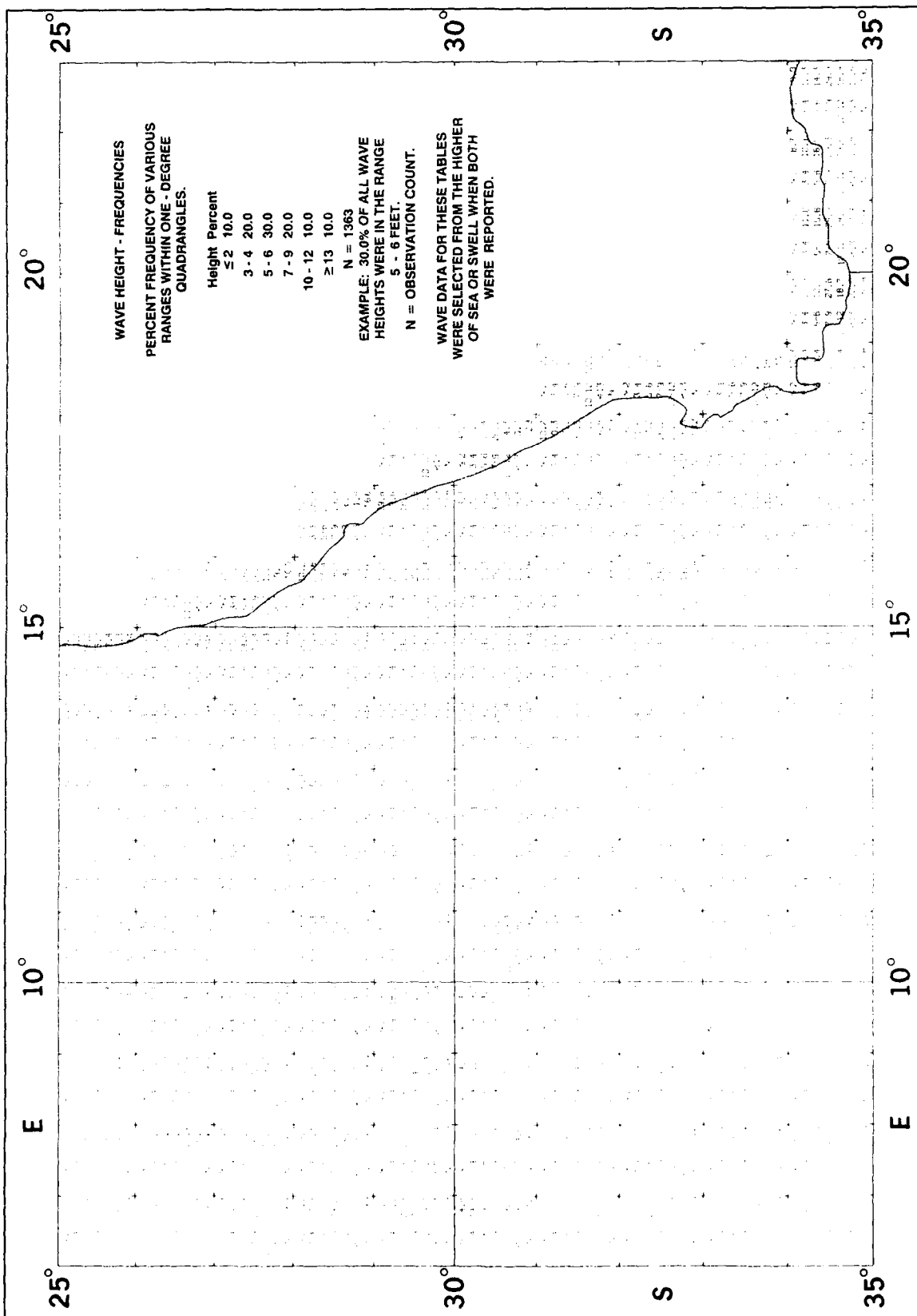
June

Wave Height



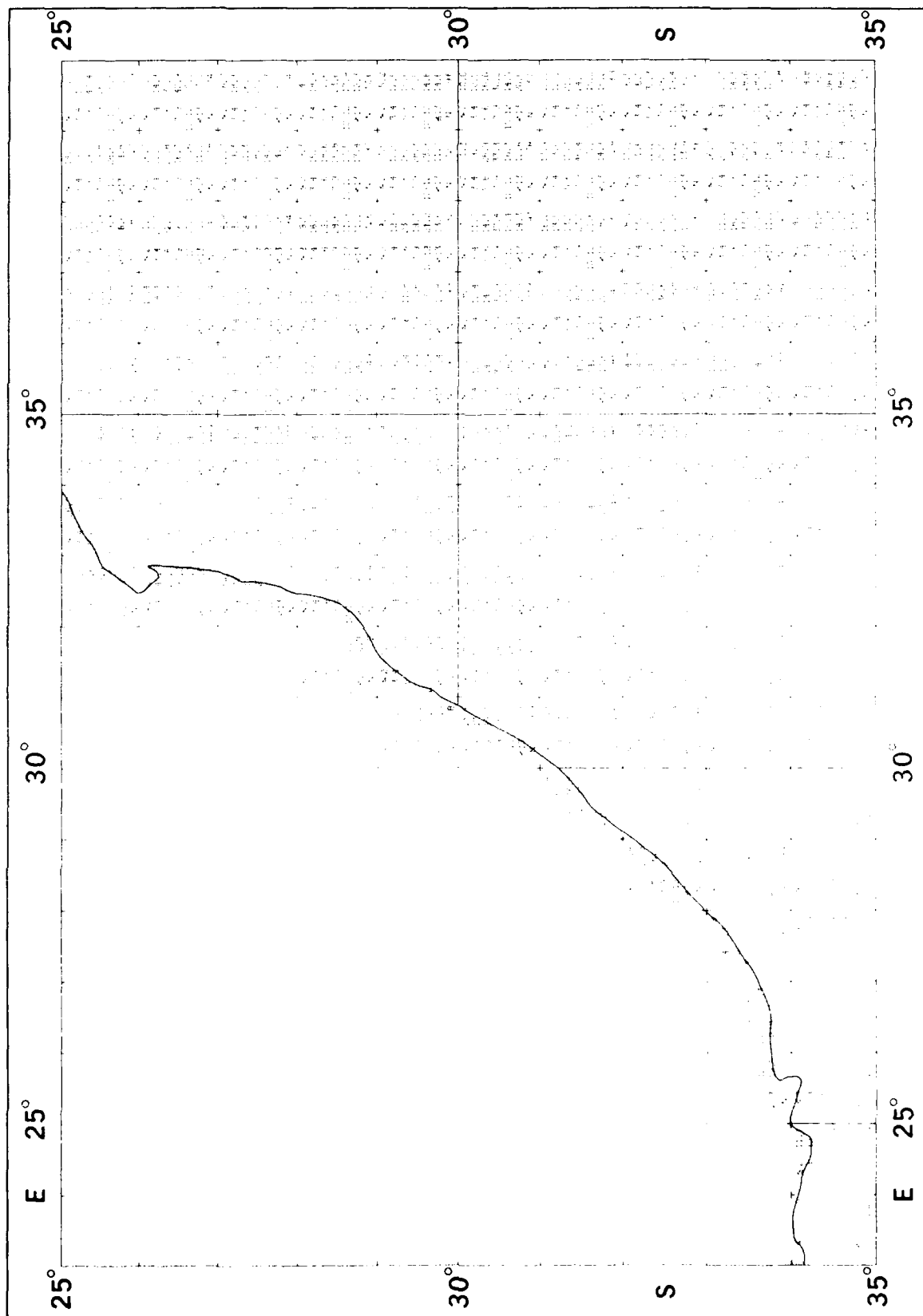
June

Wave Height



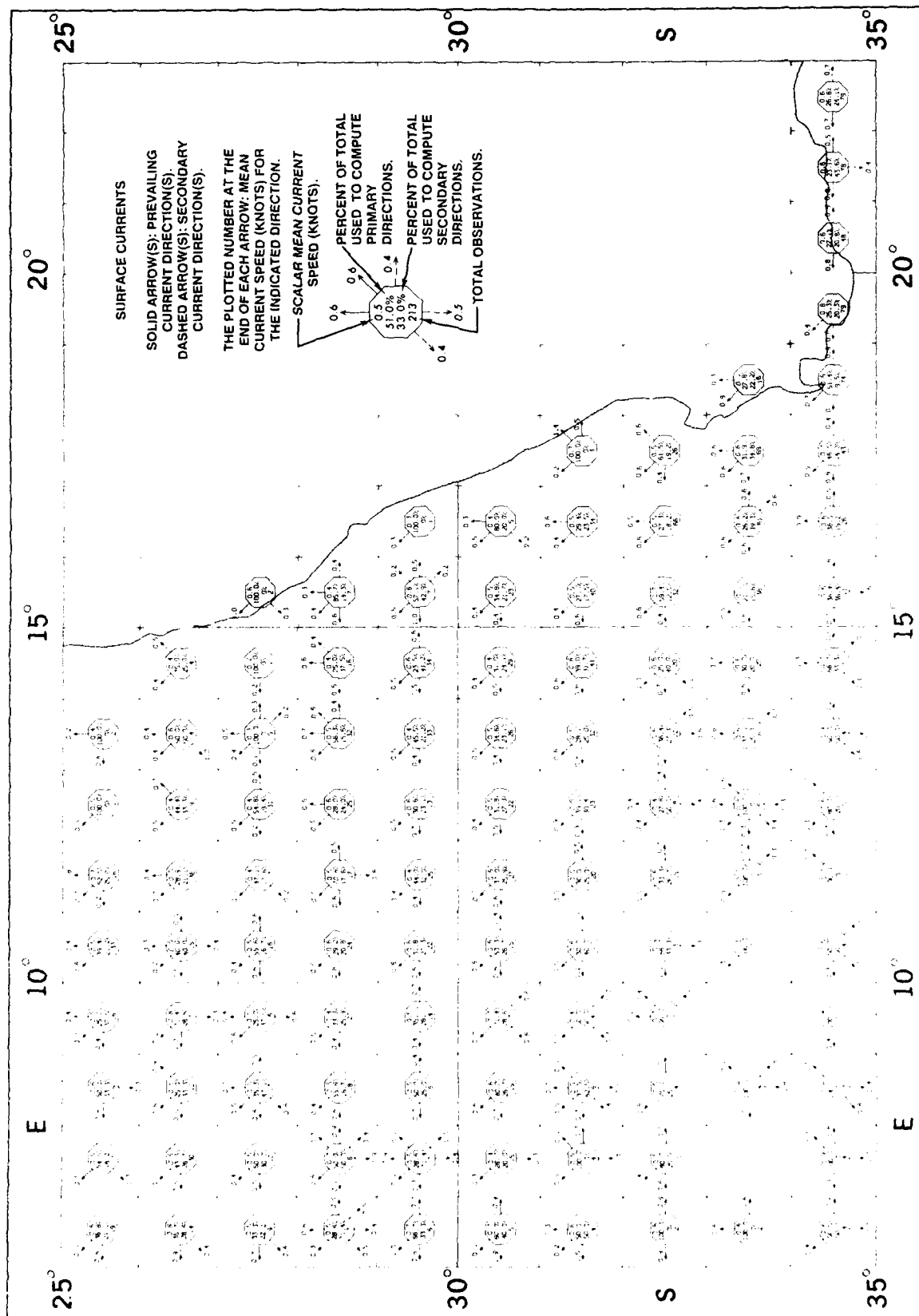
June

Wave Height



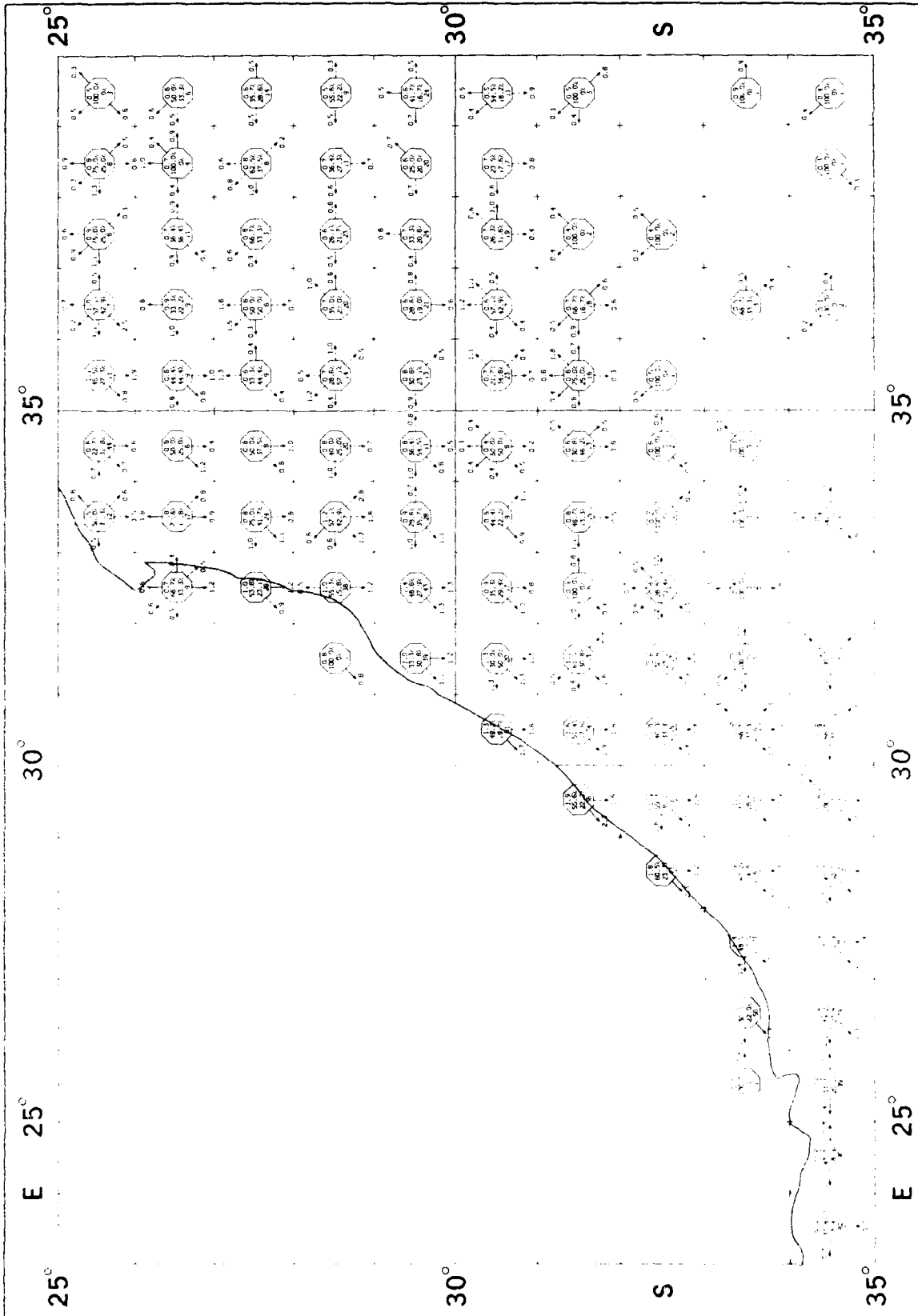
June

Surface Currents



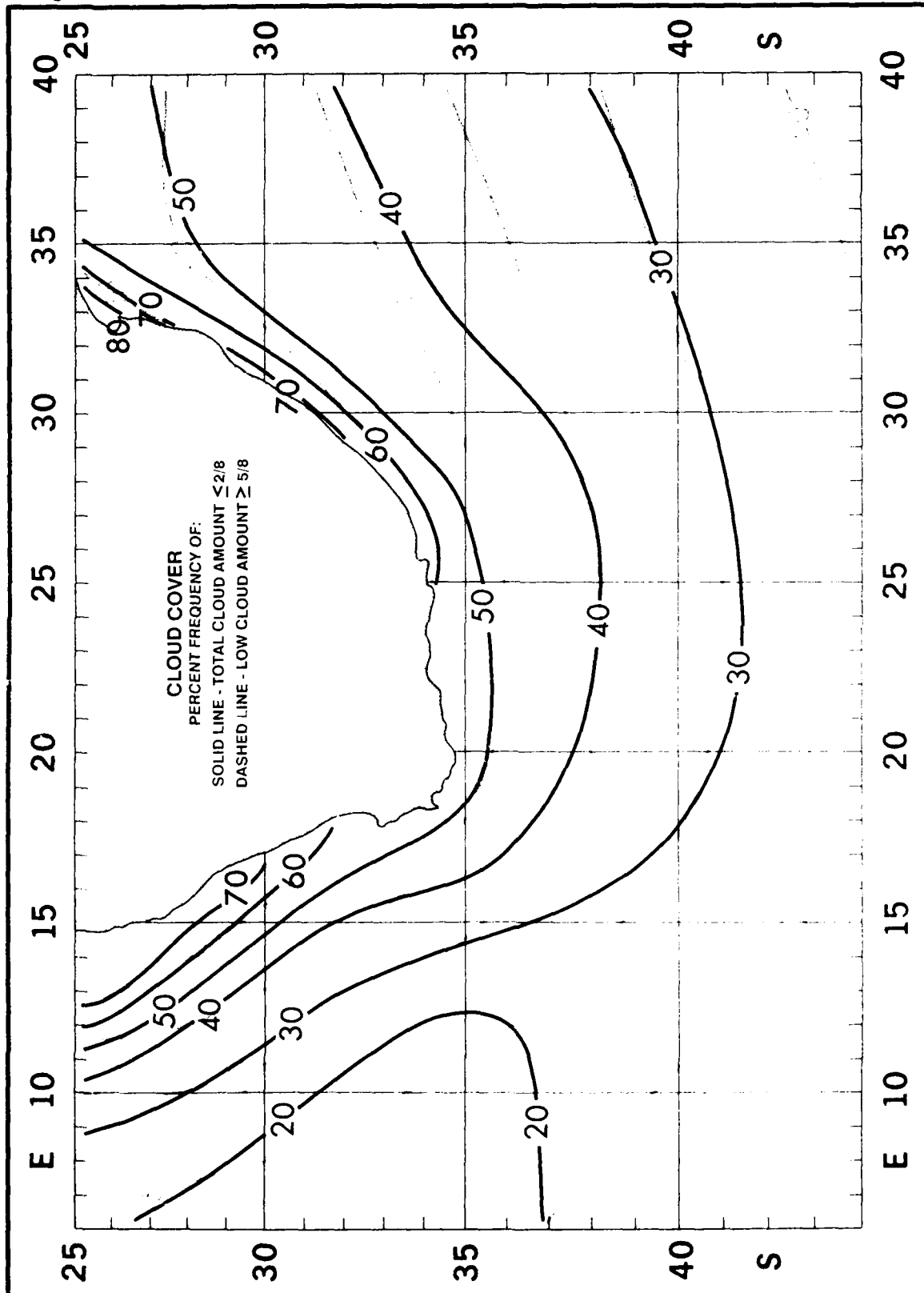
June

Surface Currents



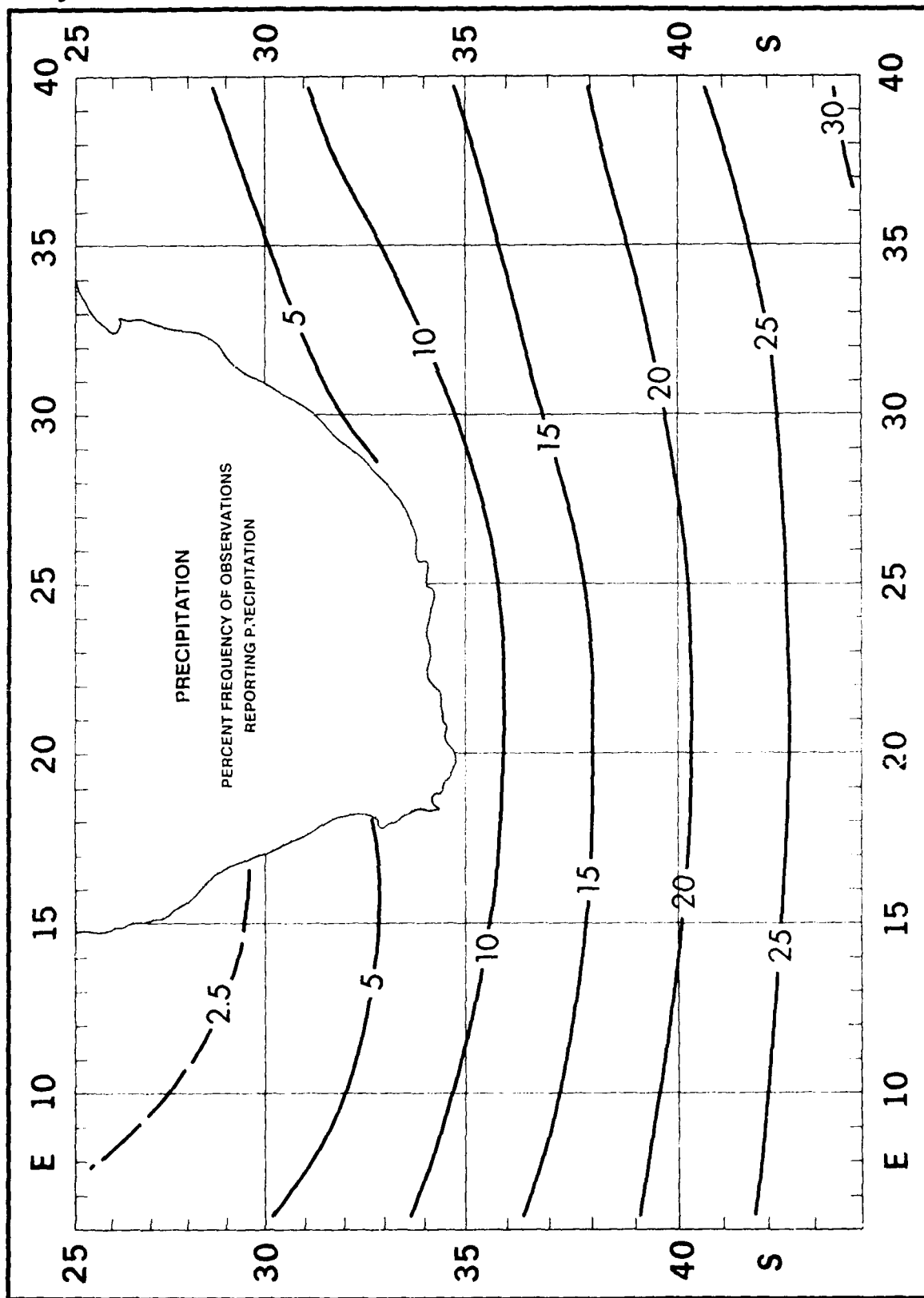
July

Clouds



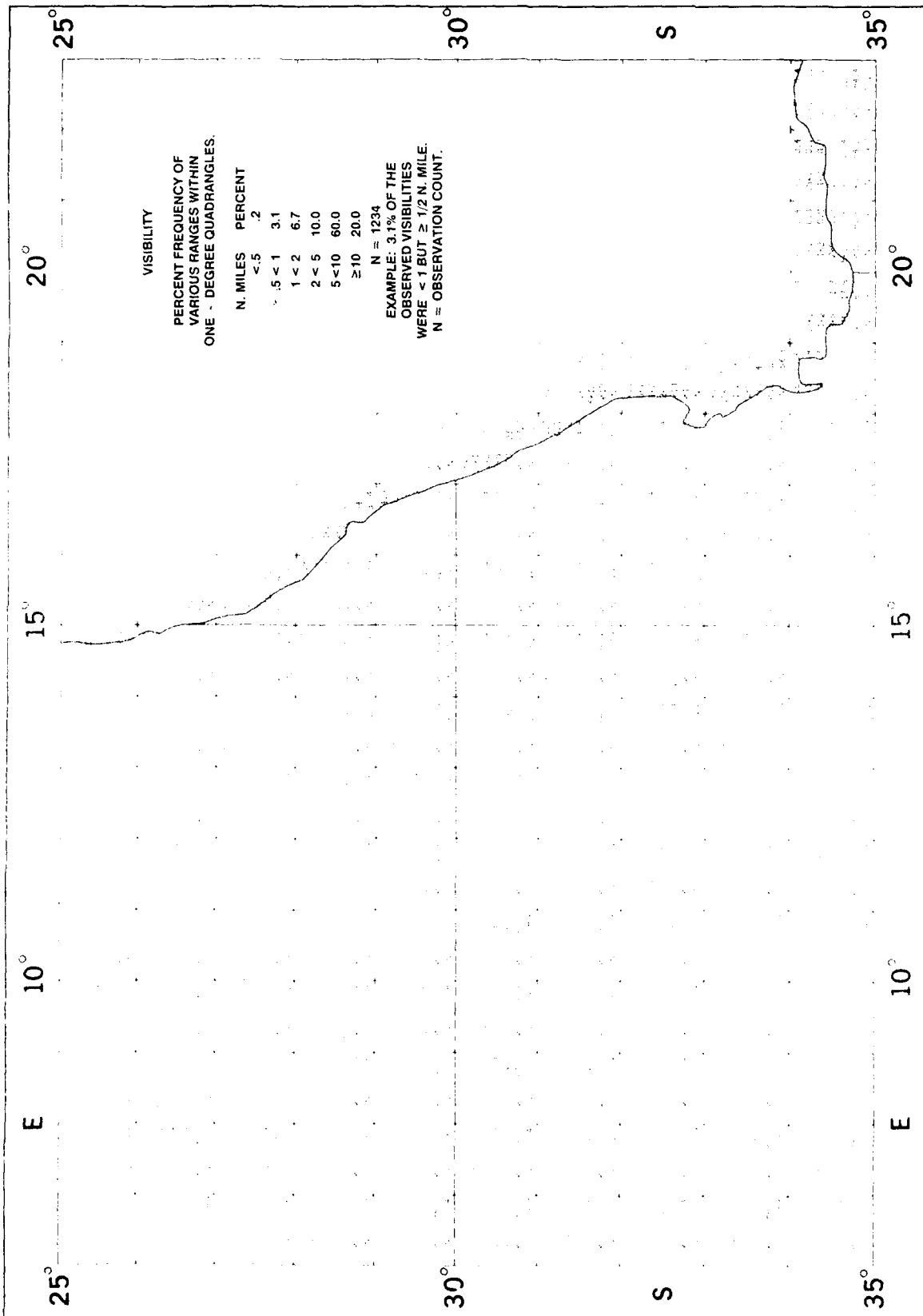
July

Precipitation



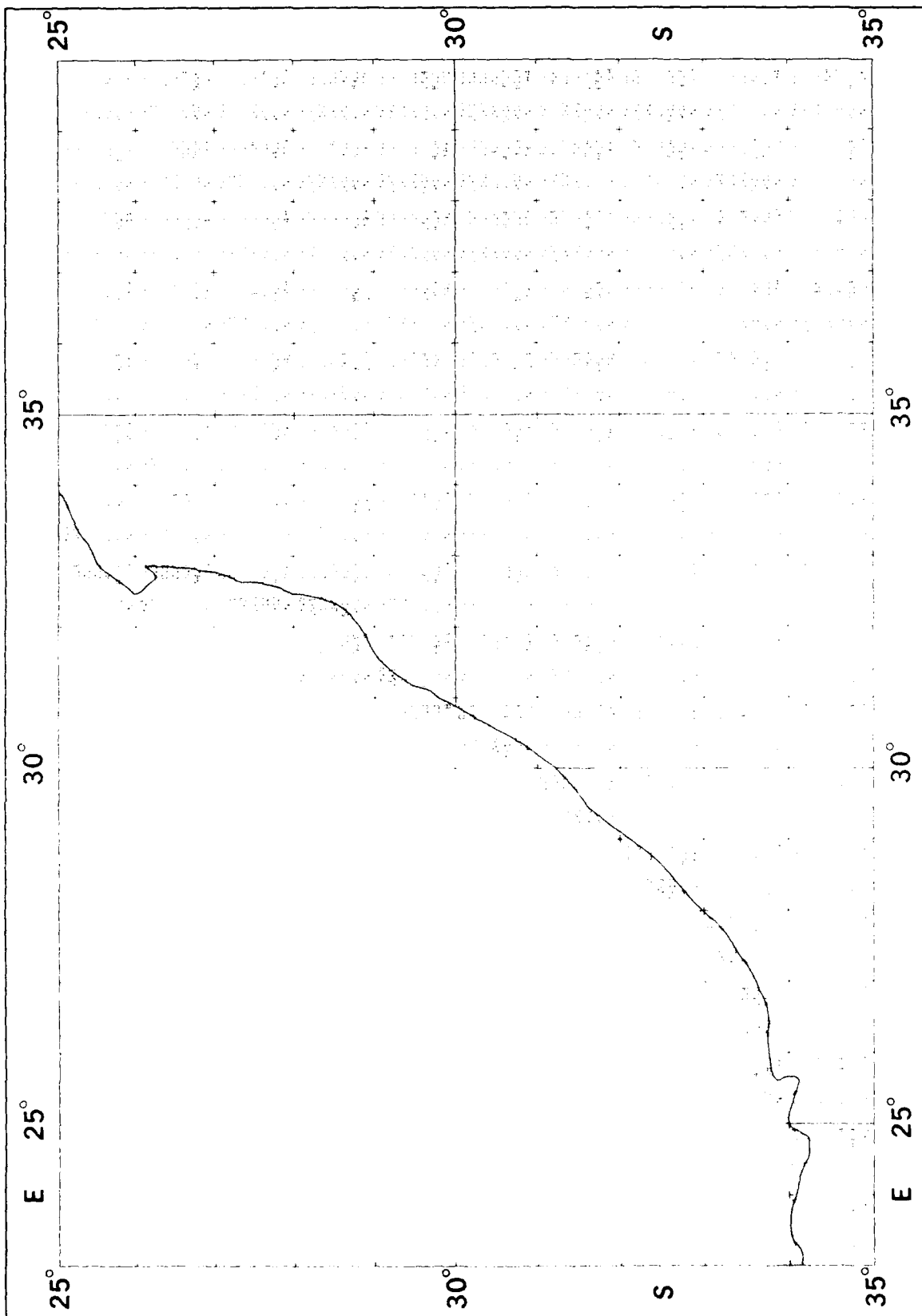
July

Visibility



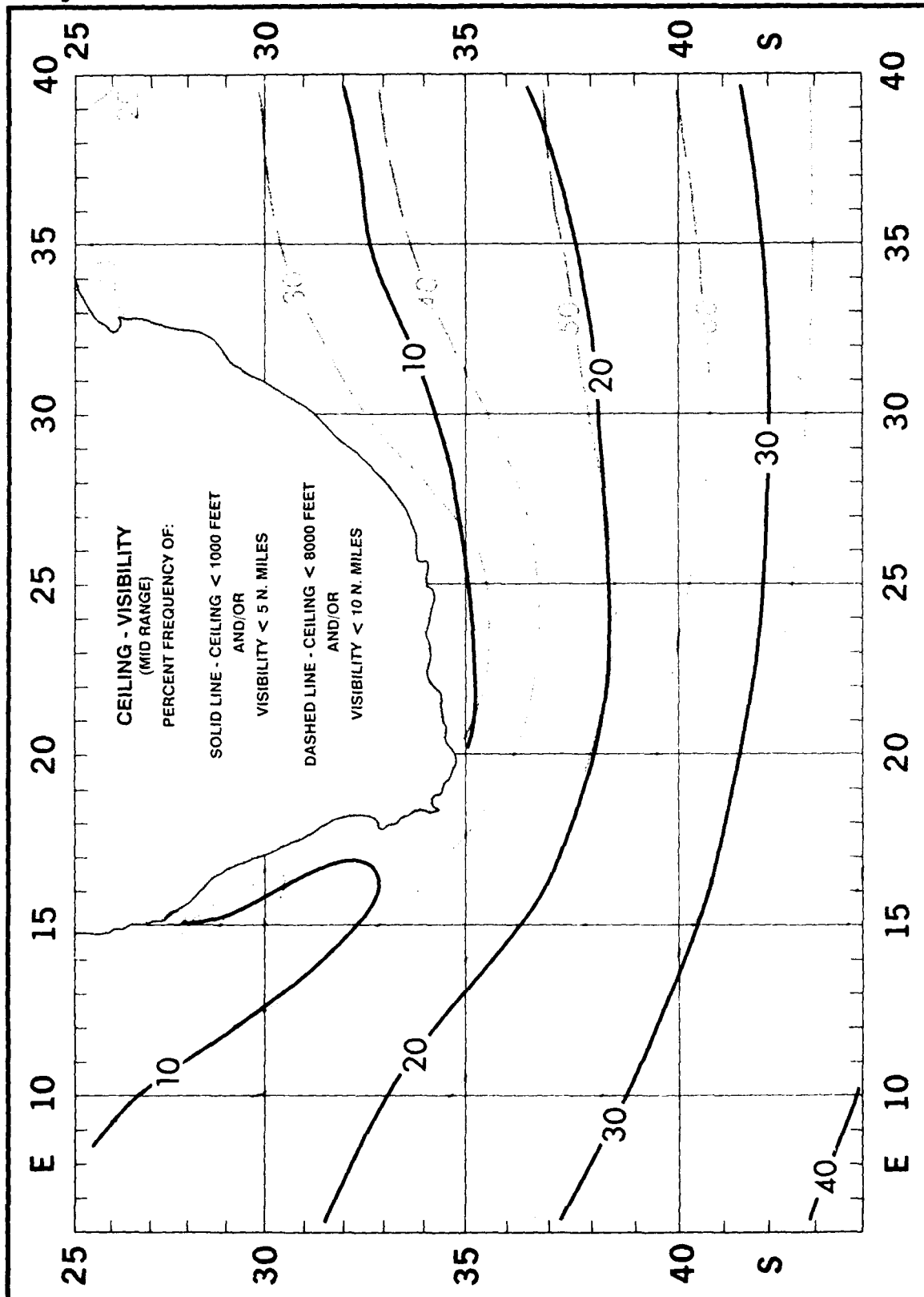
July

Visibility



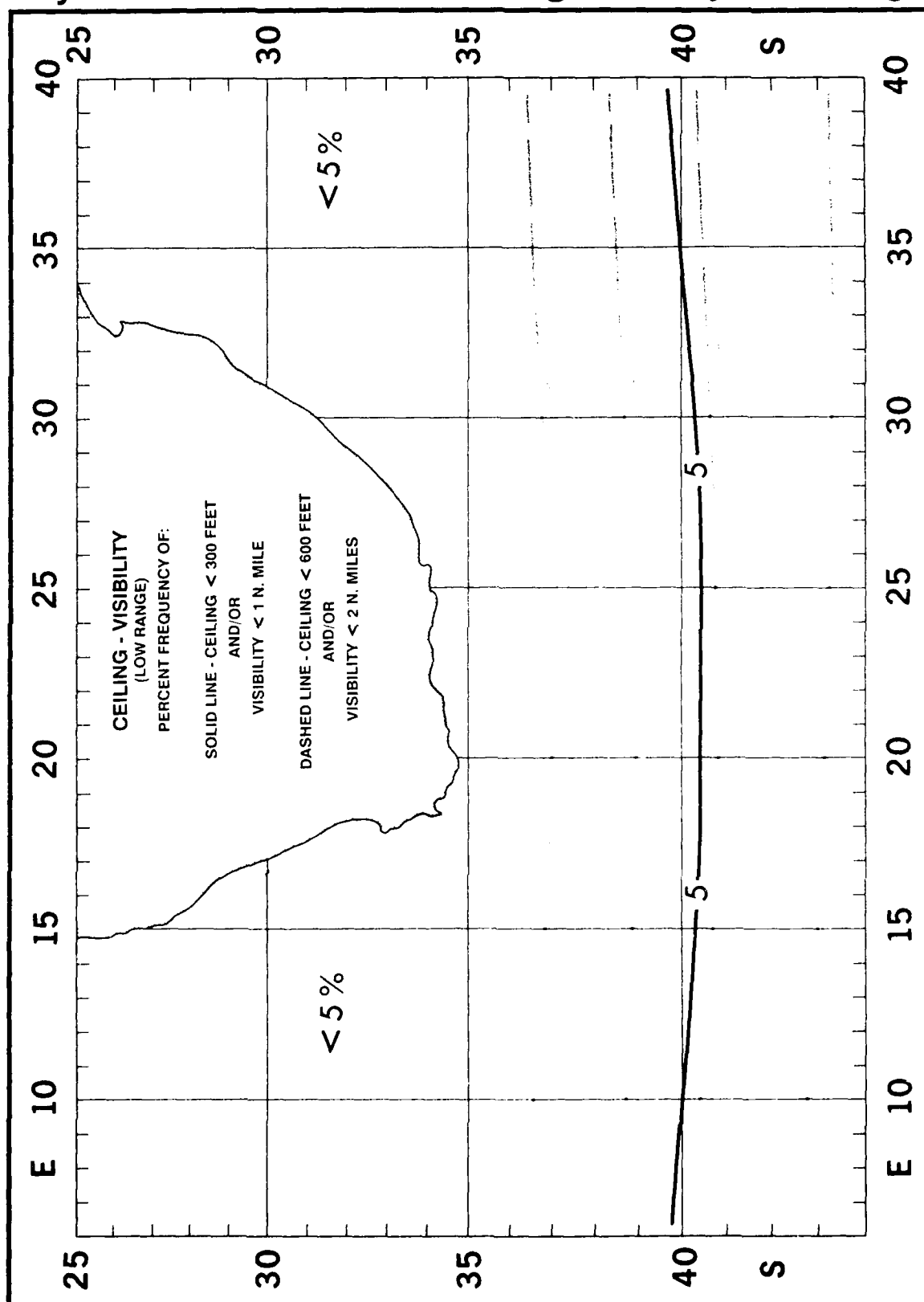
July

Ceiling - Visibility (Mid Range)



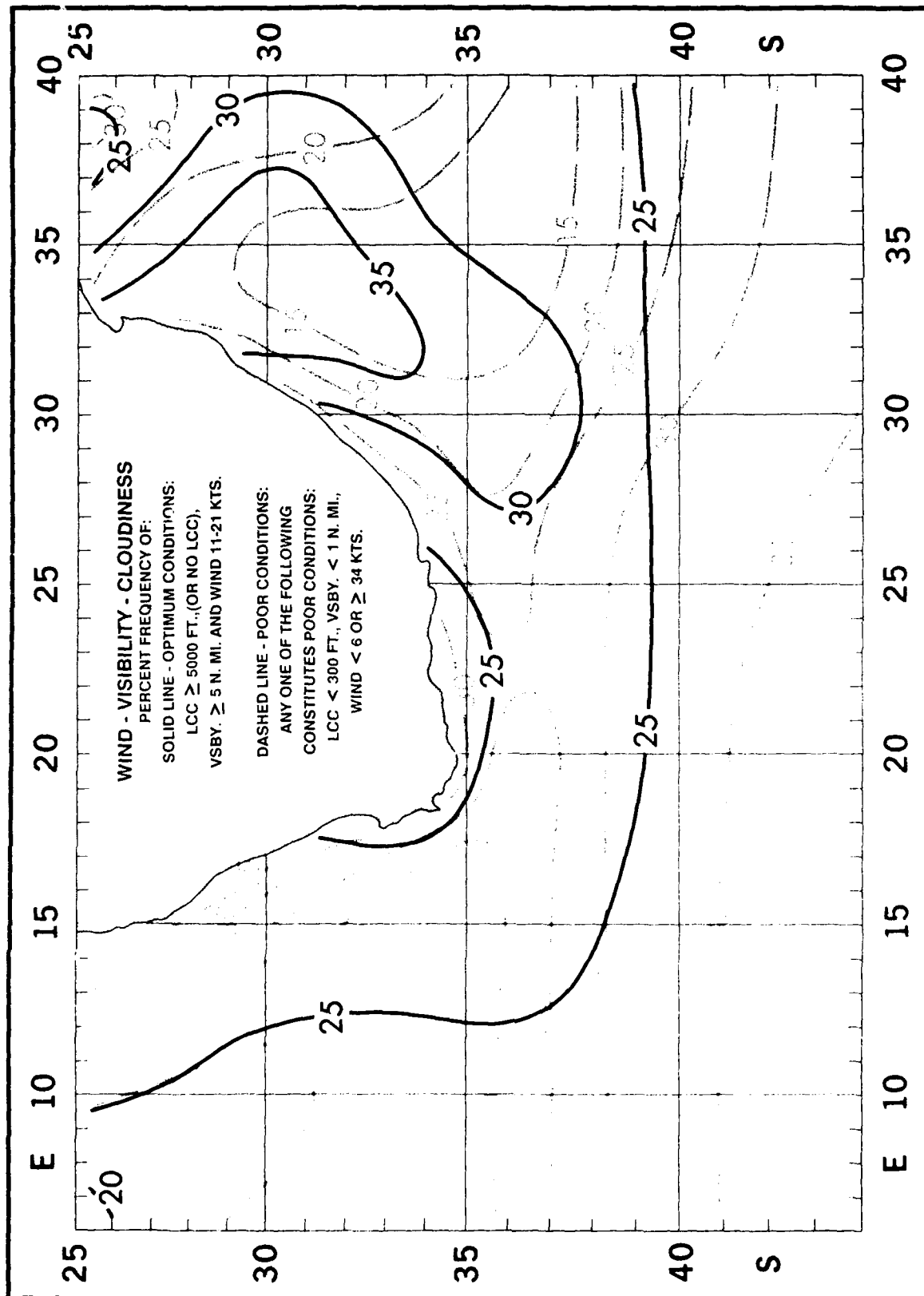
July

Ceiling - Visibility (Low Range)



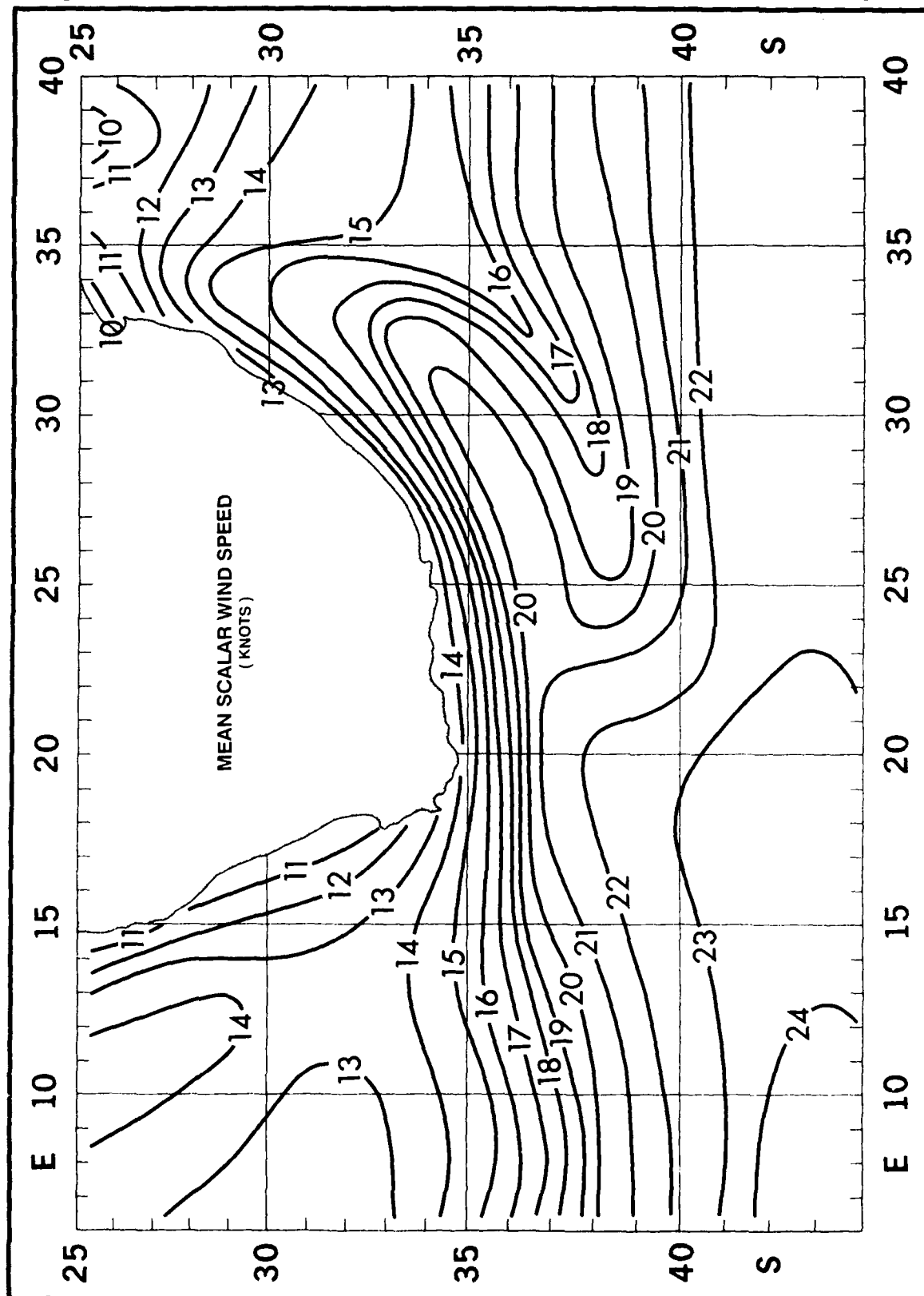
July

Wind - Visibility - Cloudiness



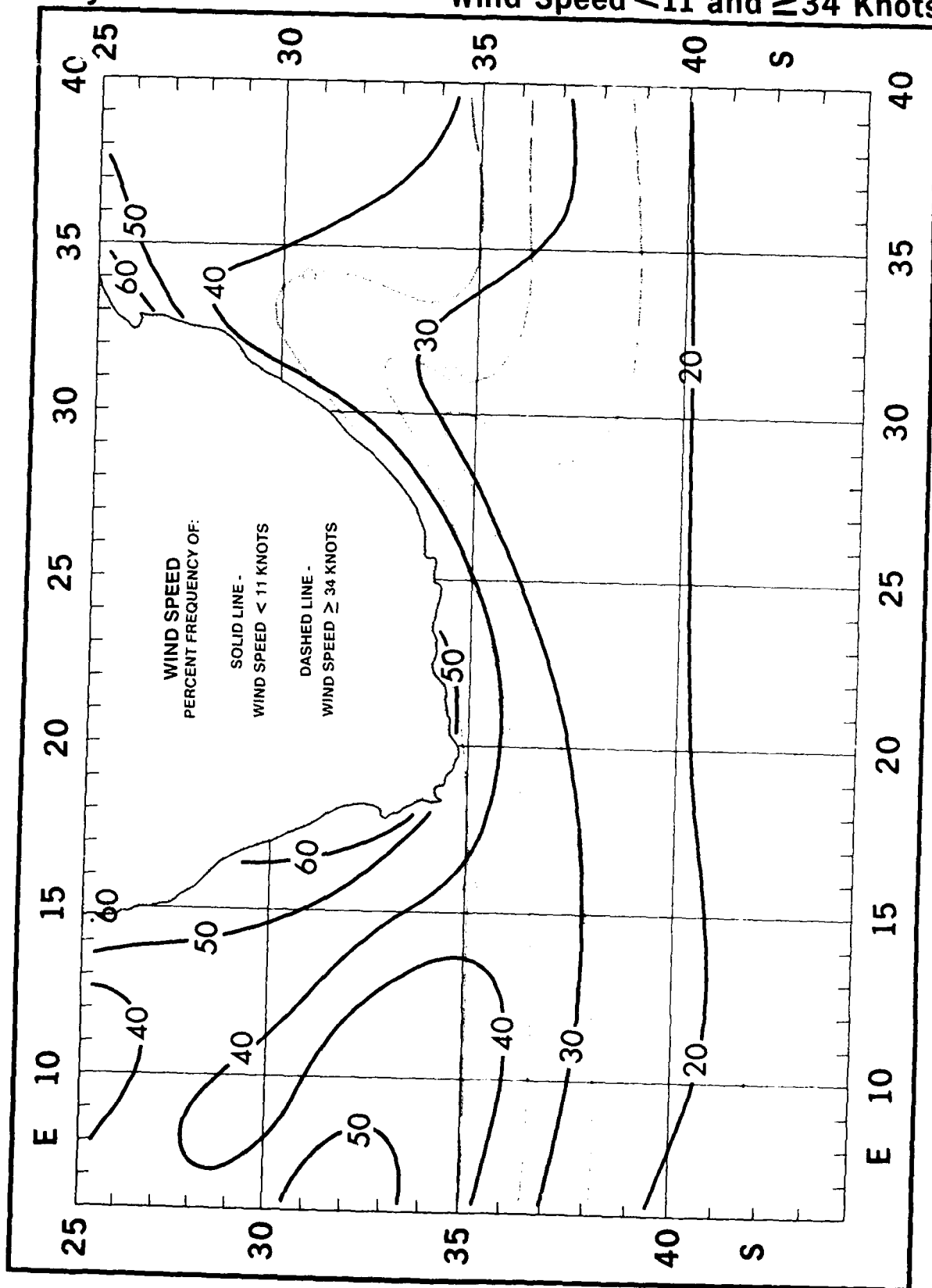
July

Mean Scalar Wind Speed



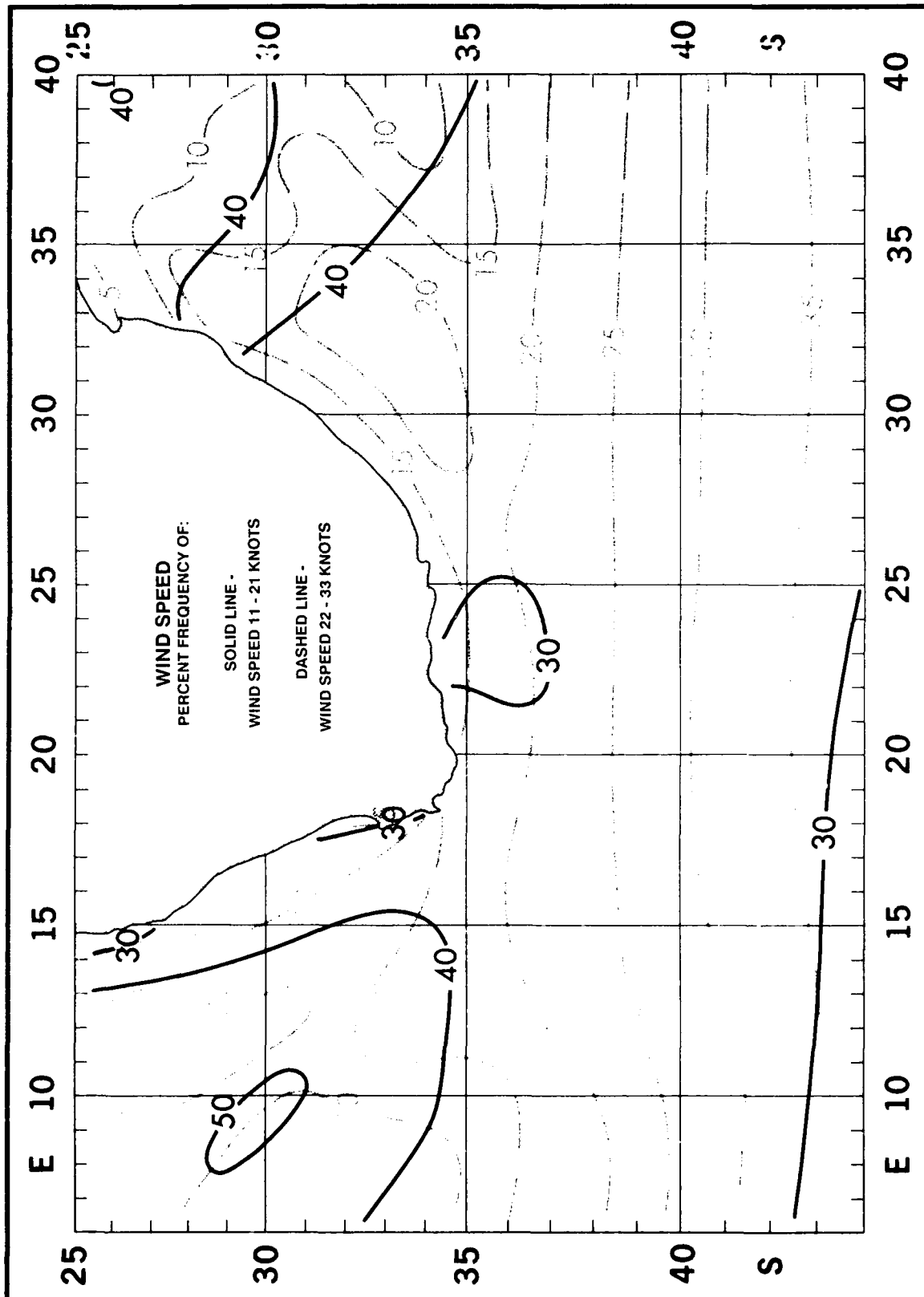
July

Wind Speed < 11 and ≥ 34 Knots



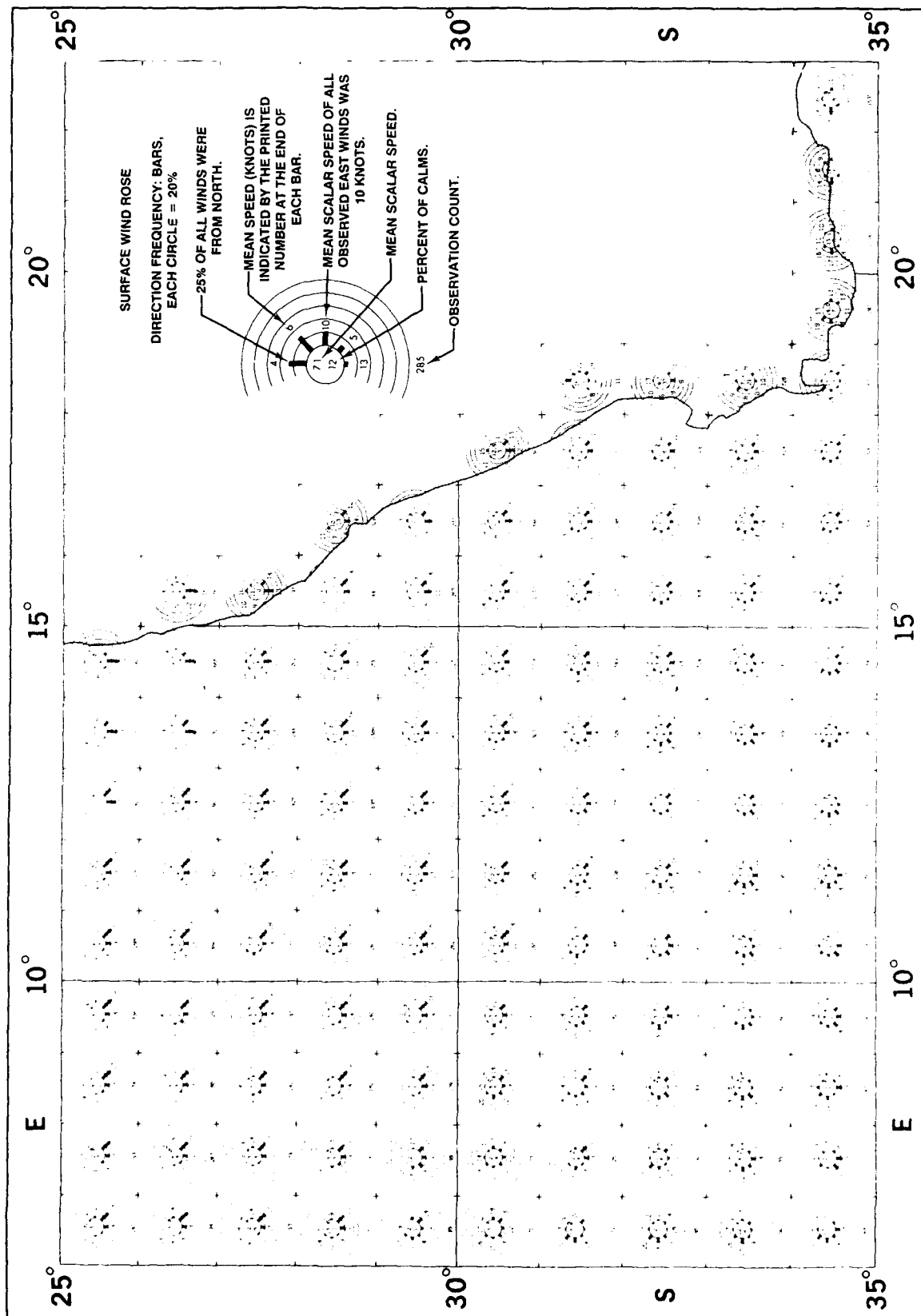
July

Wind Speed 11 - 21 and 22 - 33 Knots



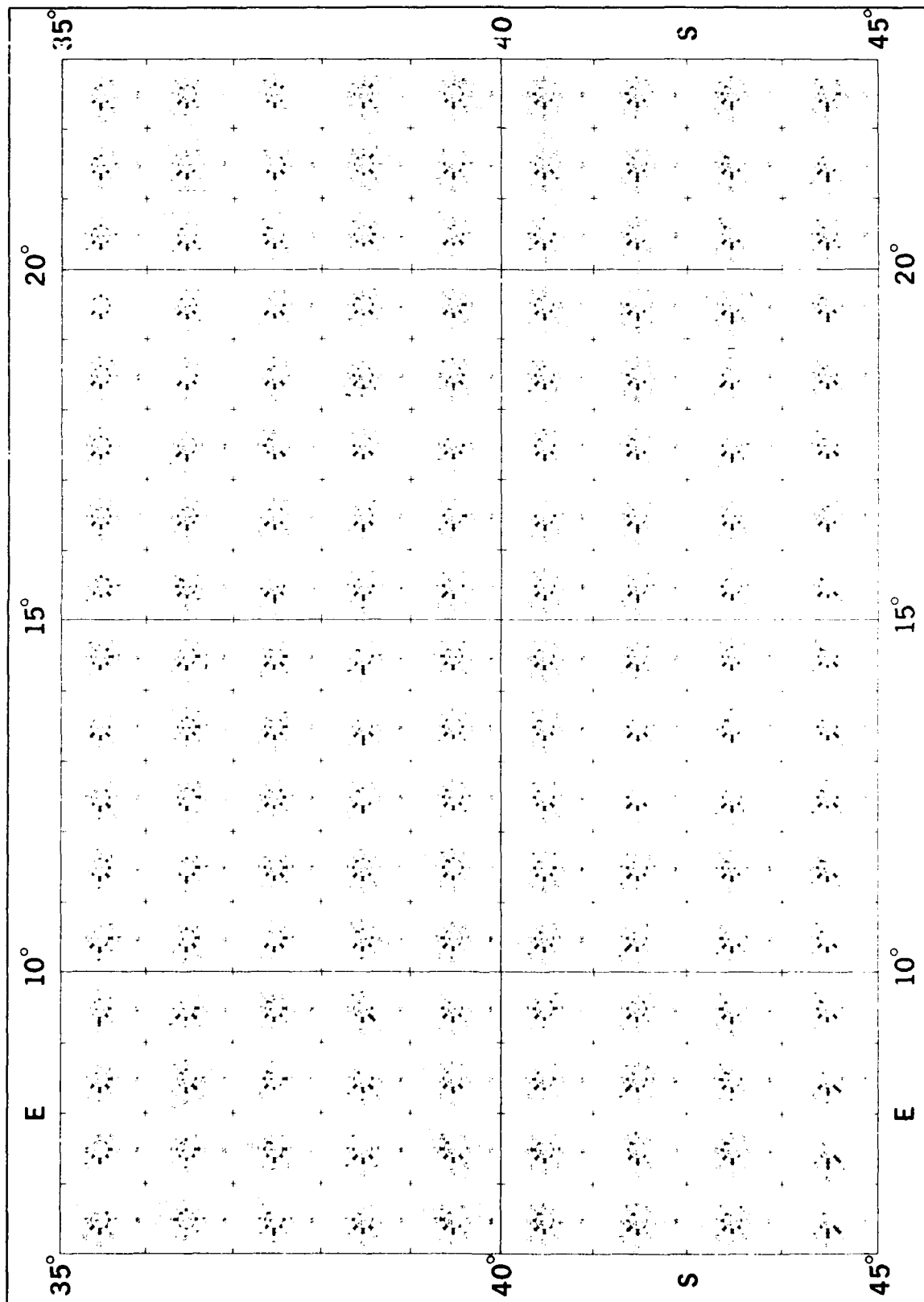
July

Surface Wind Roses



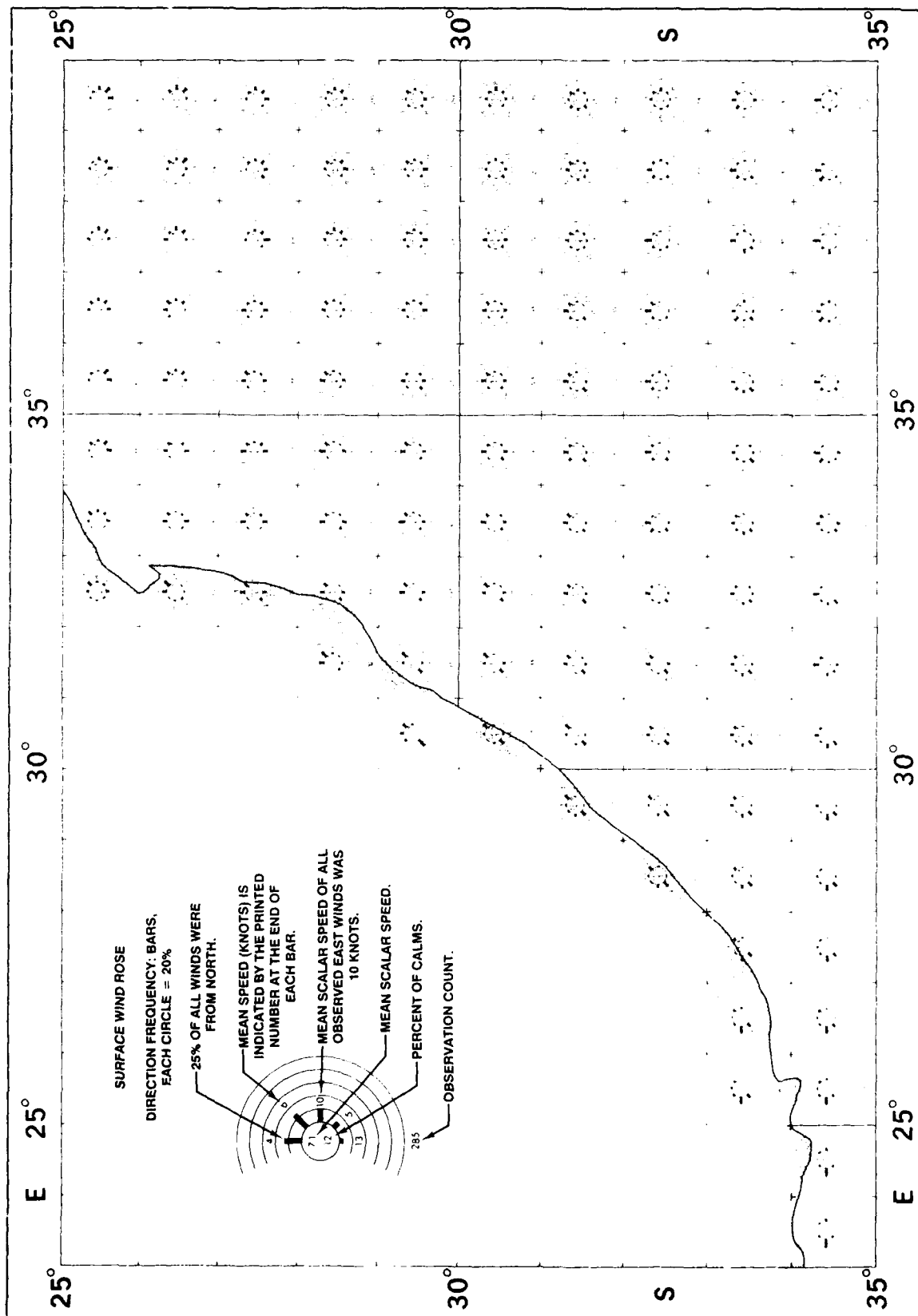
July

Surface Wind Roses



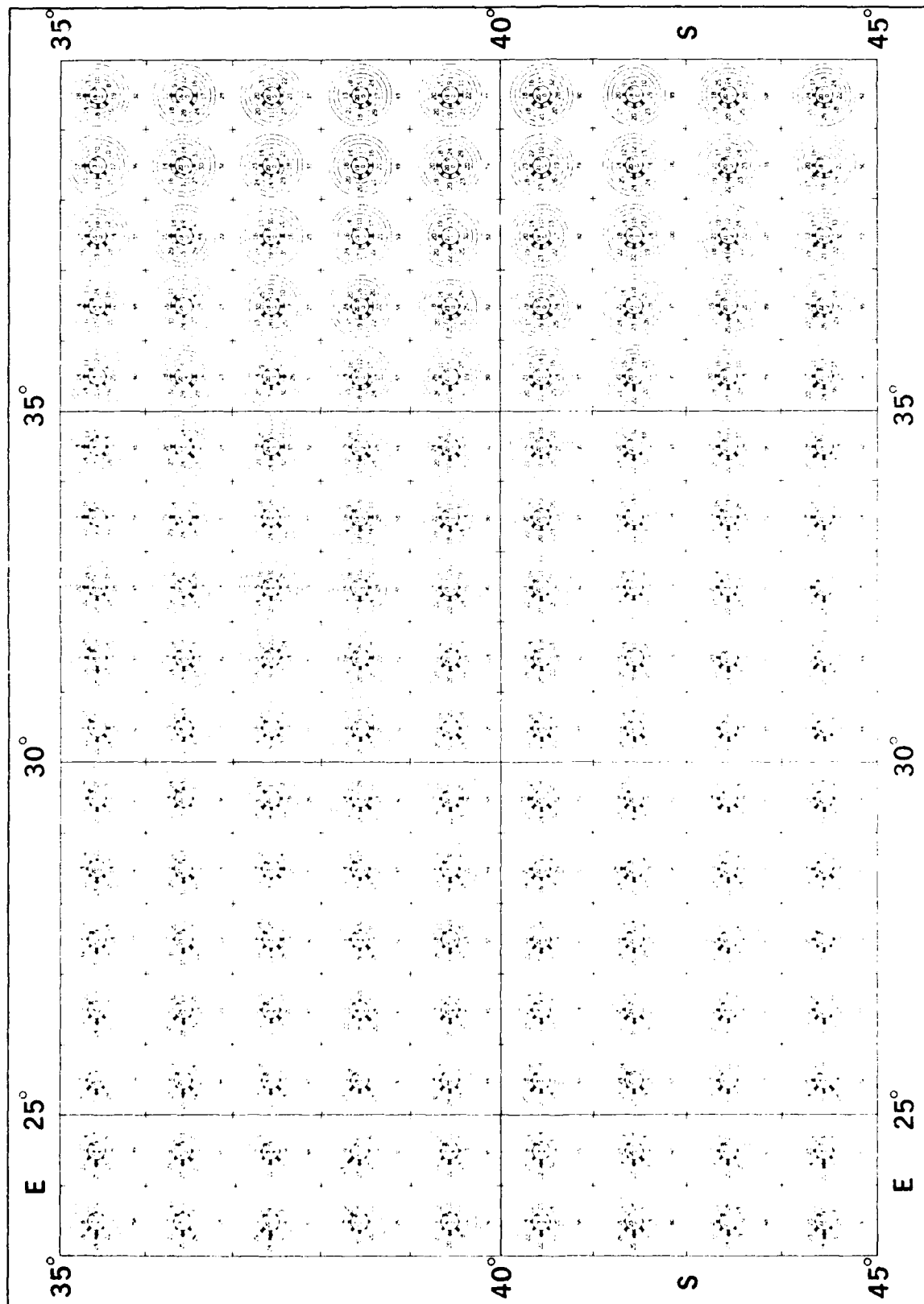
July

Surface Wind Roses



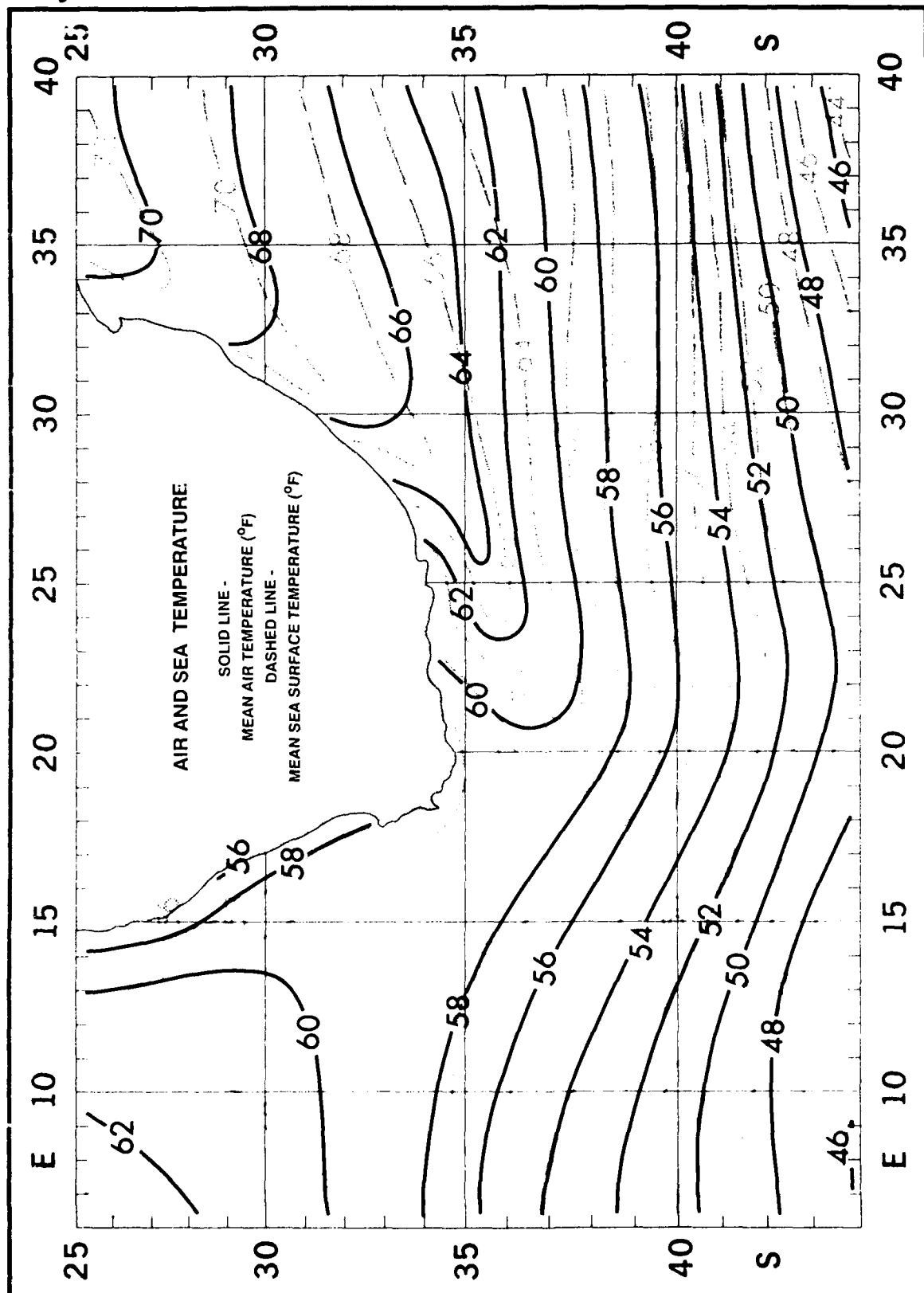
July

Surface Wind Roses



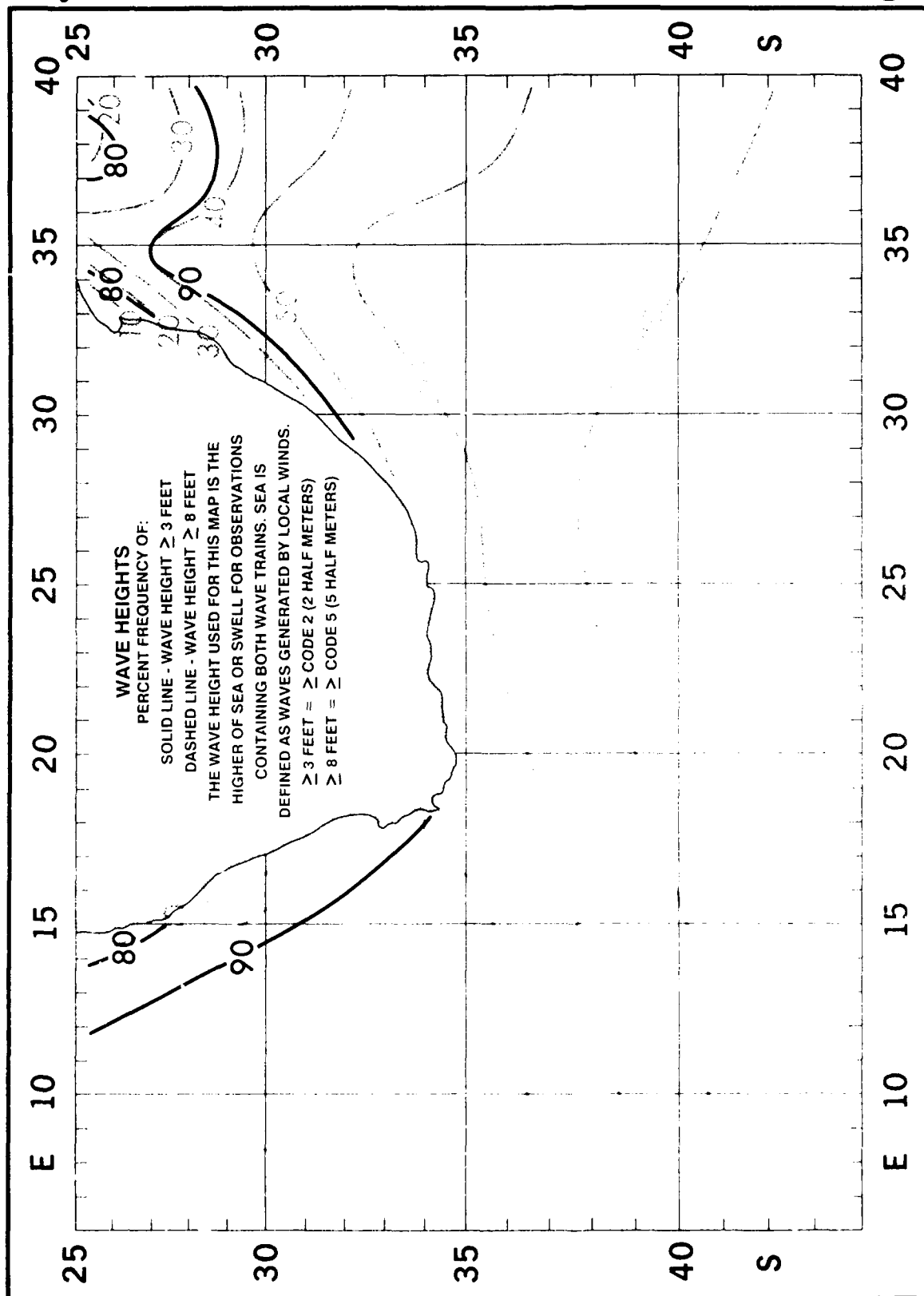
July

Air and Sea Temperature



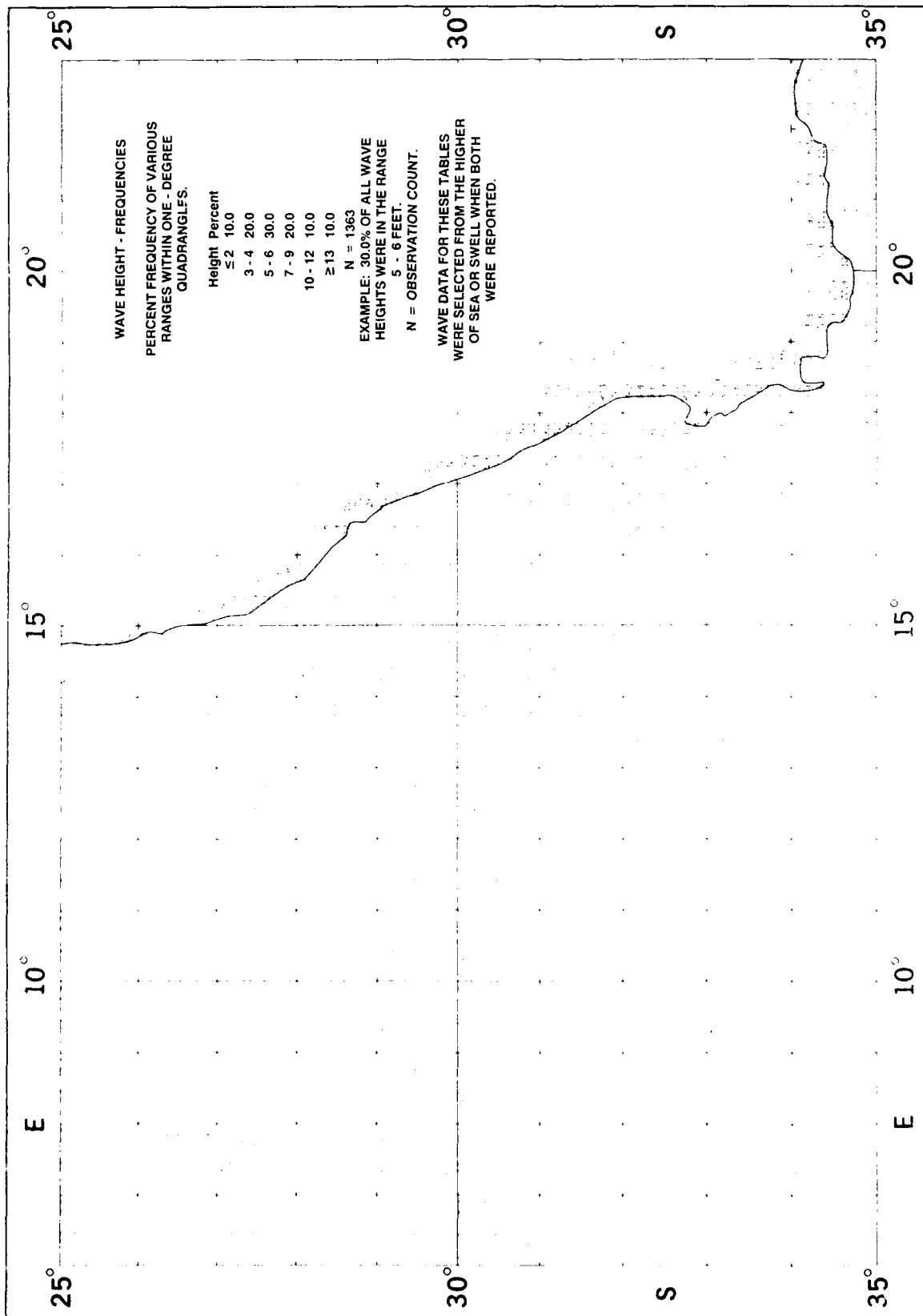
July

Wave Height



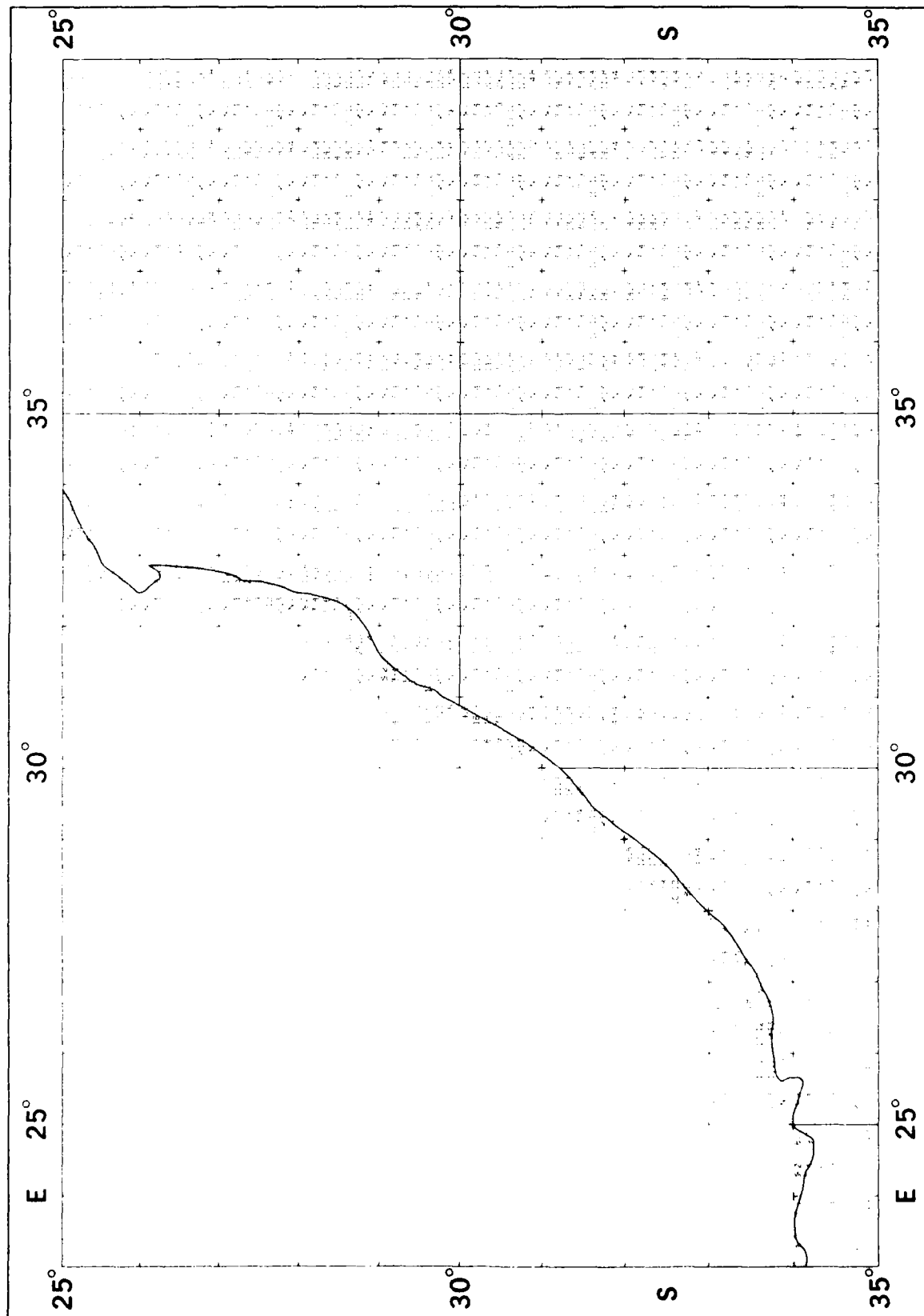
July

Wave Height



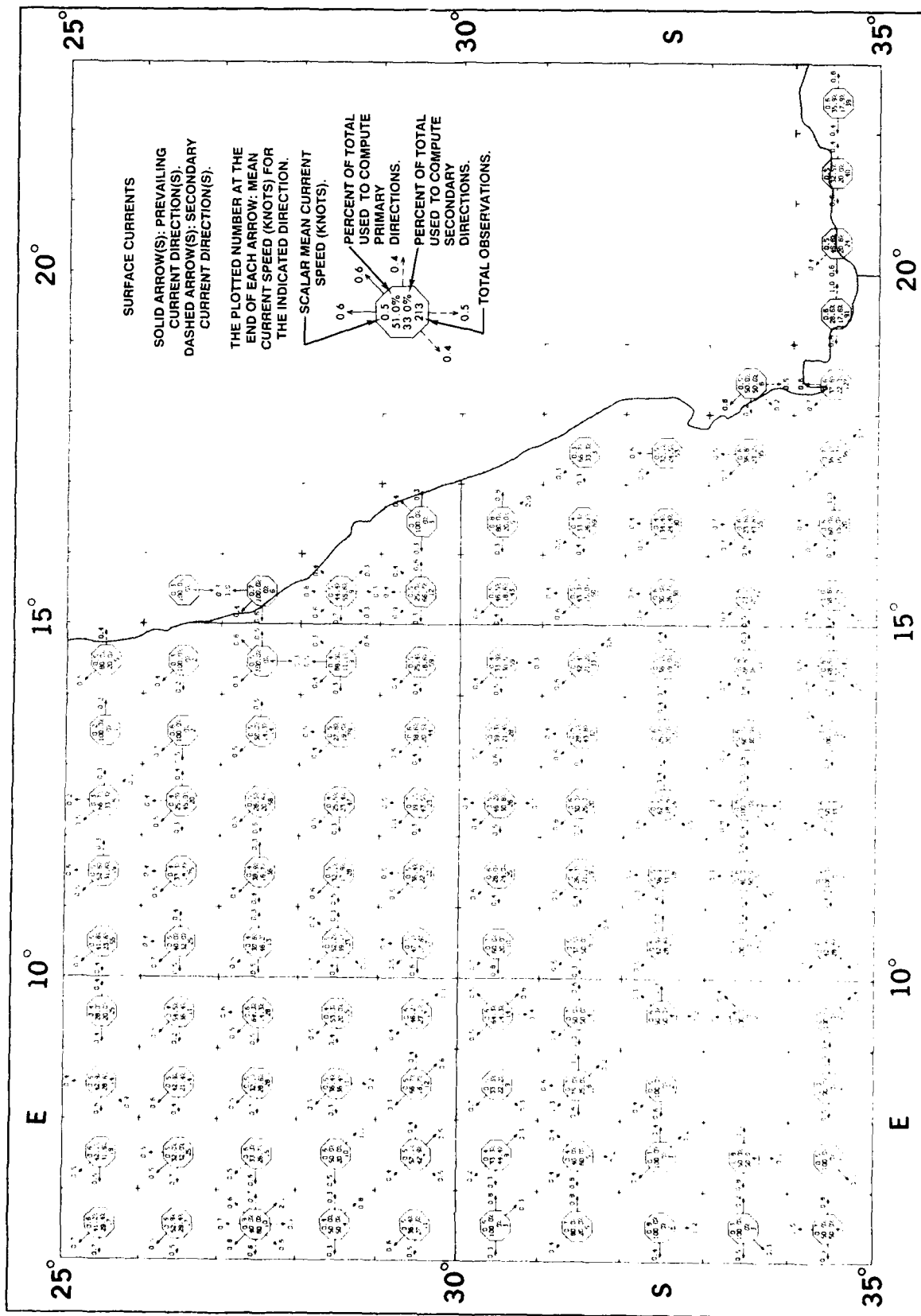
July

Wave Height



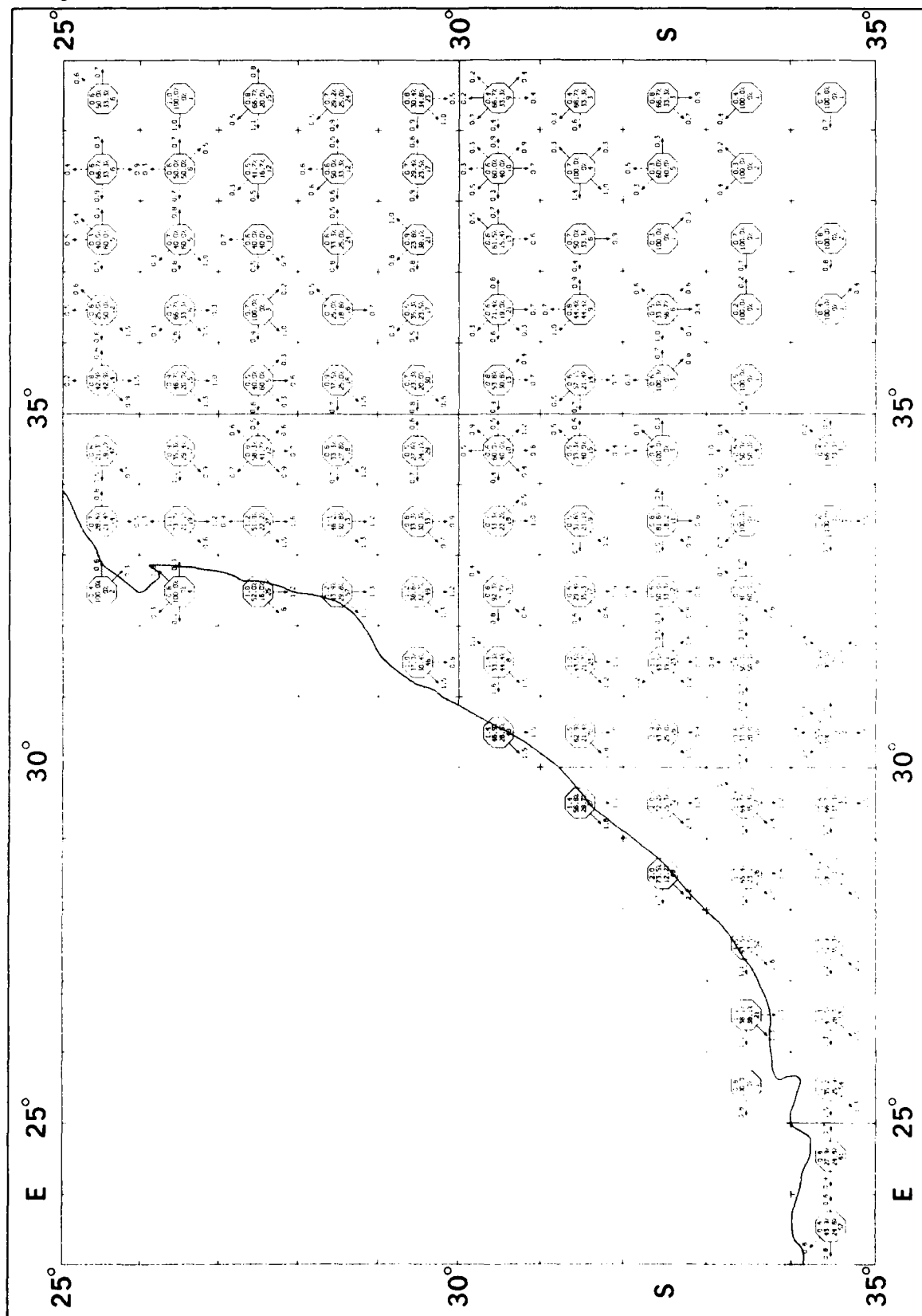
July

Surface Currents



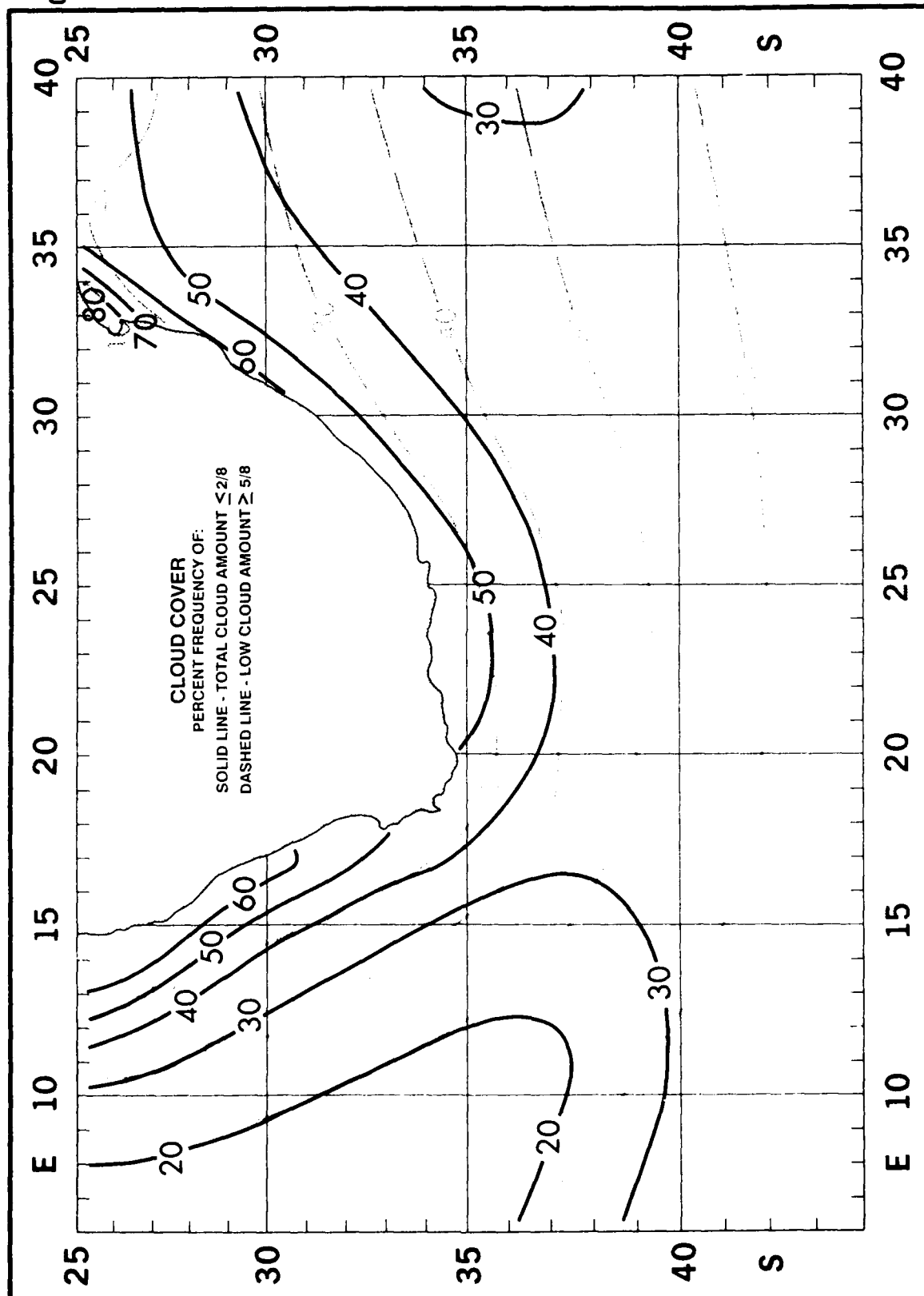
July

Surface Currents



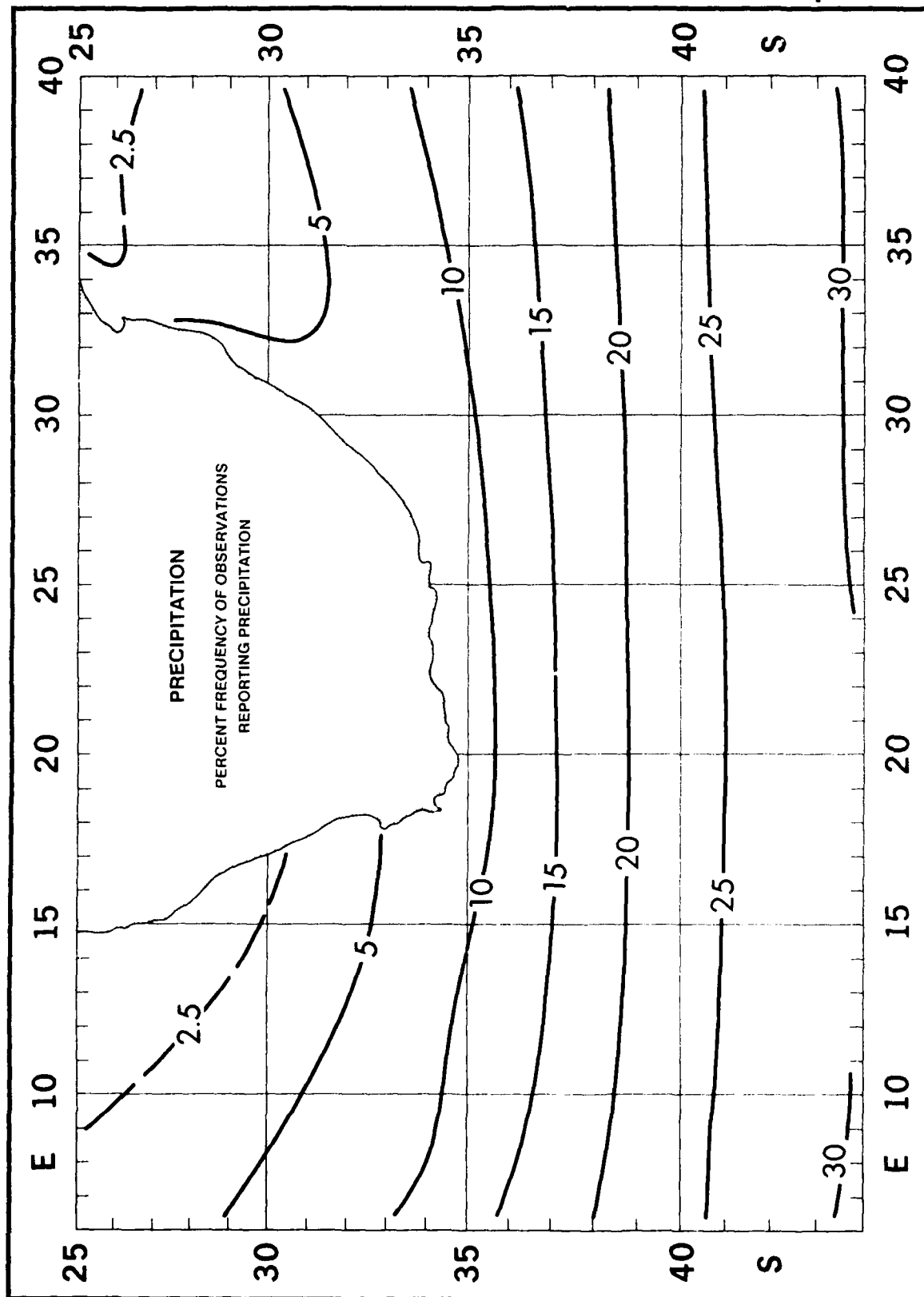
August

Clouds



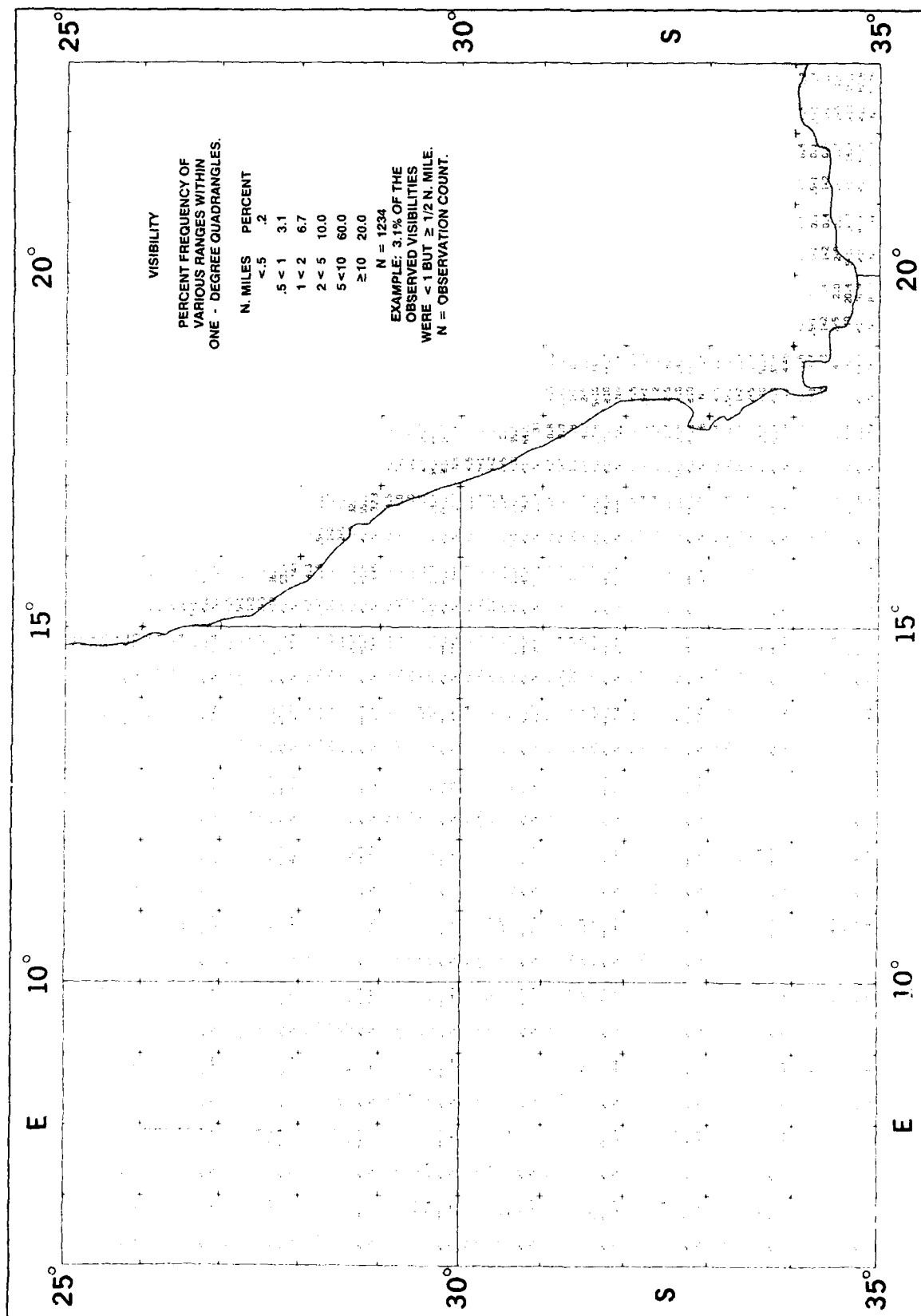
August

Precipitation



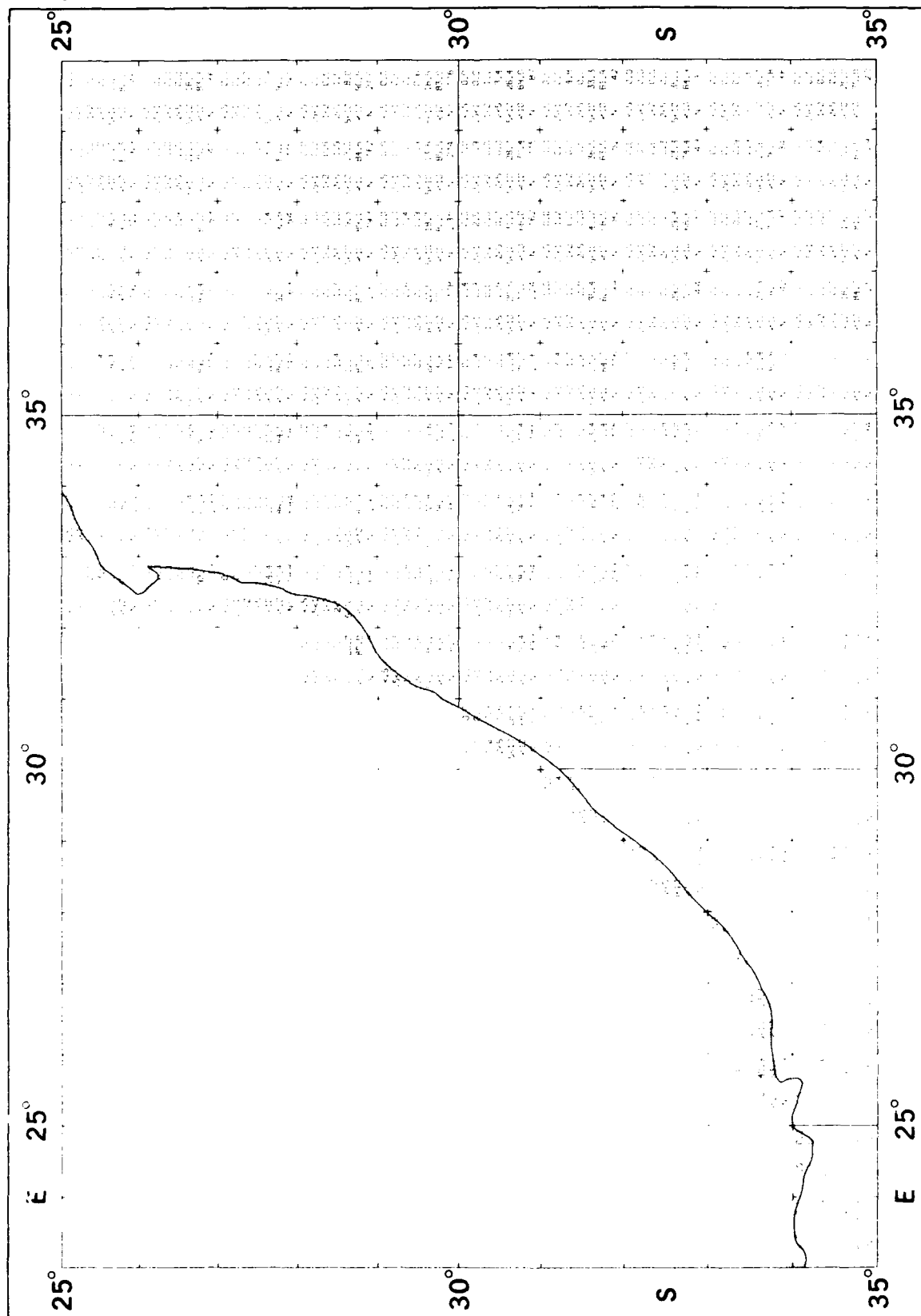
August

Visibility



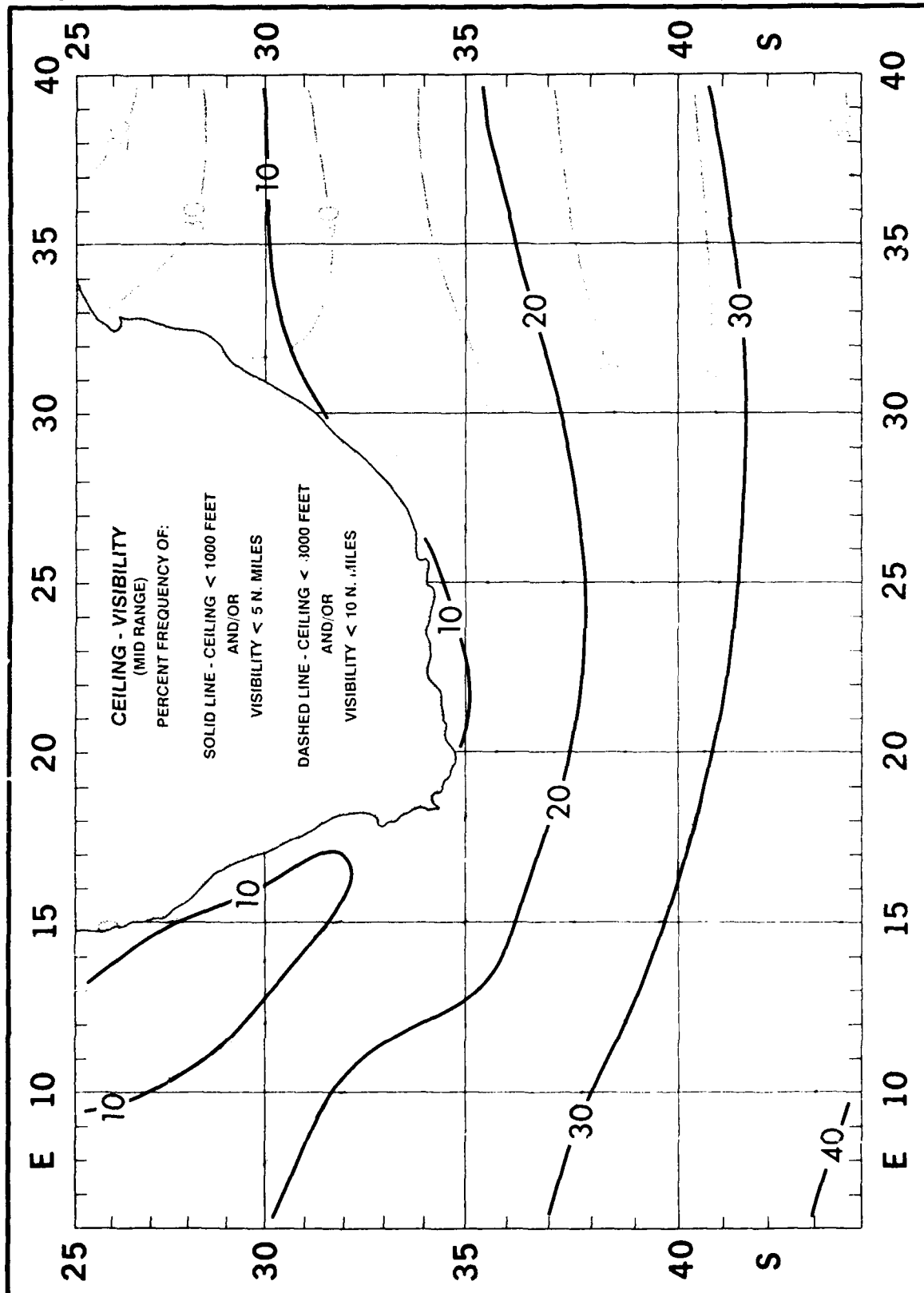
August

Visibility



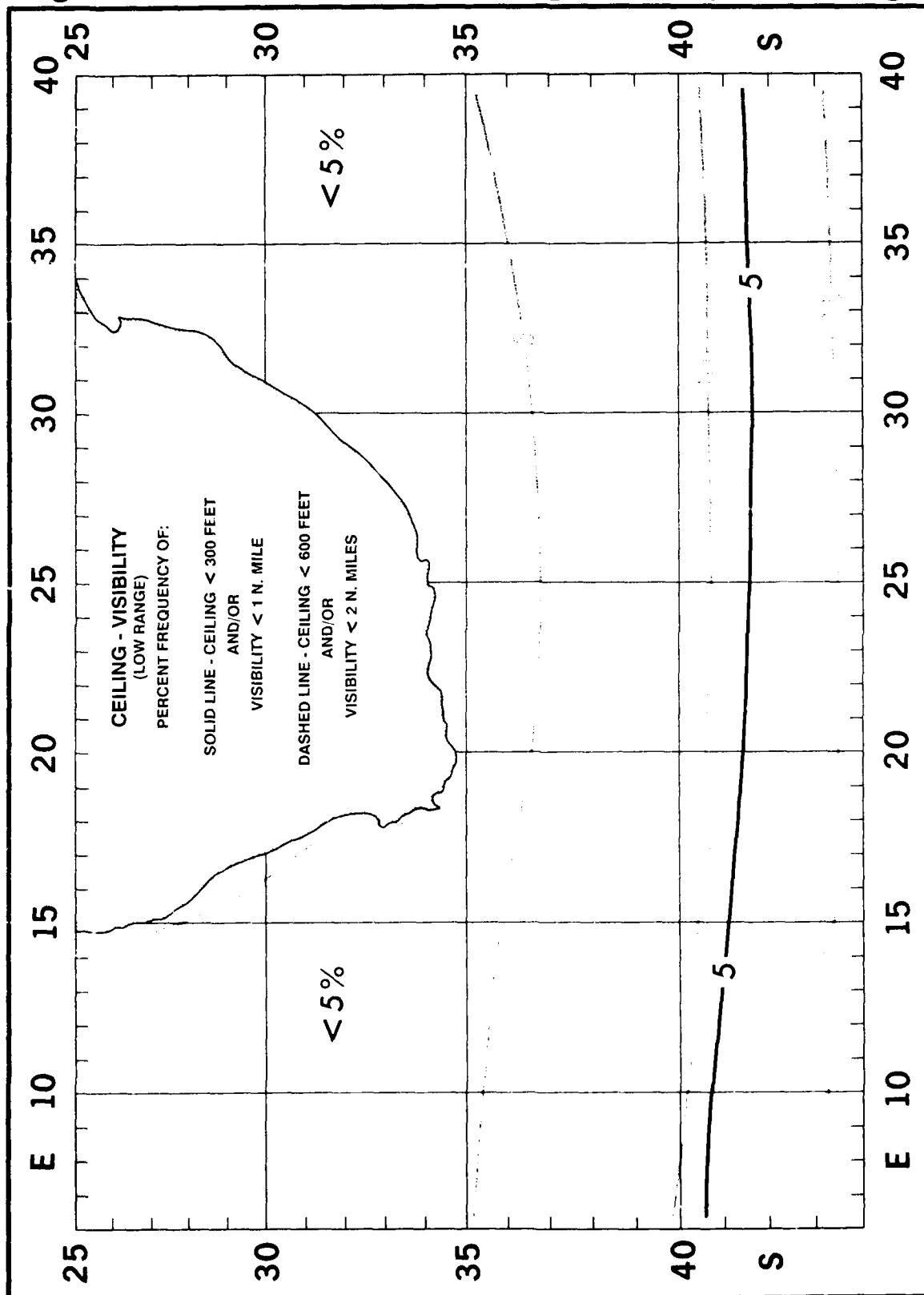
August

Ceiling - Visibility (Mid Range)



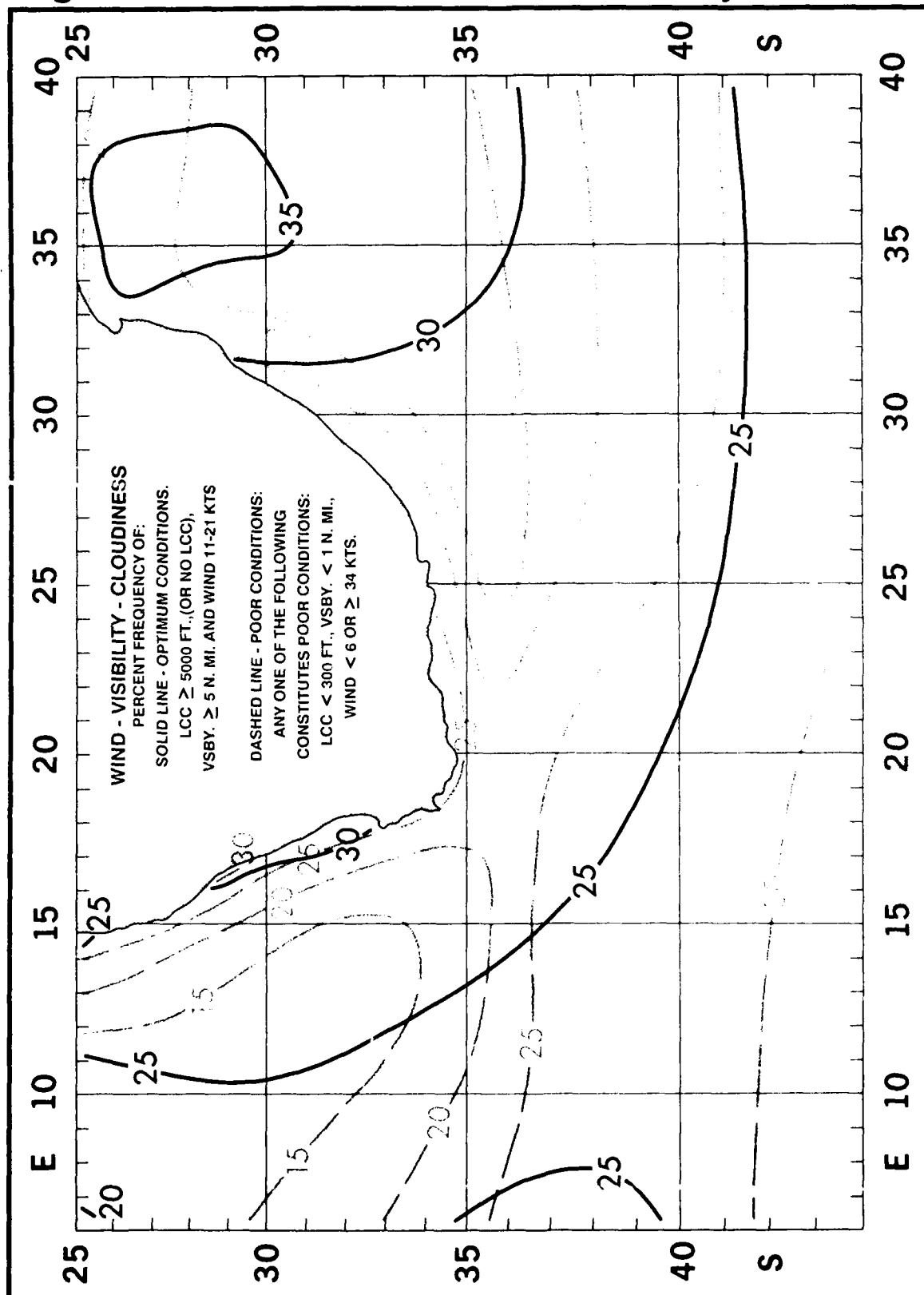
August

Ceiling - Visibility (Low Range)



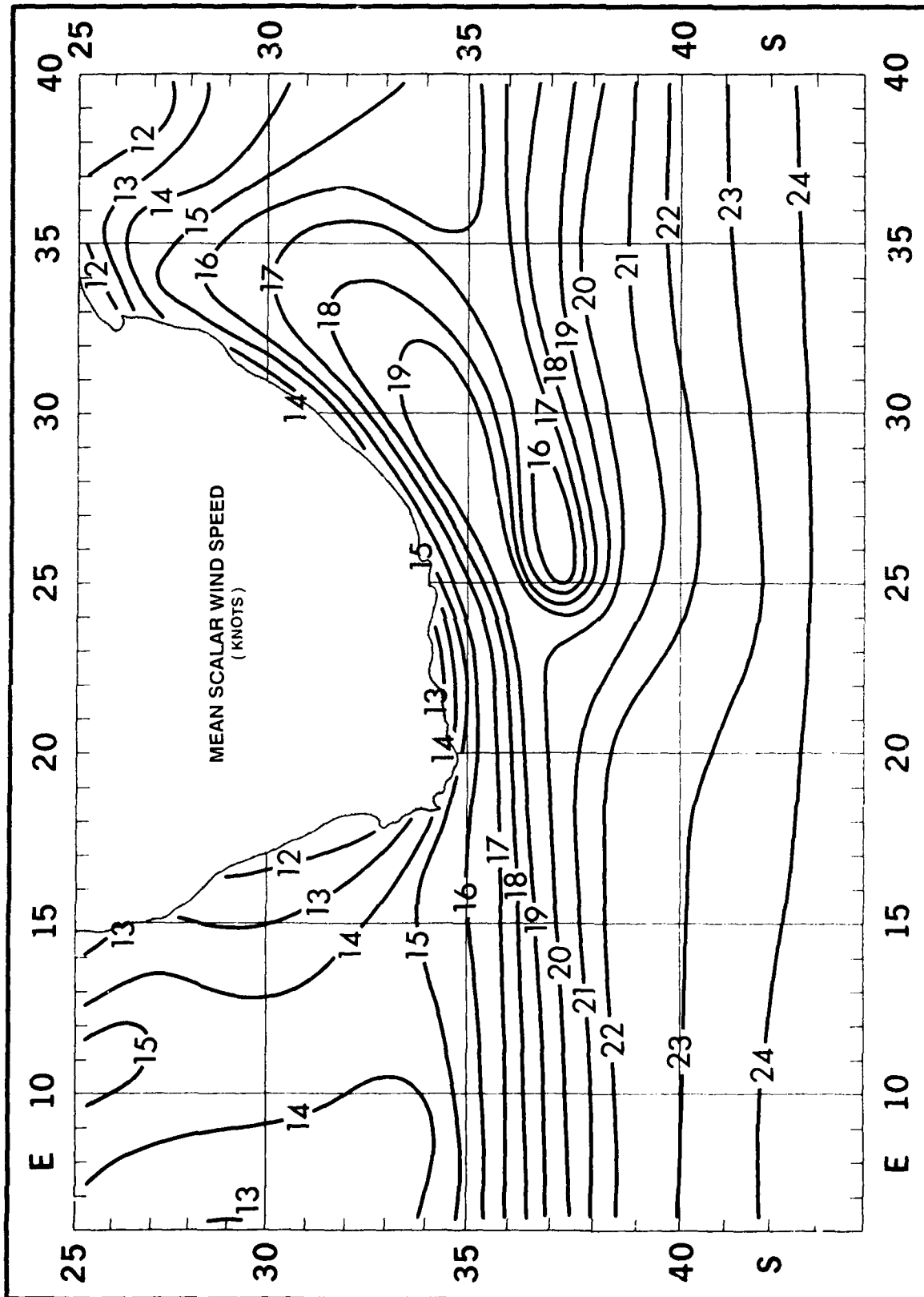
August

Wind - Visibility - Cloudiness



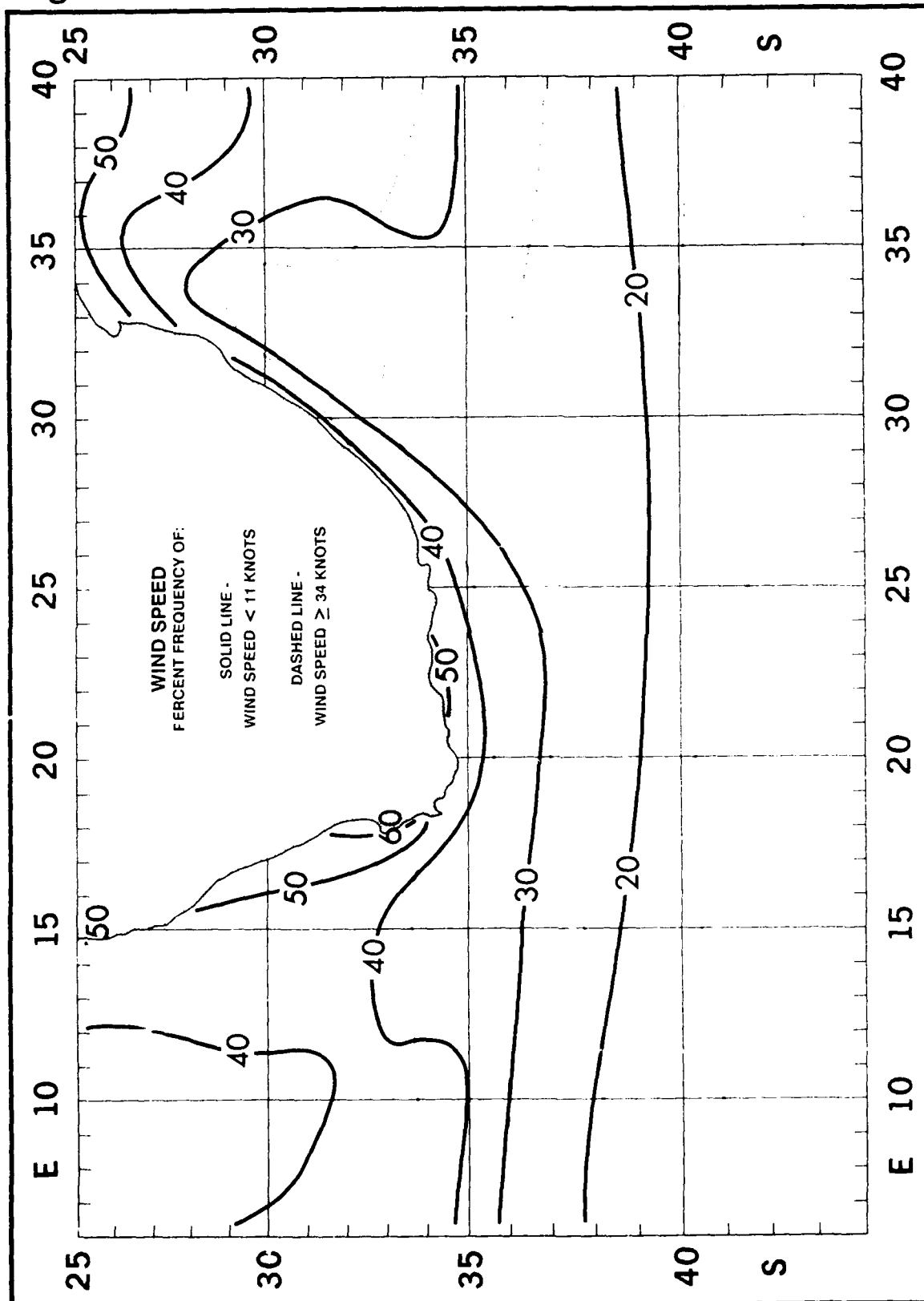
August

Mean Scalar Wind Speed



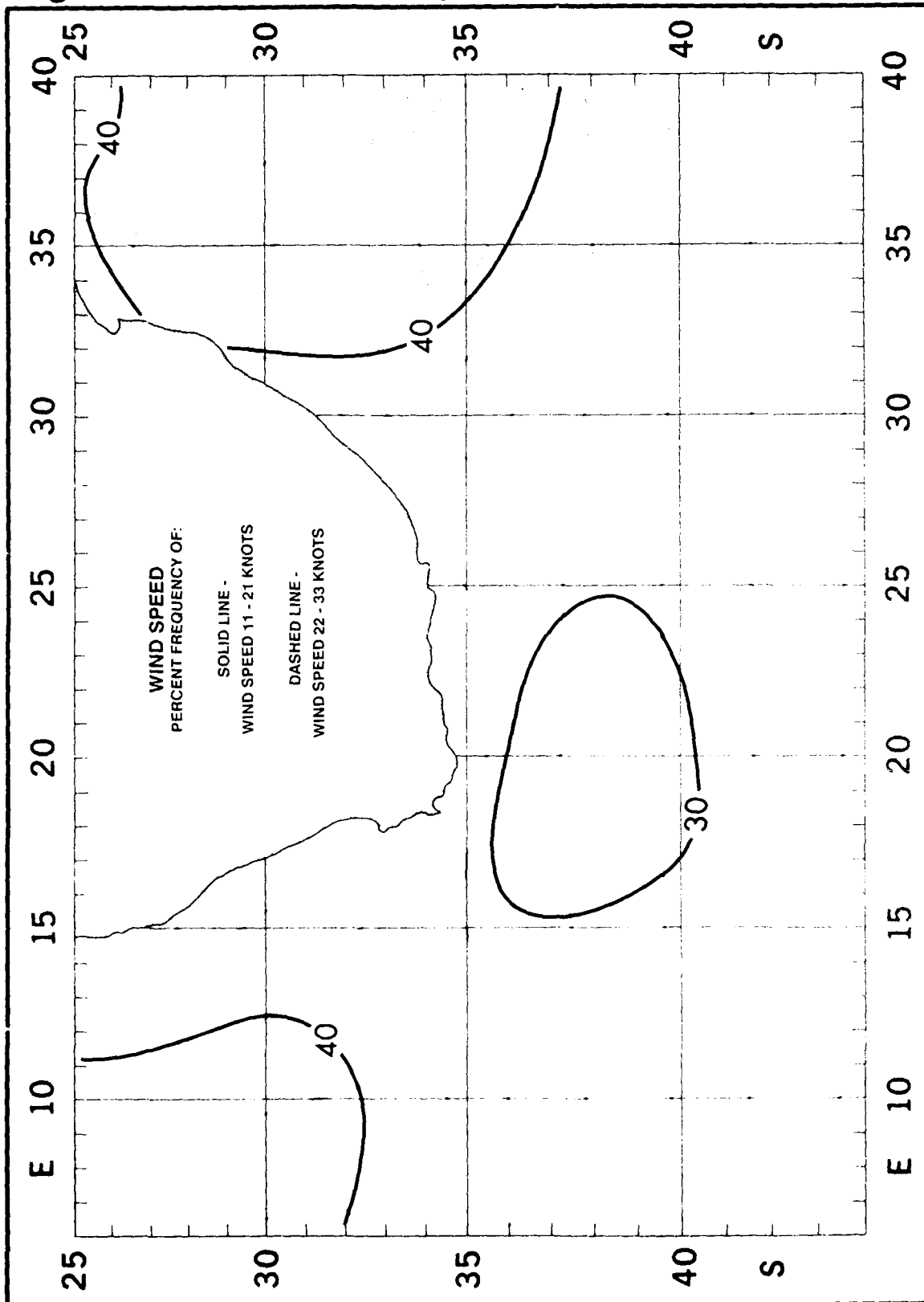
August

Wind Speed < 11 and ≥ 34 Knots



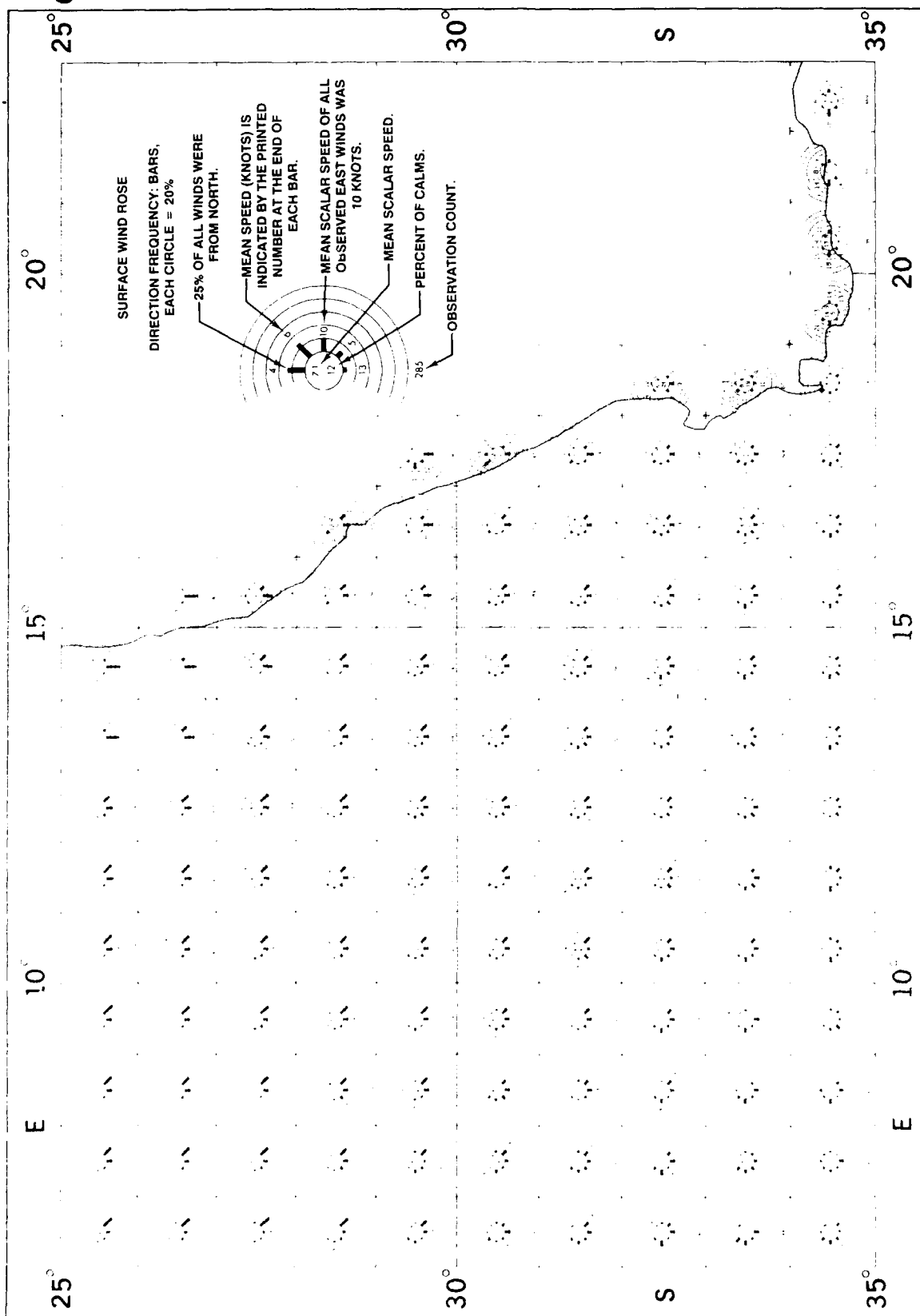
August

Wind Speed 11 - 21 and 22 - 33 Knots



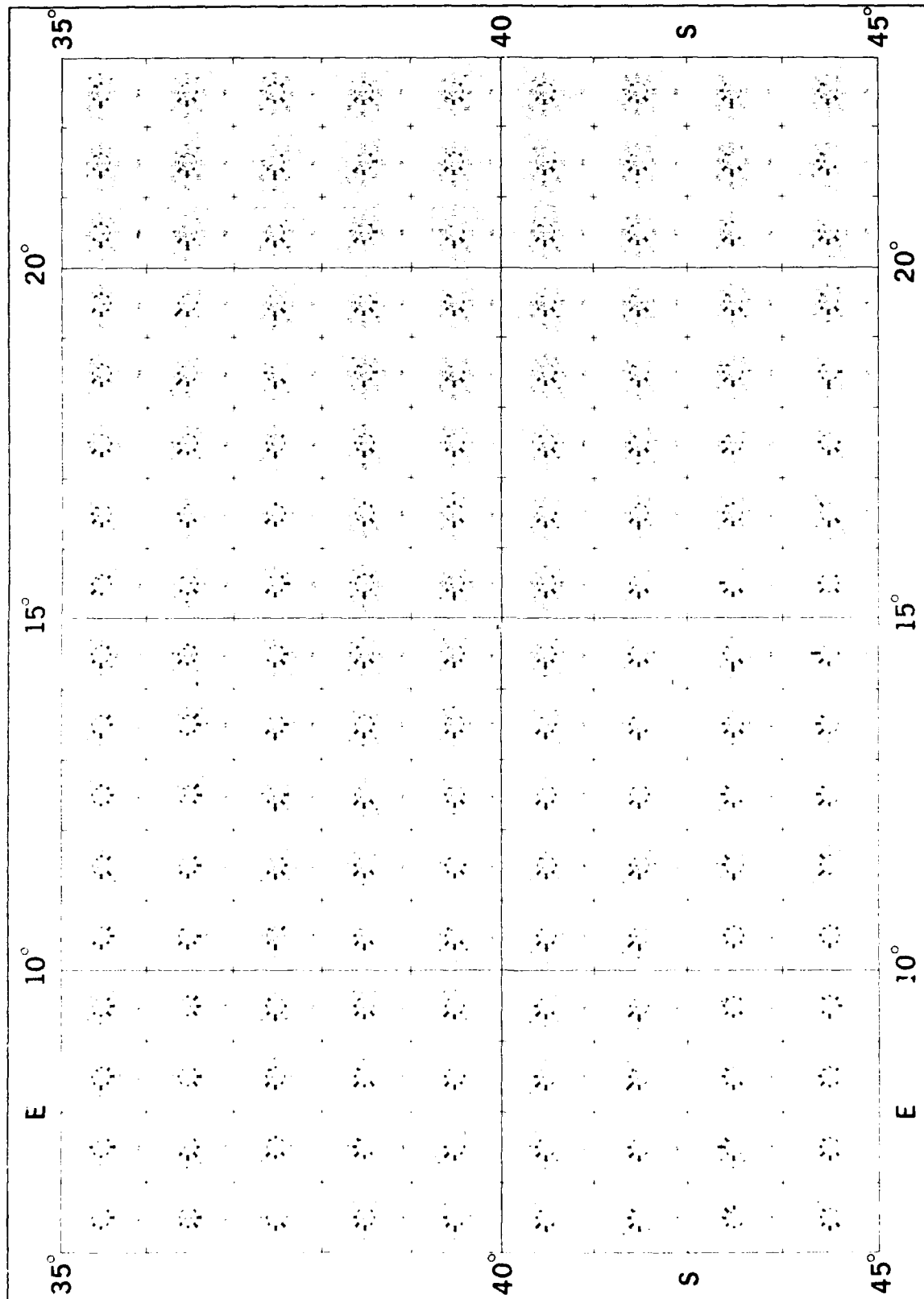
August

Surface Wind Roses



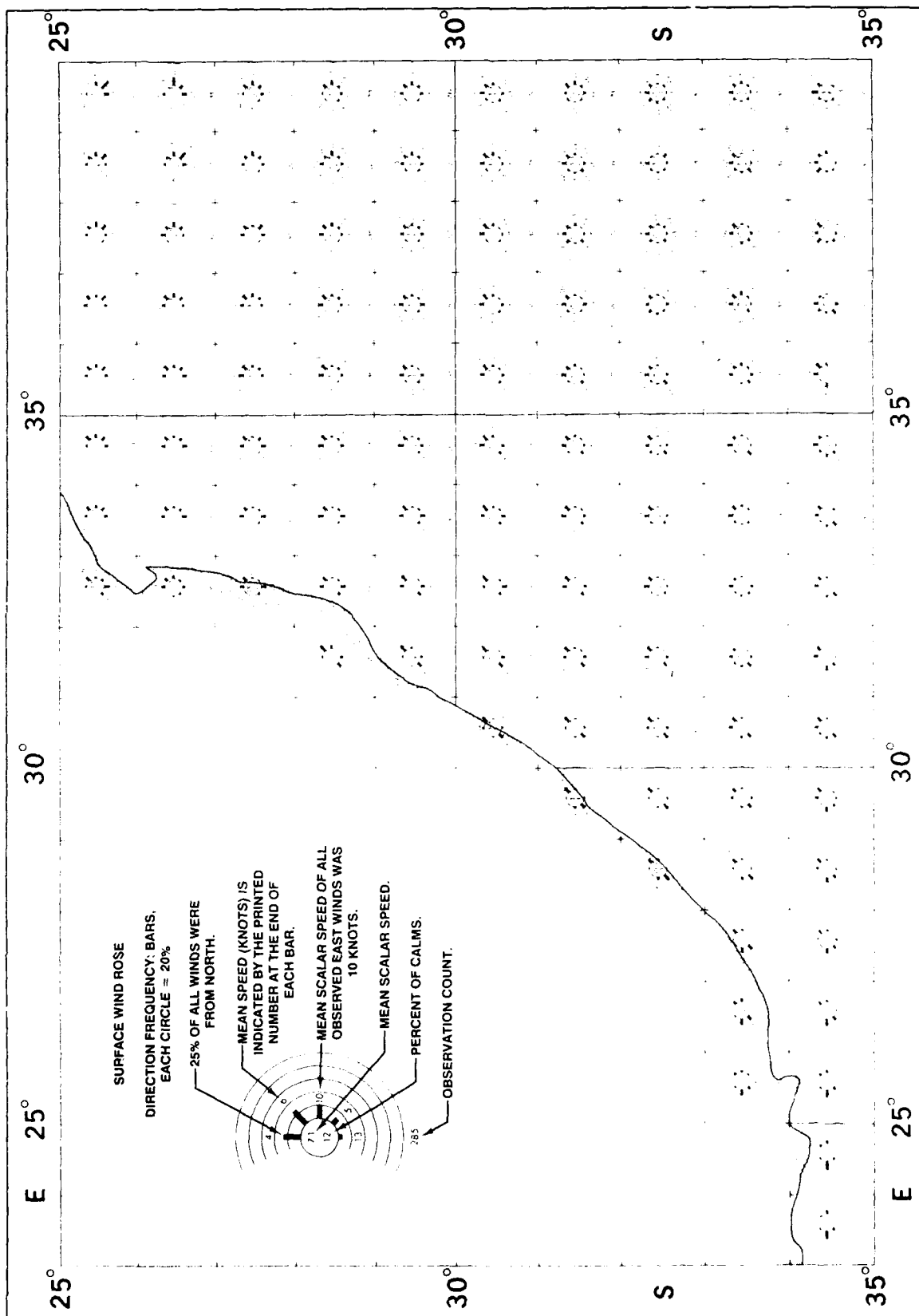
August

Surface Wind Roses



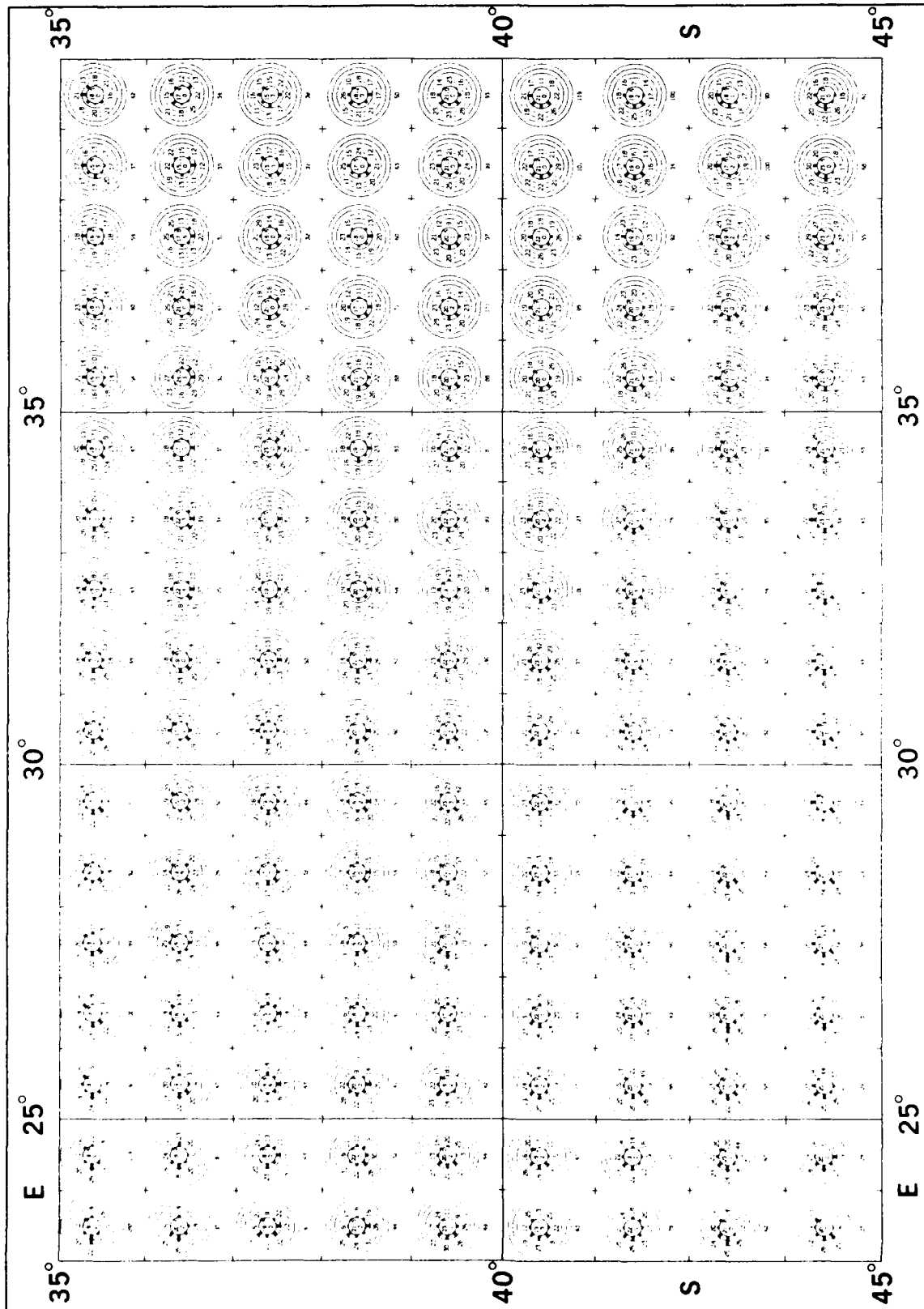
August

Surface Wind Roses



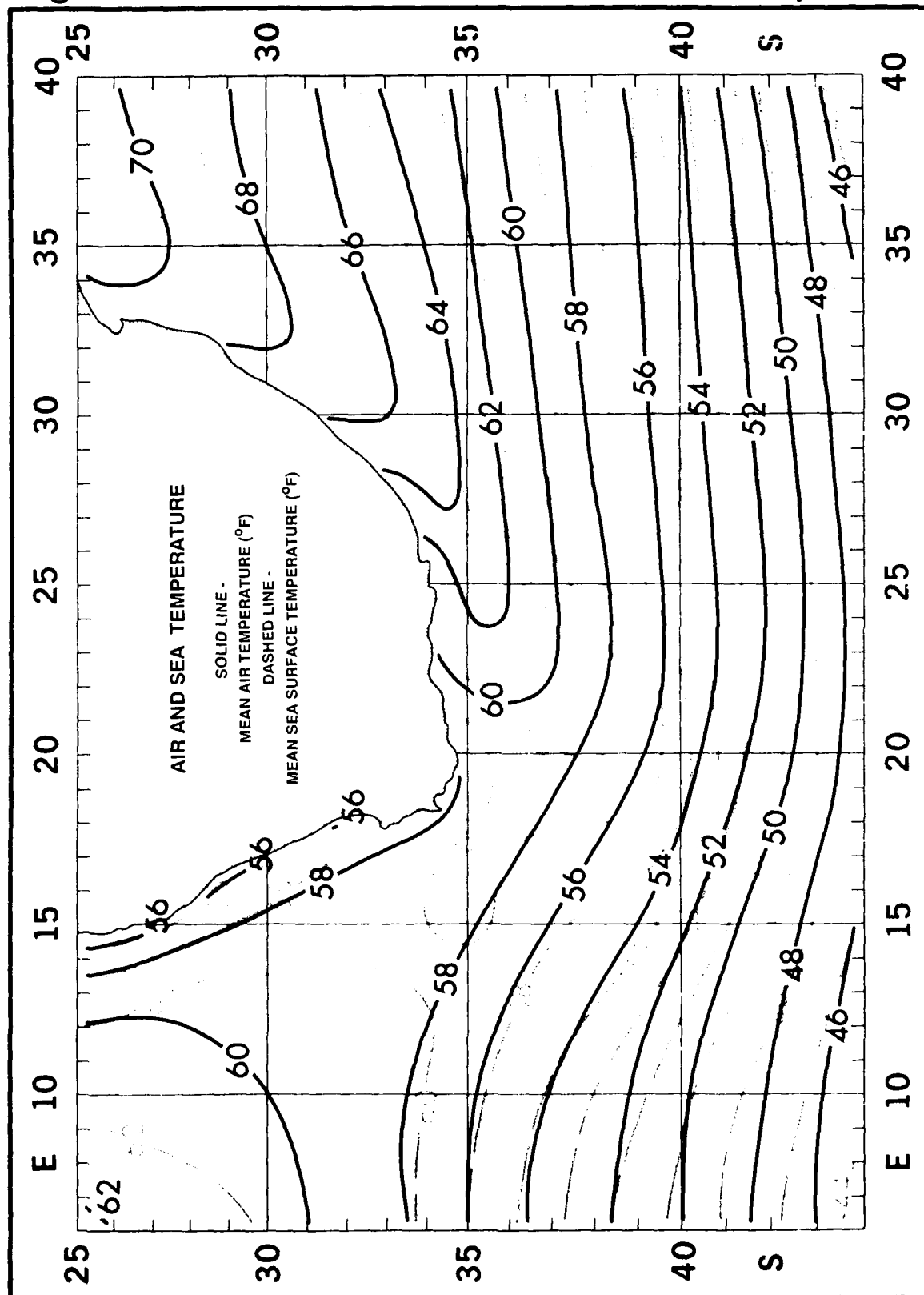
August

Surface Wind Roses



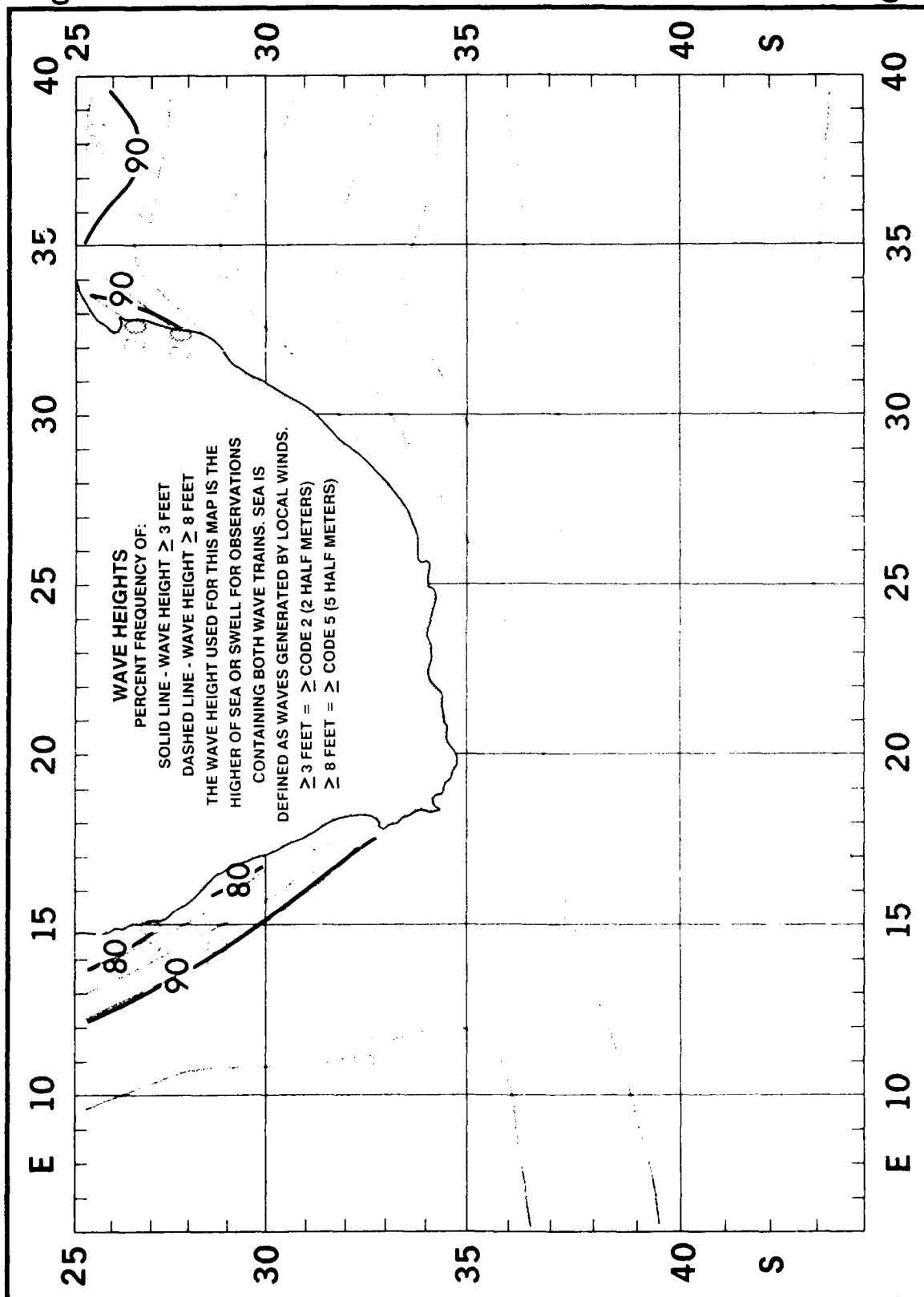
August

Air and Sea Temperature



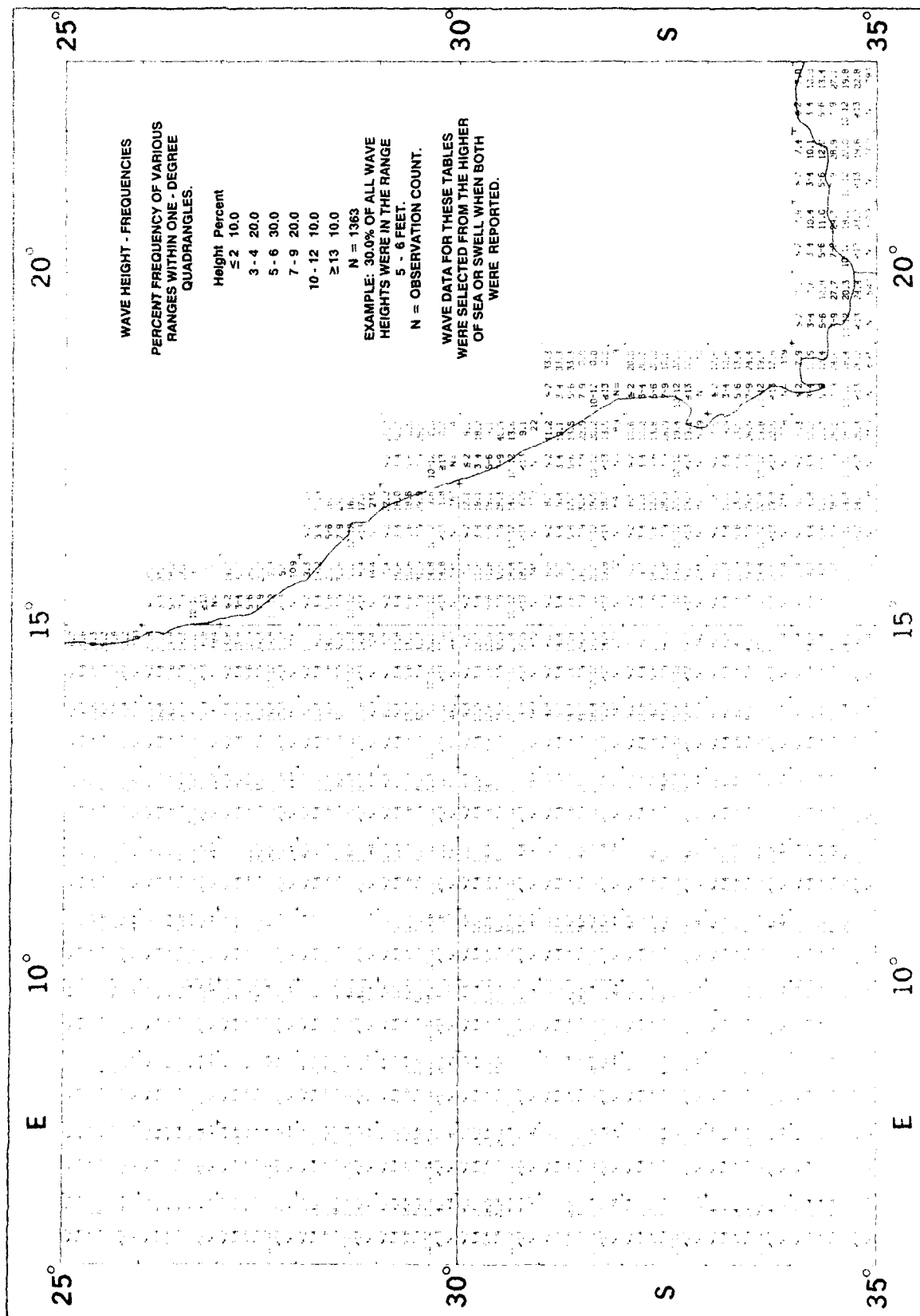
August

Wave Height



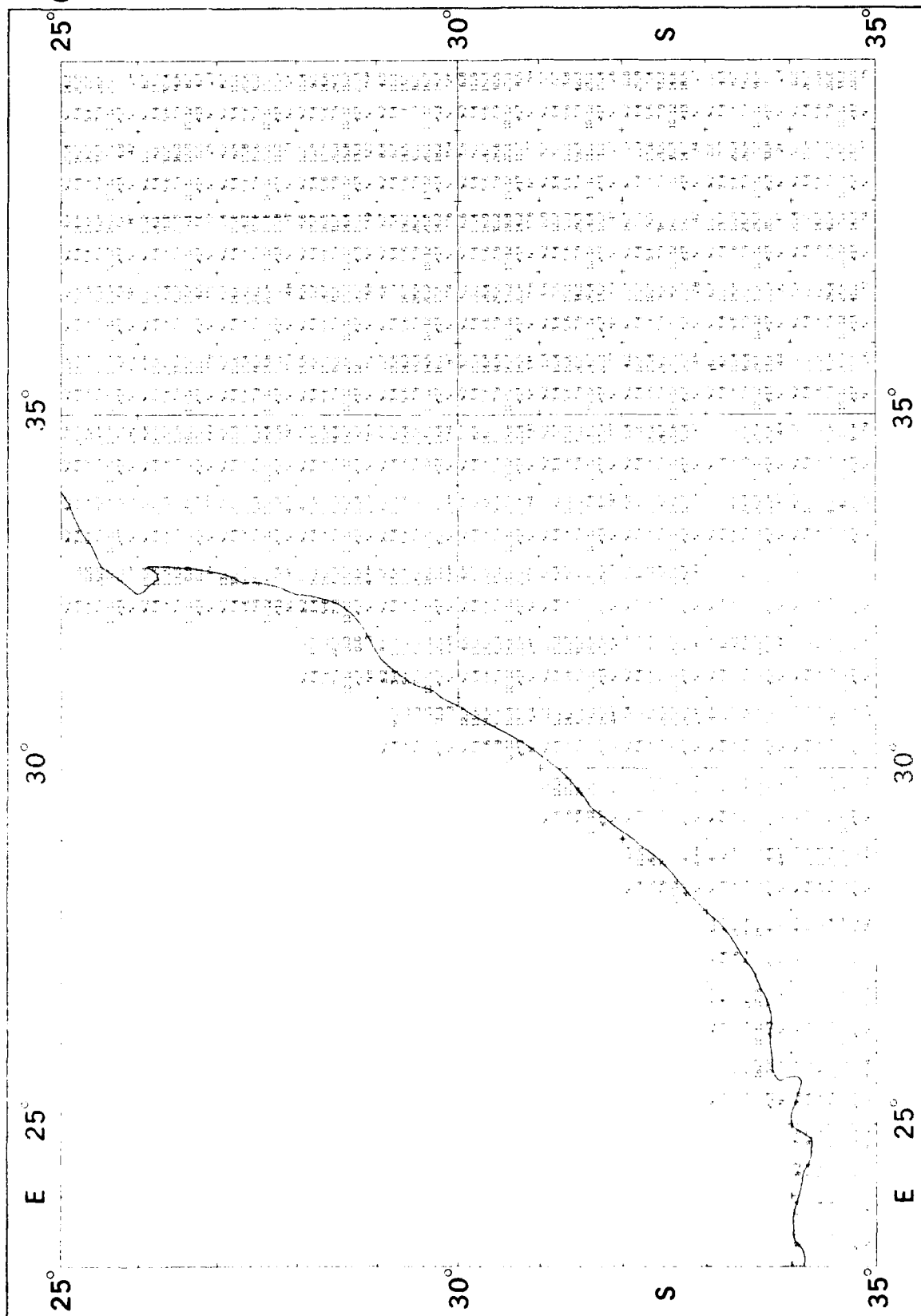
August

Wave Height



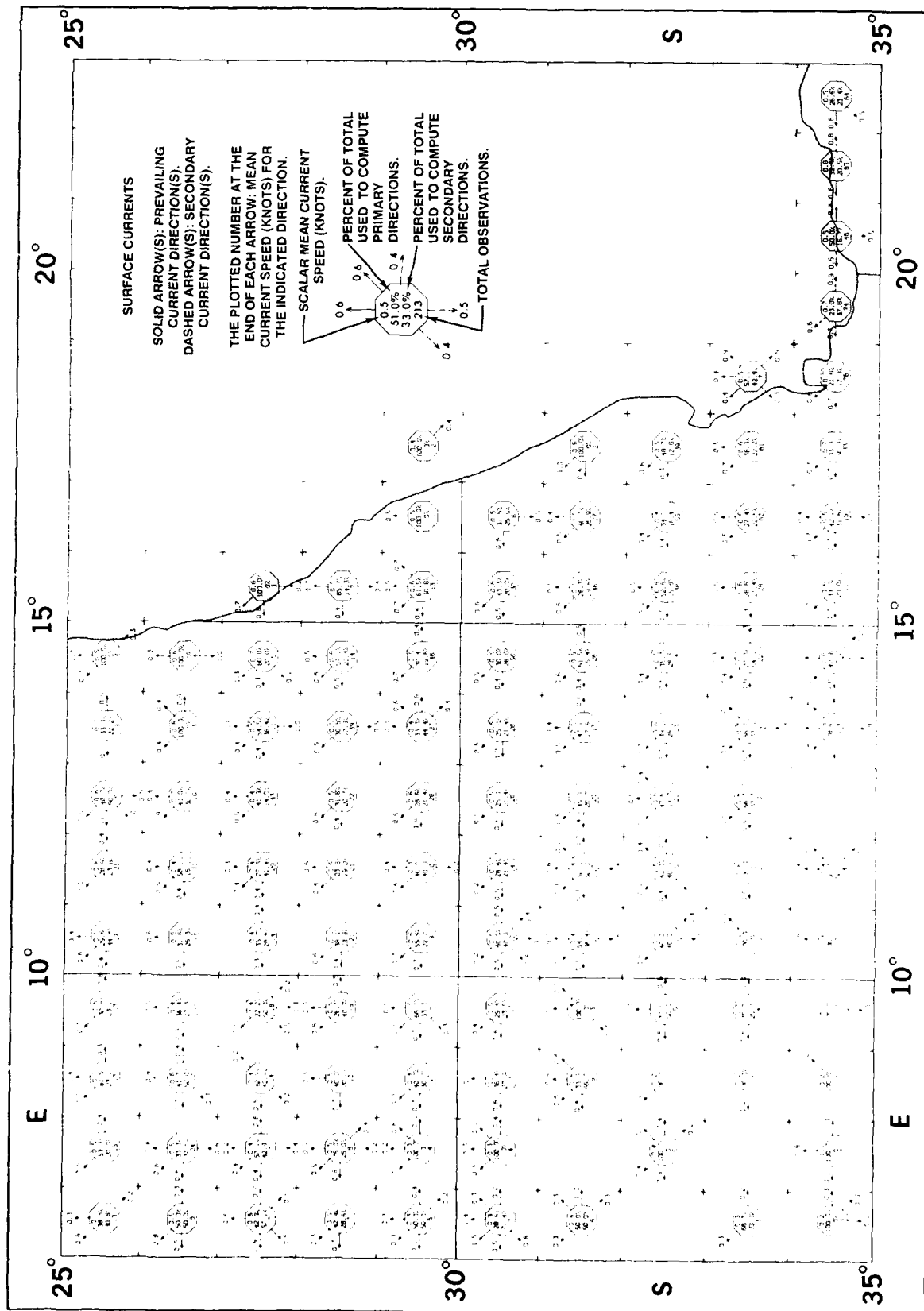
August

Wave Height



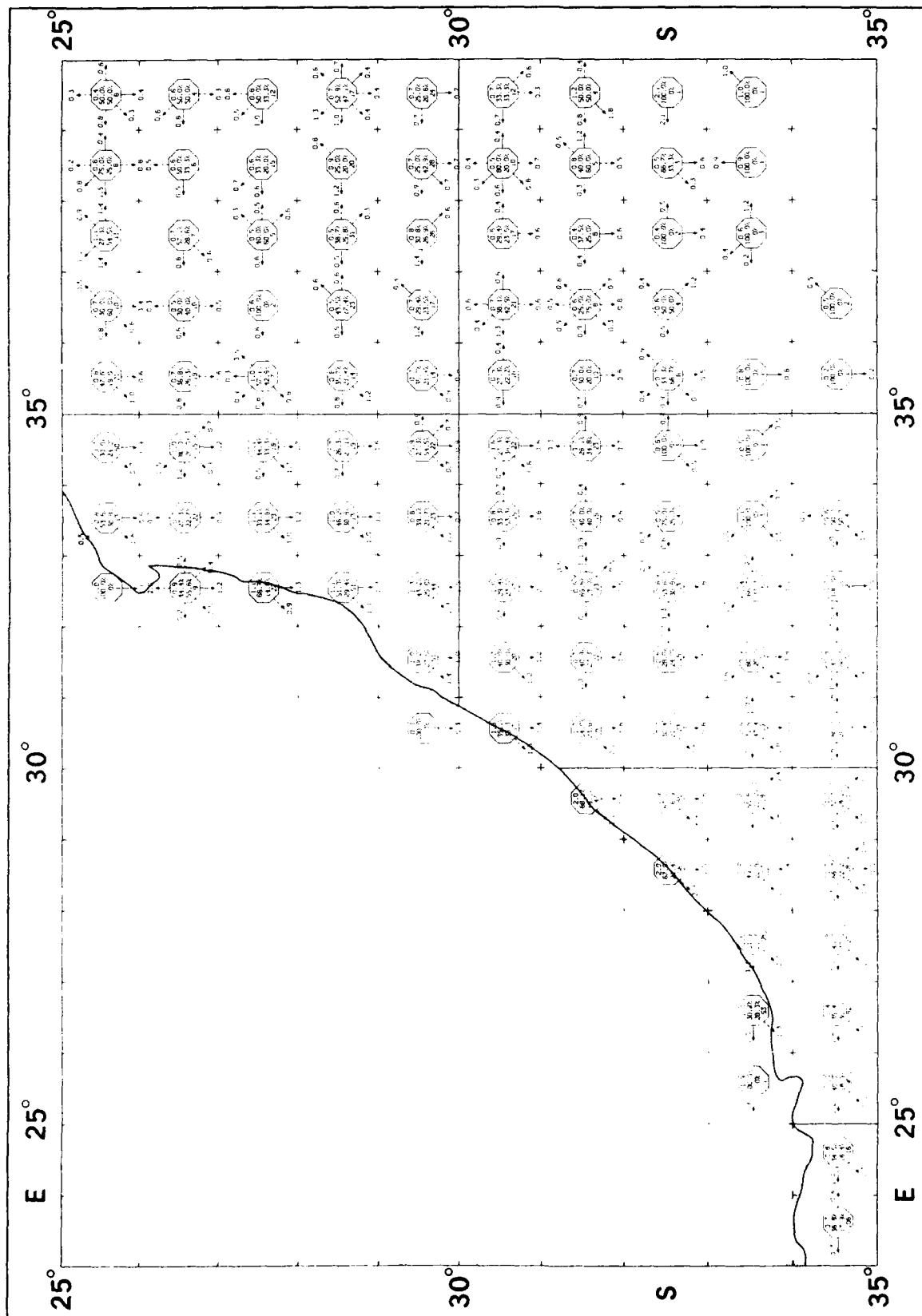
August

Surface Currents



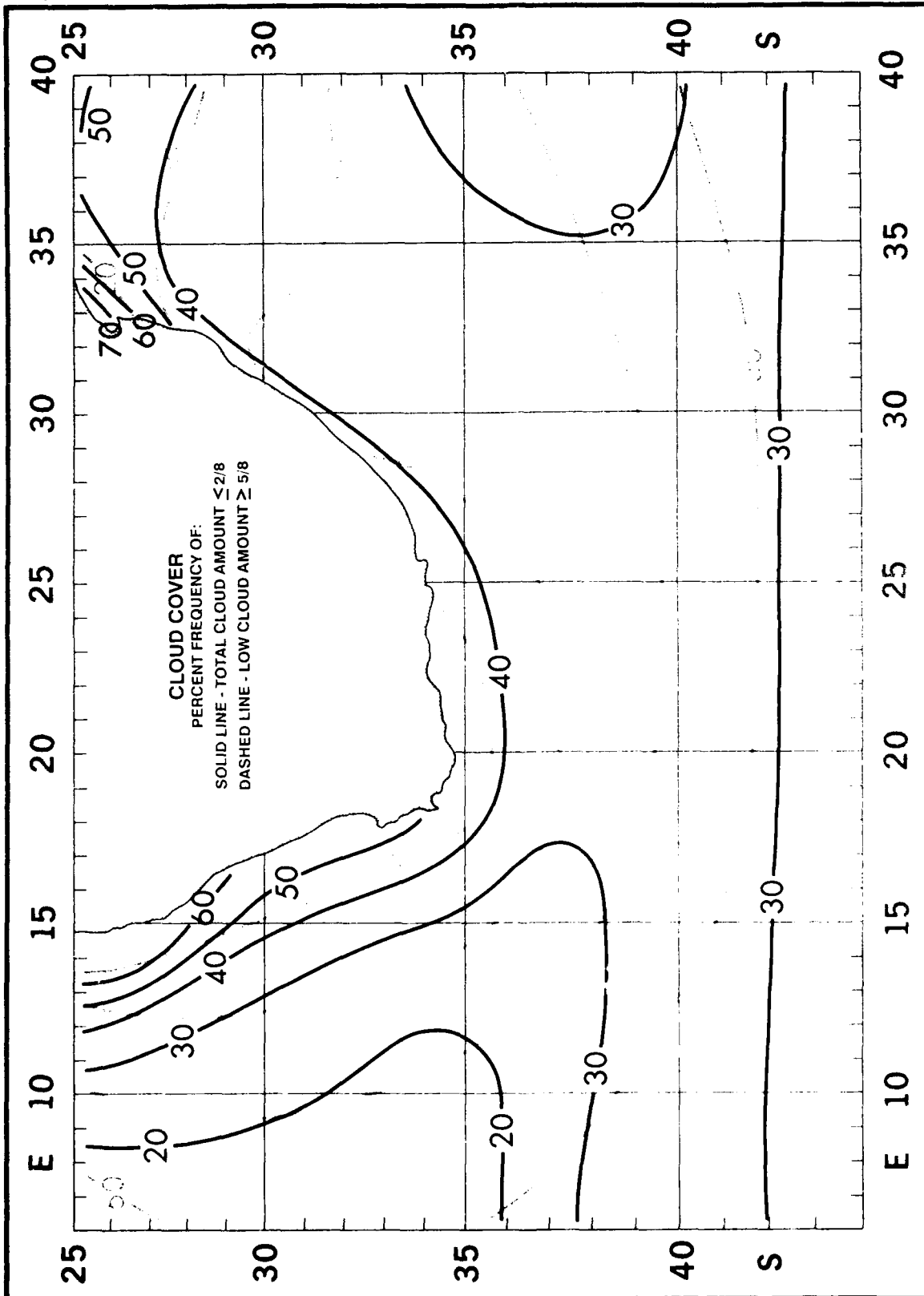
August

Surface Currents



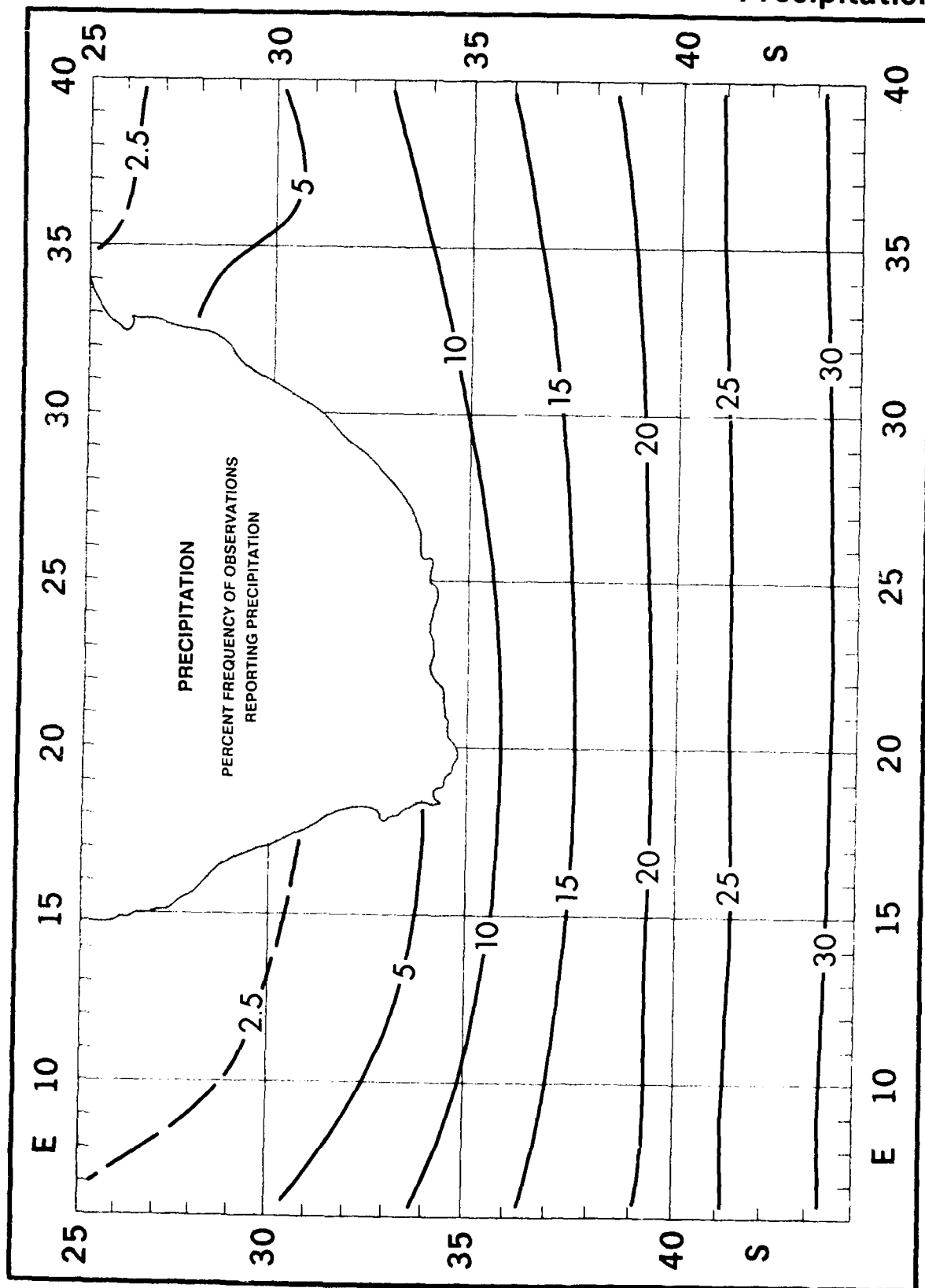
September

Clouds



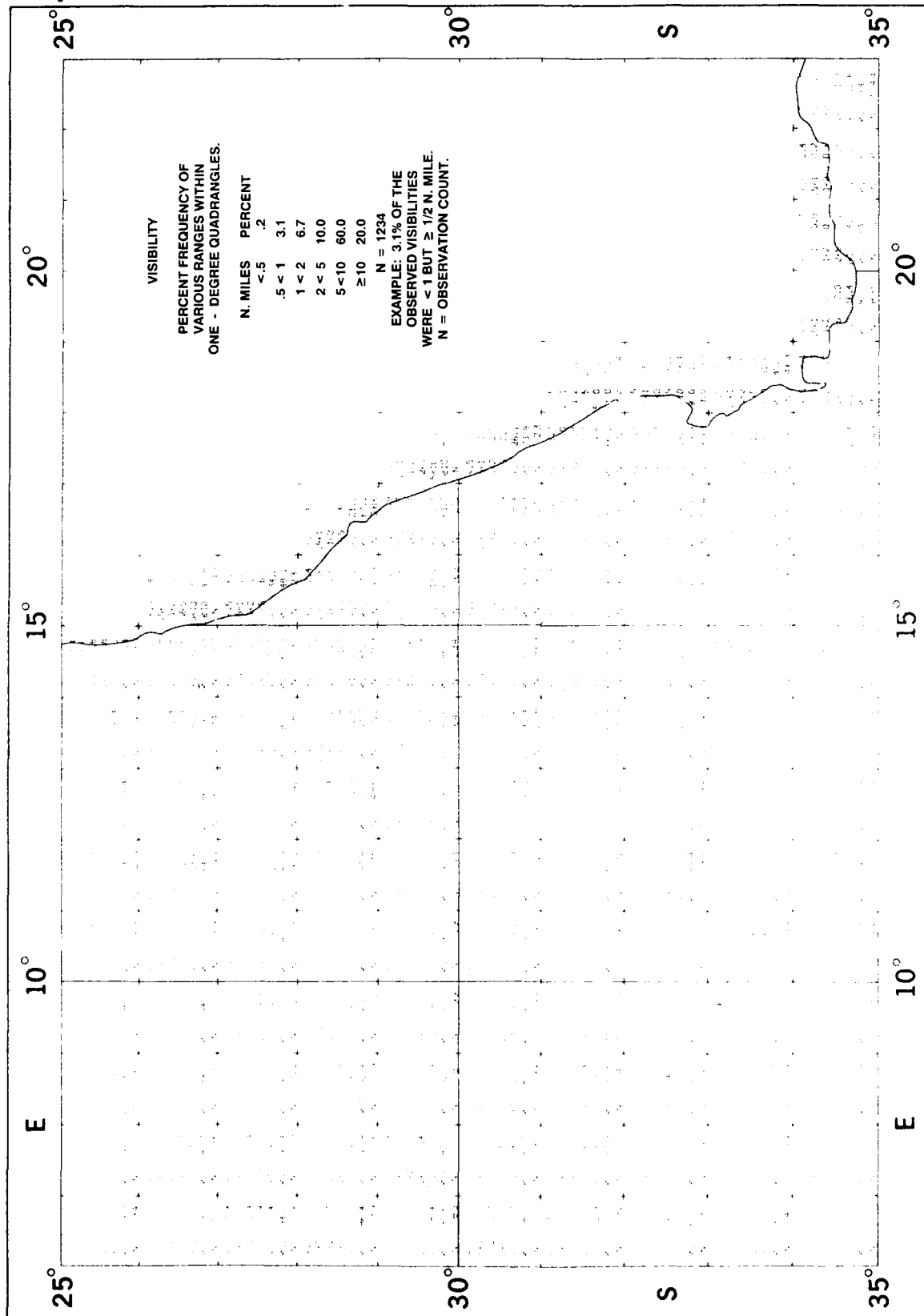
September

Precipitation



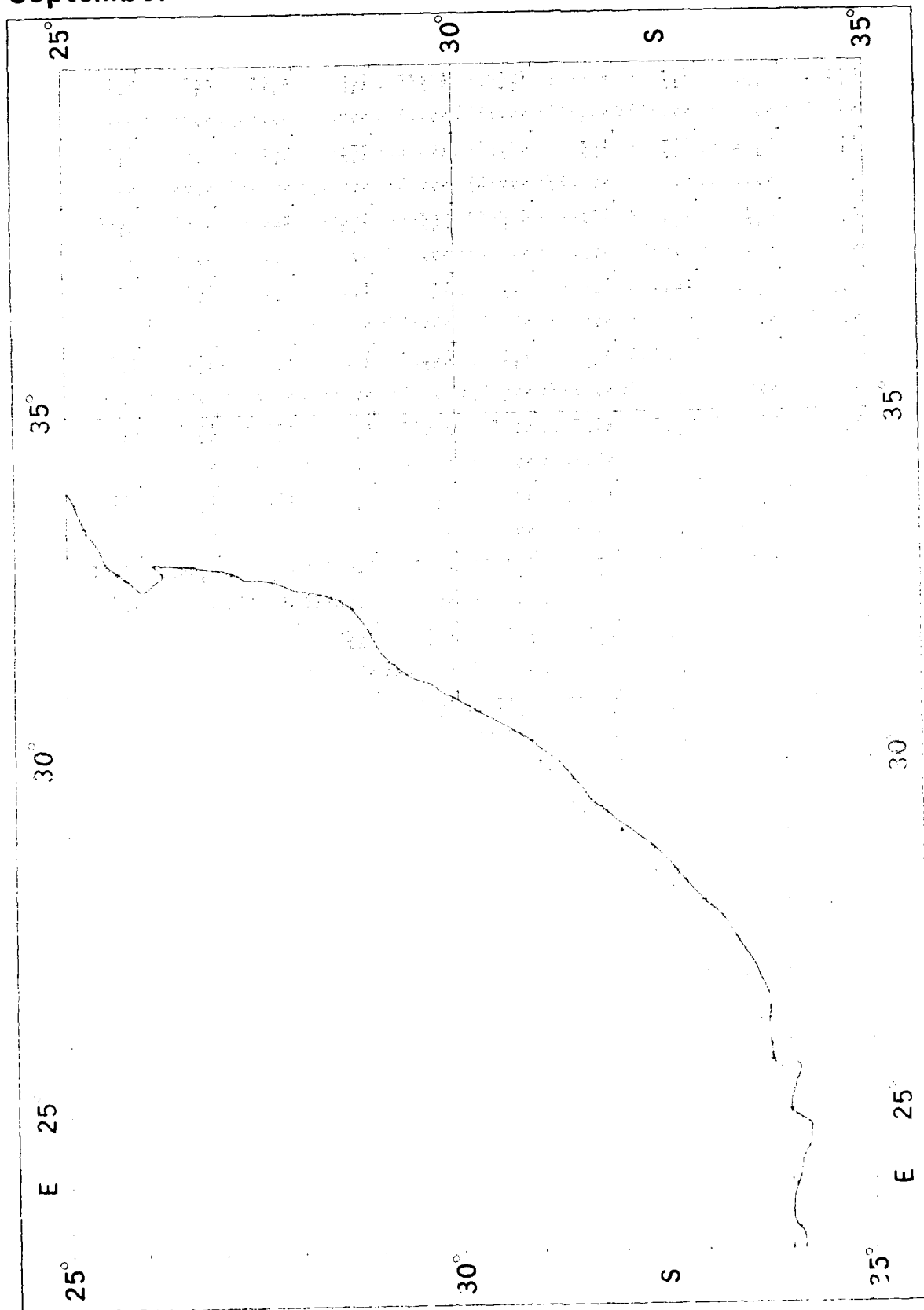
September

Visibility



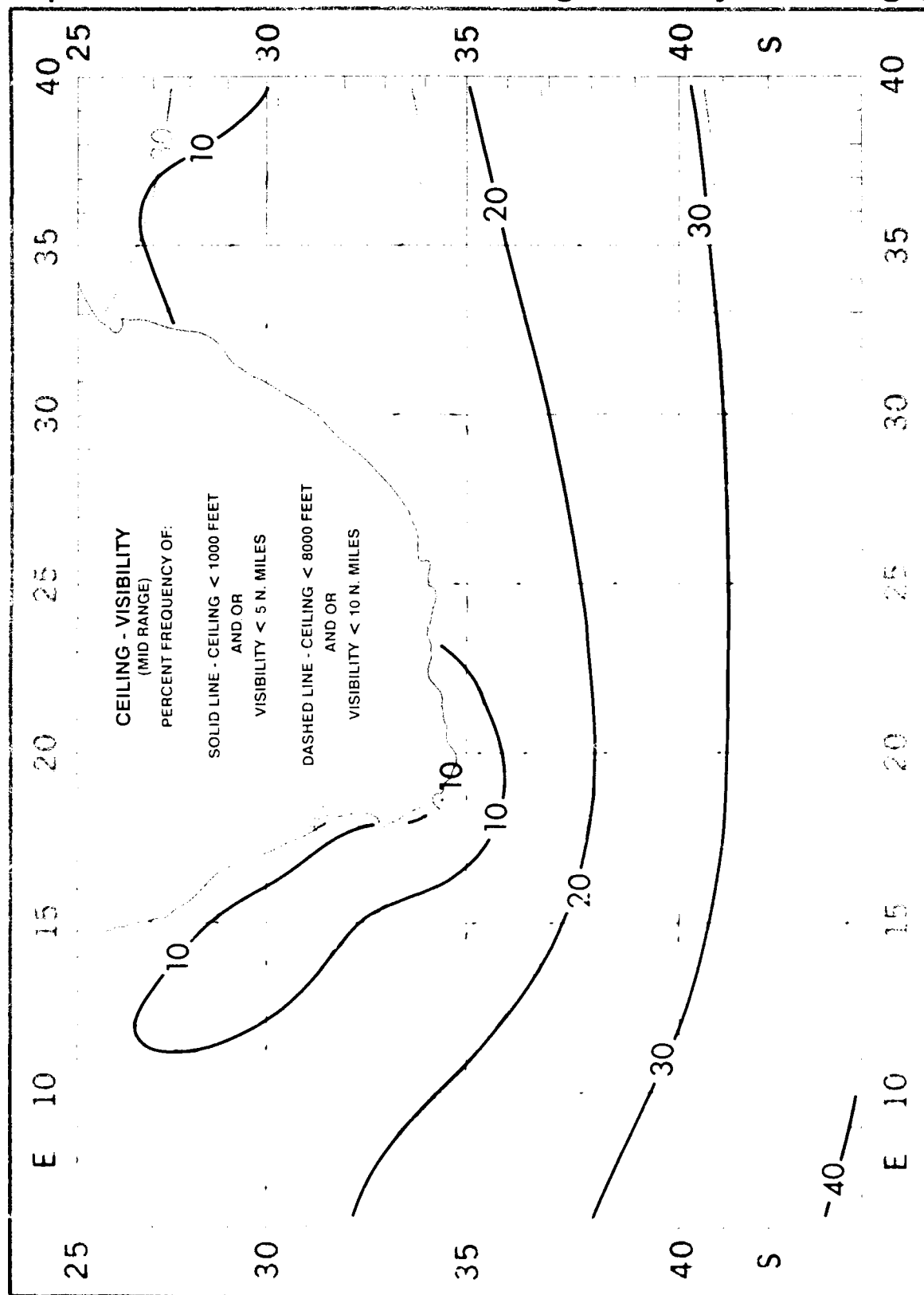
September

Visibility



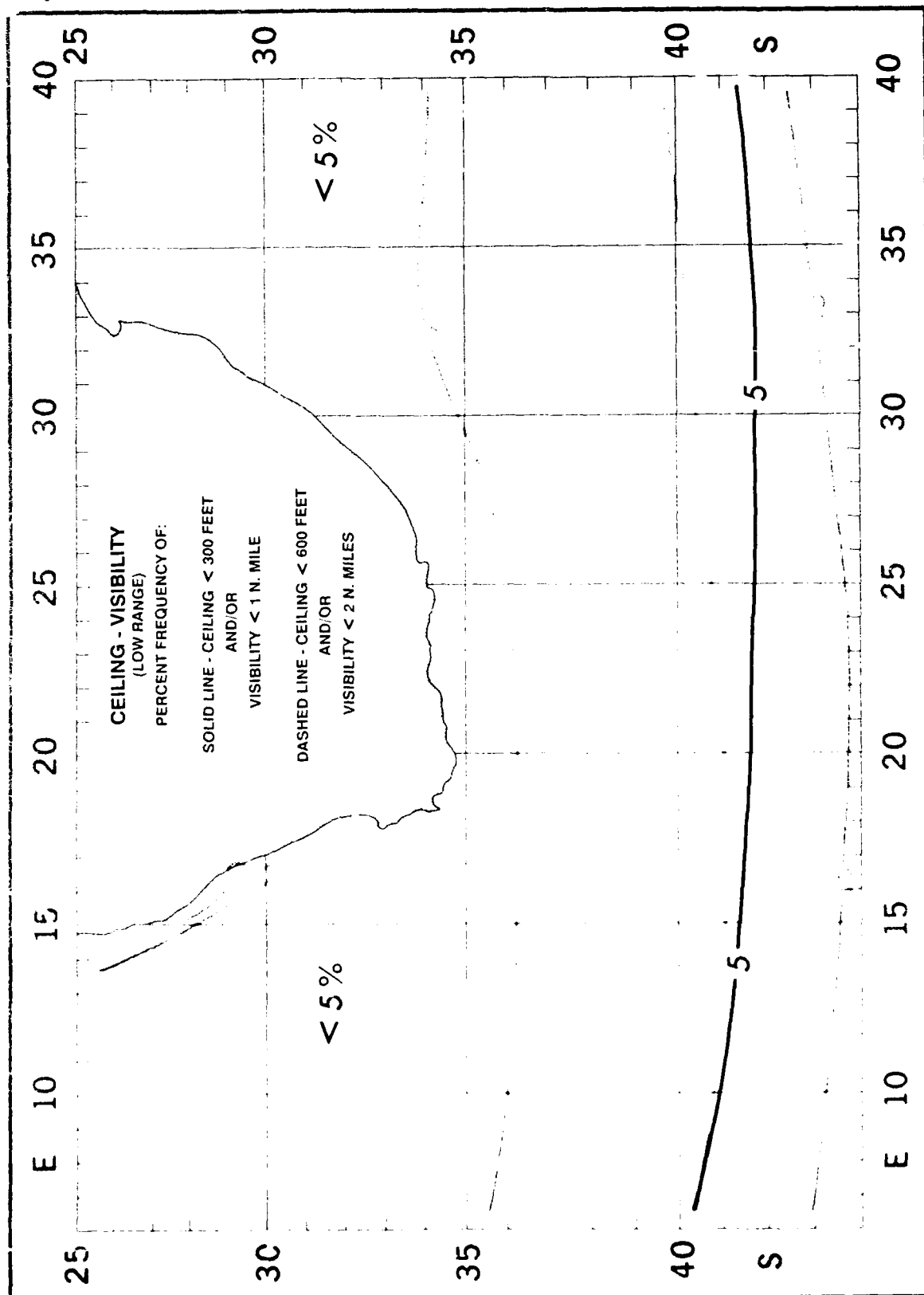
September

Ceiling - Visibility (Mid Range)



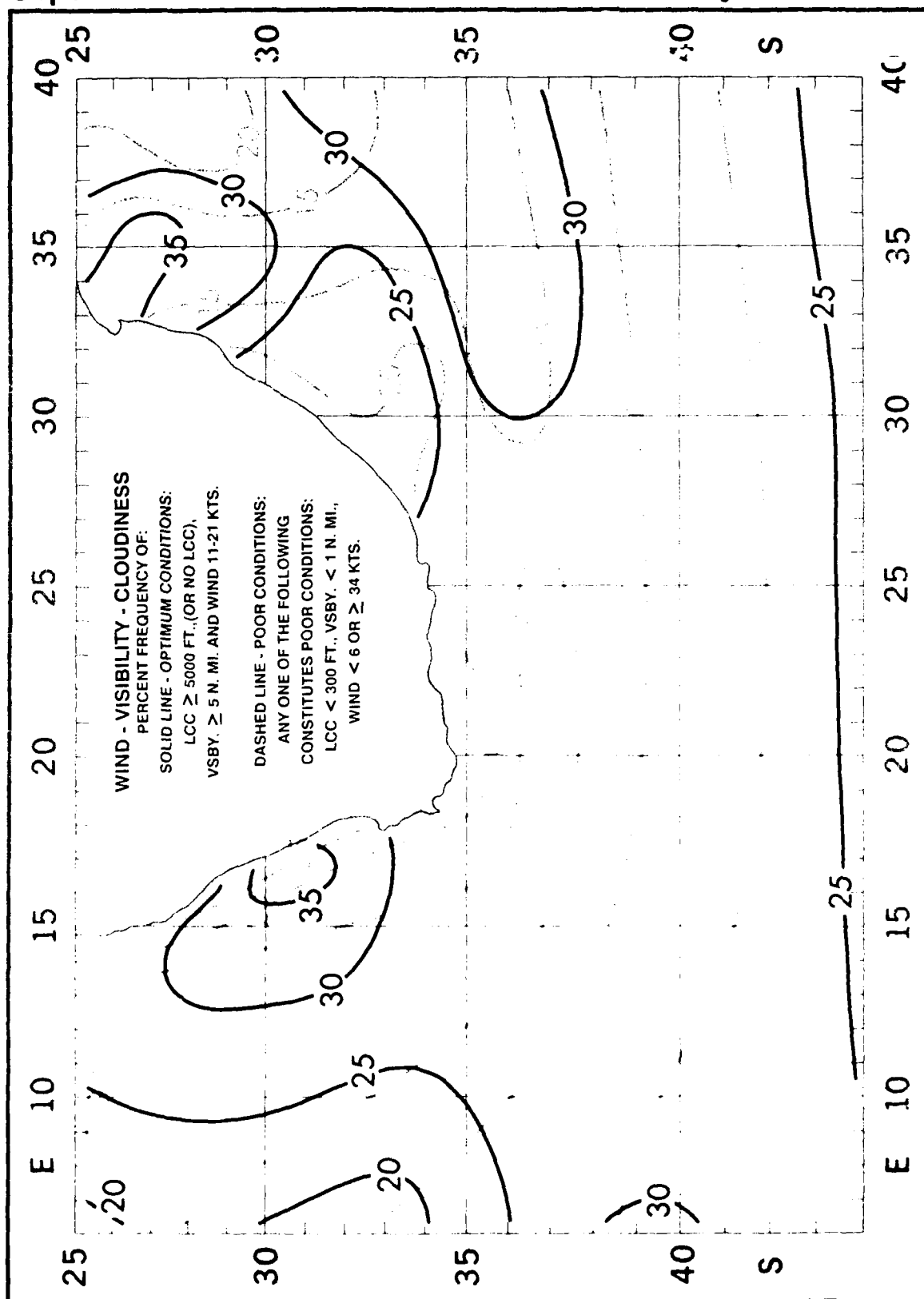
September

Ceiling - Visibility (Low Range)



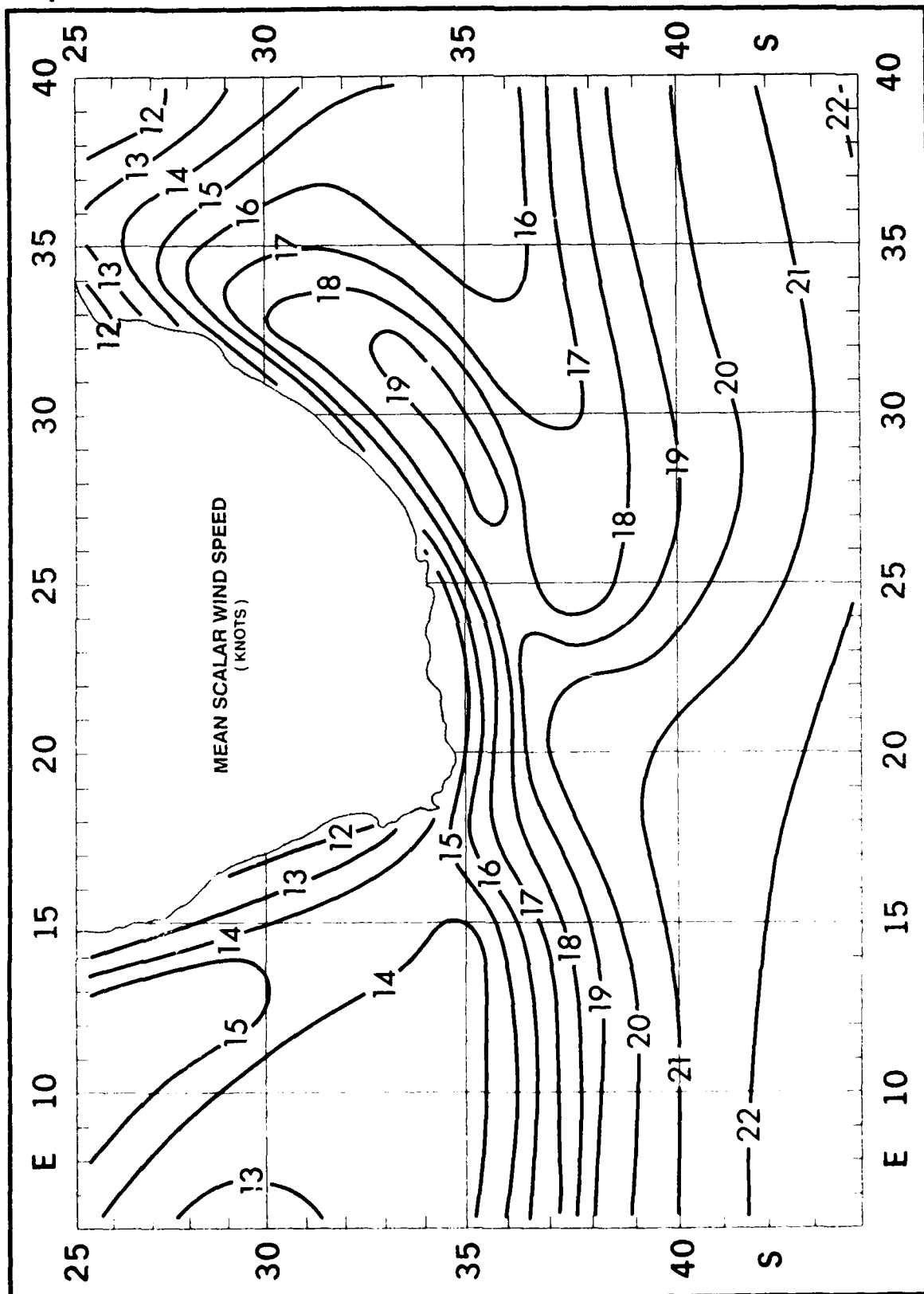
September

Wind - Visibility - Cloudiness



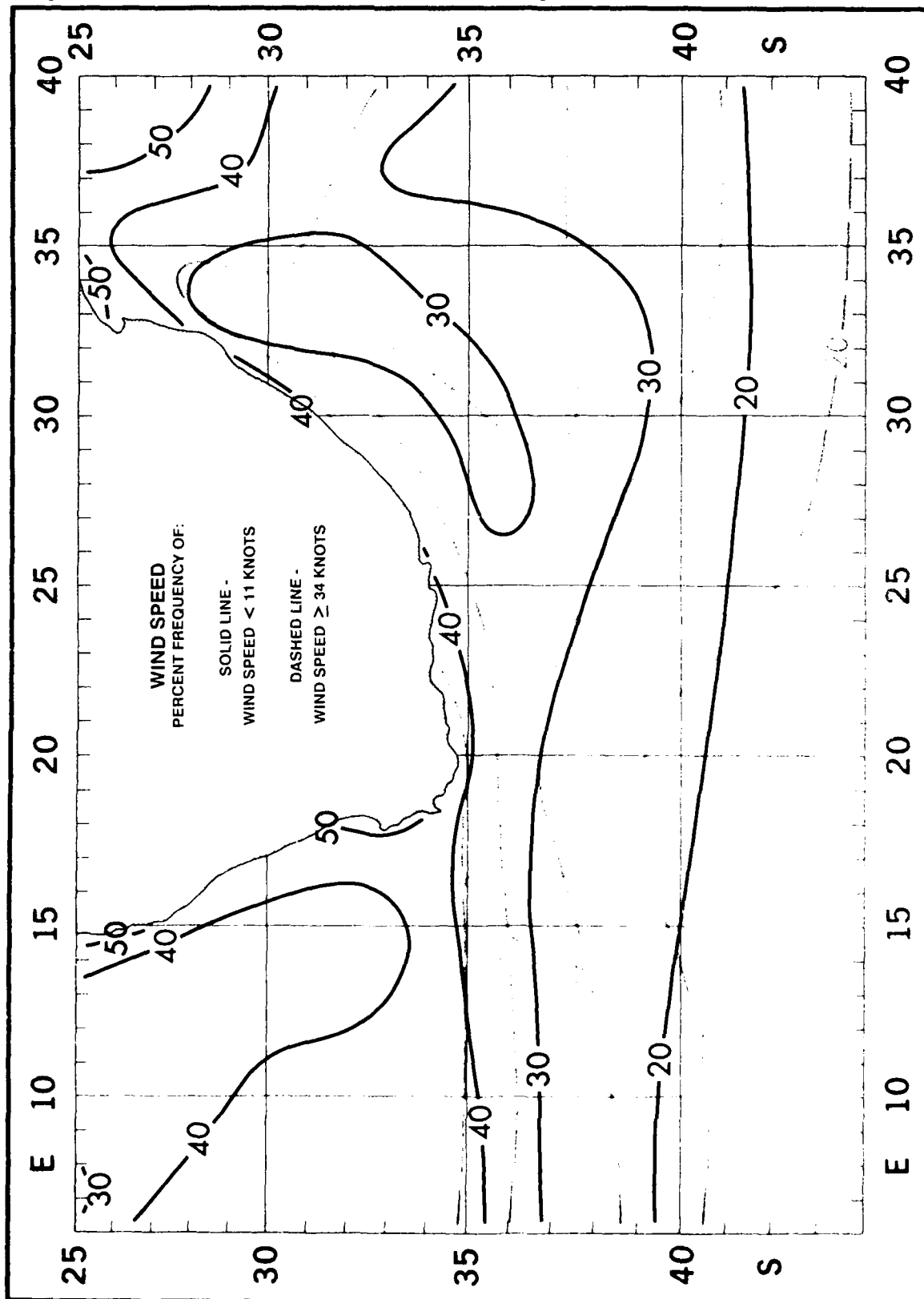
September

Mean Scalar Wind Speed



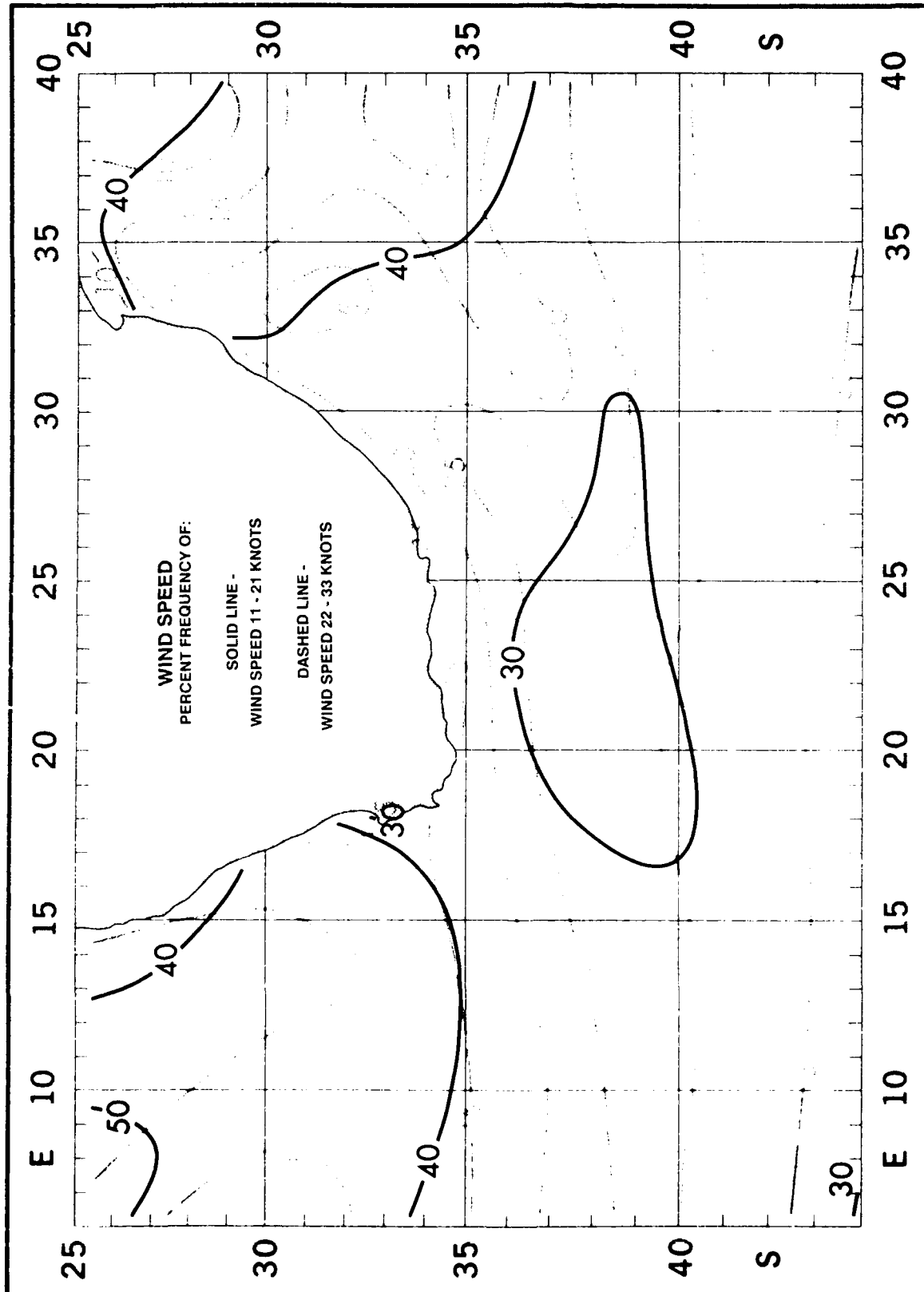
September

Wind Speed < 11 and ≥ 34 Knots



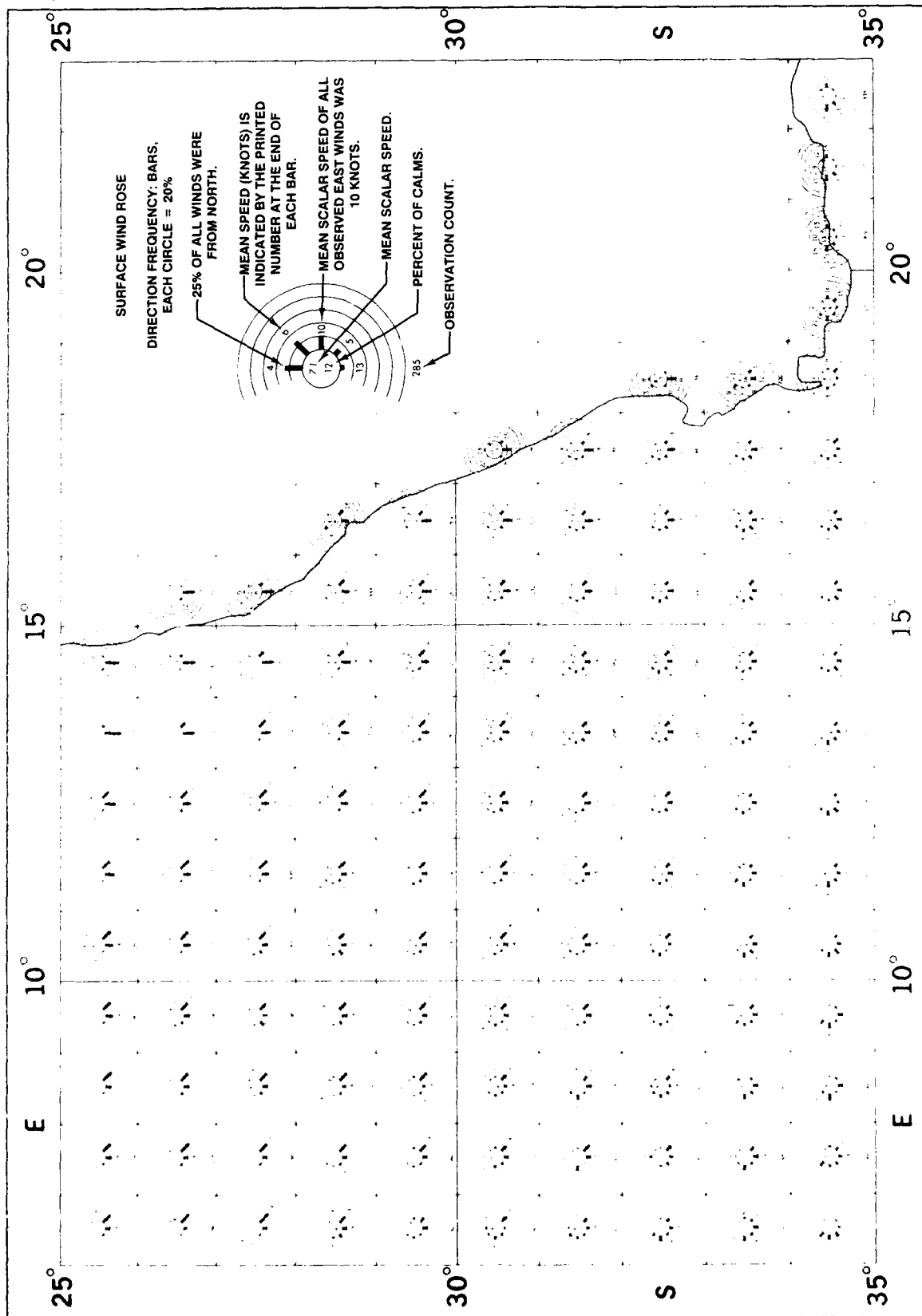
September

Wind Speed 11 - 21 and 22 - 33 Knots



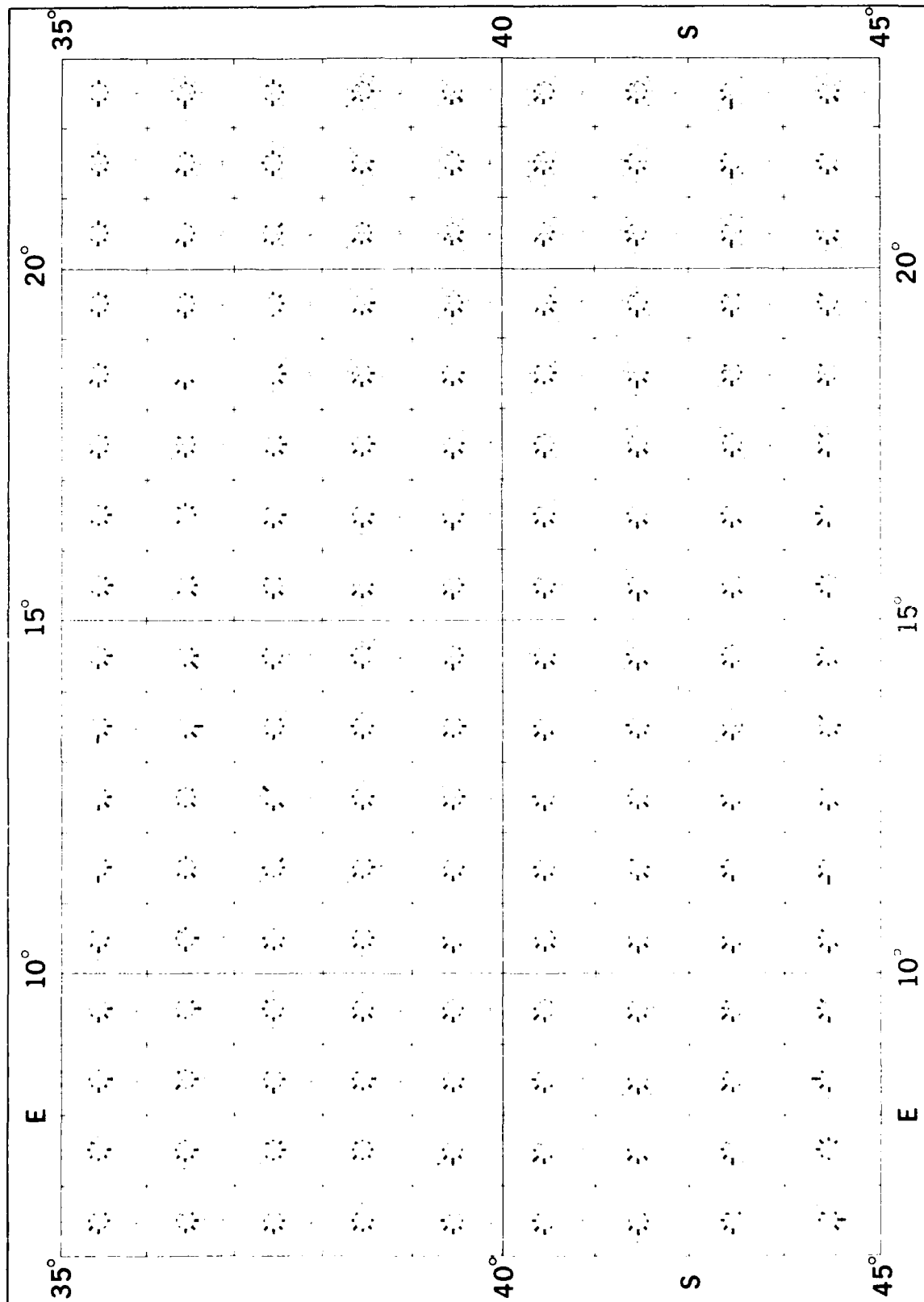
September

Surface Wind Roses



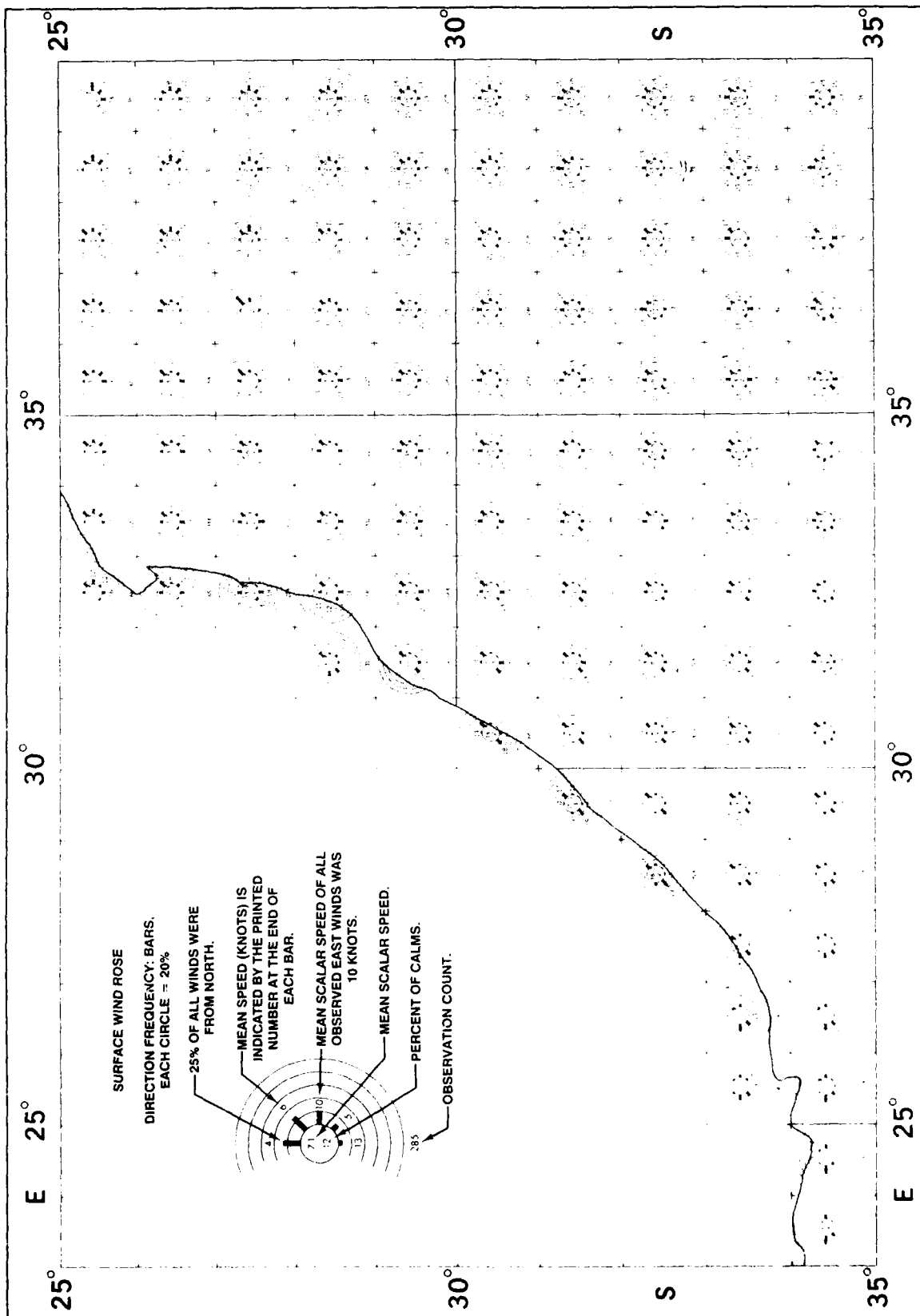
September

Surface Wind Roses



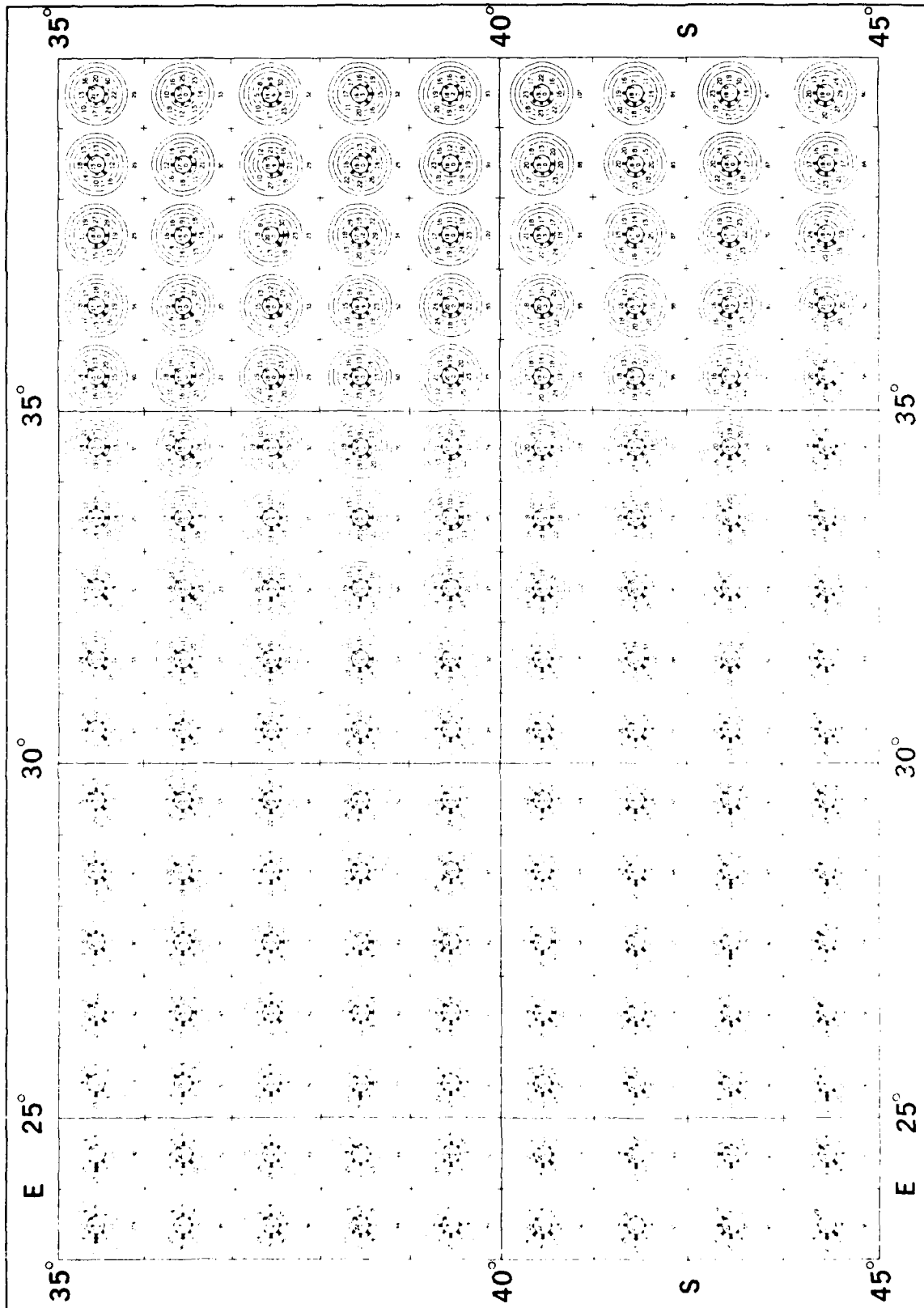
September

Surface Wind Roses



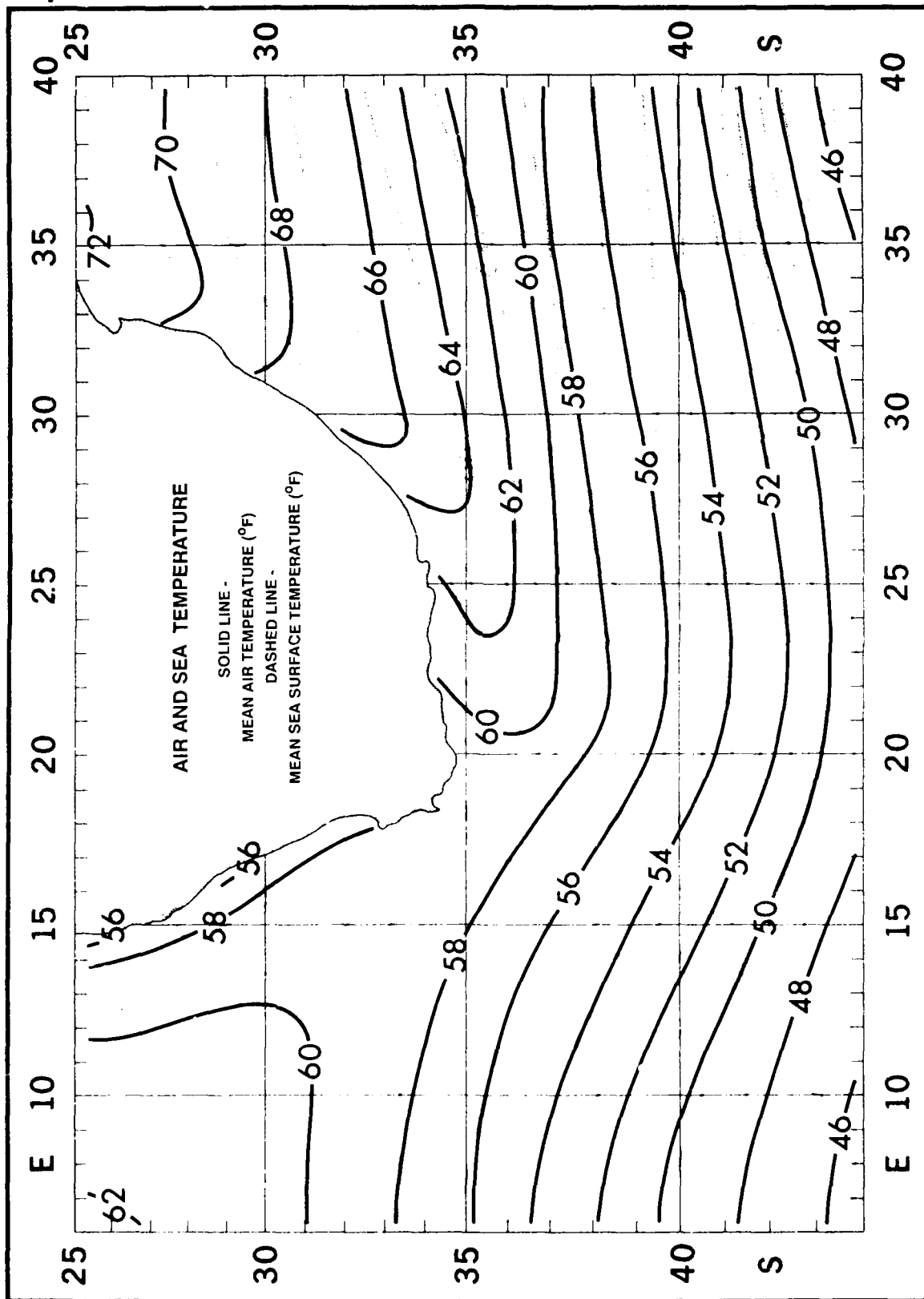
September

Surface Wind Roses



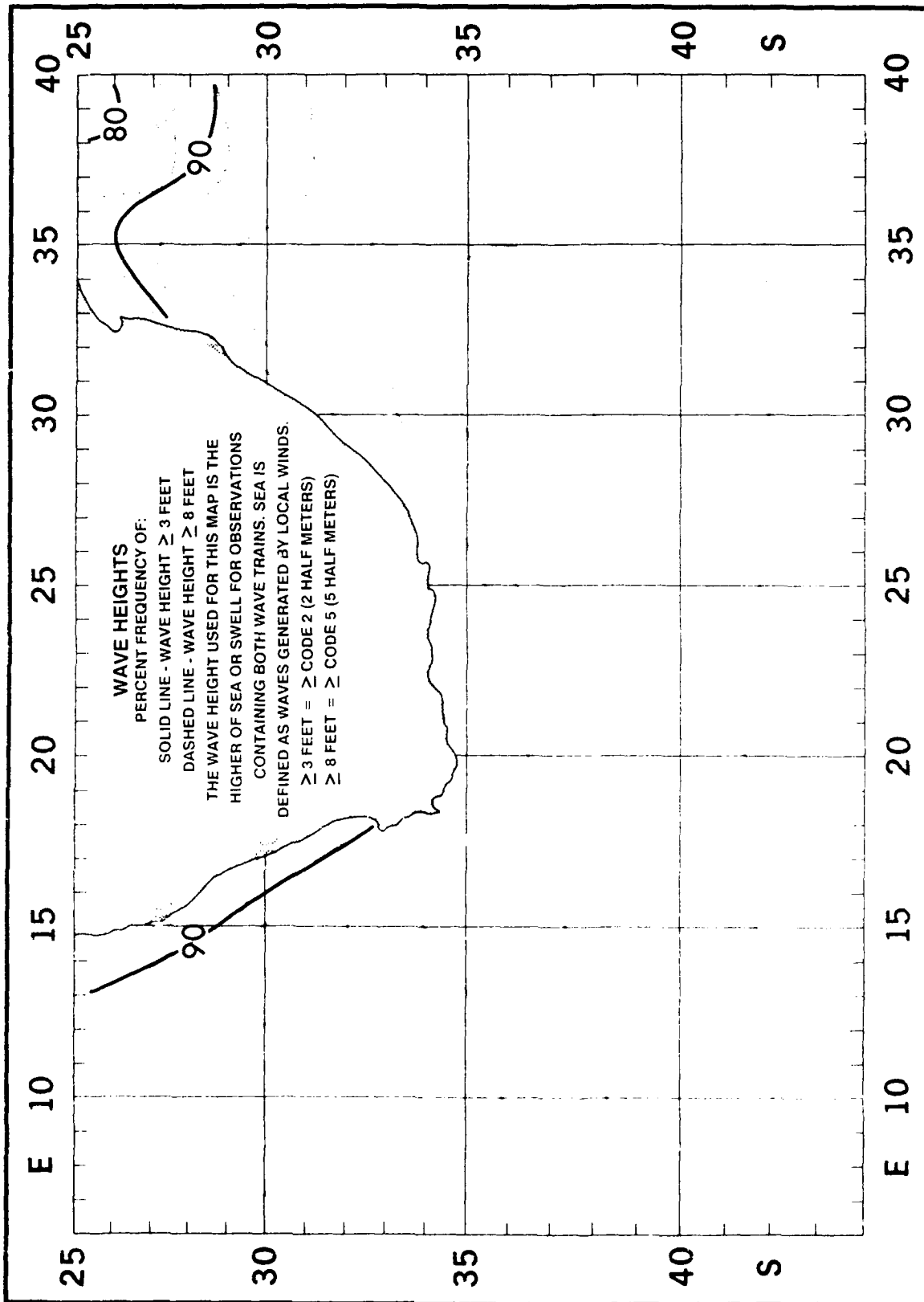
September

Air and Sea Temperature



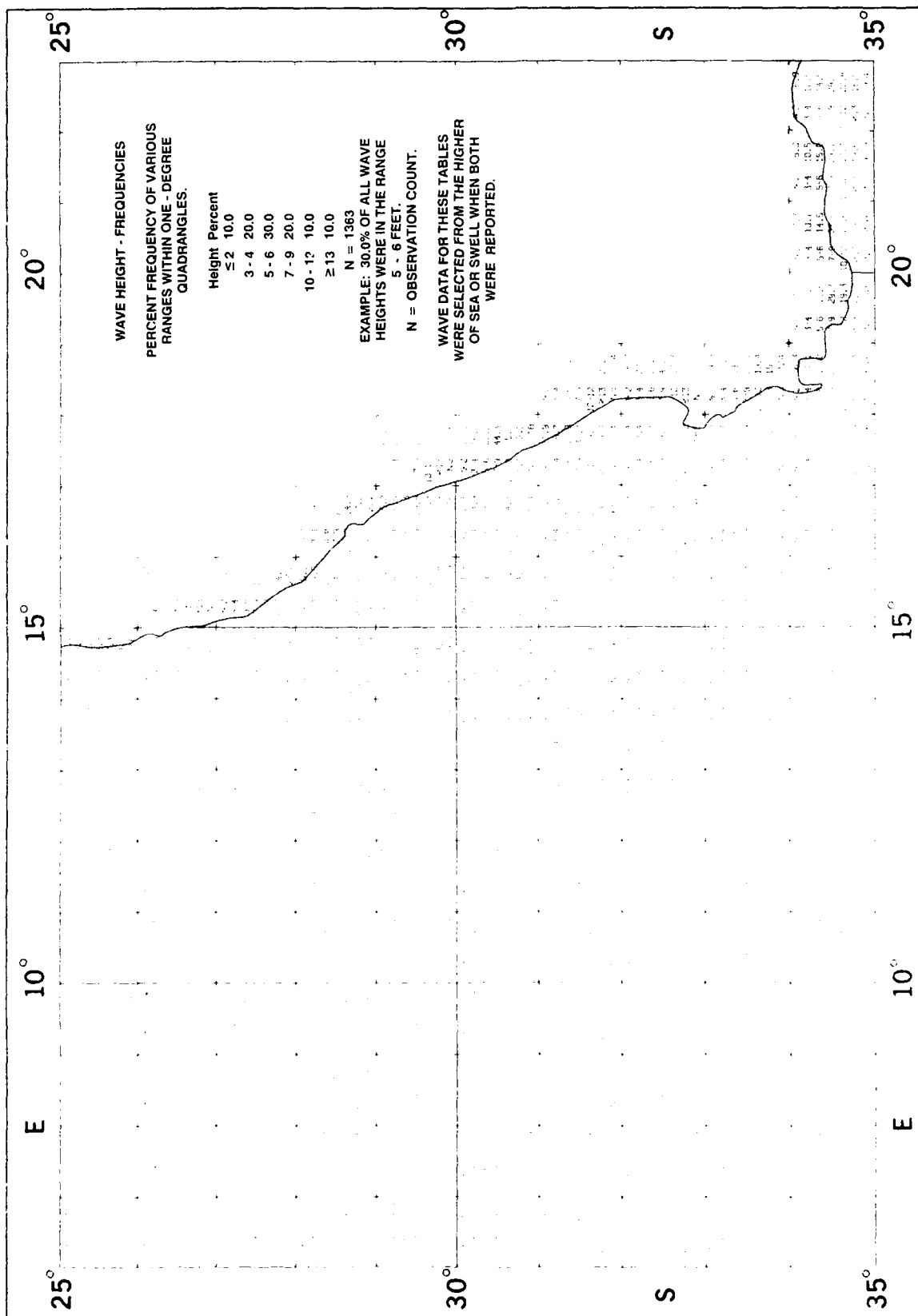
September

Wave Height



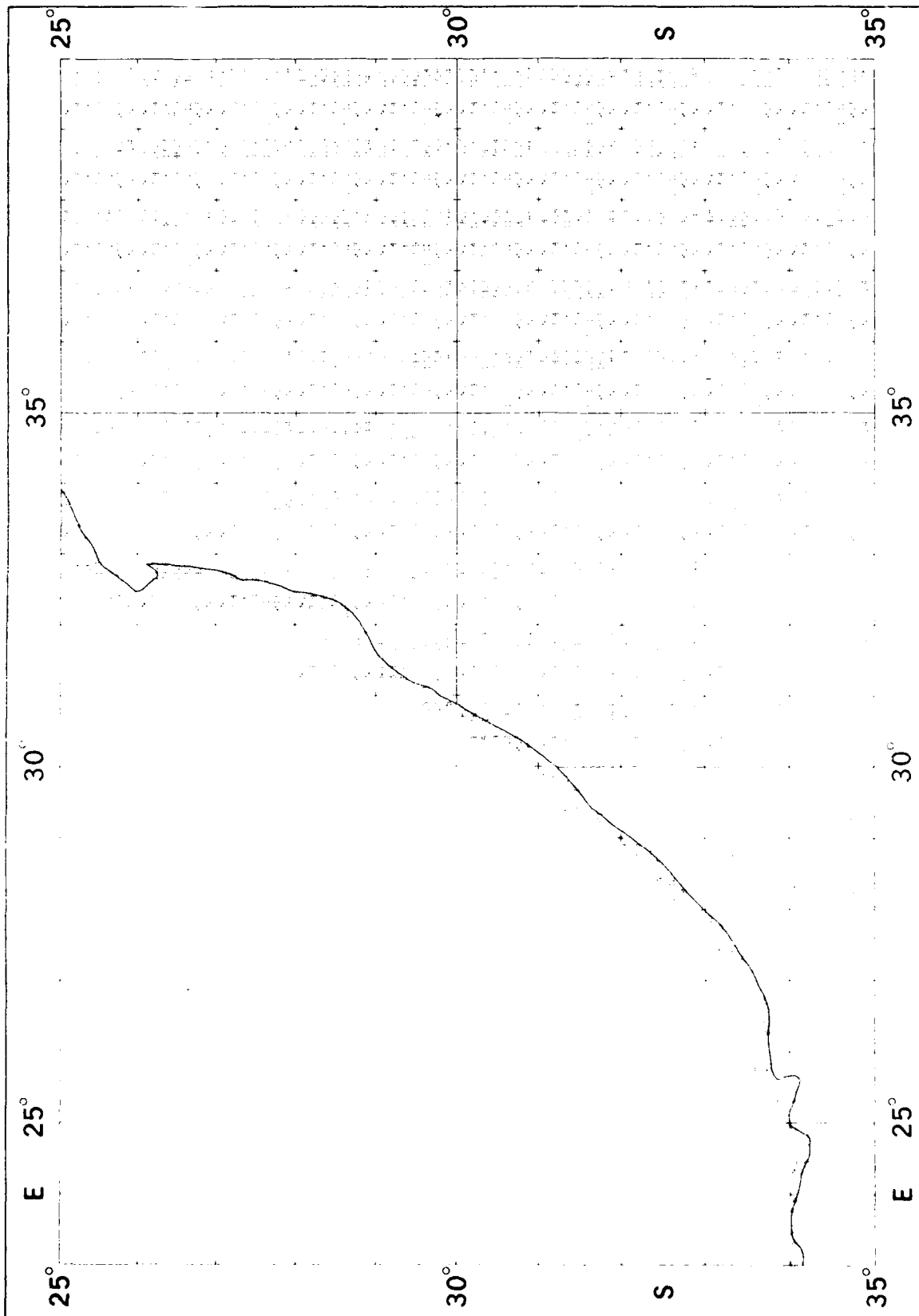
September

Wave Height



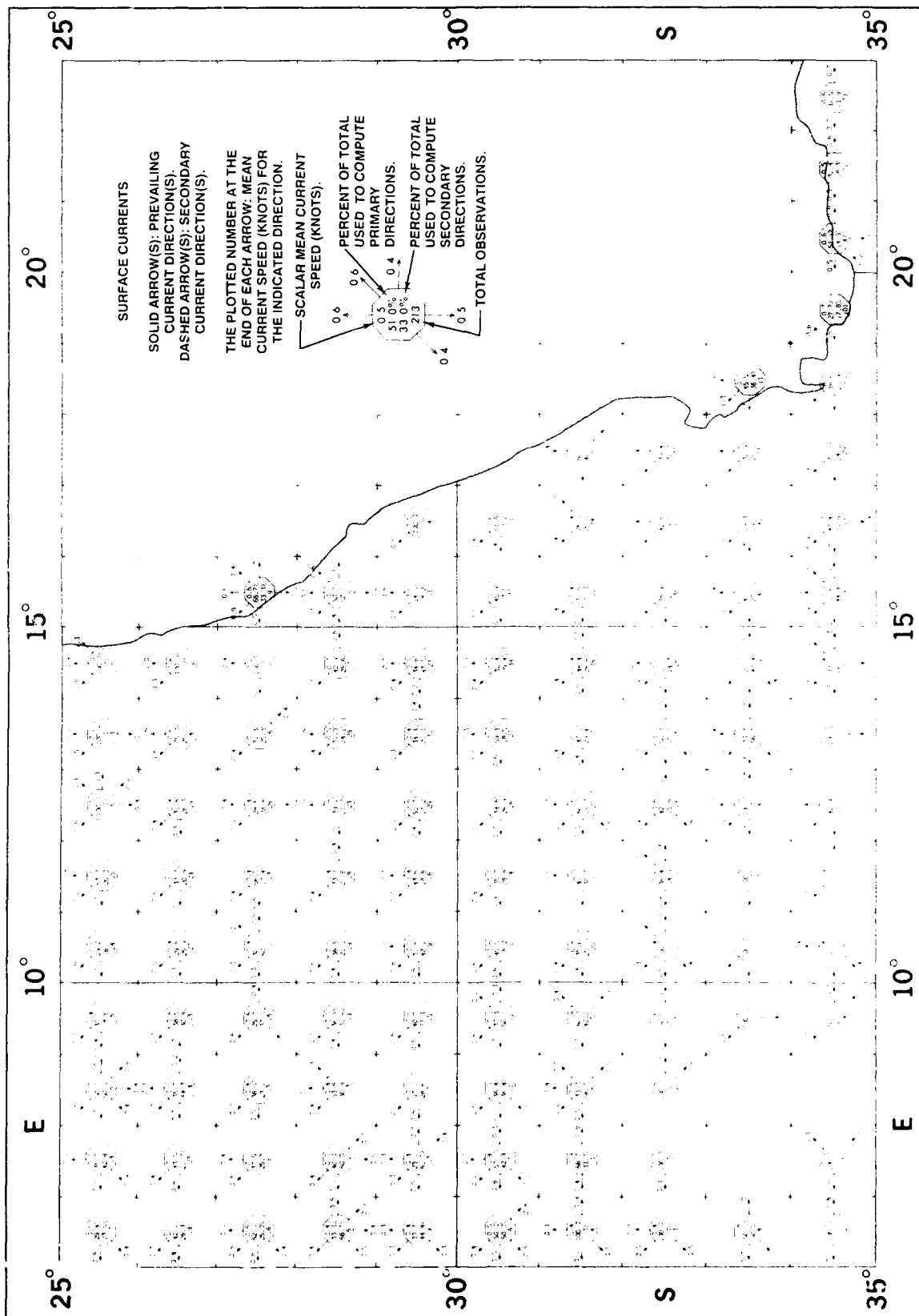
September

Wave Height



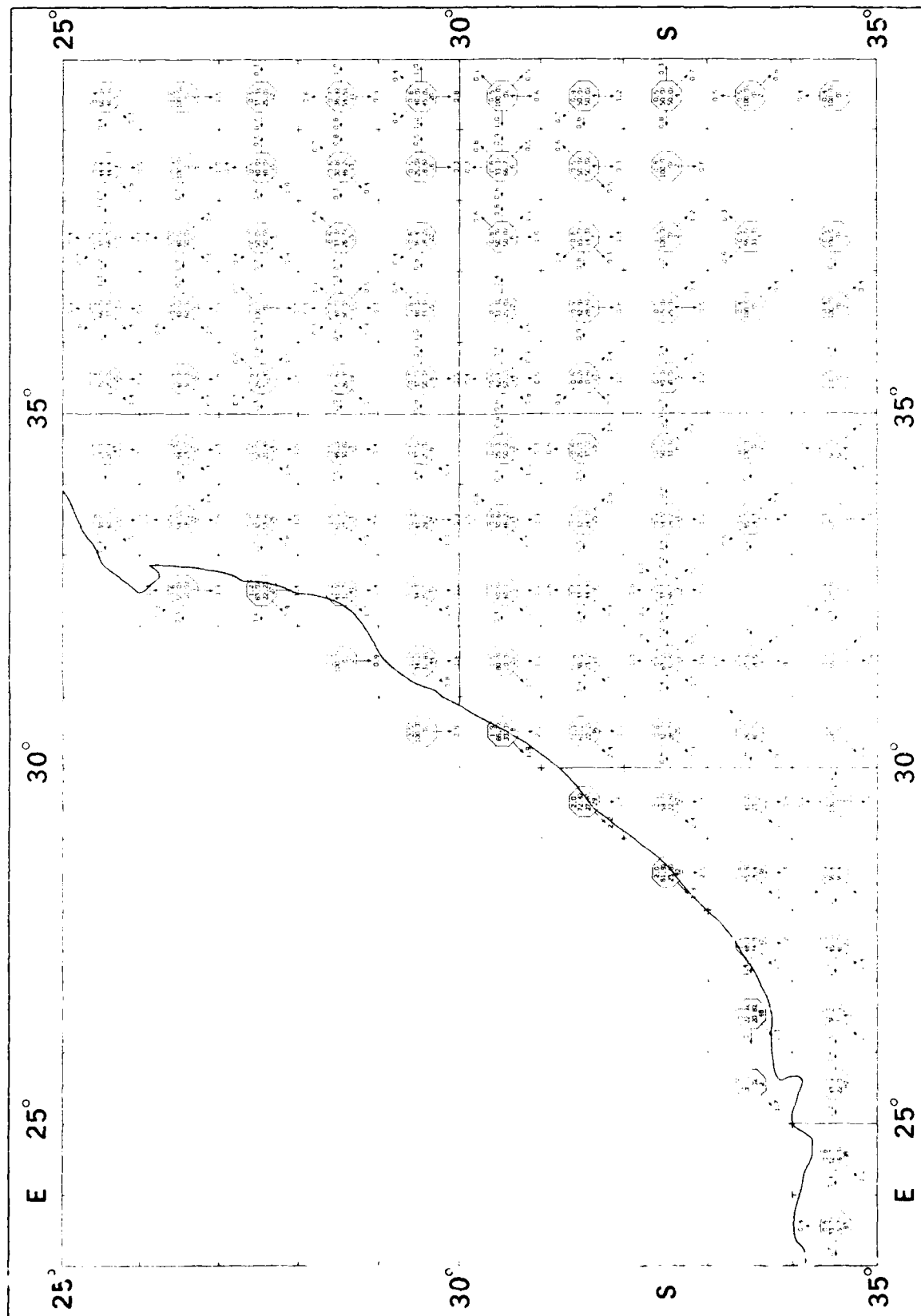
September

Surface Currents



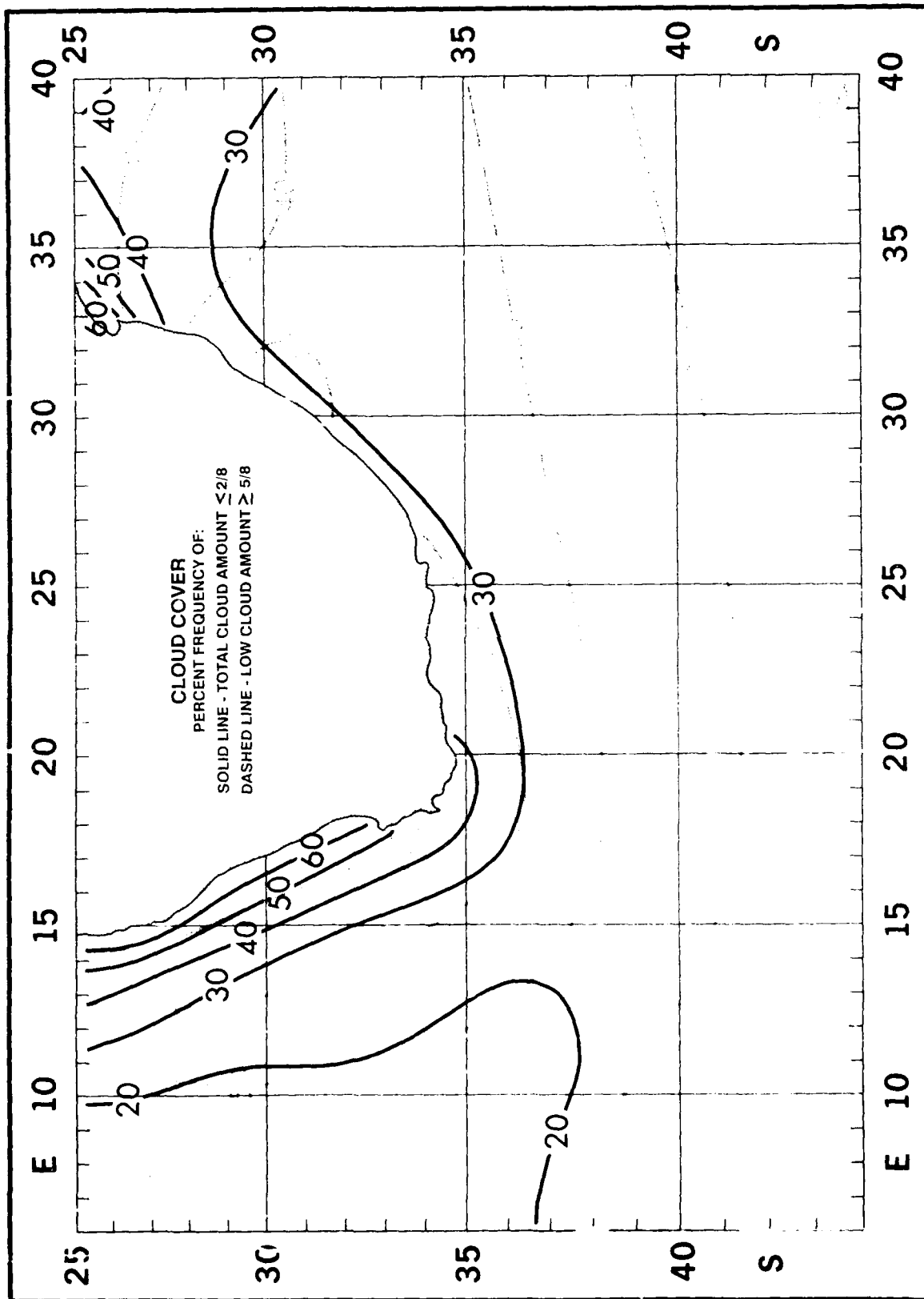
September

Surface Currents



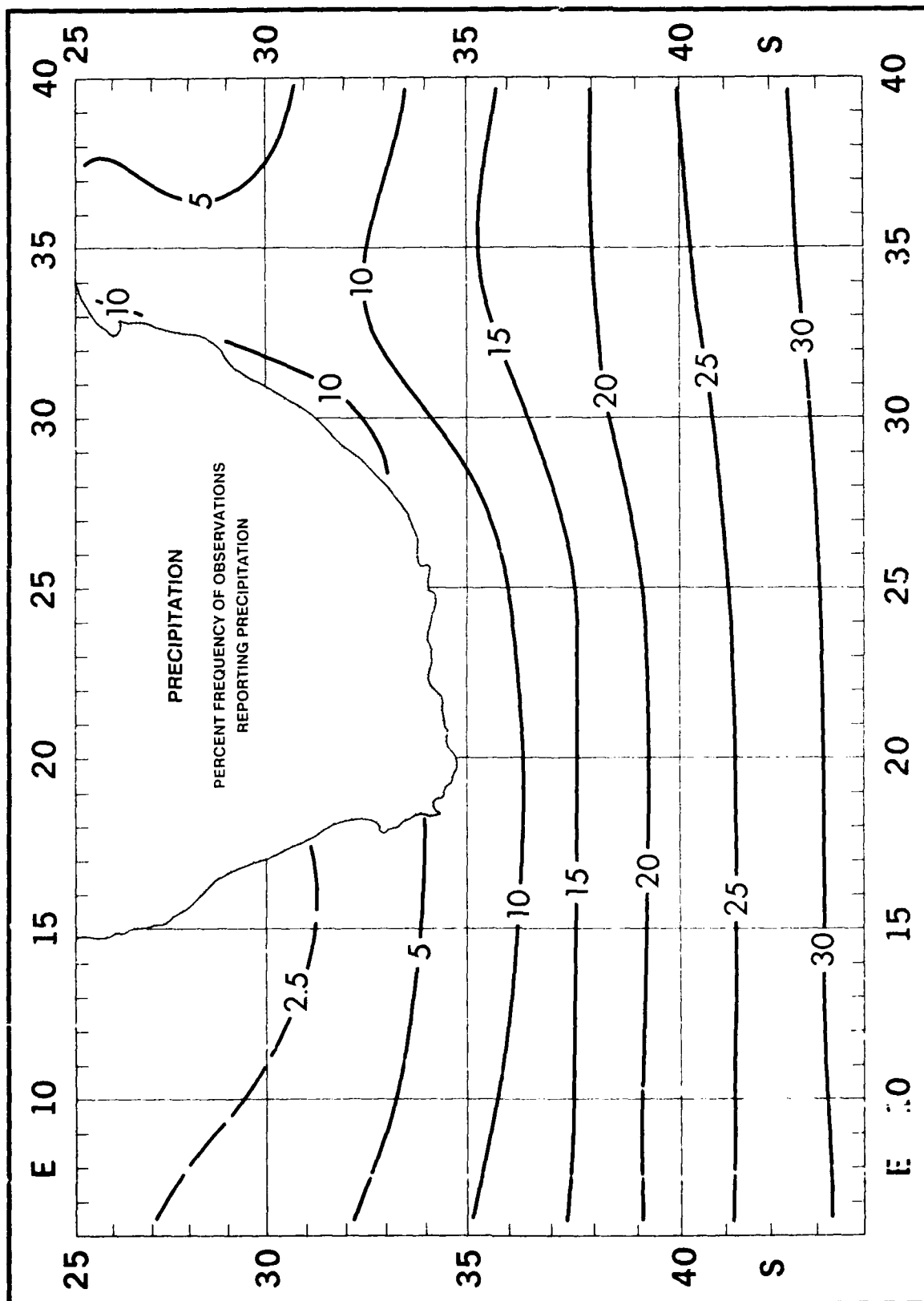
October

Clouds



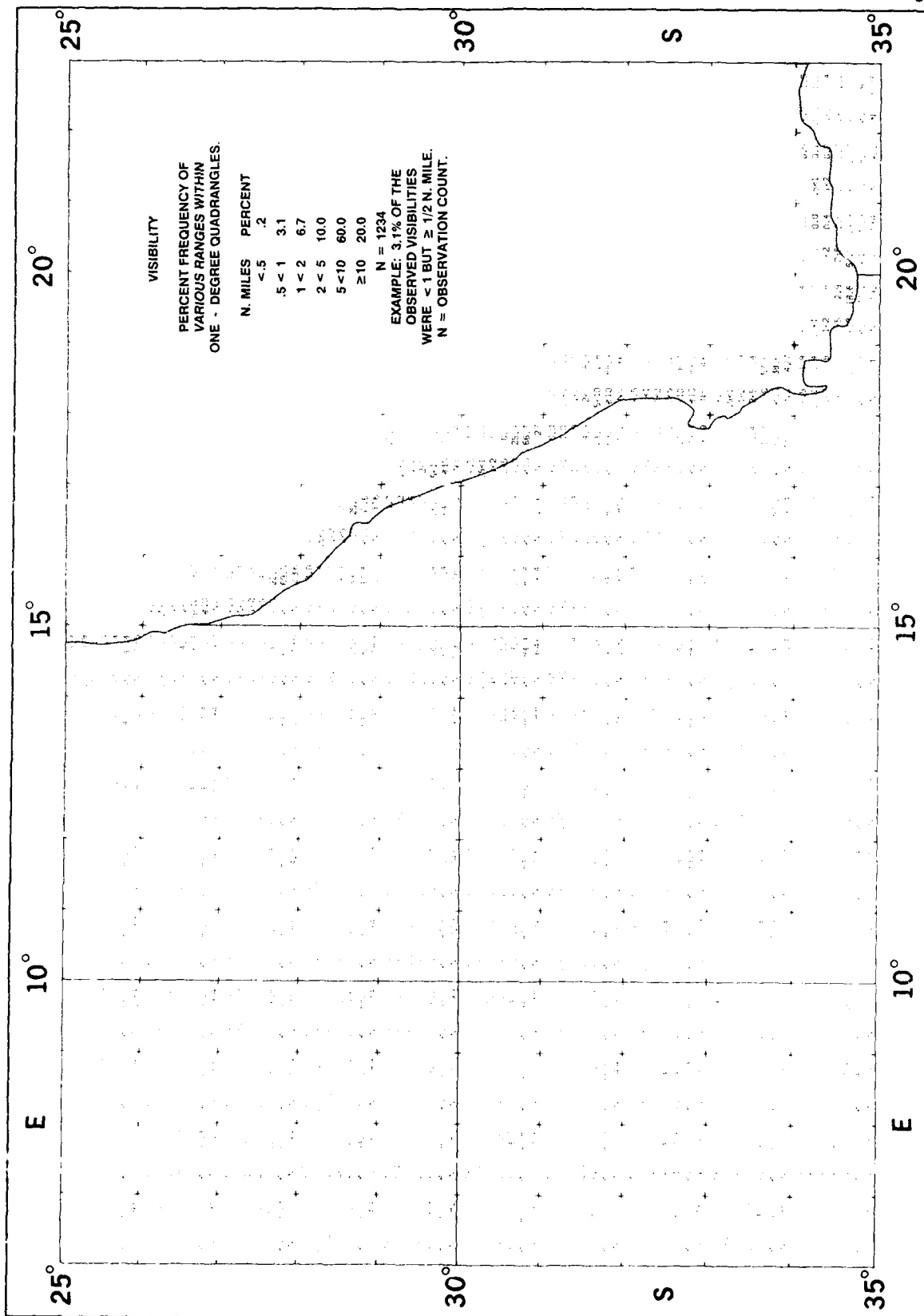
October

Precipitation



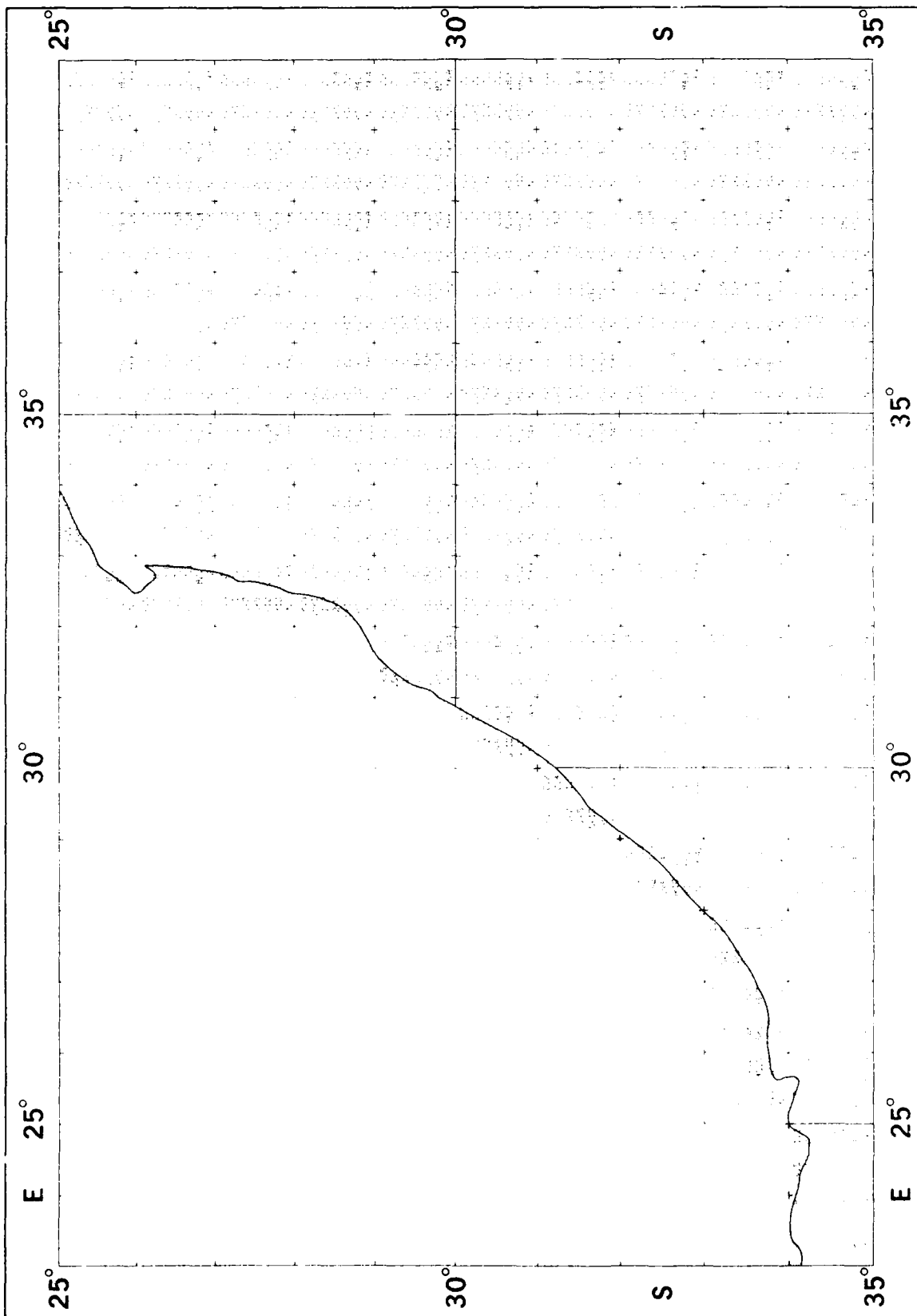
October

Visibility



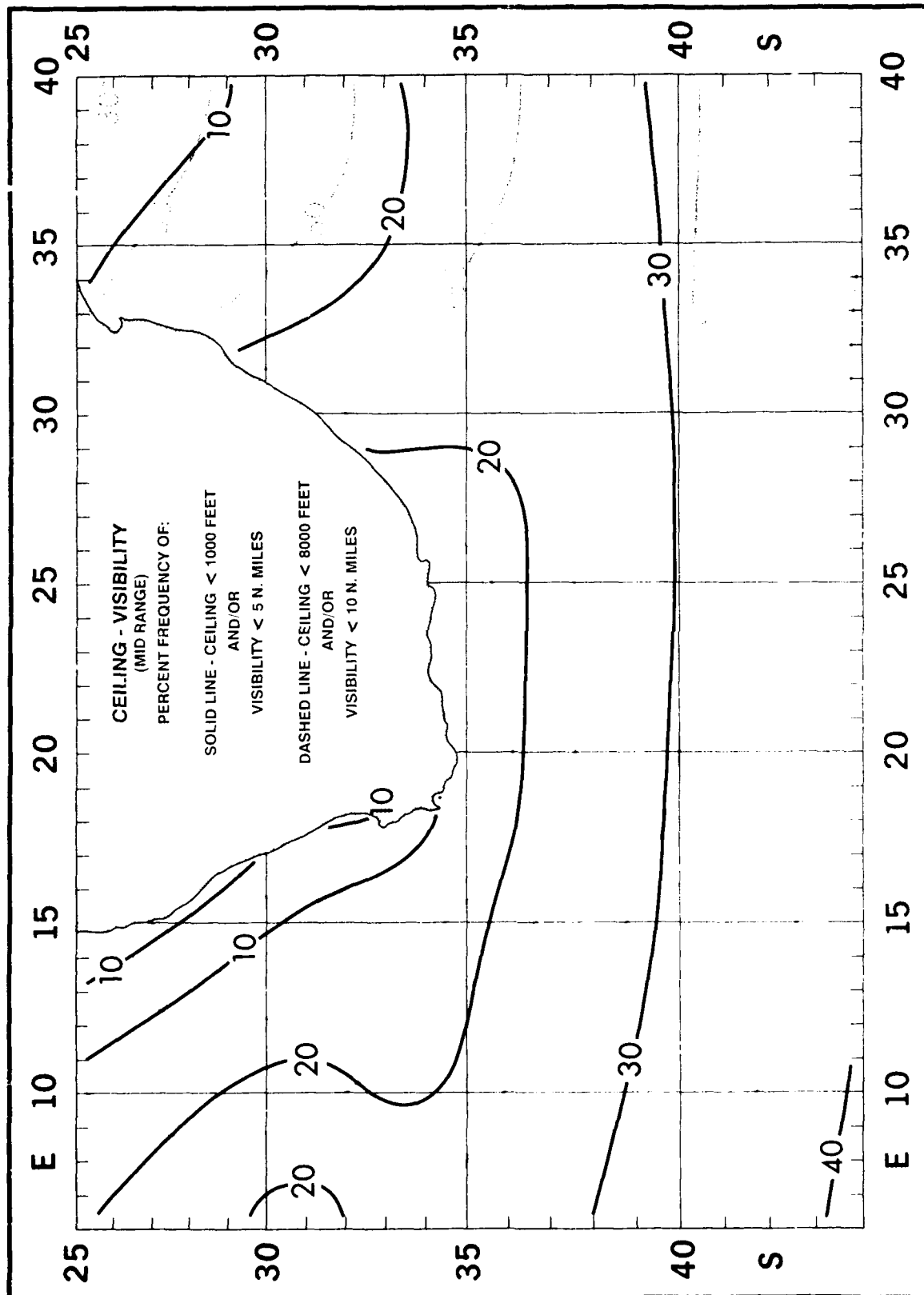
October

Visibility



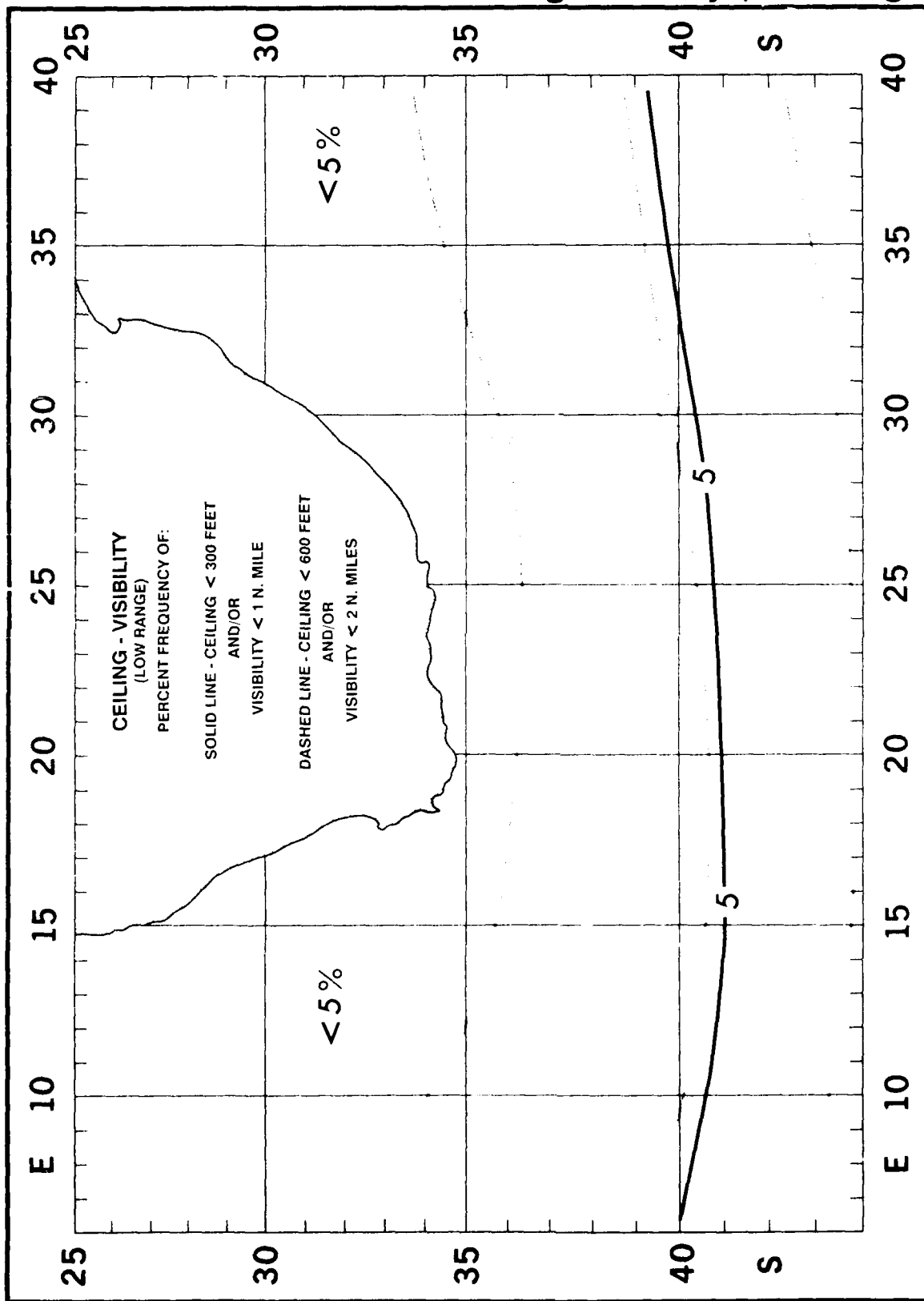
October

Ceiling - Visibility (Mid Range)



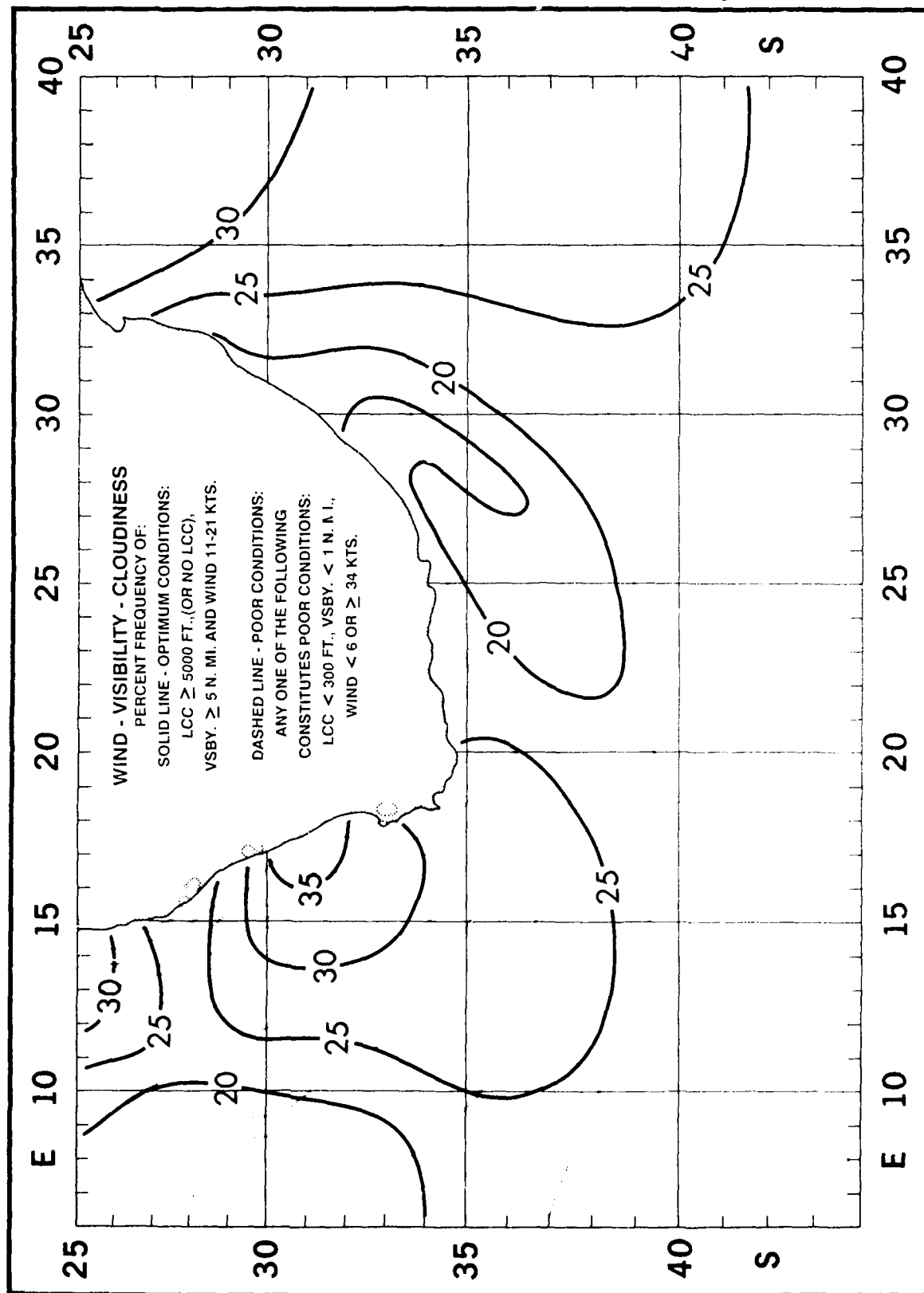
October

Ceiling - Visibility (Low Range)



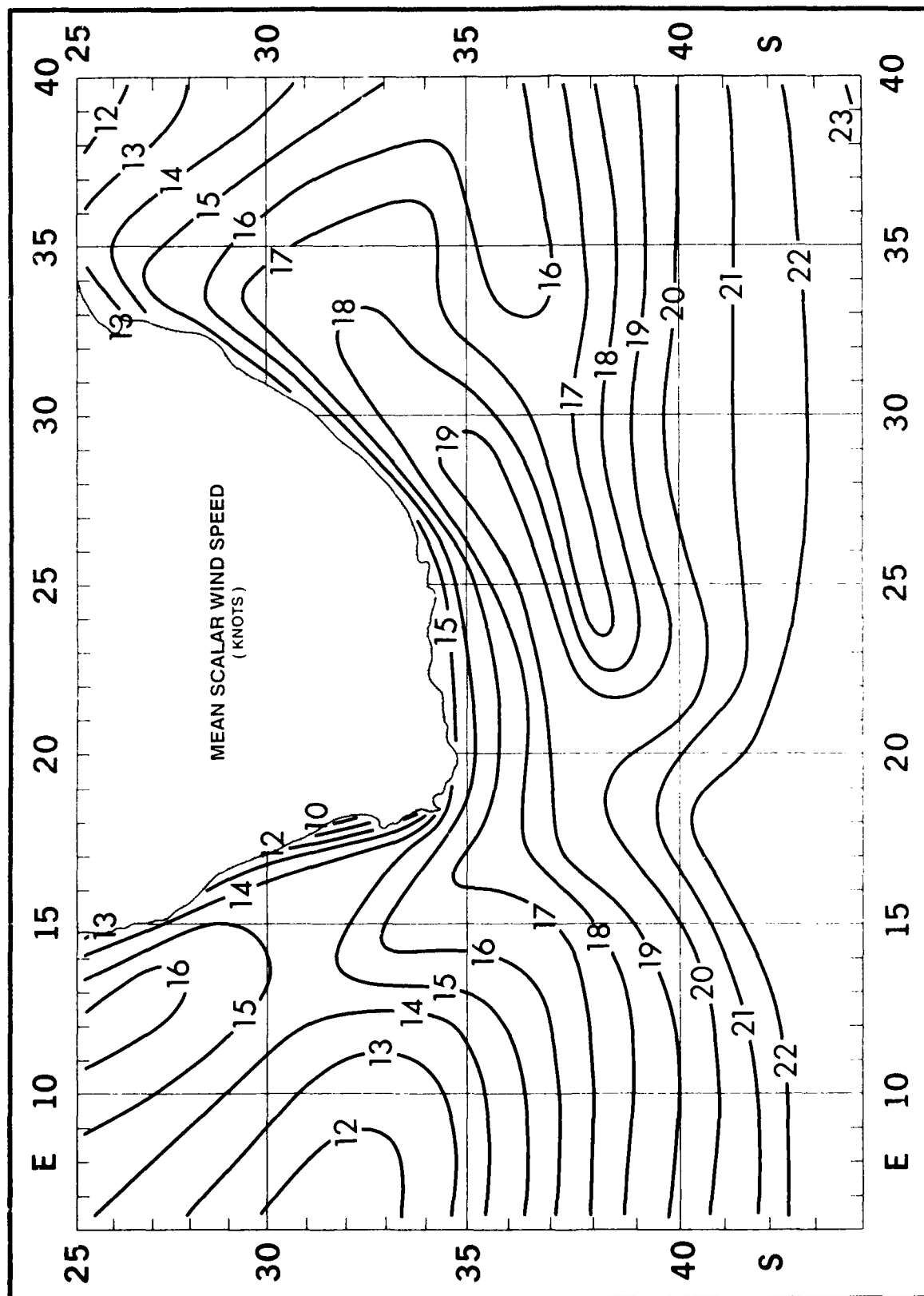
October

Wind · Visibility · Cloudiness



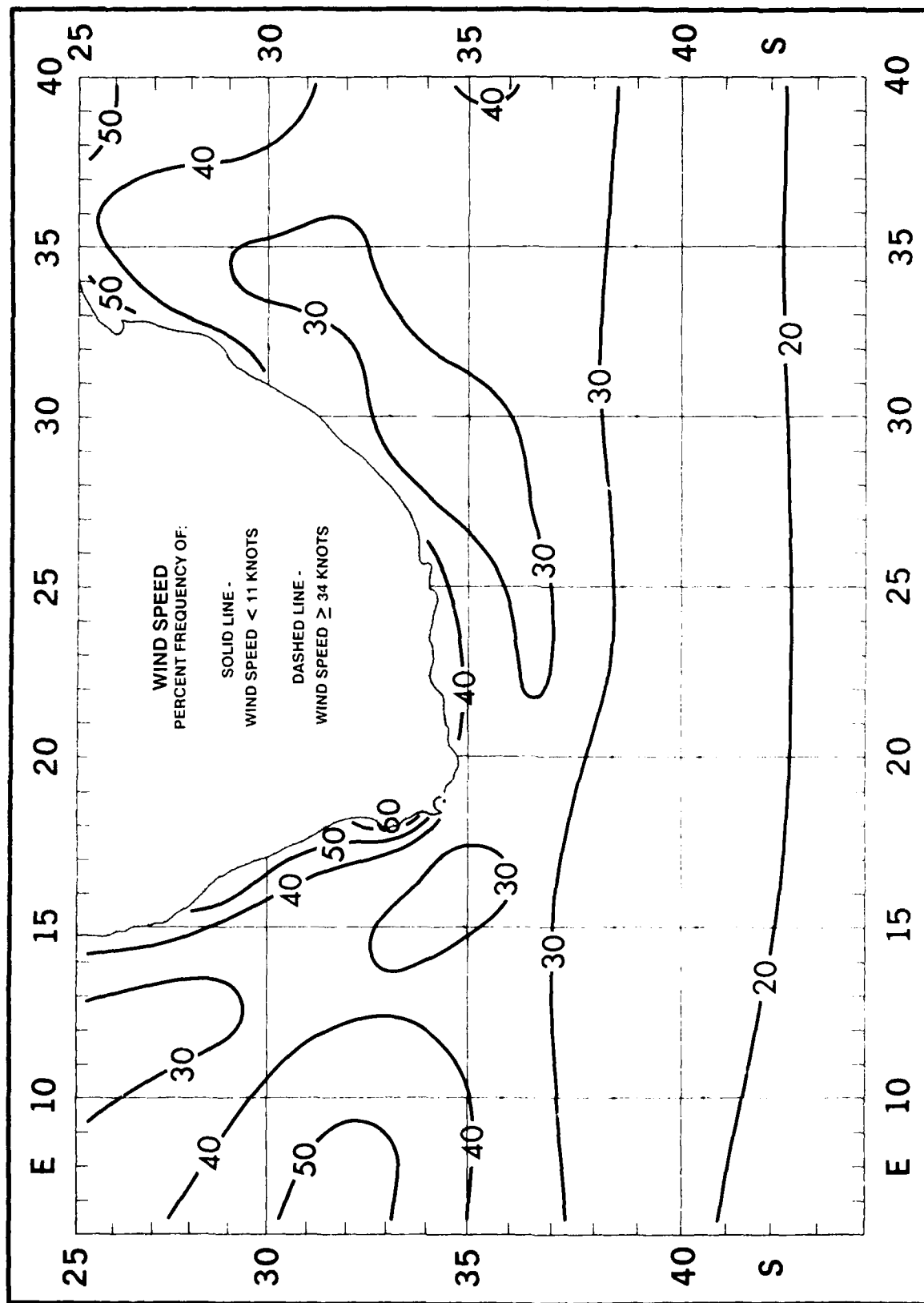
October

Mean Scalar Wind Speed



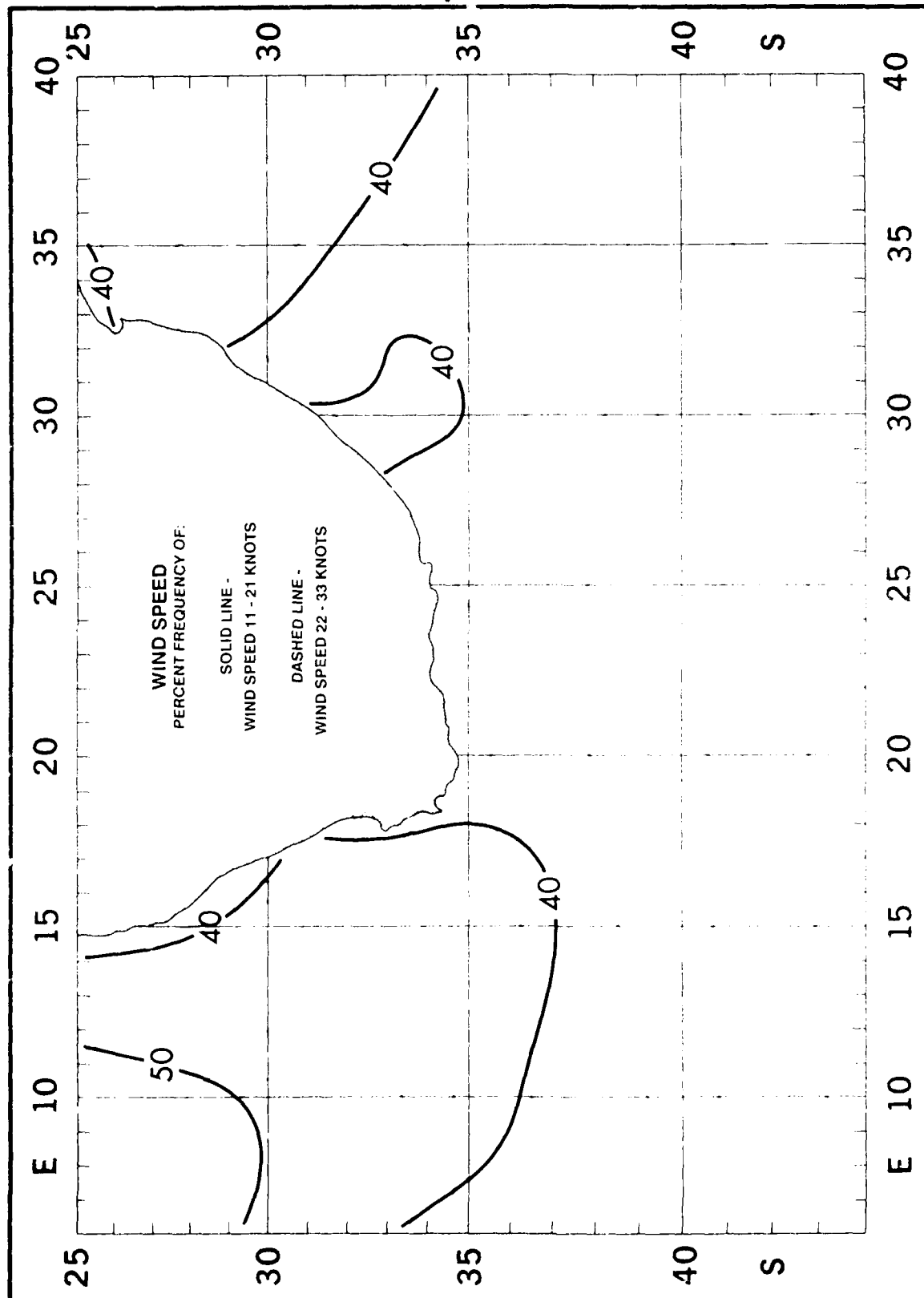
October

Wind Speed < 11 and ≥ 34 Knots



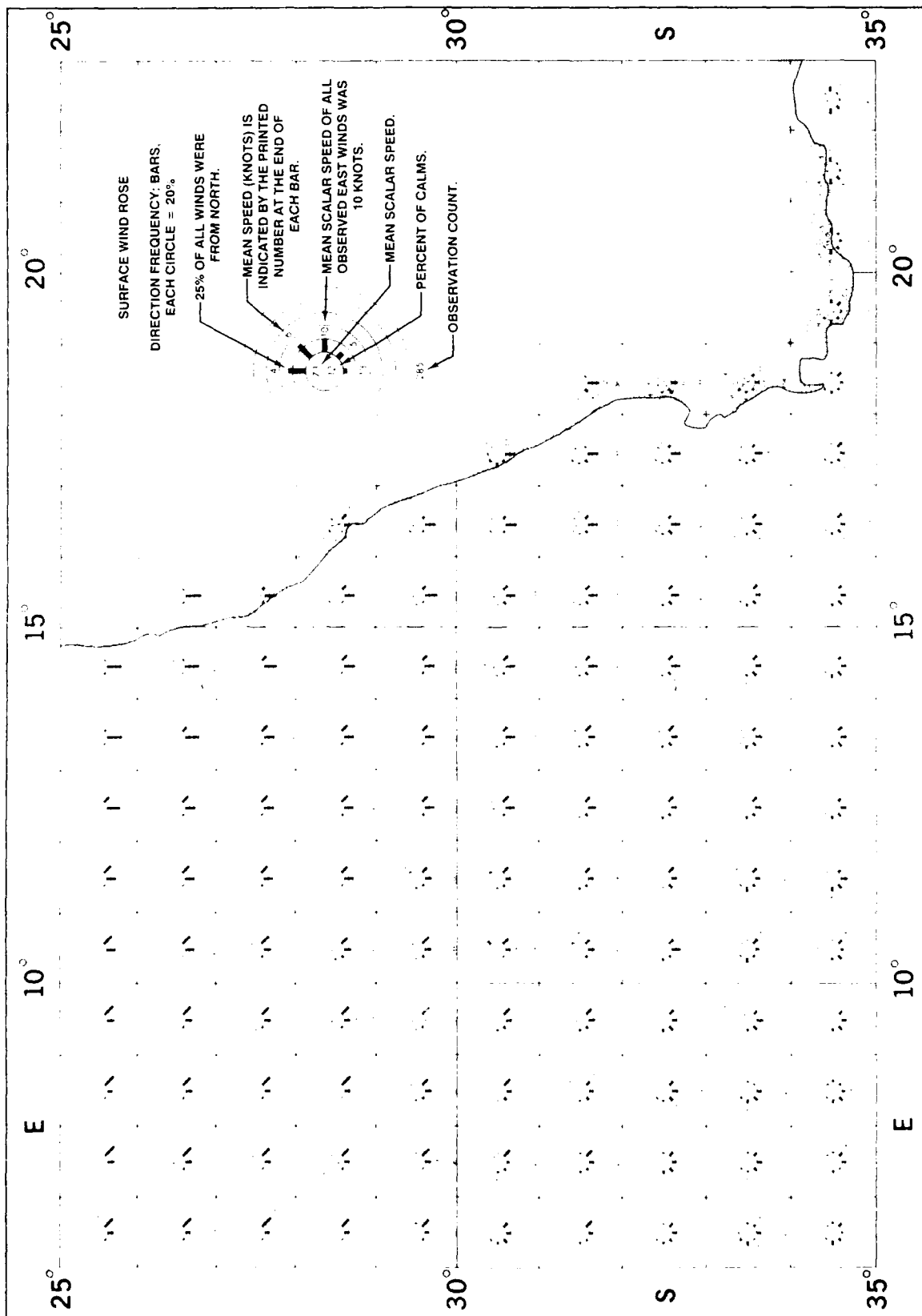
October

Wind Speed 11 - 21 and 22 - 33 Knots



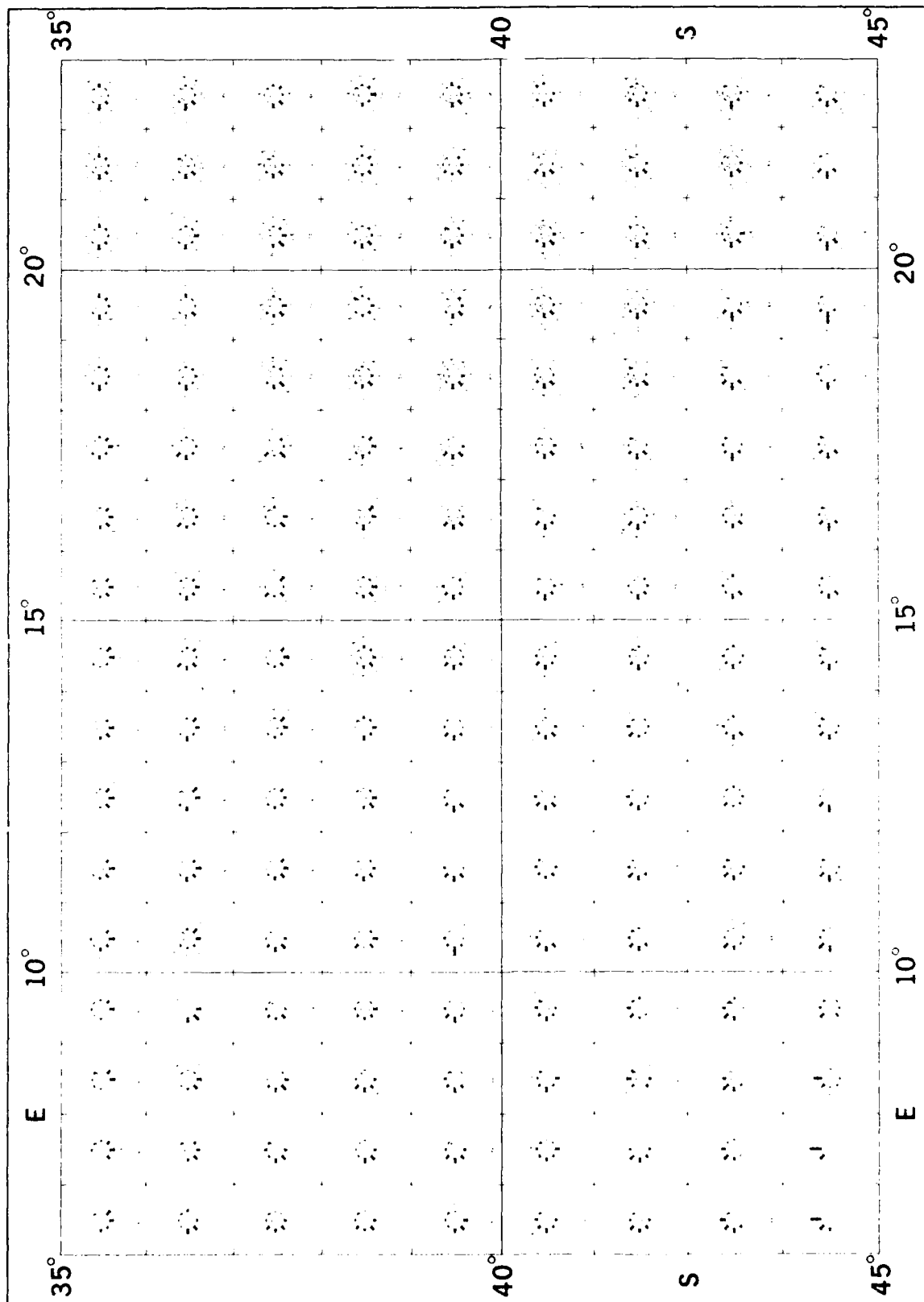
October

Surface Wind Roses



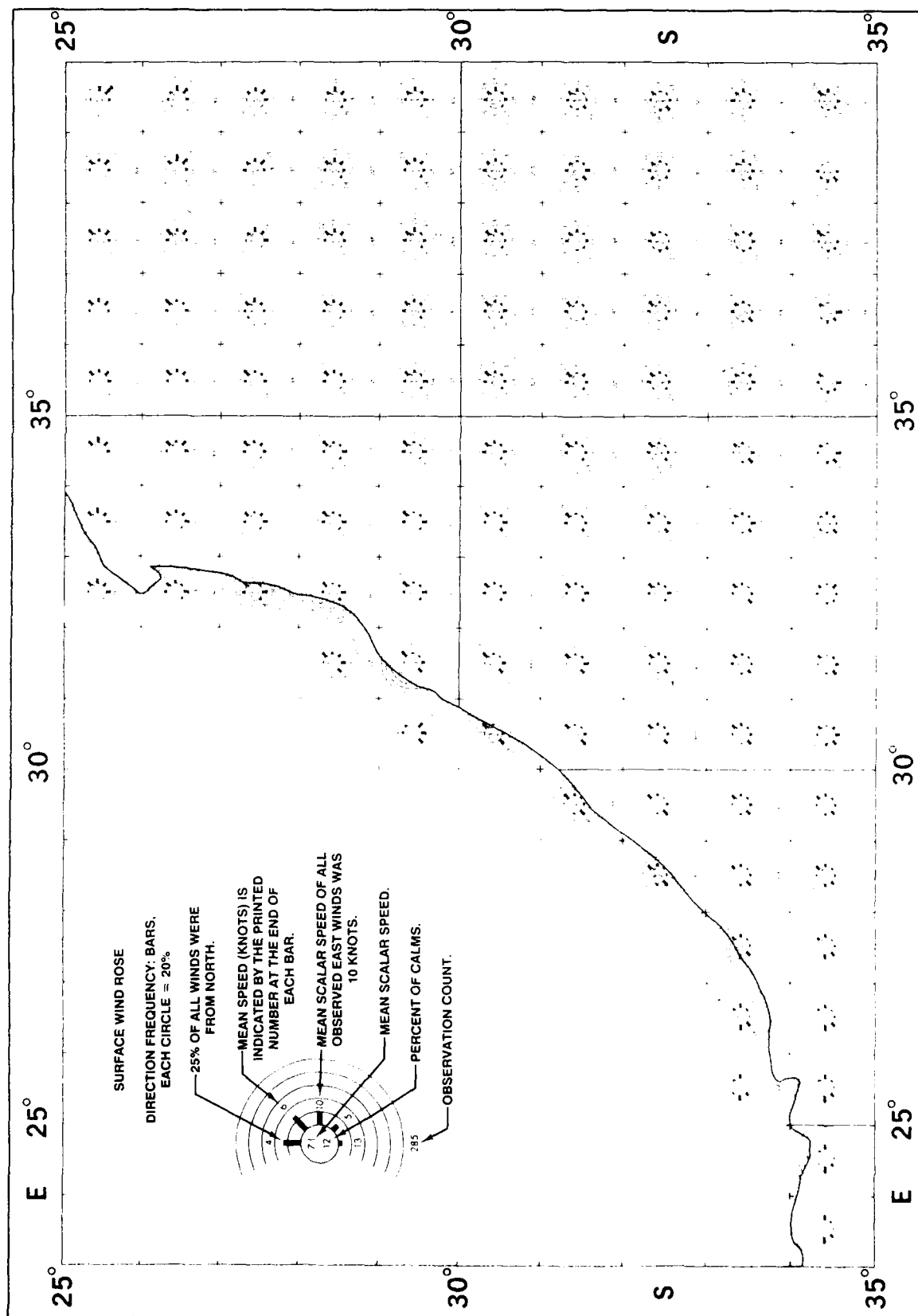
October

Surface Wind Roses



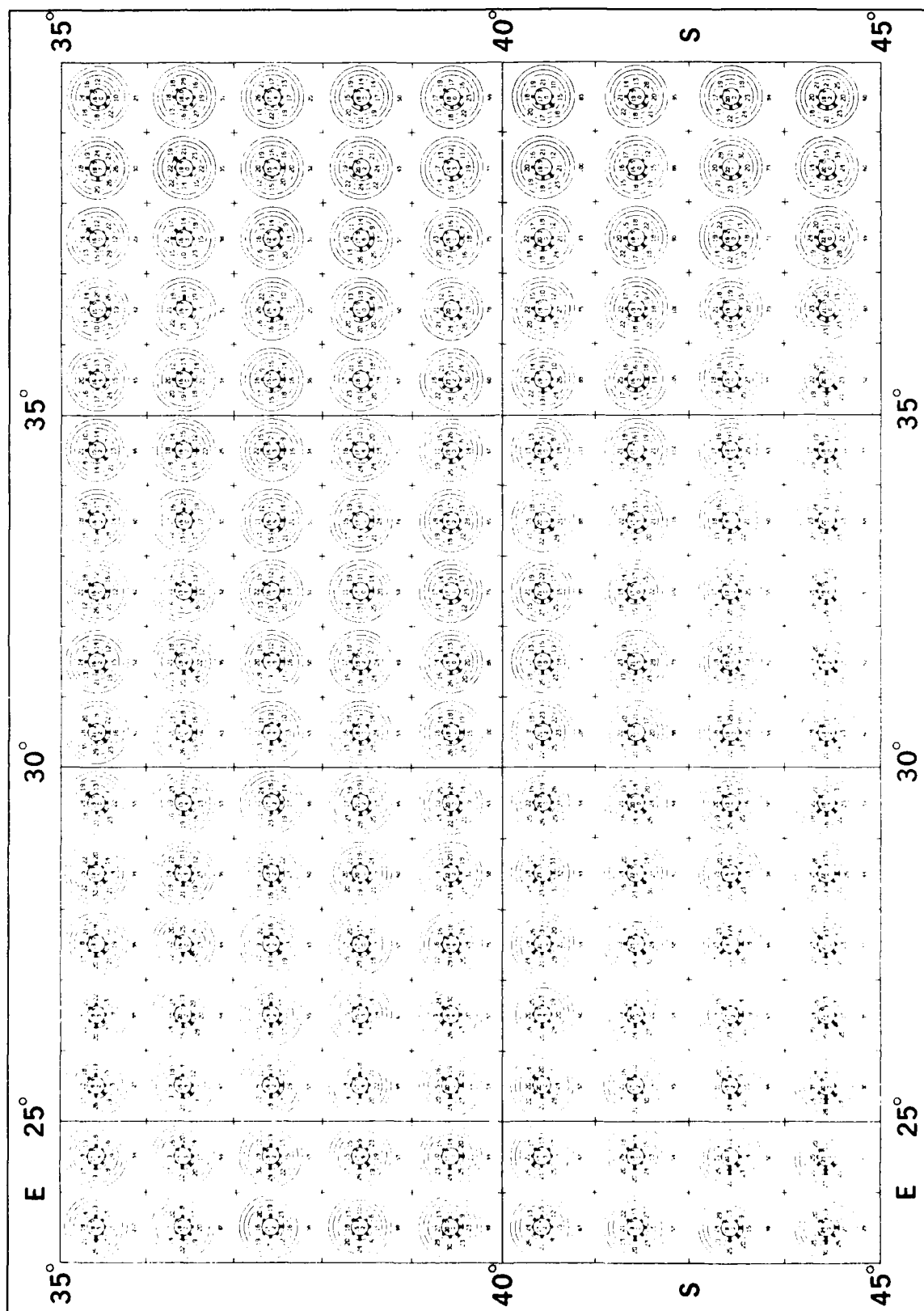
October

Surface Wind Roses



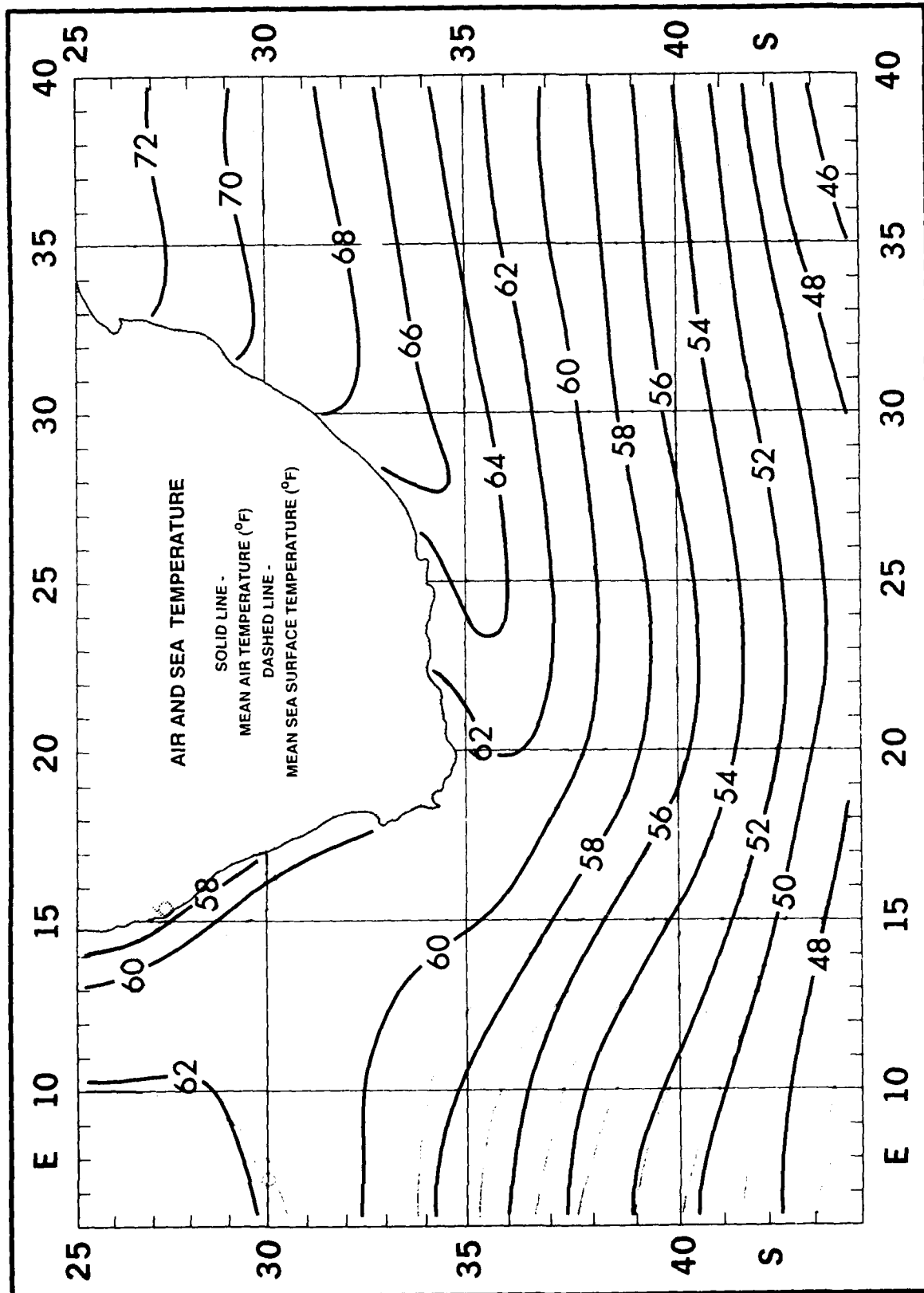
October

Surface Wind Roses



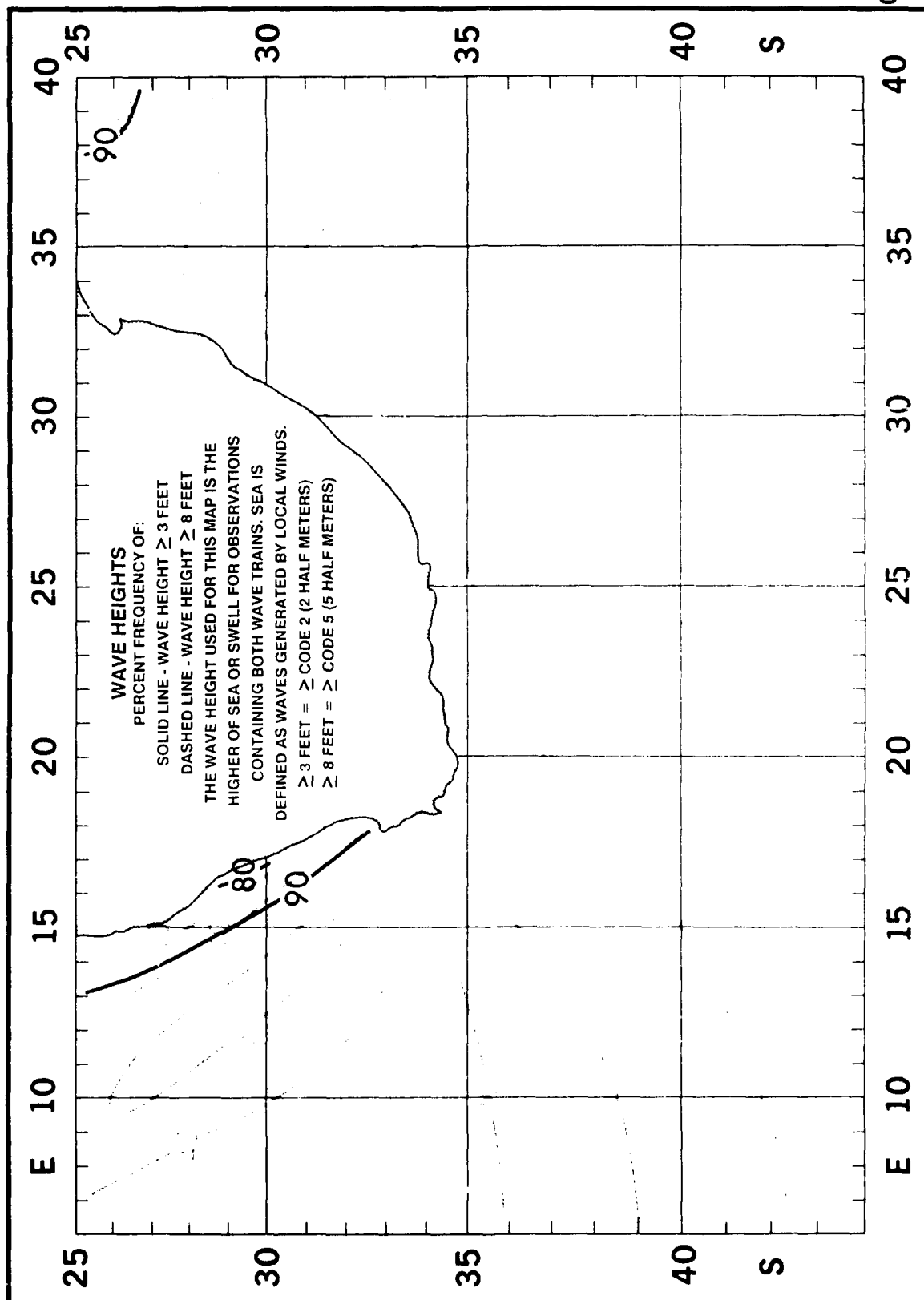
October

Air and Sea Temperature



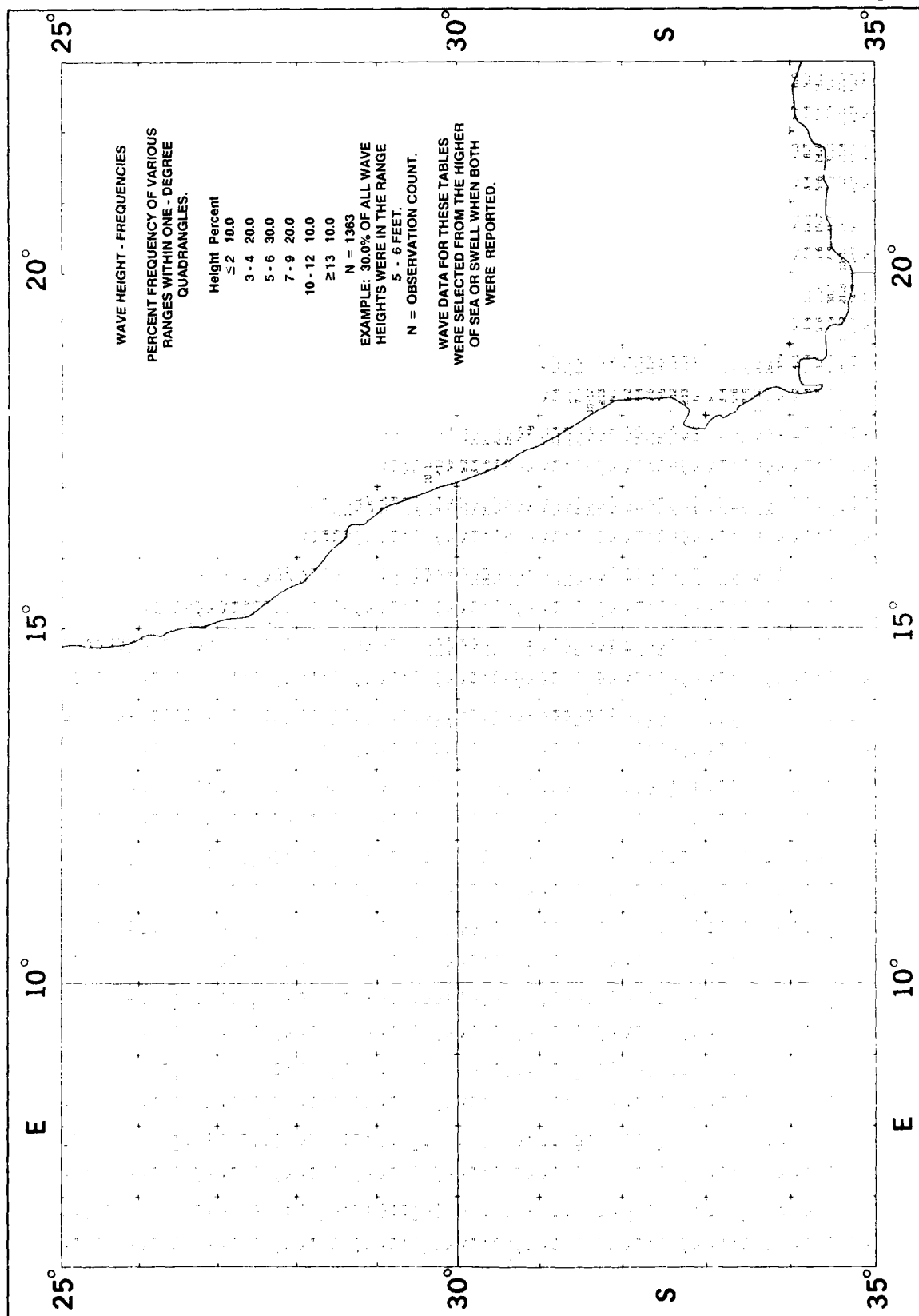
October

Wave Height



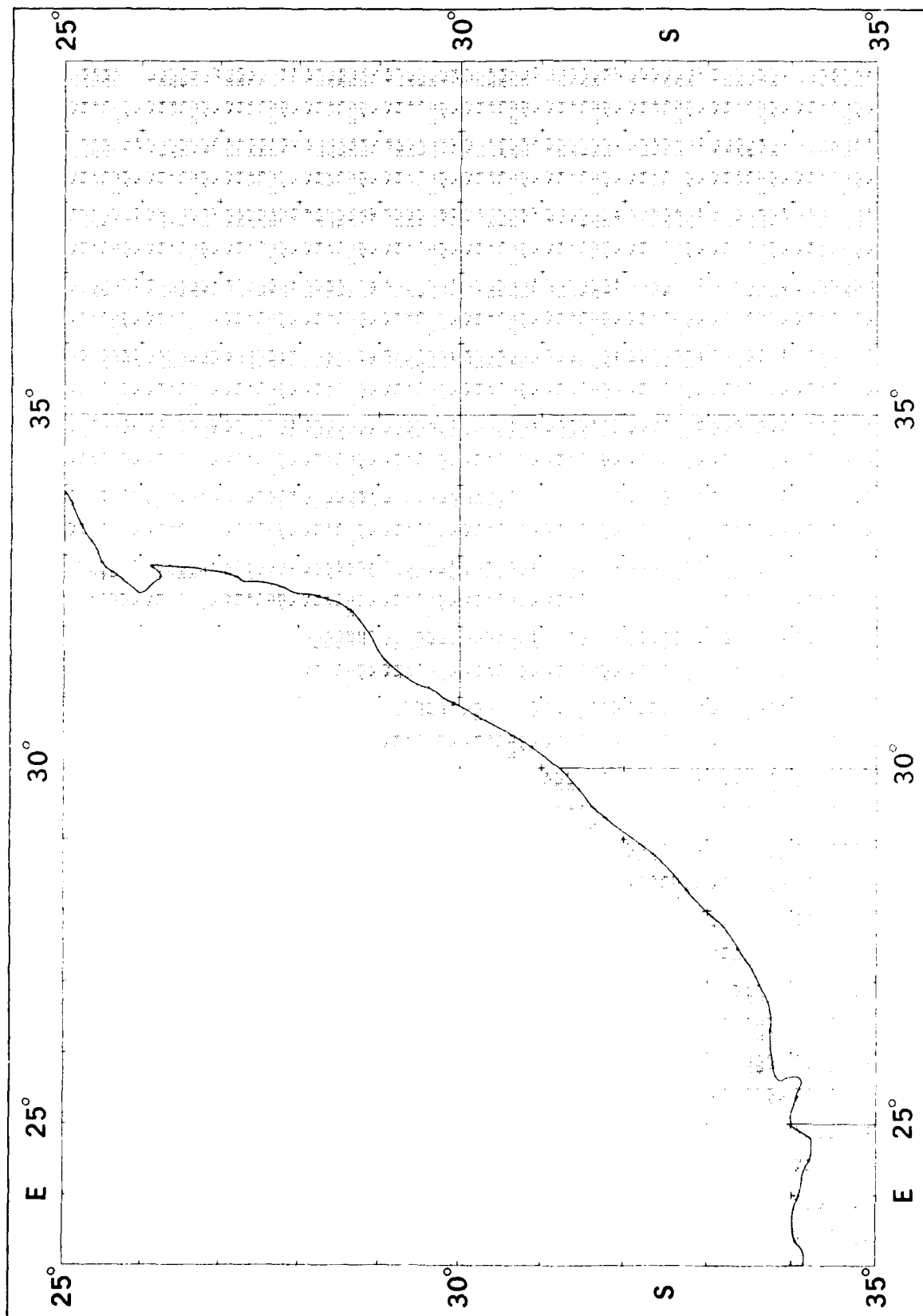
October

Wave Height



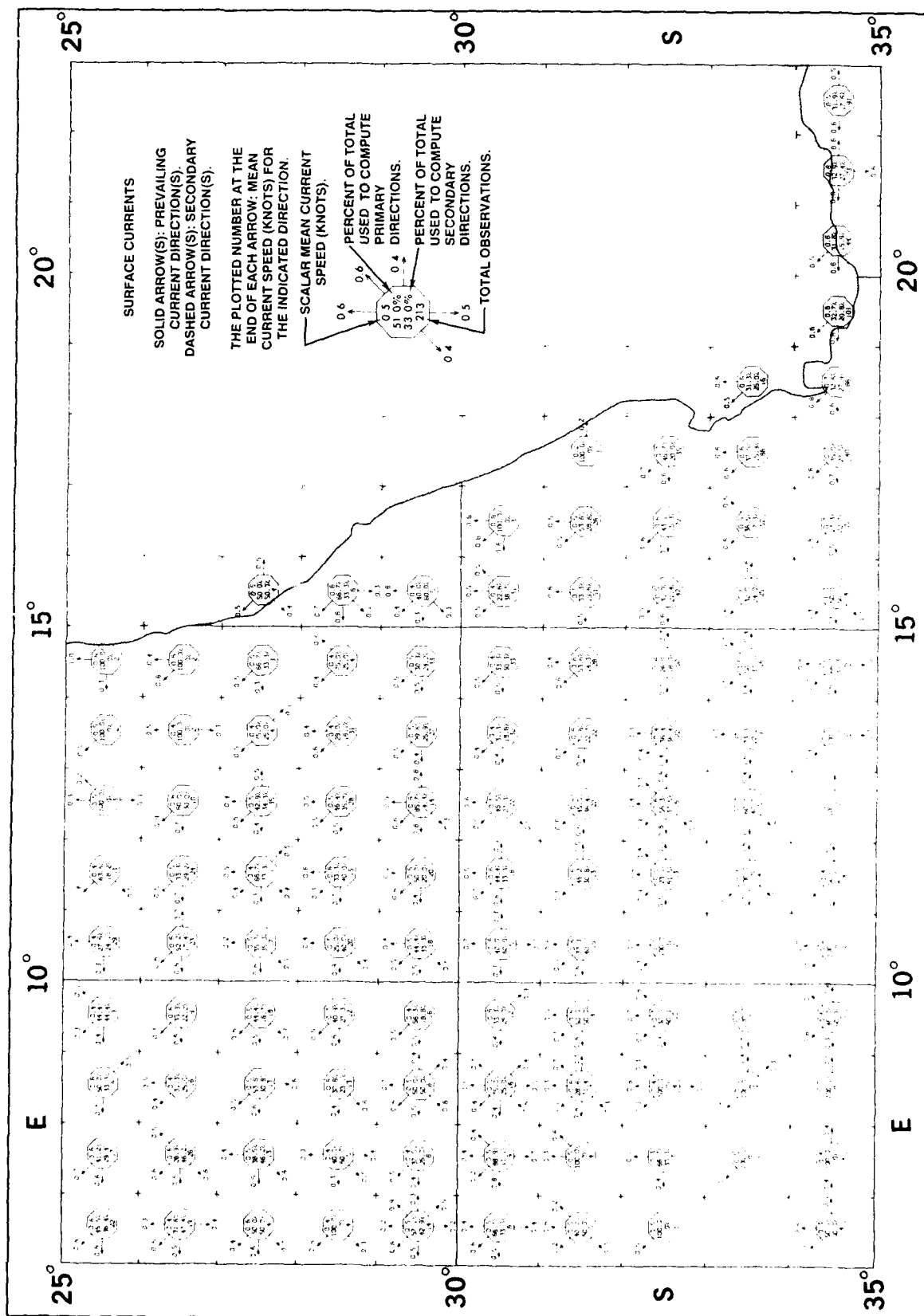
October

Wave Height



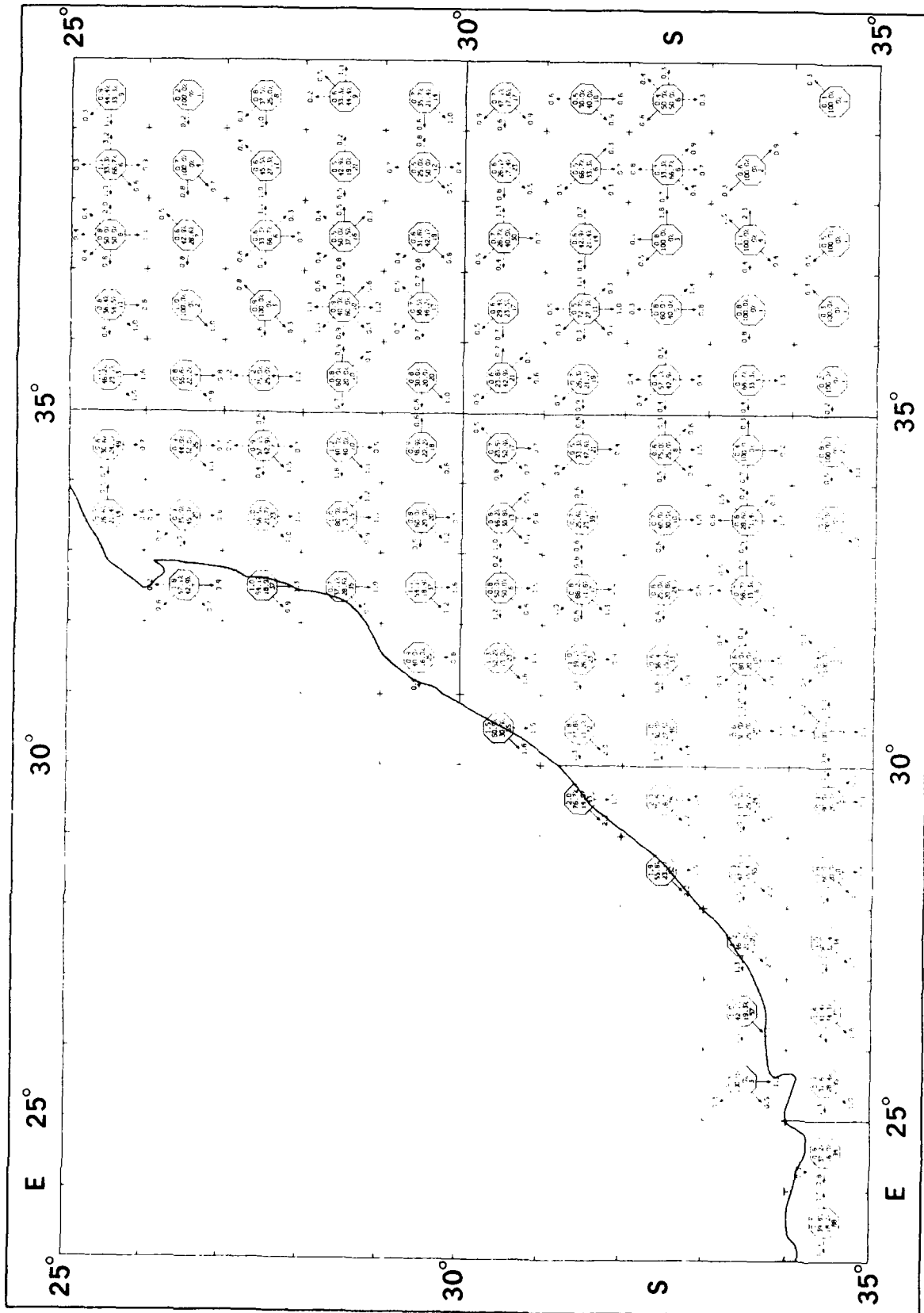
October

Surface Currents



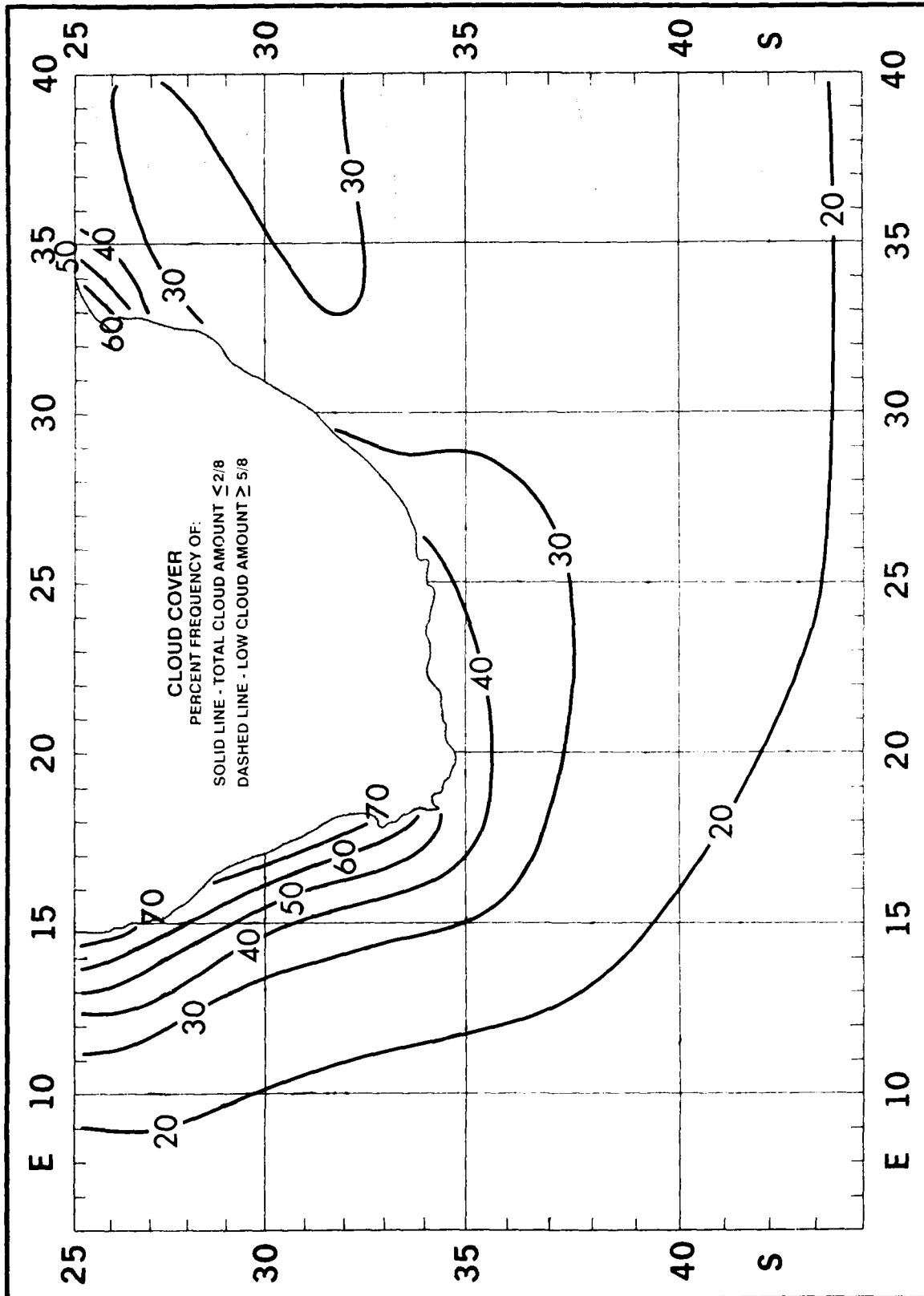
October

Surface Currents



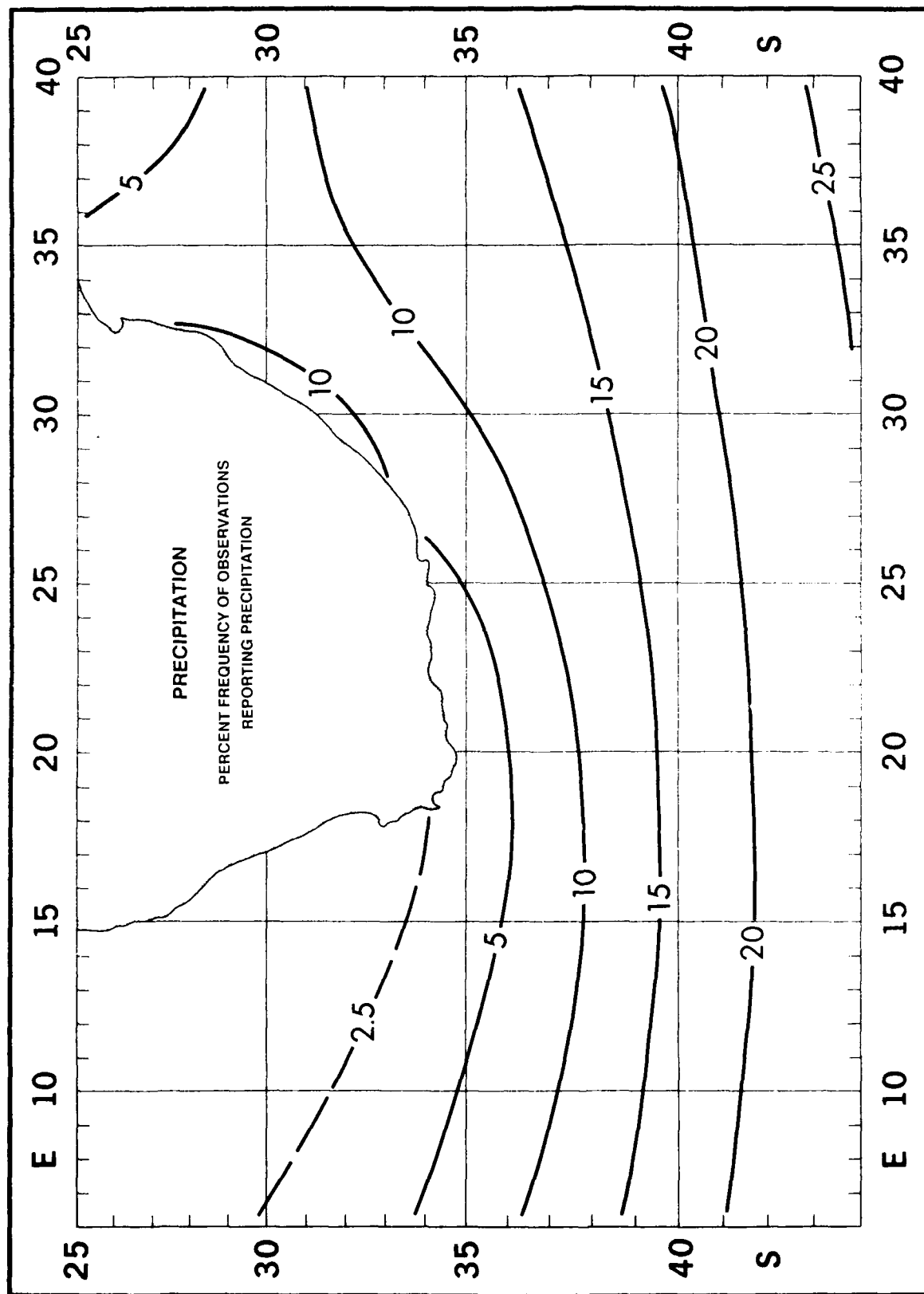
November

Clouds



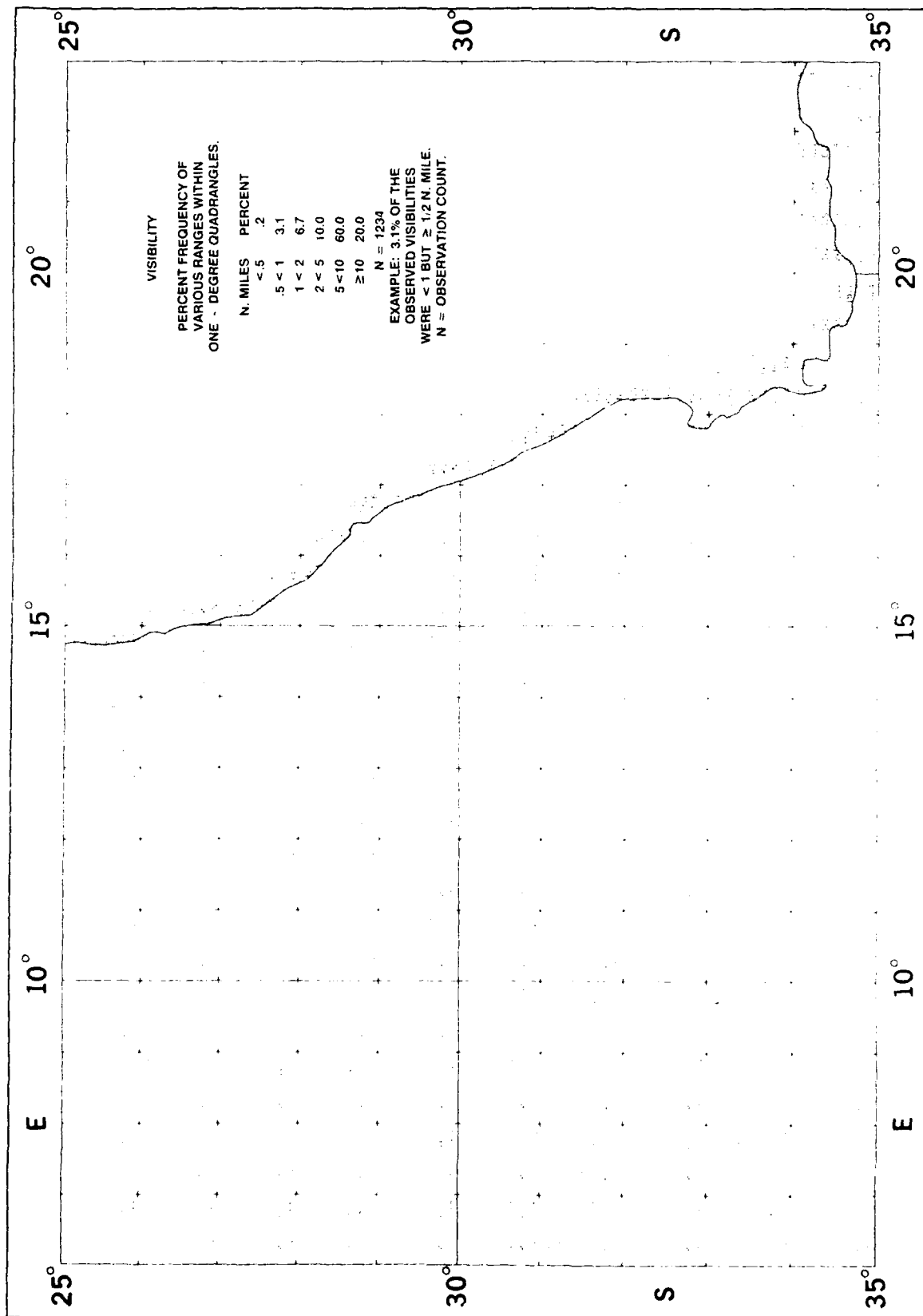
November

Precipitation



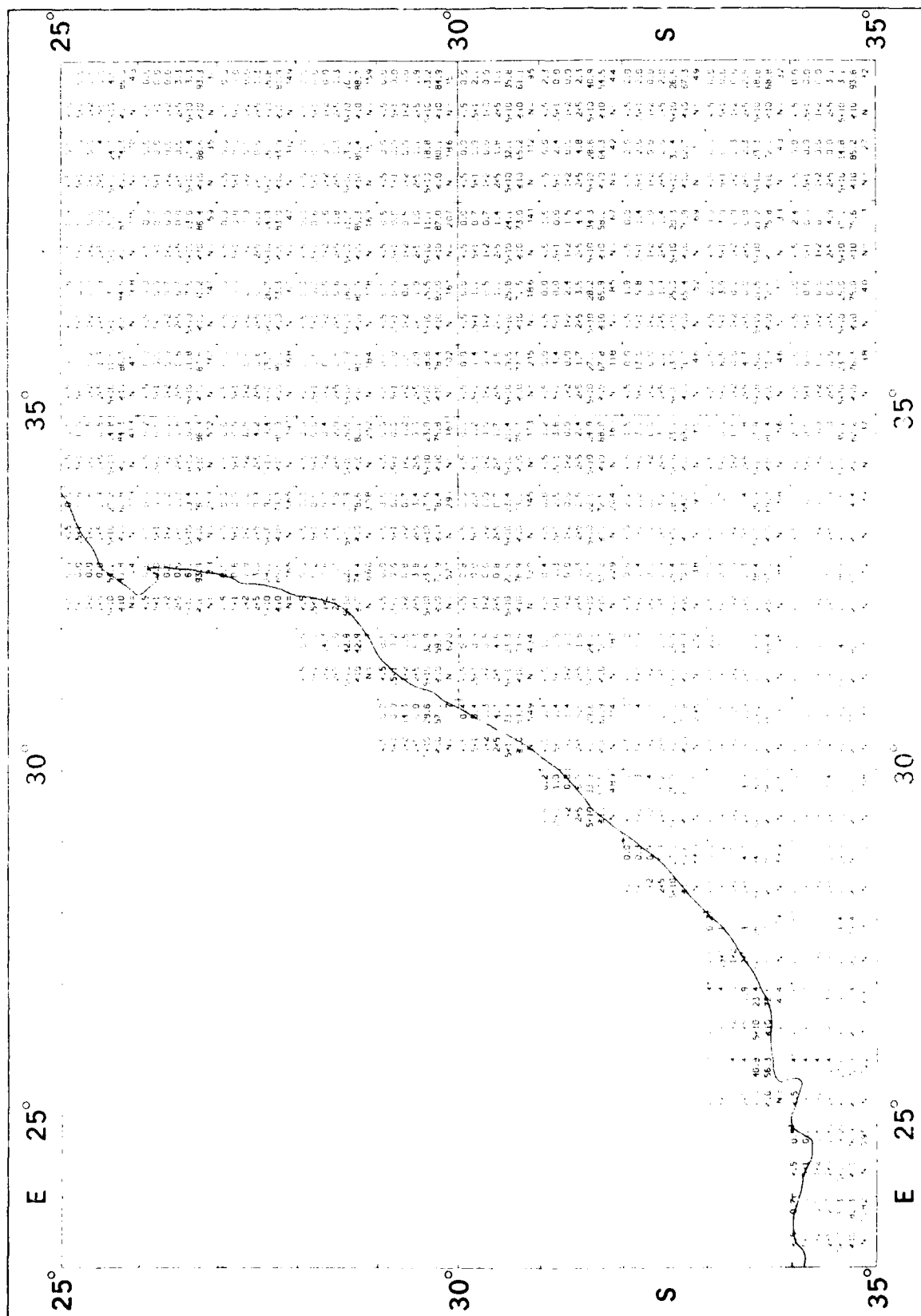
November

Visibility



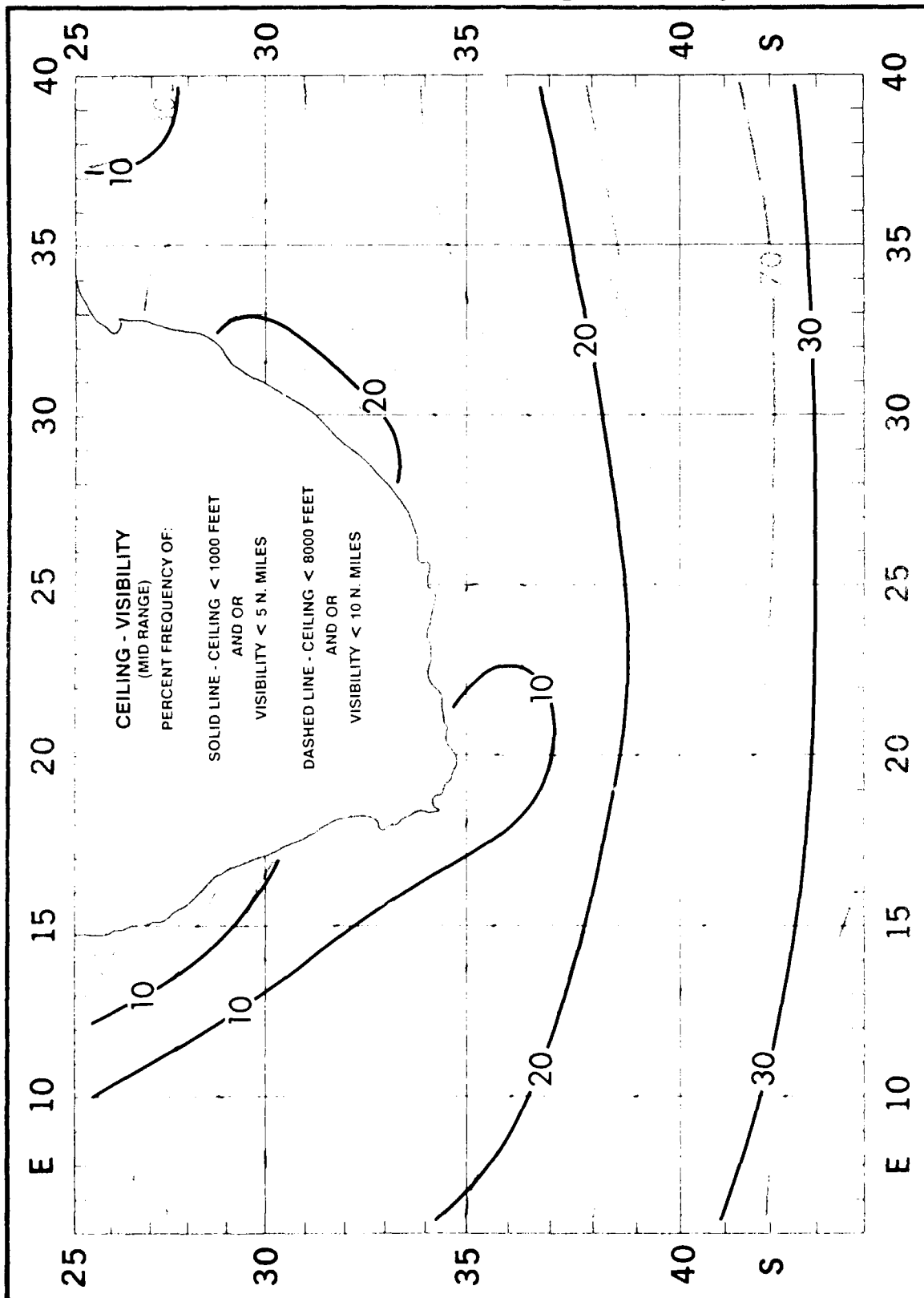
November

Visibility



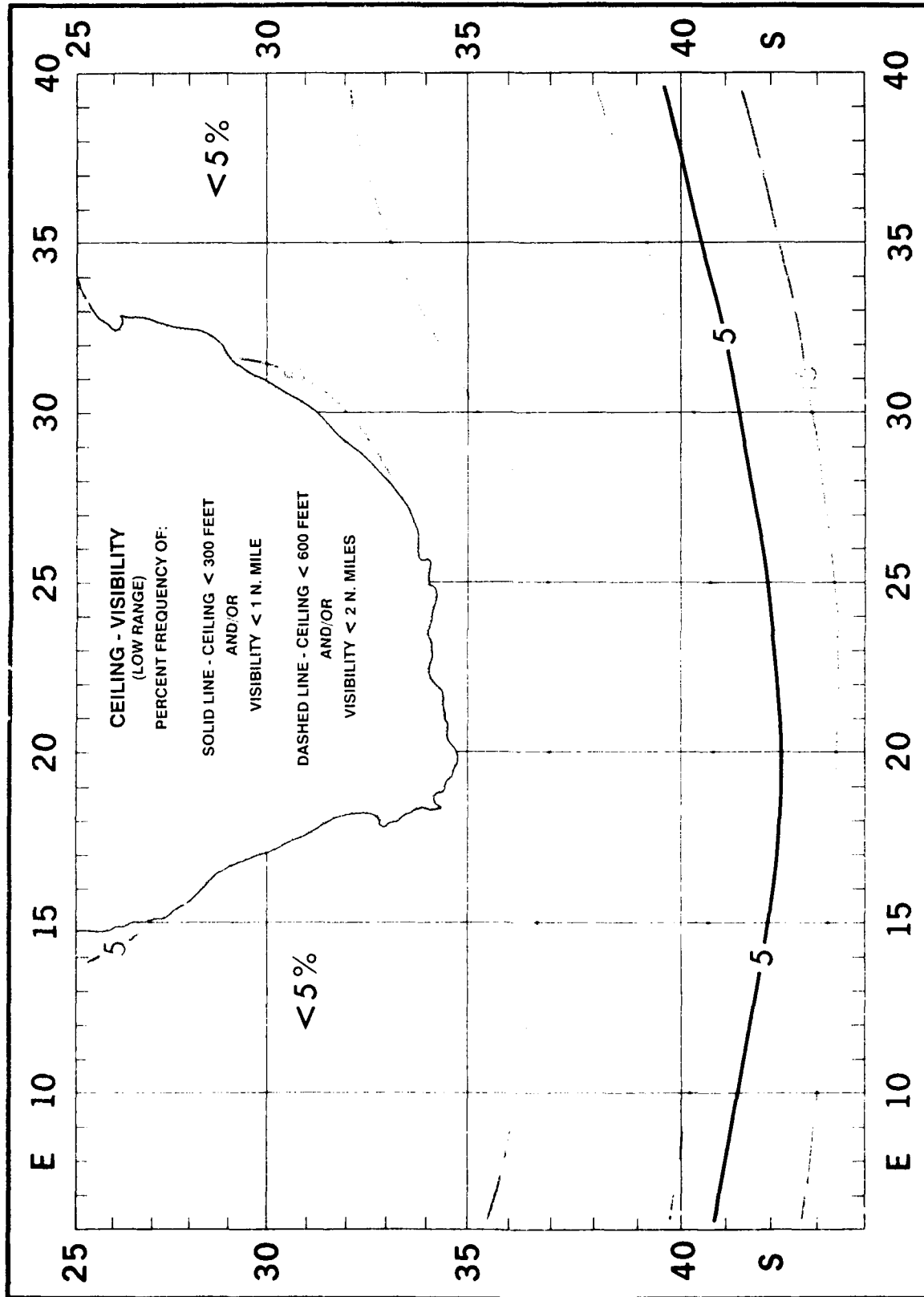
November

Ceiling - Visibility (Mid Range)



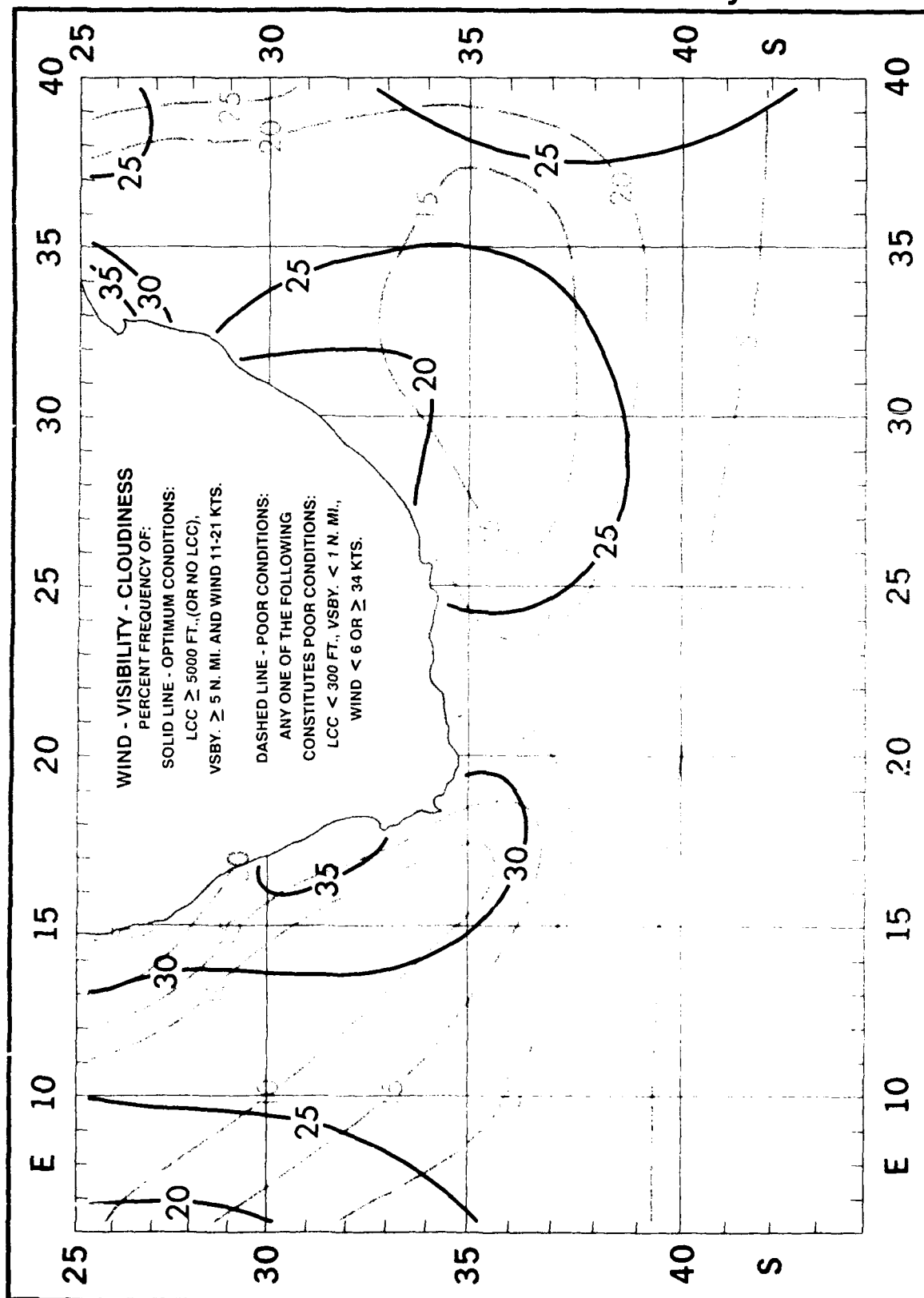
November

Ceiling - Visibility (Low Range)



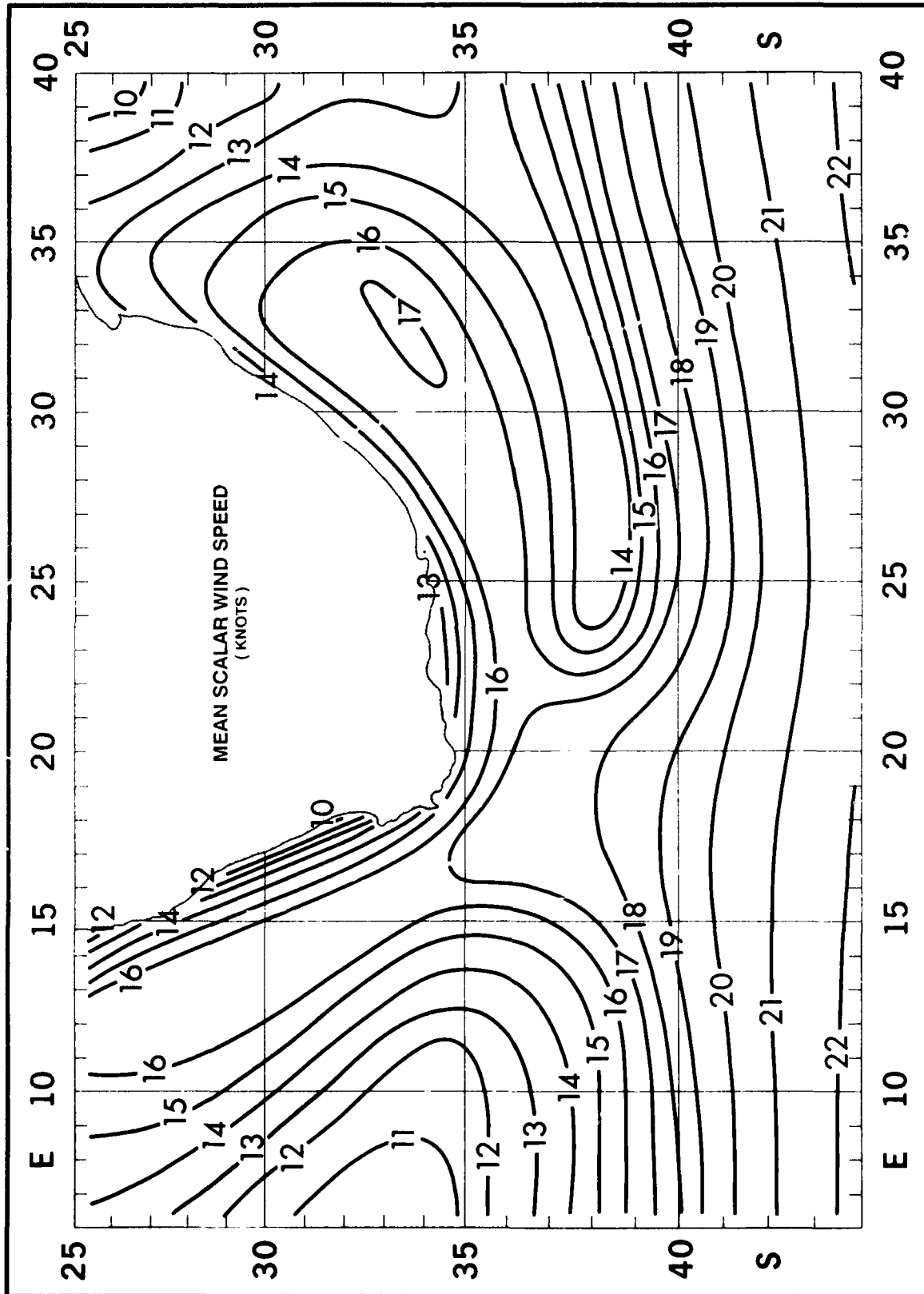
November

Wind - Visibility - Cloudiness



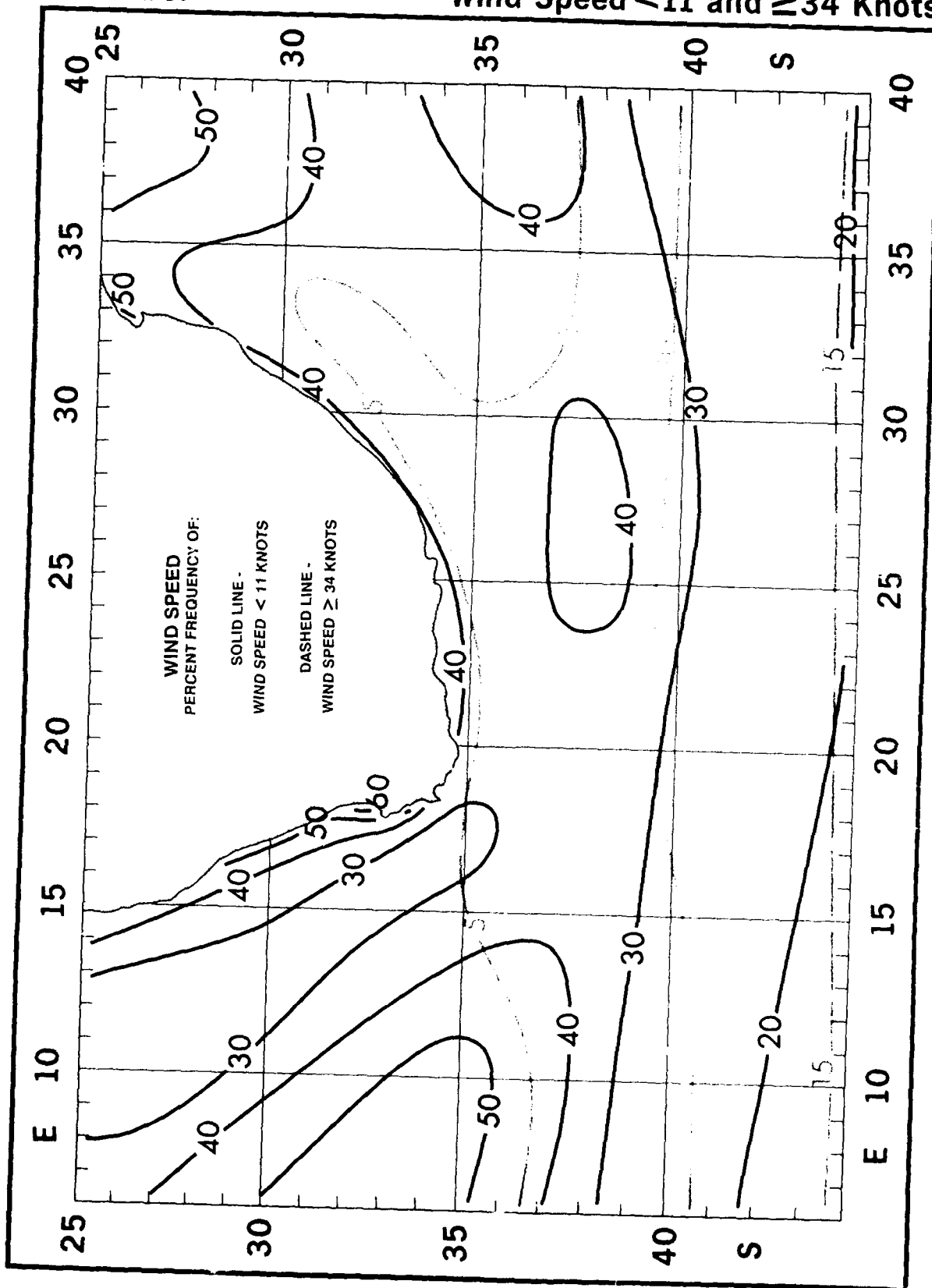
November

Mean Scalar Wind Speed



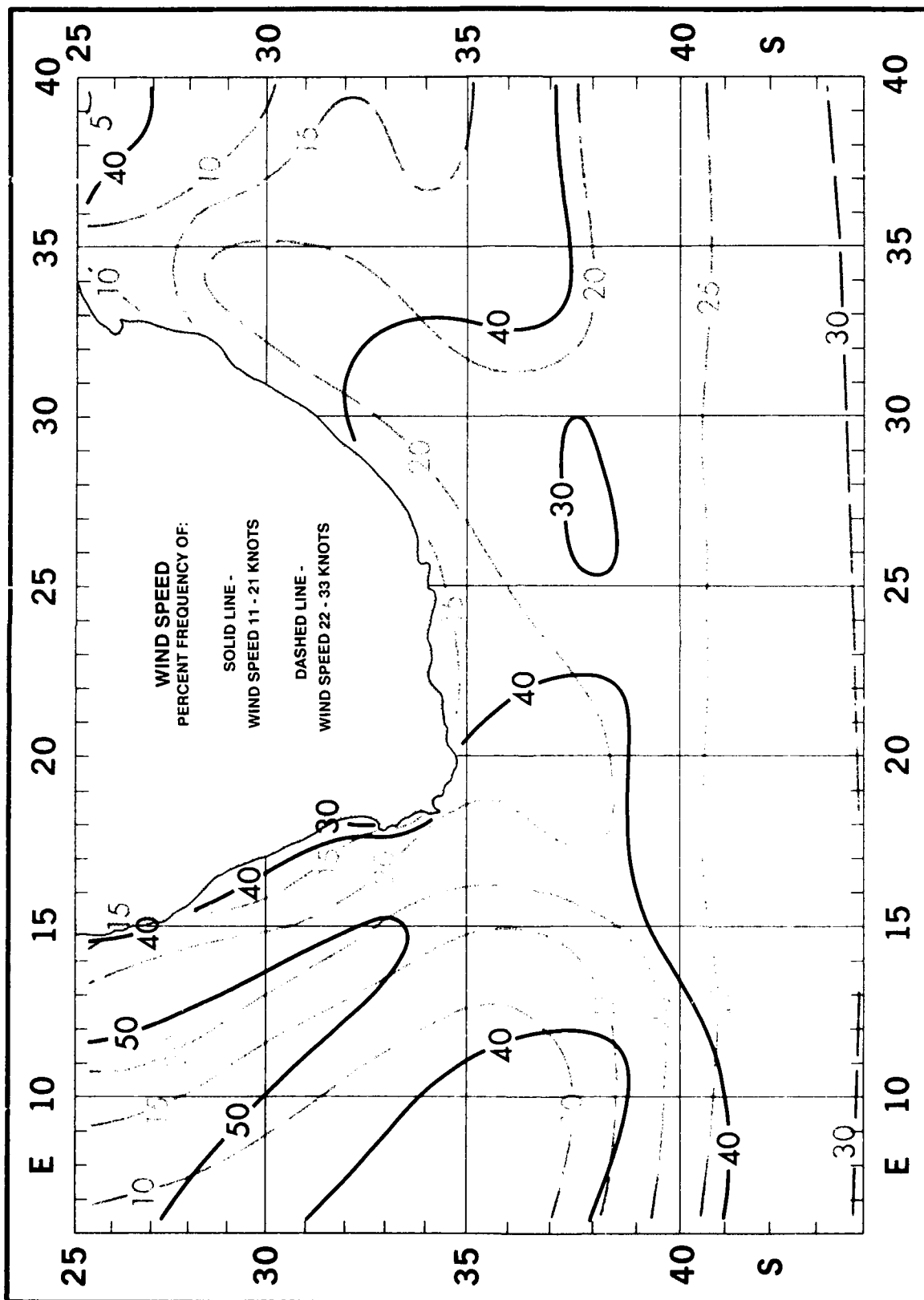
November

Wind Speed < 11 and ≥ 34 Knots



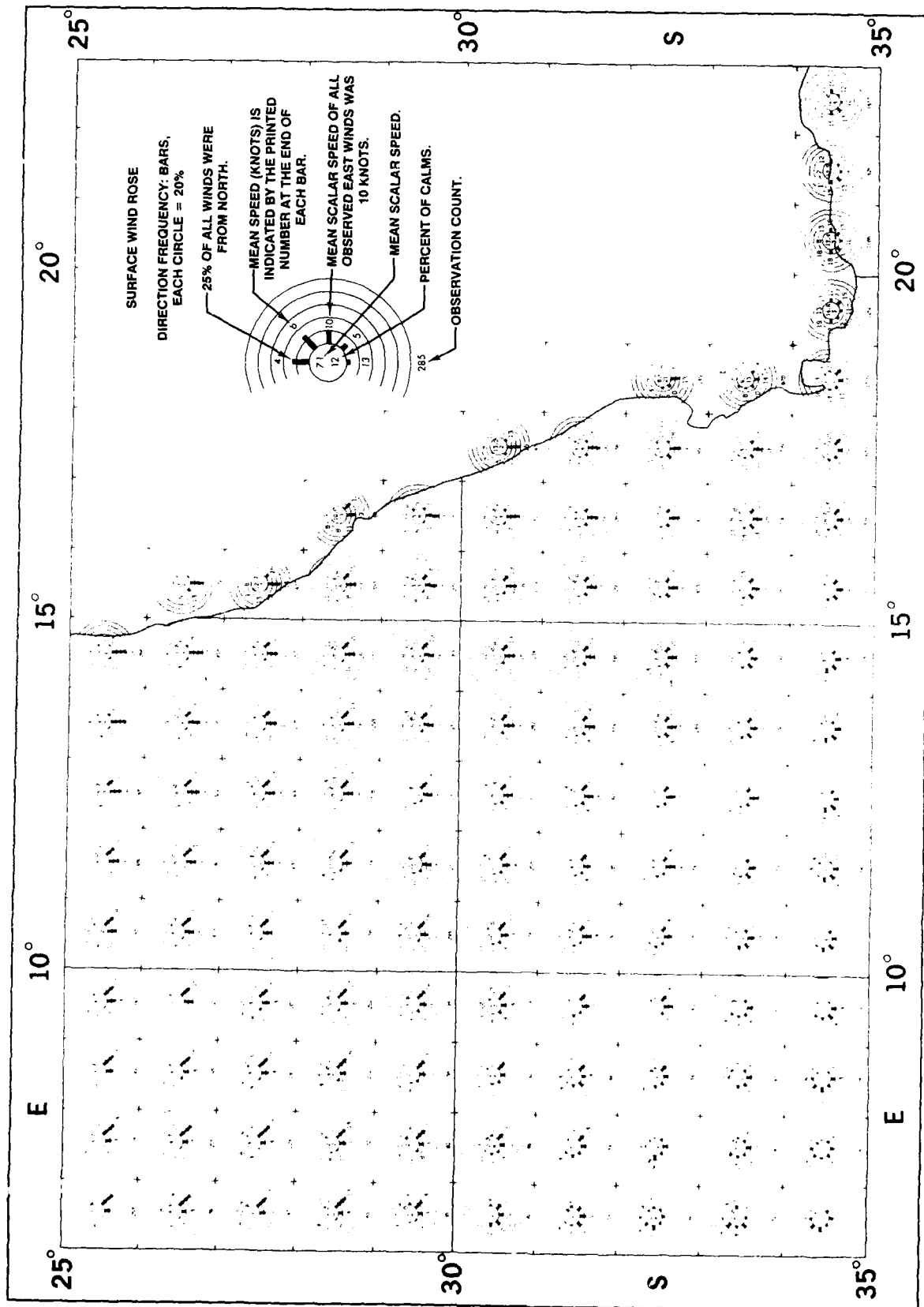
November

Wind Speed 11 - 21 and 22 - 33 Knots



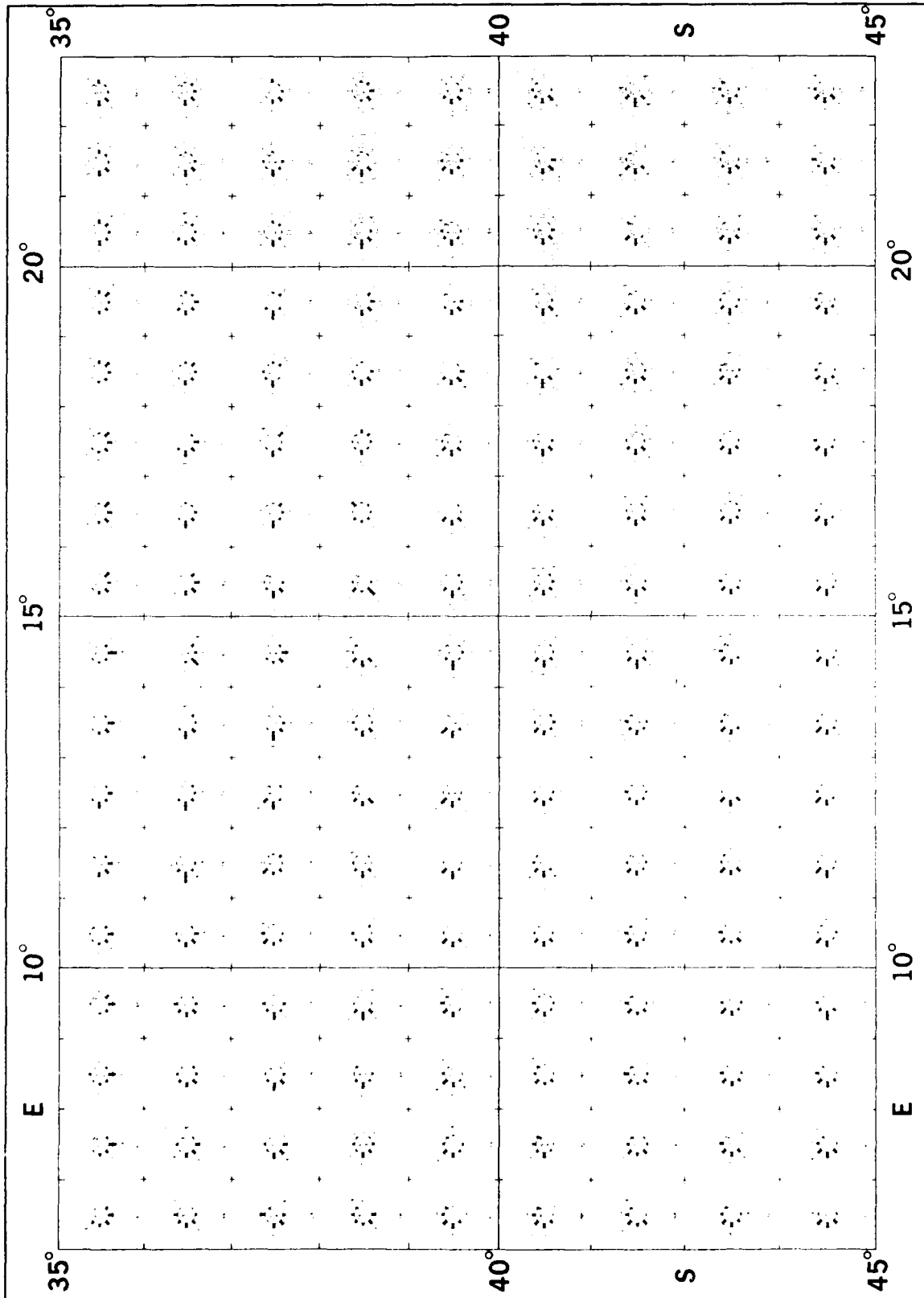
November

Surface Wind Roses



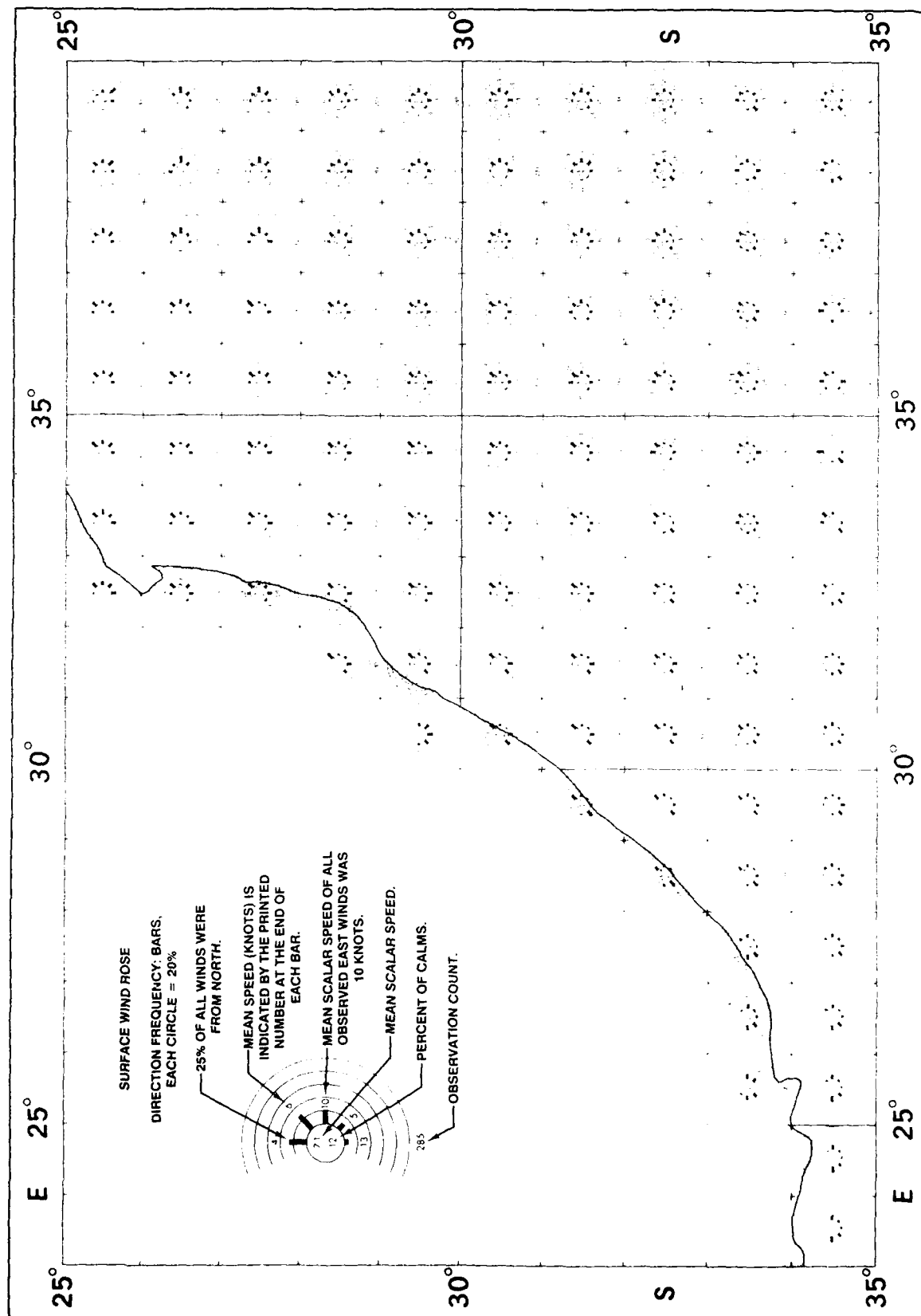
November

Surface Wind Roses



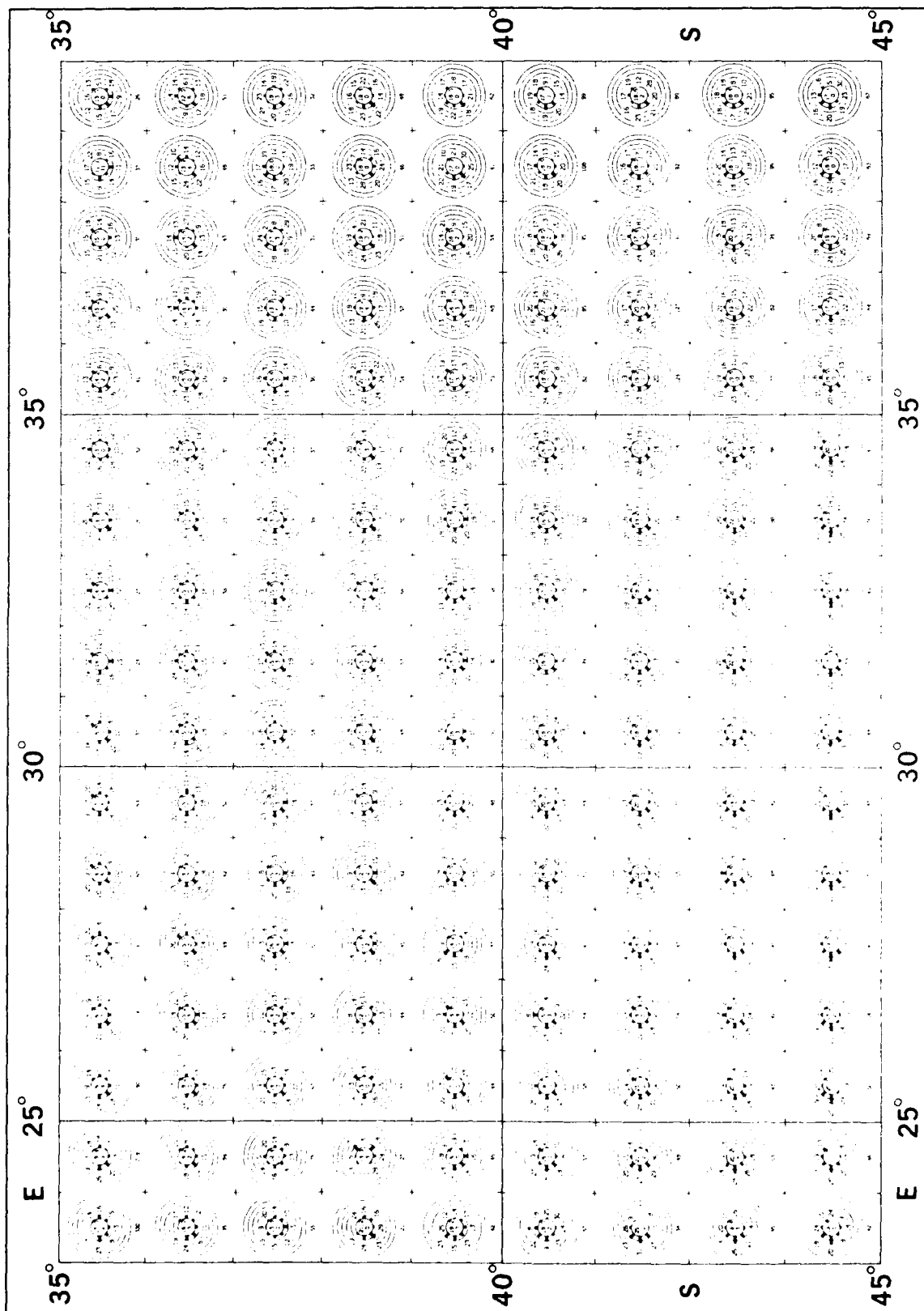
November

Surface Wind Roses



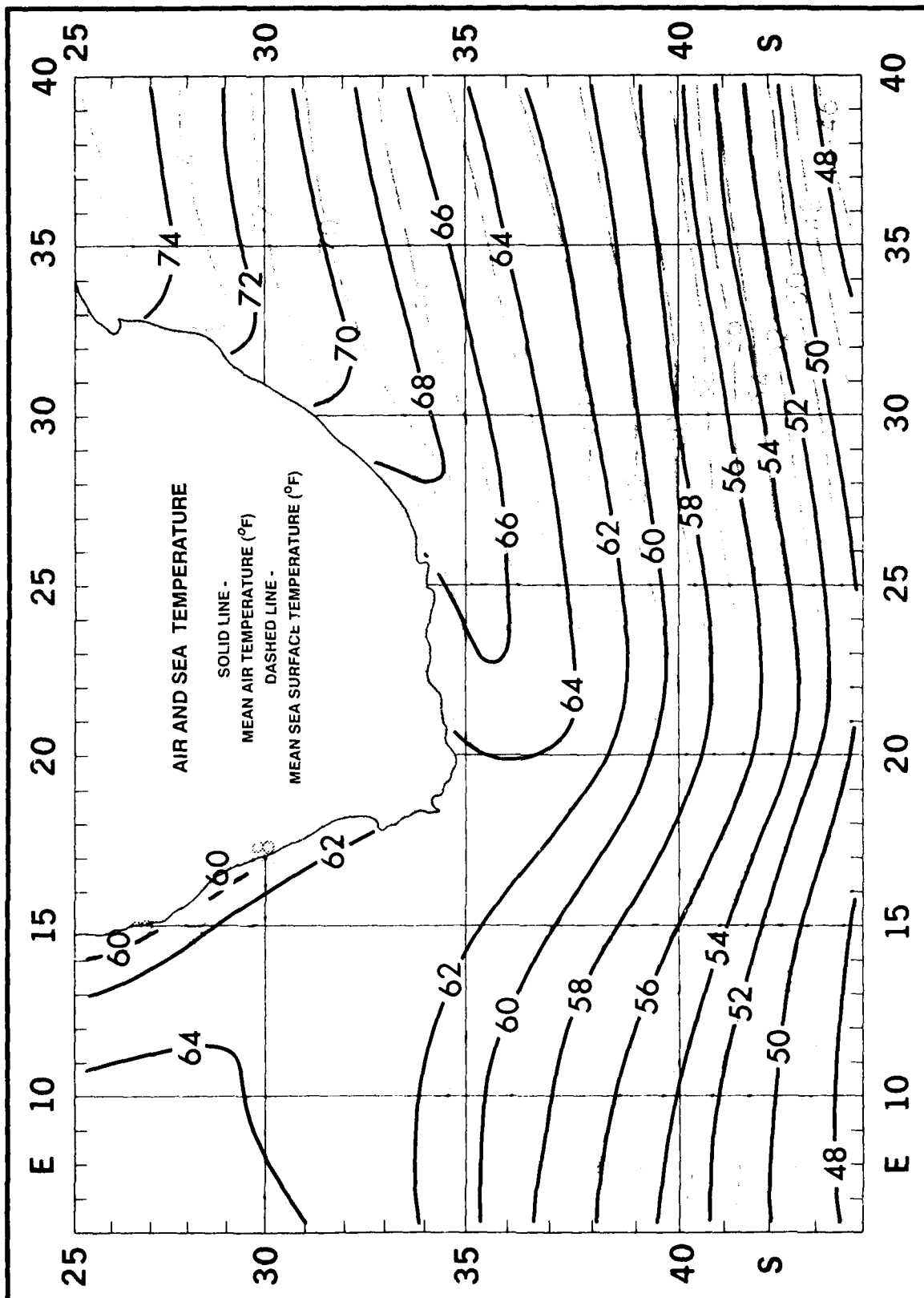
November

Surface Wind Roses



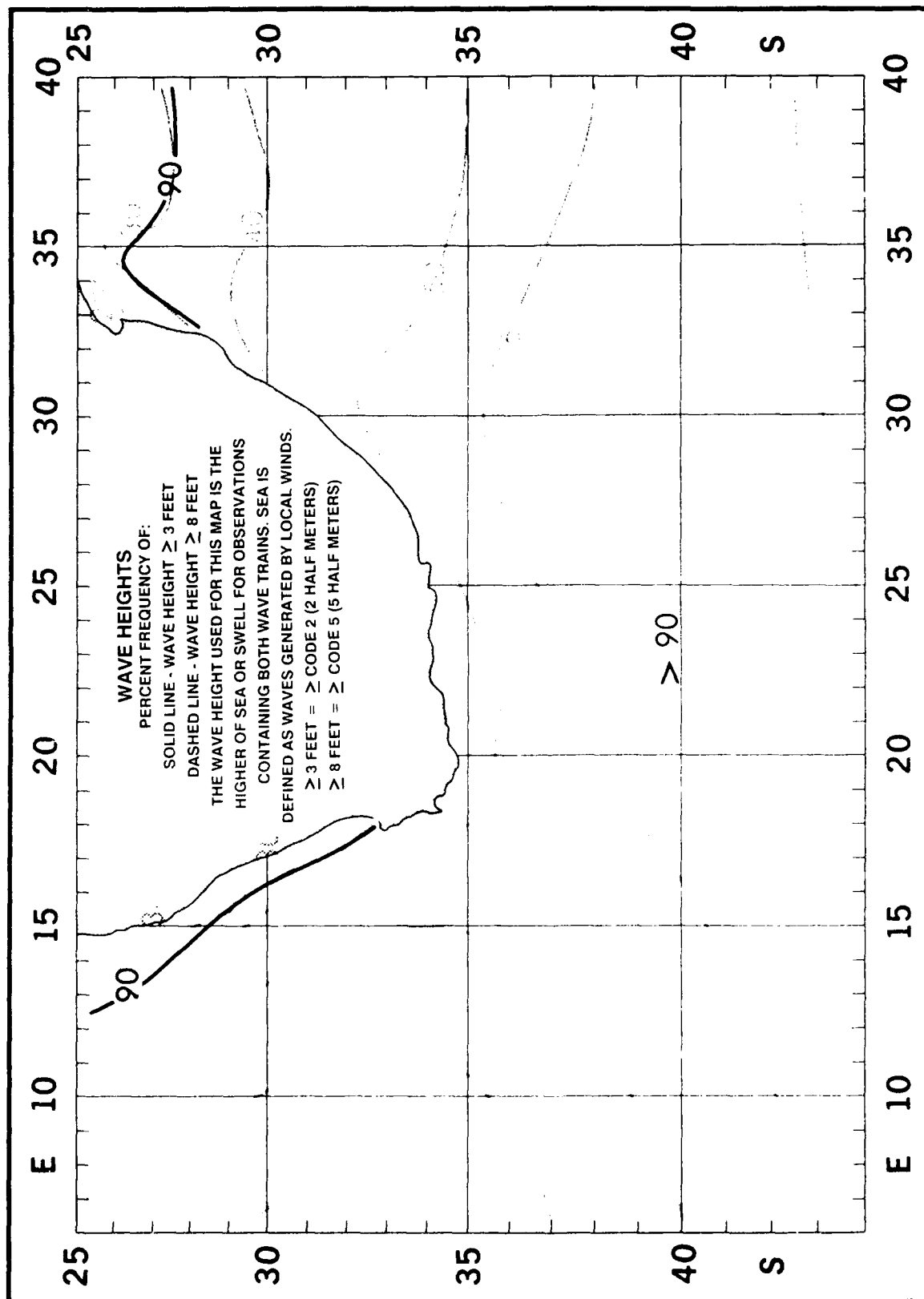
November

Air and Sea Temperature



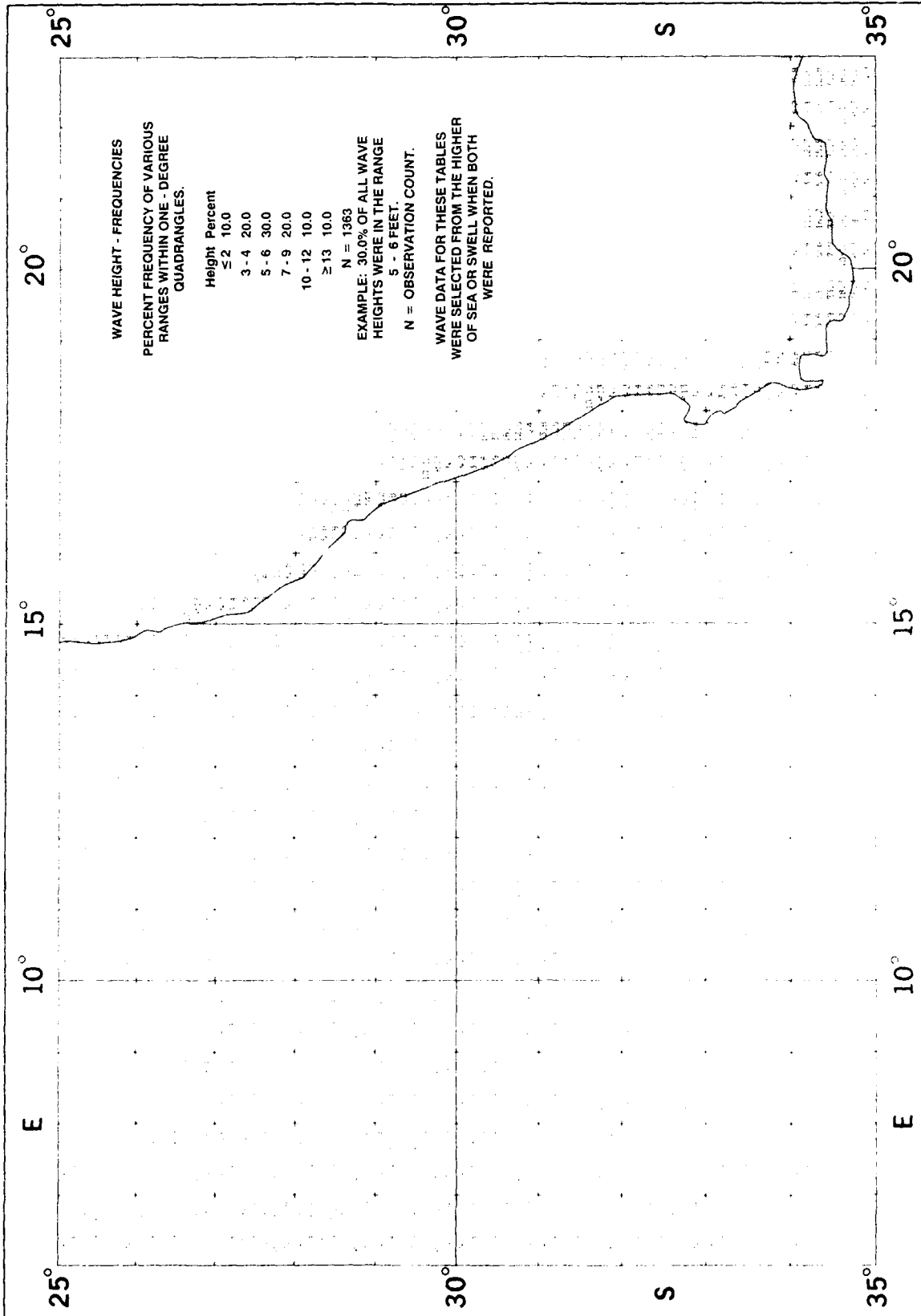
November

Wave Height



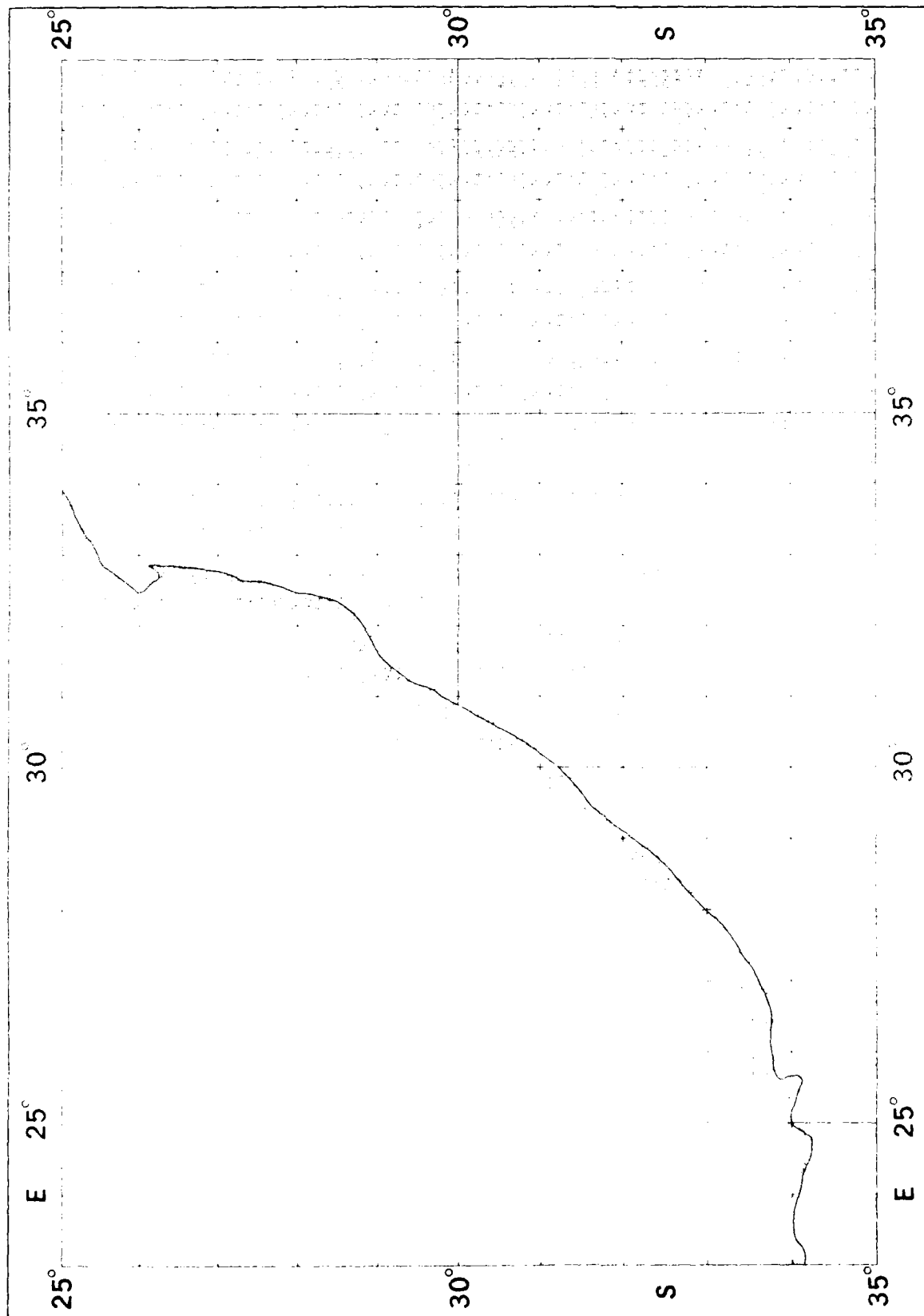
November

Wave Height



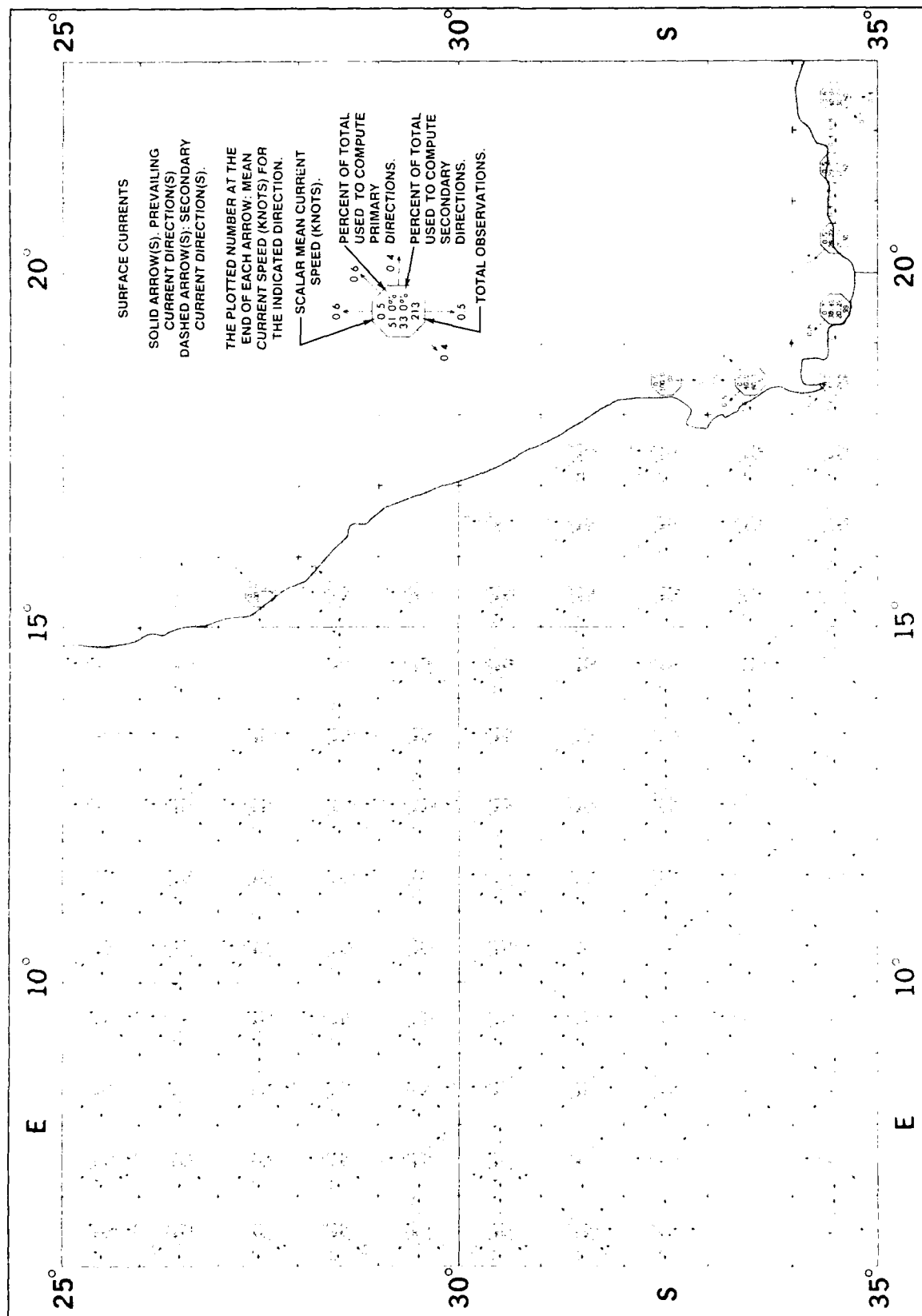
November

Wave Height



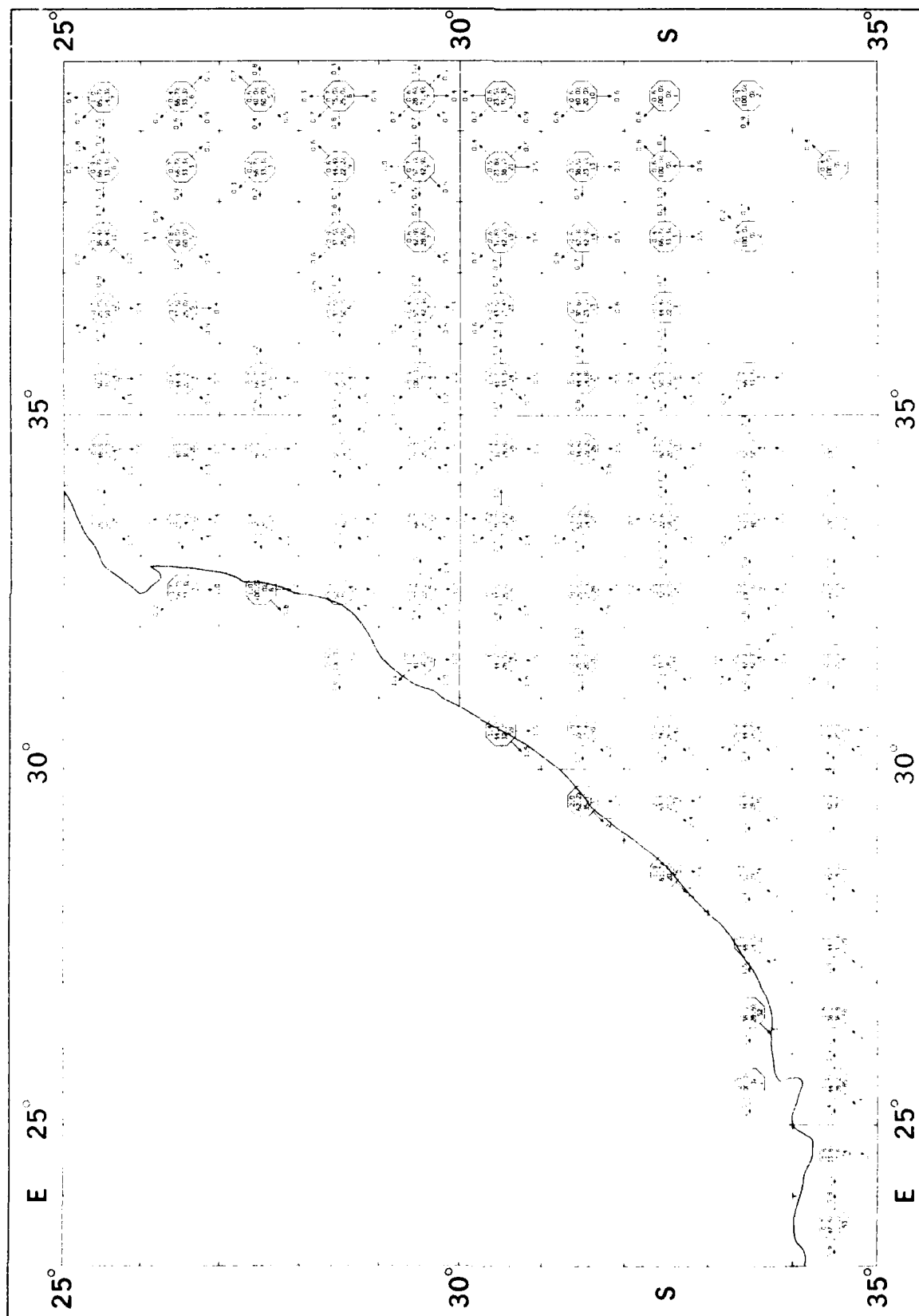
November

Surface Currents



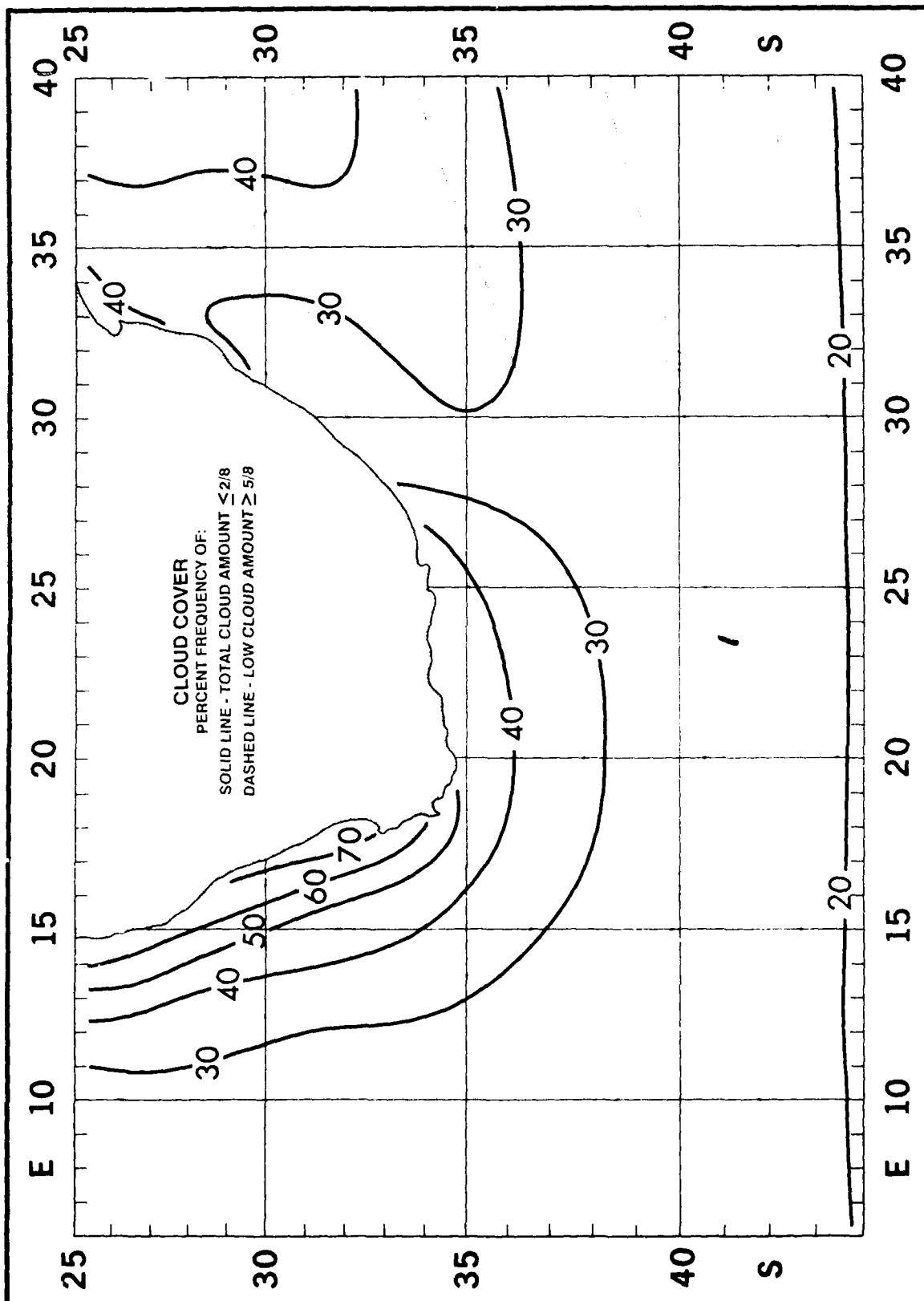
November

Surface Currents



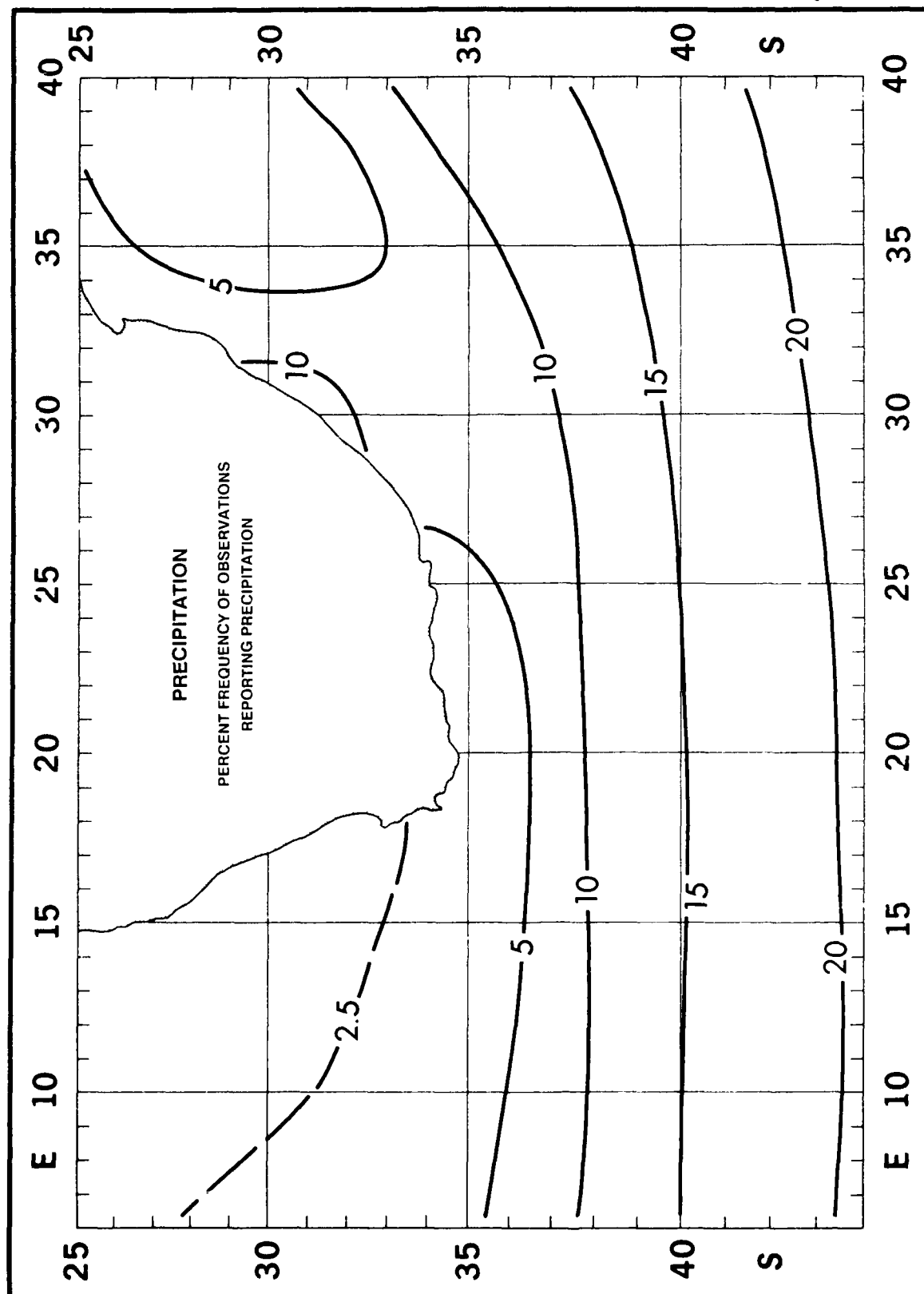
December

Clouds



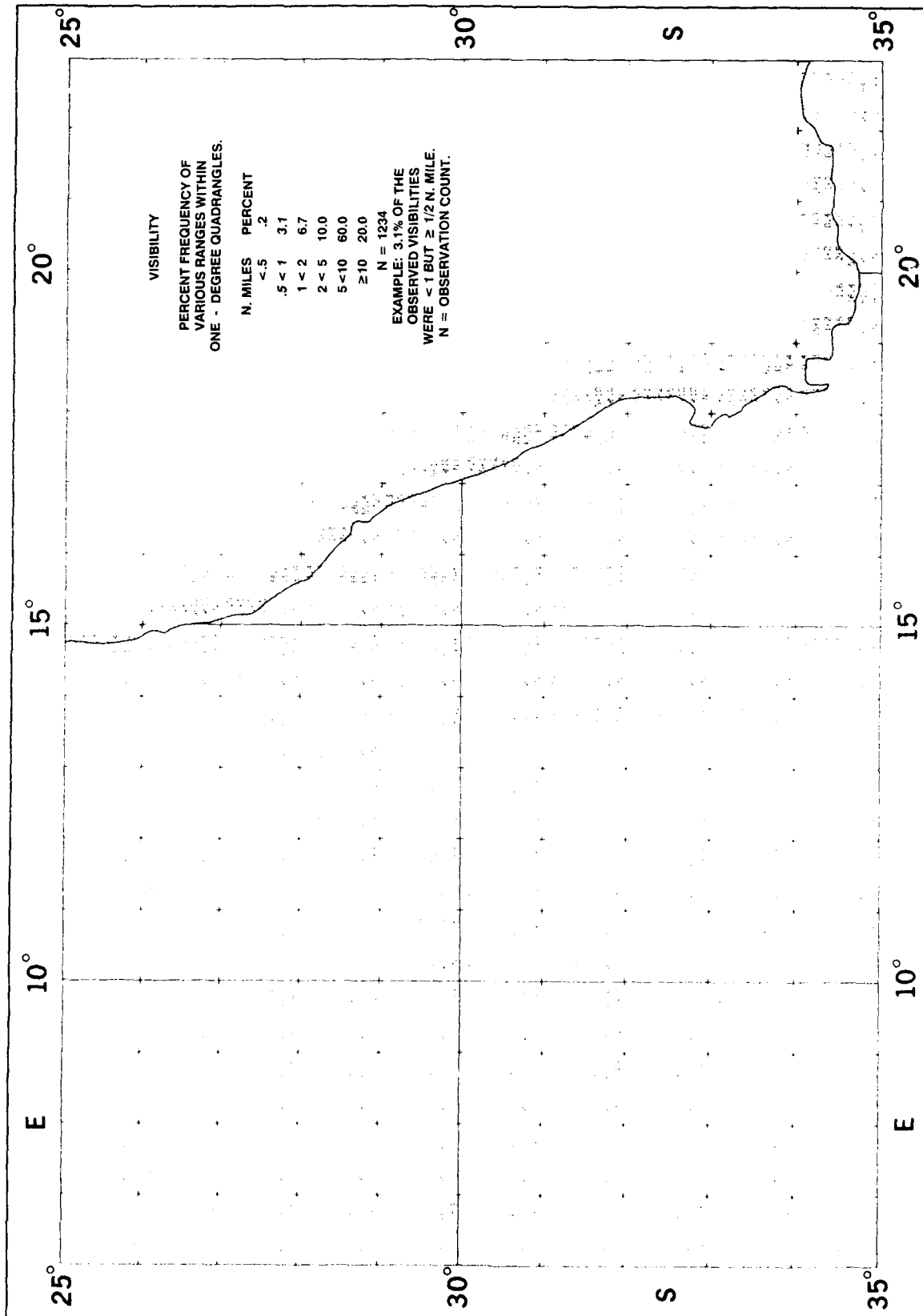
December

Precipitation



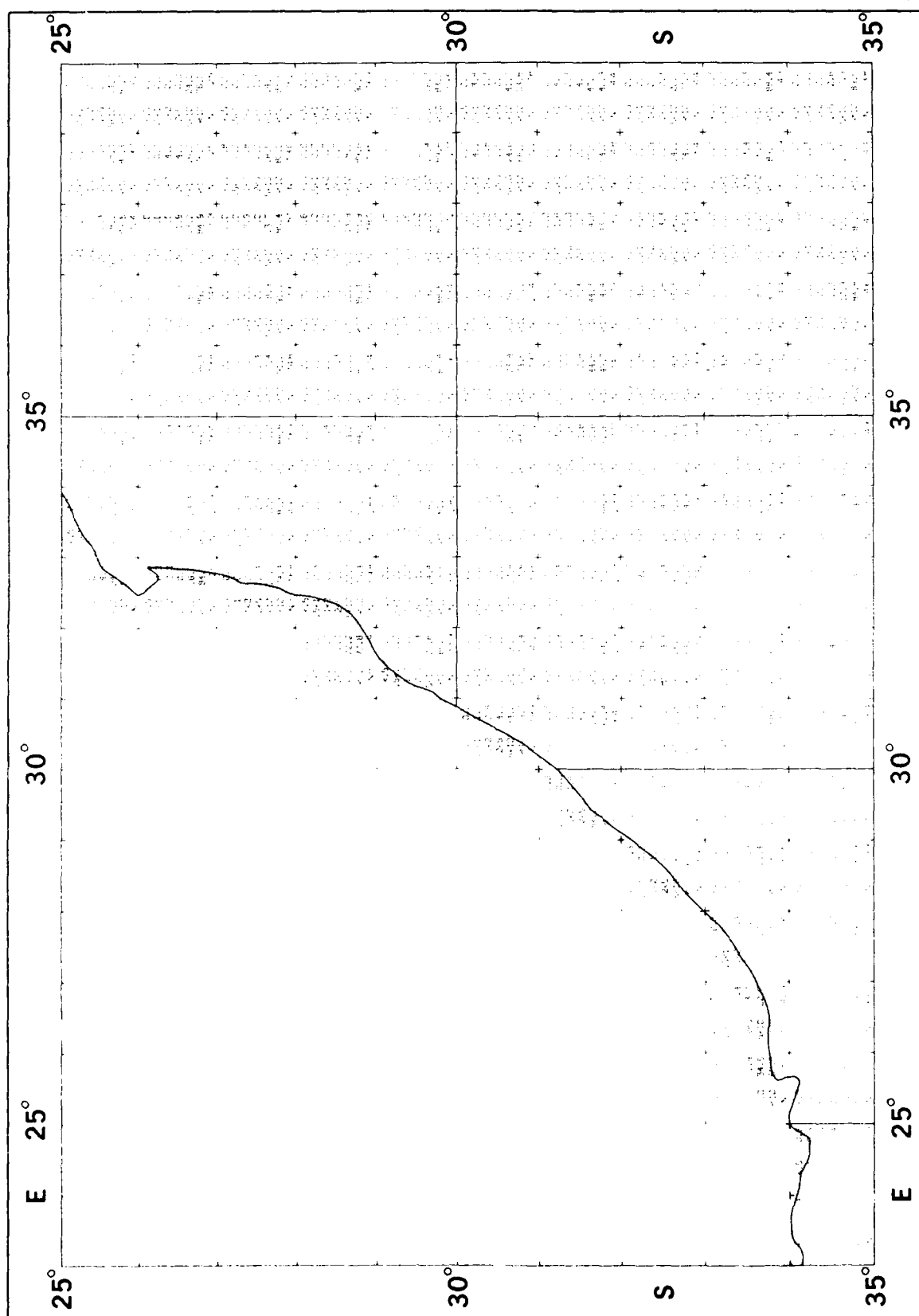
December

Visibility



December

Visibility

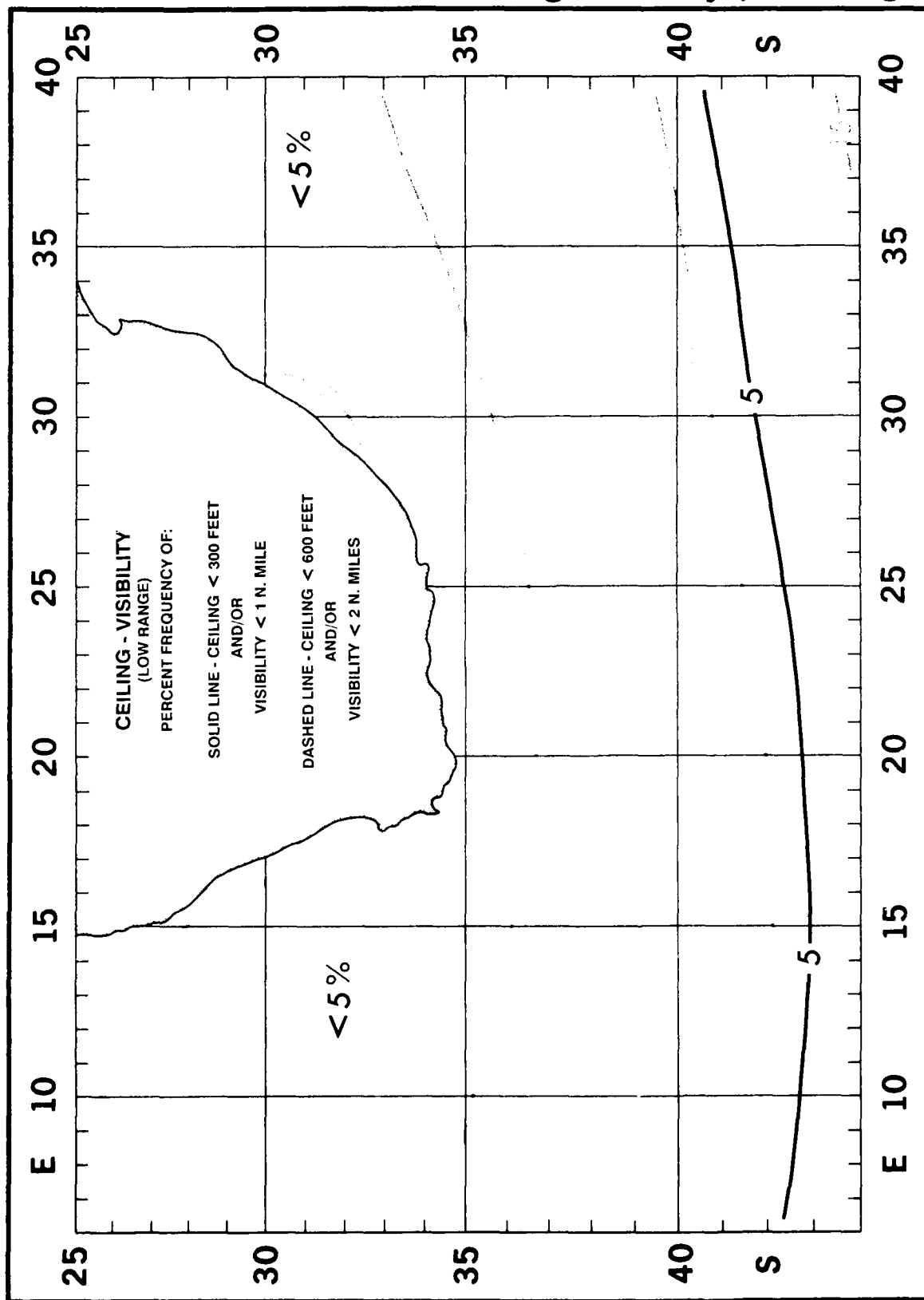


Ceiling - Visibility (Mid Range)



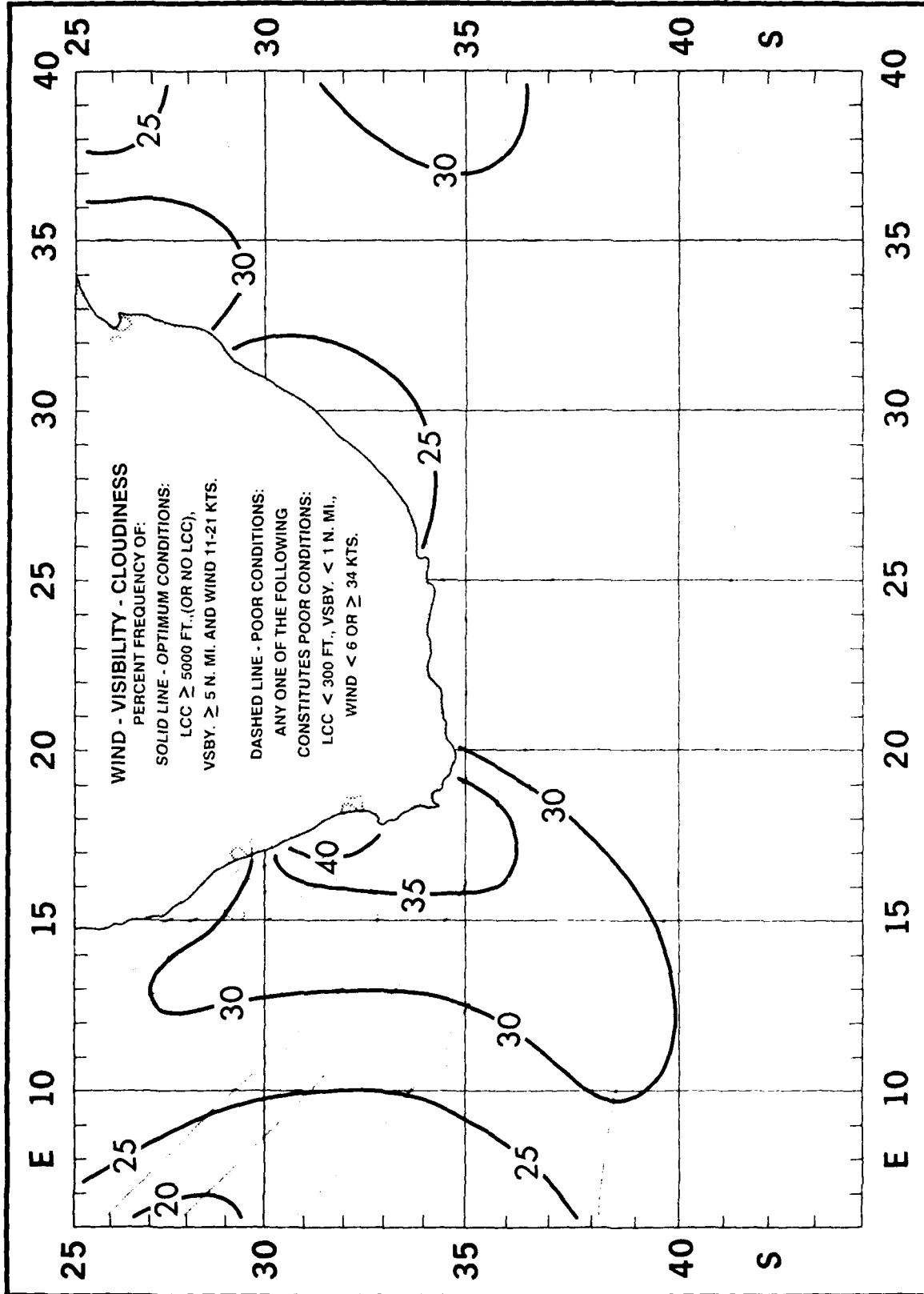
December

Ceiling - Visibility (Low Range)



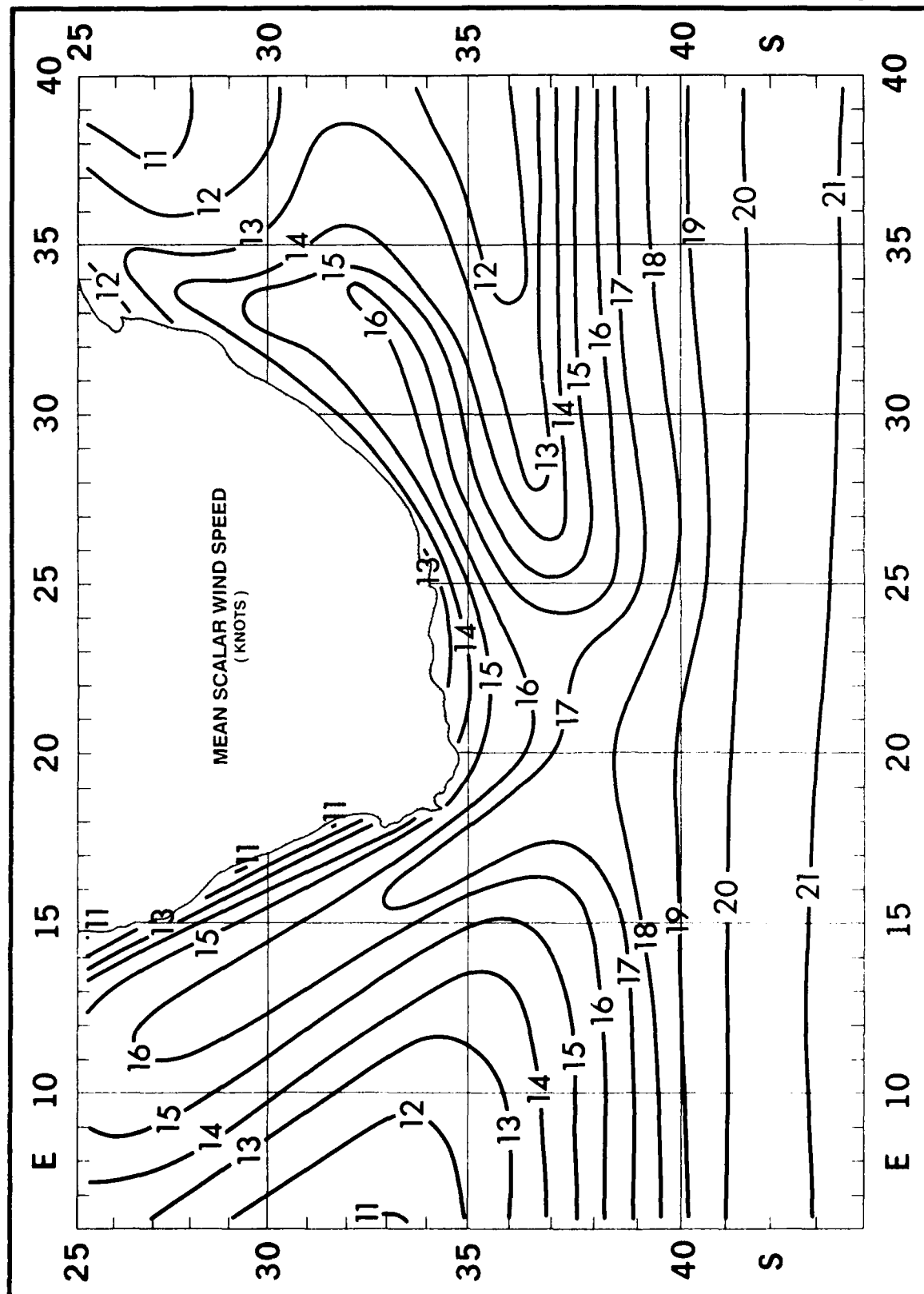
December

Wind - Visibility - Cloudiness



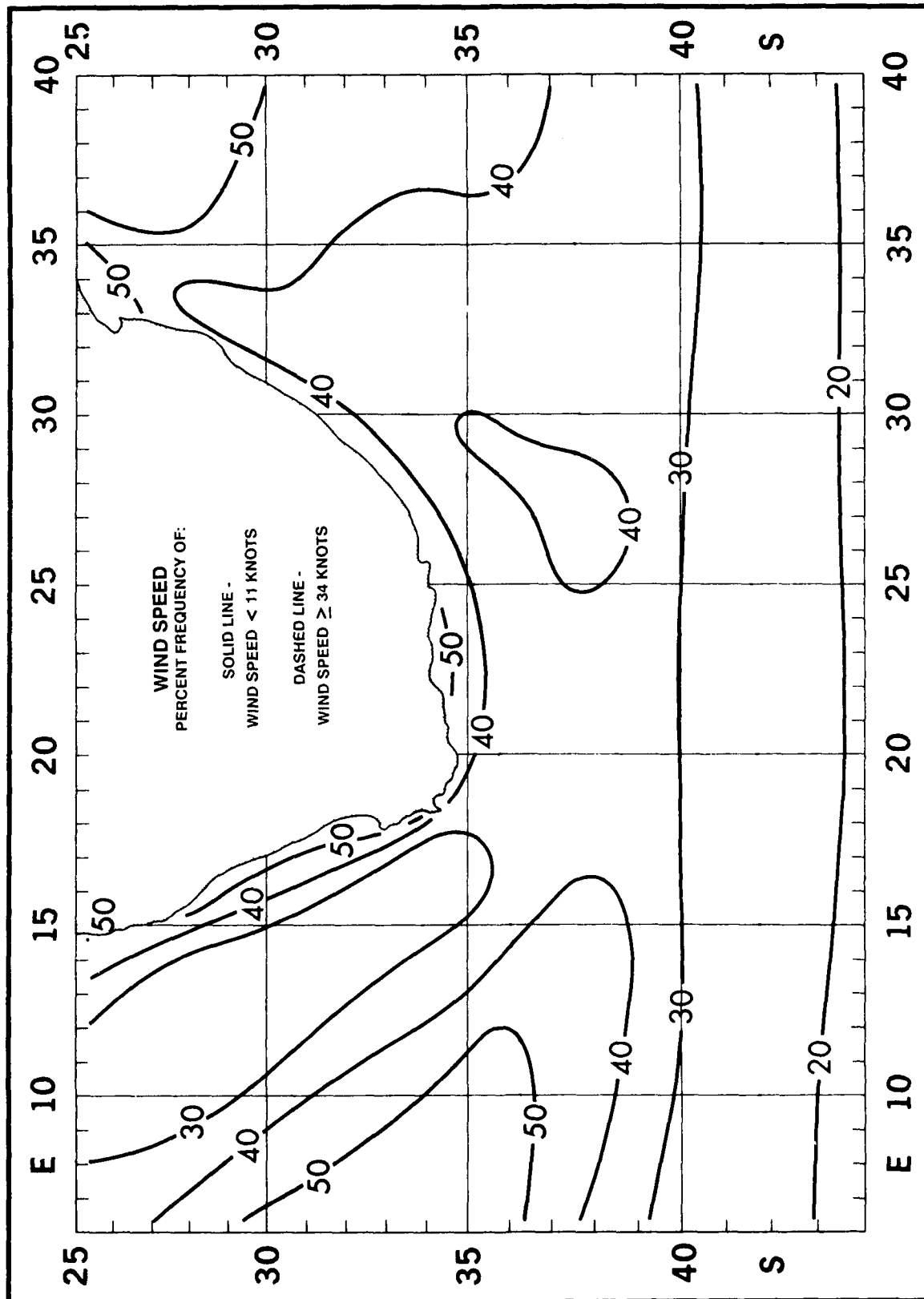
December

Mean Scalar Wind Speed



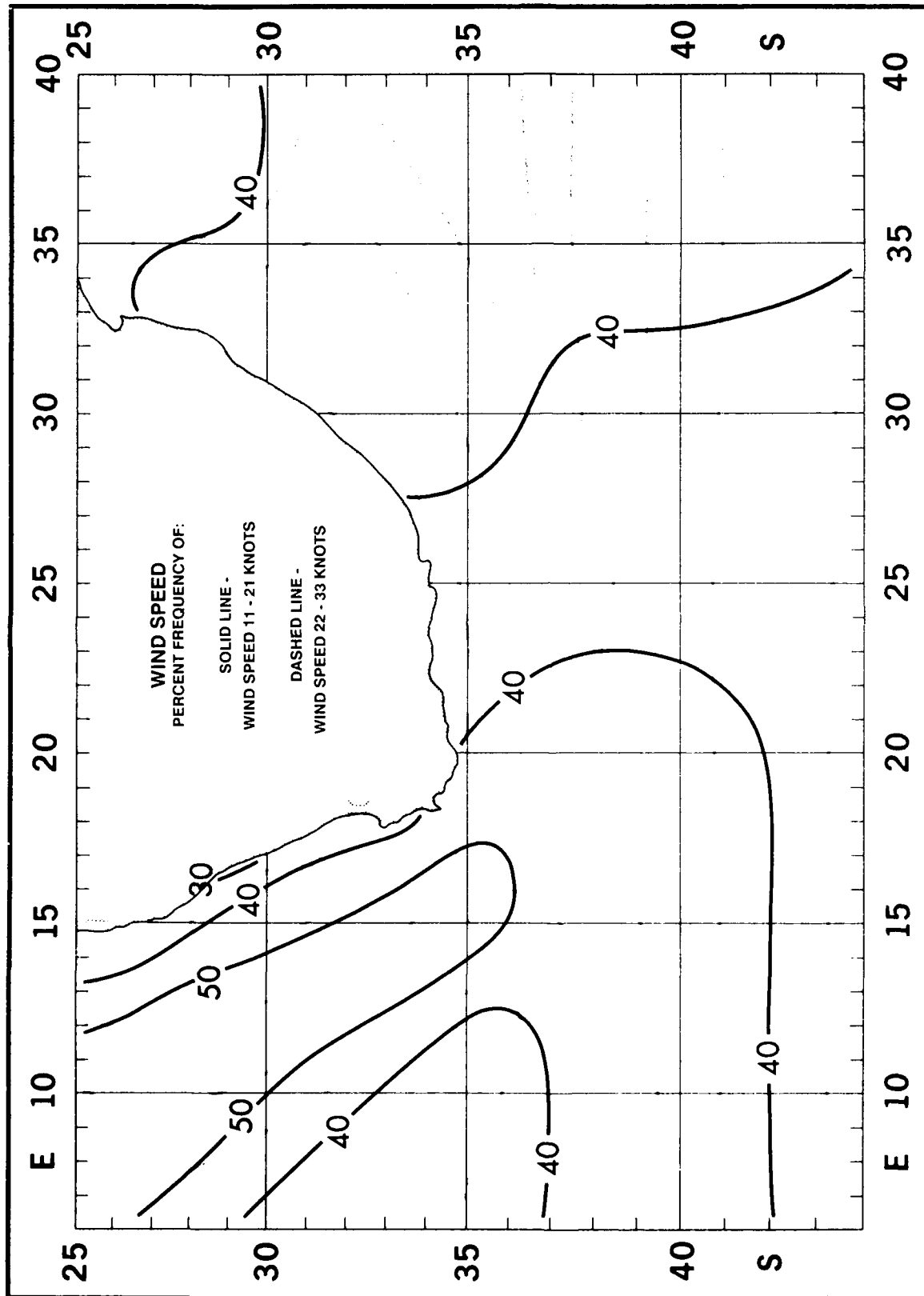
December

Wind Speed ≤ 11 and ≥ 34 Knots



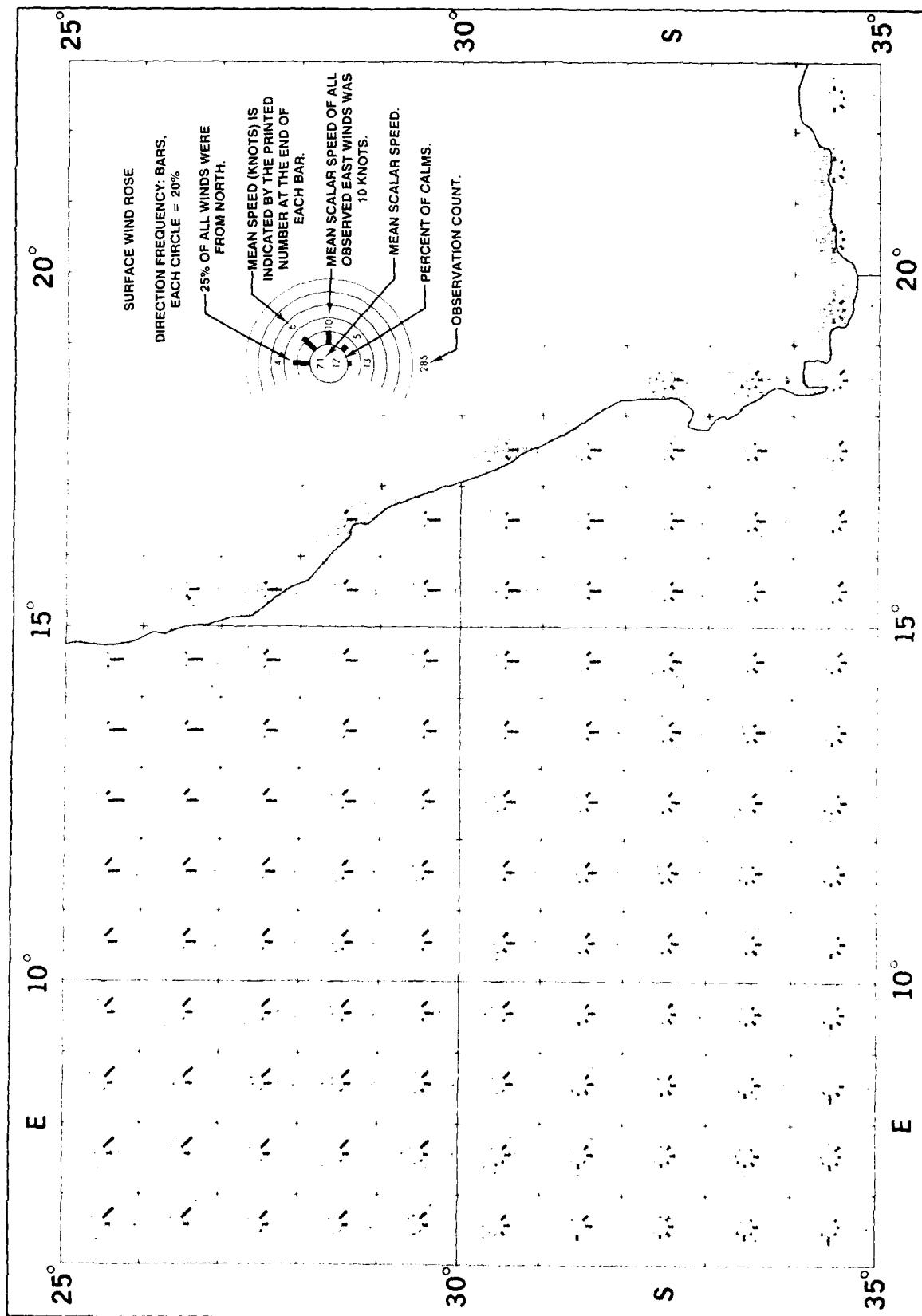
December

Wind Speed 11 - 21 and 22 - 33 Knots



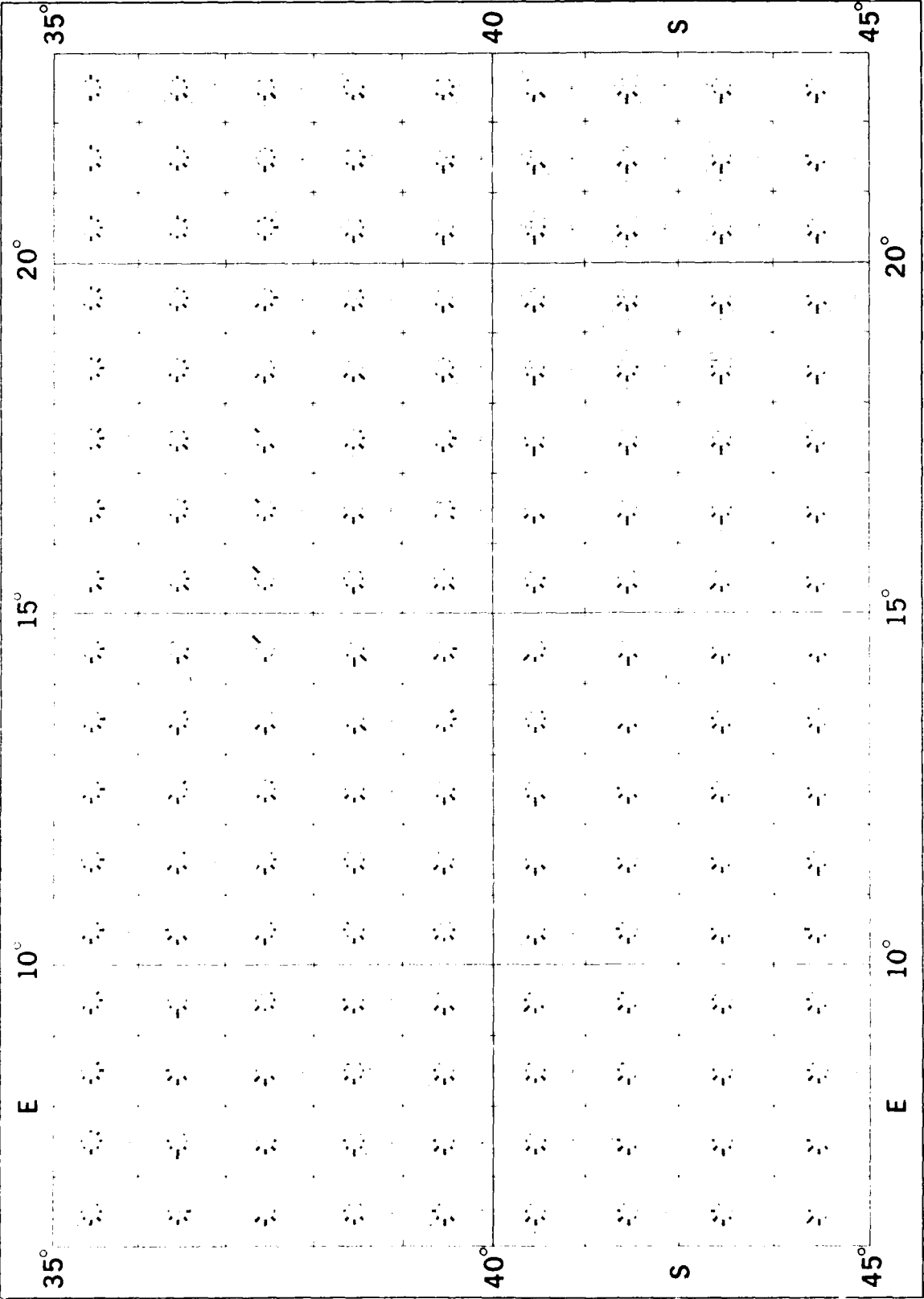
December

Surface Wind Roses



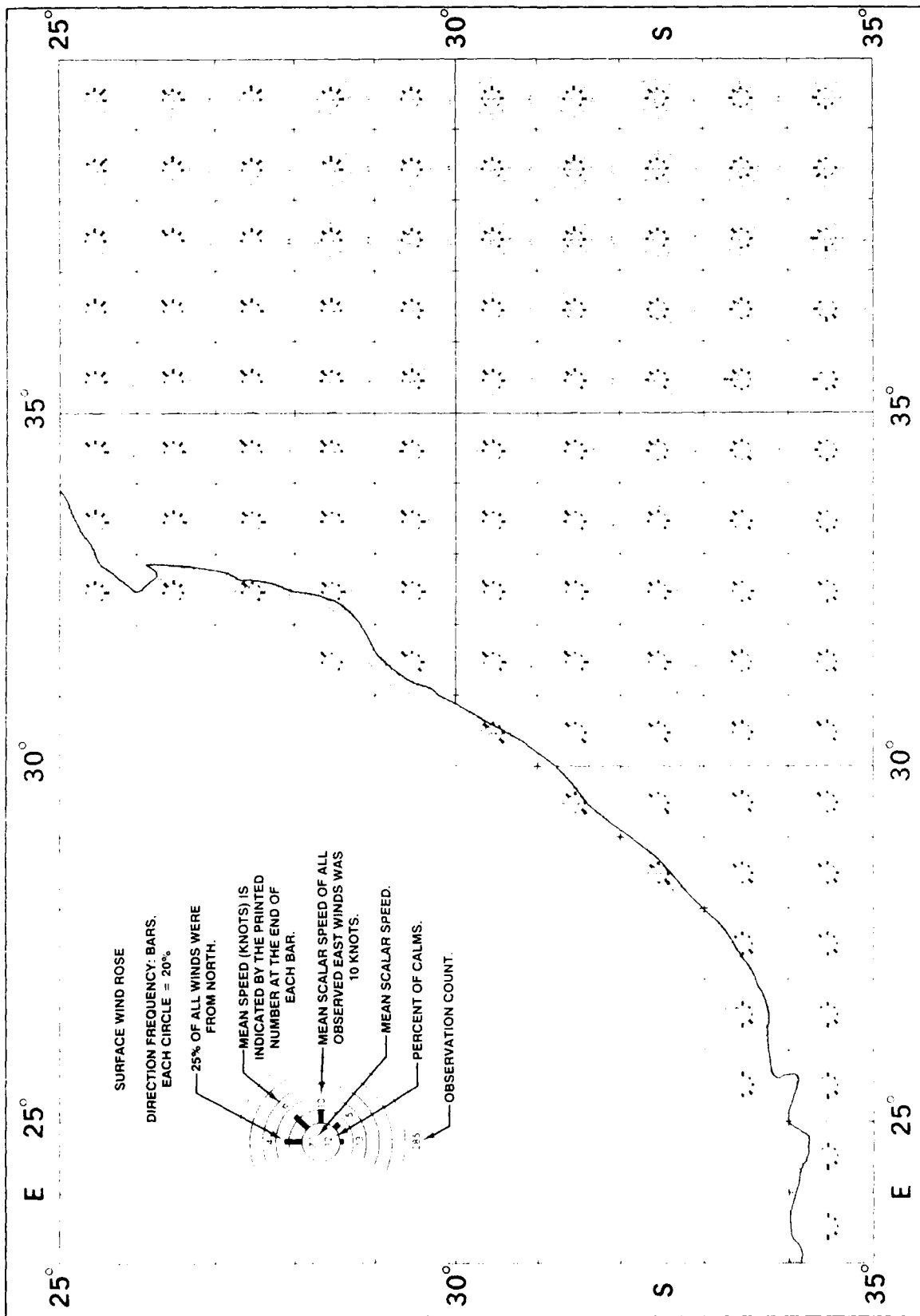
December

Surface Wind Roses



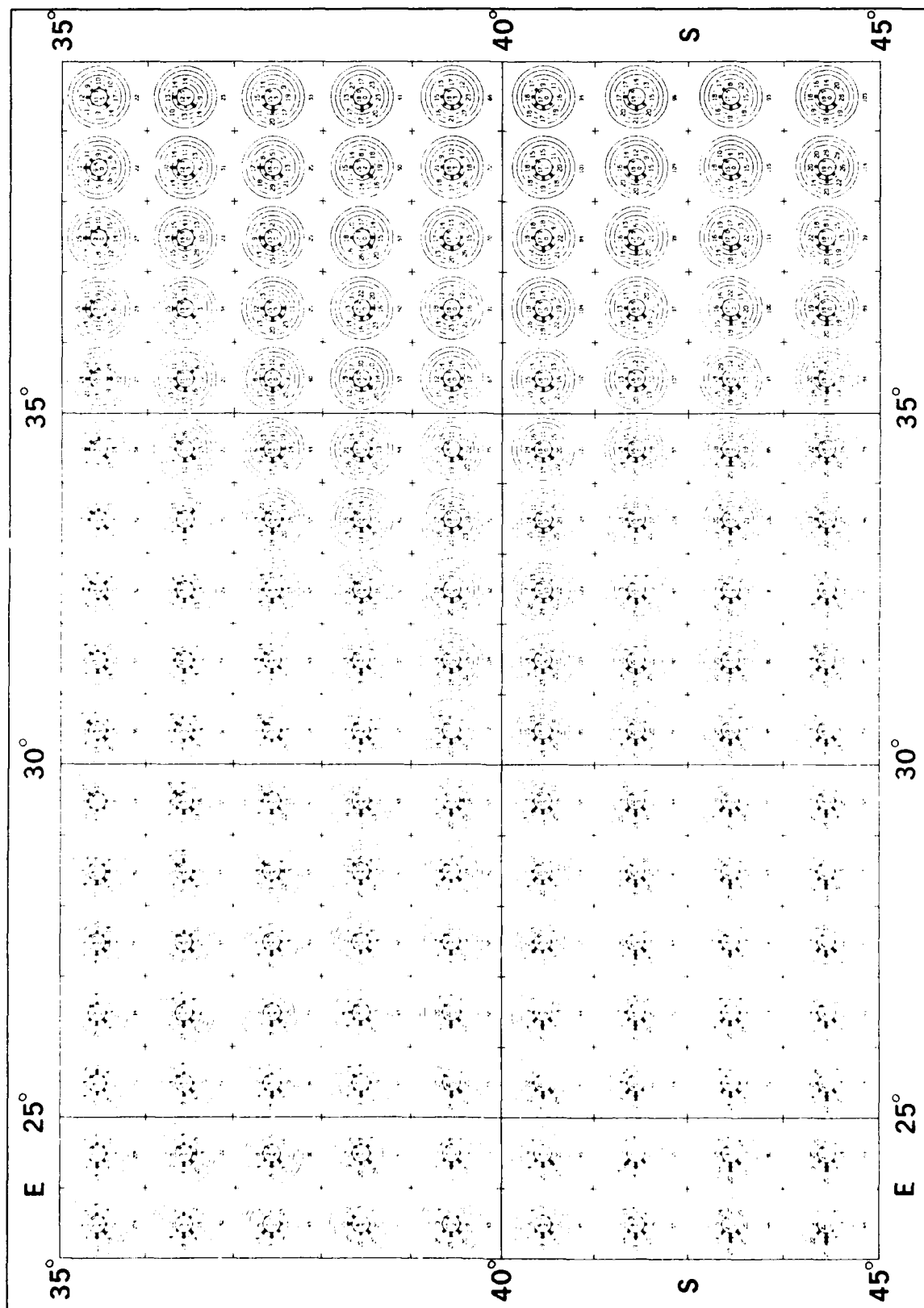
December

Surface Wind Roses



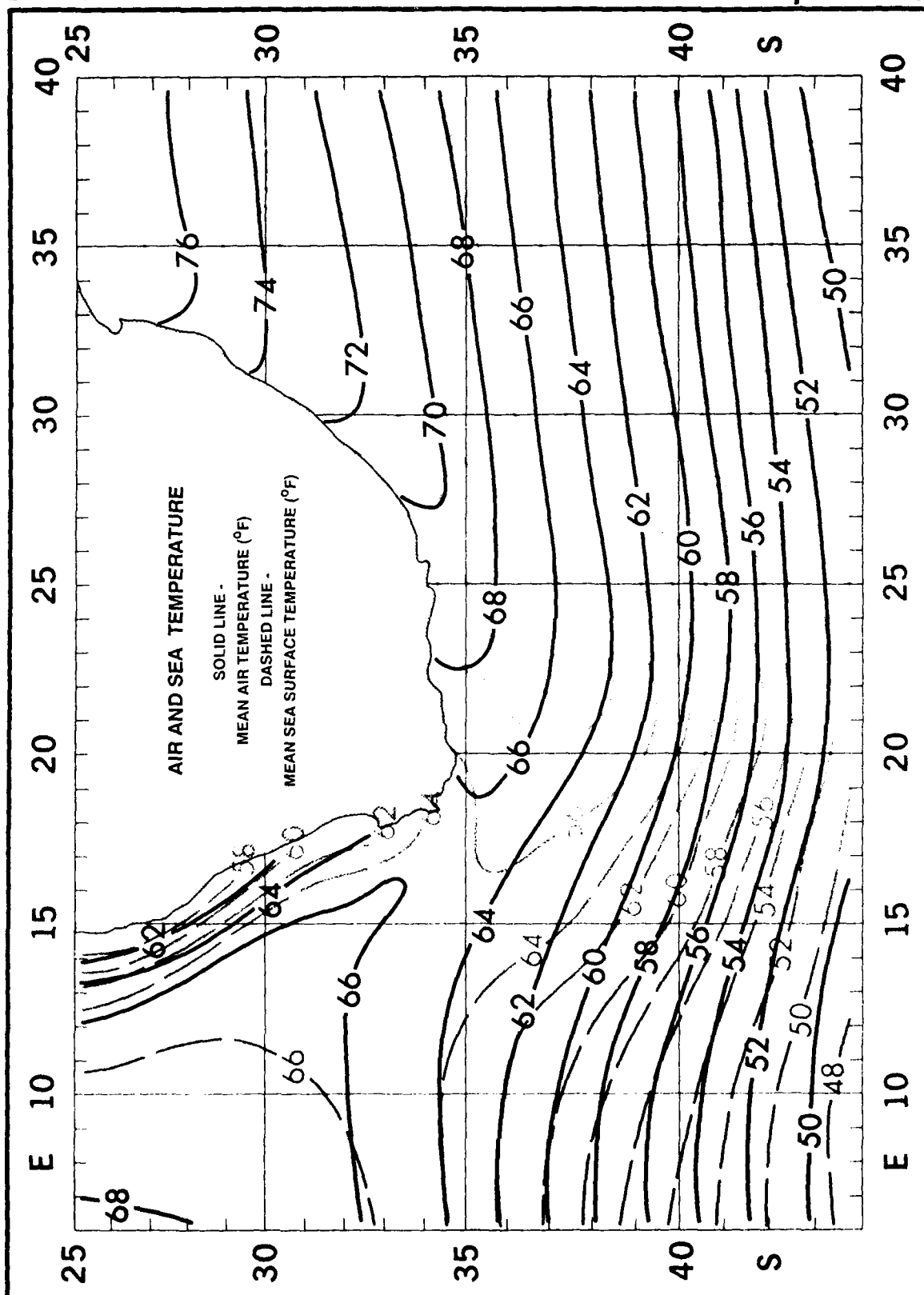
December

Surface Wind Roses



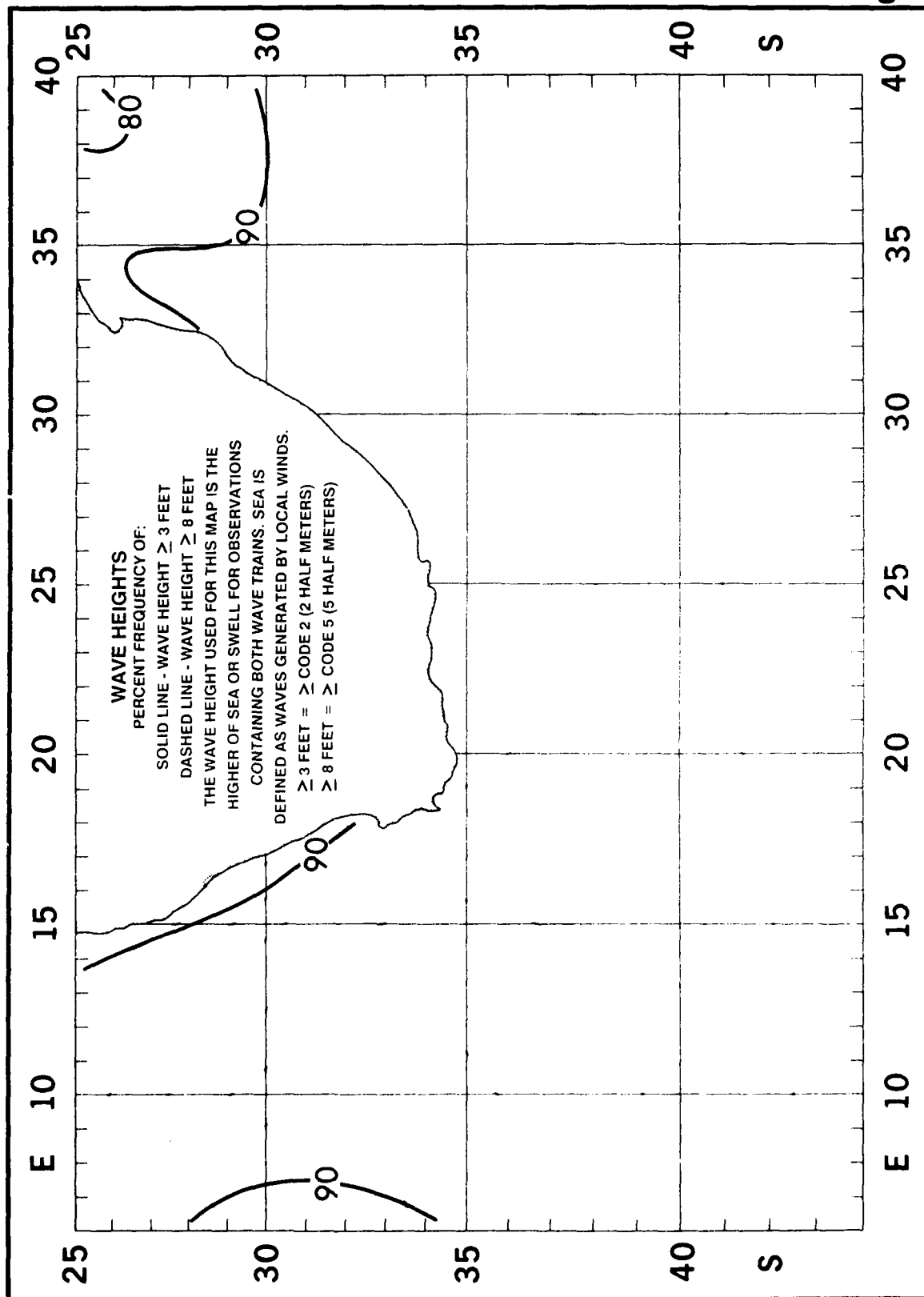
December

Air and Sea Temperature



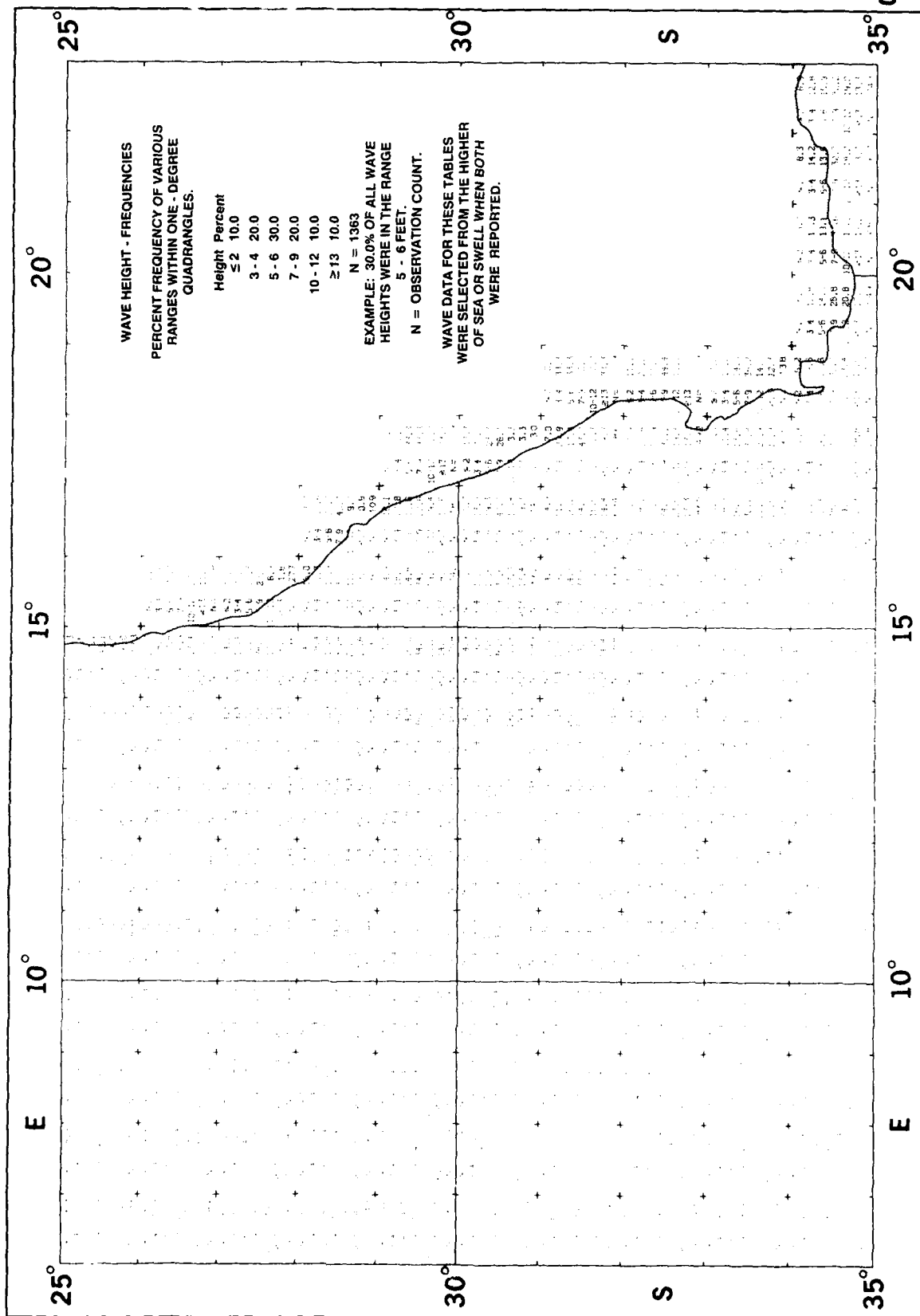
December

Wave Height



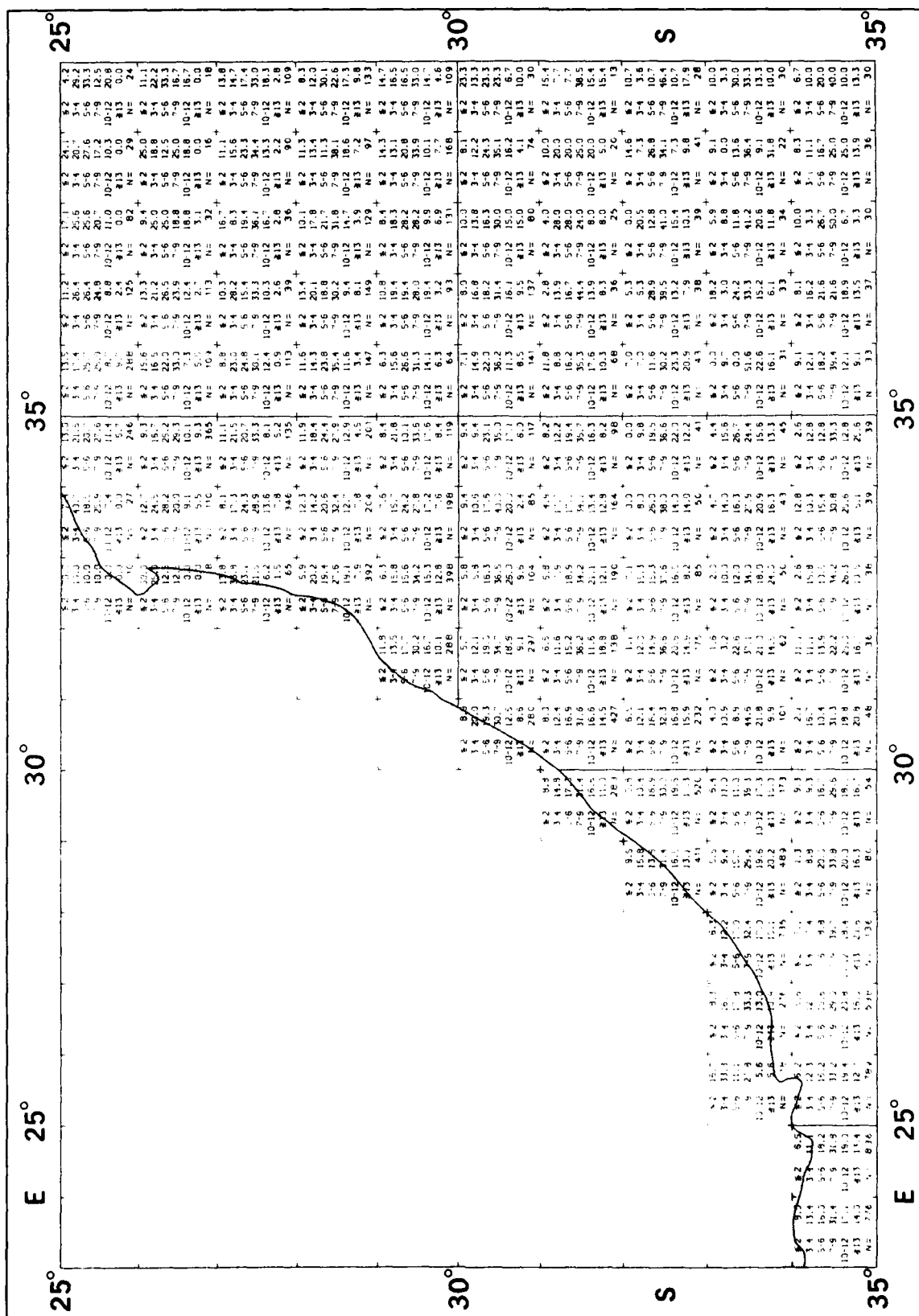
December

Wave Height



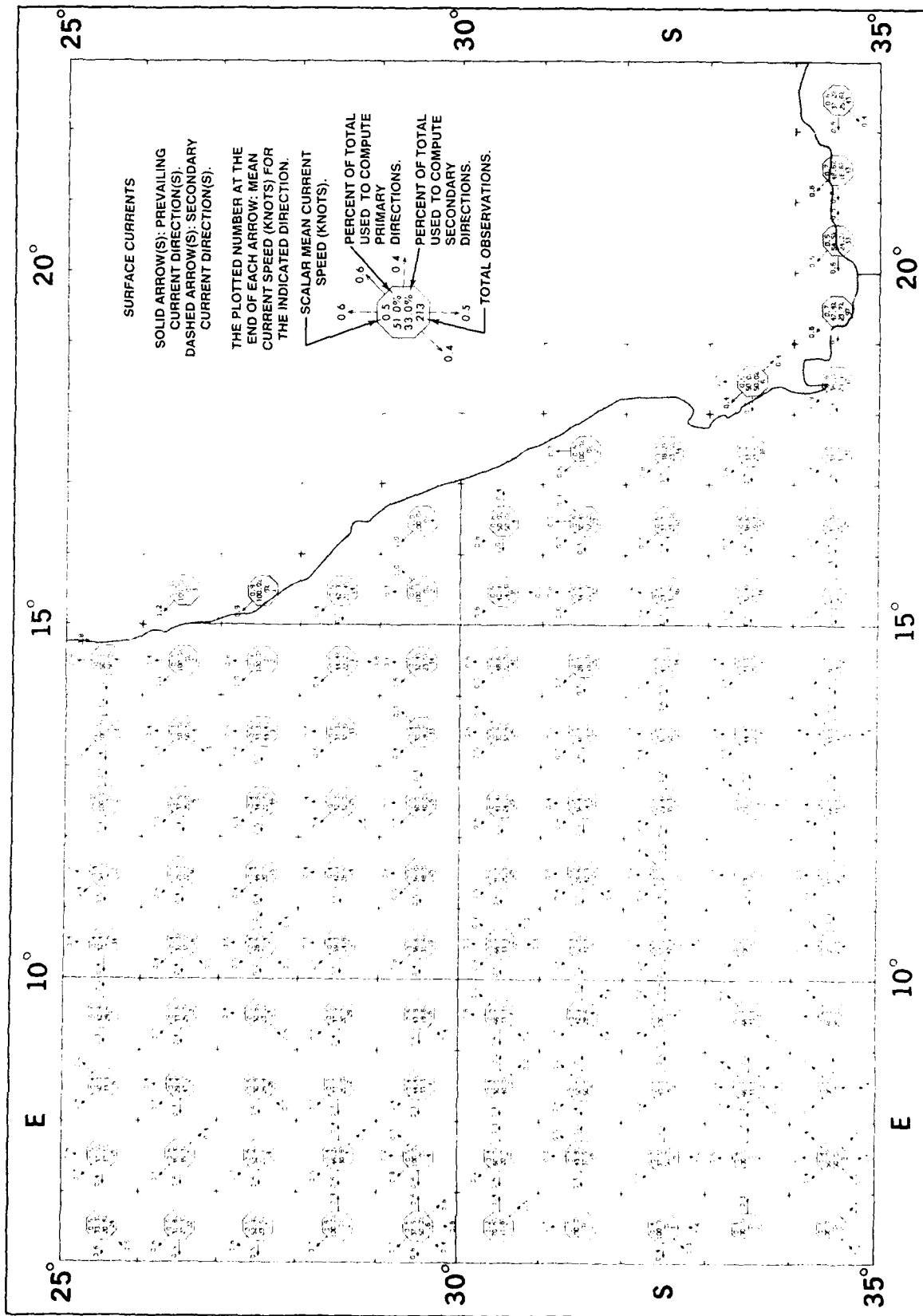
December

Wave Height



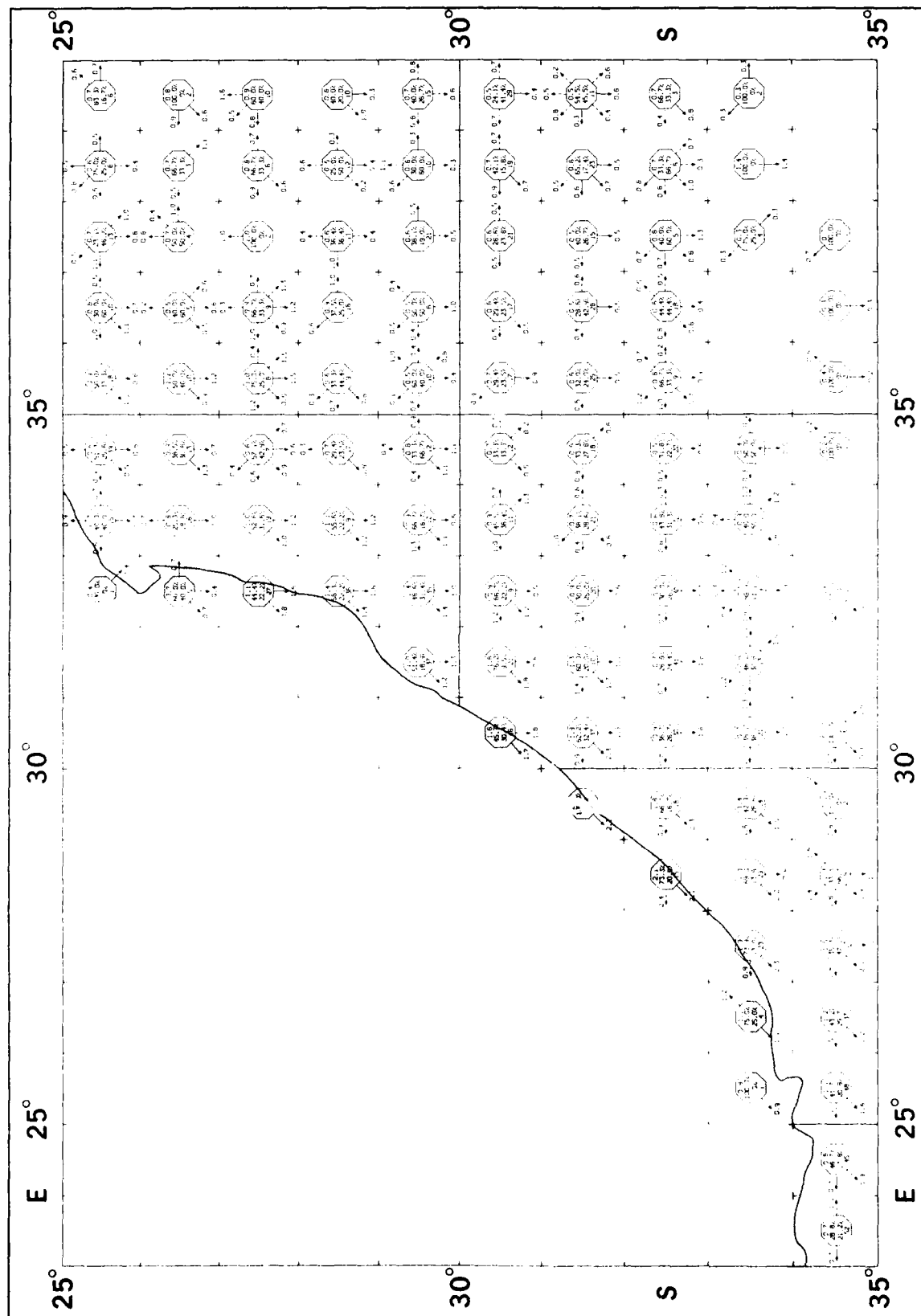
December

Surface Currents



December

Surface Currents



Station Climatic Summaries

The following Station Climatic Summaries are based on data from many different sources, with most stations having variable periods-of-record. Considerable effort went into making these data as compatible as possible for each station. However, for some stations a more recent shorter period-of-record was selected over a longer period because the shorter record is more representative of the current climate. Also, in some instances, the station periods-of-record were mixed because only one period-of-record source could be found for a given element. For example, the mean daily maximum and minimum temperatures for a given station may have been based on a period other than that for the mean temperature because of incomplete data records. This practice sometimes gives inconsistencies in the summarized data set.

Station relocations and varying periods-of-record also introduce inconsistencies. For example, inconsistencies often appear when comparing absolute minimum temperatures from one period-of-record with the total number of days below freezing from another period.

Ideally, these Station Climatic Summaries should be generated from a relatively consistent long-term digital station data base. Unfortunately that is not possible for most foreign-reporting stations at this time.

Summaries for the following stations appear in alphabetical order:

Alexander Bay, South Africa

Cape Agulhas, South Africa

Cape Hermes, South Africa

Cape Town, South Africa

Durban, South Africa

East London, South Africa

George, South Africa

Luderitz Bay, Namibia

Maputo, Mozambique

Port Elizabeth, South Africa

Port Nolloth, South Africa

REPORT BY: NOCO ASHEVILLE

STATION NAME: ALEXANDER BAY, SOUTH AFRICA
LOCATION: 28 44S 16 32E

ELEVATION: 69 FEET

WMO #: 68406

	TEMPERATURE (F)					PRECIPITATION (INCHES)					RELATIVE HUMIDITY					WIND (KTS)					MEAN NUMBER OF DAYS WITH				
	MEANS		EXTREME			MEAN	MAXIMUM	MINIMUM	24-HR MAXIMUM	SNOWFALL	MEAN	MAXIMUM	MINIMUM	24-HR MAXIMUM	WIND PRESSURE	SEA SURFACE	PRESSURE ALTITUDE	DIRECTION	SPEED	WIND CLOUD AMOUNT	PRECIPITATION	SNOWFALL	WINDS	VISIBILITY	TEMPERATURE
	MAXIMUM	MINIMUM	AVERAGE	MAXIMUM	MINIMUM																				
JAN	76	59	67	100	40	0	0	0	0		66	67	43	70	10	10	10	10	10	10	0	0	0	0	0
FEB	75	60	67	100	40	0	0	0	0		63	63	43	70	10	10	10	10	10	10	0	0	0	0	0
MAR	76	57	67	100	40	0	0	0	0		69	69	43	70	10	10	10	10	10	10	0	0	0	0	0
APR	74	54	64	100	42	0	0	0	0		67	66	43	70	10	10	10	10	10	10	0	0	0	0	0
MAY	72	51	62	100	19	0	0	0	0		63	67	39	67	10	10	10	10	10	10	0	0	0	0	0
JUN	71	49	60	94	35	0	0	0	0		70	60	34	44	10	10	10	10	10	10	0	0	0	0	0
JUL	69	48	59	98	15	0	0	0	0		68	58	33	47	10	10	10	10	10	10	0	0	0	0	0
AUG	68	47	58	96	15	0	0	0	0		67	57	33	44	10	10	10	10	10	10	0	0	0	0	0
SEP	70	50	60	100	15	0	0	0	0		67	57	33	44	10	10	10	10	10	10	0	0	0	0	0
OCT	71	52	63	100	43	0	0	0	0		61	67	40	70	10	10	10	10	10	10	0	0	0	0	0
NOV	74	55	64	100	43	0	0	0	0		60	60	40	64	10	10	10	10	10	10	0	0	0	0	0
DEC	74	58	66	100	48	0	0	0	0		63	62	40	67	10	10	10	10	10	10	0	0	0	0	0
ANN	72	53	64	100	35	1	1	0	0		64	60	40	63	10	10	10	10	10	10	0	0	0	0	0
LYR	68	30	39	204	20	14	15	14	17		23	20	20	20	10	10	10	10	10	10	12	12	12	12	12

FEW: LESS THAN 0.5 INCHES OR 0.25 INCHES OR MORE, AS APPLICABLE

THE VALUE LISTED UNDER PRESSURE ALTITUDE INDICATES THE VALUE IS EXCEEDED ONLY ON 1% OF THE TIME WHEN CALLED ON AND OTHERWISE IT IS THE MEAN

LYR IS EQUIVALENT YEARS OF RECORD FOR THE MONTH NUMBER OF YEARS UTILIZED IN THE CALCULATION

MONTH	PERCENT OF MONTH												ANN	YRS
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC		
FEELING LESS THAN 5000 FEET AND/OR VISIBILITY LESS THAN 5 MI														
07	56	63	63	51	46		44	49	51	51	45	50		12
13	10	6	3	10	11		14	20	13	14	9	9		12
19	28	20	15	24	21		21	20	26	19	10	12		12
ALL HRS	32	32	33	29	26		27	30	30	31	20	33	29	12
FEELING LESS THAN 4000 FEET AND/OR VISIBILITY LESS THAN 2 1/2 MI														
07	51	54	54	43	40		39	49	44	43	40	44		12
13	9	5	3	8	7		10	13	9	9	5	7		12
19	26	28	21	18	16		17	13	20	20	22	10		12
HRS	29	29	26	24	22		22	22	21	24	22	29	25	12
FEELING LESS THAN 3000 FEET AND/OR VISIBILITY LESS THAN 2 1/2 MI														
07	22	13	18	10	10		25	24	27	18	16	19		12
13	0	1	1	1	2		2	2	2	2	1	3		12
19	10	16	13	12	14		11	6	9	5	0	11		12
HRS	12	17	17	14	15		12	11	14	7	4	11	12	12
FEELING LESS THAN 650 FEET AND/OR VISIBILITY LESS THAN 1 1/4 MI														
07	12	22	12	24	27		22	18	20	17	7	12		12
13	3	3	3	3	2		1	1	1	1	1	1		12
19	4	9	8	10	9		8	4	6	3	2	5		12
HRS	6	11	14	12	13		10	8	9	3	3	6	9	12
FEELING LESS THAN 300 FEET AND/OR VISIBILITY LESS THAN 5/8 MI														
07	5	10	24	13	21		16	16	16	4	3	4		12
13	0	1	0	0	1		1	1	1	1	1	0		12
19	2	4	4	5	6		4	3	1	0	0	2		12
ALL HRS	3	5	10	8	9		7	7	6	2	1	2	6	12

ALEXANDER BAY, SOUTH AFRICA

PREPARED BY: NCOO ASHEVILLE

STATION NAME: CAPE AGULHAS, SOUTH AFRICA
LOCATION: 34 50S 20 01E

ELEVATION: 20 FEET

WMO #: 68920

	TEMPERATURE (F)					PRECIPITATION					RELATIVE HUMIDITY					SURFACE WIND (KTS)					MEAN CLOUD AMOUNT (TENTHS)					MEAN NUMBER OF DAYS WITH				
	MEANS			EXTREME		(INCHES)					HUMIDITY					WIND (KTS)					MEAN CLOUD AMOUNT (TENTHS)					MEAN NUMBER OF DAYS WITH				
	WINTER MIN	WINTER MAX	AVERAGE	WINTER MIN	WINTER MAX	WINTER MIN	WINTER MAX	AVERAGE	WINTER MIN	WINTER MAX	WINTER MIN	WINTER MAX	AVERAGE	WINTER MIN	WINTER MAX	AVERAGE	WINTER MIN	WINTER MAX	AVERAGE	WINTER MIN	WINTER MAX	AVERAGE	WINTER MIN	WINTER MAX	AVERAGE					
JAN	75	85	80	70	90	0.1	0.2	0.1	0.1	0.2	70	80	75	10	20	15	5	10	5	0	1	1	0	1						
FEB	75	85	80	70	90	0.1	0.2	0.1	0.1	0.2	70	80	75	10	20	15	5	10	5	0	1	1	0	1						
MAR	75	85	80	70	90	0.1	0.2	0.1	0.1	0.2	70	80	75	10	20	15	5	10	5	0	1	1	0	1						
APR	65	75	70	60	80	0.1	0.2	0.1	0.1	0.2	60	70	65	10	20	15	5	10	5	0	1	1	0	1						
MAY	65	75	70	60	80	0.1	0.2	0.1	0.1	0.2	60	70	65	10	20	15	5	10	5	0	1	1	0	1						
JUN	65	75	70	60	80	0.1	0.2	0.1	0.1	0.2	60	70	65	10	20	15	5	10	5	0	1	1	0	1						
JUL	65	75	70	60	80	0.1	0.2	0.1	0.1	0.2	60	70	65	10	20	15	5	10	5	0	1	1	0	1						
AUG	65	75	70	60	80	0.1	0.2	0.1	0.1	0.2	60	70	65	10	20	15	5	10	5	0	1	1	0	1						
SEP	65	75	70	60	80	0.1	0.2	0.1	0.1	0.2	60	70	65	10	20	15	5	10	5	0	1	1	0	1						
OCT	65	75	70	60	80	0.1	0.2	0.1	0.1	0.2	60	70	65	10	20	15	5	10	5	0	1	1	0	1						
NOV	65	75	70	60	80	0.1	0.2	0.1	0.1	0.2	60	70	65	10	20	15	5	10	5	0	1	1	0	1						
DEC	75	85	80	70	90	0.1	0.2	0.1	0.1	0.2	70	80	75	10	20	15	5	10	5	0	1	1	0	1						
ANN	65	75	70	60	80	0.1	0.2	0.1	0.1	0.2	60	70	65	10	20	15	5	10	5	0	1	1	0	1						
EVR	65	75	70	60	80	0.1	0.2	0.1	0.1	0.2	60	70	65	10	20	15	5	10	5	0	1	1	0	1						

LESS THAN 0.5 DAYS, 0.5 OR 0.05 INCH, OR 0.5 PERCENT AS APPLICABLE

THE VALUE LISTED UNDER PRESSURE ALTITUDE INDICATES THAT VALUE IS EXCEEDED ONLY 0.05 % OF THE TIME WHEN LABELED 99.95% OTHERWISE IT IS THE MEAN

EVR IS EQUIVALENT YEARS OF RECORD (I.E. THE ACTUAL NUMBER OF YEARS UTILIZED IN THE CALCULATIONS)

CAPE AGULHAS, SOUTH AFRICA

PREPARED BY: NCOO ASHEVILLE

STATION NAME: CAPE HERMES, SOUTH AFRICA
LOCATION: 31 39S 24 31E

ELEVATION: 154 FEET

WMO #: 68674

	TEMPERATURE (F)					PRECIPITATION					RELATIVE HUMIDITY					SURFACE WIND (KTS)					MEAN CLOUD AMOUNT (TENTHS)					MEAN NUMBER OF DAYS WITH				
	MEANS			EXTREME		(INCHES)					HUMIDITY					WIND (KTS)					PRECIPITATION					TEMPERATURE				
	WINTER MIN	WINTER MAX	AVERAGE	WINTER MIN	WINTER MAX	WINTER MIN	WINTER MAX	WINTER AVERAGE	WINTER MIN	WINTER MAX	WINTER MIN	WINTER MAX	WINTER AVERAGE	WINTER MIN	WINTER MAX	WINTER AVERAGE	WINTER MIN	WINTER MAX	WINTER AVERAGE	WINTER MIN	WINTER MAX	WINTER AVERAGE	WINTER MIN	WINTER MAX	WINTER AVERAGE	WINTER MIN	WINTER MAX	WINTER AVERAGE		
JAN	75	85	80	70	90	0.1	0.2	0.1	0.1	0.2	70	80	75	10	20	15	5	10	5	0	1	1	0	1	1	0	1			
FEB	75	85	80	70	90	0.1	0.2	0.1	0.1	0.2	70	80	75	10	20	15	5	10	5	0	1	1	0	1	1	0	1			
MAR	75	85	80	70	90	0.1	0.2	0.1	0.1	0.2	70	80	75	10	20	15	5	10	5	0	1	1	0	1	1	0	1			
APR	65	75	70	60	80	0.1	0.2	0.1	0.1	0.2	60	70	65	10	20	15	5	10	5	0	1	1	0	1	1	0	1			
MAY	65	75	70	60	80	0.1	0.2	0.1	0.1	0.2	60	70	65	10	20	15	5	10	5	0	1	1	0	1	1	0	1			
JUN	65	75	70	60	80	0.1	0.2	0.1	0.1	0.2	60	70	65	10	20	15	5	10	5	0	1	1	0	1	1	0	1			
JUL	65	75	70	60	80	0.1	0.2	0.1	0.1	0.2	60	70	65	10	20	15	5	10	5	0	1	1	0	1	1	0	1			
AUG	65	75	70	60	80	0.1	0.2	0.1	0.1	0.2	60	70	65	10	20	15	5	10	5	0	1	1	0	1	1	0	1			
SEP	65	75	70	60	80	0.1	0.2	0.1	0.1	0.2	60	70	65	10	20	15	5	10	5	0	1	1	0	1	1	0	1			
OCT	65	75	70	60	80	0.1	0.2	0.1	0.1	0.2	60	70	65	10	20	15	5	10	5	0	1	1	0	1	1	0	1			
NOV	75	85	80	70	90	0.1	0.2	0.1	0.1	0.2	70	80	75	10	20	15	5	10	5	0	1	1	0	1	1	0	1			
DEC	75	85	80	70	90	0.1	0.2	0.1	0.1	0.2	70	80	75	10	20	15	5	10	5	0	1	1	0	1	1	0	1			
ANN	65	75	70	60	80	0.1	0.2	0.1	0.1	0.2	60	70	65	10	20	15	5	10	5	0	1	1	0	1	1	0	1			
EVR	65	75	70	60	80	0.1	0.2	0.1	0.1	0.2	60	70	65	10	20	15	5	10	5	0	1	1	0	1	1	0	1			

LESS THAN 0.5 DAYS, 0.5 OR 0.05 INCH, OR 0.5 PERCENT AS APPLICABLE

THE VALUE LISTED UNDER PRESSURE ALTITUDE INDICATES THAT VALUE IS EXCEEDED ONLY 0.05 % OF THE TIME WHEN LABELED 99.95% OTHERWISE IT IS THE MEAN

EVR IS EQUIVALENT YEARS OF RECORD (I.E. THE ACTUAL NUMBER OF YEARS UTILIZED IN THE CALCULATIONS)

CAPE HERMES, SOUTH AFRICA

PREPARED BY: NOD ASHEVILLE

STATION NAME: CAPE TOWN, SOUTH AFRICA
LOCATION: 33 59S 18 36E

ELEVATION: 151 FEET

WMO #: 68816

	TEMPERATURE (F)					PRECIPITATION (INCHES)					RELATIVE HUMIDITY		WIND PRESSURE INCHES OF MERCURY	SEA POINT (F)	PRESSURE ALTITUDE FEET (9500)	SURFACE WIND (KTS)			MEAN NUMBER OF DAYS WITH												
	MEANS			EXTREME		MEAN	MAXIMUM	MINIMUM	24-HR MAXIMUM	24-HR MINIMUM	24-HR MAXIMUM	24-HR MINIMUM				DIRECTION	SPEED	MAX GUST	MEAN CLOUD AMOUNT (TENTHS)	PRECIPITATION		THUNDERSTORMS	VISIBILITY (1/8 MI IN FOG)	TEMPERATURE							
	MAXIMUM	MINIMUM	AVERAGE	MAXIMUM	MINIMUM															0.004	0.01			50	60	70	80	90			
	MAXIMUM	MINIMUM	AVERAGE	MAXIMUM	MINIMUM															0.004	0.01			50	60	70	80	90			
JAN	74	60	67	101	41	0.6	2.8	0.0	1.6				73	52	49	54	11	15	8	5	0	0	2	2	12	0	2				
FEB	70	58	64	99	44	0	2.1	0	1.3				70	53	48	59	10	28	2	2	0	0	1	1	11	0	1				
MAR	70	57	60	105	40	0	1.4	0	1.2				69	52	48	58	9	10	8	5	0	0	0	4	1	10	0	4			
APR	73	52	61	102	36	1.5	4.1	0	1.8				69	55	48	54	7	24	4	9	0	0	1	5	0	1	12				
MAY	67	48	57	92	34	2.9	6.8	0.6	2.6				61	63	38	51	2	2	2	13	0	0	1	5	8	2	0	16			
JUN	64	47	54	83	30	3.6	8.9	0.4	2.3				60	63	34	44	2	7	11	4	12	0	1	4	0	1	4	20			
JUL	63	44	53	84	26	2.6	6.7	0.3	2.0				61	64	34	47	2	7	14	12	0	0	1	3	0	8	4	24			
AUG	64	45	54	89	15	1.0	3.5	0.2	2.2				60	62	34	47	2	8	48	13	0	0	1	3	0	1	4	23			
SEP	67	47	57	92	12	1.4	3.5	0.4	1.4				60	58	35	44	1	8	12	10	0	0	1	1	8	2	8	18			
OCT	70	50	60	96	24	1.2	4.2	0.2	2.1				60	58	35	51	1	1	17	4	0	0	1	1	8	4	0	14			
NOV	76	55	64	98	39	0.6	2.5	0	1.0				71	53	42	64	1	11	16	5	0	0	1	1	1	1	0	5			
DEC	77	58	67	94	46	0.7	2.4	0.0	0.8				70	53	47	57	1	12	11	8	0	0	1	1	1	1	0	1			
ANN	71	51	61	104	30	2.0	5.12	0.2	2.6				63	57	41	53	2	9	40	4	13.1	0	9	33	6	64	1	141			
CYR	16	15	20	15	15	26	17	0	24				15	15	24	30	12	12	15	15	12	28	17	10	12	12					

LESS THAN 0.5 DAYS, 0.5 OR 0.0 INCH, OR 0.5 PERCENT AS APPLICABLE

THE VALUE LISTED UNDER PRESSURE ALTITUDE INDICATES THAT VALUE IS EXCEEDED ONLY 0.05% OF THE TIME WHEN LABELED OR ANY OTHERWISE IT IS THE MEAN

PER IS EQUIVALENT YEARS OF RECORD (16) THE ACTUAL NUMBER OF YEARS UTILIZED IN THE CALCULATIONS

FLYING WEATHER, PERCENT OF HOURS															
HOUR	CELT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS
CEILING LESS THAN 5000 FEET AND/OR VISIBILITY LESS THAN 6 MI															
07		22	28	21	14	45	39	43	47	44	36	28	23		12
13		11	16	17	26	31	12	15	25	28	22	13	14		12
19		14	14	18	20	11	14	14	10	19	14	14	13		12
ALL HRS		16	19	20	26	15	40	17	18	10	25	19	16	23	12
CEILING LESS THAN 3000 FEET AND/OR VISIBILITY LESS THAN 2 MI															
07		19	22	25	30	39	42	36	35	32	30	25	20		12
13		7	11	9	16	25	27	31	30	21	13	10	10		12
19		11	10	15	16	20	20	27	24	17	15	12	12		12
ALL HRS		12	14	16	20	30	33	31	25	24	19	15	13	22	12
CEILING LESS THAN 1000 FEET AND/OR VISIBILITY LESS THAN 1 MI															
07		6	9	12	15	17	14	14	10	7	7	5	2		12
13		1	1	3	4	5	3	3	4	2	1	1	1		12
19		4	6	6	10	9	7	4	4	3	2	4			12
ALL HRS		3	4	5	7	10	10	8	6	5	4	3	2	5	12
CEILING LESS THAN 650 FEET AND/OR VISIBILITY LESS THAN 5/8 MI															
07		5	7	10	9	11	11	6	4	3	3	1	1		12
13		0	0	2	2	2	2	2	1	1	1	1	0		12
19		2	1	3	3	3	6	5	2	2	2	1	2		12
ALL HRS		1	1	4	5	6	7	6	3	2	2	2	1	3	12
CEILING LESS THAN 300 FEET AND/OR VISIBILITY LESS THAN 5/8 MI															
07		1	3	5	6	7	10	8	4	3	1	2	0		12
13		0	0	0	0	0	0	0	0	0	0	0	0		12
19		0	1	2	2	4	3	4	1	1	1	1	0		12
ALL HRS		0	1	2	3	4	4	4	1	1	1	1	0	2	12

CAPE TOWN, SOUTH AFRICA

	PRECIPITATION (IN)					PRECIPITATION (INCHES)					RELATIVE HUMIDITY					SURFACE WIND (KTS)					MEAN NUMBER OF DAYS WITH									
	MEANS		EXTREMES			MEANS		EXTREMES			MEANS		EXTREMES			MEANS		EXTREMES			PRECIPITATION		TEMPERATURE		TEMPERATURE		TEMPERATURE			
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	1	2	1	2	1	2		
JAN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0	0	0		
FEB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0	0	0		
MAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0	0	0		
APR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0	0	0		
MAY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0	0	0		
JUN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0	0	0		
JUL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0	0	0		
AUG	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0	0	0		
SEP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0	0	0		
OCT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0	0	0		
NOV	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0	0	0		
DEC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0	0	0		
ANN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0	0	0		
YRS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	70	70	70	70	70	0	0	0	0	0	0	0	0	0	0	0	0	0		

LESS THAN 0.1 DAYS, 0.1 OR MORE DAYS, OR 100 PERCENT RECORD LENGTH

THE VALUE LISTED UNDER PRESSURE ALTITUDE INDICATES THAT VALUE IS EXCEEDED ONLY 5.0% OF THE TIME WHEN

TABLED RECORDS OTHERWISE IT IS THE MEAN

FOR EQUIVALENT YEARS OF RECORD IF THE ACTUAL NUMBER OF YEARS UTILIZED IN THE CALCULATIONS

FLYING WEATHER - PERCENT OF HOURS

NOOR	CELT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS
CEILING LESS THAN 500 FEET AND/OR VISIBILITY LESS THAN 0.5 MI															
OR	46	41	36	31	26	21	16	11	6	4	3	2	1	1	12
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
ALL HRS	46	41	36	31	26	21	16	11	6	4	3	2	1	1	12
CEILING LESS THAN 1000 FEET AND/OR VISIBILITY LESS THAN 1.0 MI															
OR	51	47	41	36	31	26	21	16	11	6	4	3	2	1	12
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
ALL HRS	51	47	41	36	31	26	21	16	11	6	4	3	2	1	12
CEILING LESS THAN 1500 FEET AND/OR VISIBILITY LESS THAN 1.5 MI															
OR	5	4	4	4	4	4	4	4	4	4	4	4	4	4	12
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
ALL HRS	5	4	4	4	4	4	4	4	4	4	4	4	4	4	12
CEILING LESS THAN 2000 FEET AND/OR VISIBILITY LESS THAN 2.0 MI															
OR	2	1	1	1	1	1	1	1	1	1	1	1	1	1	12
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
ALL HRS	2	1	1	1	1	1	1	1	1	1	1	1	1	1	12
CEILING LESS THAN 2500 FEET AND/OR VISIBILITY LESS THAN 2.5 MI															
OR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
ALL HRS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12

DURBAN, SOUTH AFRICA

	TEMPERATURE (°F)					PRECIPITATION (INCHES)					RELATIVE HUMIDITY					SURFACE WIND (KTS)					MEAN NUMBER OF DAYS WITH									
	MEANS		EXTREME			MEAN		MAXIMUM			MEAN		MAXIMUM			SPEED		DIRECTION			PRECIPITATION		HOURS OF PRECIPITATION	HOURS OF WETNESS	HOURS OF FOG	TEMPERATURE				
	MAX	MIN	MAX	MIN	AVERAGE	MAX	MIN	MAX	MIN	AVERAGE	MAX	MIN	MAX	MIN	AVERAGE	MAX	MIN	MAX	MIN	AVERAGE	MAX	MIN				32	36	40	44	48
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				1	2	3	4	5
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	1	2	3	4	5			
JAN	76	64	73	46	48	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FEB	76	65	71	109	52	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MAR	71	4	10	102	51	4	2	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
APR	74	5	67	9	40	3	2	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MAY	72	5	64	7	40	2	2	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JUN	70	51	63	91	47	1	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JUL	70	50	60	91	37	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AUG	70	52	61	100	36	3	0	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SEP	70	54	62	100	41	3	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OCT	71	57	64	100	46	3	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NOV	73	60	66	105	47	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DEC	74	60	68	101	47	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ANN	73	58	66	100	45	3	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EVR	30	10	10	30	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10

0 LESS THAN 0.1 INCHES, 0.5 OR 0.1 INCH, OR 0.5 PERCENT AS APPLICABLE

THE VALUE LISTED UNDER PRESSURE ALTITUDE INDICATES THAT VALUE IS EXCEEDED ONLY 0.25 % OF THE TIME WHEN LABELLED 99.75% OTHERWISE IT IS THE MEAN

EVR IS EQUIVALENT YEARS OF RECORD (EVR) THE ACTUAL NUMBER OF YEARS UTILIZED IN THE CALCULATIONS

FLYING WEATHER, - PERCENT OF HOURS

HOOR (EST)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS
CEILING LESS THAN 500 FEET AND/OR VISIBILITY LESS THAN 3 MI														
00	45	43	43	30	20	12	14	22	17	17	42	40		12
14	40	35	33	26	18	11	15	20	10	10	43	14		12
20	54	48	47	29	16	12	11	18	13	10	47	45		12
ALL HRS	47	41	41	28	18	12	15	20	12	13	41	39	31	12
CEILING LESS THAN 1000 FEET AND/OR VISIBILITY LESS THAN 2 1/2 MI														
00	80	65	64	27	16	10	15	23	27	29	17	36		12
14	35	42	27	22	14	9	10	35	25	22	35	31		12
20	54	48	47	29	16	12	11	18	13	10	47	45		12
ALL HRS	47	41	41	28	18	12	15	20	12	13	41	39	27	12
CEILING LESS THAN 1000 FEET AND/OR VISIBILITY LESS THAN 2 1/2 MI														
00	14	12	12	8	6	3	3	3	6	12	16	12		12
14	9	10	12	7	5	2	2	2	5	11	12	6		12
20	35	48	47	29	16	12	11	18	13	10	47	45		12
ALL HRS	13	10	13	8	6	2	3	3	7	12	11	11	8	12
CEILING LESS THAN 500 FEET AND/OR VISIBILITY LESS THAN 1 1/4 MI														
00	8	7	7	6	5	2	2	2	6	9	10	8		12
14	4	5	6	5	2	1	1	1	2	5	5	5		12
20	8	6	7	3	2	1	1	2	3	7	7	7		12
ALL HRS	7	6	7	4	2	1	1	1	3	7	7	6	4	12
CEILING LESS THAN 100 FEET AND/OR VISIBILITY LESS THAN 5/8 MI														
00	1	4	4	2	1	0	0	1	2	2	4	4		12
14	1	2	1	0	1	1	0	0	1	1	1	1		12
20	1	1	1	1	1	1	0	1	0	2	2	2		12
ALL HRS	2	2	1	1	1	1	0	1	1	2	3	3	2	12

EAST LONDON, SOUTH AFRICA

PREPARED BY: WOOD ASHEVILLE

STATION NAME: GEORGE, SOUTH AFRICA
LOCATION: 33 58S 22 25E

ELEVATION: 725 FEET

WMO #: 68828

	TEMPERATURE (F)					PRECIPITATION (INCHES)			RELATIVE HUMIDITY		SURFACE WIND (KTS)		MEAN CLOUD AMOUNT (TENTHS)		MEAN NUMBER OF DAYS WITH				
	MEANS			EXTREME		PRECIPITATION (INCHES)			HUMIDITY		WIND (KTS)		AMOUNT (TENTHS)		MEAN NUMBER OF DAYS WITH				
	MAXIMUM	MINIMUM	AVERAGE	MAXIMUM	MINIMUM	MEAN	MAXIMUM	MINIMUM	24-HR MAXIMUM	1400 LT	2000 LT	DIRECTION	SPEED	MAX GUST	1400 LT	2000 LT	PRECIPITATION	SNOW ALL	TEMPERATURE
JAN	76	58	67	100	47	2.9	7.2	0.4	5.4	69	87	SE	9		5	6	0		2 0
FEB	76	58	67	100	46	2.5	7.0	0.4	2.4	69	88	SE	8		4	7	0		2 0
MAR	74	57	65	100	43	1.3	11.1	0.5	1.5	70	92	SE	8		5	6	0		2 0
APR	71	54	62	100	39	2.3	10.8	0.4	2.9	67	80	SE	6		5	6	0		1 0
MAY	67	49	58		38	2.4	7.0	0.3	5.2	60	86	NW	5		5	6	0		1 1
JUN	67	47	56	8	32	1.6	4.9	0.2	2.4	53	81	NW	7		4	5	0		1 0
JUL	65	45	55	8	34	1.8	5.4	0.1	2.8	56	83	NW	7		3	4	0		1 0
AUG	66	45	56	9	35	2.6	10.5	0.4	4.6	56	85	NW	8		5	5	0		1 0
SEP	67	47	57	10	36	2.6	9.6	0.5	5.2	62	87	W	9		5	6	0		1 0
OCT	68	50	59	10	38	1.6	7.4	0.6	3.5	69	90	W	9		6	6	0		1 0
NOV	71	53	62	10	40	2.8	7.8	0.5	3.8	68	88	SE	9		6	6	0		1 0
DEC	74	56	65	10	40	2.4	5.4	0.4	1.1	67	87	SE	9		8	6	0		1 0
ANN	71	52	63	10	37	2.0	8.1	0.4	3.4	64	87	W	9		5	5	0		1 0
ETH	36	33	33	33	33	36	41	36	10	62	77	SE	10		20	20	10		36 21

1. LESS THAN 0.5 DAYS, 0.5 OR 0.04 INCH, OR 0.5 PERCENT AS APPLICABLE

THE VALUE LISTED UNDER PRESSURE ALTITUDE INDICATES THAT VALUE IS EXCEEDED ONLY 0.05 % OF THE TIME WHEN LABELED 99.9% OTHERWISE IT IS THE MEAN

ETH IS EQUIVALENT YEARS OF RECORD 11 E THE ACTUAL NUMBER OF YEARS UTILIZED IN THE CALCULATIONS 1

FLYING WEATHER - PERCENT OF HOURS

	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS
CEILING LESS THAN 1000 FEET AND/OR VISIBILITY LESS THAN 1 MI																
OR	11	12	11	10	6	5	5	6	5	5	7	10	11	10		8
14	8	10	7	7	4	4	4	5	7	7	7	8	6	10		9
20	12	11	12	8	7	8	8	8	8	10	10	12	12			8
ALL HRS	10	11	12	8	6	5	5	6	7	8	8	9	11	11	9	8
CEILING LESS THAN 1000 FEET AND/OR VISIBILITY LESS THAN 2 MI																
OR	7	8	10	7	4	4	4	4	5	5	6	8	7	7		8
14	4	5	4	4	3	3	3	3	4	4	4	5	4	5		8
20	6	7	7	4	4	4	4	5	5	5	6	7	7			8
ALL HRS	5	7	7	5	3	3	3	4	4	4	5	6	5	6	5	8
CEILING LESS THAN 1000 FEET AND/OR VISIBILITY LESS THAN 2 MI																
OR	4	7	8	5	2	2	2	2	3	3	4	7	5	5		8
14	2	3	2	3	2	2	2	2	3	3	3	3	3	2		8
20	4	5	6	3	3	3	3	4	3	4	4	4	4	4		8
ALL HRS	1	5	5	4	2	2	2	3	3	3	4	5	4	4	4	8
CEILING LESS THAN 200 FEET AND/OR VISIBILITY LESS THAN 1/2 MI																
OR	1	1	1	2	1	1	1	1	1	1	1	2	1	1		8
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0		8
20	1	1	1	0	0	0	0	1	2	0	0	1	1	0		8
ALL HRS	1	1	1	1	0	0	0	1	1	0	0	1	1	0	1	8

GEORGE, SOUTH AFRICA

PREPARED BY: NOOD ASHVELL

STATION NAME: LUDERTZ BAY, NAMIBIA
LOCATION: 26 38S 15 06E

ELEVATION: 76 FEET

WMO #: 68300

	TEMPERATURE (F)				PRECIPITATION (INCHES)				RELATIVE HUMIDITY		BAROM. PRESSURE (INCHES OF MERCURY)	SEA POINT (F)	SURFACE WIND (KTS)		MEAN CLOUD AMOUNT (TENTHS)		MEAN NUMBER OF DAYS WITH								
	MEANS		EXTREME		MEAN	MAXIMUM	MINIMUM	24-HR MAXIMUM	24-HR MINIMUM	1800 LST			2100 LST	DIRECTION	SPEED	MAX LST	0900 LST	1400 LST	P. C. 0-254	PRECIPITATION		THUNDERSTORMS	VISIBILITY < 7 MI IN PG	TEMPERATURE	
	MAXIMUM	MINIMUM	MAXIMUM	MINIMUM																SNOW/ALL				14-00-00	14-00-00
																				14-00-00	14-00-00				
JAN	71	57	84	42	0	0.5	0.0	0.5	89	76		SW	25		1	2	0	10	0	0					
FEB	69	50	81	40	0.1	1.4	0.0	0.5	91	77		SW	22		4	2	1	12	0	0					
MAR	70	52	82	44	0.1	2.2	0.0	0.5	90	75		SW	18		1	2	1	11	0	0					
APR	68	54	80	42	0.1	3.1	0.0	0.5	88	74		SW	16		1	2	1	11	0	0					
MAY	67	52	79	39	0.1	3.5	0.0	0.4	85	73		SW	13		4	2	1	11	0	0					
JUN	64	52	77	32	0.1	3.6	0.0	0.4	82	72		SW	13		1	2	1	11	0	0					
JUL	64	50	76	17	0.1	3.7	0.0	0.4	82	70		SW	13		1	2	1	9	0	0					
AUG	63	50	75	13	0.1	3.7	0.0	0.4	82	70		SW	13		1	2	1	9	0	0					
SEP	63	51	75	13	0.1	3.7	0.0	0.4	82	70		S	20		4	3	1	8	0	0					
OCT	63	51	75	13	0.1	3.7	0.0	0.4	82	70		S	20		4	3	1	8	0	0					
NOV	63	51	75	13	0.1	3.7	0.0	0.4	82	70		S	22		4	3	1	7	0	0					
DEC	63	51	75	13	0.1	3.7	0.0	0.4	82	70		S	24		4	3	1	9	0	0					
ANN	63	51	75	13	0.1	3.7	0.0	0.4	82	70		S	24		1	2	1	9	0	0					
LYN	30	30	30	30	30	30	30	30	30	30		14	14		20	20	20	20	10	33	26				

LESS THAN 0.5 DAYS, 0.5 OR 0.5 INCH, OR 0.5 PERCENT AS APPLICABLE.
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LYN IS EQUIVALENT YEARS OF RECORD (1) THE ACTUAL NUMBER OF YEARS UTILIZED IN THE CALCULATIONS.

LUDERTZ BAY, NAMIBIA

PREPARED BY: NOOD ASHVELL

STATION NAME: MAPUTO, MOZAMBIQUE
LOCATION: 25 58S 32 36E

ELEVATION: 197 FEET

WMO #: 67339

	TEMPERATURE (F)					PRECIPITATION (INCHES)					RELATIVE HUMIDITY					SNOWFALL					MEAN CLOUD AMOUNT (TENTHS)		MEAN NUMBER OF DAYS WITH										
	MEANS		EXTREME			MEAN	MAXIMUM	MINIMUM	24-HR MAXIMUM	24-HR MINIMUM	24-HR AVERAGE	24-HR MAXIMUM	24-HR MINIMUM	24-HR AVERAGE	24-HR MAXIMUM	24-HR MINIMUM	24-HR AVERAGE	24-HR MAXIMUM	24-HR MINIMUM	24-HR AVERAGE	24-HR MAXIMUM	24-HR MINIMUM	24-HR AVERAGE	24-HR MAXIMUM	24-HR MINIMUM	24-HR AVERAGE	24-HR MAXIMUM	24-HR MINIMUM					
	MAXIMUM	MINIMUM	MAXIMUM	MINIMUM	AVERAGE																								MAXIMUM	MINIMUM	AVERAGE	MAXIMUM	MINIMUM
JAN	81	71	78	100	6.2	5.1	20.6	0.5	9.5	71	68	SE	10	15	7	5	0	30	0	10	15	7	5	0	30	0	10	15	7	5	0	30	0
FEB	80	71	78	100	6.3	5.4	16.5	0.5	7.5	75	68	SE	8	32	7	5	0	20	0	10	15	7	5	0	30	0	10	15	7	5	0	30	0
MAR	84	70	78	100	6.4	4.7	22.1	0.5	6.0	75	67	SE	8	42	6	4	0	20	0	10	15	7	5	0	30	0	10	15	7	5	0	30	0
APR	87	75	75	103	6.7	2.5	14.0	0.5	6.8	75	66	SE	8	18	5	3	0	20	0	10	15	7	5	0	30	0	10	15	7	5	0	30	0
MAY	87	75	75	103	6.7	1.2	5.8	0.5	2.3	73	63	SE	8	11	4	2	0	20	0	10	15	7	5	0	30	0	10	15	7	5	0	30	0
JUN	87	75	75	103	6.7	0.8	3.8	0.5	1.5	72	60	SE	8	10	3	2	0	20	0	10	15	7	5	0	30	0	10	15	7	5	0	30	0
JUL	87	75	75	103	6.7	0.6	3.8	0.5	1.5	72	60	SE	8	10	3	2	0	20	0	10	15	7	5	0	30	0	10	15	7	5	0	30	0
AUG	87	75	75	103	6.7	0.6	3.8	0.5	1.5	72	60	SE	8	10	3	2	0	20	0	10	15	7	5	0	30	0	10	15	7	5	0	30	0
SEP	87	75	75	103	6.7	0.6	3.8	0.5	1.5	72	60	SE	8	10	3	2	0	20	0	10	15	7	5	0	30	0	10	15	7	5	0	30	0
OCT	87	75	75	103	6.7	0.6	3.8	0.5	1.5	72	60	SE	8	10	3	2	0	20	0	10	15	7	5	0	30	0	10	15	7	5	0	30	0
NOV	87	75	75	103	6.7	0.6	3.8	0.5	1.5	72	60	SE	8	10	3	2	0	20	0	10	15	7	5	0	30	0	10	15	7	5	0	30	0
DEC	87	75	75	103	6.7	0.6	3.8	0.5	1.5	72	60	SE	8	10	3	2	0	20	0	10	15	7	5	0	30	0	10	15	7	5	0	30	0
ANN	87	75	75	103	6.7	0.6	3.8	0.5	1.5	72	60	SE	8	10	3	2	0	20	0	10	15	7	5	0	30	0	10	15	7	5	0	30	0
LYN	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30

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MAPUTO, MOZAMBIQUE

	TEMPERATURE (F)					PRECIPITATION (INCHES)					RELATIVE HUMIDITY					SURFACE WIND (KTS)					MEAN NUMBER OF DAYS WITH									
	MEANS		EXTREME			MEAN		MAXIMUM			HUMIDITY		WIND (KTS)			PRECIPITATION		TEMPERATURE												
	MAXIMUM	MINIMUM	AVERAGE	MAXIMUM	MINIMUM	MEAN	MAXIMUM	MINIMUM	24-HR MEAN	24-HR MEAN	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
JAN	76	63	70	102	49	1.6	5.1	0.2	3.7		77	65	54	42		0	1	4	1	0	2	2	1	0	0	0	0	0	0	0
FEB	76	63	70	104	46	1.5	5.4	0.2	3.8		80	67	57	43		0	1	4	1	0	2	2	1	0	0	0	0	0	0	0
MAR	76	63	70	105	45	2.2	5.2	0.2	3.8		84	67	57	42		0	1	4	1	0	2	2	1	0	0	0	0	0	0	0
APR	78	57	67	105	40	2.2	5.8	0.3	4.1		84	66	48	51		0	1	4	1	0	2	2	1	0	0	0	0	0	0	0
MAY	75	51	63	96	31	2.7	6.4	0.2	3.0		83	65	40	54		0	1	4	1	0	2	2	1	0	0	0	0	0	0	0
JUN	68	47	58	90	17	2.4	8.5	0.2	2.1		82	56	35	49		0	1	4	1	0	2	2	1	0	0	0	0	0	0	0
JUL	67	47	57	90	13	2.1	8.5	0.2	2.0		83	57	34	49		0	1	4	1	0	2	2	1	0	0	0	0	0	0	0
AUG	67	48	58	90	12	3.0	7.2	0.2	2.1		83	67	37	44		0	1	4	1	0	2	2	1	0	0	0	0	0	0	0
SEP	68	51	60	103	32	2.8	18.4	0.5	16.9		81	65	39	52		0	1	4	1	0	2	2	1	0	0	0	0	0	0	0
OCT	68	54	62	103	37	2.1	7.9	0.8	1.1		78	68	40	55		0	1	4	1	0	2	2	1	0	0	0	0	0	0	0
NOV	72	57	67	104	42	1.9	4.8	0.4	2.1		76	66	41	56		0	1	4	1	0	2	2	1	0	0	0	0	0	0	0
DEC	75	60	68	99	44	1.3	5.4	0.3	1.7		74	65	47	60		0	1	4	1	0	2	2	1	0	0	0	0	0	0	0
ANN	72	53	63	101	37	2.1	12.7	0.3	16.9		80	64	40	56		0	1	4	1	0	2	2	1	0	0	0	0	0	0	0
LYR	48	48	48	48	48	14	14	14	14		10	10	10	10		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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LYR IS 10-EQUIVALENT YEARS OF RECORD (10 - THE ACTUAL NUMBER OF YEARS UTILIZED IN THE CALCULATIONS)

FLYING WEATHER, PERCENT OF HOURS

FOUR (KTS)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	YRS
FEELING LESS THAN 5000 FEET AND/OR VISIBILITY LESS THAN 6 MI														
08	37	35	38	36	28	24	31	34	33	37	34	34		12
14	25	24	20	17	15	12	14	13	18	19	17	16		12
20	38	31	30	25	17	16	17	22	28	30	33	28		12
ALL HRS	33	30	29	26	20	17	21	23	26	29	28	26	26	12
FEELING LESS THAN 3000 FEET AND/OR VISIBILITY LESS THAN 2 1/2 MI														
08	10	26	29	21	16	11	20	20	21	28	28	27		12
14	21	20	14	14	11	9	11	9	14	16	14	13		12
20	33	27	25	22	14	12	11	18	25	27	31	25		12
ALL HRS	24	24	23	19	14	11	15	16	21	24	25	22	20	12
FEELING LESS THAN 1000 FEET AND/OR VISIBILITY LESS THAN 1 1/2 MI														
08	8	6	11	6	7	7	10	10	9	9	8	6		12
14	4	3	5	5	4	2	3	3	3	5	4	4		12
20	7	7	7	3	5	2	3	5	6	6	5	5		12
ALL HRS	6	5	8	5	5	4	5	6	6	7	6	5	6	12
FEELING LESS THAN 650 FEET AND/OR VISIBILITY LESS THAN 1 1/4 MI														
08	4	4	6	4	2	1	4	4	4	6	5	4		12
14	2	2	4	2	2	1	1	1	2	3	3	1		12
20	4	1	5	2	2	1	1	2	4	1	3	2		12
ALL HRS	4	3	5	3	4	1	2	2	4	4	3	2	3	12
FEELING LESS THAN 300 FEET AND/OR VISIBILITY LESS THAN 5/8 MI														
08	1	2	2	3	1	1	3	3	1	2	2	1		12
14	1	1	1	1	1	0	0	0	1	1	1	0		12
20	2	1	2	1	1	1	1	1	1	1	1	1		12
ALL HRS	1	1	2	1	1	1	1	1	1	1	1	1	1	12

PORT ELIZABETH, SOUTH AFRICA

PREPARED BY: WOOD ASHEVILLE

STATION NAME: PORT NOLLOTH, SOUTH AFRICA
LOCATION: 29 14S 16 52E

ELEVATION: 13 FEET

WMO #: 66408

	TEMPERATURE (F)					PRECIPITATION (INCHES)					RELATIVE HUMIDITY		SURFACE WINDS (KTS)				MEAN CLOUD AMOUNT (TENTHS)		MEAN NUMBER OF DAYS WITH				
	MEANS			EXTREME									DIR		SPEED				PRECIPITATION	TEMPERATURE			
	MAXIMUM	MINIMUM	AVERAGE	MAXIMUM	MINIMUM	MEAN	MAXIMUM	MINIMUM	AVERAGE	1000-EST	700-EST	DIRECTION	SPEED	DIRECTION	SPEED	1000-EST	700-EST	WINDS		WINDS	WINDS		
JAN	67	54	60	100	30	0.0	0.0	0.0	0.0	92	80	0	0	0	0	4	2	0	0	10	0	0	
FEB	67	55	61	100	40	0.0	0.0	0.0	0.0	94	84	0	0	0	0	5	3	0	0	10	0	0	
MAR	67	56	62	100	40	0.0	0.0	0.0	0.0	94	84	0	0	0	0	4	2	0	0	10	0	0	
APR	66	51	58	100	30	0.0	0.0	0.0	0.0	94	84	0	0	0	0	4	2	0	0	10	0	0	
MAY	65	48	57	99	25	0.0	0.0	0.0	0.0	86	76	0	0	0	0	4	2	0	0	10	0	0	
JUN	65	47	56	96	15	0.0	0.0	0.0	0.0	83	76	0	0	0	0	4	2	0	0	10	0	0	
JUL	64	46	55	96	10	0.0	0.0	0.0	0.0	84	76	0	0	0	0	4	2	0	0	10	0	0	
AUG	64	46	54	100	10	0.0	0.0	0.0	0.0	86	76	0	0	0	0	4	2	0	0	10	0	0	
SEP	64	46	55	100	10	0.0	0.0	0.0	0.0	87	76	0	0	0	0	4	2	0	0	10	0	0	
OCT	64	50	57	100	10	0.0	0.0	0.0	0.0	87	80	0	0	0	0	4	2	0	0	10	0	0	
NOV	64	52	58	100	10	0.0	0.0	0.0	0.0	87	80	0	0	0	0	4	2	0	0	10	0	0	
DEC	64	51	57	100	10	0.0	0.0	0.0	0.0	88	80	0	0	0	0	4	2	0	0	10	0	0	
ANN	65	50	58	100	10	0.0	0.0	0.0	0.0	88	80	0	0	0	0	4	2	0	0	10	0	0	
FEB	53	52	51	60	0	98	6.4	6.4	5.0	29	29	10	5	8	4	4	20	20	20	10	20	20	

* LESS THAN 0.5 DAYS, 0.5 OR 0.05 INCH, OR 0.5 PERCENT AS APPLICABLE

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FEB IS EQUIVALENT YEARS OF RECORD (1) THE ACTUAL NUMBER OF YEARS UTILIZED IN THE CALCULATIONS

PORT NOLLOTH, SOUTH AFRICA

**END
FILMED**

DATE: **4-90**

DTIC

