

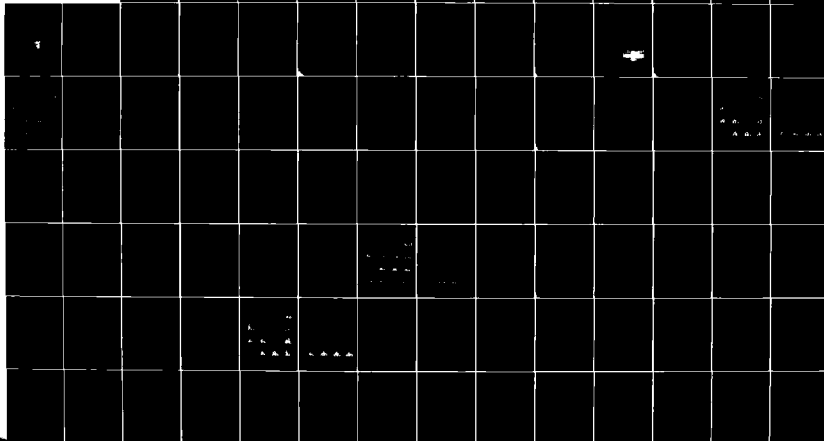
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6 **CLIMATIC ATLAS
OF THE OUTER CONTINENTAL SHELF WATERS
AND COASTAL REGIONS OF ALASKA.**

VOLUME I. GULF OF ALASKA.

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NCC

William A. Brower, Jr., M.S., a meteorologist and chief of the National Climatic Center's Technical Applications Section, Applied Climatology Branch, works primarily in marine climatology. Among his contributions are environmental assessment reports for selected marine and coastal regions of the Atlantic Ocean, Gulf of Mexico, and Caribbean Sea, and a comprehensive climatic atlas of New York Bight. His research includes a comparison of energy exchanges at the tropical sea-air interface, based on data collected by a buoy and a ship.

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Contents

Acknowledgments	6
Abstract	6
Introduction	6
Selected Topics in Marine and Coastal Climatology	7
<i>by James L. Wise and Harold W. Searby</i>	
Storm Surges	7
Superstructure Icing	12
Sea Ice	14
Immersion Hypothermia	15
Sensible Climate Elements	15
Wind Chill	22
 Marine and Coastal Climatic Atlas	 23
<i>by William A. Brower, Jr., Henry F. Diaz, and Anton S. Prechtel</i>	
 References	 439

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Figure Index

Selected Topics in Marine and Coastal Climatology

Figures

1 Bathymetry and topography	3
2 Earthquakes	9
3 Summer sea surface currents	10
4 Winter sea surface currents	11
5 Nomograph for forecasting spray ice accumulation	12
6 Tide data	13
7 Sea Ice	14
8 Survival time versus water temperature	15
9 Climate means and extremes	16
10 Precipitation intensities	17
11 Snowfall and snow depth	18
12 Type of precipitation	19
13 Visibility obstructions	20
14 Ceiling and visibility data	21
15 Equivalent wind chill temperature	22

Marine and Coastal Climatic Atlas

Figure

16 Duration of daylight	25

Set No		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	Precipitation/wind direction – graphs	26	60	94	128	162	196	230	264	298	332	366	400
	Precipitation – maps	27	61	95	129	163	197	231	265	299	333	367	401
2	Precipitation types – graphs	28	62	96	130	164	198	232	266	300	334	368	402
	Snow – maps	29	63	97	131	165	199	233	267	301	335	369	403
3	Air temperature/wind direction – graphs	30	64	98	132	166	200	234	268	302	336	370	404
	Air temperature mean and thresholds – maps	31	65	99	133	167	201	235	269	303	337	371	405
4	Wet bulb/relative humidity – graphs	32	66	100	134	168	202	236	270	304	338	372	406
	Mean dew point temperature – maps	33	67	101	135	169	203	237	271	305	339	373	407
5	Air temperature/wind speed – graphs	34	68	102	136	170	204	238	272	306	340	374	408
	Air temperature extremes – maps	35	69	103	137	171	205	239	273	307	341	375	409
6	Fog/time and fog/wind direction – graphs	36	70	104	138	172	206	240	274	308	342	376	410
	Fog – maps	37	71	105	139	173	207	241	275	309	343	377	411
7	Cloud cover/wind direction – graphs	38	72	106	140	174	208	242	276	310	344	378	412
	Cloud amount thresholds – maps	39	73	107	141	175	209	243	277	311	345	379	413
8	Visibility/wind direction – graphs	40	74	108	142	176	210	244	278	312	346	380	414
	Visibility thresholds – maps	41	75	109	143	177	211	245	279	313	347	381	415
9	Wind speed/direction – graphs	42	76	110	144	178	212	246	280	314	348	382	416
	Wind speed thresholds – maps	43	77	111	145	179	213	247	281	315	349	383	417
10	Wind direction/diurnal variation – graphs	44	78	112	146	180	214	248	282	316	350	384	418
	Vector mean wind – maps	45	79	113	147	181	215	249	283	317	351	385	419
11	Wind speed/diurnal variation – graphs	46	80	114	148	182	216	250	284	318	352	386	420
	Scalar mean wind – maps	47	81	115	149	183	217	251	285	319	353	387	421
12	Low cloud ceiling/visibility – graphs	48	82	116	150	184	218	252	286	320	354	388	422
	Low cloud ceiling and visibility thresholds – maps	49	83	117	151	185	219	253	287	321	355	389	423
13	Sea level pressure – graphs	50	84	118	152	186	220	254	288	322	356	390	424
	Mean sea level pressure – maps	51	85	119	153	187	221	255	289	323	357	391	425
14	Fog/air-sea temperature difference – graphs	52	86	120	154	188	222	256	290	324	358	392	426
	Mean sea surface temperature – maps	52	86	120	154	188	222	256	290	324	358	392	426
15	Sea surface temperature – graphs	53	87	121	155	189	223	257	291	325	359	393	427
	Sea surface temperature extremes – maps	53	87	121	155	189	223	257	291	325	359	393	427
16	Wave height/direction – graphs	54	88	122	156	190	224	258	292	326	360	394	428
	Wave height thresholds (nonhazardous) – maps	54	88	122	156	190	224	258	292	326	360	394	428
17	Wave height/period – graphs	55	89	123	157	191	225	259	293	327	361	395	429
	Wave height thresholds (hazardous) – maps	55	89	123	157	191	225	259	293	327	361	395	429
18	Low pressure center movement – roses	56	90	124									

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We would like to give special thanks to the AEIDC graphics staff who worked many hours preparing maps and graphic presentations and organizing the material for printing.

The maps, graphs, and tables in the second section are the result of efforts by many people (aided by modern data processing equipment) at NOAA's National Climatic Center (NCC) in Asheville, NC. Special acknowledgement is given to members of the Computer Support Branch, who performed the voluminous data processing, to Joe E. Elms and Albert W.Y. Chen of the Applied Climatology Branch for their editorial evaluation of the analyses, and to Dr. Harold L. Crutcher and M. Lawrence Nicodemus of the Science Advisory Staff for the statistical presentation of return periods for maximum sustained winds for selected coastal stations.

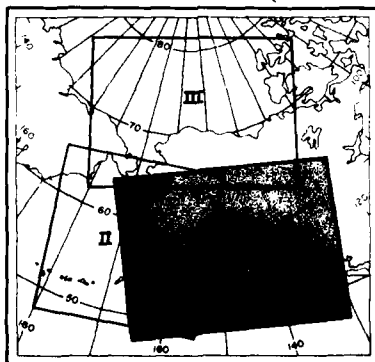
Observations processed for the coastal stations were collected by the National Weather Service (NOAA), the Federal Aviation Administration, and the U.S. Navy and Air Force weather services and routinely sent to NCC for archiving. Data summaries were made possible through programs designed at NCC and funded primarily by the Director, Naval Oceanography and Meteorology (formerly Commander, Naval Weather Service Command) in support of the Marine A-1 Revision program. The Naval Weather Service also provided major support for acquisition of basic marine data.

This was supported under AEIDC contract no. 03-5-022-56 with NOAA by the Bureau of Land Management through interagency agreement with the National Oceanic and Atmospheric Administration, under which a multiyear program responding to needs of petroleum development of the Alaskan outer continental shelf is managed by the Outer Continental Shelf Environmental Assessment Program (OCSEAP) office.

Abstract

This project attempts to establish the present knowledge of climatological conditions in three Alaskan marine and near coastal areas that are important to resource development of the outer continental shelf—The Gulf of Alaska (Vol. I), The Bering Sea (Vol. II), and The Chukchi and Beaufort Seas (Vol. III) as shown on the map below.

The maps, graphs, and tables in the atlas present a detailed climatic profile of the marine and coastal regions of Alaska. Statistics detail means, extremes, and percent frequency of occurrence of threshold values for these elements: wind, visibility, present weather, sea level pressure, temperature, clouds, and waves and such supplemental information as storm surges, tides, sea ice, surface currents, bathymetry, detailed weather, and aviation weather. Data came from 600,000 surface marine observations and 2 million observations for 49 coastal land stations and provide the best possible climatological picture of the outer continental shelf waters and coastal regions of Alaska.



Introduction

The nature of man's offshore activities depends to a large extent on weather conditions. Knowledge of these conditions can help insure efficient and safe operations. Extreme weather conditions that may be encountered in a given location largely determine the design, construction, and operation of permanent platforms and structures in the ocean as well as on-shore support activities. Weather information also aids in assessing the onshore impact of offshore activities.

This atlas is the result of a joint effort by Arctic Environmental Information and Data Center (AEIDC), University of Alaska, and the National Climatic Center/National Oceanic Atmospheric Administration (NCC/NOAA) to present descriptive climatology and data analyses of surface marine and atmospheric parameters for those waters and coastal regions of the Alaskan outer continental shelf important to resource development. It is designed to serve as a climatological reference in the assessment of potential impact by oil and gas exploration and development and of leasing and operating regulations and monitoring programs that will permit resource development and insure environmental protection.

The evaluation is in the form of a climatic atlas for each of three marine and coastal areas: The Gulf of Alaska (Vol. I), The Bering Sea (Vol. II), and The Chukchi and Beaufort Seas (Vol. III).

The first section in each volume contains information on such hazards as storm surges, superstructure icing, hypothermia, and wind chill; extremes data on winds, temperature, and precipitation; and planning information on surface currents, bathymetry, sea ice, and aviation weather. The second section presents a detailed climatic profile in the form of isopleth analyses, graphs, and tables.

Selected Topics in Marine and Coastal Climatology

James L. Wise
Harold W. Searby

Storm Surges

Whenever an intense storm crosses or approaches a coastline, some portion of the shore will experience an increase in sea level and another will experience a decrease. Storm surges are the difference—positive or negative—between observed sea level and sea level that would have occurred without a storm. Storm surges are usually estimated by subtracting normal astronomical tide from the observed tide. Negative surges can affect shipping by grounding ships in harbors or shallow shipping lanes during low tide. However, the combination of a positive storm surge with high tide often damages beaches and man-made installations far beyond the normal tidelands level.

Several processes may combine to cause storm surges (Pore and Barrieness 1975). These include the direct wind effect, the atmospheric pressure effect, the transport of water by waves and swell, the effect of the earth's rotation, the rainfall effect, and the effects of coastline configuration and bathymetric conditions.

Direct Wind Effect—The rise of water from the wind consists of a component caused by the onshore wind and one caused by wind oblique to the shore. An onshore wind will cause water to move in the direction of the wind due to the drag exerted on the water by the movement of air. Its effects are directly proportional to the wind stress and inversely proportional to water depth. The effect of wind oblique to the shore

comes from a wind-generated current which is parallel to the shore and has a higher level to the right of the flow.

Atmospheric Pressure Effect—The rise of the surface of the ocean in an area of low atmospheric pressure has been called the inverted barometer effect. This amounts to a rise in sea level of about 13.16 inches for an atmospheric pressure fall of 1 inch of mercury, or 30 millibar pressure change for each 0.305 meters (1 foot) in sea level.

Transport of Water by Waves and Swell—The maximum contribution of waves and swell to the storm surge may occur at times other than the peak intensity of the storm. Swell generated over open water some distance from shore may arrive at the shoreline at a different time than the storm itself. A long fetch allows more time for waves to form and move as swell along with the winds of the storm, thus producing a higher storm surge overall.

Effects of the Earth's Rotation—The earth's rotation accelerates any current in the northern hemisphere to the right. This deflection force, called the Coriolis effect, depends on the speed of the current and the latitude. Winds parallel to a coast will generate a current in the same direction. The resulting acceleration to the right creates water motion that can increase water level.

Rainfall Effect—Hurricanes and extratropical storms usually bring heavy precipitation to large geographic areas. The resulting runoff can increase sea level near the mouths of tidal estuaries.

Effect of Coastline Configuration and Bathymetric Conditions—Bottom topography near shore is an important determinant of the amplitude of a storm surge. Gently sloping offshore bottom topography on the continental shelf promotes higher storm surges than a steep continental shelf.

The configuration of the coast also affects the resulting storm surge. Wave energy will diverge at coastal indentations such as coves and converge at coastal headlands or points, so stronger surges occur where land juts out into the sea.

Tidal gauges probably do not record the highest water levels of major storms because tide gauges are usually spaced so far apart that the highest levels most likely occur between the gauges.

The graph and map in Set No. 18, low pressure center movement roses and storm track maps, show at least one primary storm track moving into the Gulf of Alaska each month. August has the greatest number of storms west of 160 degrees west longitude and October east of there. There is a secondary maximum from March to May. Minimum storm frequency is in January west of 150 degrees west longitude and July to the east.

No damage due to storm surges in coastal areas of the Gulf of Alaska has been reported. This is probably because:

1. Most shore areas are steep and rocky, so buildings and shore installations are well above sea level.

2. The steep bathymetry of the immediate shore areas does not favor the development of high breaking waves. (Figure 1)
3. Most of the large harbors are sheltered from areas where the largest storm waves are generated. The harbors at Anchorage, Seward, Kodiak, Whittier, Valdez, Juneau, and Ketchikan are all located in coves, inlets, or bays with some protection from the open seas.
4. Normal tide ranges are large, more than 8.5 meters (29 feet) at Anchorage for instance, so unless a storm surge occurs along with low or high tide it would go unnoticed.

However, there are severe storms in the Gulf of Alaska—some with winds of 100 knots or more. On December 1, 1966, the town of Valdez experienced winds estimated at 100 knots causing severe damage to residences, mobile homes, the hospital, city hall, and several buildings under construction. On June 1, 1971 a storm sank three fishing vessels and ran another four aground in the Copper River delta fishing grounds near Cordova. On January 14-15, 1971 and October 1, 1974 winds of 90 and 100 knots occurred at the port of Anchorage. Portage Pass at the west end of the Turnagain Arm of the Cook Inlet is notorious for its strong winds.

Strong winds channeled through mountain passes, river valleys, and canyons will often extend offshore 30 n. miles or more; satellite photos indicate up to 50 n. miles. One such occurrence was at Akutan Harbor in the Aleutians on September 3, 1970. Winds of 60 knots with gusts to 110 were reported in the harbor by a ship which was damaged by winds. These winds were probably a local effect of a storm and the configuration of the Akutan Harbor, which is about two n. miles wide and four n. miles long with steep mountains on three sides and elevations of up to 1300 meters (4,275 feet) to the west.

Tidal waves generated by earthquakes are a significant hazard in the Gulf of Alaska. Figure 2 shows the location of the major faults in the Alaskan area and the location of earthquakes of magnitude 7.0 or greater in the area for a 65-year period. One of the strongest earthquakes recorded in North America occurred on March 27, 1964 in the Prince William Sound area. Tsunamis caused most of the damage at the coastal locations of Kodiak, Cordova, and Seward. Valdez was destroyed by a wave and was subsequently rebuilt at its new location a few miles away. Other smaller villages were destroyed and relocated as well. Another large earthquake on April 1, 1946 generated a tidal wave estimated at about 30 meters (100 feet) that destroyed the lighthouse at Dutch Harbor. The gulf area is also subject to tsunami damage from earthquakes which occur anywhere in the faults that rim the north Pacific coasts of North America and Asia.

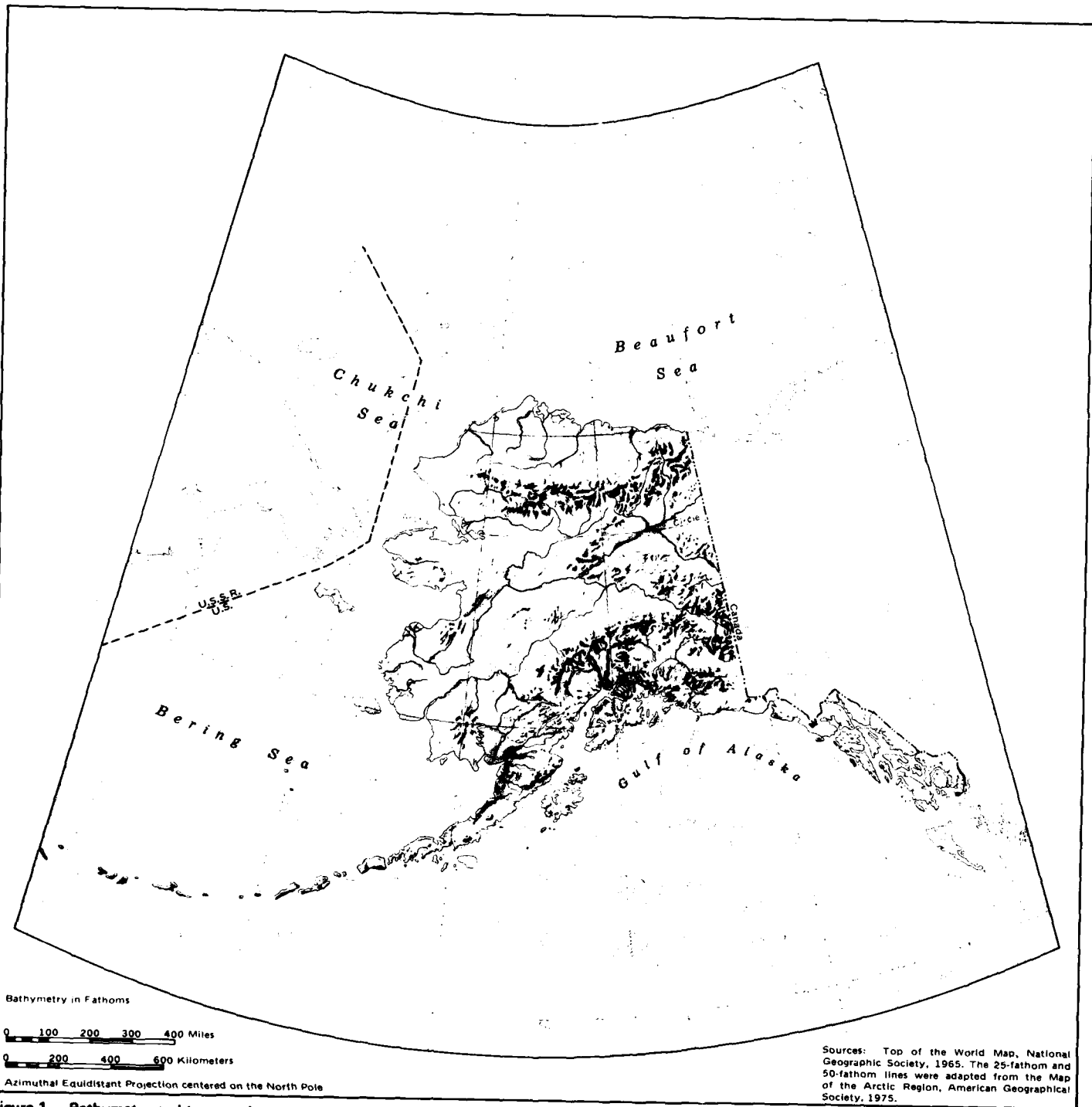
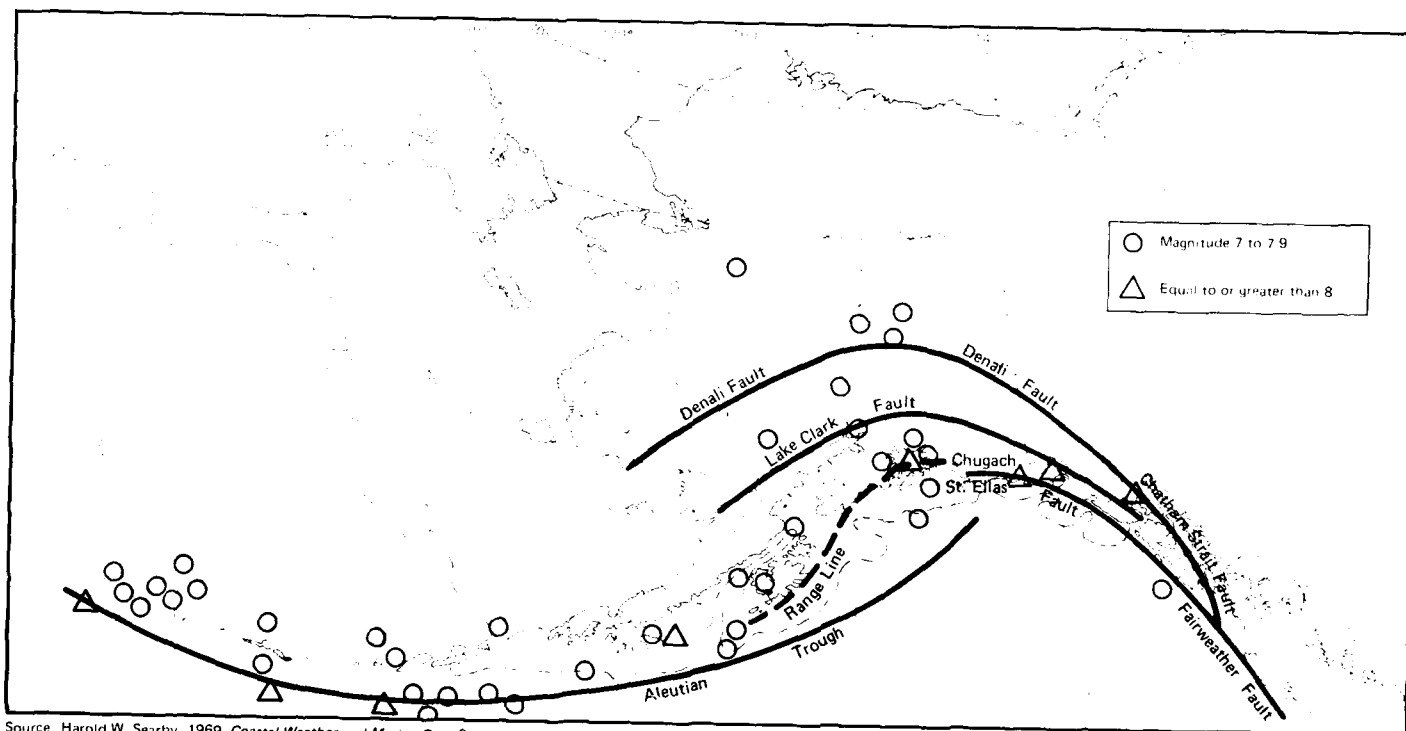


Figure 1 Bathymetry and topography



Source: Harold W. Searby, 1969, *Coastal Weather and Marine Data Summary for Gulf of Alaska, Cape Spencer Westward to Kodiak Island*. U.S. Environmental Science Services Administration.

Figure 2 Earthquakes

Legend

Surface Currents

Surface currents information is from the *U.S. Navy Marine Climatic Atlas of the World Vol II, North Pacific*, which is currently being revised. Mean speeds and directions of surface currents are derived from random ships' observations, specific scientific cruise studies, and theoretical considerations. More recent studies have differed with these depictions somewhat, especially in the Gulf of Alaska and the Bering Strait in summer. Royer (1975) and Ingraham (1976) found evidence of currents flowing east and south along the north and east coasts of the gulf with a weak closed anticyclonic (clockwise) circulation in the northeast Gulf of Alaska. The strength of this circulation varies from year to year in the weak summer flows. When this closed circulation develops, the northward flowing Alaska Current is displaced to the west. Coachman and Aggaard (1966) found a weak sporadic current flowing southward along the west coast of the Bering Strait. They also noted that strength of flow through the strait varied by a factor of five within a week.

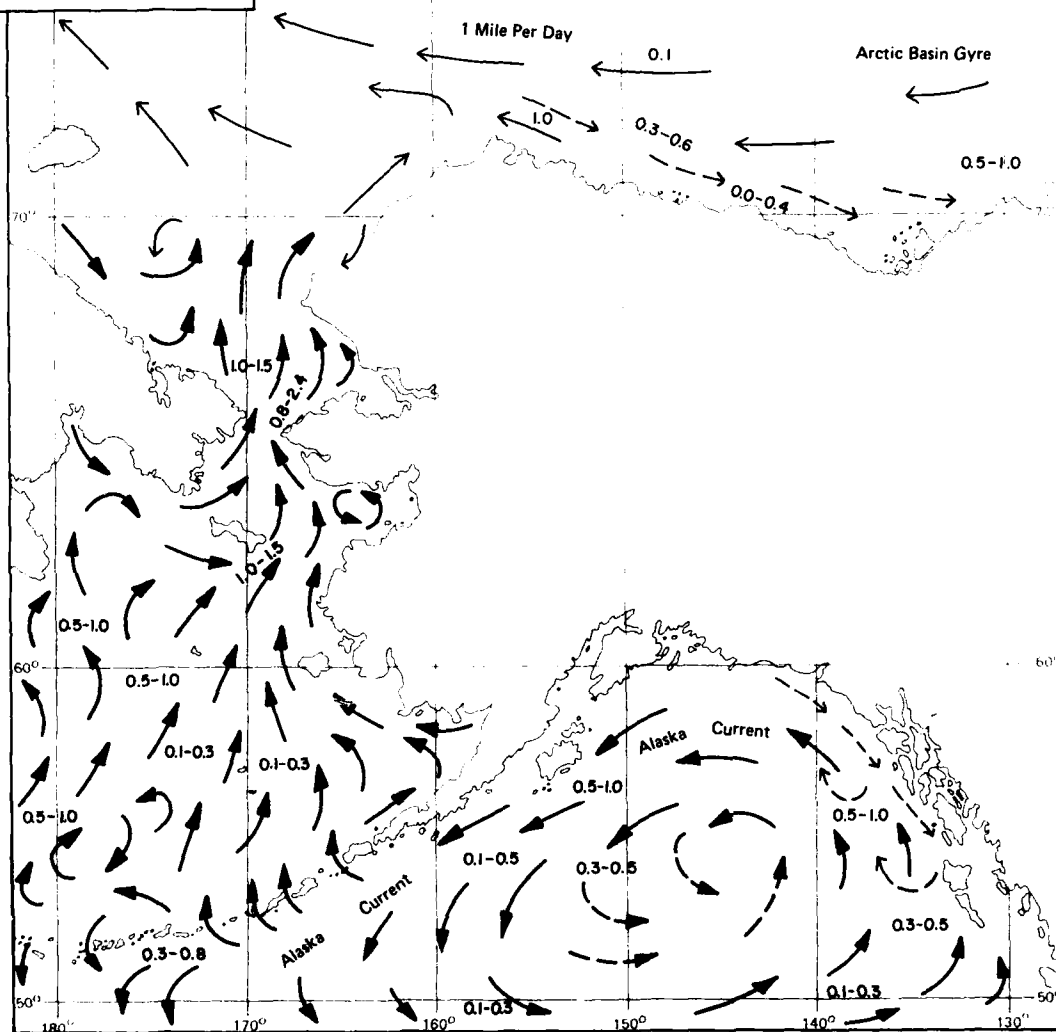


Figure 3 Summer sea surface currents

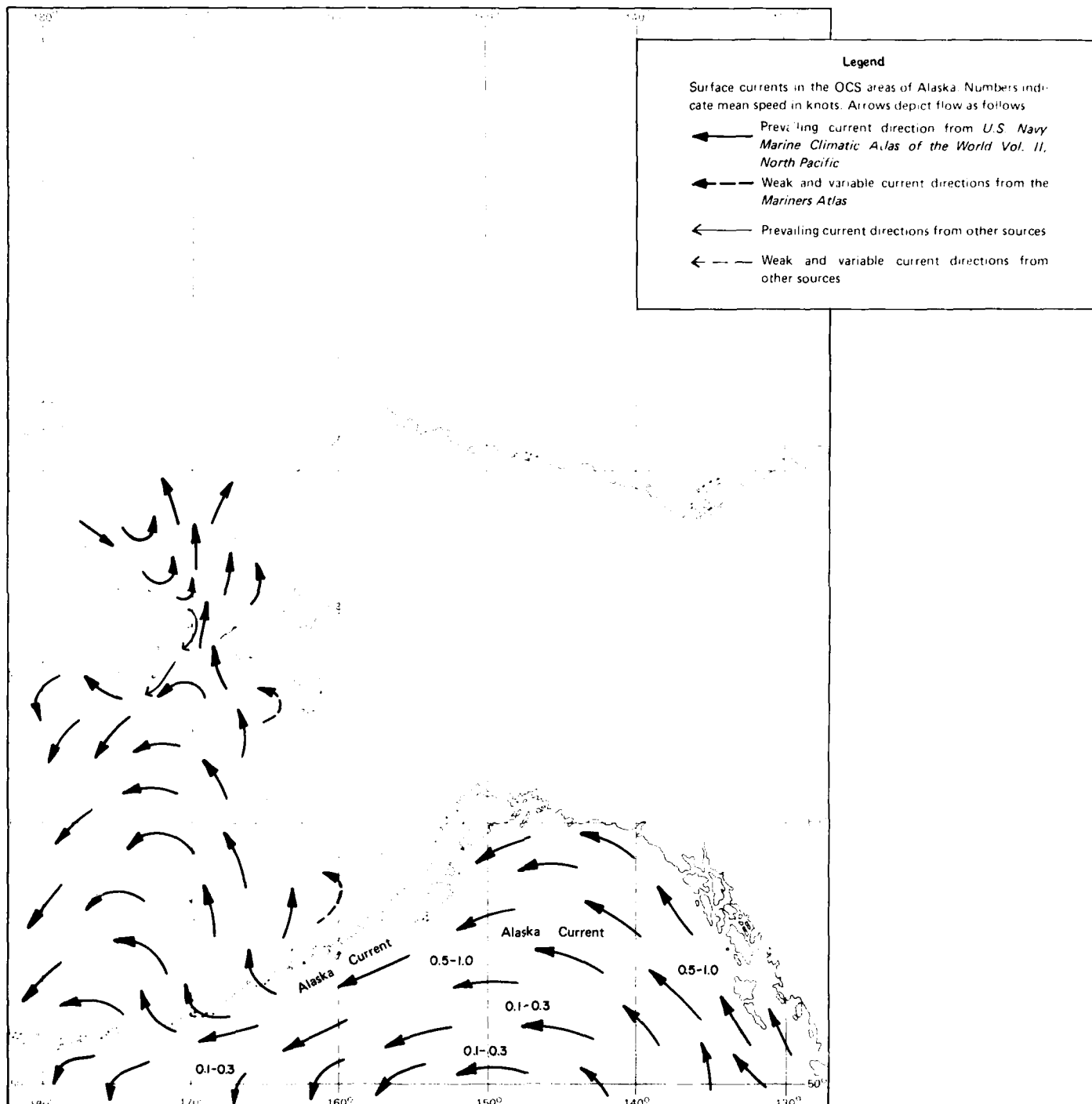


Figure 4 Winter sea surface currents

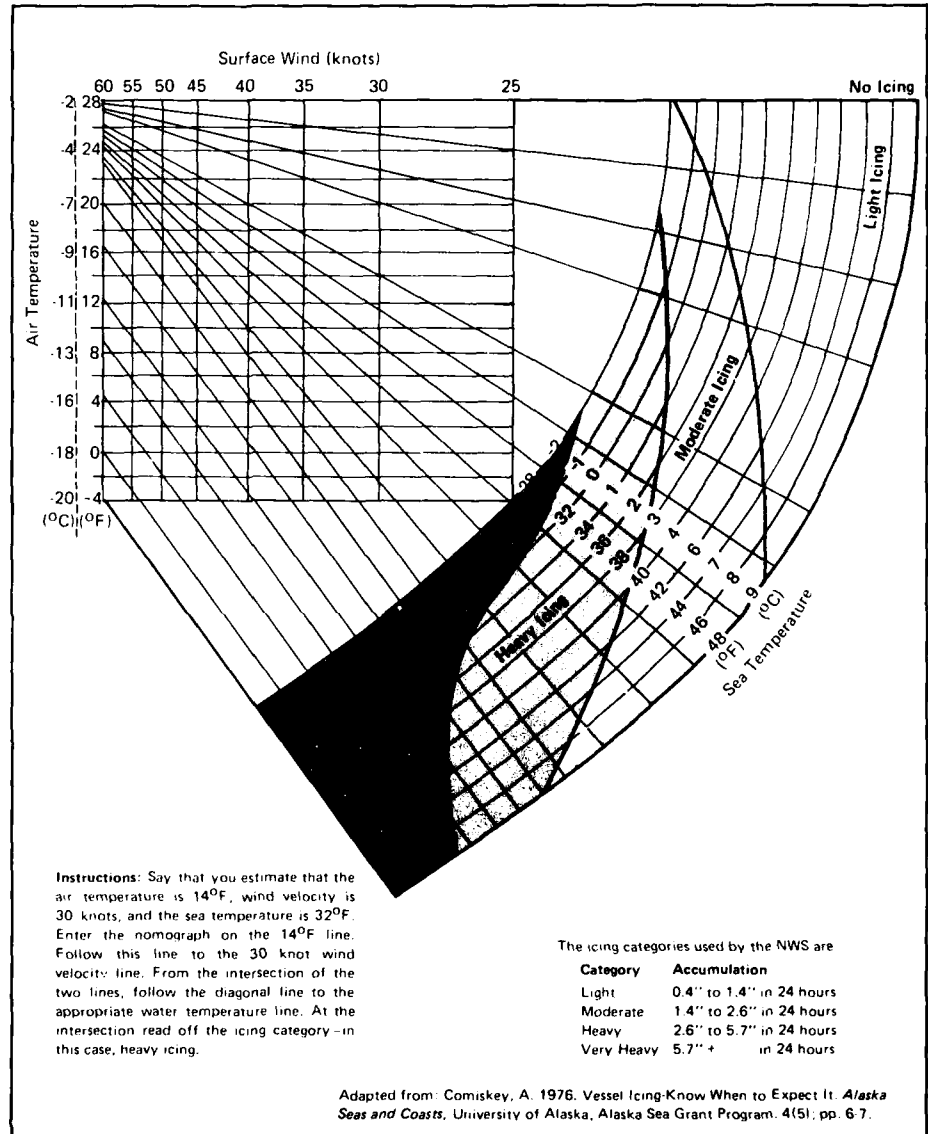
Superstructure Icing

Ice accretion is a complex process that depends on sea conditions, atmospheric conditions, and the ship's size and behavior. Icing can be caused by heavy sea spray, freezing rain, or fog. It can mean no more than slippery decks on large merchant vessels since they often pass quickly through icing conditions and experience less wave wash in rough seas because of their high freeboard. At other times, even large vessels may experience problems. Smaller ships with relatively lower freeboard, such as fishing vessels, small merchant ships, and coast guard cutters, are susceptible to wave wash in rough seas. Icing can greatly increase a vessel's weight and elevate the center of gravity, making it top heavy. Ice may increase the sail area and heeling moment due to wind action, and trim can be changed because of nonuniform ice distribution. Icing also hampers steerability and lowers ship speed. Similar, potentially dangerous stresses can occur on oil-drilling and other stationary platforms.

Freezing spray is the most common and dangerous form of icing. It can occur when the air temperature falls below the freezing temperature of sea water (usually about 2°C) and when sea surface temperatures are below about 5°C . If the air temperature falls below about -18°C , wind-induced spray may freeze before striking the ship and not adhere. The lower the temperature and the stronger the wind, the more rapidly ice accumulates. Freezing spray may deposit thick layers of ice on rigging or on deck areas, rapidly increasing the vessel's weight, which can cause it to sink.

The National Weather Service's regional offices at Anchorage and Fairbanks routinely issue structural icing forecasts as part of their marine forecasting program. Figure 5 is a nomograph used by the NWS in forecasting spray icing. Data from sets Nos. 5, 14, and 15 can be used with this nomograph to estimate the severity of spray icing for any month of the year. The nomograph does not apply when sea ice reduces the amount of wind-generated spray.

Figure 5
Nomograph for forecasting
spray ice accumulation



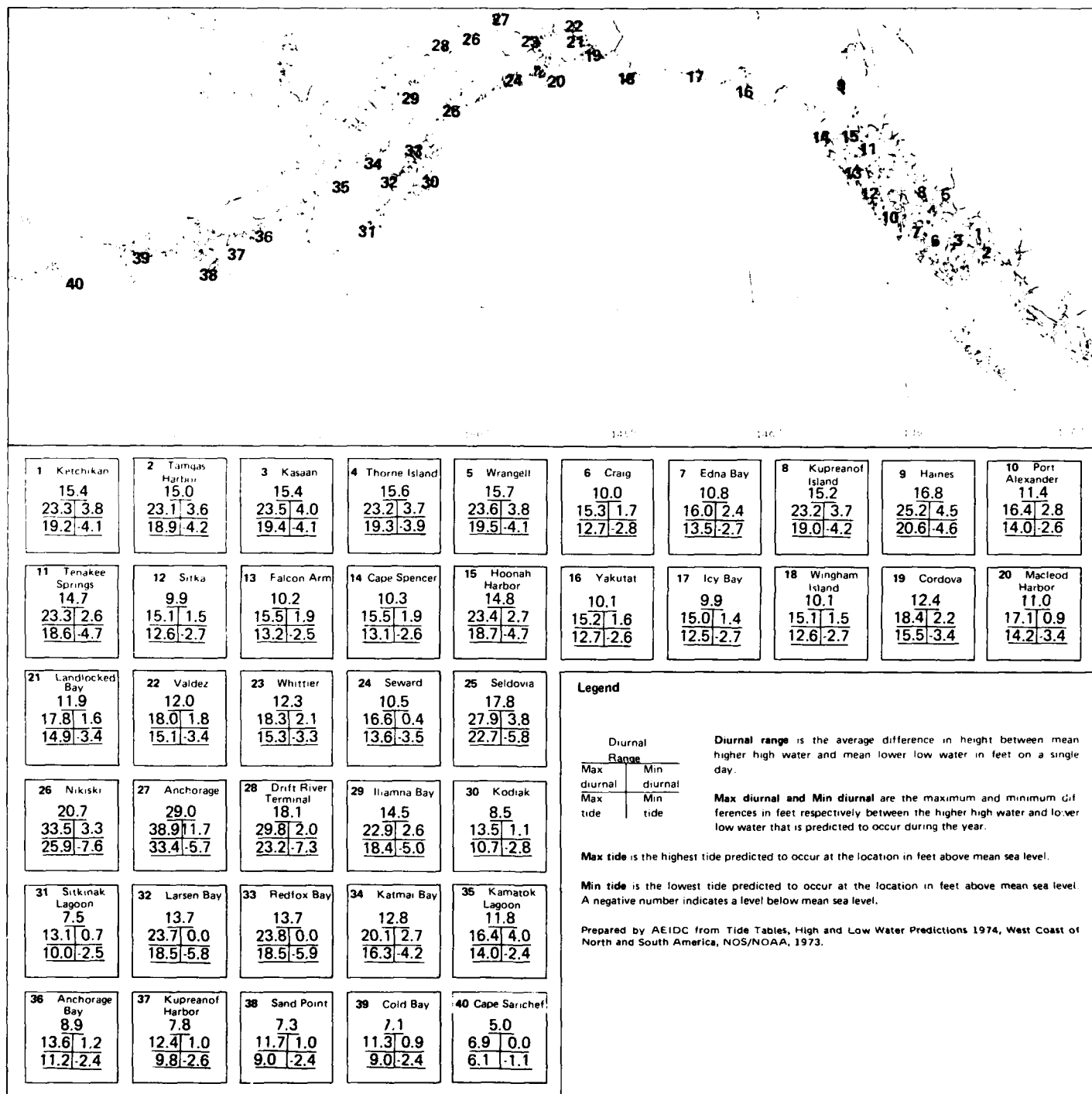


Figure 6 Tide data

Sea Ice

Most of the Gulf of Alaska does not have sea ice at any time during the year. Exceptions are the Cook Inlet, northeast Prince William Sound, and other stretches of coastline with shore ice. Sea ice is normally present in Cook Inlet from December through March, occasionally from November to as late as April. Prince William Sound usually has a shorter ice season. Shore ice occurs along the south shore of the Alaska Peninsula and along both sides of the Shelikof Strait and into Cook Inlet.

Substantial amounts of ice form in most of the coves and many of the bays in winter. The amount of ice varies, sometimes forming and breaking up several times in a season. Under low wind conditions, fresh

water may freeze several inches thick on top of sea water. The greatest thickness of ice results from heavy snow accumulating on top of a layer of ice, then partial thawing of the snow and later freezing of the slush. This type of ice, consisting mostly of fresh water, can become as thick as 0.6 meters (2 feet). Bergy bits breaking off of coastal glaciers normally do not hinder shipping. On rare occasions bergy bits and growlers combine into icebergs 18-25 meters (60 to 80 feet) across, presenting a hazard to small boats in Prince William Sound. Rarely does the ice that forms in bays, coves, and inlets leave the sheltered areas of origin, but when it does, it melts rather rapidly in the relatively warm and turbulent waters of the Alaska Current.

Legend

	0.1 Coverage	Open
	0.1-0.4 Coverage	Scattered
	0.5-0.7 Coverage	Broken
	Approximate Maximum Extent of 0.1 or Greater Concentration	
	Site of Coastal Glacier	

Note: Scattered pieces of ice may be encountered beyond the extreme limit

Climatological and Oceanographic Atlas for Mariners, Volume II North Pacific Ocean, U.S. Dept. of Commerce and U.S. Navy, 1961.

Western Arctic Sea Ice Analysis, 1972-1975, U.S. Navy Fleet Weather Facility, Suitland, Md.

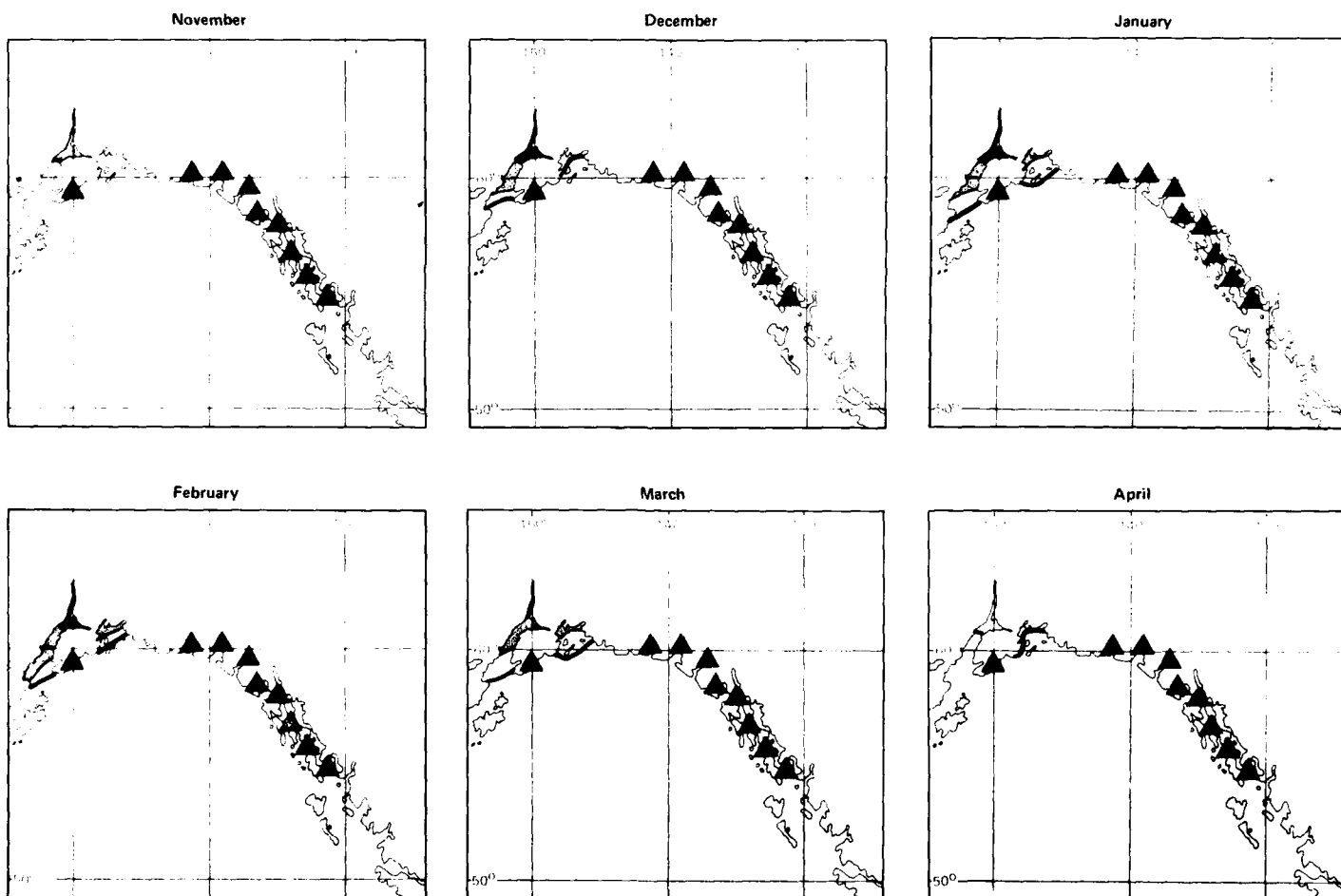


Figure 7 Sea ice

Immersion Hypothermia

Immersion hypothermia is the loss of heat when a body is immersed in water. With few exceptions, humans die if their normal rectal temperature of approximately 37.6°C drops below 25.9°C. Cardiac arrest is the most common direct cause of death. Except in tropical waters warmer than 20° to 25°C, the main threat to life during prolonged immersion is cold or cold and drowning combined.

Cold lowers body temperature, which in turn slows the heart beat, lowers the rate of metabolism, and increases the amount of carbon dioxide in the blood. Resulting impaired mental capacity is a major factor in death by hypothermia. Numerous reports from shipwrecks and accidents in cold water indicate that people can become confused and even delirious, further decreasing their chances of survival.

The length of time that a human survives in water depends on the water surface temperature and, to a lesser extent, on the person's behavior. Figure 8 shows the approximate human survival time in the sea. Body type can cause deviations. For example, thin people become hypothermic more rapidly than fat people. Extremely fat people may survive almost indefinitely in water near 0°C if they are warmly clothed.

The cooling rate can be slowed by the person's behavior and insulated gear. Wilson (1976) closely monitored more than 500 immersions in the waters around Victoria B.C. with temperatures ranging from 4° to 16°C. Using the information obtained from his research, Wilson reasoned that if the critical heat loss areas could be protected, survival time would increase. The Heat Escape Lessening Posture (HELP) was developed for those in the water alone and the Huddle for small groups. Both require a life preserver. HELP involves holding the upper arms firmly against the sides of the chest, keeping the thighs together, and raising the knees to protect the groin area. In the Huddle, people face each other and keep their bodies as close together as possible. These positions improve survival time in 9°C water to four hours, approximately two times that of a swimmer and one and one-half times that of a person in the passive position.

Sensible Climate Elements

Extremes data were gathered through a search of all available records deemed reliable, some dating back to the 1800s. Weather records of the U.S. Army Signal Corps and, more recently, those of the National Weather Service and the weather services of the U.S. Air Force and Navy were included, as were data tabulations prepared by the National Climatic Center.

Figure 9 presents annual means and extremes of temperatures, precipitation, snowfall, and wind for island and coastal locations for which data are available. These data are useful in planning for average as well as least favorable conditions. Figure 10 (Precipitation intensities) data indicate the percent frequency of occurrence of precipitation amounts based on daily observations for the wettest month, the driest month, and annually. These data are useful in the design of storm drainage systems, culverts, and shore-based support facilities. Figure 11 (Snowfall and snow depth) statistics show the month(s) with the greatest snowfall and snow depth and annual statistics. Percentages shown in the annual column are averaged over 12 months. If, as in some cases, several months of the year have no snowfall or snow depth, this condition is indicated by showing the actual number of months with snow. Figure 12 (Type of precipitation) shows the percent frequency of occurrence of precipitation by type, based on hourly observations with no regard to intensity. These data are useful in planning surface transportation systems, construction schedules, and recreational activities. Figures 13 and 14 (Visibility obstructions and Ceiling and visibility data) are especially useful for pilots and others planning flying activity. AEIDC and NCC can provide more detailed monthly and daily statistics.

Maps in set No. 17 (Wave height thresholds and hazardous sea conditions) show maximum wave heights. These were taken from tabulated reports of maximum wave heights supplied by the National Climatic Center and were supplemented by observations from various volumes of the *Mariners' Weather Log*, a publication of NOAA's Environmental Data Service.

Water Temperature	Exhaustion or Unconsciousness	Expected time of Survival
0°C	15 min	15-45 min
0°-5°C	15-30 min	30-90 min
5°-10°C	30-60 min	1-3 hrs
10°-15°C	1-2 hrs	1-6 hrs
15°-20°C	2-7 hrs	2-40 hrs
20°-25°C	3-12 hrs	3-indefinite hrs
25°C	Indefinite	Indefinite

Figure 8
Survival time versus water temperature

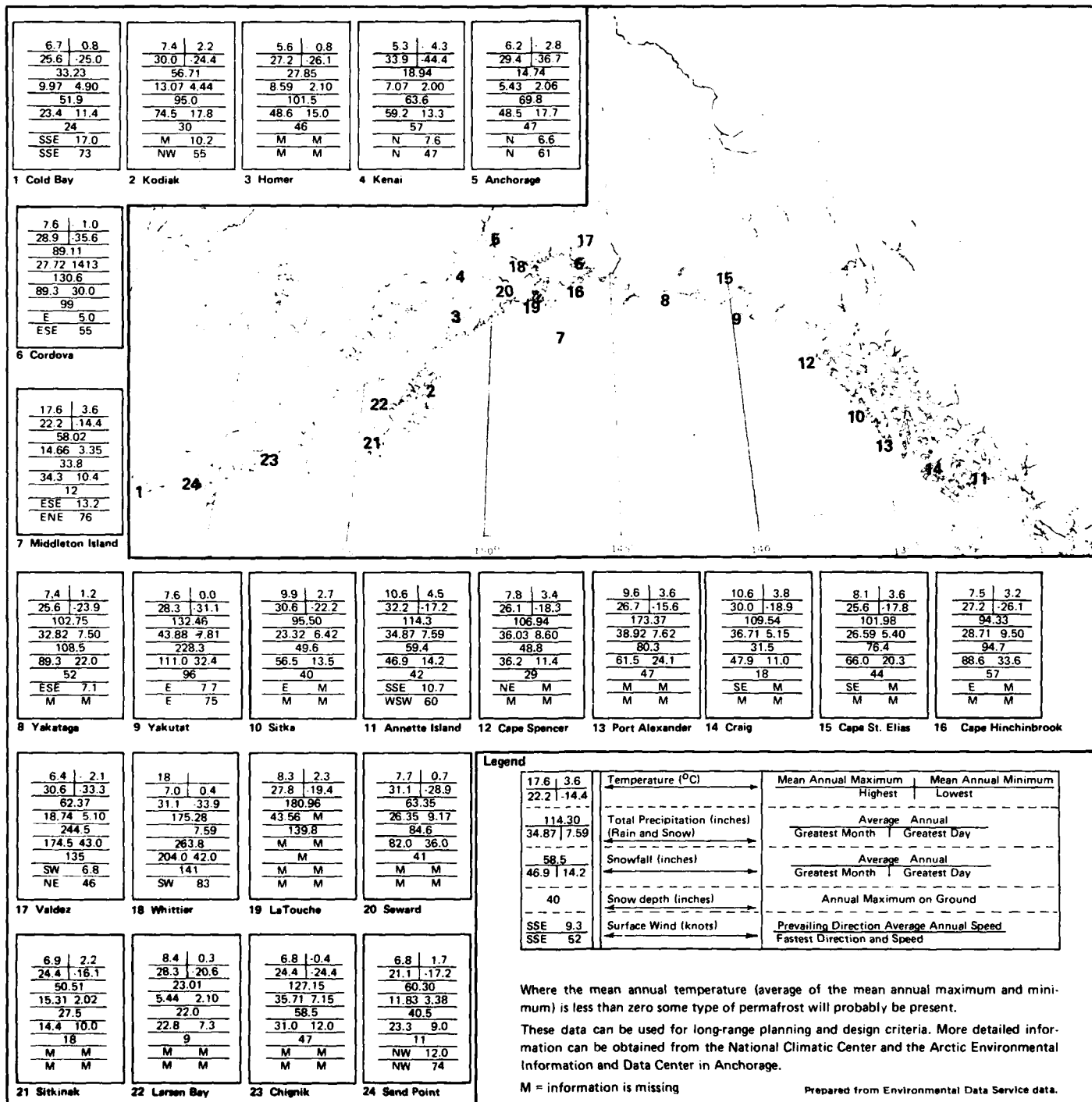
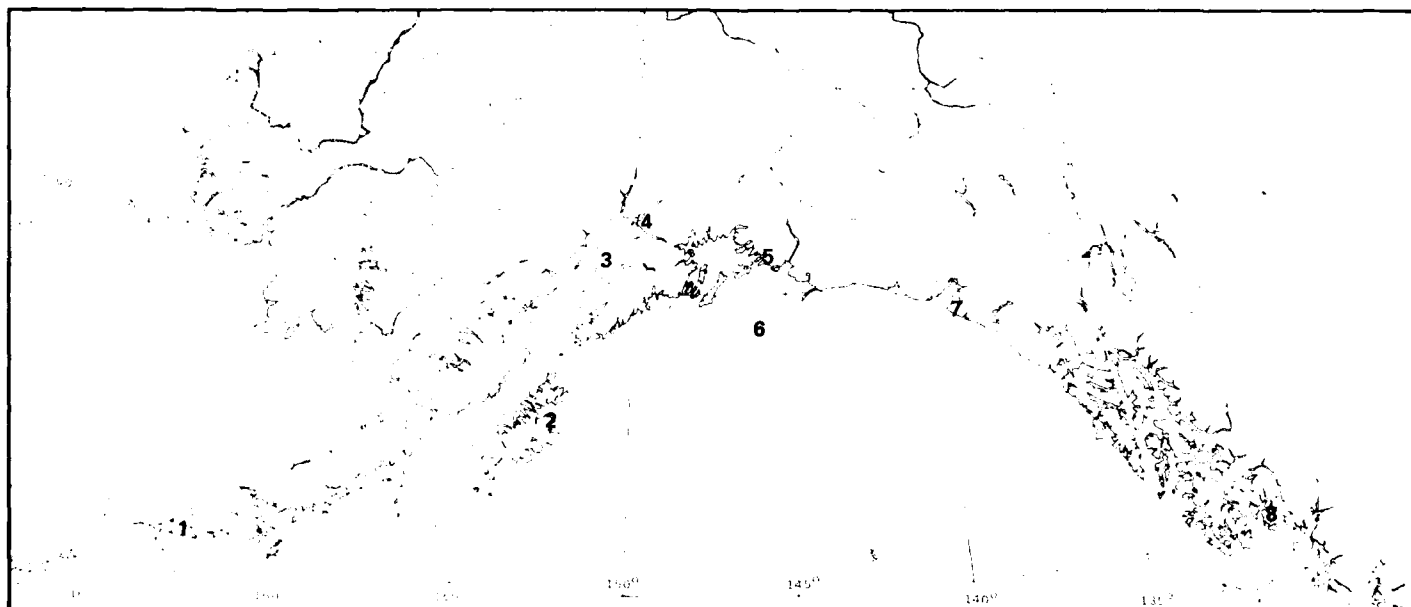


Figure 9 Climate means and extremes



1 Cold Bay

Inches	Least		Most	Annual
	Apr	Nov		
Trace	41.8	19.9	30.6	
0.01-0.10	30.7	34.7	34.3	
0.11-0.25	7.9	15.8	13.0	
0.26-0.50	2.4	8.9	5.9	
0.51-1.00	1.1	6.4	2.9	
1.01-2.50	0.4	1.4	0.9	
2.51-5.00	0.0	0.3	0.1	
5.01-10.00	0.0	0.0	0.0	
TOTAL	42.5	67.5	57.1	

2 Kodiak

Inches	Least		Most	Annual
	Jun	Nov		
Trace	18.7	18.7	20.0	
0.01-0.10	19.0	18.3	18.9	
0.11-0.25	11.0	14.0	14.0	
0.26-0.50	8.0	13.7	10.4	
0.51-1.00	3.3	11.3	6.3	
1.01-2.50	1.7	3.0	2.0	
2.51-5.00	0.0	0.0	*	
5.01-10.00	0.0	0.0	0.0	
TOTAL	43.0	60.0	51.6	

3 Kenai

Inches	Least		Most	Annual
	May	Sep		
Trace	21.9	13.3	18.3	
0.01-0.10	17.7	22.1	18.2	
0.11-0.25	6.6	12.8	8.7	
0.26-0.50	2.2	9.6	4.5	
0.51-1.00	0.8	6.1	2.0	
1.01-2.50	0.0	1.1	0.3	
2.51-5.00	0.0	0.0	0.0	
5.01-10.00	0.0	0.0	0.0	
TOTAL	27.3	51.8	33.8	

4 Anchorage

Inches	Least		Most	Annual
	Mar	Sep		
Trace	21.8	23.3	29.1	
0.01-0.10	19.6	29.0	18.7	
0.11-0.25	4.3	9.4	7.1	
0.26-0.50	1.6	5.2	3.3	
0.51-1.00	0.0	2.1	1.1	
1.01-2.50	0.0	1.2	0.3	
2.51-5.00	0.0	0.0	0.0	
5.01-10.00	0.0	0.0	0.0	
TOTAL	25.5	47.0	30.3	

5 Cordova

Inches	Least		Most	Annual
	Jun	Sep		
Trace	16.7	7.8	12.3	
0.01-0.10	21.0	17.0	19.2	
0.11-0.25	16.0	9.4	12.8	
0.26-0.50	11.6	11.3	11.6	
0.51-1.00	5.3	14.2	9.7	
1.01-2.50	2.5	11.9	5.5	
2.51-5.00	0.1	2.9	0.8	
5.01-10.00	0.0	0.1	*	
TOTAL	57.1	66.8	59.1	

6 Middleton Island

Inches	Least		Most	Annual
	Jun	Oct		
Trace	21.3	14.7	17.1	
0.01-0.10	24.7	24.7	25.1	
0.11-0.25	7.3	16.8	13.4	
0.26-0.50	5.3	10.4	10.0	
0.51-1.00	2.3	12.5	7.3	
1.01-2.50	0.3	3.9	1.9	
2.51-5.00	0.0	0.4	*	
5.01-10.00	0.0	0.0	0.0	
TOTAL	42.6	72.3	57.7	

7 Yakutat

Inches	Least		Most	Annual
	Jun	Oct		
Trace	19.3	4.1	11.0	
0.01-0.10	21.9	10.4	16.2	
0.11-0.25	10.4	10.7	11.5	
0.26-0.50	8.5	13.4	11.6	
0.51-1.00	6.9	20.8	12.1	
1.01-2.50	3.7	19.1	10.2	
2.51-5.00	0.8	2.7	1.6	
5.01-10.00	0.0	0.1	*	
TOTAL	52.4	77.2	63.2	

8 Annette Island

Inches	Least		Most	Annual
	May	Nov		
Trace	14.4	19.9	12.5	
0.01-0.10	19.8	34.7	15.8	
0.11-0.25	11.8	15.8	11.1	
0.26-0.50	9.1	8.9	11.9	
0.51-1.00	6.9	6.4	12.0	
1.01-2.50	5.2	1.4	8.8	
2.51-5.00	0.7	0.3	1.2	
5.01-10.00	0.0	0.0	*	
TOTAL	53.9	67.5	60.9	

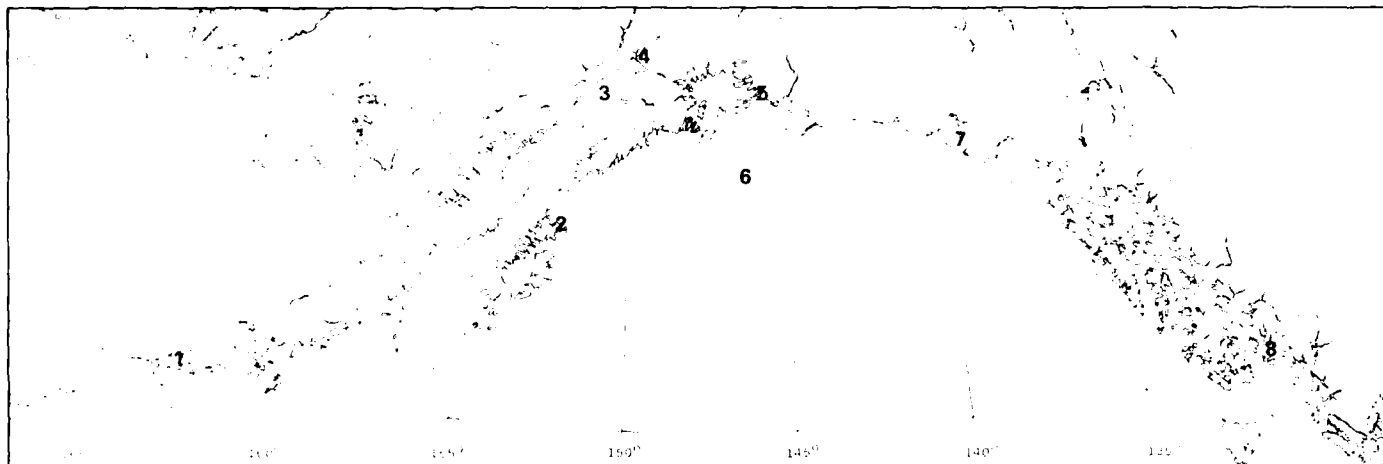
Legend

Percent frequency of occurrence of precipitation is based on daily observations. Columns 2, 3, and 4 are for the months with least and most precipitation and the annual average respectively. Total is percent of days with measurable precipitation.

* less than 0.05%

Prepared from USAF Air Weather Service data, various dates.

Figure 10 Precipitation intensities



1 Cold Bay

Snowfall			Snow Depth		
Inches	Max Month	Annual Based on 10 Months	Inches	Max Month	Annual Based on 8 Months
≤Trace	64.4	81.2	≤Trace	52.6	80.0
0.1-2.4	15.1	17.7	1-3	27.4	13.3
2.5-4.4	1.5	0.7	4-6	10.2	4.1
4.5-6.4	0.9	0.3	7-12	7.2	2.2
6.5-10.4	0.0	0.0	13-24	2.2	0.4
10.5-15.4	0.1	*	25-36	0.3	*
15.5-25.4	0.0	0.0	37-48	0.1	*
25.5-50.4	0.0	0.0	49-60	0.0	0.0
TOTAL	35.6	18.8	TOTAL	47.4	20.0

2 Kodiak

Snowfall			Snow Depth		
Inches	Max Month	Annual Based on 8 Months	Inches	Max Month	Annual Based on 7 Months
≤Trace	73.5	87.6	≤Trace	46.5	80.3
0.1-2.4	21.3	9.7	1-3	31.3	12.0
2.5-4.4	2.9	1.6	4-6	8.7	3.8
4.5-6.4	1.3	0.5	7-12	7.4	2.2
6.5-10.4	0.6	0.5	13-24	4.2	1.5
10.5-15.4	0.4	0.1	25-36	1.9	0.2
15.5-25.4	0.0	*	37-48	0.0	0.0
25.5-50.4	0.0	0.0	49-60	0.0	0.0
TOTAL	26.5	12.4	TOTAL	53.5	19.7

3 Kenai

Snowfall			Snow Depth		
Inches	Max Month	Annual Based on 9 Months	Inches	Max Month	Annual Based on 8 Months
≤Trace	70.8	87.7	≤Trace	5.8	58.0
0.1-2.4	24.4	10.0	1-3	9.9	9.2
2.5-4.4	3.2	1.5	4-6	7.8	5.8
4.5-6.4	0.5	0.5	7-12	26.0	11.0
6.5-10.4	0.7	0.3	13-24	39.0	13.2
10.5-15.4	0.4	*	25-36	7.8	1.8
15.5-25.4	0.0	0.0	37-48	2.0	0.8
25.5-50.4	0.0	0.0	49-60	1.7	0.2
TOTAL	29.2	12.3	TOTAL	94.2	42.0

4 Anchorage

Snowfall			Snow Depth		
Inches	Max Month	Annual Based on 8 Months	Inches	Max Month	Annual Based on 7 Months
≤Trace	71.2	86.3	≤Trace	10.0	55.6
0.1-2.4	22.1	10.7	1-3	18.1	12.9
2.5-4.4	4.8	1.8	4-6	19.4	8.0
4.5-6.4	0.8	0.6	7-12	16.4	12.5
6.5-10.4	0.5	0.4	13-24	25.5	9.0
10.5-15.4	0.3	0.2	25-36	9.1	1.6
15.5-25.4	0.3	*	37-48	1.5	0.4
25.5-50.4	0.0	0.0	49-60	0.0	0.0
TOTAL	28.8	13.7	TOTAL	90.0	44.4

5 Cordova

Snowfall			Snow Depth		
Inches	Max Month	Annual Based on 8 Months	Inches	Max Month	Annual Based on 8 Months
≤Trace	61.3	83.4	≤Trace	40.9	64.3
0.1-2.4	26.1	11.8	1-3	19.2	11.3
2.5-4.4	7.4	2.6	4-6	11.3	6.4
4.5-6.4	3.0	1.1	7-12	15.2	7.2
6.5-10.4	1.3	0.9	13-24	8.8	6.8
10.5-15.4	0.9	0.2	25-36	1.2	3.3
15.5-25.4	0.0	*	37-48	2.4	0.6
25.5-50.4	0.0	0.0	49-60	1.0	0.1
TOTAL	38.7	16.6	TOTAL	59.1	35.7

6 Middleton Island

Snowfall			Snow Depth		
Inches	Max Month	Annual Based on 8 Months	Inches	Max Month	Annual Based on 7 Months
≤Trace	68.5	90.0	≤Trace	71.8	90.7
0.1-2.4	27.8	9.0	1-3	14.9	6.8
2.5-4.4	3.2	0.7	4-6	8.1	1.9
4.5-6.4	0.5	0.2	7-12	5.2	0.6
6.5-10.4	0.0	0.1	13-24	0.0	0.0
10.5-15.4	0.0	*	25-36	0.0	0.0
15.5-25.4	0.0	0.0	37-48	0.0	0.0
25.5-50.4	0.0	0.0	49-60	0.0	0.0
TOTAL	31.5	10.0	TOTAL	28.2	9.3

7 Yakutat

Snowfall			Snow Depth		
Inches	Max Month	Annual Based on 8 Months	Inches	Max Month	Annual Based on 8 Months
≤Trace	51.2	79.3	≤Trace	15.9	62.9
0.1-2.4	29.1	12.4	1-3	8.7	8.3
2.5-4.4	8.4	3.8	4-6	7.7	5.0
4.5-6.4	4.4	2.0	7-12	7.5	5.5
6.5-10.4	5.5	1.8	13-24	17.7	7.9
10.5-15.4	1.3	0.6	25-36	20.3	5.6
15.5-25.4	0.1	0.1	37-48	13.2	3.0
25.5-50.4	0.0	*	≥49	9.0	1.8
TOTAL	48.8	20.7	TOTAL	84.1	37.1

8 Annette

Snowfall			Snow Depth		
Inches	Max Month	Annual Based on 8 Months	Inches	Max Month	Annual Based on 8 Months
≤Trace	76.1	92.1	≤Trace	64.8	91.7
0.1-2.4	18.1	6.0	1-3	17.0	4.9
2.5-4.4	3.6	1.1	4-6	7.6	1.7
4.5-6.4	1.6	0.5	7-12	7.5	1.1
6.5-10.4	0.6	0.3	13-24	1.5	0.3
10.5-15.4	0.0	*	25-36	1.0	0.2
15.5-25.4	0.0	0.0	37-48	0.6	0.1
25.5-50.4	0.0	0.0	49-60	0.0	0.0
TOTAL	23.9	7.9	TOTAL	35.2	8.3

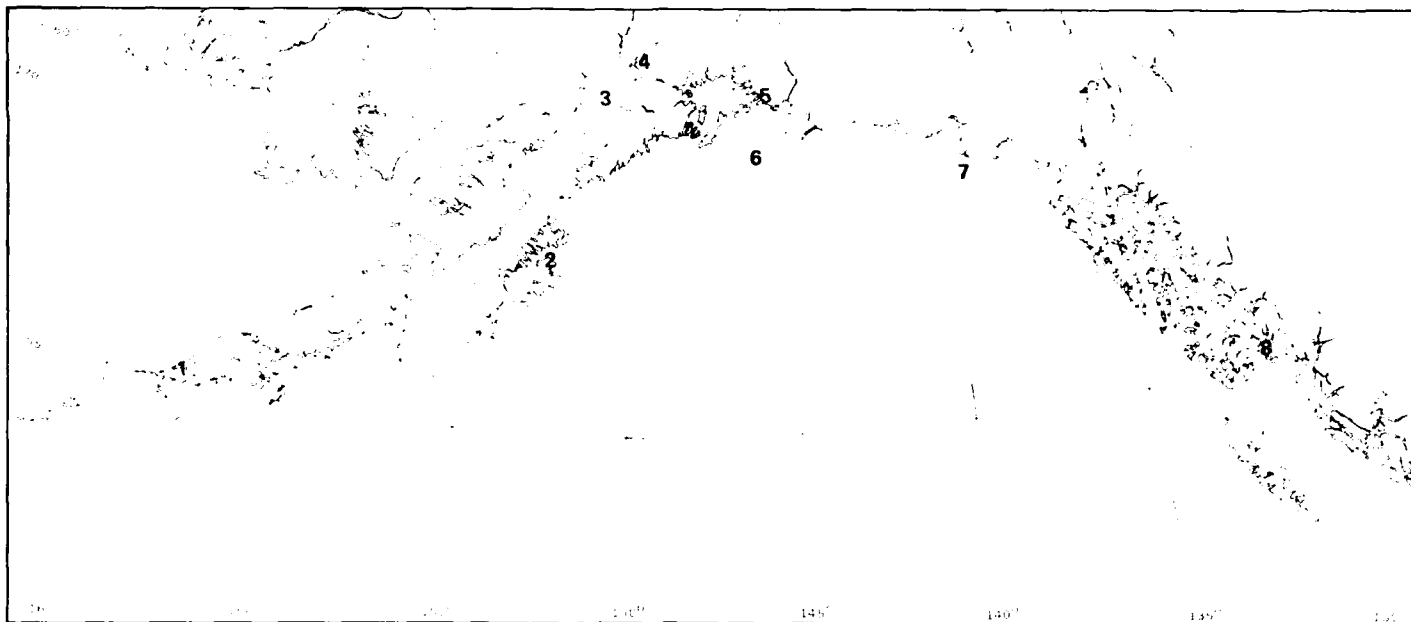
Legend

Percent frequency of occurrence of snowfall and snow depth is based on daily observations. In each table column 2 is the month that averaged the most, and column 3 is the annual percent averaged over 12 months. Column 4 shows the number of months with snowfall or snow depth. The total at the bottom of each box is the percent of days with measurable snowfall or snow depth.

* less than 0.05%

Prepared from USAF Air Weather Service data, various dates.

Figure 11 Snowfall and snow depth



1 Cold Bay

	R or L	ZR or ZL	S or E	TOT
Jan	15.3	0.4	21.8	35.9
Feb	12.9	0.7	24.7	37.1
Mar	10.5	0.8	25.7	35.0
Apr	15.1	0.1	21.9	35.3
May	30.7	*	5.8	34.8
Jun	33.8	0.0	0.2	34.0
Jul	36.0	0.0	*	36.0
Aug	40.2	0.0	0.0	40.2
Sep	32.8	0.0	0.1	32.9
Oct	27.5	*	5.5	32.6
Nov	22.8	0.2	13.1	34.0
Dec	18.9	0.6	22.1	35.8
Ann	24.6	0.2	11.3	35.4

2 Kodiak

	R or L	ZR or ZL	S or E	TOT
Jan	19.5	0.1	13.2	30.6
Feb	16.2	*	14.0	28.1
Mar	12.1	*	16.9	27.0
Apr	18.3	0.0	10.0	26.7
May	32.3	0.0	0.4	32.3
Jun	23.4	0.0	*	23.4
Jul	24.0	0.0	0.0	24.0
Aug	22.0	0.0	0.0	22.0
Sep	22.0	0.0	0.1	22.1
Oct	22.1	*	3.4	24.8
Nov	25.2	*	7.2	31.0
Dec	17.5	0.1	15.5	30.9
Ann	21.3	*	6.7	26.9

3 Kenai

	R or L	ZR or ZL	S or E	TOT
Jan	2.7	0.9	12.7	15.5
Feb	1.9	0.5	13.8	15.6
Mar	2.0	0.1	12.6	14.4
Apr	4.8	0.1	8.4	12.7
May	10.2	0.0	0.5	10.5
Jun	14.3	0.0	0.0	14.3
Jul	15.6	0.0	0.0	15.6
Aug	18.3	0.0	0.0	18.3
Sep	20.6	0.0	0.1	20.6
Oct	12.5	0.1	4.6	16.4
Nov	5.2	0.4	10.3	14.8
Dec	2.1	0.7	14.8	17.0
Ann	9.3	0.2	6.4	15.5

4 Anchorage

	R or L	ZR or ZL	S or E	TOT
Jan	2.5	1.0	15.6	18.3
Feb	1.6	0.4	17.6	19.1
Mar	2.3	*	13.6	15.7
Apr	4.7	*	10.1	13.9
May	10.4	0.0	0.4	10.7
Jun	13.8	0.0	0.0	13.8
Jul	19.2	0.0	0.0	19.2
Aug	19.1	0.0	0.0	19.1
Sep	20.1	0.0	0.4	20.4
Oct	9.7	0.1	7.3	16.4
Nov	2.4	0.3	13.6	16.0
Dec	1.8	0.6	18.2	20.4
Ann	8.9	0.2	8.2	16.9

5 Cordova

	R or L	ZR or ZL	S or E	TOT
Jan	15.1	0.2	17.6	29.3
Feb	16.3	0.1	21.3	34.1
Mar	14.0	*	20.4	31.2
Apr	23.2	*	12.8	31.9
May	36.4	0.0	1.5	37.2
Jun	33.2	0.0	0.0	33.2
Jul	37.1	0.0	0.0	37.1
Aug	34.0	0.0	0.0	34.0
Sep	39.2	0.0	0.1	39.2
Oct	37.8	*	3.1	40.0
Nov	28.2	0.1	9.7	35.6
Dec	20.2	0.3	18.8	36.3
Ann	27.9	0.1	8.8	34.9

6 Middleton Island

	R or L	ZR or ZL	S or E	TOT
Jan	19.7	0.1	9.0	27.9
Feb	19.4	*	8.7	27.3
Mar	16.0	0.0	11.6	26.1
Apr	19.8	0.0	5.4	24.1
May	27.3	0.0	0.0	27.3
Jun	20.8	0.0	0.0	20.8
Jul	23.5	0.0	0.0	23.5
Aug	26.9	0.0	0.0	26.9
Sep	26.1	0.0	*	26.1
Oct	25.3	0.0	1.1	26.2
Nov	28.5	0.0	3.0	31.1
Dec	20.6	*	8.8	28.6
Ann	22.8	*	3.8	26.2

7 Yakutat

	R or L	ZR or ZL	S or E	TOT
Jan	19.4	0.2	18.3	35.6
Feb	19.6	0.1	20.1	37.3
Mar	15.4	*	21.6	34.5
Apr	24.9	*	9.4	31.9
May	31.4	0.0	0.9	32.1
Jun	28.6	0.0	0.0	28.6
Jul	33.2	0.0	0.0	33.2
Aug	33.5	0.0	*	33.5
Sep	37.5	0.0	0.0	37.5
Oct	41.0	*	2.0	42.5
Nov	29.9	*	11.3	39.8
Dec	23.4	0.1	20.8	42.2
Ann	28.2	*	8.7	35.7

8 Annette Island

	R or L	ZR or ZL	S or E	TOT
Jan	28.5	0.2	10.9	37.4
Feb	30.2	0.0	9.5	37.2
Mar	26.9	*	9.4	33.2
Apr	31.4	*	2.6	32.4
May	24.6	0.0	0.1	24.7
Jun	24.6	0.0	0.0	24.6
Jul	22.8	0.0	0.0	22.8
Aug	22.5	0.0	0.0	22.5
Sep	28.2	0.0	0.0	28.2
Oct	40.4	0.0	0.4	40.6
Nov	36.8	*	5.1	40.3
Dec	33.0	0.1	10.4	41.2
Ann	29.2	*	4.0	32.1

Legend

Percent frequency of occurrence of precipitation by type is based on hourly observations regardless of intensity.

R or L = Rain or drizzle

ZR or ZL = Freezing rain or freezing drizzle

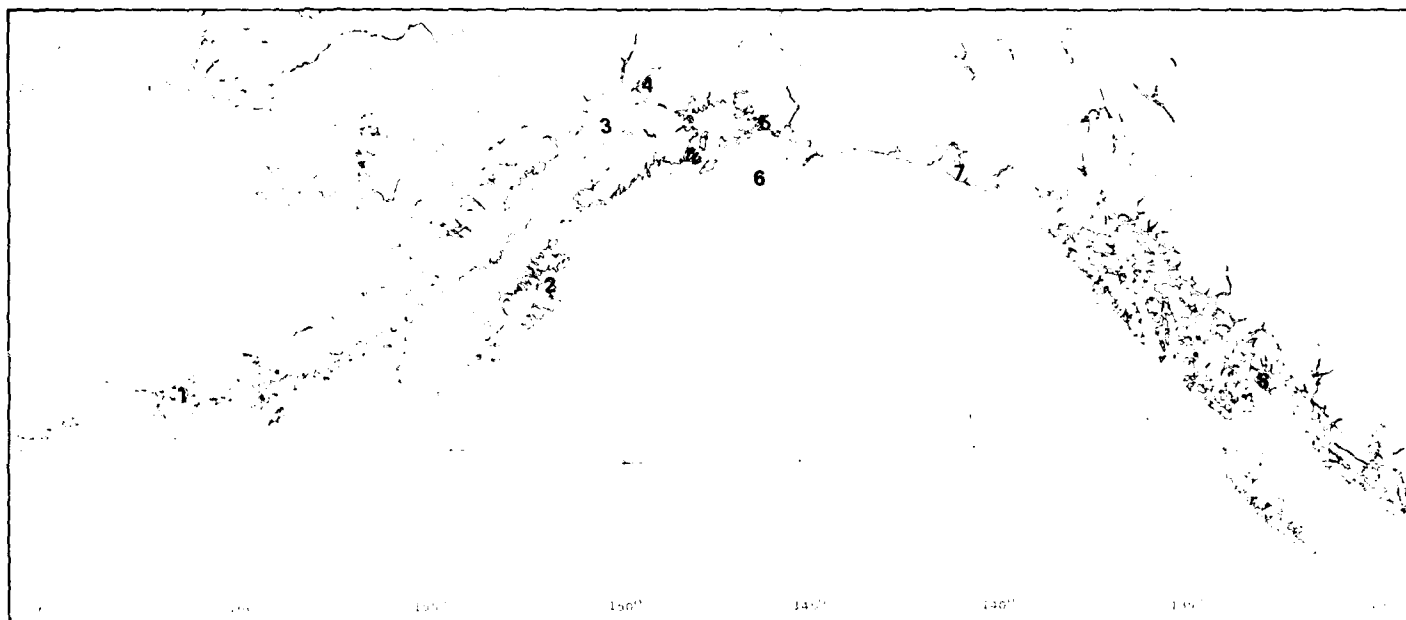
S or E = Snow or sleet

TOT = Total percent of observations with precipitation

* less than 0.05%

Prepared from USAF Air Weather Service data, various dates.

Figure 12 Type of precipitation



1 Cold Bay

	K or H			
	F	H	BS	TOT
Jan	12.5	*	8.7	21.1
Feb	11.6	*	7.3	19.1
Mar	10.8	0.1	6.3	17.0
Apr	10.5	*	2.2	12.7
May	11.5	*	*	12.0
Jun	18.0	0.0	0.0	18.0
Jul	28.3	0.1	0.0	28.3
Aug	32.3	*	0.0	32.4
Sep	18.0	0.0	0.0	18.0
Oct	9.3	0.0	0.2	9.5
Nov	10.2	0.1	3.0	13.4
Dec	10.3	*	7.4	17.6
Ann	15.5	*	2.9	18.4

2 Kodiak

	K or H			
	F	H	BS	TOT
Jan	8.7	*	2.4	11.1
Feb	8.3	0.0	1.4	9.7
Mar	5.4	0.0	2.9	8.3
Apr	6.1	*	0.4	6.6
May	12.2	0.0	0.0	12.2
Jun	16.4	0.1	0.0	16.5
Jul	17.1	0.4	0.0	17.5
Aug	12.8	*	0.0	12.9
Sep	10.5	0.0	0.0	10.5
Oct	6.1	0.1	*	6.3
Nov	8.2	*	1.2	9.3
Dec	6.1	0.0	2.6	8.7
Ann	9.8	0.1	0.9	10.8

3 Kenai

	K or H			
	F	H	BS	TOT
Jan	9.6	0.0	0.5	10.1
Feb	7.8	0.0	0.7	8.4
Mar	6.3	0.0	0.3	6.6
Apr	5.9	0.0	*	5.9
May	1.2	0.0	0.0	1.2
Jun	3.7	*	0.0	3.8
Jul	5.1	0.3	0.0	5.3
Aug	5.0	*	0.0	5.1
Sep	4.2	0.0	0.0	4.2
Oct	3.4	0.0	*	3.4
Nov	5.2	0.0	0.2	5.4
Dec	9.1	0.0	0.5	9.6
Ann	5.5	*	0.2	5.7

4 Anchorage

	K or H			
	F	H	BS	TOT
Jan	12.8	*	0.1	13.0
Feb	7.1	0.0	*	7.2
Mar	2.4	0.0	0.0	2.4
Apr	2.3	0.0	0.0	2.3
May	0.3	*	0.0	0.3
Jun	1.1	0.1	0.0	1.2
Jul	1.9	0.8	0.0	2.7
Aug	1.9	0.0	0.0	1.9
Sep	3.1	0.0	0.0	3.1
Oct	2.6	0.3	0.0	2.9
Nov	4.3	*	0.1	4.4
Dec	7.8	0.1	0.1	7.9
Ann	4.0	0.1	*	4.1

5 Cordova

	K or H			
	F	H	BS	TOT
Jan	6.7	0.0	0.4	7.1
Feb	5.4	0.0	0.5	5.8
Mar	3.8	*	0.4	4.2
Apr	4.8	0.0	*	4.8
May	4.9	0.0	0.0	4.9
Jun	10.1	0.2	0.0	10.3
Jul	17.4	0.1	0.0	17.4
Aug	15.0	0.0	0.0	15.0
Sep	12.8	0.0	0.0	12.8
Oct	5.8	0.1	0.0	5.9
Nov	4.9	*	*	5.0
Dec	5.0	0.0	0.3	5.2
Ann	8.1	*	0.1	8.2

6 Middleton Island

	K or H			
	F	H	BS	TOT
Jan	15.5	0.1	2.1	17.5
Feb	11.8	0.0	1.3	13.0
Mar	13.8	*	0.7	14.3
Apr	13.4	0.0	*	13.4
May	19.5	0.0	0.0	19.5
Jun	18.2	0.0	0.0	18.2
Jul	23.3	0.1	0.0	23.4
Aug	23.0	0.0	0.0	23.0
Sep	18.3	*	0.0	18.4
Oct	12.6	*	*	12.9
Nov	17.2	0.1	*	17.9
Dec	10.1	0.0	1.2	11.1
Ann	16.6	*	0.4	17.0

7 Yakutat

	K or H			
	F	H	BS	TOT
Jan	11.4	*	0.7	12.1
Feb	13.4	*	0.4	13.8
Mar	10.5	*	0.9	11.4
Apr	9.0	0.0	*	9.0
May	9.7	0.1	0.0	9.8
Jun	13.6	0.1	0.0	13.7
Jul	19.7	*	0.0	19.8
Aug	21.3	*	0.0	21.3
Sep	18.5	*	0.0	18.5
Oct	10.8	*	*	10.8
Nov	9.2	0.0	0.2	9.5
Dec	9.9	0.0	0.7	10.8
Ann	13.1	*	0.2	13.4

8 Annette Island

	K or H			
	F	H	BS	TOT
Jan	7.7	*	0.4	8.2
Feb	7.5	*	0.6	8.1
Mar	5.3	0.0	0.1	5.4
Apr	4.2	0.0	0.0	4.2
May	5.1	0.1	0.0	5.2
Jun	8.1	*	0.0	8.1
Jul	9.7	*	0.0	9.8
Aug	11.4	*	0.0	11.4
Sep	13.1	0.1	0.0	13.2
Oct	11.7	*	0.0	11.7
Nov	8.7	0.1	0.1	8.9
Dec	7.0	0.0	0.3	7.3
Ann	8.3	*	0.1	8.5

Legend

Percent frequency of occurrence of obstructions to vision is based on hourly observations

F - Fog

K or H - Smoke or haze

BS - Blowing snow

TOT - Total percent of observations with obstructions to vision

* less than 0.05%

Prepared from USAF Air Weather Service data, various dates.

Figure 13 Visibility obstructions

		Visibility (in miles)							Ceiling (in feet)		Visibility (in miles)						
		≥ 3	≥ 1½	≥ 1	≥ ¾	≥ ½	≥ ¼	≥ 0			≥ 3	≥ 1½	≥ 1	≥ ¾	≥ ½	≥ ¼	≥ 0
Kodiak	77	78	78	78	78	78	78	78	≥ 1,800		60	61	61	62	62	62	62
	81	81	81	81	81	81	81	81	≥ 1,500		68	69	69	69	70	70	70
	83	84	84	84	84	84	84	84	≥ 1,200		73	75	75	75	75	76	76
	86	87	87	87	87	87	87	87	≥ 1,000		78	80	81	81	81	81	82
	87	88	88	88	89	89	89	89	≥ 900		79	82	83	83	83	83	84
	88	90	90	90	90	90	90	90	≥ 800		82	85	86	86	86	86	87
	89	91	91	91	91	91	91	92	≥ 700		83	87	88	88	88	89	90
	90	92	92	93	93	93	93	93	≥ 600		85	89	90	90	92	92	92
	91	93	94	94	94	95	95	95	≥ 500		87	91	93	94	94	94	95
	92	95	95	96	96	96	96	96	≥ 400		88	93	95	96	96	96	97
	92	96	97	97	97	97	97	98	≥ 300		88	94	96	96	97	98	98
	92	96	97	98	98	99	99	99	≥ 200		88	94	96	97	98	99	99
	92	96	98	98	99	99	100	100	≥ 100		88	94	96	97	98	99	99
	92	96	98	98	99	100	100	100	≥ 0		88	94	96	97	98	99	100
Anchorage	91	91	91	91	92	92	92	92	≥ 1,800		90	90	90	90	91	91	91
	92	92	93	93	93	93	93	93	≥ 1,500		91	92	92	92	93	93	93
	93	94	94	94	94	95	95	95	≥ 1,200		92	93	94	94	94	94	94
	94	95	95	95	95	96	96	96	≥ 1,000		93	94	95	95	96	96	96
	94	95	95	96	96	96	96	96	≥ 900		93	95	95	96	96	96	96
	94	95	96	96	96	96	97	97	≥ 800		94	95	96	97	97	97	97
	94	96	96	96	97	97	97	97	≥ 700		94	96	96	97	97	98	98
	95	96	97	97	97	98	98	98	≥ 600		94	96	97	98	98	98	98
	95	97	97	97	98	98	98	98	≥ 500		95	97	98	98	99	99	99
	95	97	98	98	98	99	99	99	≥ 400		95	97	98	98	99	99	99
	96	97	98	98	99	99	99	99	≥ 300		95	97	98	99	99	99	100
	96	97	98	98	99	99	100	100	≥ 200		95	97	98	99	99	100	100
	96	97	98	98	99	99	100	100	≥ 100		95	97	98	99	99	100	100
	96	97	98	98	99	99	100	100	≥ 0		95	97	98	99	99	100	100
Middleton Island	67	67	68	68	68	68	68	68	≥ 1,800		81	81	81	81	81	81	81
	74	74	74	74	74	75	75	75	≥ 1,500		85	85	85	85	85	85	85
	79	80	80	80	80	80	80	80	≥ 1,200		89	90	90	90	90	90	90
	84	85	85	85	86	86	86	86	≥ 1,000		91	93	94	94	94	94	94
	85	87	87	87	87	87	87	87	≥ 900		92	94	95	95	95	95	95
	87	89	90	90	90	90	90	90	≥ 800		93	95	96	96	97	97	97
	88	91	91	91	92	92	92	92	≥ 700		93	96	97	97	97	97	97
	90	93	93	94	94	94	94	94	≥ 600		93	96	97	98	98	98	98
	90	94	95	95	96	96	96	96	≥ 500		93	97	98	98	99	99	99
	91	94	96	96	97	97	97	97	≥ 400		93	97	98	99	99	99	99
	91	95	96	97	98	98	98	98	≥ 300		93	97	98	99	99	100	100
	91	95	97	97	98	99	99	99	≥ 200		93	97	98	99	99	100	100
	91	95	97	97	98	99	100	100	≥ 100		93	97	98	99	99	100	100
	91	95	97	97	98	99	100	100	≥ 0		93	97	98	99	99	100	100
Annette	74	74	74	74	74	74	74	74	≥ 1,800		62	62	62	63	63	63	63
	78	78	78	78	78	78	79	79	≥ 1,500		67	68	69	69	69	69	70
	84	84	84	84	84	85	85	85	≥ 1,200		74	75	76	76	76	77	77
	87	88	88	88	89	89	89	89	≥ 1,000		79	81	82	83	83	83	83
	88	89	90	90	90	90	90	90	≥ 900		80	83	84	84	85	85	85
	90	91	92	92	92	92	92	92	≥ 800		83	86	87	88	88	89	89
	91	93	93	93	93	93	93	93	≥ 700		84	88	89	90	91	91	91
	92	94	95	95	95	95	95	95	≥ 600		85	90	92	93	94	94	94
	93	95	96	96	96	96	97	97	≥ 500		86	91	93	95	96	96	96
	93	96	97	97	98	98	98	98	≥ 400		87	92	95	96	97	98	98
	94	97	98	98	99	99	99	99	≥ 300		87	93	95	97	98	99	99
	94	97	98	99	99	99	99	99	≥ 200		87	93	95	97	99	99	100
	94	97	98	99	99	100	100	100	≥ 100		87	93	95	97	99	100	100
	94	97	98	99	99	100	100	100	≥ 0		87	93	95	97	99	100	100

Data are presented for all months and all hours. A ceiling exists when the sky is more than half covered with clouds. Due to the cumulative nature of this presentation, it is possible to determine the percentage frequency of occurrence for any given limit of ceiling or visibility separately, or a combination of ceiling and visibility. The totals progress to the right and downward. The frequency of occurrence of a particular ceiling height may be determined independently by referring to totals in the extreme right hand column for each station. The frequency of occurrence of a particular visibility range may be determined independently by referring to the horizontal row of totals at the bottom of each station grid. The percentage frequency for which the station was meeting or exceeding any given set of minima may be determined from the figure at the intersection of the appropriate ceiling column and visibility row.

Data compiled by U.S. Air Force, Air Weather Service

Figure 14 Ceiling and visibility data

Wind Chill

Human and animal bodies, or any physical bodies warmer than their surroundings, lose heat. The rate of loss depends on the barriers to heat loss, such as clothing and insulation, the speed of air movement, and the air temperature. Heat loss in humans increases dramatically in moving air that is colder than skin temperature taken as 33°C. Even a light wind increases heat loss, while a strong wind can actually lower body temperature if the rate of loss is greater than the body's heat replacement rate.

The relationship between heat loss and the cooling power of different wind and temperature combinations is shown in Figure 15. Equivalent wind chill temperature relates a particular wind and temperature combination to whatever temperature would produce the same loss of heat at about 3 knots (6 km/hr), the normal speed of a person walking vigorously. Loss of body heat can also occur by breathing cold air into the lungs and touching or leaning against cold objects. Heat loss is not as great in bright sunlight where there is some radiant heat gain. The chart in Figure 15 applies to shady areas and cloudy days or nights and represents

heat loss by convective cooling, the major source of body heat loss. Graph set No. 5 relates air temperature and wind speed. When used in conjunction with Figure 15, the percentage frequency of occurrence of various values of equivalent wind chill temperature can be estimated. Map set No. 3 shows the percentage frequency of occurrence of equivalent wind chill temperatures less than -30°C, which represents the equivalent temperature at which exposed flesh can freeze within 1 minute.

Figure 15
Equivalent wind chill temperature

Equivalent Wind Chill Temperature																				
Wind Speed		Cooling Power Of Wind Expressed As "Equivalent Chill Temperature"																		
knots	km/hr	Temperature (°C)																		
Calm		12	8	4	0	- 4	- 8	-12	-16	-20	-24	-28	-32	-36	-40	-44	-48	- 52	- 56	- 60
		Equivalent Chill Temperature																		
3	6	12	8	4	0	- 4	- 8	-12	-16	-20	-24	-28	-32	-36	-40	-44	-48	- 52	- 56	
5	10	9	5	0	- 4	- 8	-13	-17	-22	-26	-31	-35	-40	-44	-49	-53	-58			
11	20	5	0	- 5	-10	-15	-21	-26	-31	-36	-42	-47	-52	-57						
16	30	3	-3	- 8	-14	-20	-25	-31	-37	-43	-48	-54								
22	40	1	-6	-11	-17	-23	-29	-35	-41	-47	-53	-59								
27	50	0	-6	-12	-18	-25	-31	-37	-43	-49	-55									
32	60	0	-7	-13	-19	-26	-32	-38	-45	-51	-58									
38	70	- 1	-7	-14	-20	-27	-33	-40	-46	-52										
43	80	- 1	-8	-14	-21	-27	-34	-40	-47	-53										
49	90	- 1	-8	-14	-21	-27	-34	-40	-47	-53										
54	100	- 1	-8	-14	-21	-27	-34	-40	-47	-53										
		Little Danger					Increasing Danger (Flesh May Freeze Within 1 Minute)													
		Danger Of Freezing Exposed Flesh For Properly Clothed Individuals																		

Adapted from NWS/NOAA Technical Procedures Bulletin No. 165
Effective Temperature (Wind Chill Index) 1976

Marine and Coastal Climatic Atlas

William A. Brower, Jr.
Henry F. Diaz
Anton S. Prechtel

The marine observations used in computing the statistics for the maps, graphs, and tables in this atlas were taken from the National Climatic Center's (NCC) Tape Data Family 11 (TDF-11), Surface Marine Observations containing data collected by ships of various registry traveling through the study area (50° - 80°N, 130° - 180°W). Because relatively little data exist for the near-coastal zone, observations for 49 coastal land stations were combined with the marine data to present the best possible climatological picture of the outer continental shelf waters and coastal regions of Alaska.

The stations' data were taken from the edited digital files of NCC and the U.S. Air Force's Environmental Technical Applications Center in Asheville, N.C. Marine data were subjected to thorough computer and visual quality control before processing to eliminate duplicate observations and exclude or adjust elements detected during internal consistency and extreme value checks.

The percentages of the 600,000 marine and 2 million land observations that contained basic weather elements are

	Marine	Coastal Stations
Wind	98.5	98.2
Visibility	97.8	97.4
Present weather	96.9	98.2
Sea level pressure	96.2	97.2
Air temperature	99.1	99.4
Wet bulb temperature	64.9	96.6
Sea surface temperature	86.1	-
Total cloud amount	95.6	97.8
Low cloud amount	79.1	70.1
Wave	70.8	-

With a TDF-11 inventory of the number of ships' observations by 1.0° squares, a polar projection grid was defined to give an approximate equal geographic area coverage: 1° latitude by 2° longitude for the latitude belt 50° - 61°N; 1° by 3° for 61° - 70°N; and 1° by 4° for 70° - 80°N. Element statistics (with observation counts) for each of 445 marine squares and 49 coastal stations for each month were then computed and plotted on maps. Meteorologists drew isopleths (lines connecting points of equal magnitude) on 324 element maps, making subjective adjustments when data biases or insufficient observations were evident. They also performed consistency checks in monthly patterns for each element and between elements as well as comparative checks with other marine atlases and publications (see References).

To supplement the isopleth analyses, more than 10,000 statistical graphs were produced for 39 of the coastal stations and 14 representative marine areas. The graphs represent the objective compilation of available data; they were not adjusted for suspected biases, and differences may be found when comparing the graphic data with the isopleth analyses.

The legends explain the data content of the graphs and maps, contain detailed instructions on how to read the graphs, and provide remarks to aid in interpreting the data. The following paragraphs contain additional remarks likely to be of interest to those called upon to interpret the data and provide answers to specific operational questions.

Standard deviation—Most of the graphs allow approximation of the empirical probability of occurrence of selected criteria. This is a major factor in assessing the risk involved in operational planning.

For certain elements, unbiased estimates of population standard deviations are given on the graphs to provide a measure of variability. The standard deviation on these graphs is denoted by s and was computed using the expression:

$$s = \left[\frac{N \sum x_i^2 - (\sum x_i)^2}{N(N-1)} \right]^{1/2} \quad (1)$$

where N is the number of observations in the sample and x_i is the i th realization of the random variable x .

Low-pressure centers—The roses and tracks of the low-pressure center movement maps are based on 9 years of track charts (January 1966-December 1974) prepared by the National Weather Service's National Meteorological Center. These charts show cyclone tracks based on six hourly positions of closed centers.

Frequencies of cyclone centers passing through 2½-degree "squares" were analyzed for the north Pacific Ocean to obtain the mean tracks. Primary tracks were selected along axes of maximum cyclone center frequency and secondary tracks along axes of moderate frequency. The origins (first reported closed position) were also plotted by 2½-degree "squares" and analyzed to find regions of cyclogenesis (only formation, not intensification). However, no regions of cyclogenesis were defined within the Alaskan area.

Return Periods for Maximum Sustained Winds (Coastal Stations)—Estimated maximum sustained winds speeds for selected return periods are presented in graphic and tabular form. Following the method outlined by Lieblein (1954, 1974a, 1974b), these estimates were obtained by initially fitting the extreme value distribution to each station sample containing N maximum annual wind speed values, then inverting the distribution and computing extreme values for selected probabilities. Confidence bands were then computed following the techniques of Gumbel (1958) and Gumbel and Lieblein (1954).

The extreme value distribution approaches the form:

$$F(x) = F(x, \mu, \beta) = \exp \left[-\exp \left(-\frac{x - \mu}{\beta} \right) \right] \quad (2)$$

where $F(x)$ is the probability that an observation is equal to or less than the specified value x , μ is the mode and β is the scale parameter. Since the wind speed data were transformed logarithmically, μ and β refer to the transformed data not the wind speed maxima. The values given on each graph for μ and β are not identical to the μ and β in equation (2) but rather are the result of exponentiating the mode and scale parameter for the distribution of the logarithms of the extreme wind speed values.

The graphic presentations, in addition to allowing determination of extremes for probabilities other than those given in the tables, also provide an indication of the "goodness of fit" of the model to the data. To analytically quantify the "goodness of fit," a Kolmogorov-Smirnov (K-S) test was performed under the null hypothesis, H_0 , that there is no difference between the model and the data with a type I error probability (α) of 0.05. Data samples for which H_0 was not accepted are from Annette and Bethel.

The confidence limits shown by the envelope of lines about the line of "best fit" represent the level of uncertainty in the extreme value corresponding to a given probability. For this study 68 percent confidence limits were computed. This means that in 68 percent of repeated samples the true extreme value will be contained within these limits.

Sea Ice—The ice limits shown on the monthly maps of sets 14-17 reflect midmonth conditions of mean ice concentrations for different threshold values. The ice limits were derived from weekly analyses of sea ice conditions (1972-75) based on satellite imagery supplemented by conventional observations and from previously published atlases (see References). Actual concentration boundaries, under the influence of changing synoptic meteorological and oceanographic situations, may vary widely from the averages.

The following stations and representative marine areas have data plotted for analysis and graphs.

Land Stations	Lat. (°N)	Long. (°W)	Data Processed	No. of Obs.	Avg. No. Obs./Day
Anchorage	61.2	150.0	Nov 1952-Dec 1974	61,834	8
Annette Island	55.0	131.6	Jul 1948-Dec 1974	77,419	8
Cold Bay	55.2	162.7	Jul 1955-Dec 1974	56,985	8
Cordova	60.5	145.5	Jan 1945-Jan 1971	74,809	8
Homer	59.6	151.5	Jul 1945-Dec 1974	76,366	8
Kenai	60.6	151.3	Jul 1948-Jan 1971	69,454	8
Kodiak	57.8	152.3	Nov 1945-Dec 1974	84,630	8
Middleton Island	59.5	146.3	Jul 1948-Jun 1963	43,216	8
Sitka	57.1	135.4	Jul 1948-Jan 1971	65,989	8
Yakutat	60.1	142.5	Jul 1948-May 1968	52,982	8
Yakutat	59.5	139.7	Aug 1948-Dec 1974	77,101	8

Representative Marine Areas

A	52-Coast	156-165	1872-1974	41,097
B	54-57	150-156	1872-1974	12,491
C	57-Coast	150-Coast	1872-1974	11,703
D	56-Coast	144-150	1872-1974	20,016
E	56-Coast	138-144	1872-1974	13,480
F	54-Coast	Coast-138	1872-1974	18,891

The land and marine data used in producing the maps and graphs are at the NCC in a separate file designated the Alaskan Waters Atlas Work Tapes. Also on file are computer tabulations of monthly statistical tables for the above stations and marine areas.

The duration-of-daylight chart for the Northern Hemisphere defines daylight as the period from sunrise to sunset. The upper scale at the bottom of the chart is for the Northern Hemisphere; the lower scale is for the Southern Hemisphere. For example, daylight on July 20 of any year at 48°N is about 15 hours and 30 minutes for any longitude. The data source was the U.S. Naval Observatory (1945) and is accurate for the entire twentieth century. Further details may be obtained from *The Daylighter* of the Navy Weather Research Facility (1960). Additional light (during twilight) may be usable for many purposes. Duration of daylight in high latitudes (poleward of about 60°) becomes increasingly dependent upon atmospheric conditions and refraction, and there may be some departure from the values depicted on the charts.

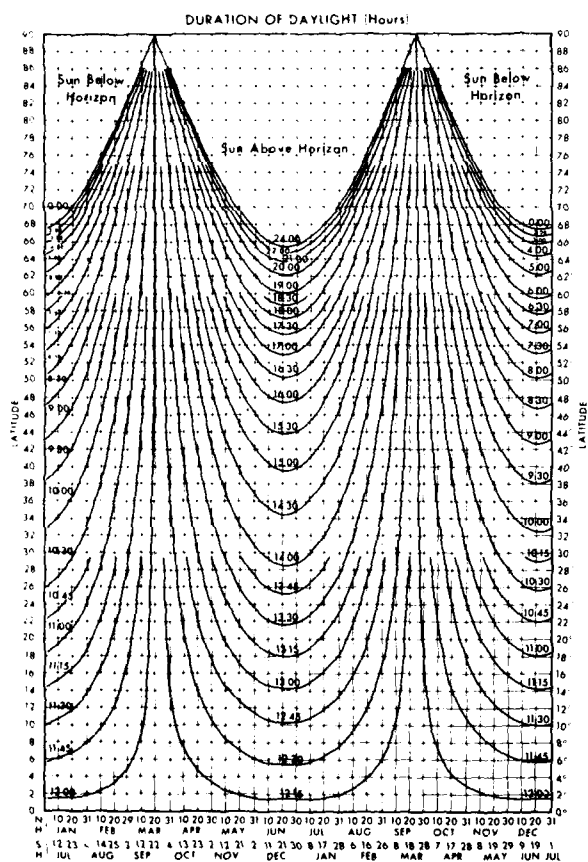
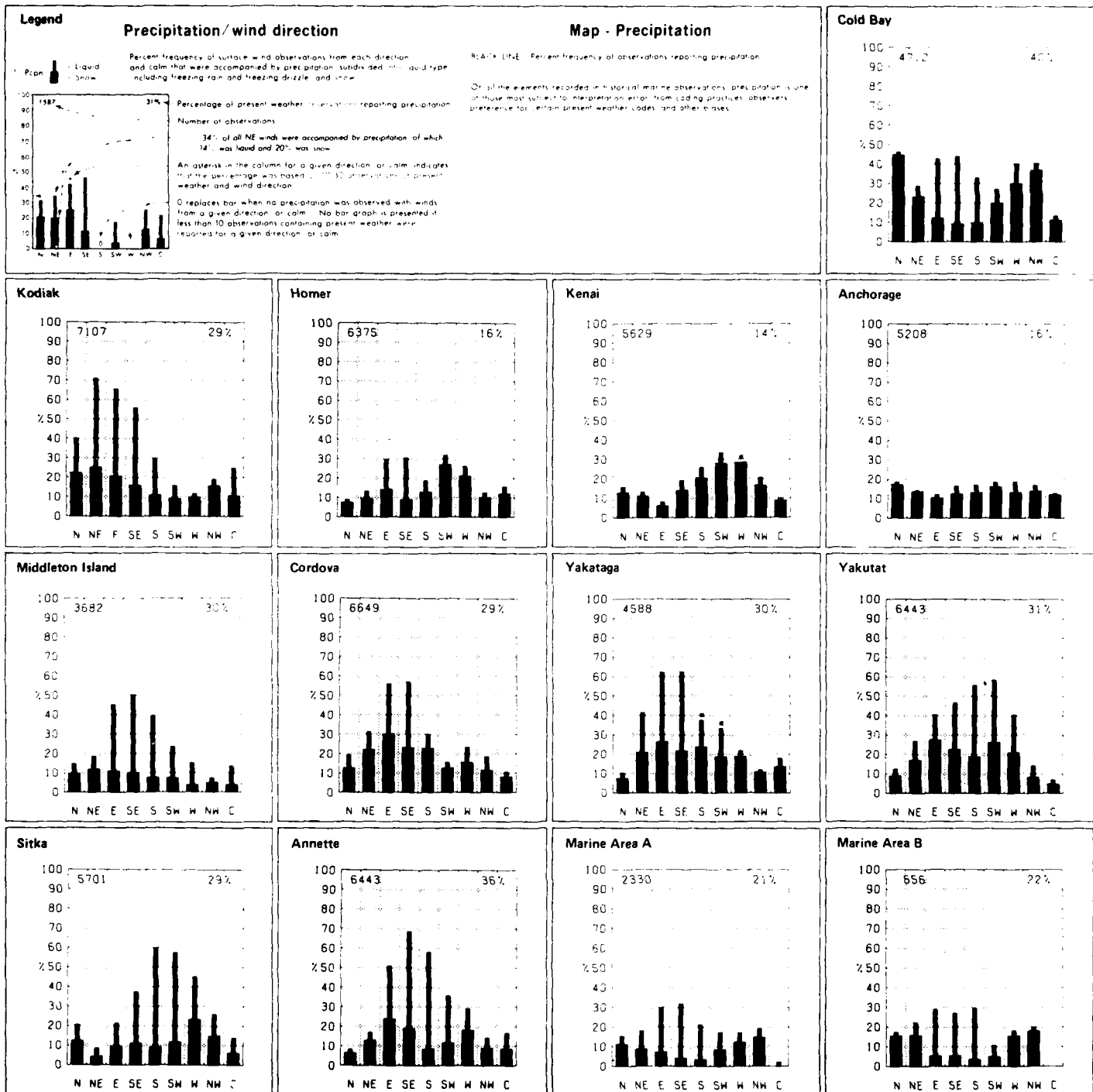
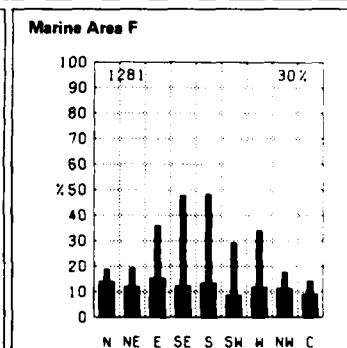
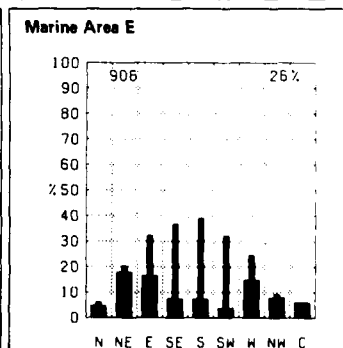
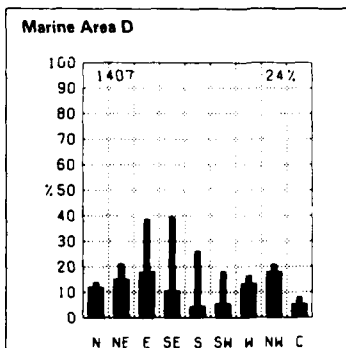
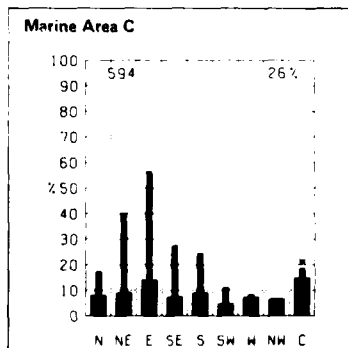
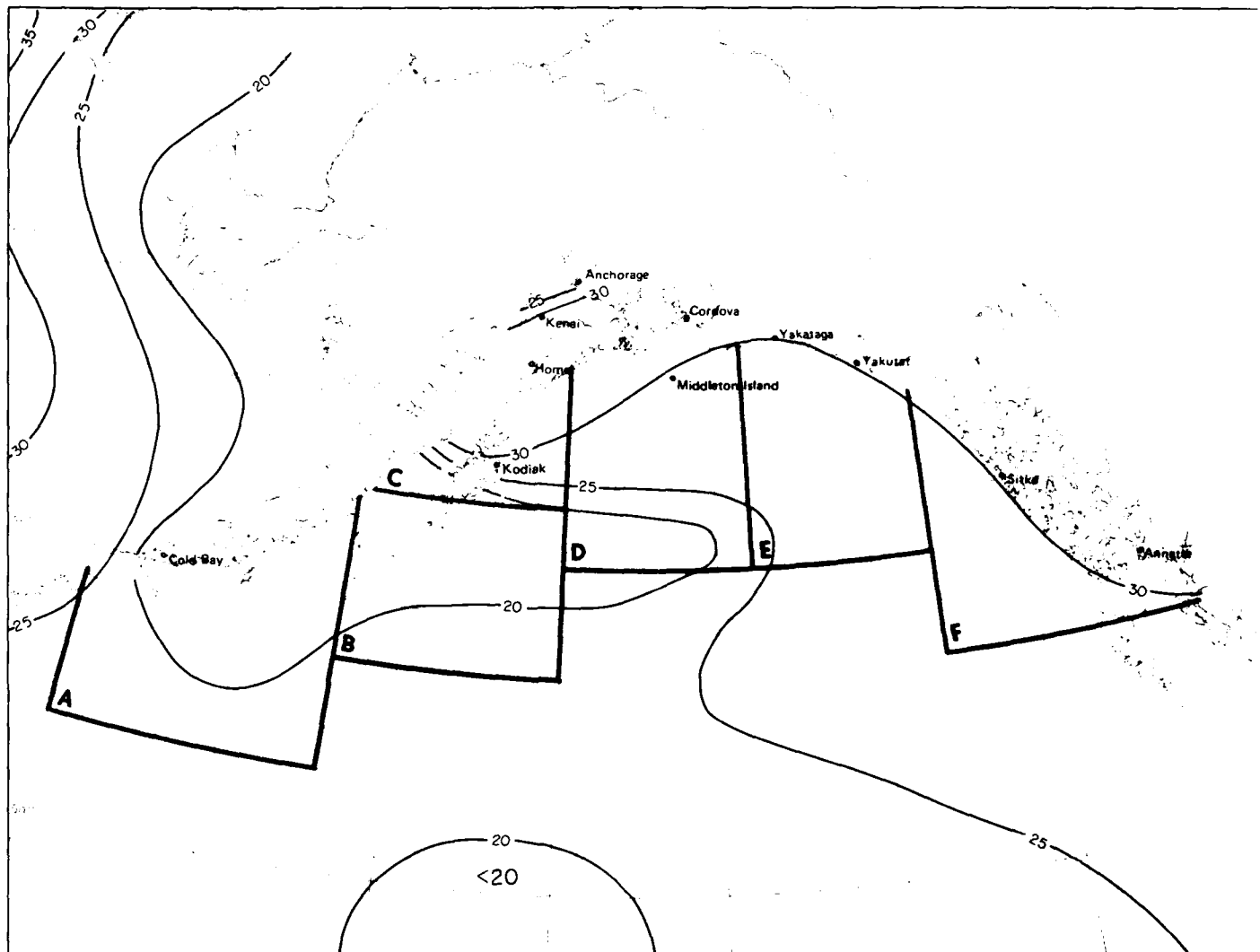


Figure 16 Duration of daylight



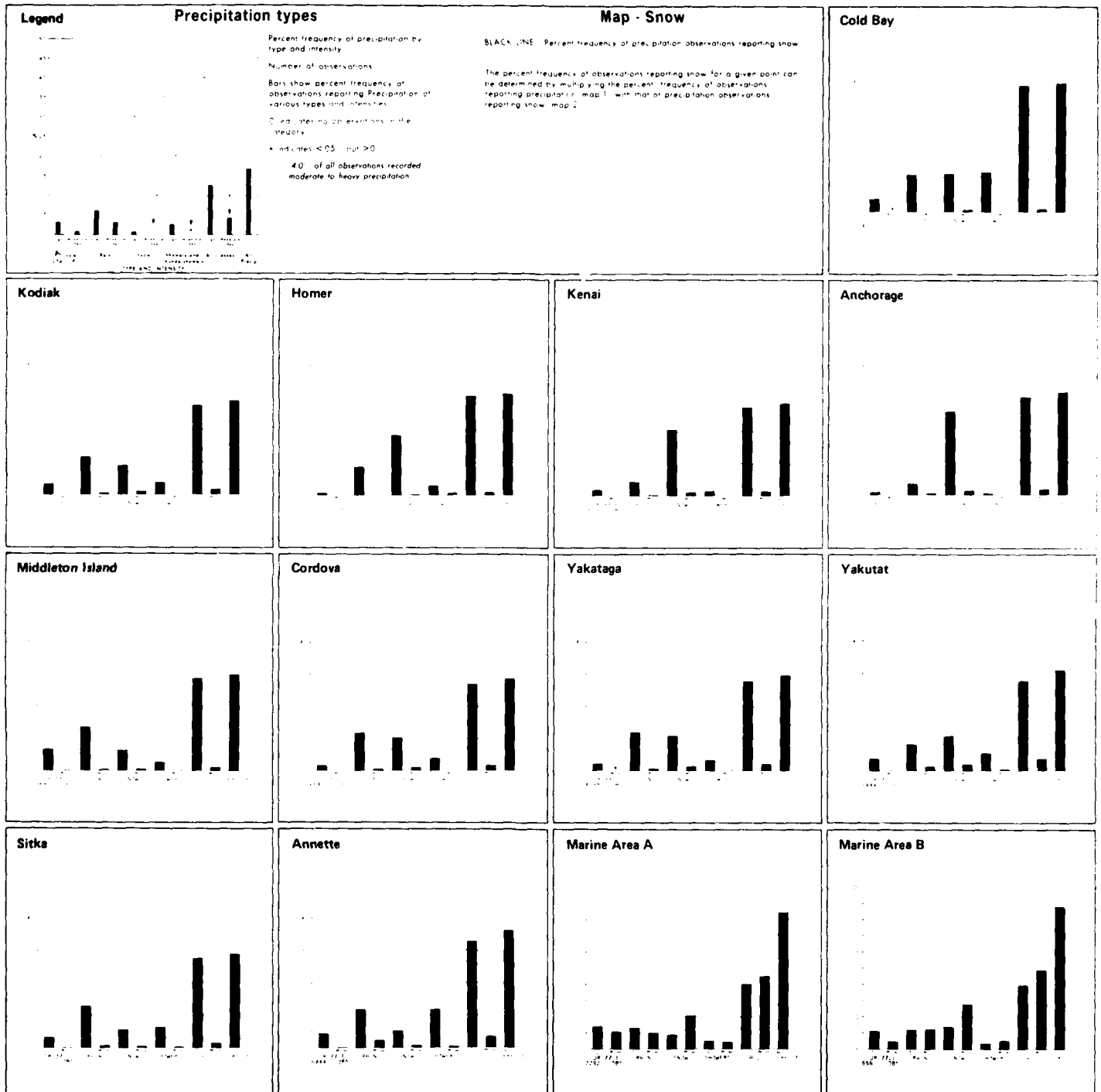
January

1 Precipitation/wind direction



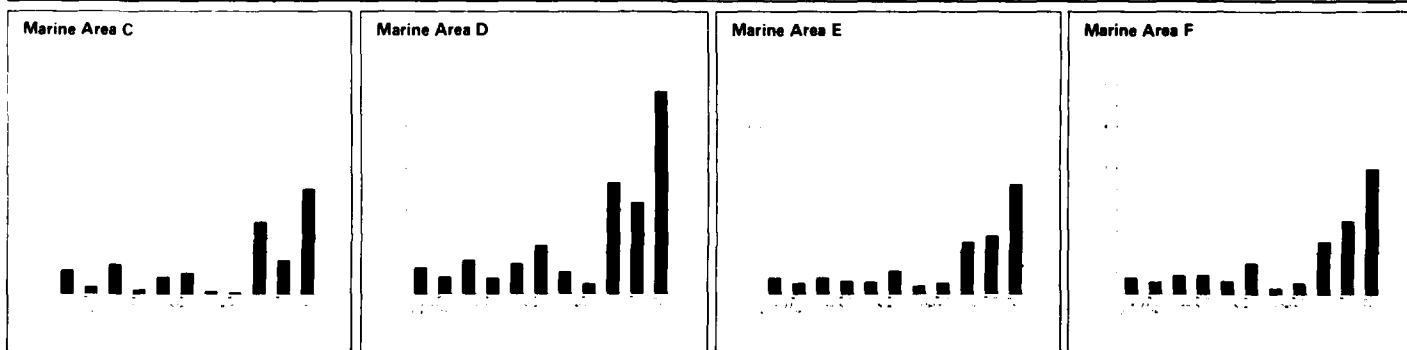
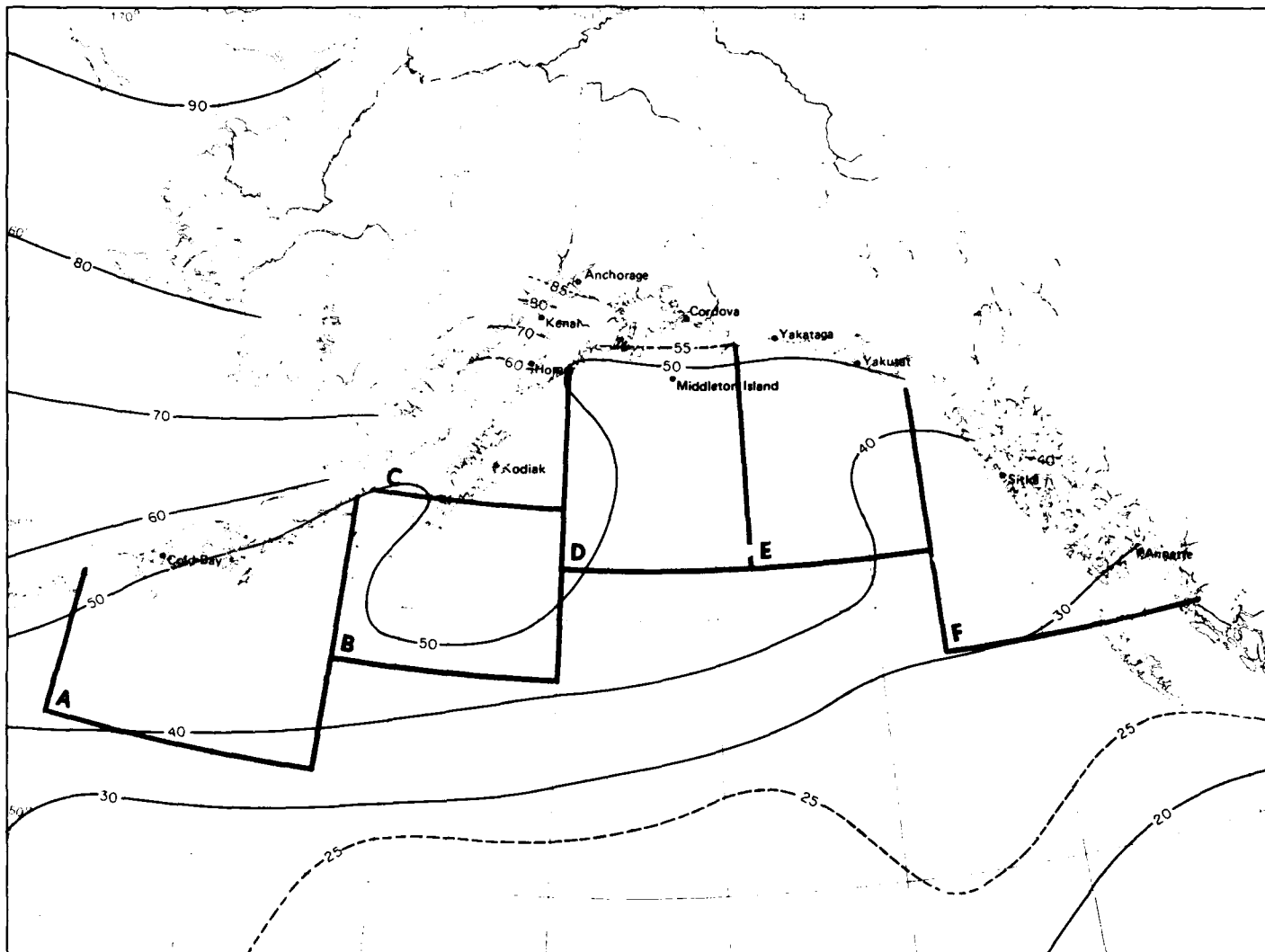
1 Precipitation

January



January

2 Precipitation types

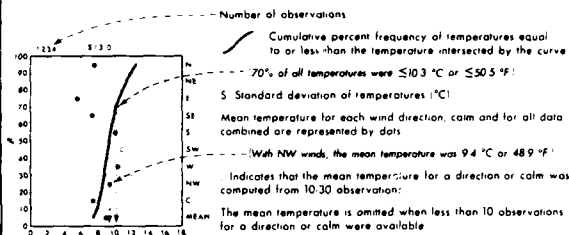


2 Snow

January

Legend

Air temperature/wind direction



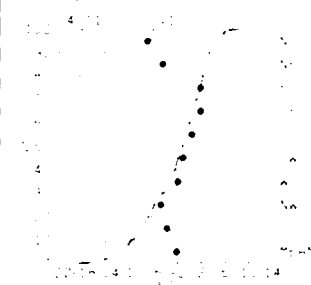
Map - Air temperature mean and thresholds

BLACK LINE Percent frequency of temperature $\leq 0^{\circ}\text{C}$ $\leq 32^{\circ}\text{F}$
 RED LINE Mean air temperature, $^{\circ}\text{C}$
 BLUE LINE Percent frequency of wind chill temperature $\leq 30^{\circ}\text{C}$ $\leq 22^{\circ}\text{F}$

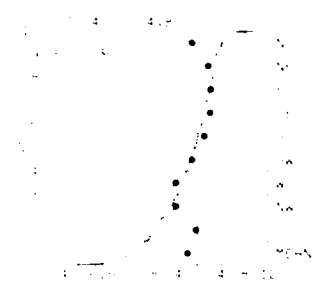
Air temperature readings recorded on transient ships in warm, sunny weather appear biased toward high temperatures, apparently because of improper instrument exposure and ventilation. Despite the inaccuracies, the large scale patterns and mean gradients of the isopleth analyses are relatively accurate.

The temperature scale of the graph may vary in both range and class interval. The percentage of temperature observations greater than a given value can be obtained by subtracting the cumulative percent frequency of that value from 100%. The number of observations and the standard deviation plus the plotted points on the graphs are based on those observations reporting both temperature and wind direction. The cumulative curve is based on all observations reporting temperature with or without wind direction.

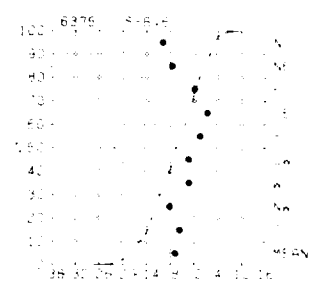
Cold Bay



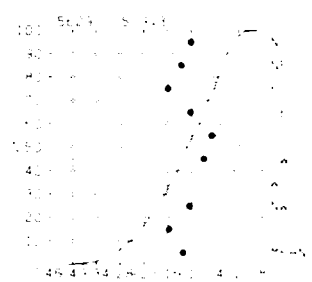
Kodiak



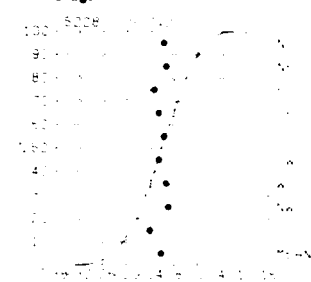
Homer



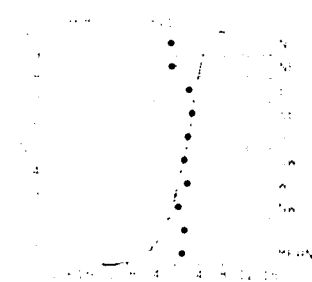
Kenai



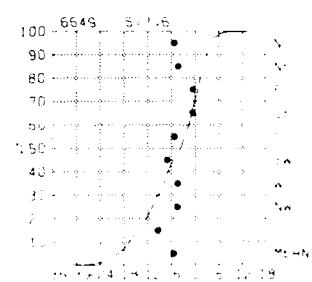
Anchorage



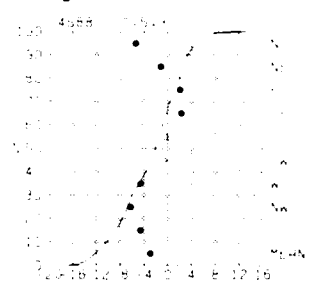
Middleton Island



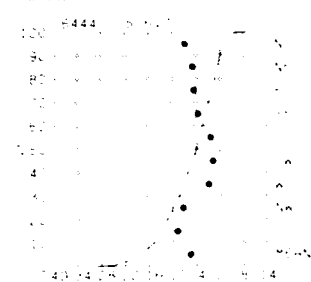
Cordova



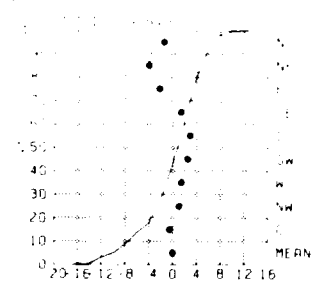
Yakutat



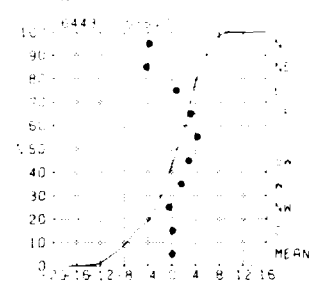
Yakutat



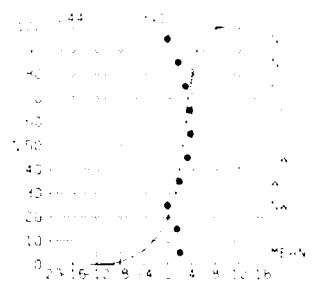
Sitka



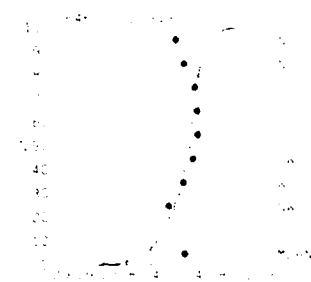
Annette



Marine Area A

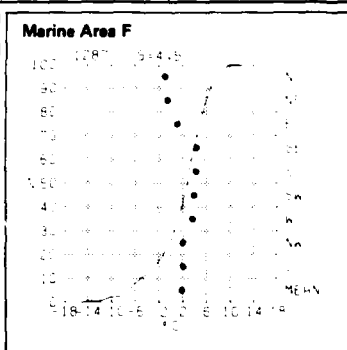
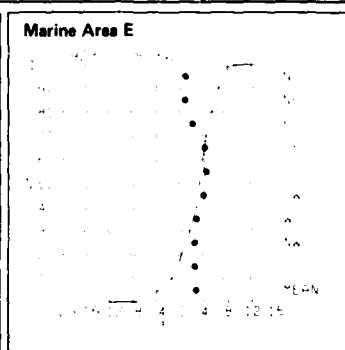
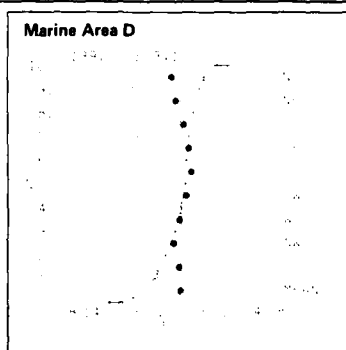
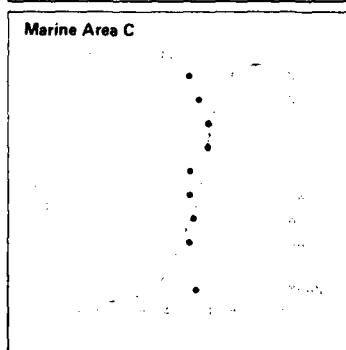
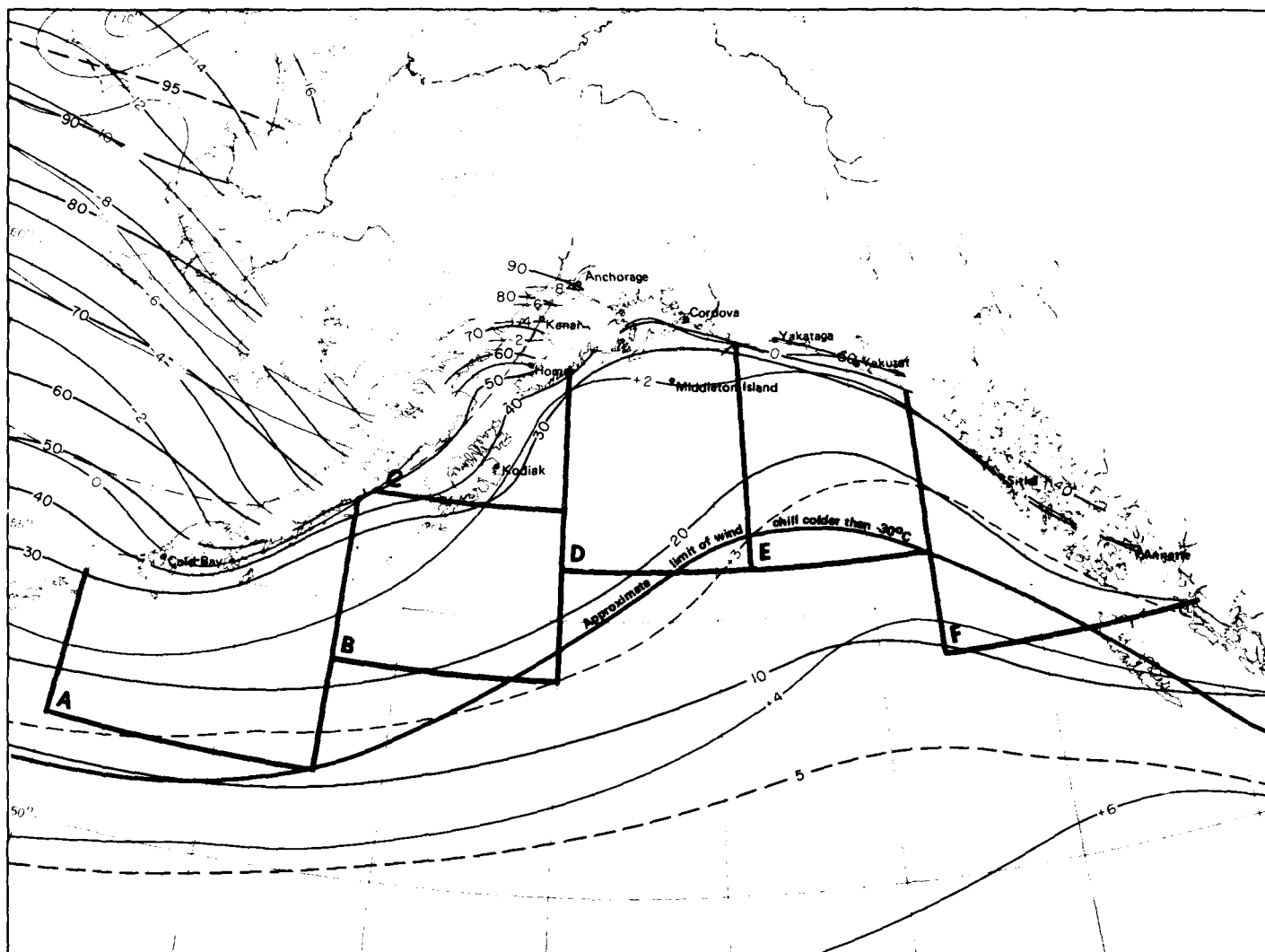


Marine Area B



January

3 Air temperature/wind direction

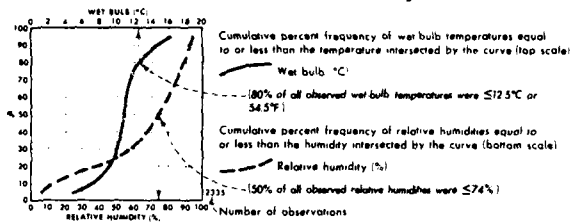


3 Air temperature mean and thresholds

January

Legend

Wet bulb/relative humidity

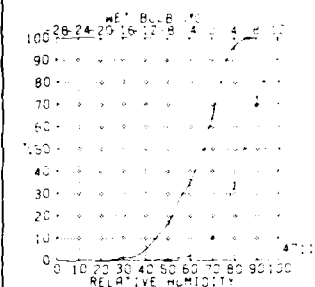


Map - Mean dew point temperature

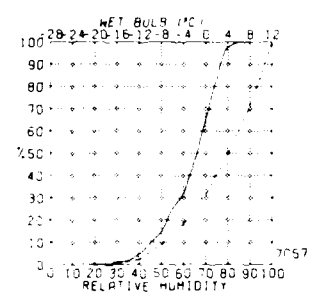
BLACK LINE - Mean dew point temperature (°C)

The observation count of the graph reflects those observations reporting both air and wet bulb temperatures, both are required in computing the relative humidity. The percentage of observations of either element greater than a given value can be obtained by subtracting the cumulative percent frequency of that value from 100%.

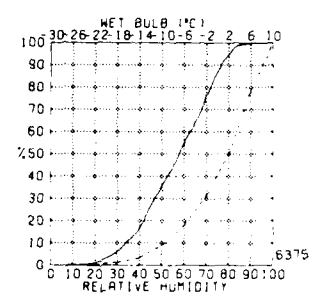
Cold Bay



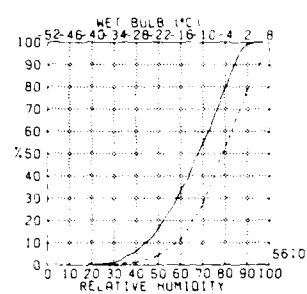
Kodiak



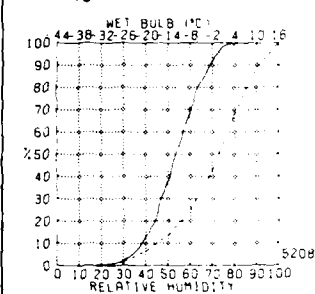
Homer



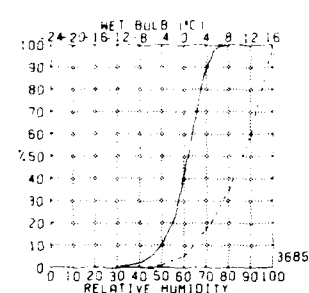
Kenai



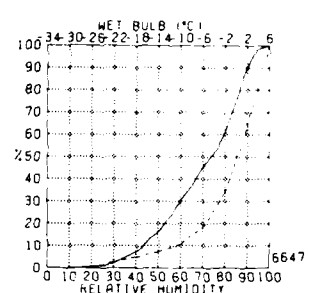
Anchorage



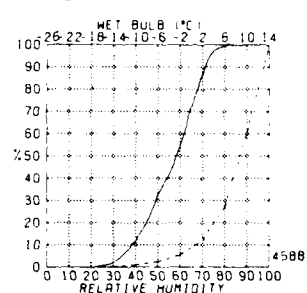
Middleton Island



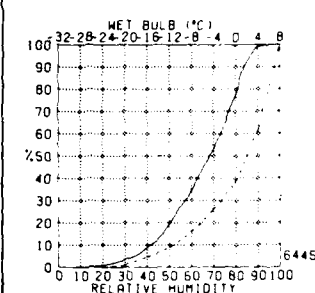
Cordova



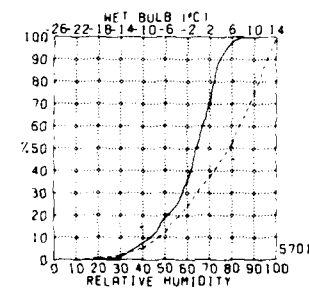
Yakutat



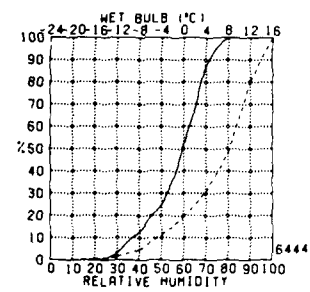
Yakutat



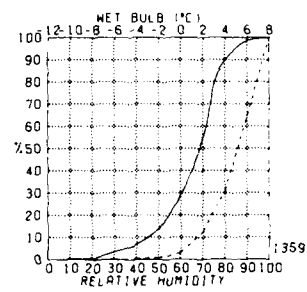
Sitka



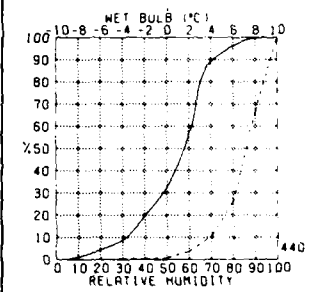
Annette



Marine Area A

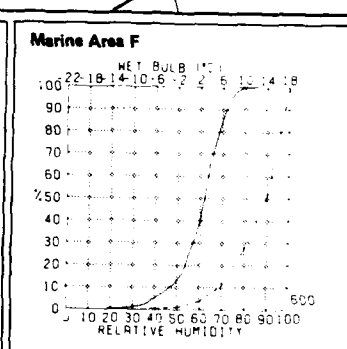
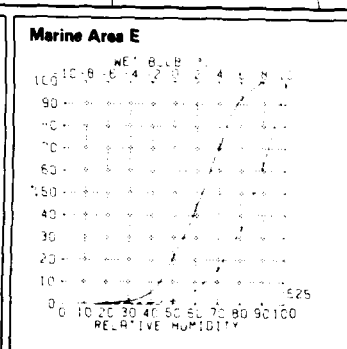
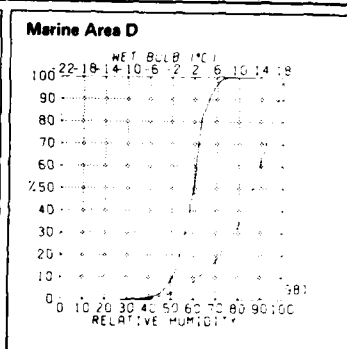
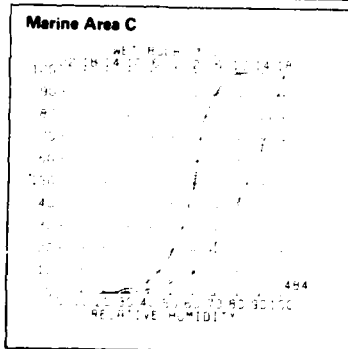
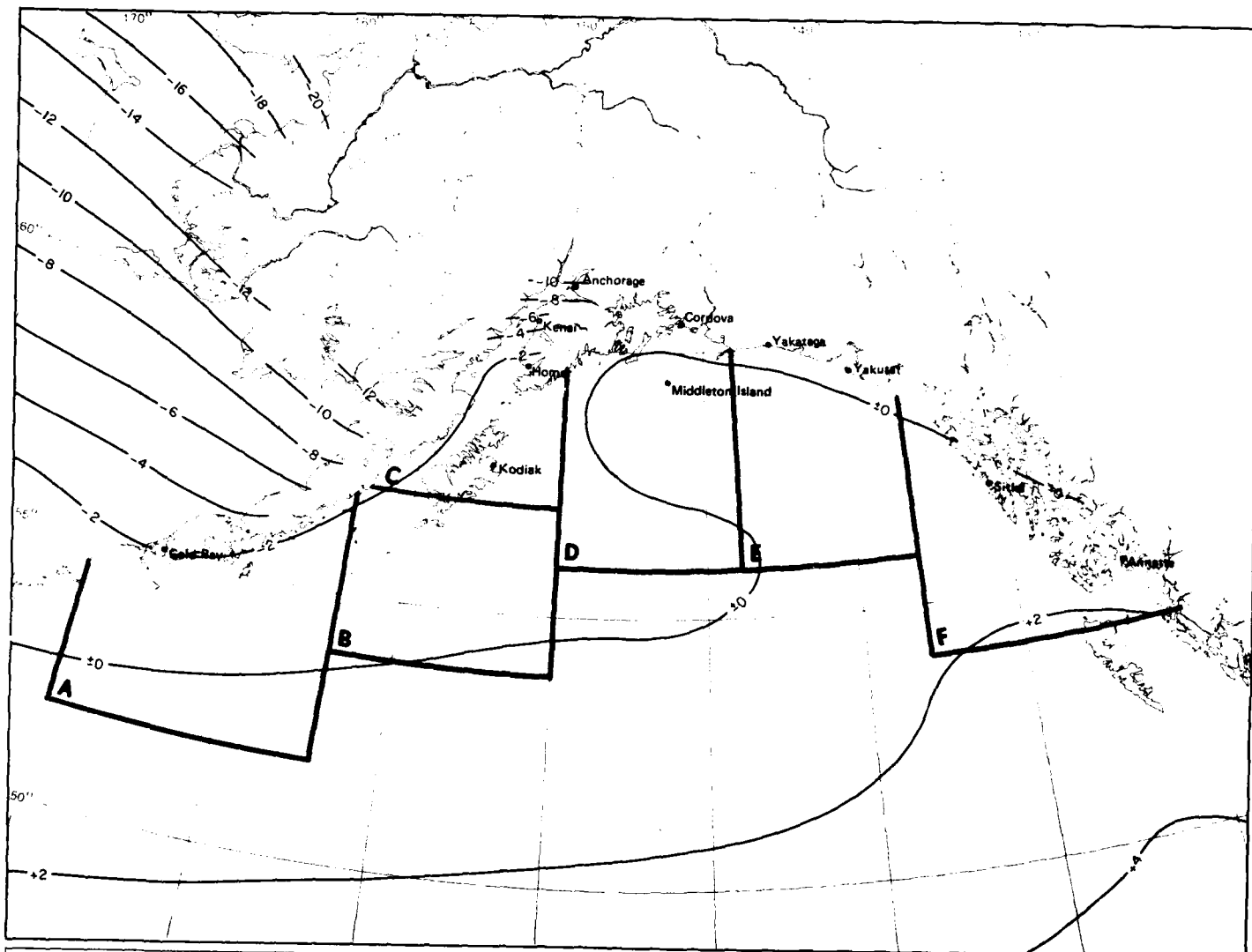


Marine Area B



January

4 Wet bulb/relative humidity

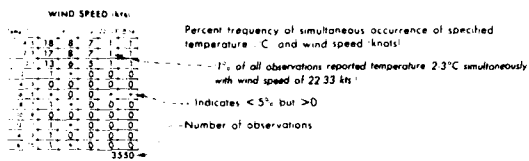


4 Mean dew point temperature

January

Legend

Air temperature/wind speed



Map - Air temperature extremes (°C)

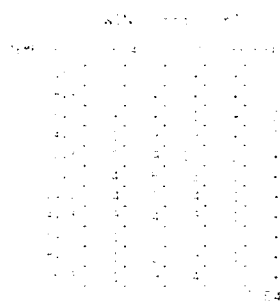
BLACK LINE Maximum 99% air temperature 1% of temperatures were greater than the given value

BLUE LINE Minimum 1% air temperature 99% of temperatures were equal to or less than the given value

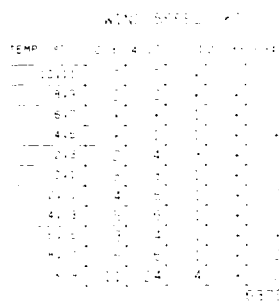
The graph can be used to determine the extent of human discomfort from the combined effects of extreme heat or cold and winds or to estimate the likelihood of superstructure icing. Icing potential increases as the air temperature drops below freezing and the winds increase above 10 knots. 12 mph and may become quite severe with temperatures equal to or less than 9°C (16°F) and winds equal to or greater than 34 knots (39 mph).

Cold Bay

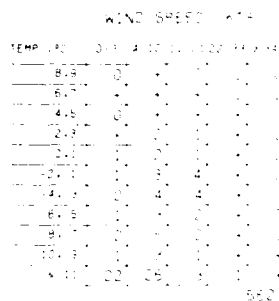
Kodiak



Homer



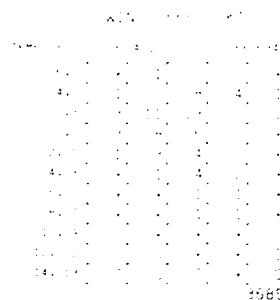
Kenai



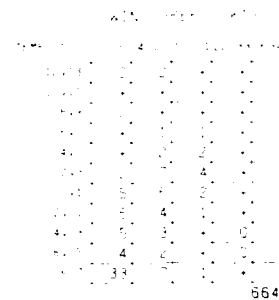
Anchorage



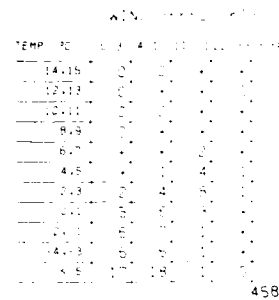
Middleton Island



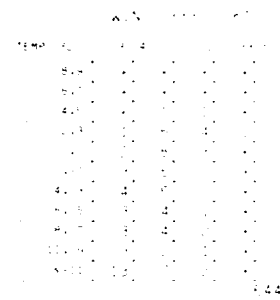
Cordova



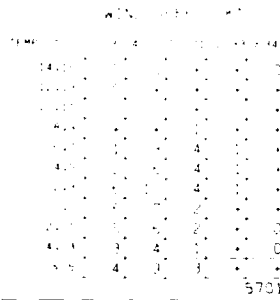
Yakutat



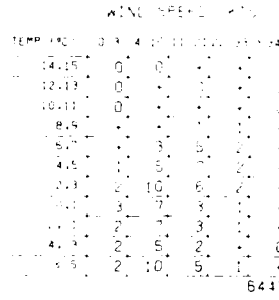
Yakutat

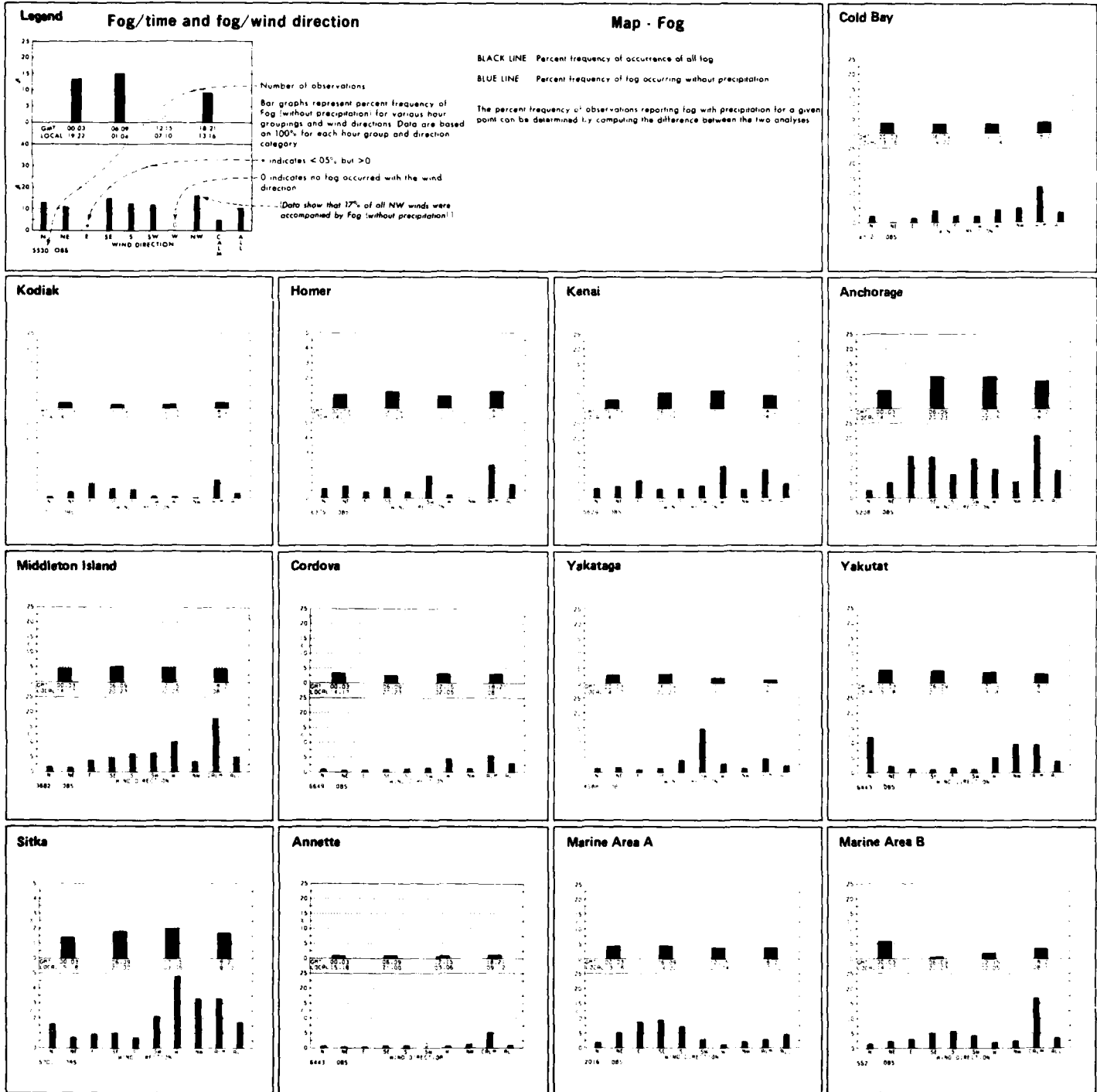


Sitka



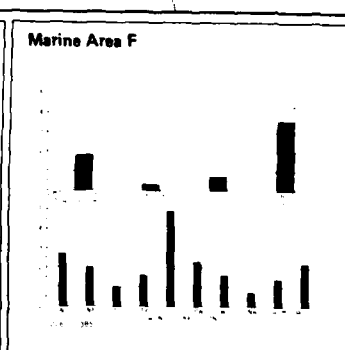
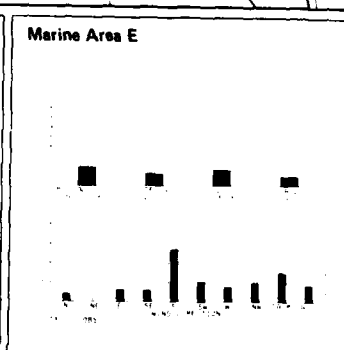
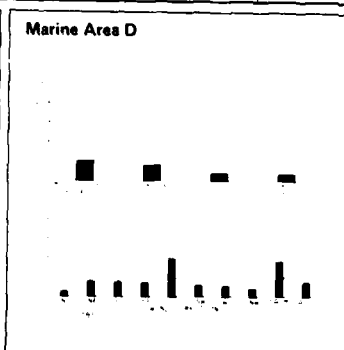
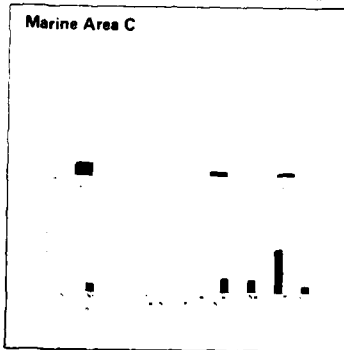
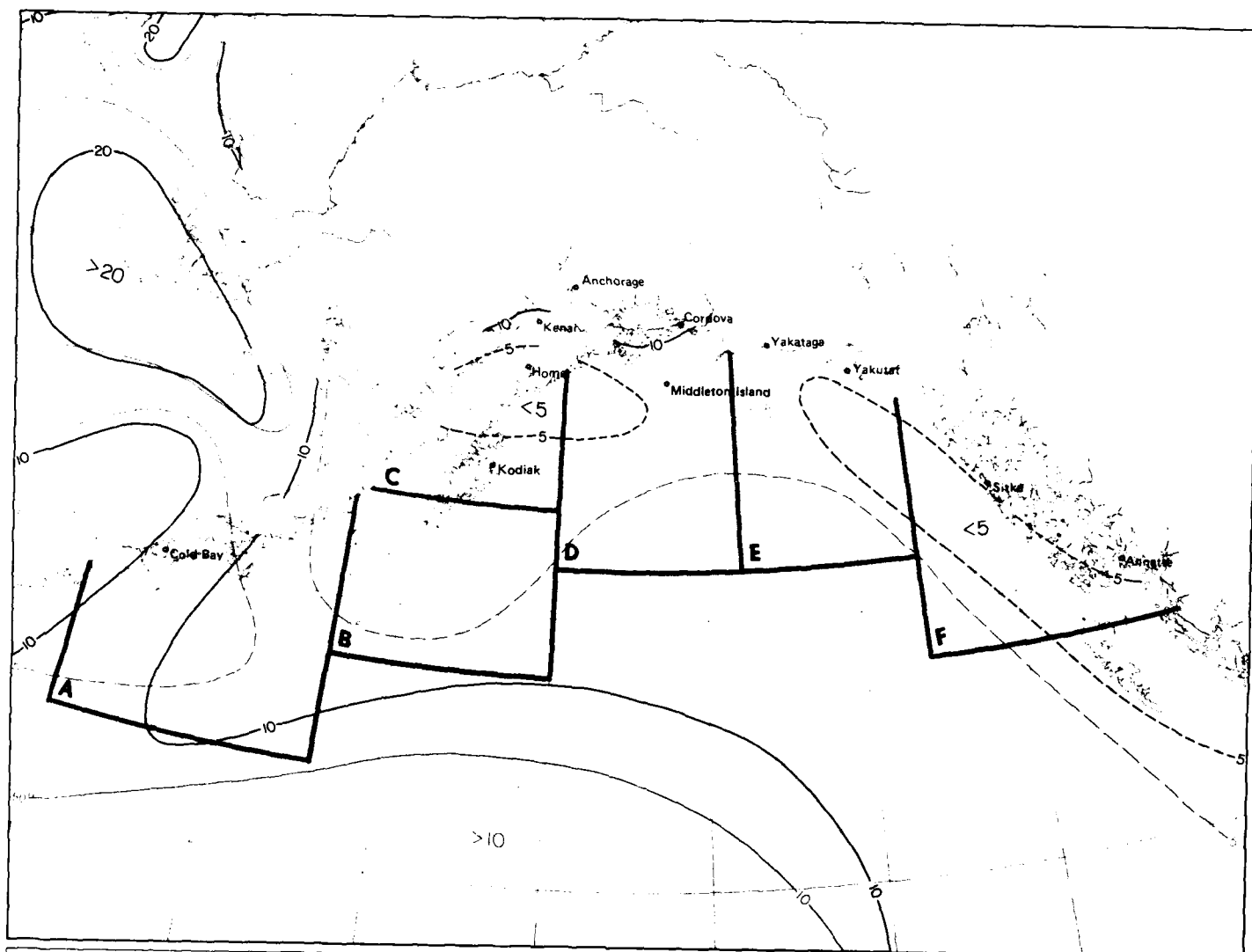
Annette





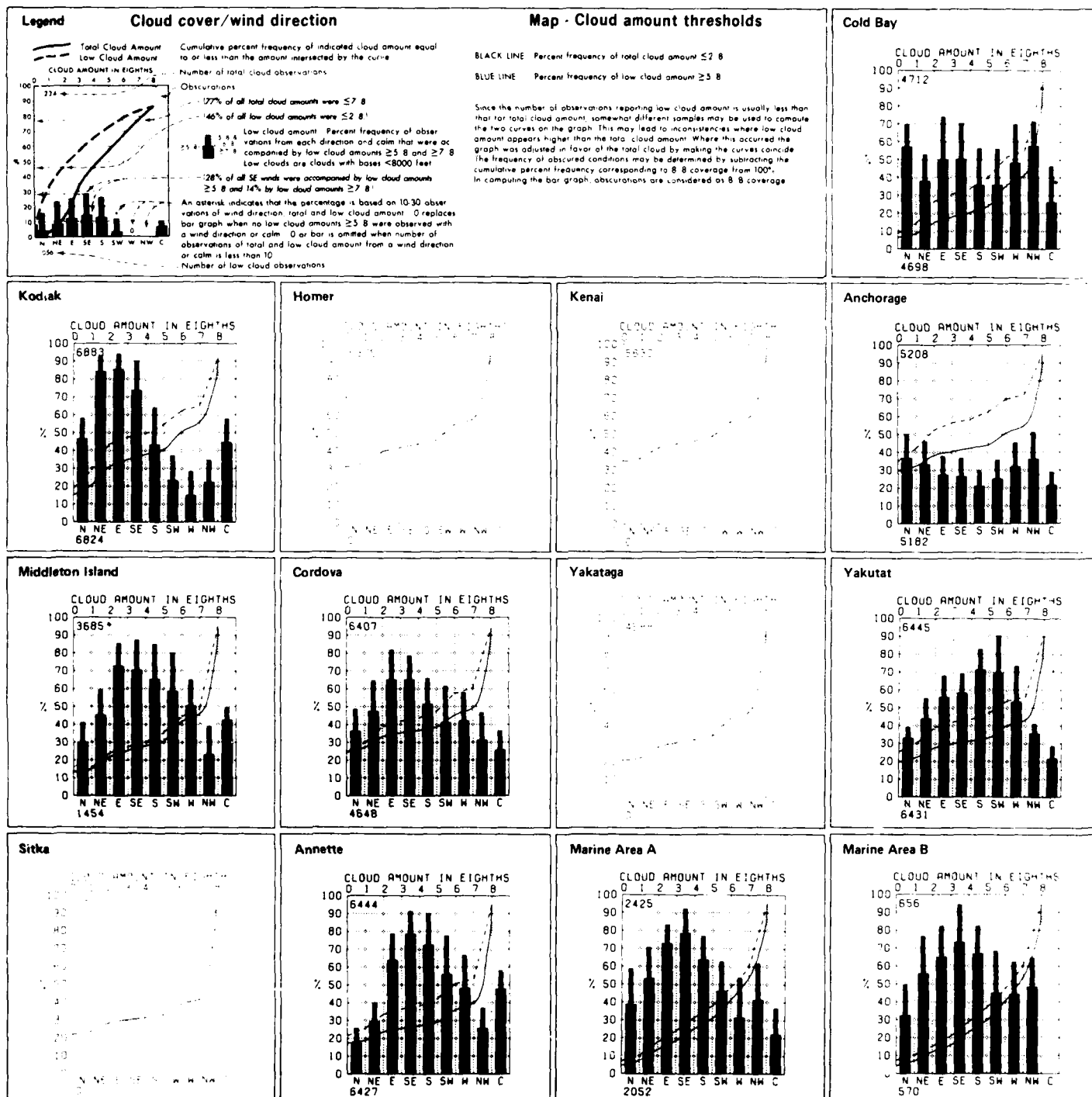
January

6 Fog/time and fog/wind direction



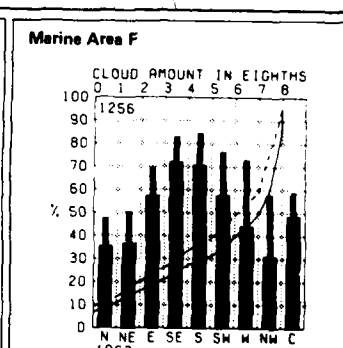
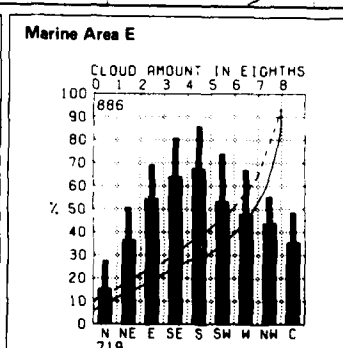
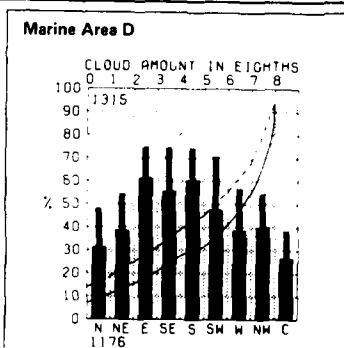
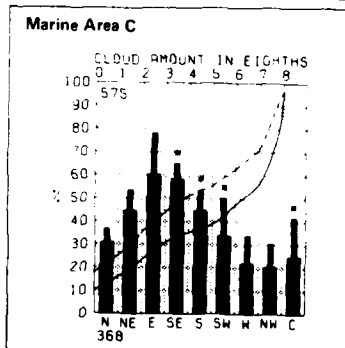
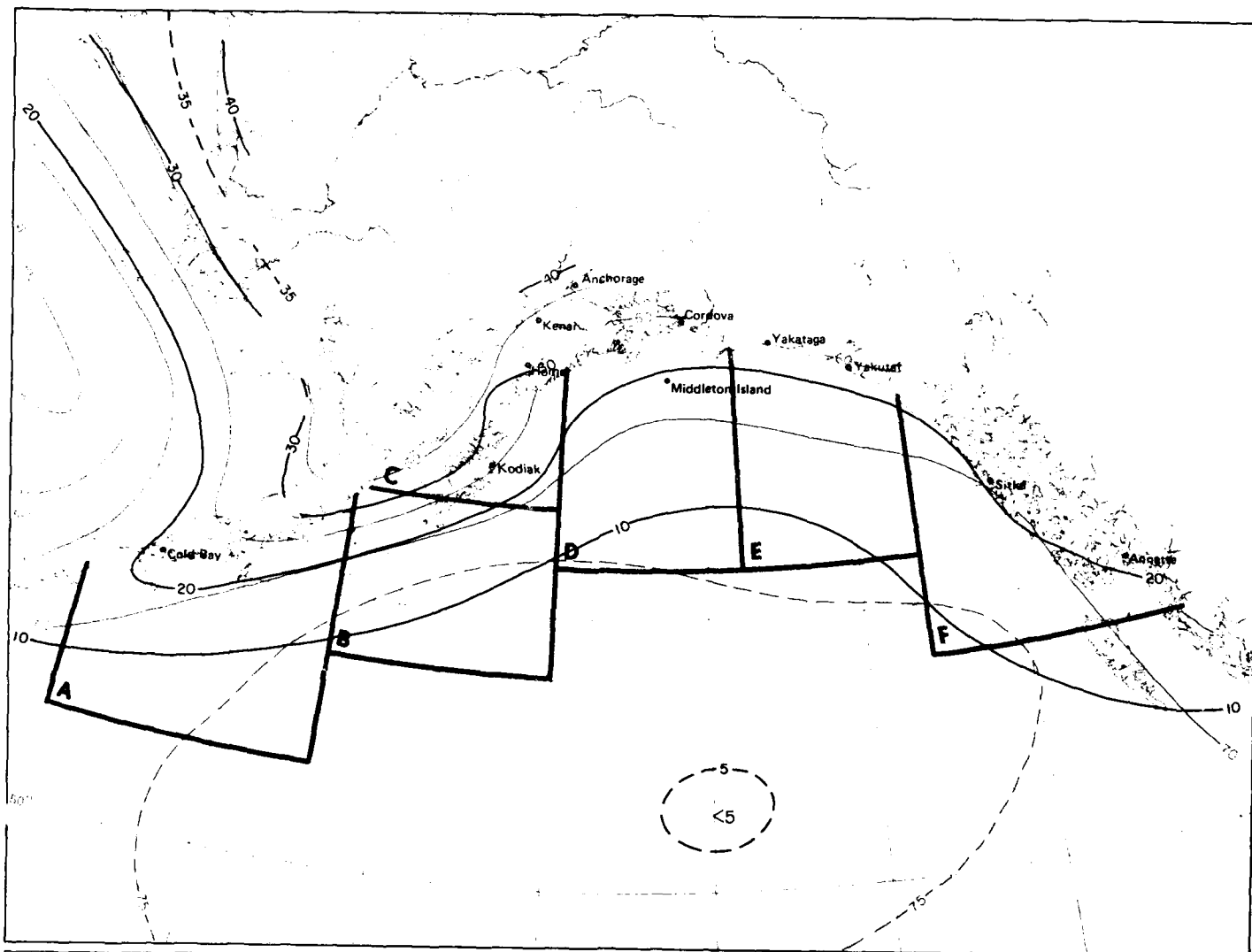
6 Fog

January



January

7 Cloud cover/wind direction

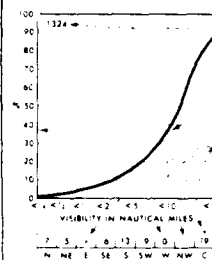


7 Cloud amount thresholds

January

Legend

Visibility/wind direction



Number of observations

Cumulative percent frequency of visibilities less than the visibility intersected by the curve

37% of all visibilities reported were <10 nautical miles

The table below the graph indicates percent frequency of occurrence of visibility <2 nautical miles versus wind direction

indicates <5; but >0 indicates that no visibilities <2 nautical miles were observed with winds from a direction or calm. No percentage is given if less than 10 observations were available for visibility and wind direction. An asterisk indicates that the percentage was based on 10-30 observations of visibility and wind direction.

13% of all S winds were accompanied by visibilities <2 nautical miles

Map - Visibility thresholds

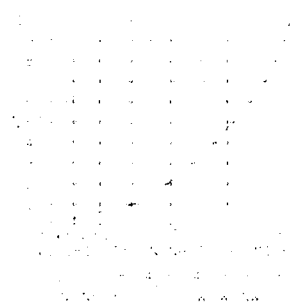
BLACK LINE Percent frequency of visibilities ≥ 5 nautical miles

BLUE LINE Percent frequency of visibilities <2 nautical miles

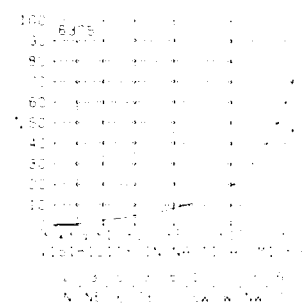
The percentage of visibility equal to or greater than a given value can be obtained from the graph by subtracting the cumulative percent frequency of that value from 100. Visibility at sea is difficult to measure because of the lack of reference points. Also, some observers seem to report reduced visibilities at night because of darkness, though this tendency has abated in recent years. The coarseness of the coding intervals, however, tends to minimize serious biases in the summarized data. Visibilities greater than 25 nm. should be interpreted cautiously because the earth's curvature makes it impossible to see 25 nm. horizontally from the bridges of most ships.

Cold Bay

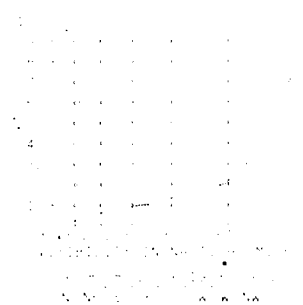
Kodiak



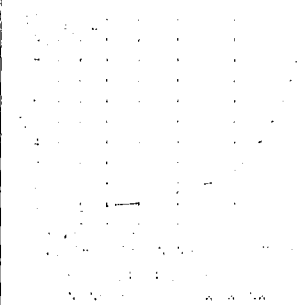
Homer



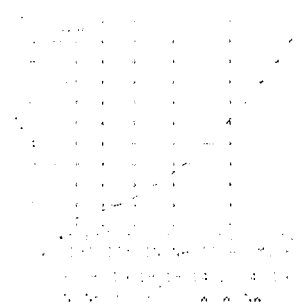
Kenai



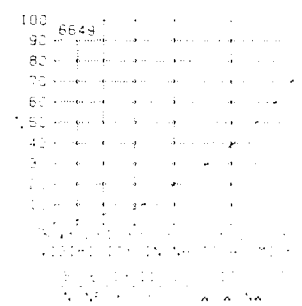
Anchorage



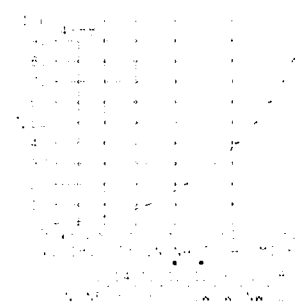
Middleton Island



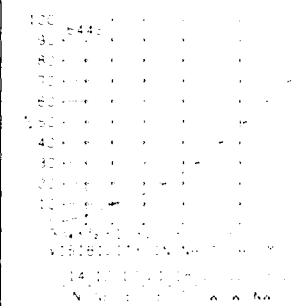
Cordova



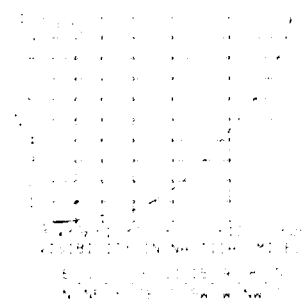
Yakataga



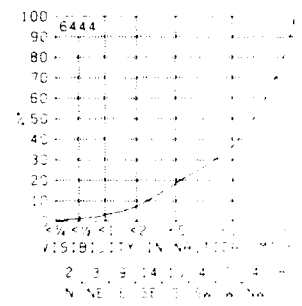
Yakutat



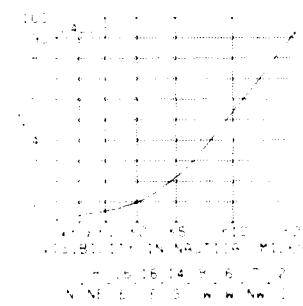
Sitka



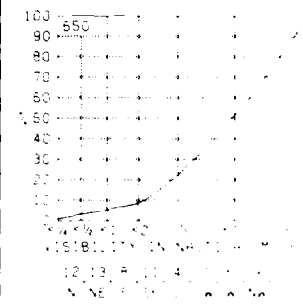
Annette



Marine Area A

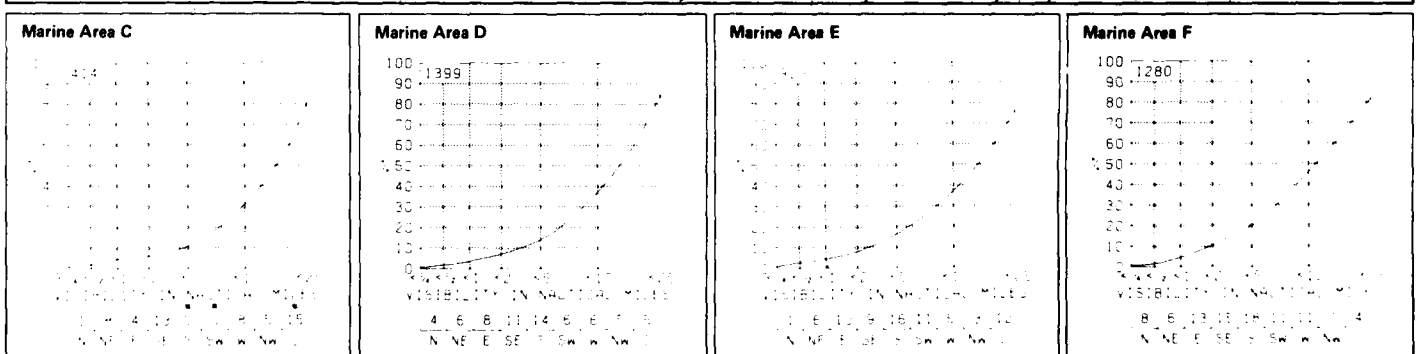
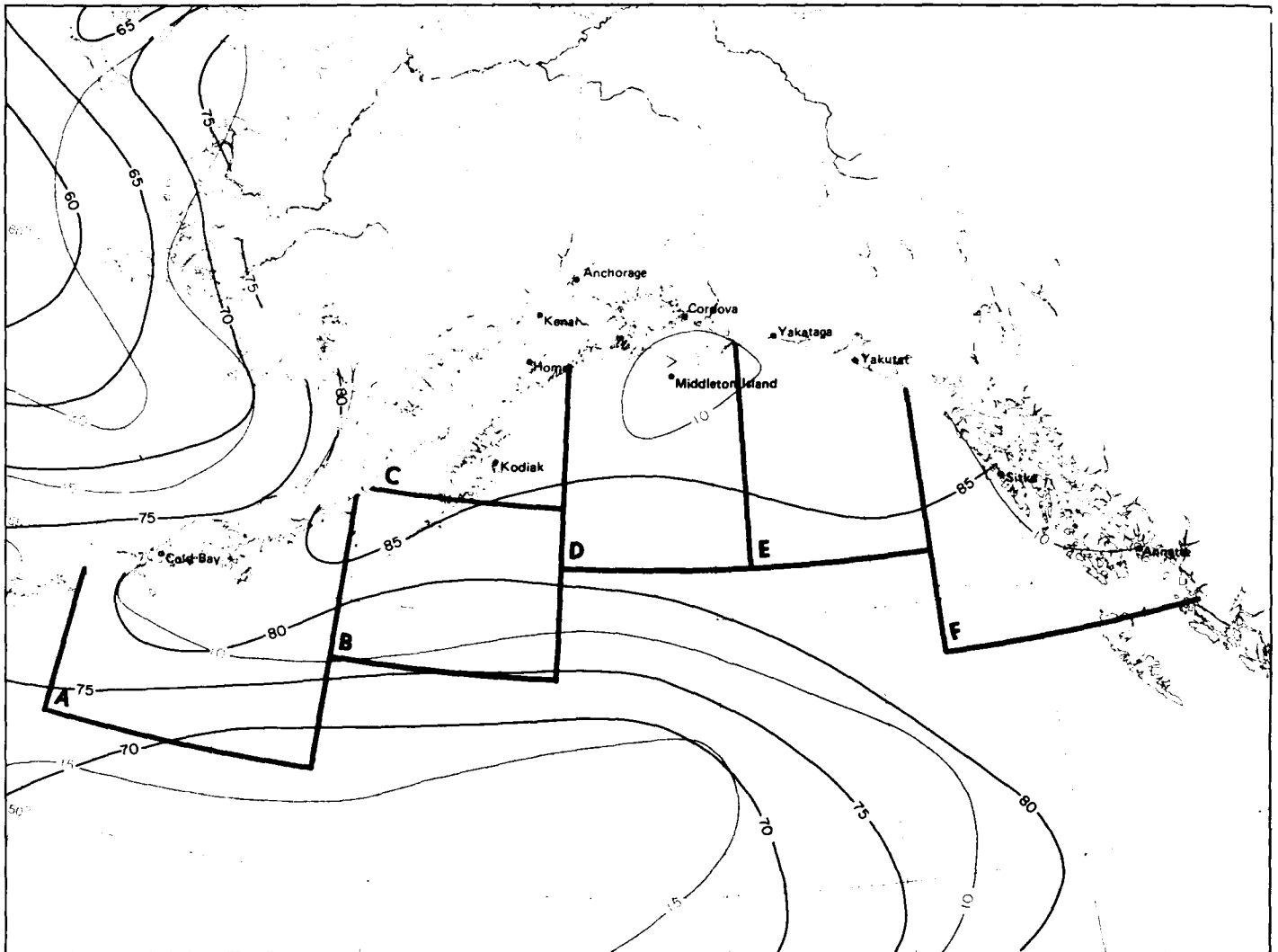


Marine Area B



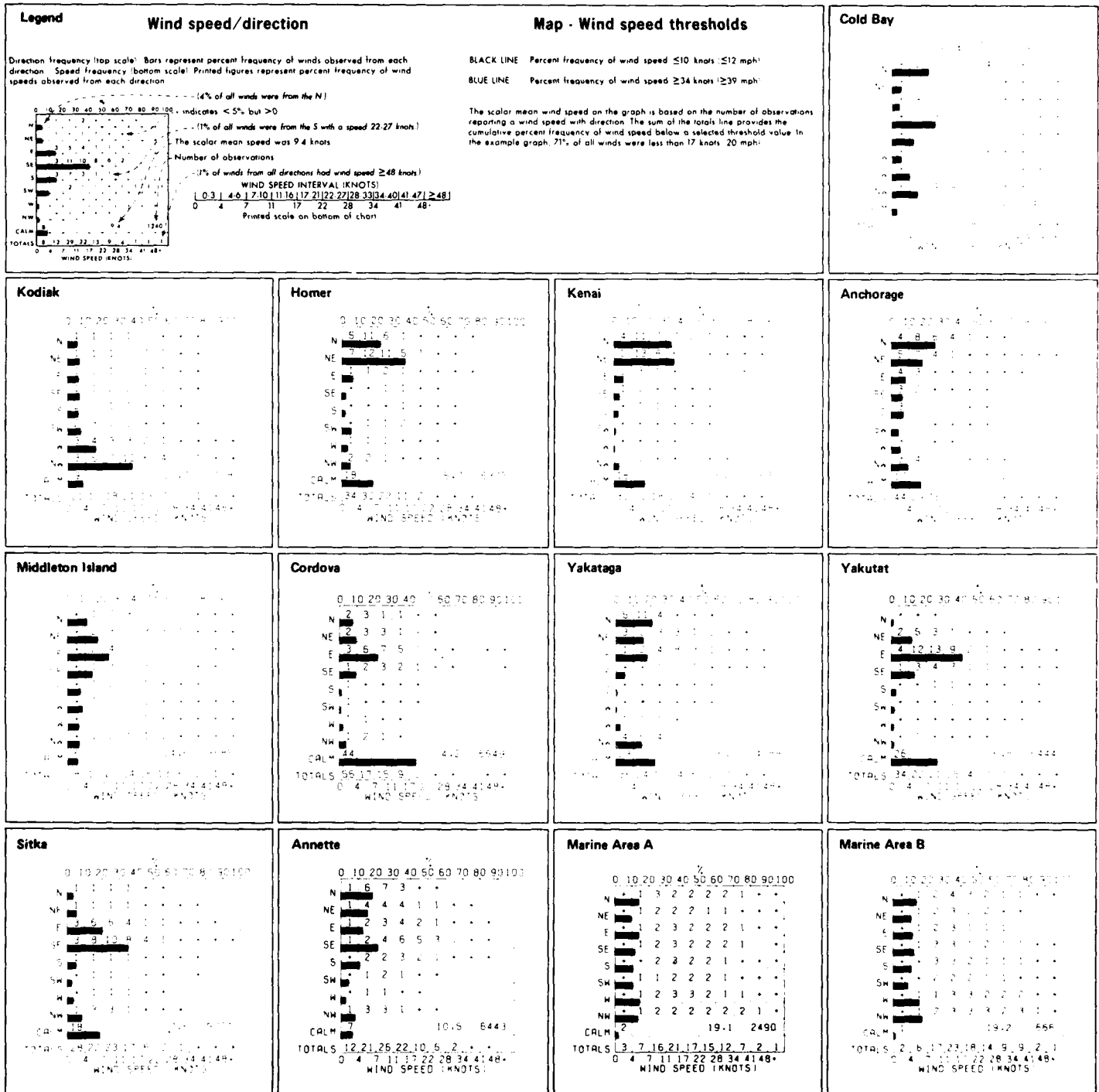
January

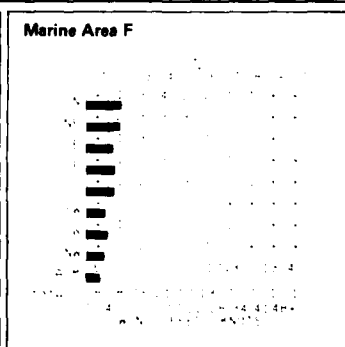
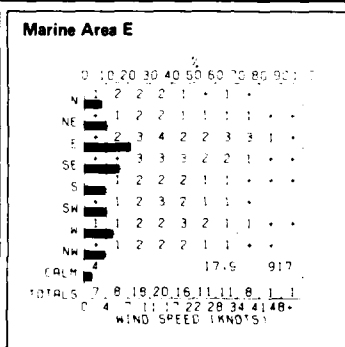
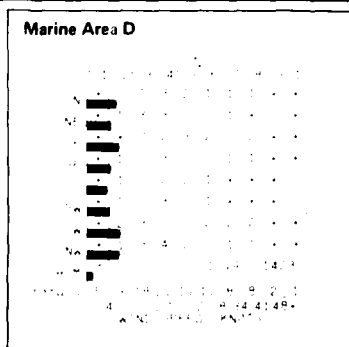
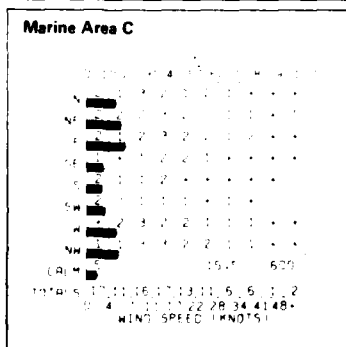
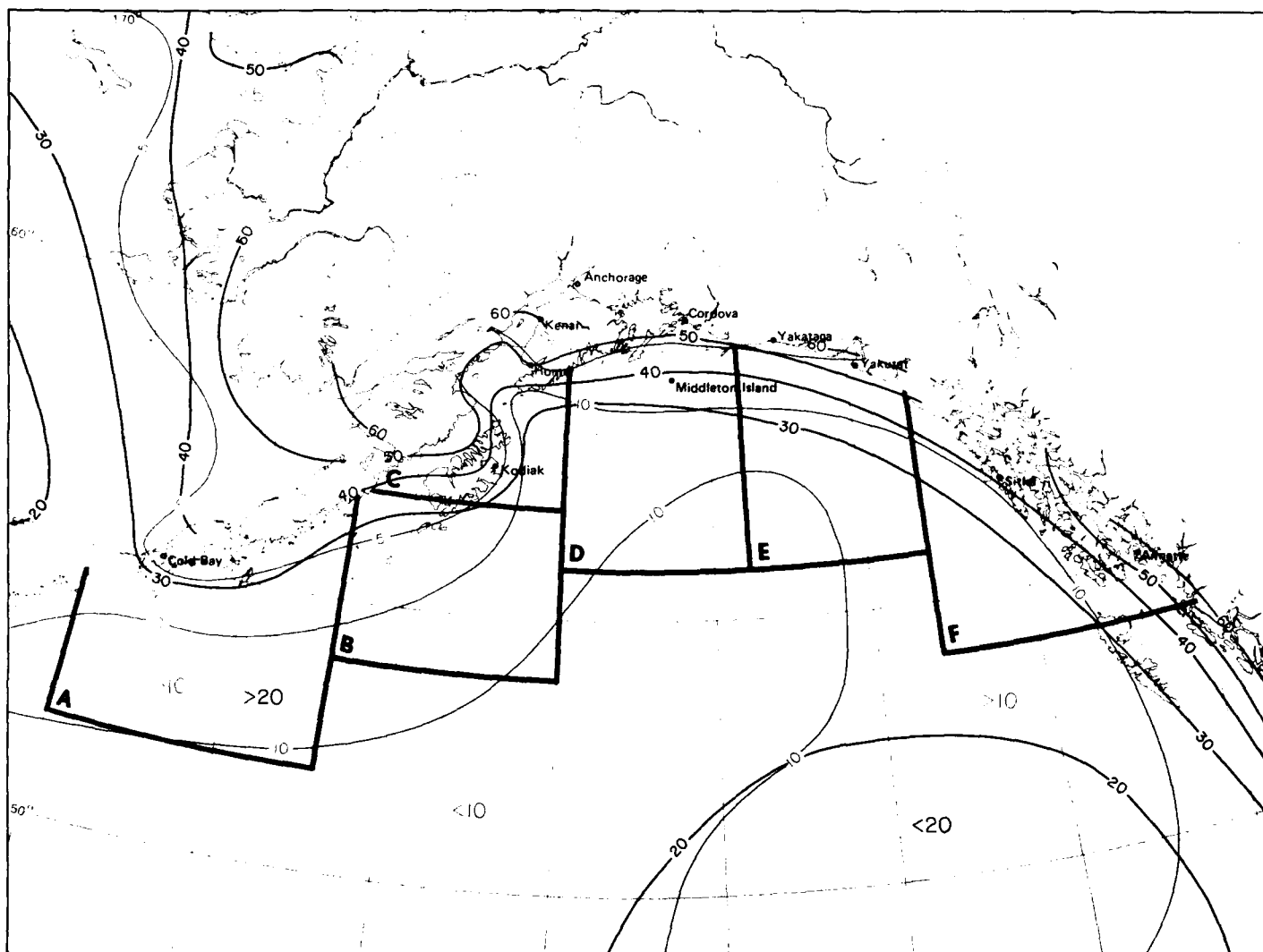
8 Visibility/wind direction



8 Visibility thresholds

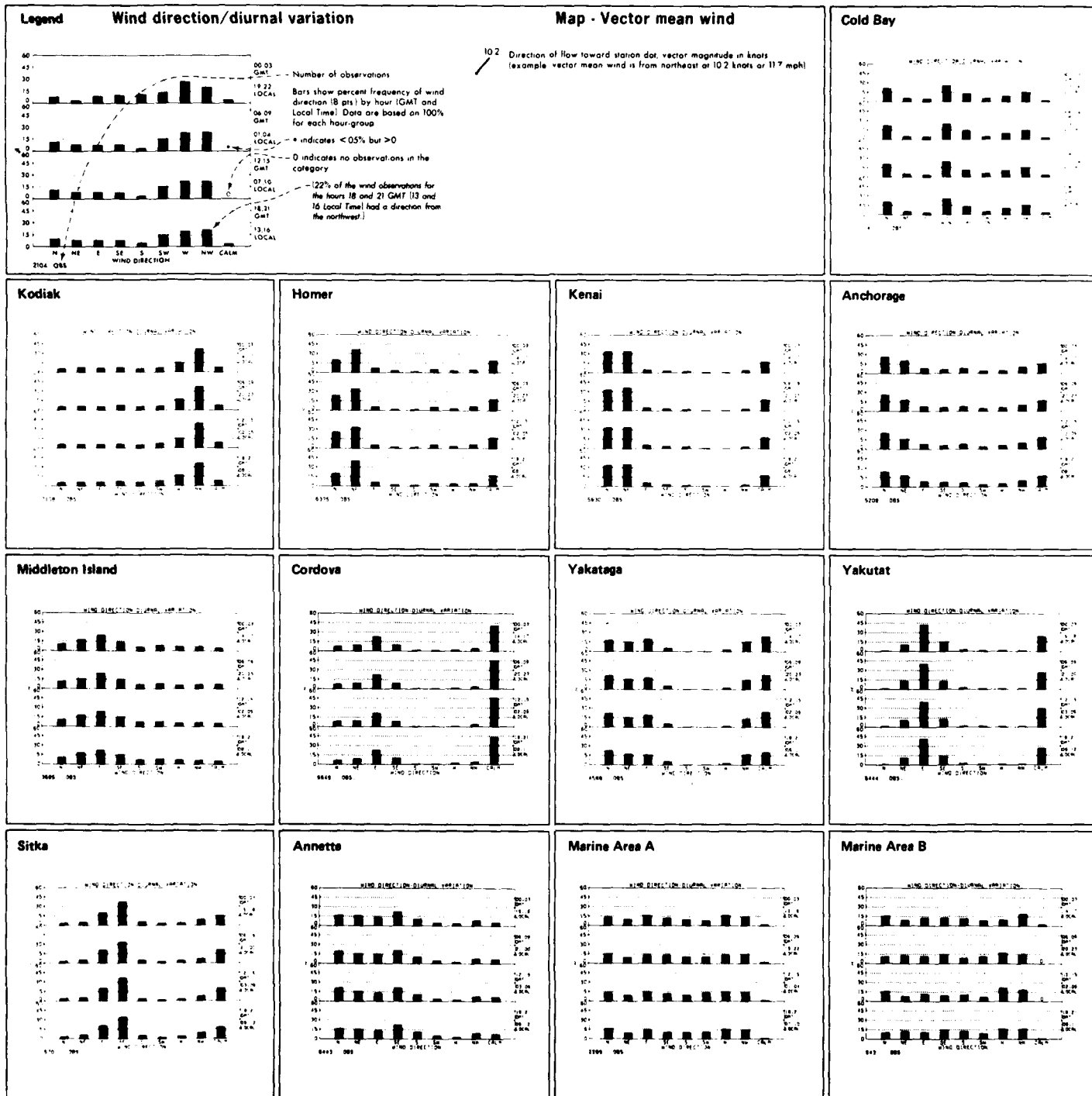
January





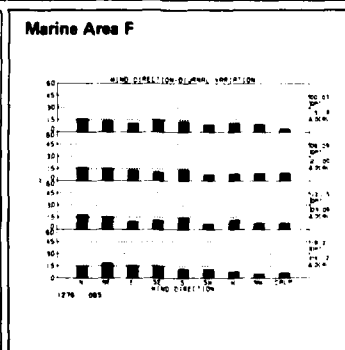
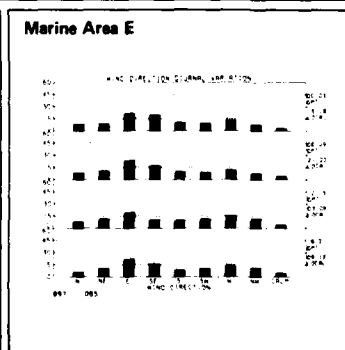
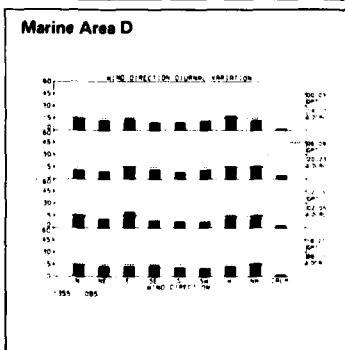
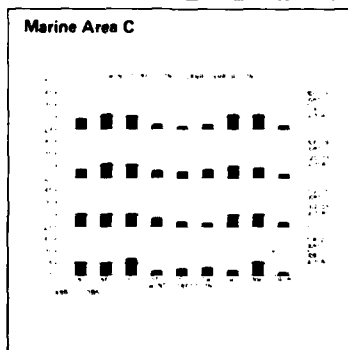
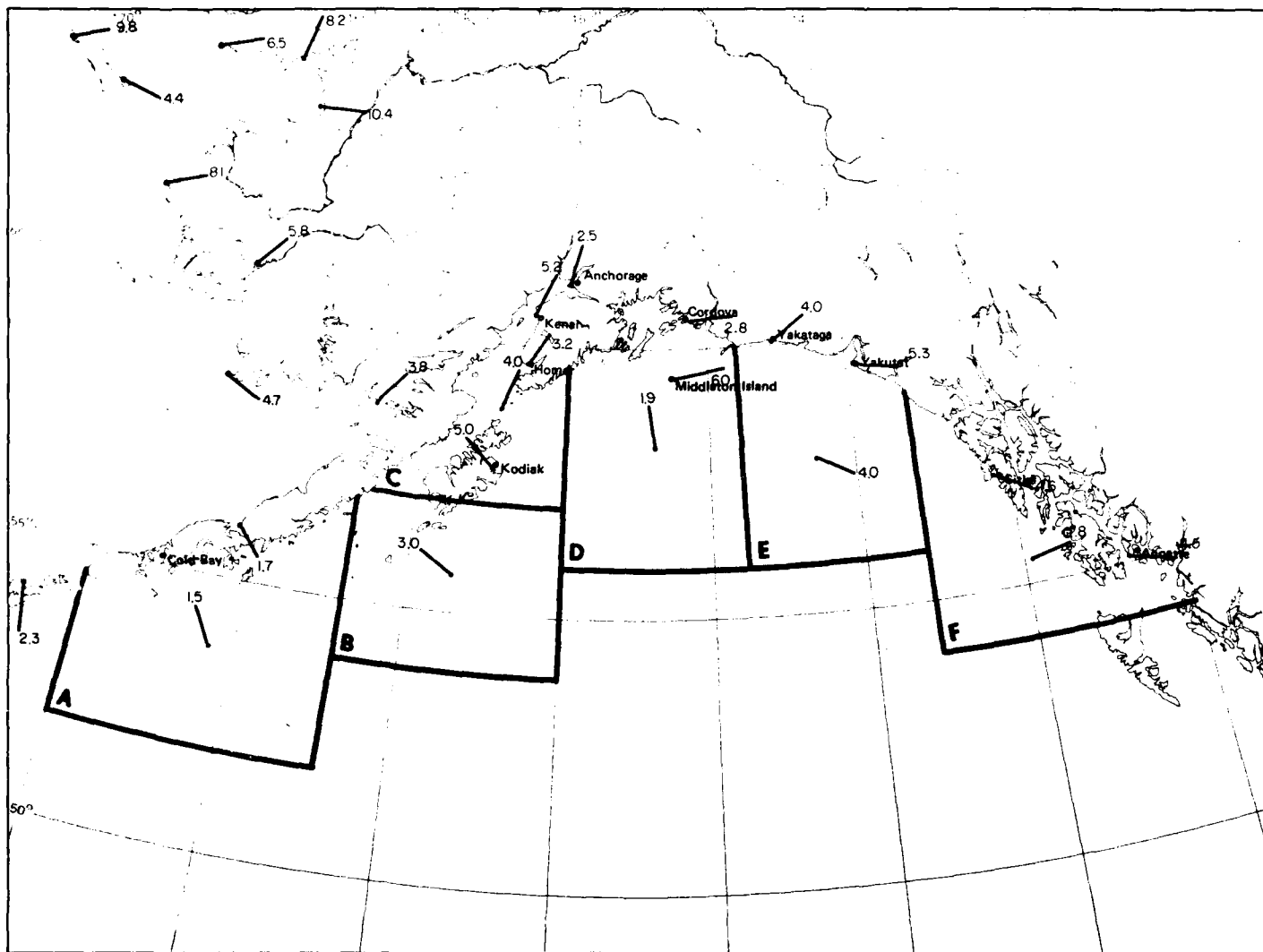
9 Wind speed thresholds

January



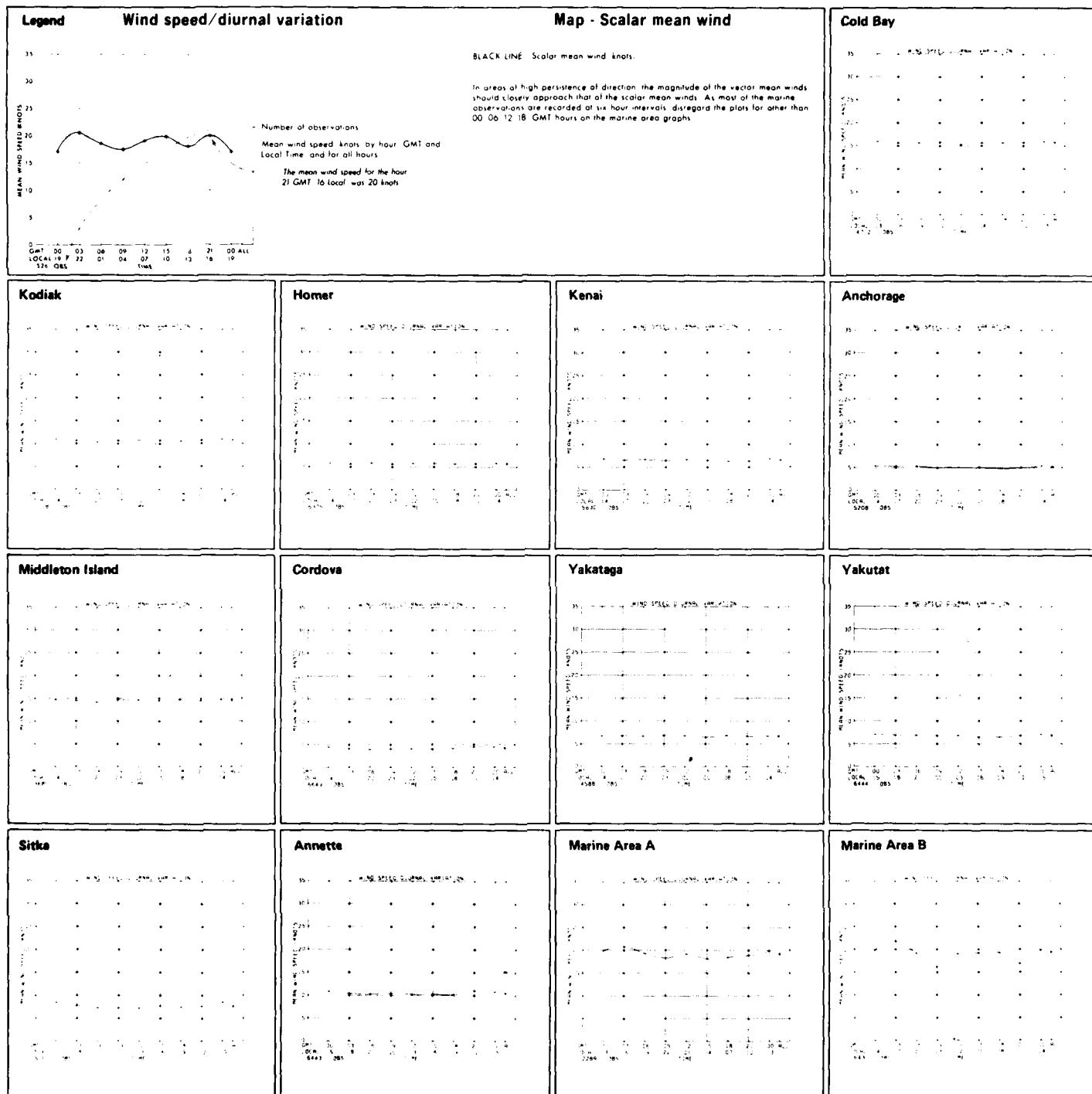
January

10 Wind direction/diurnal variation



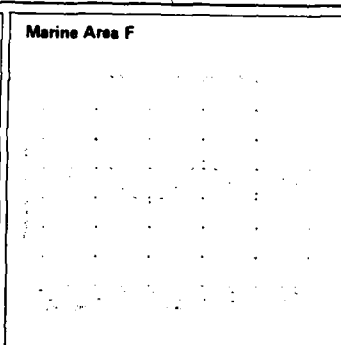
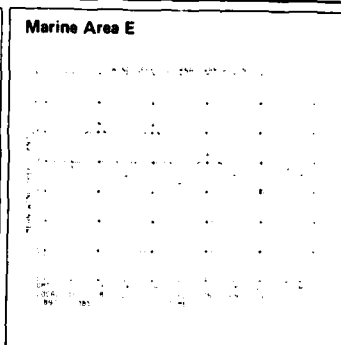
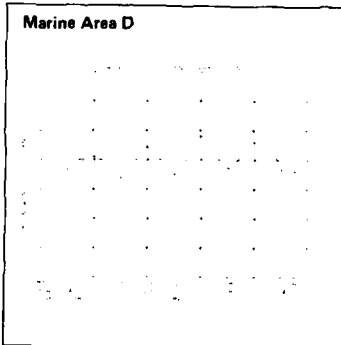
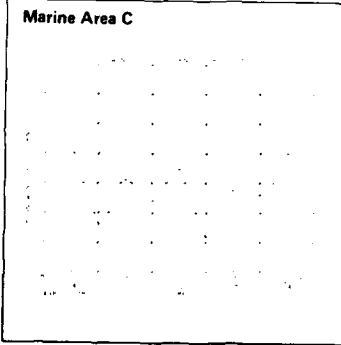
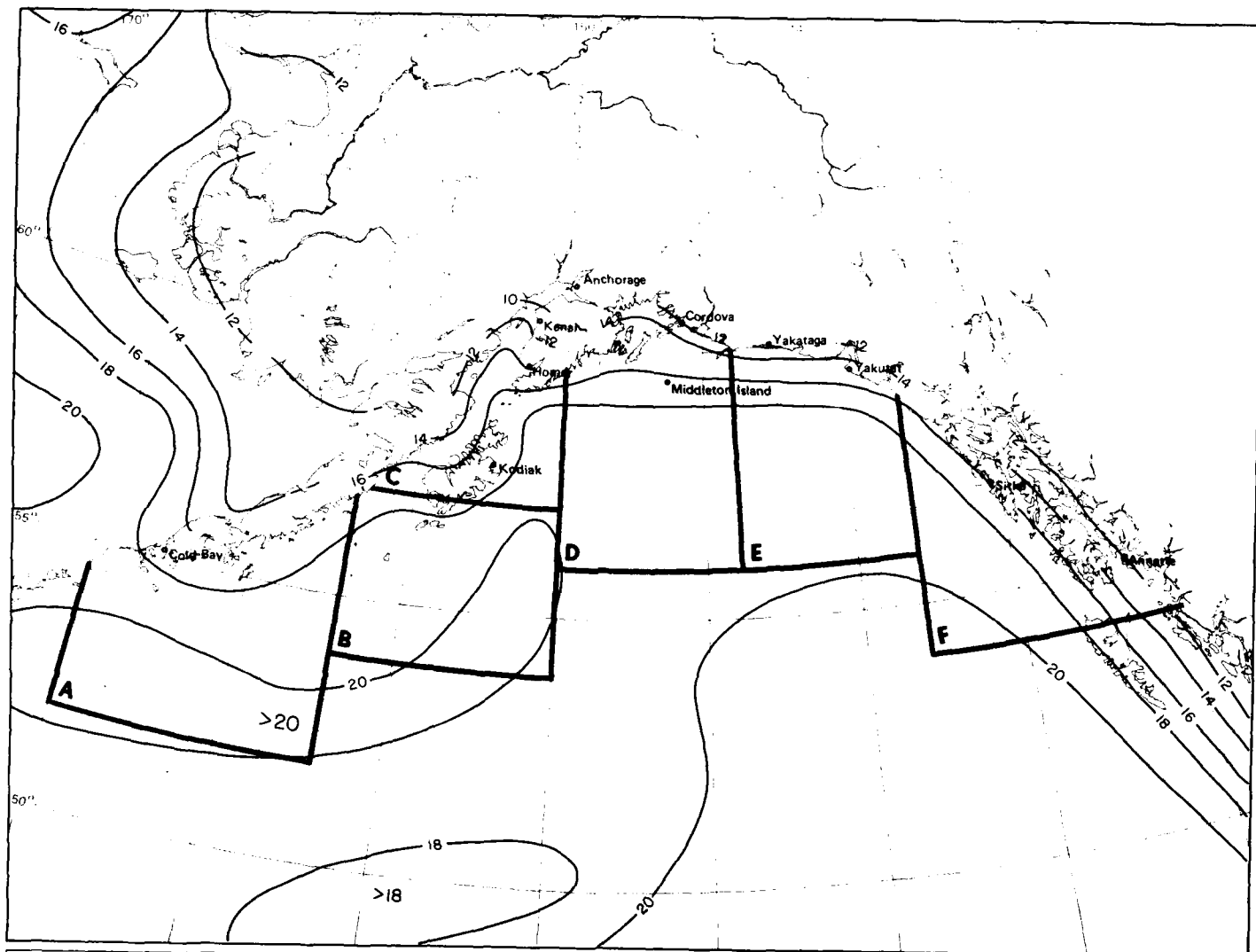
10 Vector mean wind

January



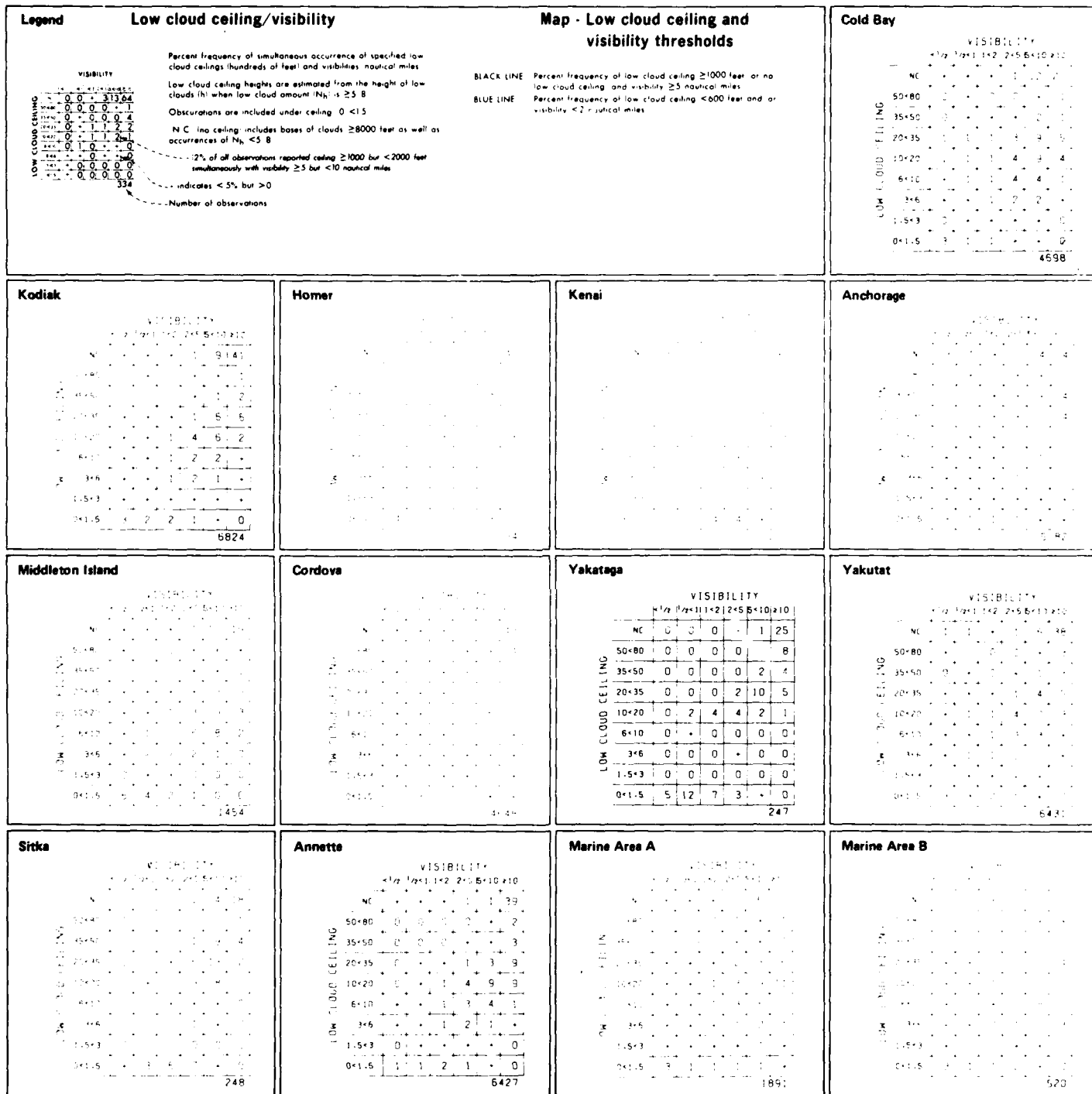
January

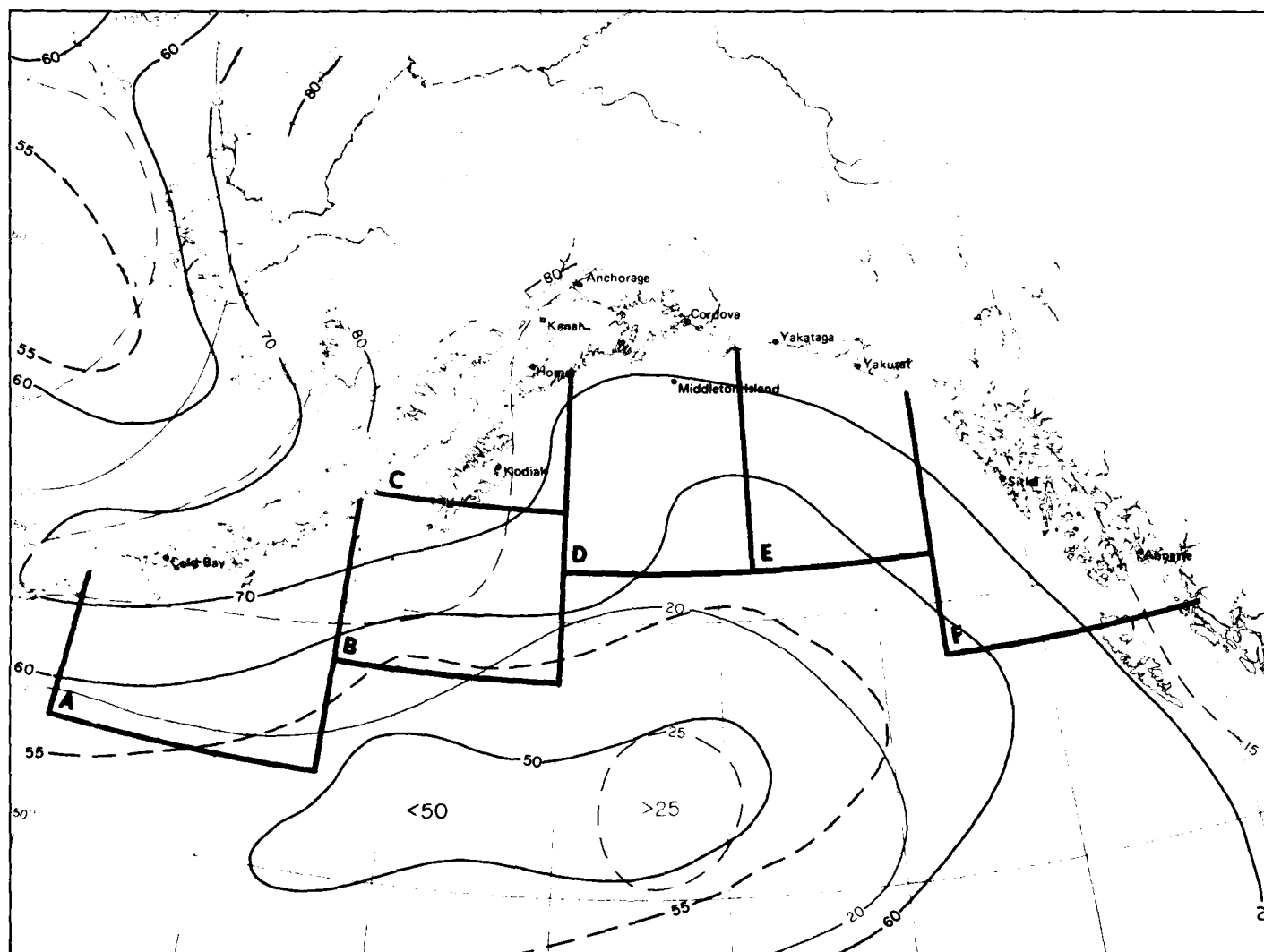
11 Wind speed/diurnal variation



11 Scalar mean wind

January





Marine Area C

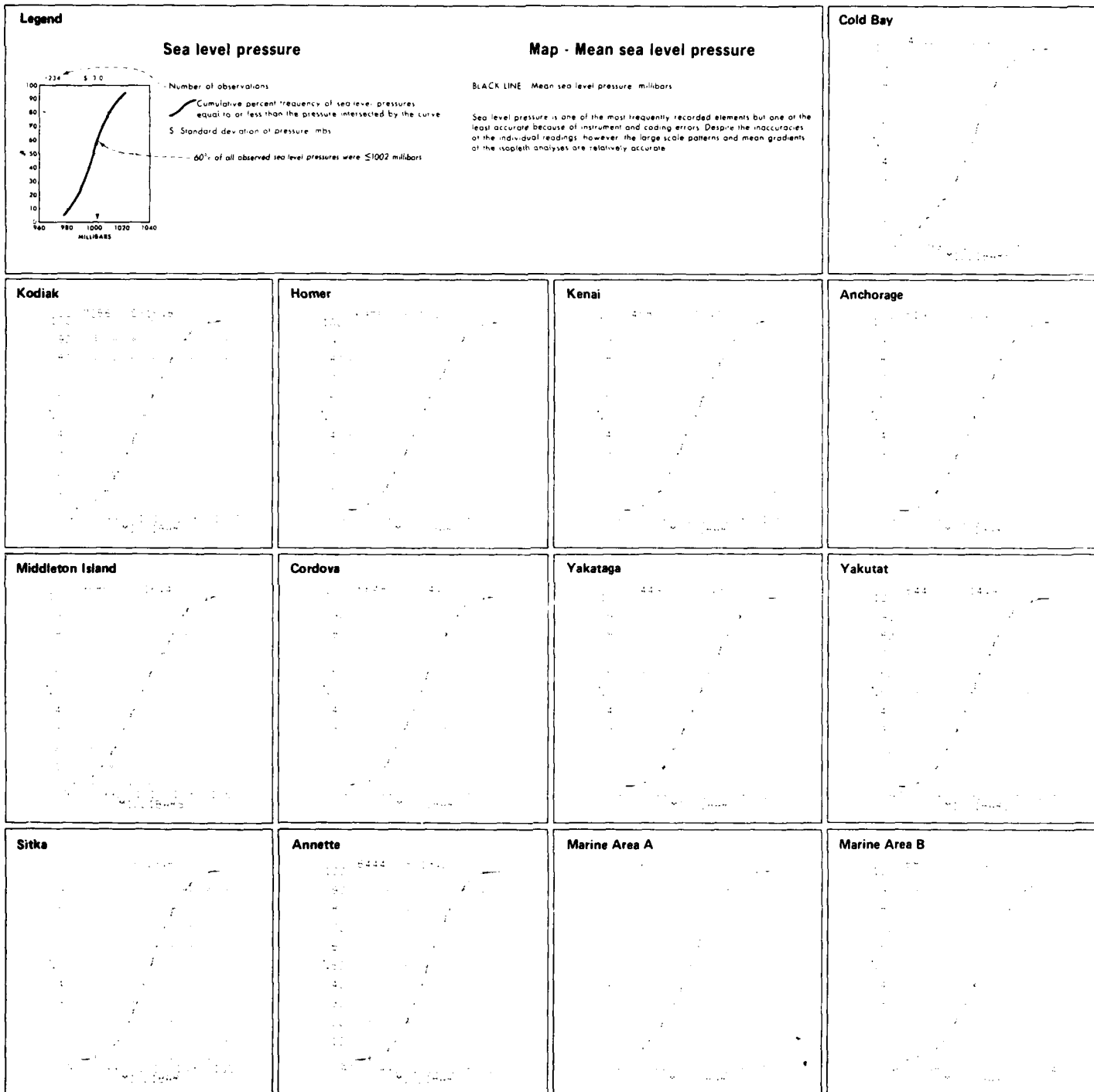
Marine Area D

Marine Area E

Marine Area F

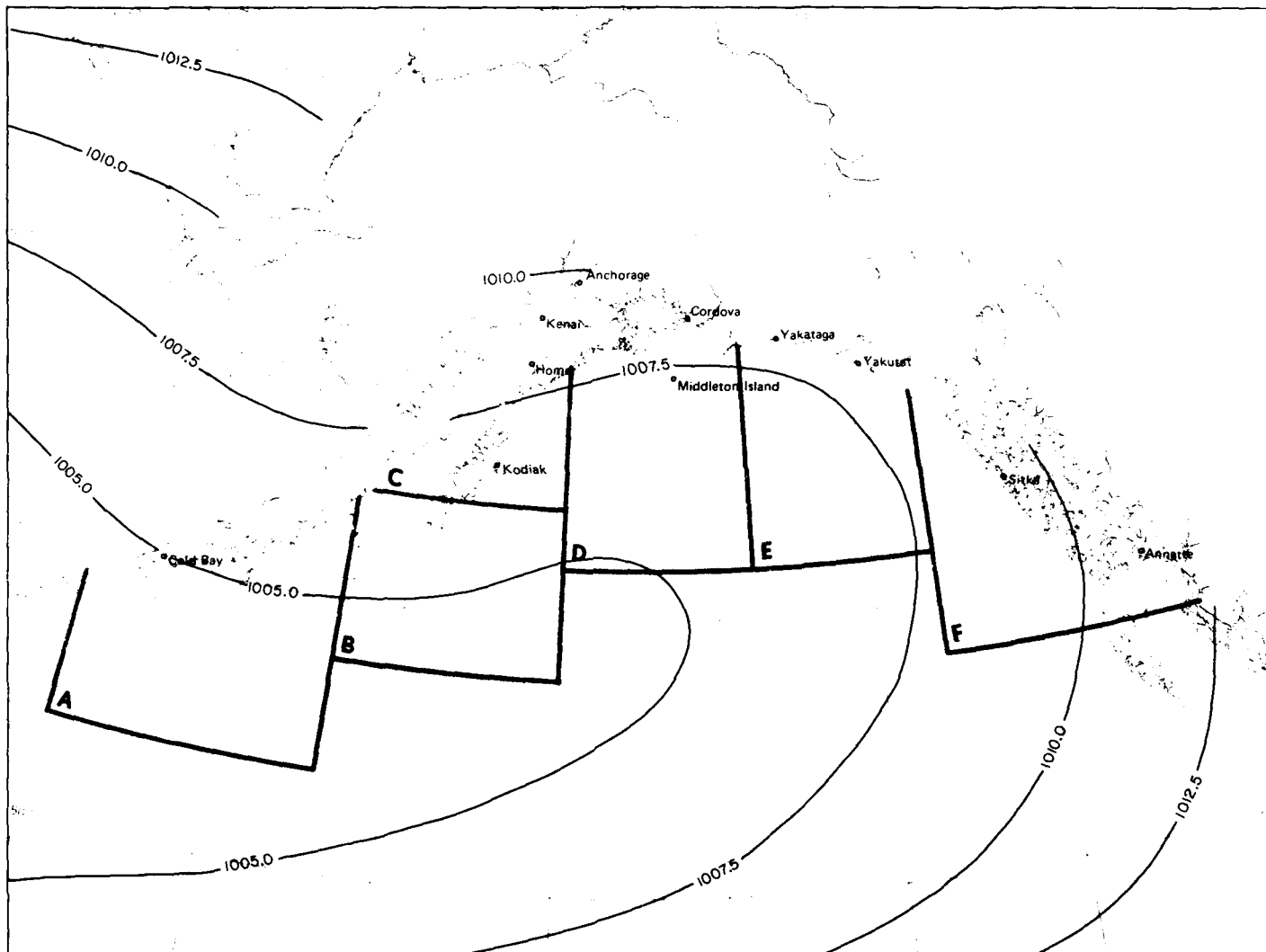
12 Low cloud ceiling and visibility thresholds

January



January

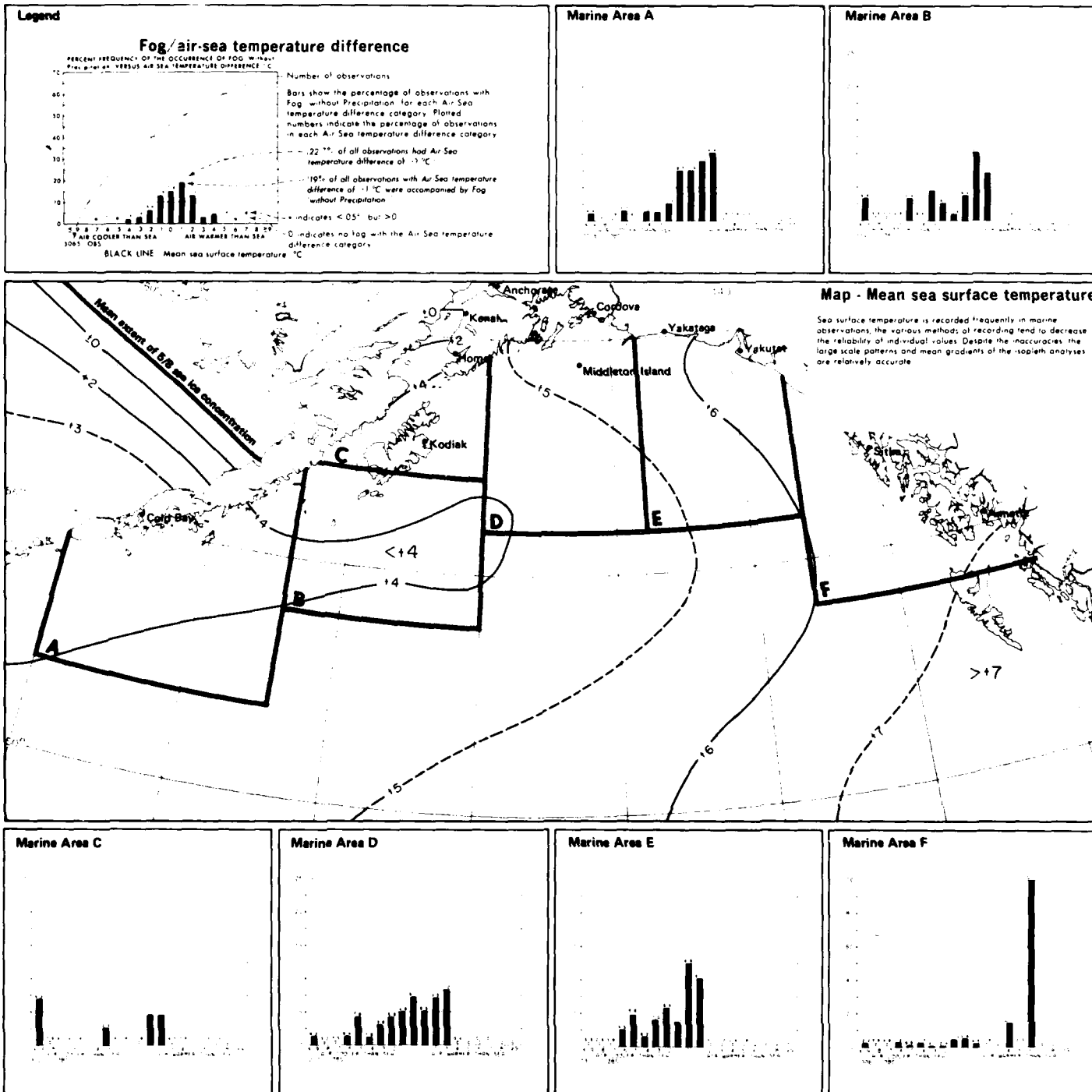
13 Sea level pressure



Marine Area C	Marine Area D	Marine Area E	Marine Area F

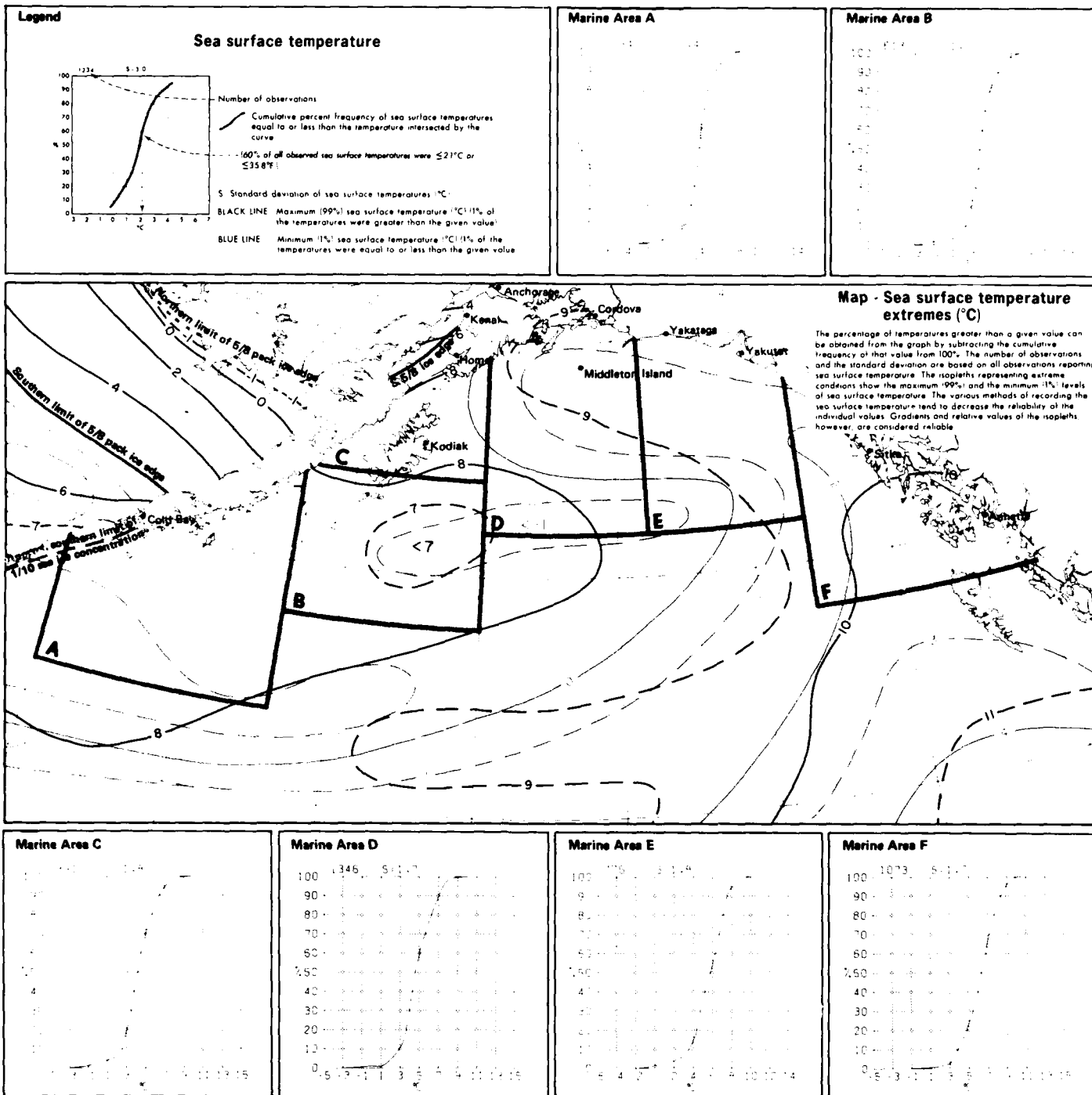
13 Mean sea level pressure

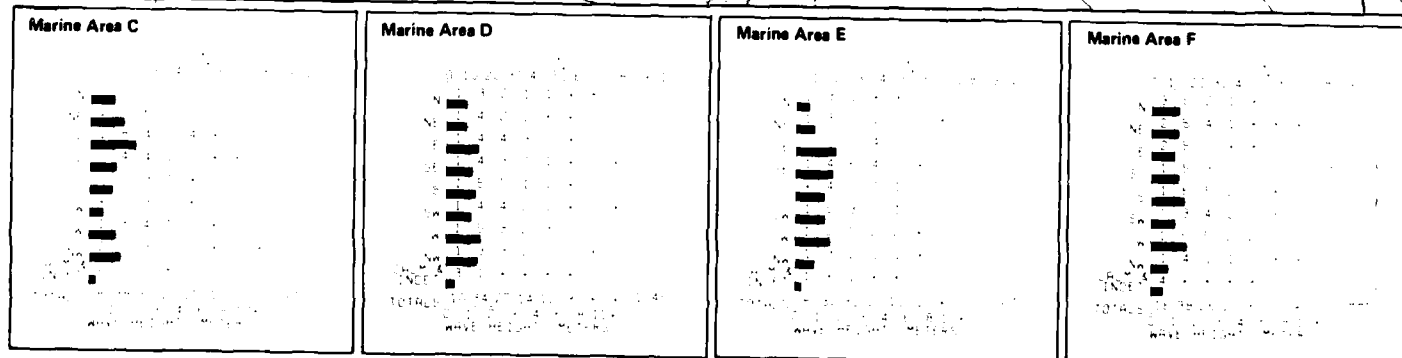
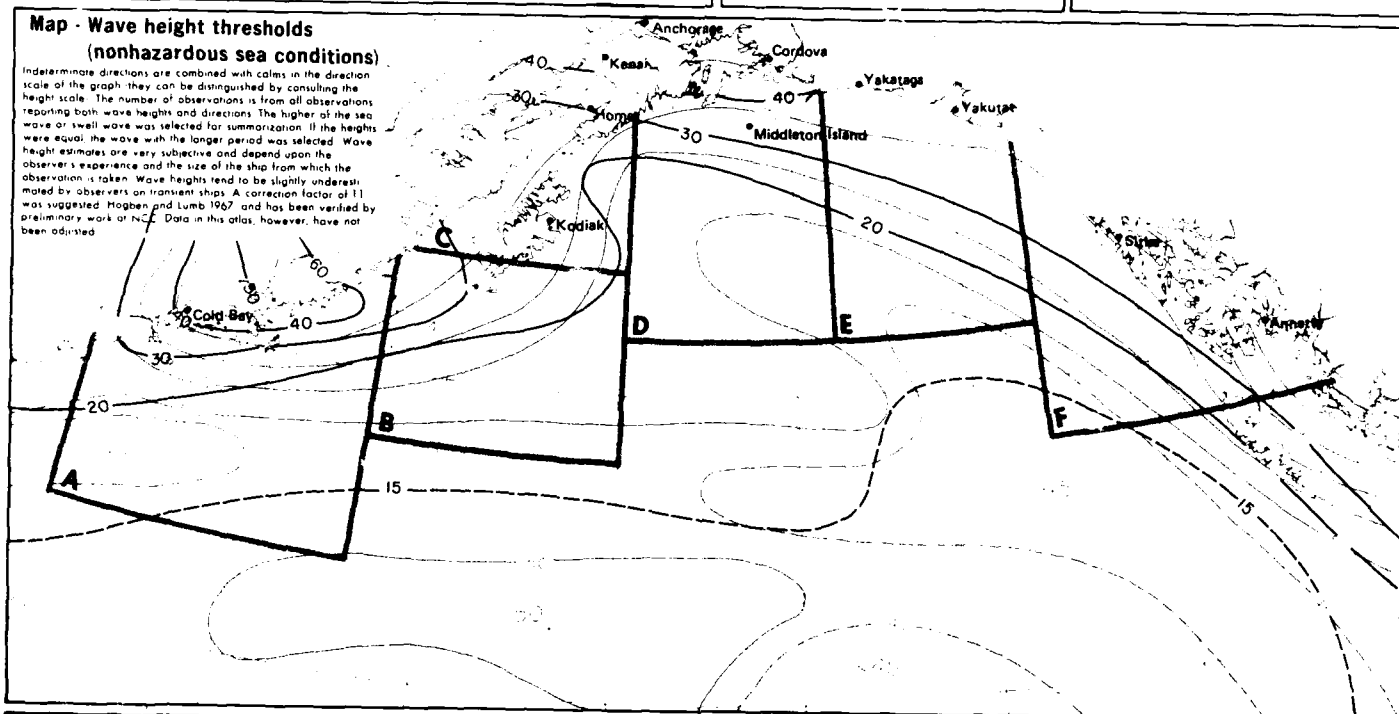
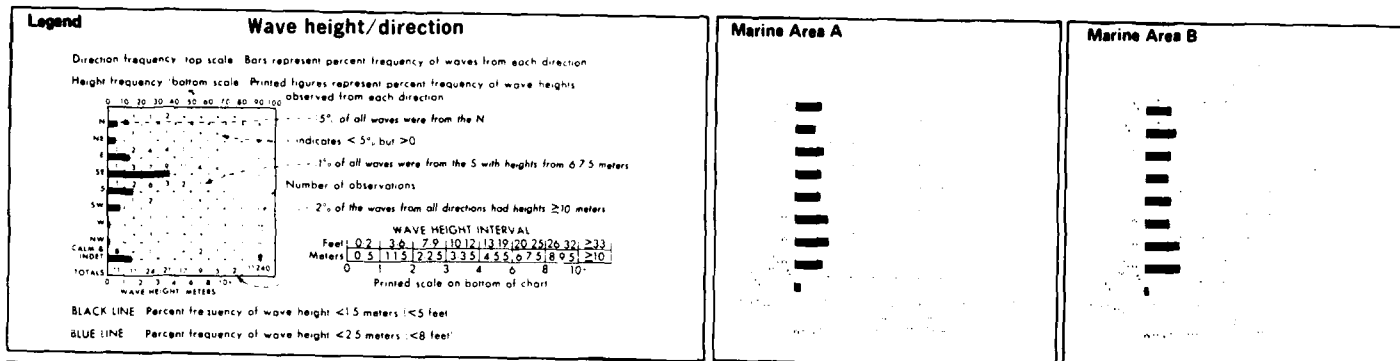
January



January

14 Fog/air-sea temperature difference
Mean sea surface temperature

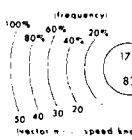




January

16 Wave height thresholds (nonhazardous)

Legend



Low pressure center movement

12 hour movements of low pressure centers considering only closed circulations

Mean speed: Printed figure at the end of each bar represents the mean speed of movement in knots toward the indicated direction

Low pressure centers moving toward the N had a mean speed of 11 knots

Direction frequency: Bars represent percent frequency of 12 hour movements toward each direction. Each circle represents 20°

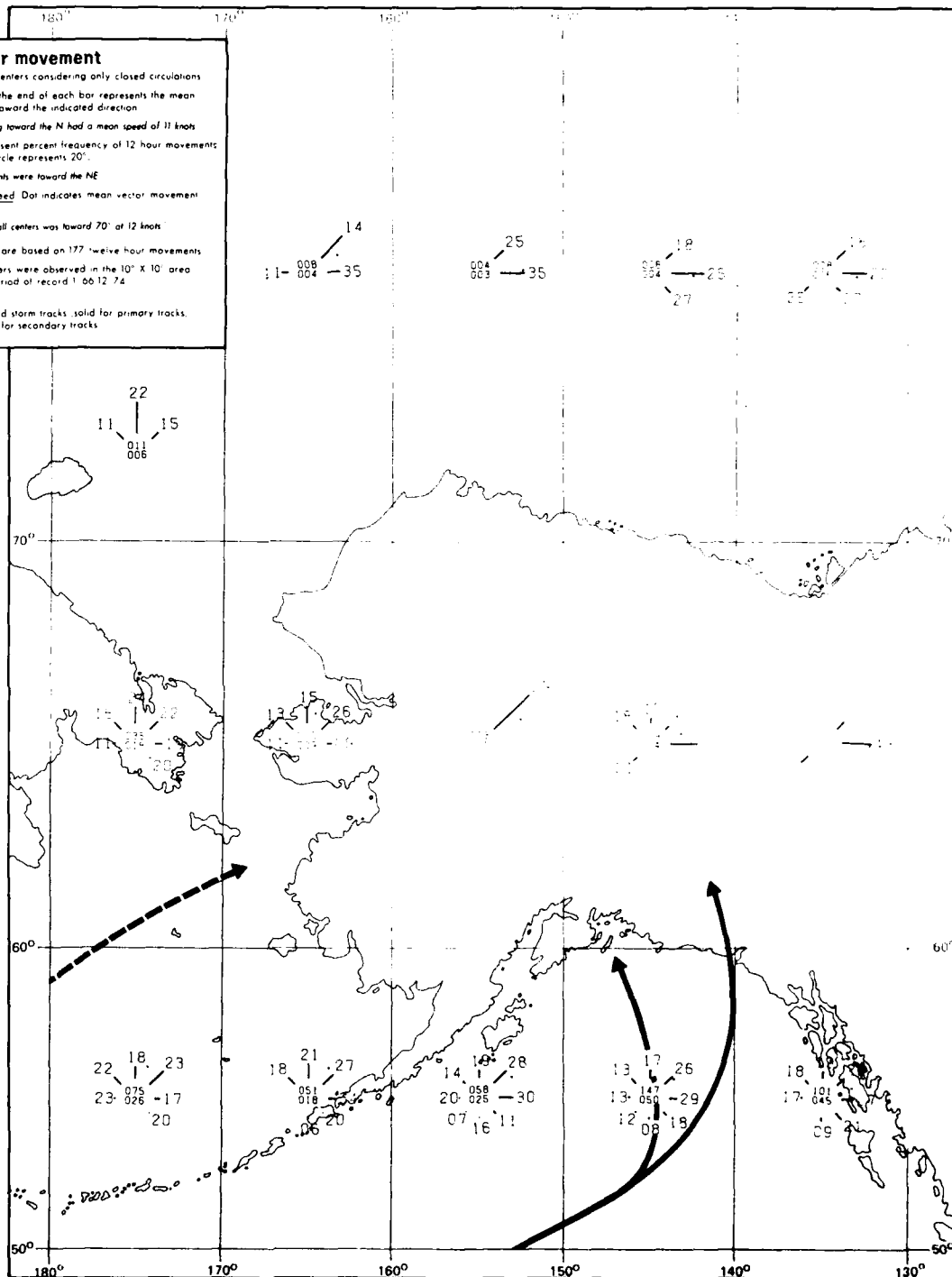
41% of all 12 hour movements were toward the NE

Vector mean direction and speed: Dot indicates mean vector movement. Each circle equals 10 knots

Mean vector movement of all centers was toward 70° at 12 knots

Statistics for this rate are based on 177 twelve hour movements. 83 low pressure centers were observed in the 10° X 10° area during the 9 year period of record 1-66 to 12-74

BLACK ARROWS: Preferred storm tracks, solid for primary tracks, dashed for secondary tracks

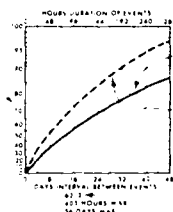


January

18 Low pressure center movement

Legend

Persistence of visibility <2 n. mi.



Hours duration of events Days interval between events

Cumulative percent frequency of hours duration equal to or less than the number of hours intersected by the solid curve

— 80% of the events had a duration ≤ 216 hours

Cumulative percent frequency of days interval between events equal to or less than the number of days intersected by the broken curve

— 88% of the events were followed by another event in 28 days or less

The maximum value(s) of hours duration and/or the days interval will be displayed when the graph limits are exceeded

Durations and intervals for a particular month extend from the time they begin, or the first of the month if already in progress, and are terminated at the actual ending time, regardless of what month that may be

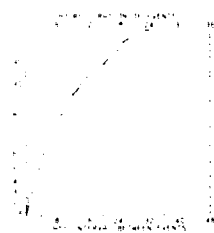
Number of observations

Top and bottom scales are variable to allow for variations in the data

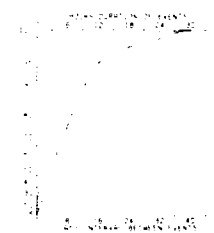
Kodiak



Homer



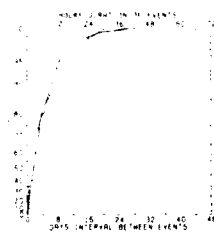
Kenai



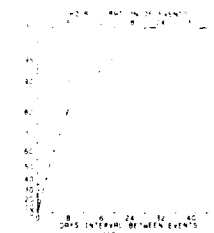
Middleton Island



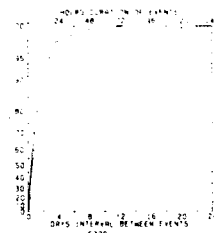
Cordova



Yakutat



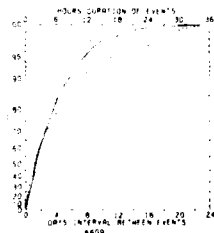
Yakutat



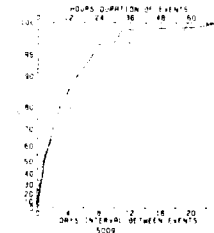
Sitka



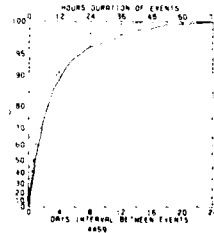
Annette



Anchorage



Cold Bay

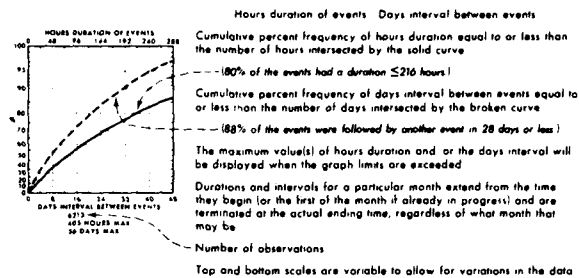


19 Persistence of visibility 2 n. mi.

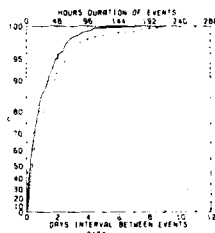
January

Legend

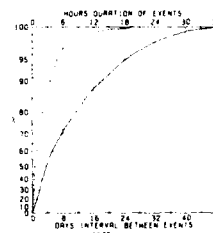
Persistence of wind ≥ 10 kts.



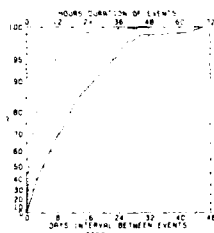
Kodiak



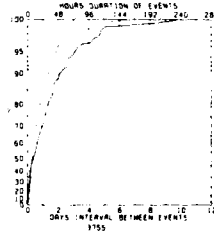
Homer



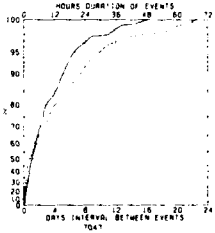
Kenai



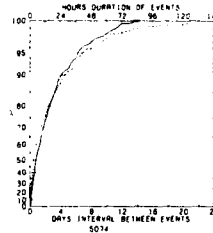
Middleton Island



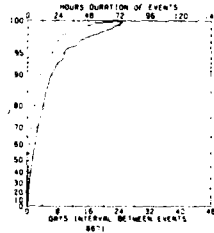
Cordova



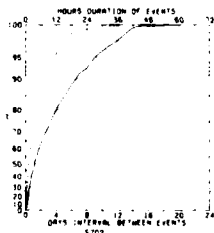
Yakutat



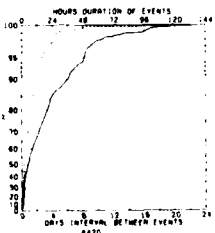
Yakutat



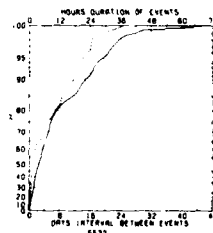
Sitka



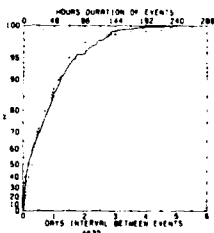
Annette



Anchorage



Cold Bay

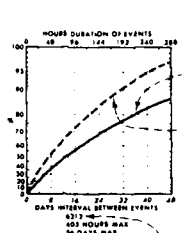


January

20 Persistence of wind ≥ 10 kts.

Legend

Persistence of wind ≥ 20 kts.



Hours duration of events - Days interval between events

Cumulative percent frequency of hours duration equal to or less than the number of hours intersected by the solid curve

--- (80% of the events had a duration ≤ 21.6 hours.)

Cumulative percent frequency of days interval between events equal to or less than the number of days intersected by the broken curve

--- (88% of the events were followed by another event in 28 days or less.)

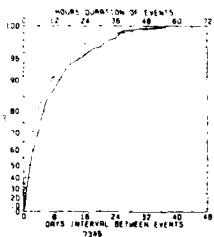
The maximum value(s) of hours duration and/or the days interval will be displayed when the graph limits are exceeded

Durations and intervals for a particular month extend from the time they begin (or the first of the month if already in progress) and are terminated at the actual ending time, regardless of what month that may be

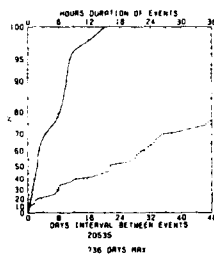
Number of observations

Top and bottom scales are variable to allow for variations in the data

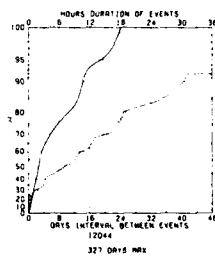
Kodiak



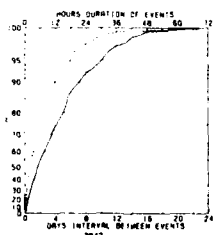
Homer



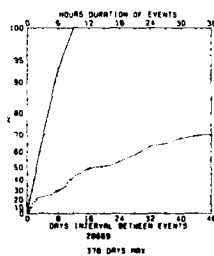
Kenai



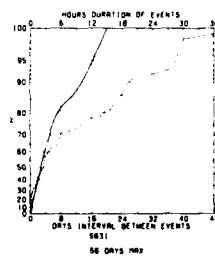
Middleton Island



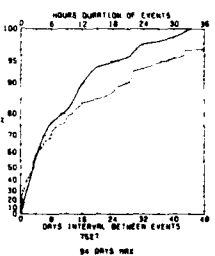
Cordova



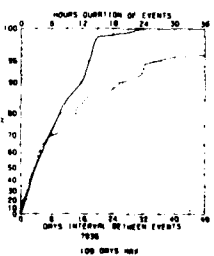
Yakutat



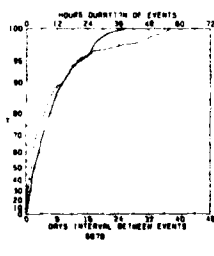
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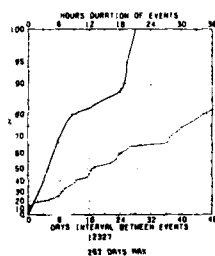
Sitka



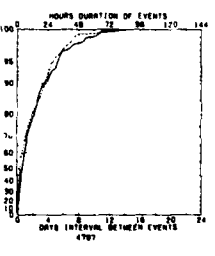
Annette



Anchorage

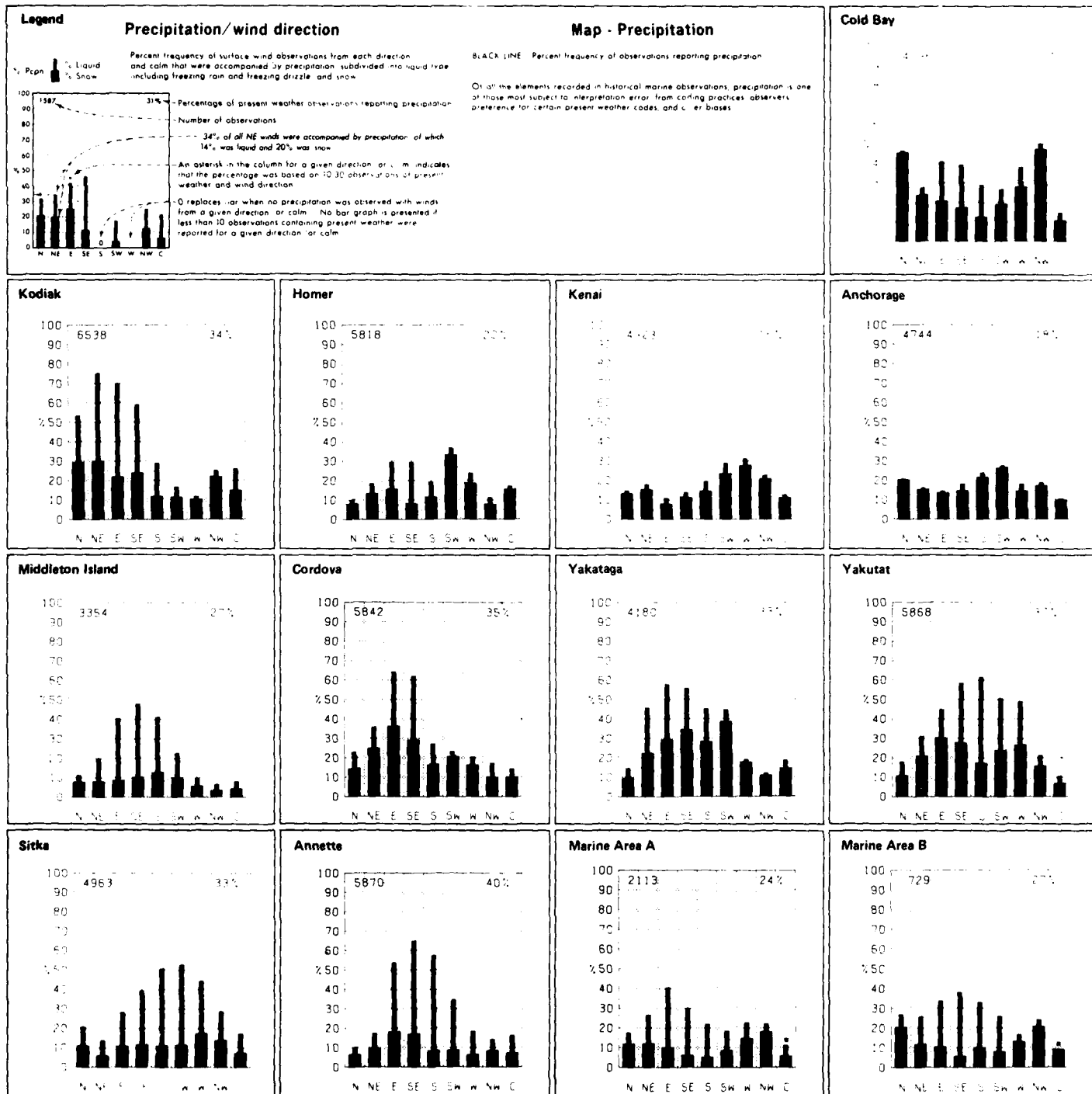


Cold Bay



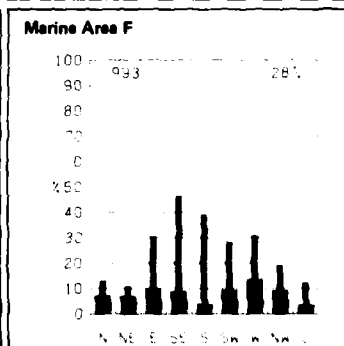
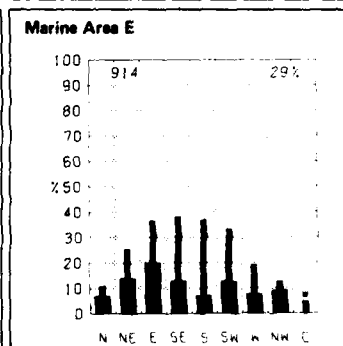
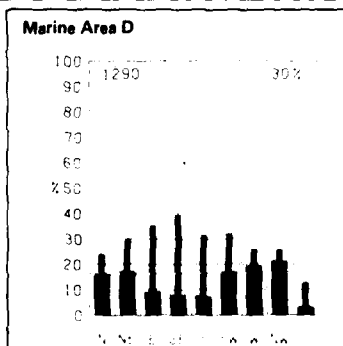
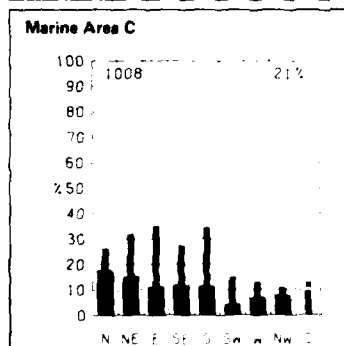
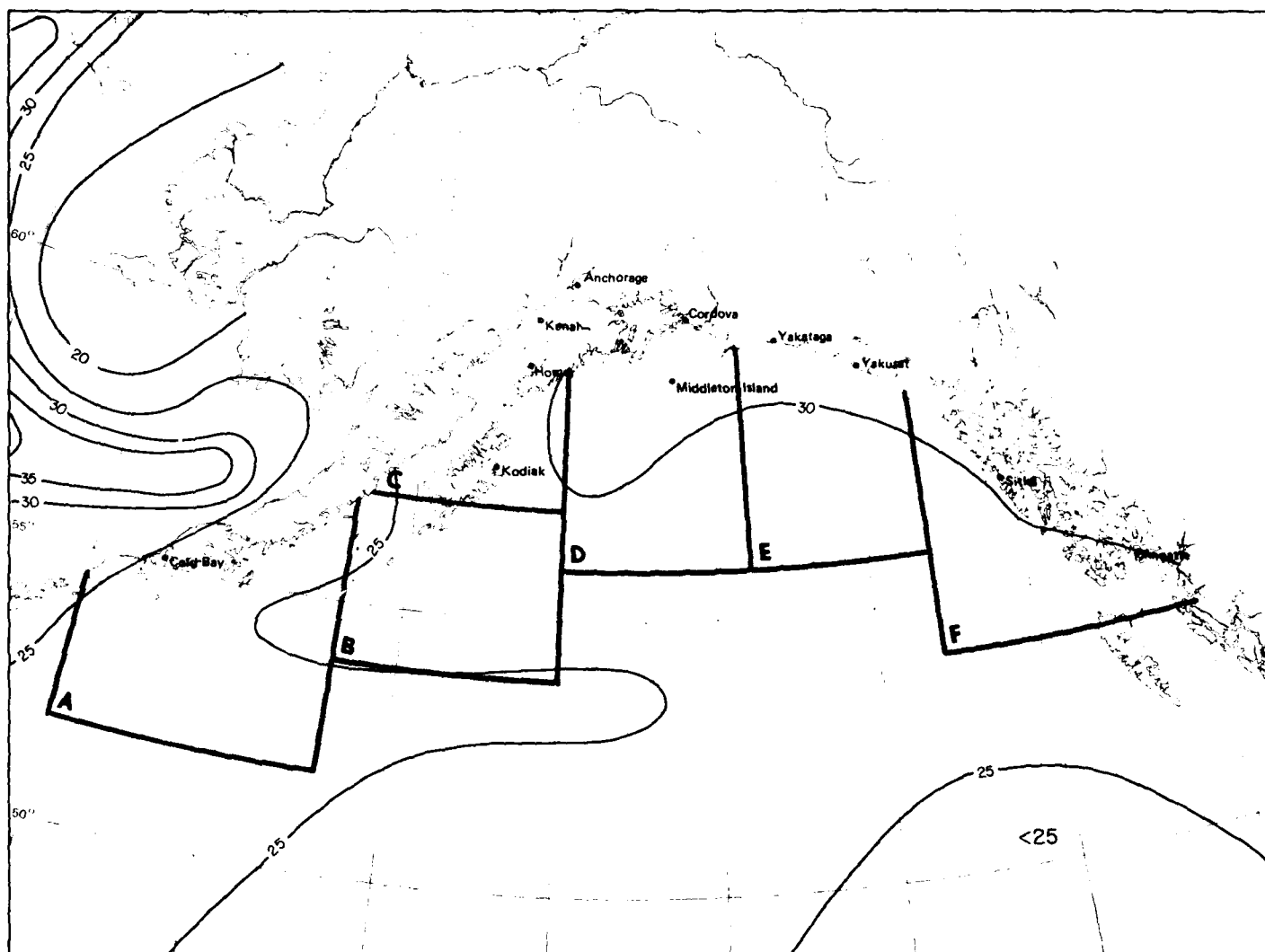
21 Persistence of wind ≥ 20 kts.

January



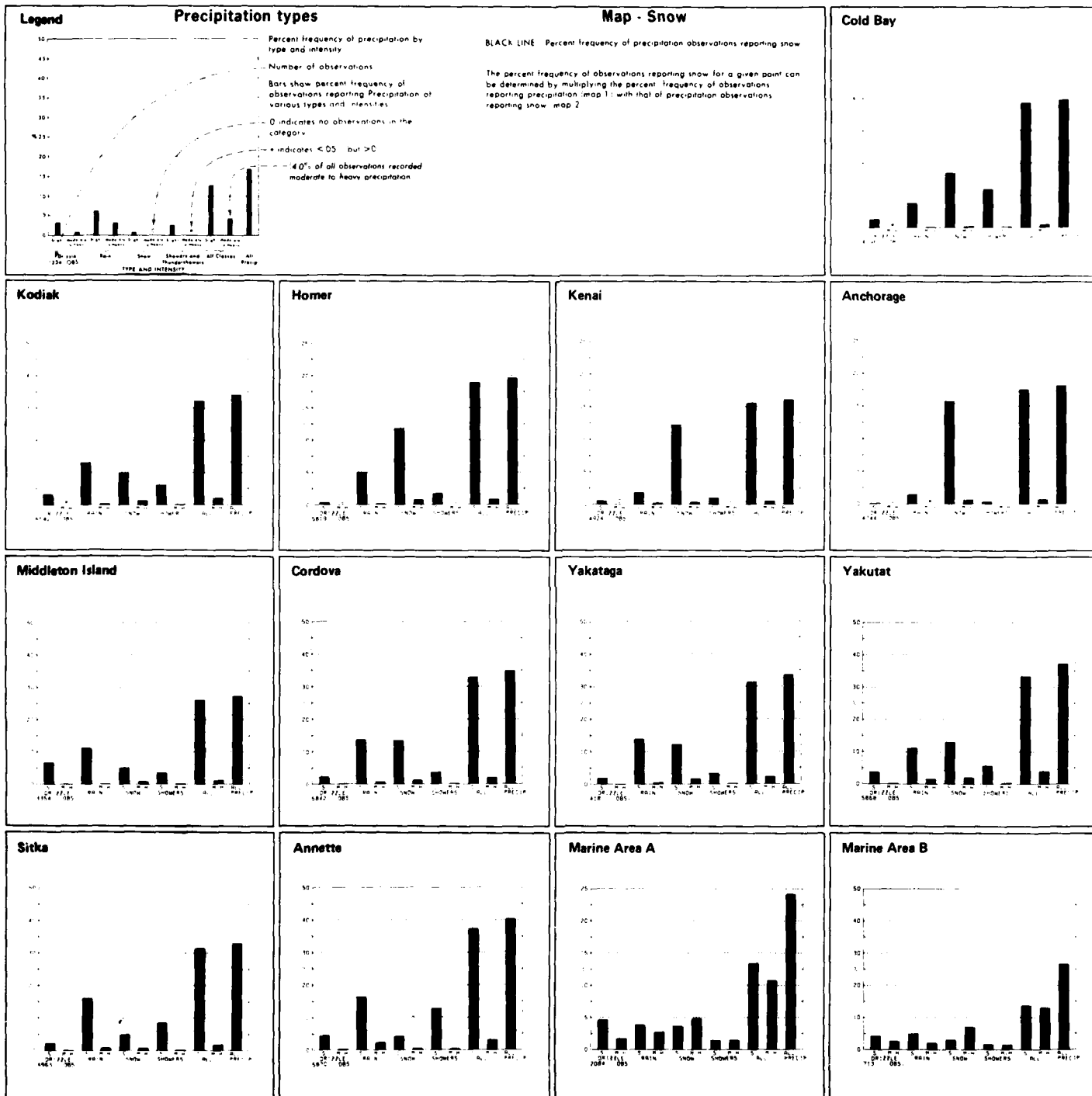
February

1 Precipitation/wind direction



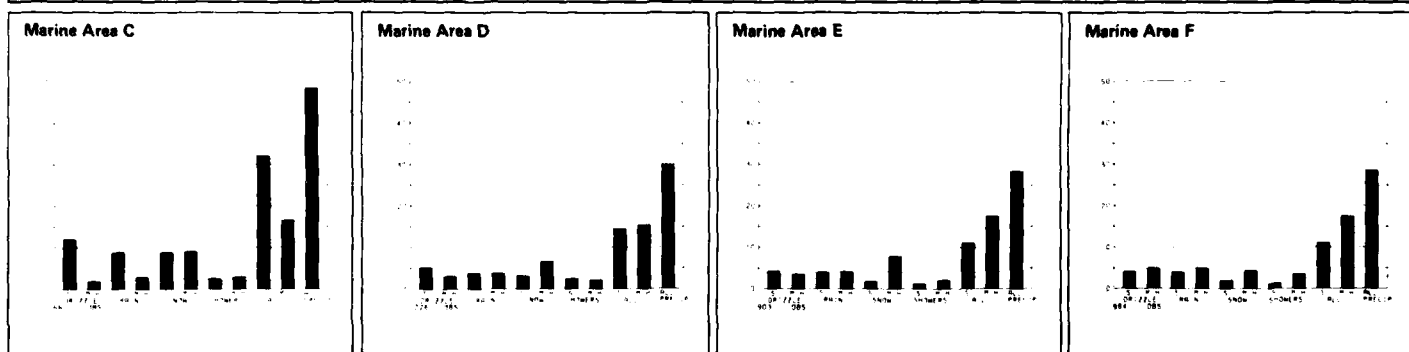
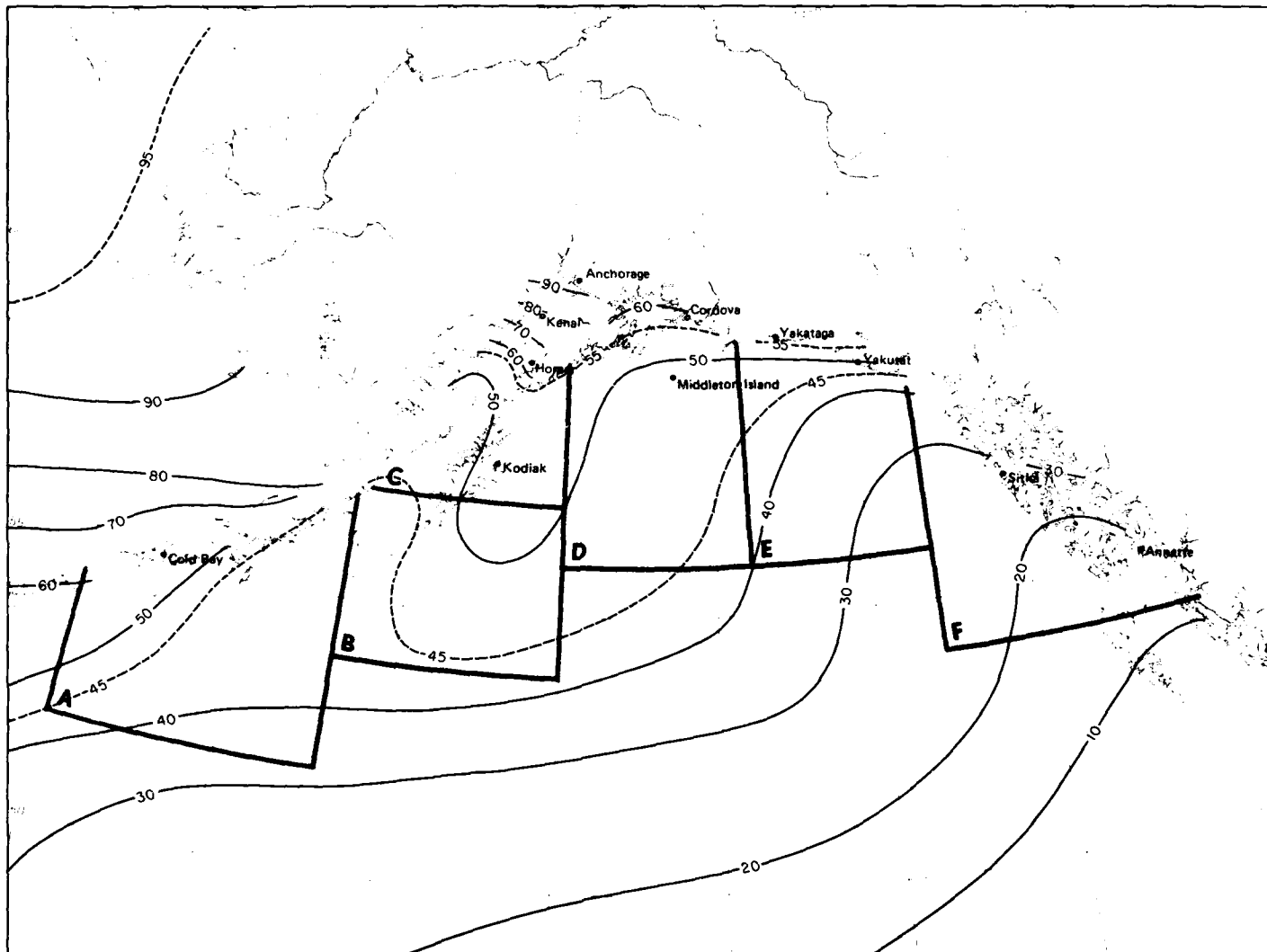
1 Precipitation

February



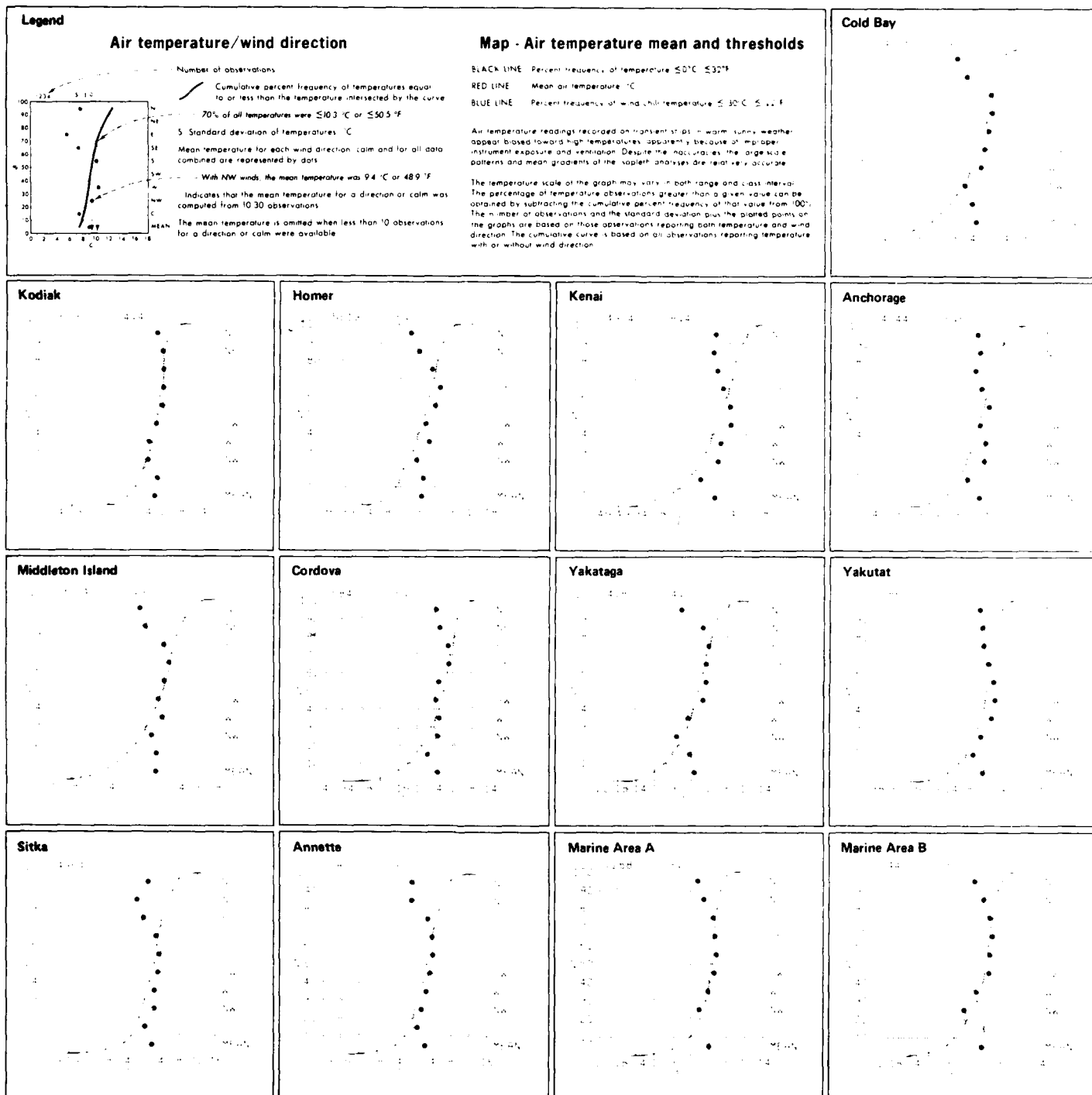
February

2 Precipitation types



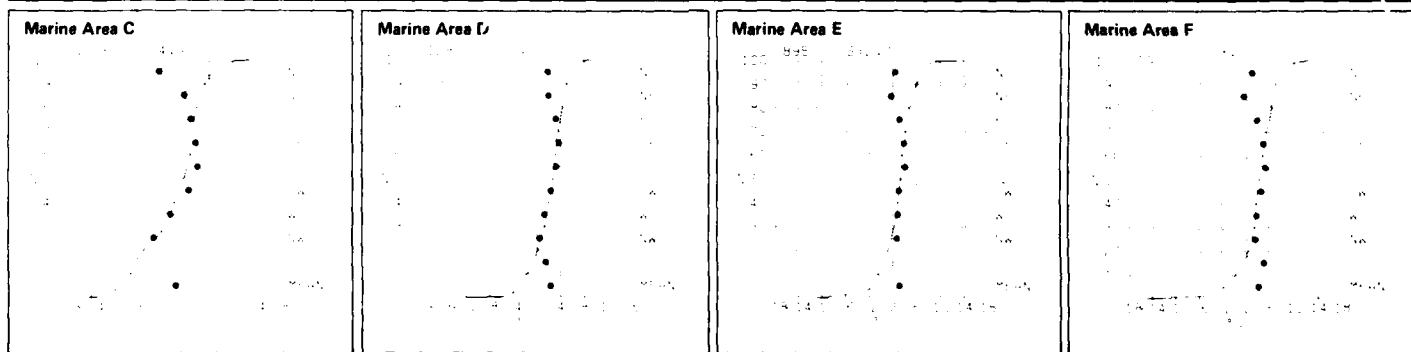
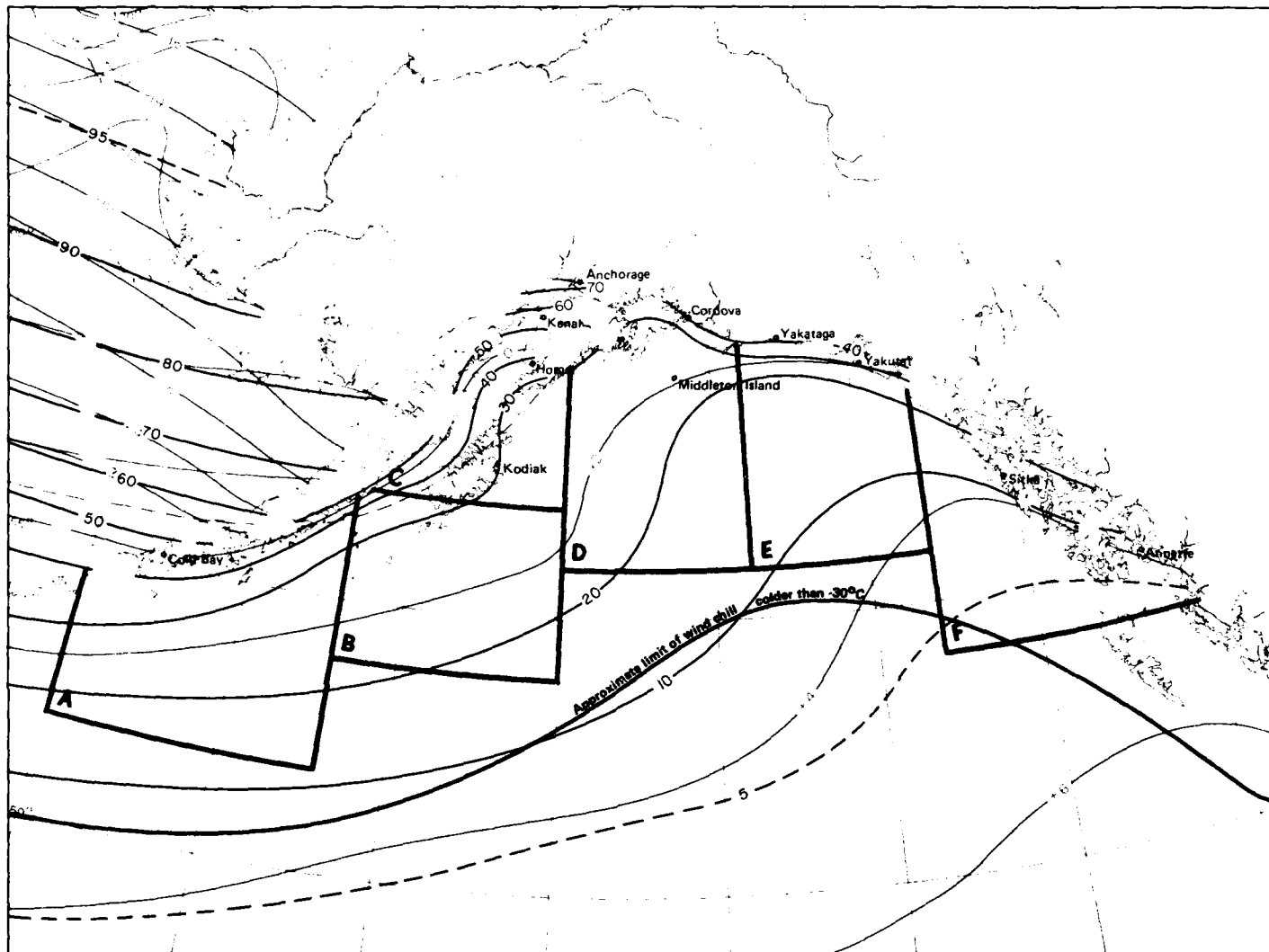
2 Snow

February



February

3 Air temperature/wind direction

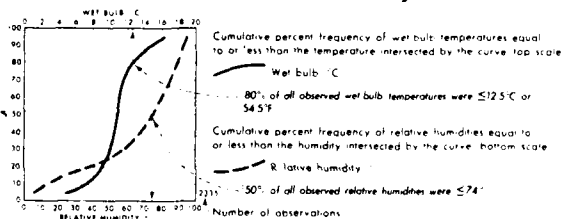


3 Air temperature mean and thresholds

February

Legend

Wet bulb/relative humidity



Map - Mean dew point temperature

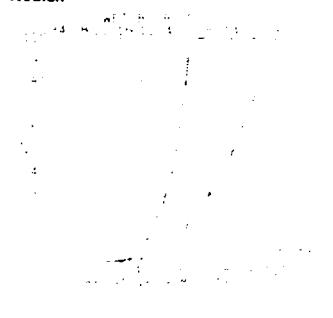
BLACK LINE Mean dew point temperature °C

The observation count of the graph reflects those observations reporting both air and wet bulb temperatures; both are required in computing the relative humidity. The percentage of observations of either element greater than a given value can be obtained by subtracting the cumulative percent frequency of that value from 100.

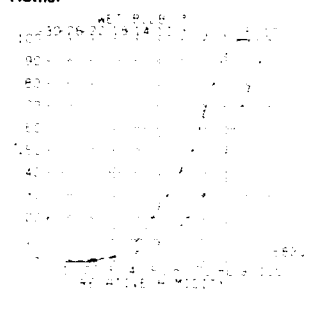
Cold Bay



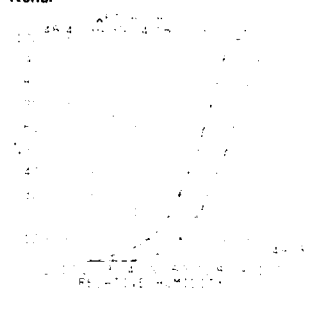
Kodiak



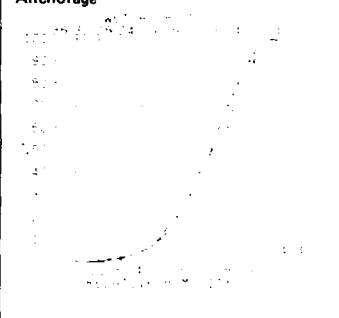
Homer



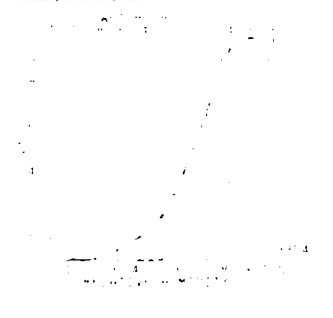
Kenai



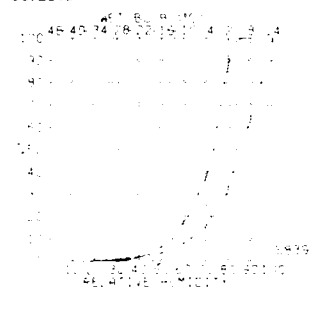
Anchorage



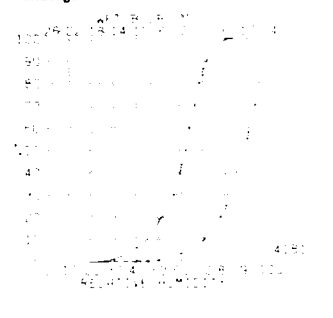
Middleton Island



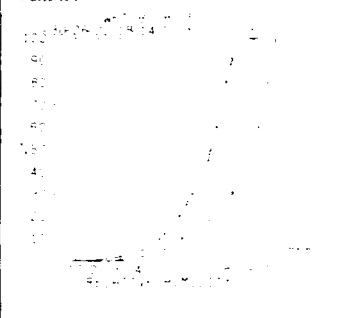
Cordova



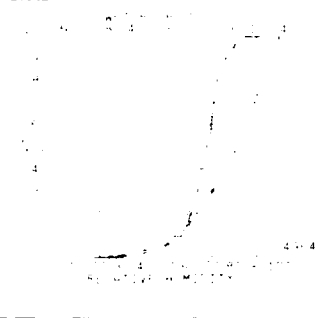
Yakutat



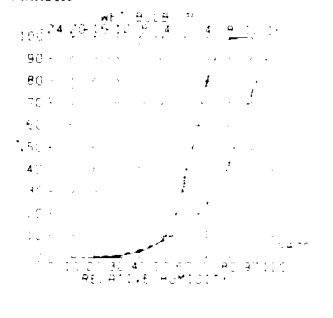
Yakutat



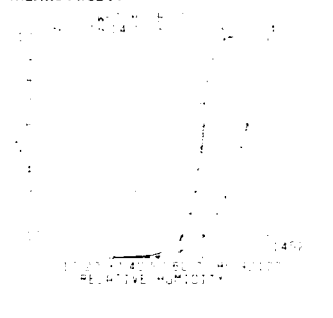
Sitka



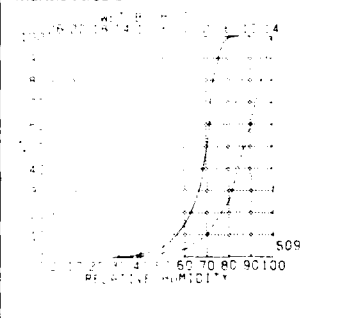
Annette



Marine Area A



Marine Area B



February

4 Wet bulb/relative humidity



Marine Area C

Marine Area D

Marine Area E

Marine Area F

4 Mean dew point temperature

February

Legend

Air temperature/wind speed



Percent frequency of simultaneous occurrence of specified temperature (°C) and wind speed (knots)

1% of all observations reported temperature 2.3°C simultaneously with wind speed of 22.33 kts

Indicates < 5% but > 0

Number of observations

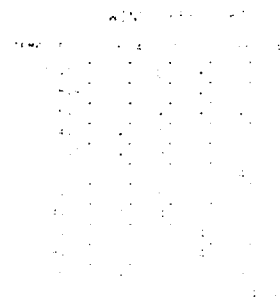
Map - Air temperature extremes (°C)

BLACK LINE Maximum 99% air temperature 1% of temperatures were greater than the given value

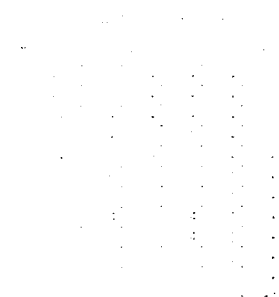
BLUE LINE Minimum 1% air temperature 99% of temperatures were equal to or less than the given value

The graph can be used to determine the extent of human discomfort from the combined effects of extreme heat or cold and winds or to estimate the likelihood of superstructure icing potential increases as the air temperature drops below freezing and the winds increase above 10 knots (12 mph) and may become quite severe with temperatures equal to or less than 9°C (16°F) and winds equal to or greater than 34 knots (39 mph)

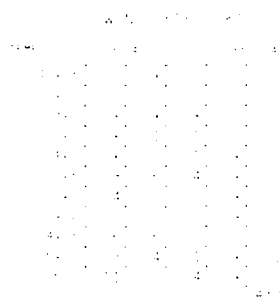
Cold Bay



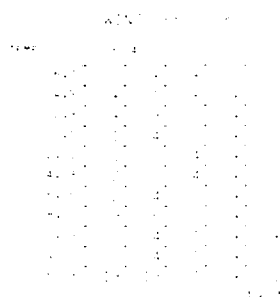
Kodiak



Homer



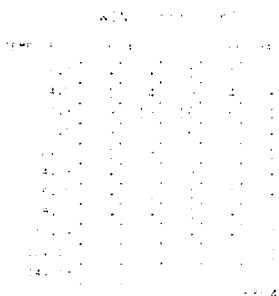
Kenai



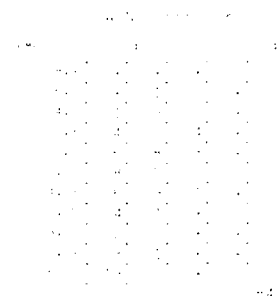
Anchorage



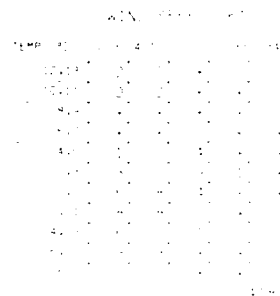
Middleton Island



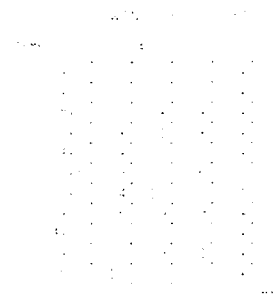
Cordova



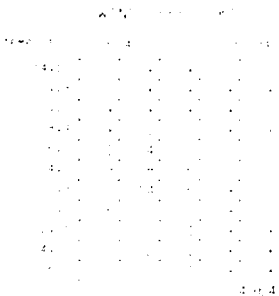
Yakataga



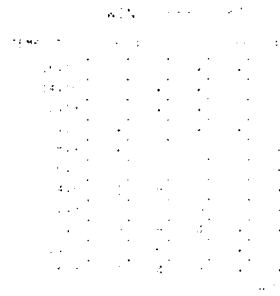
Yakutat



Sitka



Annette



Marine Area A

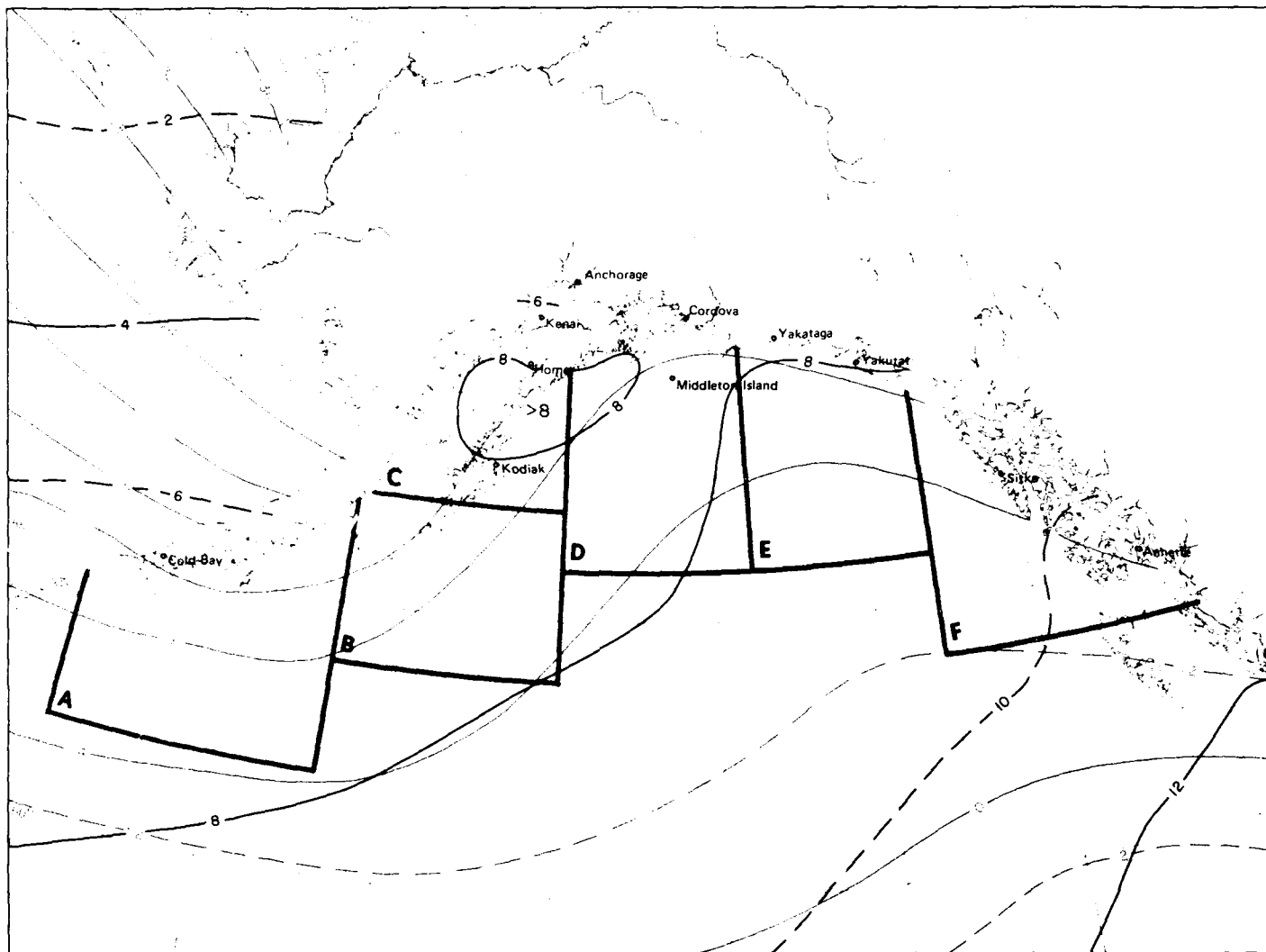


Marine Area B



February

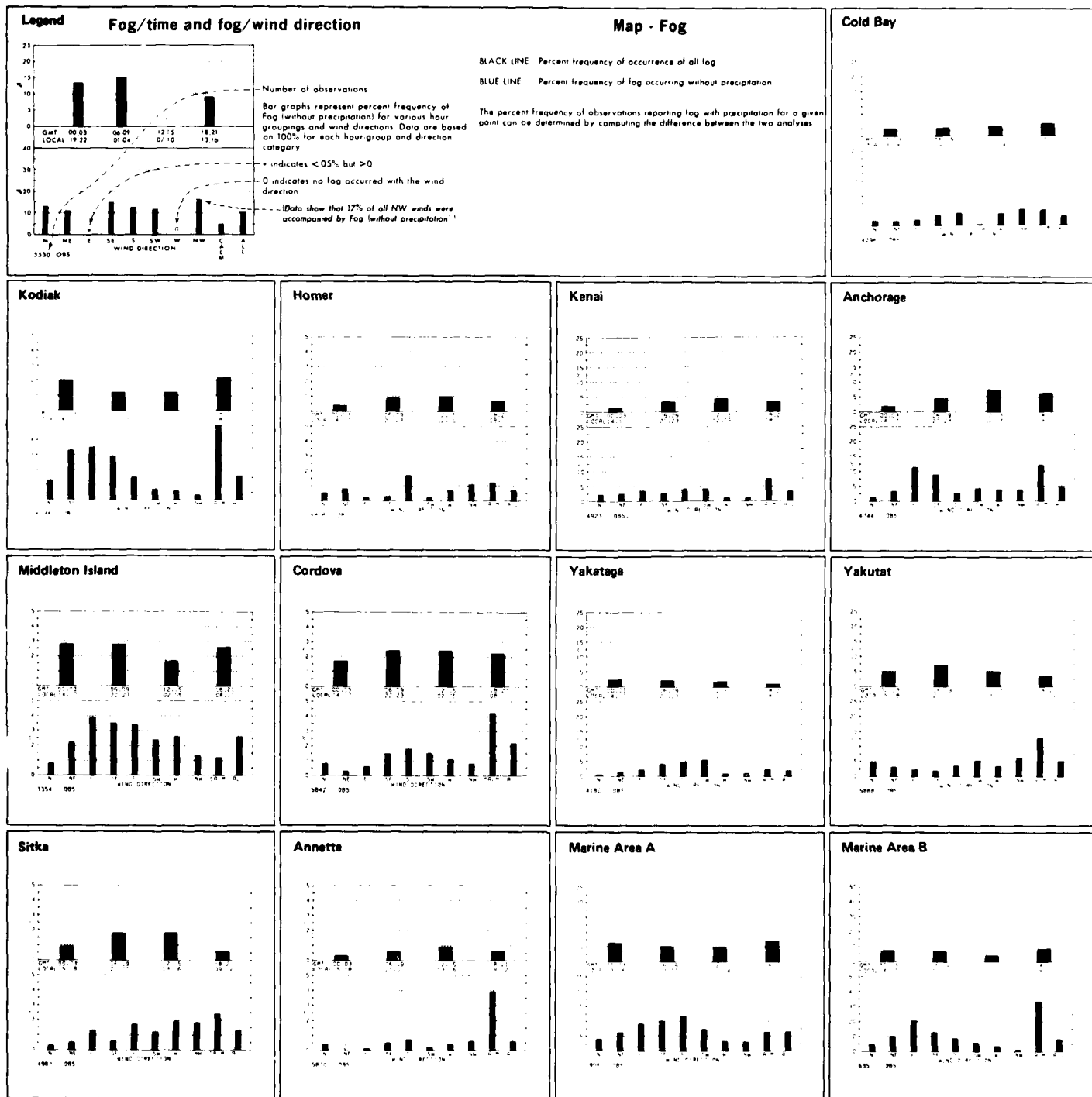
5 Air temperature/wind speed



Marine Area C	Marine Area D	Marine Area E	Marine Area F

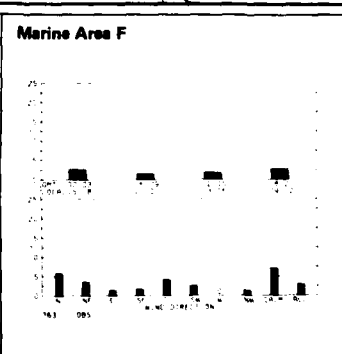
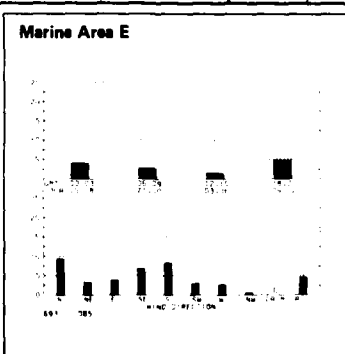
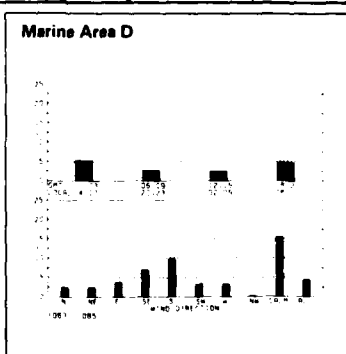
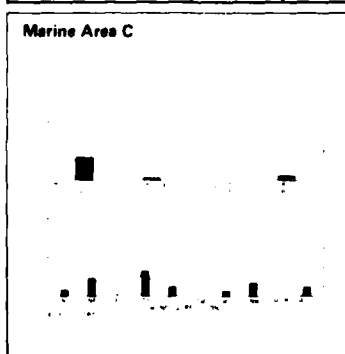
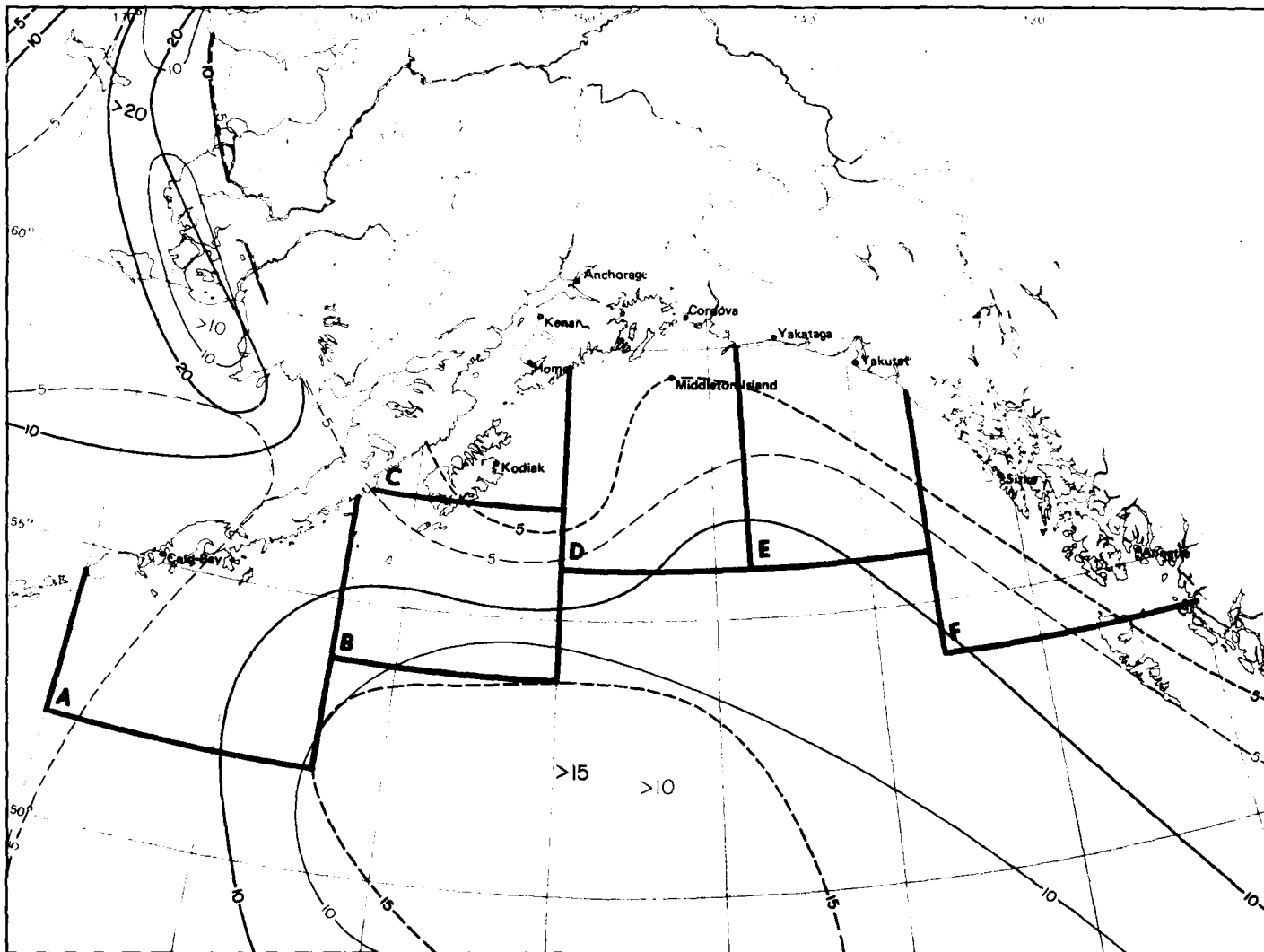
5 Air temperature extremes (°C)

February



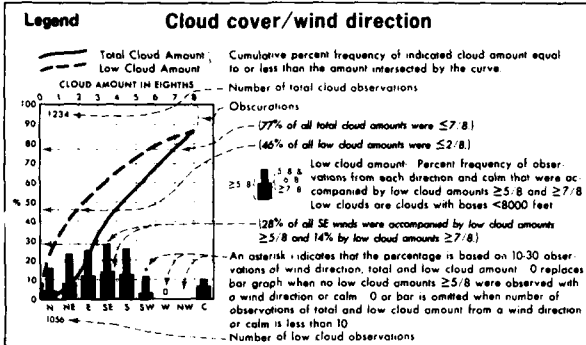
February

6 Fog/time and fog/wind direction



6 Fog

February

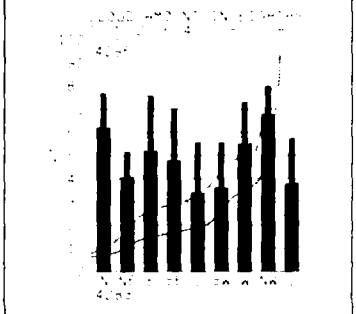


Map - Cloud amount thresholds

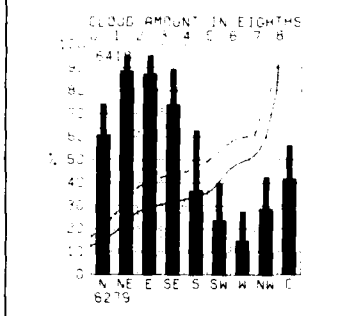
BLACK LINE Percent frequency of total cloud amount $\leq 7/8$
BLUE LINE Percent frequency of low cloud amount $\geq 5/8$

Since the number of observations reporting low cloud amount is usually less than that for total cloud amount, somewhat different samples may be used to compute the two curves on the graph. This may lead to inconsistencies where low cloud amount appears higher than the total cloud amount. Where this occurred the graph was adjusted in favor of the total cloud by making the curves coincide. The frequency of obscured conditions may be determined by subtracting the cumulative percent frequency corresponding to 8/8 coverage from 100%. In computing the bar graph, observations are considered as 8/8 coverage.

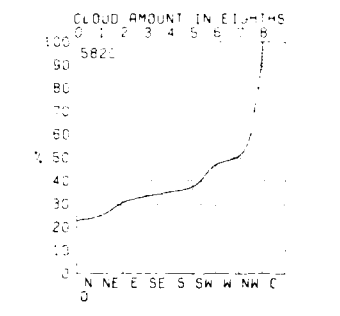
Cold Bay



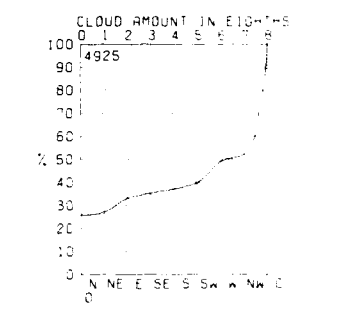
Kodiak



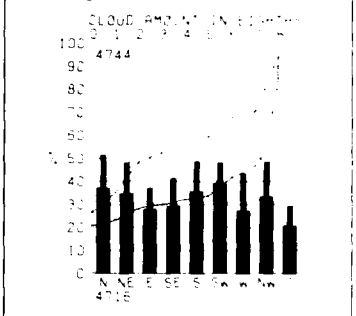
Homer



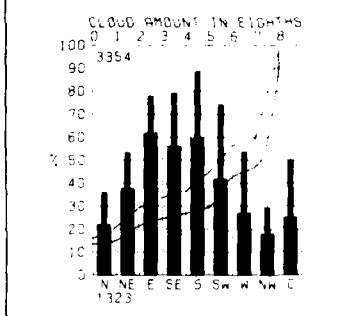
Kenai



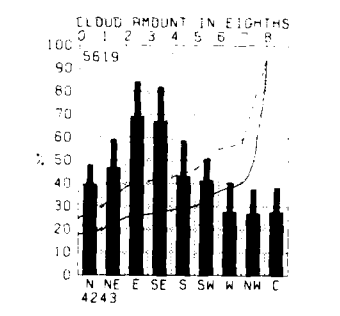
Anchorage



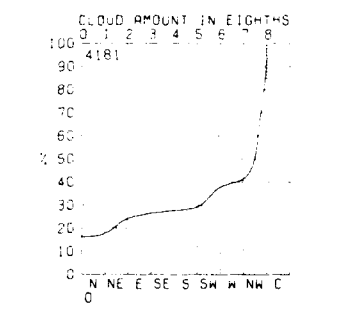
Middleton Island



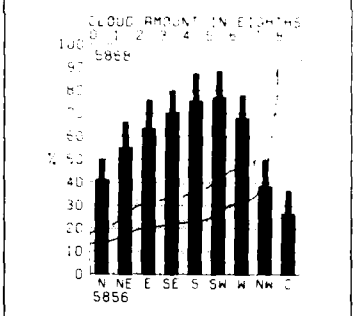
Cordova



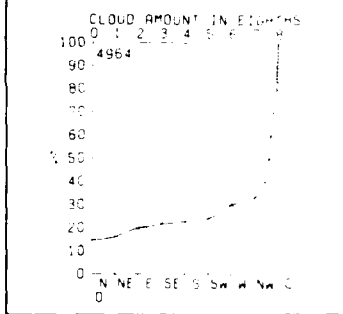
Yakutat



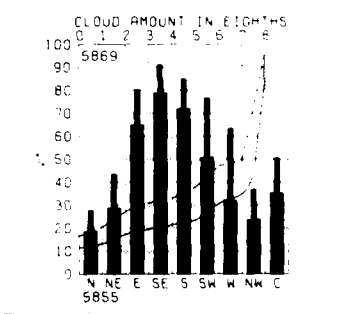
Yakutat



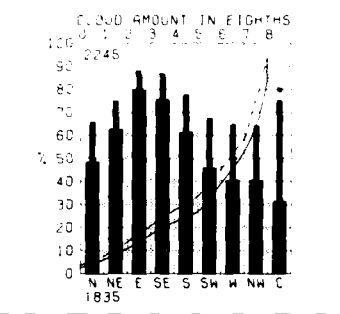
Sitka



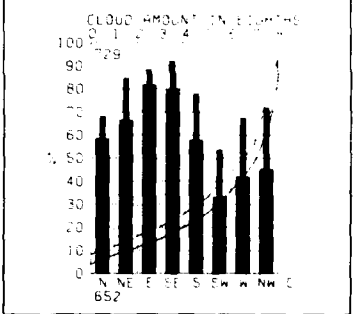
Annette



Marine Area A

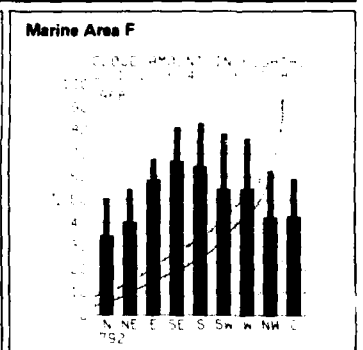
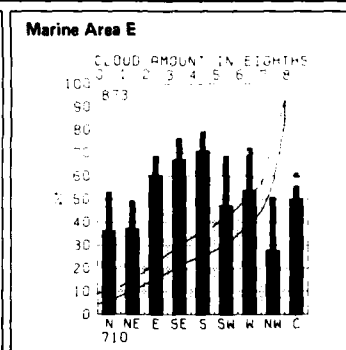
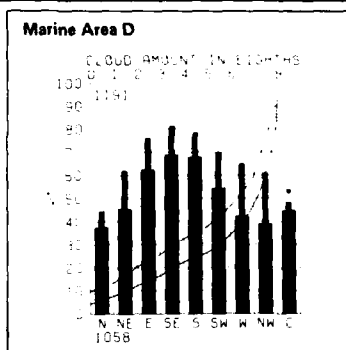
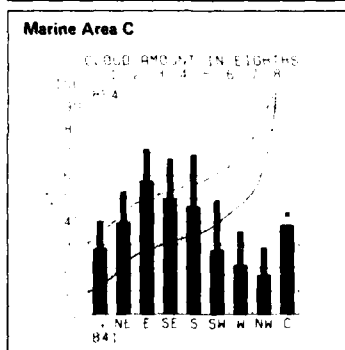
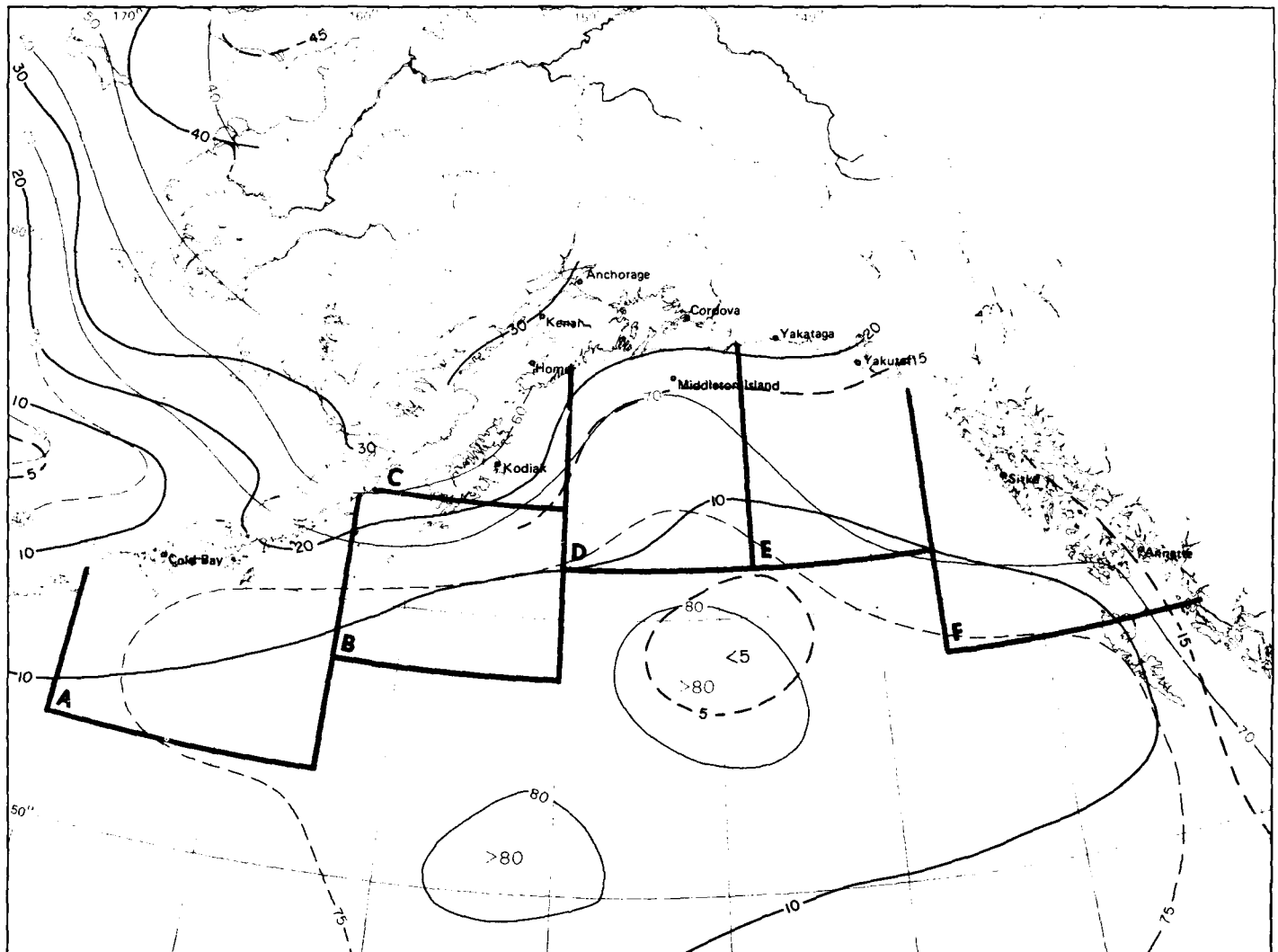


Marine Area B



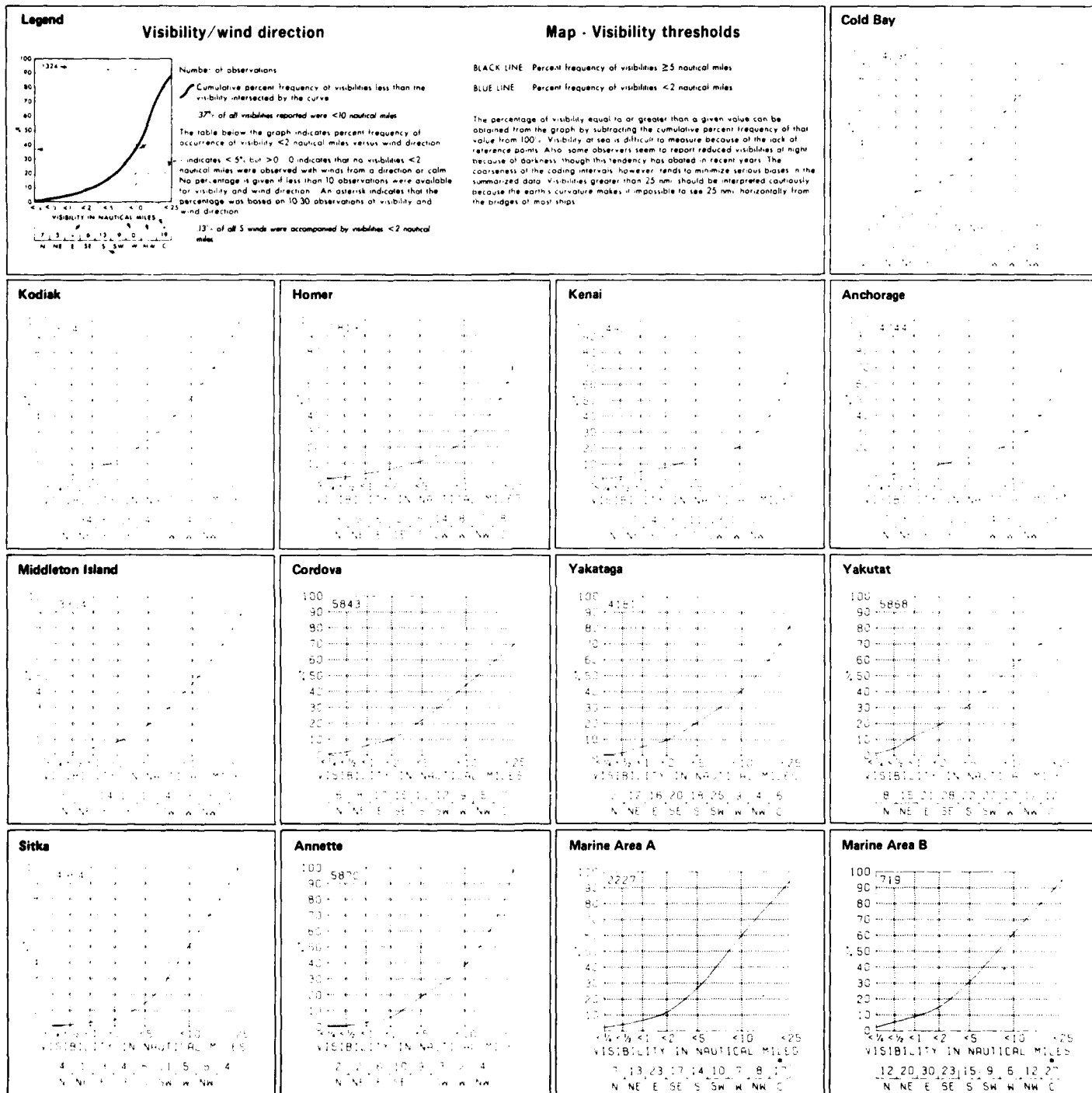
February

7 Cloud cover/wind direction



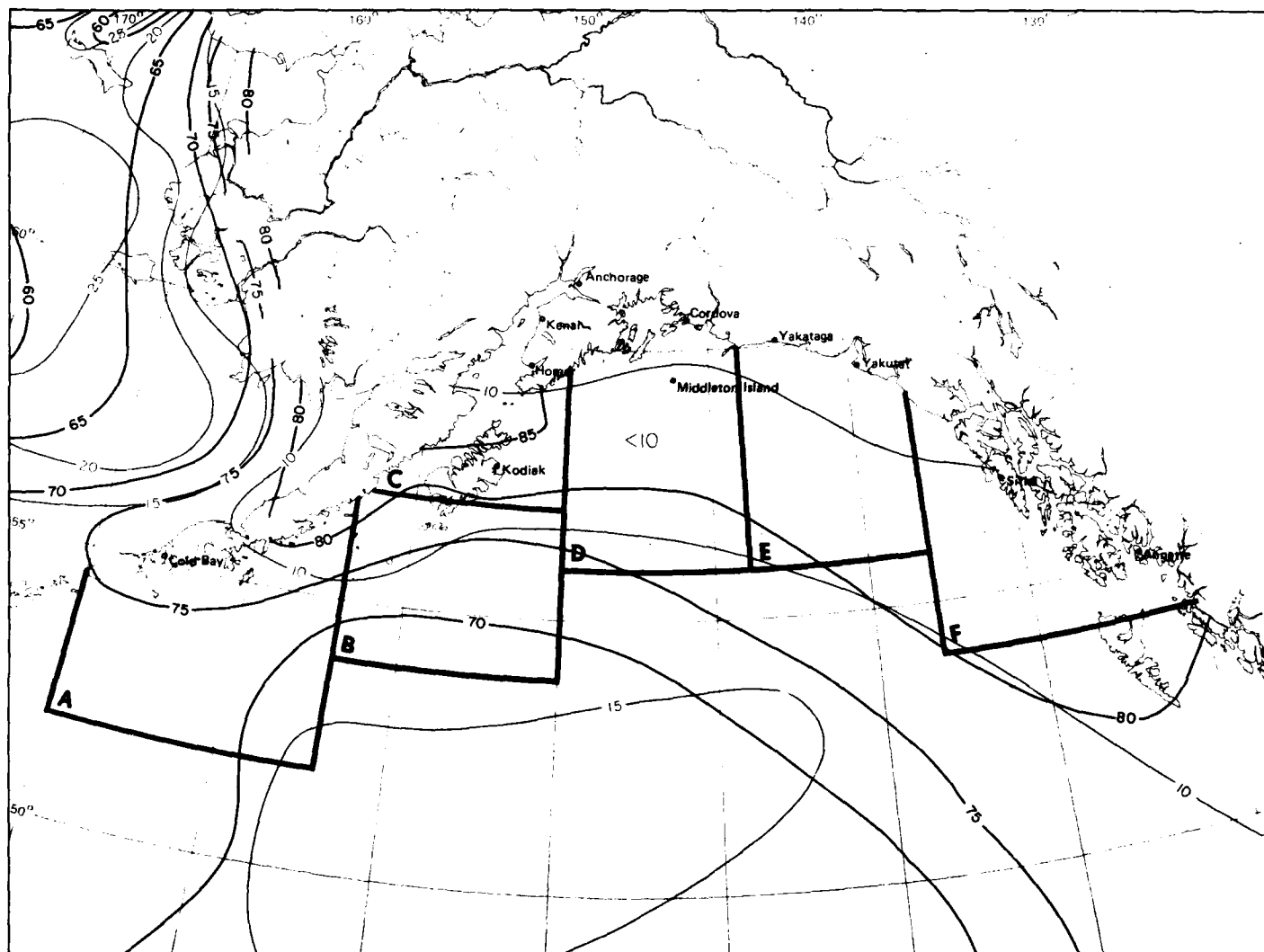
7 Cloud amount thresholds

February



February

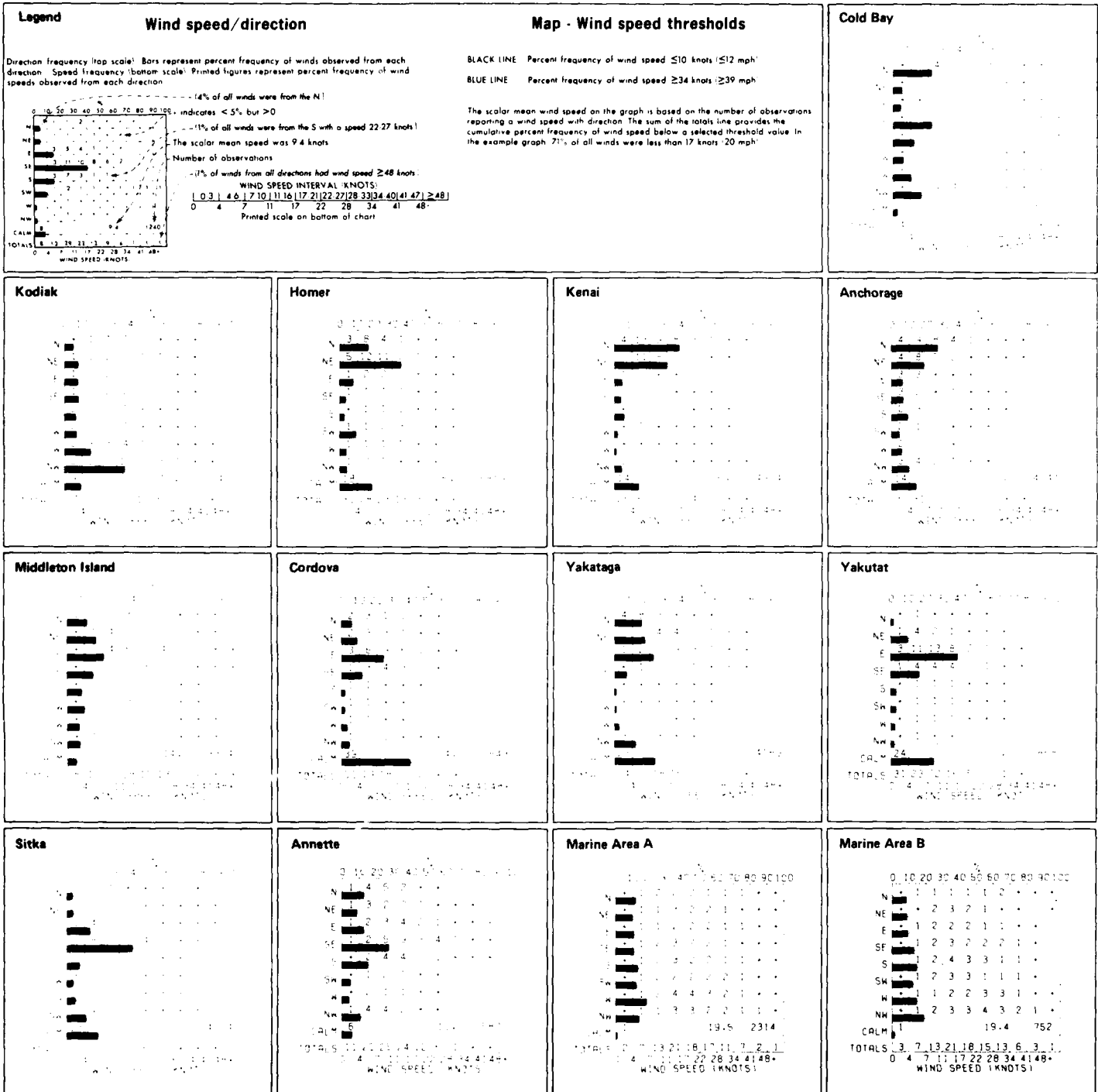
8 Visibility/wind direction



Marine Area C	Marine Area D	Marine Area E	Marine Area F
100 1263 90 1263 80 1263 70 1263 60 1263 50 1263 40 1263 30 1263 20 1263 10 1263 0 1263	100 1263 90 1263 80 1263 70 1263 60 1263 50 1263 40 1263 30 1263 20 1263 10 1263 0 1263	100 1263 90 1263 80 1263 70 1263 60 1263 50 1263 40 1263 30 1263 20 1263 10 1263 0 1263	100 1263 90 1263 80 1263 70 1263 60 1263 50 1263 40 1263 30 1263 20 1263 10 1263 0 1263

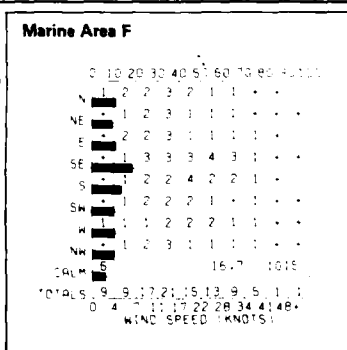
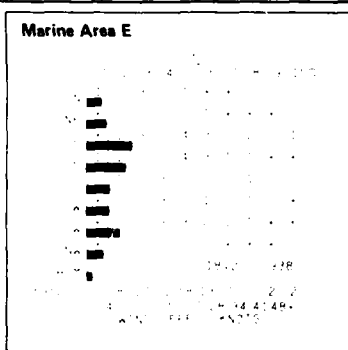
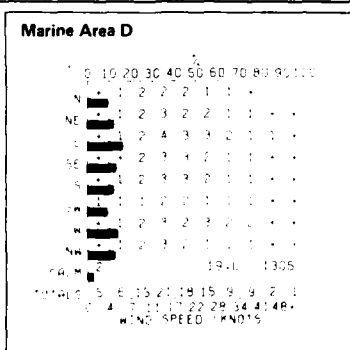
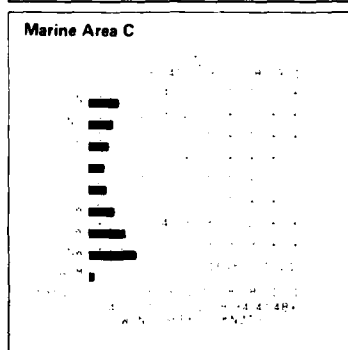
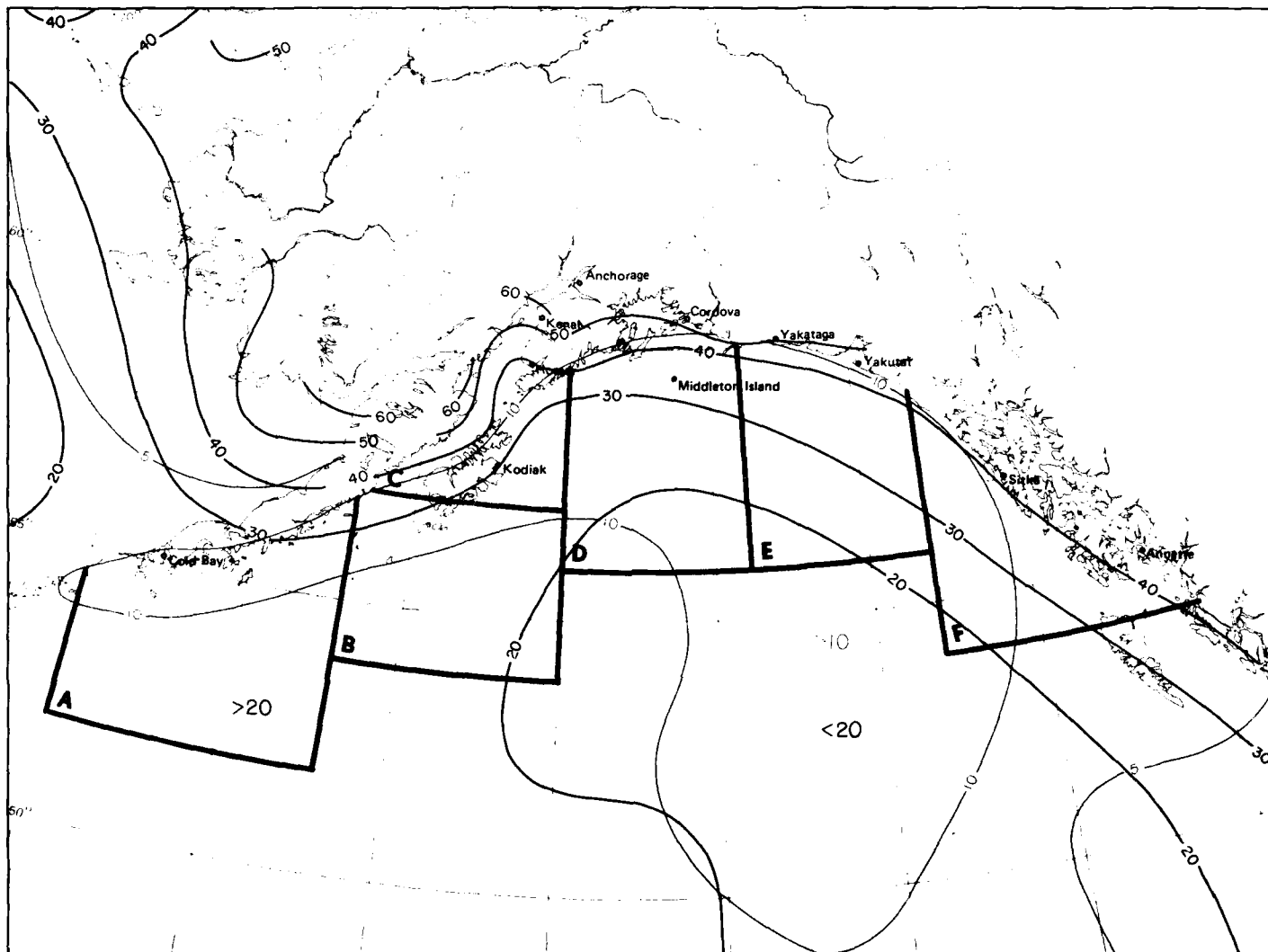
8 Visibility thresholds

February



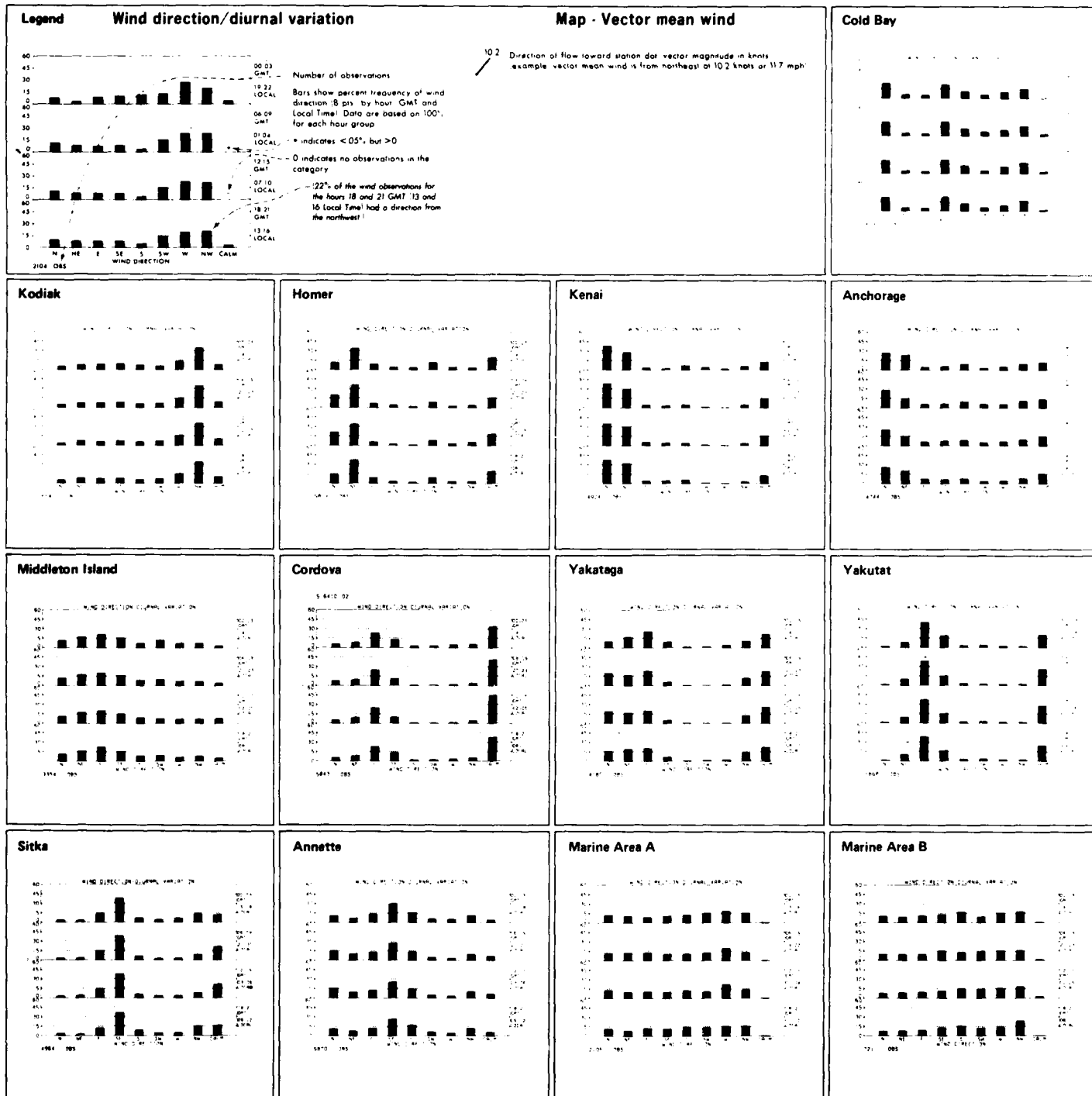
February

9 Wind speed/direction



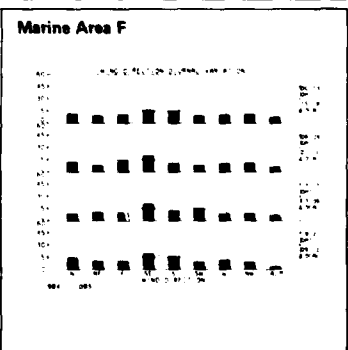
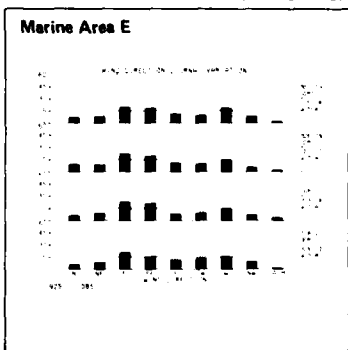
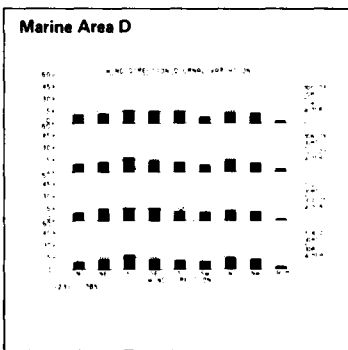
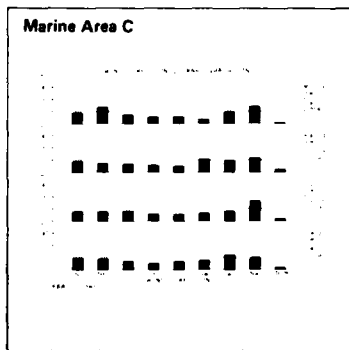
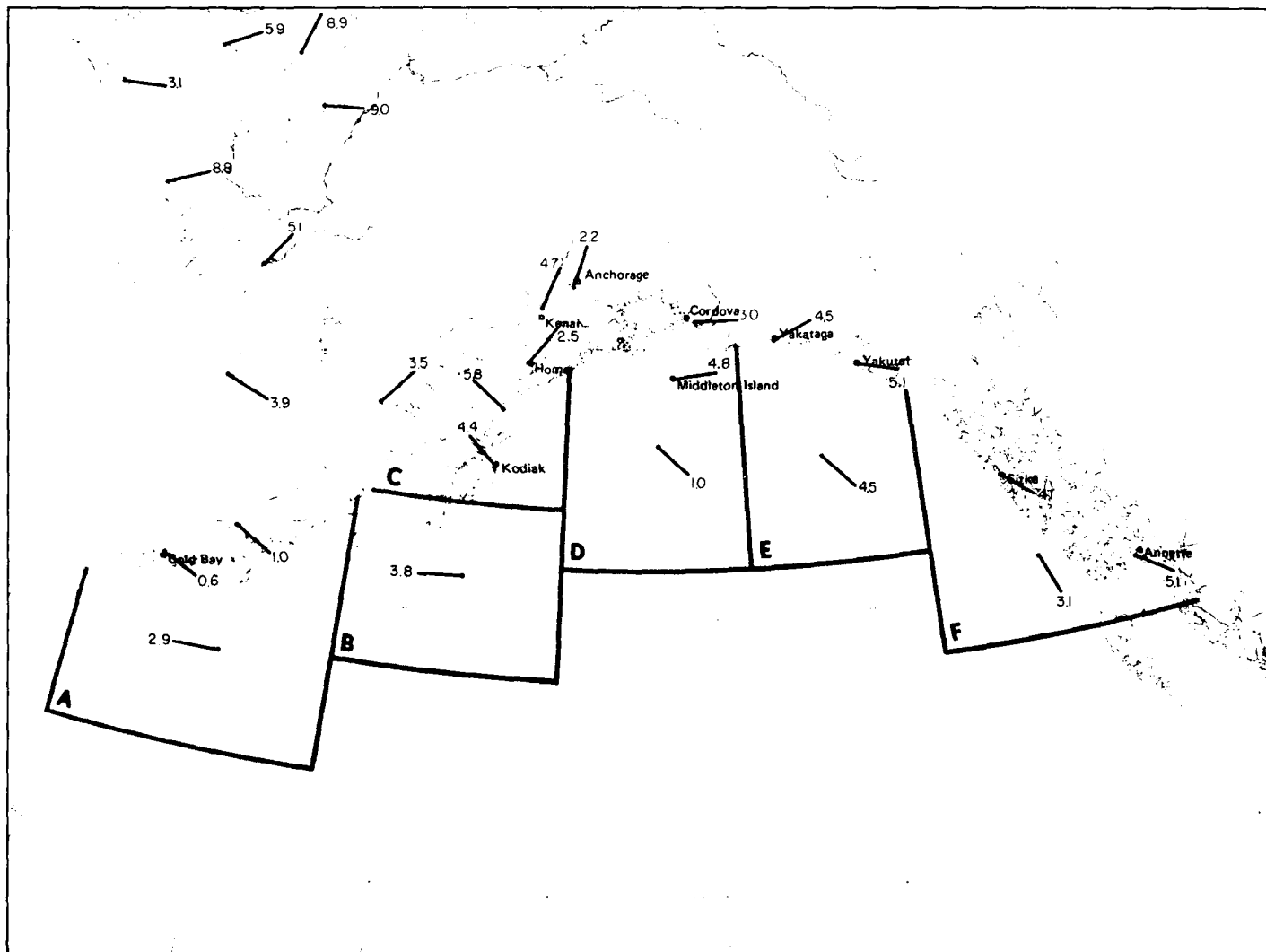
9 Wind speed thresholds

February



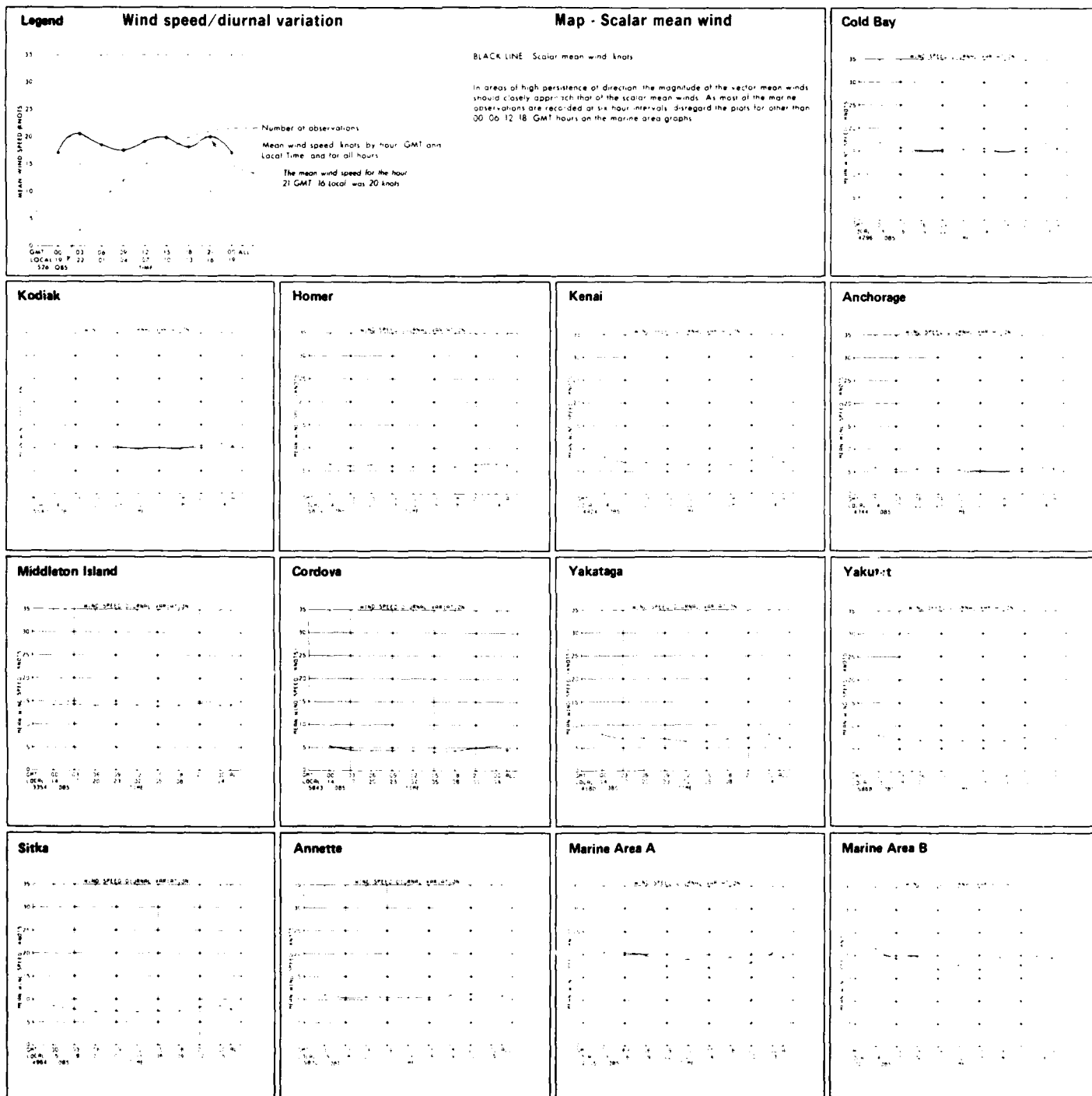
February

10 Wind direction/diurnal variation



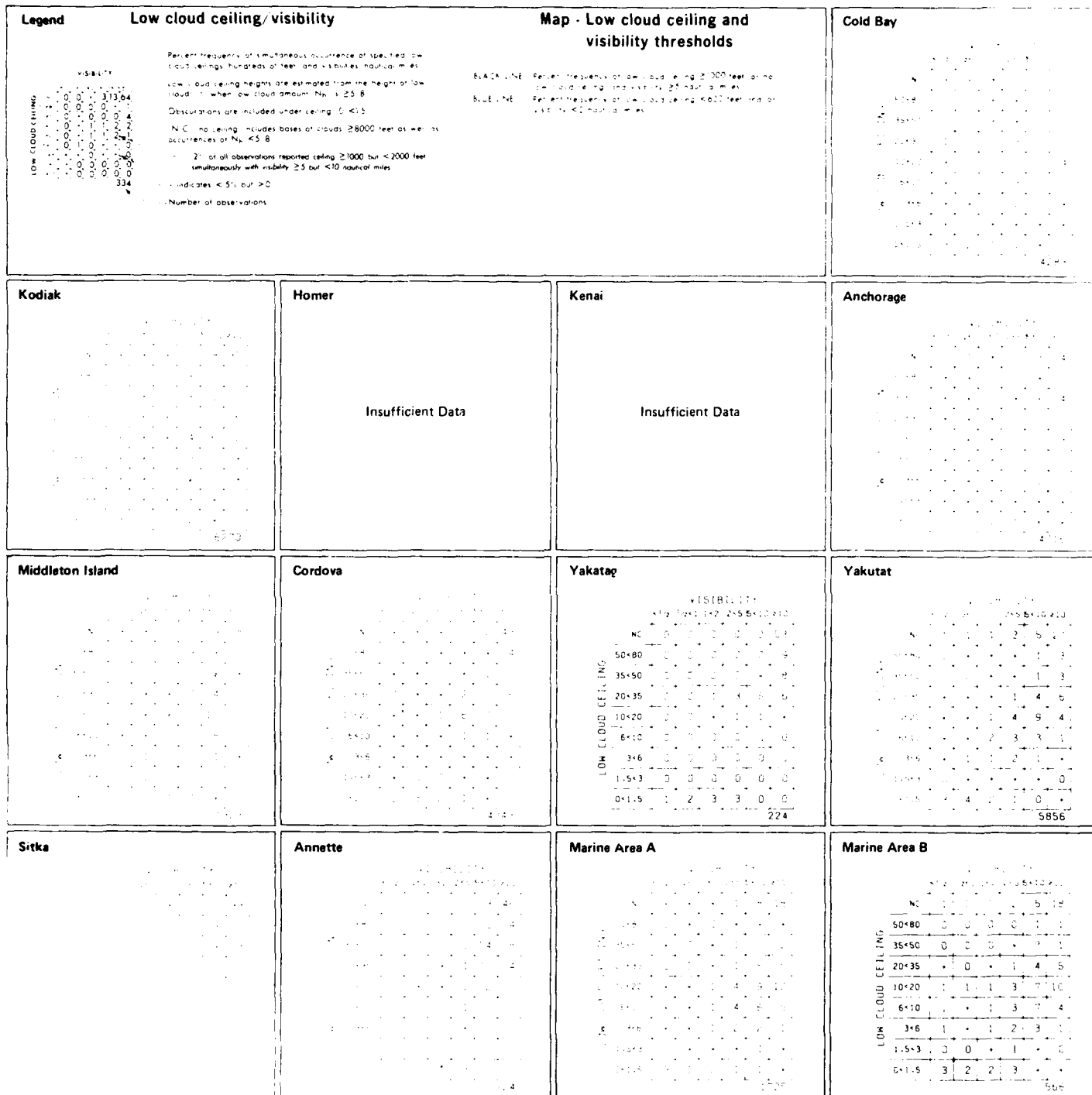
10 Vector mean wind

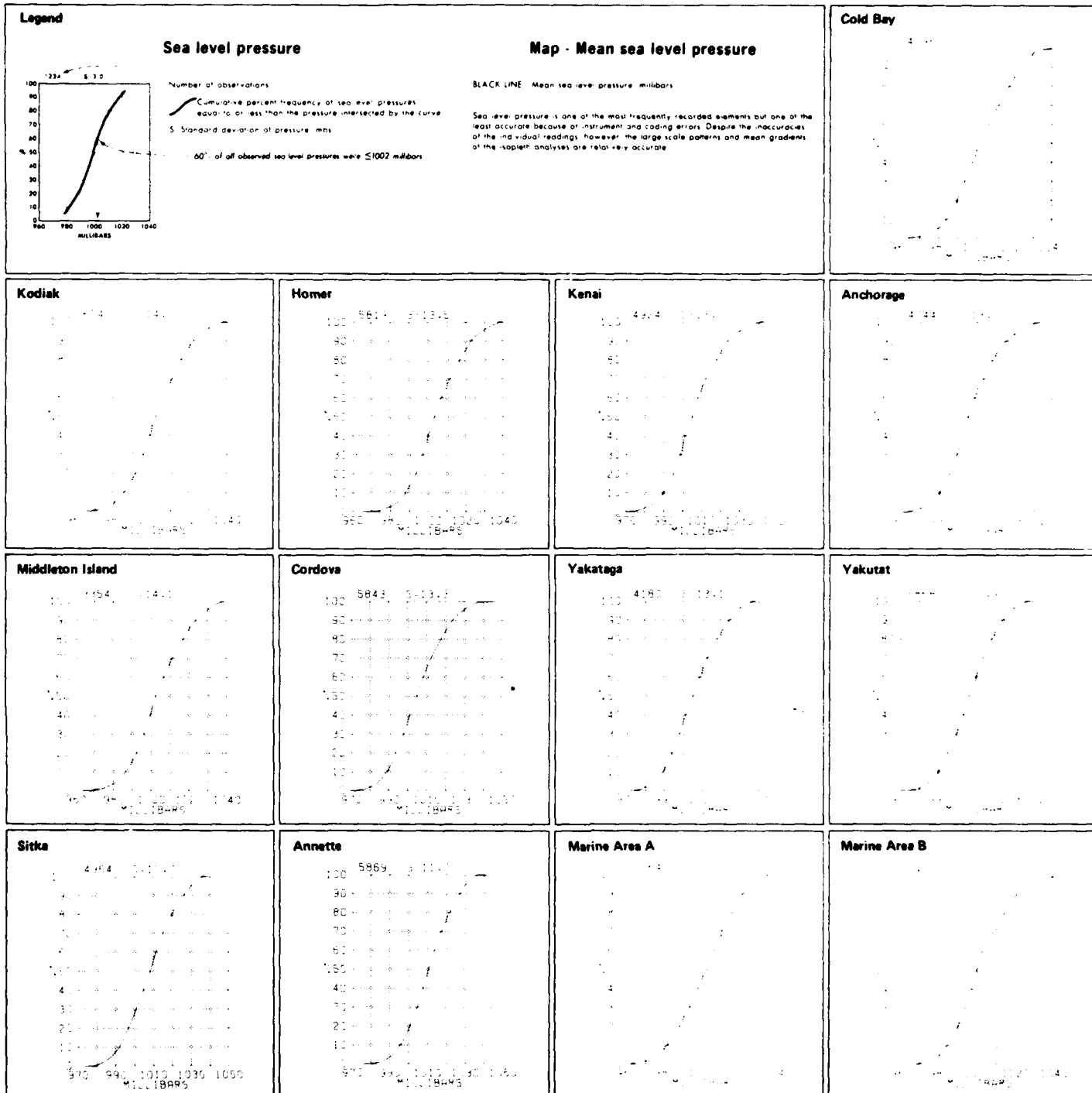
February



February

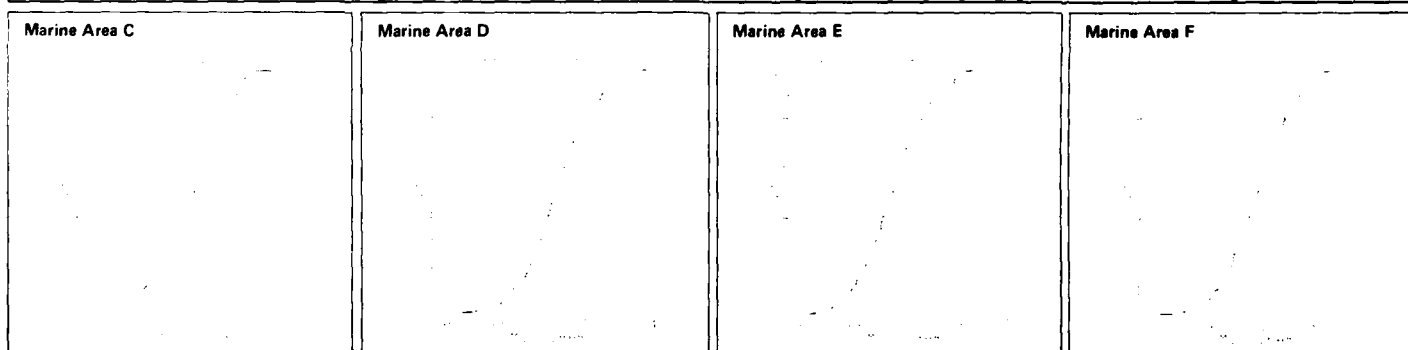
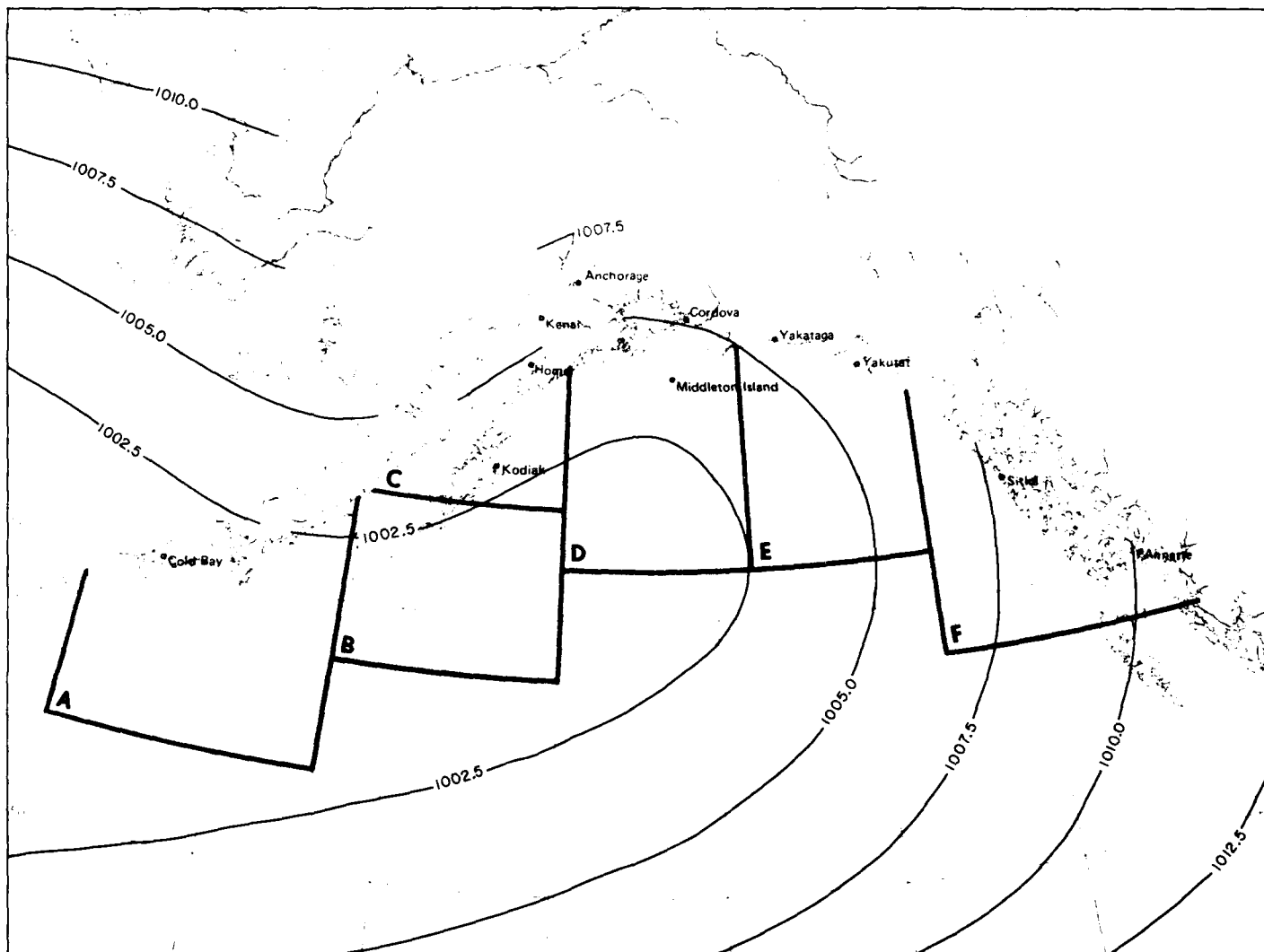
11 Wind speed/diurnal variation





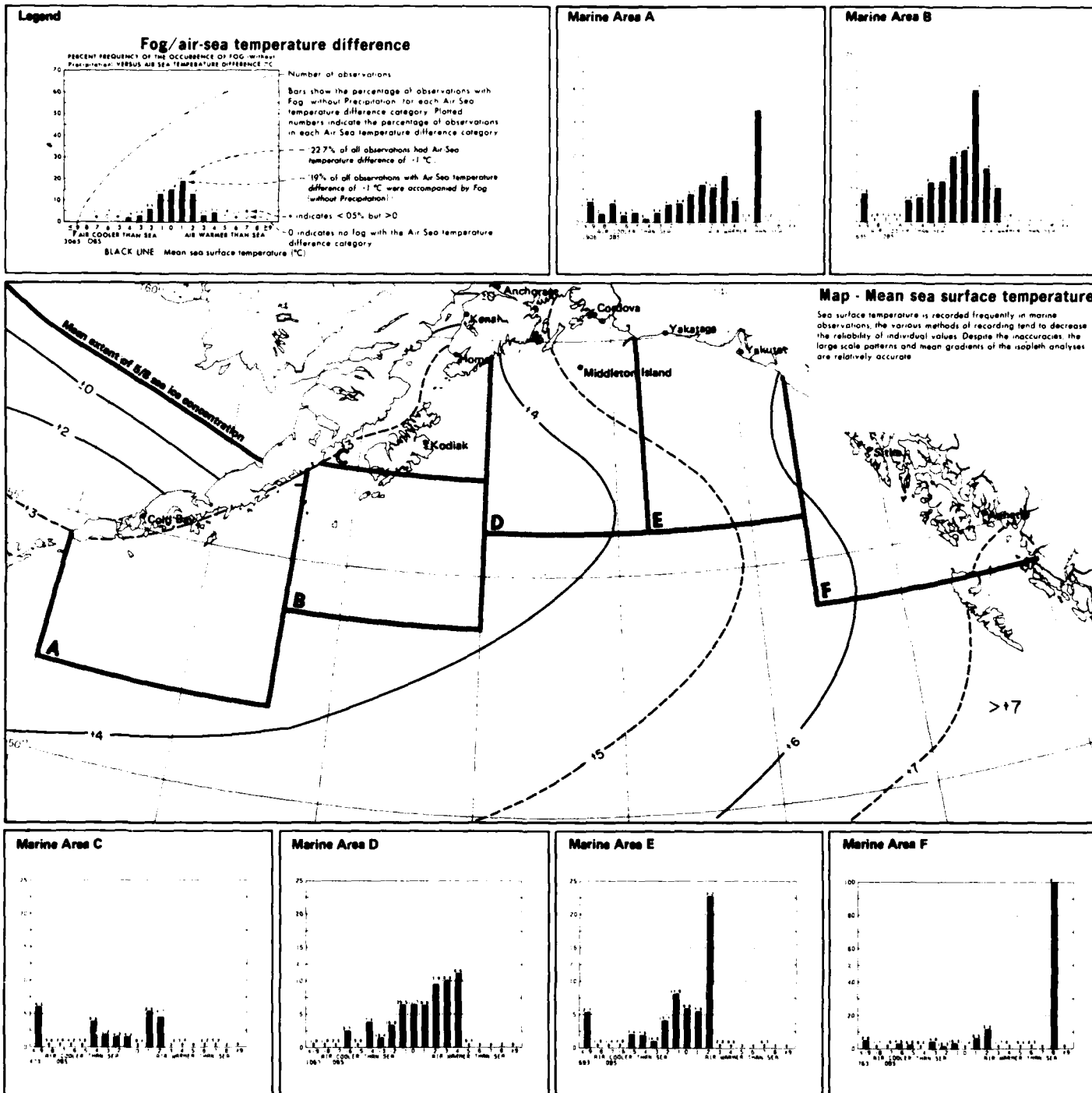
February

13 Sea level pressure



13 Mean sea level pressure

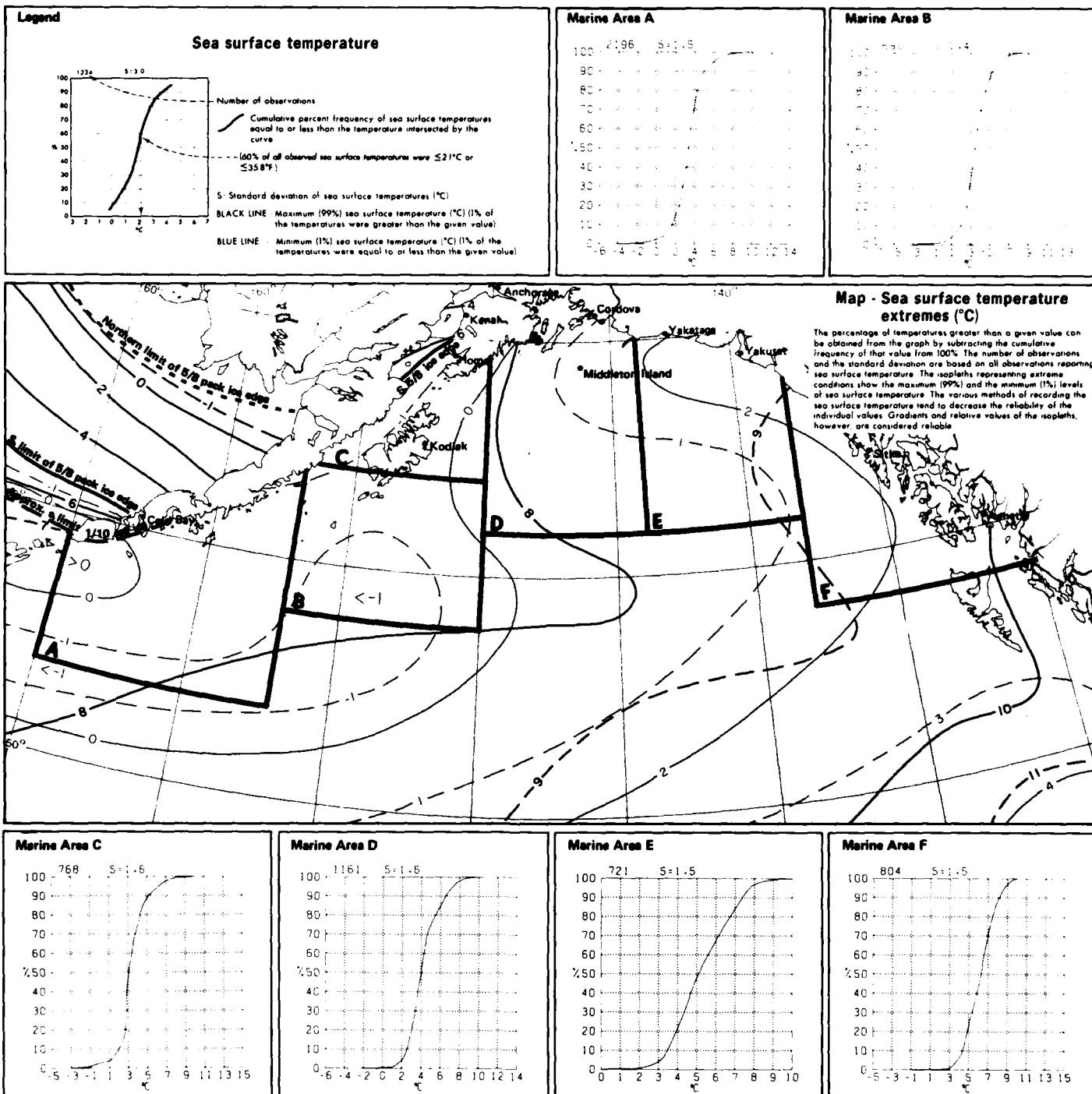
February



February

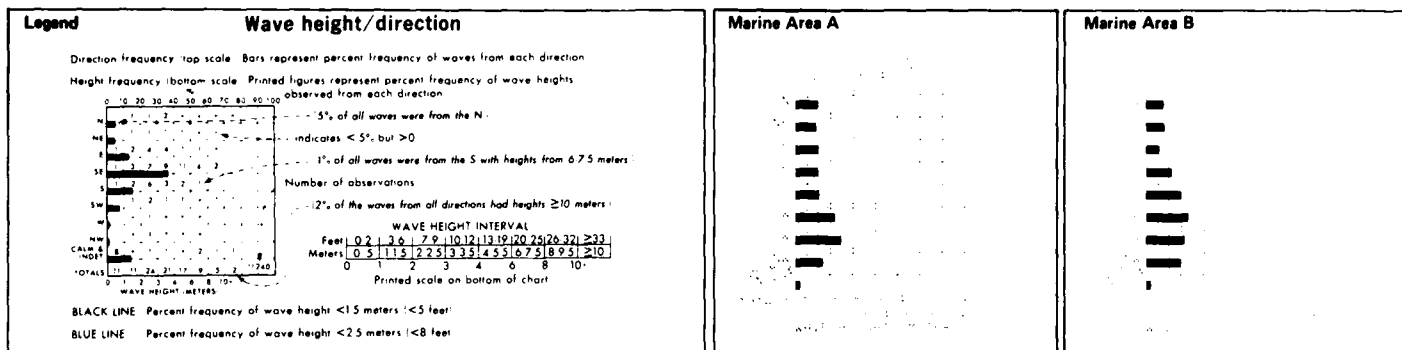
86

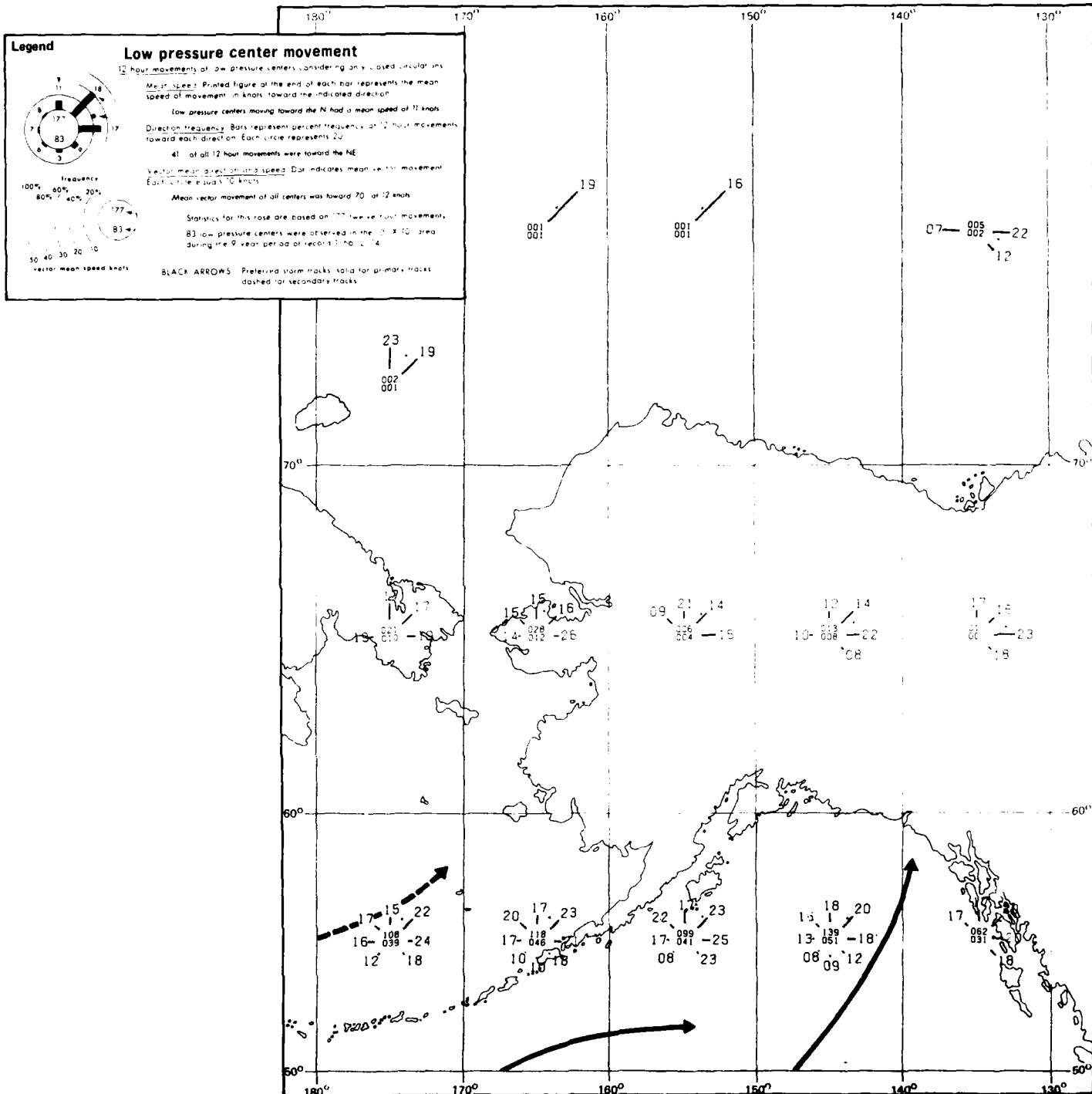
14 Fog/air-sea temperature difference
Mean sea surface temperature



15 Sea surface temperature extremes

February



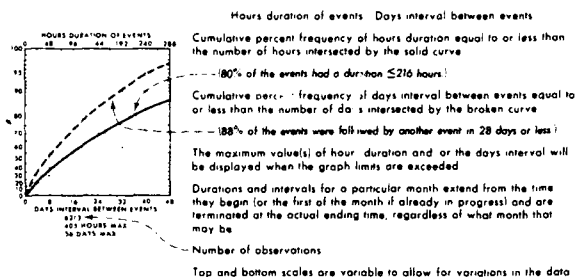


February

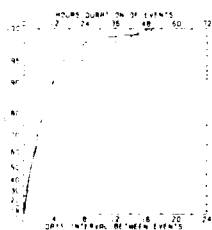
18 Low pressure center movement

Legend

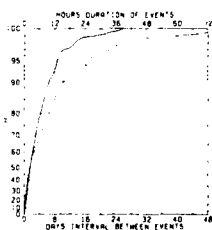
Persistence of visibility < 2 n. mi.



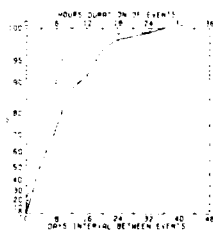
Kodiak



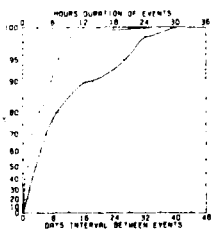
Homer



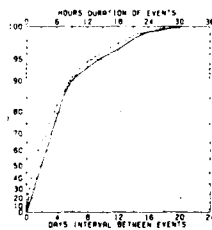
Kenai



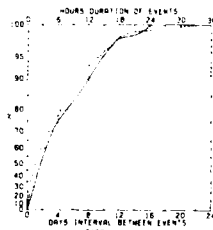
Middleton Island



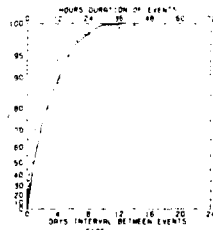
Cordova



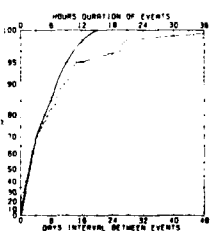
Yakataga



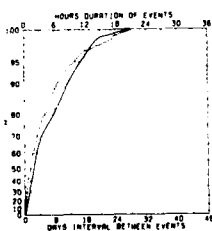
Yakutat



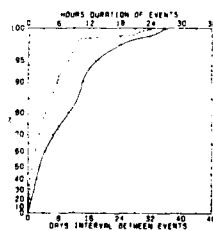
Sitka



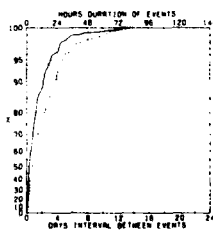
Annette



Anchorage



Cold Bay

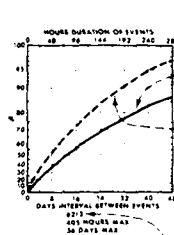


19 Persistence of visibility < 2 n. mi.

February

Legend

Persistence of wind ≥ 10 kts.



Hours duration of events Days interval between events

Cumulative percent frequency of hours duration equal to or less than the number of hours intersected by the solid curve

— (80% of the events had a duration ≤ 216 hours)

Cumulative percent frequency of days interval between events equal to or less than the number of days intersected by the broken curve

— (88% of the events were followed by another event in 28 days or less)

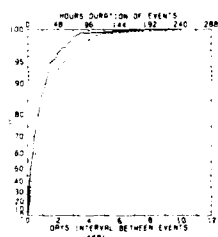
The maximum value(s) of hours duration and/or the days interval will be displayed when the graph limits are exceeded

Durations and intervals for a particular month extend from the time they begin for the first of the month if already in progress and are terminated at the actual ending time, regardless of what month that may be

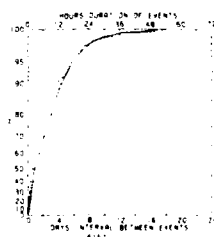
Number of observations

Top and bottom scales are variable to allow for variations in the data

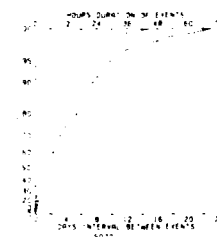
Kodiak



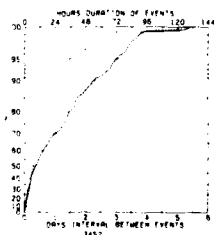
Homer



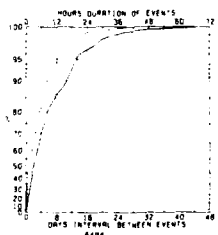
Kenai



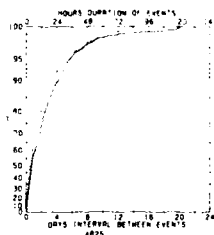
Middleton Island



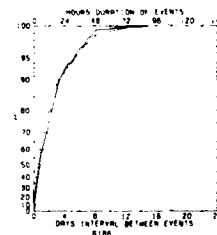
Cordova



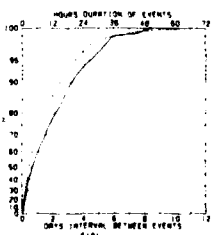
Yakutat



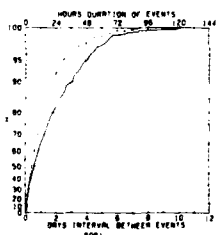
Yakutat



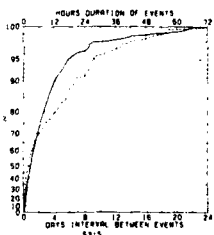
Sitka



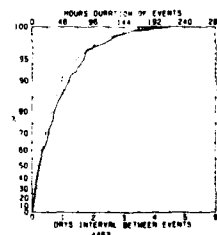
Annette



Anchorage

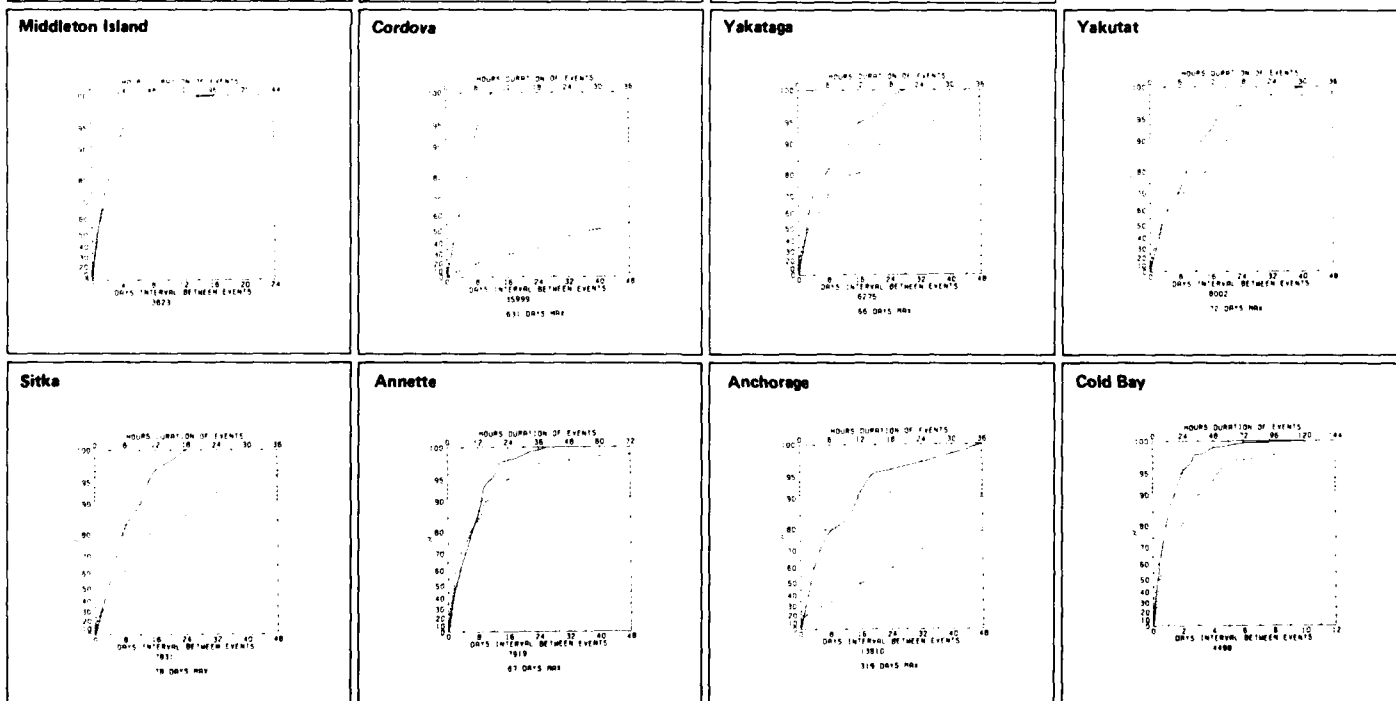
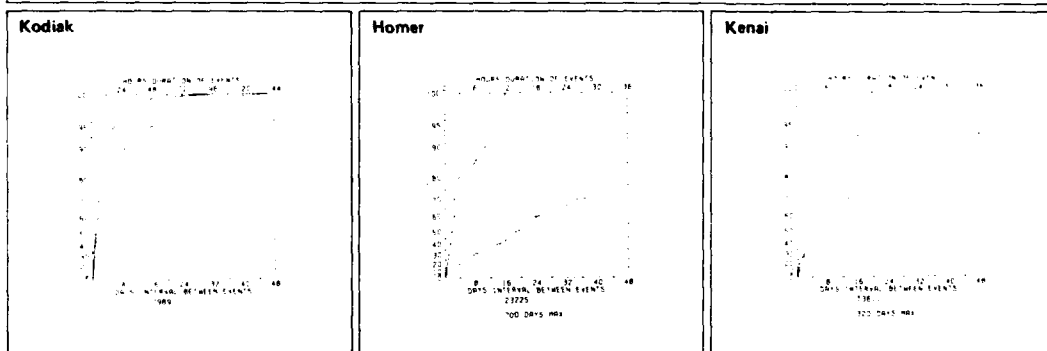
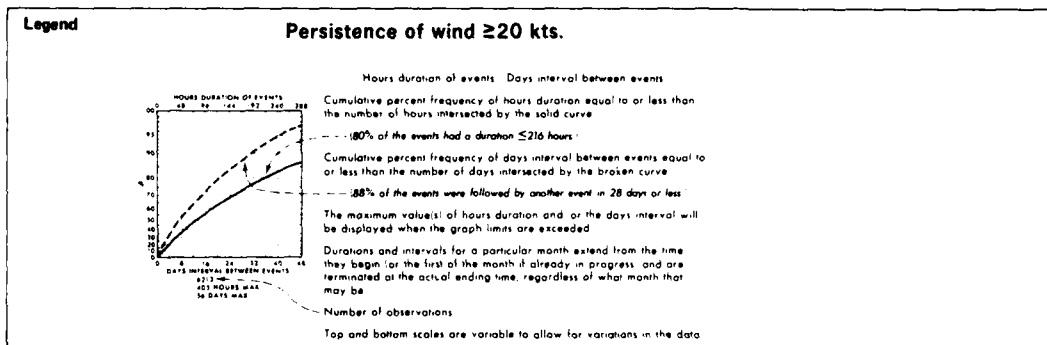


Cold Bay



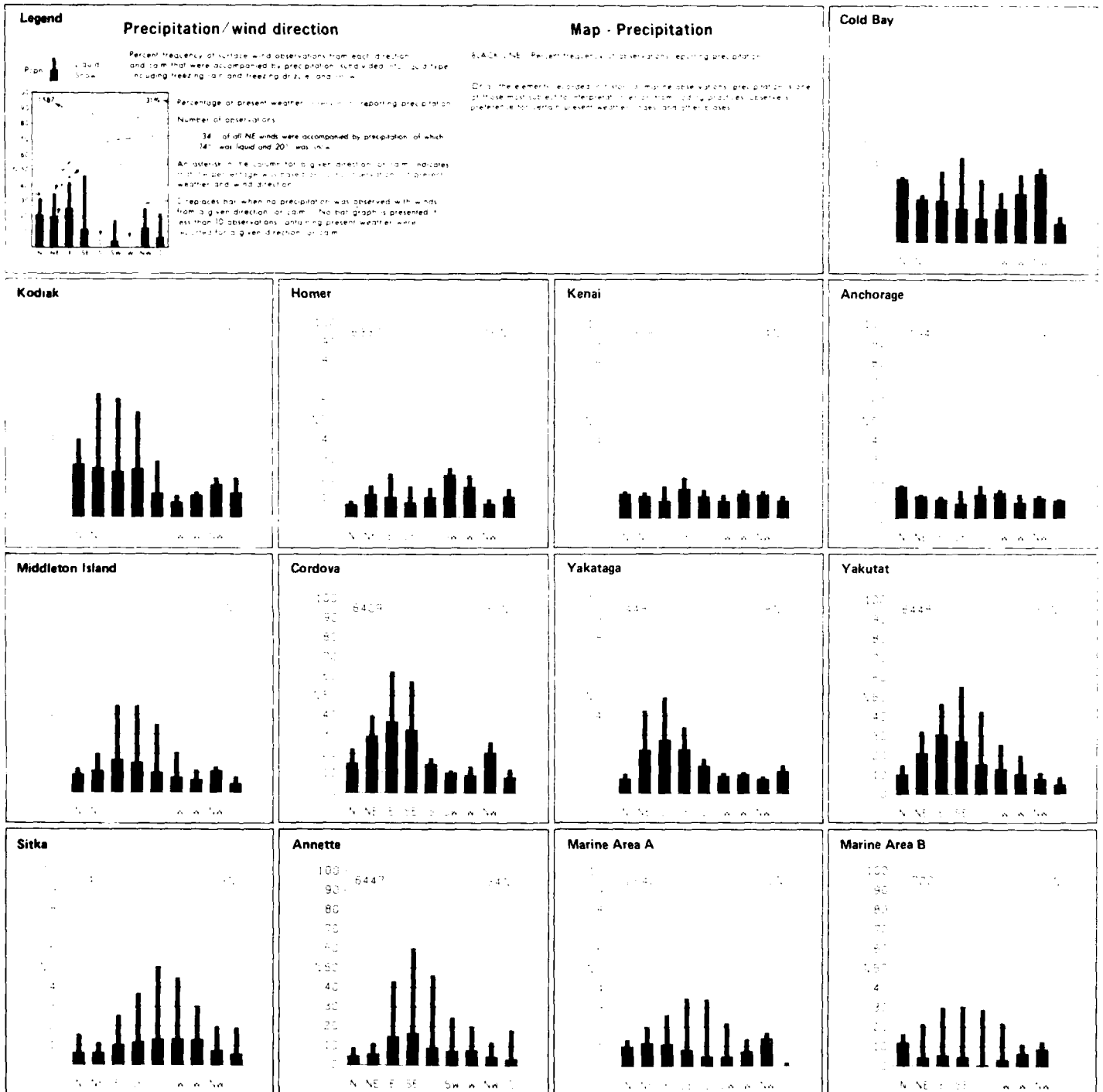
February

20 Persistence of wind ≥ 10 kts.



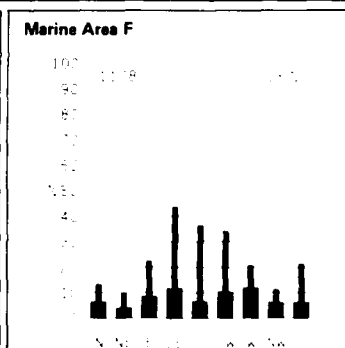
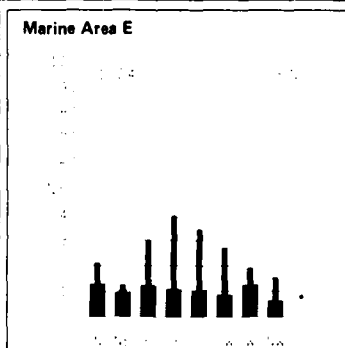
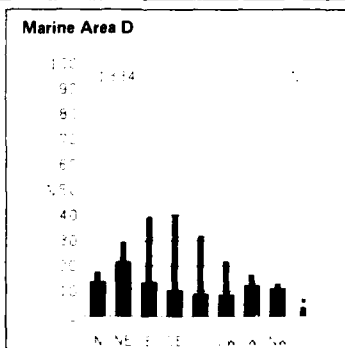
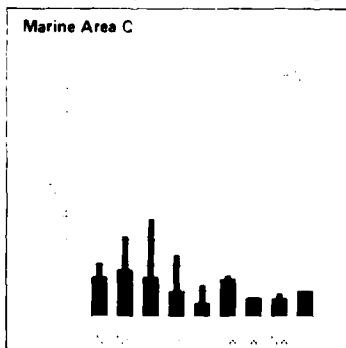
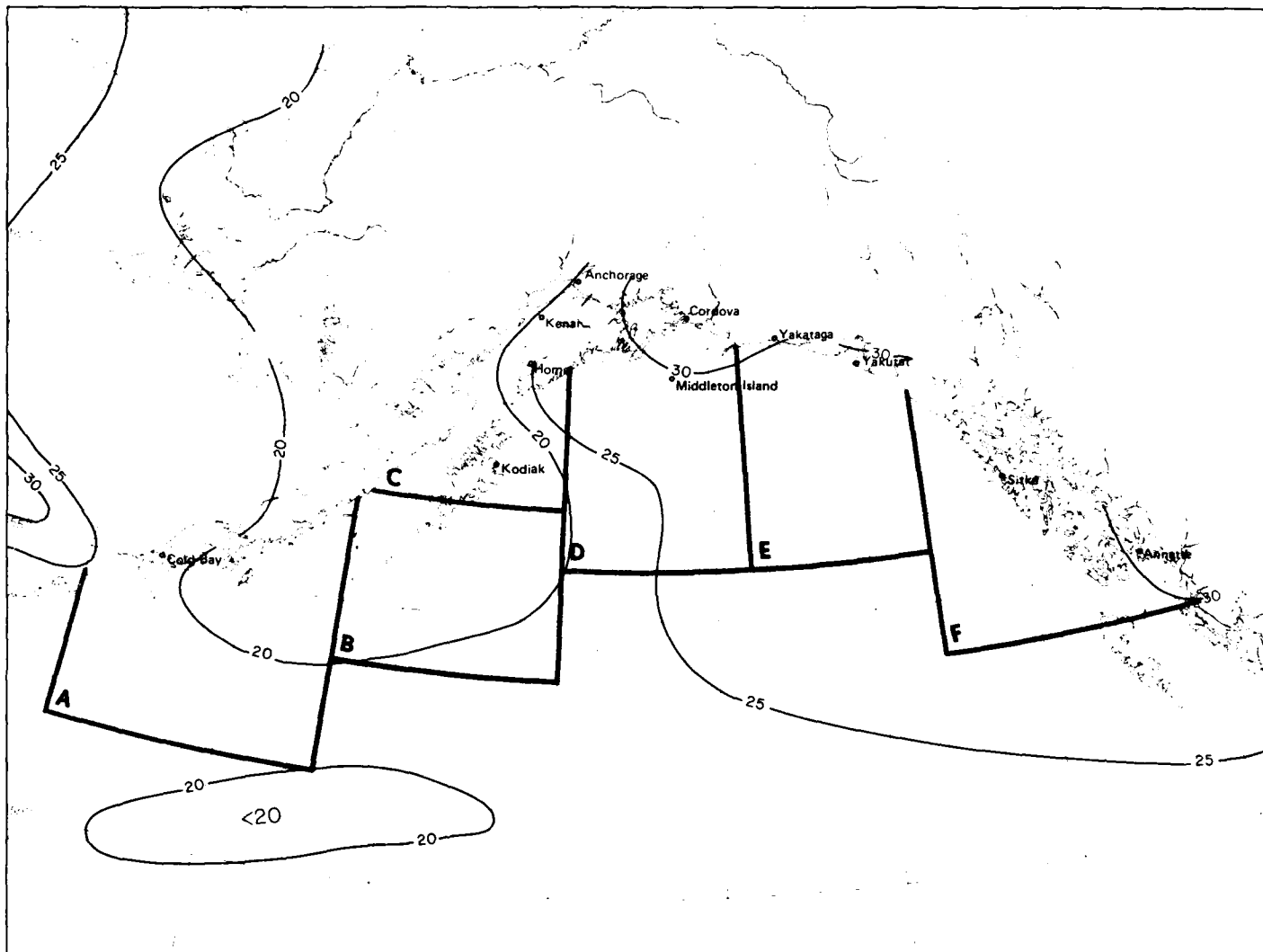
21 Persistence of wind ≥ 20 kts.

February



March

1 Precipitation/wind direction



1 Precipitation

March

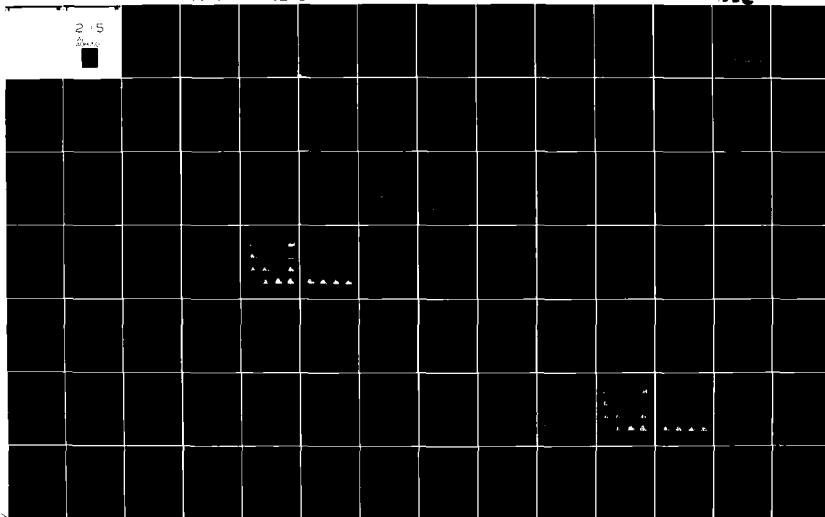
AD-A081 310

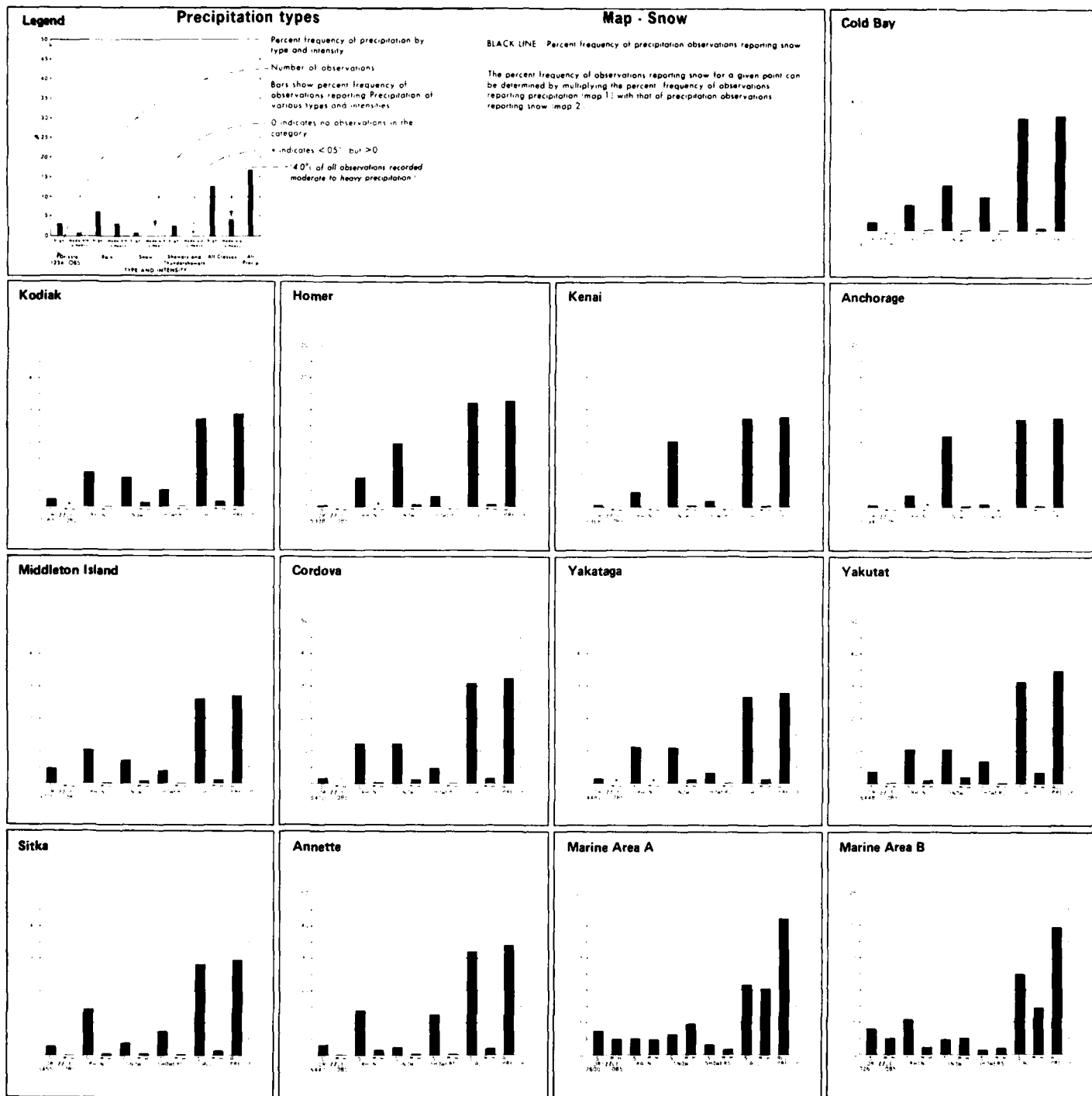
ALASKA UNIV ANCHORAGE ARCTIC ENVIRONMENTAL INFORMATI--ETC F/G 4/2
CLIMATIC ATLAS OF THE OUTER CONTINENTAL SHELF WATERS AND COASTS--ETC(U)
1977 U A BROWER; H F DIAZ; A S FRECHTEL

UNCLASSIFIED AEIC-8-77-VOL-1

NL

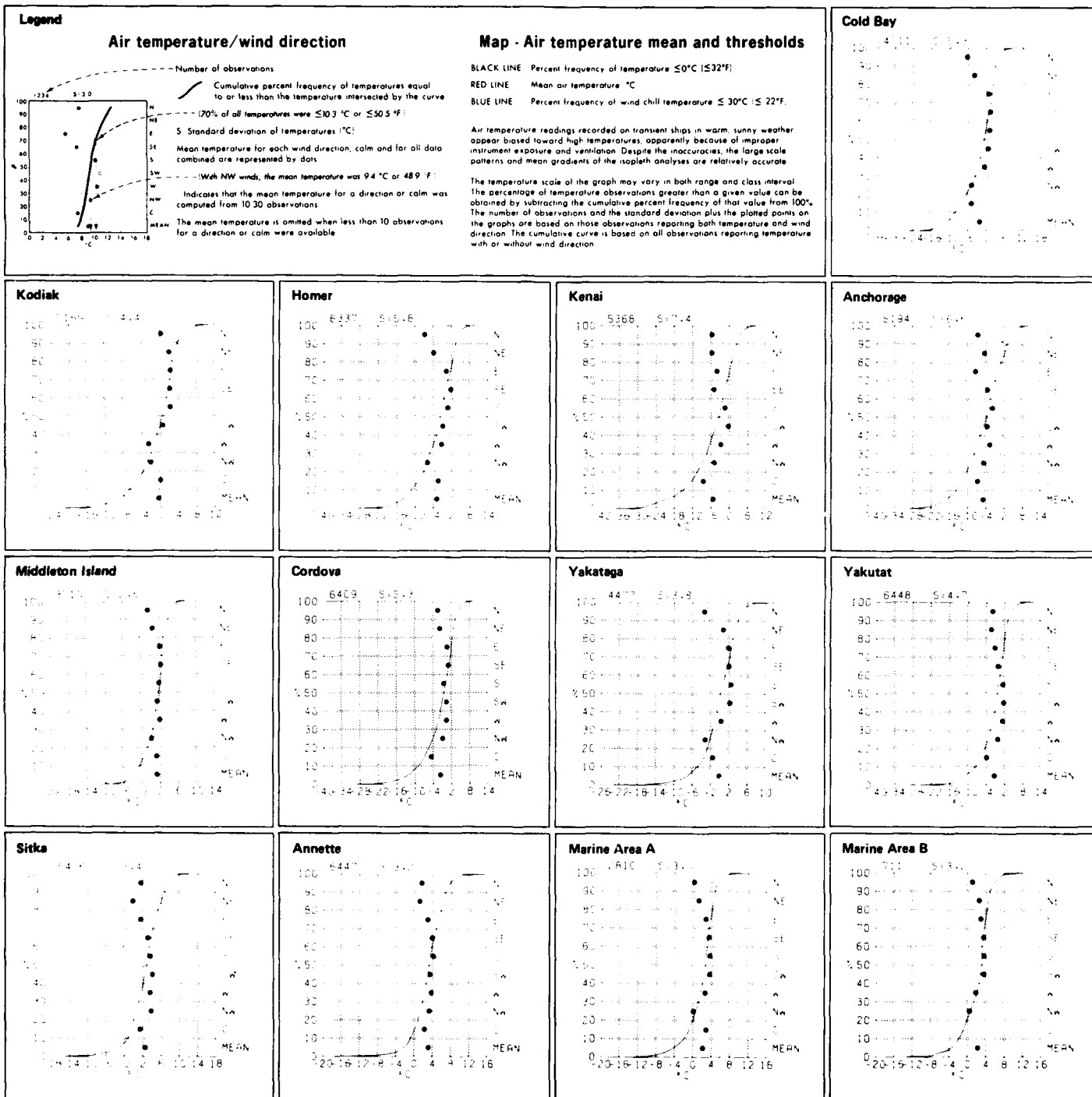
215





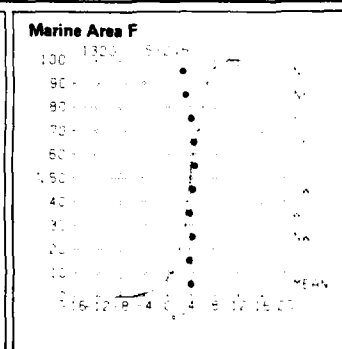
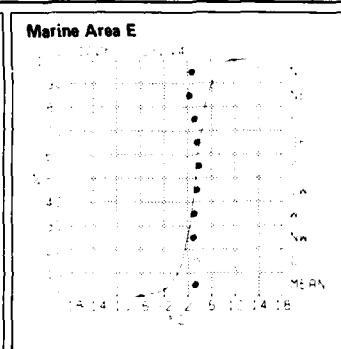
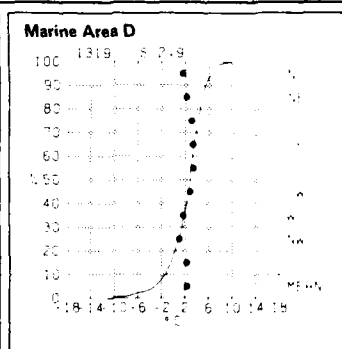
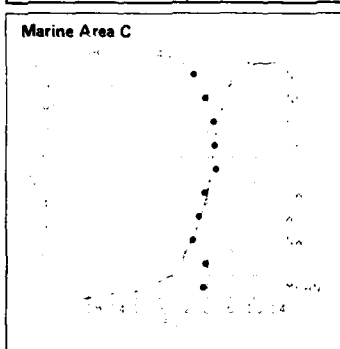
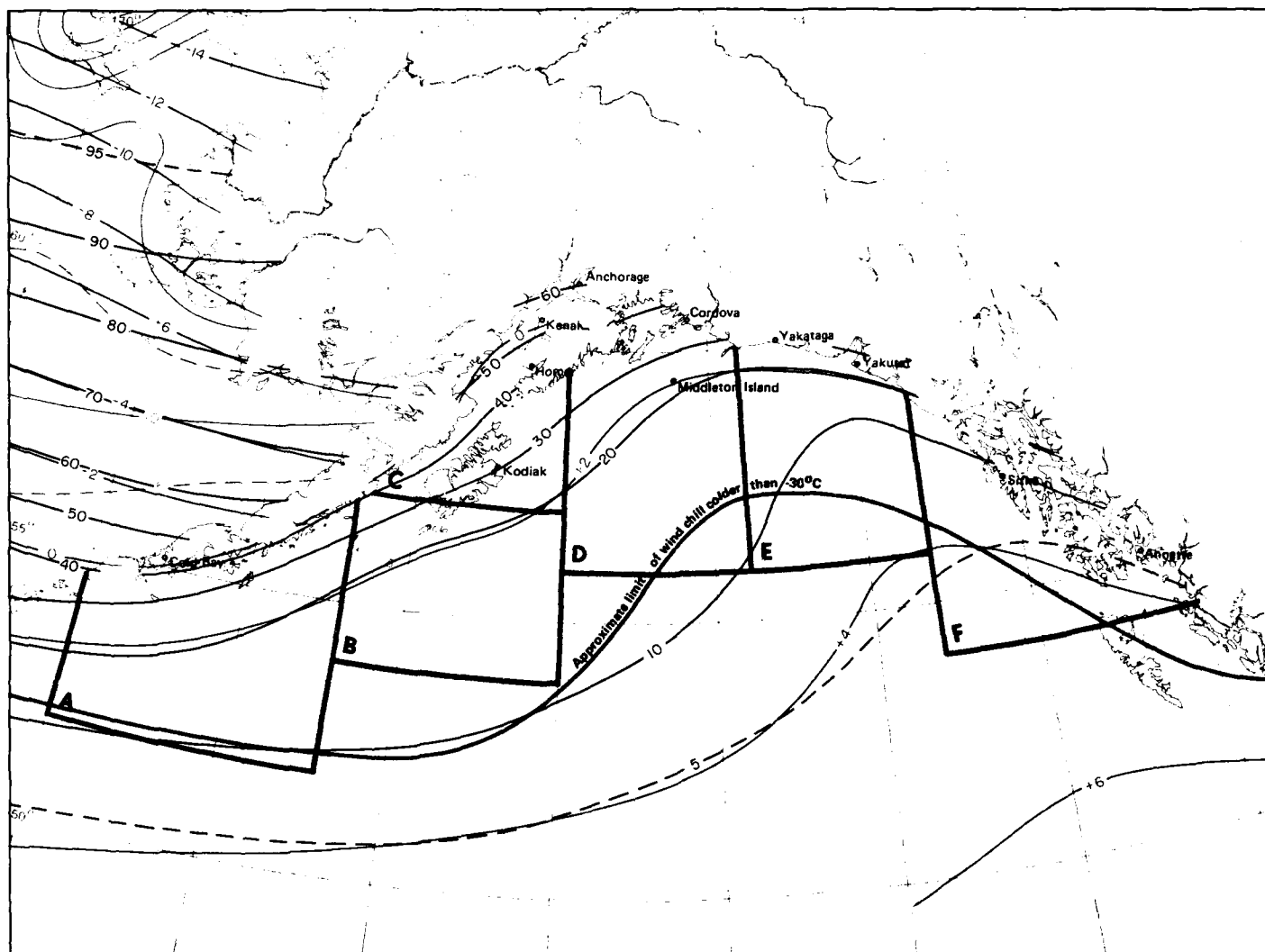
March

2 Precipitation types



March

3 Air temperature/wind direction

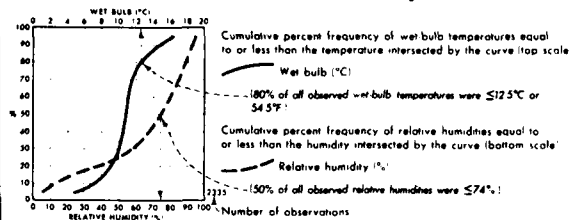


3 Air temperature mean and thresholds

March

Legend

Wet bulb/relative humidity

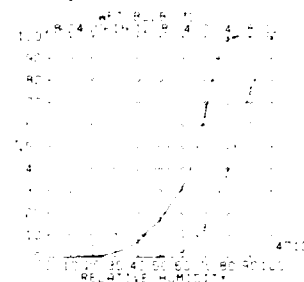


Map - Mean dew point temperature

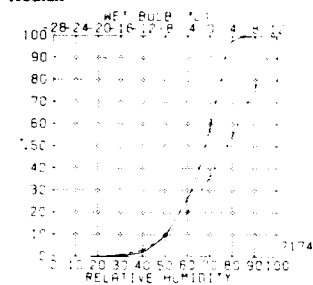
BLACK LINE - Mean dew point temperature $^{\circ}\text{C}$

The observation count of the graph reflects those observations reporting both air and wet bulb temperatures. Both are required in computing the relative humidity. The percentage of observations of either element greater than a given value can be obtained by subtracting the cumulative percent frequency of that value from 100%.

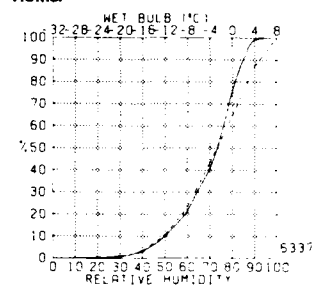
Cold Bay



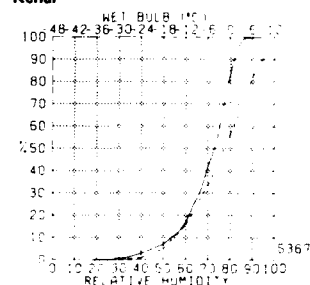
Kodiak



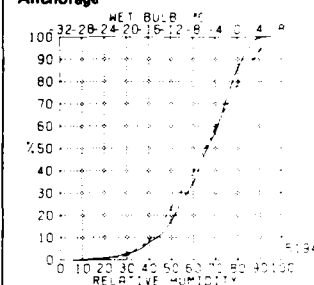
Homer



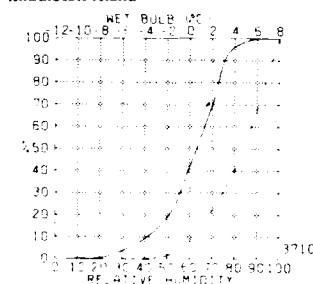
Kenai



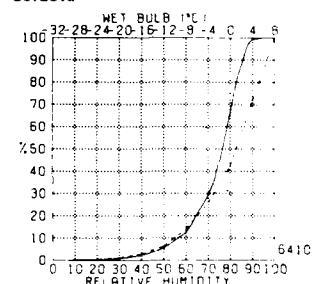
Anchorage



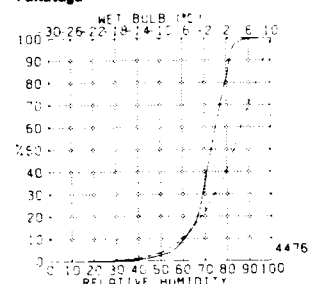
Middleton Island



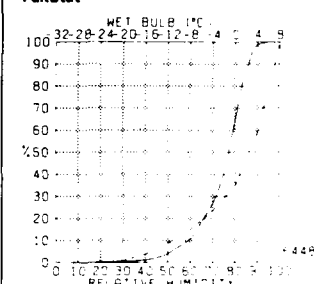
Cordova



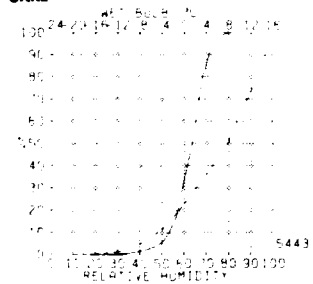
Yakutat



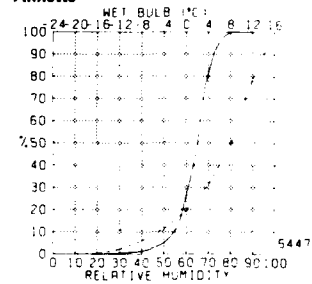
Yakutat



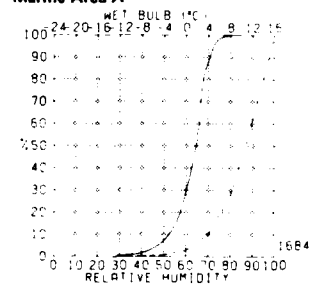
Sitka



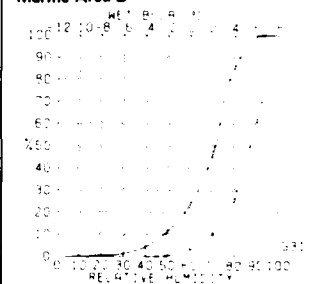
Annette



Marine Area A



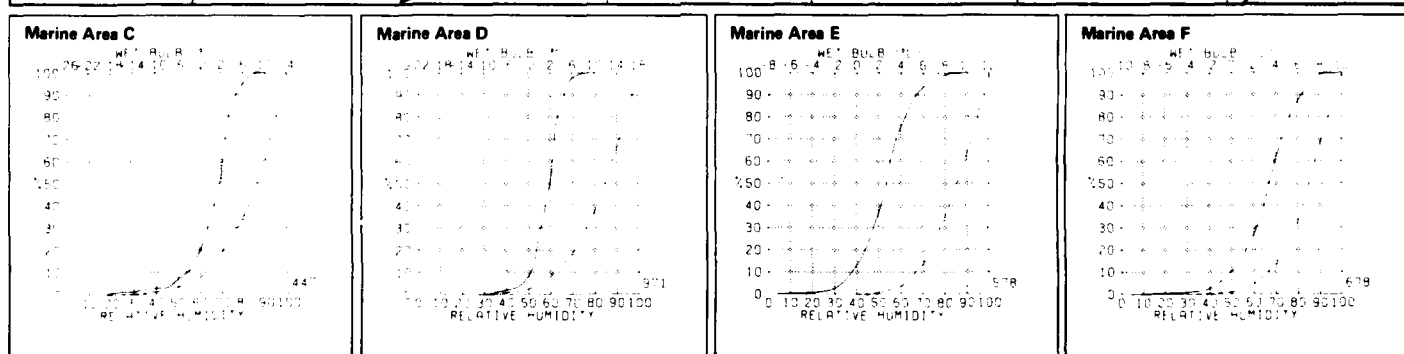
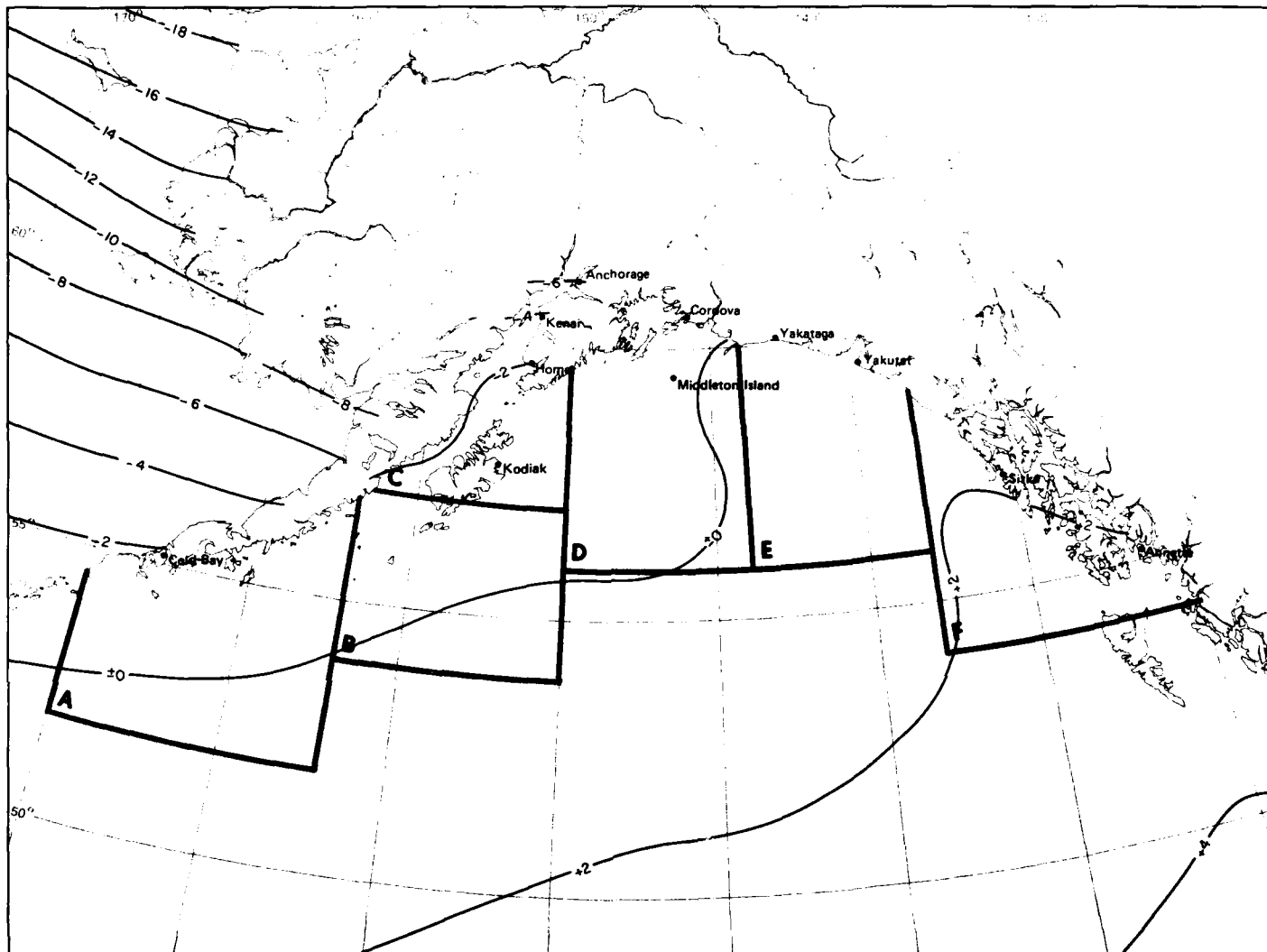
Marine Area B



March

100

4 Wet bulb/relative humidity



4 Mean dew point temperature

March

Legend

Air temperature/wind speed

WIND SPEED (kts)

Percent frequency of simultaneous occurrence of specified temperature and wind speed (knots)

--- 1% of all observations reported temperature 2-3°C simultaneously with wind speed of 22-33 kts

--- Indicates < 5% but > 0

- Number of observations

3550

Map - Air temperature extremes (°C)

BLACK LINE Maximum 99% air temperature 1% of temperatures were greater than the given value

BLUE LINE Minimum 1% air temperature 1% of temperatures were equal to or less than the given value

The graph can be used to determine the extent of human discomfort from the combined effects of extreme heat or cold and winds or to estimate the likelihood of superstructure icing. Icing potential increases as the air temperature drops below freezing and the winds increase above 10 knots (12 mph) and may become quite severe with temperatures equal to or less than 9°C (16°F) and winds equal to or greater than 34 knots (39 mph).

[illegible]

Year	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099
1994	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100						

Homer

WIND SPEED KTS										
TIME	0	1	2	3	4	5	6	7	8	9
8:00	+								0	0
8:15	+	1	2	1					0	0
8:30	+	2	3	2					0	0
8:45	+	5	5	4					0	0
9:00	+	4	6	2					0	0
9:15	+	5	7	2					0	0
9:30	+	5	6	2					0	0
9:45	+	3	4	1					0	0
10:00	+	2	5	1					0	0
10:15	+	1	2	1					0	0
10:30	+	3	7	1					0	0

6337

Kenai

WIND SPEED KTS:

TEMP °C:	0-3	4	10-11	21-22	33	34
10-11	-	-	0	0	0	0
8-9	-	-	0	0	0	0
6-7	-	-	1	-	0	0
4-5	-	-	3	-	0	0
2-3	2	7	4	-	0	0
0-1	2	6	3	-	0	0
-2-1	2	6	4	-	0	0
-4-3	0	7	5	-	0	0
-6-5	2	5	2	-	0	0
-8-7	2	5	-	-	0	0
-9-8	0	5	2	-	0	0

5369

[illegible][illegible]

Cordova

WIND SPEED

TIME	0	1	4	10	11	12	13	14
8:4							0	0
8:5		1	2				0	0
4:0		1	5	2			0	0
1:4		1	5	4			0	0
1:1		8	6	1			0	0
1:0		8	6	1			0	0
4:5		7	4	1			0	0
1:5		4	2				0	0
8:4		5	1				0	0
1:4		2	1				0	0
1:1		6	1				0	0

5409

Yakataga

WIND SPEED 1415

TEMP (°C)	0-3	4	10	11	12	13	14	15
10.11	+		0			0		0
8.9						0		0
6.7			1		2	0		0
4.5	1		3		5			
2.3	4		10		8			
0.1	5		9		5			
-2.1	10		9		2		0	
-4.3	5		6		1		0	
-6.5	2		2				0	
-8.7	1		2				0	
-9	1		2				0	

4477

[illegible]

Sitta

WIND: 1011.1 1011.1 1011.1

TEMP	1	2	3	4	5	6	7	8	9	10	11	12	13	14
14.15	0				*									
12.13														
10.11														
8.0					2									
6.0					7									
4.0					4		6							
2.0					3		13		6					
0.0					6		8		7					
20.0					5		4		5					
40.0					1									
50.0					1				1					

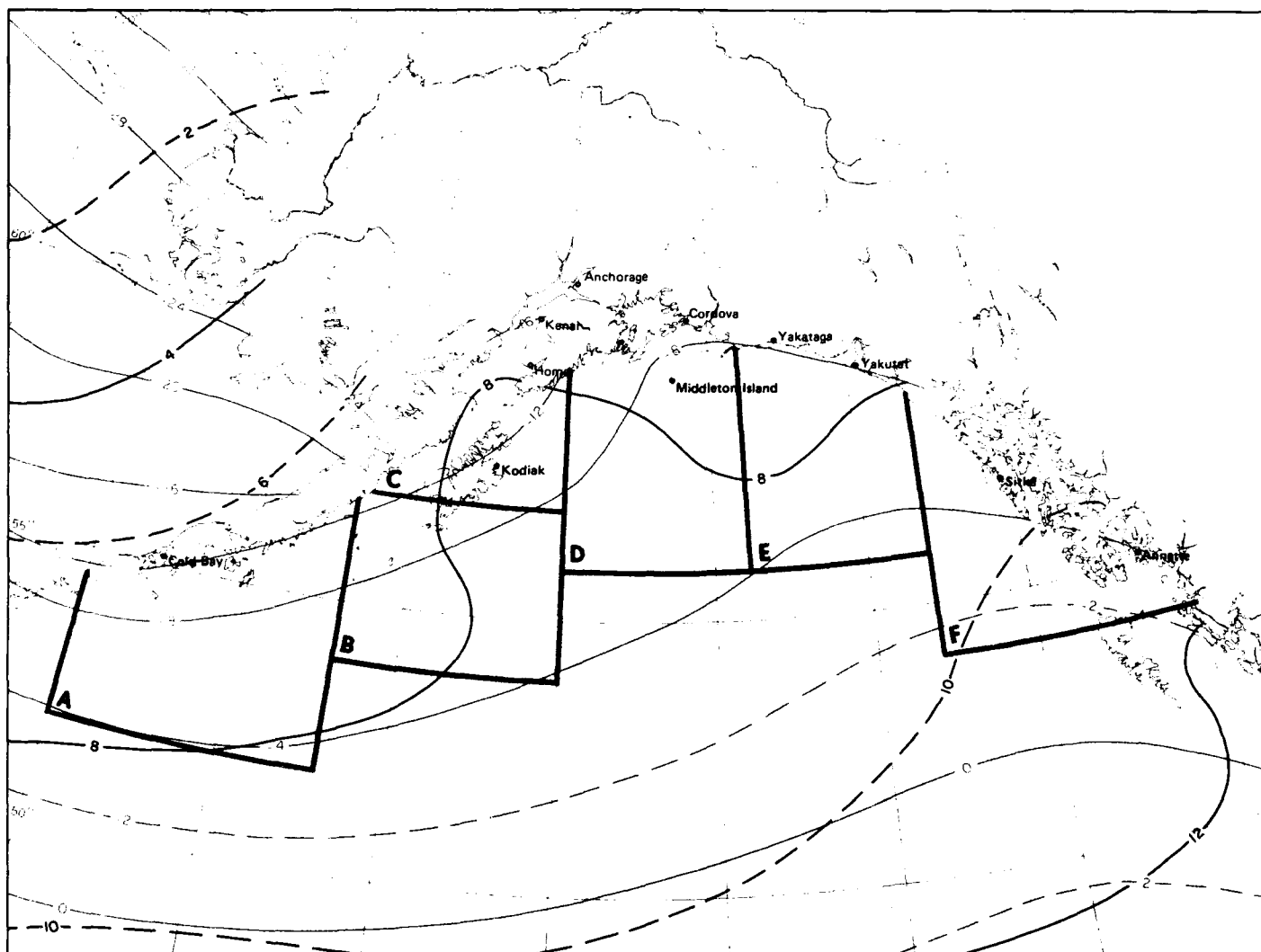
5456

Annette		WIN, SPEED, PLACE							
Trk	Pr	1	2	3	4	5	6	7	8
14	1	0						0	0
12	14								0
10	11							8	0
8	4					2			0
6	2			9		7		1	
4	5			12		8		1	
2	3		4	14		8		2	
0	4		2	8		3			
14	1			4		1			0
12	1			1					0
10	1			1					0
8	5			1		1			0

6447

Marine Area A

Marine Area B



Marine Area C

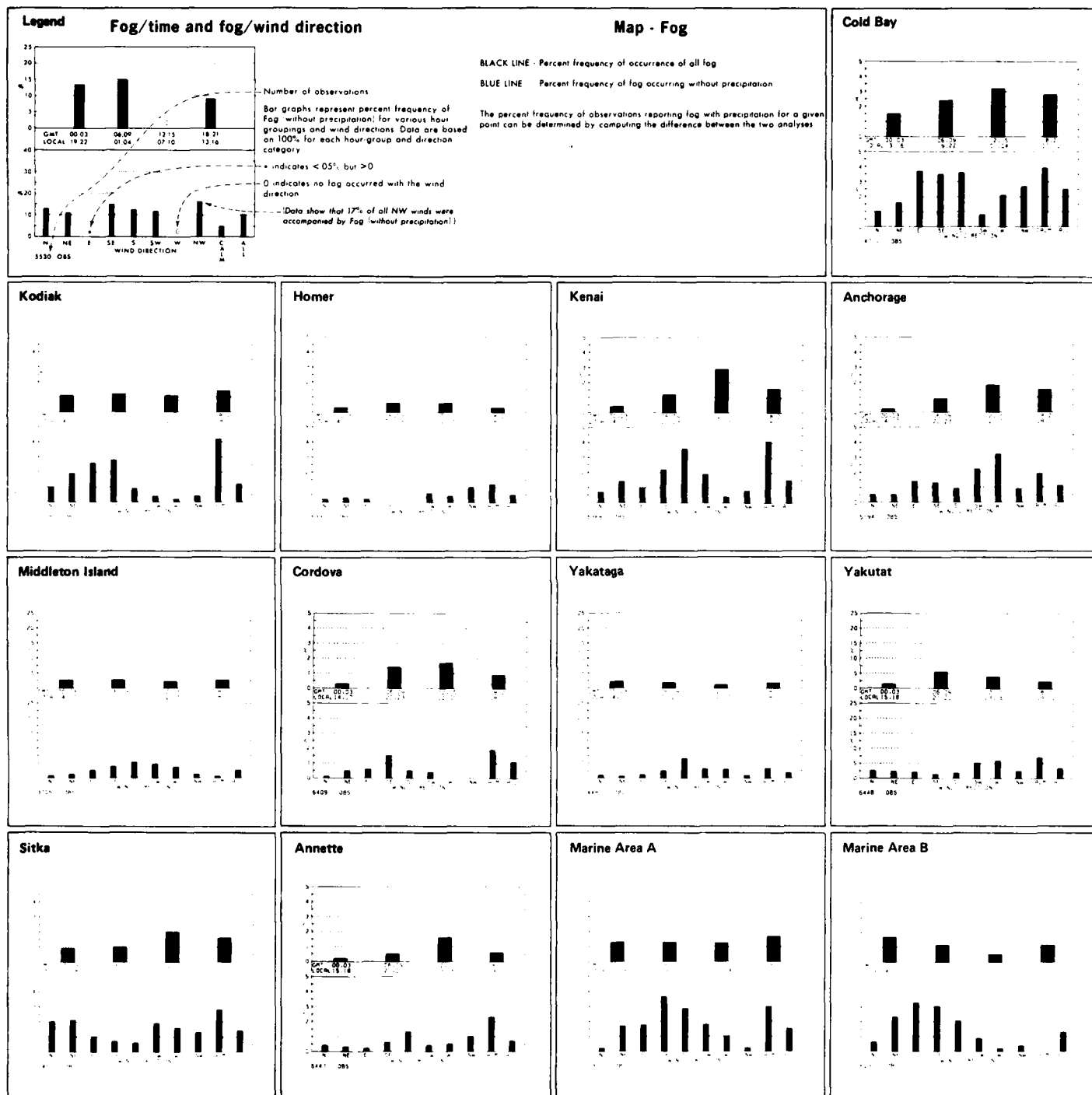
Marine Area D

Marine Area E

Marine Area F

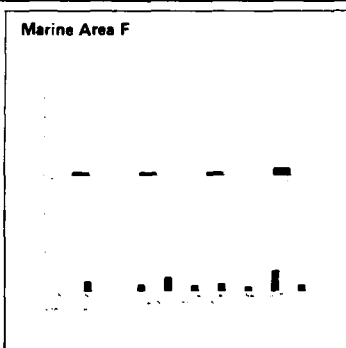
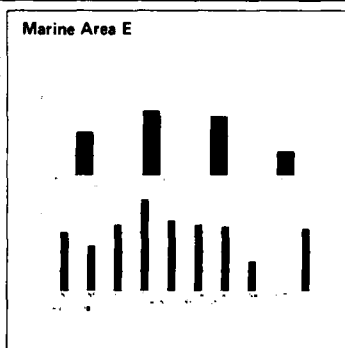
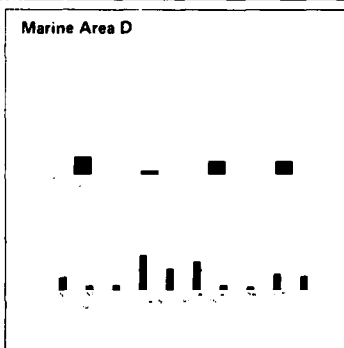
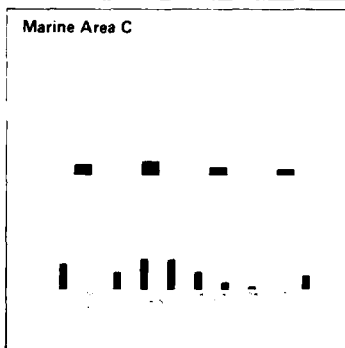
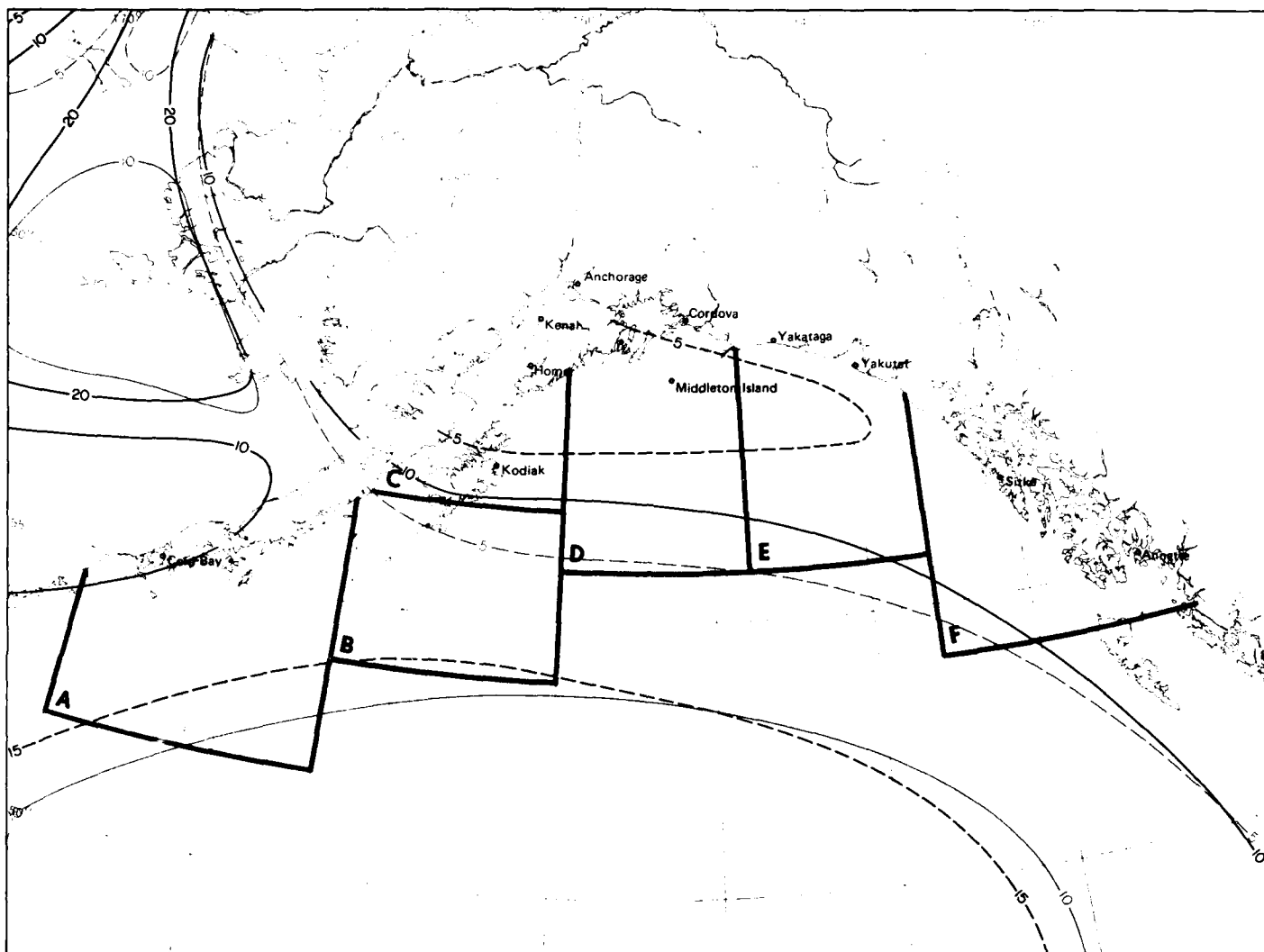
5 Air temperature extremes (°C)

March



March

6 Fog/time and fog/wind direction



6 Fog

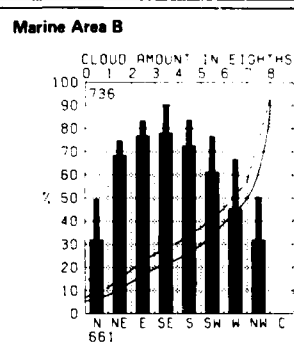
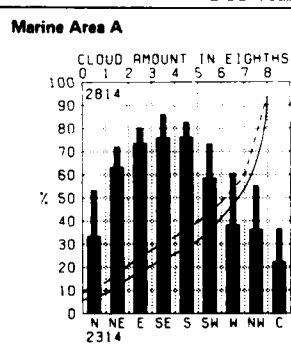
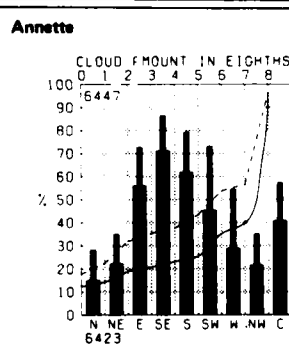
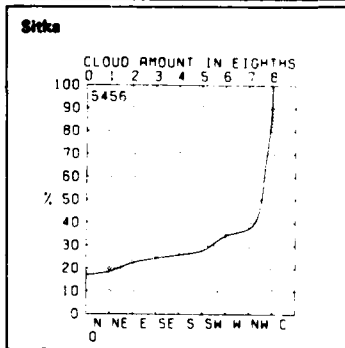
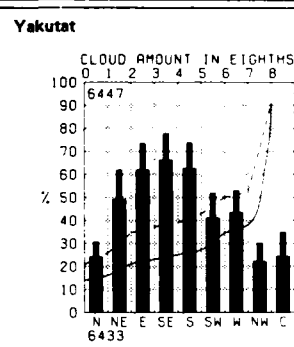
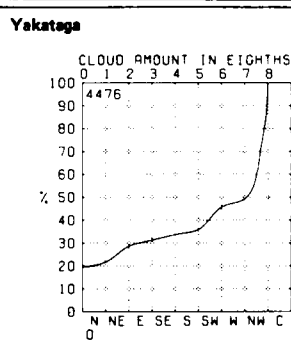
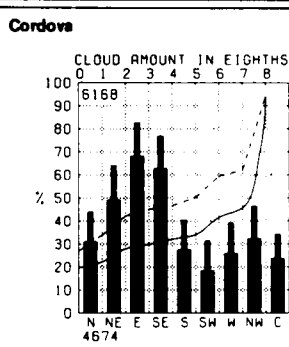
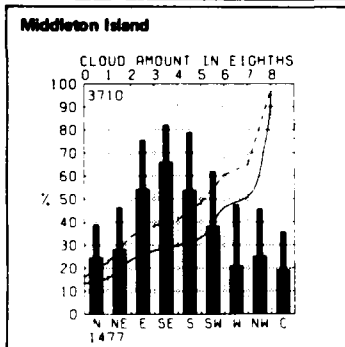
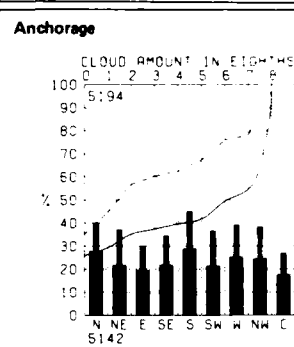
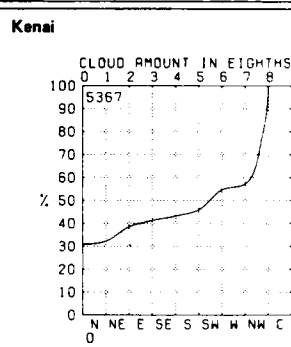
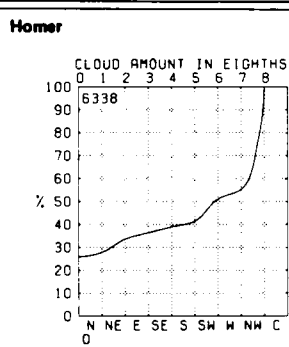
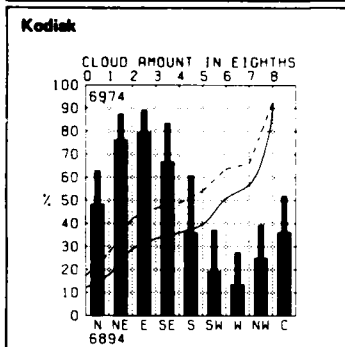
March

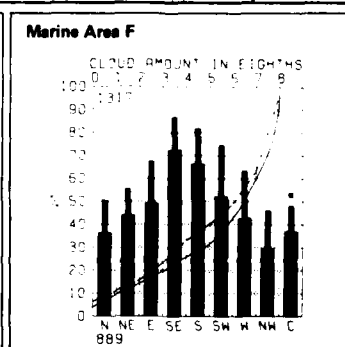
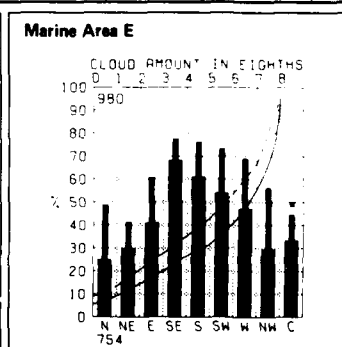
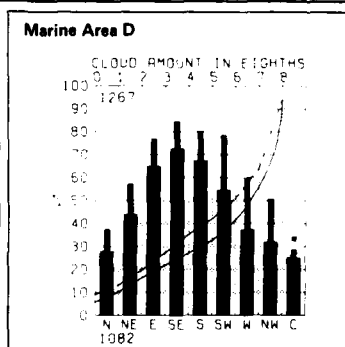
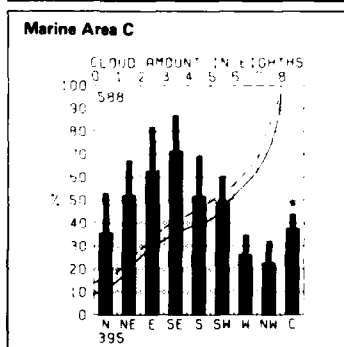
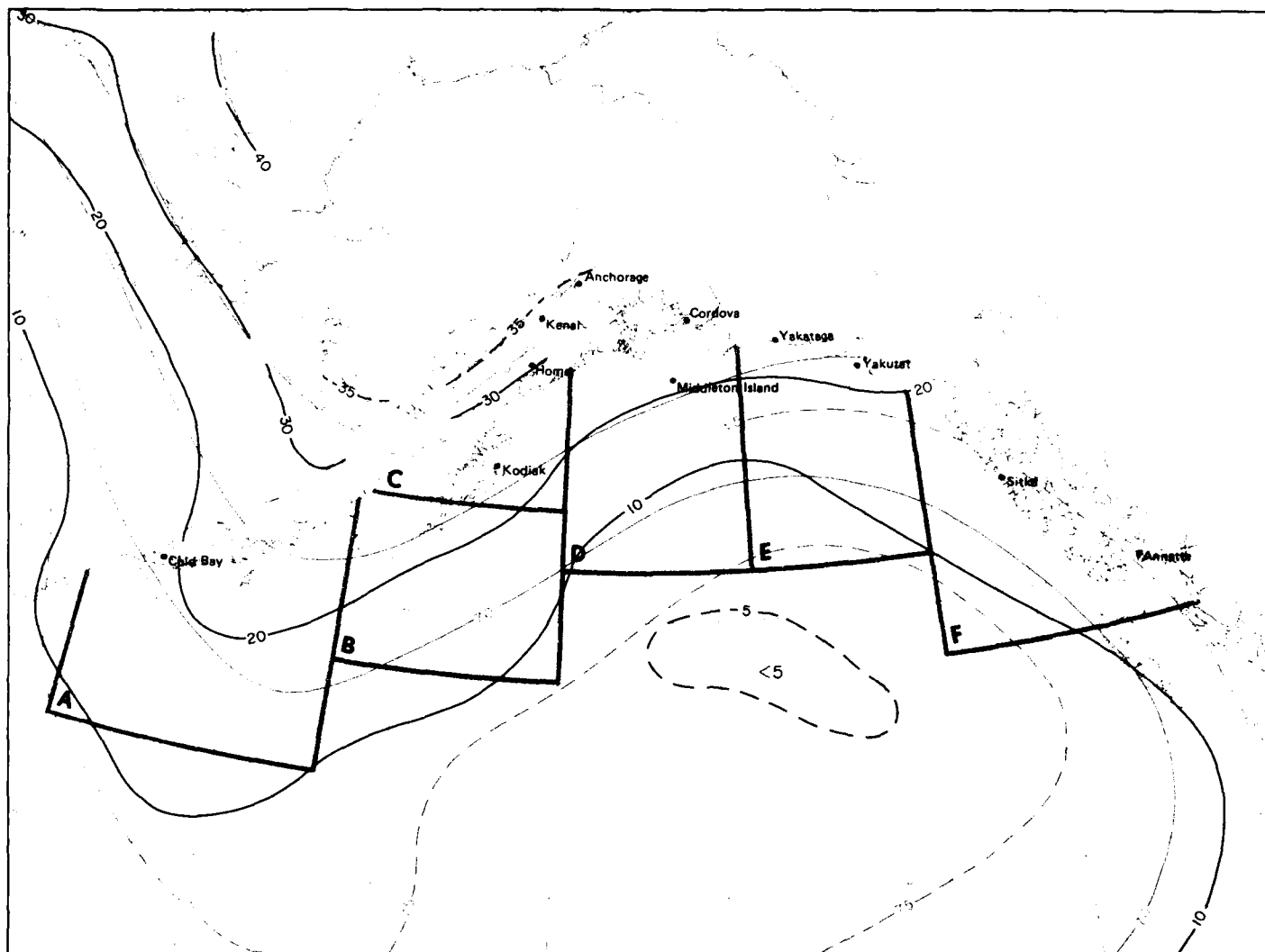
BLACK LINE Percent frequency of total cloud amount $\leq 2/8$
BLUE LINE Percent frequency of low cloud amount $\geq 5/8$

Since the number of observations reporting low cloud amount is usually less than that for total cloud amount, somewhat different samples may be used to compute the two curves on the graph. This may lead to inconsistencies in that the low cloud amount appears higher than the total cloud amount. Where this occurred the graph was adjusted in favor of the total cloud by making the curves coincide. The frequency of obscured conditions may be determined by subtracting the cumulative percent frequency corresponding to 8/8 coverage from 100%. In computing the bar graph, obscurations are considered as 8/8 coverage.

CLOUD AMOUNT IN EIGHT-HOURS

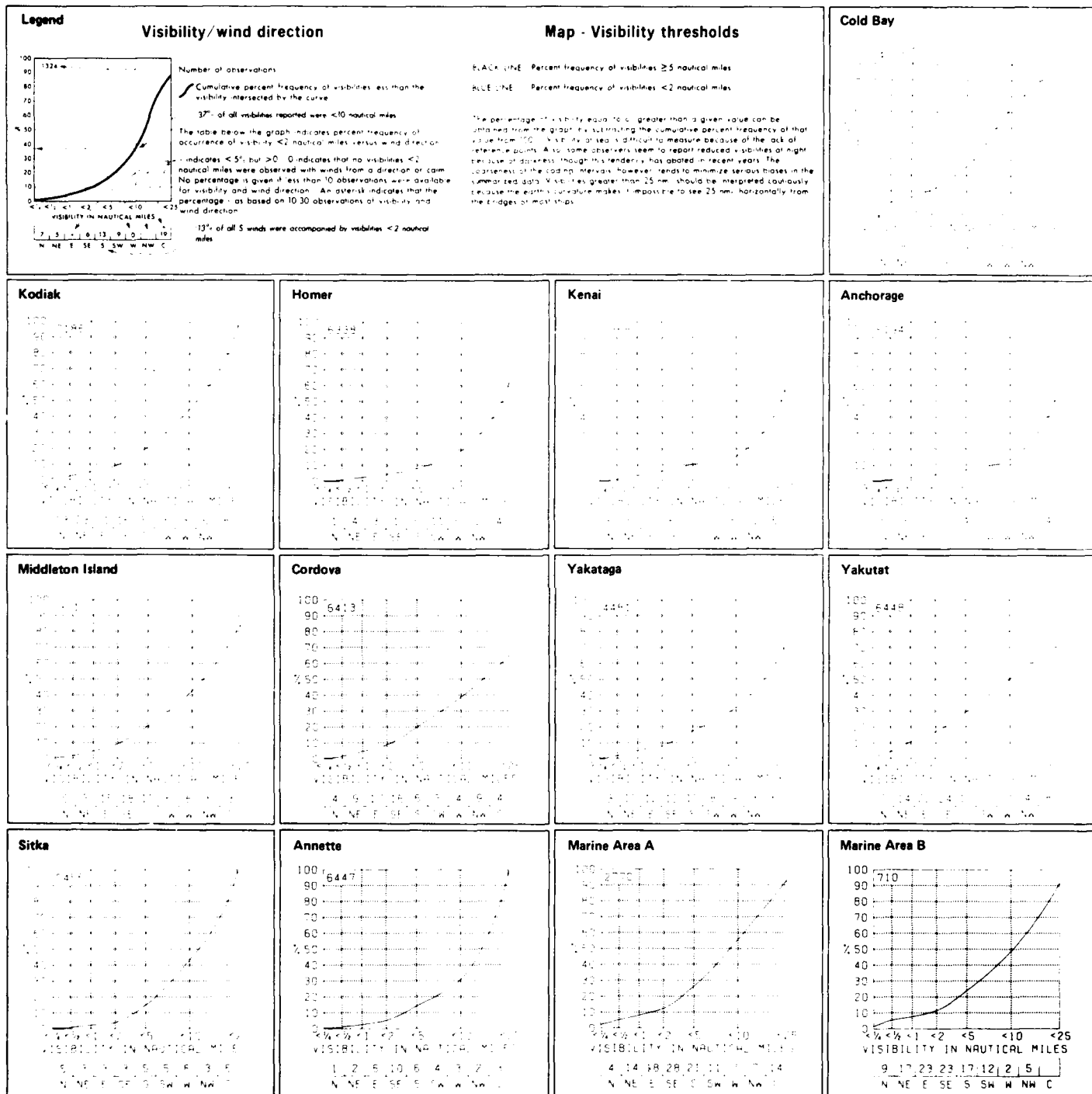
Location	Cloud Amount (%)
N	42
NE	33
E	48
SE	54
S	39
SW	34
W	51
NW	50





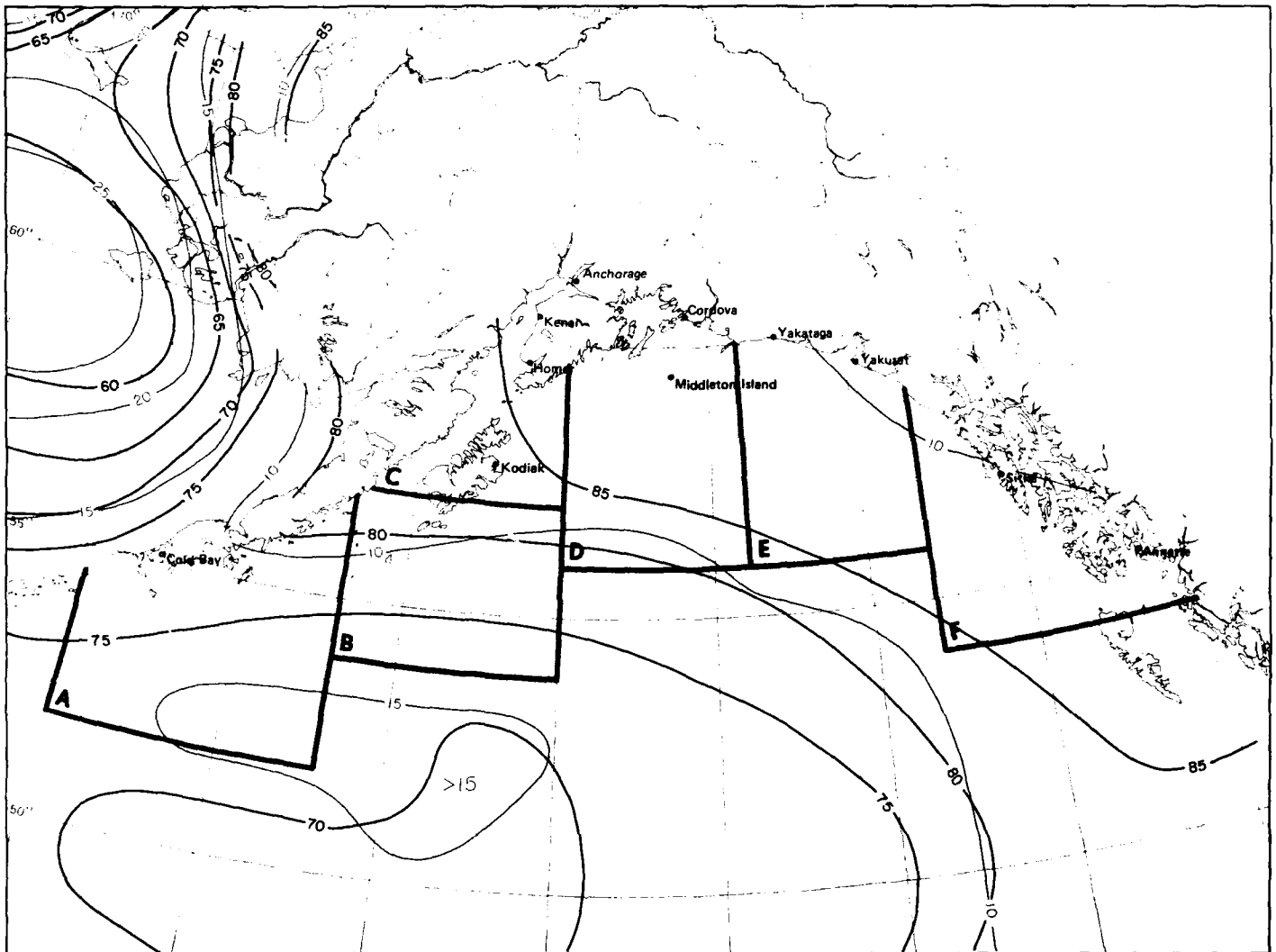
7 Cloud amount thresholds

March



March

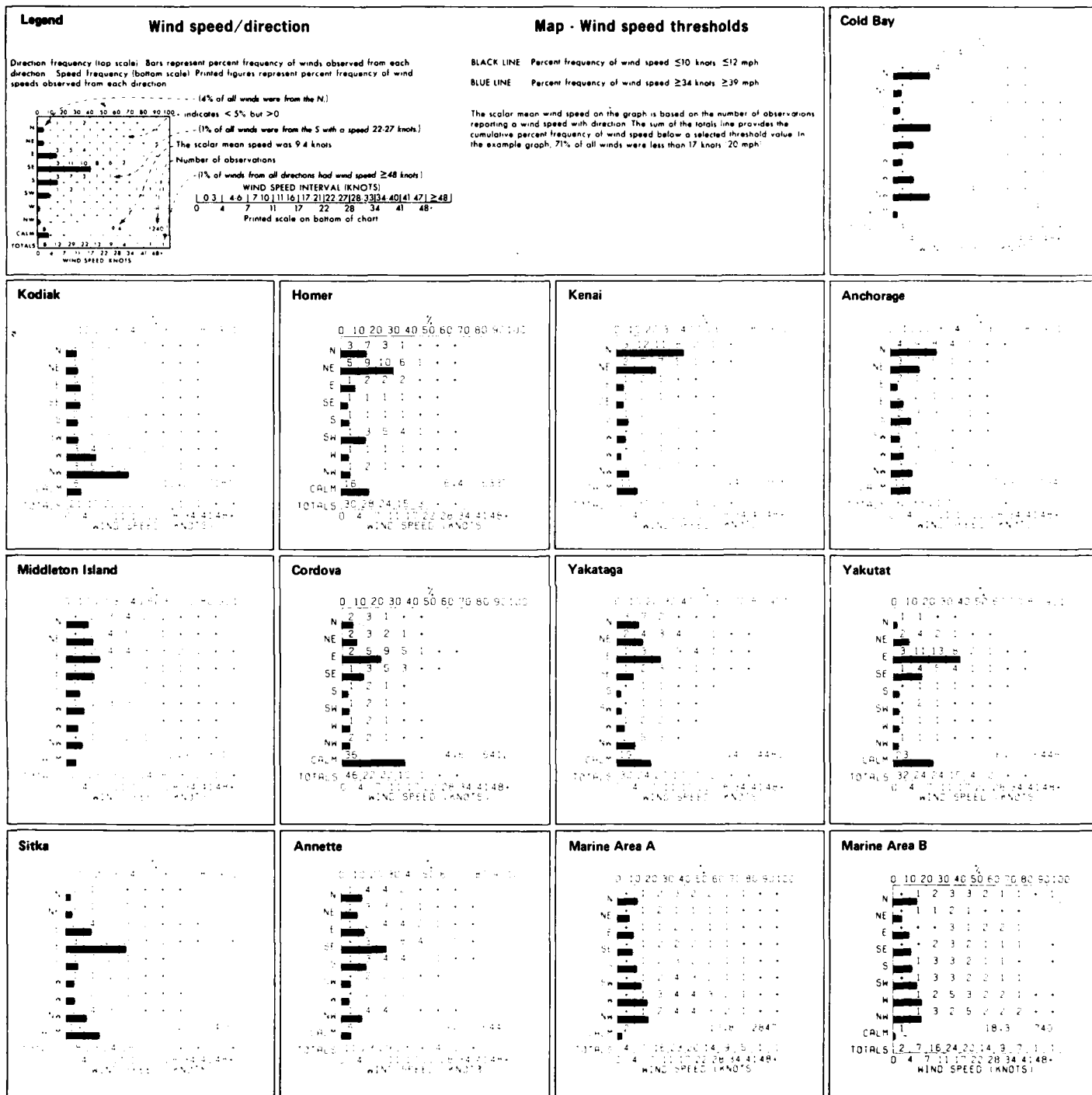
8 Visiblity/wind direction



Marine Area C	Marine Area D	Marine Area E	Marine Area F
100	100	100	100
90	90	90	90
80	80	80	80
70	70	70	70
60	60	60	60
50	50	50	50
40	40	40	40
30	30	30	30
20	20	20	20
15	15	15	15
10	10	10	10
5	5	5	5
1	1	1	1
0	0	0	0
100	100	100	100
90	90	90	90
80	80	80	80
70	70	70	70
60	60	60	60
50	50	50	50
40	40	40	40
30	30	30	30
20	20	20	20
15	15	15	15
10	10	10	10
5	5	5	5
1	1	1	1
0	0	0	0

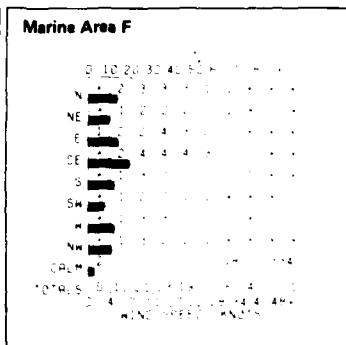
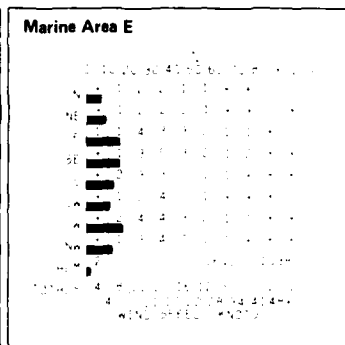
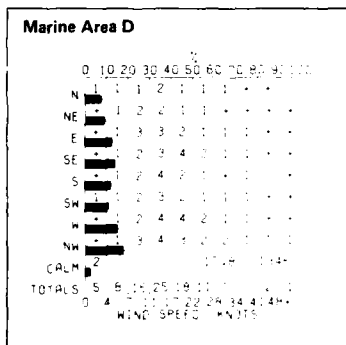
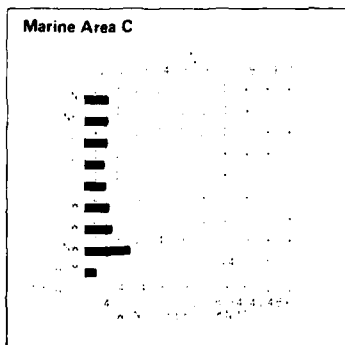
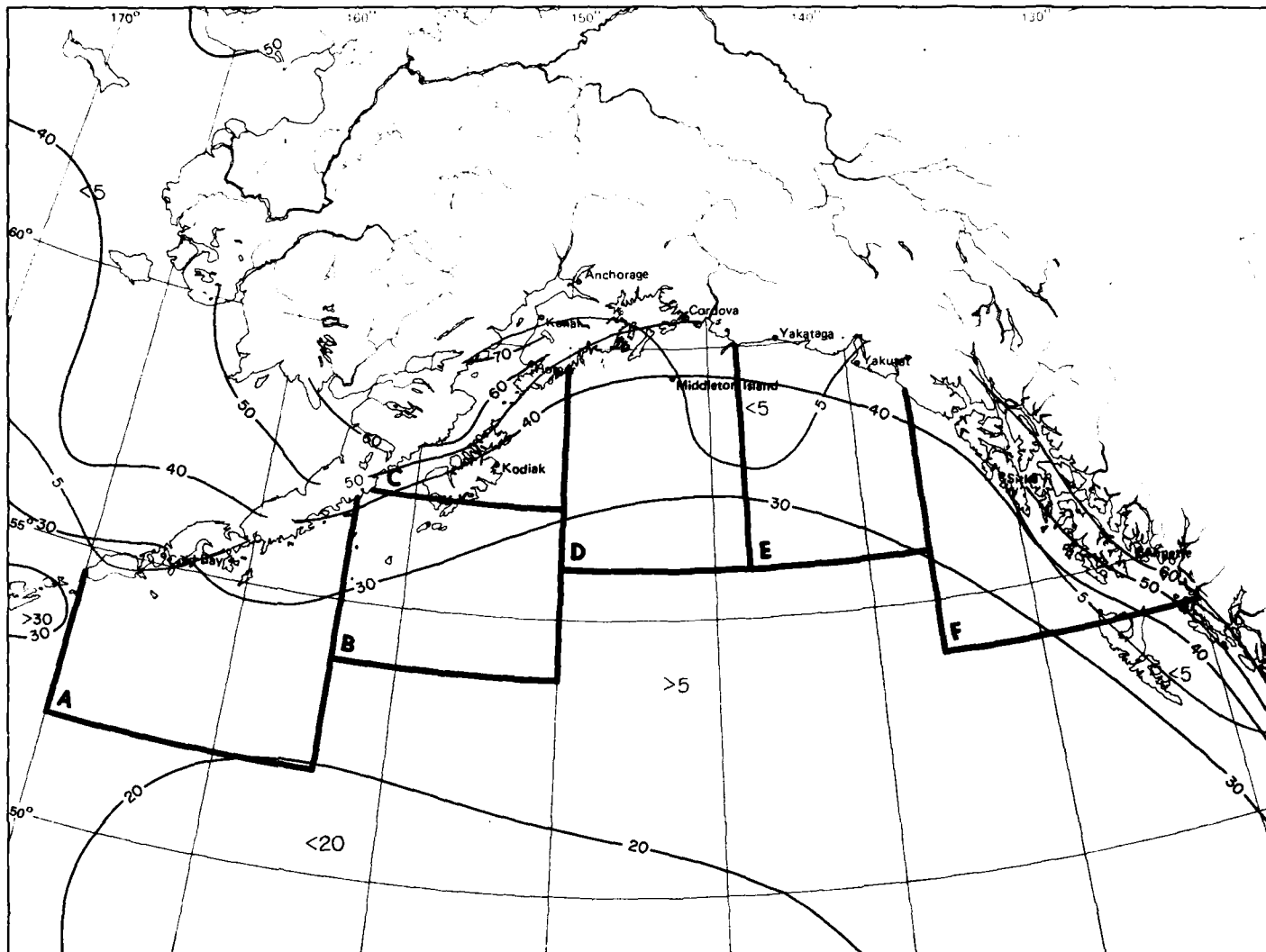
8 Visibility thresholds

March



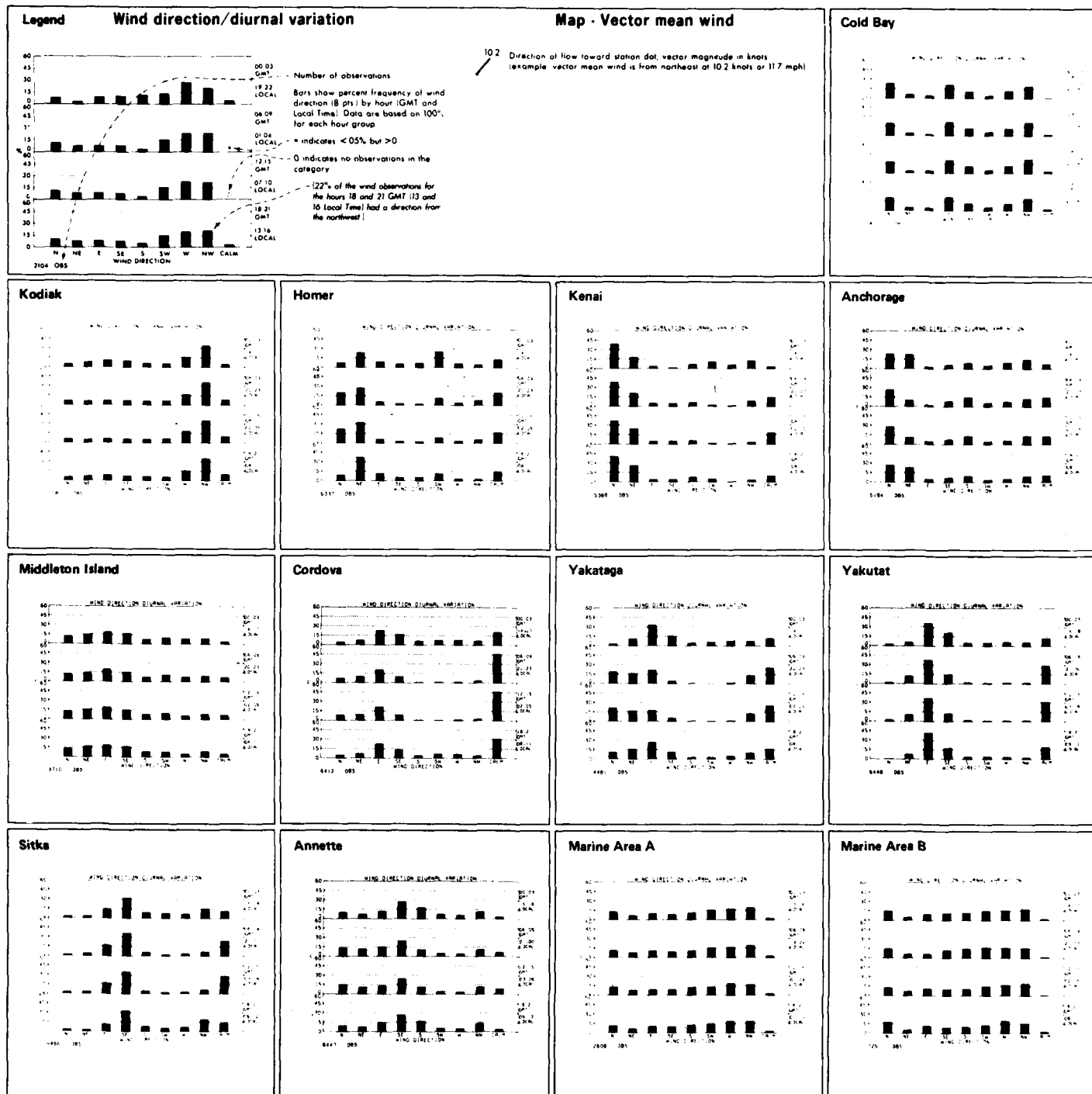
March

9 Wind speed/direction



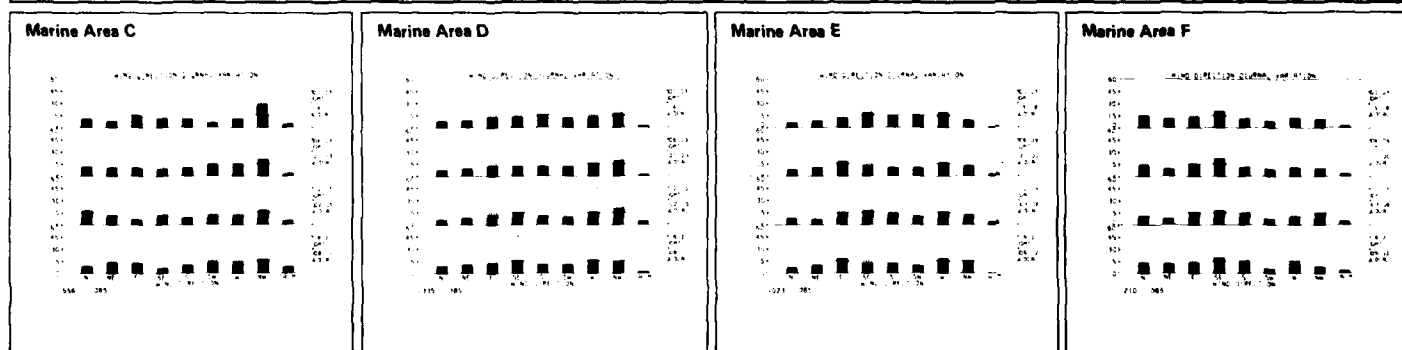
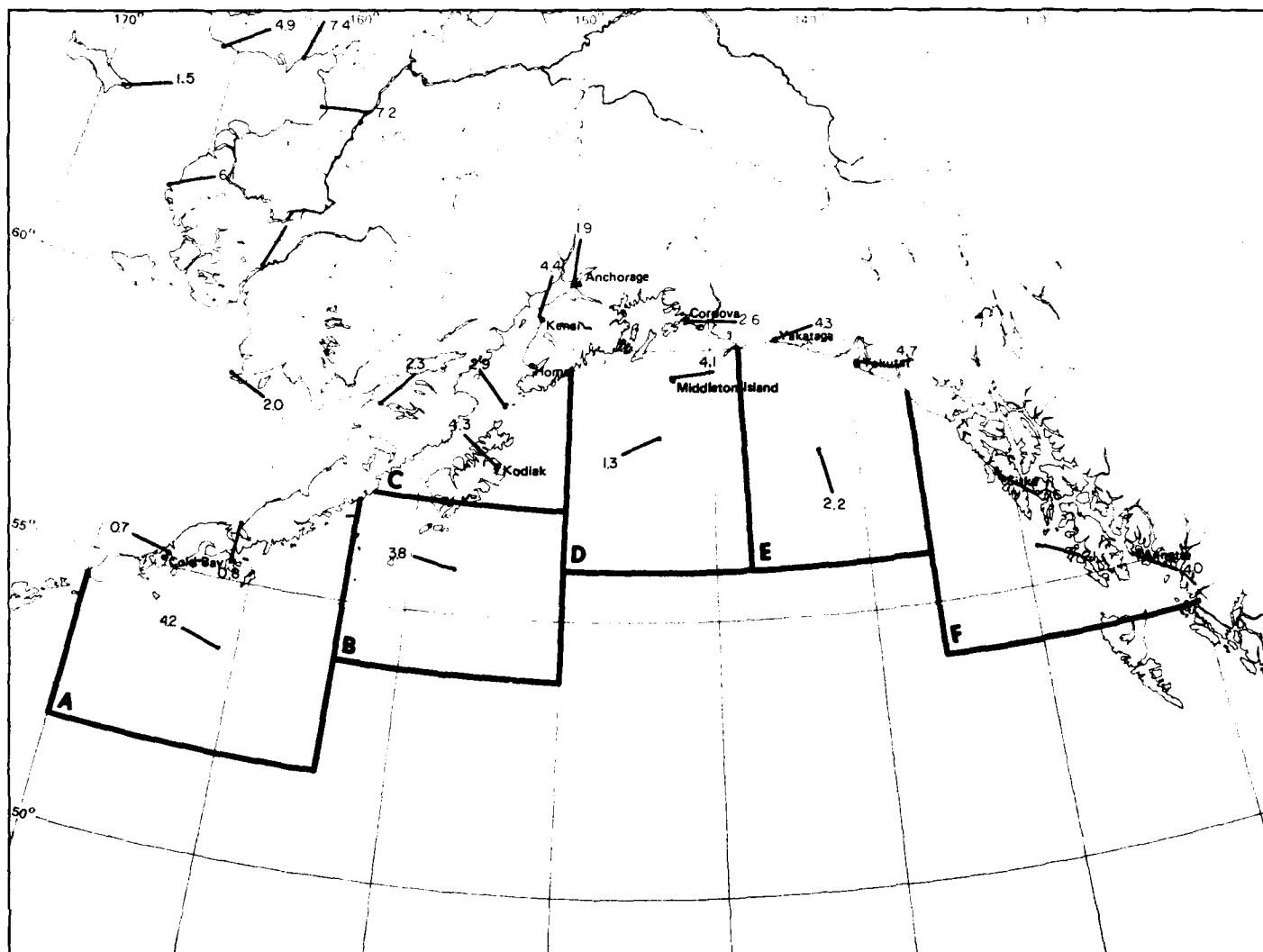
9 Wind speed thresholds

March



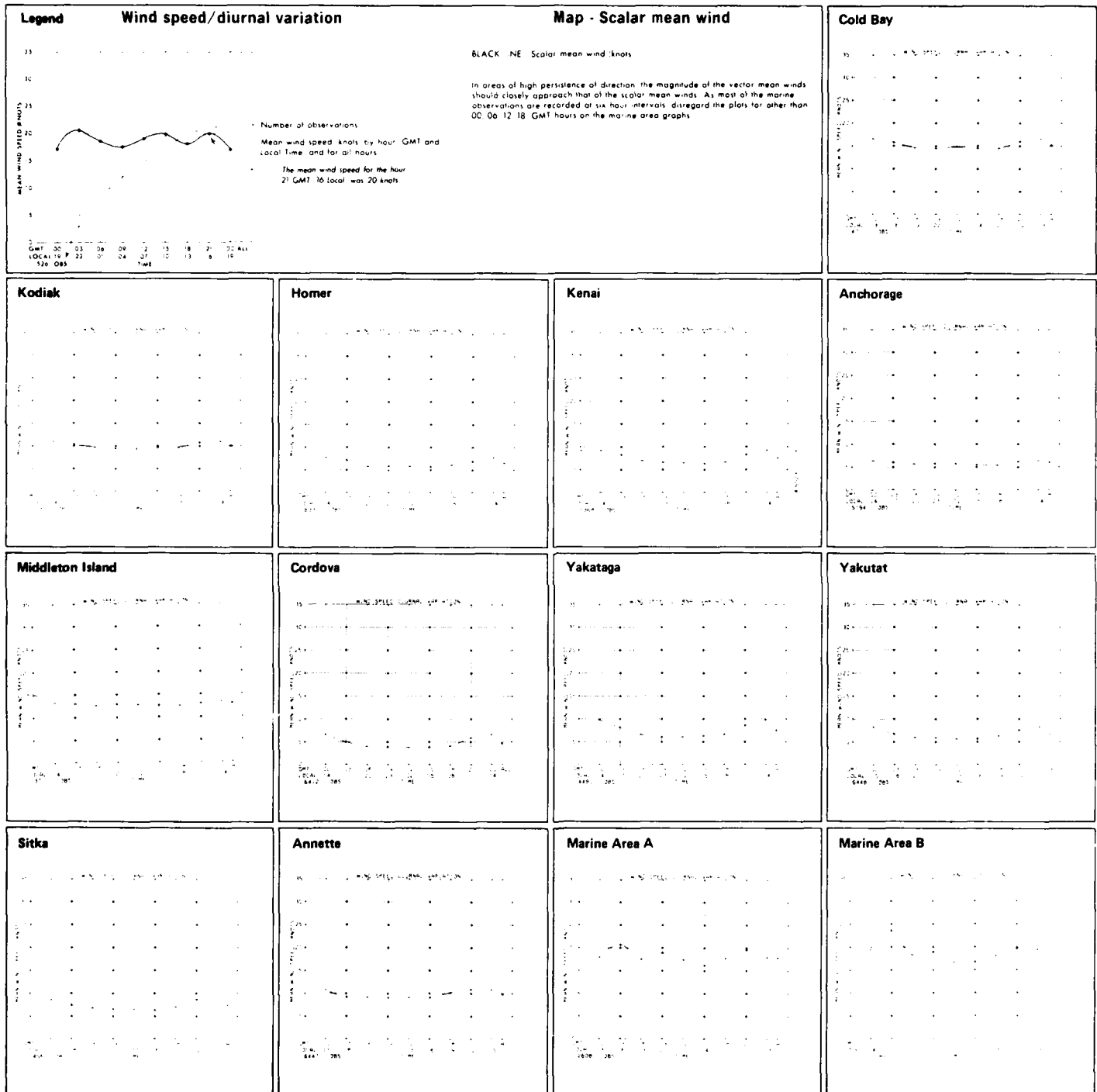
March

10 Wind direction/diurnal variation



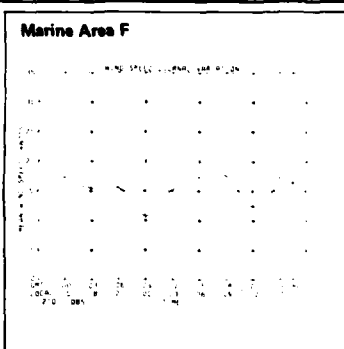
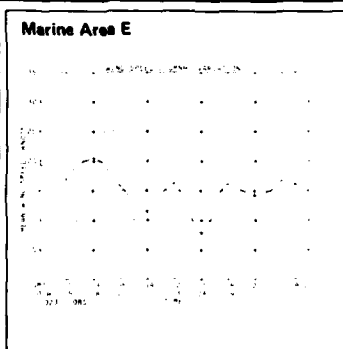
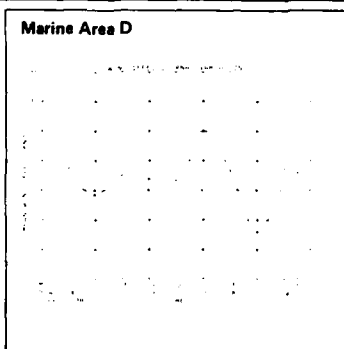
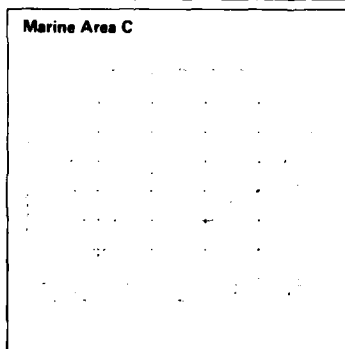
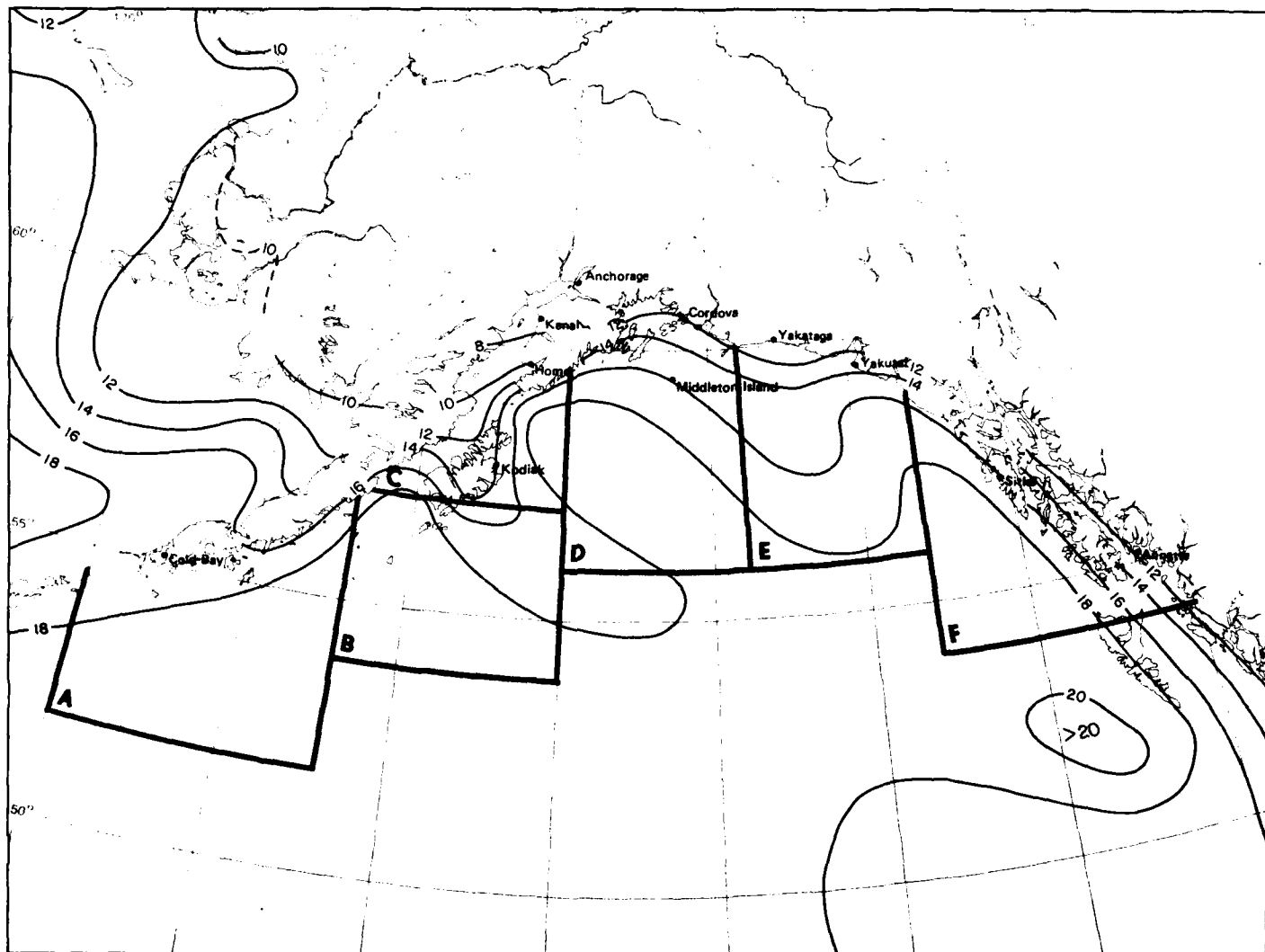
10 Vector mean wind

March



March

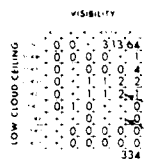
11 Wind speed/diurnal variation



11 Scalar mean wind

March

Low cloud ceiling/visibility



Percent frequency of simultaneous occurrence of specified low cloud ceilings, hundreds of feet, and visibilities, nautical miles

low cloud ceiling heights are estimated from the height of low clouds h when low cloud amount N_h is ≥ 8 .

Obscurements are included under ceiling 0 <15

N C no ceiling includes bases of clouds ≥ 8000 feet as well as occurrences of $N_h < 5$

2% of all observations reported ceiling ≥ 1000 but < 2000 feet simultaneously with visibility ≥ 5 but < 10 nautical miles

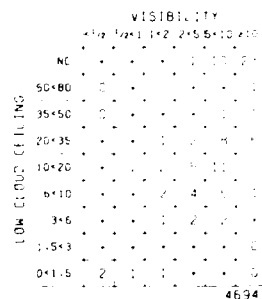
* indicates < 5%, but > 0

- Number of observations.

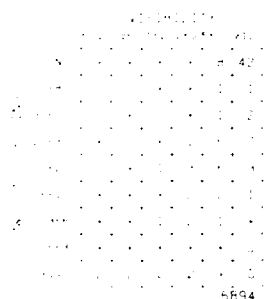
Map - Low cloud ceiling and visibility thresholds

BLACK LINE Percent frequency of low cloud ceiling ≥ 1000 feet or no low cloud ceiling and visibility ≥ 5 nautical miles

BLUE LINE Percent frequency of low cloud ceiling <600 feet and or visibility <2 nautical miles

Cold Bay

Kodiak



Homer

Insufficient Data

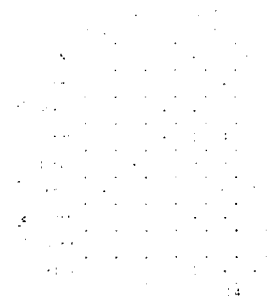
Kenai

Insufficient Data

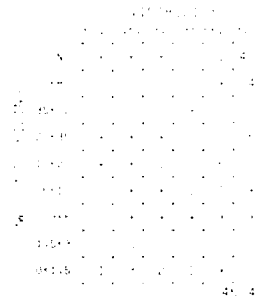
Anchorage



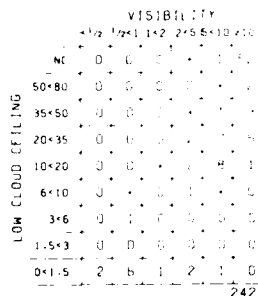
Middleton Island



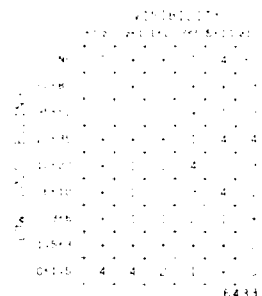
Cordova



Yakataga

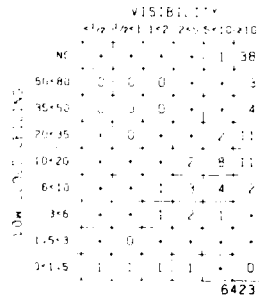


Yakutat



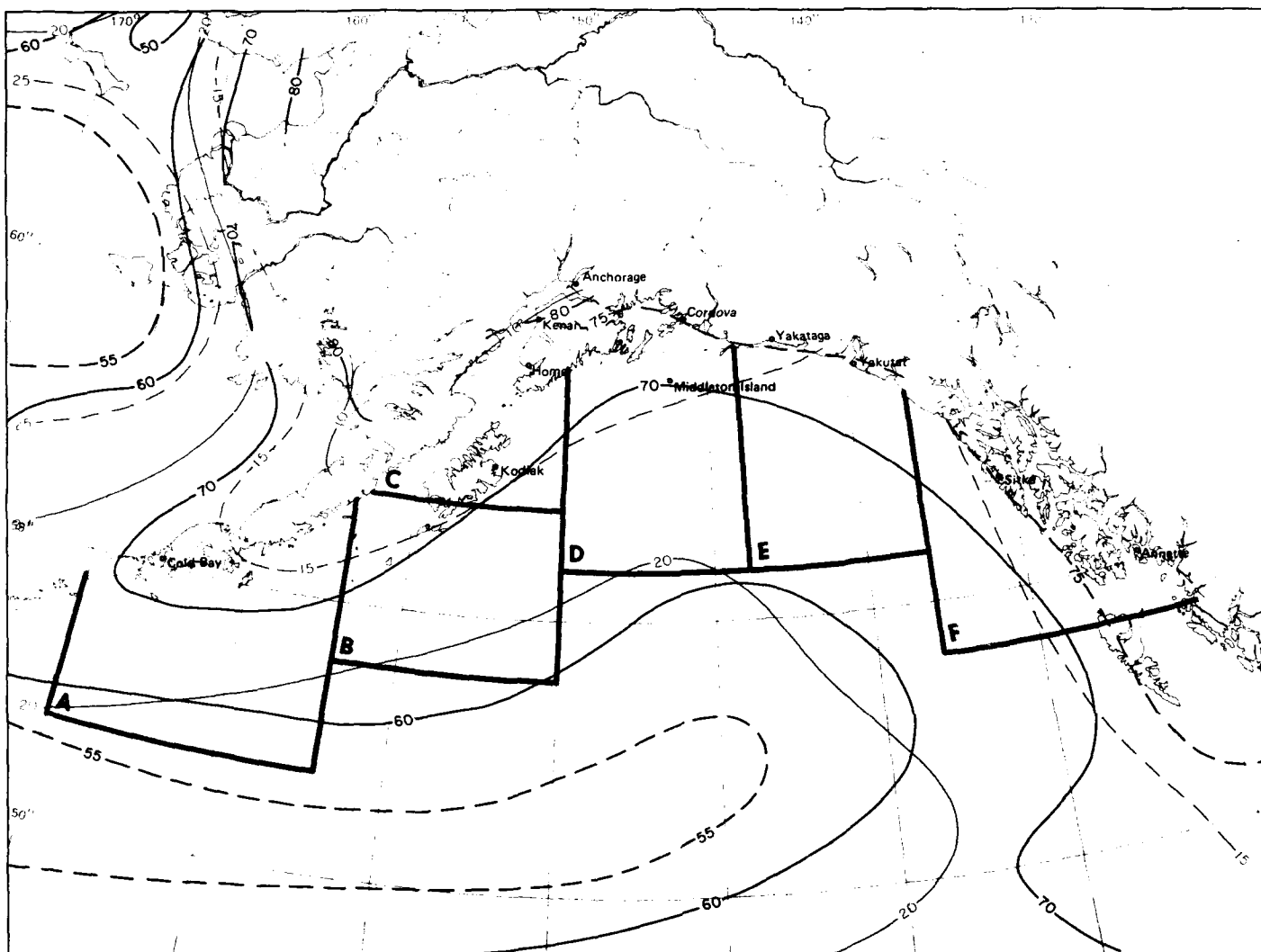
Sitka

Annette



Marine Area A

Marine Area B



Marine Area C

Marine Area D

Marine Area E

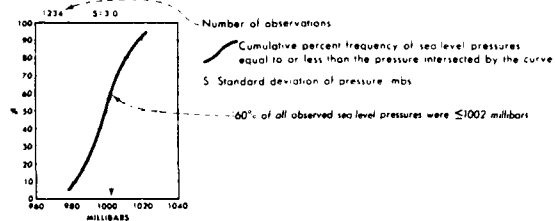
Marine Area F

12 Low cloud ceiling and visibility thresholds

March

Legend

Sea level pressure

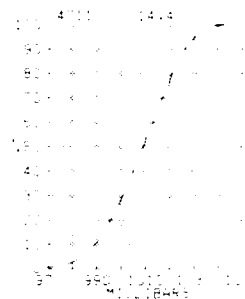


Map - Mean sea level pressure

BLACK LINE Mean sea level pressure millibars

Sea level pressure is one of the most frequently recorded elements but one of the least accurate because of instrument and coding errors. Despite the inaccuracies of the individual readings, however, the large scale patterns and mean gradients of the isopleth analyses are relatively accurate.

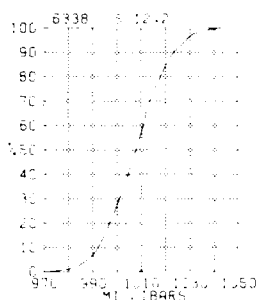
Cold Bay



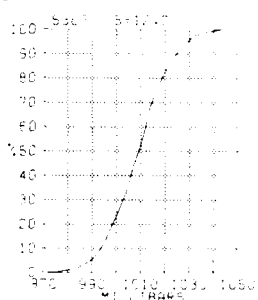
Kodiak



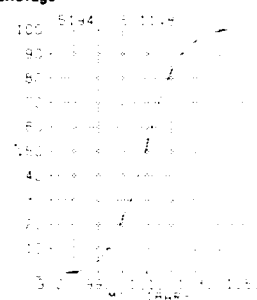
Homer



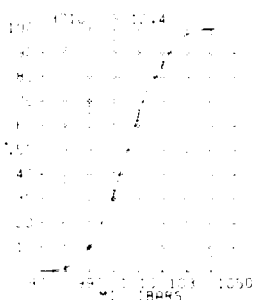
Kenai



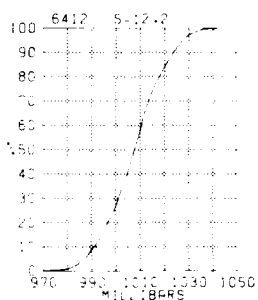
Anchorage



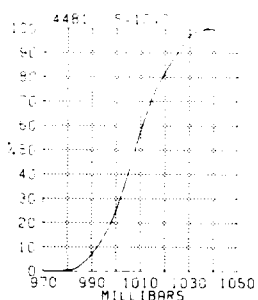
Middleton Island



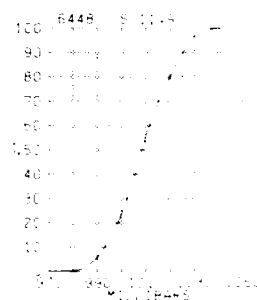
Cordova



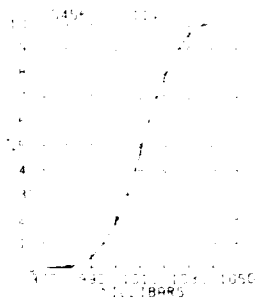
Yakutat



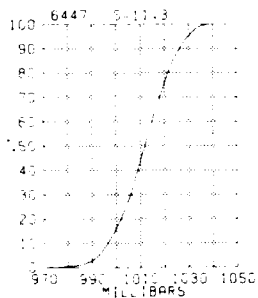
Yakutat



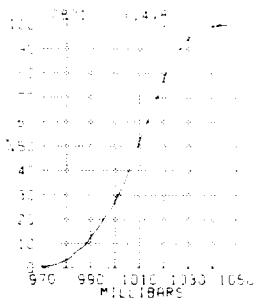
Sitka



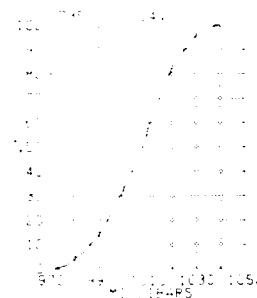
Annette



Marine Area A

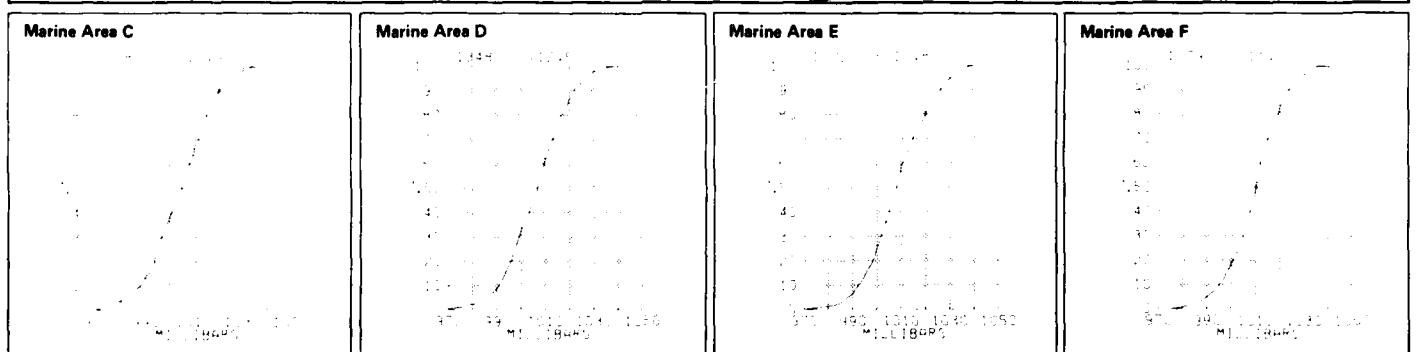
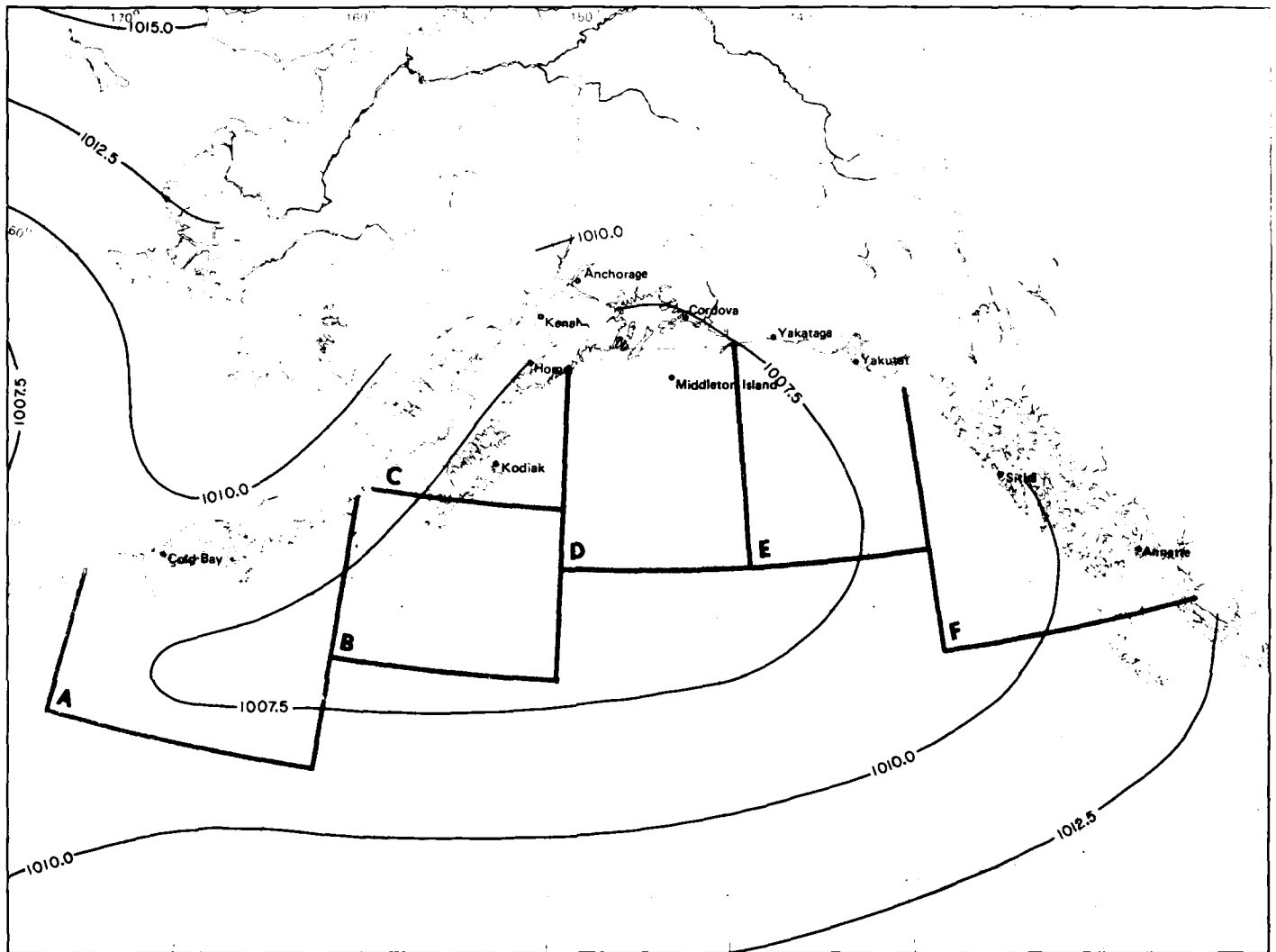


Marine Area B



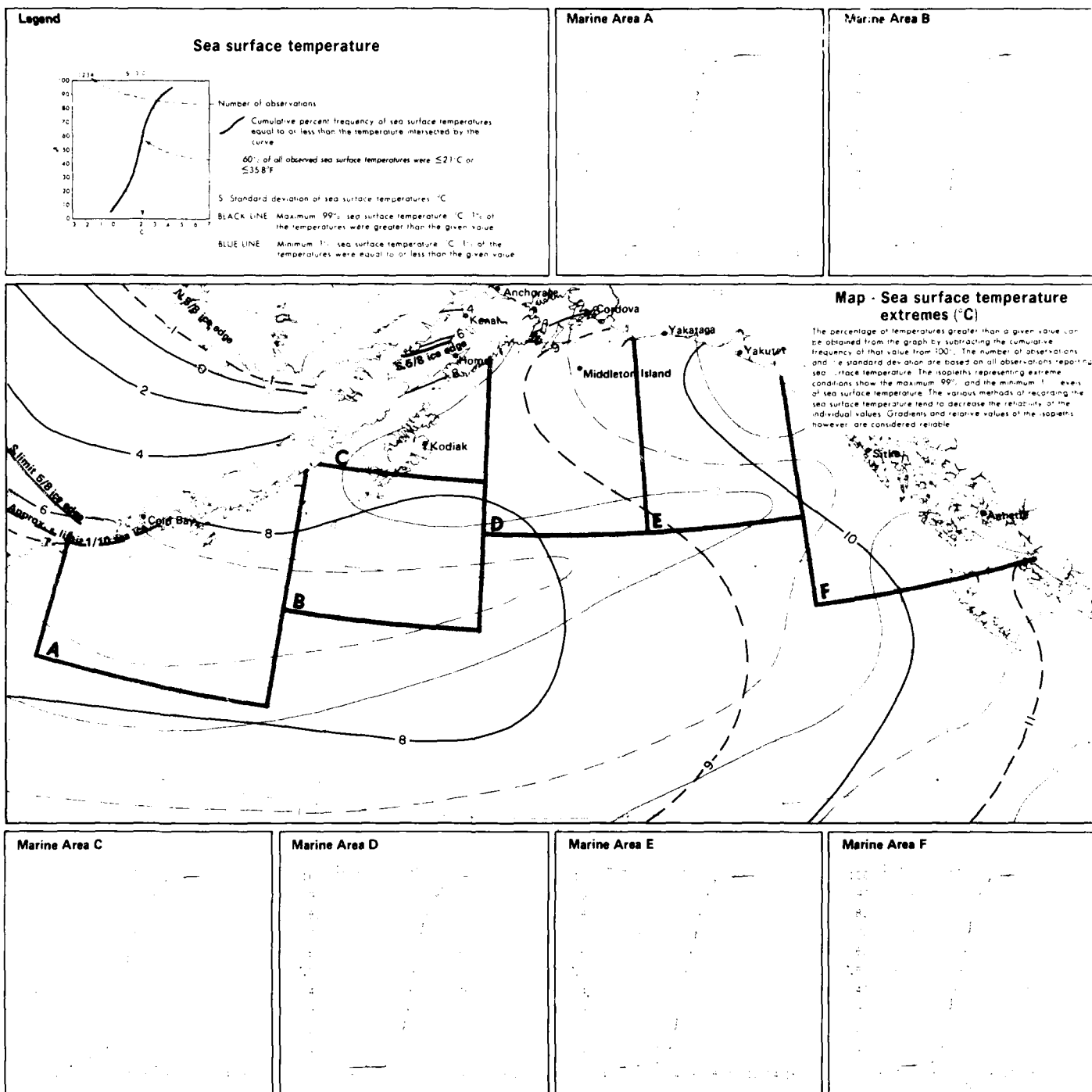
March

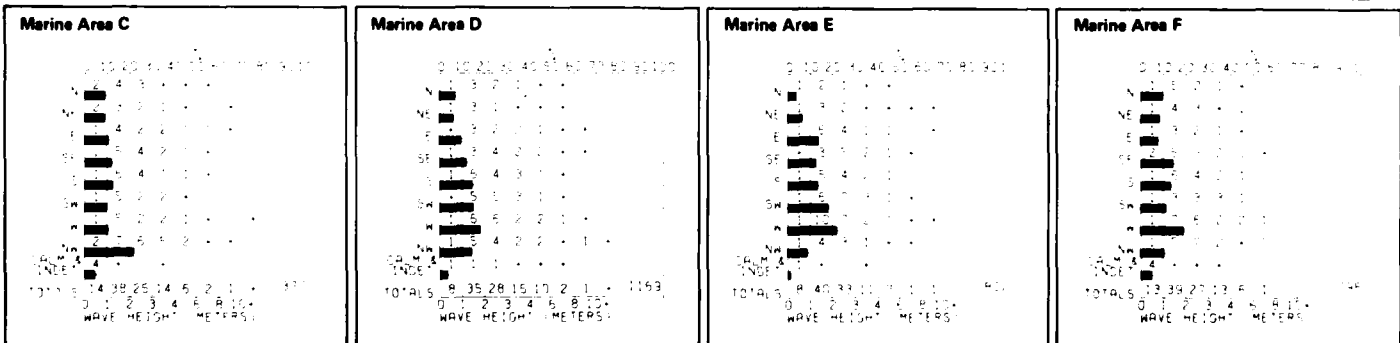
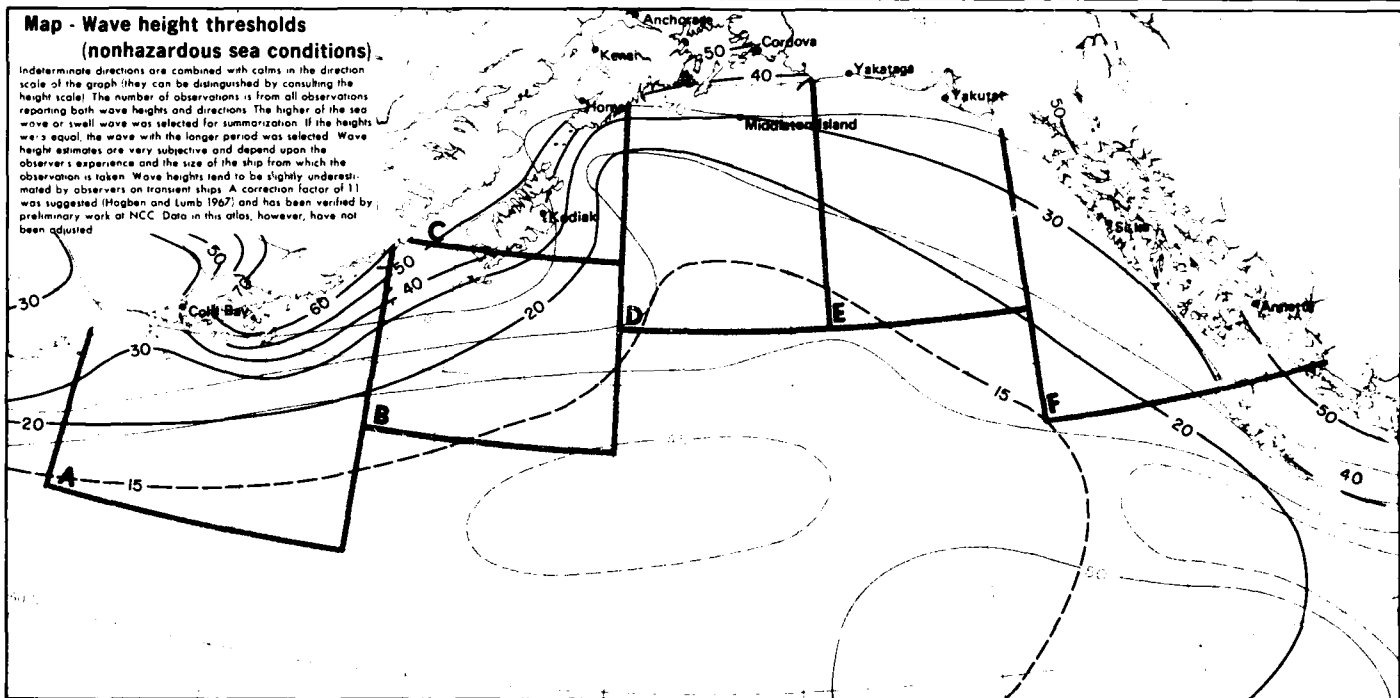
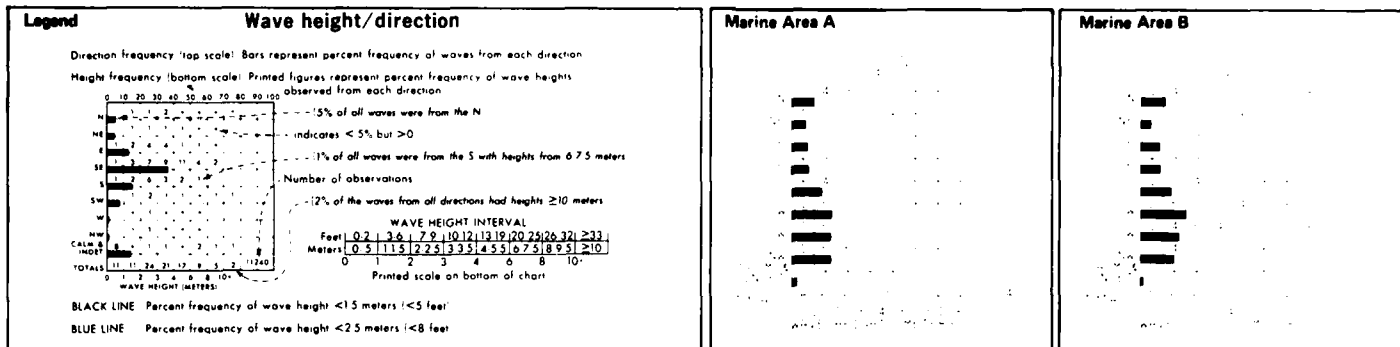
13 Sea level pressure



13 Mean sea level pressure

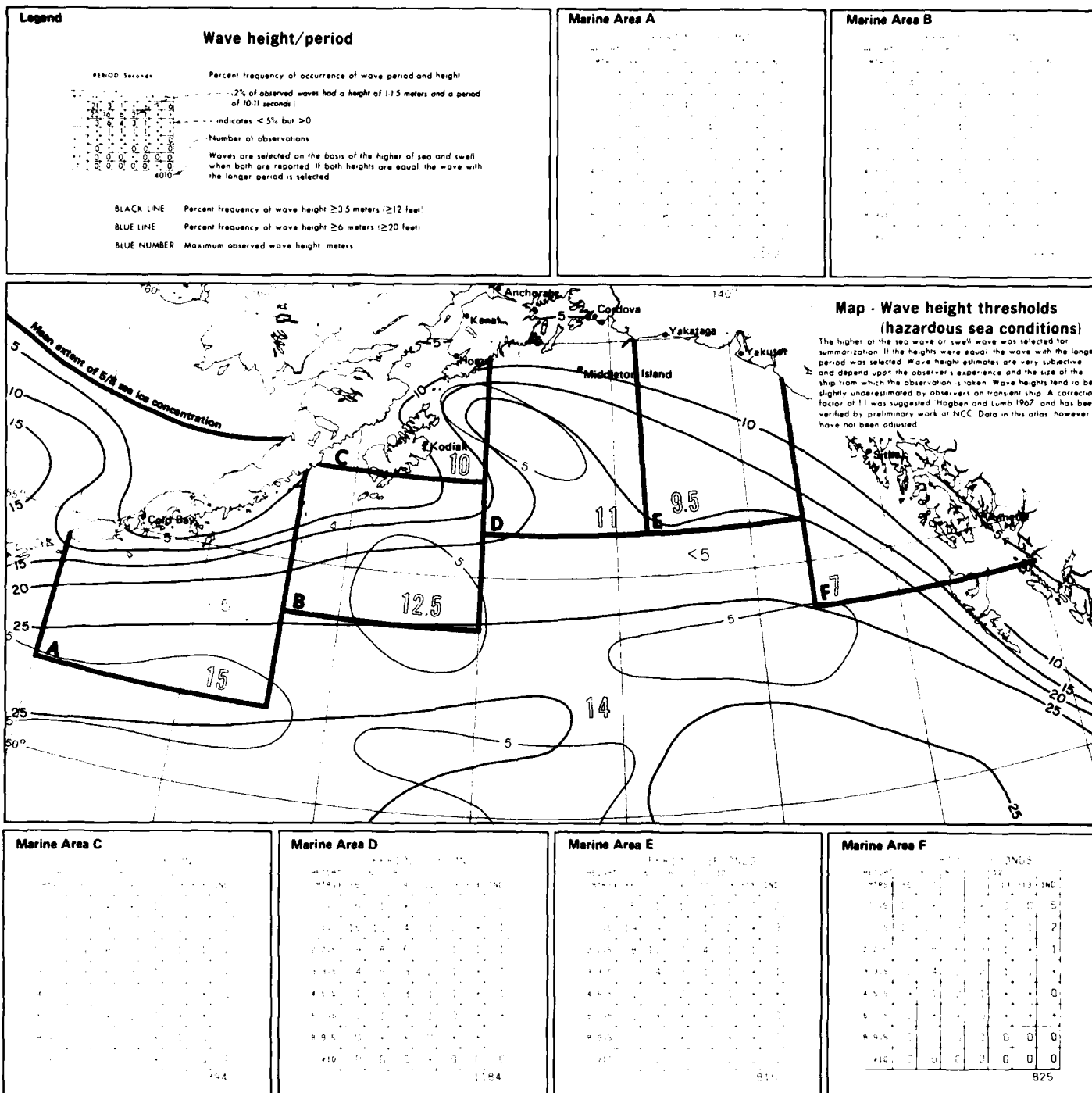
March





March

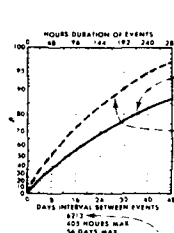
16 Wave height thresholds (nonhazardous)



17 Wave height thresholds (hazardous)

Legend

Persistence of visibility <2 n. mi.



Hours duration of events - Days interval between events

Cumulative percent frequency of hours duration equal to or less than the number of hours intersected by the solid curve

--- (80% of the events had a duration ≤ 216 hours.)

Cumulative percent frequency of days interval between events equal to or less than the number of days intersected by the broken curve

--- (88% of the events were followed by another event in 28 days or less.)

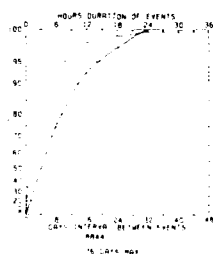
The maximum value(s) of hours duration and/or the days interval will be displayed when the graph limits are exceeded.

Durations and intervals for a particular month extend from the time they begin (or the first of the month if already in progress) and are terminated at the actual ending time, regardless of what month that may be.

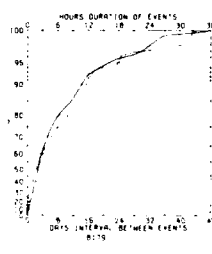
Number of observations

Top and bottom scales are variable to allow for variations in the data

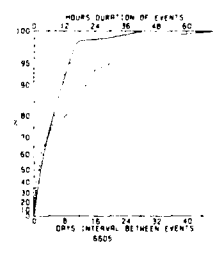
Kodiak



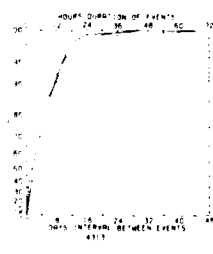
Homer



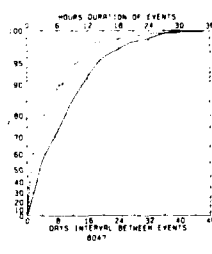
Kenai



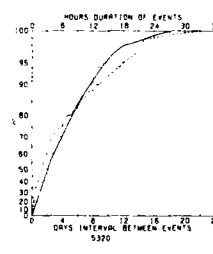
Middleton Island



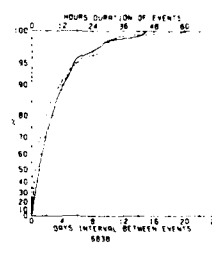
Cordova



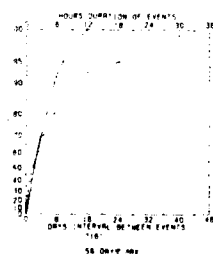
Yakutat



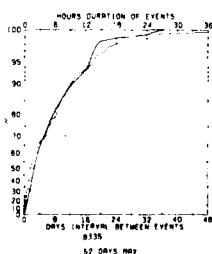
Yakutat



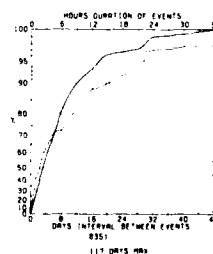
Sitka



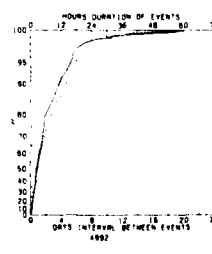
Annette



Anchorage



Cold Bay

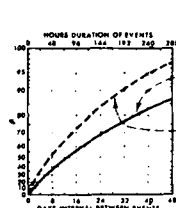


19 Persistence of visibility < 2 n. mi.

March

Legend

Persistence of wind ≥ 10 kts.



Hours duration of events - Days interval between events

Cumulative percent frequency of hours duration equal to or less than the number of hours intersected by the solid curve

--- (80% of the events had a duration ≤ 144 hours.)

Cumulative percent frequency of days interval between events equal to or less than the number of days intersected by the broken curve

--- (80% of the events were followed by another event in 28 days or less.)

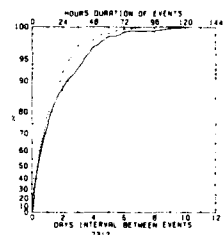
The maximum value(s) of hours duration and/or the days interval will be displayed when the graph lines are exceeded

Durations and intervals for a particular month extend from the time they begin (or the first of the month if already in progress) and are terminated at the actual ending time, regardless of what month that may be

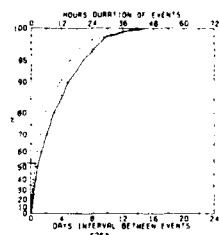
Number of observations

Top and bottom scales are variable to allow for variations in the data

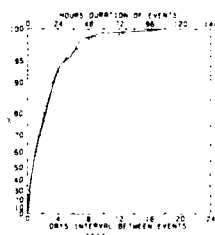
Kodiak



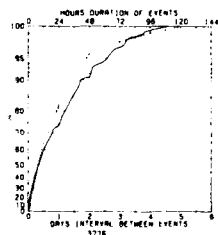
Homer



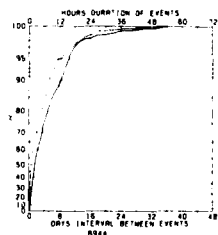
Kenai



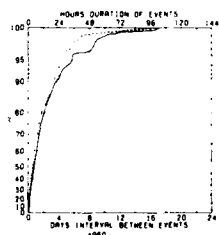
Middletown Island



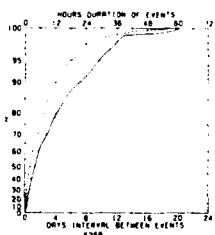
Cordova



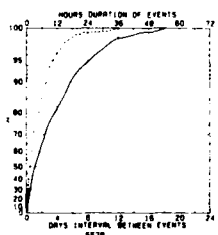
Yakutat



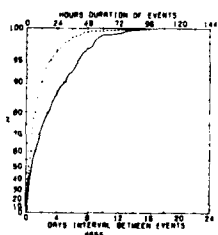
Yakutat



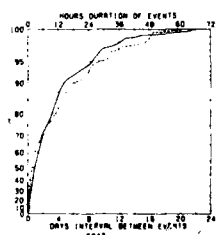
Sitka



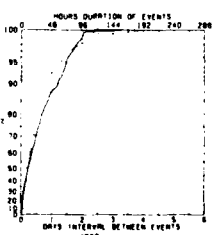
Annette



Anchorage



Cold Bay

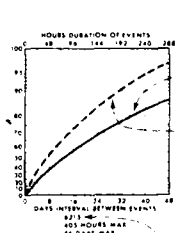


March

20 Persistence of wind ≥ 10 kts.

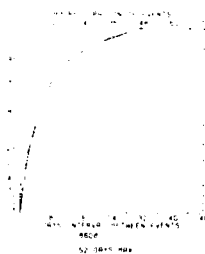
Legend

Persistence of wind ≥ 20 kts.

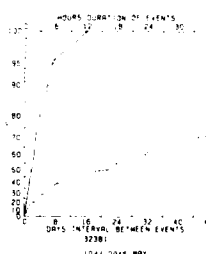


Hours duration of events - Days interval between events
 Cumulative percent frequency of hours duration equal to or less than the number of hours intersected by the solid curve
 --- (80% of the events had a duration ≤ 216 hours.)
 Cumulative percent frequency of days interval between events equal to or less than the number of days intersected by the broken curve
 --- (88% of the events were followed by another event in 28 days or less.)
 The maximum value(s) of hours duration and/or the days interval will be displayed when the graph limits are exceeded.
 Durations and intervals for a particular month extend from the time they begin for the first of the month (if already in progress) and are terminated at the actual ending time, regardless of what month that may be.
 Number of observations
 Top and bottom scales are variable to allow for variations in the data

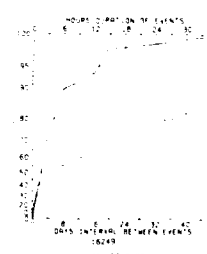
Kodiak



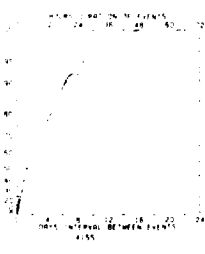
Homer



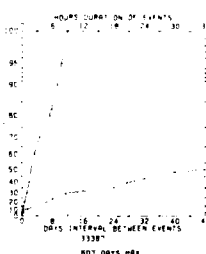
Kenai



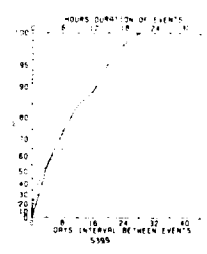
Middleton Island



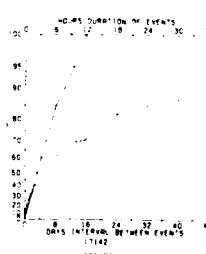
Cordova



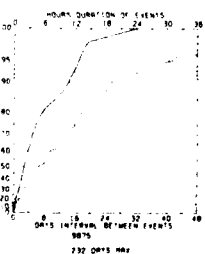
Yakutat



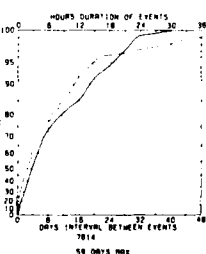
Yakutat



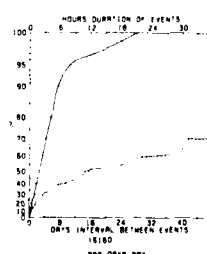
Sitka



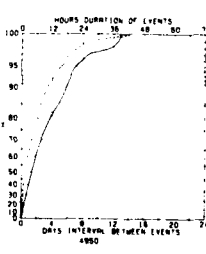
Annette



Anchorage

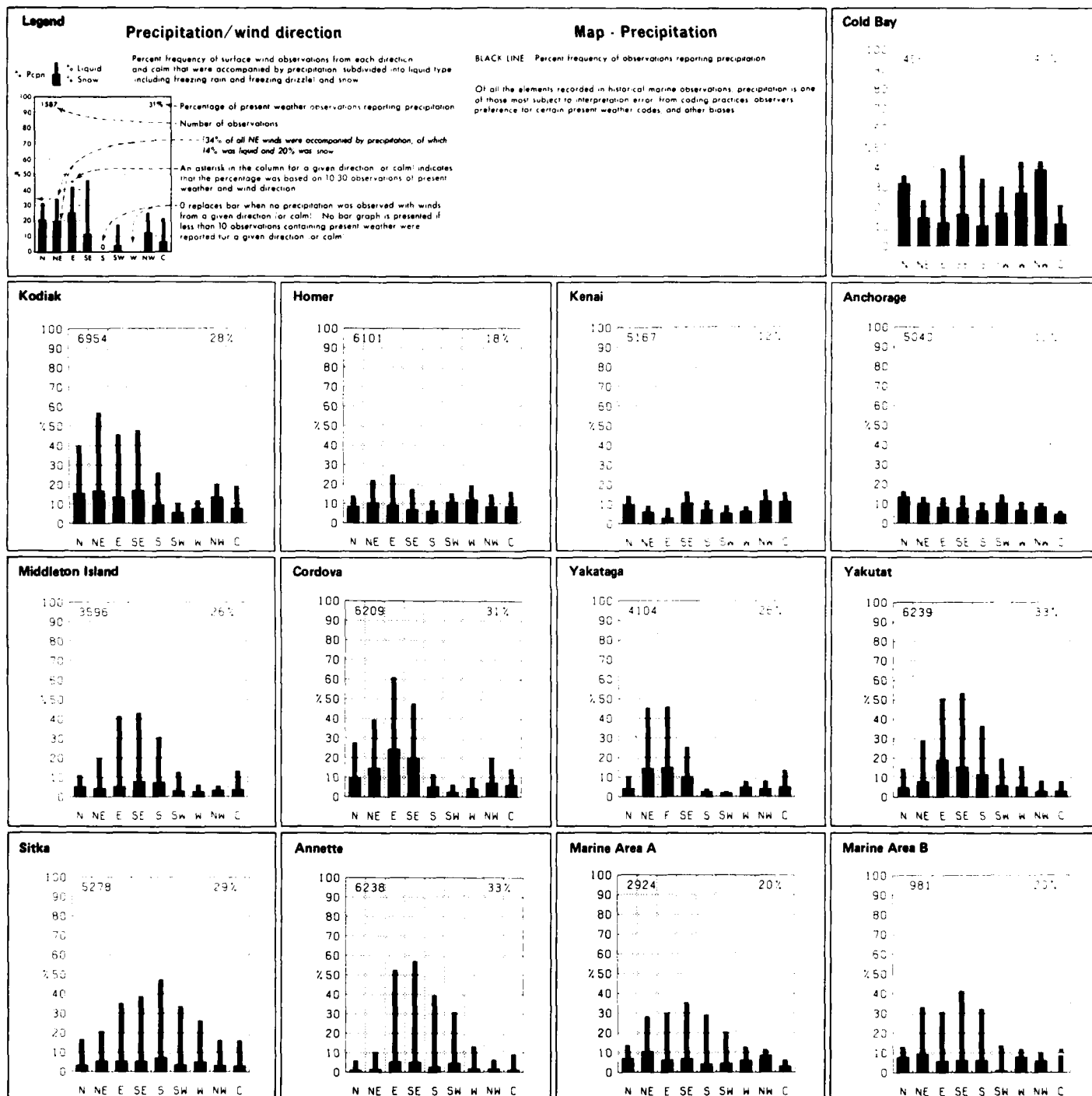


Cold Bay



21 Persistence of wind ≥ 20 kts.

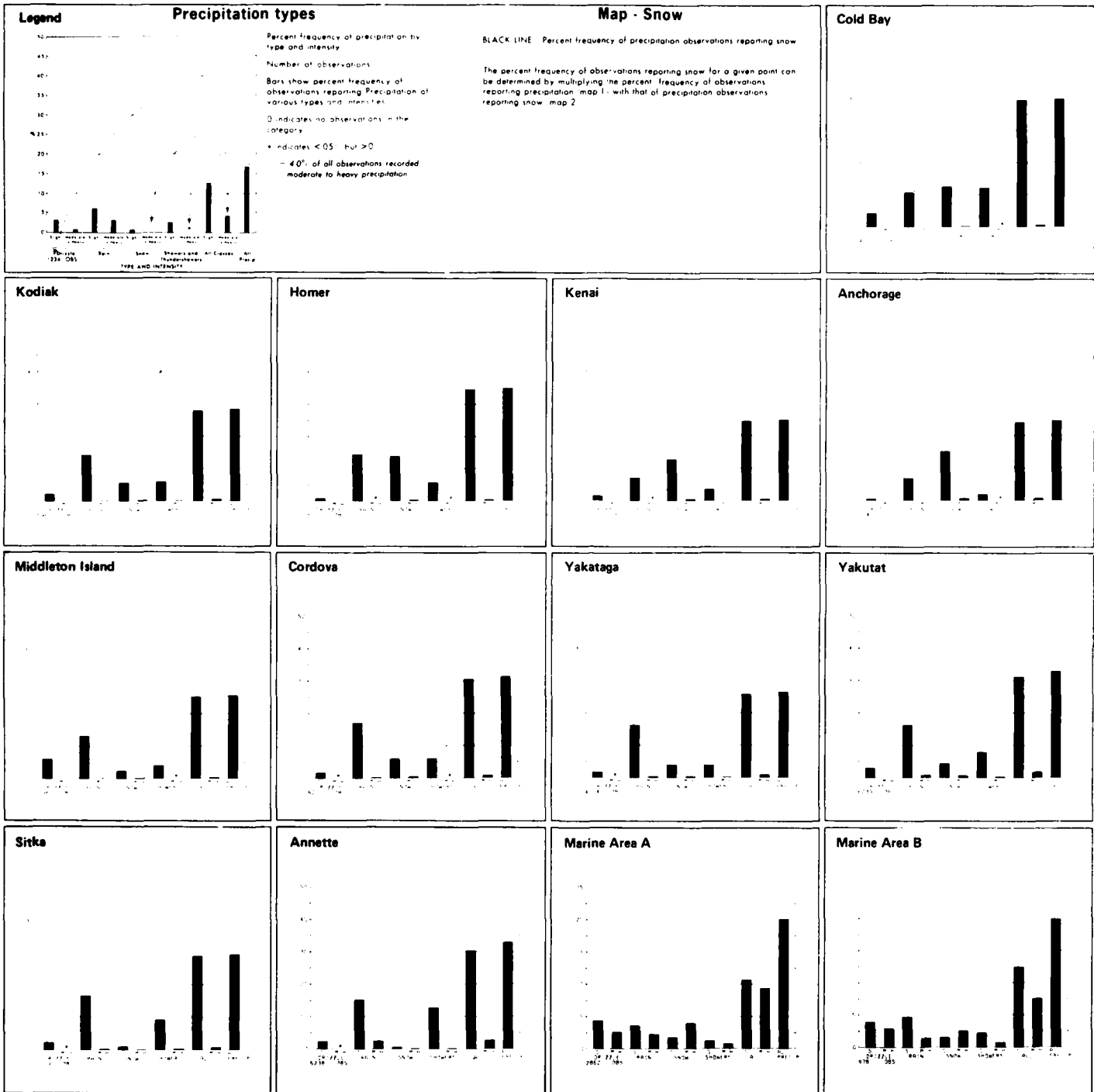
March



April

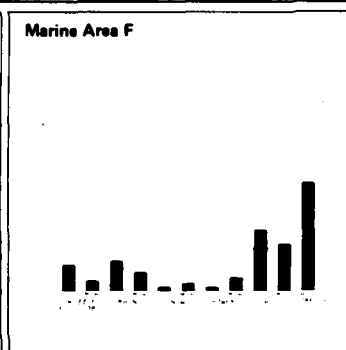
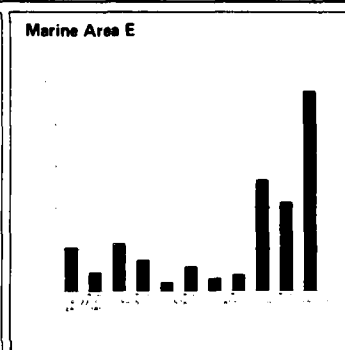
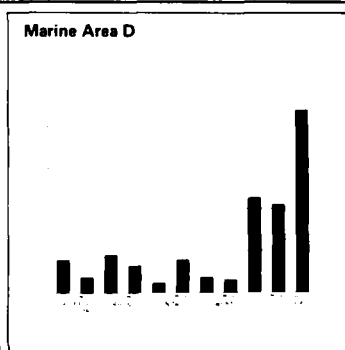
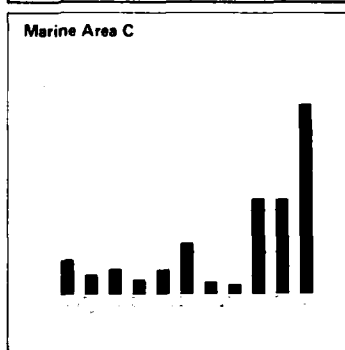
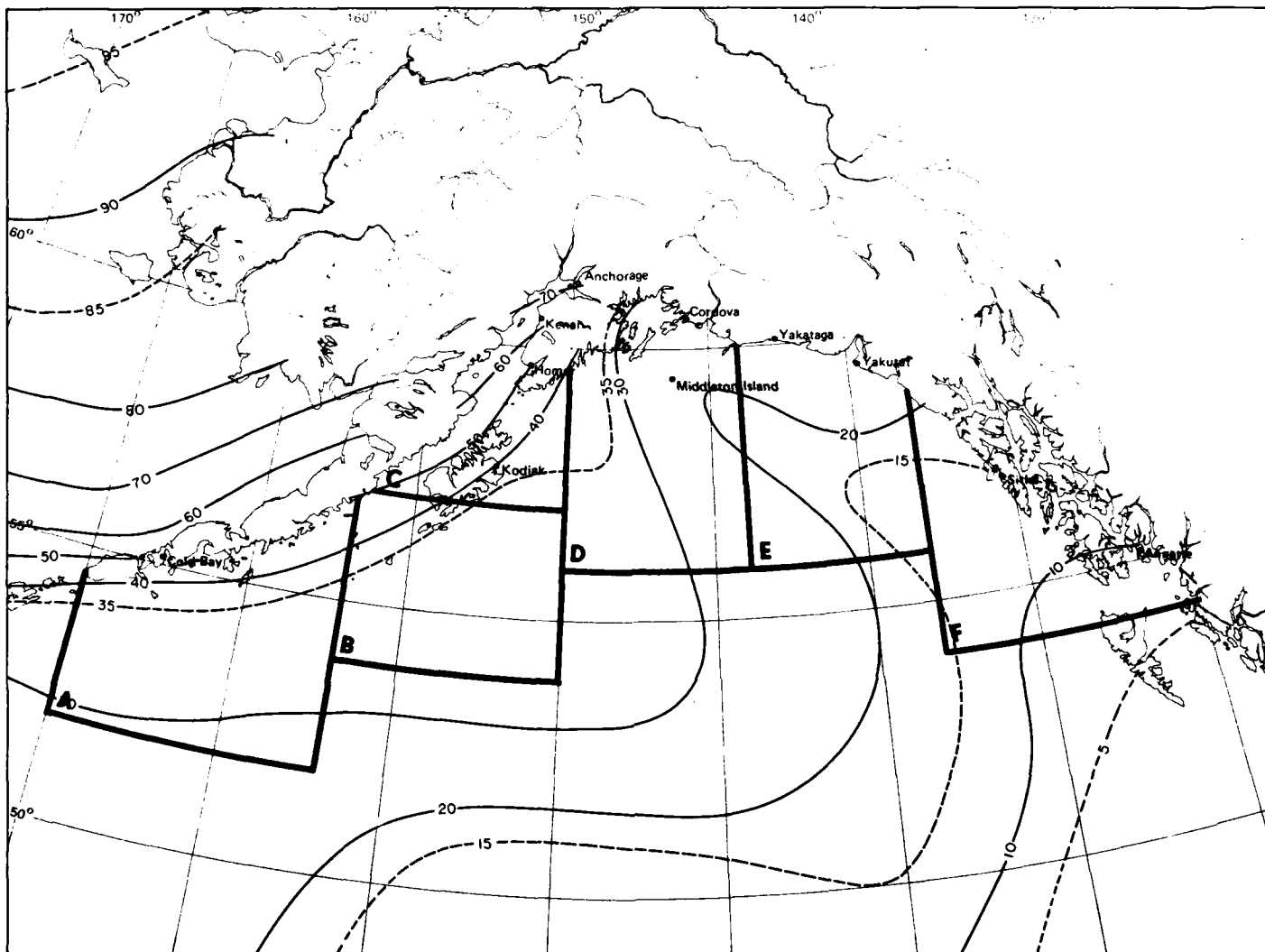
128

1 Precipitation/wind direction



April

2 Precipitation types



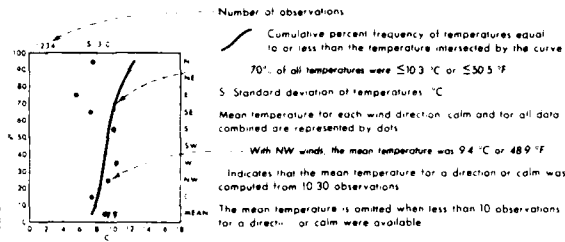
2 Snow

April

Legend

Air temperature/wind direction

Map - Air temperature mean and thresholds



BLACK LINE Percent frequency of temperature $\leq 0^{\circ}\text{C}$ ($\leq 32^{\circ}\text{F}$)

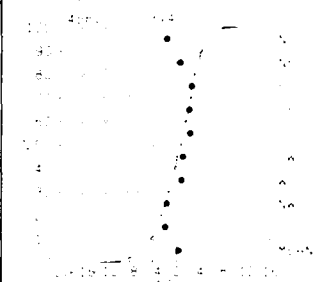
RED LINE Mean air temperature $^{\circ}\text{C}$

BLUE LINE Percent frequency of wind chill temperature $\leq 30^{\circ}\text{C}$ ($\leq 22^{\circ}\text{F}$)

Air temperature readings recorded on transient ships in warm, sunny weather appear biased toward high temperatures, apparently because of improper instrument exposure and ventilation. Despite the inaccuracies, the large scale patterns and mean gradients of the isopleth analyses are relatively accurate.

The temperature scale of the graph may vary in both range and class interval. The percentage of temperature observations greater than a given value can be obtained by subtracting the cumulative percent frequency of that value from 100%. The number of observations and the standard deviation plus the plotted points on the graphs are based on those observations reporting both temperature and wind direction. The cumulative curve is based on all observations reporting temperature with or without wind direction.

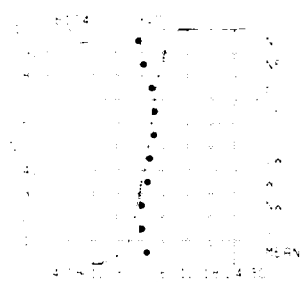
Cold Bay



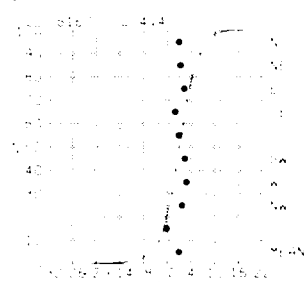
Kodiak



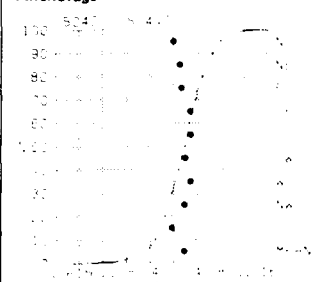
Homer



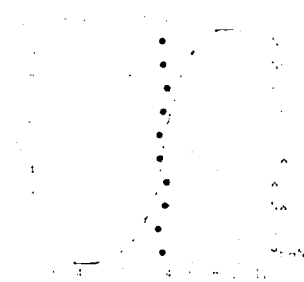
Kenai



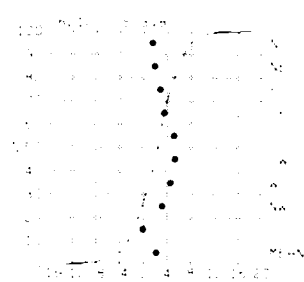
Anchorage



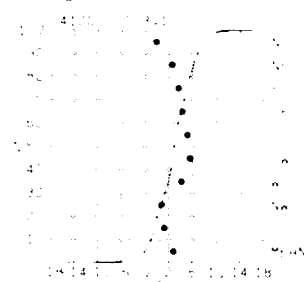
Middleton Island



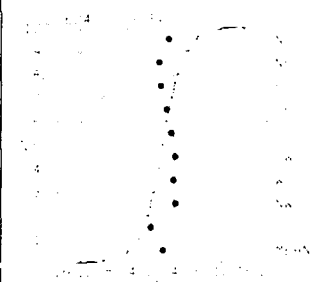
Cordova



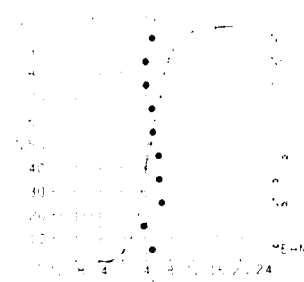
Yakataga



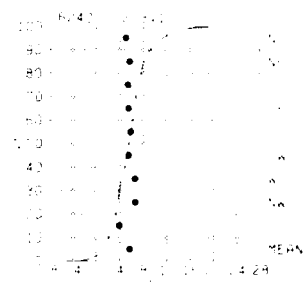
Yakutat



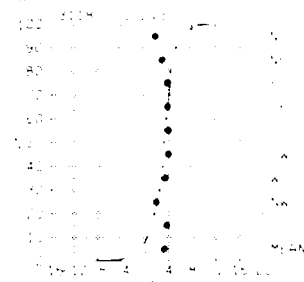
Sitka



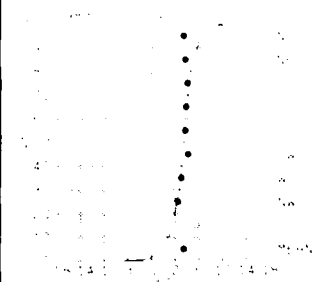
Annette



Marine Area A

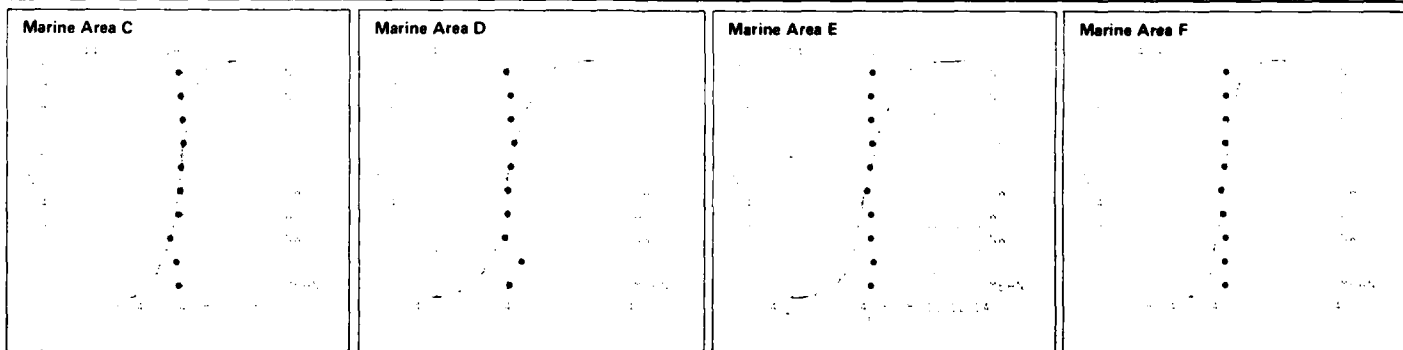
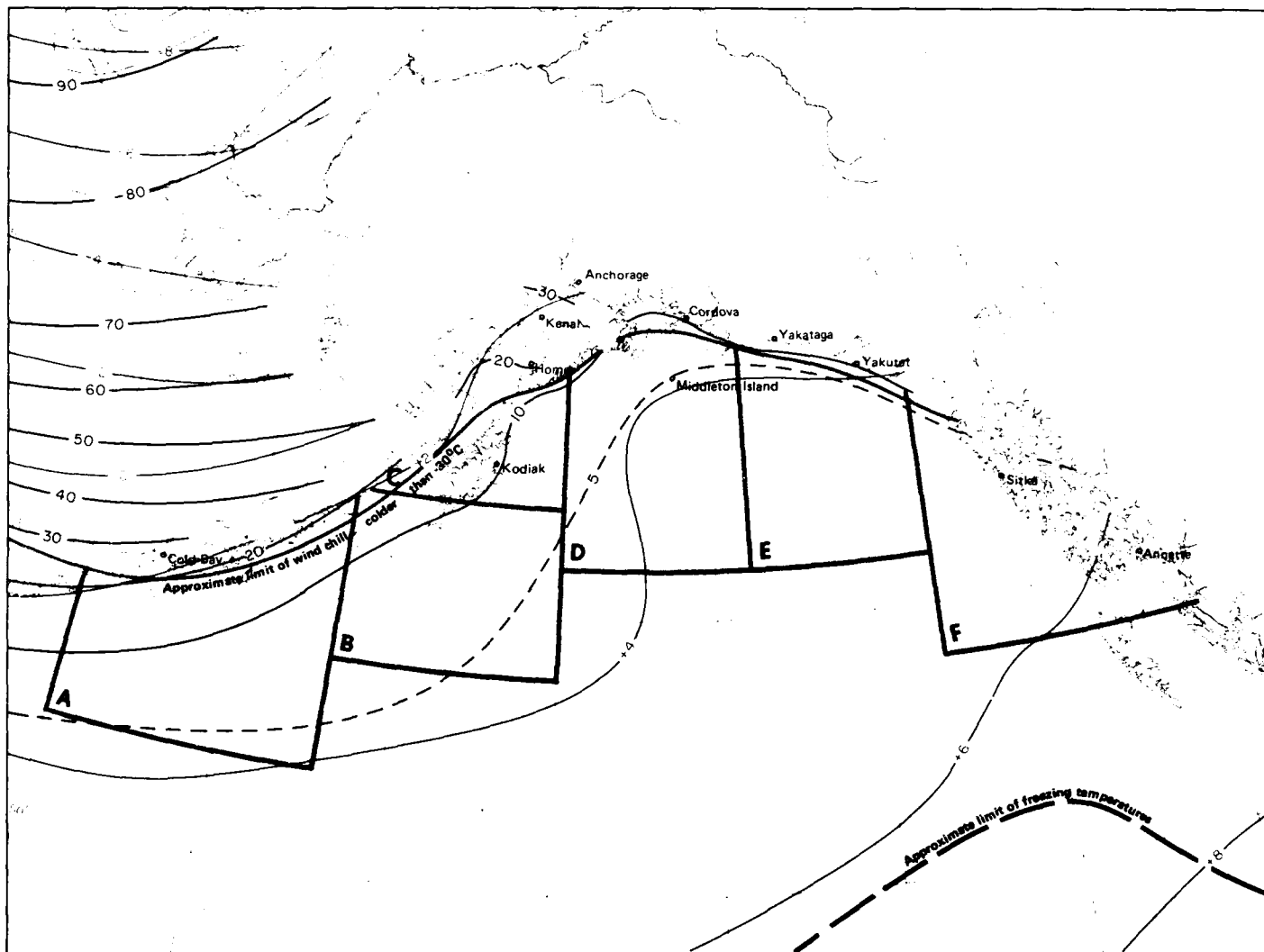


Marine Area B



April

3 Air temperature/wind direction

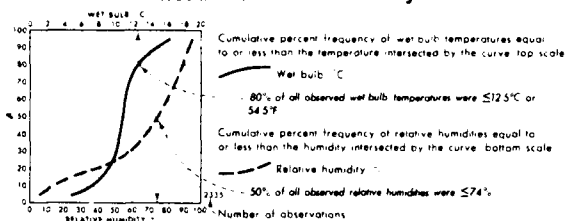


3 Air temperature mean and thresholds

April

Legend

Wet bulb/relative humidity



Map - Mean dew point temperature

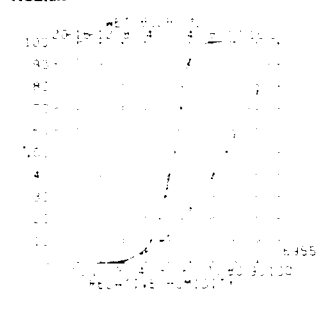
BLACK LINE - Mean dew point temperature °C

The observation count of the graph reflects those observations reporting both air and wet bulb temperatures; both are required in computing the relative humidity. The percentage of observations of either element greater than a given value can be obtained by subtracting the cumulative percent frequency of that value from 100%.

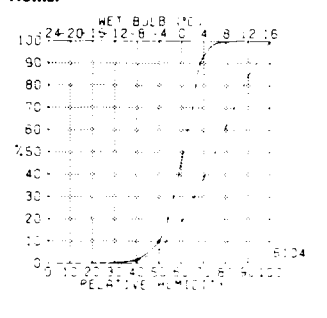
Cold Bay



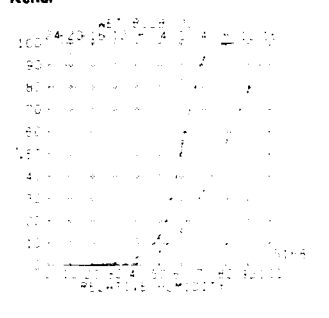
Kodiak



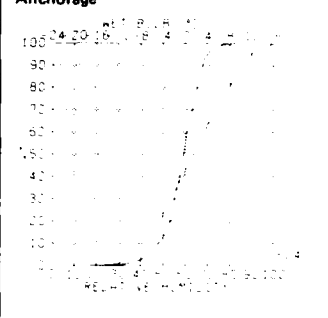
Homer



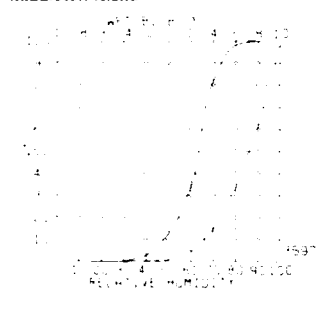
Kenai



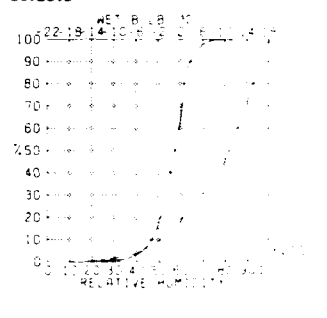
Anchorage



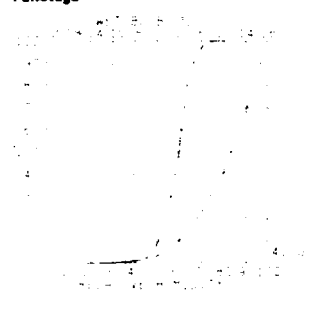
Middleton Island



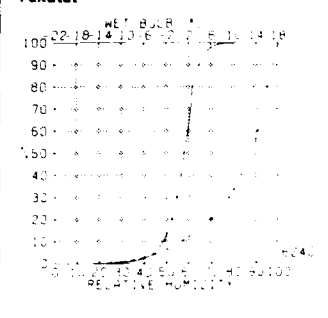
Cordova



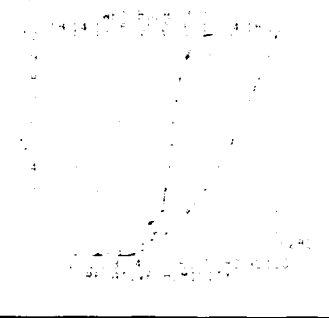
Yakataga



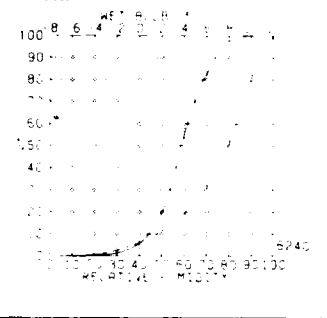
Yakutat



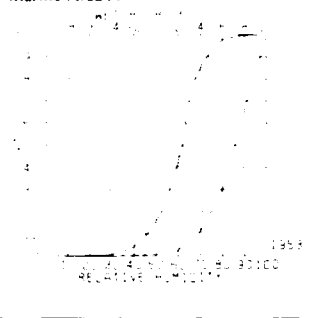
Sitka



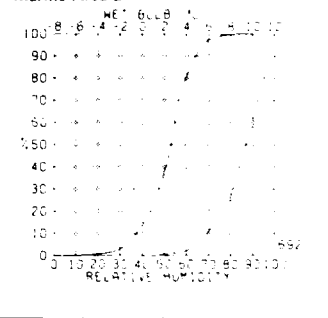
Annette



Marine Area A

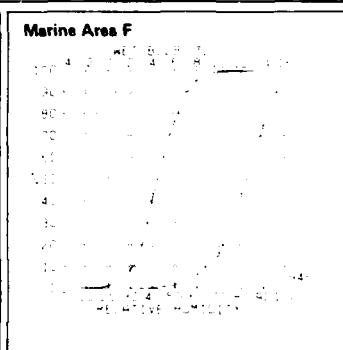
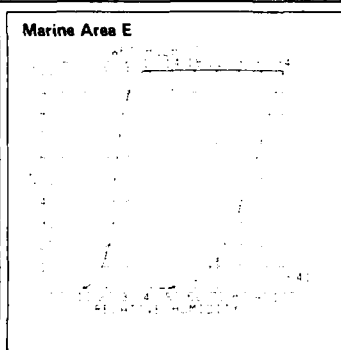
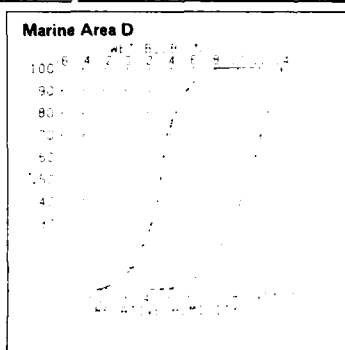
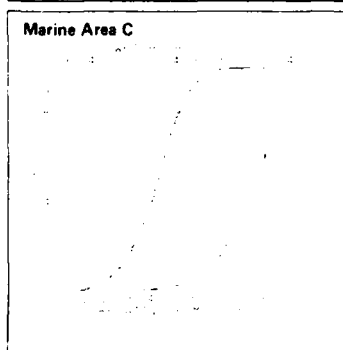
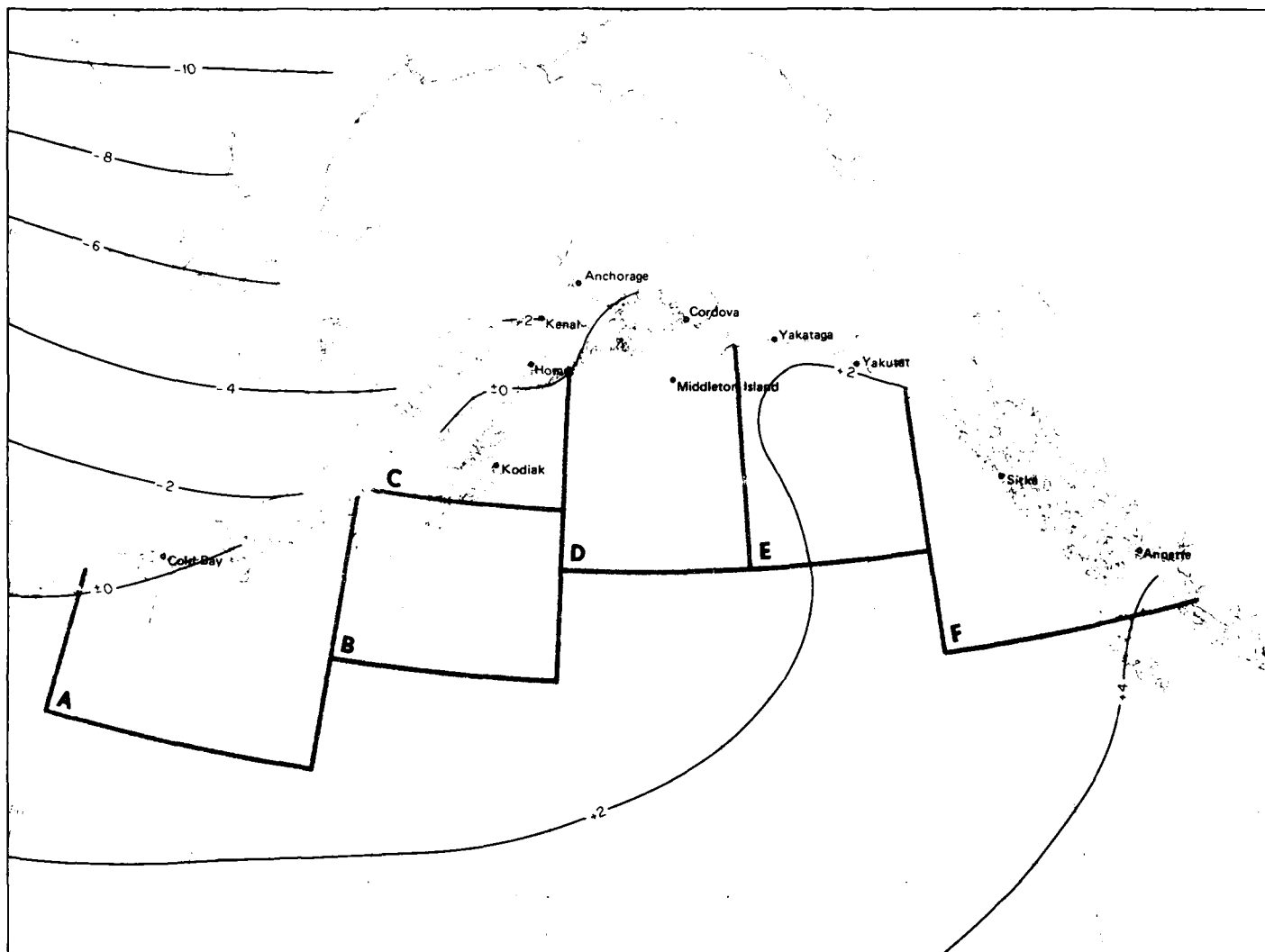


Marine Area B



April

4 Wet bulb/relative humidity

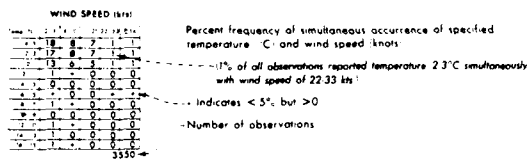


4 Mean dew point temperature

April

Legend

Air temperature/wind speed



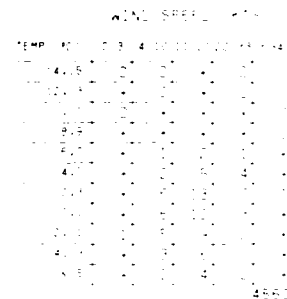
Map - Air temperature extremes (°C)

BLACK LINE Maximum 99% air temperature 1% of temperatures were greater than the given value

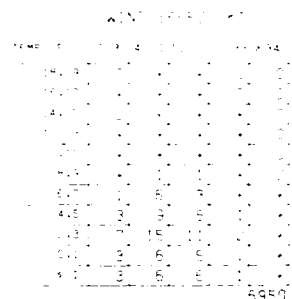
BLUE LINE Minimum 1% air temperature 1% of temperatures were equal to or less than the given value

The graph can be used to determine the extent of human discomfort from the combined effects of extreme heat or cold and winds or to estimate the likelihood of superstructure icing potential increase as the air temperature drops below freezing and the winds increase above 10 knots (12 mph) and may become quite severe with temperatures equal to or less than 9°C (16°F) and winds equal to or greater than 34 knots (39 mph).

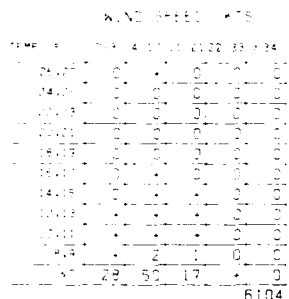
Cold Bay



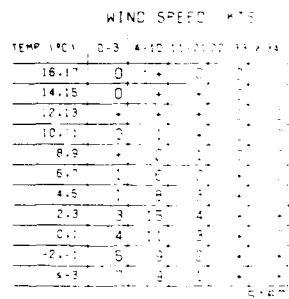
Kodiak



Homer



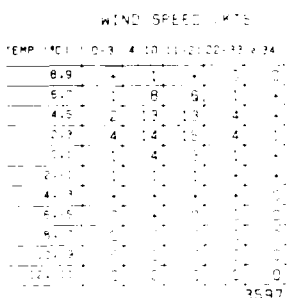
Kenai



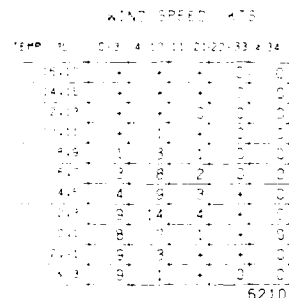
Anchorage



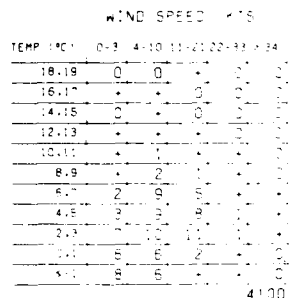
Middleton Island



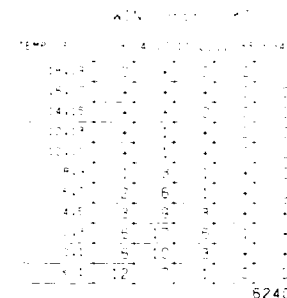
Cordova



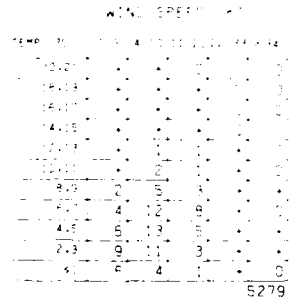
Yakutat



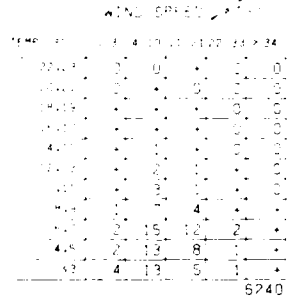
Yakutat



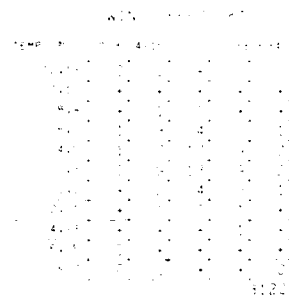
Sitka



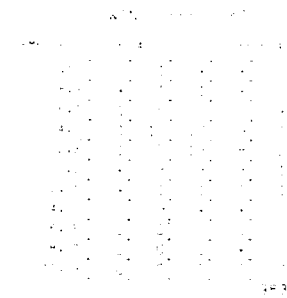
Annette



Marine Area A



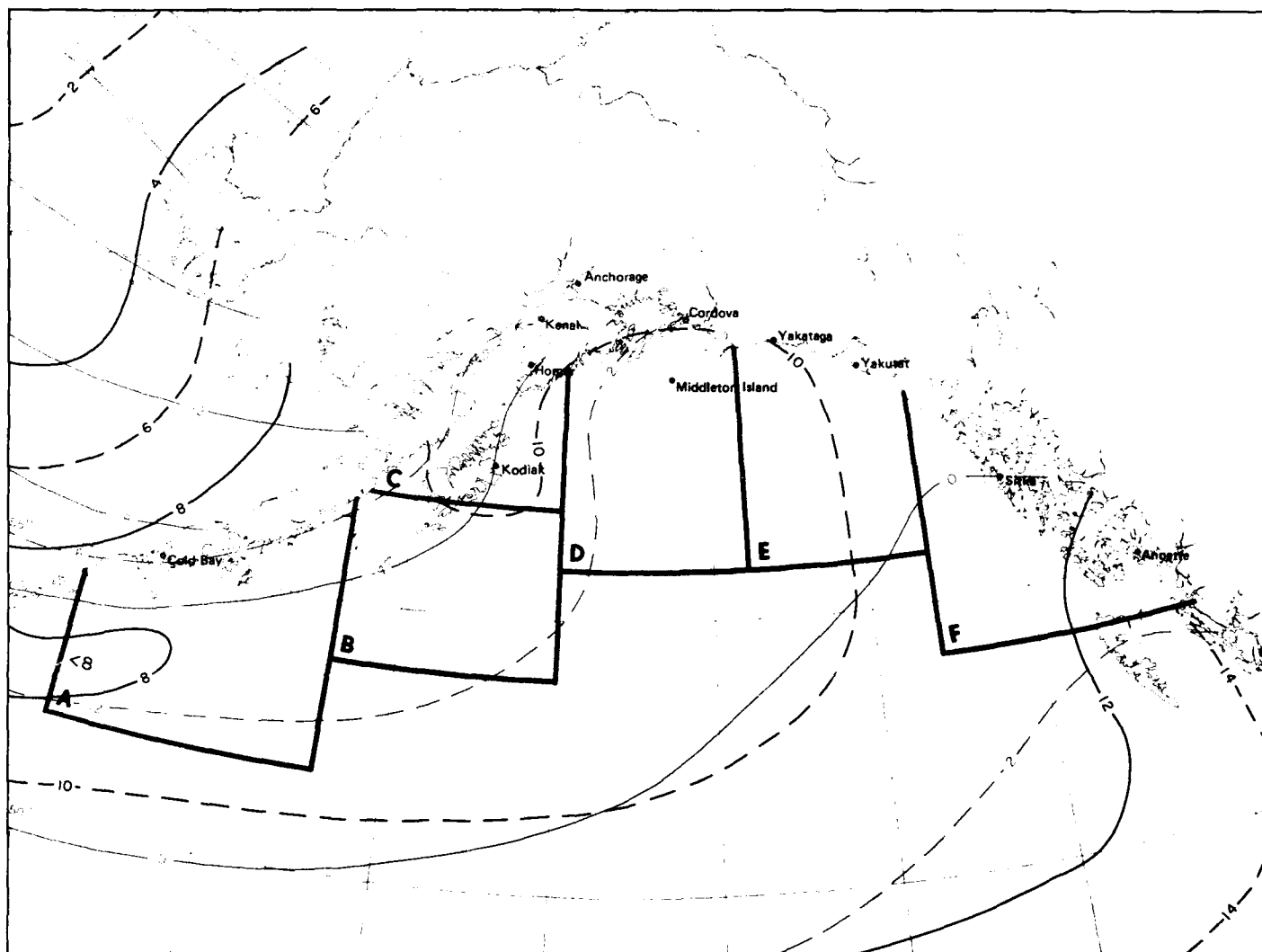
Marine Area B



April

136

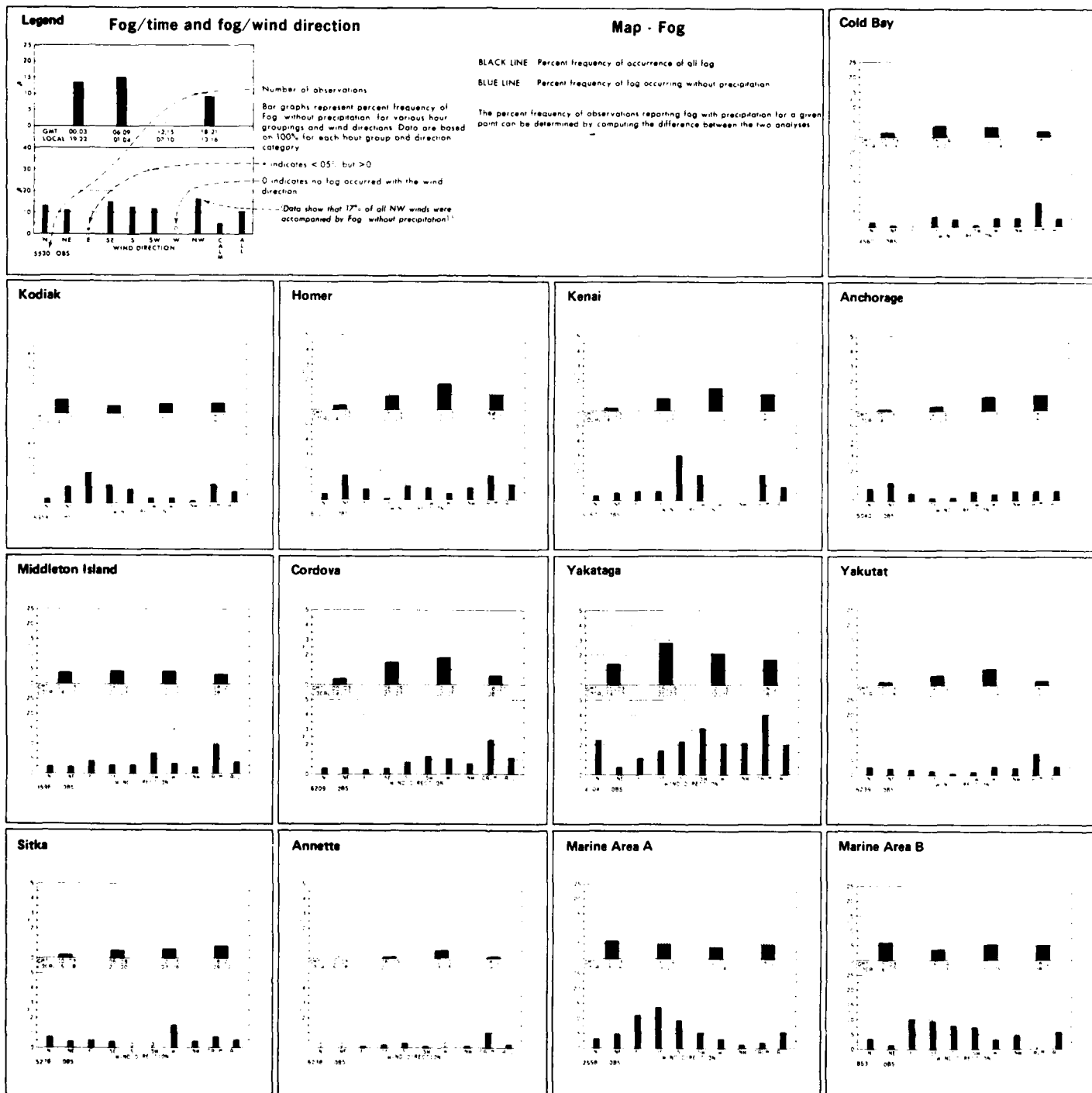
5 Air temperature/wind speed



Marine Area C	Marine Area D	Marine Area E	Marine Area F
WIND SPEED (KNOTS) TEMP. (°C) 4.4	WIND SPEED (KNOTS) TEMP. (°C) 4.4	WIND SPEED (KNOTS) TEMP. (°C) 4.4	WIND SPEED (KNOTS) TEMP. (°C) 4.4

5 Air temperature extremes (°C)

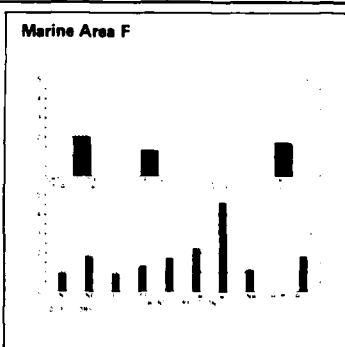
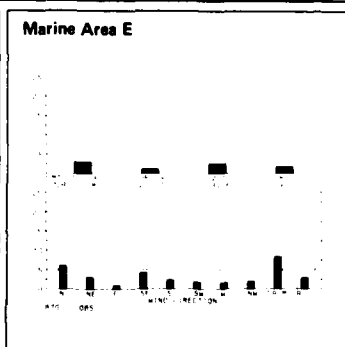
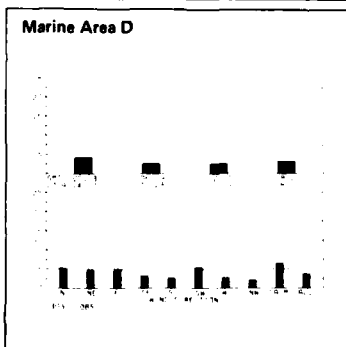
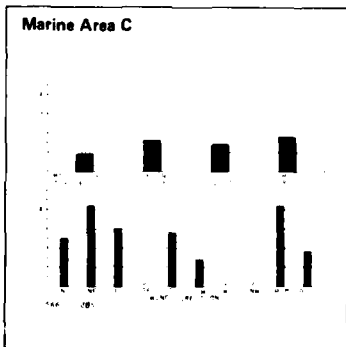
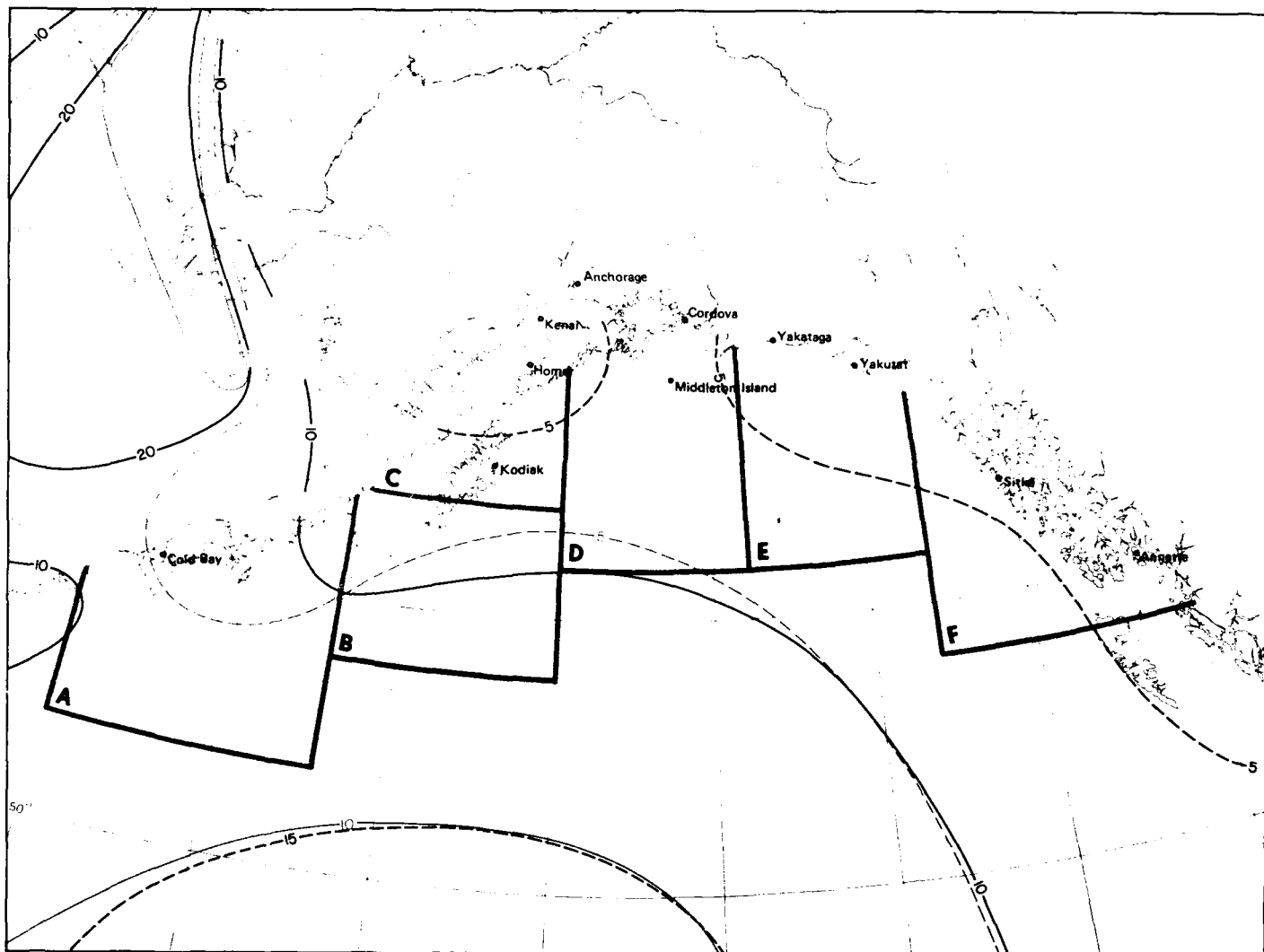
April



April

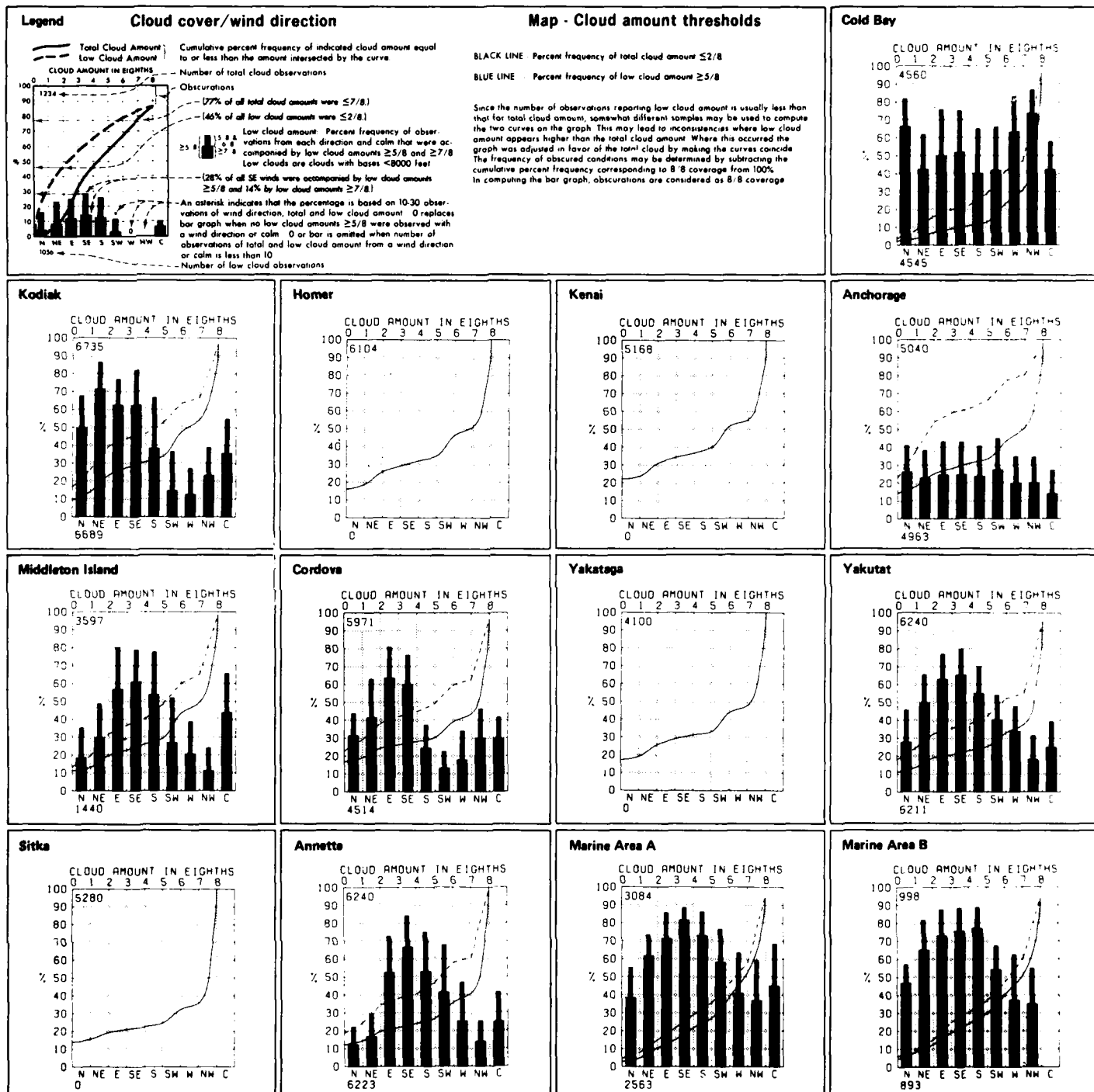
138

6 Fog/time and fog/wind direction



6 Fog

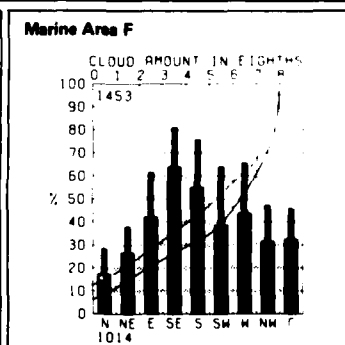
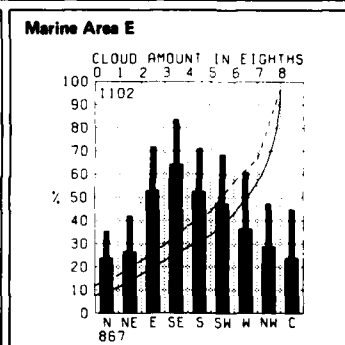
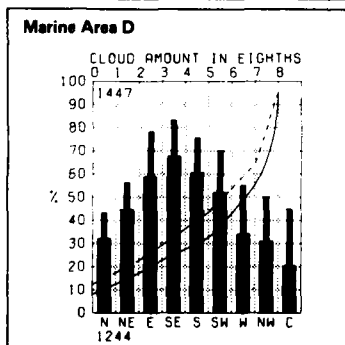
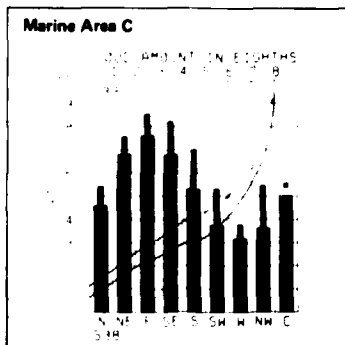
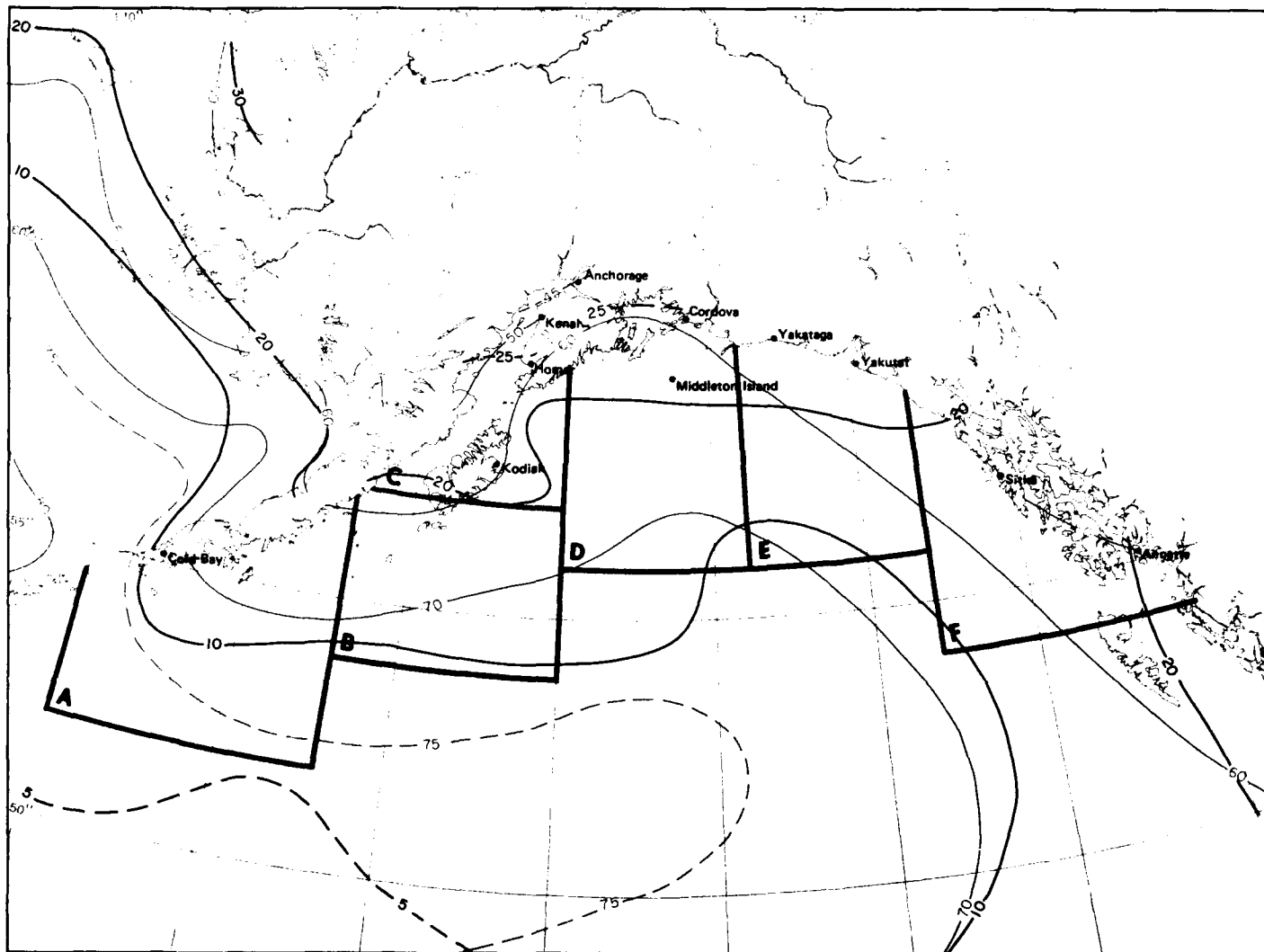
April



April

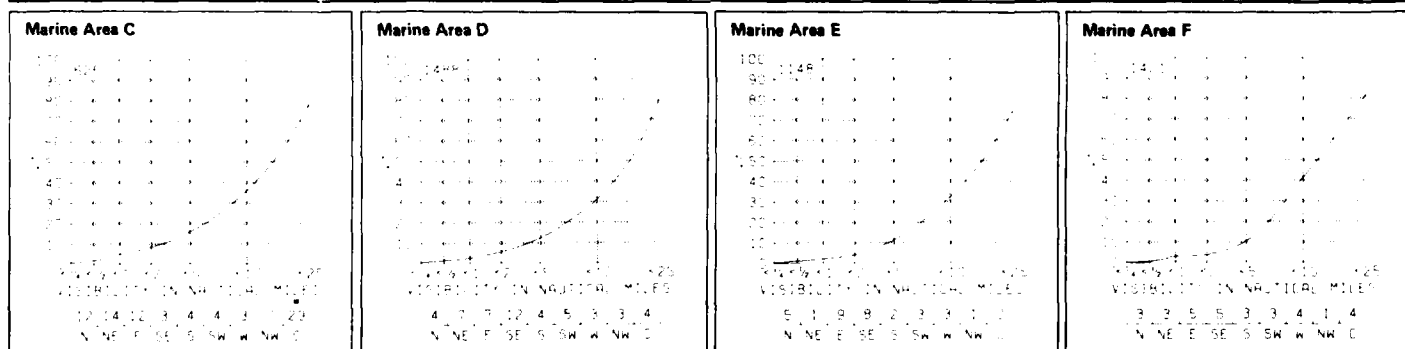
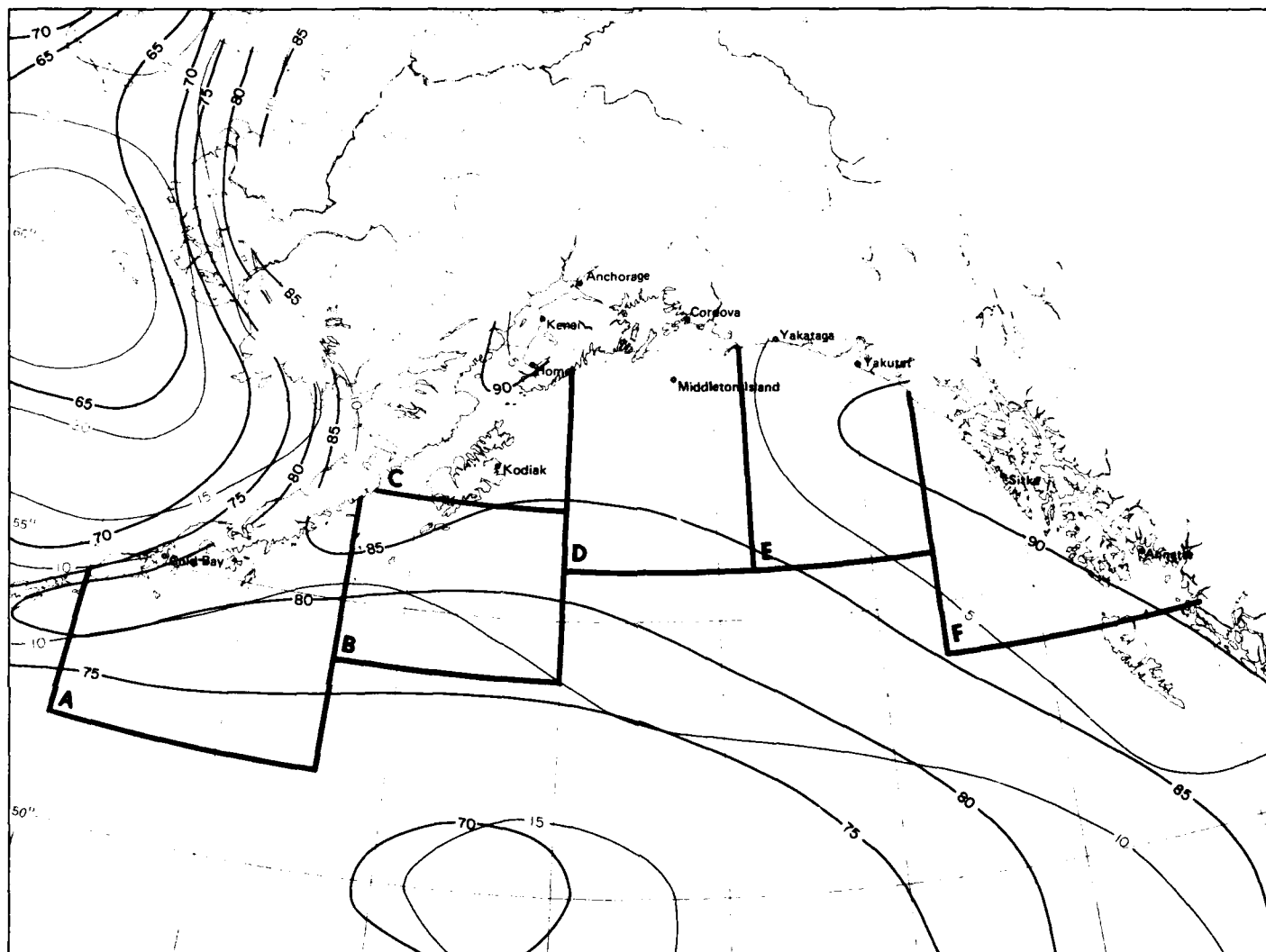
140

7 Cloud cover/wind direction



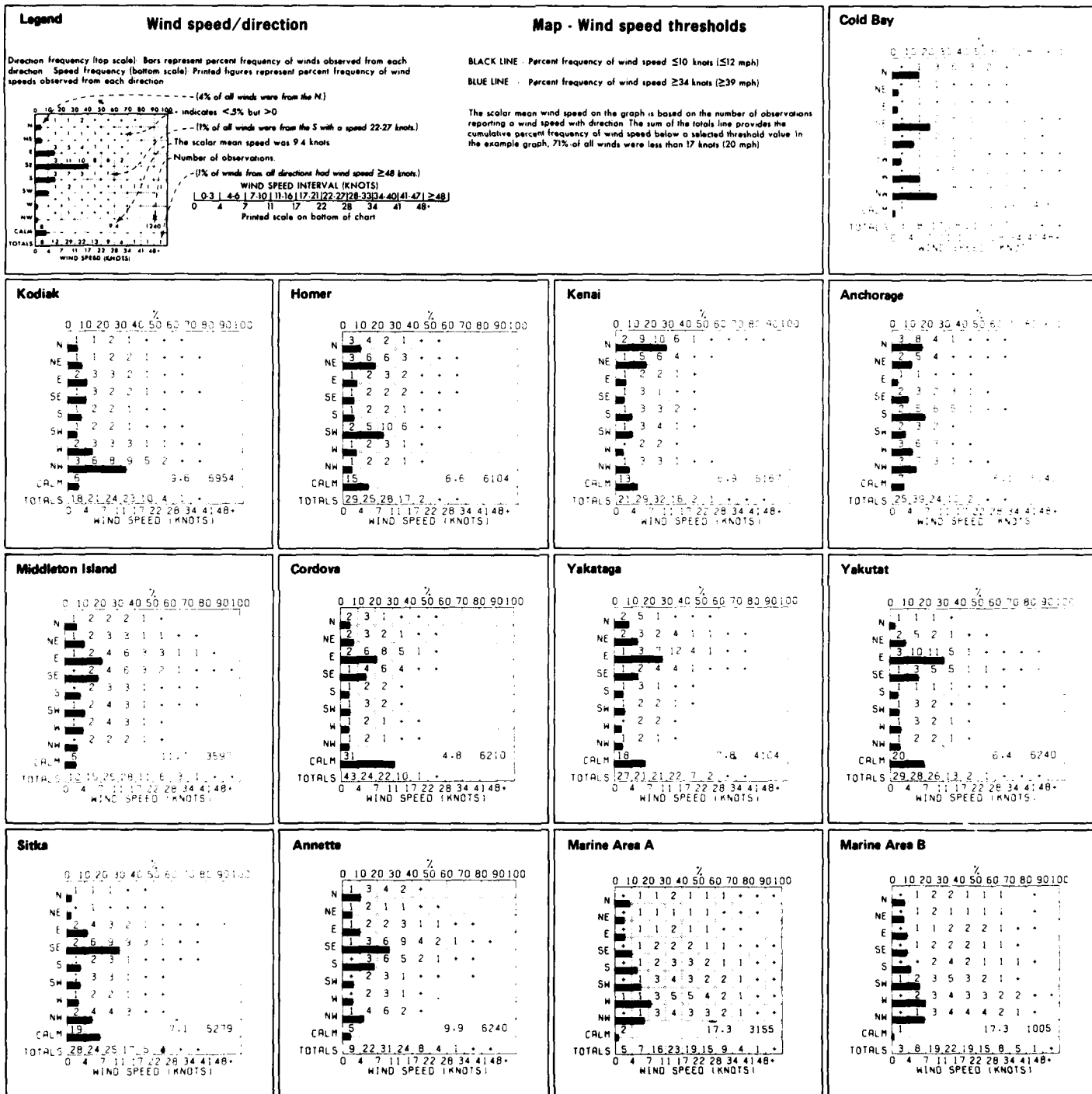
7 Cloud amount thresholds

April



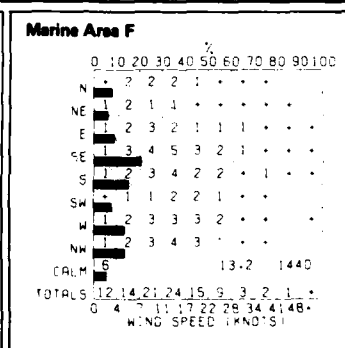
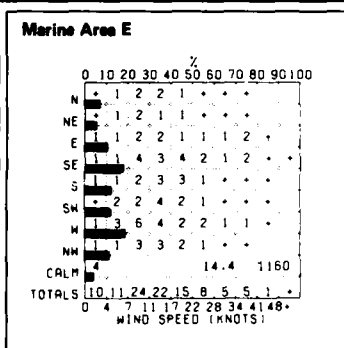
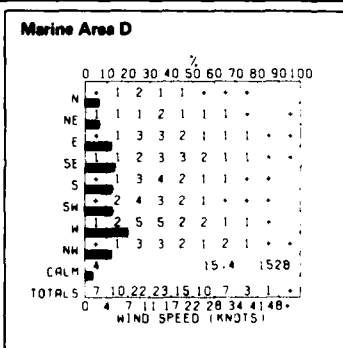
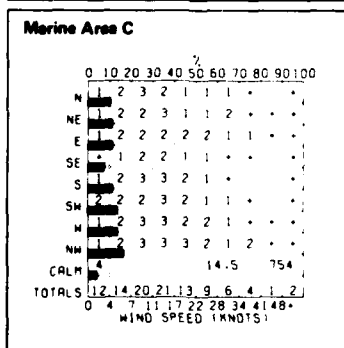
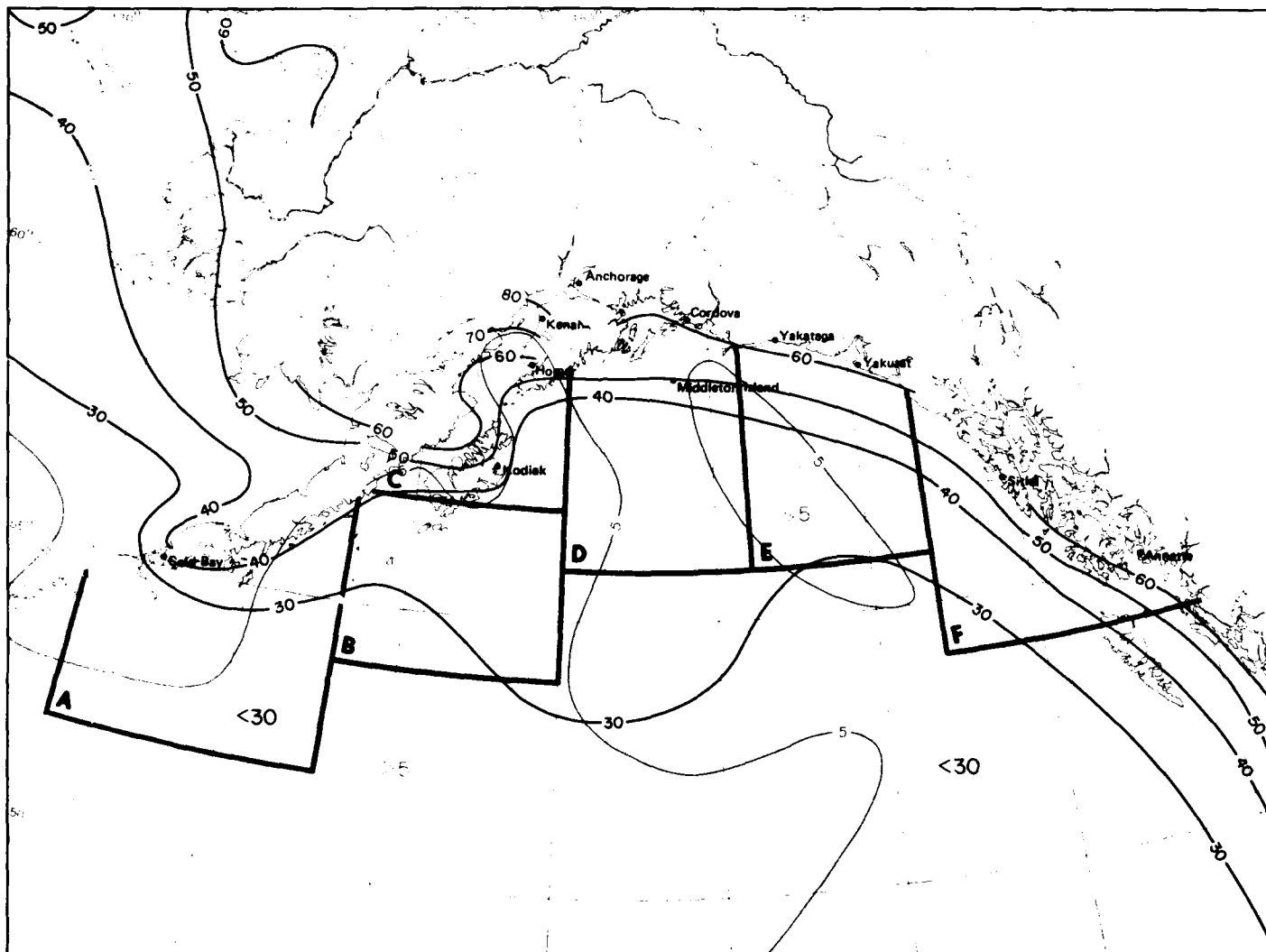
8 Visibility thresholds

April



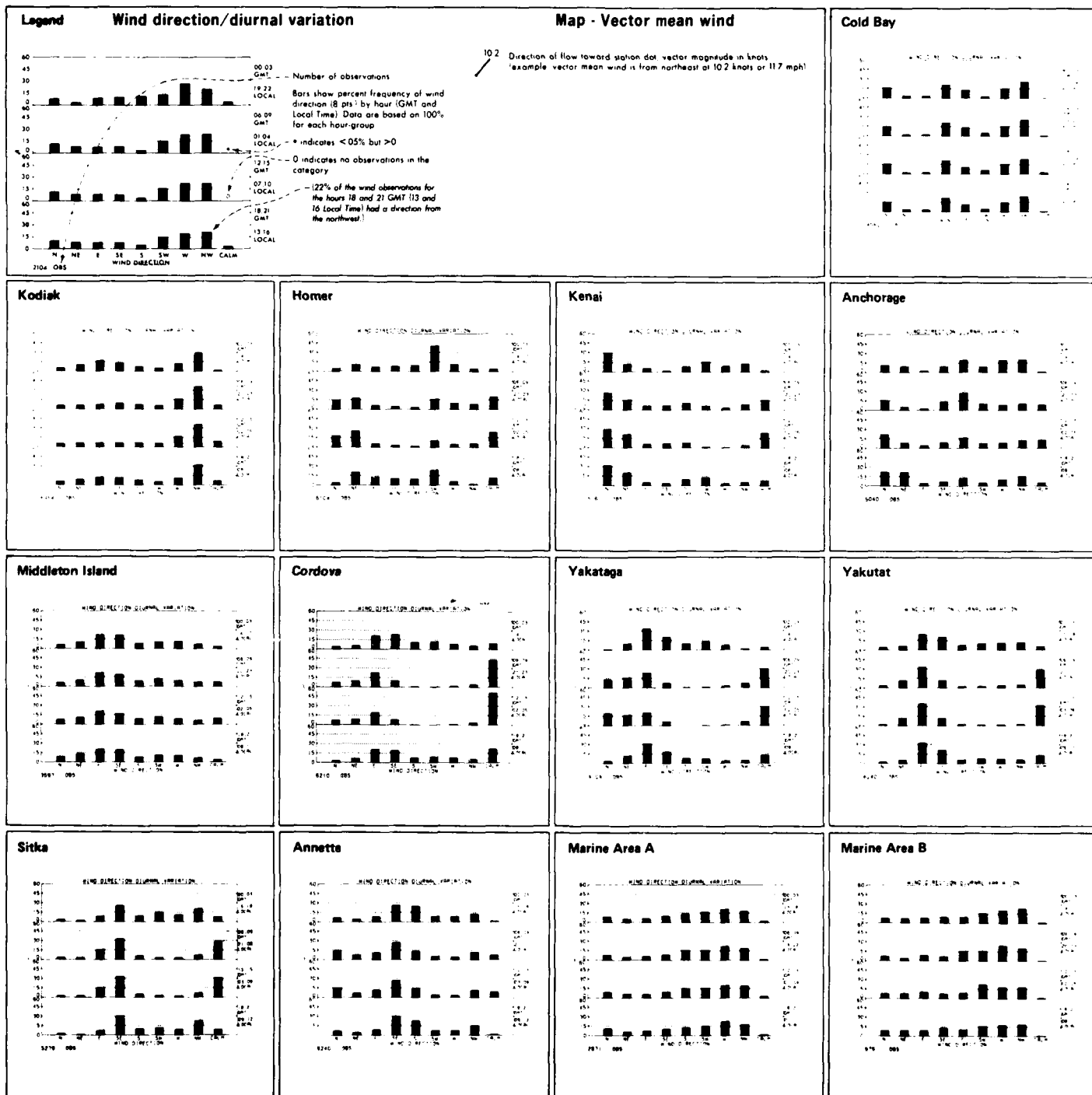
April

9 Wind speed/direction



9 Wind speed thresholds

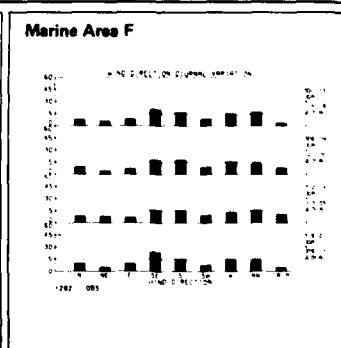
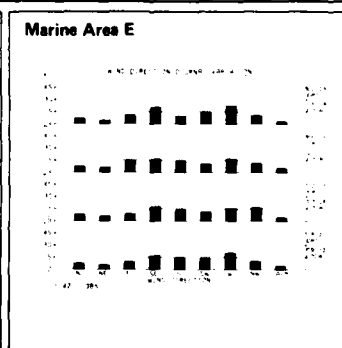
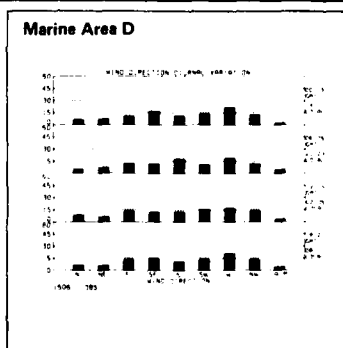
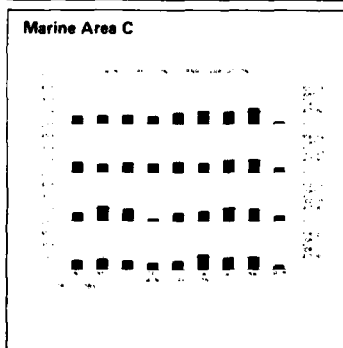
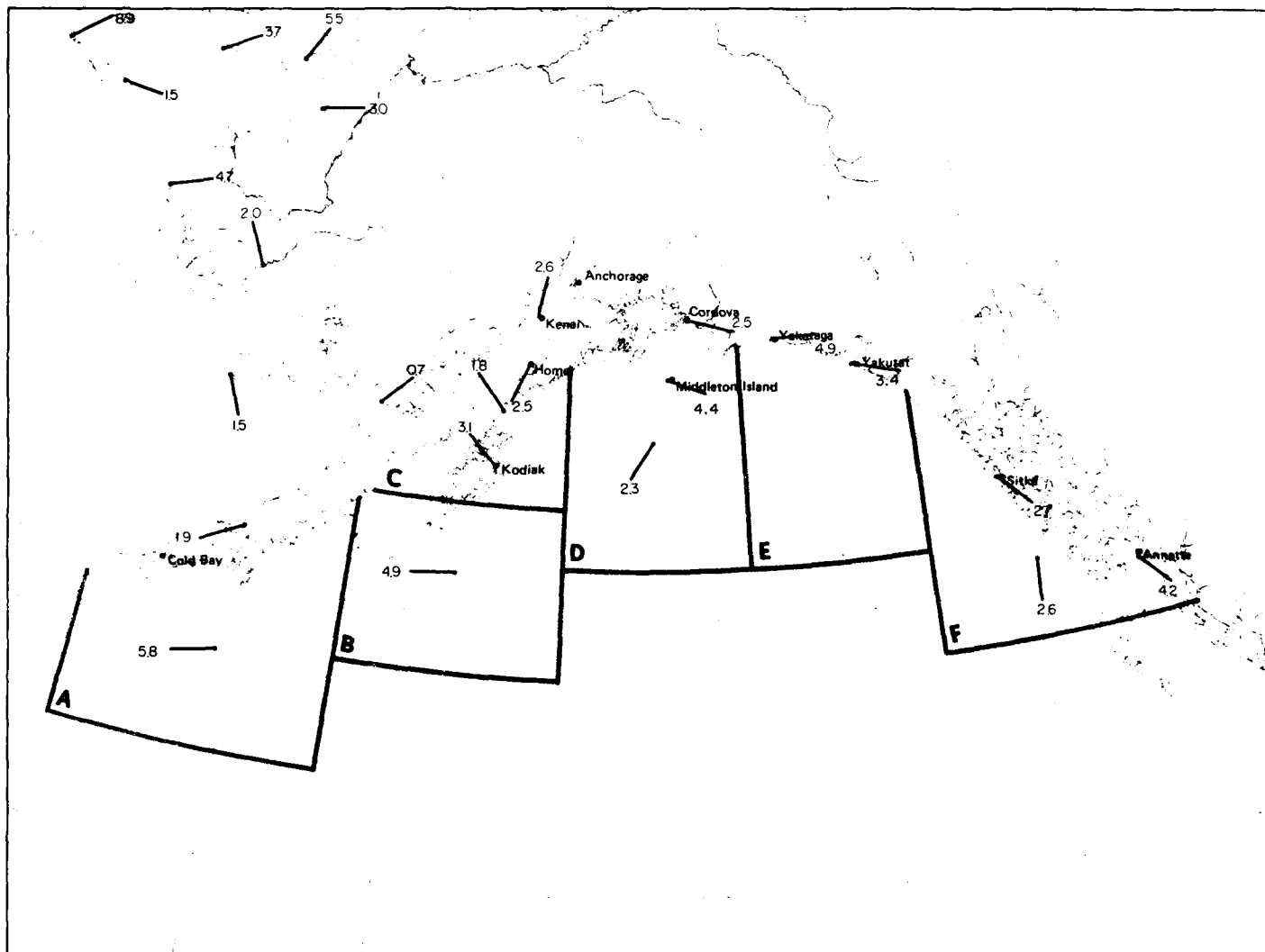
April



April

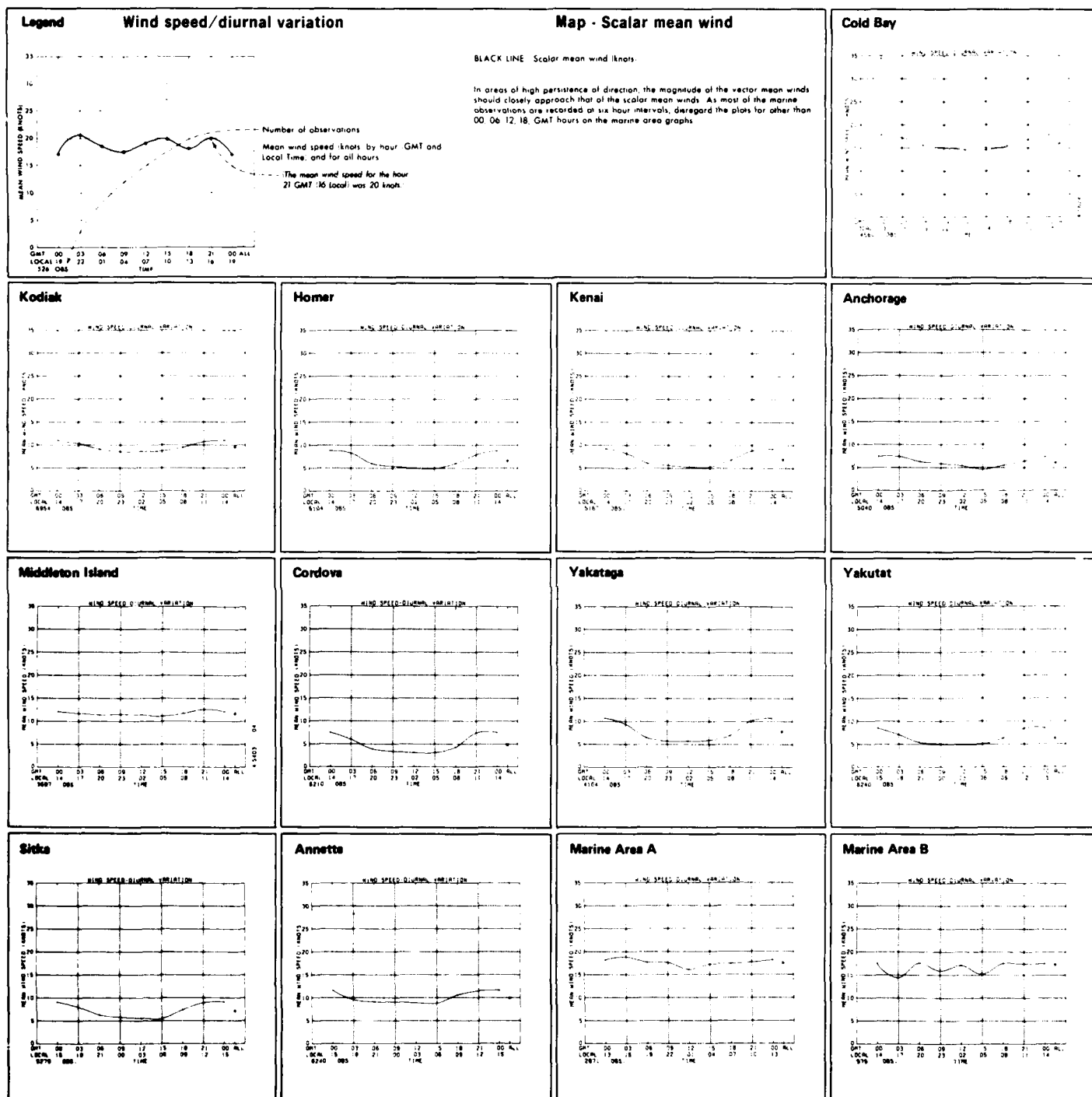
146

10 Wind direction/diurnal variation



10 Vector mean wind

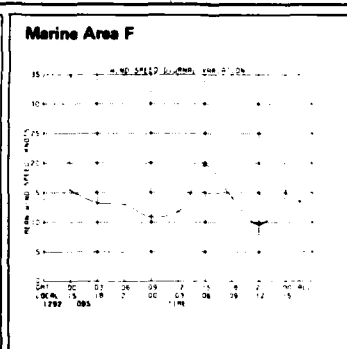
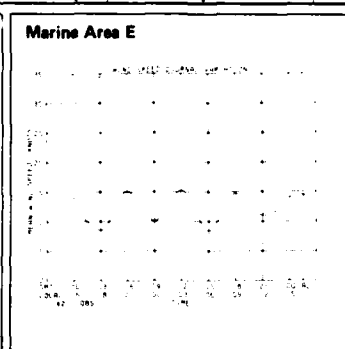
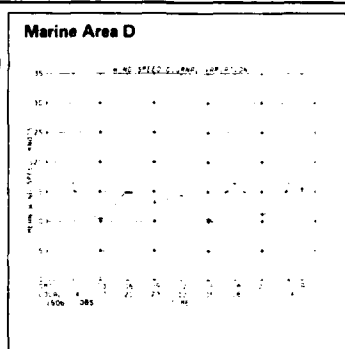
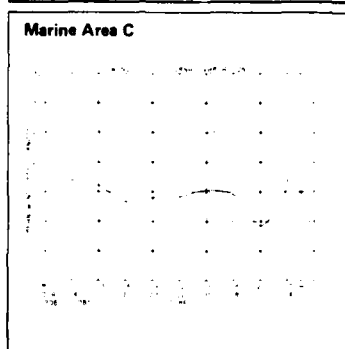
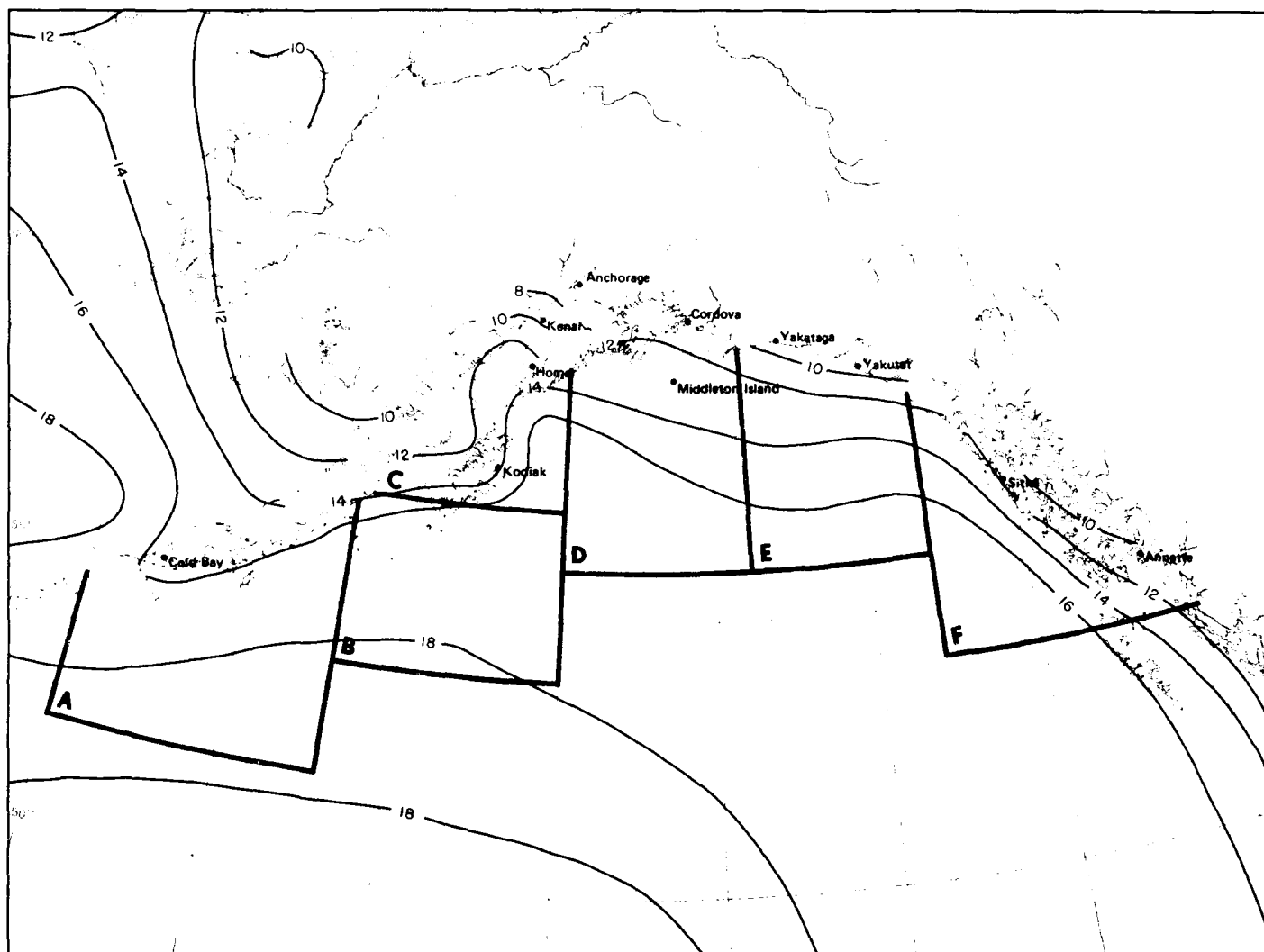
April



April

148

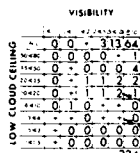
11 Wind speed/diurnal variation



11 Scalar mean wind

April

Low cloud ceiling/visibility



Percent frequency of simultaneous occurrence of specified low cloud ceilings (hundreds of feet) and visibilities (nautical miles).

Low cloud ceiling heights are estimated from the height of low clouds (h) when low cloud amount (N_h) is ≥ 8 .

Obscurements are included under ceiling 0 < 5

N C (no ceiling) includes bases of clouds ≥ 8000 feet as well as occurrences of $N_h < 5.8$

--- 12% of all observations reported ceiling ≥ 1000 but < 2000 feet simultaneously with visibility ≥ 5 but < 10 nautical miles.)

- . indicates $< 5\%$ but > 0
- Number of observations

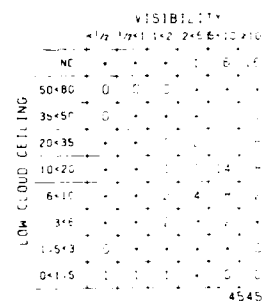
**Map · Low cloud ceiling and
visibility thresholds**

BLACK LINE Percent frequency of low cloud ceiling ≥ 1000 feet or no low cloud ceiling; and visibility ≥ 5 nautical miles

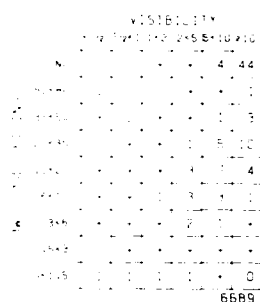
BLUE LINE Percent frequency of low cloud ceiling < 600 feet and or visibility < 2 nautical miles

BLUE LINE Percent frequency of low cloud ceiling <600 feet and or visibility <2 nautical miles

Cold Bay



Kodiak



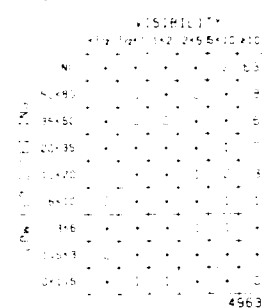
Homer

Insufficient Data

Kenai

Insufficient Data

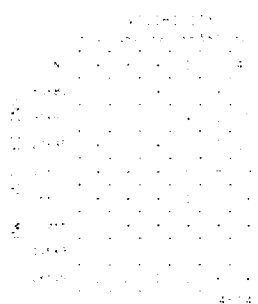
Anchorage



Middleton Island



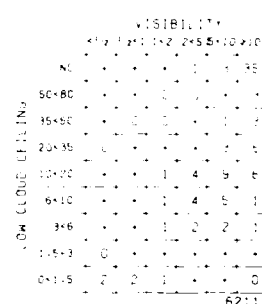
Cordova



Yakataga

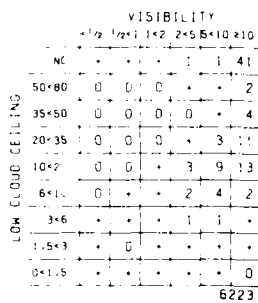
Insufficient Data

Yakutat

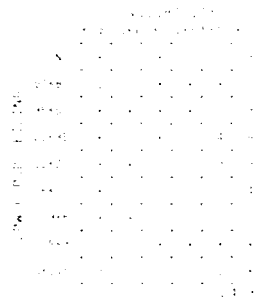
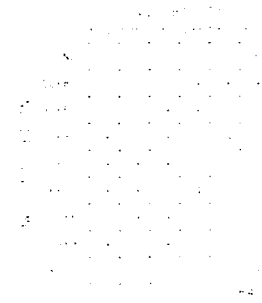


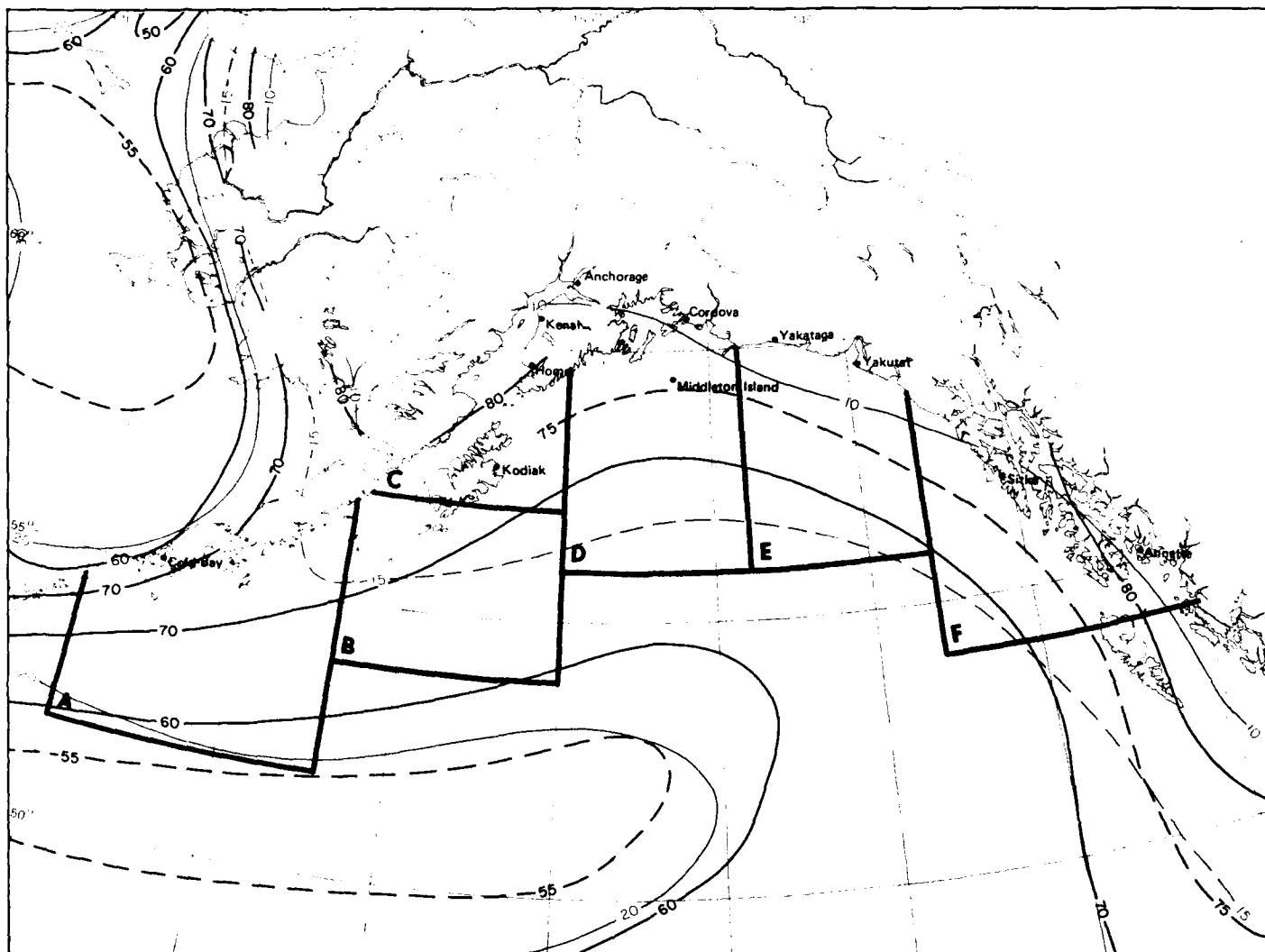
Sitka

Annette



Marine Area A

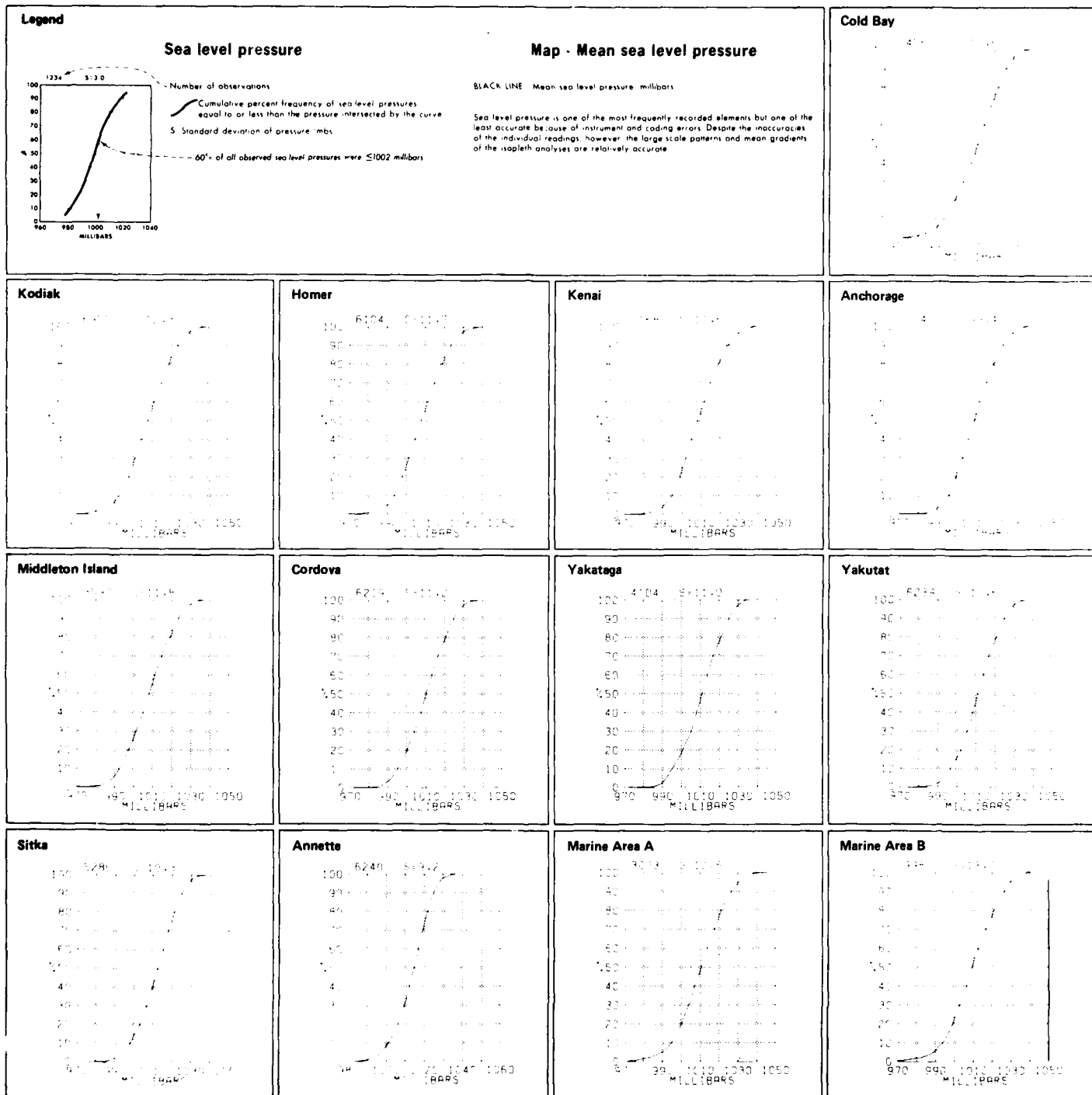
**Marine Area B**



Marine Area C	Marine Area D	Marine Area E	Marine Area F
50-55 60-70 75-80 85-90 95-100 105-110 115-120 125-130 135-140 145-150 155-160 165-170 175-180 185-190 195-200 205-210 215-220 225-230 235-240 245-250 255-260 265-270 275-280 285-290 295-300 305-310 315-320 325-330 335-340 345-350 355-360 365-370 375-380 385-390 395-400 405-410 415-420 425-430 435-440 445-450 455-460 465-470 475-480 485-490 495-500 505-510 515-520 525-530 535-540 545-550 555-560 565-570 575-580 585-590 595-600 605-610 615-620 625-630 635-640 645-650 655-660 665-670 675-680 685-690 695-700 705-710 715-720 725-730 735-740 745-750 755-760 765-770 775-780 785-790 795-800 805-810 815-820 825-830 835-840 845-850 855-860 865-870 875-880 885-890 895-900 905-910 915-920 925-930 935-940 945-950 955-960 965-970 975-980 985-990 995-1000	50-55 60-70 75-80 85-90 95-100 105-110 115-120 125-130 135-140 145-150 155-160 165-170 175-180 185-190 195-200 205-210 215-220 225-230 235-240 245-250 255-260 265-270 275-280 285-290 295-300 305-310 315-320 325-330 335-340 345-350 355-360 365-370 375-380 385-390 395-400 405-410 415-420 425-430 435-440 445-450 455-460 465-470 475-480 485-490 495-500 505-510 515-520 525-530 535-540 545-550 555-560 565-570 575-580 585-590 595-600 605-610 615-620 625-630 635-640 645-650 655-660 665-670 675-680 685-690 695-700 705-710 715-720 725-730 735-740 745-750 755-760 765-770 775-780 785-790 795-800 805-810 815-820 825-830 835-840 845-850 855-860 865-870 875-880 885-890 895-900 905-910 915-920 925-930 935-940 945-950 955-960 965-970 975-980 985-990 995-1000	50-55 60-70 75-80 85-90 95-100 105-110 115-120 125-130 135-140 145-150 155-160 165-170 175-180 185-190 195-200 205-210 215-220 225-230 235-240 245-250 255-260 265-270 275-280 285-290 295-300 305-310 315-320 325-330 335-340 345-350 355-360 365-370 375-380 385-390 395-400 405-410 415-420 425-430 435-440 445-450 455-460 465-470 475-480 485-490 495-500 505-510 515-520 525-530 535-540 545-550 555-560 565-570 575-580 585-590 595-600 605-610 615-620 625-630 635-640 645-650 655-660 665-670 675-680 685-690 695-700 705-710 715-720 725-730 735-740 745-750 755-760 765-770 775-780 785-790 795-800 805-810 815-820 825-830 835-840 845-850 855-860 865-870 875-880 885-890 895-900 905-910 915-920 925-930 935-940 945-950 955-960 965-970 975-980 985-990 995-1000	50-55 60-70 75-80 85-90 95-100 105-110 115-120 125-130 135-140 145-150 155-160 165-170 175-180 185-190 195-200 205-210 215-220 225-230 235-240 245-250 255-260 265-270 275-280 285-290 295-300 305-310 315-320 325-330 335-340 345-350 355-360 365-370 375-380 385-390 395-400 405-410 415-420 425-430 435-440 445-450 455-460 465-470 475-480 485-490 495-500 505-510 515-520 525-530 535-540 545-550 555-560 565-570 575-580 585-590 595-600 605-610 615-620 625-630 635-640 645-650 655-660 665-670 675-680 685-690 695-700 705-710 715-720 725-730 735-740 745-750 755-760 765-770 775-780 785-790 795-800 805-810 815-820 825-830 835-840 845-850 855-860 865-870 875-880 885-890 895-900 905-910 915-920 925-930 935-940 945-950 955-960 965-970 975-980 985-990 995-1000

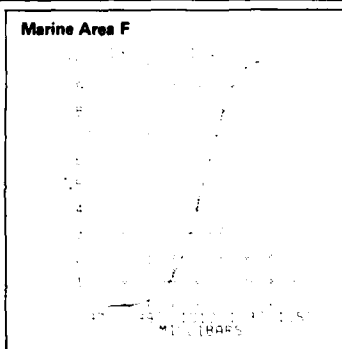
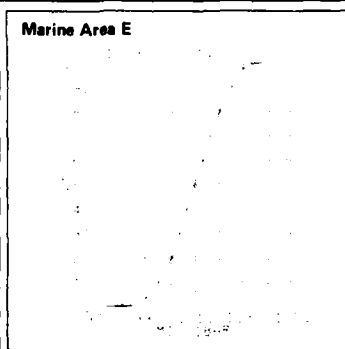
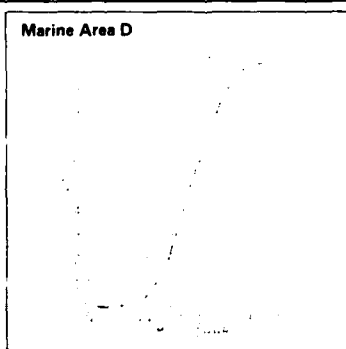
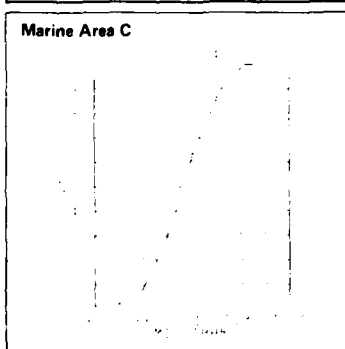
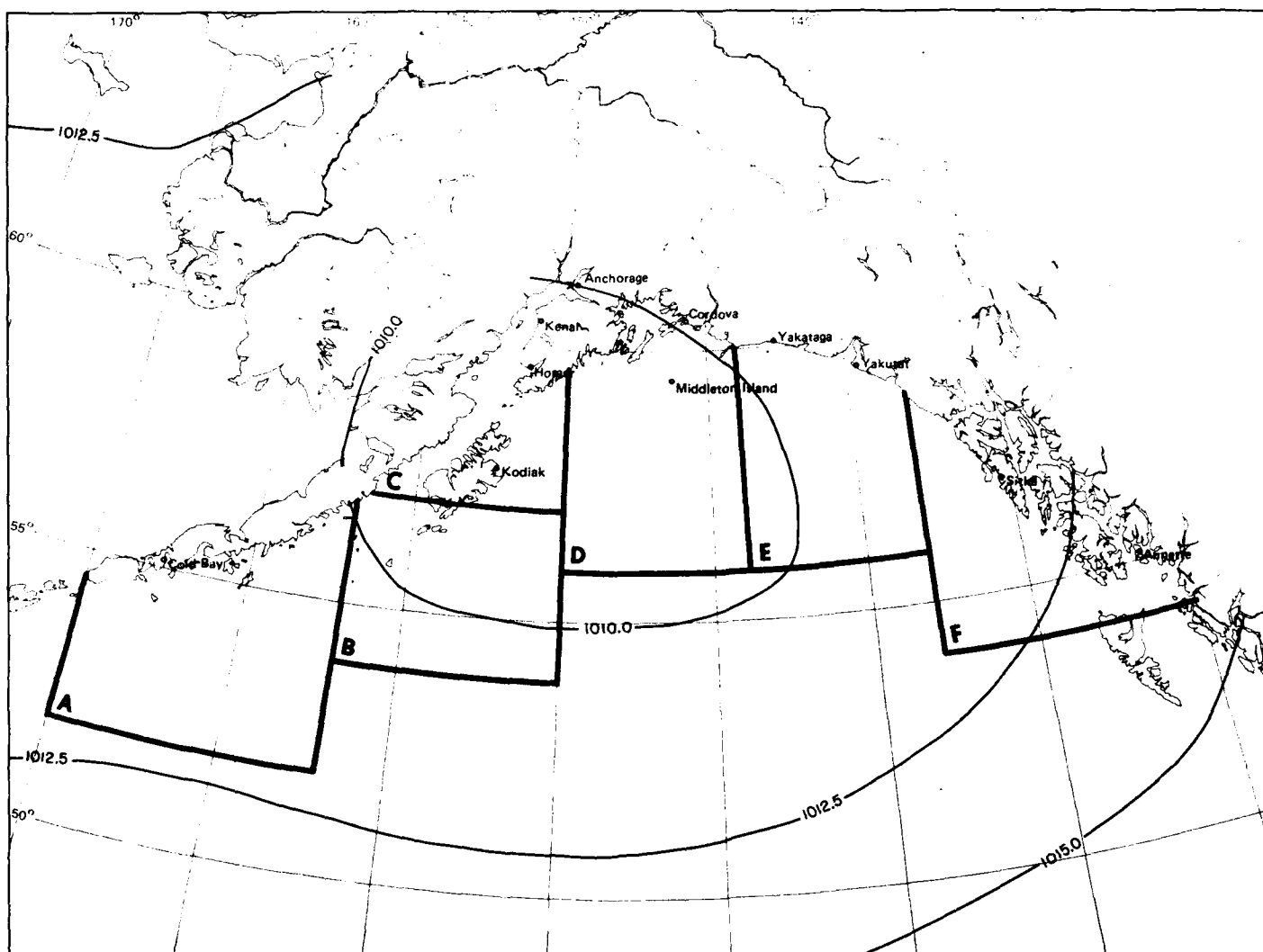
12 Low cloud ceiling and visibility thresholds

April



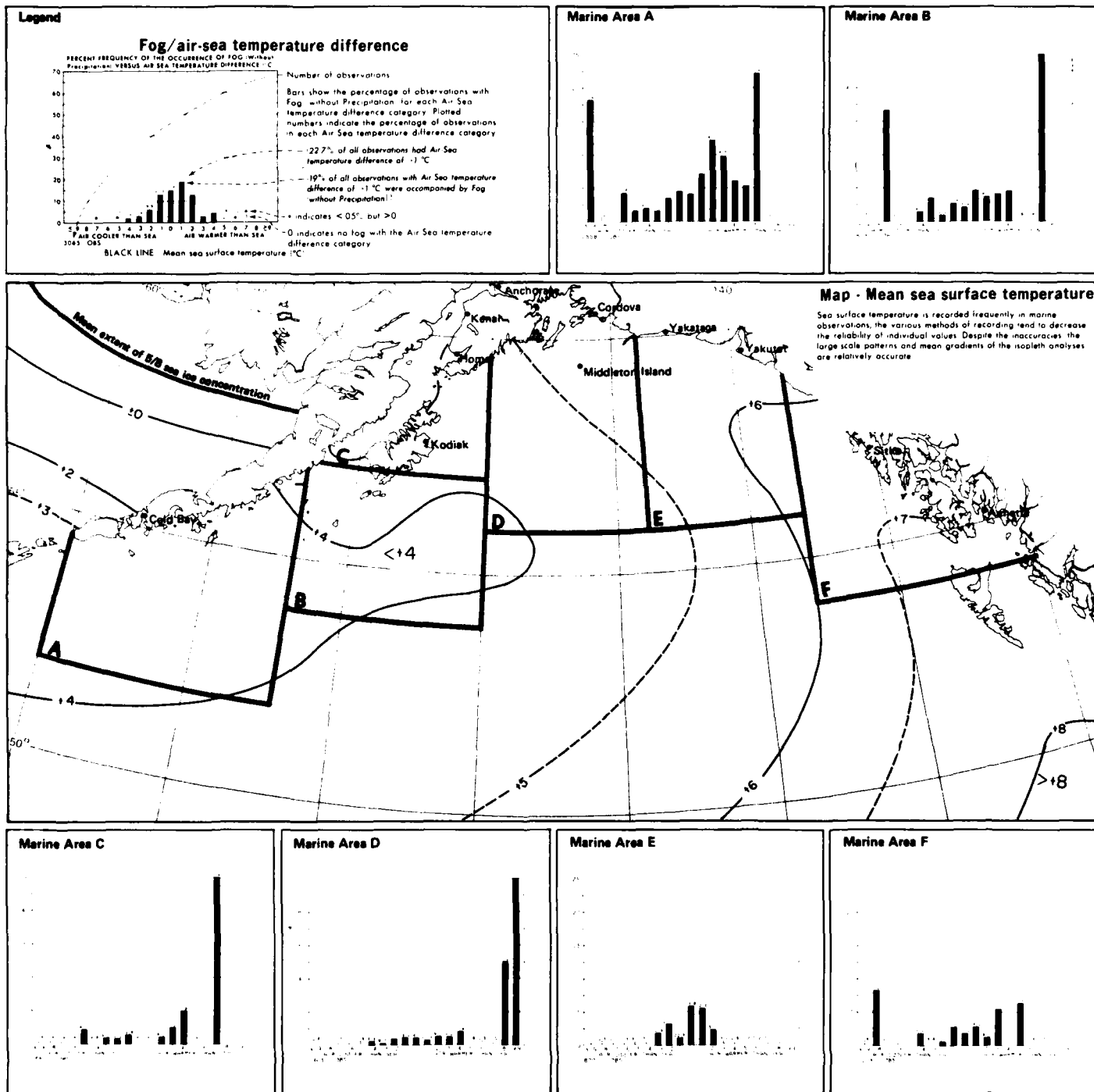
April

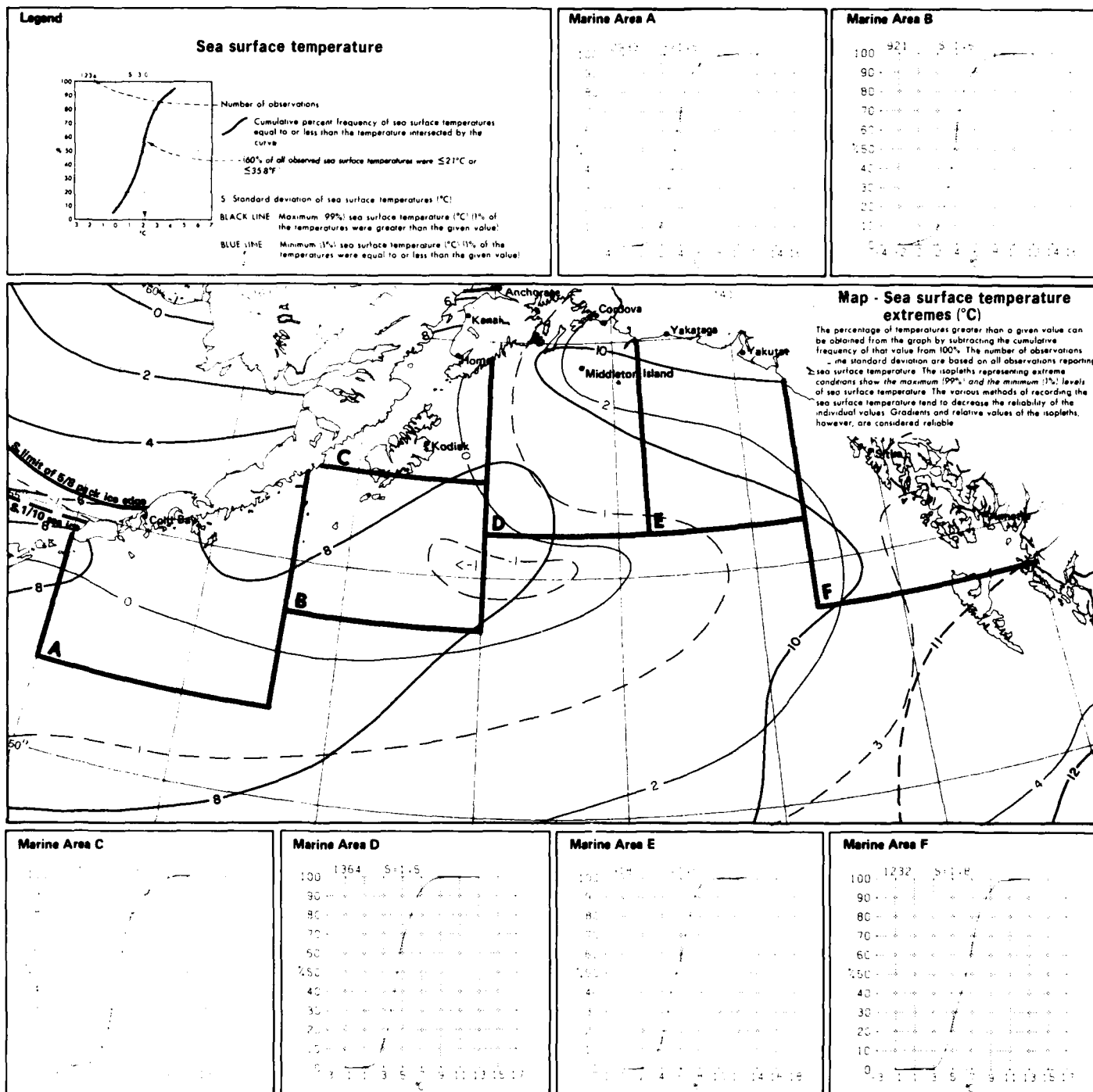
13 Sea level pressure



13 Mean sea level pressure

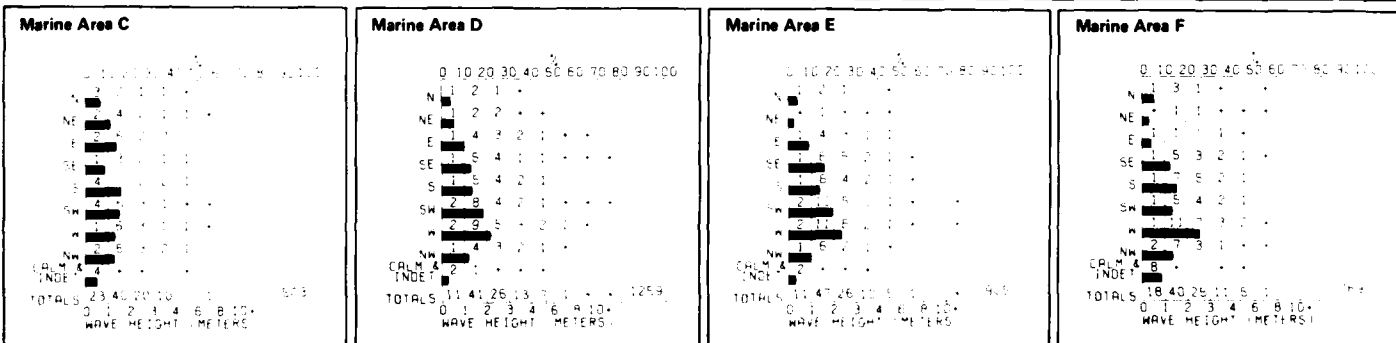
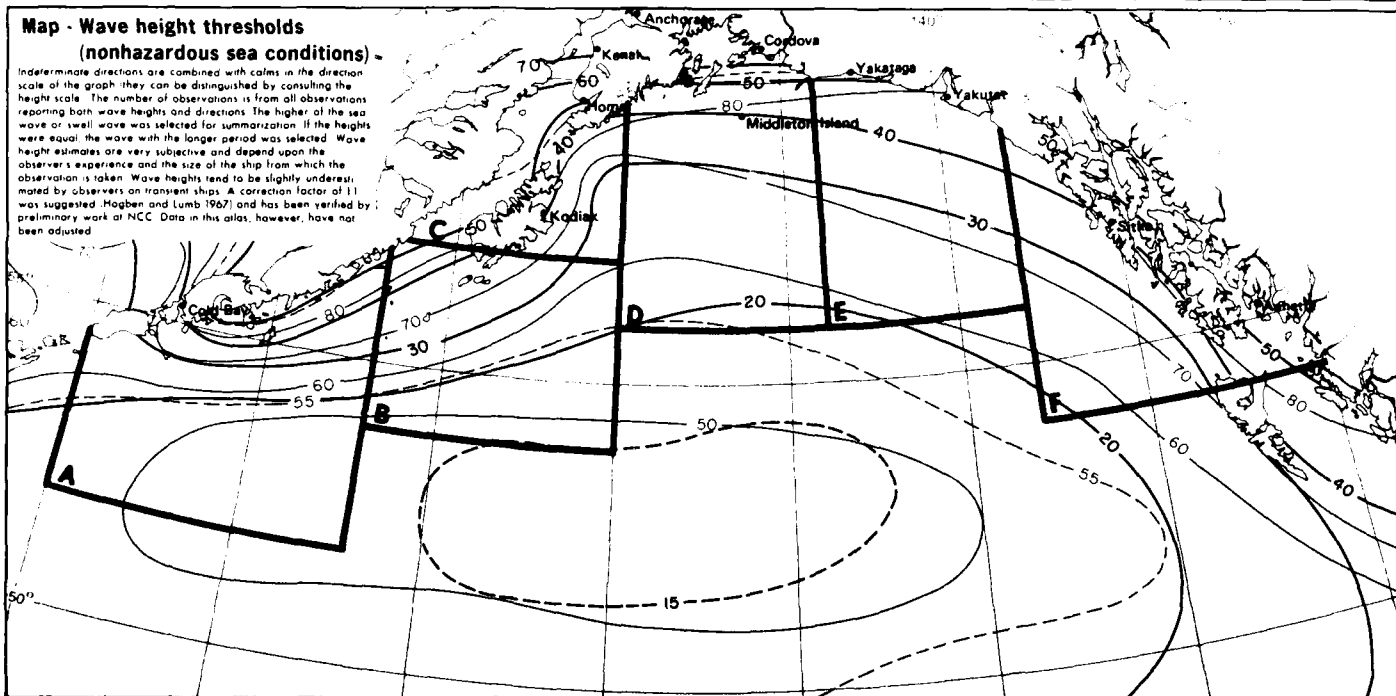
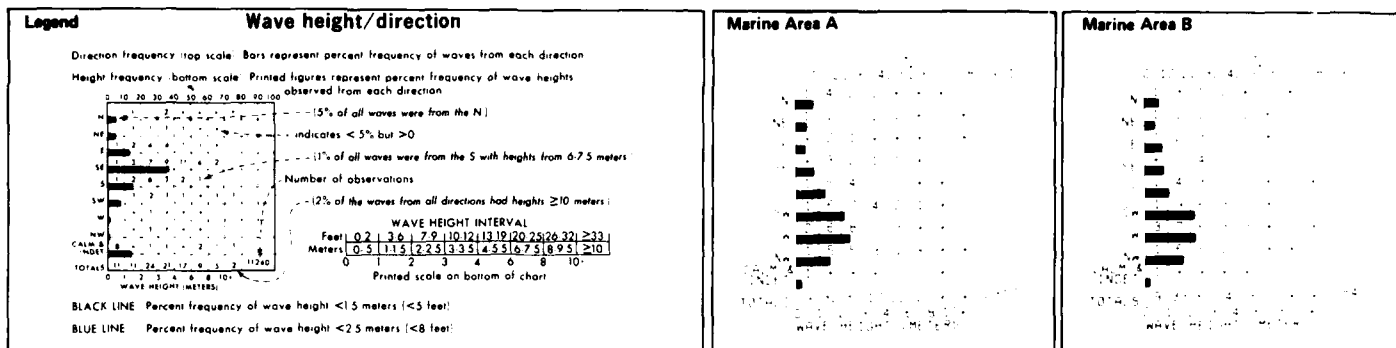
April





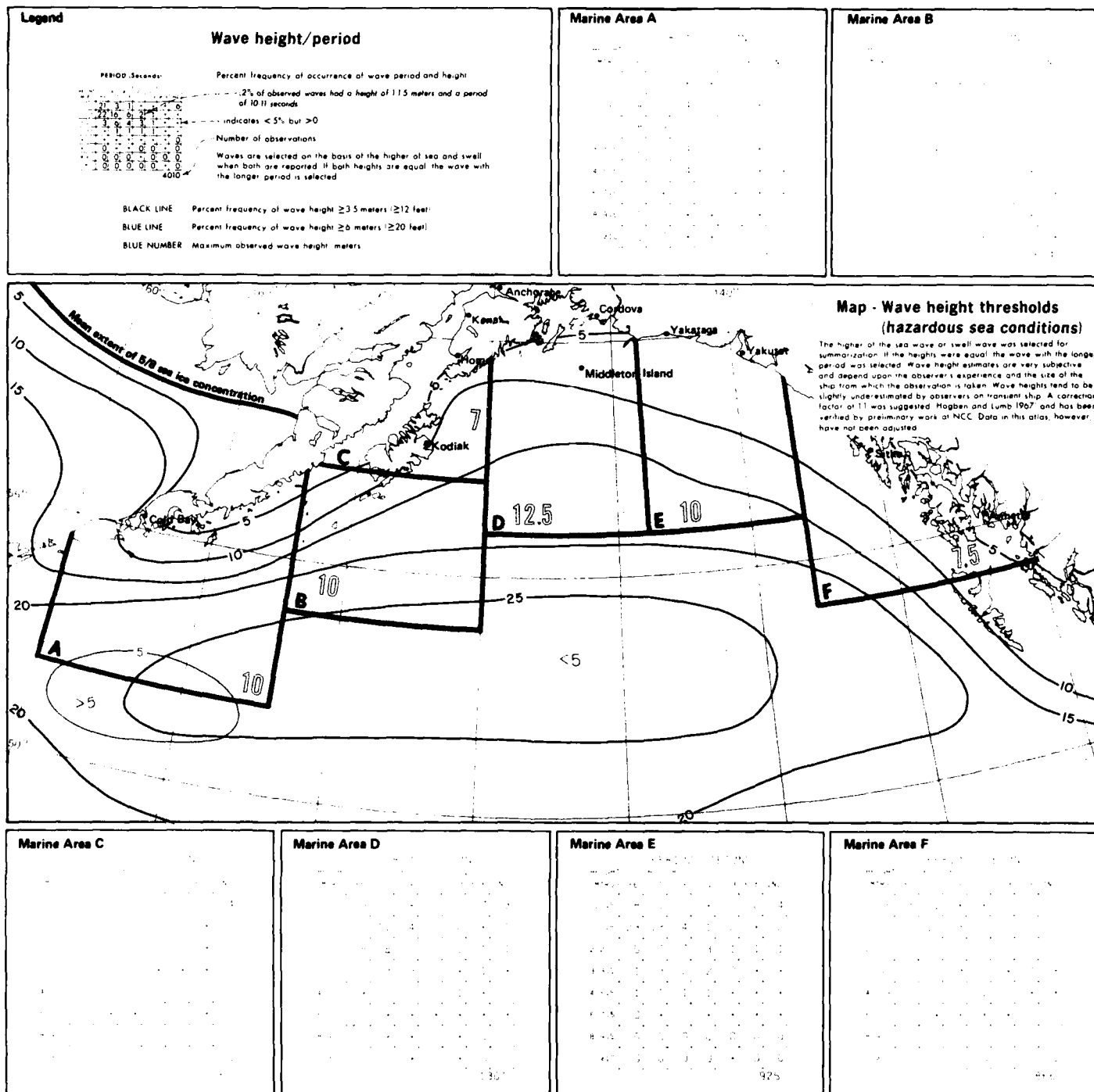
15 Sea surface temperature extremes

April



April

16 Wave height thresholds (nonhazardous)



17 Wave height thresholds (hazardous)

April

Legend

Low pressure center movement

12 hour movements of low pressure centers considering only closed circulations

Mean speed: Printed figure at the end of each bar represents the mean speed of movement in knots toward the indicated direction

Low pressure centers moving toward the N had a mean speed of 11 knots

Direction frequency: Bars represent percent frequency of 12 hour movements toward each direction. Each circle represents 20

41 of all 12 hour movements were toward the NE

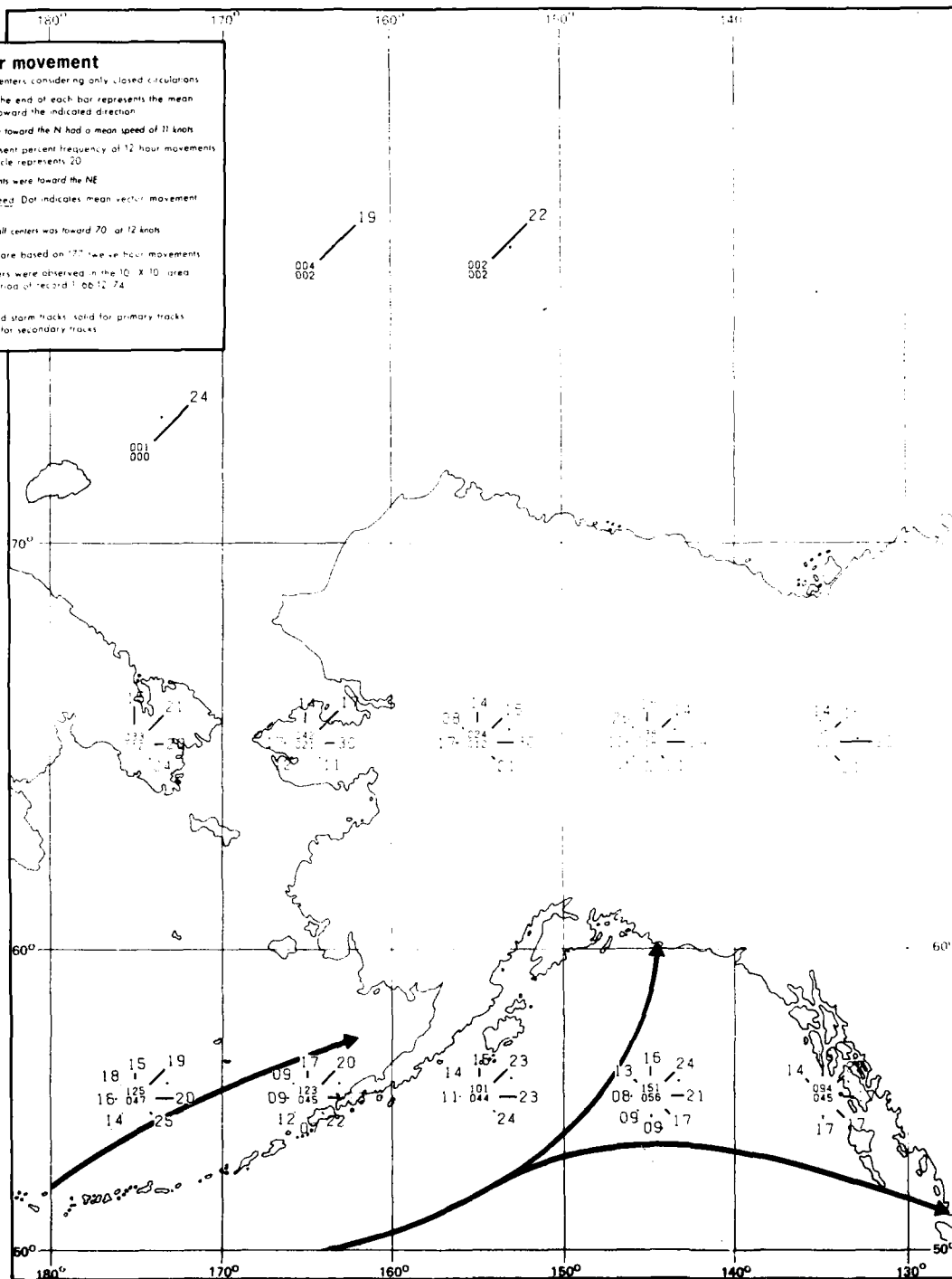
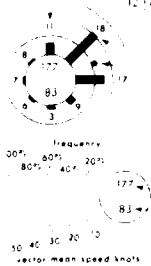
Vector mean direction and speed: Dot indicates mean vector movement. Each circle equals 10 knots

Mean vector movement of all centers was toward 70° at 12 knots

Statistics for this have are based on 177 twelve hour movements

83 low pressure centers were observed in the 10° X 10° area during the 9 year period of record 1 0012 74

BLACK ARROWS: Preferred storm tracks, solid for primary tracks, dashed for secondary tracks

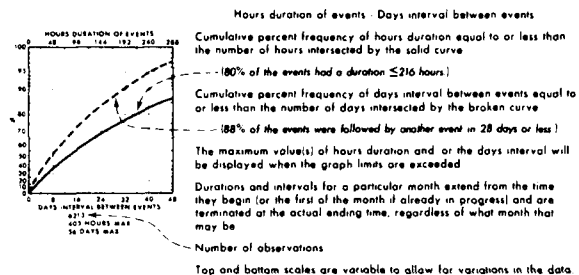


April

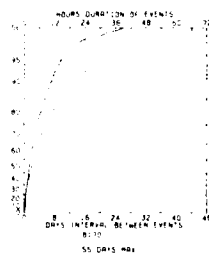
18 Low pressure center movement

Legend

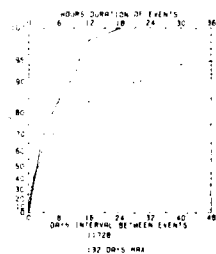
Persistence of visibility <2 n. mi.



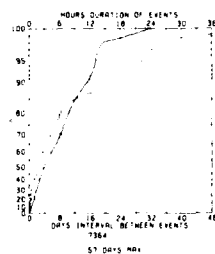
Kodiak



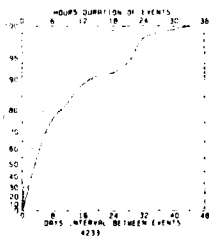
Homer



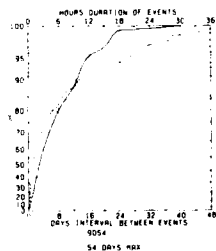
Kenai



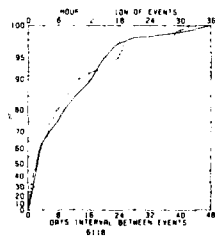
Middleton Island



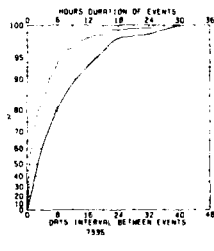
Cordova



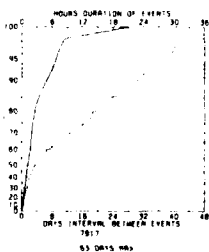
Yakutat



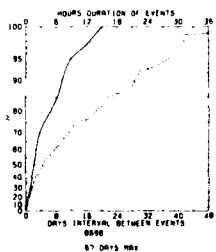
Yakutat



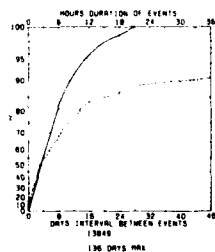
Sitka



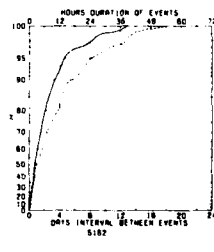
Annette



Anchorage



Cold Bay

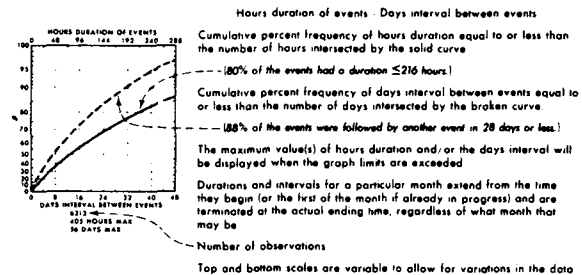


19 Persistence of visibility < 2 n. mi.

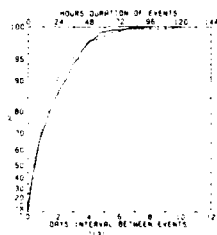
April

Legend

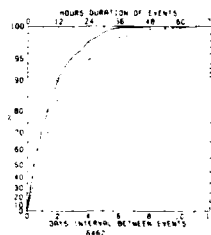
Persistence of wind ≥ 10 kts.



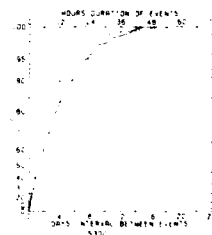
Kodiak



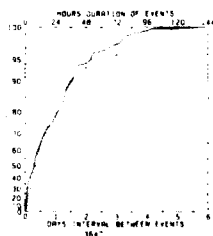
Homer



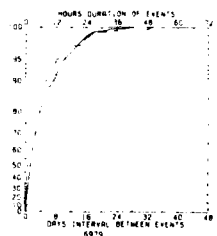
Kenai



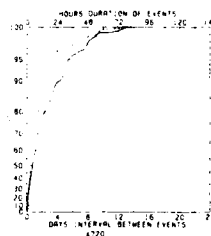
Middleton Island



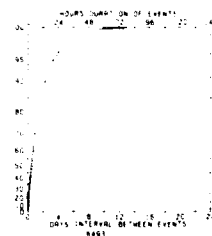
Cordova



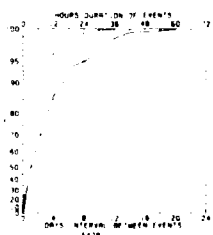
Yakutat



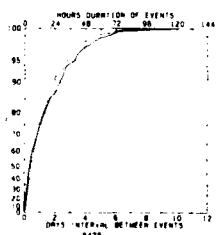
Yakutat



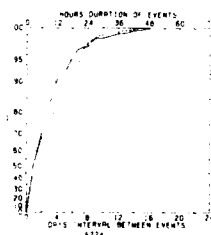
Sitka



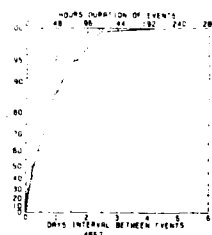
Annette



Anchorage

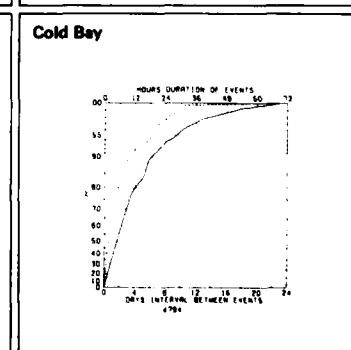
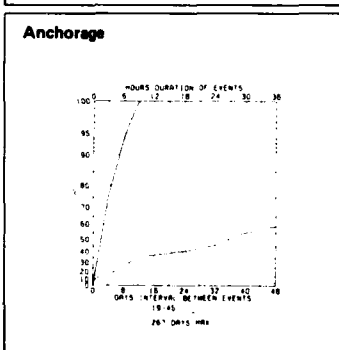
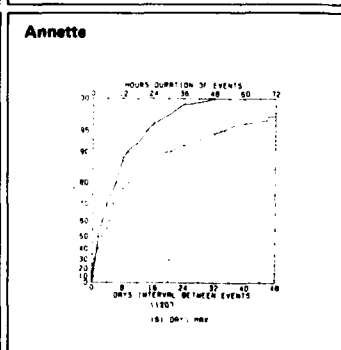
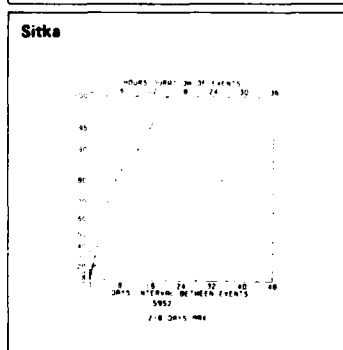
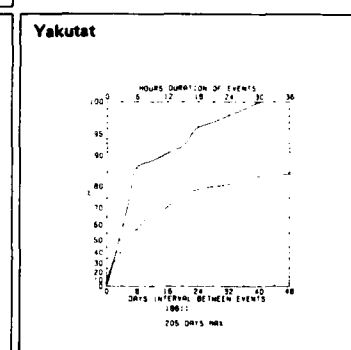
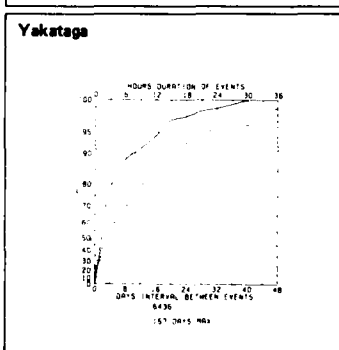
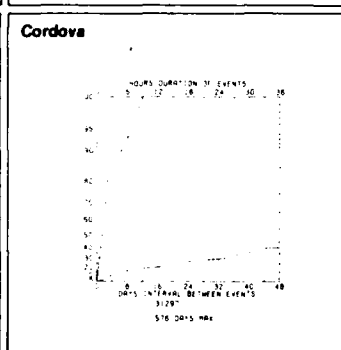
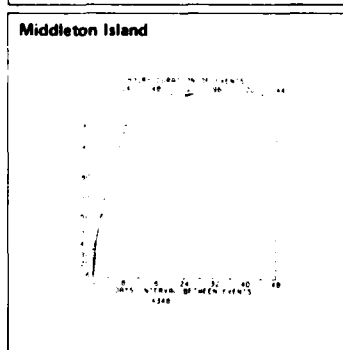
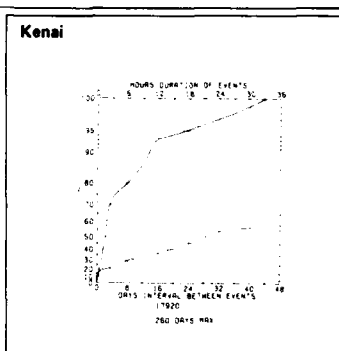
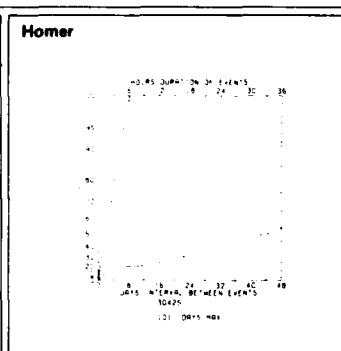
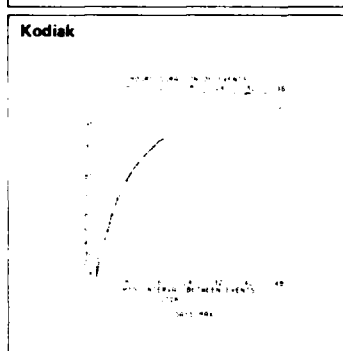
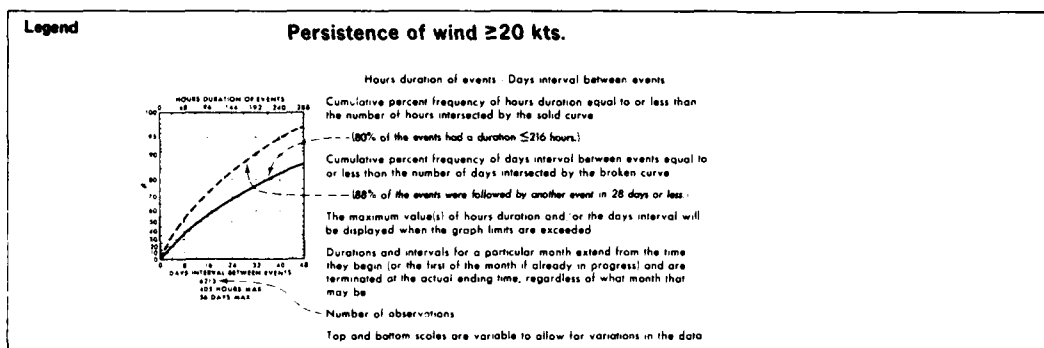


Cold Bay



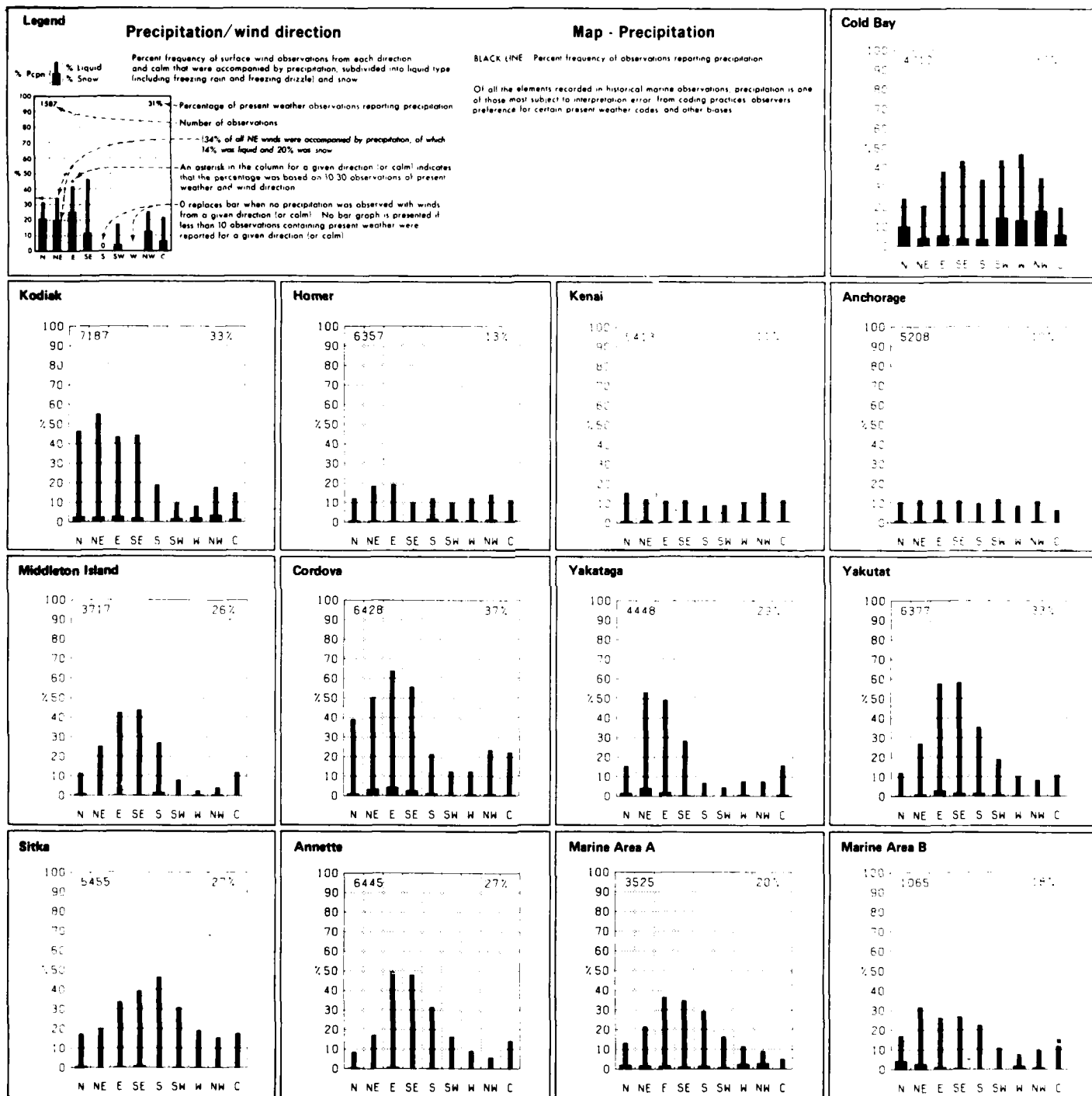
April

20 Persistence of wind ≥ 10 kts.



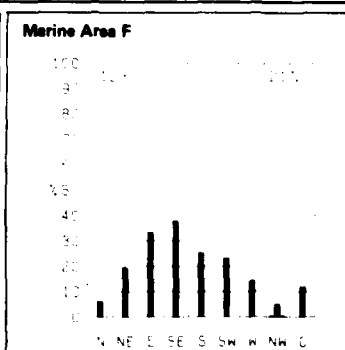
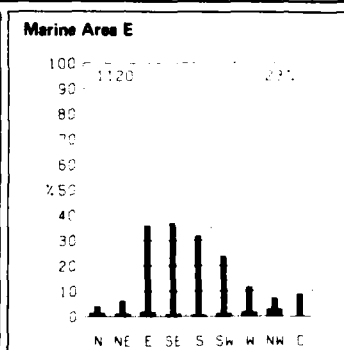
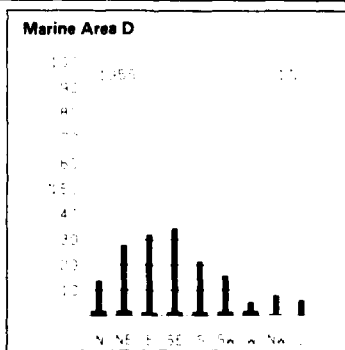
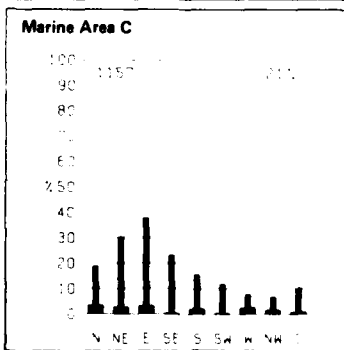
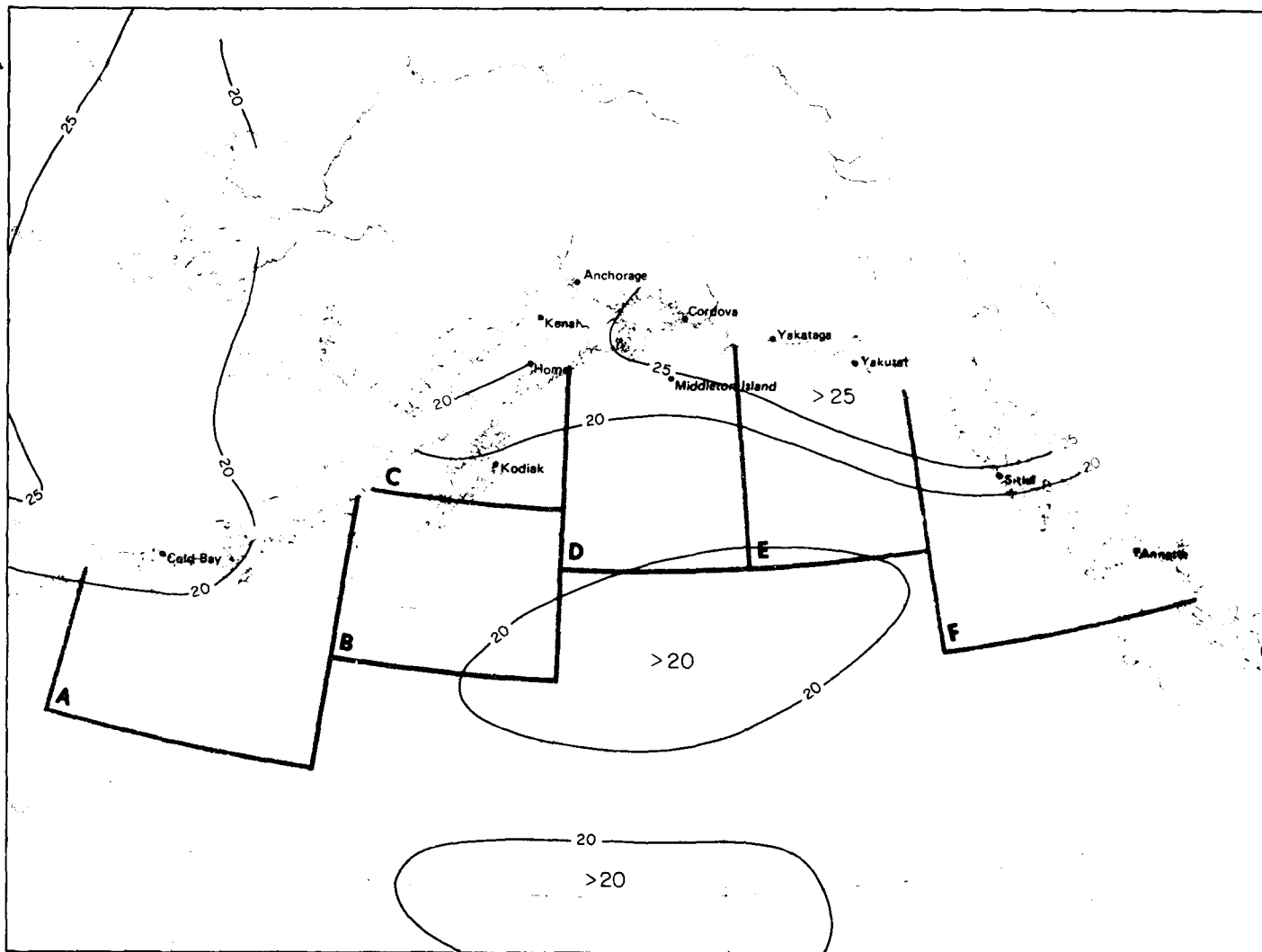
21 Persistence of wind ≥ 20 kts.

April



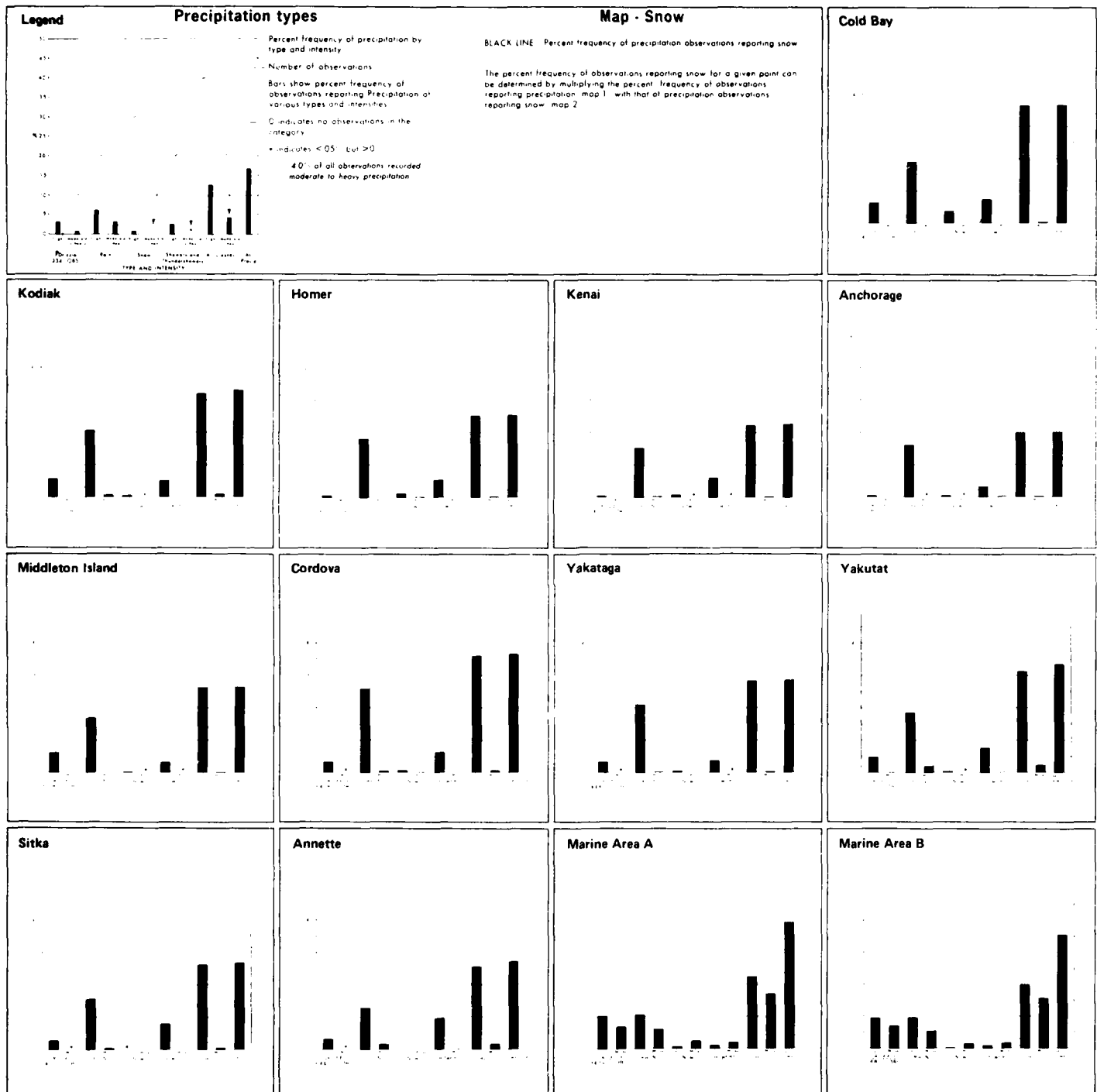
May

1 Precipitation/wind direction



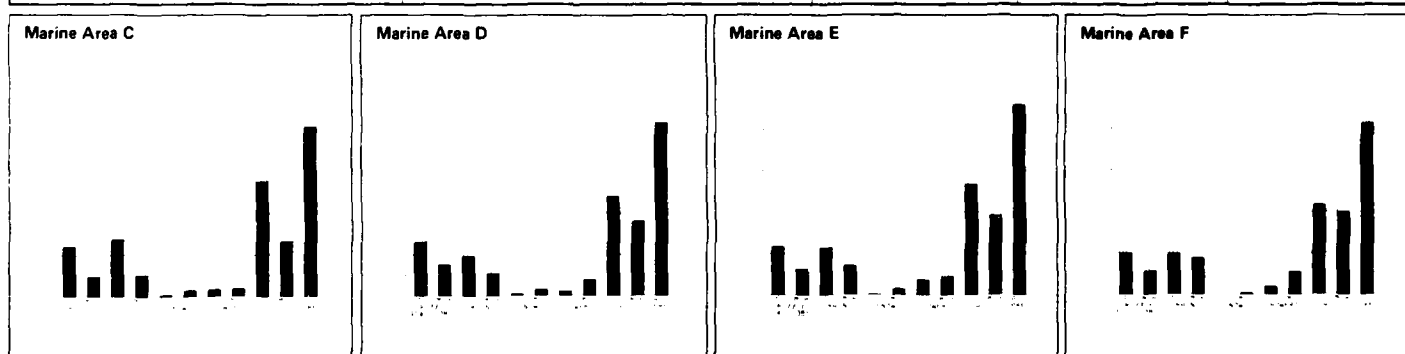
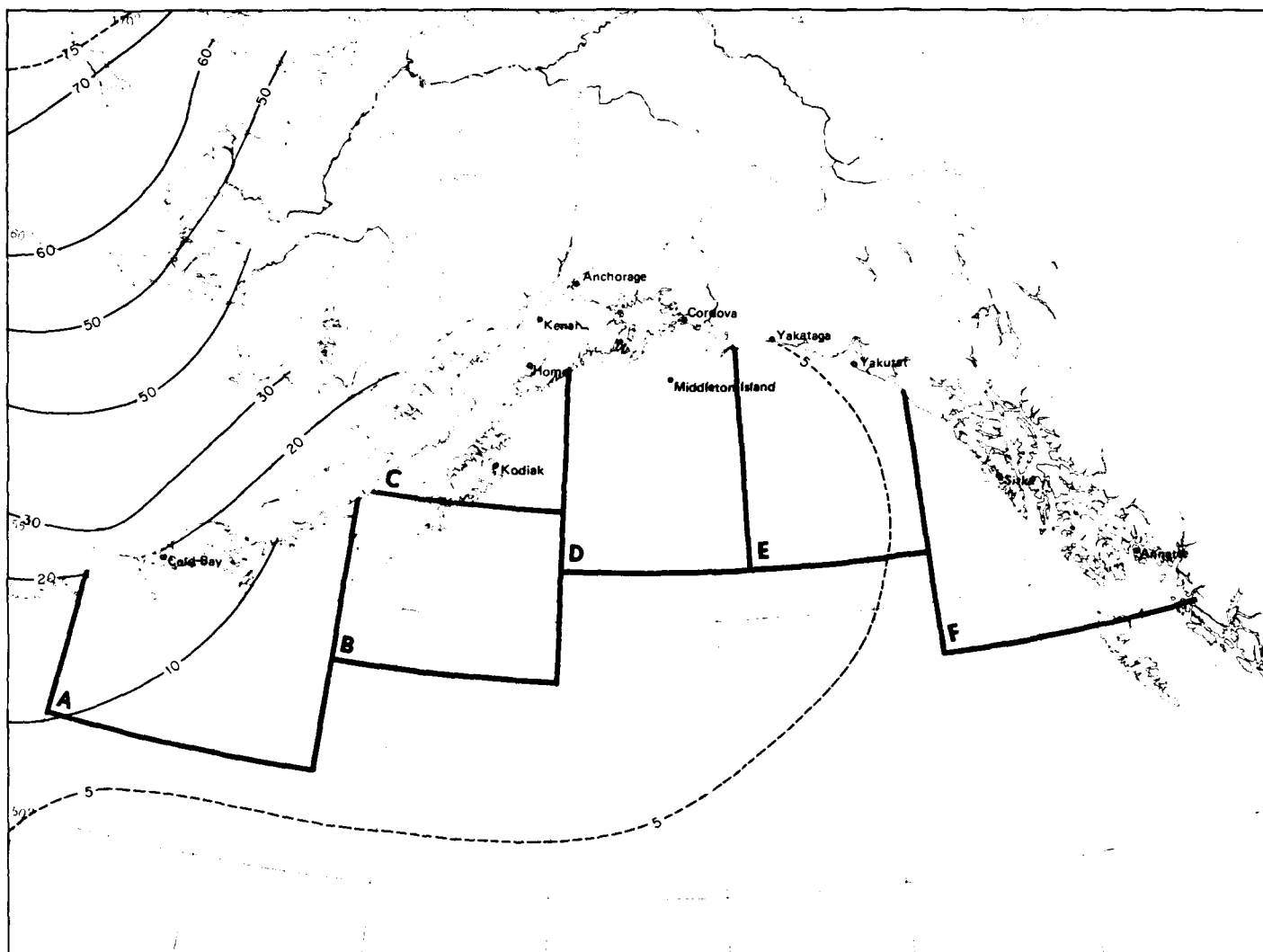
1 Precipitation

May



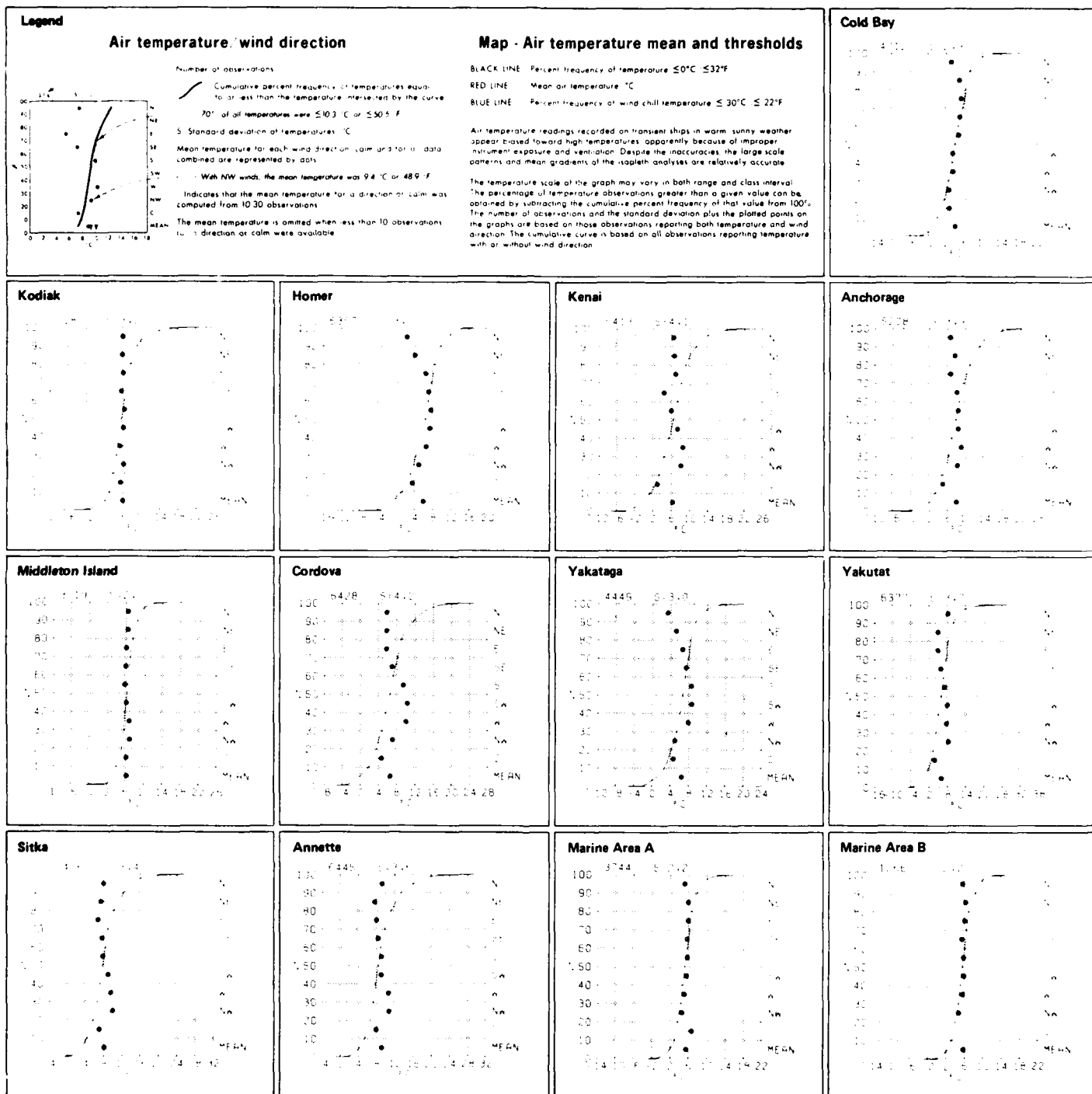
May

2 Precipitation types



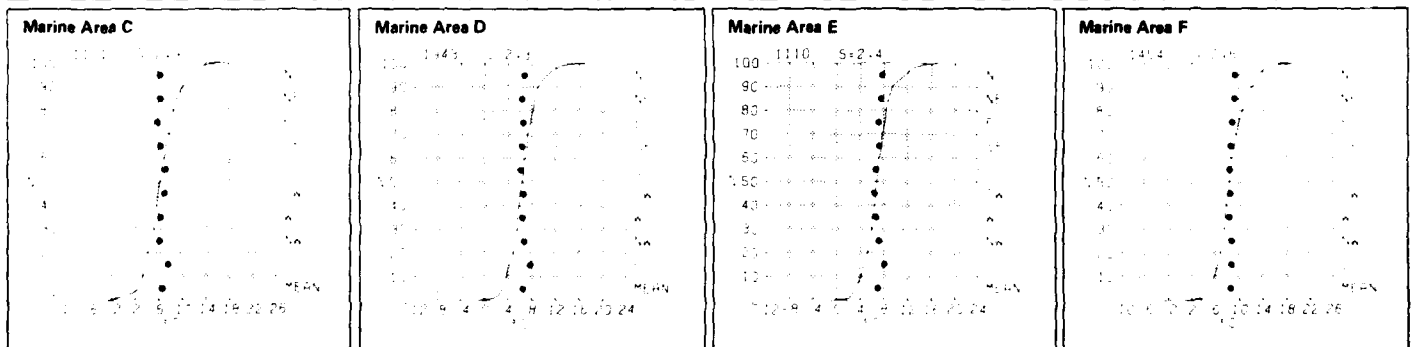
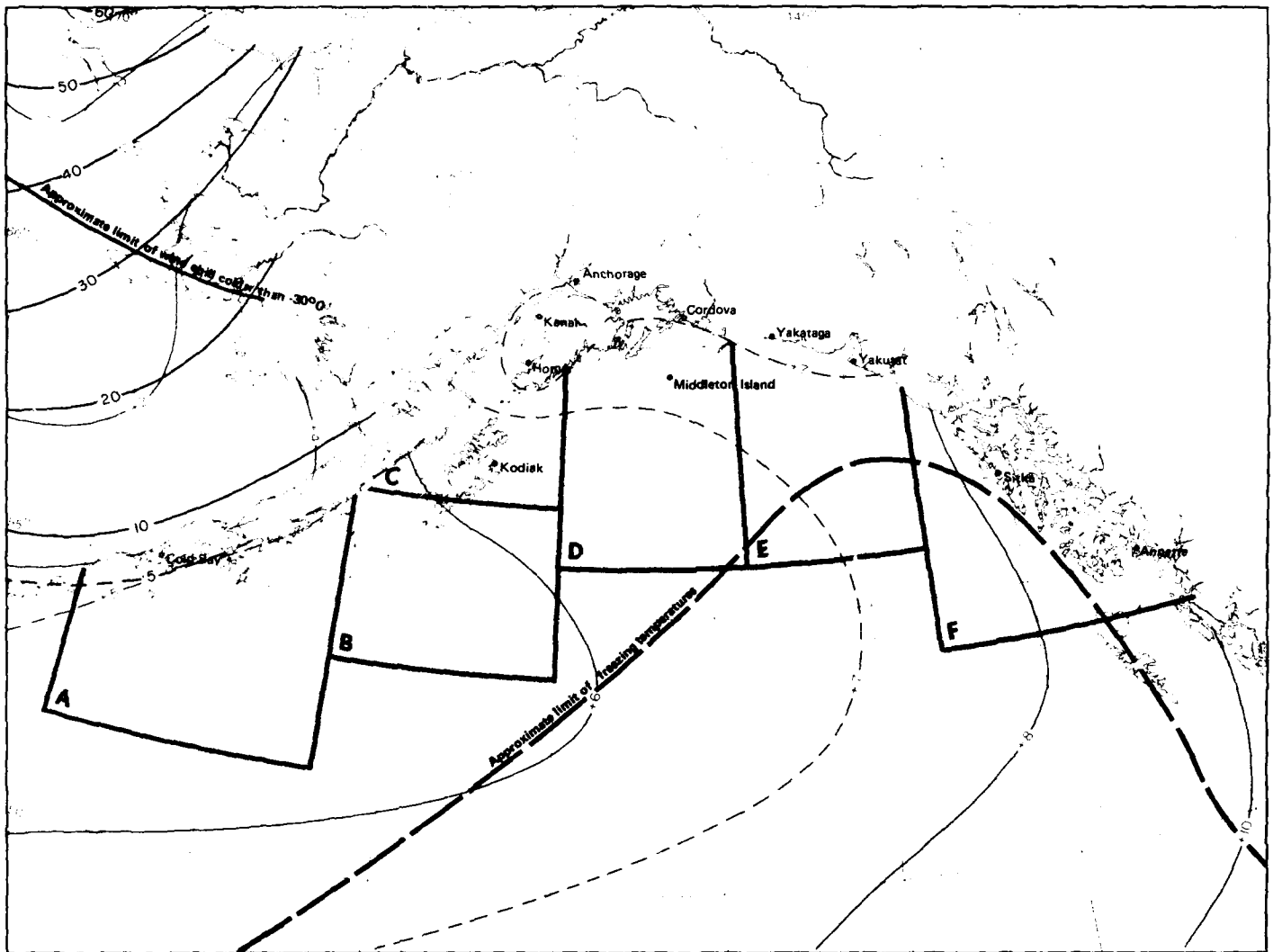
2 Snow

May



May

3 Air temperature/wind direction

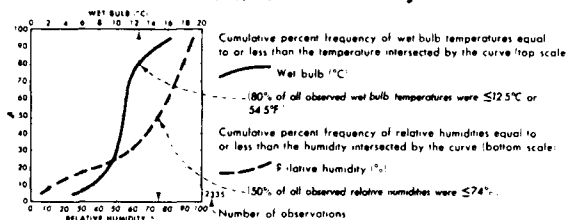


3 Air temperature mean and thresholds

May

Legend

Wet bulb/relative humidity



Map - Mean dew point temperature

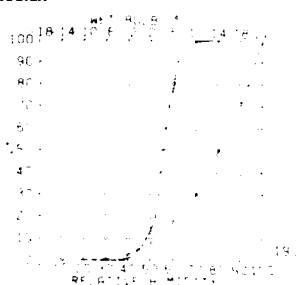
BLACK LINE - Mean dew point temperature °C

The observation count of the graph reflects those observations reporting both air and wet bulb temperatures, both are required in computing the relative humidity. The percentage of observations of either element greater than a given value can be obtained by subtracting the cumulative percent frequency of that value from 100%.

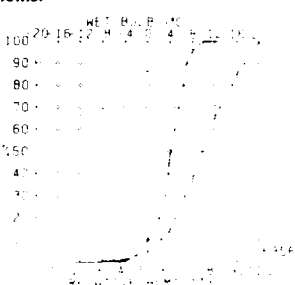
Cold Bay



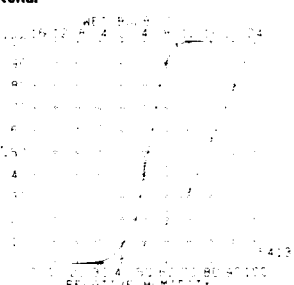
Kodiak



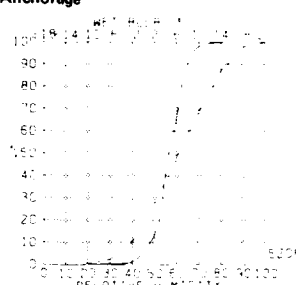
Homer



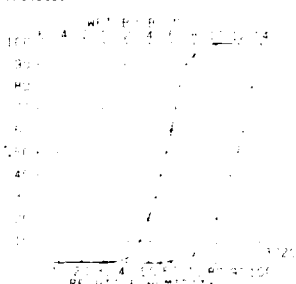
Kenai



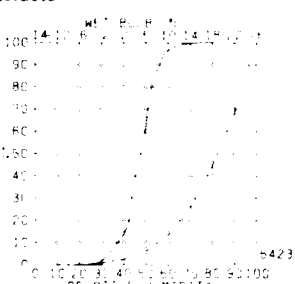
Anchorage



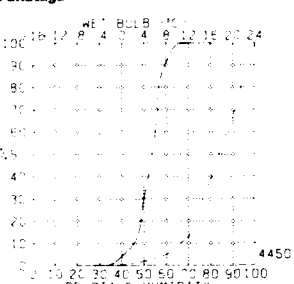
Middleton Island



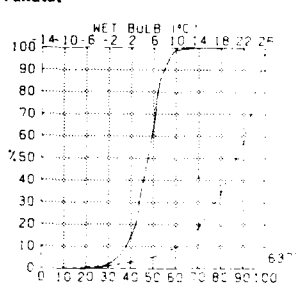
Cordova



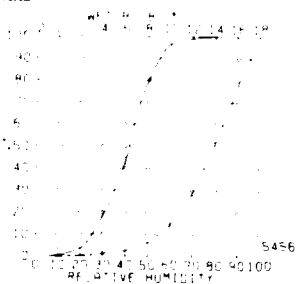
Yakutat



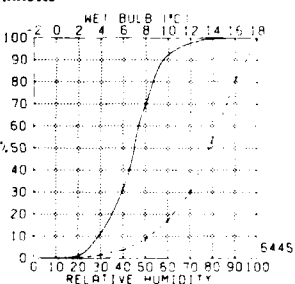
Yakutat



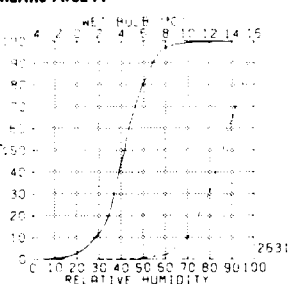
Sitka



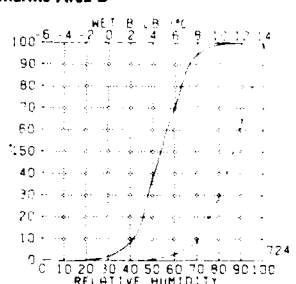
Annette



Marine Area A



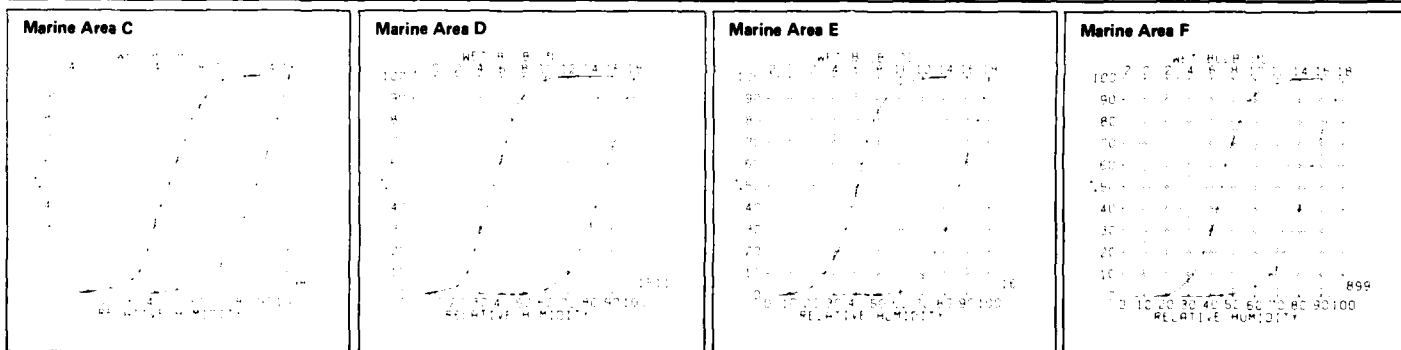
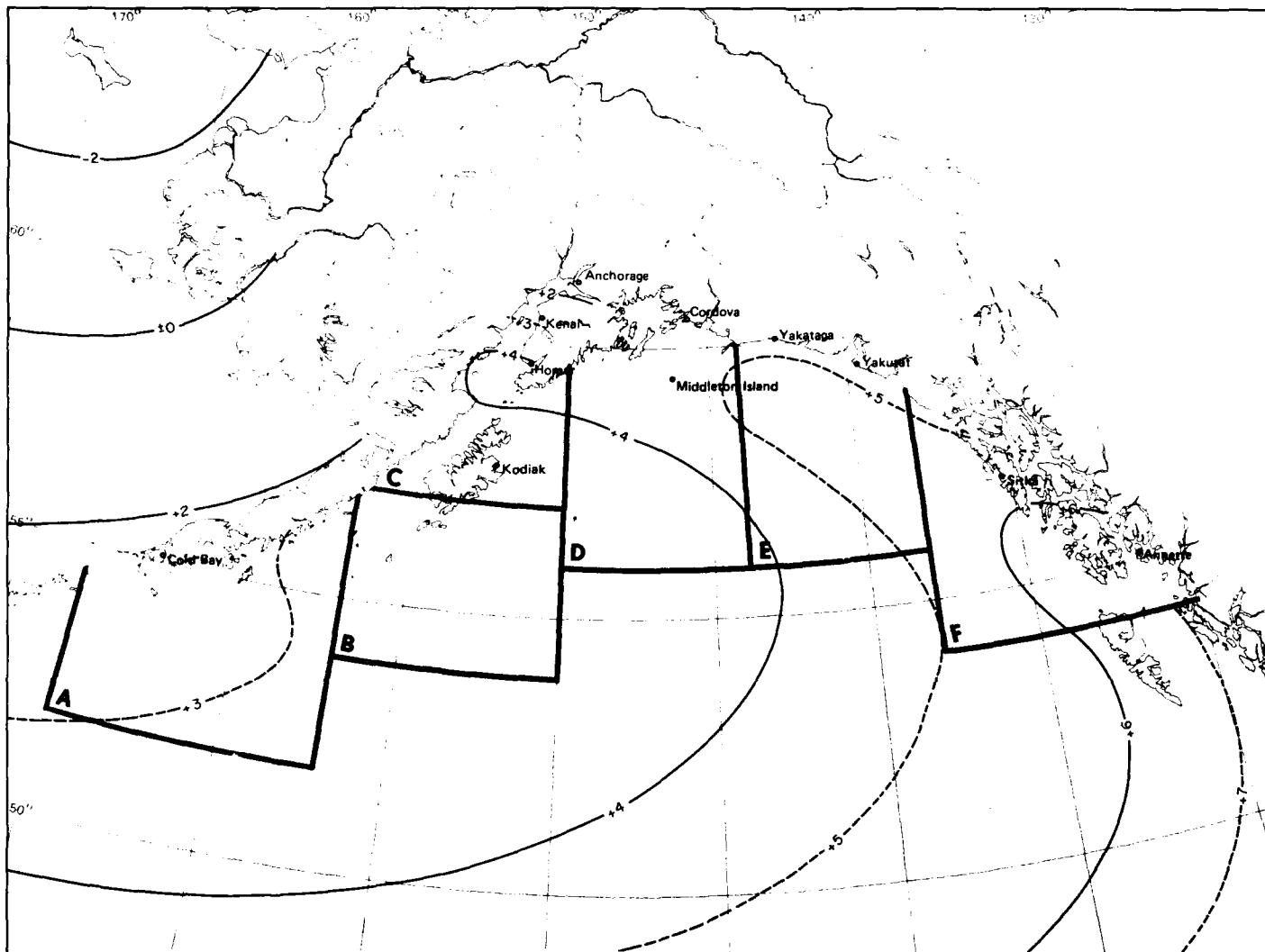
Marine Area B



May

168

4 Wet bulb/relative humidity



4 Mean dew point temperature

May

Legend

Air temperature/wind speed

WIND SPEED (KTS)

TEMP (°C)	0-3	4-10	11-21	22-33	≥ 34
26-27	0	0	0	0	0
24-25	0	0	0	0	0
22-23	0	0	0	0	0
20-21	0	0	0	0	0
18-19	0	0	0	0	0
16-17	0	0	0	0	0
14-15	0	0	0	0	0
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
≤ 1	0	0	0	0	0

Percent frequency of simultaneous occurrence of specified temperature (°C) and wind speed (knots)

(% of all observations reported temperature 2.3°C simultaneously with wind speed of 22-33 kts.)

Indicates < 5% but > 0

Number of observations

3550

Map - Air temperature extremes (°C)

BLACK LINE Maximum (99%) air temperature (1% of temperatures were greater than the given value)

BLUE LINE Minimum (1%) air temperature (1% of temperatures were equal to or less than the given value)

The graph can be used to determine the extent of human discomfort from the combined effects of extreme heat or cold and winds or to estimate the likelihood of superstructure icing (icing potential increases as the air temperature drops below freezing and the winds increase above 10 knots (12 mph) and may become quite severe with temperatures equal to or less than -9°C (16°F) and winds equal to or greater than 34 knots (39 mph)

Cold Bay

WIND SPEED (KTS)

TEMP (°C)	0-3	4-10	11-21	22-33	≥ 34
16-17	0	0	0	0	0
14-15	0	0	0	0	0
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
0-1	0	0	0	0	0
-2-1	0	0	0	0	0
≤ -3	0	0	0	0	0

4712

Kodiak

WIND SPEED (KTS)

TEMP (°C)	0-3	4-10	11-21	22-33	≥ 34
26-27	0	0	0	0	0
24-25	0	0	0	0	0
22-23	0	0	0	0	0
20-21	0	0	0	0	0
18-19	0	0	0	0	0
16-17	0	0	0	0	0
14-15	0	0	0	0	0
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
≤ 1	0	0	0	0	0

7187

Homer

WIND SPEED (KTS)

TEMP (°C)	0-3	4-10	11-21	22-33	≥ 34
20-21	0	0	0	0	0
18-19	0	0	0	0	0
16-17	0	0	0	0	0
14-15	0	0	0	0	0
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
≤ 1	0	0	0	0	0

6357

Kenai

WIND SPEED (KTS)

TEMP (°C)	0-3	4-10	11-21	22-33	≥ 34
26-27	0	0	0	0	0
24-25	0	0	0	0	0
22-23	0	0	0	0	0
20-21	0	0	0	0	0
18-19	0	0	0	0	0
16-17	0	0	0	0	0
14-15	0	0	0	0	0
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
≤ 1	0	0	0	0	0

5413

Anchorage

WIND SPEED (KTS)

TEMP (°C)	0-3	4-10	11-21	22-33	≥ 34
24-25	0	0	0	0	0
22-23	0	0	0	0	0
20-21	0	0	0	0	0
18-19	0	0	0	0	0
16-17	0	0	0	0	0
14-15	0	0	0	0	0
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
≤ 1	0	0	0	0	0

5208

Middleton Island

WIND SPEED (KTS)

TEMP (°C)	0-3	4-10	11-21	22-33	≥ 34
16-17	0	0	0	0	0
14-15	0	0	0	0	0
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
0-1	0	0	0	0	0
-2-1	0	0	0	0	0
≤ -3	0	0	0	0	0

3719

Cordova

WIND SPEED (KTS)

TEMP (°C)	0-3	4-10	11-21	22-33	≥ 34
26-27	0	0	0	0	0
24-25	0	0	0	0	0
22-23	0	0	0	0	0
20-21	0	0	0	0	0
18-19	0	0	0	0	0
16-17	0	0	0	0	0
14-15	0	0	0	0	0
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
≤ 1	0	0	0	0	0

6428

Yakutat

WIND SPEED (KTS)

TEMP (°C)	0-3	4-10	11-21	22-33	≥ 34
20-21	0	0	0	0	0
18-19	0	0	0	0	0
16-17	0	0	0	0	0
14-15	0	0	0	0	0
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
≤ 1	0	0	0	0	0

4449

Yakutat

WIND SPEED (KTS)

TEMP (°C)	0-3	4-10	11-21	22-33	≥ 34
30-31	0	0	0	0	0
28-29	0	0	0	0	0
26-27	0	0	0	0	0
24-25	0	0	0	0	0
22-23	0	0	0	0	0
20-21	0	0	0	0	0
18-19	0	0	0	0	0
16-17	0	0	0	0	0
14-15	0	0	0	0	0
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
≤ 1	0	0	0	0	0

6377

Sitka

WIND SPEED (KTS)

TEMP (°C)	0-3	4-10	11-21	22-33	≥ 34
28-29	0	0	0	0	0
26-27	0	0	0	0	0
24-25	0	0	0	0	0
22-23	0	0	0	0	0
20-21	0	0	0	0	0
18-19	0	0	0	0	0
16-17	0	0	0	0	0
14-15	0	0	0	0	0
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
≤ 1	0	0	0	0	0

5456

Annette

WIND SPEED (KTS)

TEMP (°C)	0-3	4-10	11-21	22-33	≥ 34
28-29	0	0	0	0	0
26-27	0	0	0	0	0
24-25	0	0	0	0	0
22-23	0	0	0	0	0
20-21	0	0	0	0	0
18-19	0	0	0	0	0
16-17	0	0	0	0	0
14-15	0	0	0	0	0
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
≤ 1	0	0	0	0	0

6445

Marine Area A

WIND SPEED (KTS)

TEMP (°C)	0-3	4-10	11-21	22-33	≥ 34
14-15	0	0	0	0	0
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
0-1	0	0	0	0	0
-2-1	0	0	0	0	0
≤ -3	0	0	0	0	0

3744

Marine Area B

WIND SPEED (KTS)

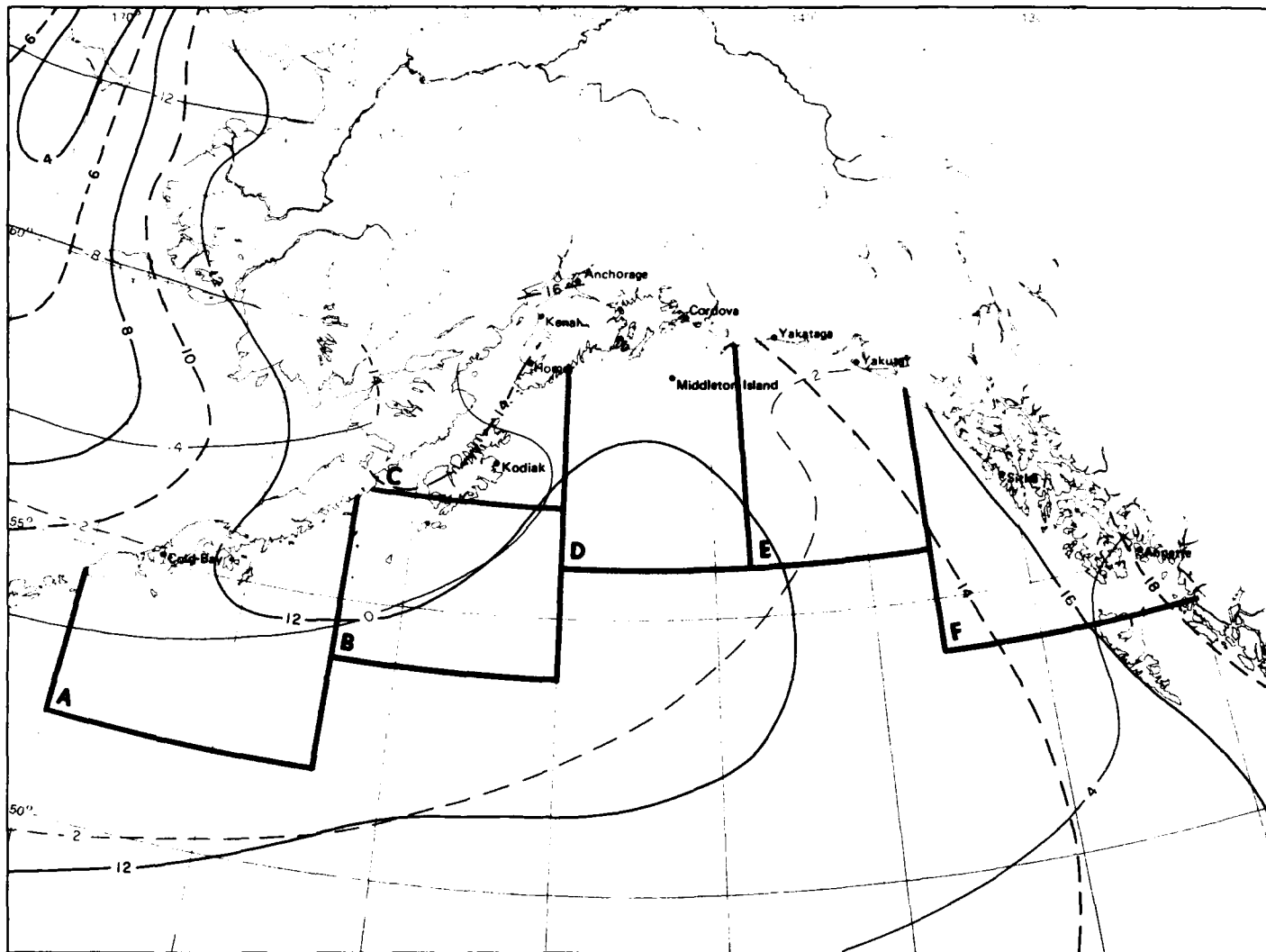
TEMP (°C)	0-3	4-10	11-21	22-33	≥ 34
14-15	0	0	0	0	0
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
0-1	0	0	0	0	0
-2-1	0	0	0	0	0
≤ -3	0	0	0	0	0

1066

May

170

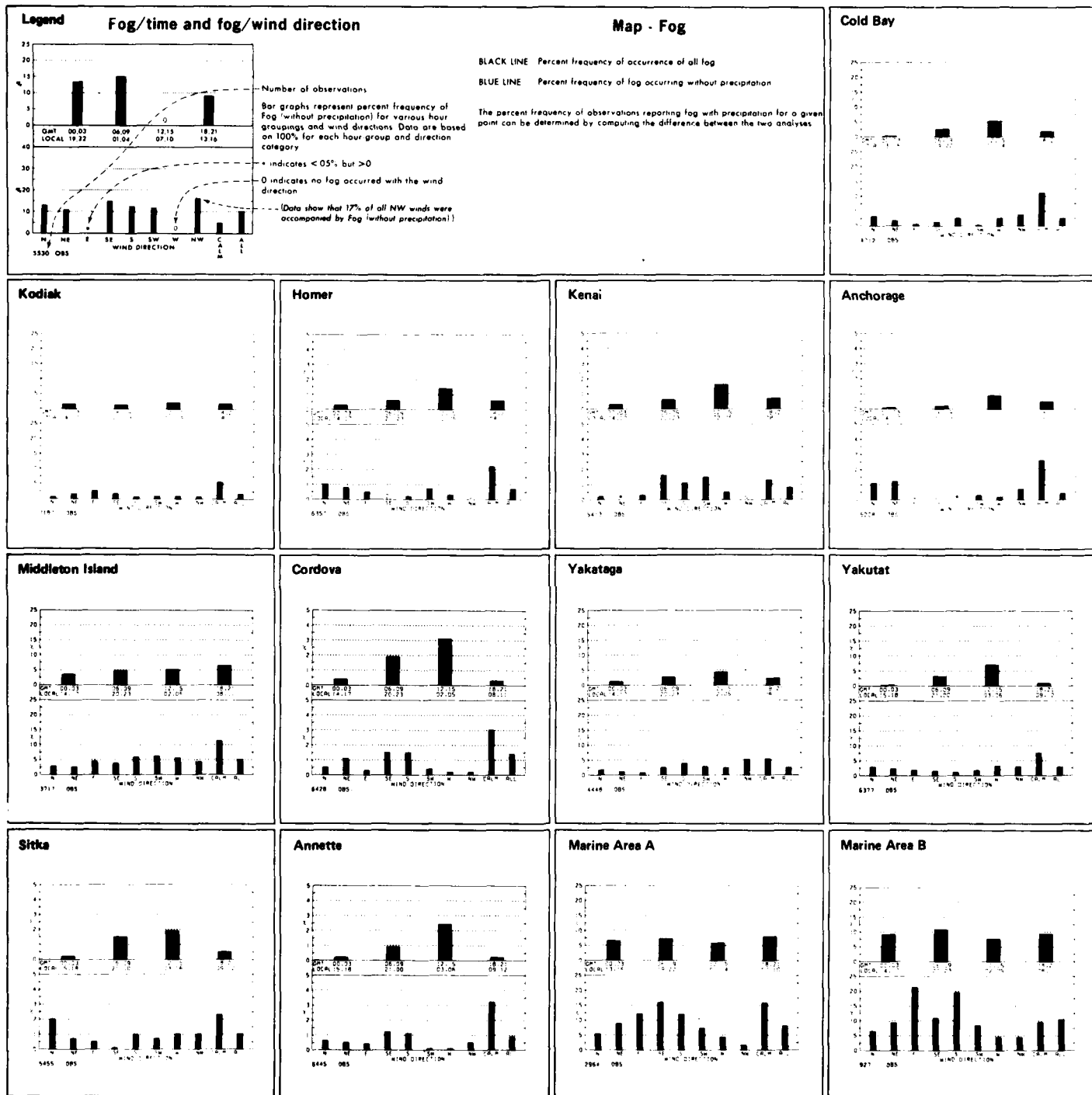
5 Air temperature/wind speed



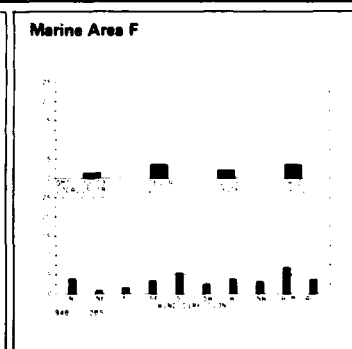
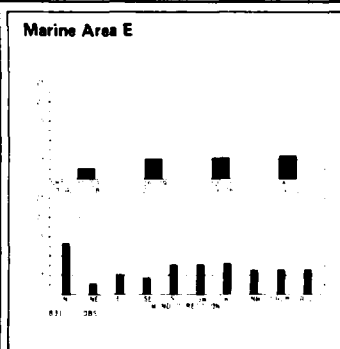
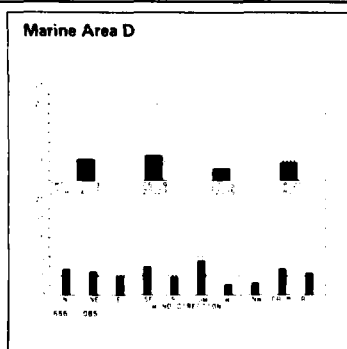
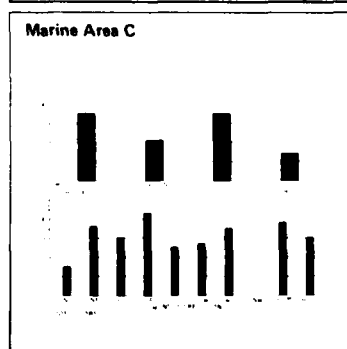
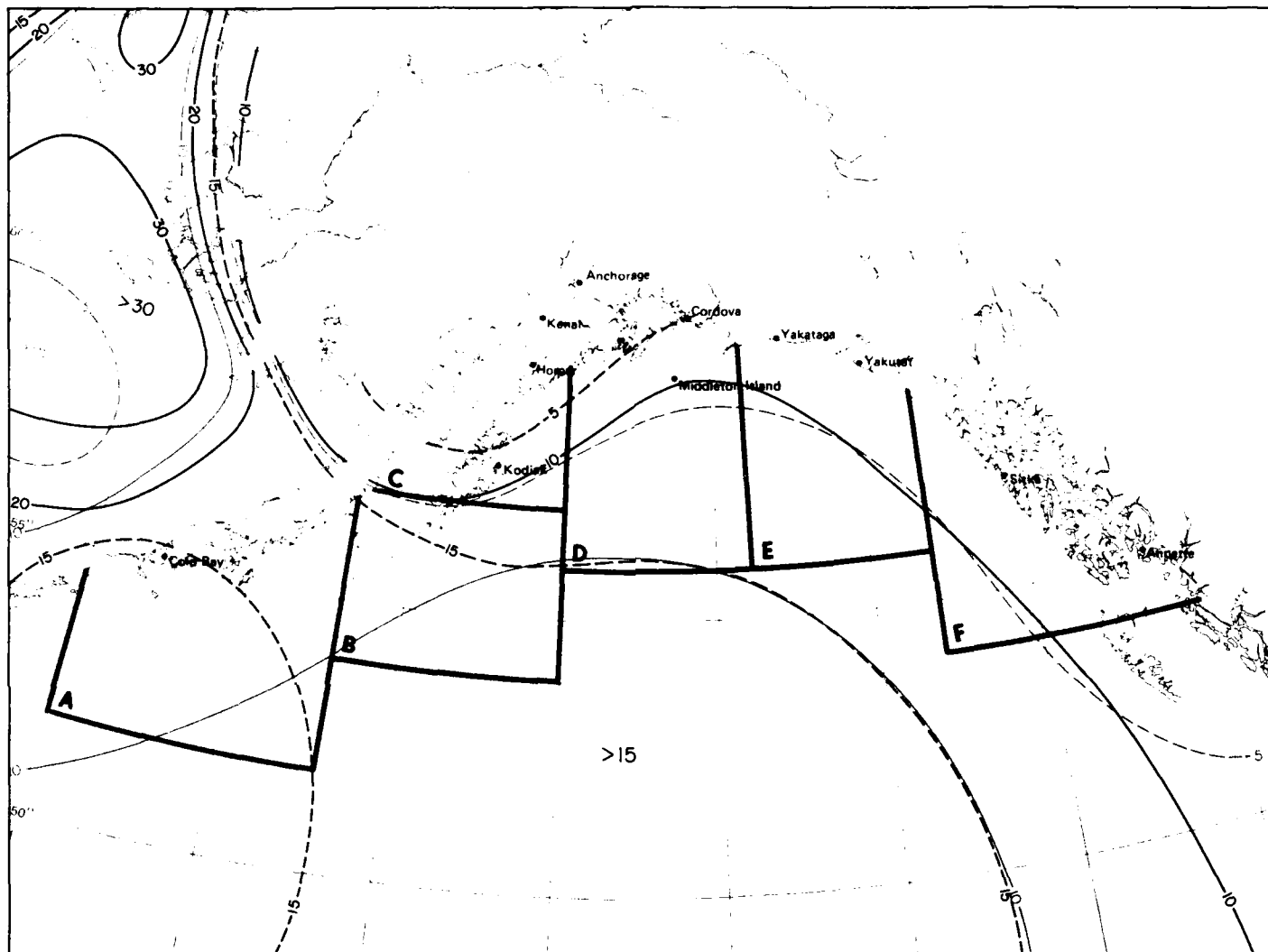
Marine Area C	Marine Area D	Marine Area E	Marine Area F
WATER TEMPERATURE TEMP. (°C) 16 14 12 10 8 6 4 2 0 -2 -4 -6 -8 -10 -12 -14 -16 -18 -20 -22 -24 -26 -28 -30 -32 -34 -36 -38 -40 -42 -44 -46 -48 -50	WATER TEMPERATURE TEMP. (°C) 16 14 12 10 8 6 4 2 0 -2 -4 -6 -8 -10 -12 -14 -16 -18 -20 -22 -24 -26 -28 -30 -32 -34 -36 -38 -40 -42 -44 -46 -48 -50	WATER TEMPERATURE TEMP. (°C) 16 14 12 10 8 6 4 2 0 -2 -4 -6 -8 -10 -12 -14 -16 -18 -20 -22 -24 -26 -28 -30 -32 -34 -36 -38 -40 -42 -44 -46 -48 -50	WATER TEMPERATURE TEMP. (°C) 16 14 12 10 8 6 4 2 0 -2 -4 -6 -8 -10 -12 -14 -16 -18 -20 -22 -24 -26 -28 -30 -32 -34 -36 -38 -40 -42 -44 -46 -48 -50

5 Air temperature extremes (°C)

May

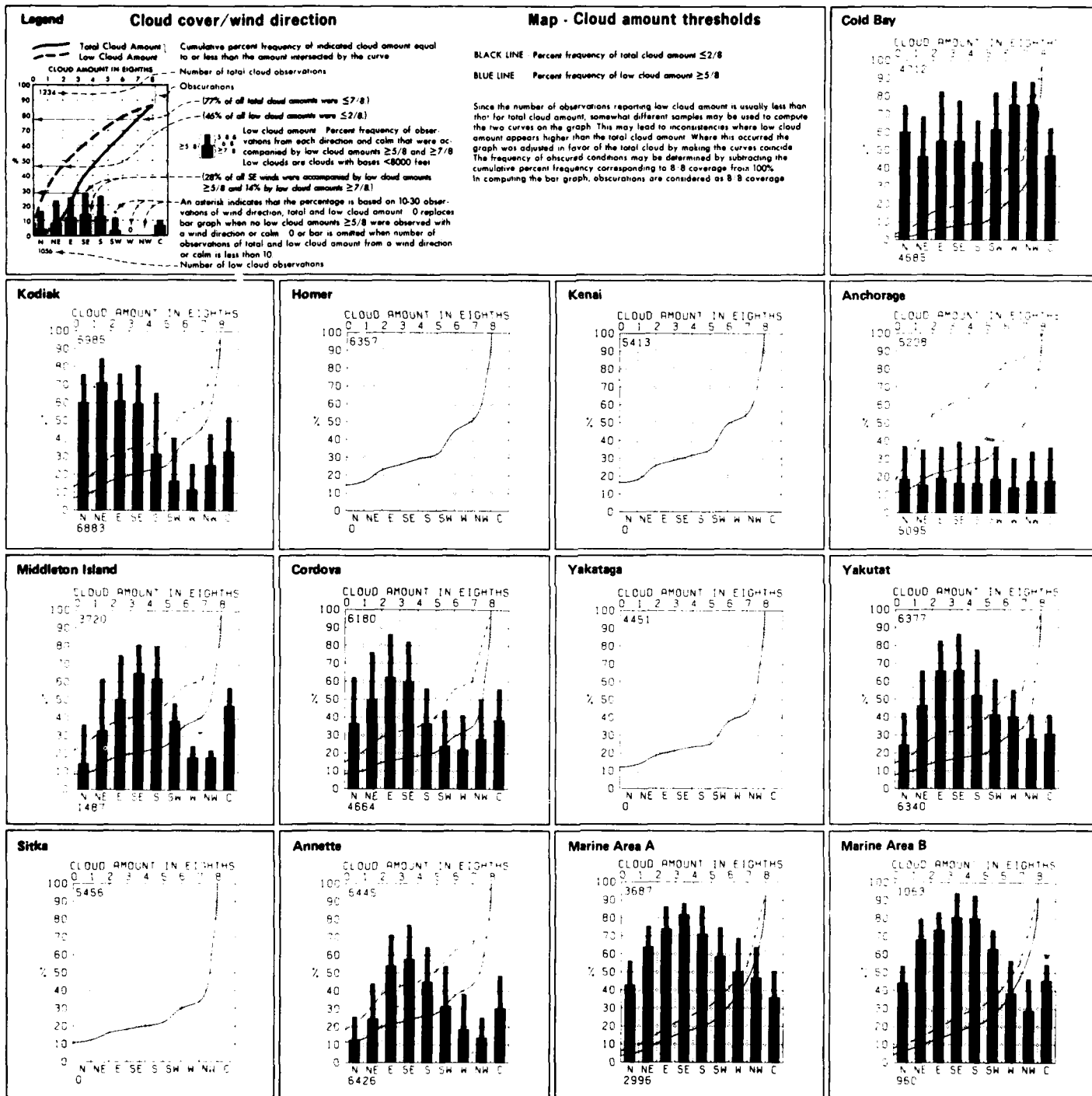


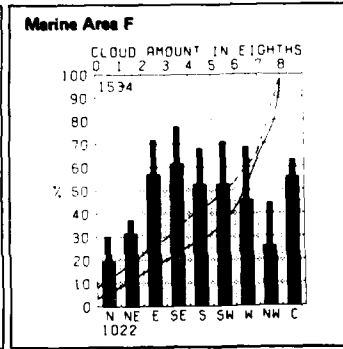
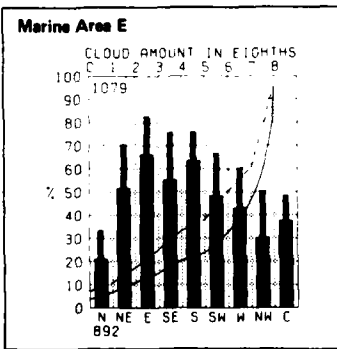
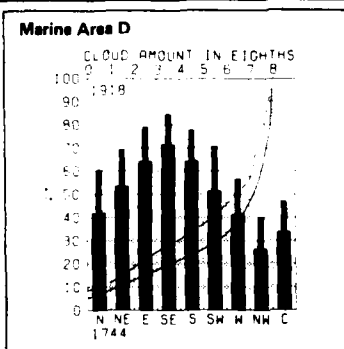
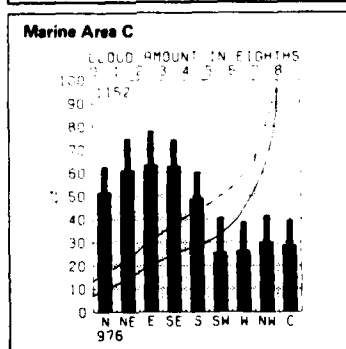
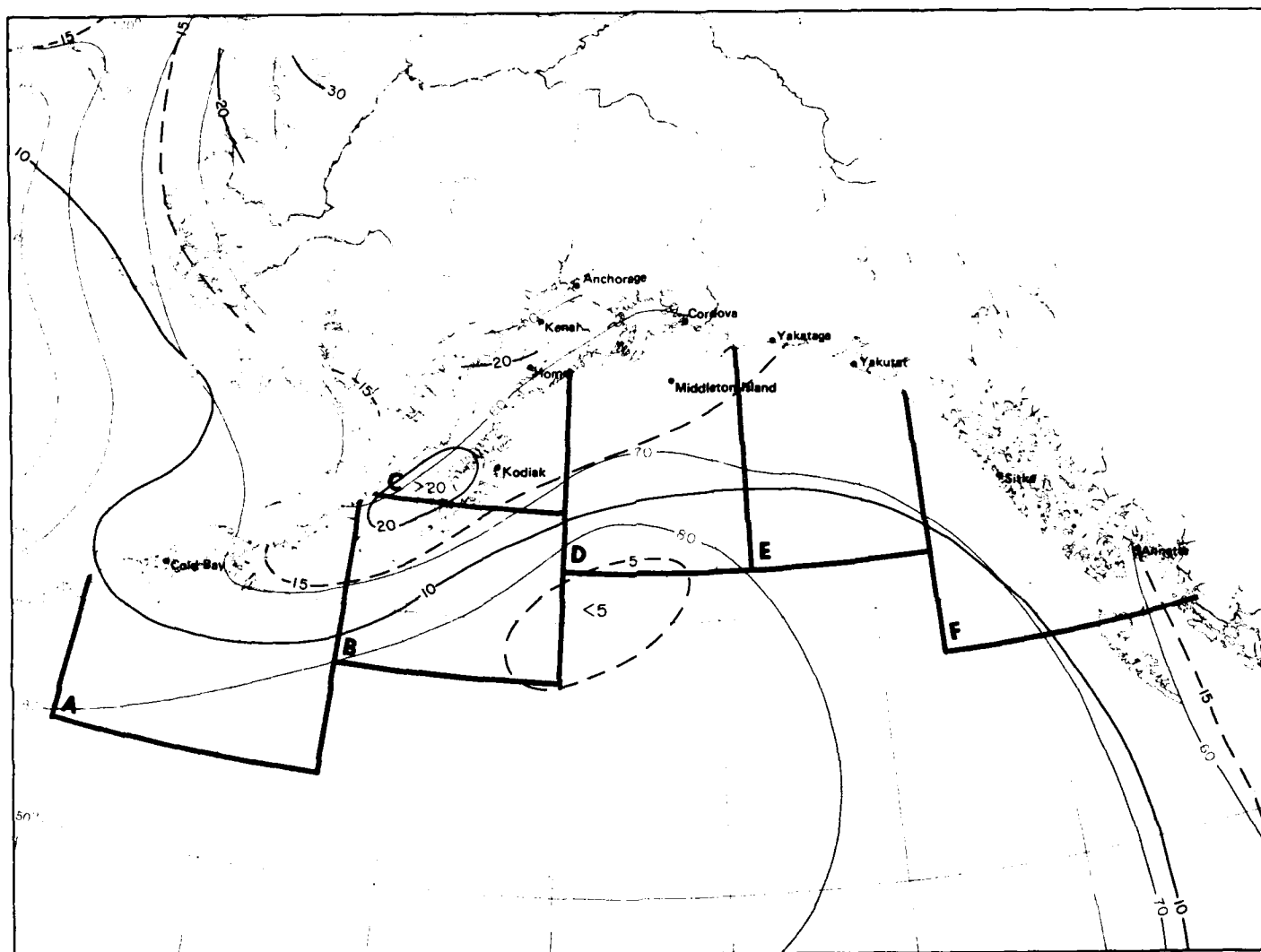
May



6 Fog

May



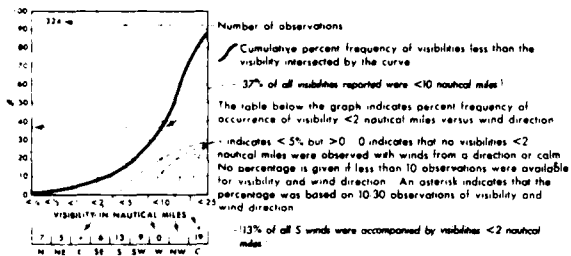


7 Cloud amount thresholds

May

Legend

Visibility/wind direction

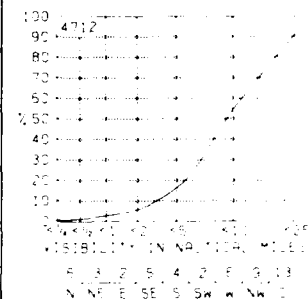


Map - Visibility thresholds

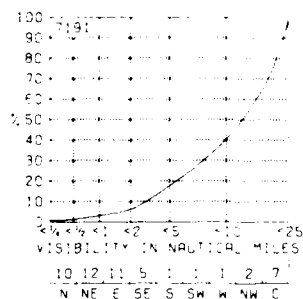
BLACK LINE Percent frequency of visibilities ≥ 5 nautical miles
BLUE LINE Percent frequency of visibilities <2 nautical miles

The percentage of visibility equal to or greater than a given value can be obtained from the graph by subtracting the cumulative percent frequency of that value from 100%. Visibility at sea is difficult to measure because of the lack of reference points. Also, some observers seem to report reduced visibilities at night because of darkness, though this tendency has abated in recent years. The coarseness of the coding intervals, however, tends to minimize serious biases in the summarized data. Visibilities greater than 25 nm should be interpreted cautiously because the earth's curvature makes it impossible to see 25 nm horizontally from the bridges of most ships.

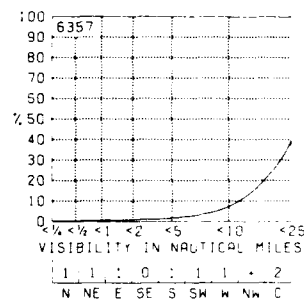
Cold Bay



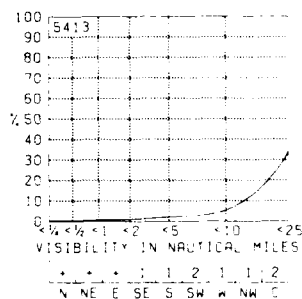
Kodiak



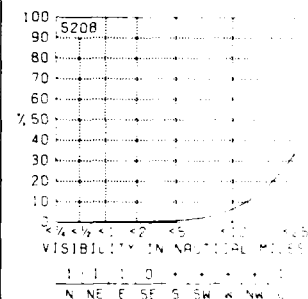
Homer



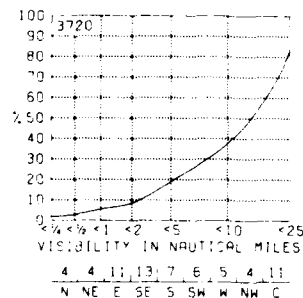
Kenai



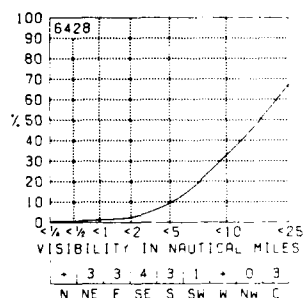
Anchorage



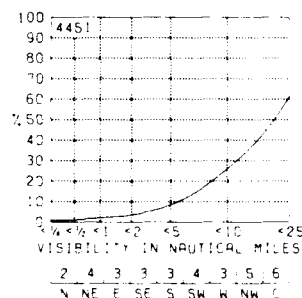
Middleton Island



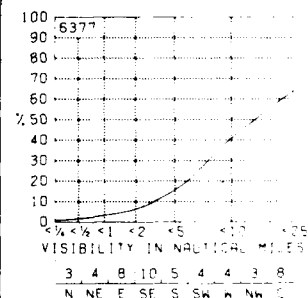
Cordova



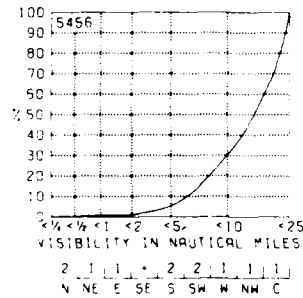
Yakutat



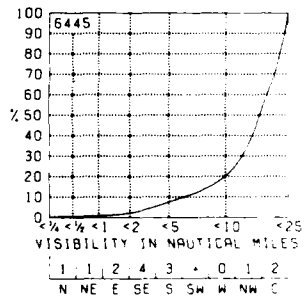
Yakutat



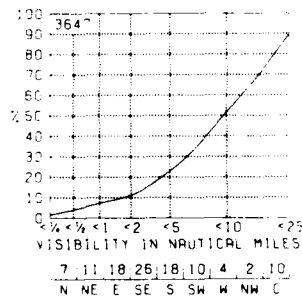
Sitka



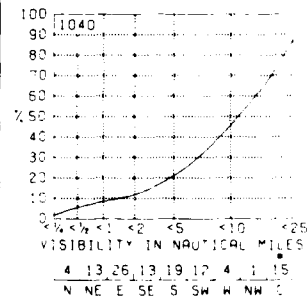
Annette



Marine Area A



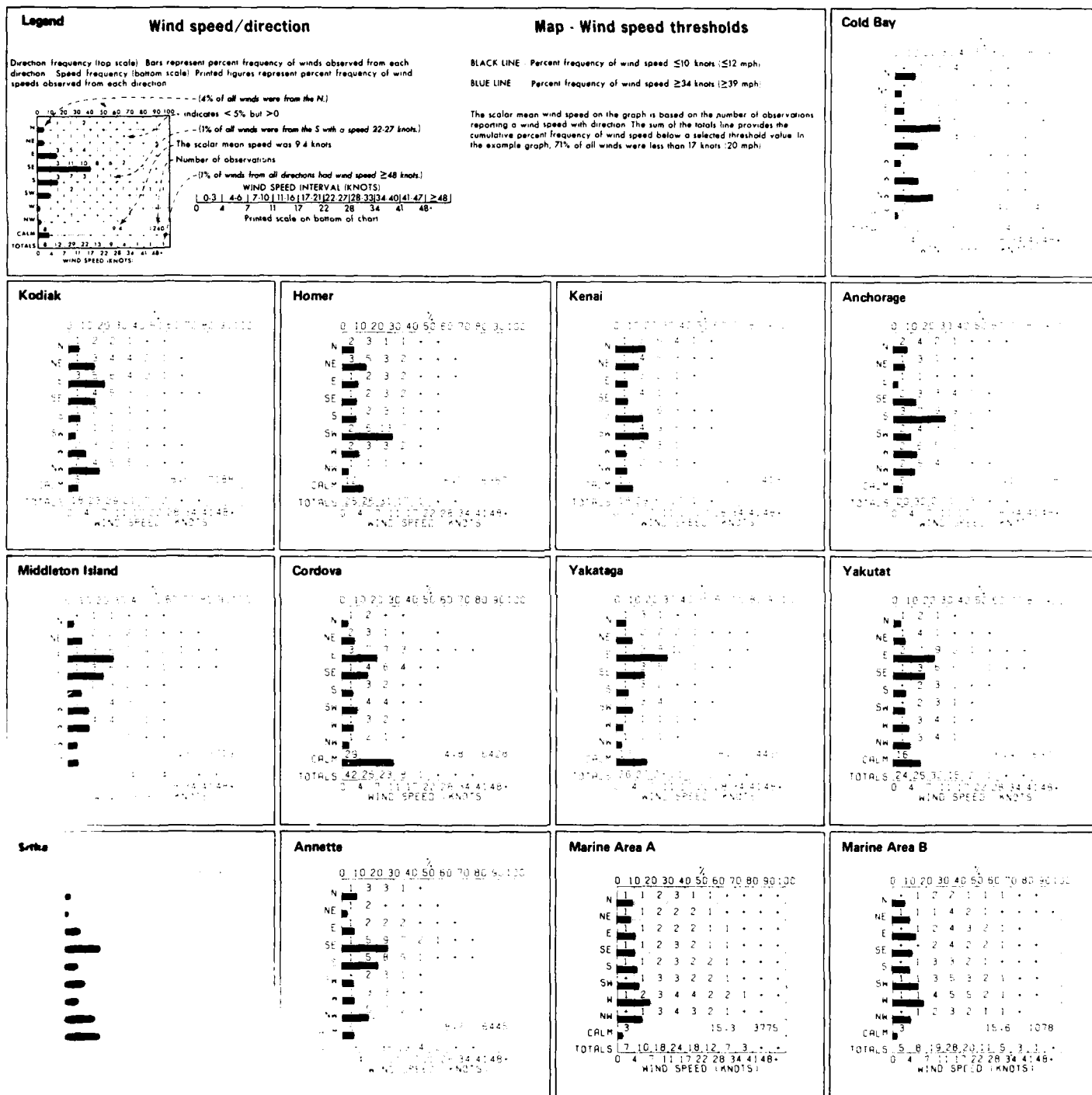
Marine Area B

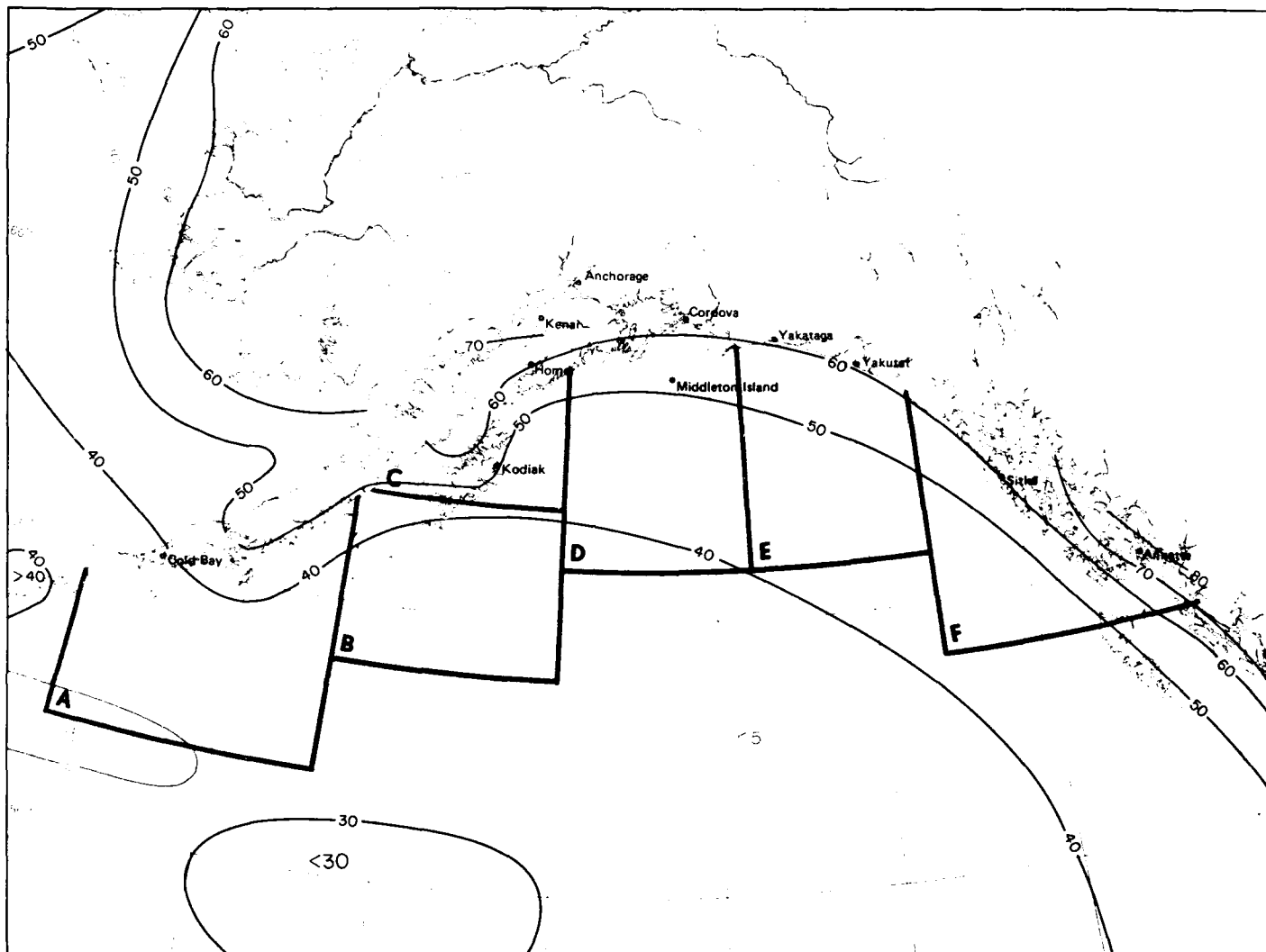


May

178

8 Visibility/wind direction





Marine Area C

	0	10	20	30	40	50	60	70	80	90	100
N	2	2	2	1	1	1	1	1	1	1	1
NE	1	1	3	2	1	1	1	1	1	1	1
E	2	3	4	4	2	1	1	1	1	1	1
SE	2	3	3	1	1	1	1	1	1	1	1
S	1	2	3	3	1	1	1	1	1	1	1
SW	1	3	3	2	1	1	1	1	1	1	1
W	1	2	2	2	2	1	1	1	1	1	1
NW	1	1	1	1	1	1	1	1	1	1	1
CALM	10										
TOTALS	18	17	22	16	11	8	6	5	4	4	4
WIND SPEED (KNOTS)	0	4									

Marine Area D

	0	10	20	30	40	50	60	70	80	90	100
N	1	1	1	1	1	1	1	1	1	1	1
NE	1	1	1	1	1	1	1	1	1	1	1
E	1	1	1	1	1	1	1	1	1	1	1
SE	1	1	1	1	1	1	1	1	1	1	1
S	1	1	1	1	1	1	1	1	1	1	1
SW	1	1	1	1	1	1	1	1	1	1	1
W	1	1	1	1	1	1	1	1	1	1	1
NW	1	1	1	1	1	1	1	1	1	1	1
CALM	10										
TOTALS	12	12	12	12	12	12	12	12	12	12	12
WIND SPEED (KNOTS)	0	4									

Marine Area E

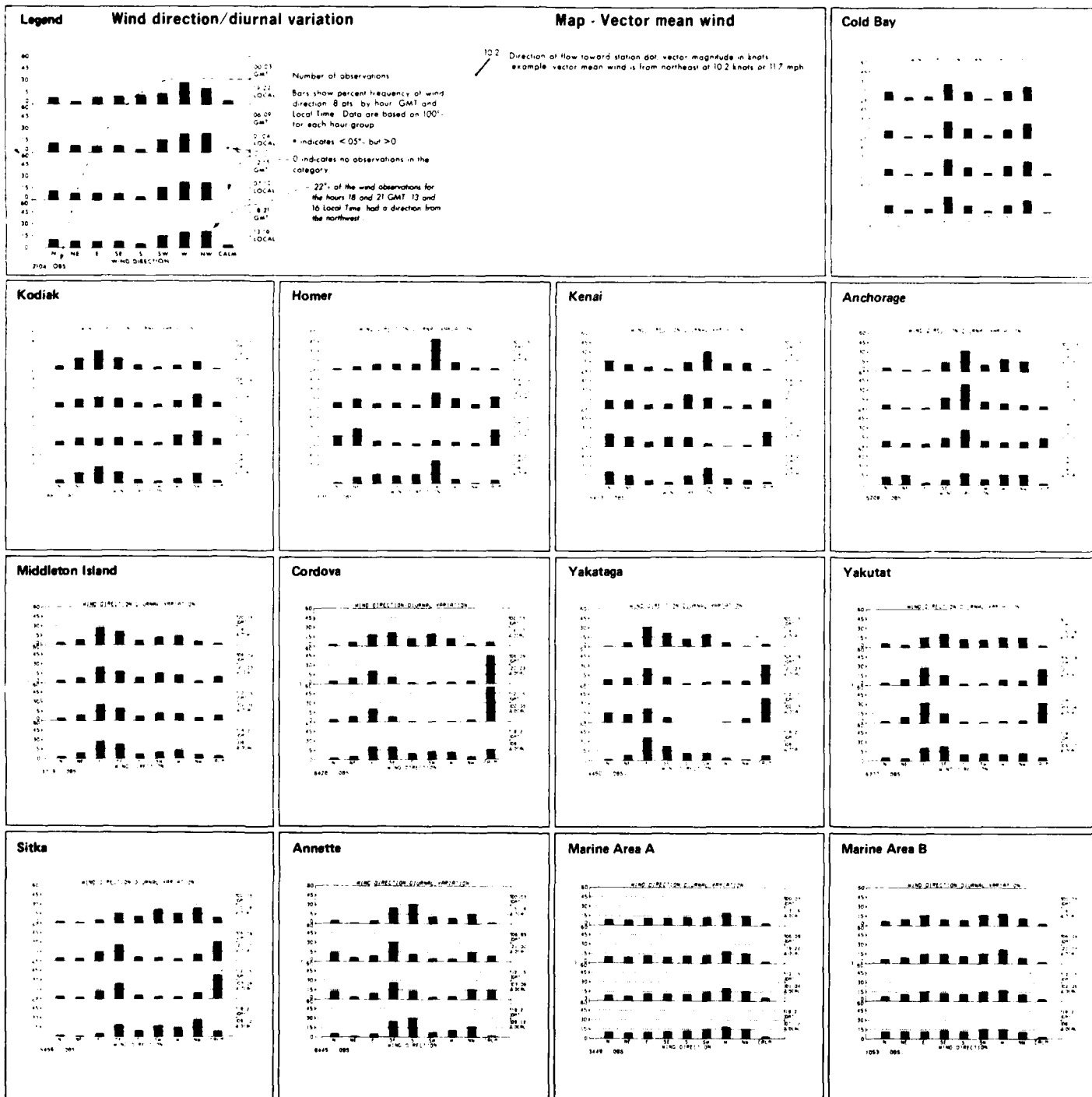
	0	10	20	30	40	50	60	70	80	90	100
N	1	1	2	2	1	1	1	1	1	1	1
NE	1	1	1	1	1	1	1	1	1	1	1
E	2	3	4	2	1	1	1	1	1	1	1
SE	3	4	5	4	2	1	1	1	1	1	1
S	1	2	4	4	2	1	1	1	1	1	1
SW	1	2	4	1	1	1	1	1	1	1	1
W	1	3	4	4	2	1	1	1	1	1	1
NW	1	1	4	3	1	1	1	1	1	1	1
CALM	6										
TOTALS	12	15	24	25	13	6	3	2	1	1	1
WIND SPEED (KNOTS)	0	4									

Marine Area F

	0	10	20	30	40	50	60	70	80	90	100
N	2	2	1	1	1	1	1	1	1	1	1
NE	2	1	1	1	1	1	1	1	1	1	1
E	2	2	2	1	1	1	1	1	1	1	1
SE	3	4	4	2	1	1	1	1	1	1	1
S	1	3	4	4	2	1	1	1	1	1	1
SW	1	3	3	2	1	1	1	1	1	1	1
W	1	3	4	2	1	1	1	1	1	1	1
NW	1	3	4	4	2	1	1	1	1	1	1
CALM	6										
TOTALS	13	20	24	21	12	6	3	1	1	1	1
WIND SPEED (KNOTS)	0	4									

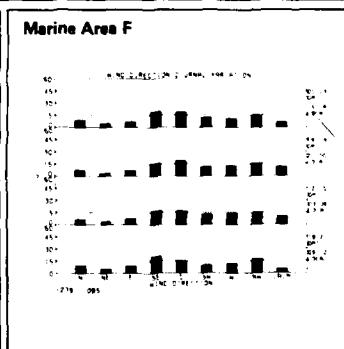
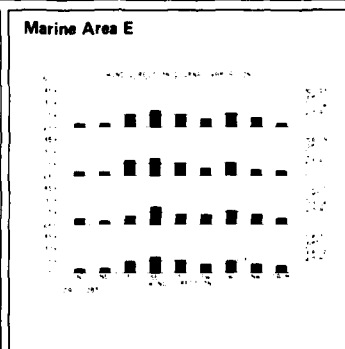
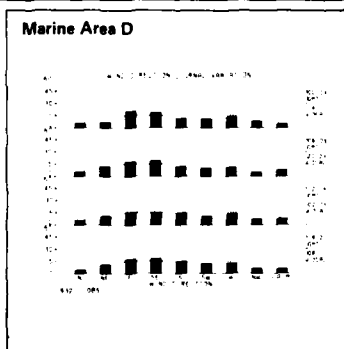
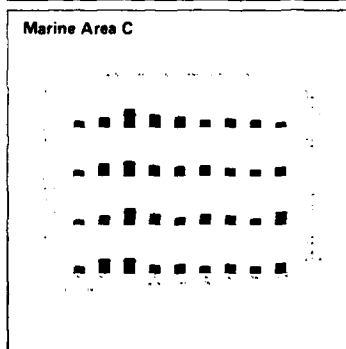
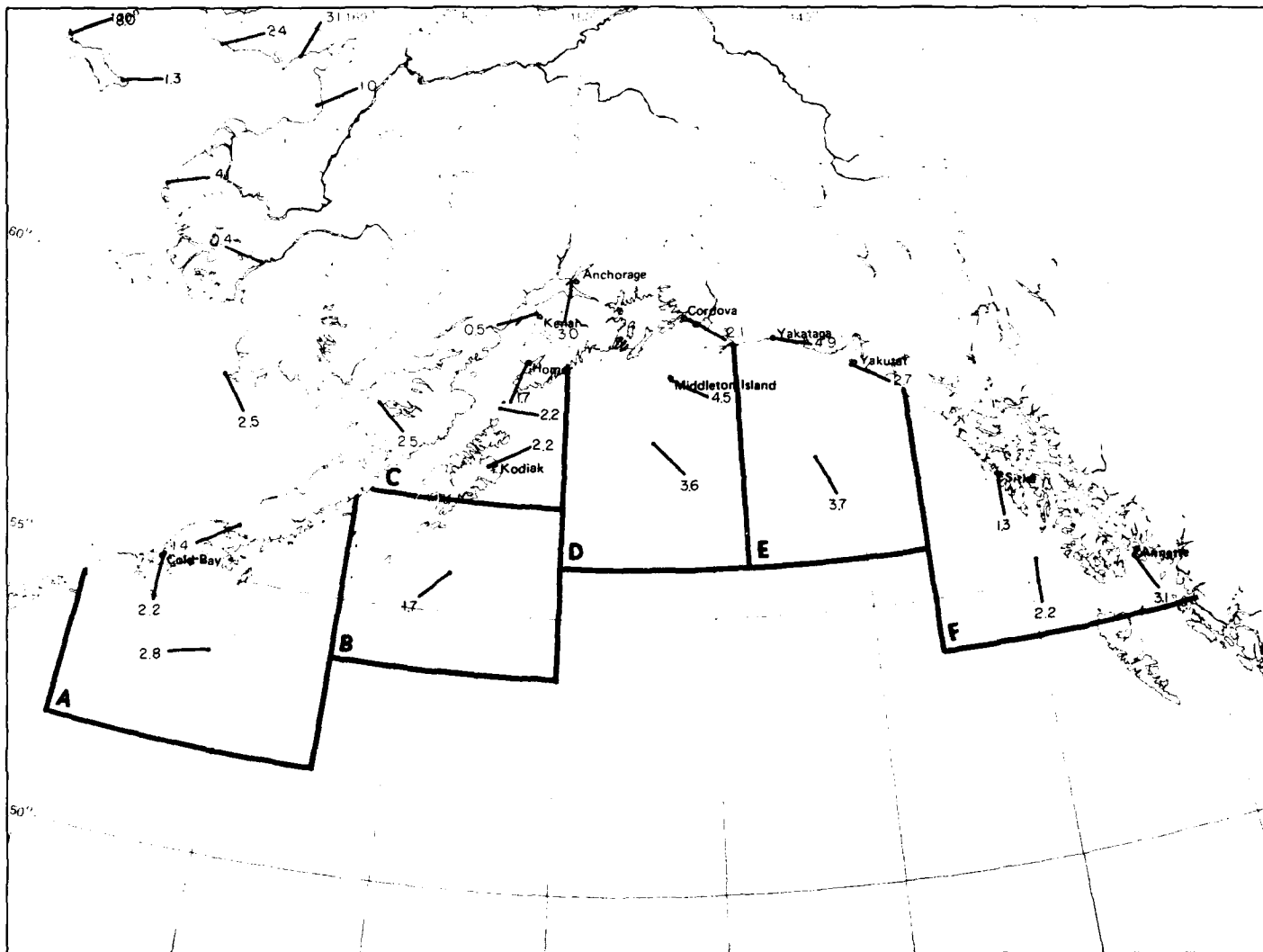
9 Wind speed thresholds

May

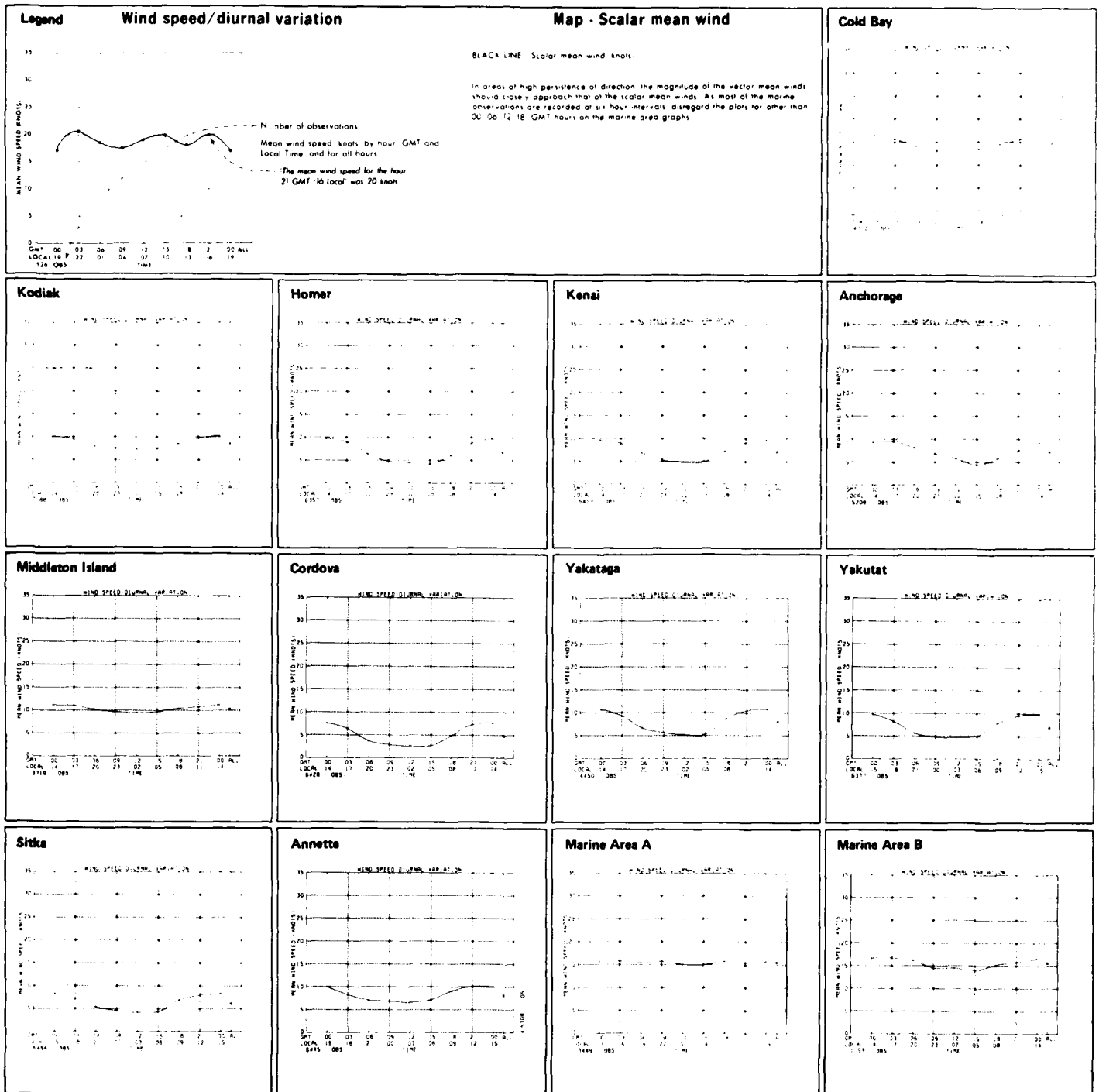


May

10 Wind direction/diurnal variation



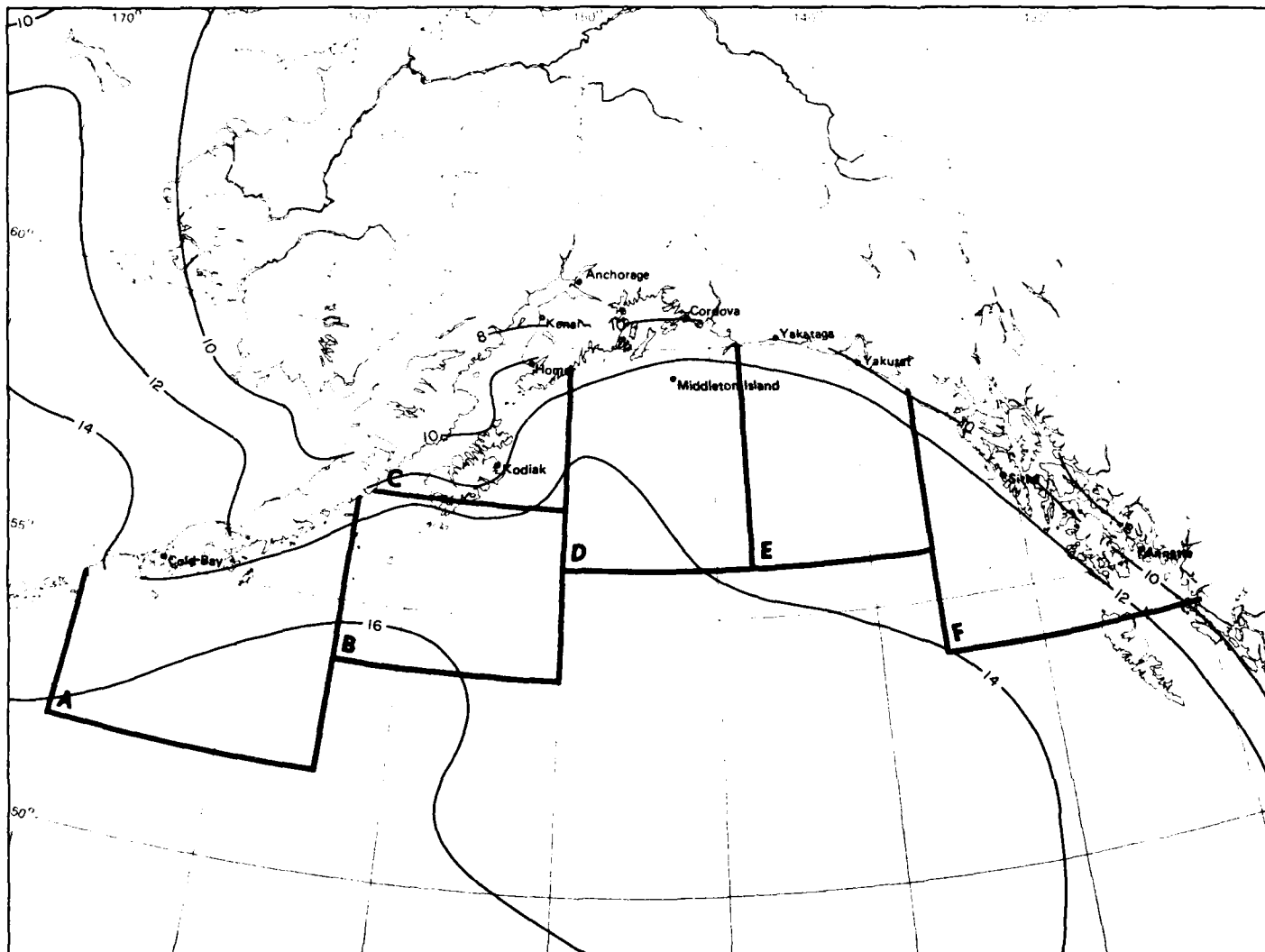
10 Vector mean wind



May

182

11 Wind speed/diurnal variation



Marine Area C	Marine Area D	Marine Area E	Marine Area F
1000 900 800 700 600 500 400 300 200 100 0	1000 900 800 700 600 500 400 300 200 100 0	1000 900 800 700 600 500 400 300 200 100 0	1000 900 800 700 600 500 400 300 200 100 0

11 Scalar mean wind

Legend

Low cloud ceiling/visibility

Percent frequency of simultaneous occurrence of specified low cloud ceilings (hundreds of feet) and visibilities (nautical miles):

Low cloud ceiling heights are estimated from the height of low clouds (h) when low cloud amount (N_h) is ≥ 5.8

Obscurations are included under ceiling $0 < 1.5$

N.C. (no ceiling) includes bases of clouds ≥ 8000 feet as well as occurrences of N_h < 5.8

(2% of all observations reported ceiling ≥ 1000 but < 2000 feet simultaneously with visibility ≥ 5 but < 10 nautical miles.)

indicates $< 5\%$ but > 0

Number of observations

LOW CLOUD CEILING	1/2	3/4	1	2	5	10	20
NC	0	0	0	0	0	0	0
50+80	0	0	0	0	0	0	0
35+50	0	0	0	0	0	0	0
20+35	0	0	0	0	0	0	0
10+20	0	0	0	0	0	0	0
6+10	0	0	0	0	0	0	0
3+6	0	0	0	0	0	0	0
1.5+3	0	0	0	0	0	0	0
0+1.5	0	0	0	0	0	0	0

Percent frequency of simultaneous occurrence of specified low cloud ceilings (hundreds of feet) and visibilities (nautical miles):

Low cloud ceiling heights are estimated from the height of low clouds (h) when low cloud amount (N_h) is ≥ 5.8

Obscurations are included under ceiling $0 < 1.5$

N.C. (no ceiling) includes bases of clouds ≥ 8000 feet as well as occurrences of N_h < 5.8

(2% of all observations reported ceiling ≥ 1000 but < 2000 feet simultaneously with visibility ≥ 5 but < 10 nautical miles.)

indicates $< 5\%$ but > 0

Number of observations

Map - Low cloud ceiling and visibility thresholds

BLACK LINE Percent frequency of low cloud ceiling ≥ 1000 feet (or no low cloud ceiling) and visibility ≥ 5 nautical miles

BLUE LINE Percent frequency of low cloud ceiling < 600 feet and or visibility < 2 nautical miles

Cold Bay

VISIBILITY

1/2 3/4 1 2 5 10 20

LOW CLOUD CEILING	1/2	3/4	1	2	5	10	20
NC	0	0	0	0	0	0	0
50+80	0	0	0	0	0	0	0
35+50	0	0	0	0	0	0	0
20+35	0	0	0	0	0	0	0
10+20	0	0	0	0	0	0	0
6+10	0	0	0	0	0	0	0
3+6	0	0	0	0	0	0	0
1.5+3	0	0	0	0	0	0	0
0+1.5	0	0	0	0	0	0	0

4685

Kodiak

VISIBILITY

1/2 3/4 1 2 5 10 20

LOW CLOUD CEILING	1/2	3/4	1	2	5	10	20
NC	0	0	0	0	0	0	0
50+80	0	0	0	0	0	0	0
35+50	0	0	0	0	0	0	0
20+35	0	0	0	0	0	0	0
10+20	0	0	0	0	0	0	0
6+10	0	0	0	0	0	0	0
3+6	0	0	0	0	0	0	0
1.5+3	0	0	0	0	0	0	0
0+1.5	0	0	0	0	0	0	0

6883

Homer

Insufficient Data

Kenai

Insufficient Data

Anchorage

VISIBILITY

1/2 3/4 1 2 5 10 20

LOW CLOUD CEILING	1/2	3/4	1	2	5	10	20
NC	0	0	0	0	0	0	0
50+80	0	0	0	0	0	0	0
35+50	0	0	0	0	0	0	0
20+35	0	0	0	0	0	0	0
10+20	0	0	0	0	0	0	0
6+10	0	0	0	0	0	0	0
3+6	0	0	0	0	0	0	0
1.5+3	0	0	0	0	0	0	0
0+1.5	0	0	0	0	0	0	0

5095

Middleton Island

VISIBILITY

1/2 3/4 1 2 5 10 20

LOW CLOUD CEILING	1/2	3/4	1	2	5	10	20
NC	0	0	0	0	0	0	0
50+80	0	0	0	0	0	0	0
35+50	0	0	0	0	0	0	0
20+35	0	0	0	0	0	0	0
10+20	0	0	0	0	0	0	0
6+10	0	0	0	0	0	0	0
3+6	0	0	0	0	0	0	0
1.5+3	0	0	0	0	0	0	0
0+1.5	0	0	0	0	0	0	0

1487

Cordova

VISIBILITY

1/2 3/4 1 2 5 10 20

LOW CLOUD CEILING	1/2	3/4	1	2	5	10	20
NC	0	0	0	0	0	0	0
50+80	0	0	0	0	0	0	0
35+50	0	0	0	0	0	0	0
20+35	0	0	0	0	0	0	0
10+20	0	0	0	0	0	0	0
6+10	0	0	0	0	0	0	0
3+6	0	0	0	0	0	0	0
1.5+3	0	0	0	0	0	0	0
0+1.5	0	0	0	0	0	0	0

4664

Yakutat

VISIBILITY

1/2 3/4 1 2 5 10 20

LOW CLOUD CEILING	1/2	3/4	1	2	5	10	20
NC	0	0	0	0	0	0	0
50+80	0	0	0	0	0	0	0
35+50	0	0	0	0	0	0	0
20+35	0	0	0	0	0	0	0
10+20	0	0	0	0	0	0	0
6+10	0	0	0	0	0	0	0
3+6	0	0	0	0	0	0	0
1.5+3	0	0	0	0	0	0	0
0+1.5	0	0	0	0	0	0	0

243

Yakutat

VISIBILITY

1/2 3/4 1 2 5 10 20

LOW CLOUD CEILING	1/2	3/4	1	2	5	10	20
NC	0	0	0	0	0	0	0
50+80	0	0	0	0	0	0	0
35+50	0	0	0	0	0	0	0
20+35	0	0	0	0	0	0	0
10+20	0	0	0	0	0	0	0
6+10	0	0	0	0	0	0	0
3+6	0	0	0	0	0	0	0
1.5+3	0	0	0	0	0	0	0
0+1.5	0	0	0	0	0	0	0

6340

Sitka

Insufficient Data

Annette

VISIBILITY

1/2 3/4 1 2 5 10 20

LOW CLOUD CEILING	1/2	3/4	1	2	5	10	20
NC	0	0	0	0	0	0	0
50+80	0	0	0	0	0	0	0
35+50	0	0	0	0	0	0	0
20+35	0	0	0	0	0	0	0
10+20	0	0	0	0	0	0	0
6+10	0	0	0	0	0	0	0
3+6	0	0	0	0	0	0	0
1.5+3	0	0	0	0	0	0	0
0+1.5	0	0	0	0	0	0	0

6426

Marine Area A

VISIBILITY

1/2 3/4 1 2 5 10 20

LOW CLOUD CEILING	1/2	3/4	1	2	5	10	20
NC	0	0	0	0	0	0	0
50+80	0	0	0	0	0	0	0
35+50	0	0	0	0	0	0	0
20+35	0	0	0	0	0	0	0
10+20	0	0	0	0	0	0	0
6+10	0	0	0	0	0	0	0
3+6	0	0	0	0	0	0	0
1.5+3	0	0	0	0	0	0	0
0+1.5	0	0	0	0	0	0	0

2811

Marine Area B

VISIBILITY

1/2 3/4 1 2 5 10 20

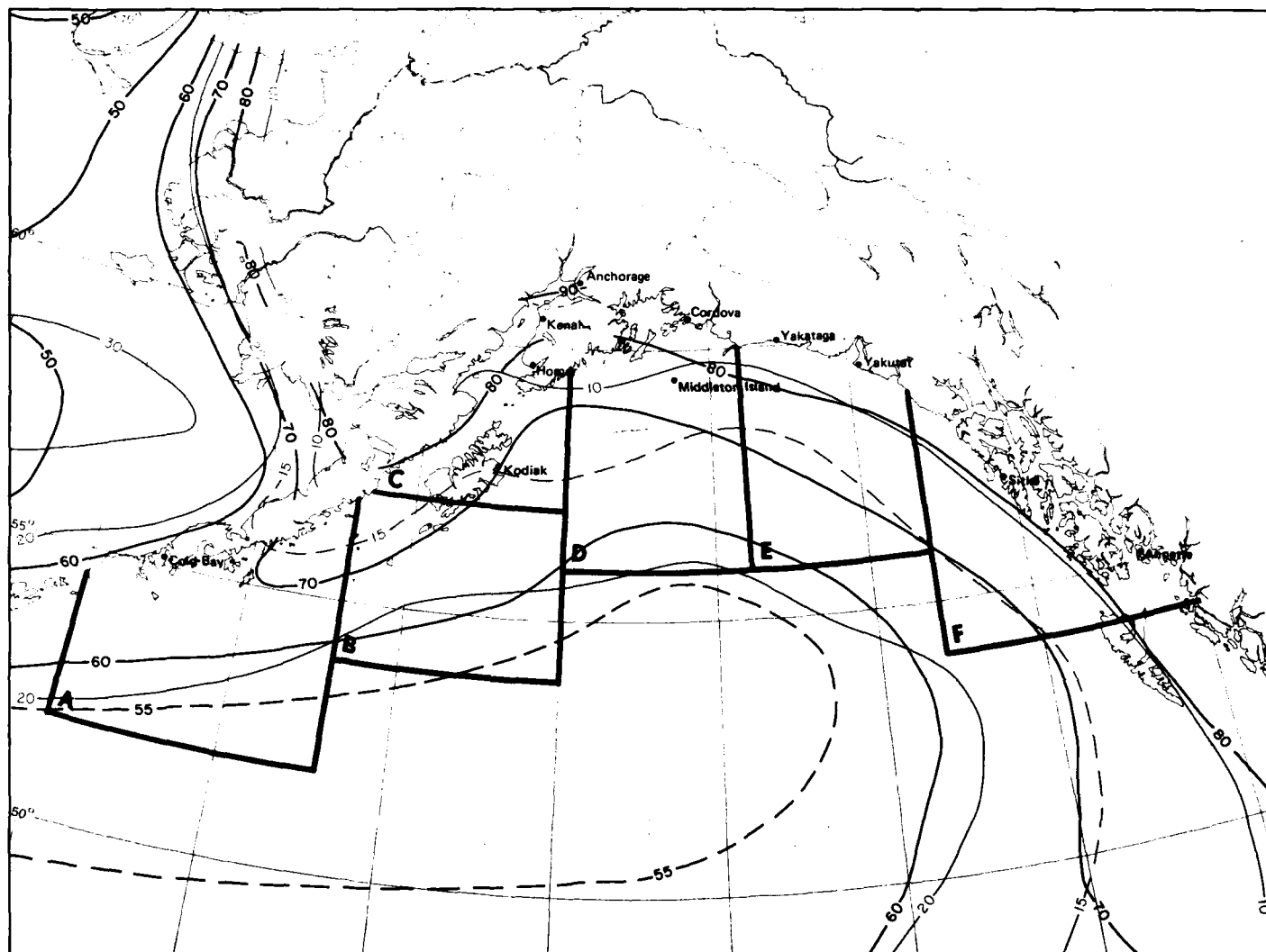
LOW CLOUD CEILING	1/2	3/4	1	2	5	10	20
NC	0	0	0	0	0	0	0
50+80	0	0	0	0	0	0	0
35+50	0	0	0	0	0	0	0
20+35	0	0	0	0	0	0	0
10+20	0	0	0	0	0	0	0
6+10	0	0	0	0	0	0	0
3+6	0	0	0	0	0	0	0
1.5+3	0	0	0	0	0	0	0
0+1.5	0	0	0	0	0	0	0

973

May

184

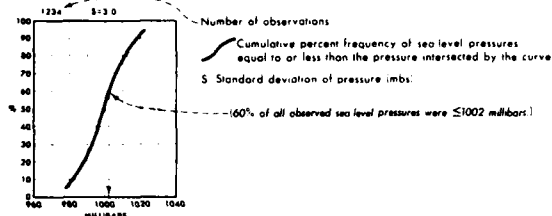
12 Low cloud ceiling and visibility thresholds



12 Low cloud ceiling and visibility thresholds

Legend

Sea level pressure

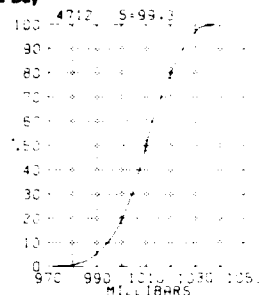


Map - Mean sea level pressure

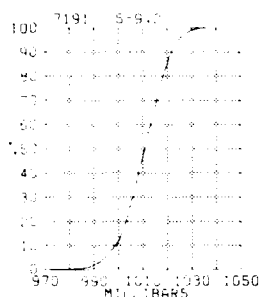
BLACK LINE - Mean sea level pressure (millibars)

Sea level pressure is one of the most frequently recorded elements but one of the least accurate because of instrument and coding errors. Despite the inaccuracies of the individual readings, however, the large scale patterns and mean gradients of the isopleth analyses are relatively accurate.

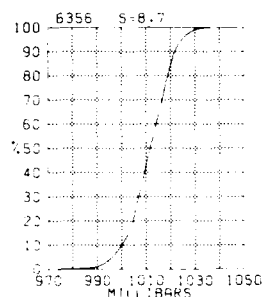
Cold Bay



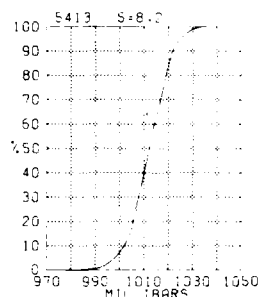
Kodiak



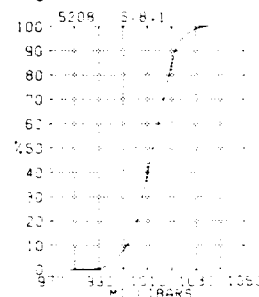
Homer



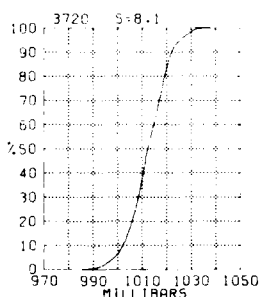
Kenai



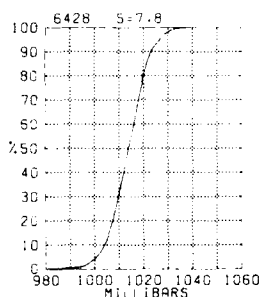
Anchorage



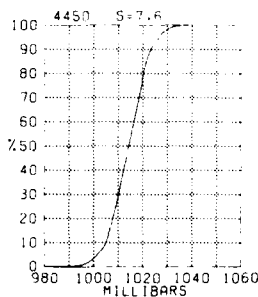
Middleton Island



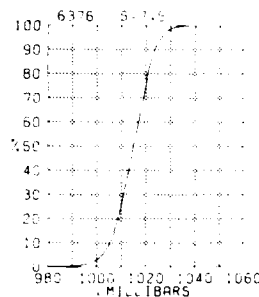
Cordova



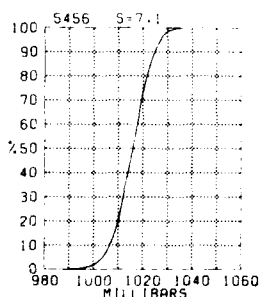
Yakutat



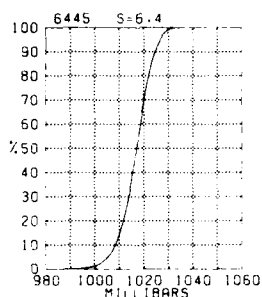
Yakutat



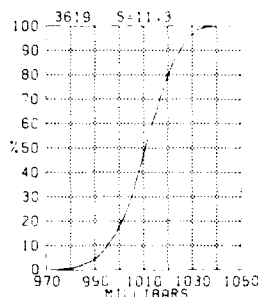
Sitka



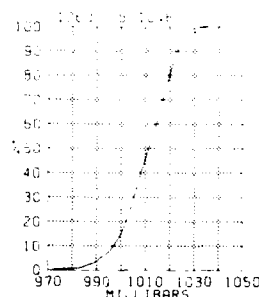
Annette



Marine Area A



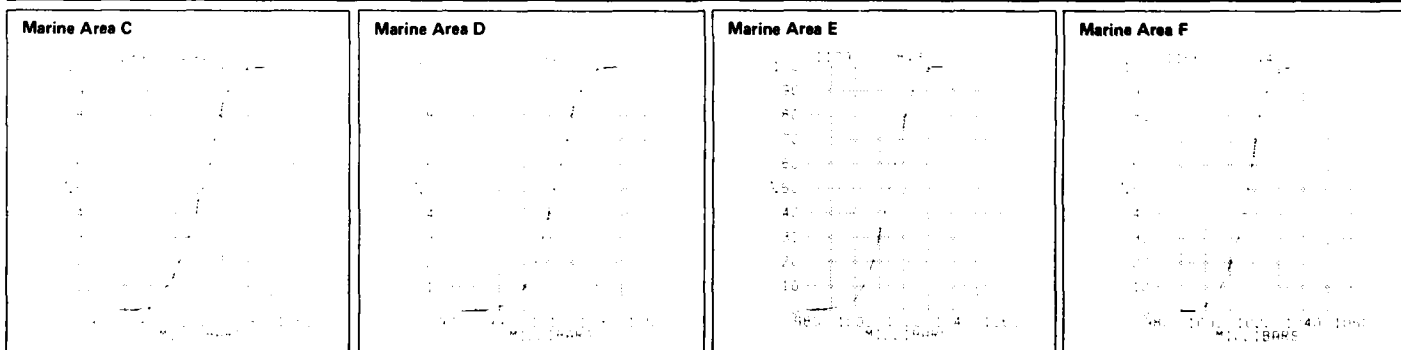
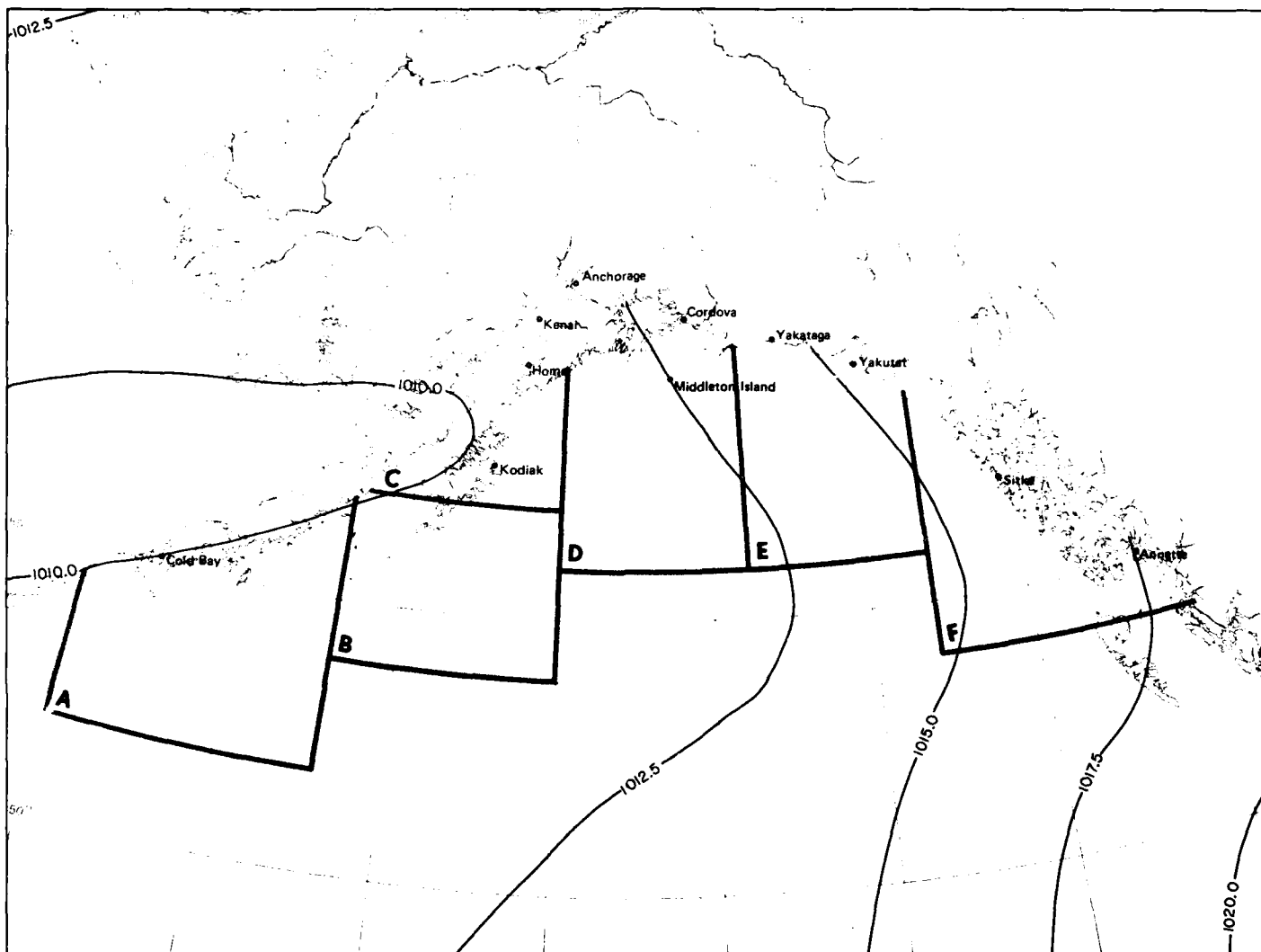
Marine Area B



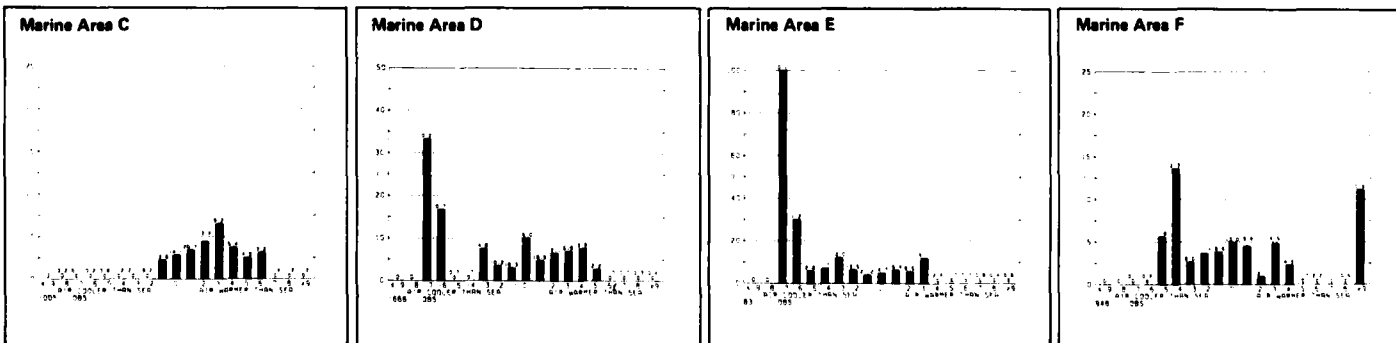
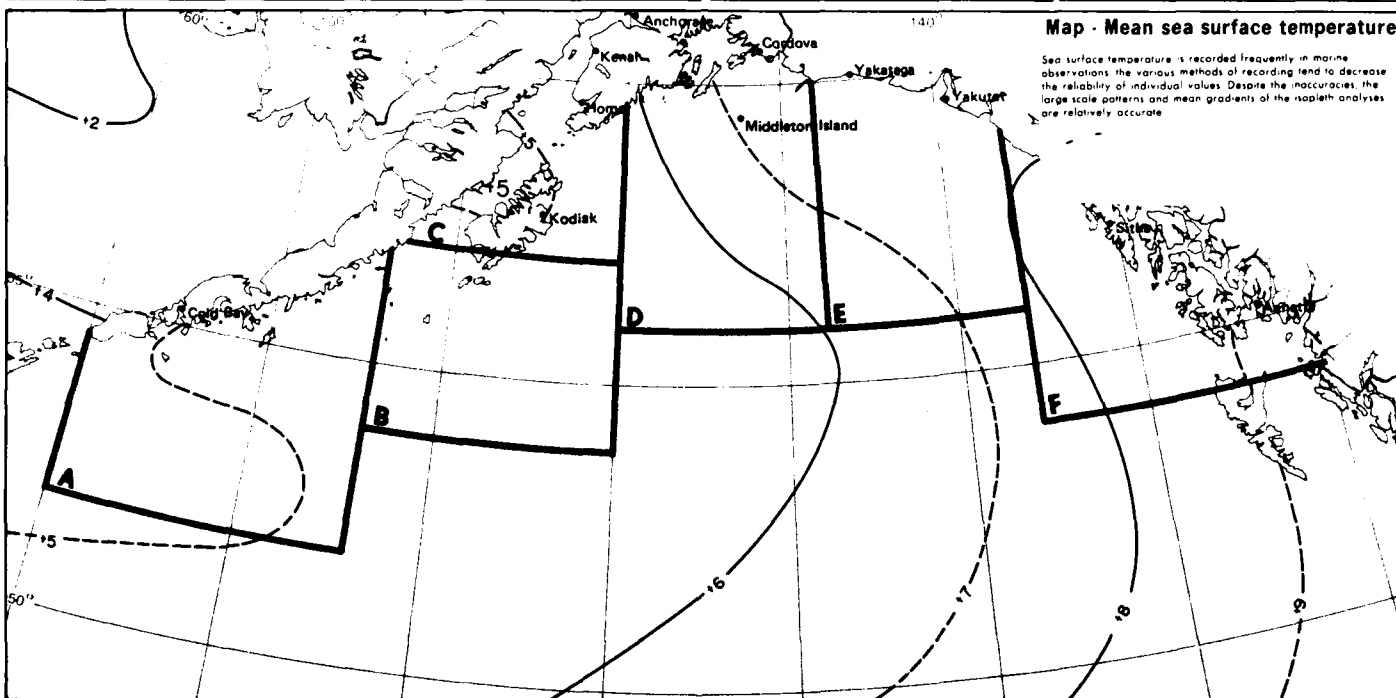
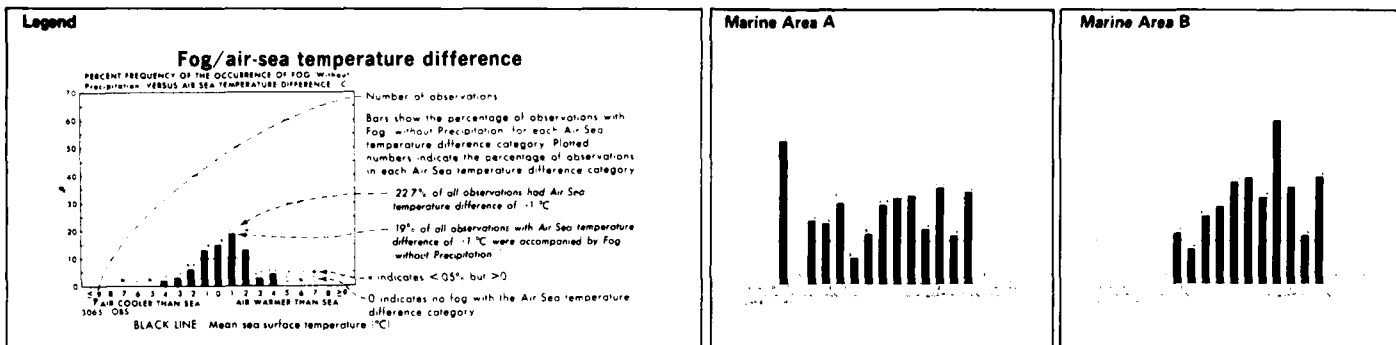
May

188

13 Sea level pressure



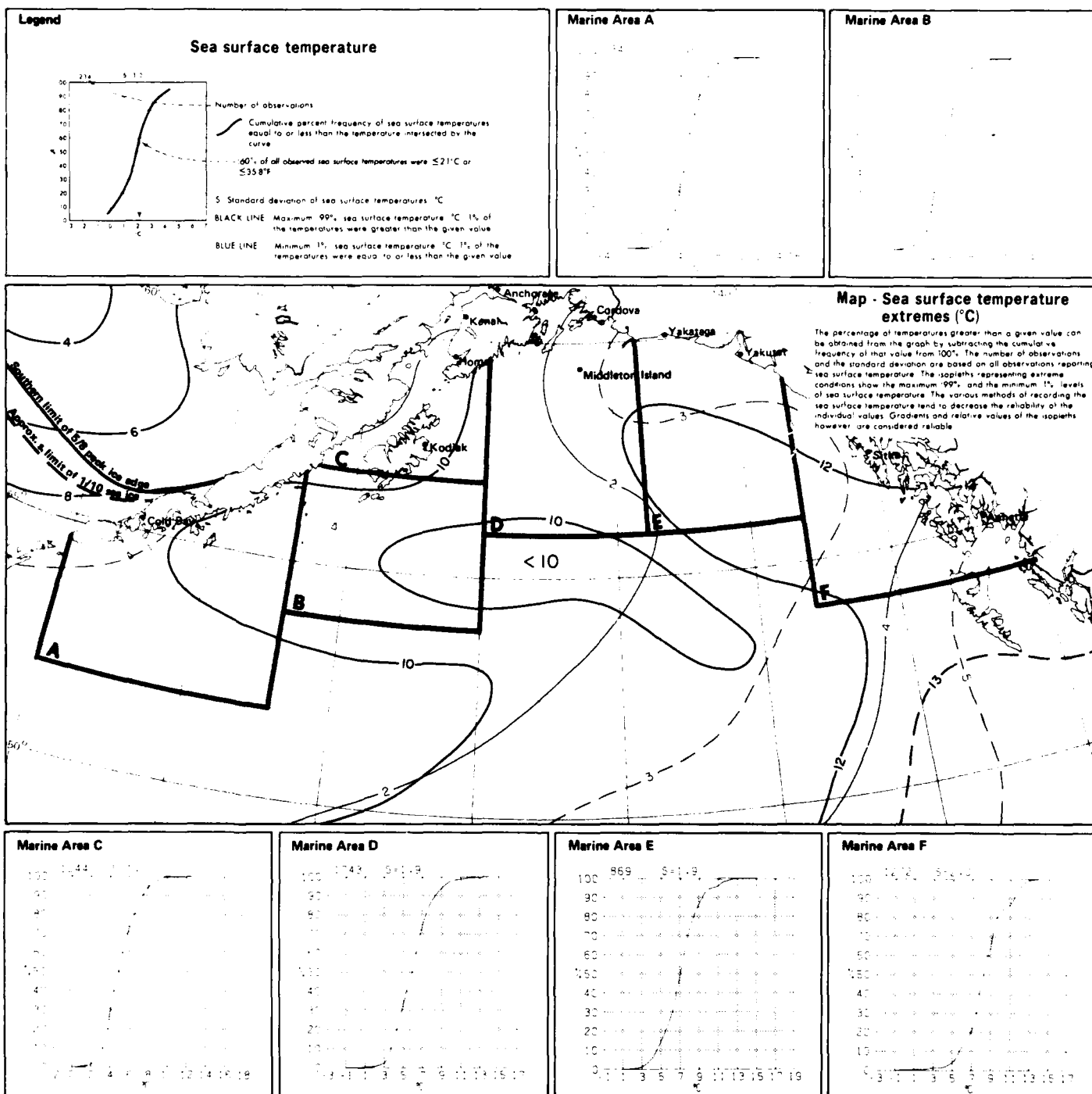
13 Mean sea level pressure



May

188

14 Fog/air-sea temperature difference
Mean sea surface temperature

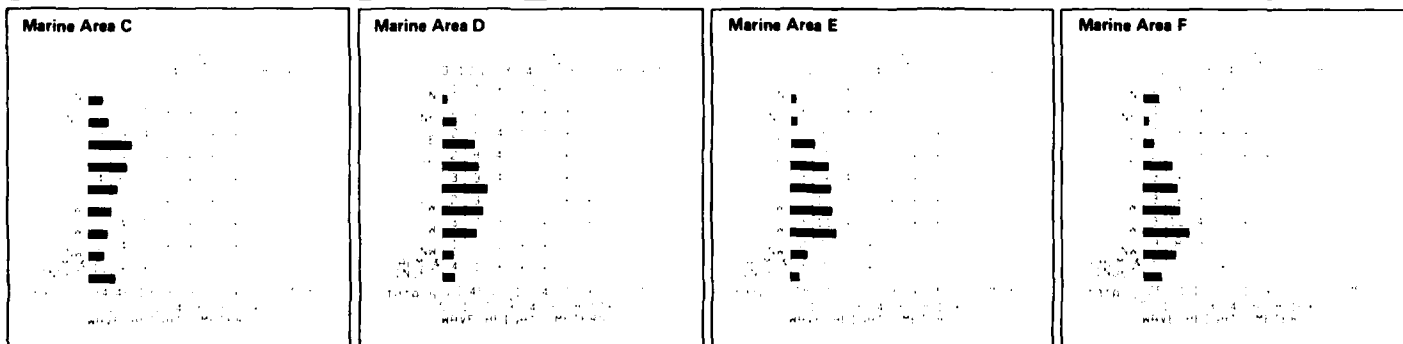
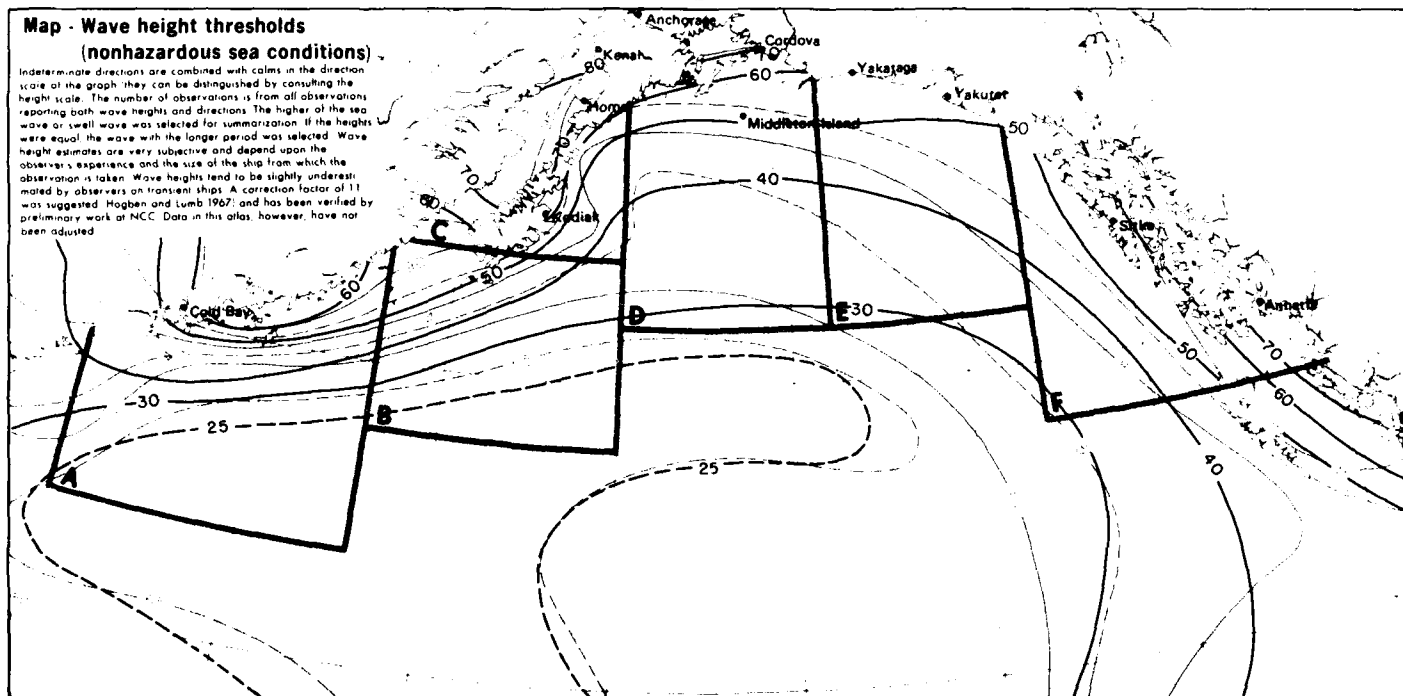
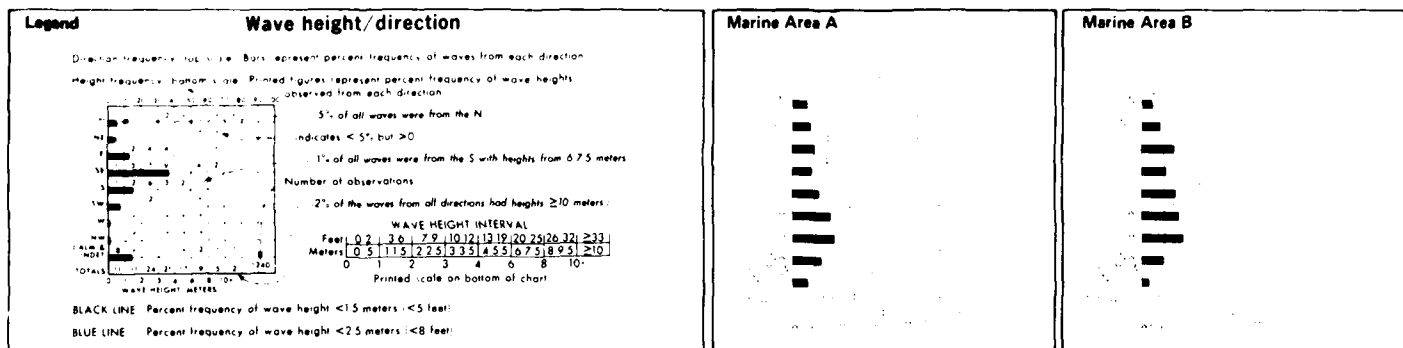


Marine Area C

Marine Area D

Marine Area E

Marine Area F



May

16 Wave height thresholds (nonhazardous)

AD-A081 310

ALASKA UNIV ANCHORAGE ARCTIC ENVIRONMENTAL INFORMAT--ETC F/S 4/2
CLIMATIC ATLAS OF THE OUTER CONTINENTAL SHELF WATERS AND COAST--ETC(U)
1977 W A BROWER, M F DIAZ, A S FRECHTEL

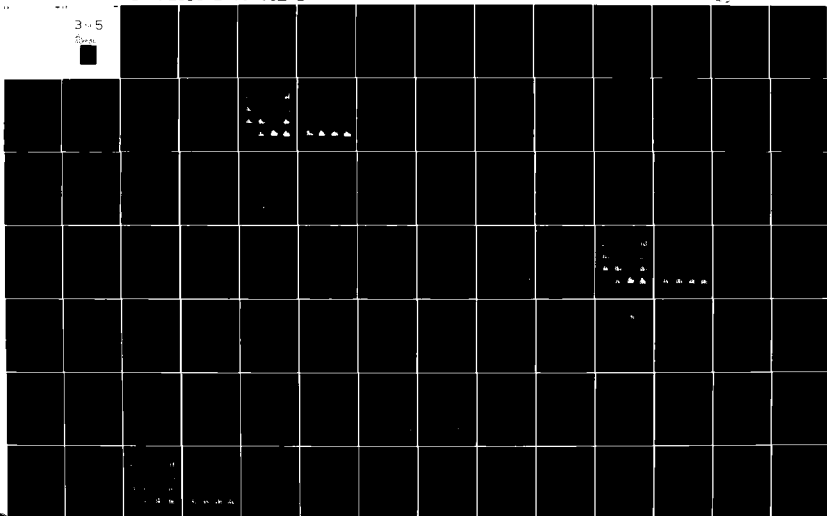
UNCLASSIFIED

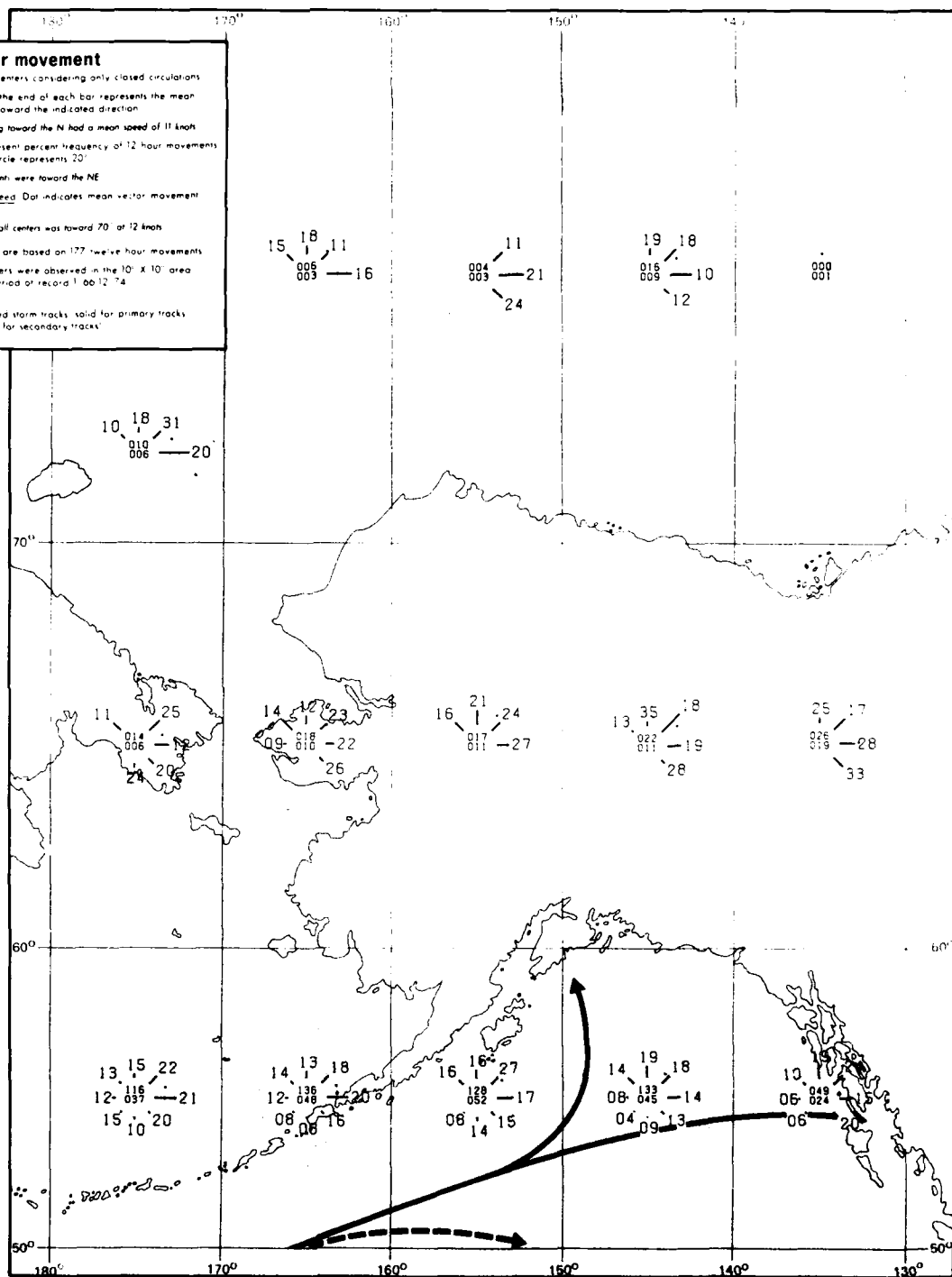
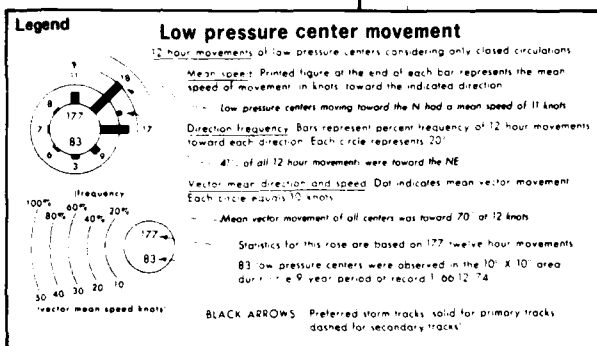
AEIOC-8-77-VOL-1

NL

3-5

Figure 1

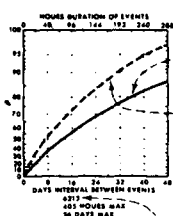




18 Low pressure center movement

Legend

Persistence of visibility <2 n. mi.



Hours duration of events : Days interval between events.
Cumulative percent frequency of hours duration equal to or less than the number of hours intersected by the solid curve.

--- (80% of the events had a duration ≤ 216 hours.)

Cumulative percent frequency of days interval between events equal to or less than the number of days intersected by the broken curve.

--- (80% of the events were followed by another event in 28 days or less.)

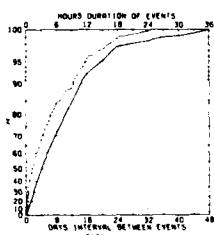
The maximum value(s) of hours duration and/or the days interval will be displayed when the graph limits are exceeded.

Durations and intervals for a particular month extend from the time they begin (or the first of the month if already in progress) and are terminated at the actual ending time, regardless of what month they may be.

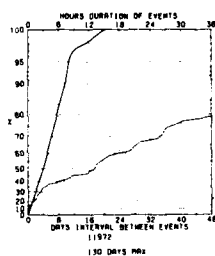
Number of observations.

Top and bottom scales are variable to allow for variations in the data.

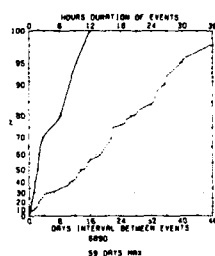
Kodiak



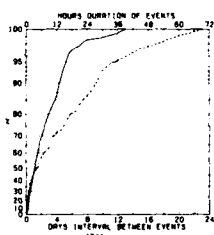
Homer



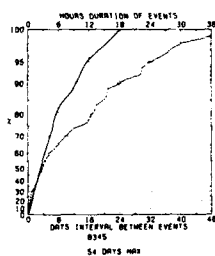
Kenai



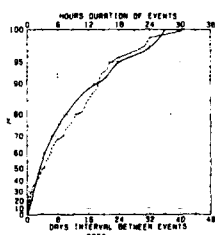
Middleton Island



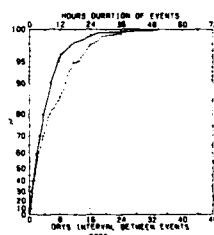
Cordova



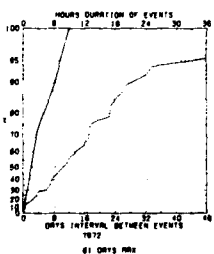
Yakutat



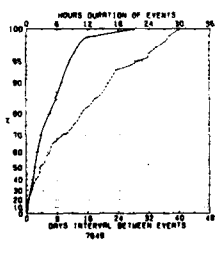
Yakutat



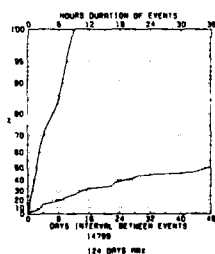
Sitka



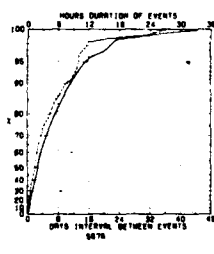
Annette



Anchorage



Cold Bay

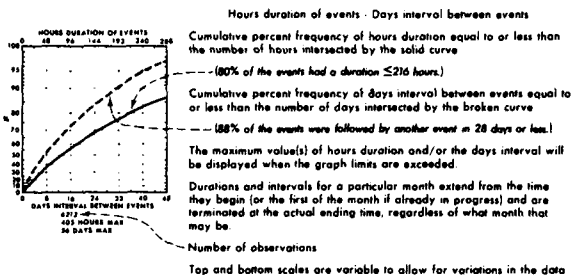


19 Persistence of visibility < 2 n. mi.

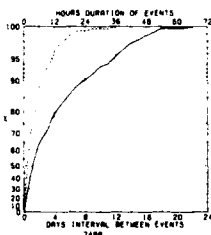
May

Legend

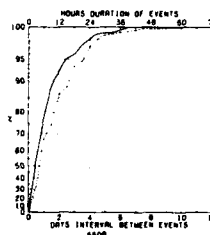
Persistence of wind ≥ 10 kts.



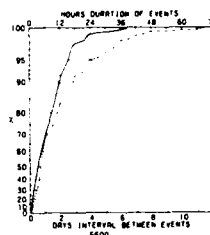
Kodiak



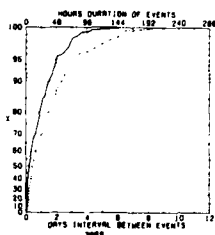
Homer



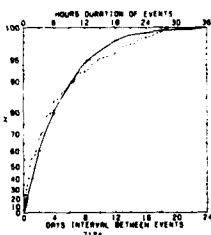
Kenai



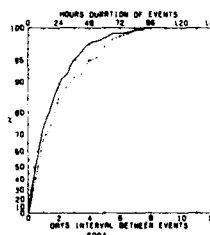
Middleton Island



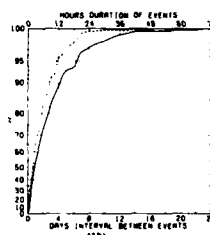
Cordova



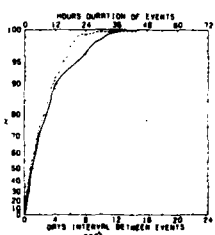
Yakutat



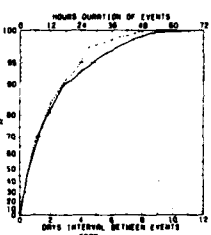
Yakutat



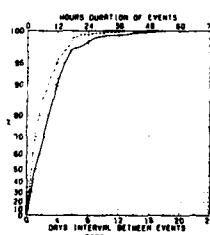
Sitka



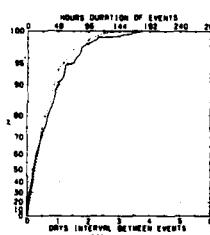
Annette



Anchorage



Cold Bay

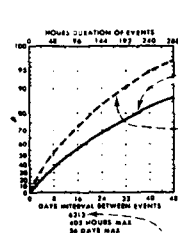


May

20 Persistence of wind ≥ 10 kts.

Legend

Persistence of wind ≥ 20 kts.



Hours duration of events - Days interval between events

Cumulative percent frequency of hours duration equal to or less than the number of hours intersected by the solid curve.

(80% of the events had a duration ≤ 216 hours.)

Cumulative percent frequency of days interval between events equal to or less than the number of days intersected by the broken curve.

(86% of the events were followed by another event in 28 days or less.)

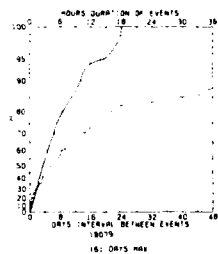
The maximum value(s) of hours duration and/or the days interval will be displayed when the graph lines are exceeded.

Durations and intervals for a particular month extend from the time they begin (or the first of the month if already in progress) and are terminated at the actual ending time, regardless of what month that may be.

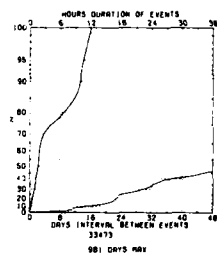
Number of observations

Top and bottom scales are variable to allow for variations in the data.

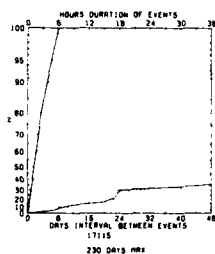
Kodiak



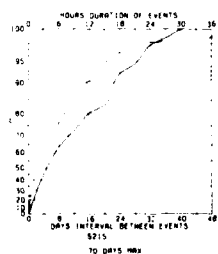
Homer



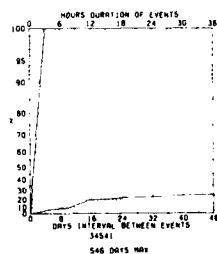
Kenai



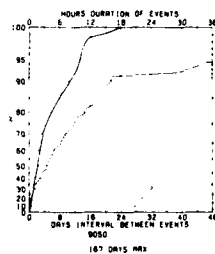
Middleton Island



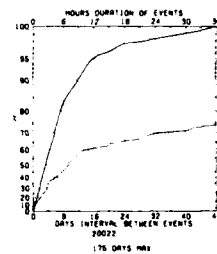
Cordova



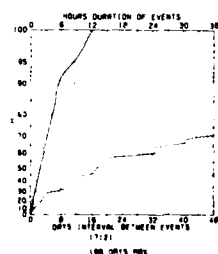
Yakutat



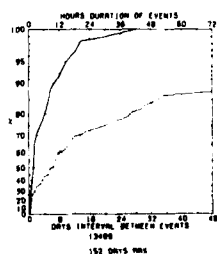
Yakutat



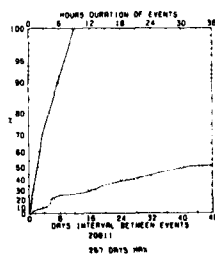
Sitka



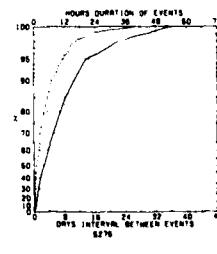
Annette



Anchorage

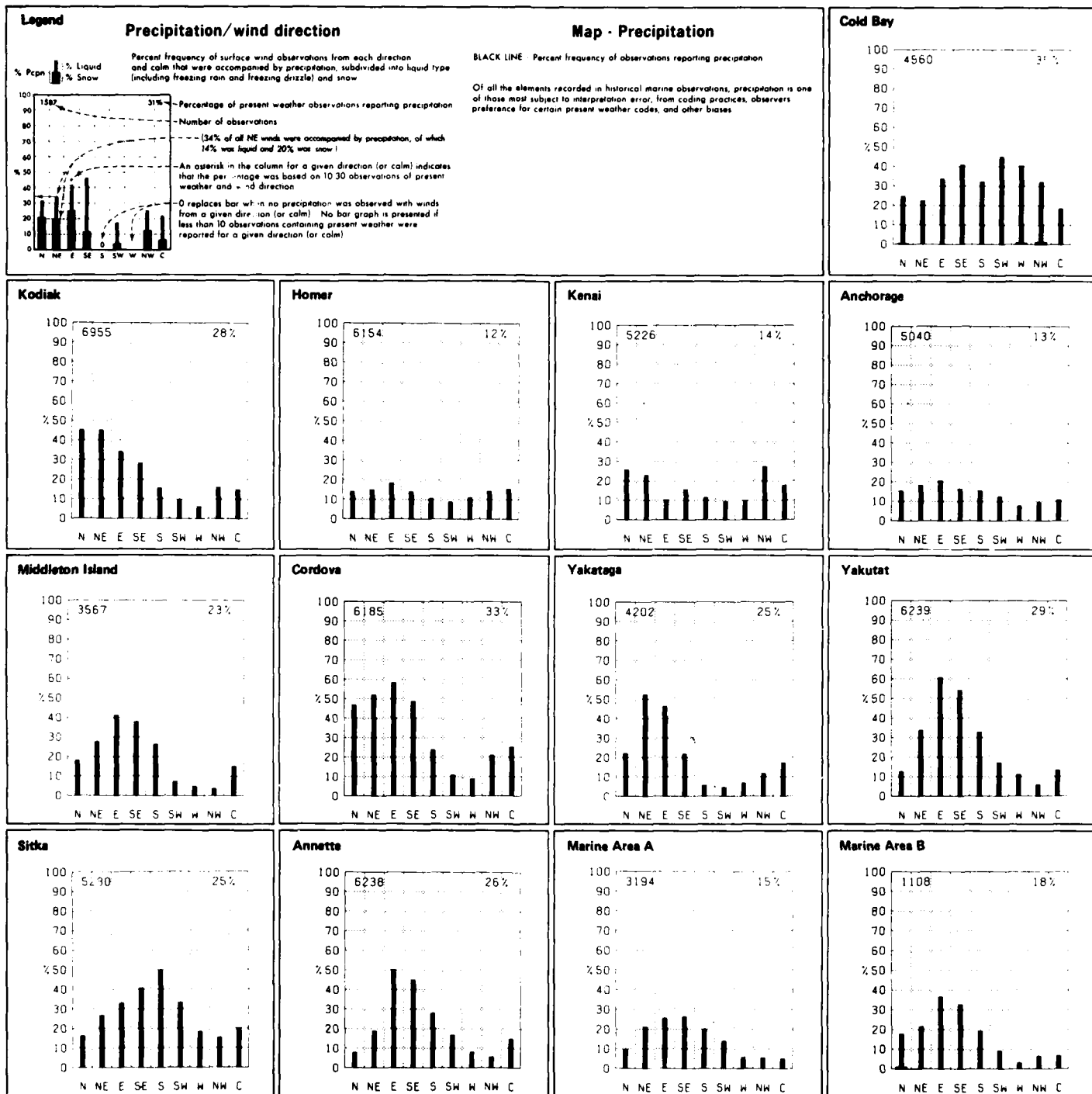


Cold Bay



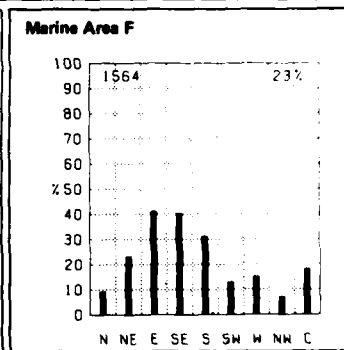
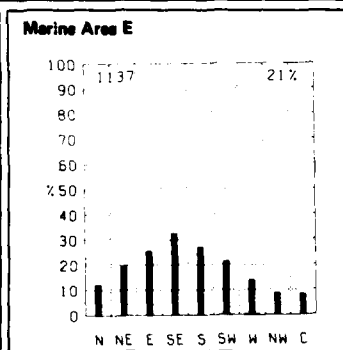
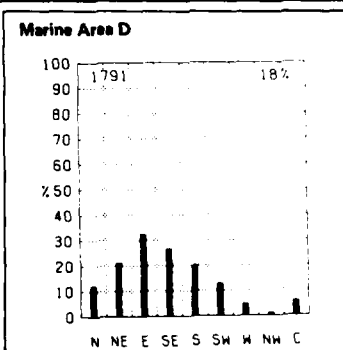
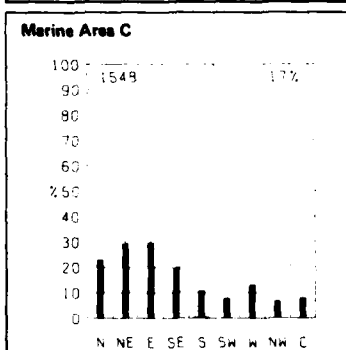
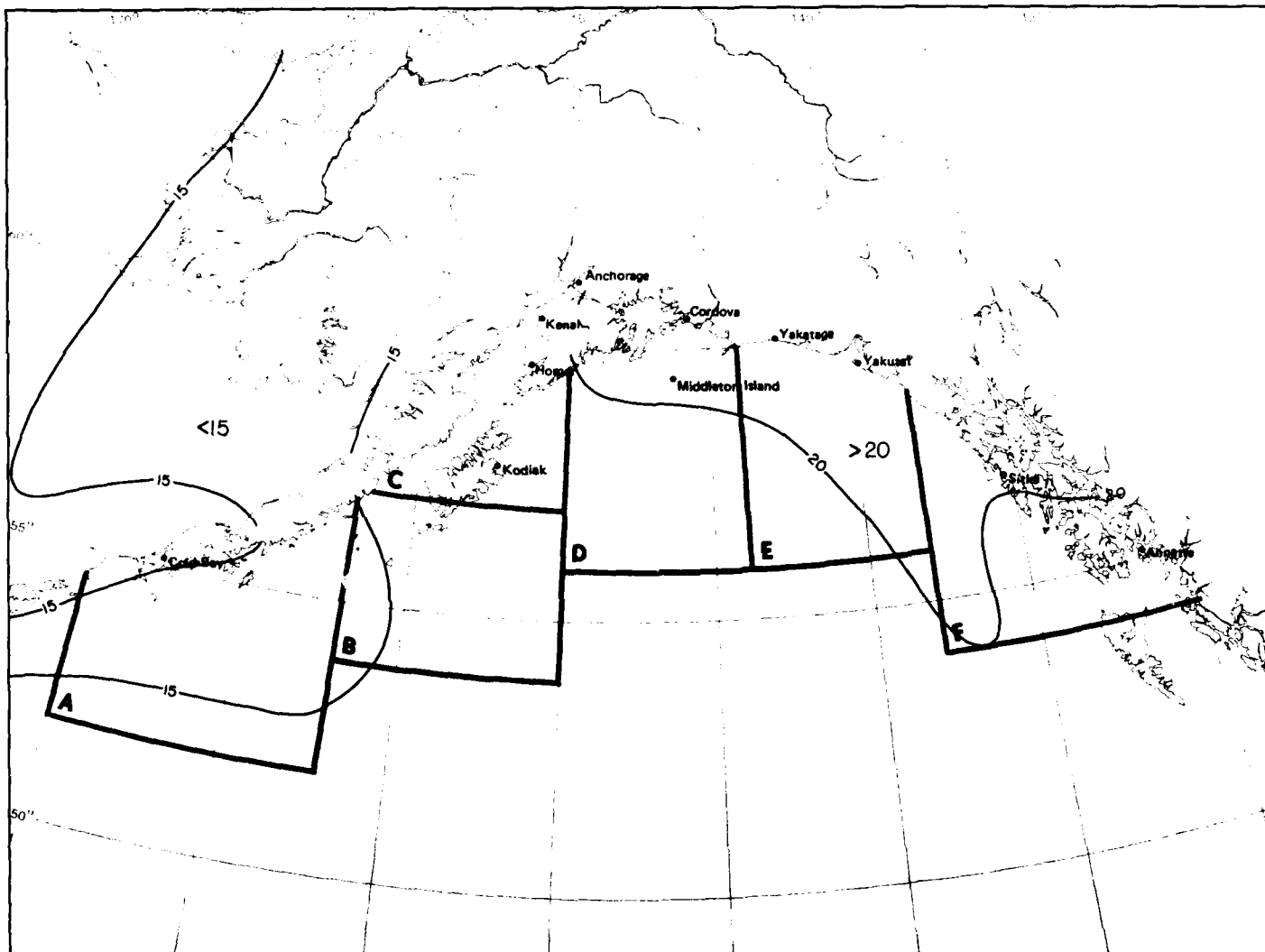
21 Persistence of wind ≥ 20 kts.

May
196



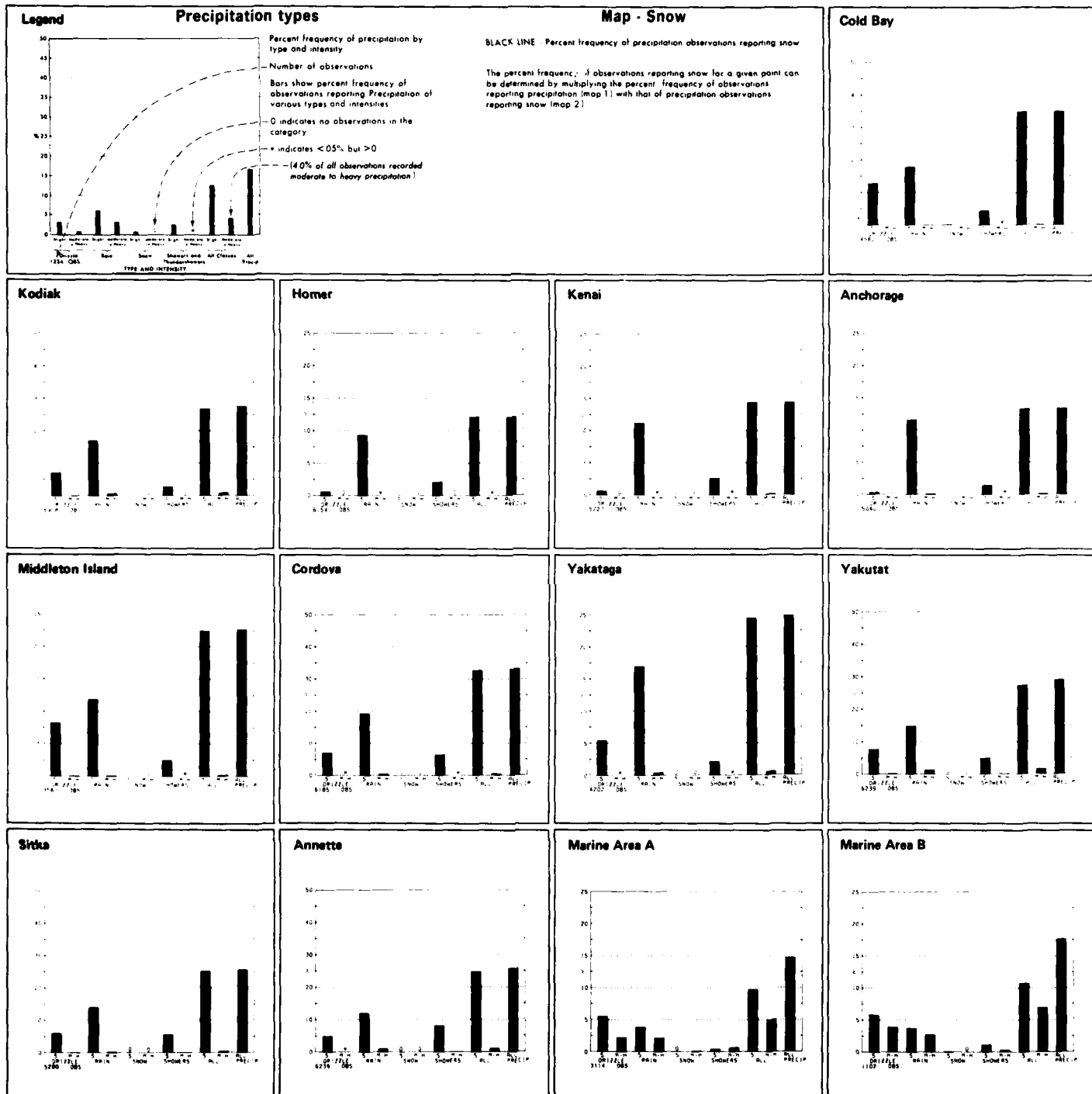
June

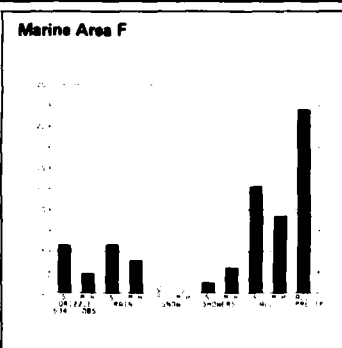
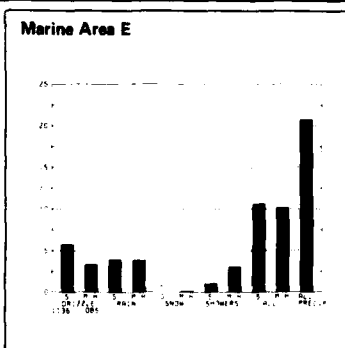
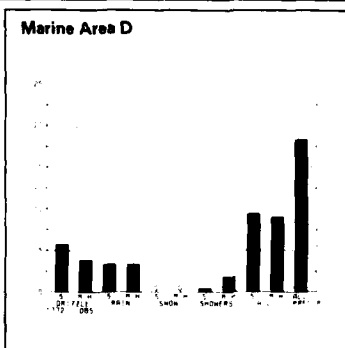
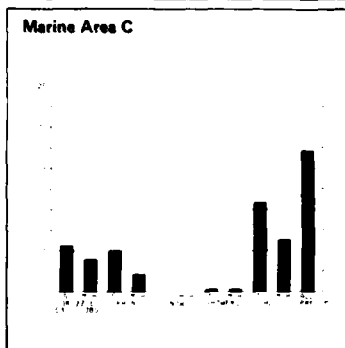
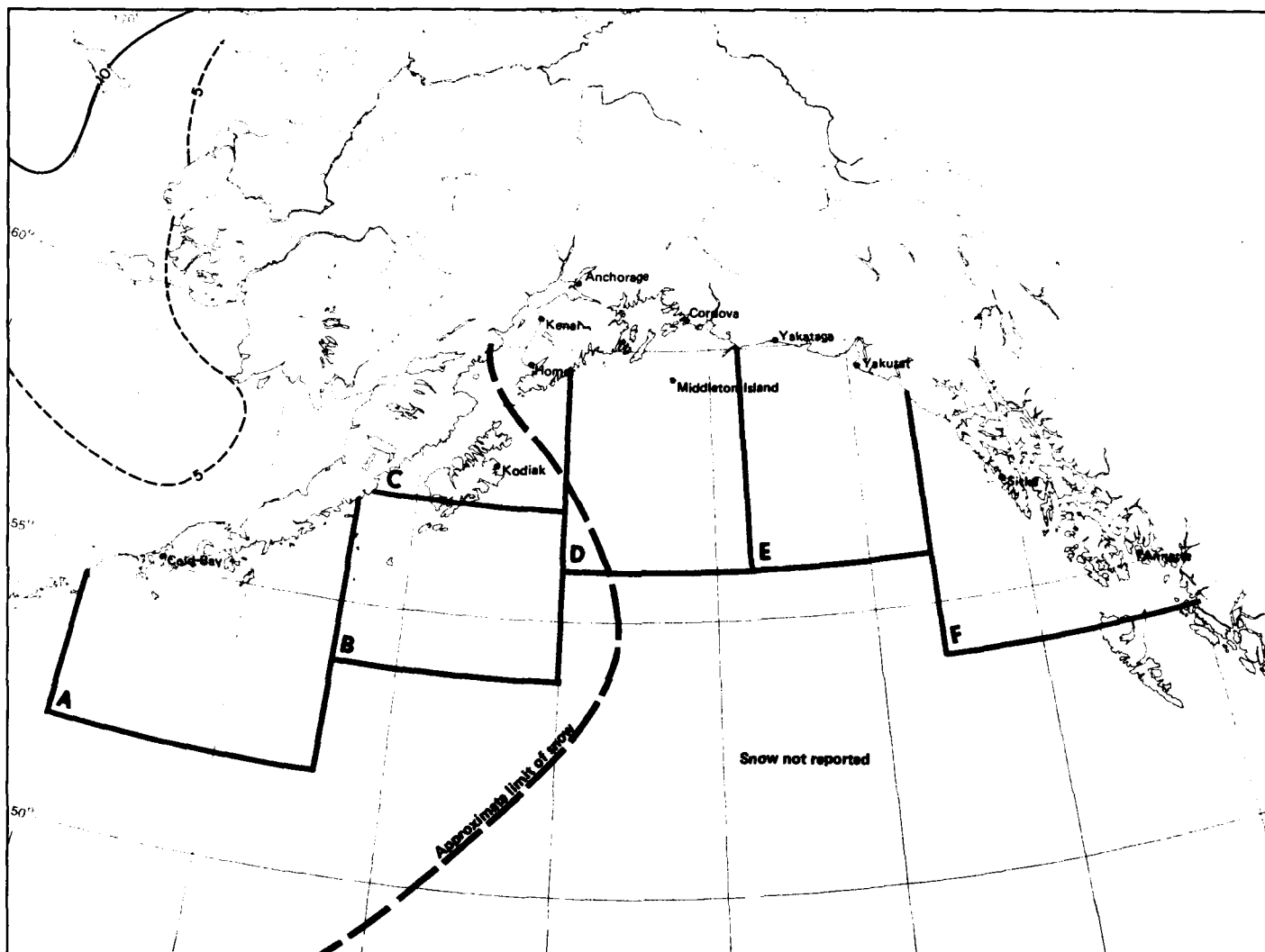
1 Precipitation/wind direction



1 Precipitation

June



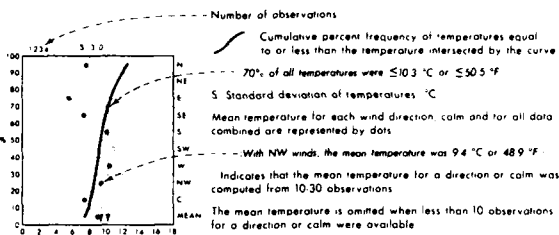


2 Snow

June

Legend

Air temperature/wind direction



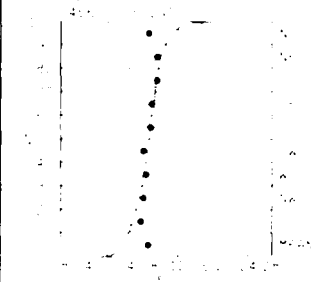
Map - Air temperature mean and thresholds

BLACK LINE Percent frequency of temperature $\leq 0^{\circ}\text{C}$ $\leq 32^{\circ}\text{F}$
 RED LINE Mean air temperature $^{\circ}\text{C}$
 BLUE LINE Percent frequency of wind chill temperature $\leq 30^{\circ}\text{C}$ $\leq 22^{\circ}\text{F}$

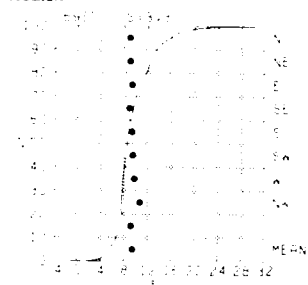
Air temperature readings recorded on transient ships in warm, sunny weather appear biased toward high temperatures, apparently because of improper instrument exposure and ventilation. Despite the inaccuracies, the large-scale patterns and mean gradients of the isopleth analyses are relatively accurate.

The temperature scale of the graph may vary in both range and class interval. The percentage of temperature observations greater than a given value can be obtained by subtracting the cumulative percent frequency of that value from 100%. The number of observations and the standard deviation plus the plotted points on the graphs are based on those observations reporting both temperature and wind direction. The cumulative curve is based on all observations reporting temperature with or without wind direction.

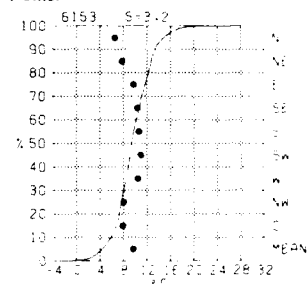
Cold Bay



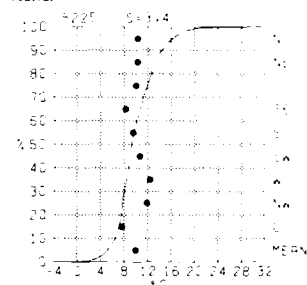
Kodiak



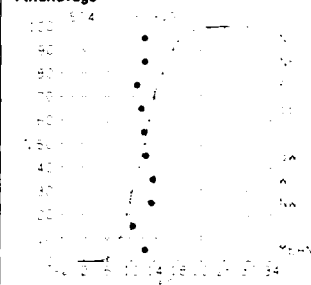
Homer



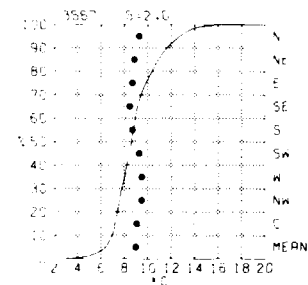
Kenai



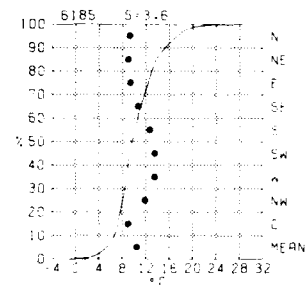
Anchorage



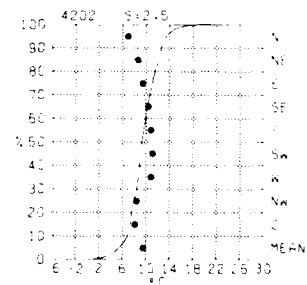
Middleton Island



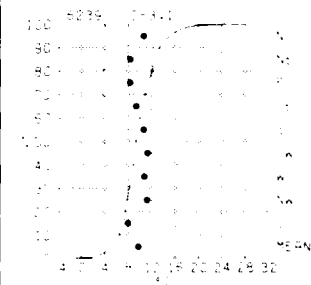
Cordova



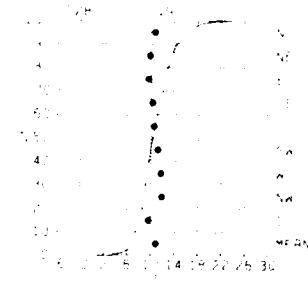
Yakutat



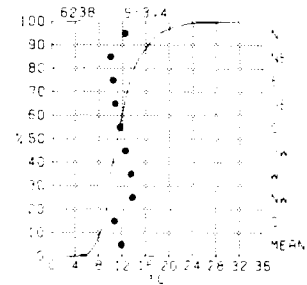
Yakutat



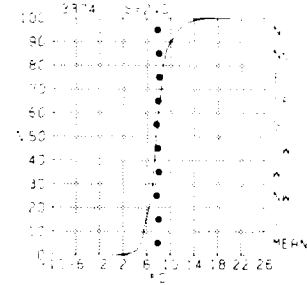
Sitka



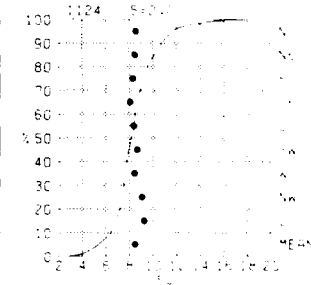
Annette



Marine Area A

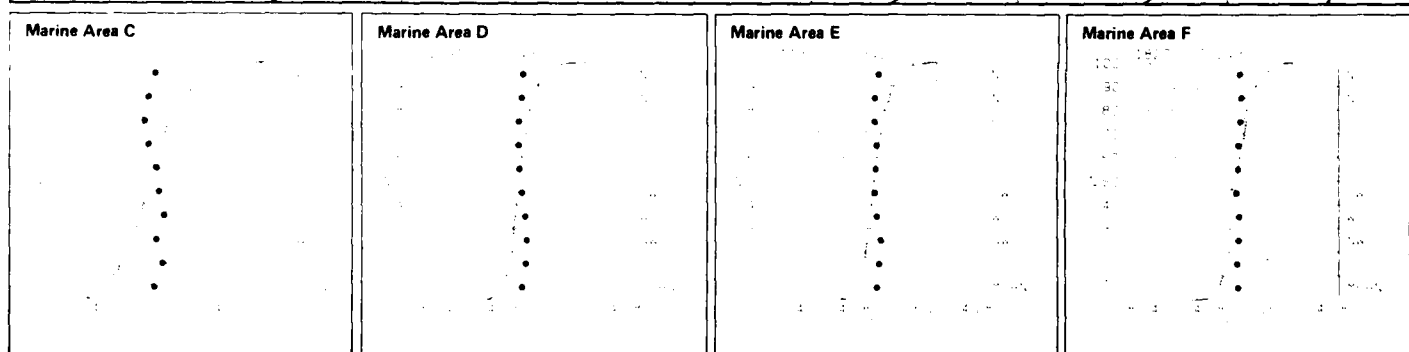
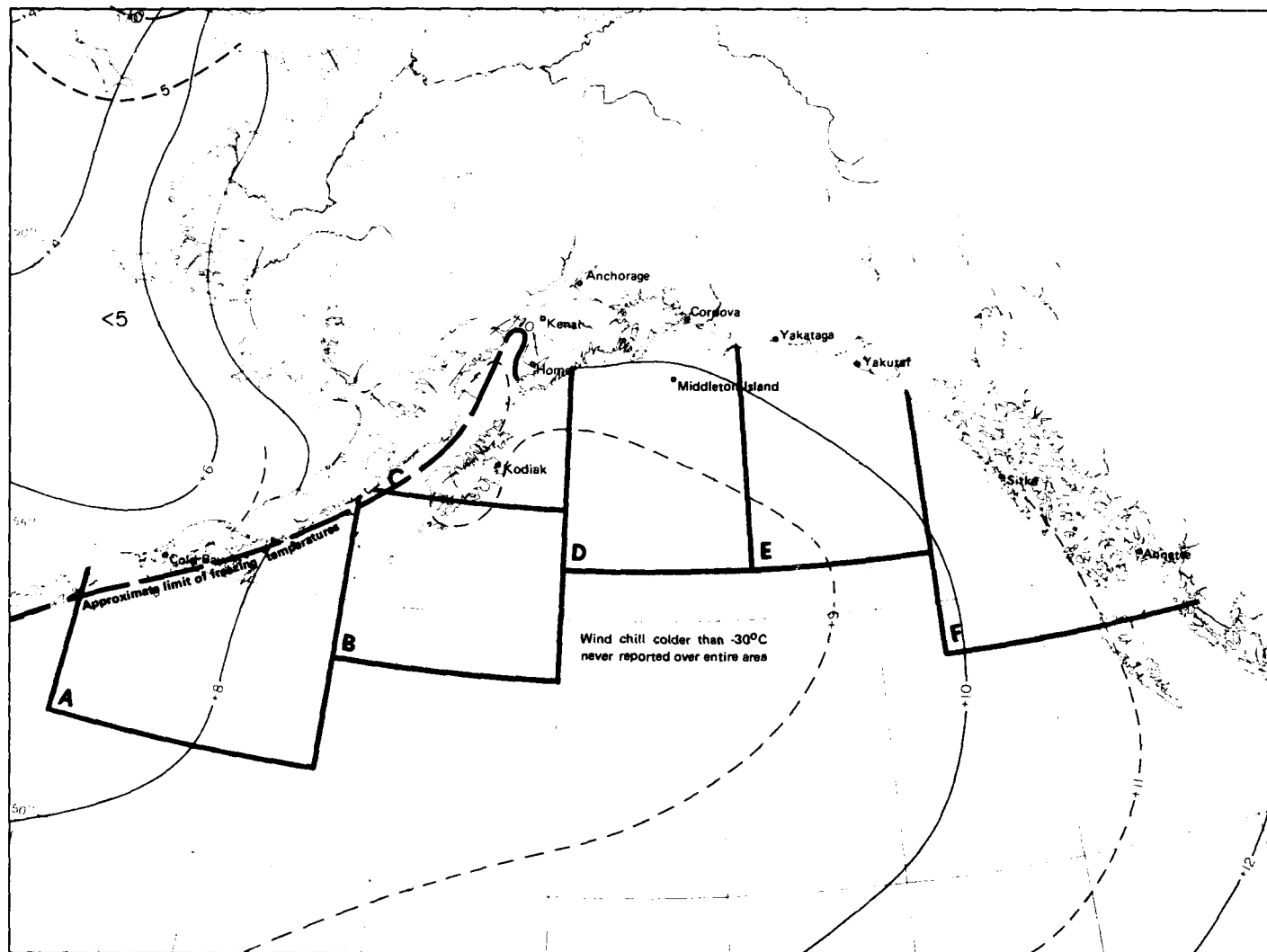


Marine Area B



June

3 Air temperature/wind direction

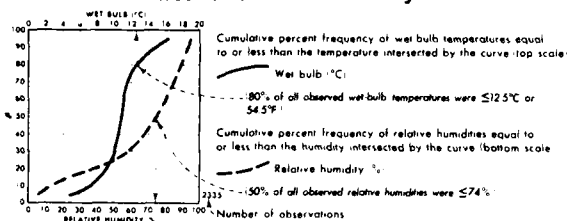


3 Air temperature mean and thresholds

June

Legend

Wet bulb/relative humidity

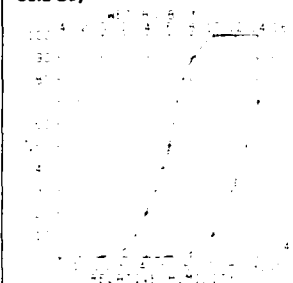


Map - Mean dew point temperature

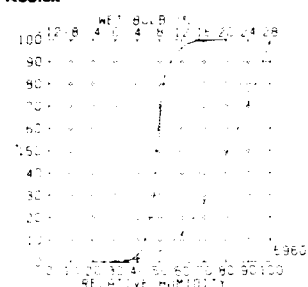
BLACK LINE - Mean dew point temperature (°C)

The observation count of the graph reflects those observations reporting both air and wet bulb temperatures; both are required in computing the relative humidity. The percentage of observations of either element greater than a given value can be obtained by subtracting the cumulative percent frequency of that value from 100%.

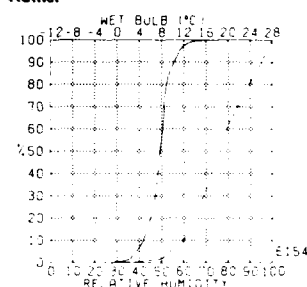
Cold Bay



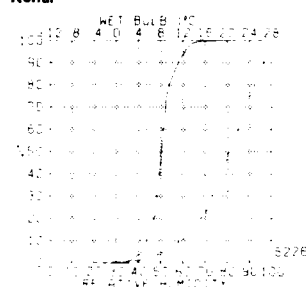
Kodiak



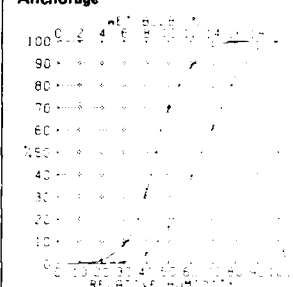
Homer



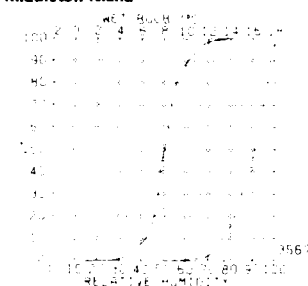
Kenai



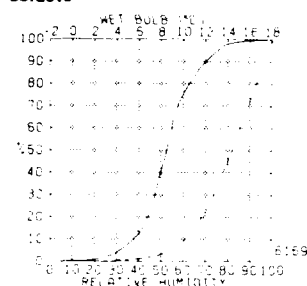
Anchorage



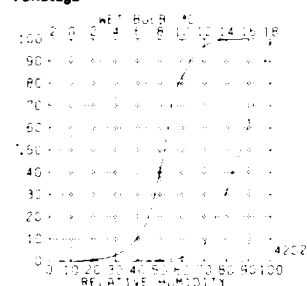
Middleton Island



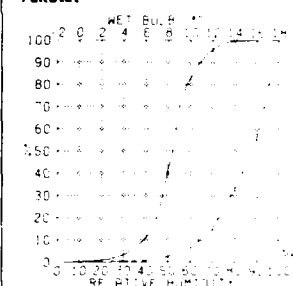
Cordova



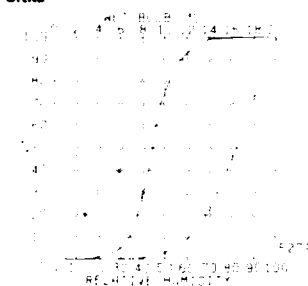
Yakutat



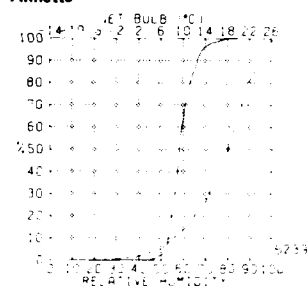
Yakutat



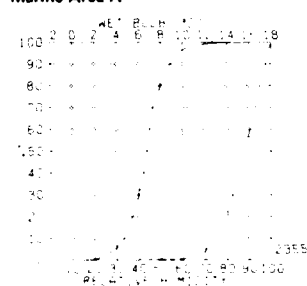
Sitka



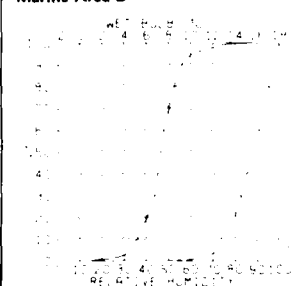
Annette

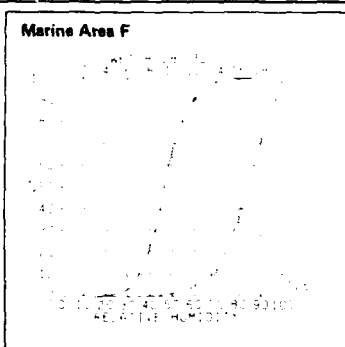
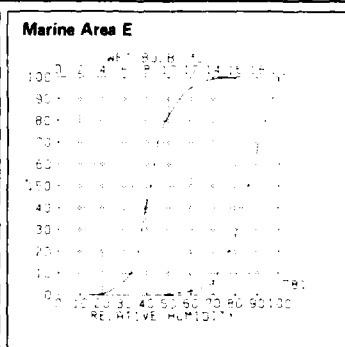
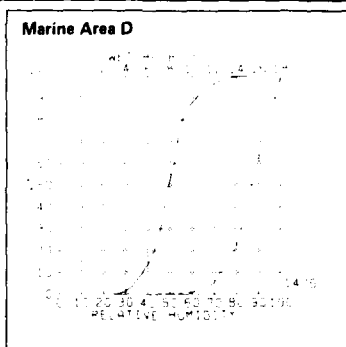
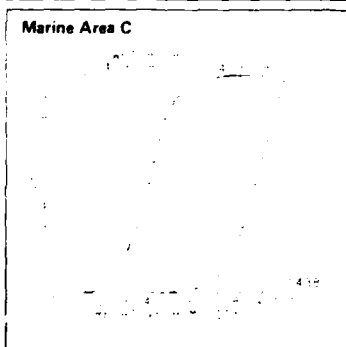
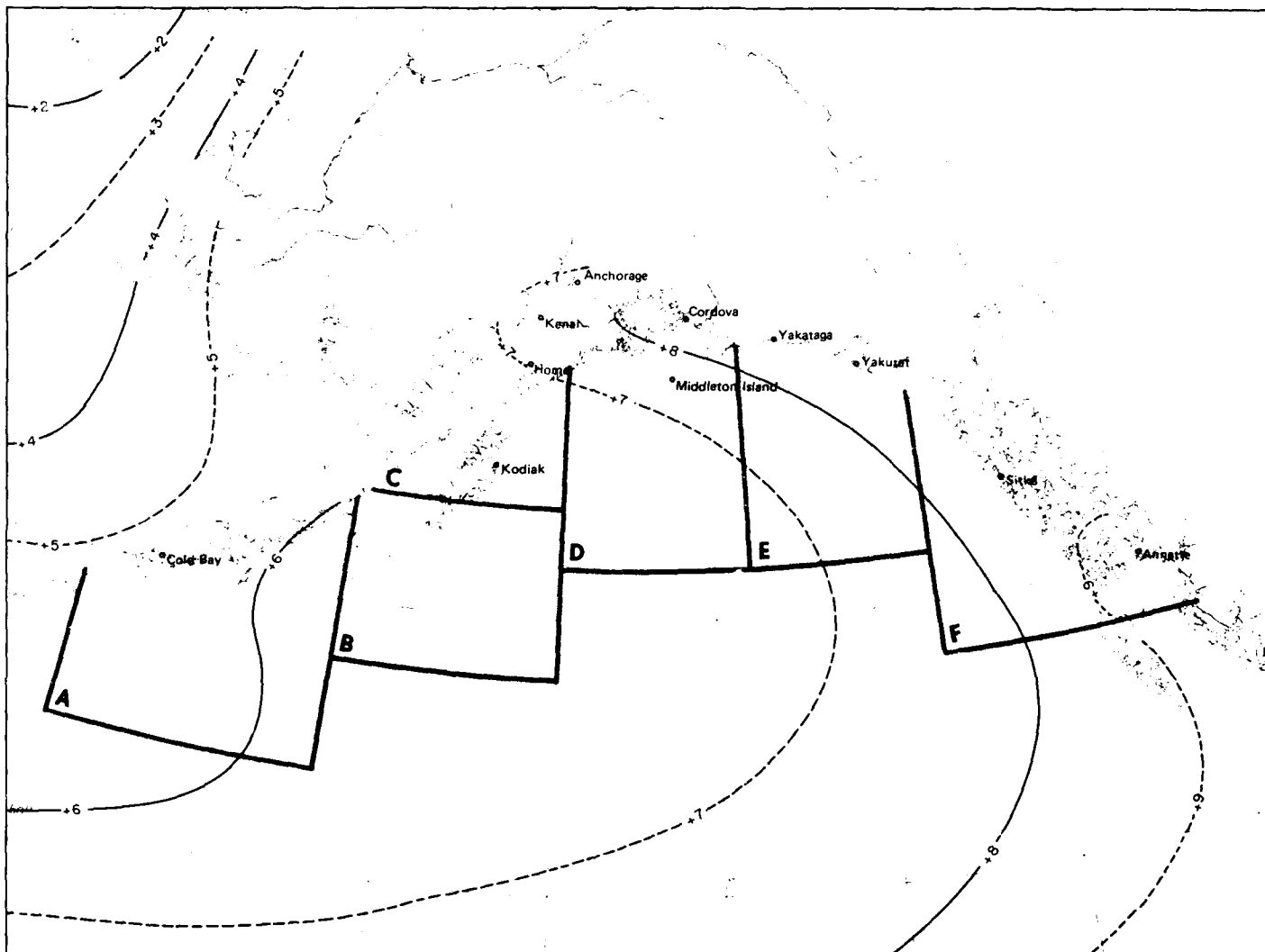


Marine Area A



Marine Area B

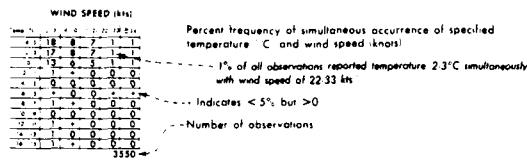




4 Mean dew point temperature

Legend

Air temperature/wind speed



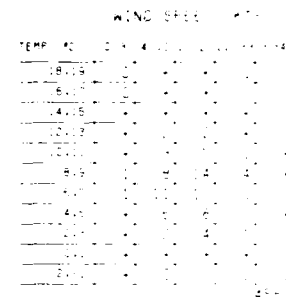
Map - Air temperature extremes (°C)

BLACK LINE Maximum 99% air temperature 1% of temperatures were greater than the given value

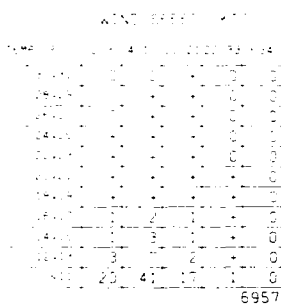
BLUE LINE Minimum 1% air temperature 1% of temperatures were equal to or less than the given value

The graph can be used to determine the extent of human discomfort from the combined effects of extreme heat or cold and winds or to estimate the likelihood of superstructure icing (icing potential increases as the air temperature drops below freezing and the winds increase above 10 knots (12 mph) and may become quite severe with temperatures equal to or less than -9°C (16°F) and winds equal to or greater than 34 knots (39 mph).

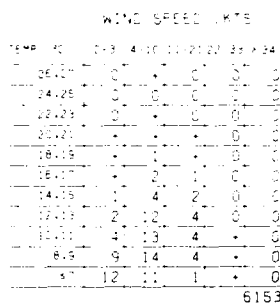
Cold Bay



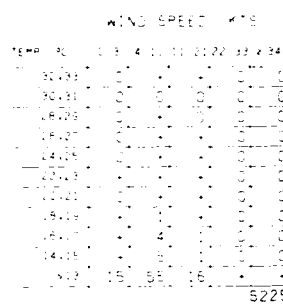
Kodiak



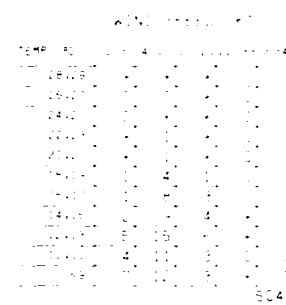
Homer



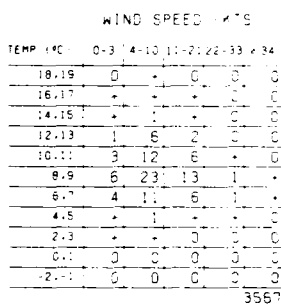
Kenai



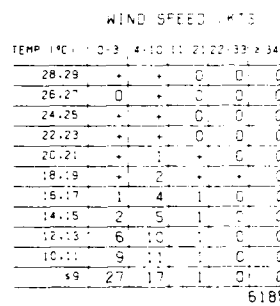
Anchorage



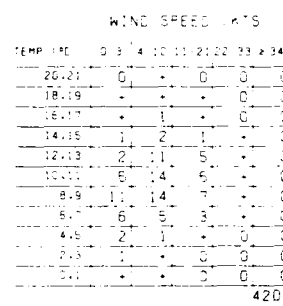
Middleton Island



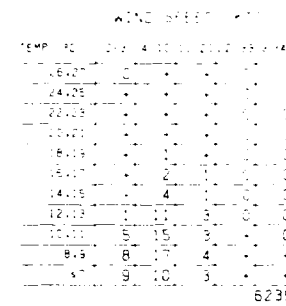
Cordova



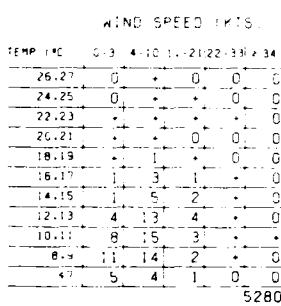
Yakutat



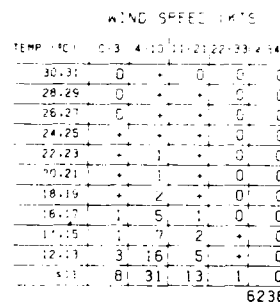
Yakutat



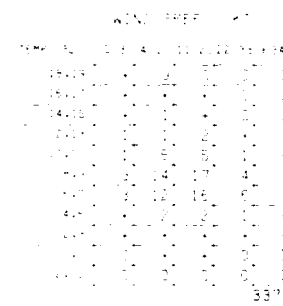
Sitka



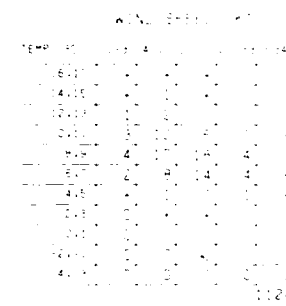
Annette



Marine Area A

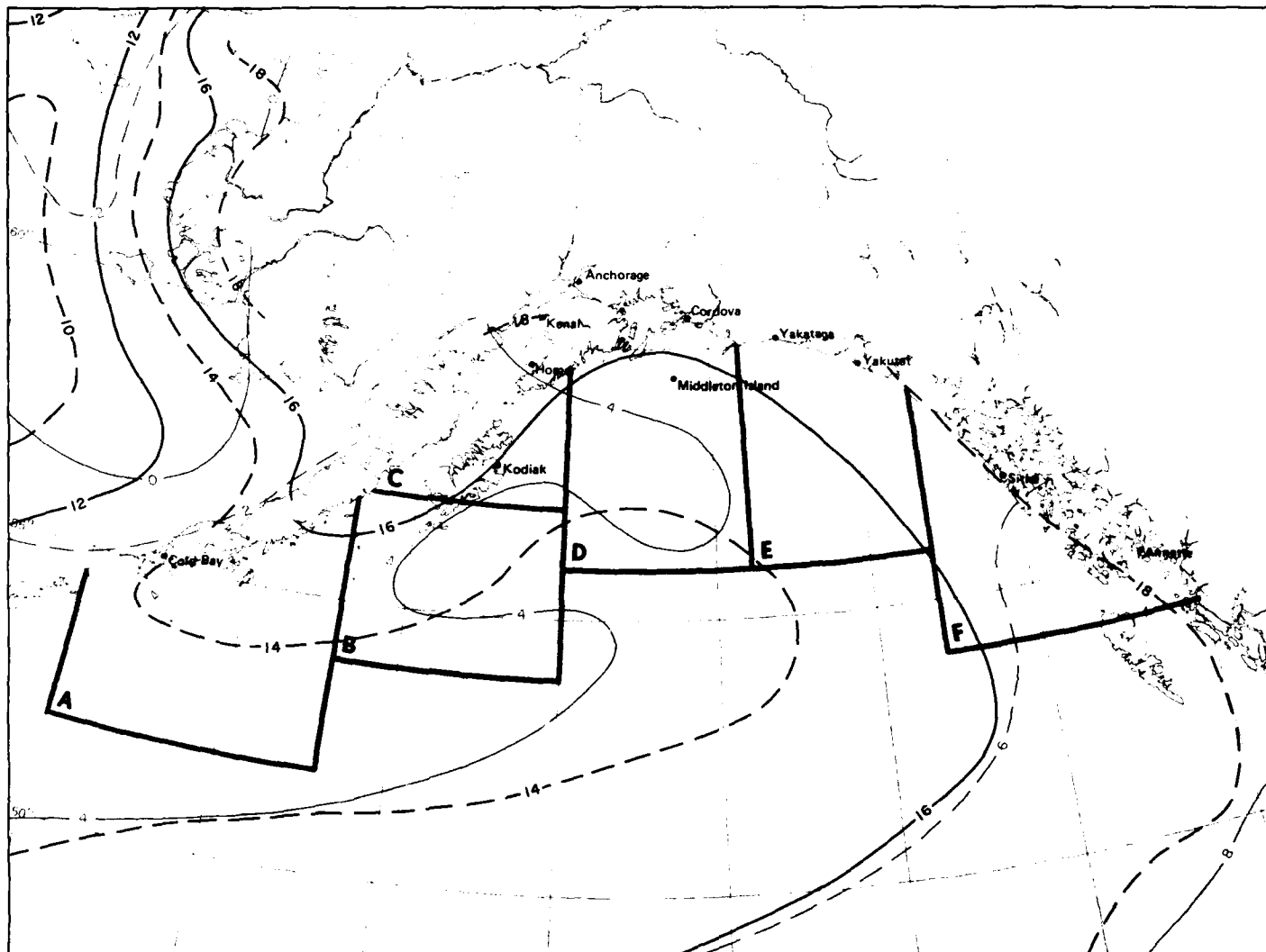


Marine Area B



June

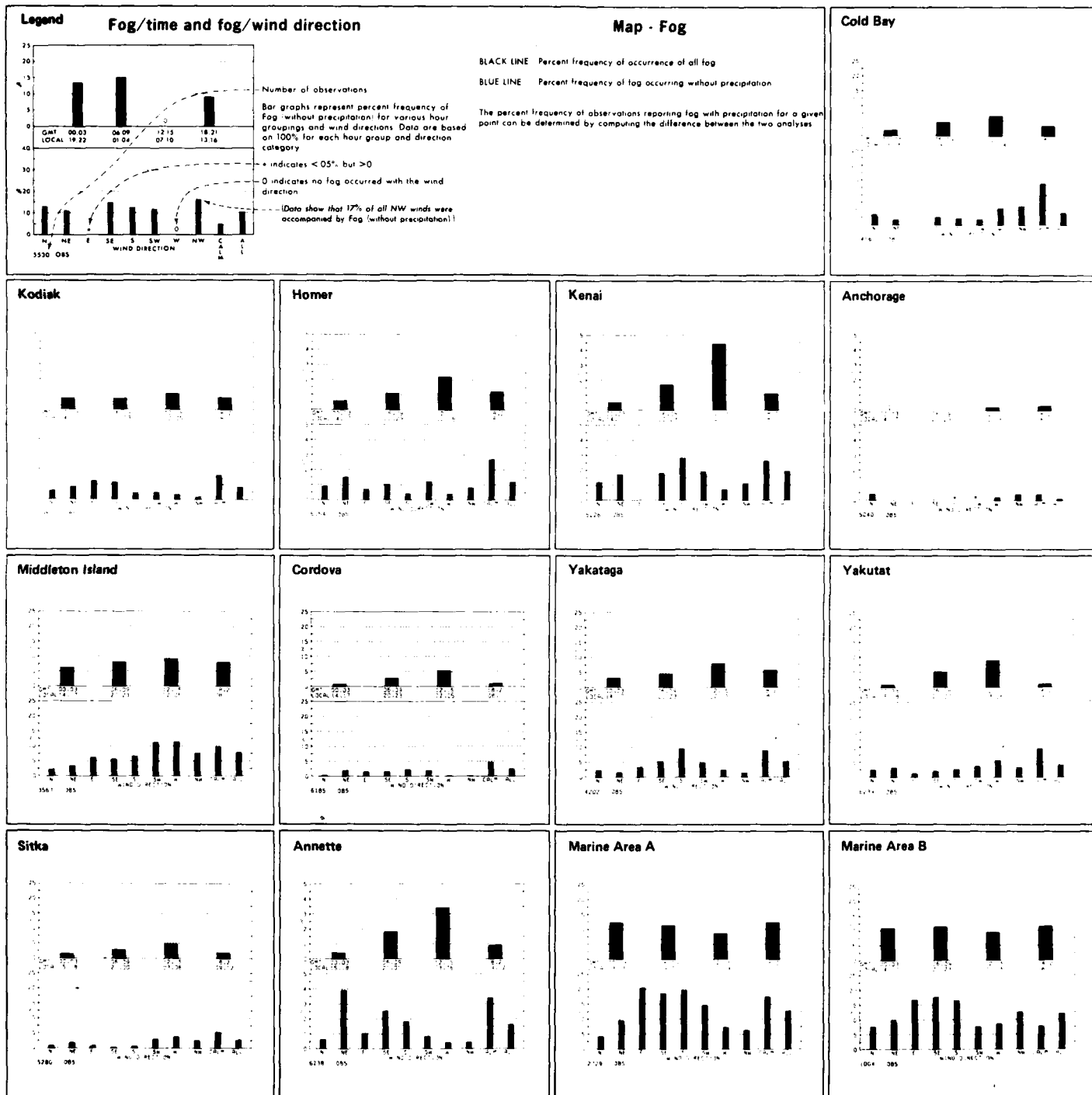
5 Air temperature/wind speed

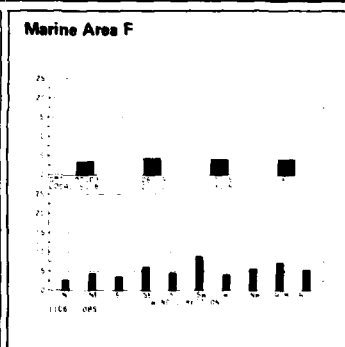
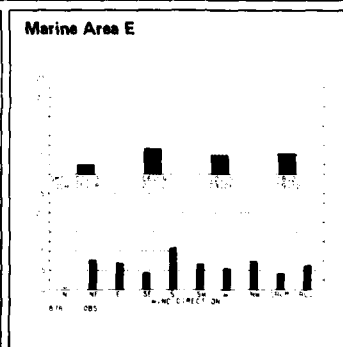
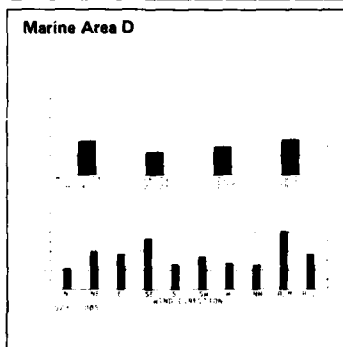
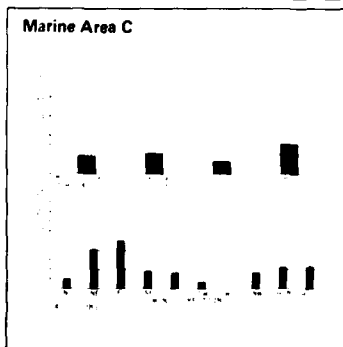
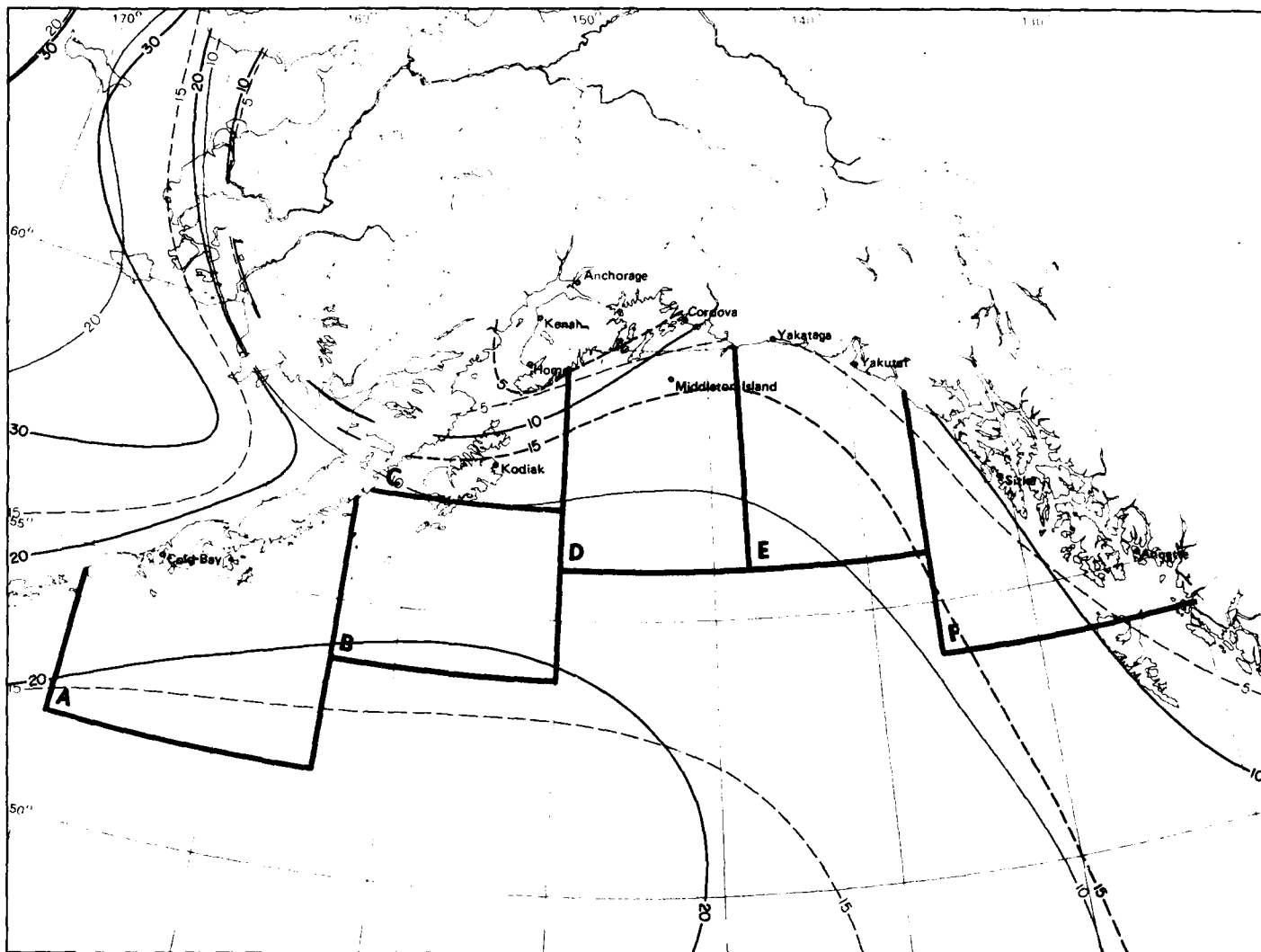


Marine Area C	Marine Area D	Marine Area E	Marine Area F
18 16 14 12 10 8 6 4 2 0 -2 -4 -6 -8 -10 -12 -14 -16 -18 -20 -22 -24 -26 -28 -30 -32 -34 -36 -38 -40 -42 -44 -46 -48 -50	18 16 14 12 10 8 6 4 2 0 -2 -4 -6 -8 -10 -12 -14 -16 -18 -20 -22 -24 -26 -28 -30 -32 -34 -36 -38 -40 -42 -44 -46 -48 -50	18 16 14 12 10 8 6 4 2 0 -2 -4 -6 -8 -10 -12 -14 -16 -18 -20 -22 -24 -26 -28 -30 -32 -34 -36 -38 -40 -42 -44 -46 -48 -50	18 16 14 12 10 8 6 4 2 0 -2 -4 -6 -8 -10 -12 -14 -16 -18 -20 -22 -24 -26 -28 -30 -32 -34 -36 -38 -40 -42 -44 -46 -48 -50

5 Air temperature extremes (°C)

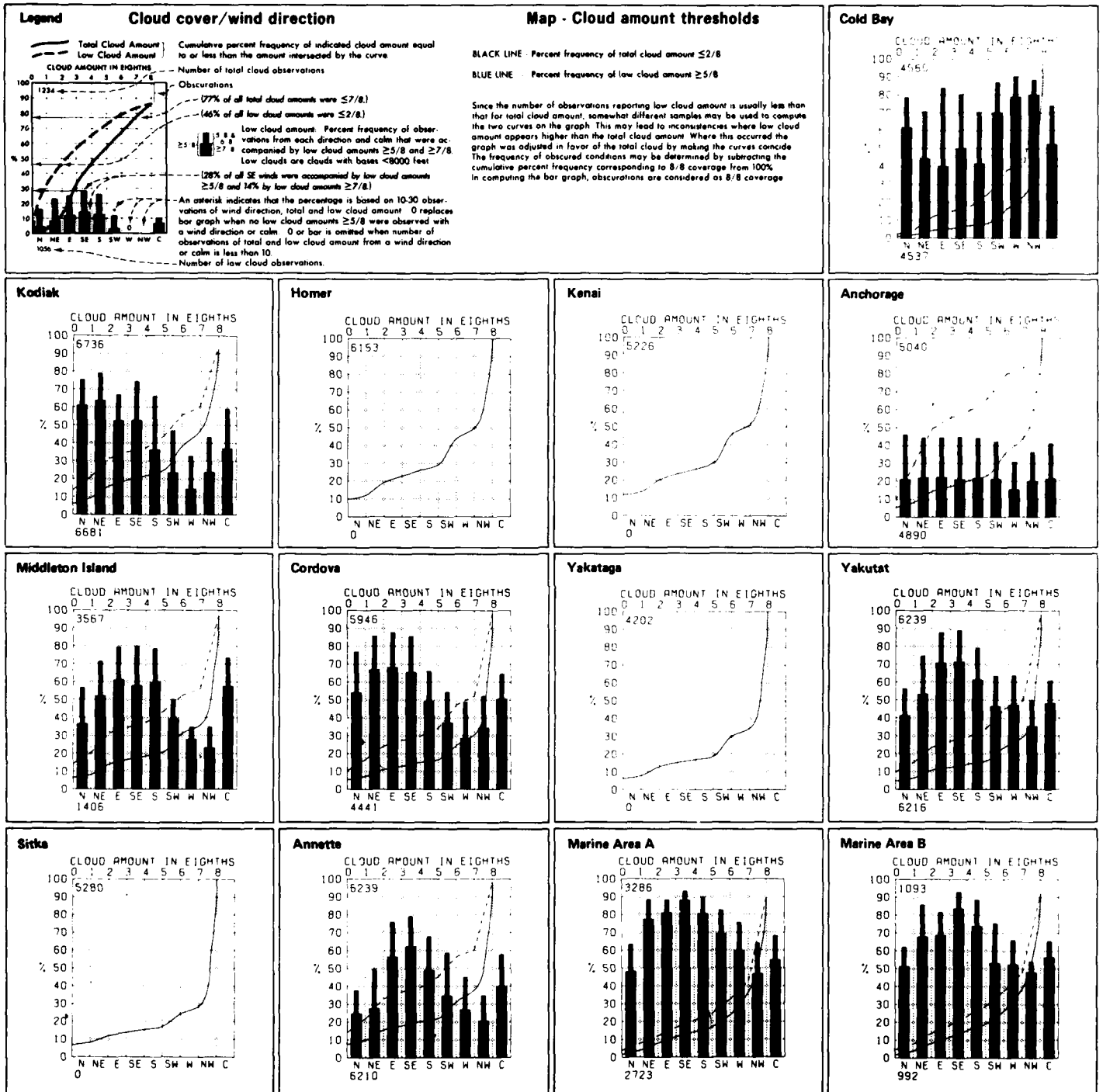
June





6 Fog

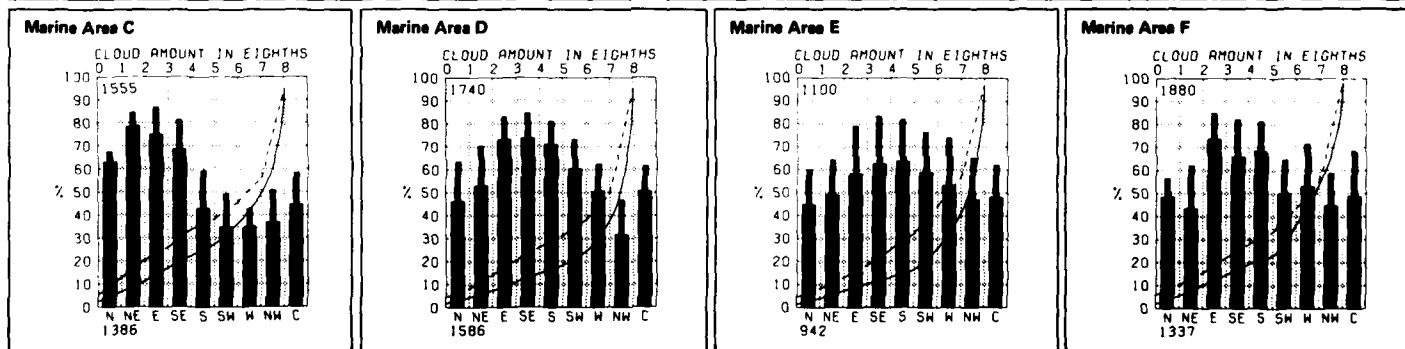
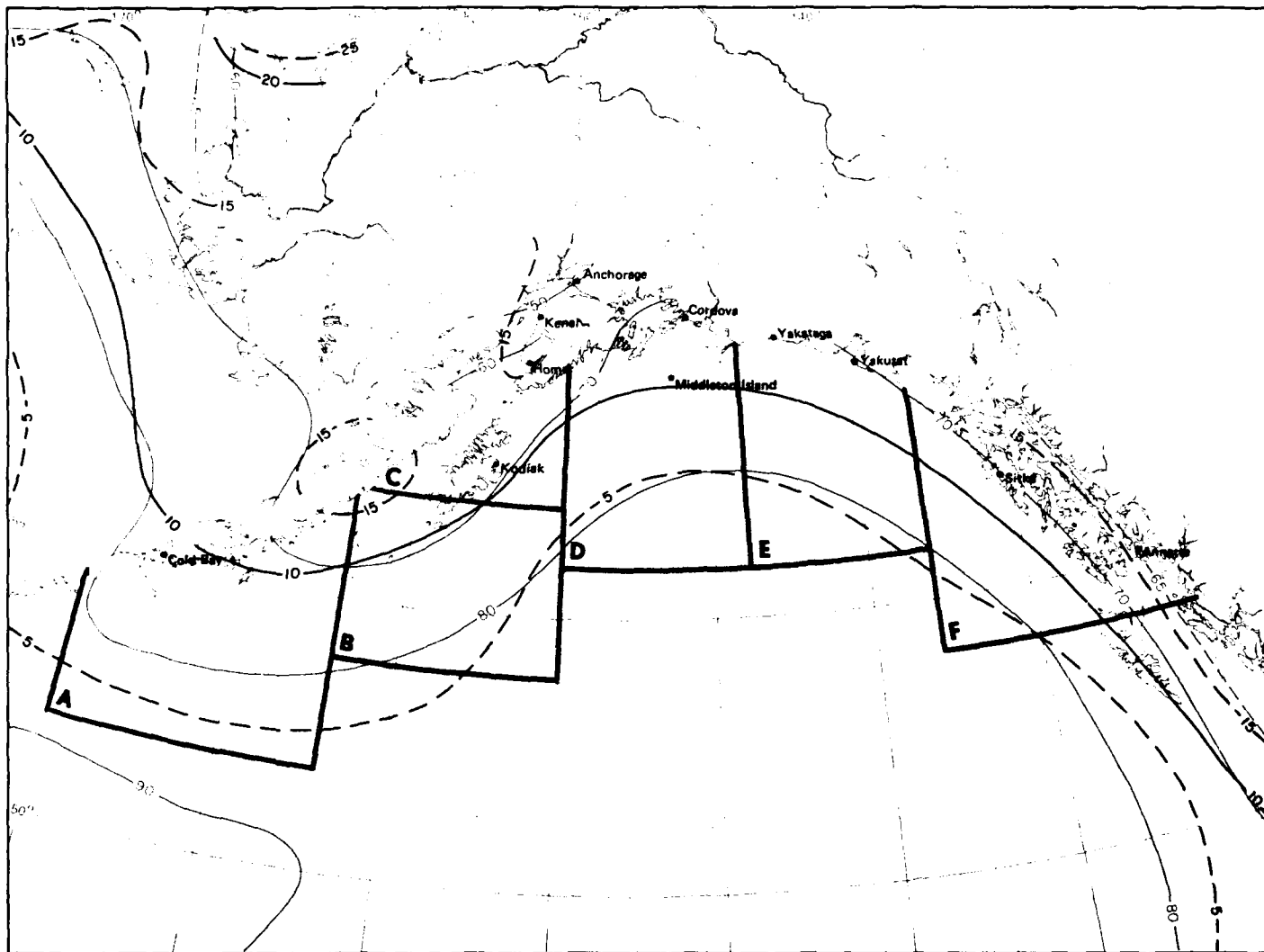
June



June

208

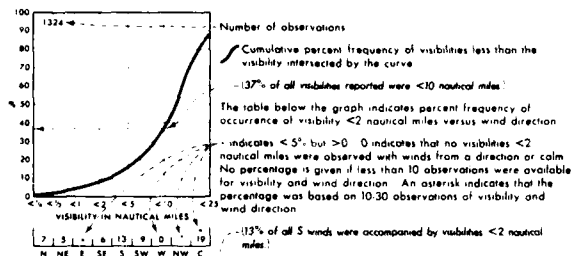
7 Cloud cover/wind direction



7 Cloud amount thresholds

Legend

Visibility/wind direction

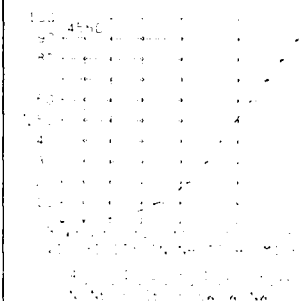


Map - Visibility thresholds

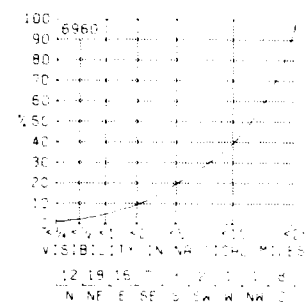
BLACK LINE Percent frequency of visibilities ≥ 5 nautical miles
BLUE LINE Percent frequency of visibilities ≤ 2 nautical miles

The percentage of visibility equal to or greater than a given value can be obtained from the graph by subtracting the cumulative percent frequency of that value from 100%. Visibility at sea is difficult to measure because of the lack of reference points. Also, some observers seem to report reduced visibilities at night because of darkness, though this tendency has abated in recent years. The coarseness of the coding intervals, however, tends to minimize serious biases in the summarized data. Visibilities greater than 25 nm should be interpreted cautiously because the earth's curvature makes it impossible to see 25 nm horizontally from the bridges of most ships.

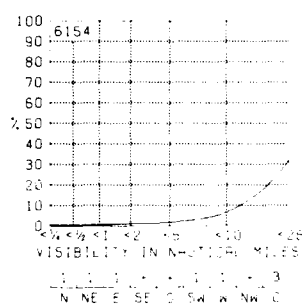
Cold Bay



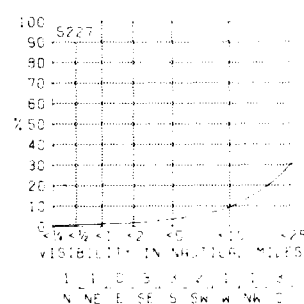
Kodiak



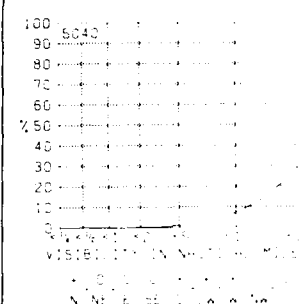
Homer



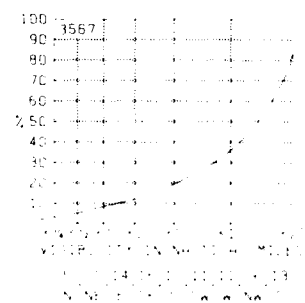
Kenai



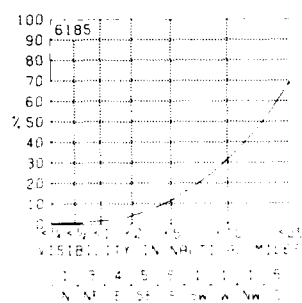
Anchorage



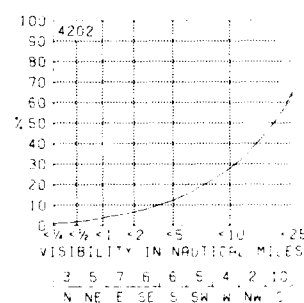
Middleton Island



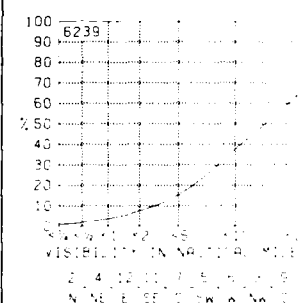
Cordova



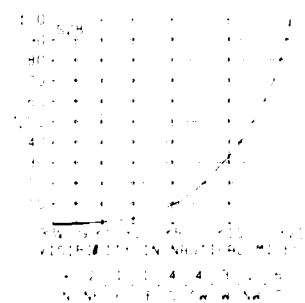
Yakutat



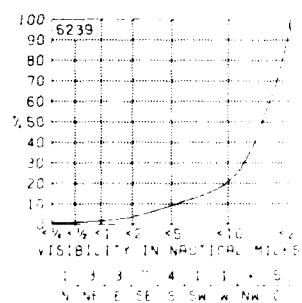
Yakutat



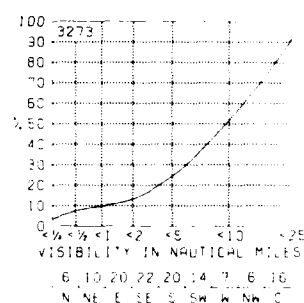
Sitka



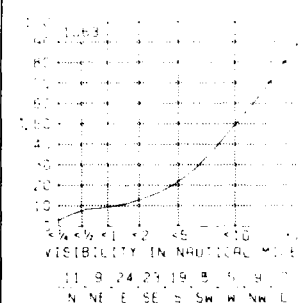
Annette



Marine Area A



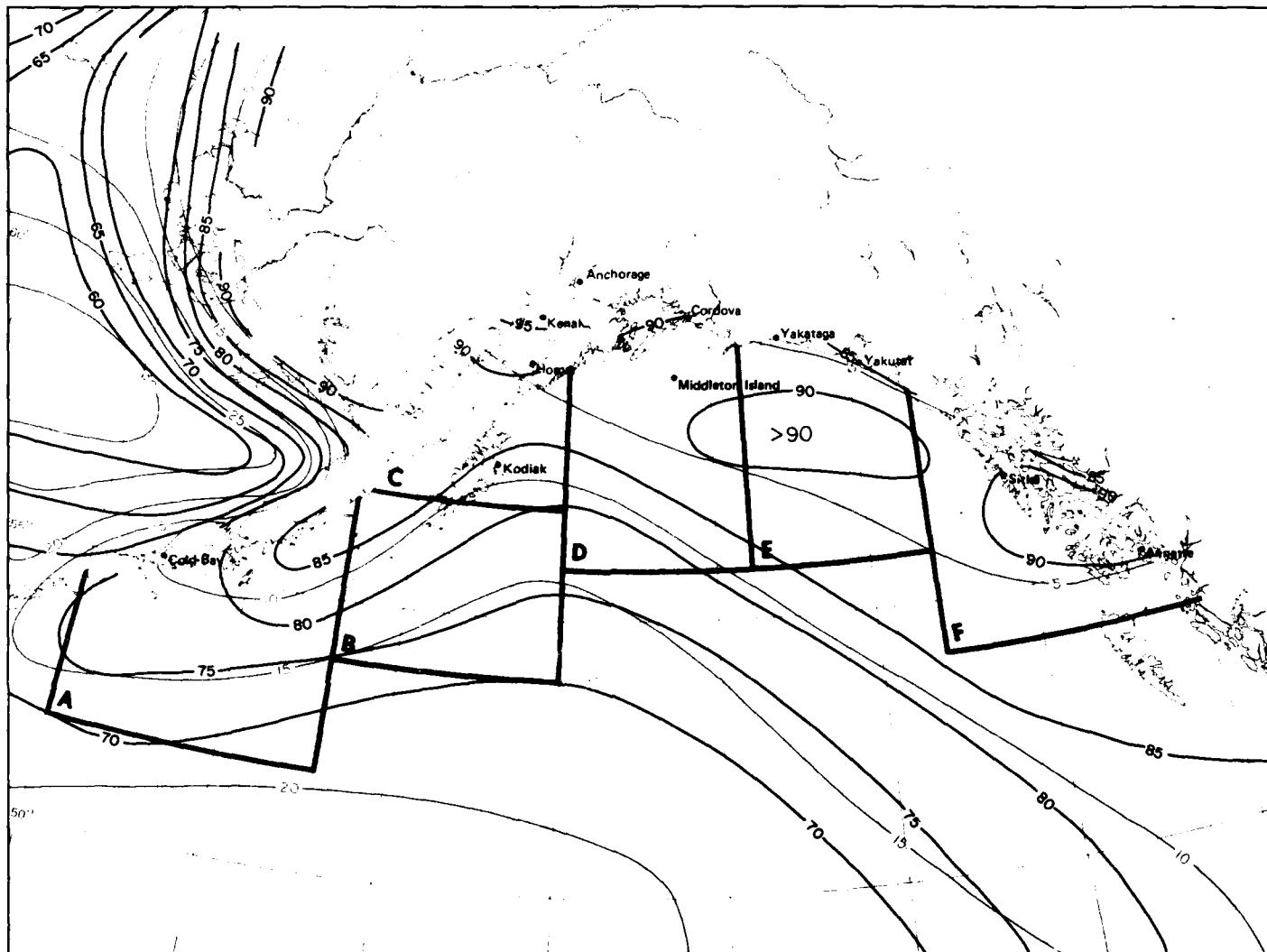
Marine Area B



June

210

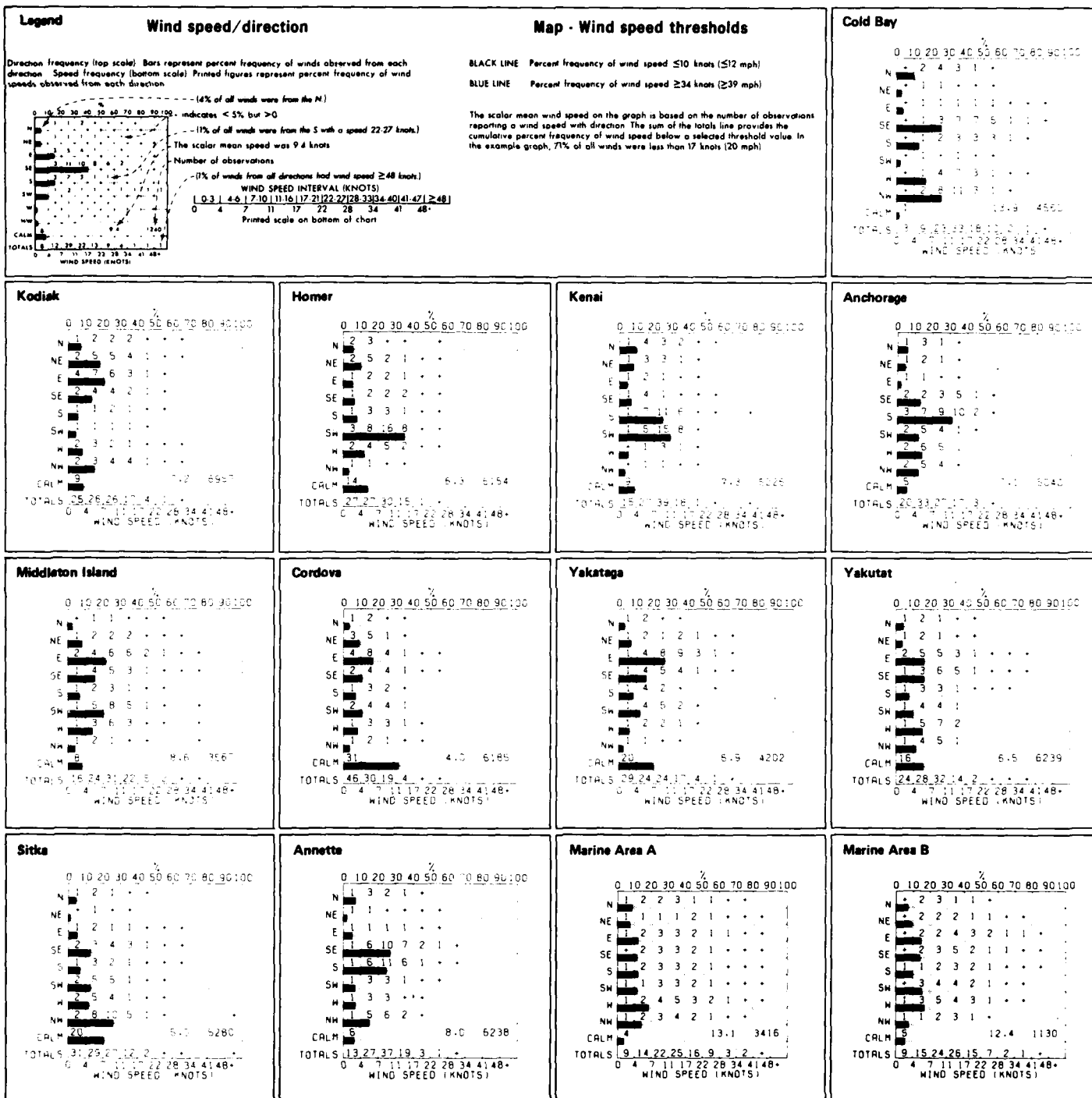
8 Visibility/wind direction



Marine Area C	Marine Area D	Marine Area E	Marine Area F
100 11-41 12-10 13-10 14-10 15-10 16-10 17-10 18-10 19-10 20-10 21-10 22-10 23-10 24-10 25-10 26-10 27-10 28-10 29-10 30-10 31-10 32-10 33-10 34-10 35-10 36-10 37-10 38-10 39-10 40-10 41-10 42-10 43-10 44-10 45-10 46-10 47-10 48-10 49-10 50-10 51-10 52-10 53-10 54-10 55-10 56-10 57-10 58-10 59-10 60-10 61-10 62-10 63-10 64-10 65-10 66-10 67-10 68-10 69-10 70-10 71-10 72-10 73-10 74-10 75-10 76-10 77-10 78-10 79-10 80-10 81-10 82-10 83-10 84-10 85-10 86-10 87-10 88-10 89-10 90-10 91-10 92-10 93-10 94-10 95-10 96-10 97-10 98-10 99-10 100-10	100 11-41 12-10 13-10 14-10 15-10 16-10 17-10 18-10 19-10 20-10 21-10 22-10 23-10 24-10 25-10 26-10 27-10 28-10 29-10 30-10 31-10 32-10 33-10 34-10 35-10 36-10 37-10 38-10 39-10 40-10 41-10 42-10 43-10 44-10 45-10 46-10 47-10 48-10 49-10 50-10 51-10 52-10 53-10 54-10 55-10 56-10 57-10 58-10 59-10 60-10 61-10 62-10 63-10 64-10 65-10 66-10 67-10 68-10 69-10 70-10 71-10 72-10 73-10 74-10 75-10 76-10 77-10 78-10 79-10 80-10 81-10 82-10 83-10 84-10 85-10 86-10 87-10 88-10 89-10 90-10 91-10 92-10 93-10 94-10 95-10 96-10 97-10 98-10 99-10 100-10	100 11-41 12-10 13-10 14-10 15-10 16-10 17-10 18-10 19-10 20-10 21-10 22-10 23-10 24-10 25-10 26-10 27-10 28-10 29-10 30-10 31-10 32-10 33-10 34-10 35-10 36-10 37-10 38-10 39-10 40-10 41-10 42-10 43-10 44-10 45-10 46-10 47-10 48-10 49-10 50-10 51-10 52-10 53-10 54-10 55-10 56-10 57-10 58-10 59-10 60-10 61-10 62-10 63-10 64-10 65-10 66-10 67-10 68-10 69-10 70-10 71-10 72-10 73-10 74-10 75-10 76-10 77-10 78-10 79-10 80-10 81-10 82-10 83-10 84-10 85-10 86-10 87-10 88-10 89-10 90-10 91-10 92-10 93-10 94-10 95-10 96-10 97-10 98-10 99-10 100-10	100 11-41 12-10 13-10 14-10 15-10 16-10 17-10 18-10 19-10 20-10 21-10 22-10 23-10 24-10 25-10 26-10 27-10 28-10 29-10 30-10 31-10 32-10 33-10 34-10 35-10 36-10 37-10 38-10 39-10 40-10 41-10 42-10 43-10 44-10 45-10 46-10 47-10 48-10 49-10 50-10 51-10 52-10 53-10 54-10 55-10 56-10 57-10 58-10 59-10 60-10 61-10 62-10 63-10 64-10 65-10 66-10 67-10 68-10 69-10 70-10 71-10 72-10 73-10 74-10 75-10 76-10 77-10 78-10 79-10 80-10 81-10 82-10 83-10 84-10 85-10 86-10 87-10 88-10 89-10 90-10 91-10 92-10 93-10 94-10 95-10 96-10 97-10 98-10 99-10 100-10

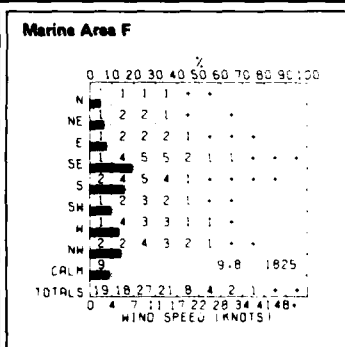
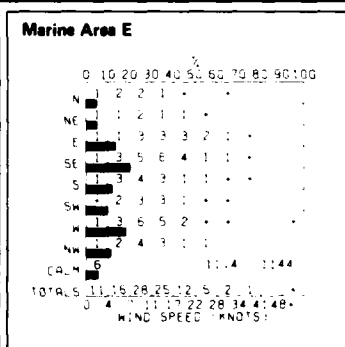
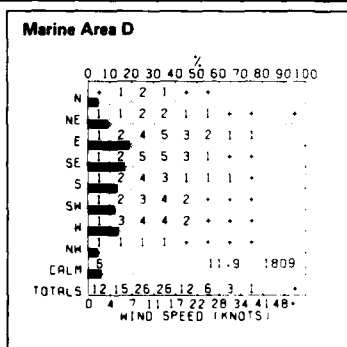
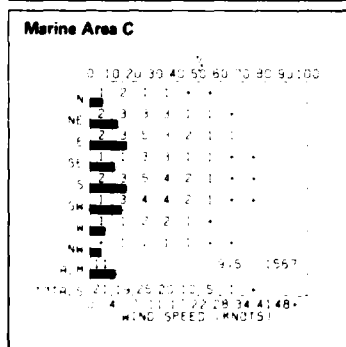
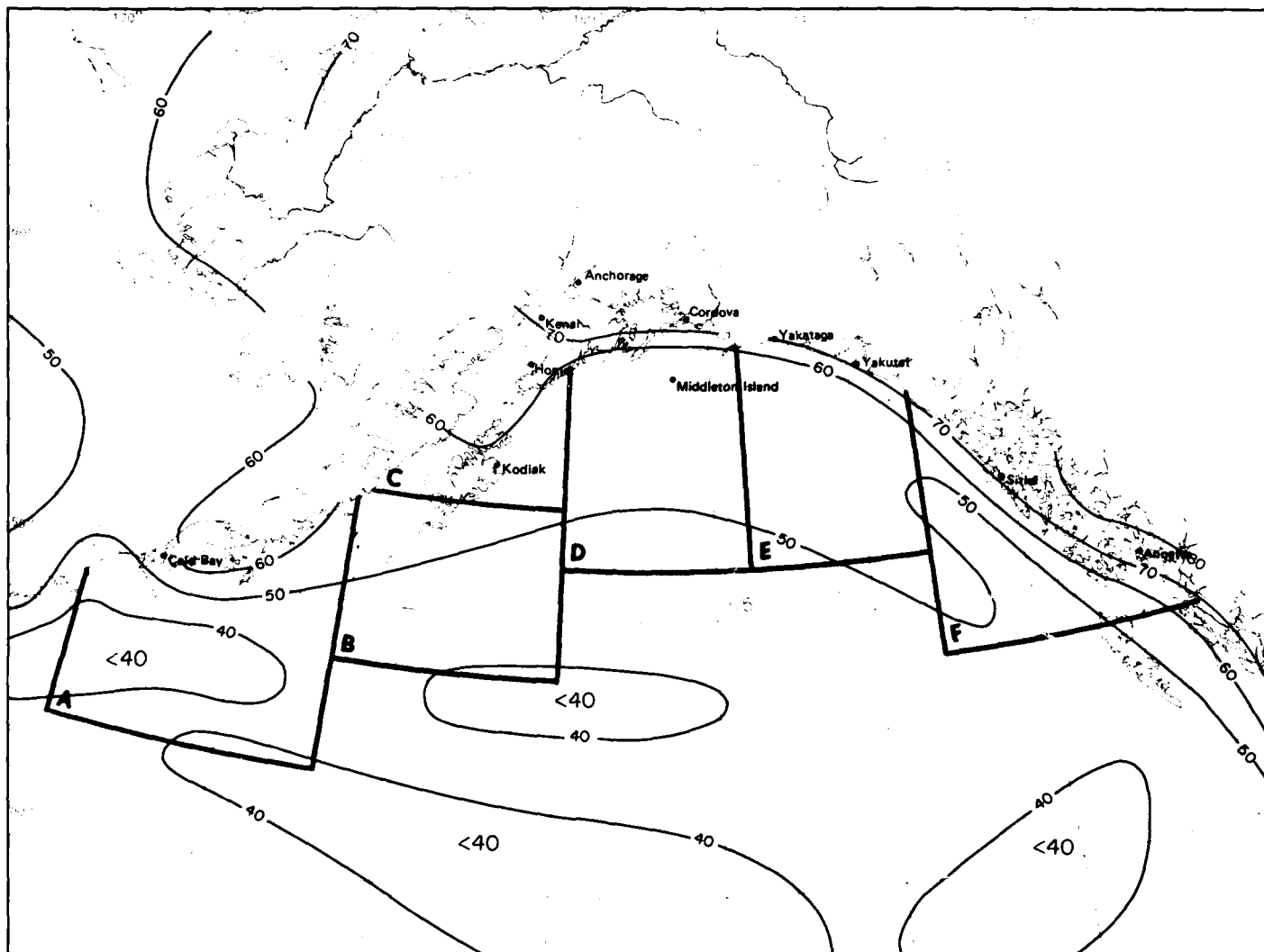
8 Visibility thresholds

June



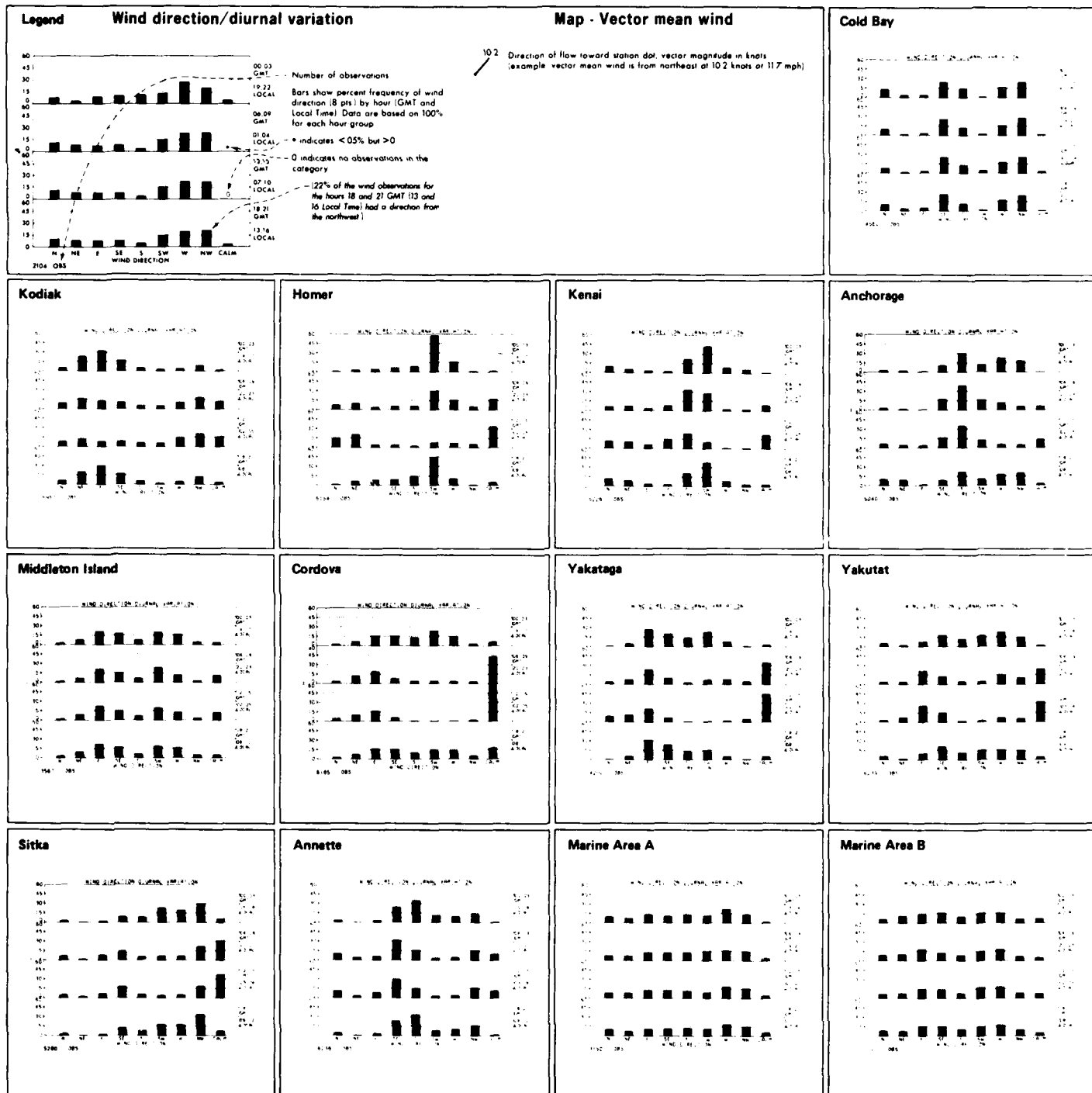
June

9 Wind speed/direction



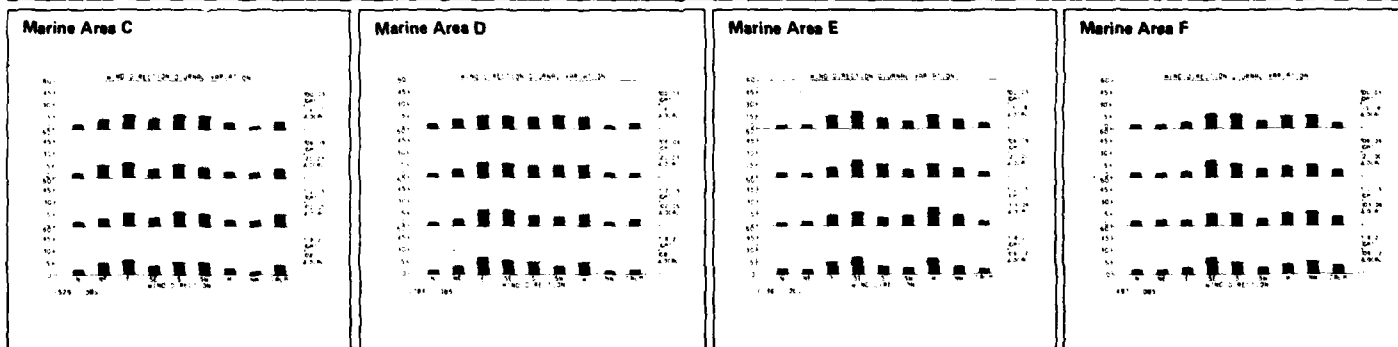
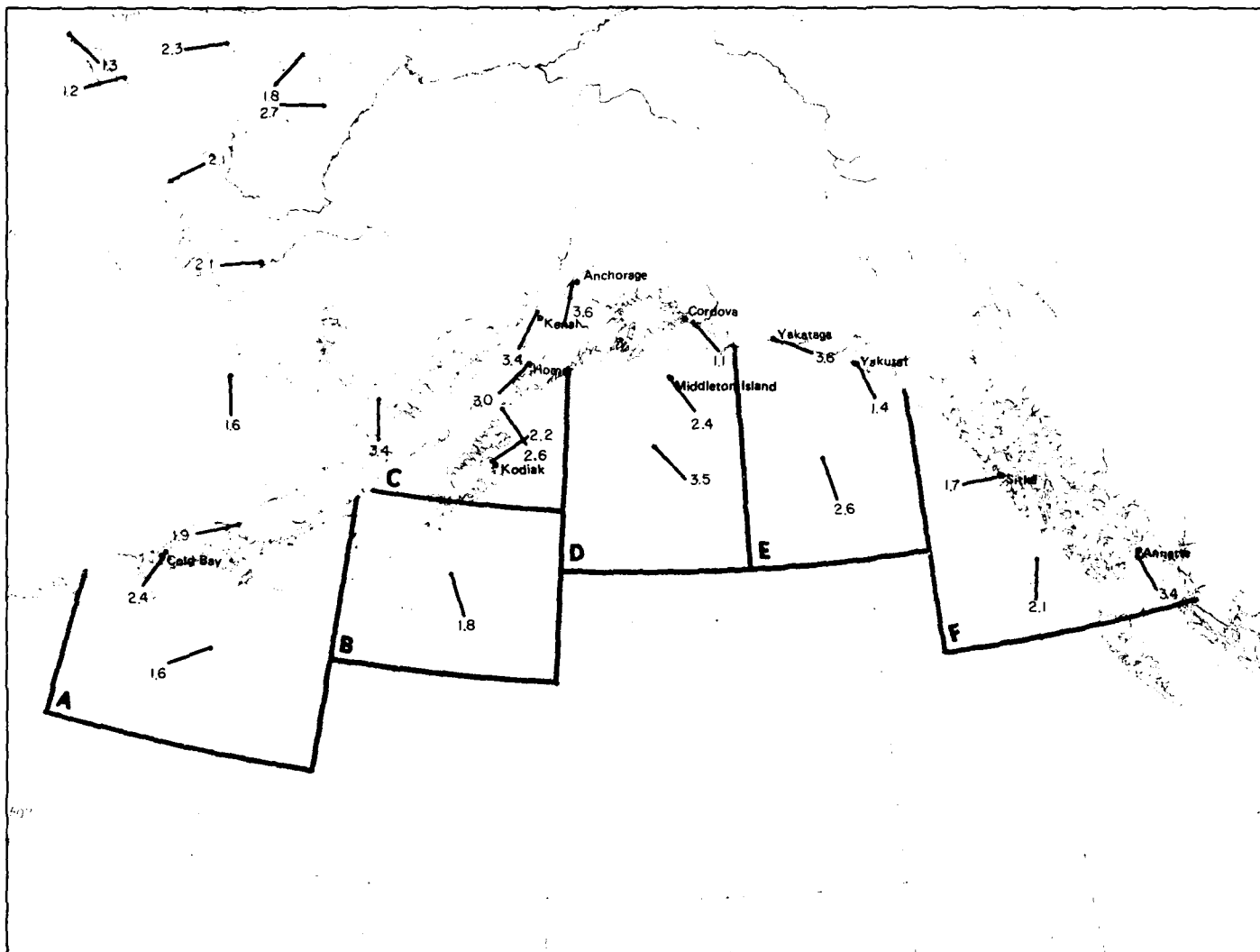
9 Wind speed thresholds

June

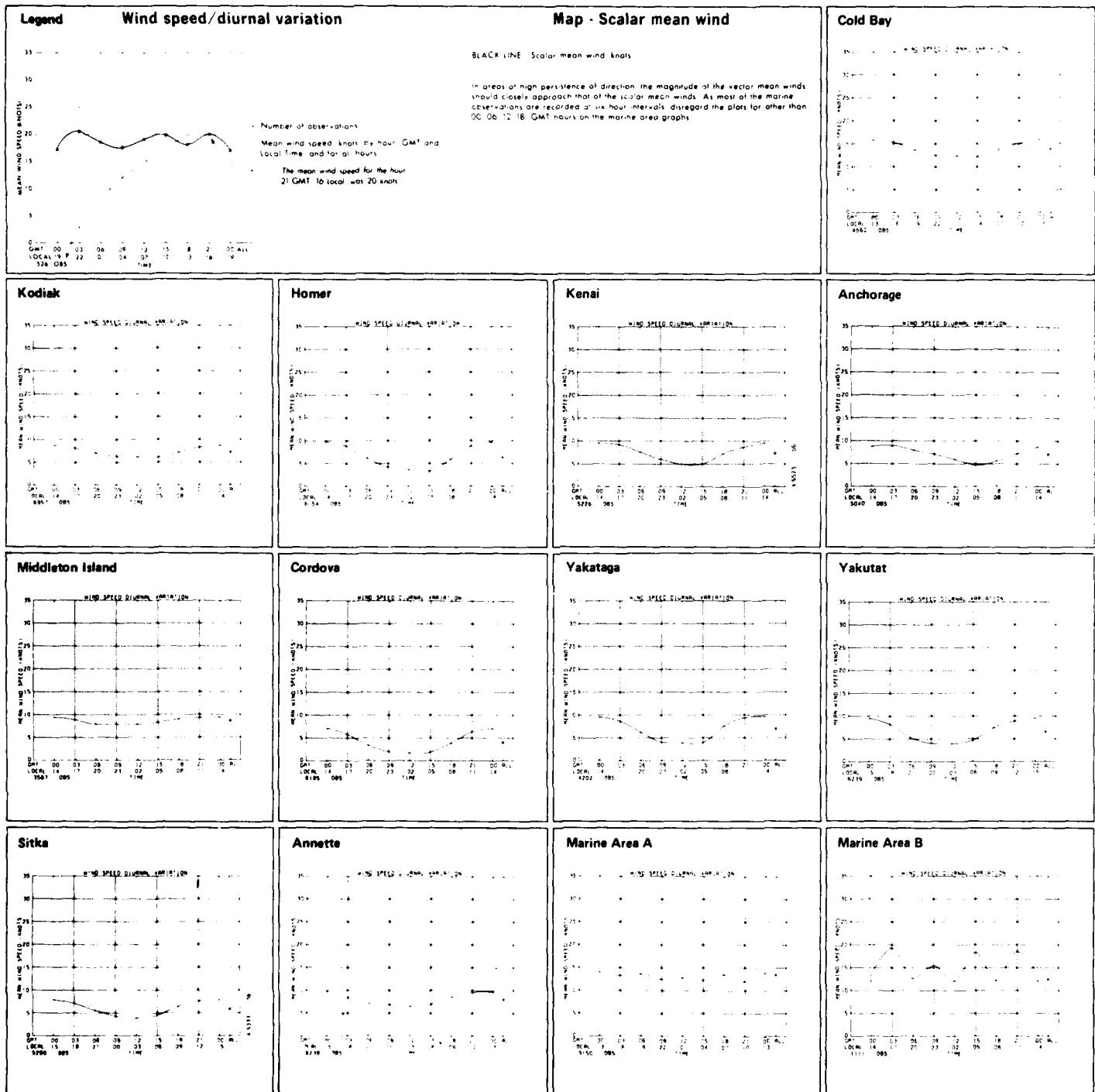


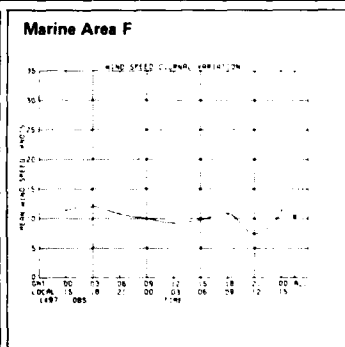
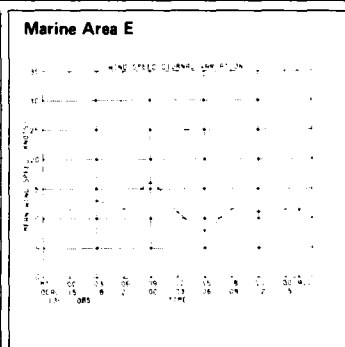
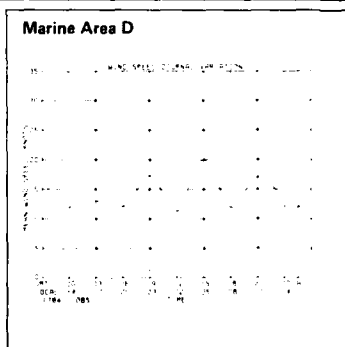
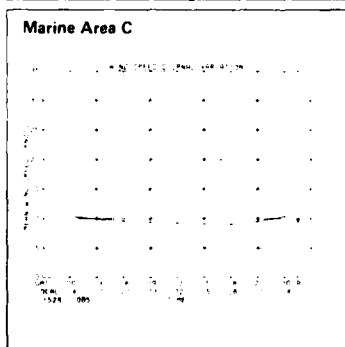
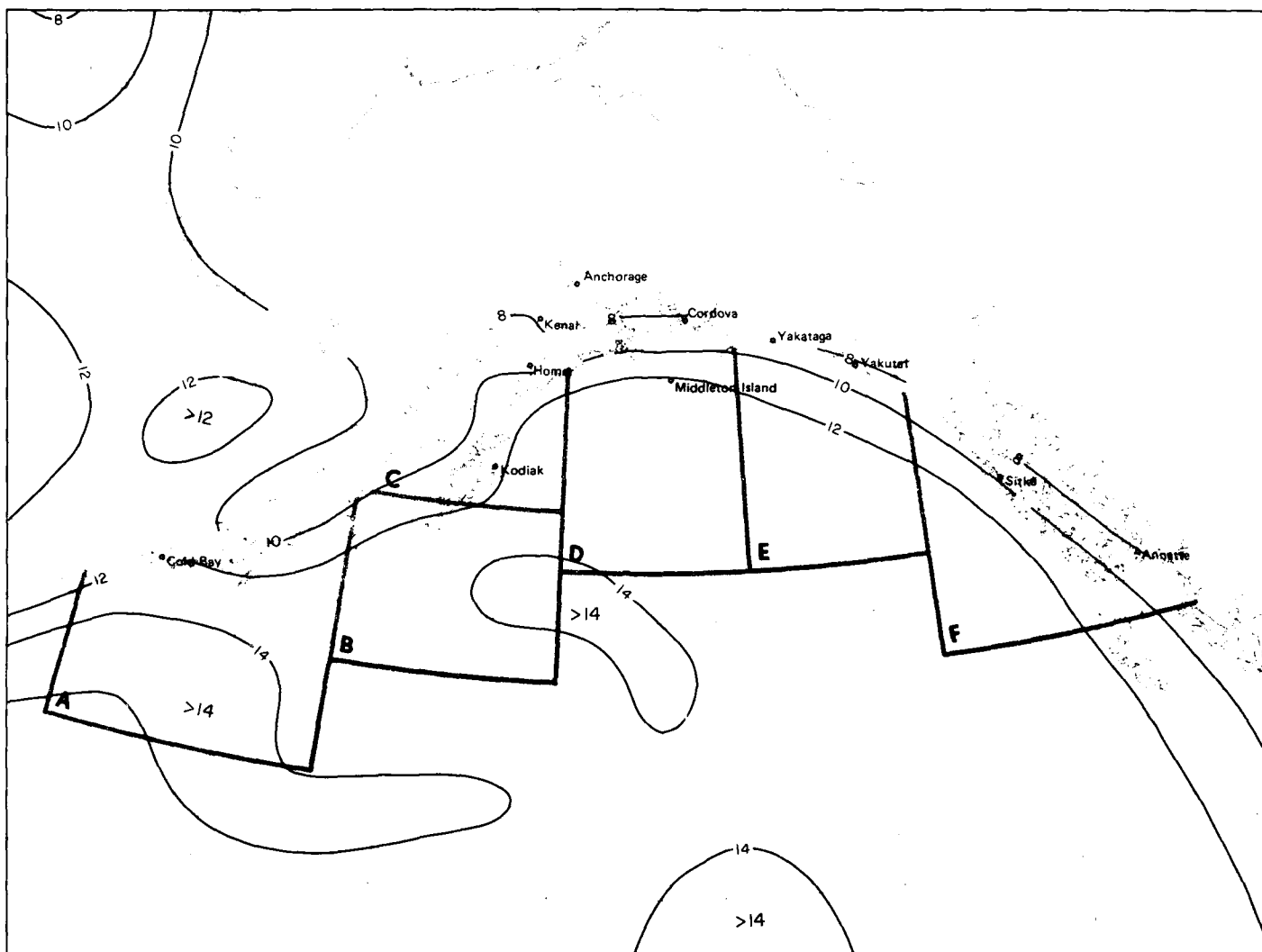
June

10 Wind direction/diurnal variation

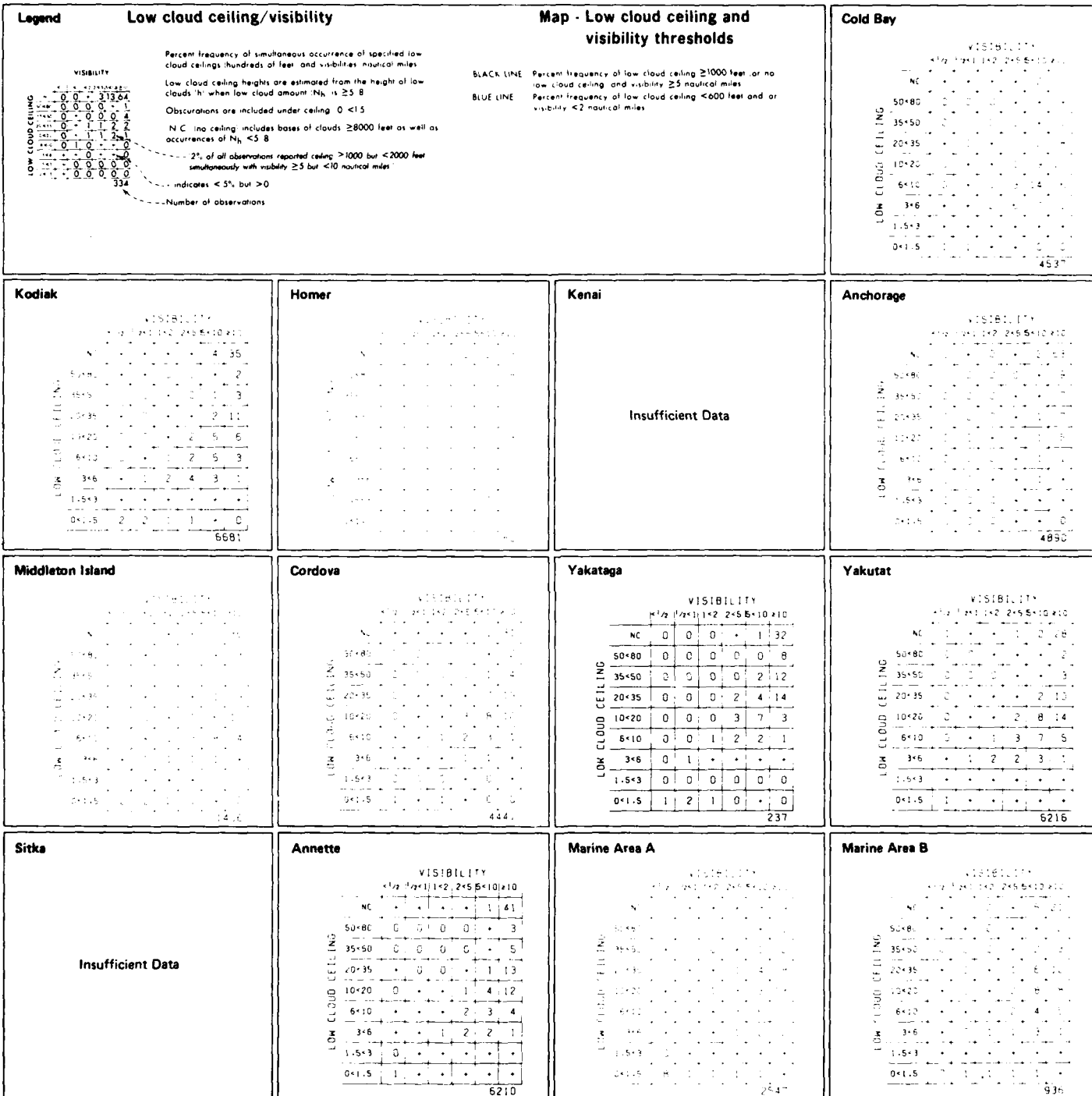


10 Vector mean wind



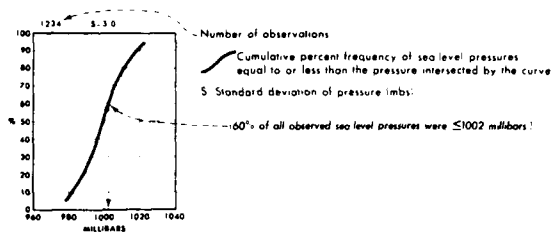


11 Scalar mean wind



Legend

Sea level pressure

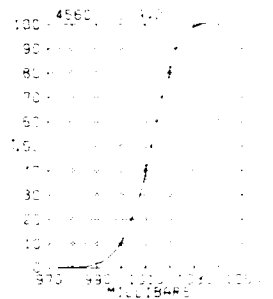


Map - Mean sea level pressure

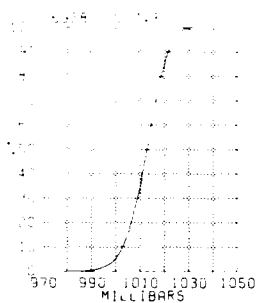
BLACK LINE Mean sea level pressure, millibars

Sea level pressure is one of the most frequently recorded elements but one of the least accurate because of instrument and coding errors. Despite the inaccuracies of the individual readings, however, the large scale patterns and mean gradients of the isopleth analyses are relatively accurate.

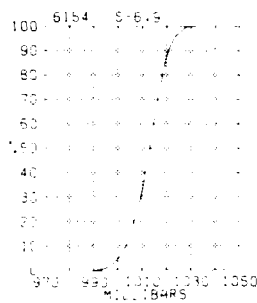
Cold Bay



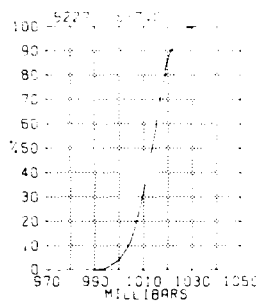
Kodiak



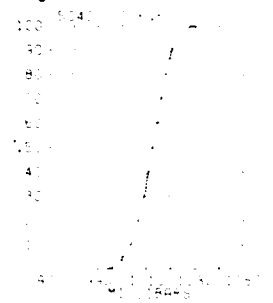
Homer



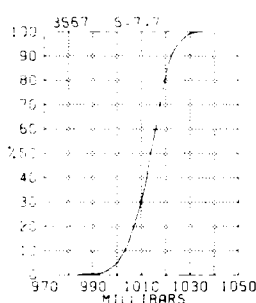
Kenai



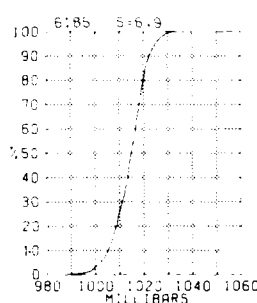
Anchorage



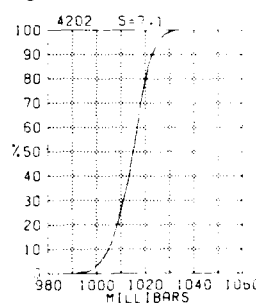
Middleton Island



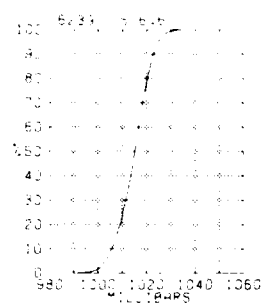
Cordova



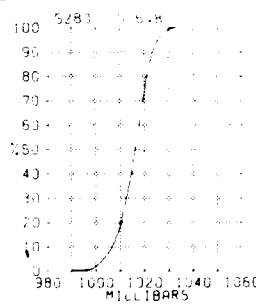
Yakutat



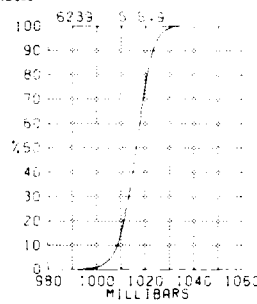
Yakutat



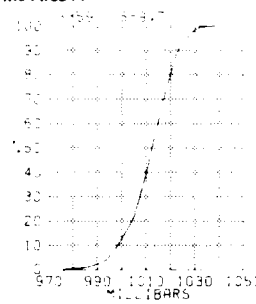
Sitka



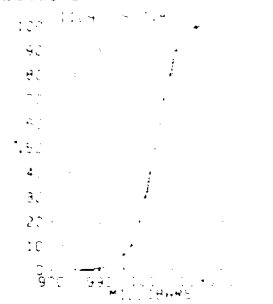
Annette



Marine Area A

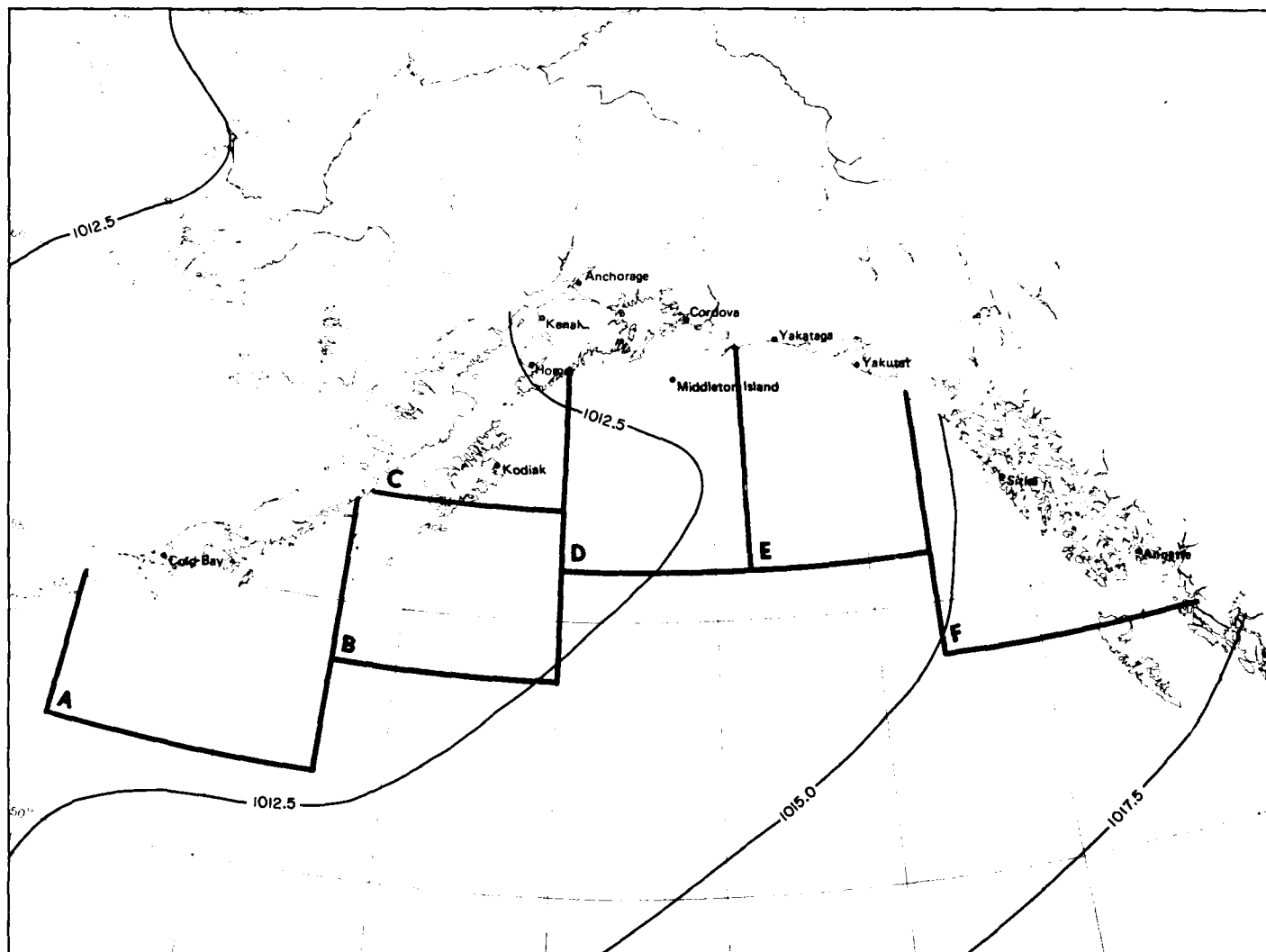


Marine Area B



June

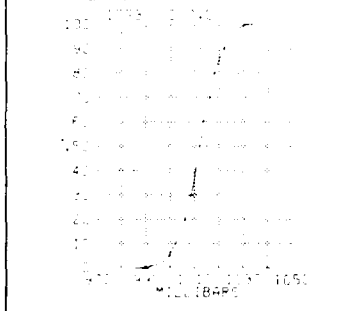
13 Sea level pressure



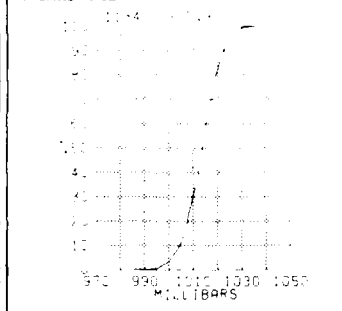
Marine Area C



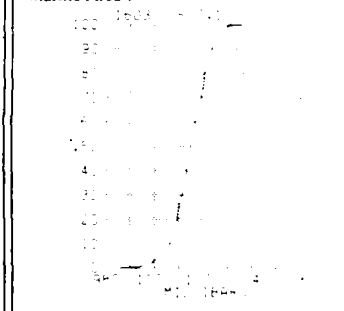
Marine Area D



Marine Area E

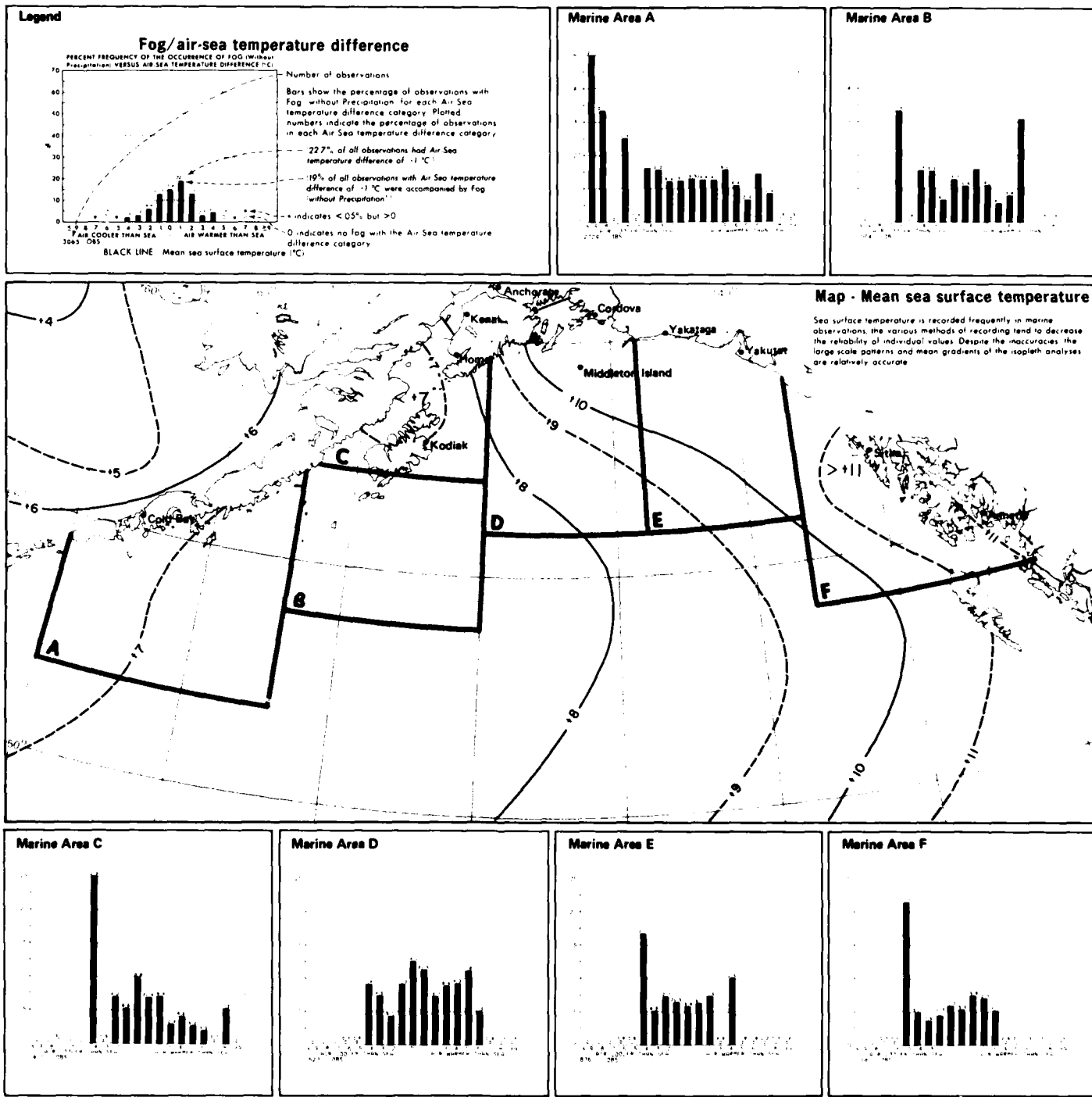


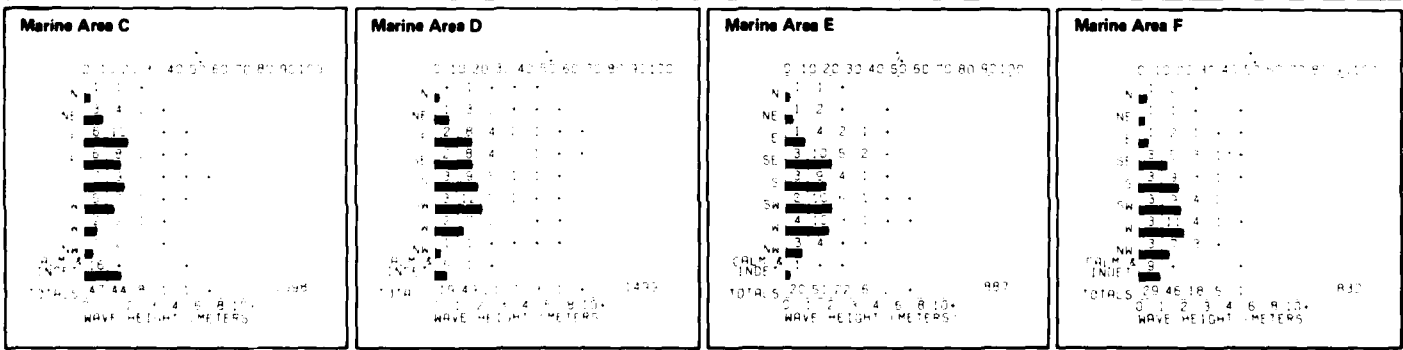
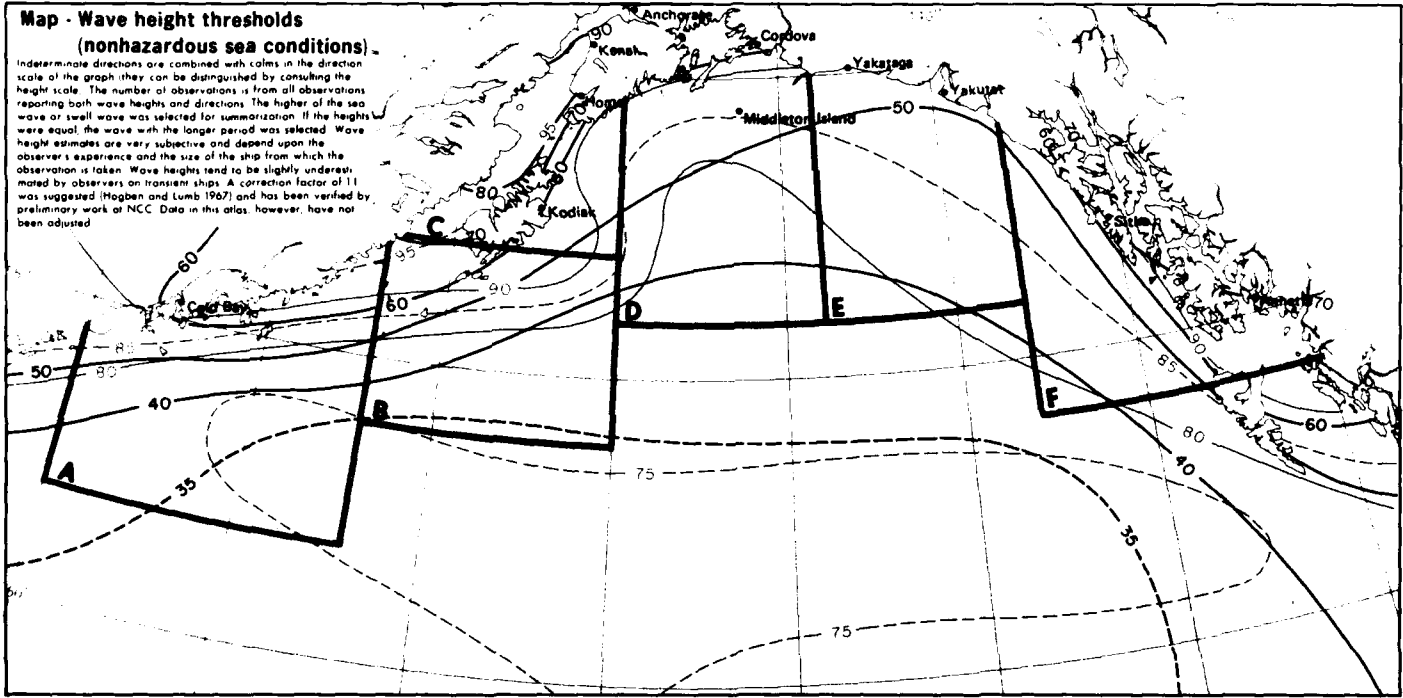
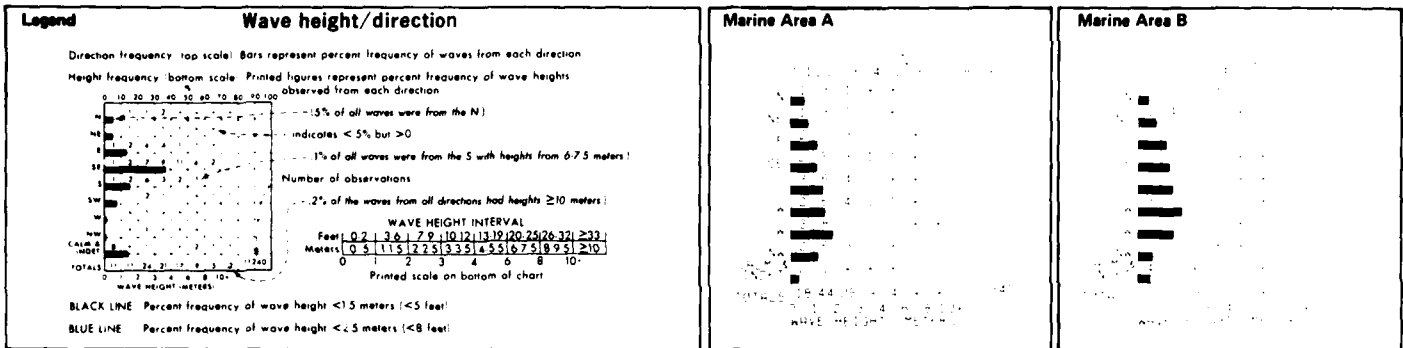
Marine Area F

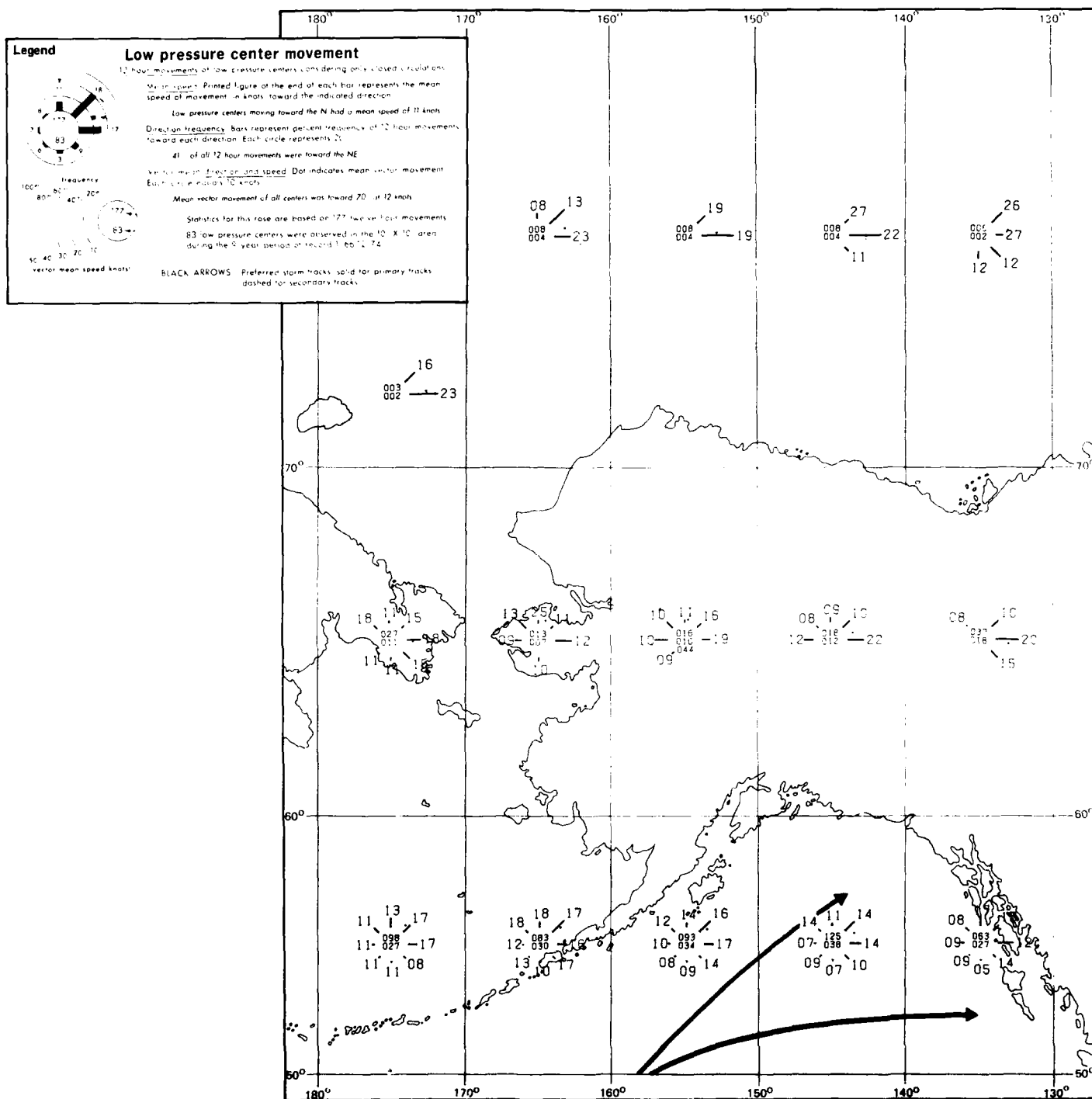


13 Mean sea level pressure

June







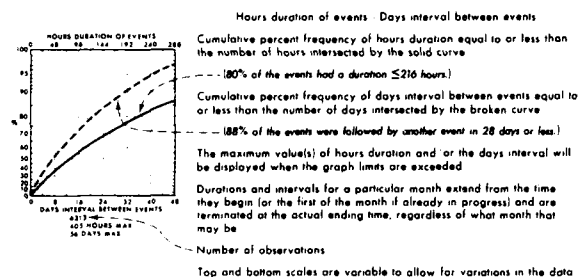
June

226

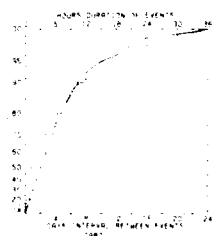
18 Low pressure center movement

Legend

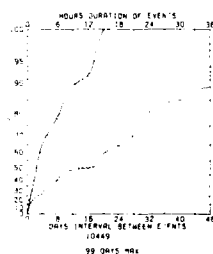
Persistence of visibility <2 n. mi.



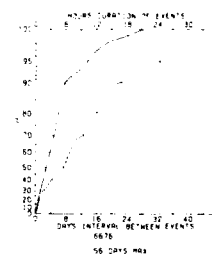
Kodiak



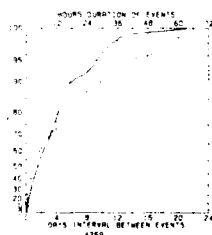
Homer



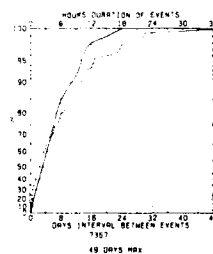
Kenai



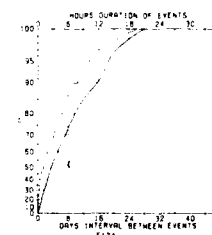
Middleton Island



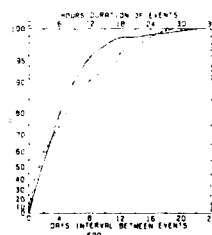
Cordova



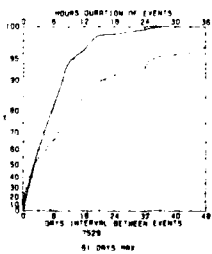
Yakutat



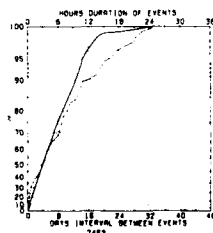
Yakutat



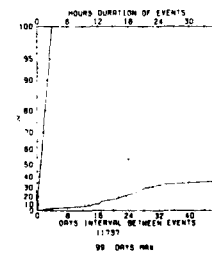
Sitka



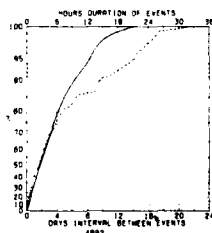
Annette



Anchorage



Cold Bay

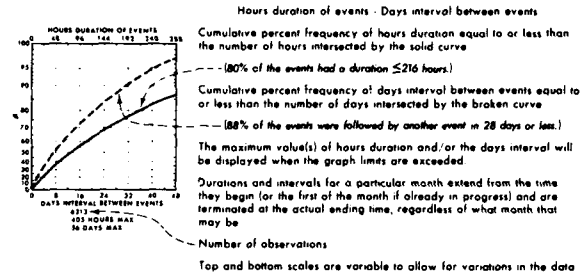


19 Persistence of visibility < 2 n. mi.

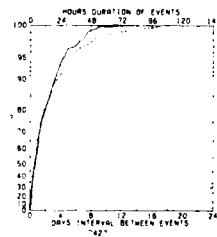
June

Legend

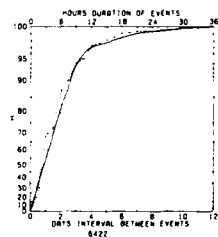
Persistence of wind ≥ 10 kts.



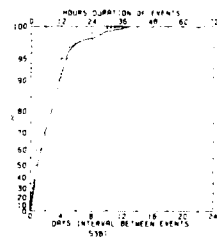
Kodiak



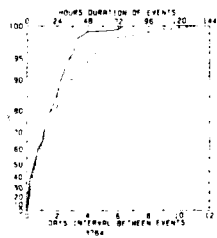
Homer



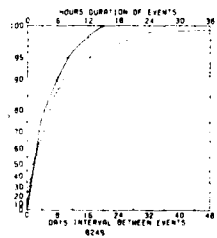
Kenai



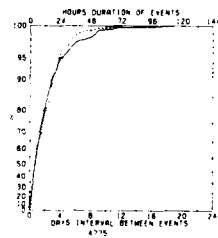
Middleton Island



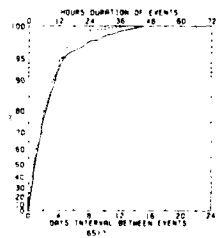
Cordova



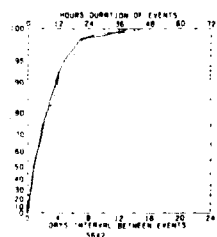
Yakataga



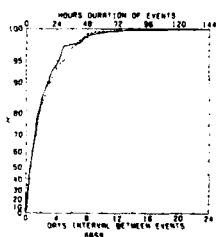
Yakutat



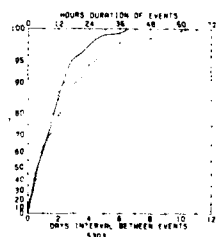
Sitka



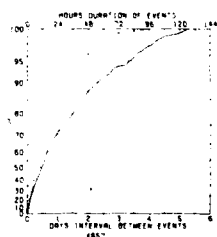
Annette

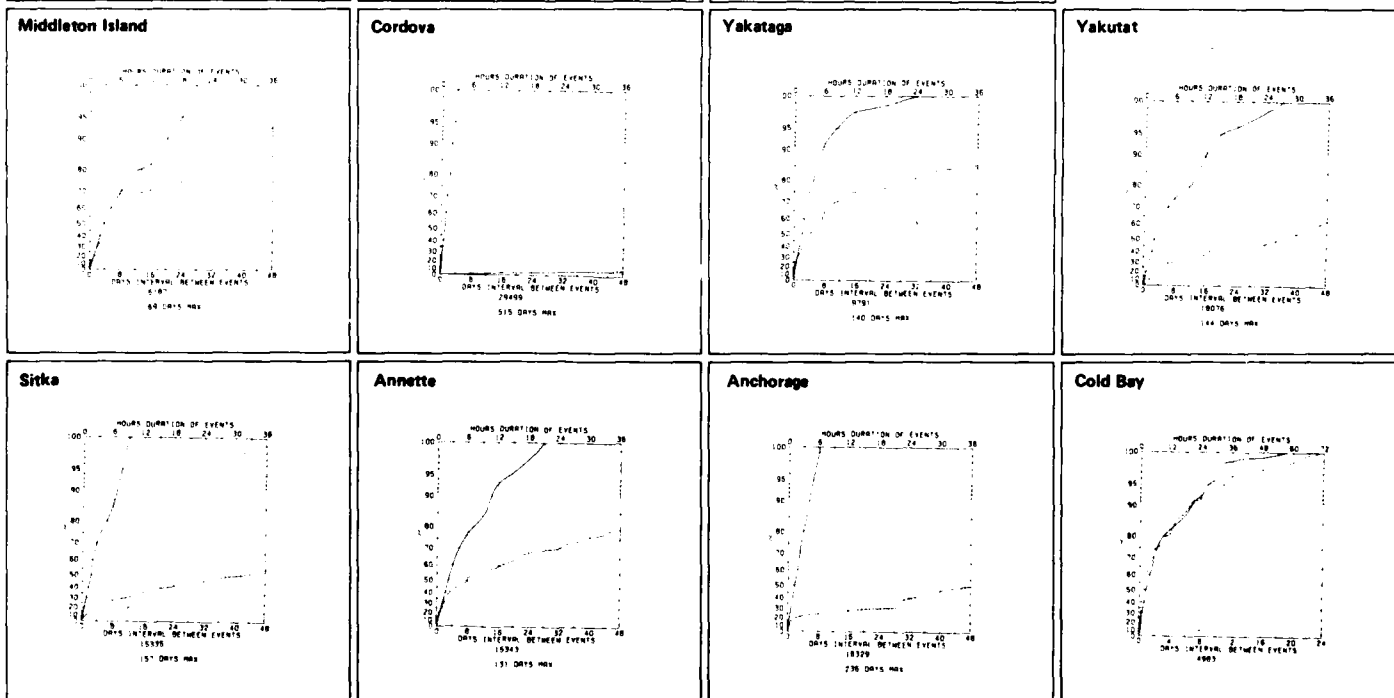
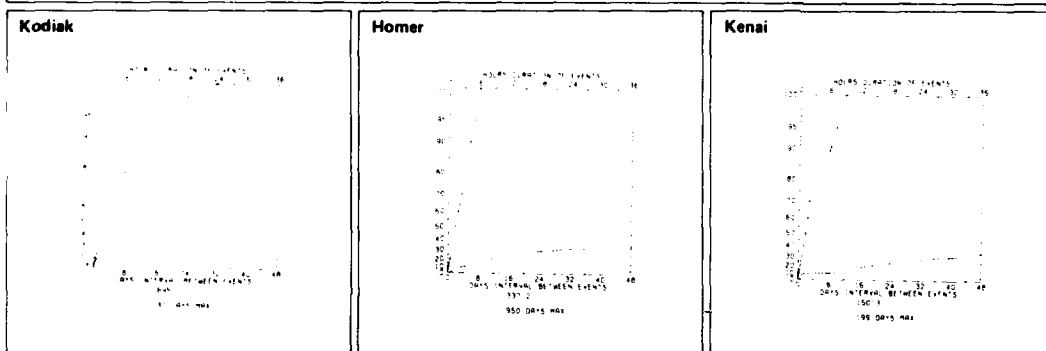
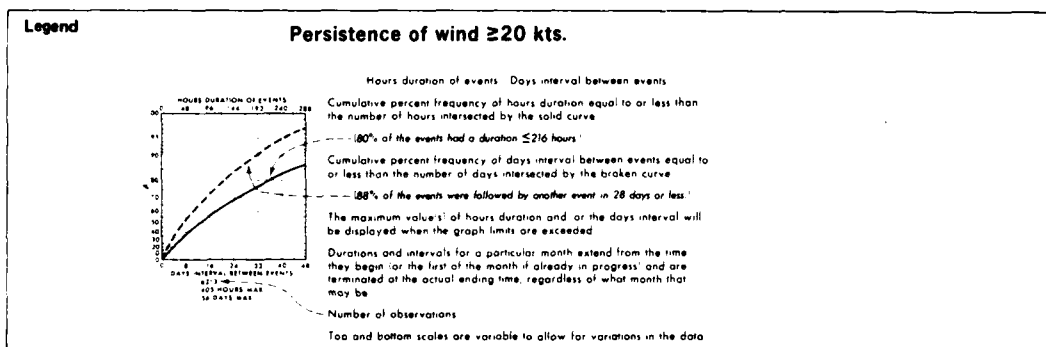


Anchorage

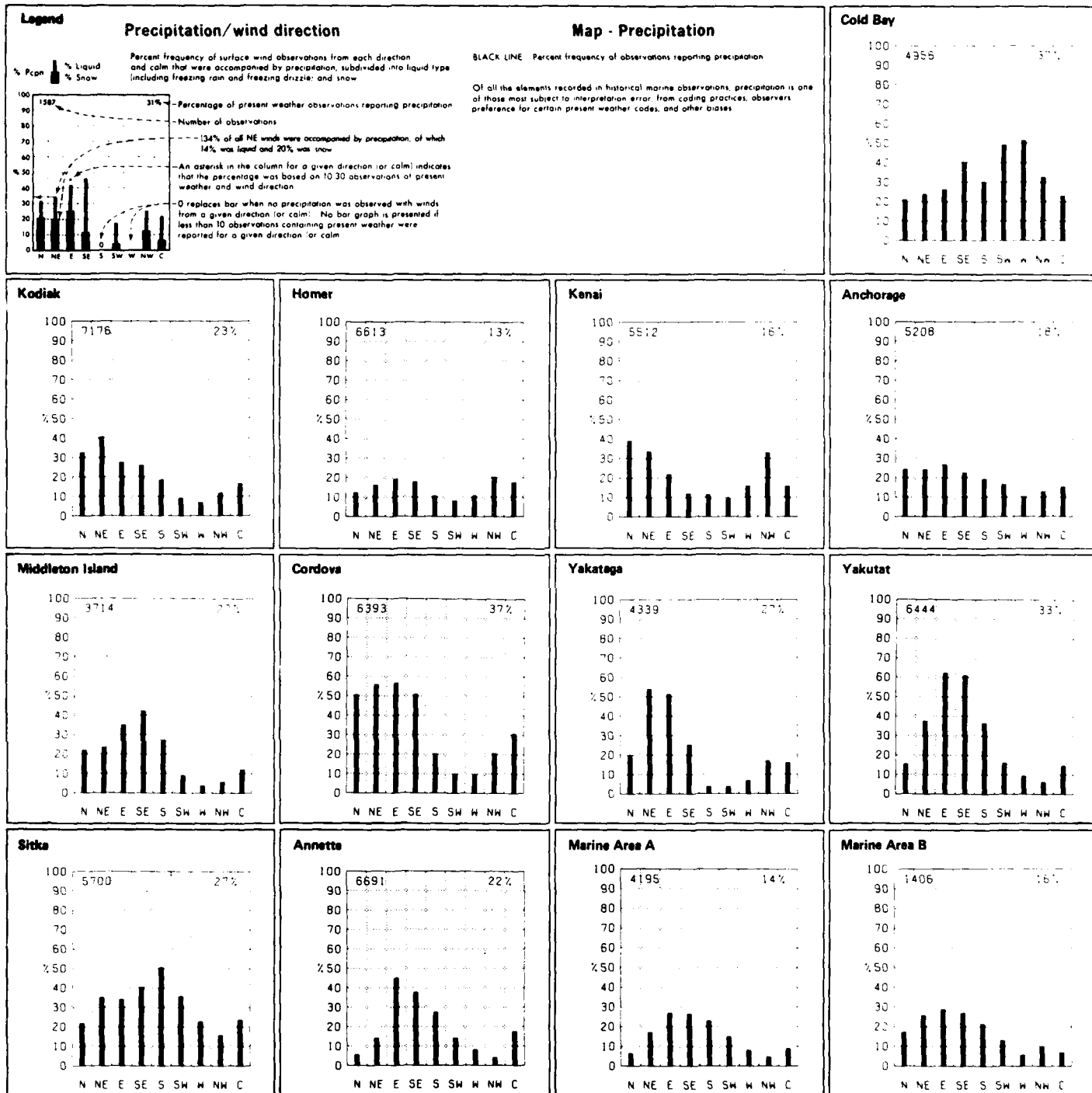


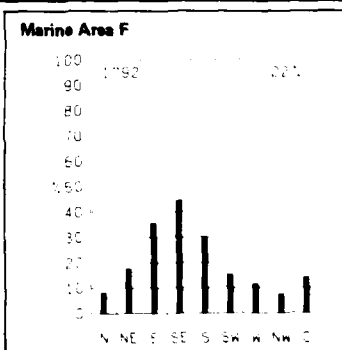
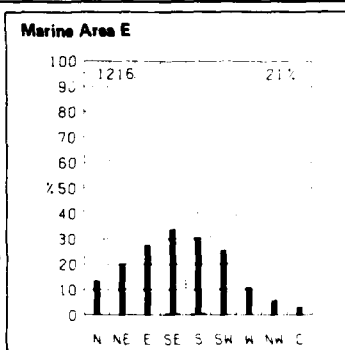
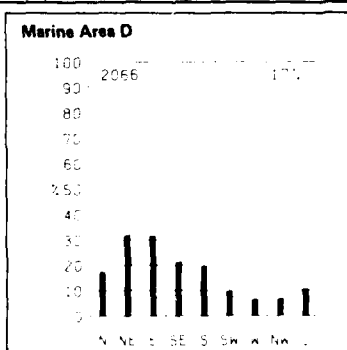
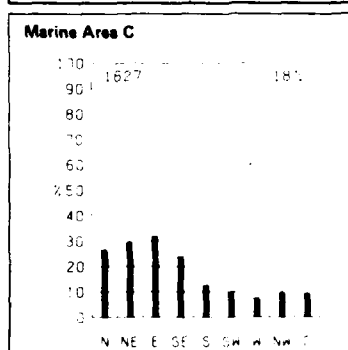
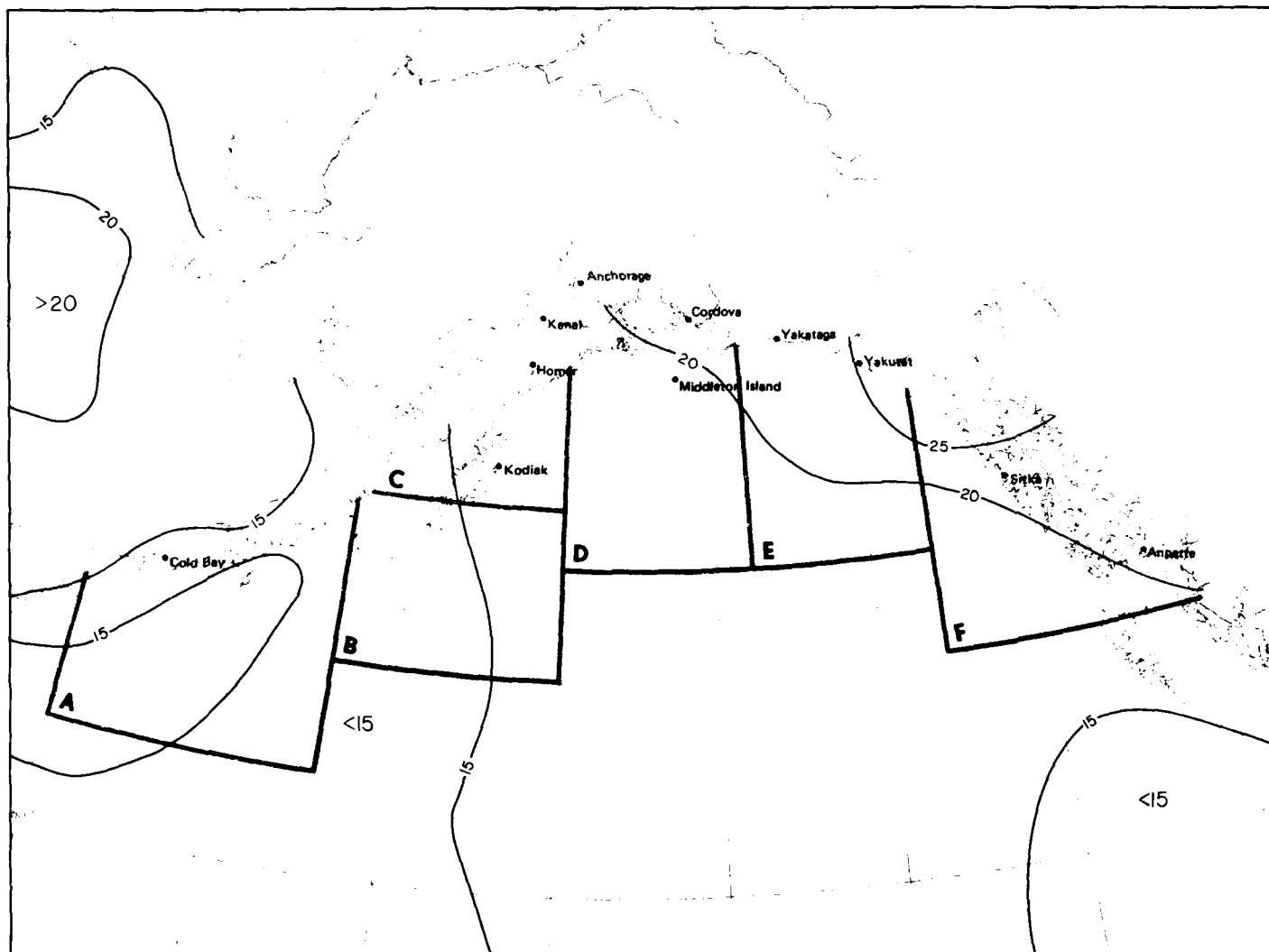
Cold Bay



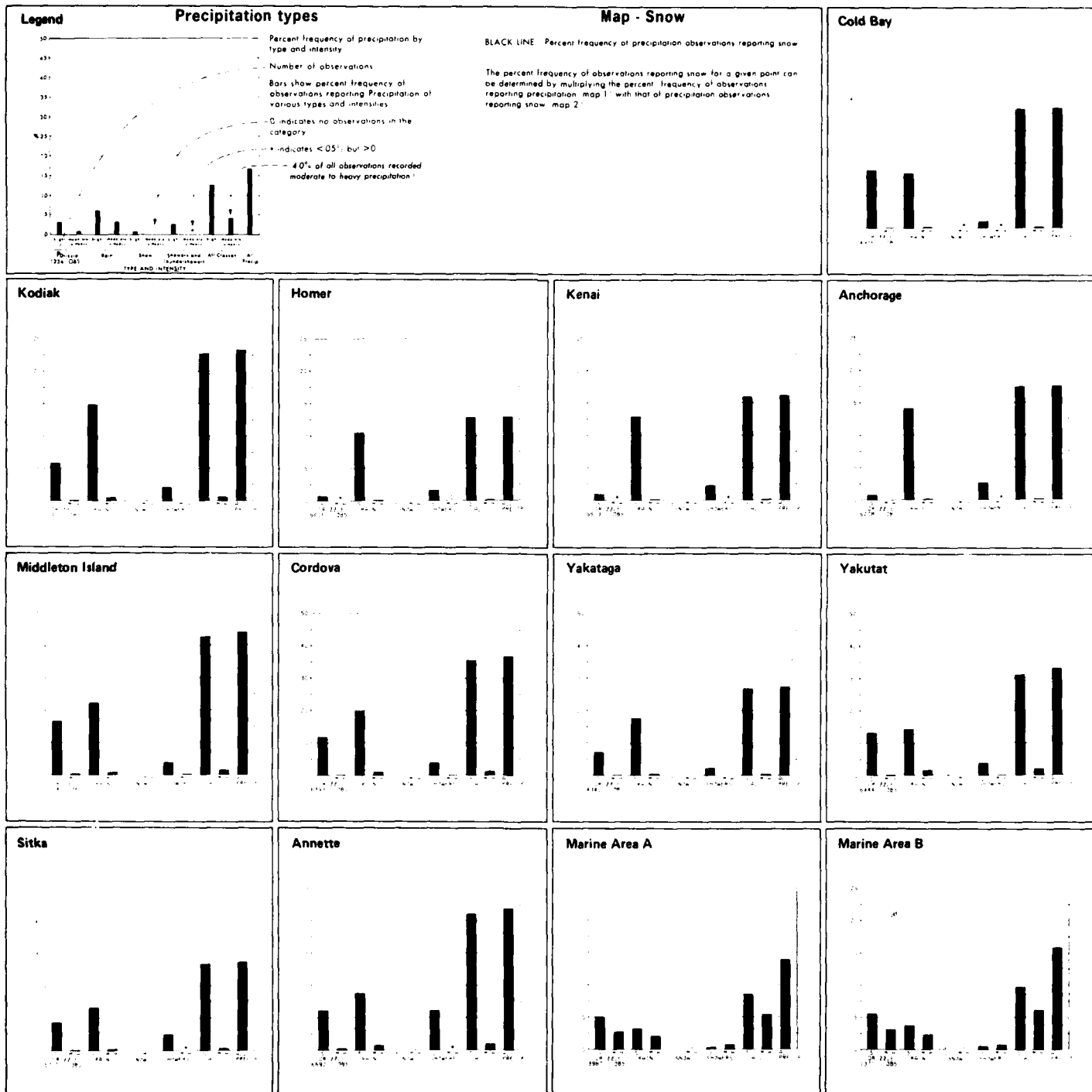


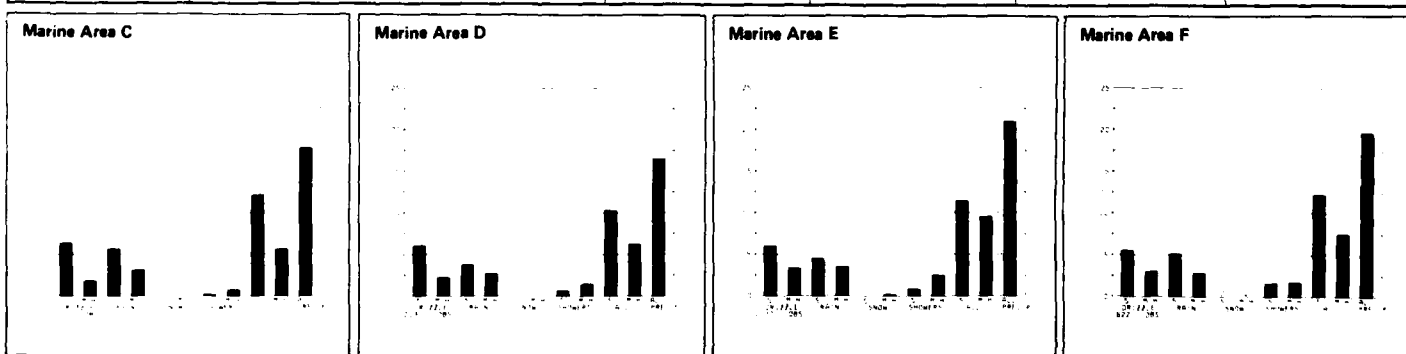
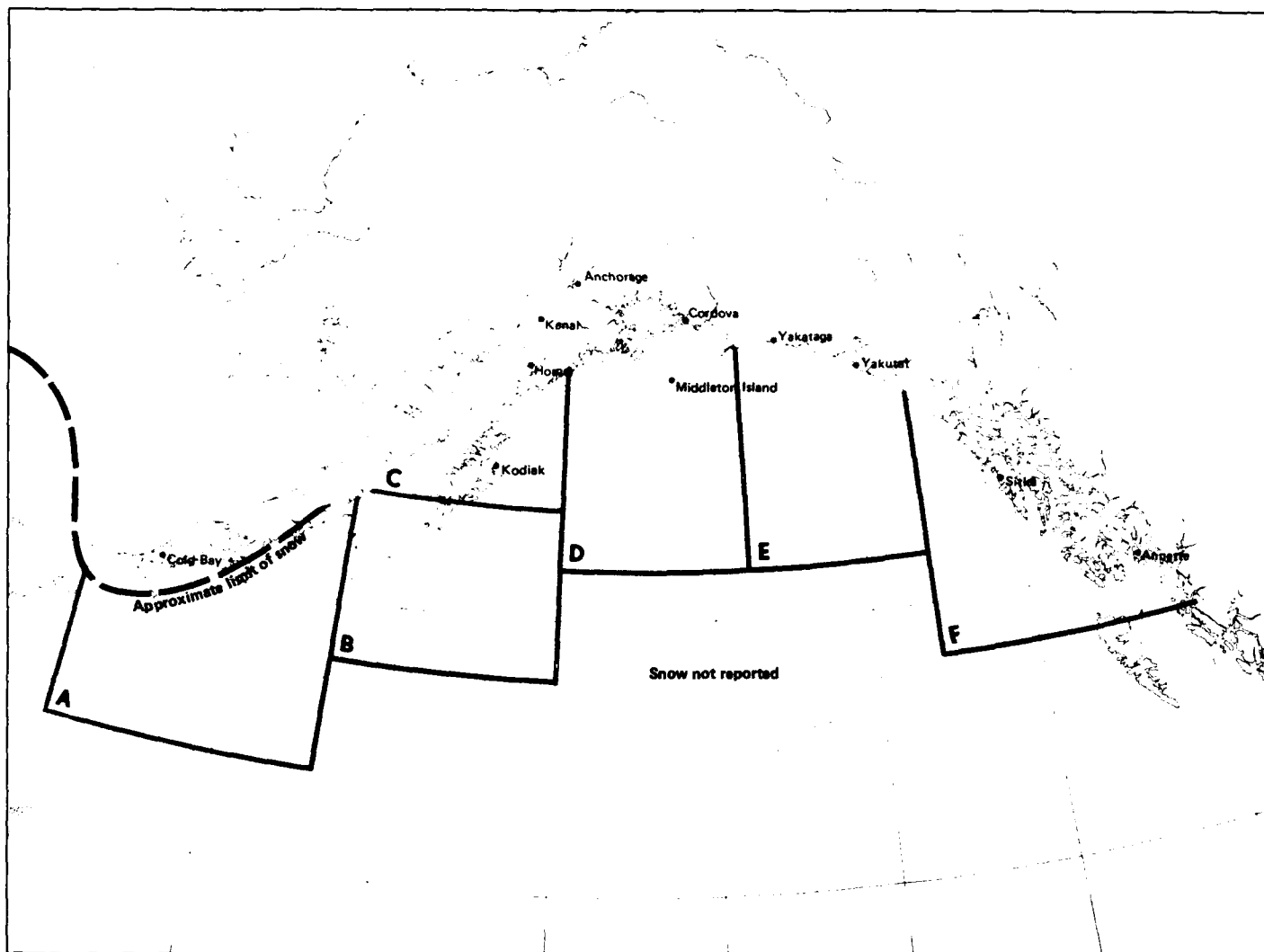
21 Persistence of wind ≥ 20 kts.





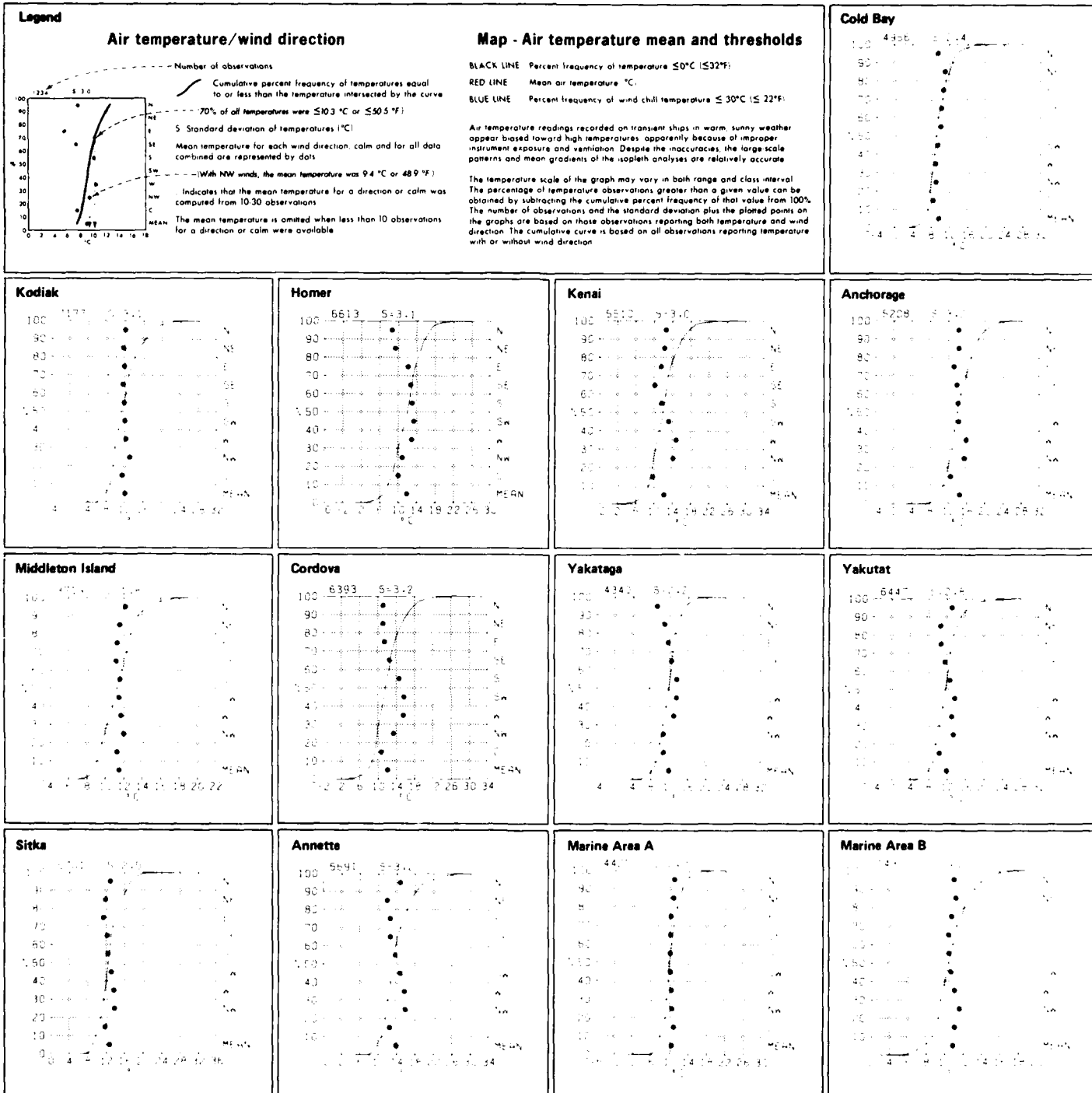
1 Precipitation





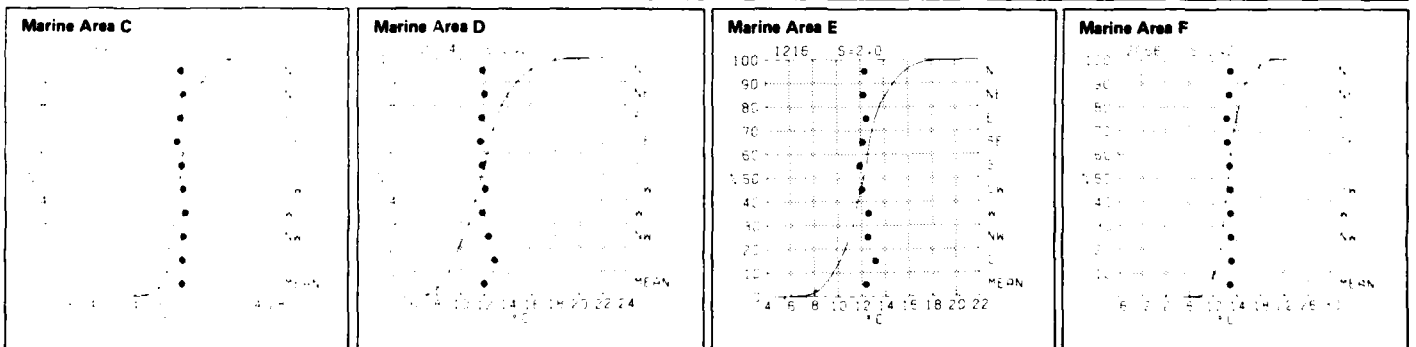
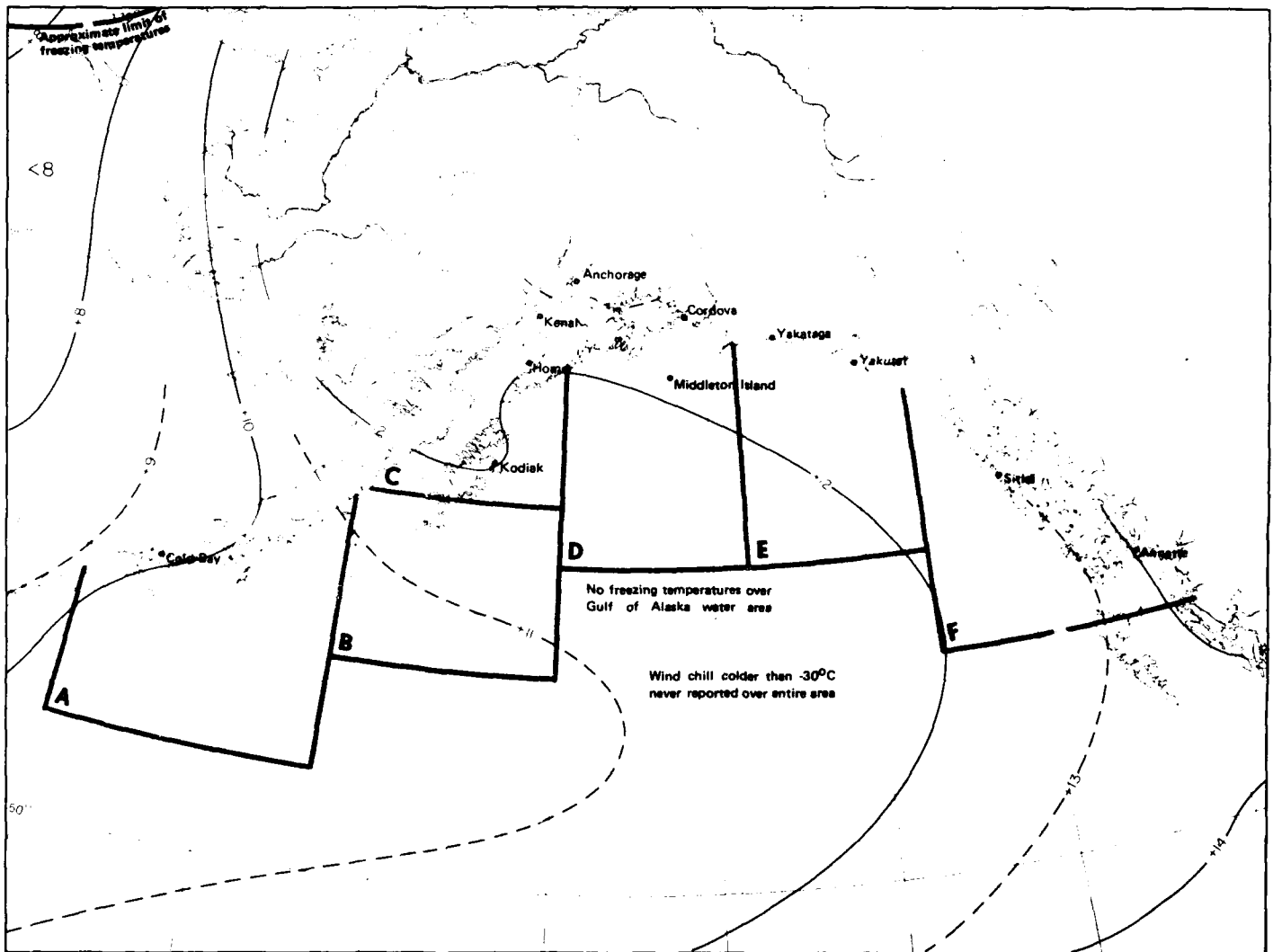
2 Snow

July



July

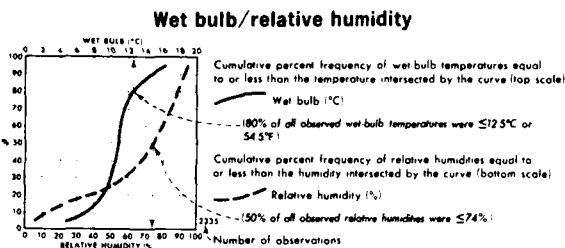
3 Air temperature/wind direction



3 Air temperature mean and thresholds

July

Legend

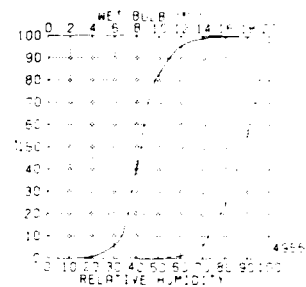


Map - Mean dew point temperature

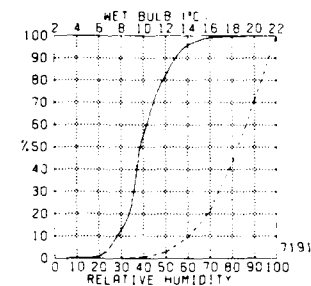
BLACK LINE - Mean dew point temperature (°C)

The observation count of the graph reflects those observations reporting both air and wet bulb temperatures, both are required in computing the relative humidity. The percentage of observations of either element greater than a given value can be obtained by subtracting the cumulative percent frequency of that value from 100%.

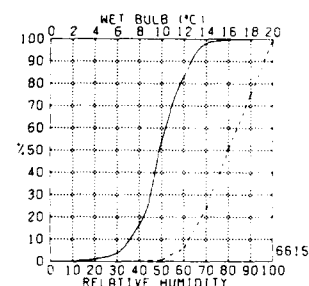
Cold Bay



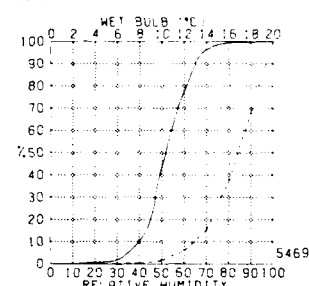
Kodiak



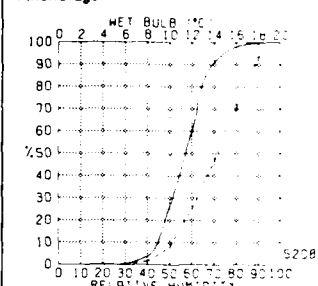
Homer



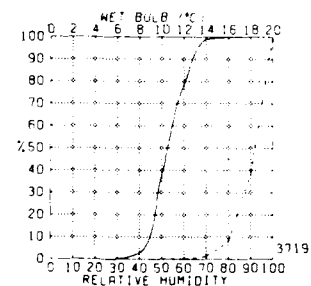
Kenai



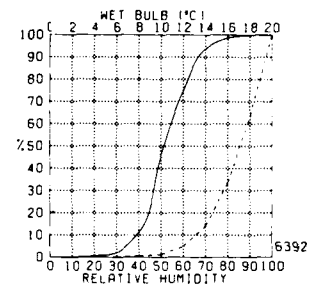
Anchorage



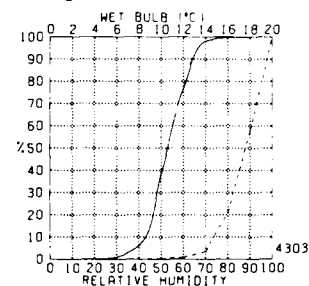
Middleton Island



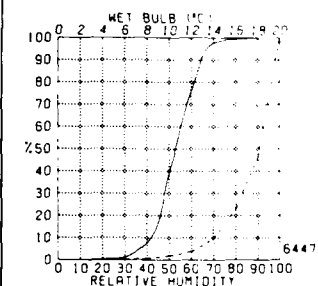
Cordova



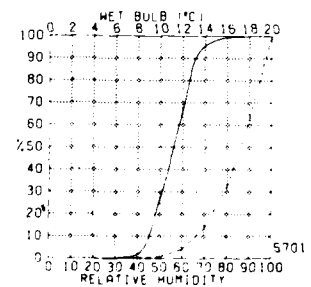
Yakutat



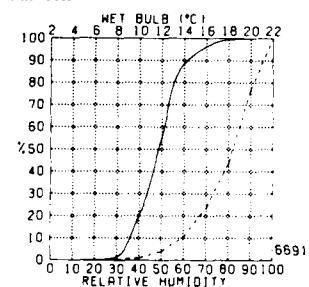
Yakutat



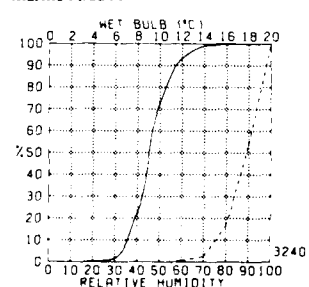
Sitka



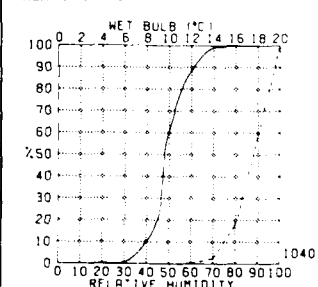
Annette



Marine Area A



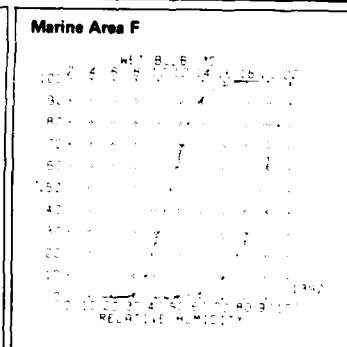
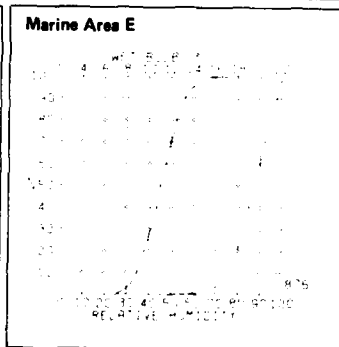
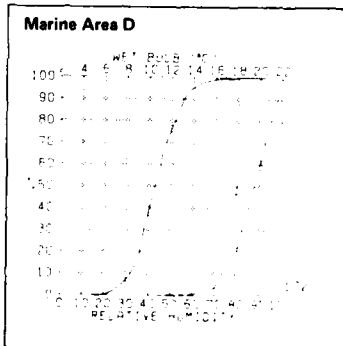
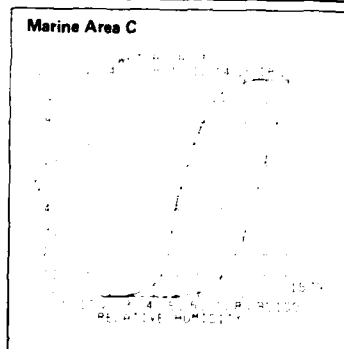
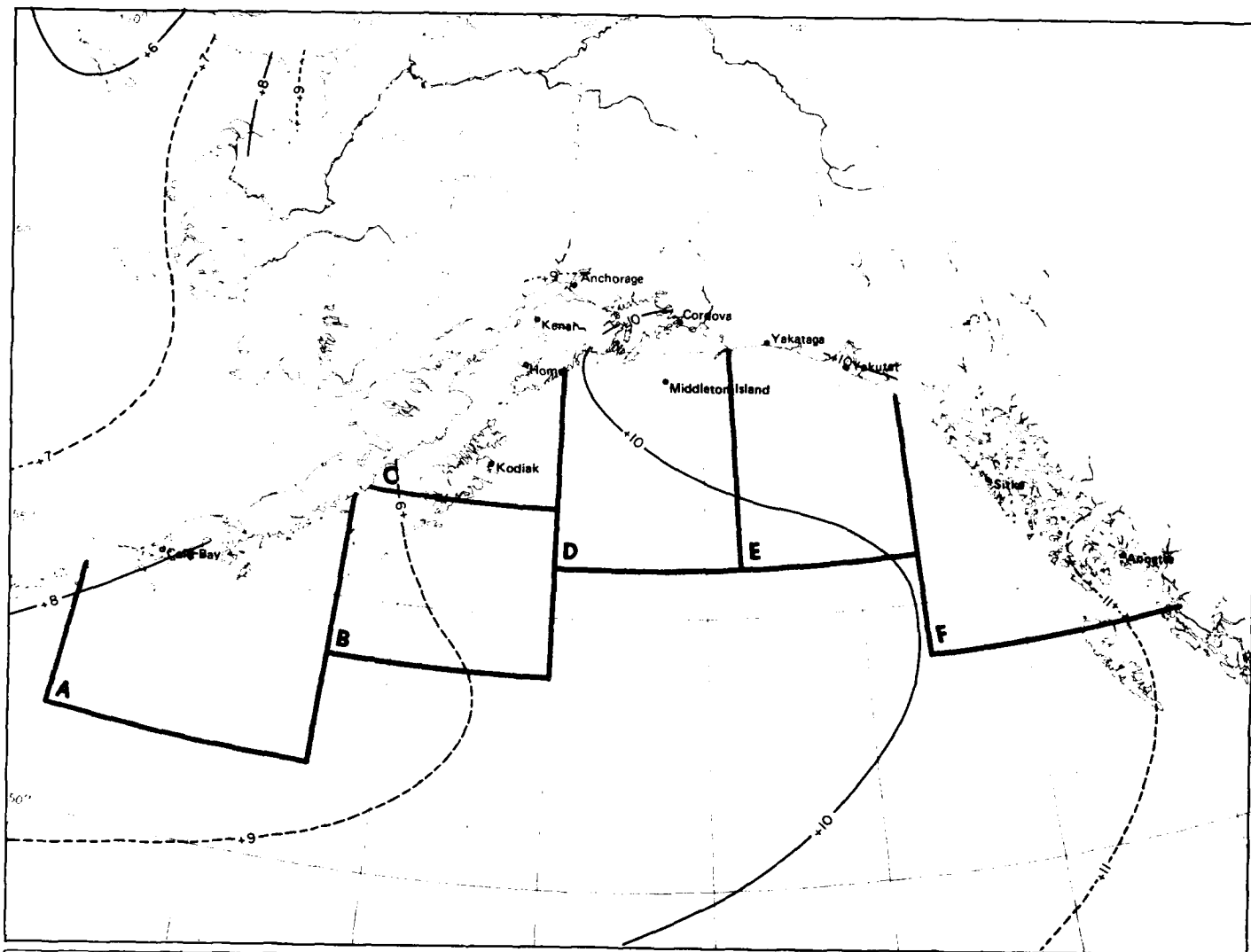
Marine Area B



July

236

4 Wet bulb/relative humidity



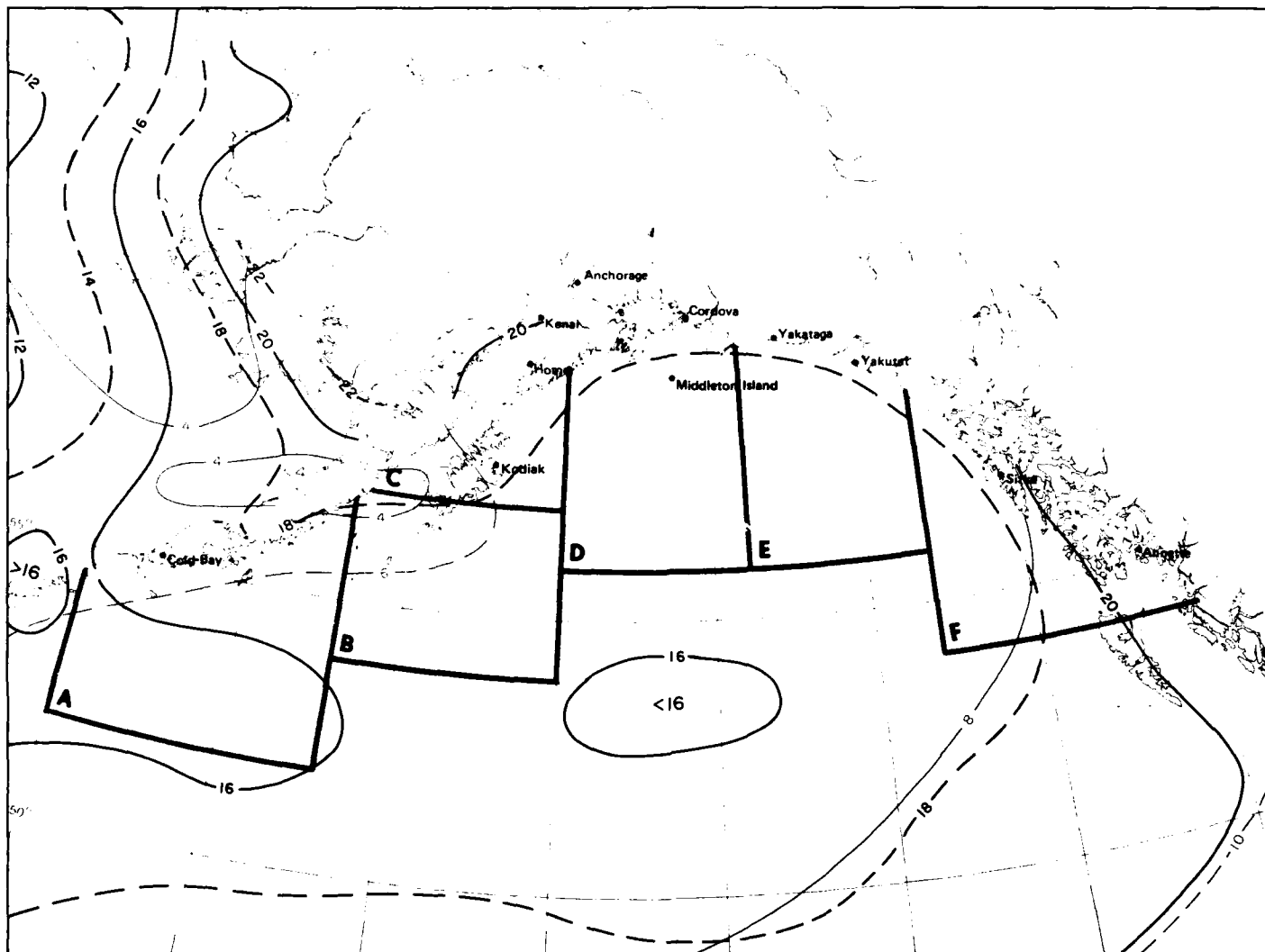
4 Mean dew point temperature

July

Legend

Air temperature/wind speed

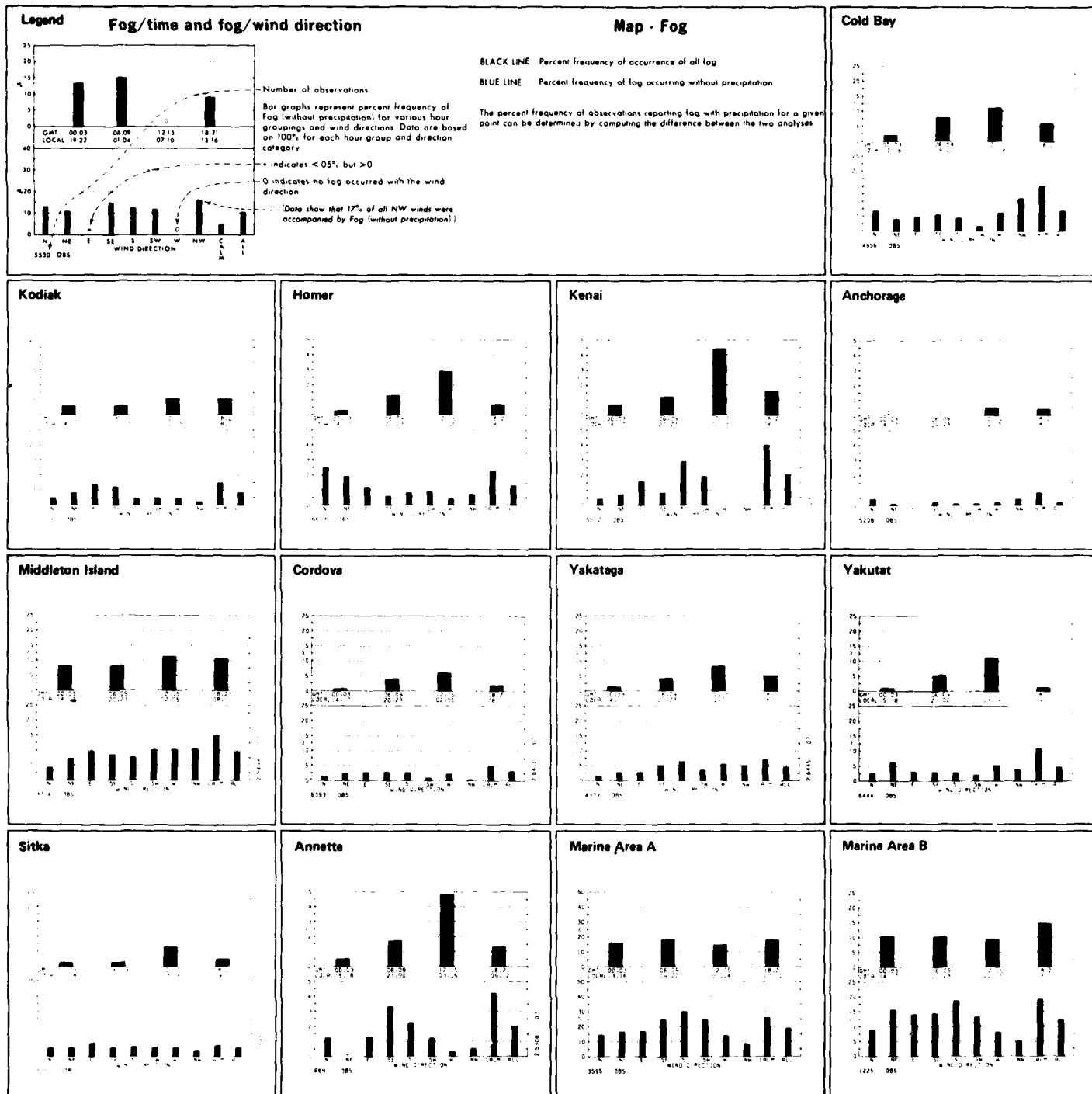
WIND SPEED (KTS)	Percent frequency of simultaneous occurrence of specified temperature (°C) and wind speed (knots)
0-3	0
4-10	0
11-17	0
18-24	0
25-31	0
32-38	0
39-45	0
46-52	0
53-59	0
60-66	0
67-73	0
74-80	0
81-87	0
88-94	0
95-101	0
102-108	0
109-115	0
116-122	0
123-129	0
130-136	0
137-143	0
144-150	0
151-157	0
158-164	0
165-171	0
172-178	0
179-185	0
186-192	0
193-199	0
200-206	0
207-213	0
214-220	0
221-227	0
228-234	0
235-241	0
242-248	0
249-255	0
256-262	0
263-269	0
270-276	0
277-283	0
284-290	0
291-297	0
298-304	0
305-311	0
312-318	0
319-325	0
326-332	0
333-339	0
340-346	0
347-353	0
354-360	0
361-367	0
368-374	0
375-381	0
382-388	0
389-395	0
396-402	0
403-409	0
410-416	0
417-423	0
424-430	0
431-437	0
438-444	0
445-451	0
452-458	0
459-465	0
466-472	0
473-479	0
480-486	0
487-493	0
494-500	0
501-507	0
508-514	0
515-521	0
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529-535	0
536-542	0
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550-556	0
557-563	0
564-570	0
571-577	0
578-584	0
585-591	0
592-598	0
599-605	0
606-612	0
613-619	0
620-626	0
627-633	0
634-640	0
641-647	0
648-654	0
655-661	0
662-668	0
669-675	0
676-682	0
683-689	0
690-696	0
697-703	0
704-710	0
711-717	0
718-724	0
725-731	0
732-738	0
739-745	0
746-752	0
753-759	0
760-766	0
767-773	0
774-780	0
781-787	0
788-794	0
795-801	0
802-808	0
809-815	0
816-822	0
823-829	0
830-836	0
837-843	0
844-850	0
851-857	0
858-864	0
865-871	0
872-878	0
879-885	0
886-892	0
893-899	0
900-906	0
907-913	0
914-920	0
921-927	0
928-934	0
935-941	0
942-948	0
949-955	0
956-962	0
963-969	0
970-976	0
977-983	0
984-990	0
991-997	0
998-1004	0
1005-1011	0
1012-1018	0
1019-1025	0
1026-1032	0
1033-1039	0
1040-1046	0
1047-1053	0
1054-1060	0
1061-1067	0
1068-1074	0
1075-1081	0
1082-1088	0
1089-1095	0
1096-1102	0
1103-1109	0
1110-1116	0
1117-1123	0
1124-1130	0
1131-1137	0
1138-1144	0
1145-1151	0
1152-1158	0
1159-1165	0
1166-1172	0
1173-1179	0
1180-1186	0
1187-1193	0
1194-1200	0
1201-1207	0
1208-1214	0
1215-1221	0
1222-1228	0
1229-1235	0
1236-1242	0
1243-1249	0
1250-1256	0
1257-1263	0
1264-1270	0
1271-1277	0
1278-1284	0
1285-1291	0
1292-1298	0
1299-1305	0
1306-1312	0
1313-1319	0
1320-1326	0
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1348-1354	0
1355-1361	0
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1369-1375	0
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1383-1389	0
1390-1396	0
1397-1403	0
1404-1410	0
1411-1417	0
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1439-1445	0
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1467-1473	0
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1579-1585	0
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1607-1613	0
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1670-1676	0
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1684-1690	0
1691-1697	0
1698-1704	0
1705-1711	0
1712-1718	0
1719-1725	0
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1761-1767	0
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1775-1781	0
1782-1788	0
1789-1795	0
1796-1802	0
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2146-2152	0
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2160-2166	0
2167-2173	0
2174-2180	0
2181-2187	0
2188-2194	0
2195-2201	0
2202-2208	0
2209-2215	0
2216-2222	0
2223-2229	0
2230-2236	0
2237-2243	0
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2258-2264	0
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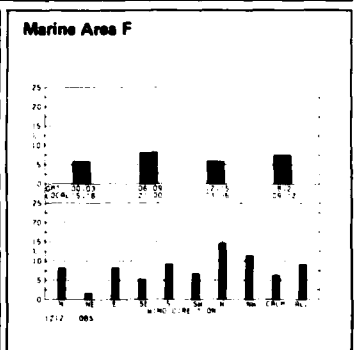
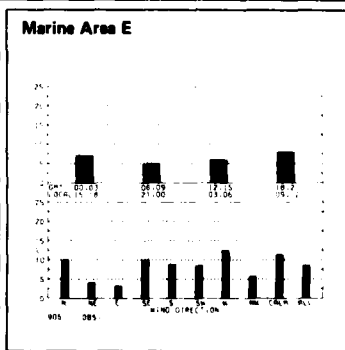
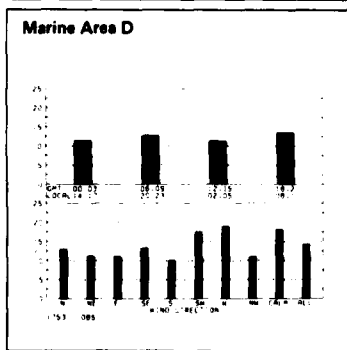
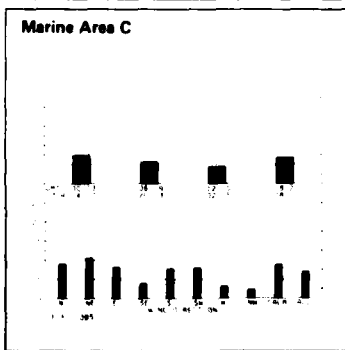
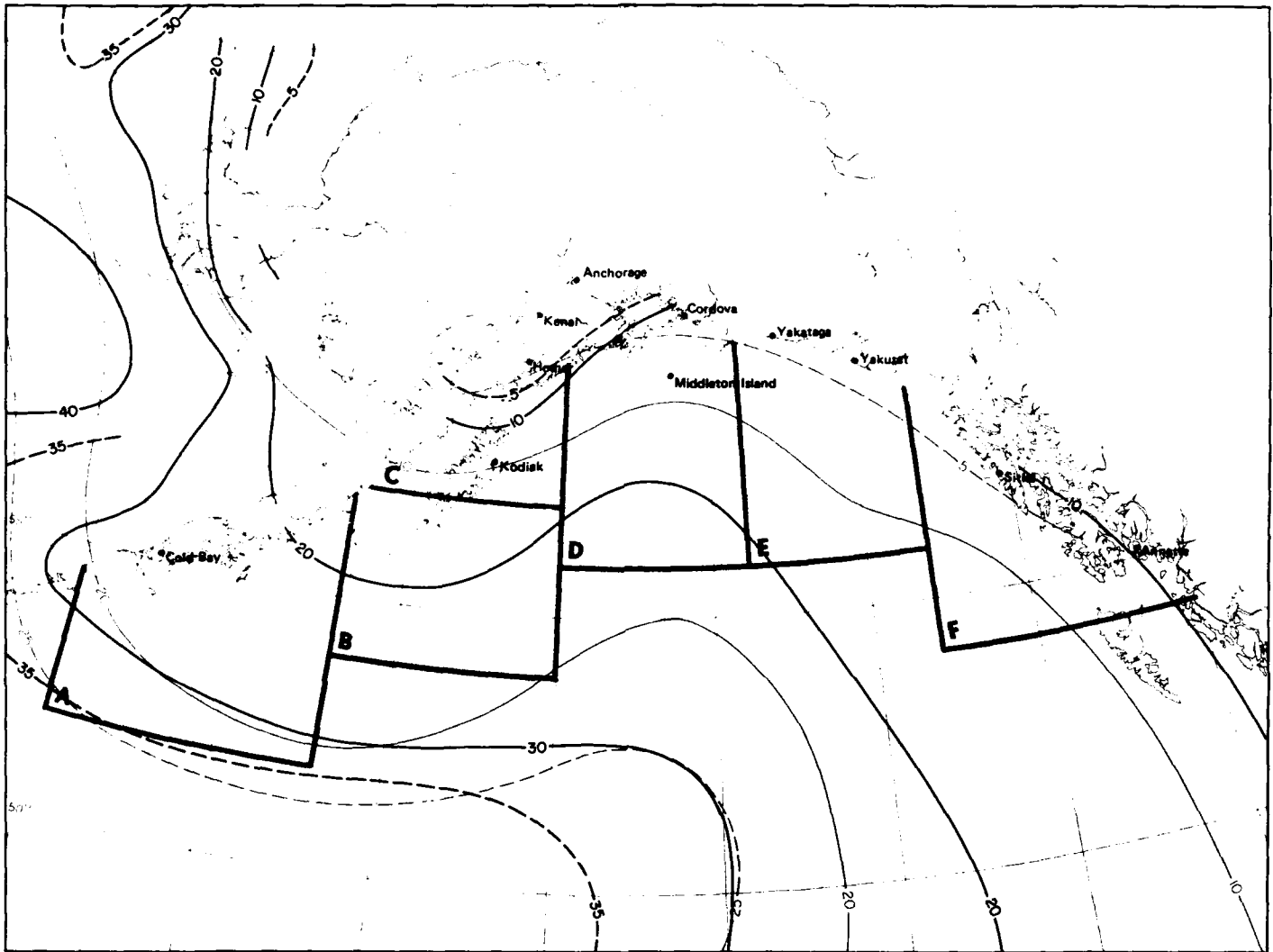


Marine Area C	Marine Area D	Marine Area E	Marine Area F
WIND SPEED KTS TEMP °C 1534	WIND SPEED KTS TEMP °C 2074	WIND SPEED KTS TEMP °C 1216	WIND SPEED KTS TEMP °C 2057

5 Air temperature extremes (°C)

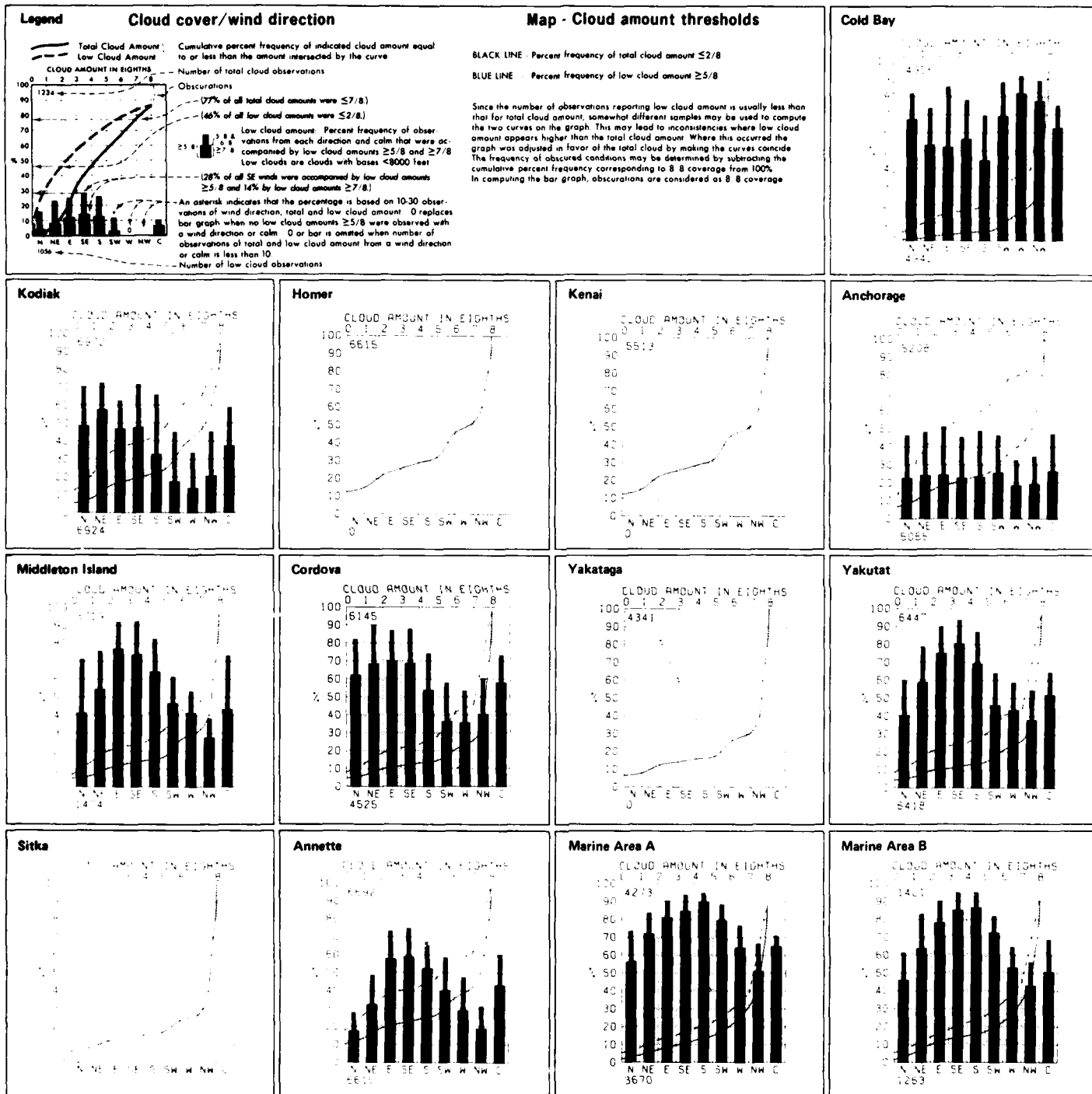
July





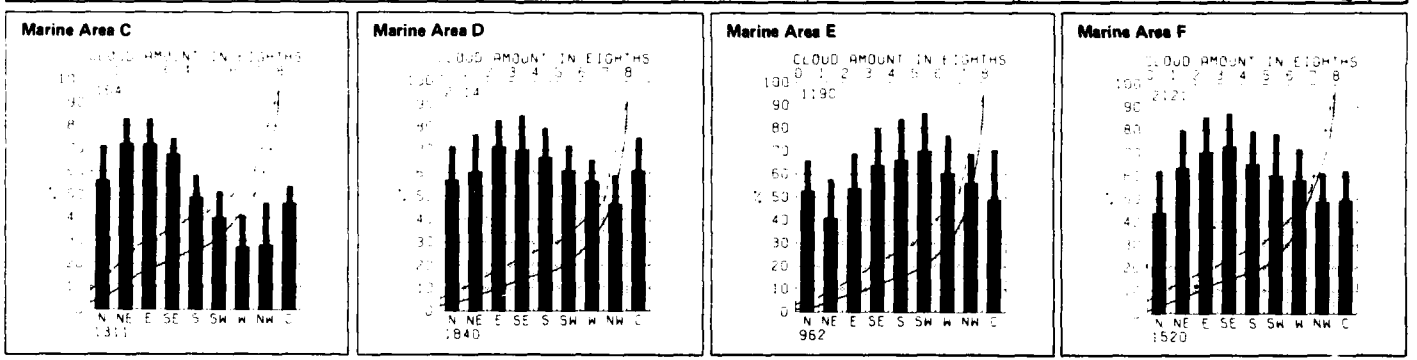
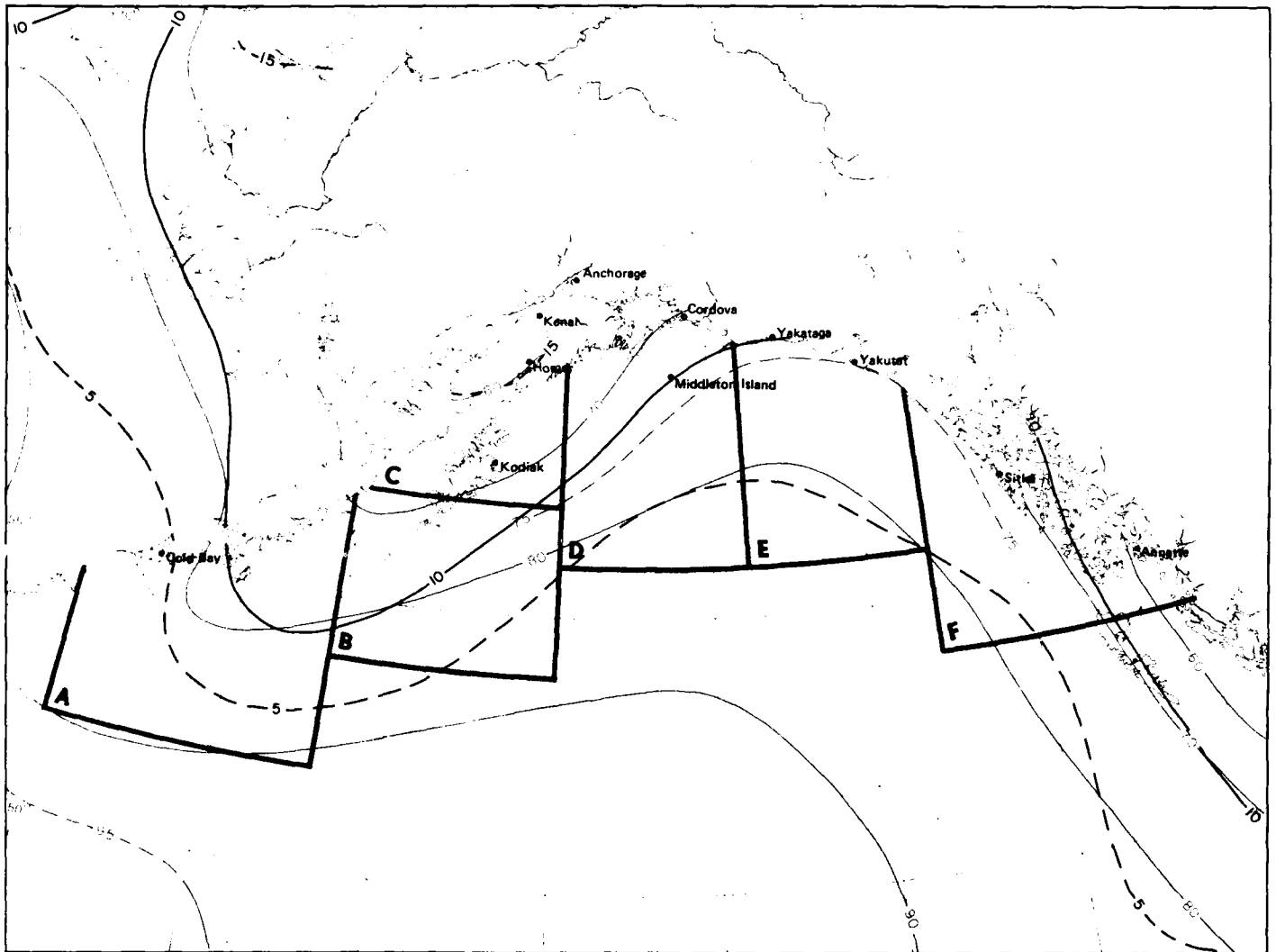
6 Fog

July



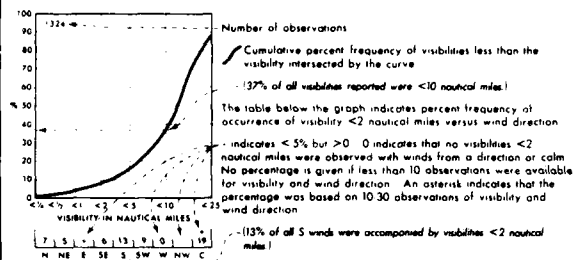
July

7 Cloud cover/wind direction



7 Cloud amount thresholds

July

Visibility/wind direction

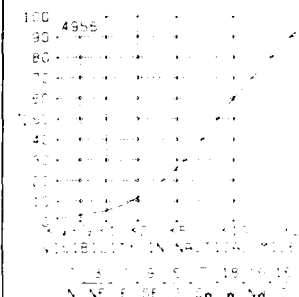
Map - Visibility thresholds

BLACK LINE Percent frequency of visibilities ≥ 5 nautical miles

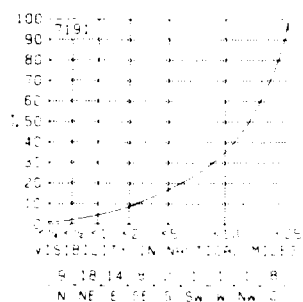
BLUE LINE Percent frequency of visibilities ≤ 2 nautical miles

The percentage of light equal to or greater than a given value can be obtained from the graph by subtracting the cumulative percent frequency of that value from 100%. Visibility at sea is difficult to measure because of the lack of reference points. Also, some observers seem to report reduced visibilities at night because of darkness through this tendency has abated in recent years. The coarseness of the coding intervals, however, tends to minimize serious biases in the summarized data. Visibilities greater than 25 nm. should be interpreted cautiously because of the difficulty of accurate coding. The picture makes it impossible to see 25 nm. horizontally from the bridges of most ships.

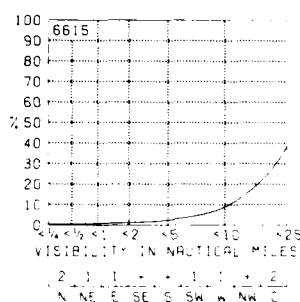
Cold Bay



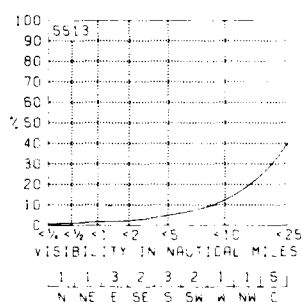
Kodiak



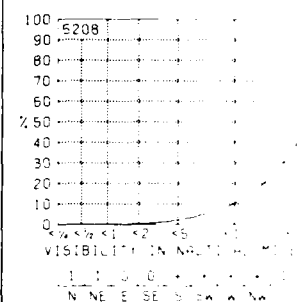
Homer



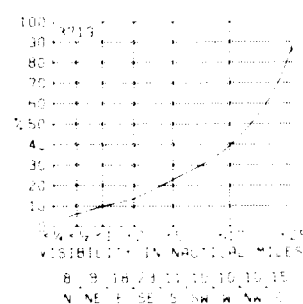
Kenai



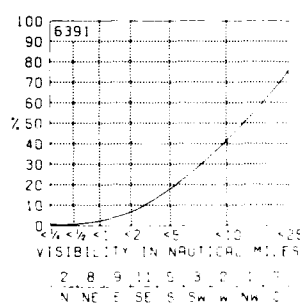
Anchorage



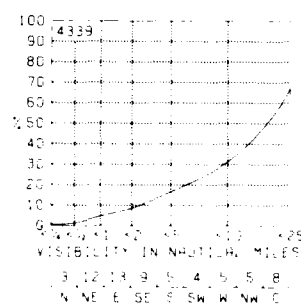
Middleton Island



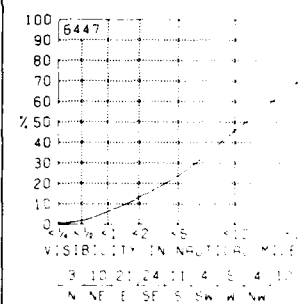
Cordova



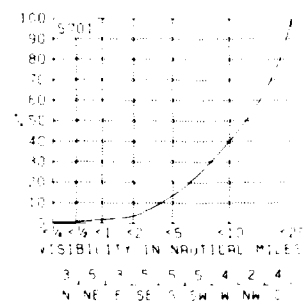
Yakataga



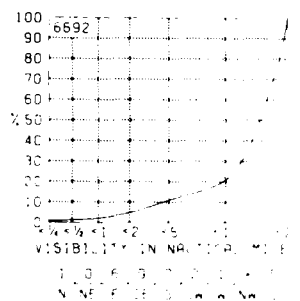
Yakutat



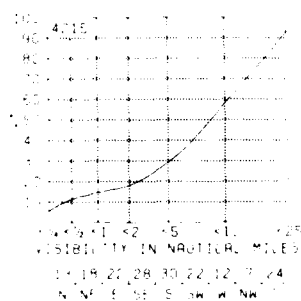
Sitka



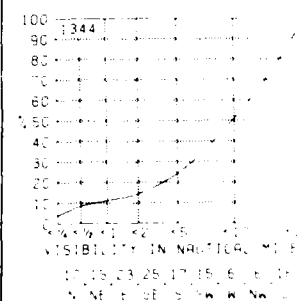
Annette

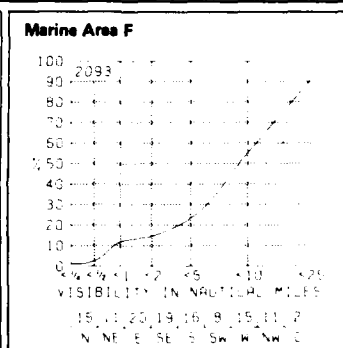
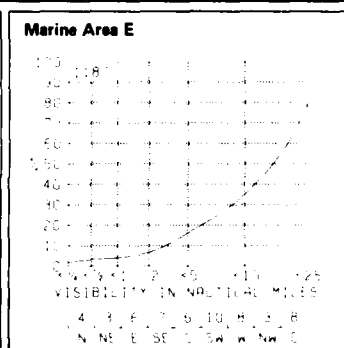
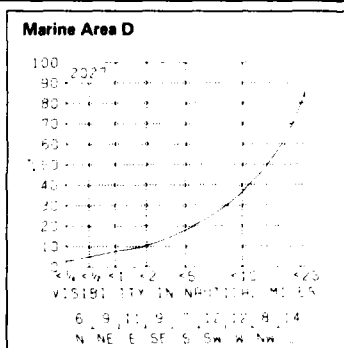
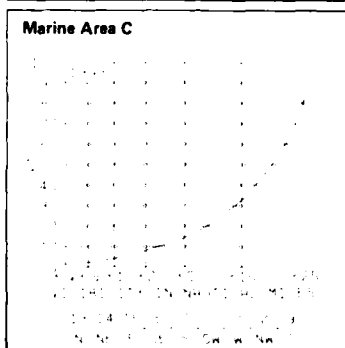
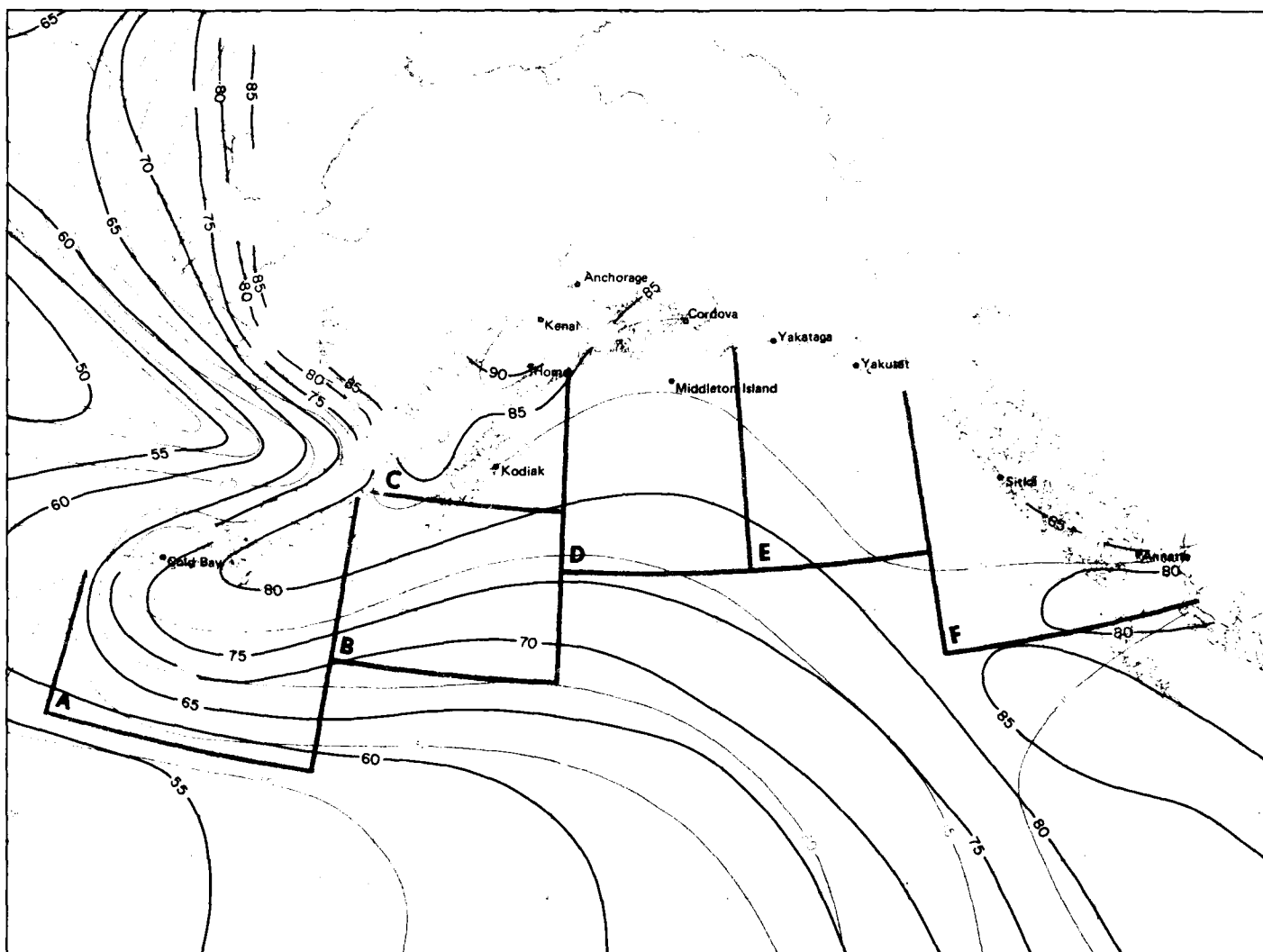


Marine Area A



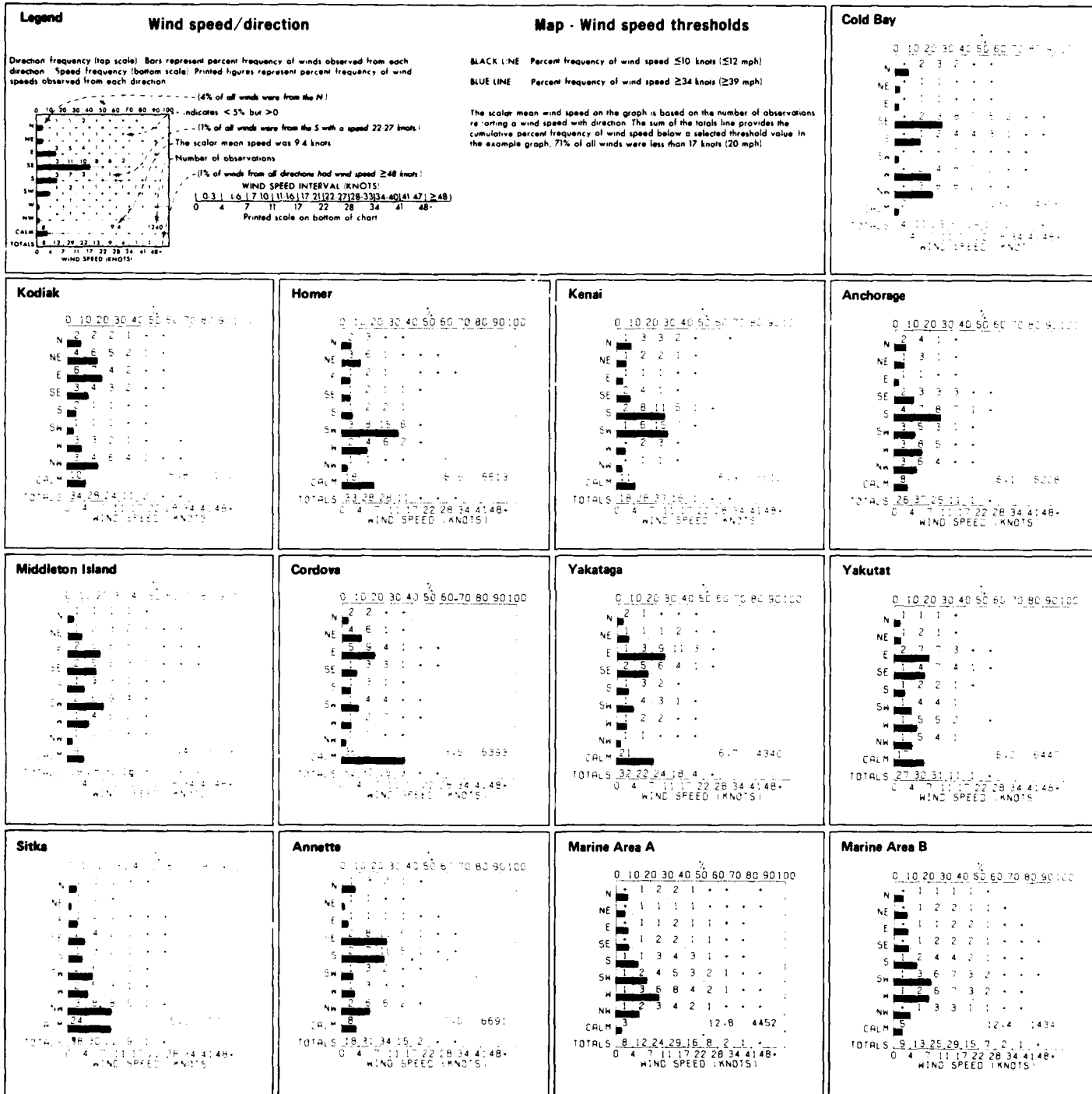
Marine Area B

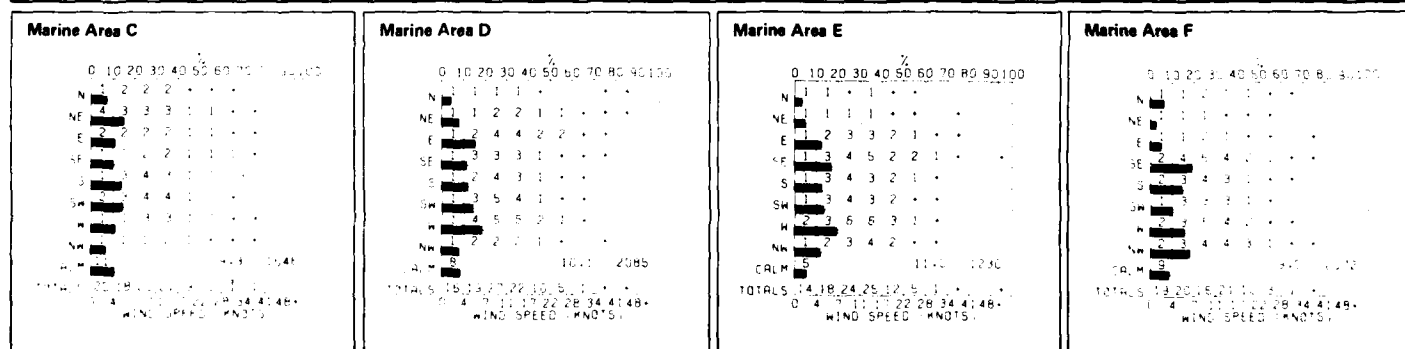
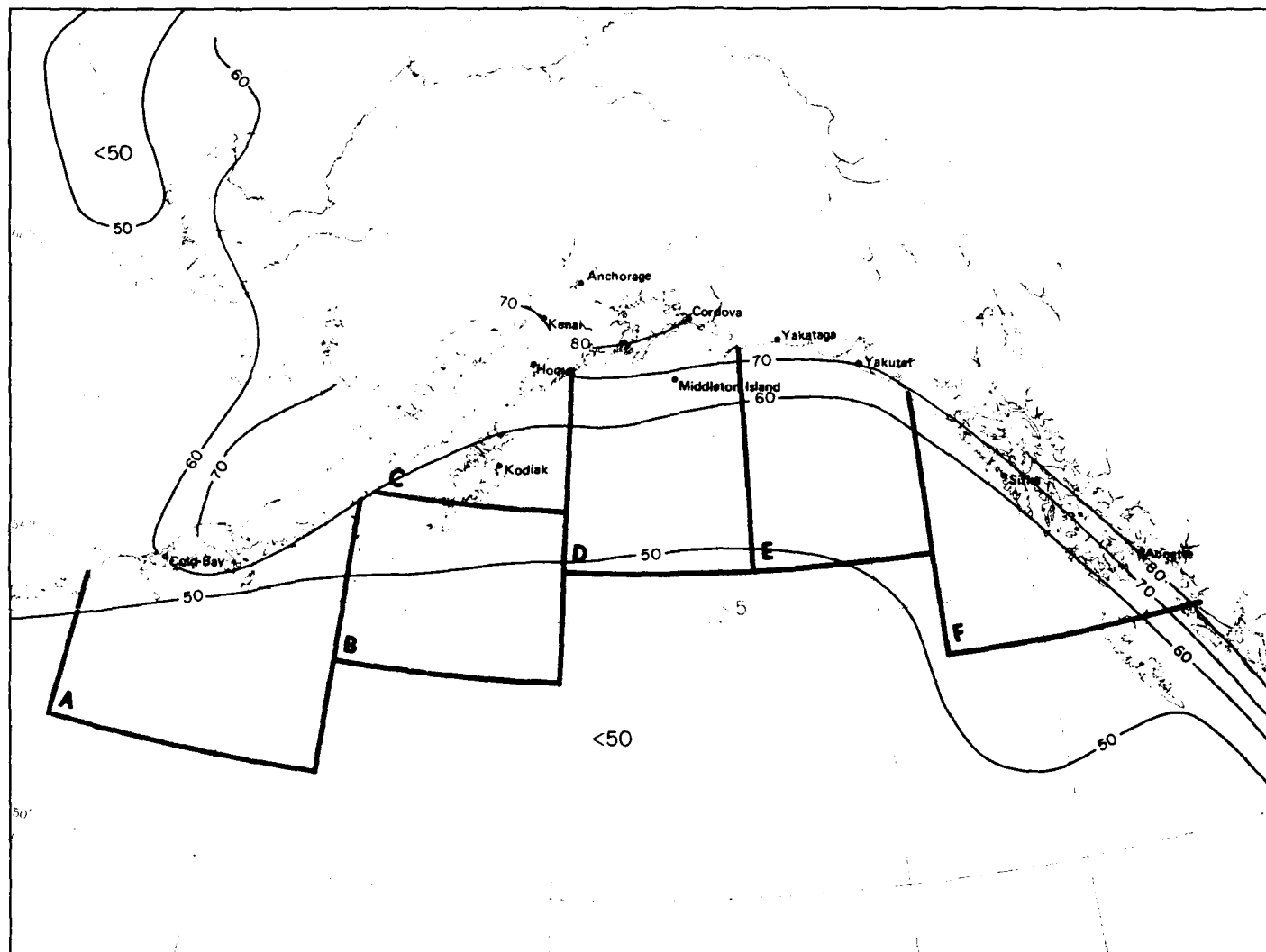




8 Visibility thresholds

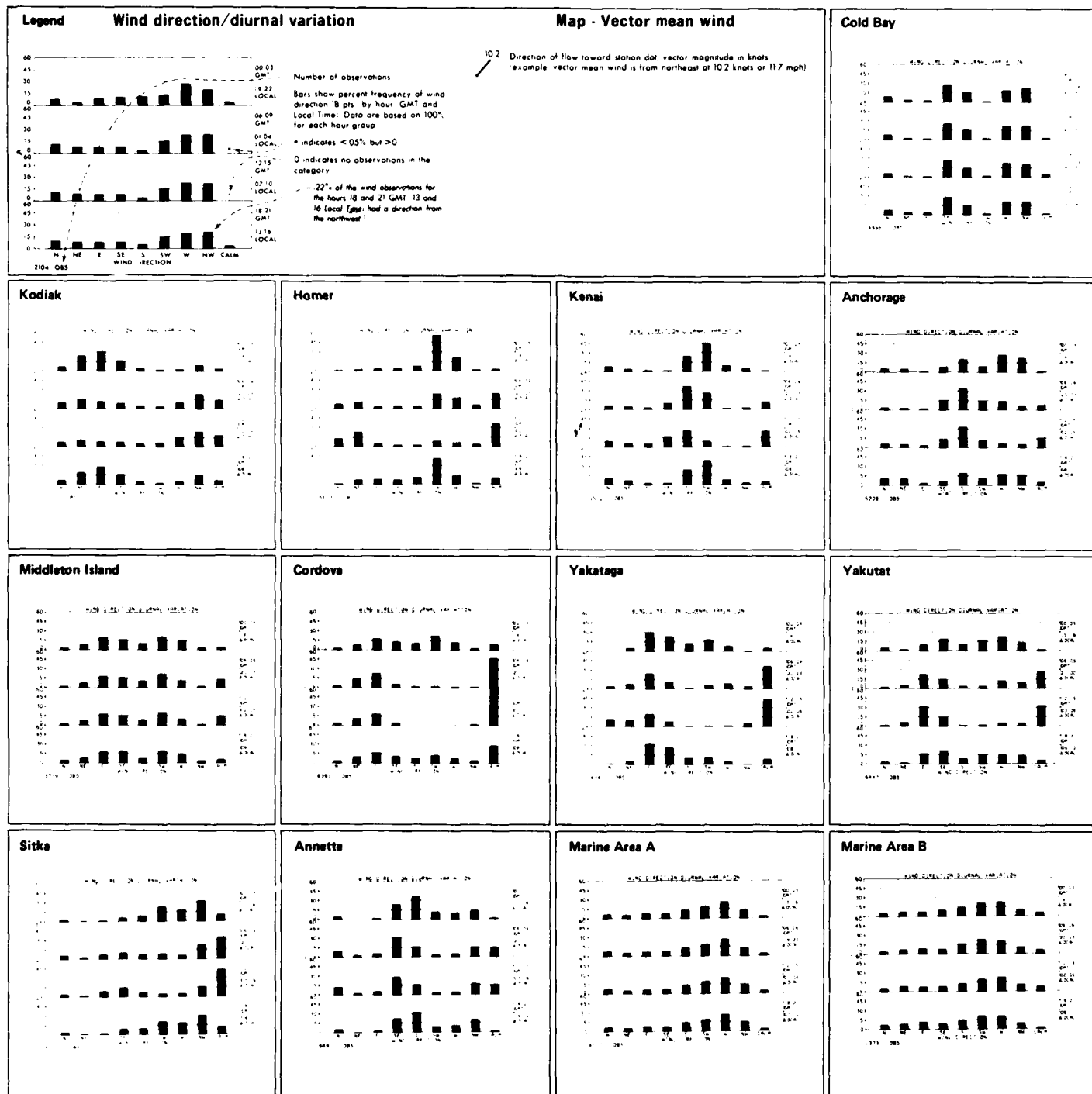
July

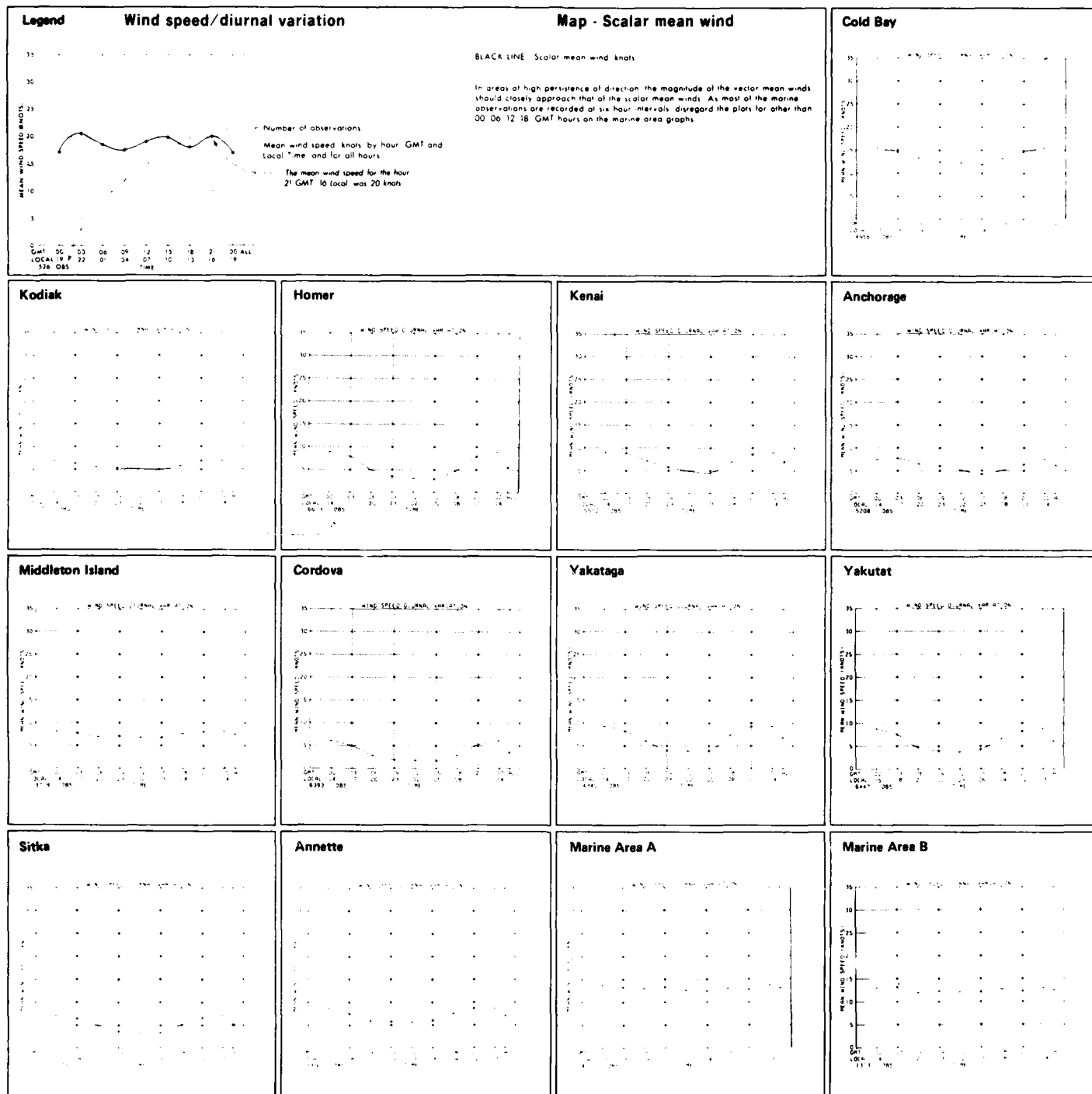


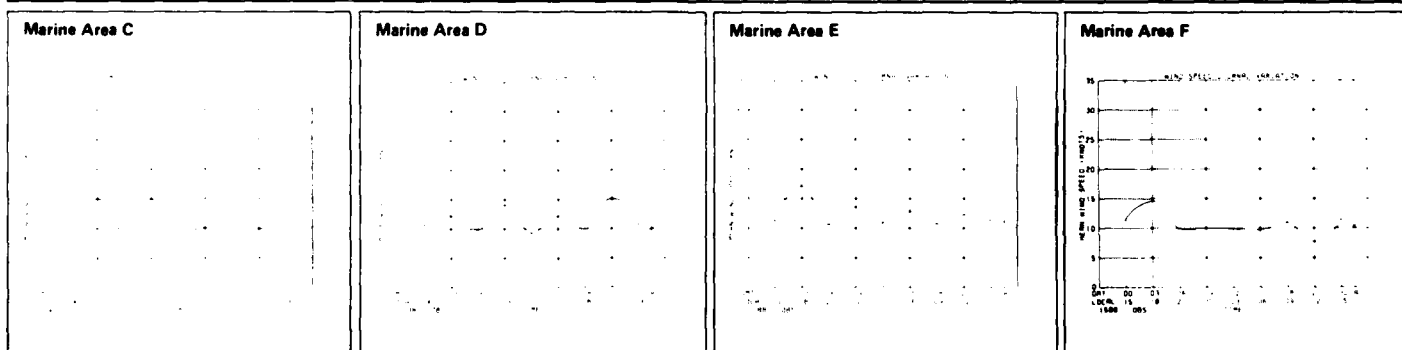
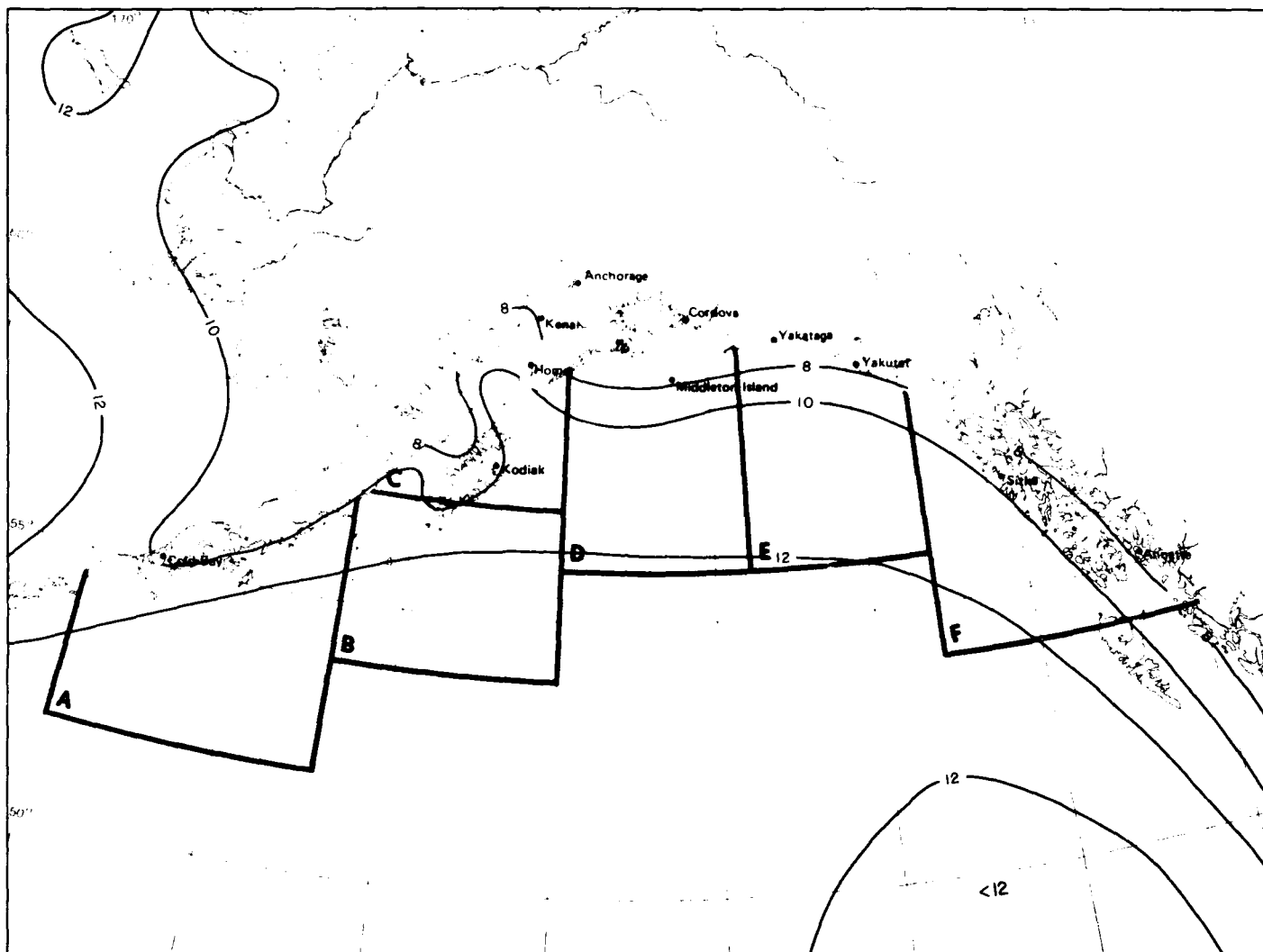


9 Wind speed thresholds

July







11 Scalar mean wind

July

Low cloud ceiling/visibility

		VISIBILITY									
		0	1	2	3	4	5	6	7	8	9
LOW CLOUD CEILING	0-499	0	0	0	3	1	3	6	4		
	500-999	0	0	0	0	0	0	0	4		
	1000-1999	0	0	0	7	7	2	2			
	2000-2999	0	0	1	1	2	1				
	3000-3999	0	1	0	0	0	0				
	4000-4999	0	0	0	0	0	0				
	5000-5999	0	0	0	0	0	0				
		134									

Percent frequency of simultaneous occurrence of specified low cloud ceilings (hundreds of feet) and visibilities (nautical miles)

Low cloud ceiling heights are estimated from the height of low

clouds (h) when low cloud amount (N_h) is ≥ 5.8
 Observations are included under ceiling 0-1.5

N C (no ceiling) includes bases of clouds ≥ 8000 feet as well as occurrences of $N_h < 5$ 8

--- (2% of all observations reported ceiling ≥ 1000 but < 2000 feet simultaneously with visibility ≥ 5 but < 10 nautical miles)

--- indicates < 5% but > 0

Map - Low cloud ceiling and visibility thresholds

BLACK LINE Percent frequency of low cloud ceiling ≥ 1000 feet for no

low cloud ceiling and visibility ≥ 5 nautical miles

BLUE LINE Percent frequency of low cloud ceiling < 600 feet and or visibility < 2 nautical miles

Cold Bay

		VISIBILITY									
		1/2	1/4	1/8	1/16	1/32	1/64	1/128	1/256	1/512	1/1024
LOW CLOUD CEILING	NC	-	-	-	-	-	-	-	-	4	3
	50+80	0	0	0	0	0	0	0	0	0	1
	35+50	0	0	0	0	0	0	0	0	0	1
	20+35	0	0	0	0	0	0	0	2	5	
	10+20	-	-	-	-	-	-	-	1	7	12
	6+10	0	0	0	0	0	0	0	4	12	5
	3+6	0	0	0	0	0	0	0	3	9	2
	1.5+3	0	0	0	0	0	0	0	0	0	0
0+1.5	3	1	1	1	1	1	1	1	1	0	

4942

Kodiak

		VISIBILITY						
		< 1/2	1/2-1	1-2	2-5	5-10	10-100	> 100
LOW CLOUDS (%)	NO.						4	39
	50-80	0	0	0	0	0	0	2
	35-50	0	0	0	0	0	1	4
	20-35	0	0	0	0	0	2	10
	10-20	0	0	0	0	1	4	6
	5-10	0	0	0	0	2	4	2
	3-6	0	0	0	2	4	3	1
	1-3	0	0	0	0	0	0	0
0-1.5	2	2	2	1	0	0	0	

Homer

[illegible]

Kenai

Date	Temperature		Wind	Direction	State	Remarks
	Max	Min				
5-1-80	55	40	10	SE	NY	Cloudy
5-2-80	55	40	10	SE	NY	Cloudy
5-3-80	55	40	10	SE	NY	Cloudy
5-4-80	55	40	10	SE	NY	Cloudy
5-5-80	55	40	10	SE	NY	Cloudy
5-6-80	55	40	10	SE	NY	Cloudy
5-7-80	55	40	10	SE	NY	Cloudy
5-8-80	55	40	10	SE	NY	Cloudy
5-9-80	55	40	10	SE	NY	Cloudy
5-10-80	55	40	10	SE	NY	Cloudy

Anchorage

LOW CLOUD CEILING	VISIBILITY				
	1/2-1	1-2	2-5	5-10	10+
NC	0	0	2	5	0
50-80	0	0	0	0	8
35-50	0	0	0	0	7
20-35	0	0	0	0	8
10-20	0	0	0	2	6
6-10	0	0	0	2	2
3-6	0	0	0	0	1
1-3	0	0	0	0	0
0-1.5	0	0	0	0	0

Middleton Island

Time trial	Time (min)	Heart rate (b·min ⁻¹)	Power (W)	VO ₂ (l·min ⁻¹)	VO ₂ max (l·min ⁻¹)	VO ₂ max (% of predicted)
1000 m	4:15.8	175.5	400.0	30.0	36.0	83.3
1500 m	6:45.5	165.5	300.0	22.5	30.0	75.0
1000 m to exhaustion	10:11.1	185.5	450.0	35.0	36.0	83.3

Cordova

LOW CLOUD CELLING	VISIBILITY				
	0.1	0.2	0.5	1.0	≥10
50+80	0	0	0	0	0
75+50	0	0	0	0	4
20+35	0	0	0	0	6
10+20	0	0	0	0	9
5+10	0	1	2	4	2
3+6	0	0	1	2	2
1.5+3	0	0	0	0	0
0+1.5	0	0	0	0	0

Yakataga

		VISIBILITY					
		<1/2	1/2<1	1-2	2-5	5-10	>10
LOW CLOUD CEILING	NC	1	1	0	1	1	3
	50-80	0	0	1	0	0	9
	35-50	0	0	0	0	2	1
	20-35	0	0	0	0	4	16
	10-20	0	0	1	3	2	1
	6-10	0	0	3	1	1	0
	3-6	0	0	0	1	0	0
	1-3	0	0	0	0	0	0
	0<1.5	1	3	1	0	0	0

Yakutat

		VISIBILITY						
		<1/2	1/2-1	1-2	2-5	5-10	>10	
LOW CLOUD CEILING	NC	1	1	1	1	1	2	
	50-80	+	+	0	0	+	+	
	35-50	+	0	+	+	+	2	
	20-35	0	0	+	+	2	7	
	10-20	+	+	+	1	5	14	
	6-10	0	1	2	4	8	5	
	3-6	+	2	3	4	4	2	
	1-5	+	1	+	+	+	+	
0-1.5	1	1	+	+	+	0		

Sitka

Figure 1 is a schematic diagram of the experimental setup. It shows a subject seated at a table, looking at a video screen. A video camera is positioned above the screen. A light source is positioned to the left of the screen. A target is positioned on the screen. The subject's hand is positioned near the target. The diagram illustrates the spatial arrangement of the components used in the experiment.

Annette

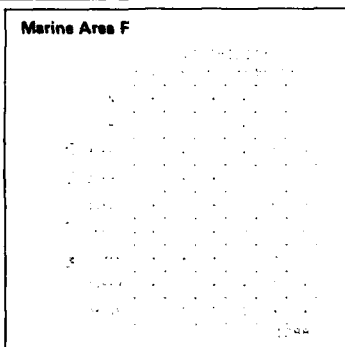
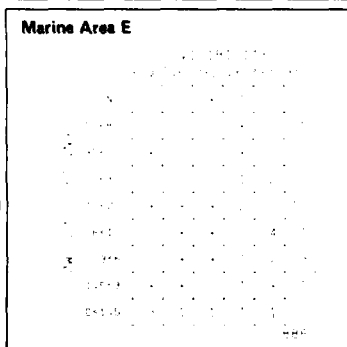
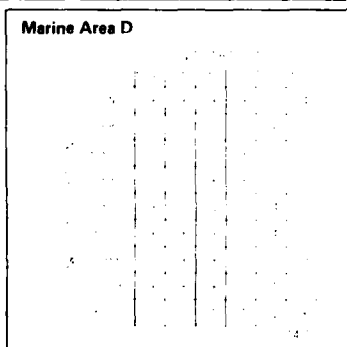
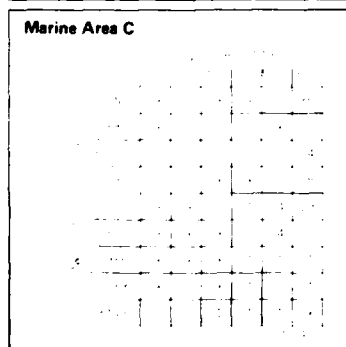
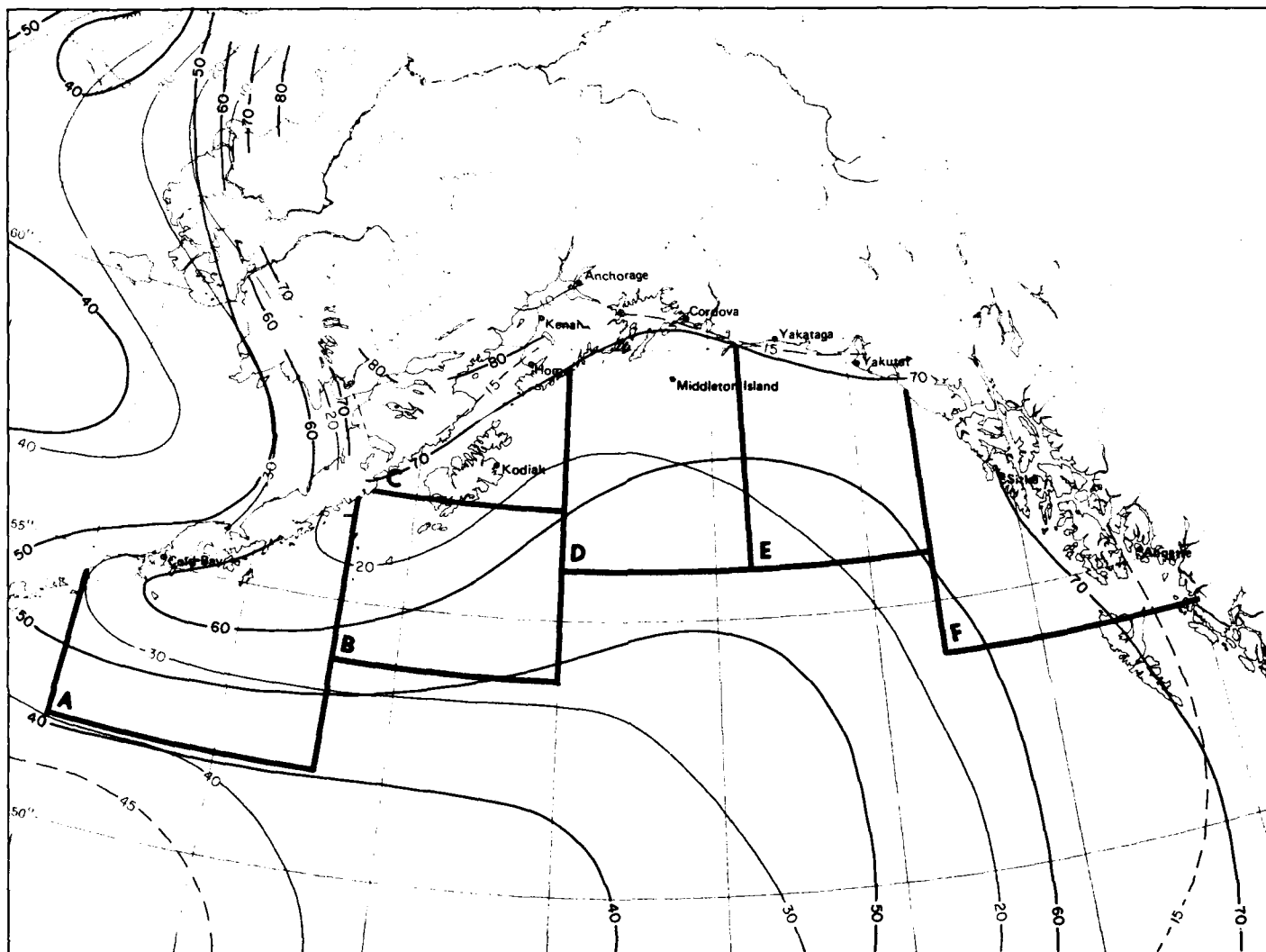
		VISIBILITY				
		1/2	1	1 1/2	2 or more	10 or more
DN1733 DN013 MD7	NC	*	*	*	*	1 43
	50*80	*	0	0	0	* 3
	35*50	0	0	0	0	* 4
	20*35	0	0	0	*	* 11
	10*20	0	*	*	1	2 12
	6*10	*	*	*	2	3 4
	3*6	*	*	1	3	2 2
	1.5*3	*	*	*	*	*
0*1.5	1	*	*	*	0	

Marine Area A

[illegible]

Marine Area B

Figure 1 is a log-log plot showing the relationship between the logarithm of the rate of polymerization ($\lg R_p$) and the logarithm of the concentration of the initiator ($\lg [I]$). The y-axis is labeled $\lg R_p$ and ranges from 0 to 1.5. The x-axis is labeled $\lg [I]$ and ranges from 0 to 1.5. The data points are approximately at (0.2, 0.2), (0.4, 0.4), (0.6, 0.6), (0.8, 0.8), (1.0, 1.0), and (1.2, 1.2). A straight line is drawn through these points, and its equation is given as $\lg R_p = 0.5 \lg [I] + 0.2$.



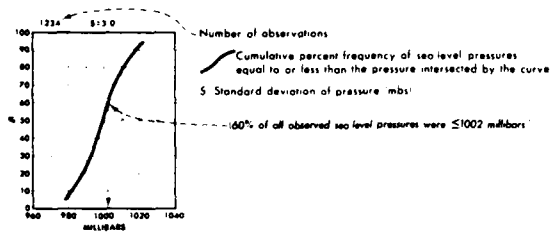
12 Low cloud ceiling and visibility thresholds

July

Legend

Sea level pressure

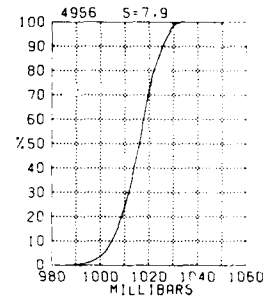
Map - Mean sea level pressure



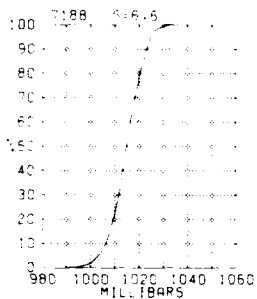
BLACK LINE Mean sea level pressure (millibars)

Sea level pressure is one of the most frequently recorded elements but one of the least accurate because of instrument and coding errors. Despite the inaccuracies of the individual readings, however, the large-scale patterns and mean gradients of the isopleth analyses are relatively accurate.

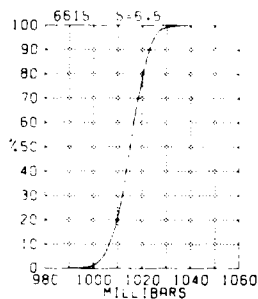
Cold Bay



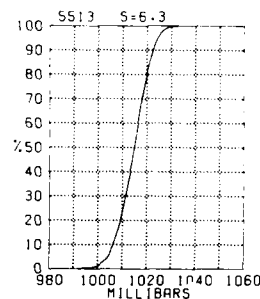
Kodiak



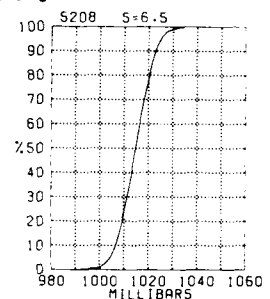
Homer



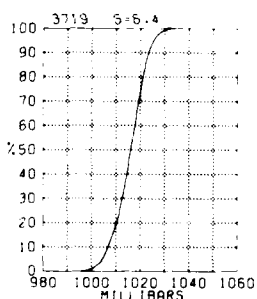
Kensai



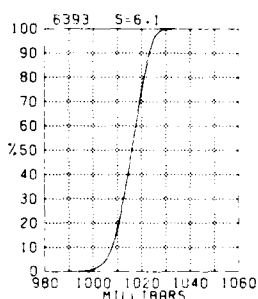
Anchorage



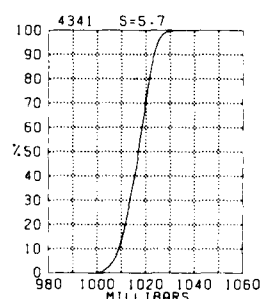
Middleton Island



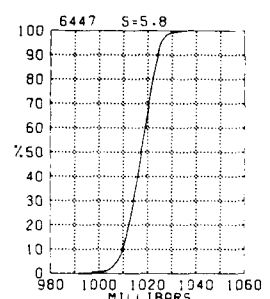
Cordova



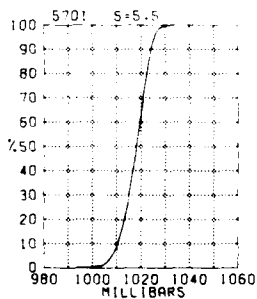
Yakutat



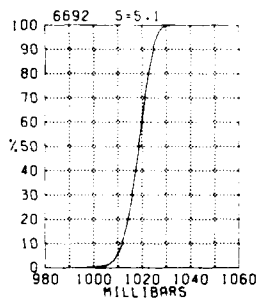
Yakutat



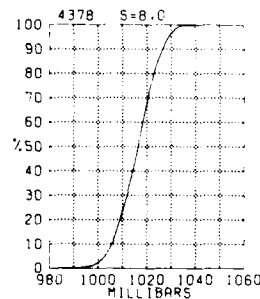
Sitka



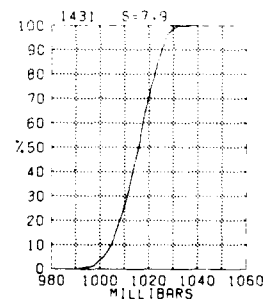
Annette

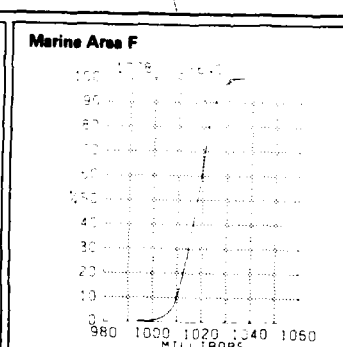
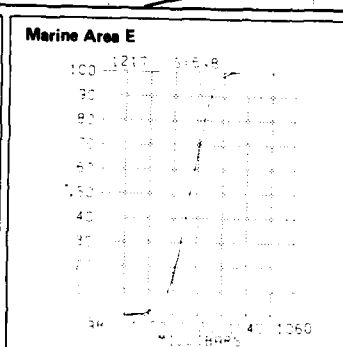
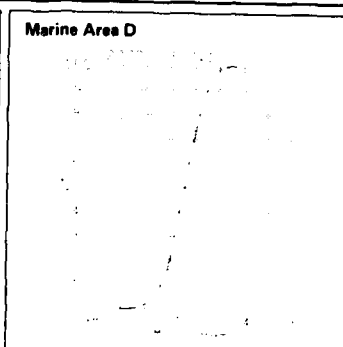
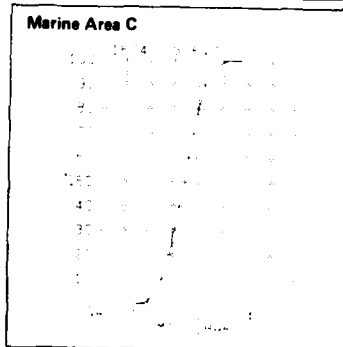
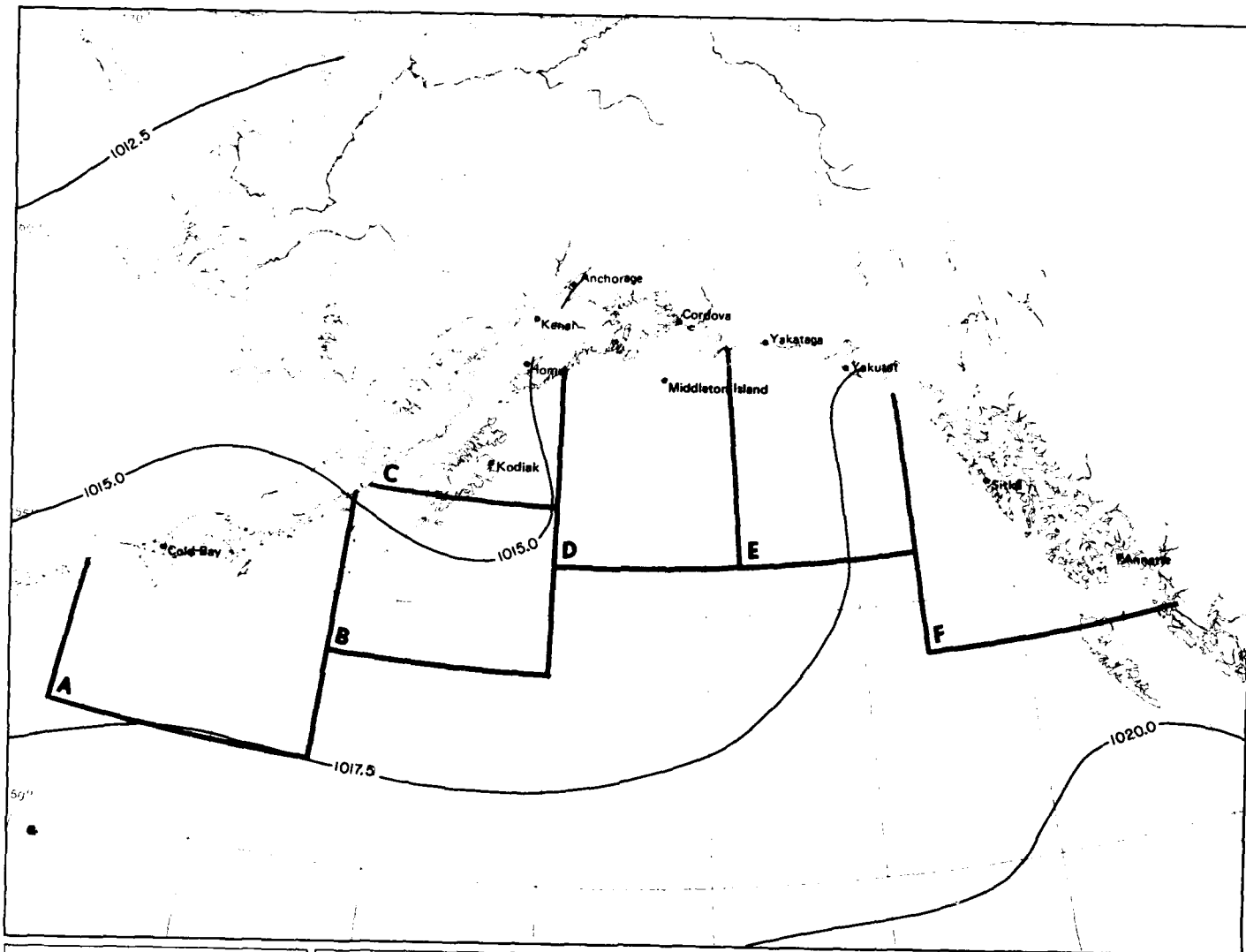


Marine Area A



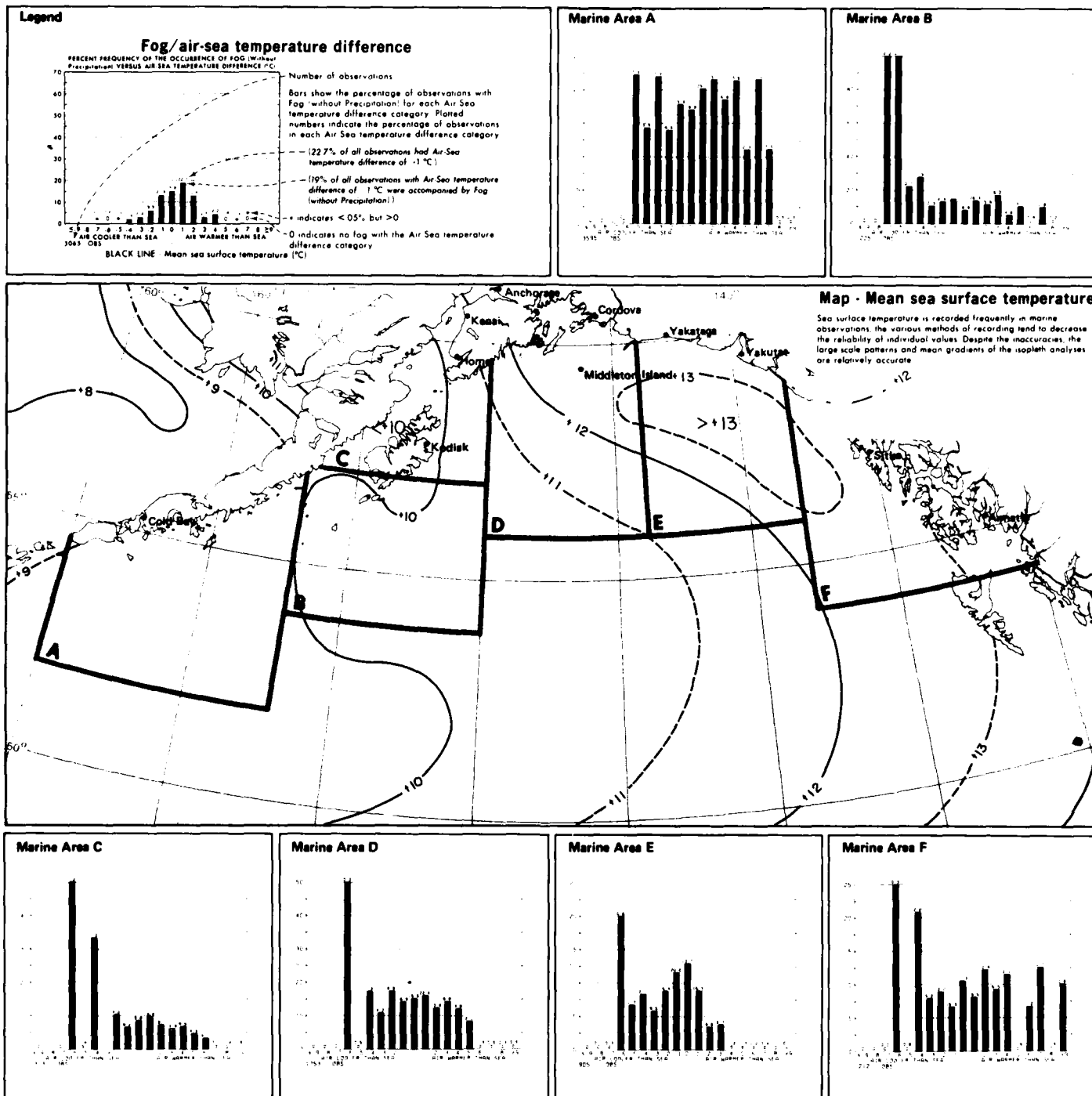
Marine Area B





13 Mean sea level pressure

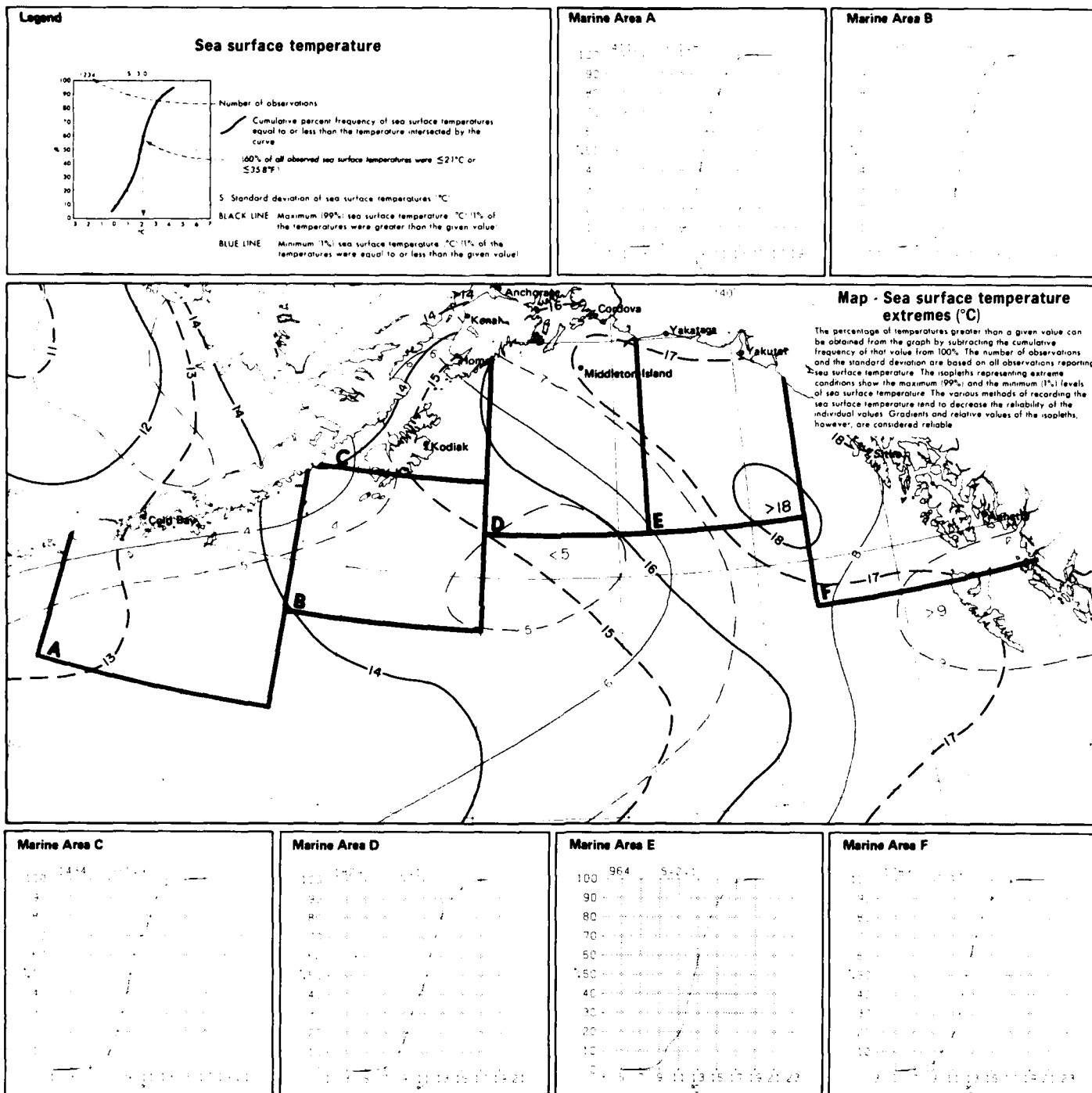
July



July

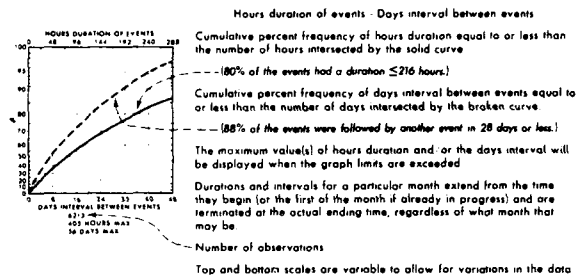
256

14 Fog/air-sea temperature difference
Mean sea surface temperature

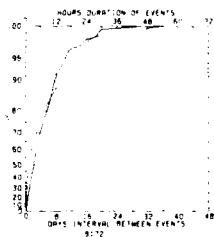


Legend

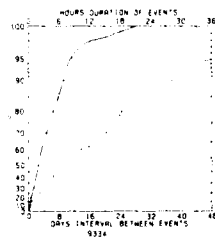
Persistence of visibility < 2 n. mi.



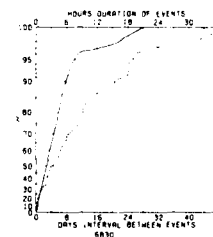
Kodiak



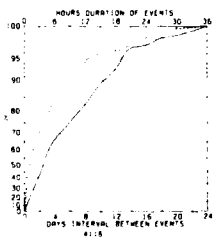
Homer



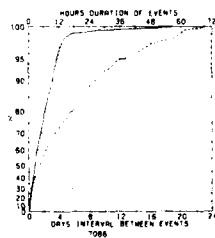
Kenai



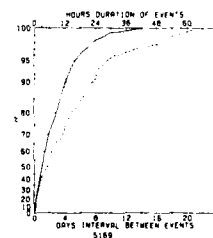
Middleton Island



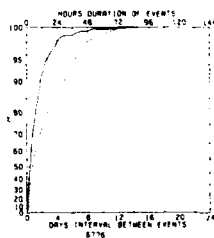
Cordova



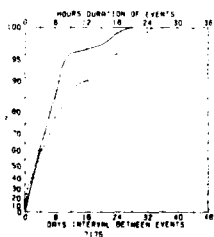
Yakutat



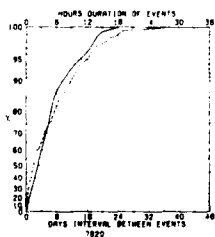
Yakutat



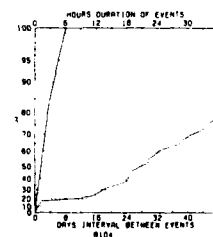
Sitka



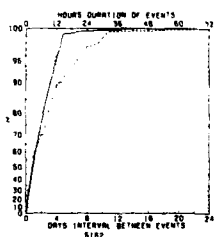
Annette



Anchorage



Cold Bay

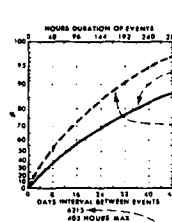


19 Persistence of visibility < 2 n. mi.

July

Legend

Persistence of wind ≥ 10 kts.



Hours duration of events Days interval between events

Cumulative percent frequency of hours duration equal to or less than the number of hours intersected by the solid curve

--- (80% of the events had a duration ≤ 216 hours.)

Cumulative percent frequency of days interval between events equal to or less than the number of days intersected by the broken curve

--- (88% of the events were followed by another event in 28 days or less.)

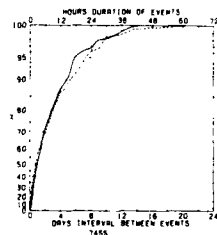
The maximum value(s) of hours duration and/or the days interval will be displayed when the graph limits are exceeded

Durations and intervals for a particular month extend from the time they begin (or the first of the month if already in progress) and are terminated at the actual ending time, regardless of what month that may be

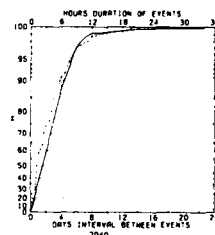
Number of observations

Top and bottom scales are variable to allow for variations in the data

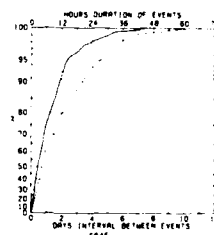
Kodiak



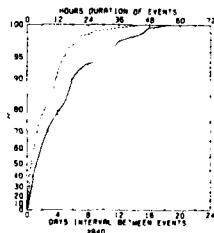
Homer



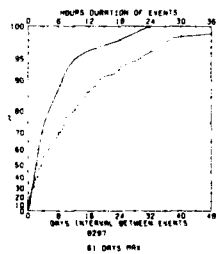
Kenai



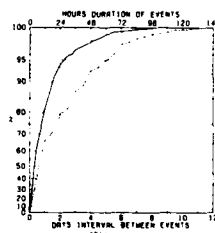
Middleton Island



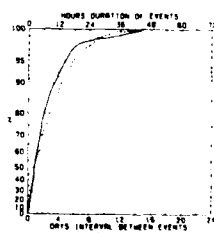
Cordova



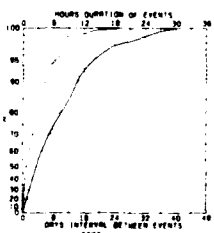
Yakutat



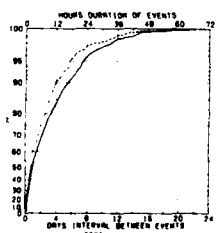
Yakutat



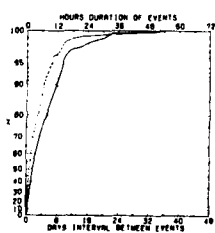
Sitka



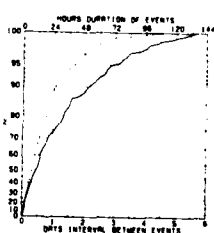
Annette



Anchorage

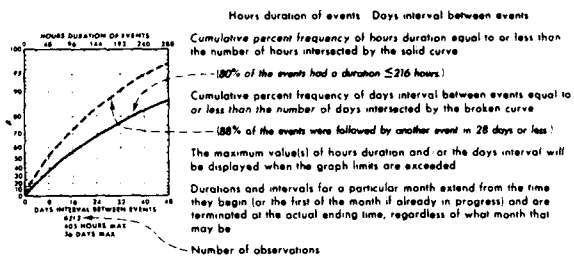


Cold Bay

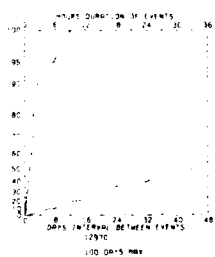


Legend

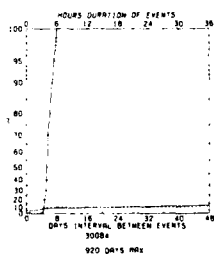
Persistence of wind ≥ 20 kts.



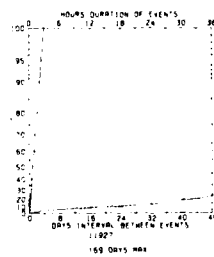
Kodiak



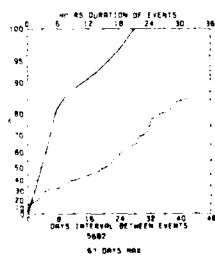
Homer



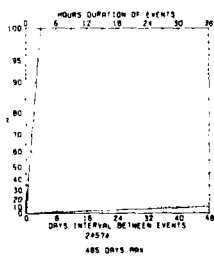
Kenai



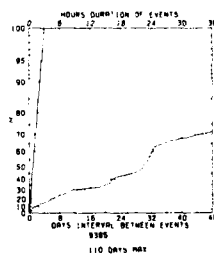
Middleton Island



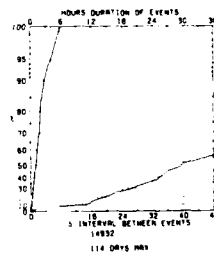
Cordova



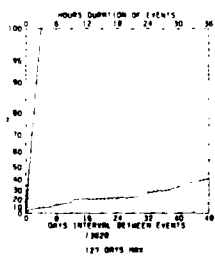
Yakutat



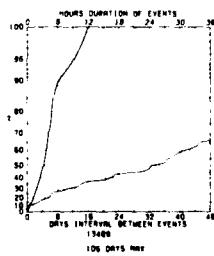
Yakutat



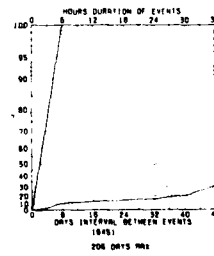
Sitka



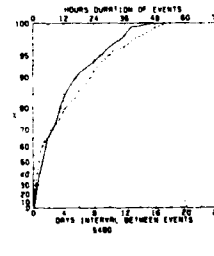
Annette



Anchorage



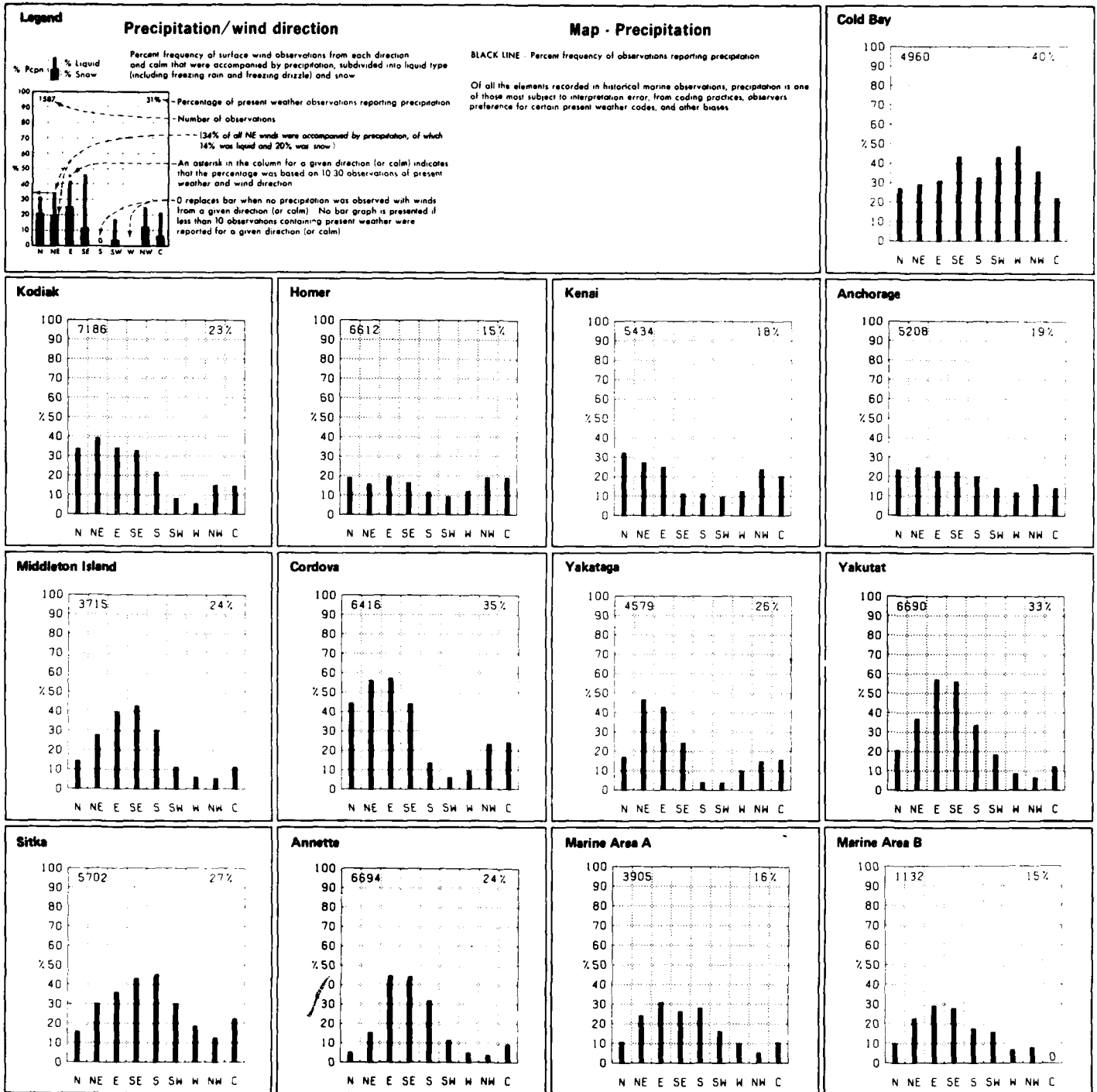
Cold Bay



21 Persistence of wind ≥ 20 kts.

July

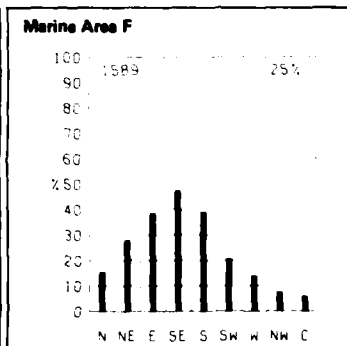
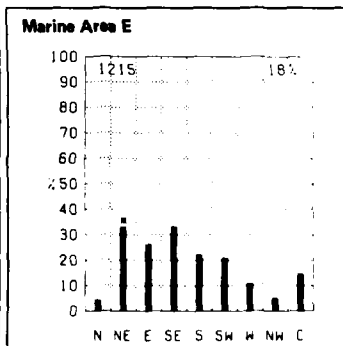
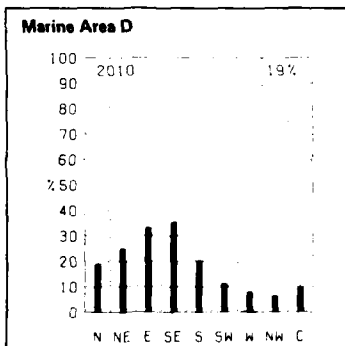
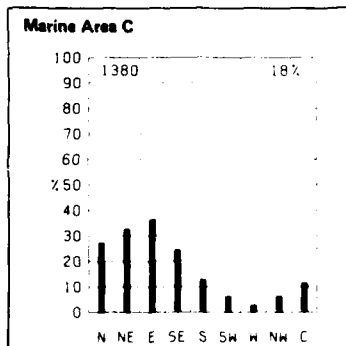
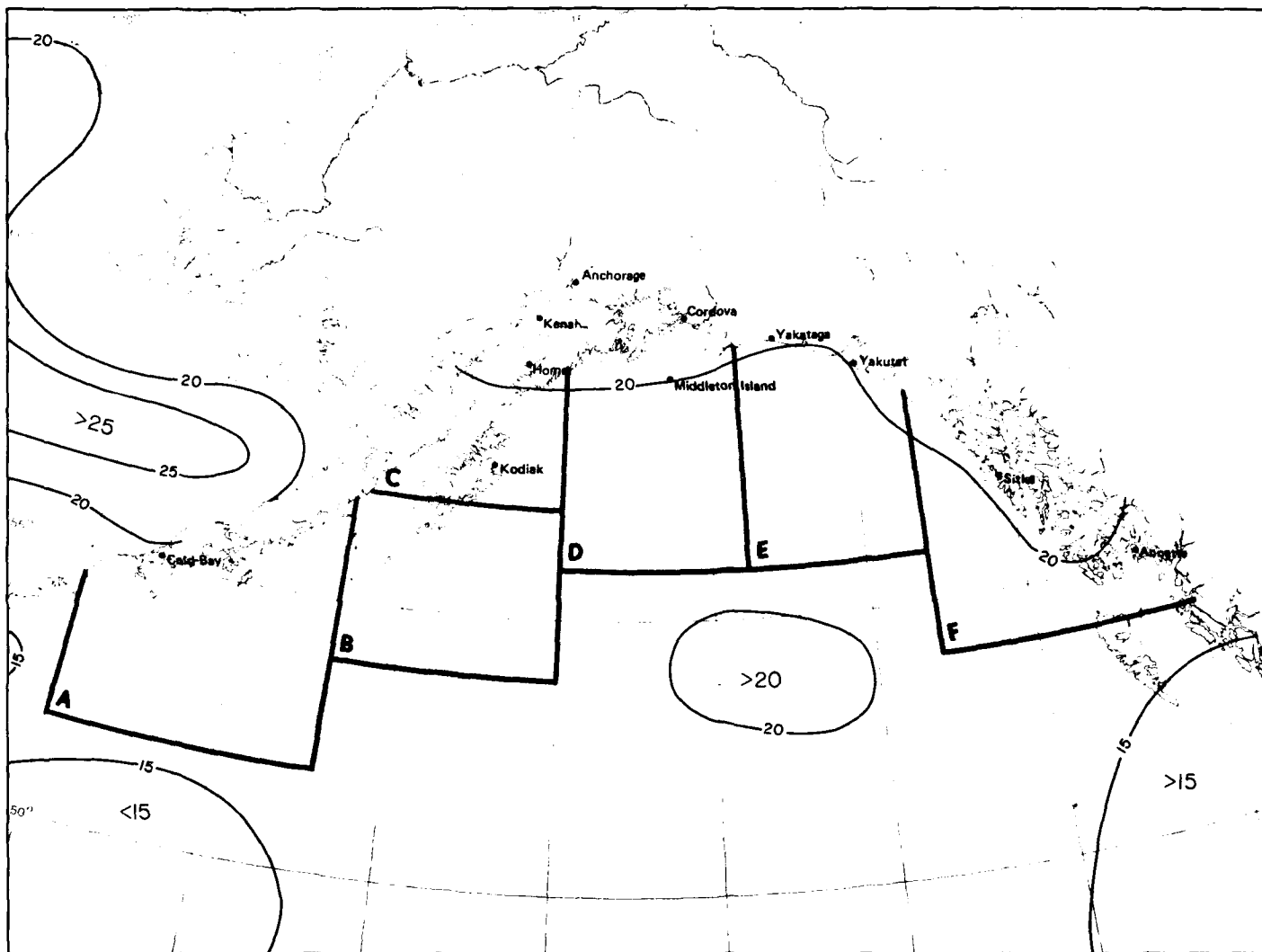
283



August

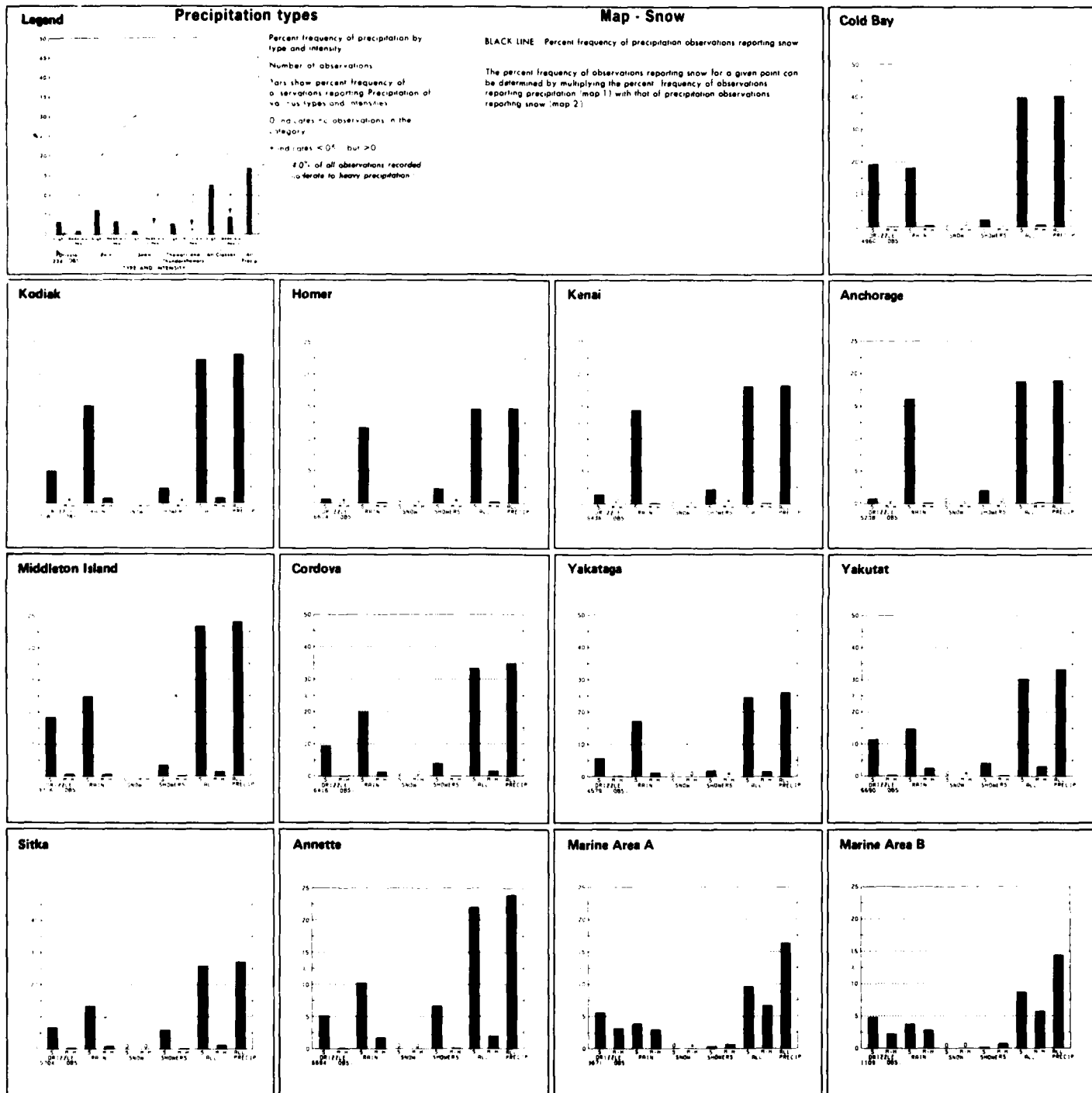
264

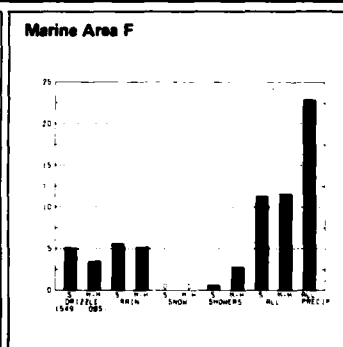
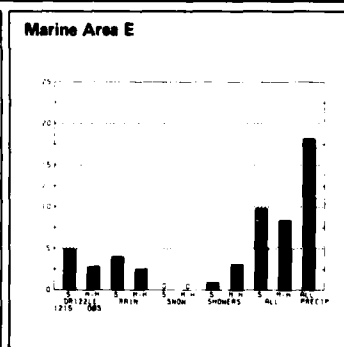
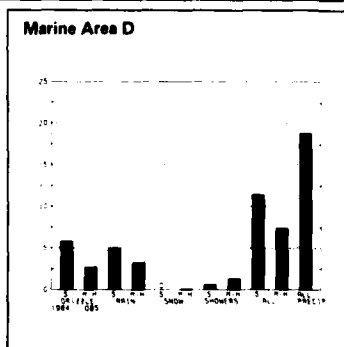
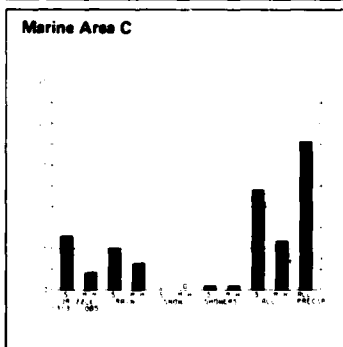
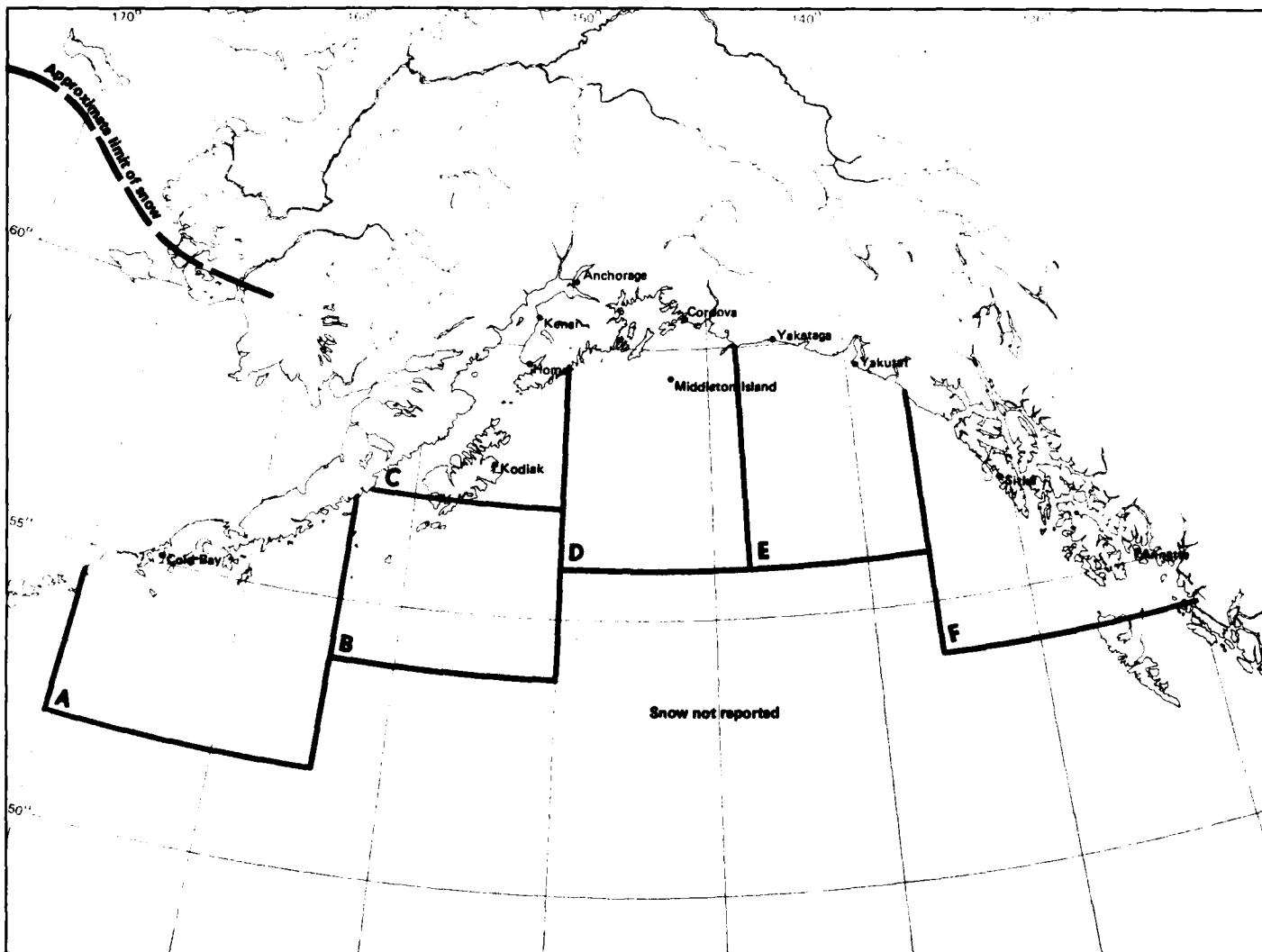
1 Precipitation/wind direction



1 Precipitation

August



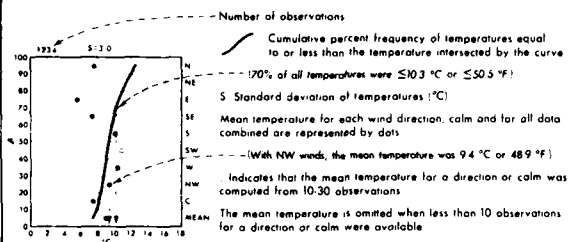


2 Snow

August

Legend

Air temperature/wind direction



Map - Air temperature mean and thresholds

BLACK LINE Percent frequency of temperature $\leq 0^{\circ}\text{C}$ ($\leq 32^{\circ}\text{F}$)

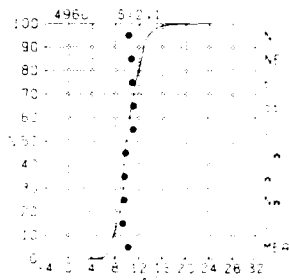
RED LINE Mean air temperature ($^{\circ}\text{C}$)

BLUE LINE Percent frequency of wind chill temperature $\leq 30^{\circ}\text{C}$ ($\leq 22^{\circ}\text{F}$)

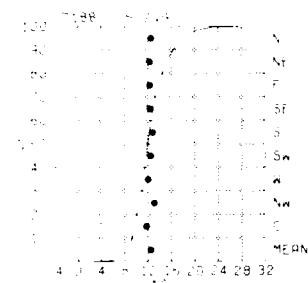
Air temperature readings recorded on transient ships in warm, sunny weather appear biased toward high temperatures, apparently because of improper instrument exposure and ventilation. Despite the inaccuracies, the large-scale patterns and mean gradients of the isopleth analyses are relatively accurate.

The temperature scale of the graph may vary in both range and class interval. The percentage of temperature observations greater than a given value can be obtained by subtracting the cumulative percent frequency of that value from 100%. The number of observations and the standard deviation plus the plotted points on the graphs are based on those observations reporting both temperature and wind direction. The cumulative curve is based on all observations reporting temperature with or without wind direction.

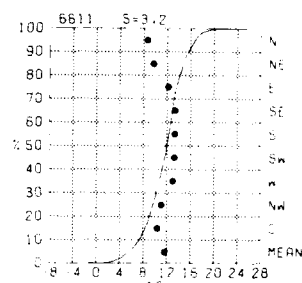
Cold Bay



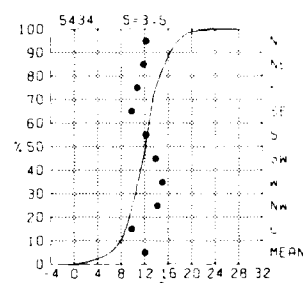
Kodiak



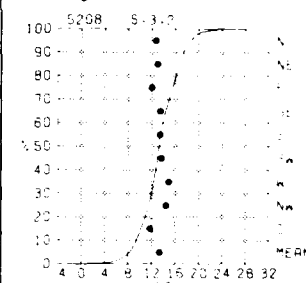
Homer



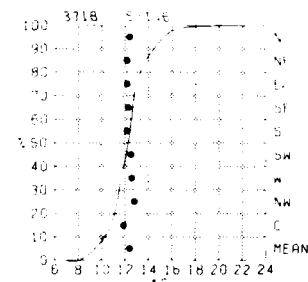
Kenai



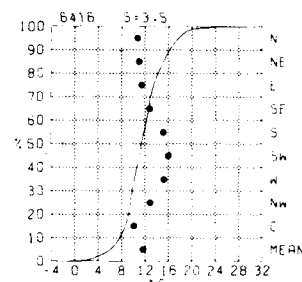
Anchorage



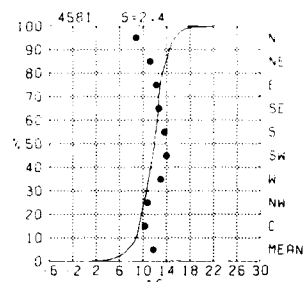
Middleton Island



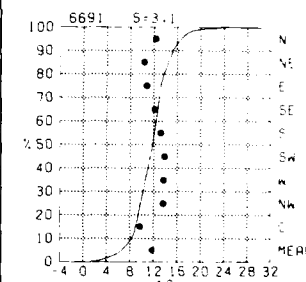
Cordova



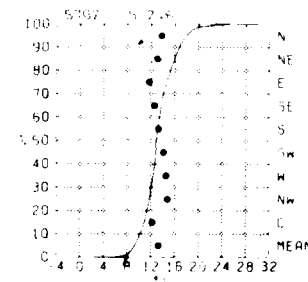
Yakutat



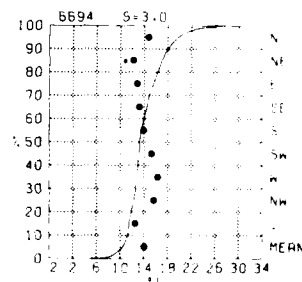
Yakutat



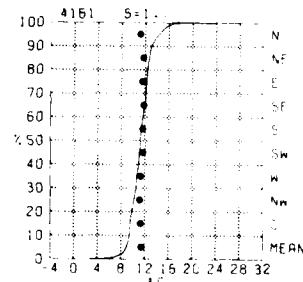
Sitka



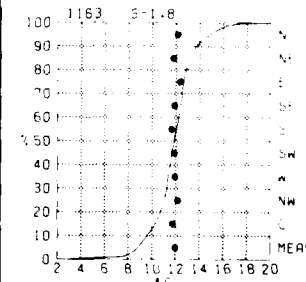
Annette



Marine Area A



Marine Area B



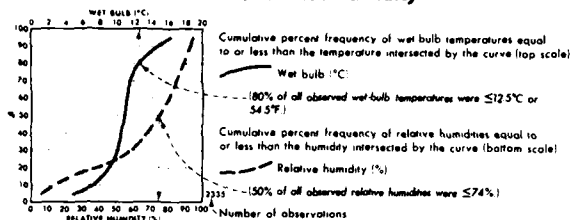
August

208

3 Air temperature/wind direction

Legend

Wet bulb/relative humidity

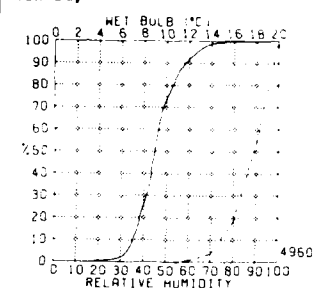


Map - Mean dew point temperature

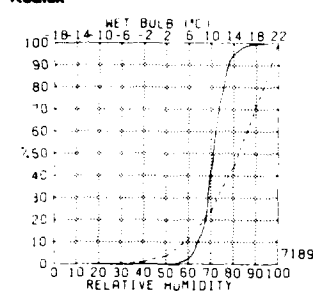
BLACK LINE mean dew point temperature (°C)

The observation count of the graph reflects those observations reporting both air and wet bulb temperatures, both are required in computing the relative humidity. The percentage of observations of either element greater than a given value can be obtained by subtracting the cumulative percent frequency of that value from 100%.

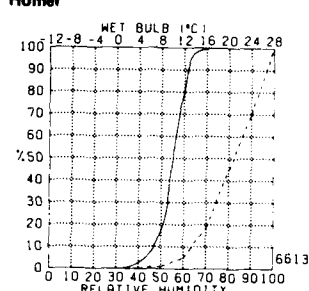
Cold Bay



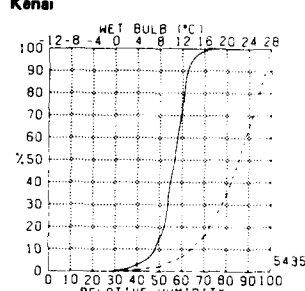
Kodiak



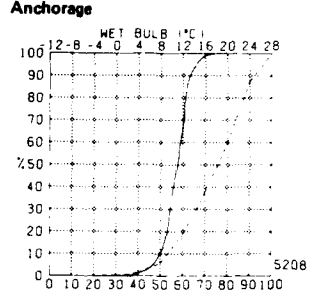
Homer



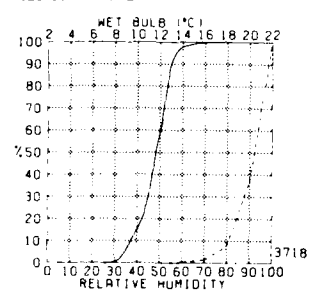
Kenai



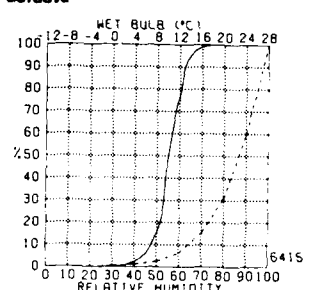
Anchorage



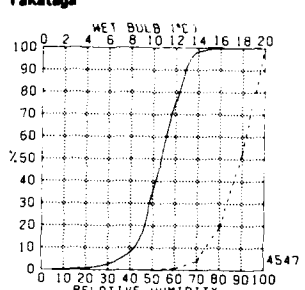
Middleton Island



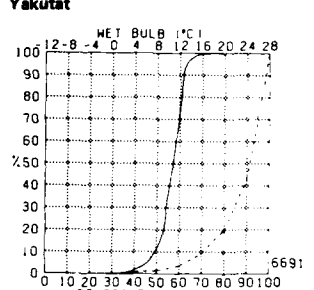
Cordova



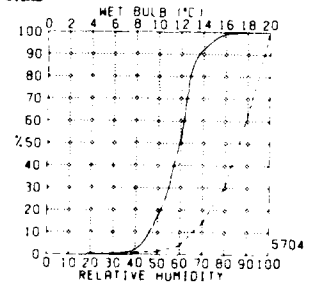
Yakutat



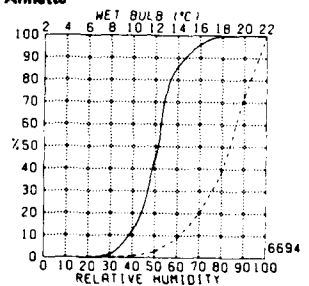
Yakutat



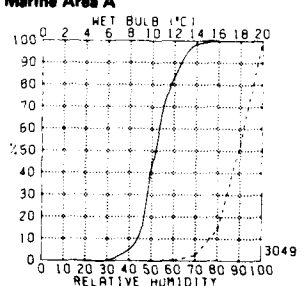
Sitka



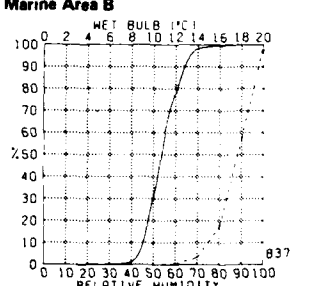
Annette



Marine Area A



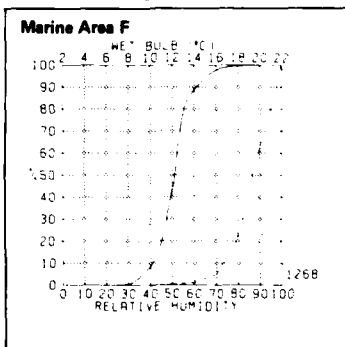
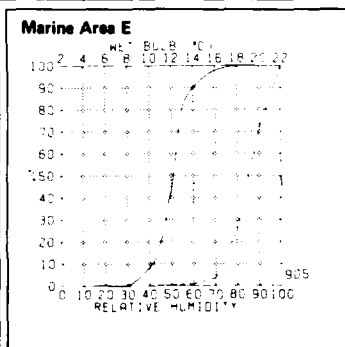
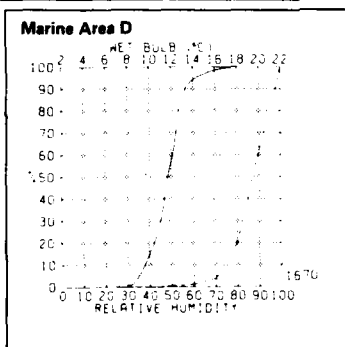
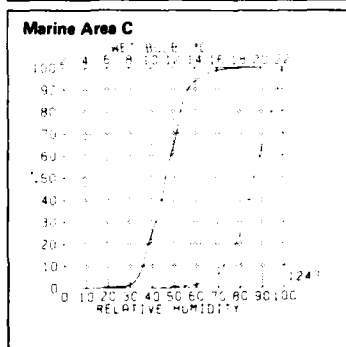
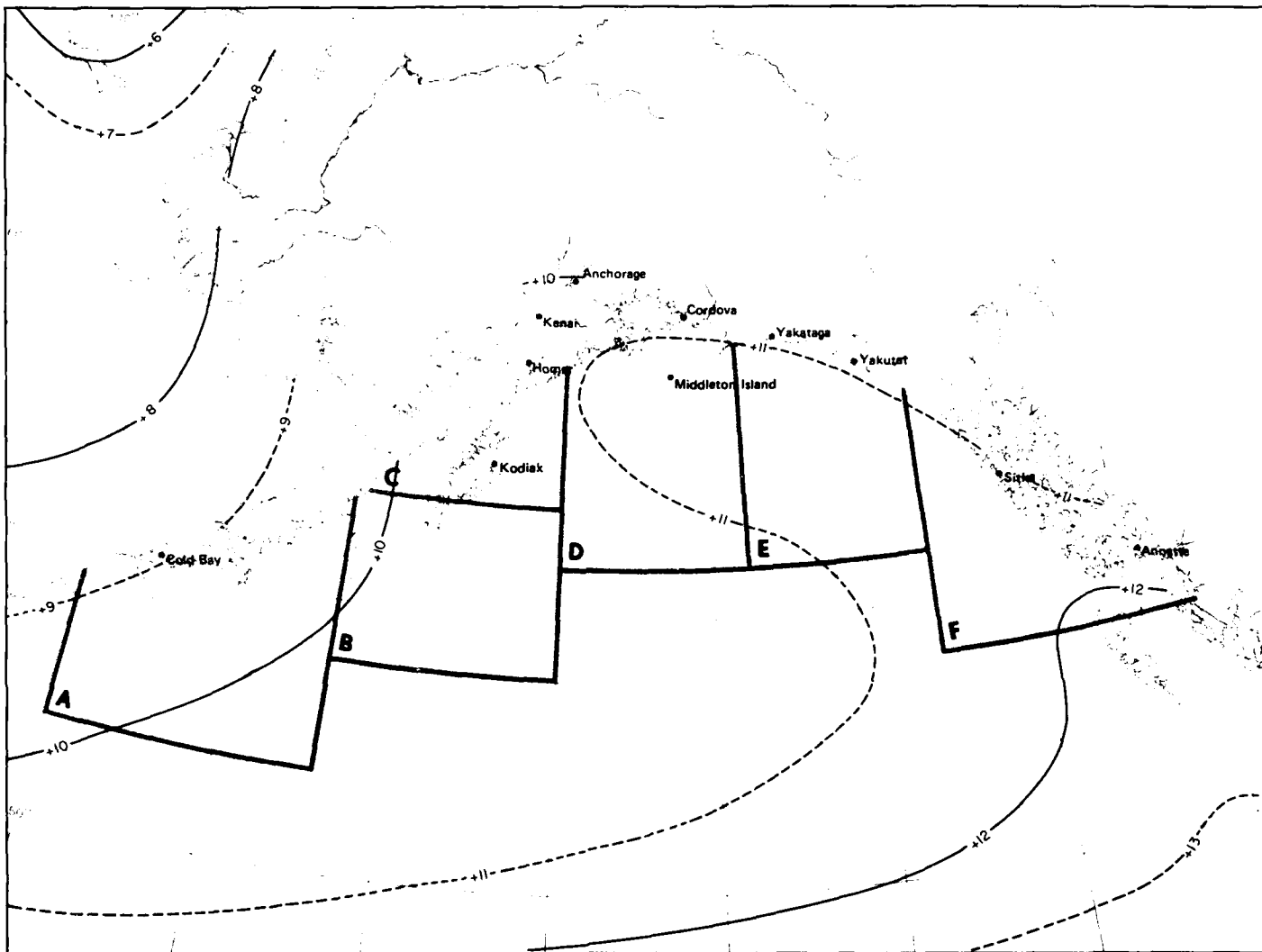
Marine Area B



August

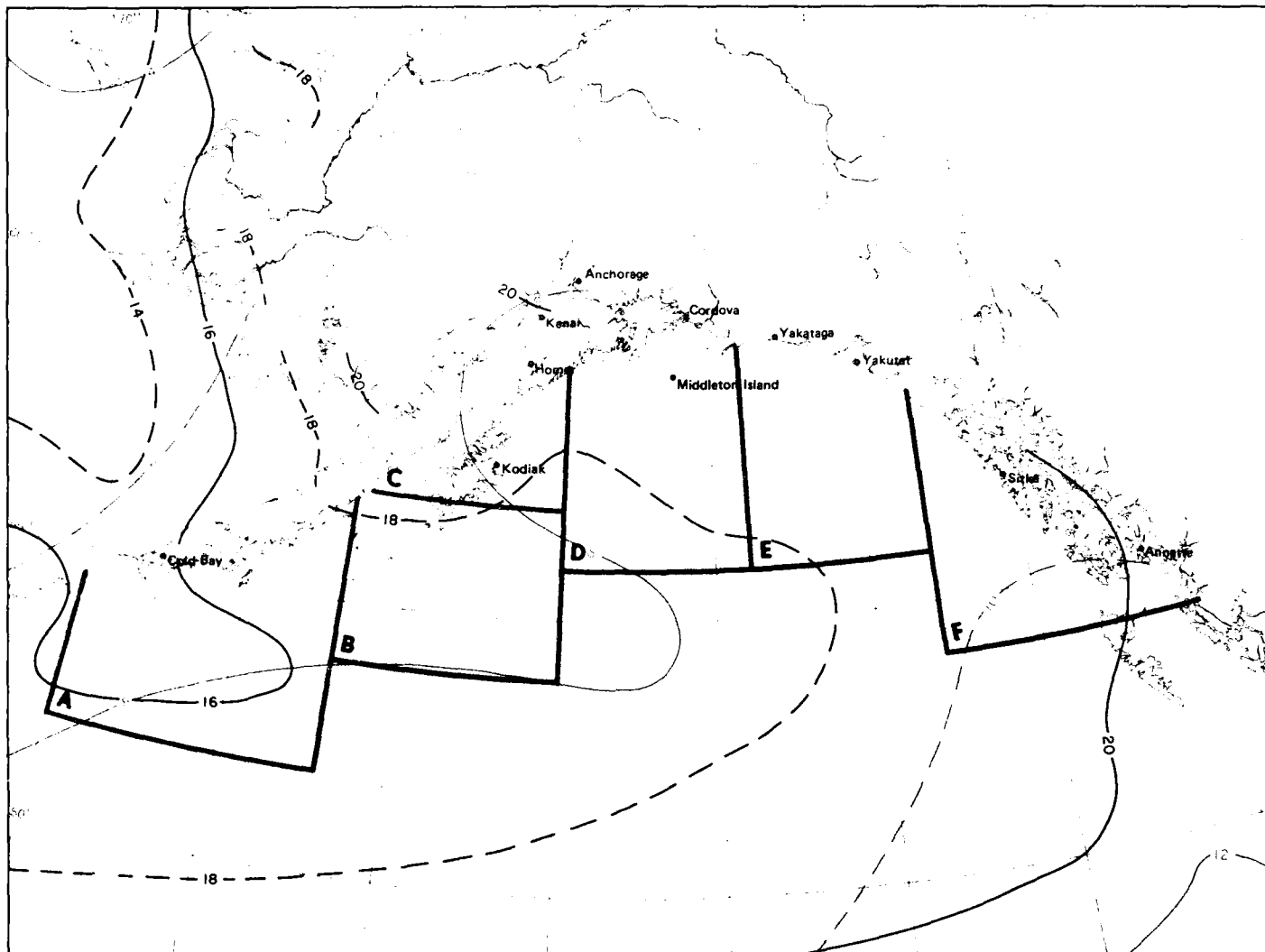
270

4 Wet bulb/relative humidity



4 Mean dew point temperature

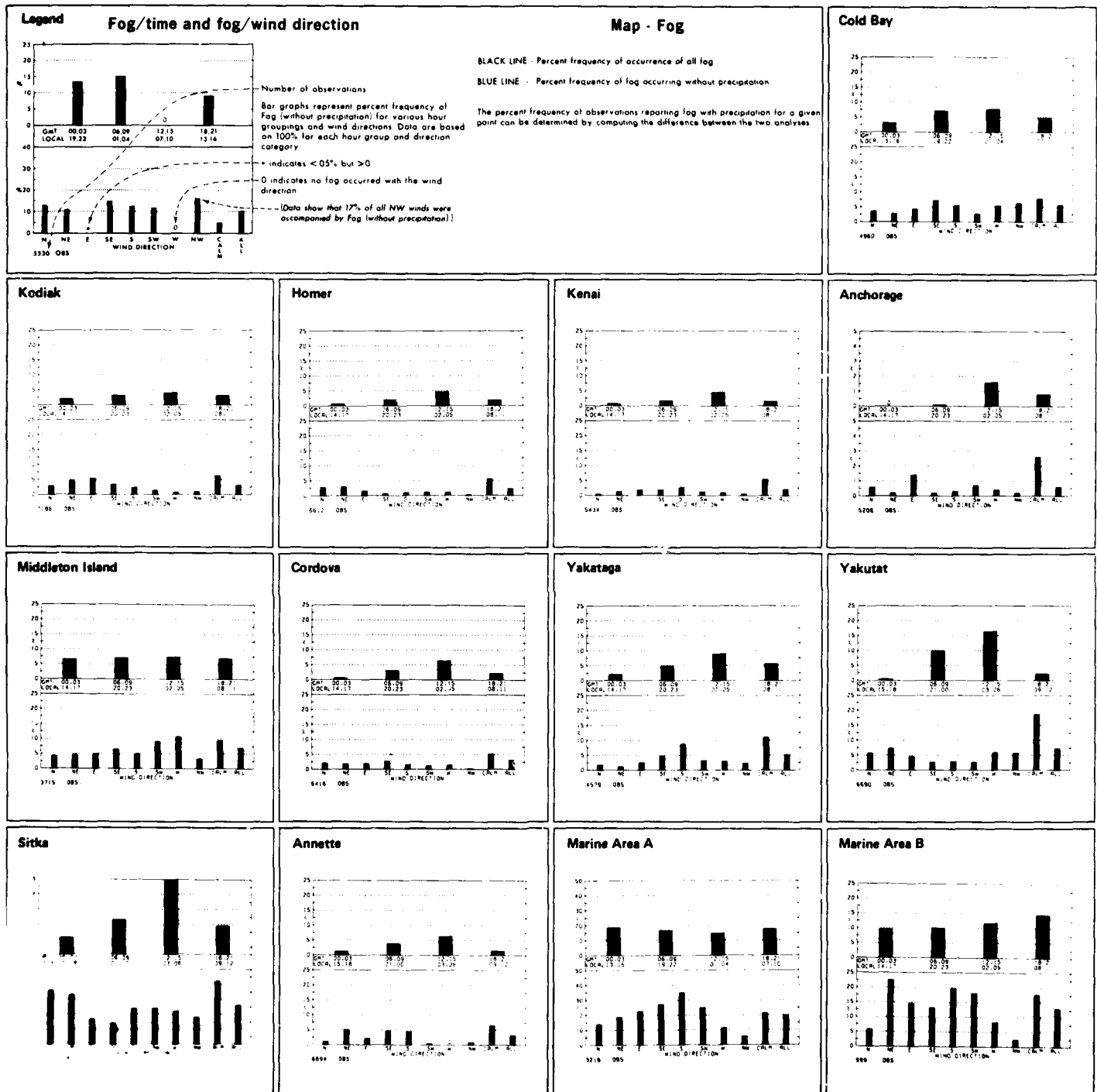
August



Marine Area C	Marine Area D	Marine Area E	Marine Area F
1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020	1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020	1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020	1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020

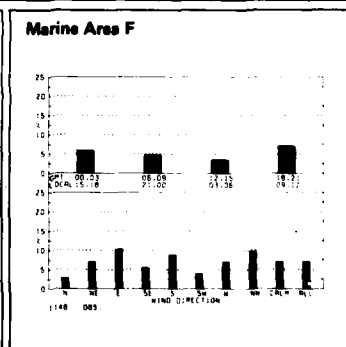
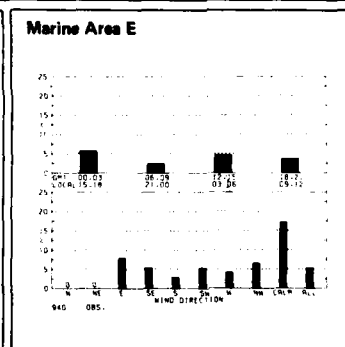
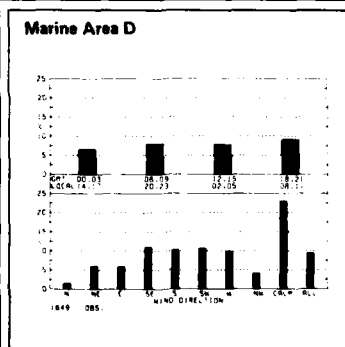
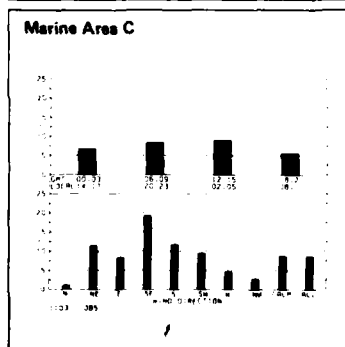
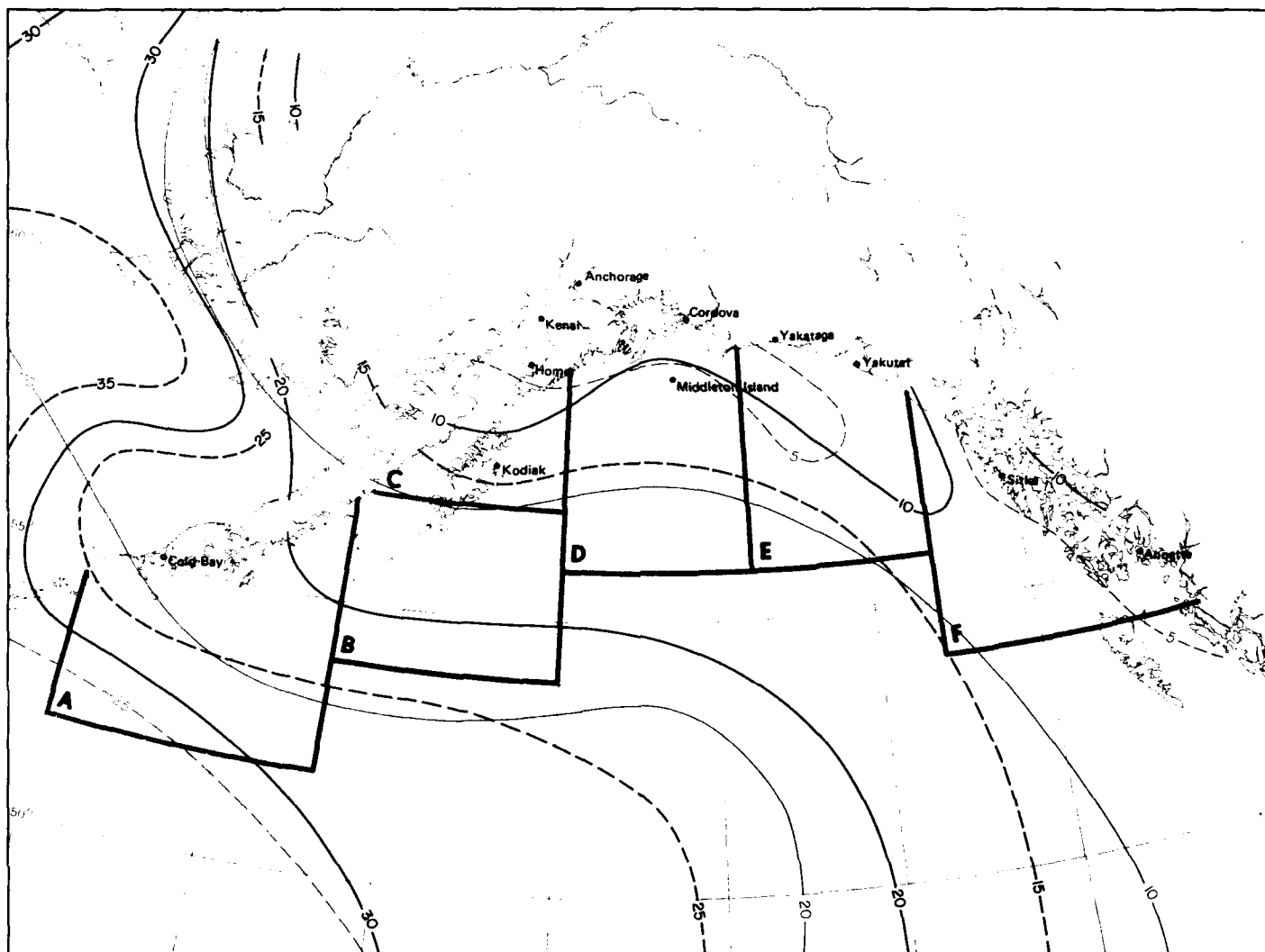
5 Air temperature extremes (°C)

August

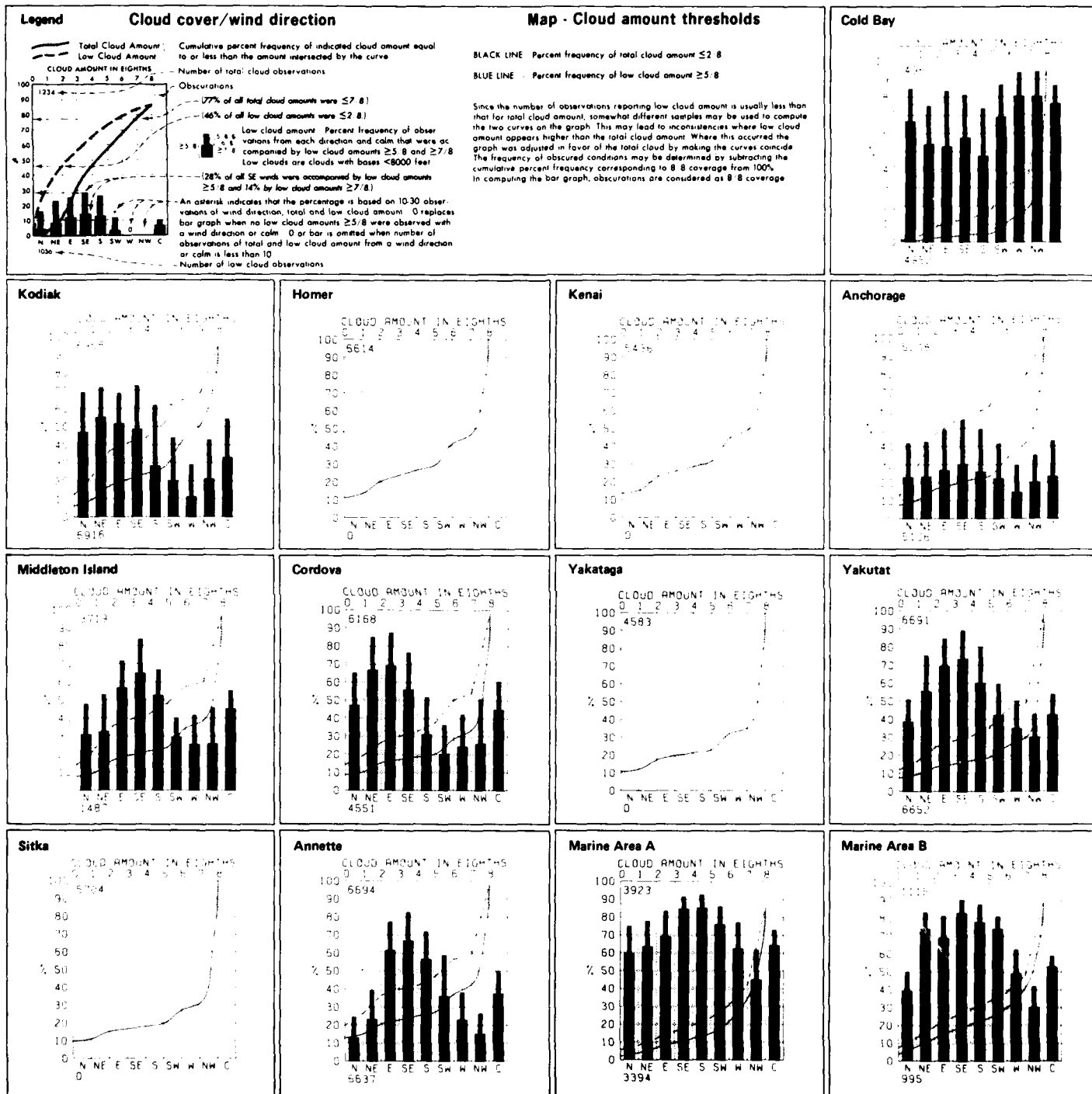


August

6 Fog/time and fog/wind direction

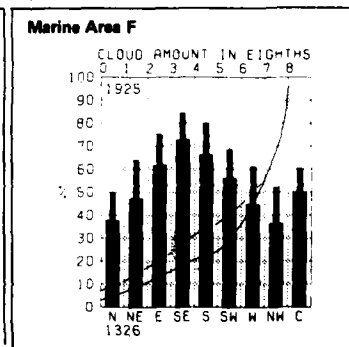
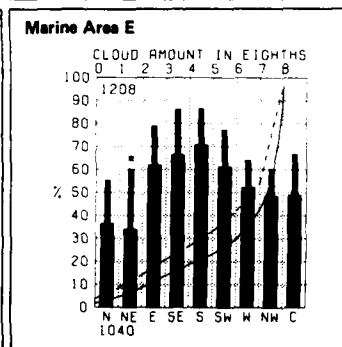
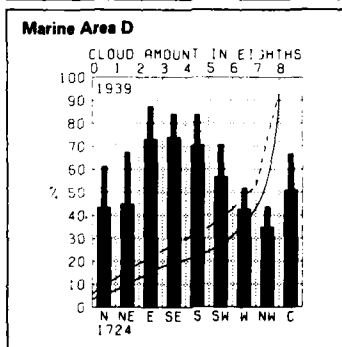
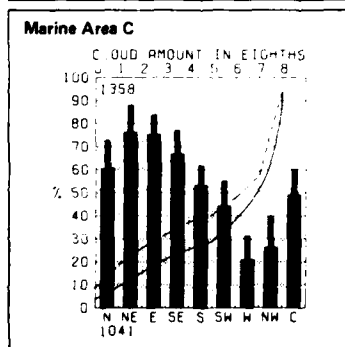
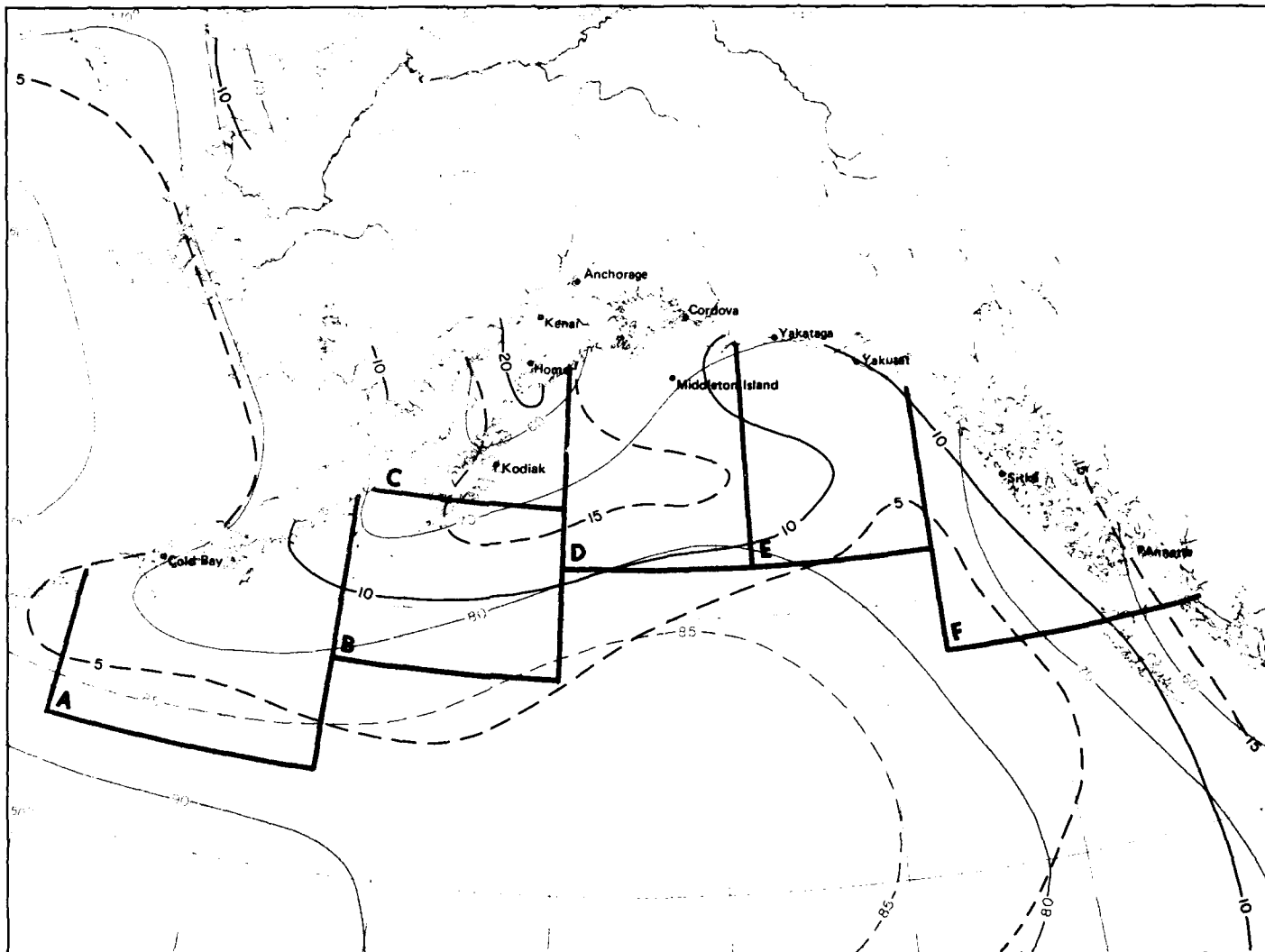


6 Fog



August

7 Cloud cover/wind direction

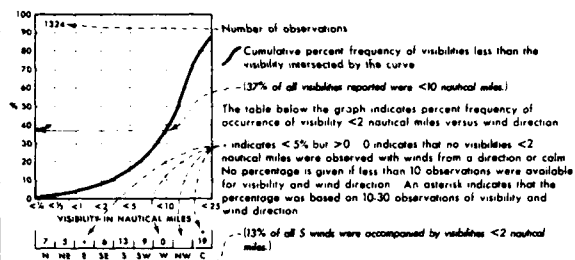


7 Cloud amount thresholds

August

Legend

Visibility/wind direction

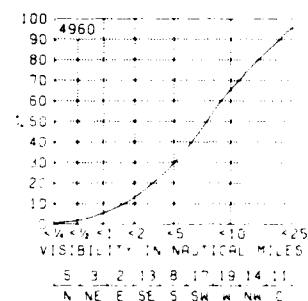


Map - Visibility thresholds

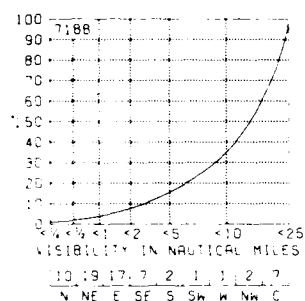
BLACK LINE Percent frequency of visibilities ≥ 5 nautical miles
BLUE LINE Percent frequency of visibilities <2 nautical miles

The percentage of visibility equal to or greater than a given value can be obtained from the graph by subtracting the cumulative percent frequency of that value from 100%. Visibility of sea is difficult to measure because of the lack of reference points. Also, some observers seem to report reduced visibilities at night because of darkness, though this tendency has abated in recent years. The coarseness of the coding intervals, however, tends to minimize serious biases in the summarized data. Visibilities greater than 25 nm. should be interpreted cautiously because the earth's curvature makes it impossible to see 25 nm. horizontally from the bridges of most ships.

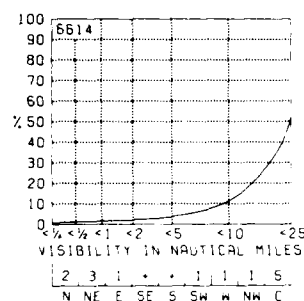
Cold Bay



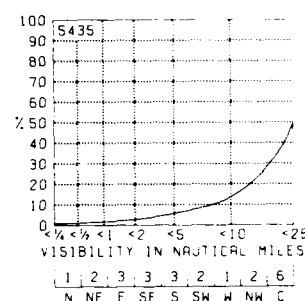
Kodiak



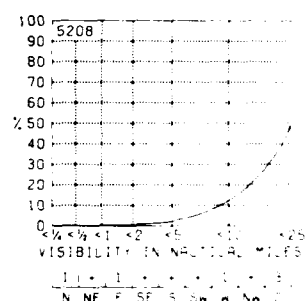
Homer



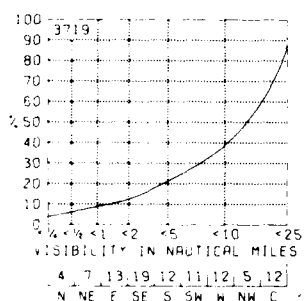
Kenai



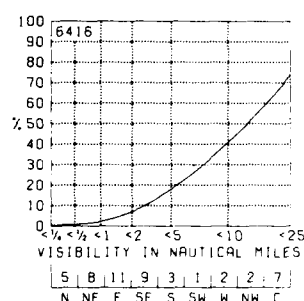
Anchorage



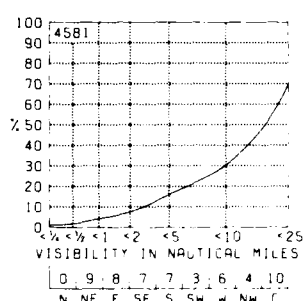
Middleton Island



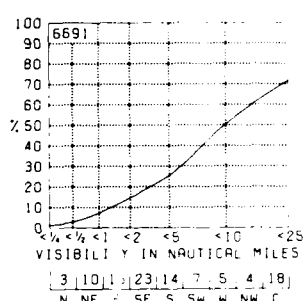
Cordova



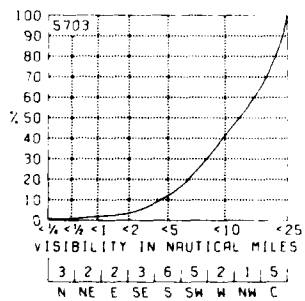
Yakutat



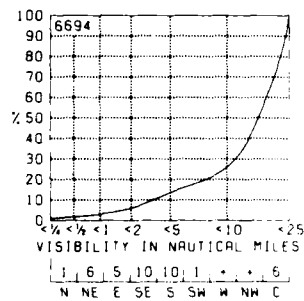
Yakutat



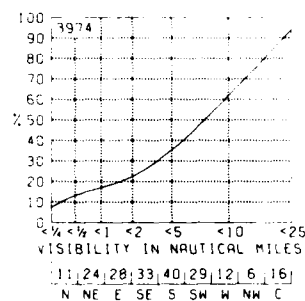
Sitka



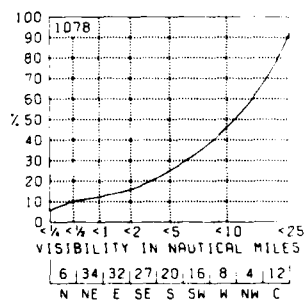
Annette



Marine Area A

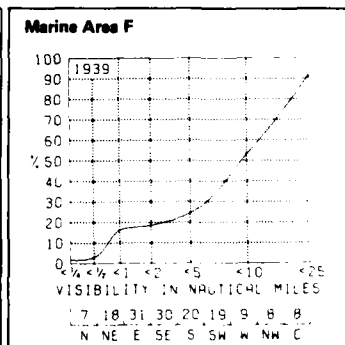
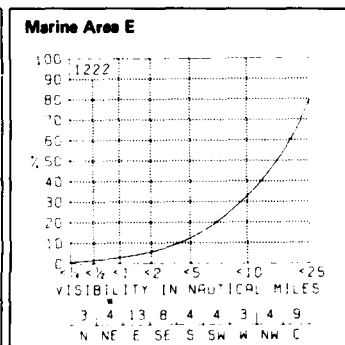
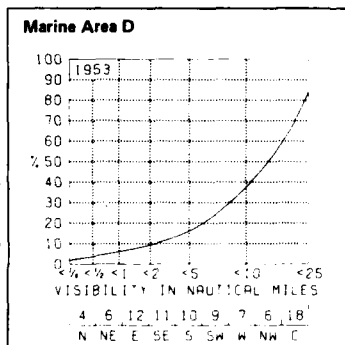
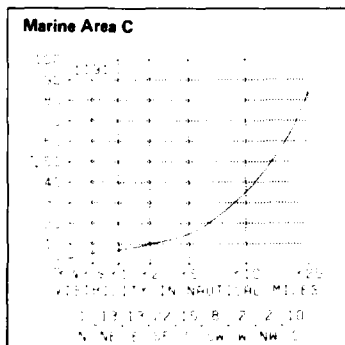
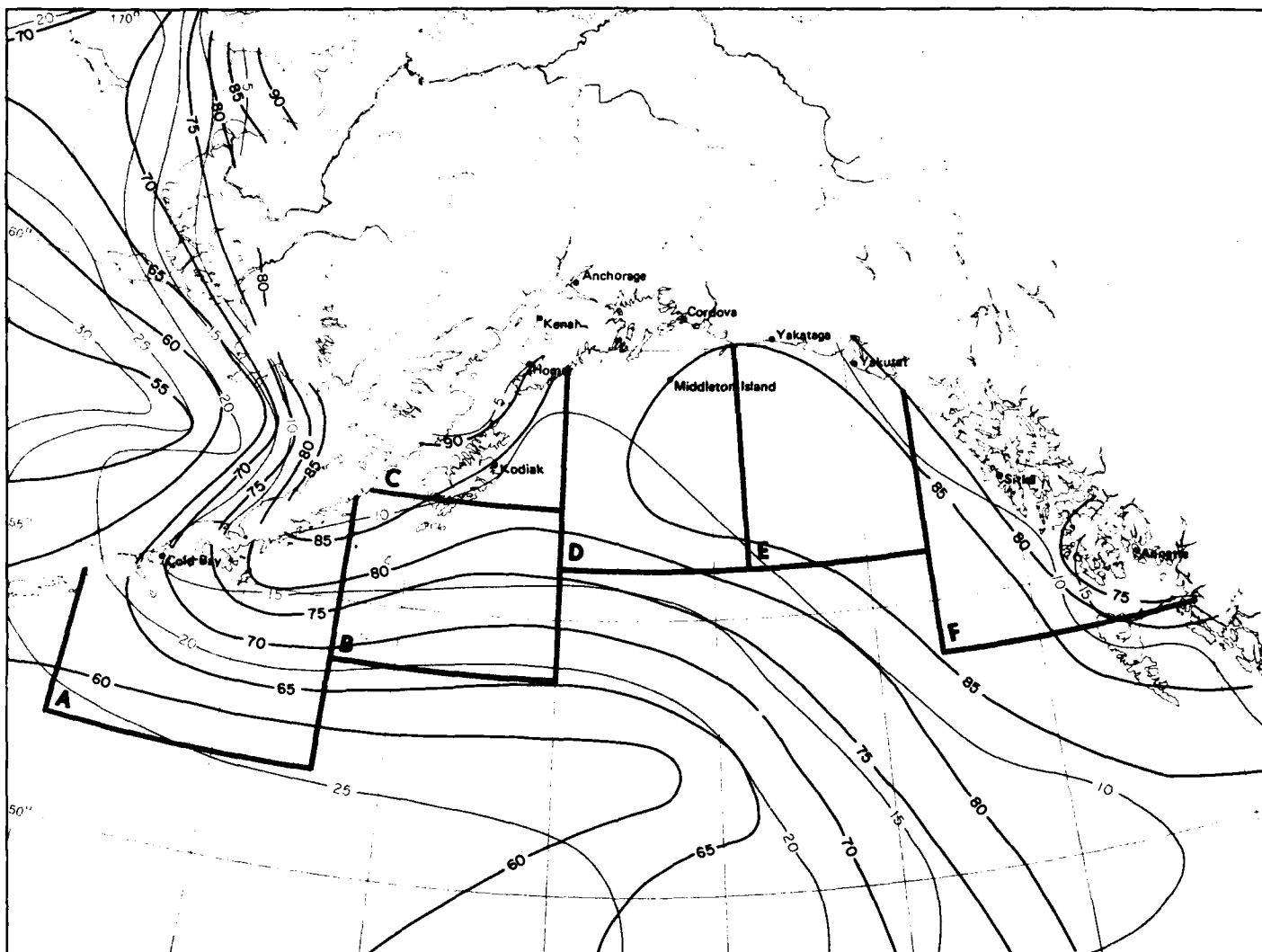


Marine Area B



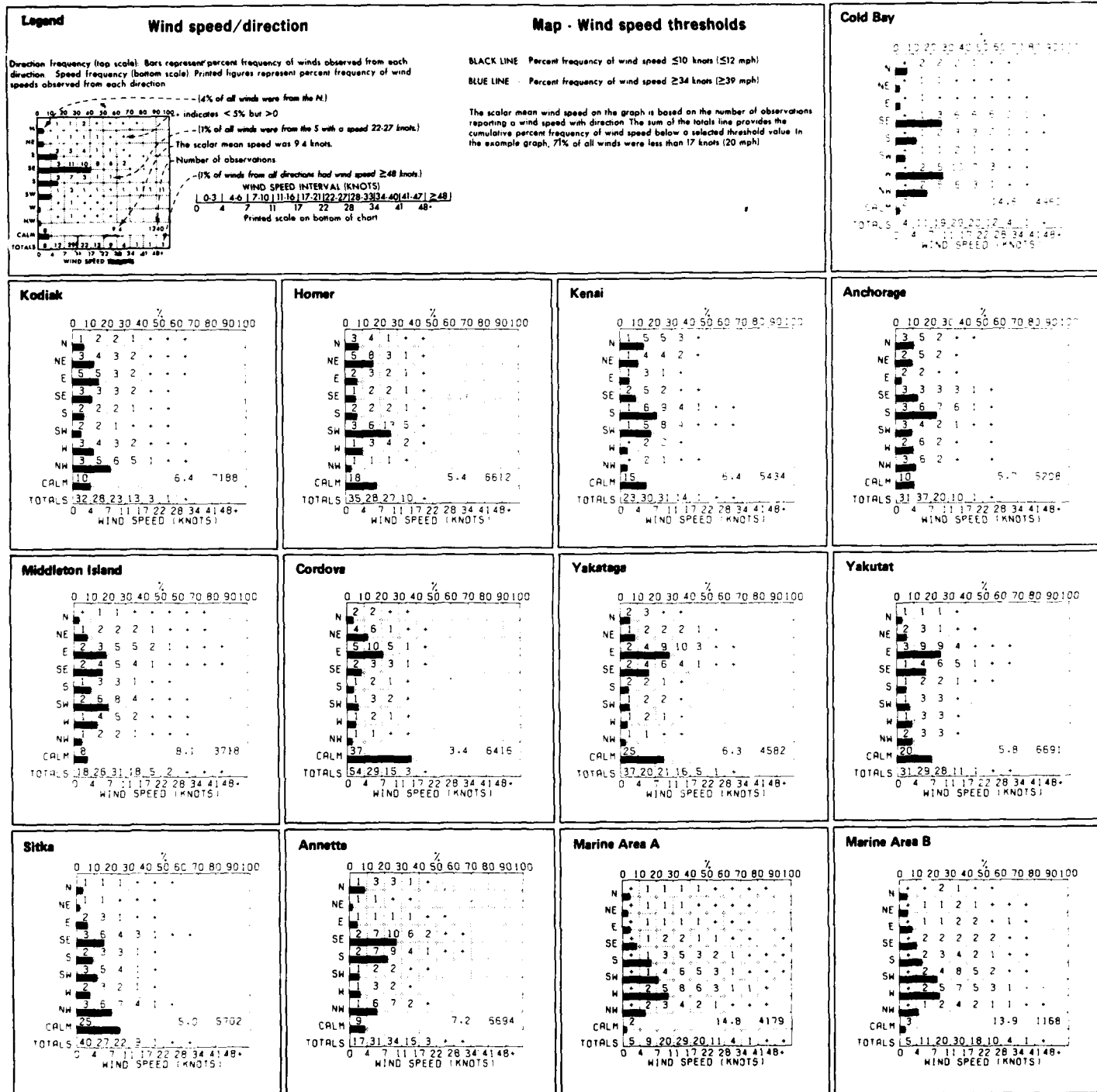
August

8 Visibility/wind direction



8 Visibility thresholds

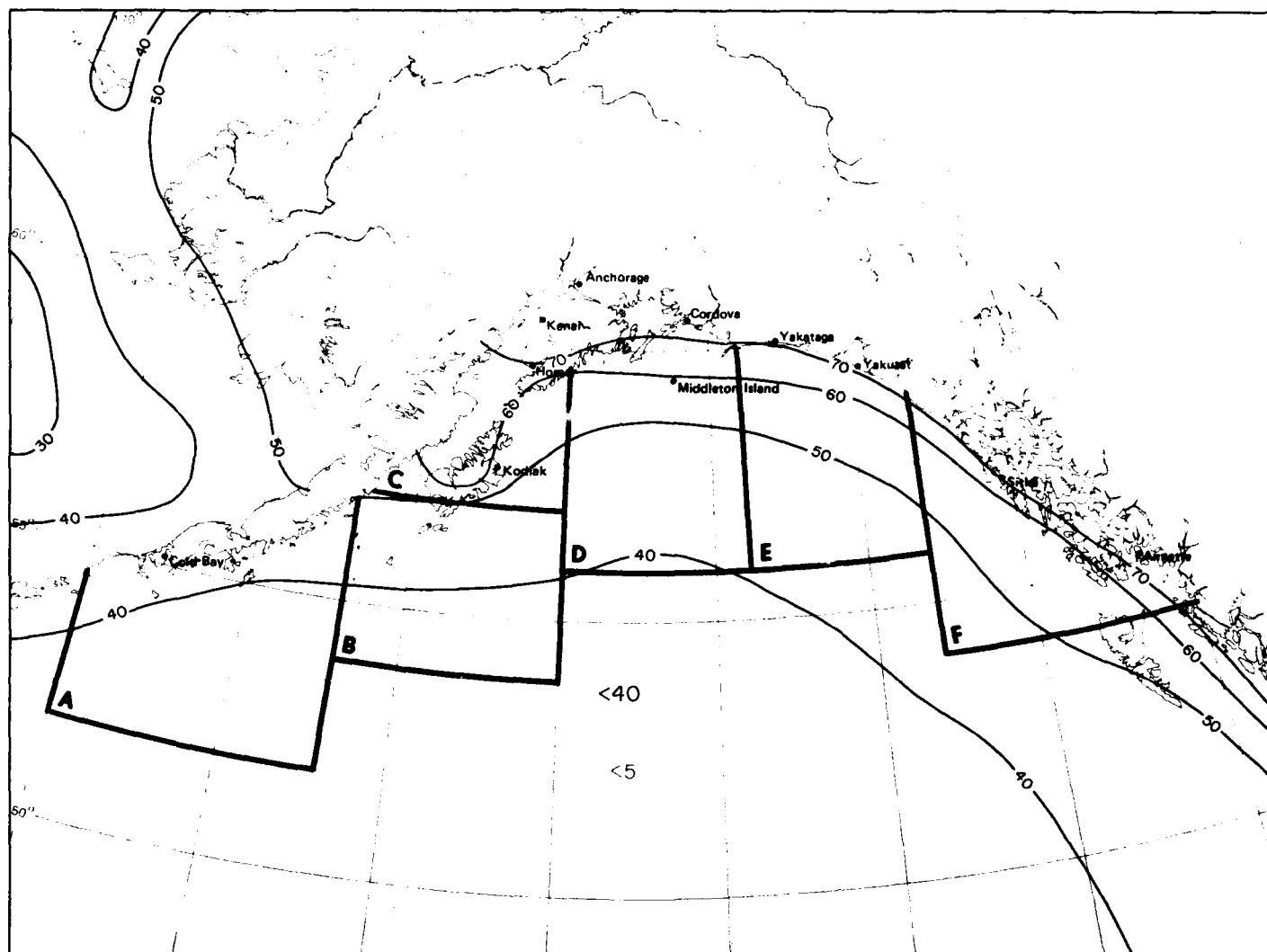
August



August

280

9 Wind speed/direction



Marine Area C

	0	10	20	30	40	50	60	70	80	90	100
N	1	2	3	2	1	1	1	1	1	1	1
NE	3	3	2	1	1	1	1	1	1	1	1
E	2	2	3	1	1	1	1	1	1	1	1
SE	2	2	2	1	1	1	1	1	1	1	1
S	2	4	3	1	1	1	1	1	1	1	1
SW	3	3	4	2	1	1	1	1	1	1	1
W	2	3	3	1	1	1	1	1	1	1	1
NW	1	2	2	1	1	1	1	1	1	1	1
CALM	13										
TOTALS	19	18	22	22	10	6	1	1	1	1	1
	0	4	7	11	17	22	28	34	41	48	55
	WIND SPEED (KNOTS)										

Marine Area D

	0	10	20	30	40	50	60	70	80	90	100
N	1	1	1	1	1	1	1	1	1	1	1
NE	1	2	2	1	1	1	1	1	1	1	1
E	1	3	3	2	1	1	1	1	1	1	1
SE	2	3	4	2	1	1	1	1	1	1	1
S	3	4	5	2	1	1	1	1	1	1	1
SW	2	5	4	2	1	1	1	1	1	1	1
W	3	4	6	3	1	1	1	1	1	1	1
NW	1	2	2	1	1	1	1	1	1	1	1
CALM	6										
TOTALS	11	15	25	27	13	6	3	1	1	1	1
	0	4	7	11	17	22	28	34	41	48	55
	WIND SPEED (KNOTS)										

Marine Area E

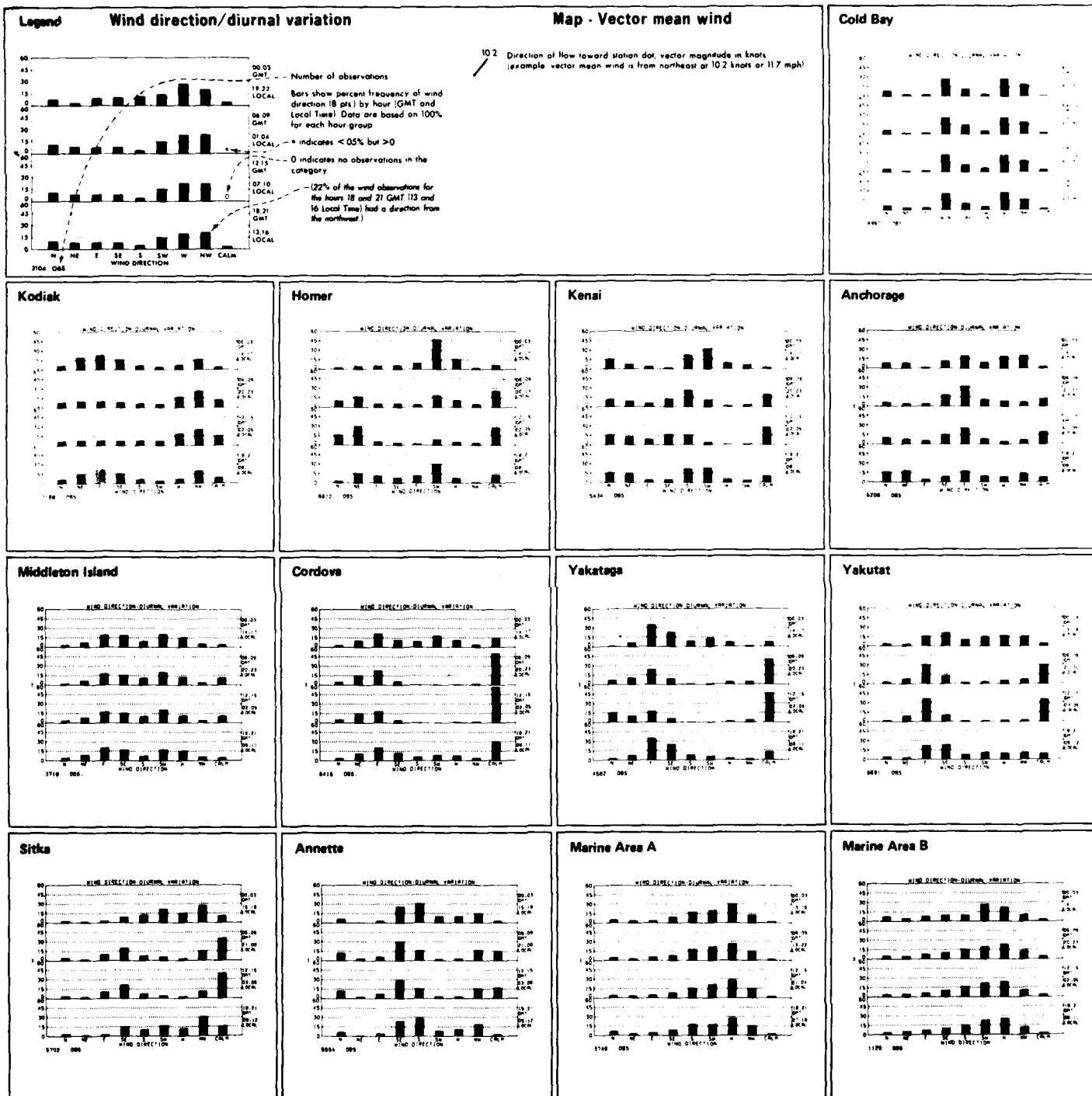
	0	10	20	30	40	50	60	70	80	90	100
N	1	1	1	1	1	1	1	1	1	1	1
NE	1	1	1	1	1	1	1	1	1	1	1
E	1	3	3	1	1	1	1	1	1	1	1
SE	2	3	4	2	1	1	1	1	1	1	1
S	1	2	5	3	2	1	1	1	1	1	1
SW	2	5	5	2	1	1	1	1	1	1	1
W	1	4	7	6	2	1	1	1	1	1	1
NW	2	4	5	2	1	1	1	1	1	1	1
CALM	5										
TOTALS	9	14	30	27	11	6	2	1	1	1	1
	0	4	7	11	17	22	28	34	41	48	55
	WIND SPEED (KNOTS)										

Marine Area F

	0	10	20	30	40	50	60	70	80	90	100
N	1	1	1	1	1	1	1	1	1	1	1
NE	1	1	1	1	1	1	1	1	1	1	1
E	1	2	2	1	1	1	1	1	1	1	1
SE	1	4	6	4	2	1	1	1	1	1	1
S	2	3	5	3	2	1	1	1	1	1	1
SW	1	4	4	2	1	1	1	1	1	1	1
W	1	3	5	3	1	1	1	1	1	1	1
NW	1	3	4	2	1	1	1	1	1	1	1
CALM	8										
TOTALS	15	21	29	19	10	4	1	1	1	1	1
	0	4	7	11	17	22	28	34	41	48	55
	WIND SPEED (KNOTS)										

9 Wind speed thresholds

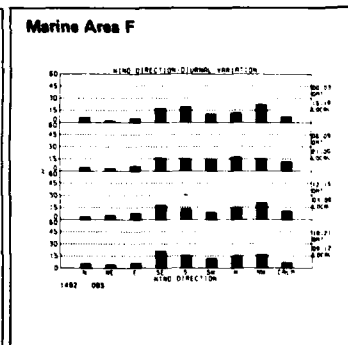
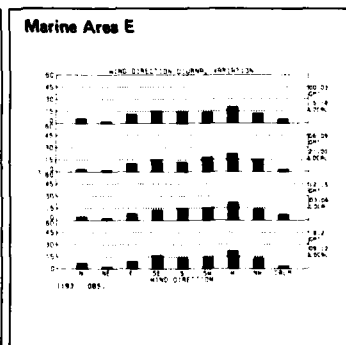
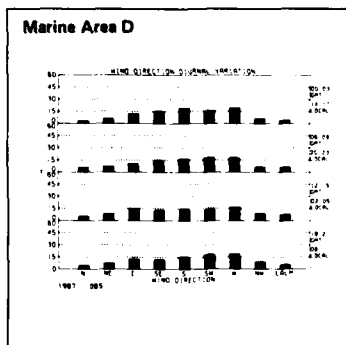
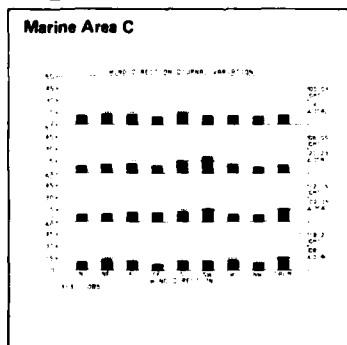
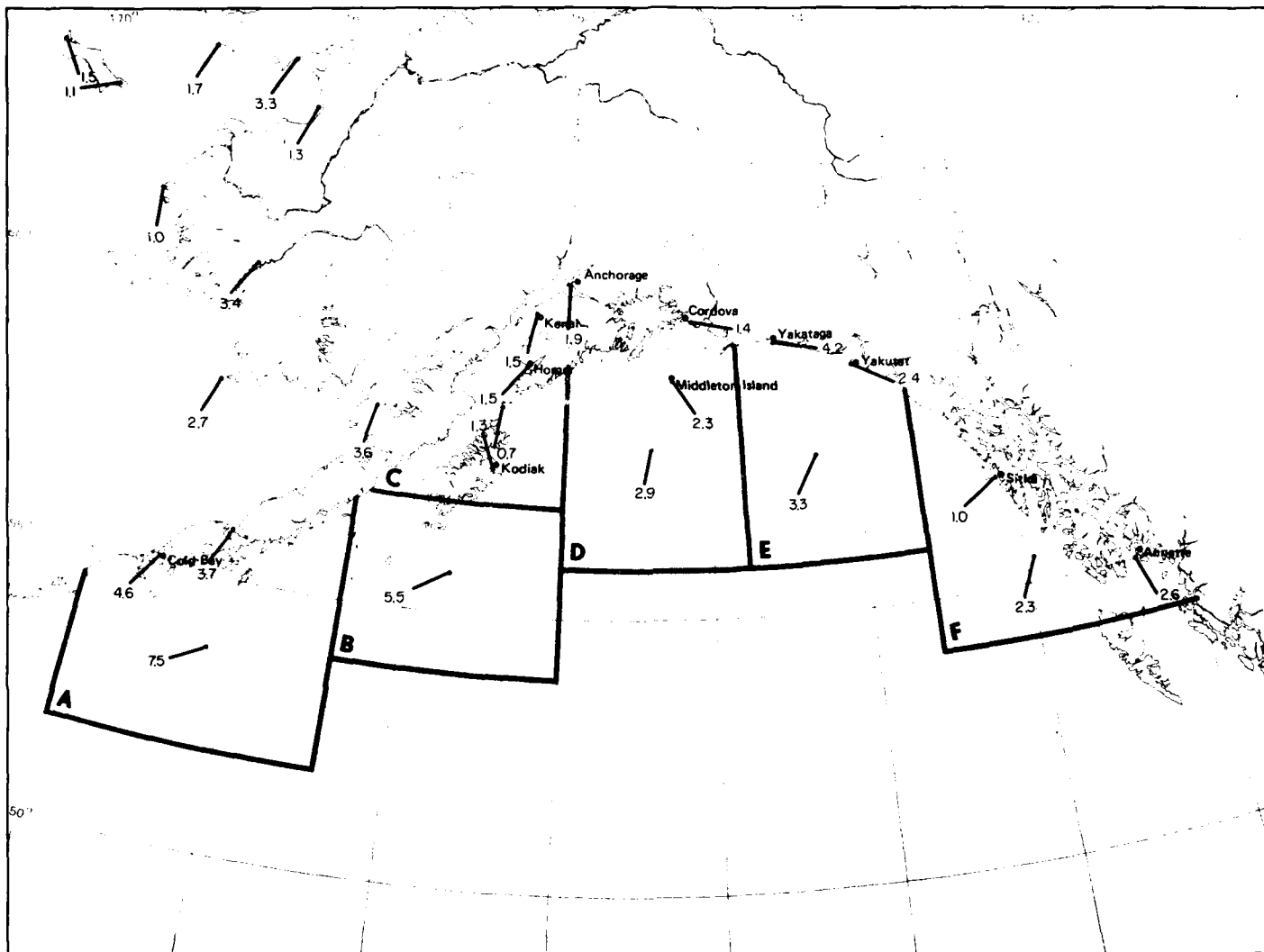
August



August

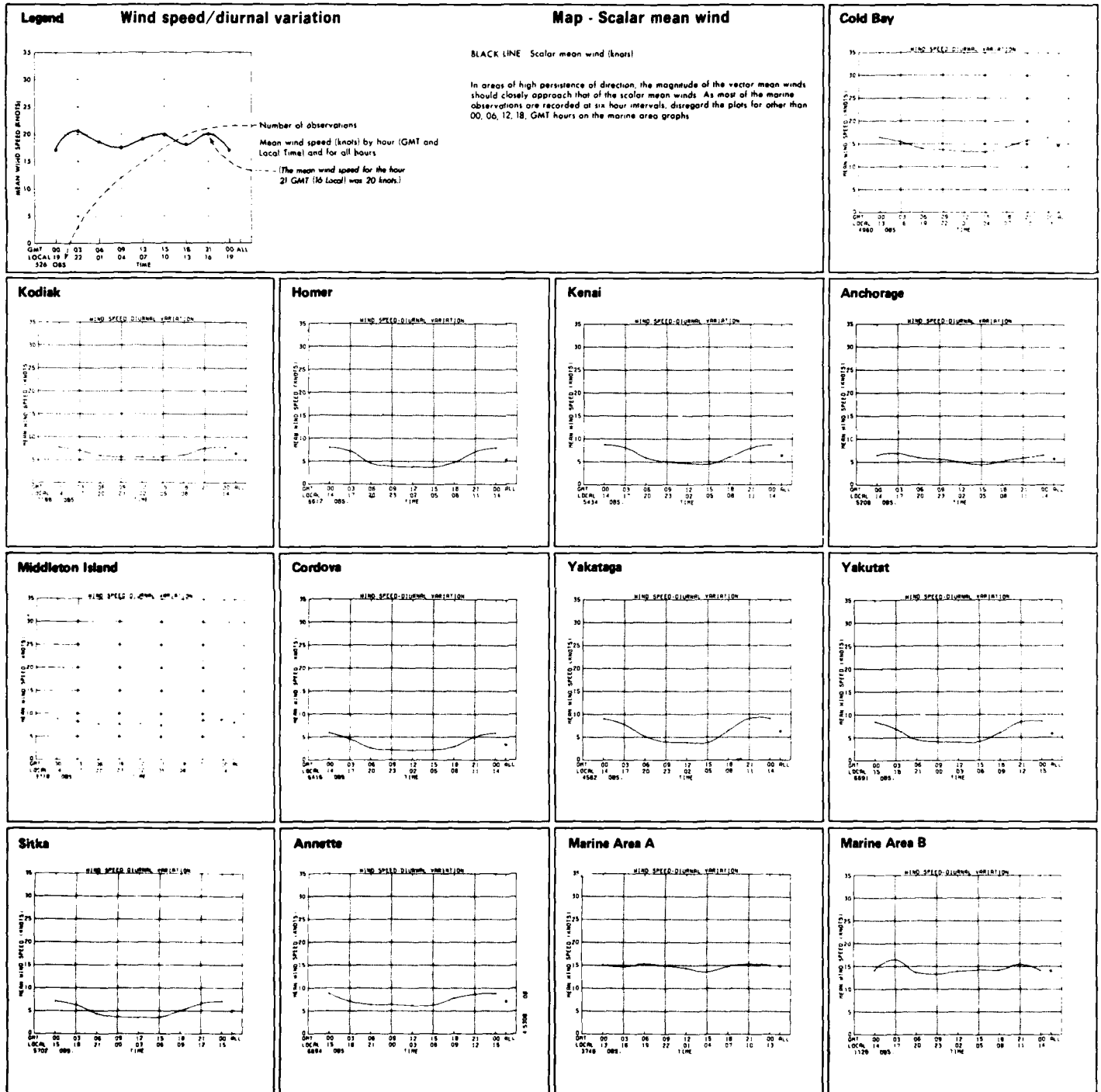
282

10 Wind direction/diurnal variation



10 Vector mean wind

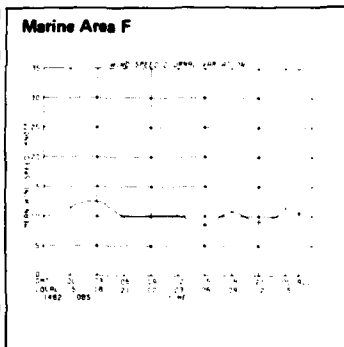
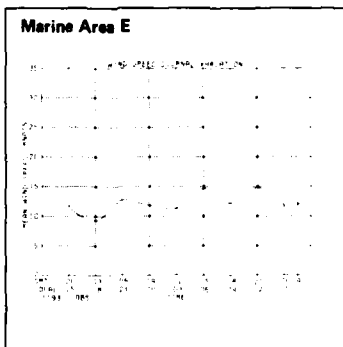
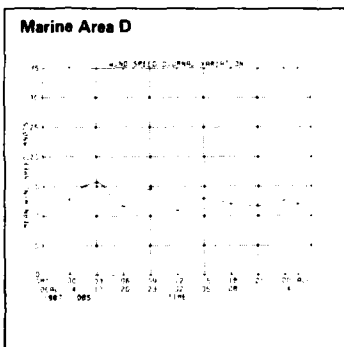
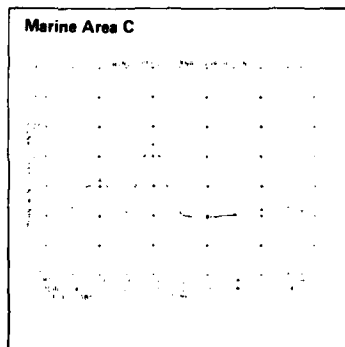
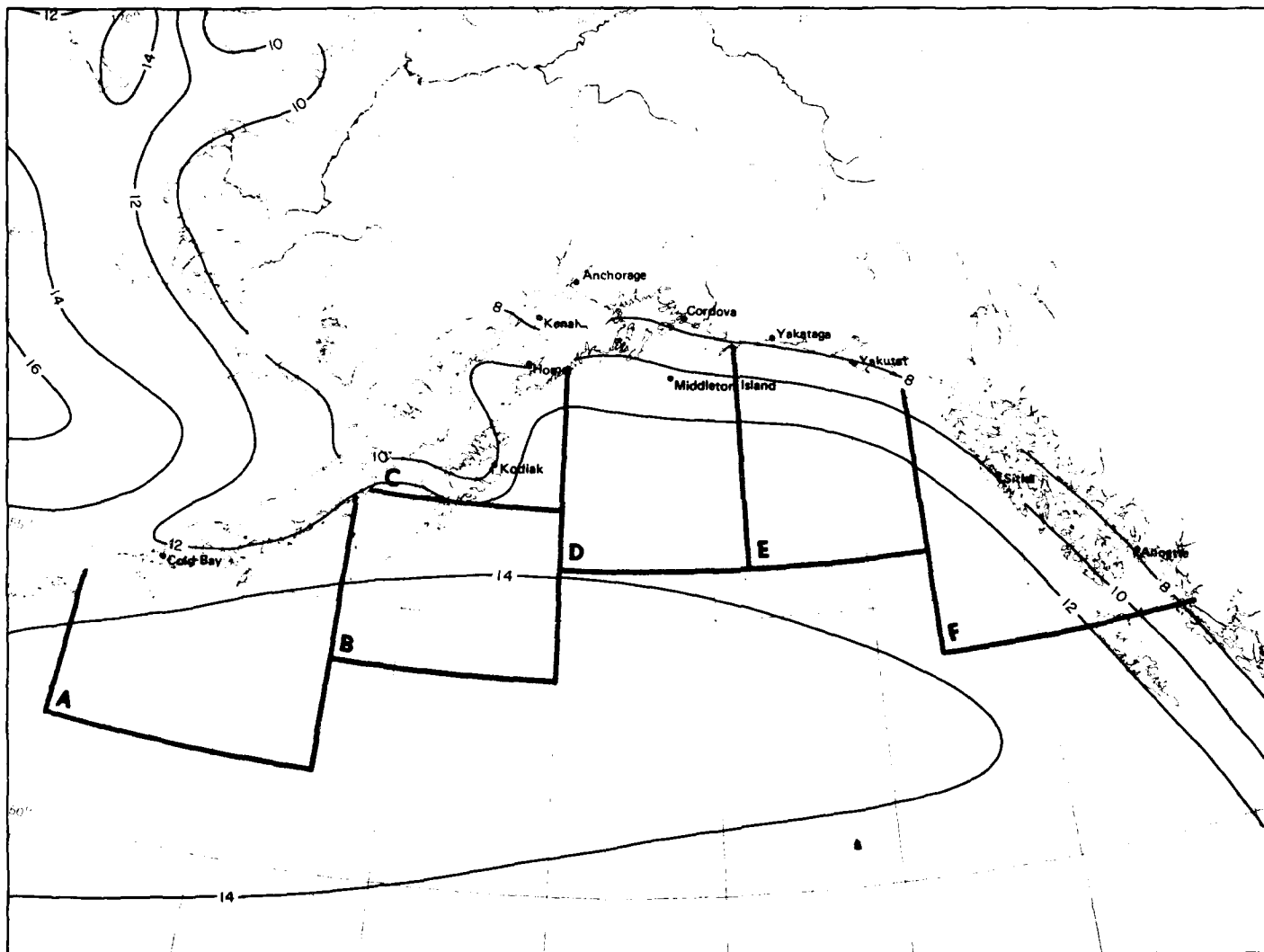
August



August

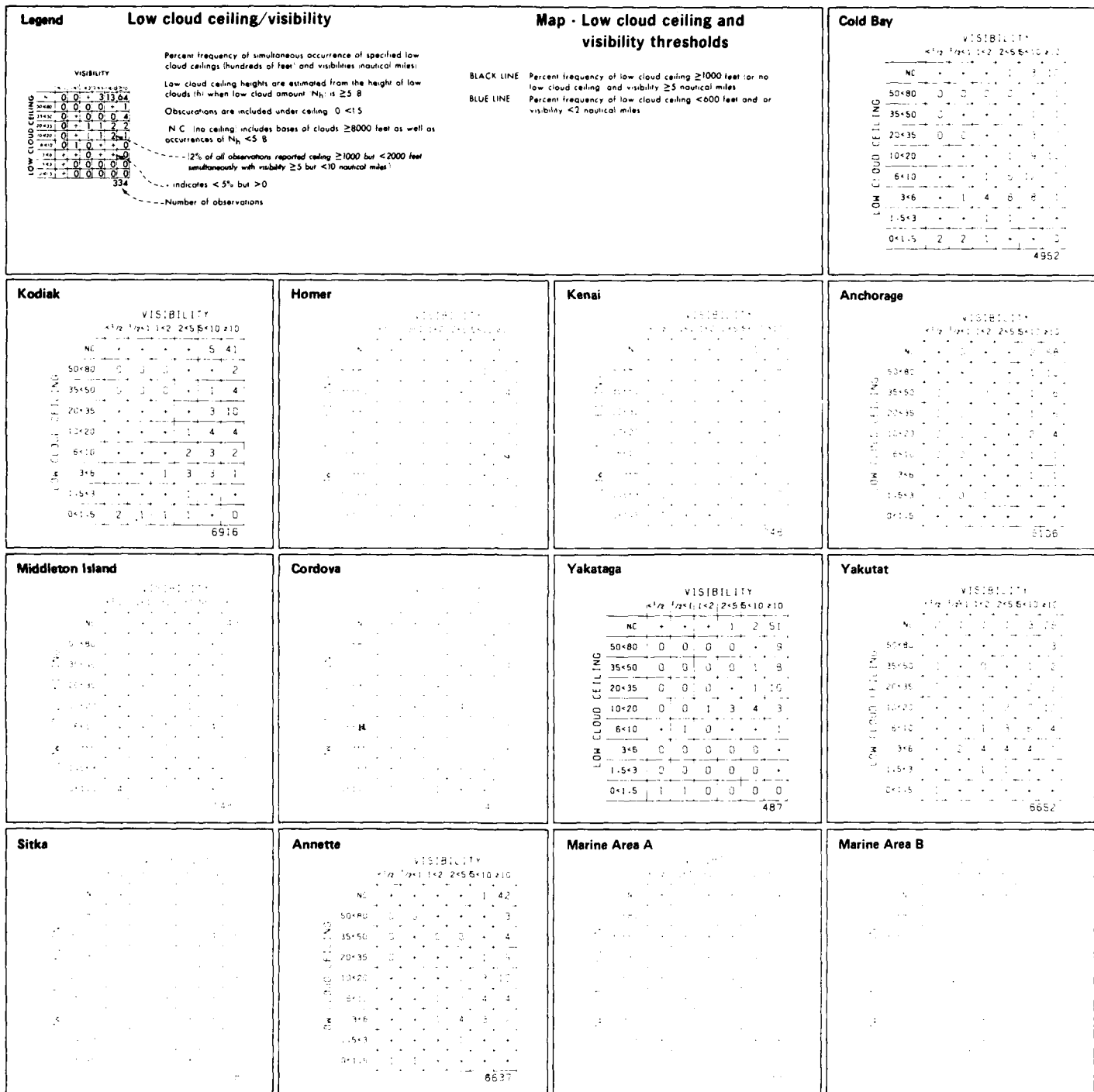
284

11 Wind speed/diurnal variation



11 Scalar mean wind

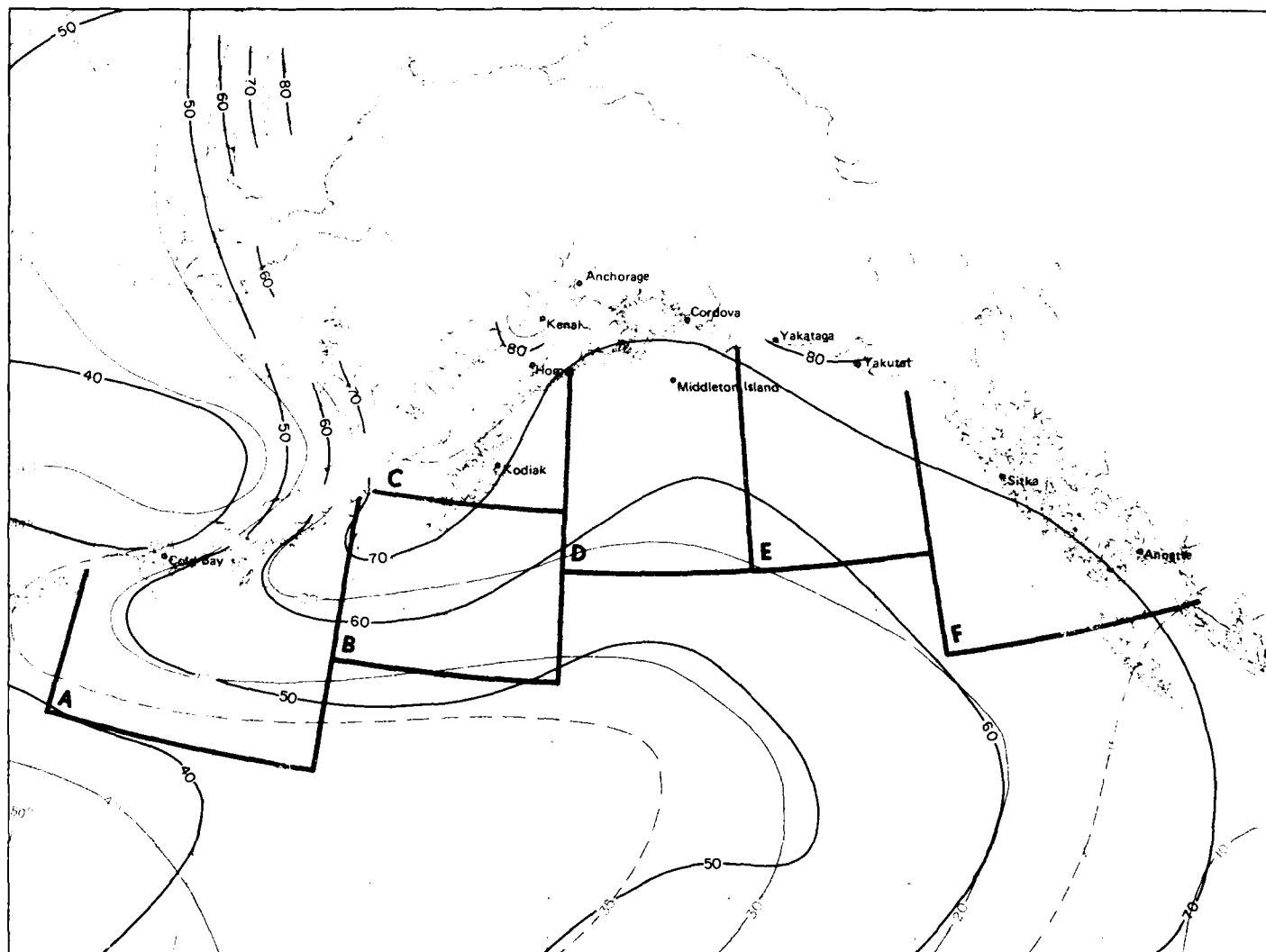
August



August

286

12 Low cloud ceiling/visibility



Marine Area C

Marine Area D

Marine Area E

Marine Area F

12 Low cloud ceiling and visibility thresholds

August

AD-A081 310

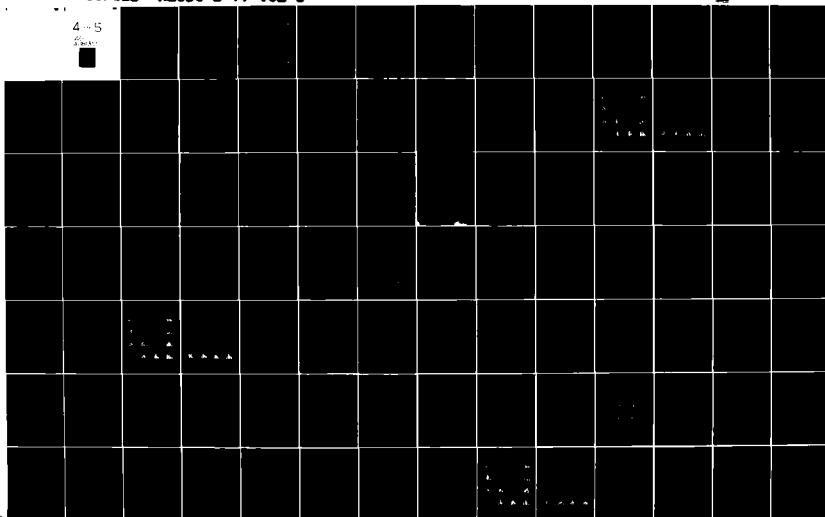
ALASKA UNIV ANCHORAGE ARCTIC ENVIRONMENTAL INFORMATI--ETC F/O 5/2
CLIMATIC ATLAS OF THE OUTER CONTINENTAL SHELF WATERS AND COASTS--ETC(U)
1977 W A BROWER, M F DIAZ, A S FRECHTEL

UNCLASSIFIED

AEIOC-8-77-VOL-1

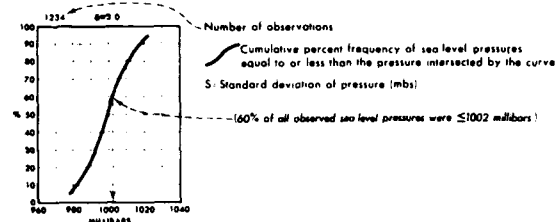
REL

4-5



Legend

Sea level pressure

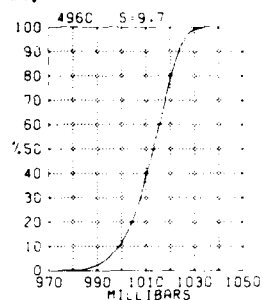


Map - Mean sea level pressure

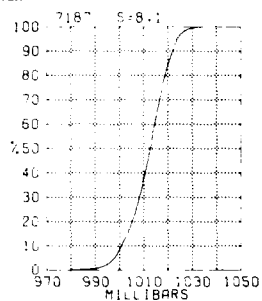
BLACK LINE: Mean sea level pressure (millibars)

Sea level pressure is one of the most frequently recorded elements but one of the least accurate because of instrument and coding errors. Despite the inaccuracies of the individual readings, however, the large scale patterns and mean gradients of the isopleth analyses are relatively accurate.

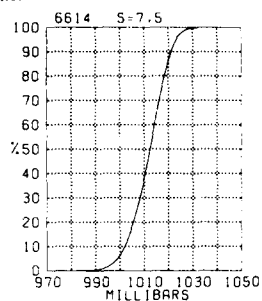
Cold Bay



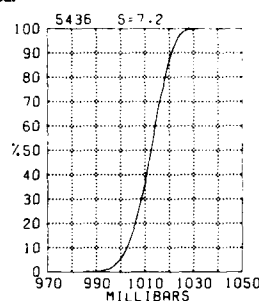
Kodiak



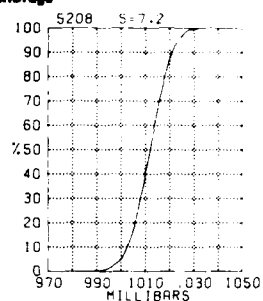
Homer



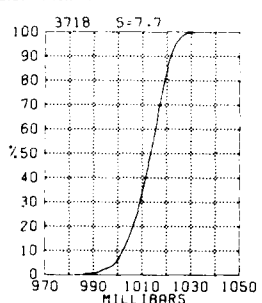
Kenai



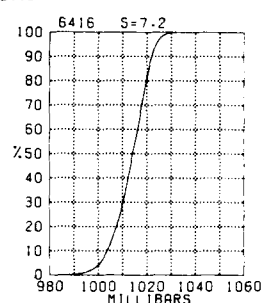
Anchorage



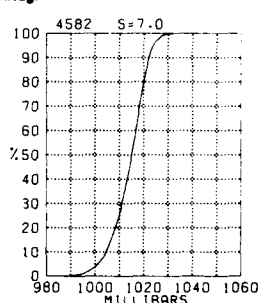
Middleton Island



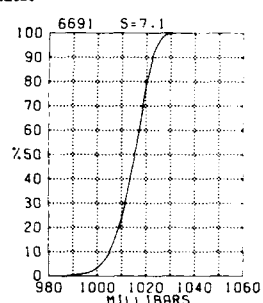
Cordova



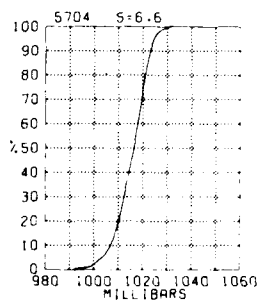
Yakutat



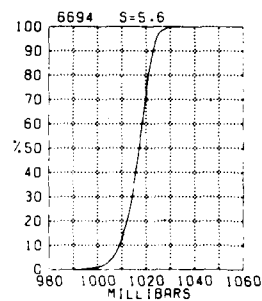
Yakutat



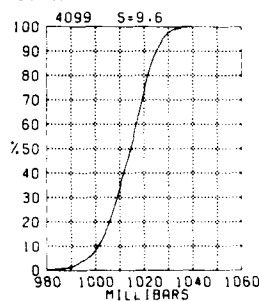
Sitka



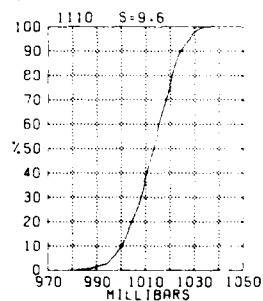
Annette



Marine Area A

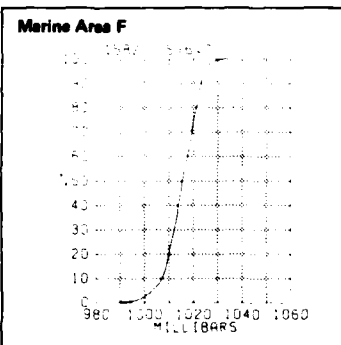
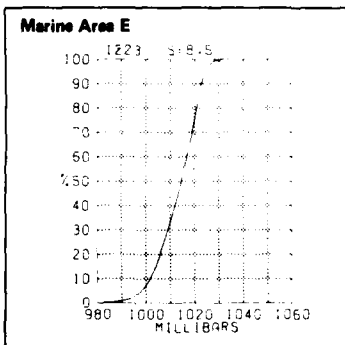
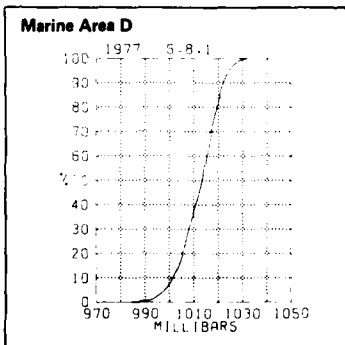
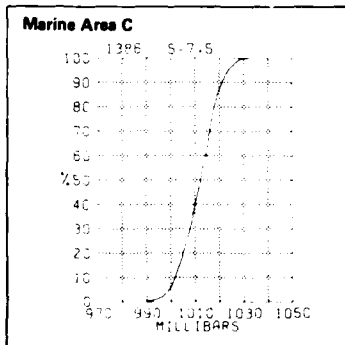
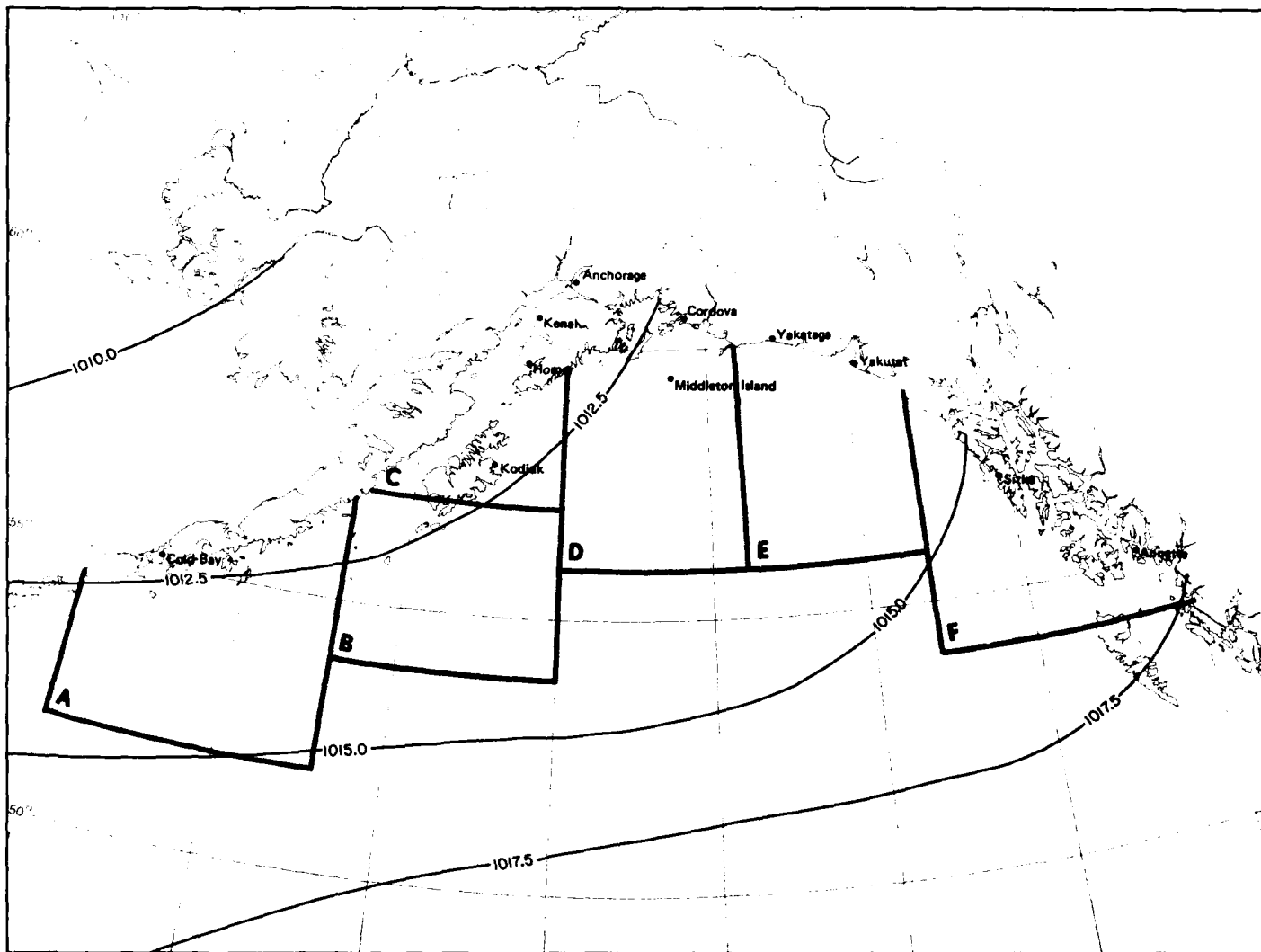


Marine Area B



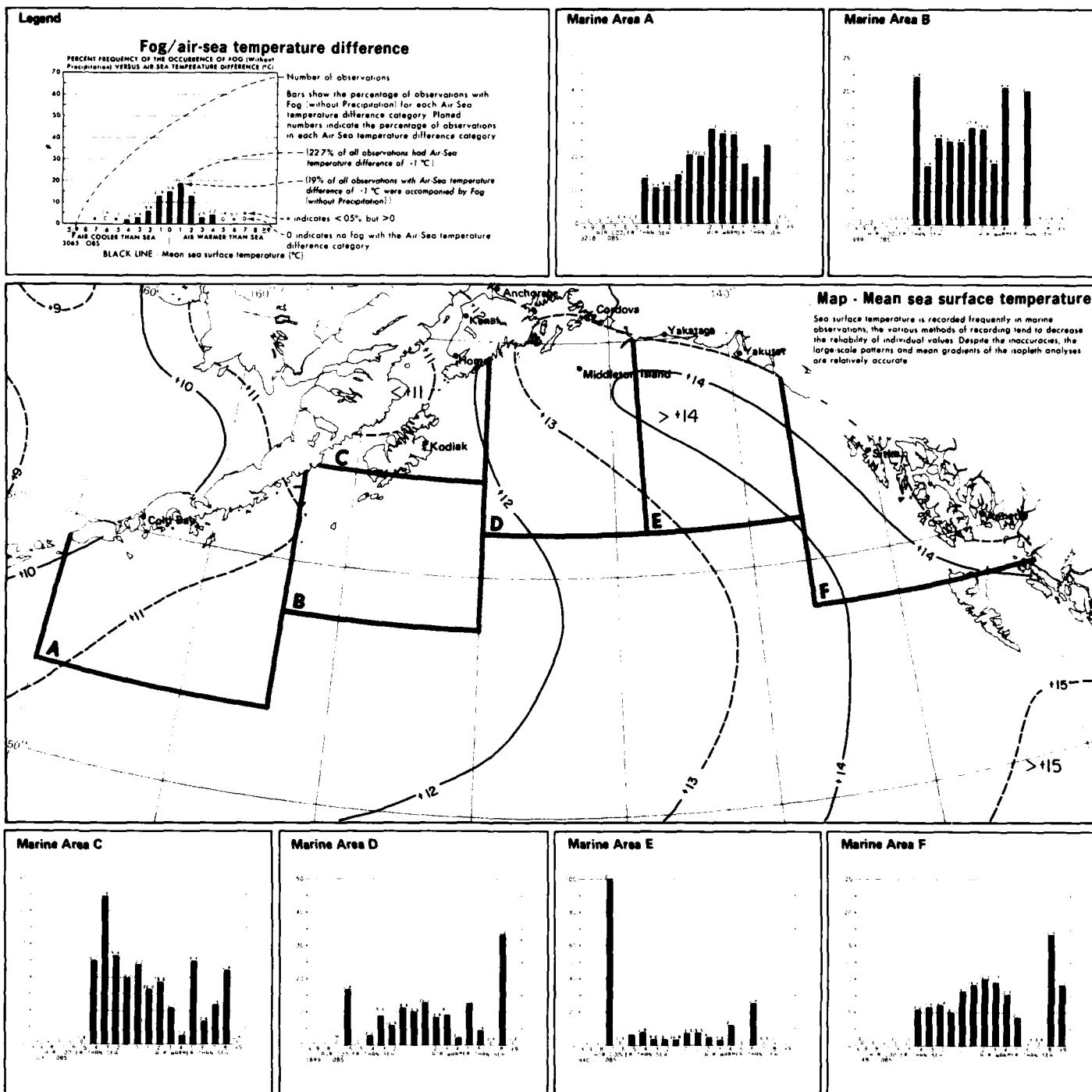
August

13 Sea level pressure



13 Mean sea level pressure

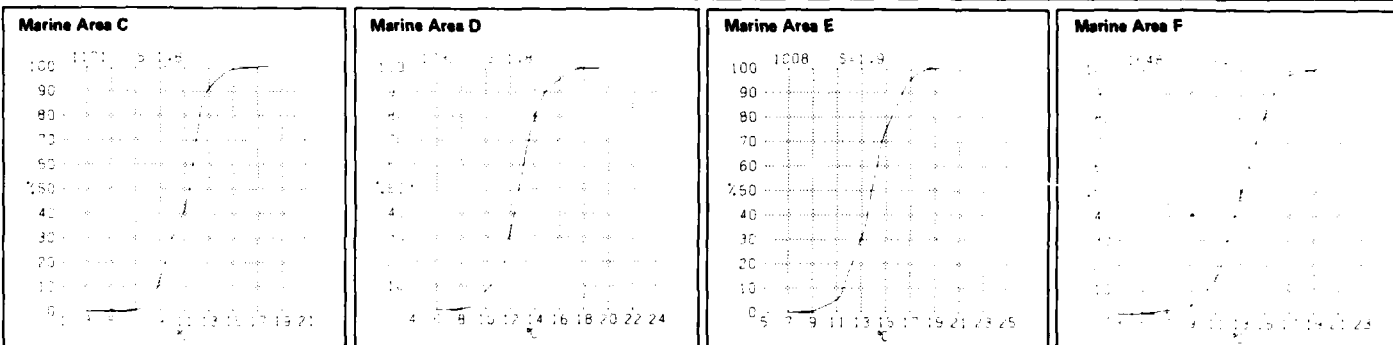
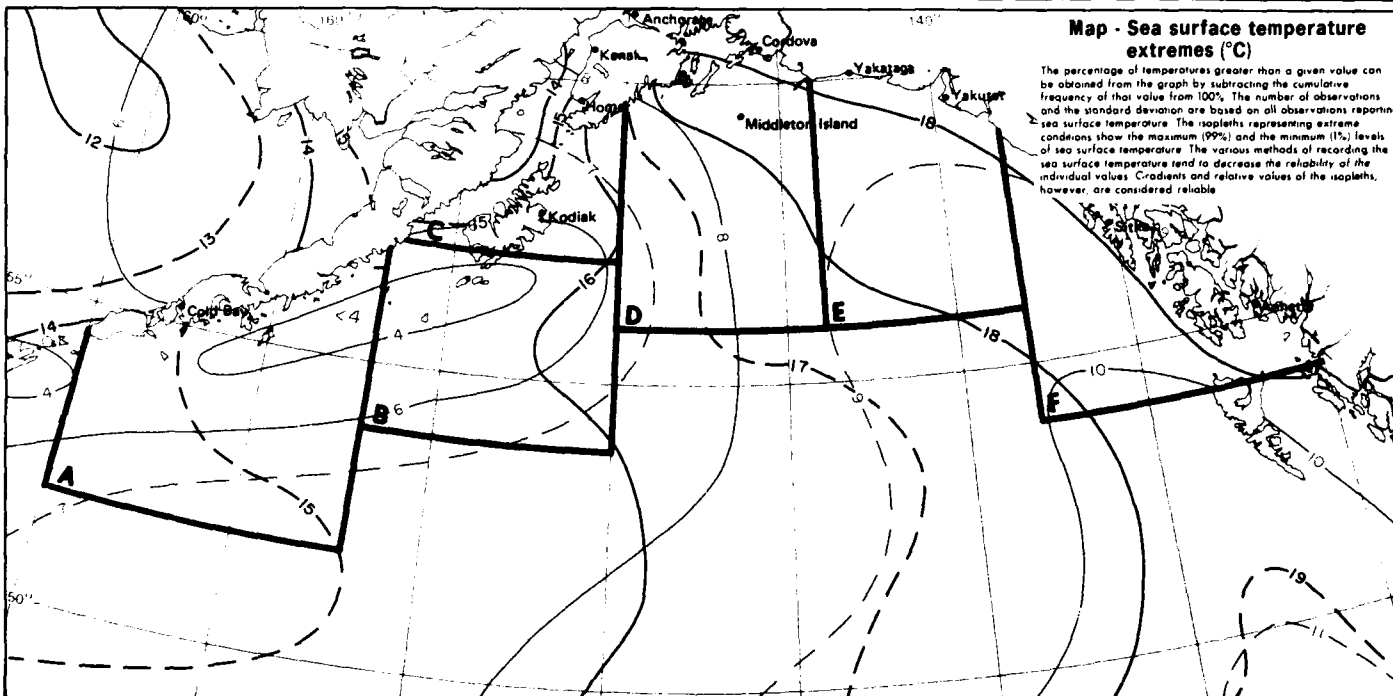
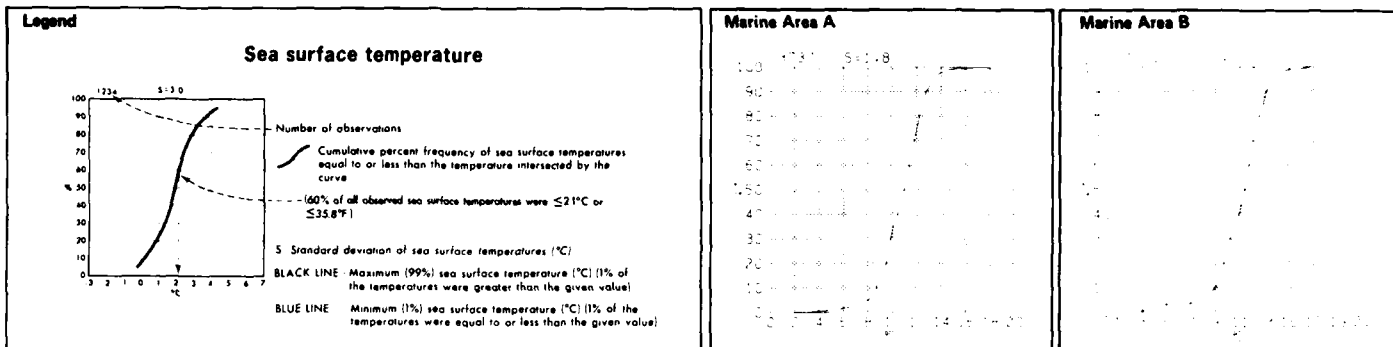
August



August

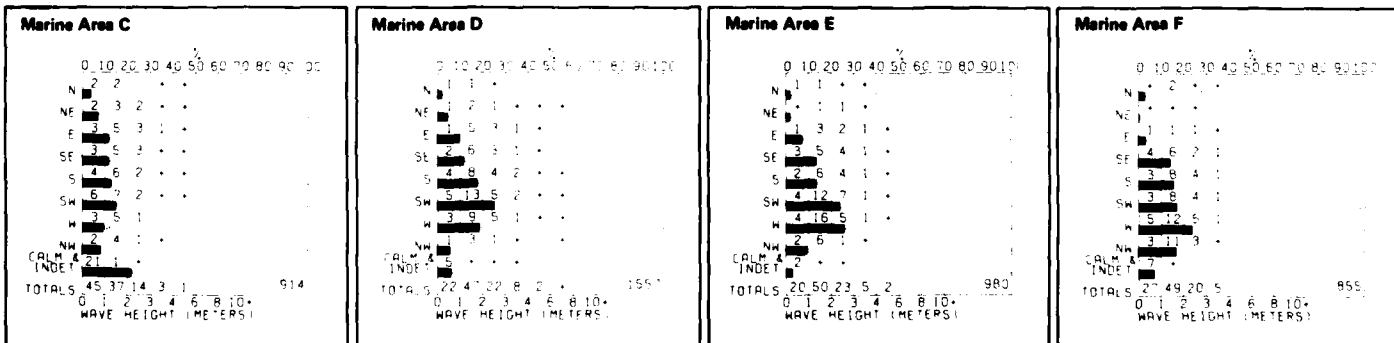
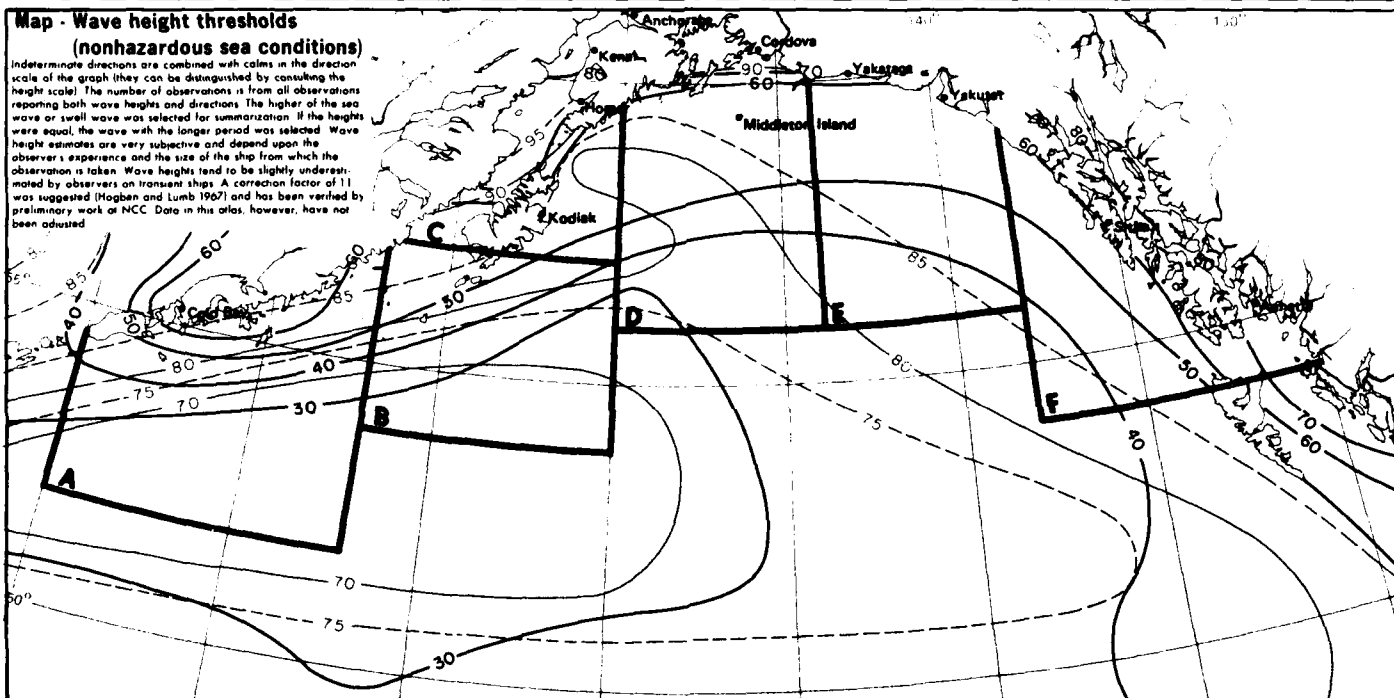
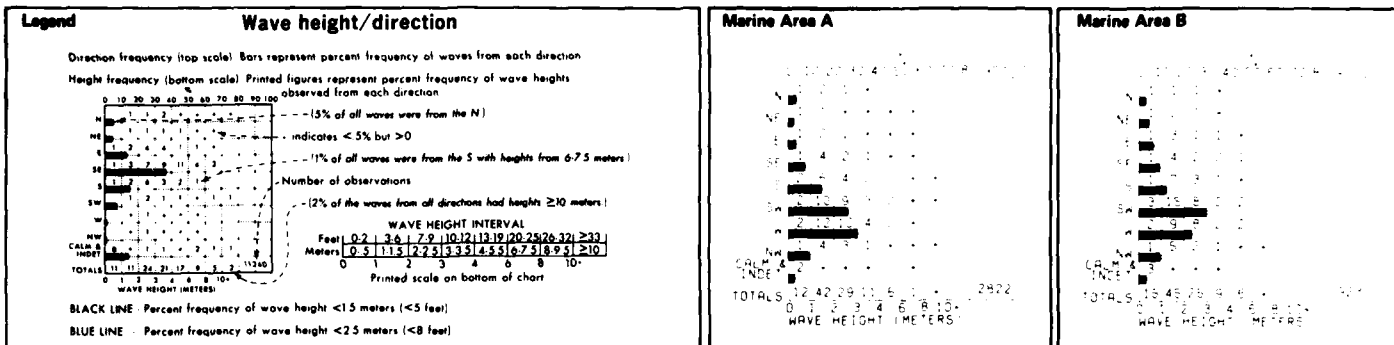
290

14 Fog/air-sea temperature difference
Mean sea surface temperature



15 Sea surface temperature extremes

August



August

16 Wave height thresholds (nonhazardous)

Legend

Wave height/period

PERIOD (Seconds)

HEIGHT (meters)	6	8	10	12	15	20
0-1.5	1	1	1	1	1	1
1.5-2.2	1	1	1	1	1	1
2.2-3.3	1	1	1	1	1	1
3.3-4.5	1	1	1	1	1	1
4.5-6.7	1	1	1	1	1	1
6.7-9.9	1	1	1	1	1	1
9.9-11.0	1	1	1	1	1	1

Percent frequency of occurrence of wave period and height
(2% of observed waves had a height of 11.5 meters and a period of 10.1 seconds.)

Indicates < 5% but > 0

Number of observations

Waves are selected on the basis of the higher of sea and swell when both are reported. If both heights are equal, the wave with the longer period is selected.

BLACK LINE

Percent frequency of wave height ≥ 3.5 meters (≥ 12 feet)

BLUE LINE

Percent frequency of wave height ≥ 6 meters (≥ 20 feet)

BLUE NUMBER

Maximum observed wave height (meters)

Marine Area A

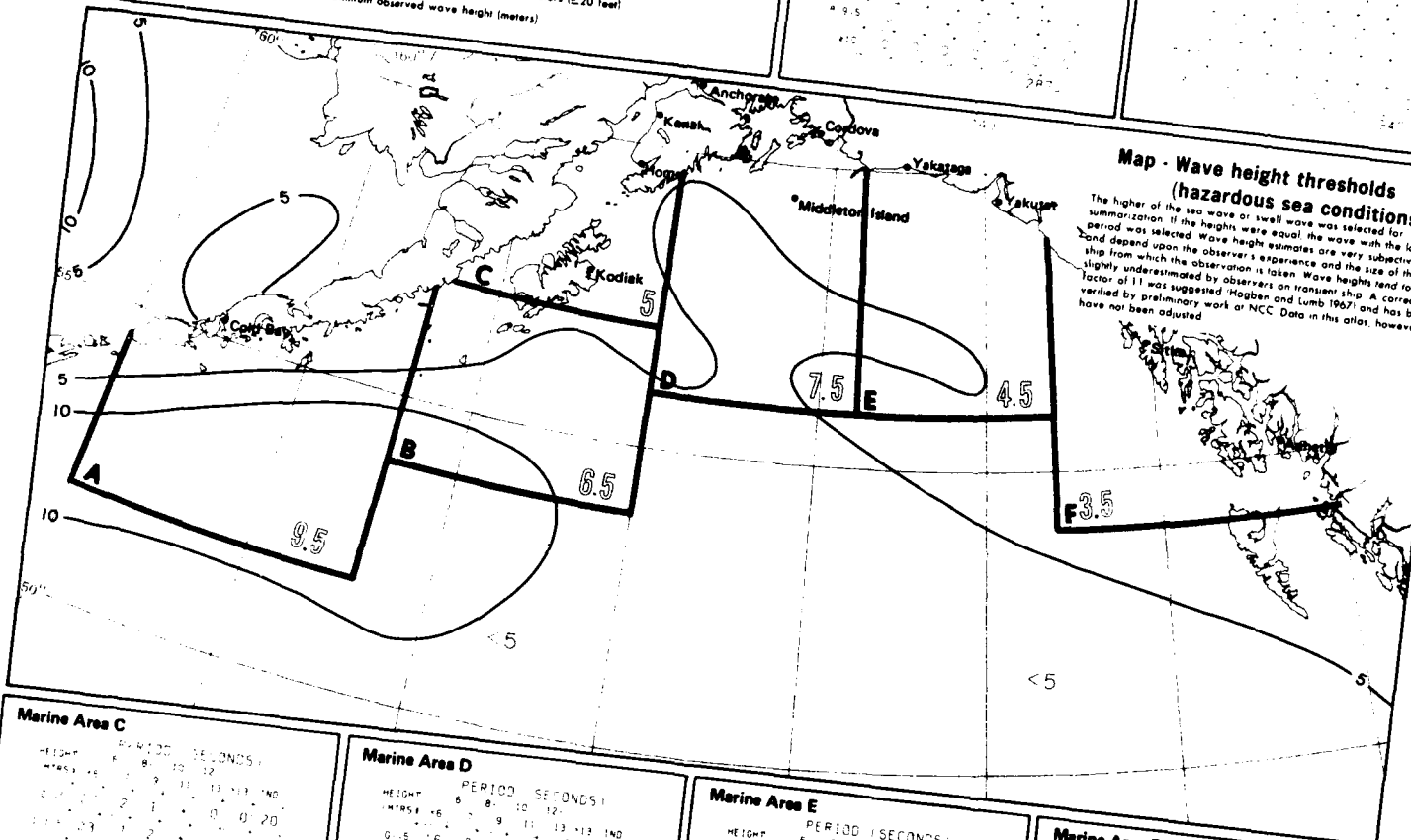
HEIGHT	6	8	10	12	15	20
0-1.5	1	1	1	1	1	1
1.5-2.2	1	1	1	1	1	1
2.2-3.3	1	1	1	1	1	1
3.3-4.5	1	1	1	1	1	1
4.5-6.7	1	1	1	1	1	1
6.7-9.9	1	1	1	1	1	1
9.9-11.0	1	1	1	1	1	1

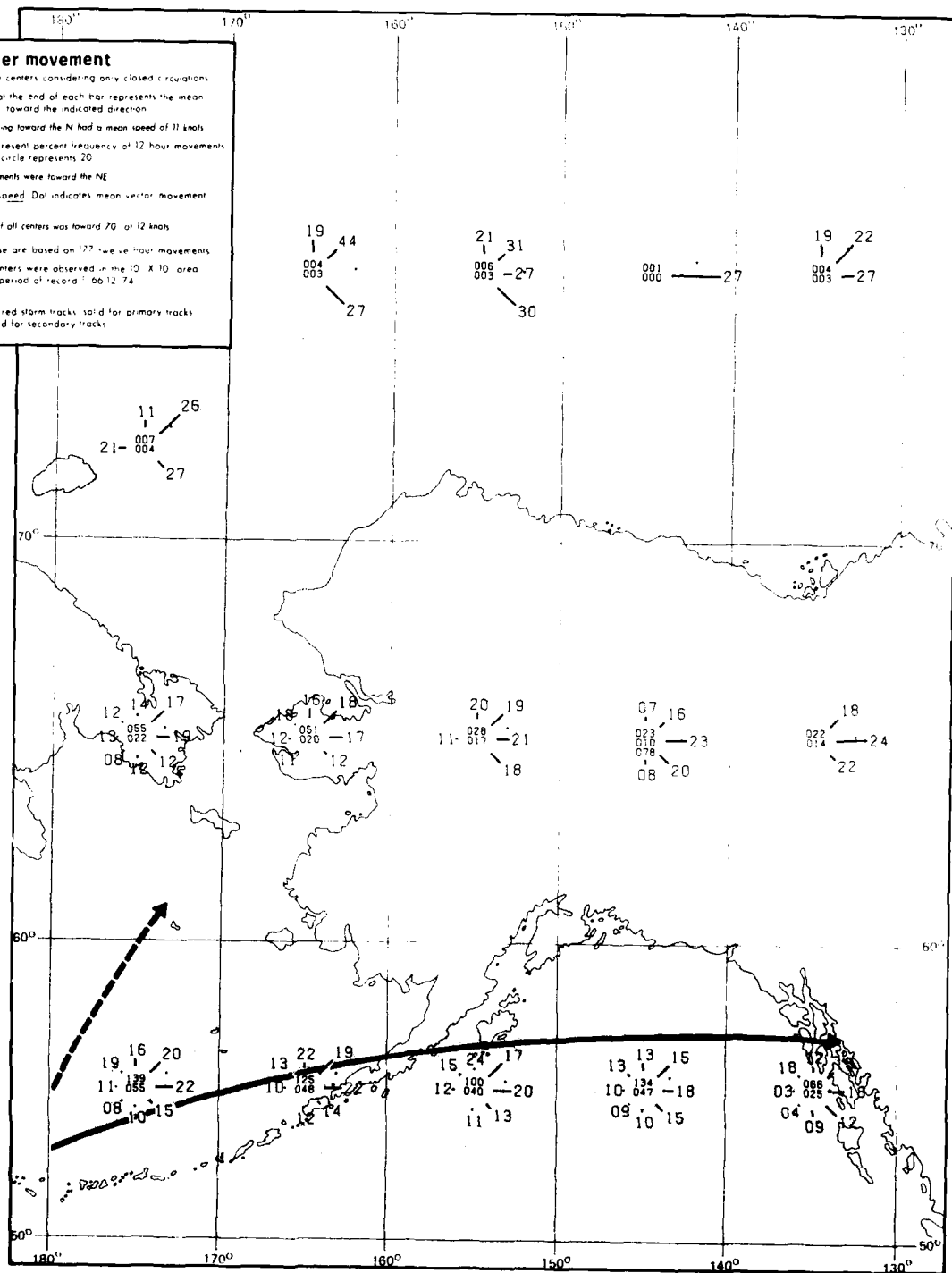
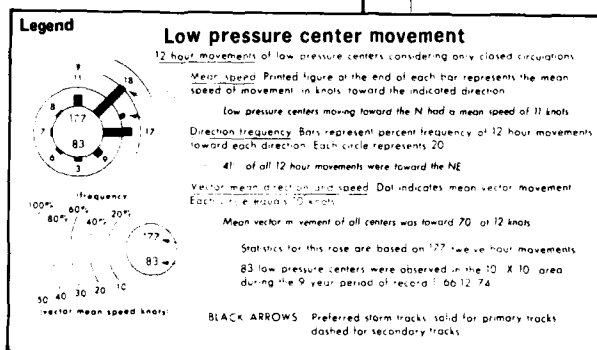
Marine Area B

HEIGHT	6	8	10	12	15	20
0-1.5	1	1	1	1	1	1
1.5-2.2	1	1	1	1	1	1
2.2-3.3	1	1	1	1	1	1
3.3-4.5	1	1	1	1	1	1
4.5-6.7	1	1	1	1	1	1
6.7-9.9	1	1	1	1	1	1
9.9-11.0	1	1	1	1	1	1

Map - Wave height thresholds (hazardous sea conditions)

The higher of the sea wave or swell wave was selected for summarization. If the heights were equal, the wave with the longer period was selected. Wave height estimates are very subjective and depend upon the observer's experience and the size of the ship from which the observation is taken. Wave heights tend to be slightly underestimated by observers on transient ship. A correction factor of 1.1 was suggested (Hogben and Lumb 1967) and has been verified by preliminary work at NCC. Data in this atlas, however, have not been adjusted.

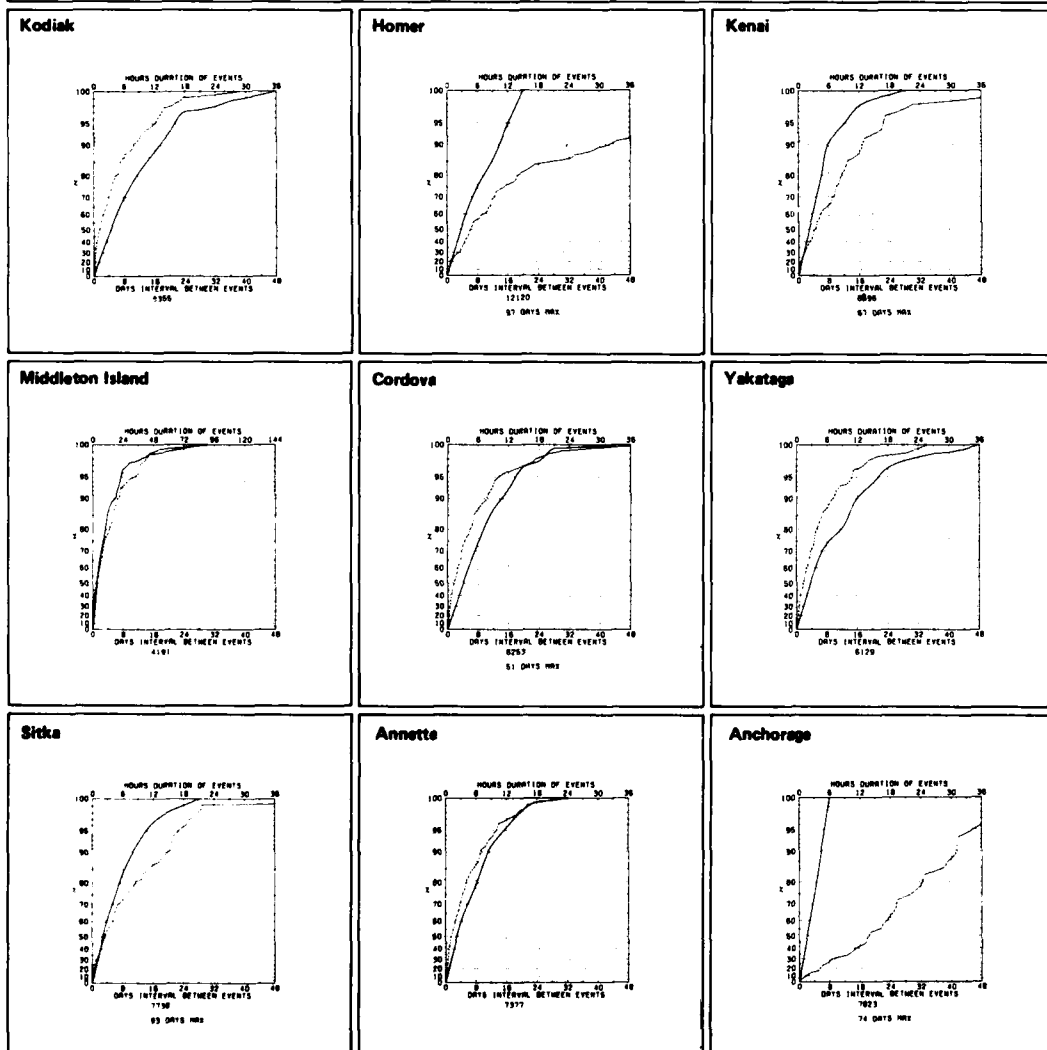
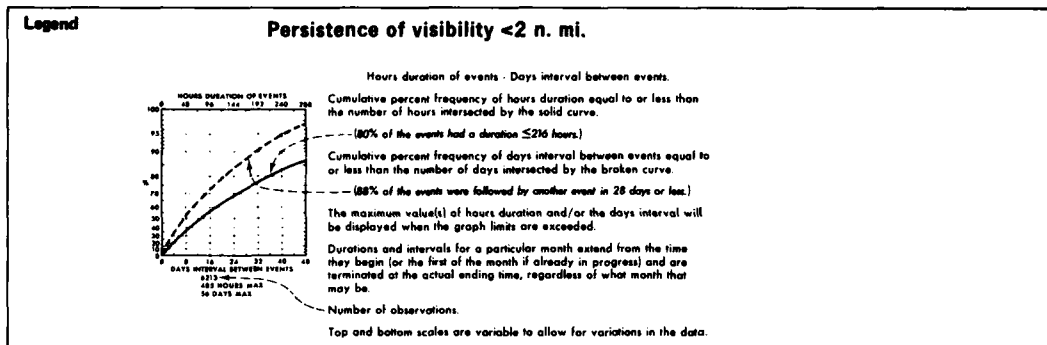




August

294

18 Low pressure center movement

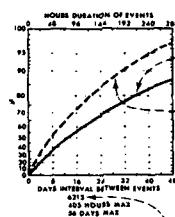


19 Persistence of visibility < 2 n. mi.

August

Legend

Persistence of wind ≥ 10 kts.



Hours duration of events - Days interval between events

Cumulative percent frequency of hours duration equal to or less than the number of hours intersected by the solid curve

--- (80% of the events had a duration ≤ 24 hours.)

Cumulative percent frequency of days interval between events equal to or less than the number of days intersected by the broken curve

--- (80% of the events were followed by another event in 28 days or less.)

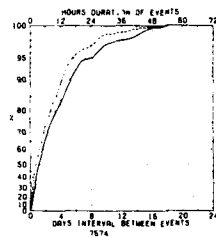
The maximum value(s) of hours duration and/or the days interval will be displayed when the graph limits are exceeded.

Durations and intervals for a particular month extend from the time they begin (or the first of the month if already in progress) and are terminated at the actual ending time, regardless of what month that may be.

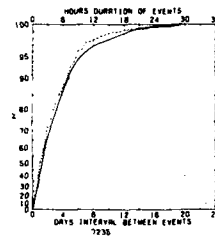
Number of observations

Top and bottom scales are variable to allow for variations in the data

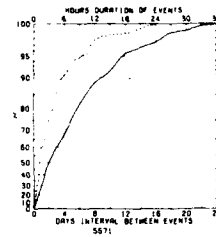
Kodiak



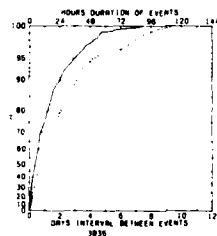
Homer



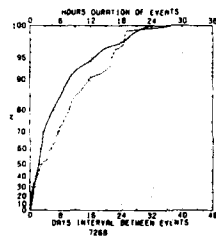
Kenai



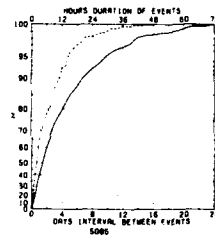
Middleton Island



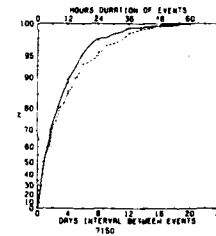
Cordova



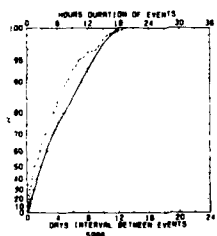
Yakutat



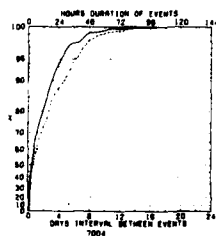
Yakutat



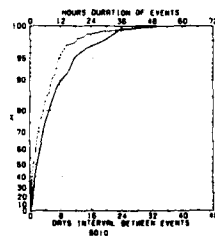
Sitka



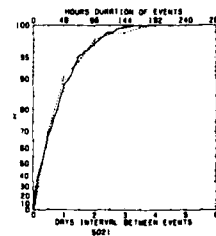
Annette



Anchorage



Cold Bay

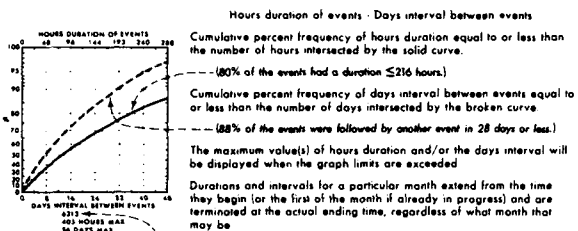


August

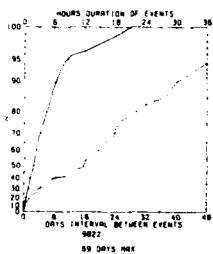
20 Persistence of wind ≥ 10 kts.

Legend

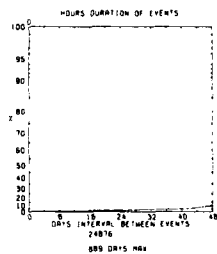
Persistence of wind ≥ 20 kts.



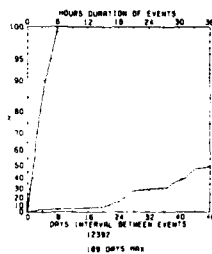
Kodiak



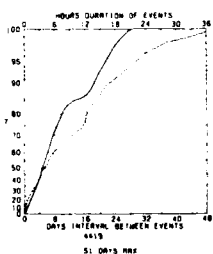
Homer



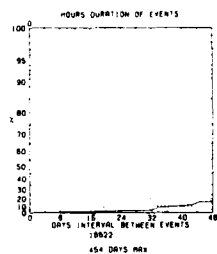
Kenai



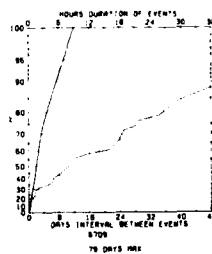
Middleton Island



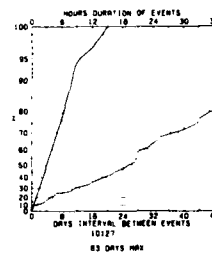
Cordova



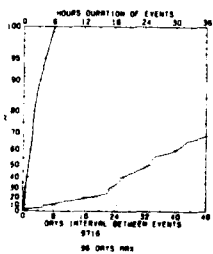
Yakutat



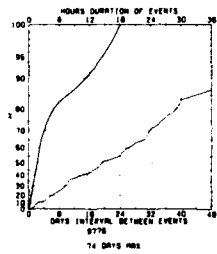
Yakutat



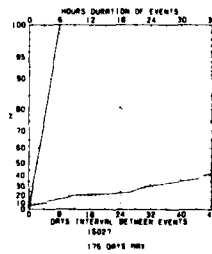
Sitka



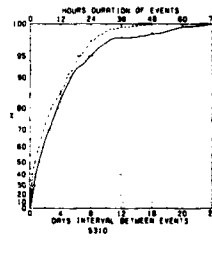
Annette



Anchorage

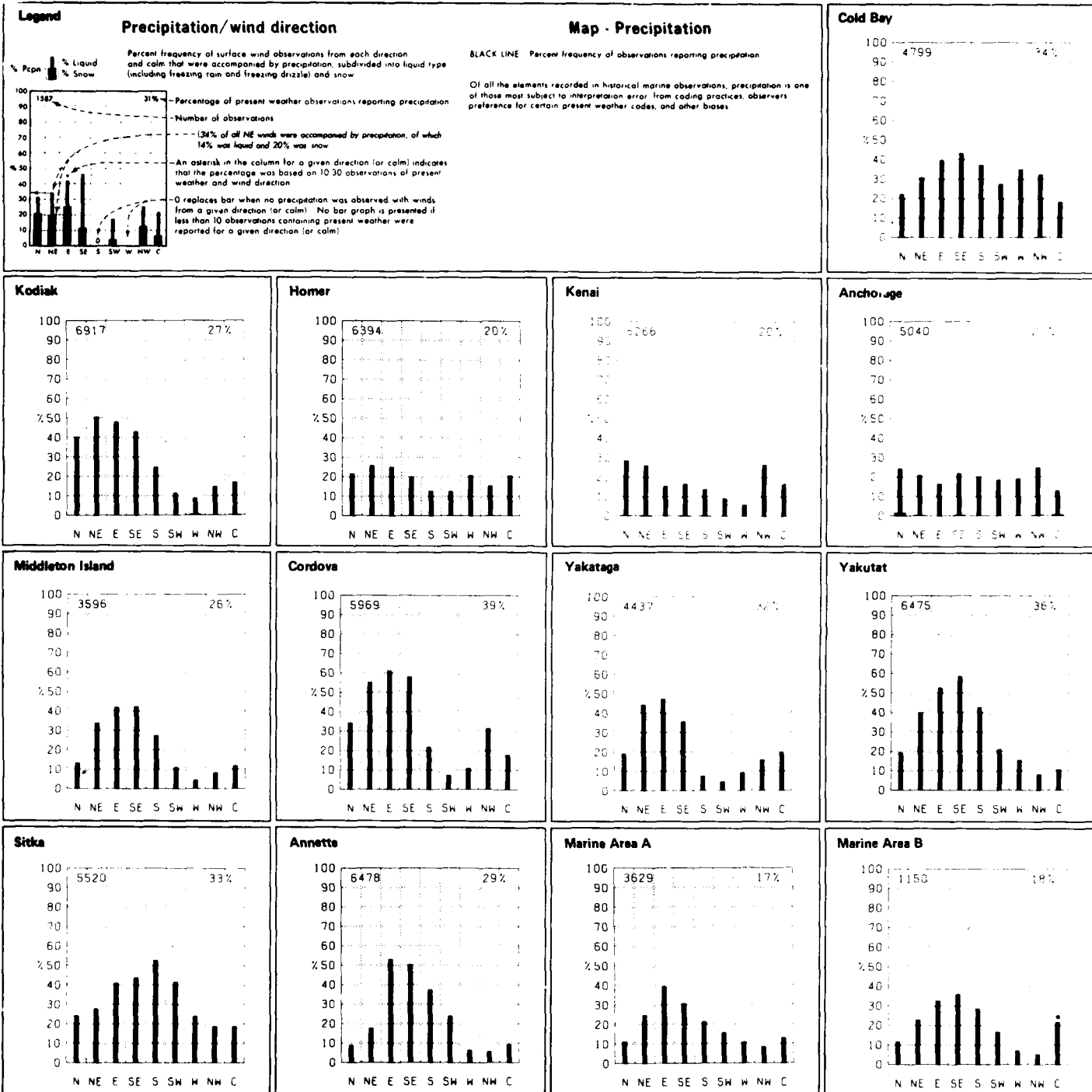


Cold Bay



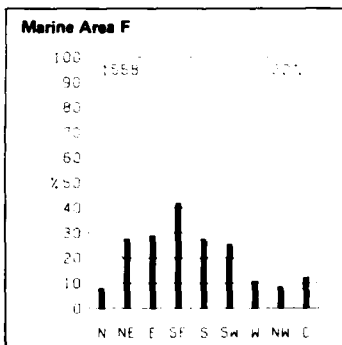
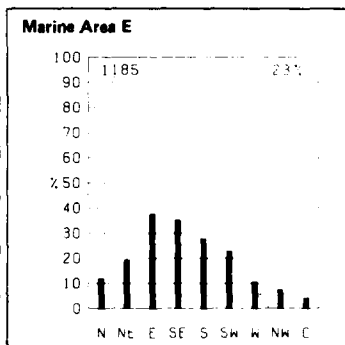
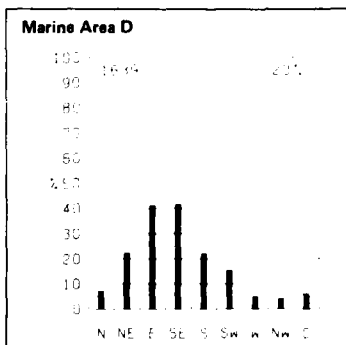
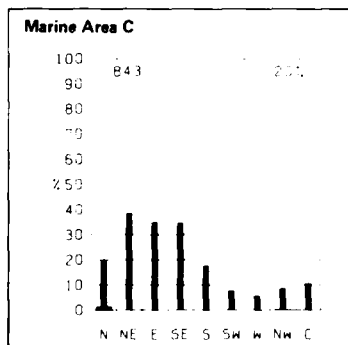
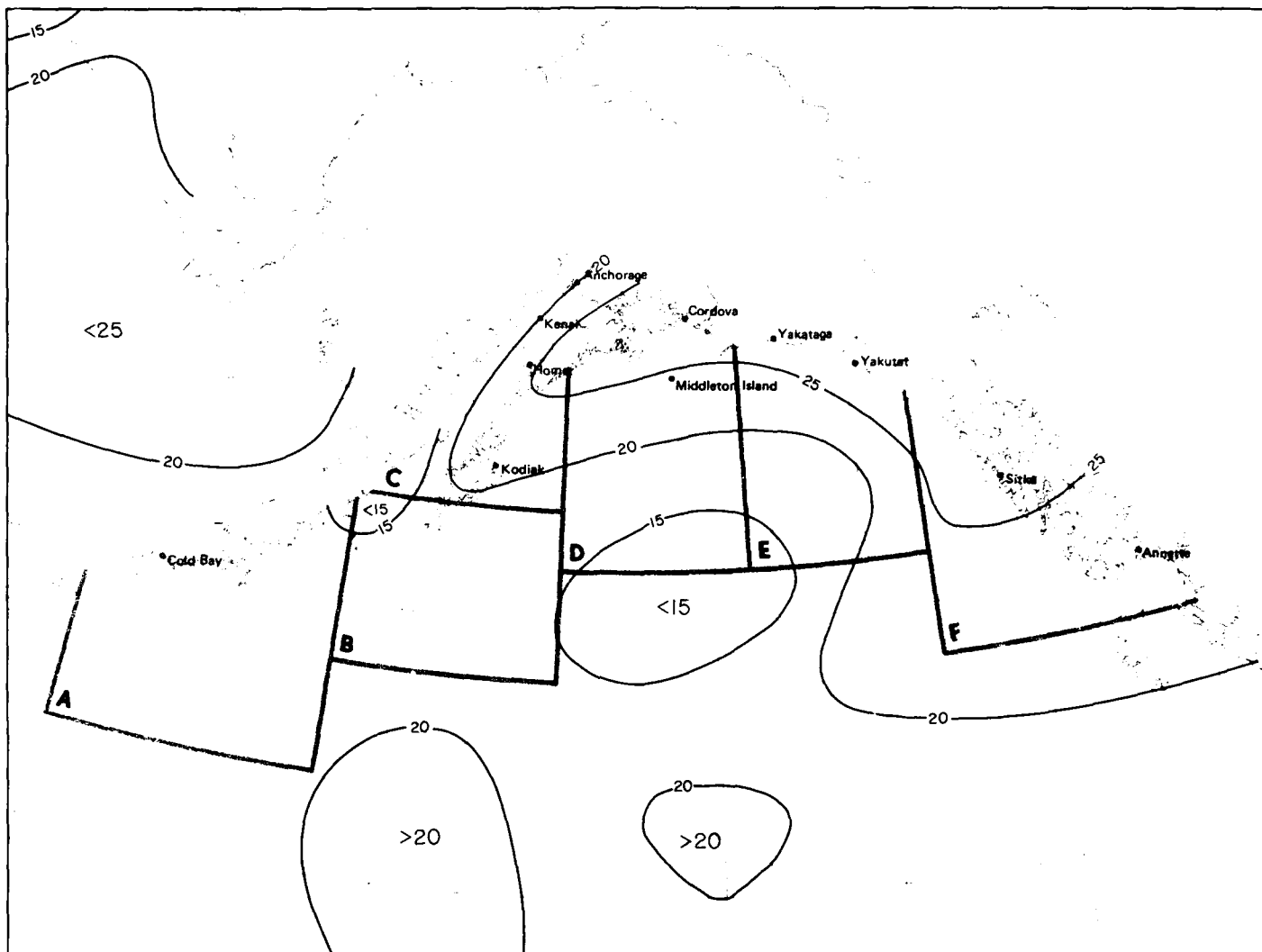
21 Persistence of wind ≥ 20 kts.

August



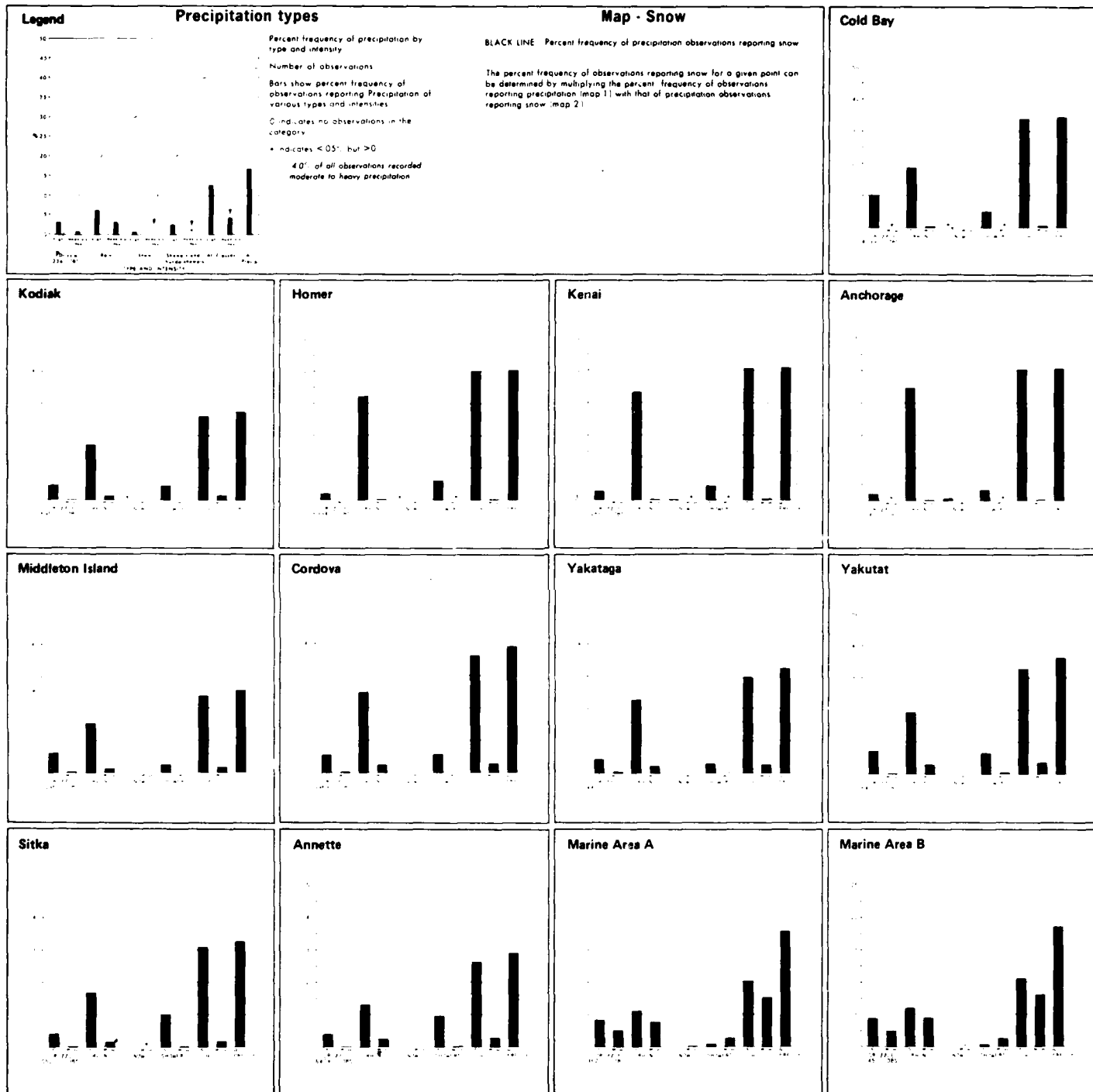
September

1 Precipitation/wind direction



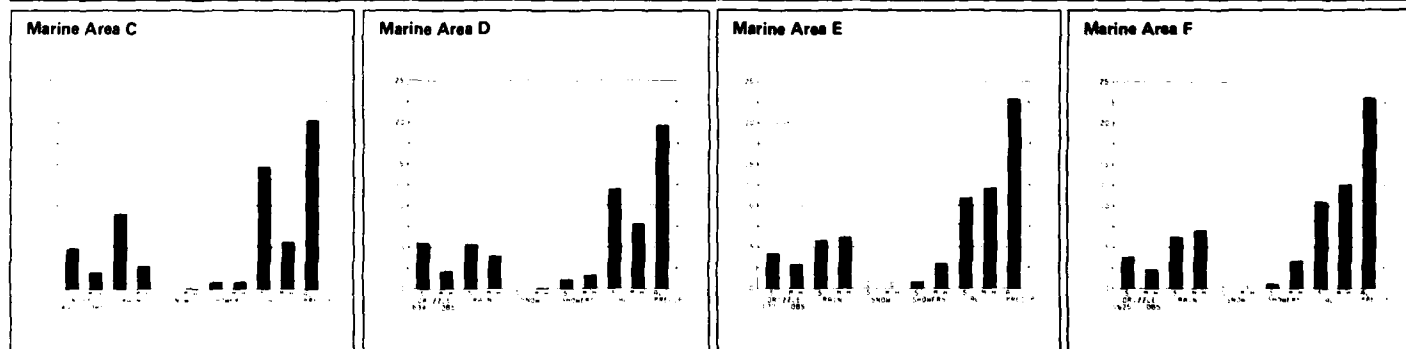
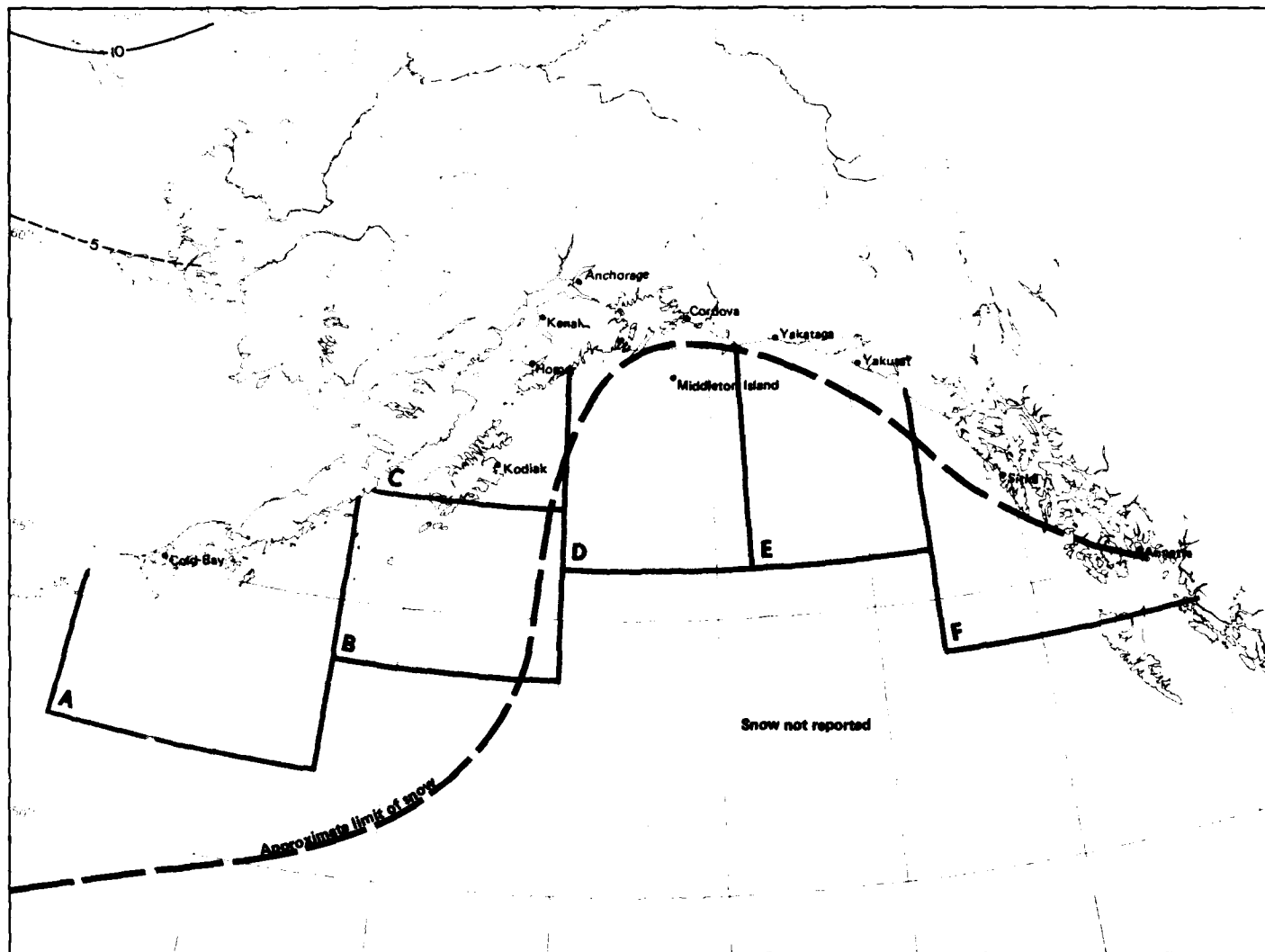
1 Precipitation

September



September

2 Precipitation types

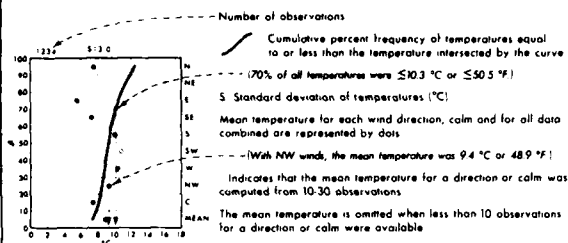


2 Snow

September

Legend

Air temperature/wind direction



Map - Air temperature mean and thresholds

BLACK LINE Percent frequency of temperature $\leq 50^{\circ}\text{C}$ ($\leq 122^{\circ}\text{F}$)

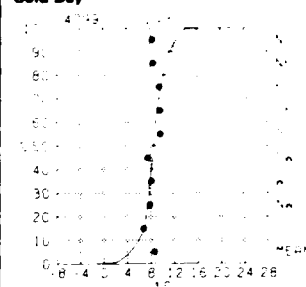
RED LINE Mean air temperature $^{\circ}\text{C}$

BLUE LINE Percent frequency of wind chill temperature $\leq 30^{\circ}\text{C}$ ($\leq 22^{\circ}\text{F}$)

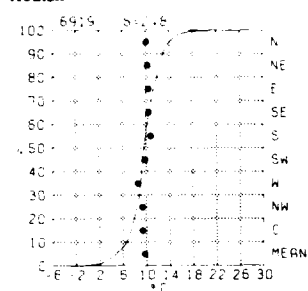
Air temperature readings recorded on transient ships in warm, sunny weather appear biased toward high temperatures, apparently because of improper instrument exposure and ventilation. Despite the inaccuracies, the large-scale patterns and mean gradients of the isopleth analyses are relatively accurate.

The temperature scale of the graph may vary in both range and class interval. The percentage of temperature observations greater than a given value can be obtained by subtracting the cumulative percent frequency of that value from 100%. The number of observations and the standard deviation plus the plotted points on the graphs are based on those observations reporting both temperature and wind direction. The cumulative curve is based on all observations reporting temperature with or without wind direction.

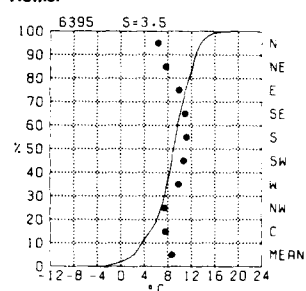
Cold Bay



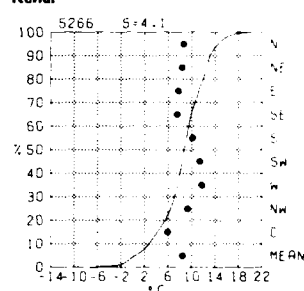
Kodiak



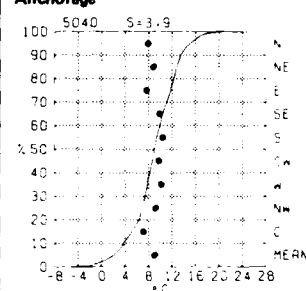
Homer



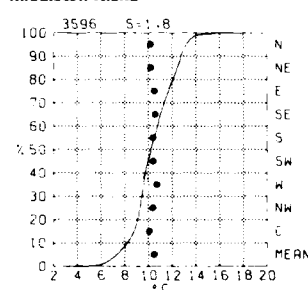
Kenai



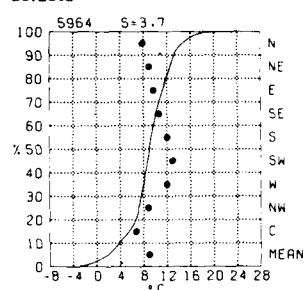
Anchorage



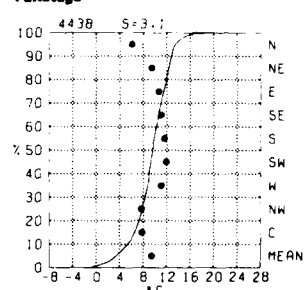
Middletown Island



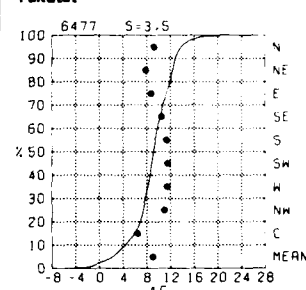
Cordova



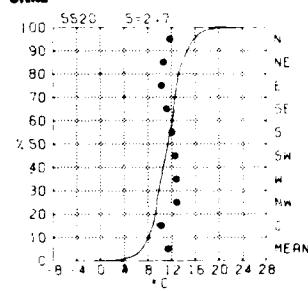
Yakutat



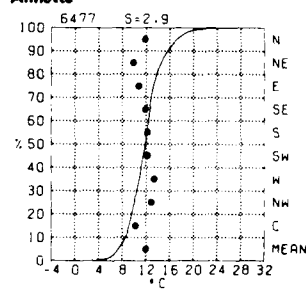
Yakutat



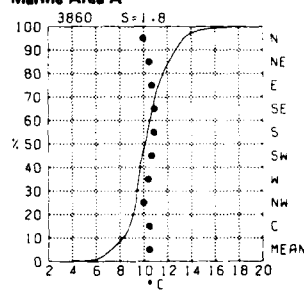
Sitka



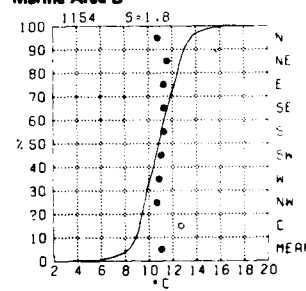
Annette



Marine Area A

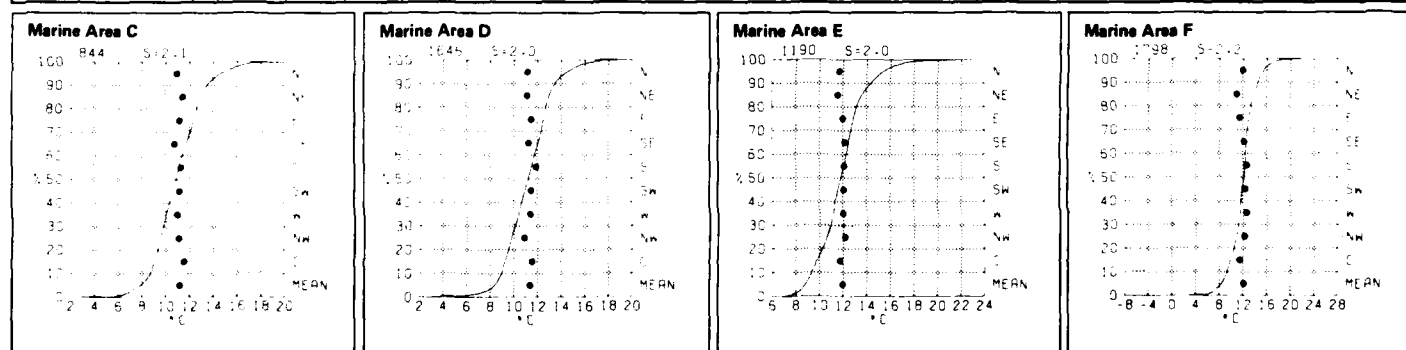
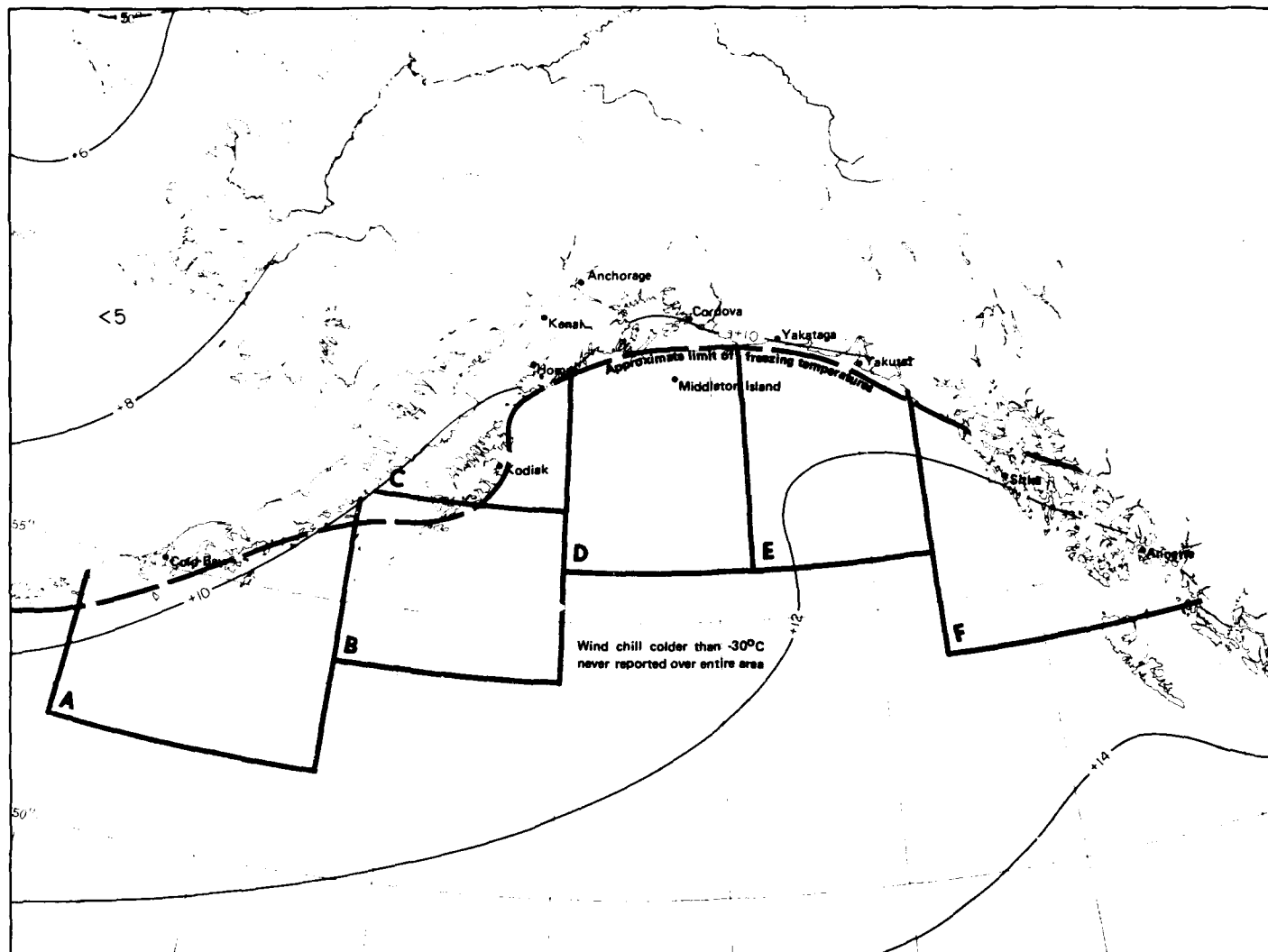


Marine Area B



September

3 Air temperature/wind direction

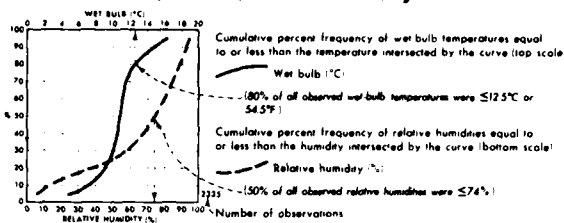


3 Air temperature mean and thresholds

September

Legend

Wet bulb/relative humidity

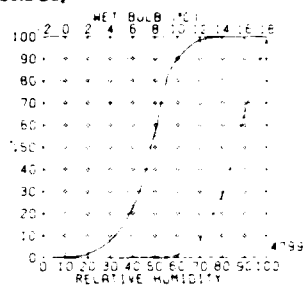


Map - Mean dew point temperature

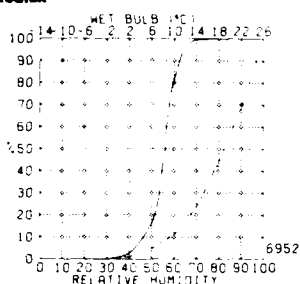
BLACK LINE Mean dew point temperature (°C)

The observation count of the graph reflects those observations reporting both air and wet bulb temperatures; both are required in computing the relative humidity. The percentage of observations of either element greater than a given value can be obtained by subtracting the cumulative percent frequency of that value from 100%.

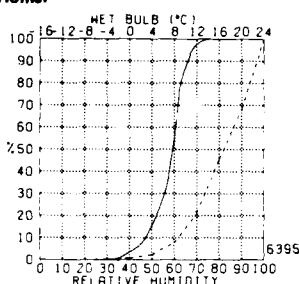
Cold Bay



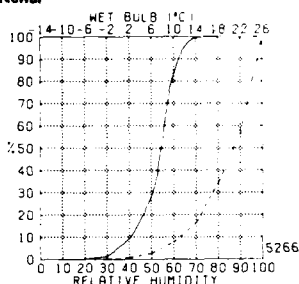
Kodiak



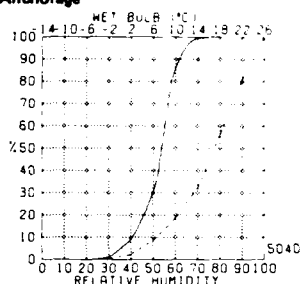
Homer



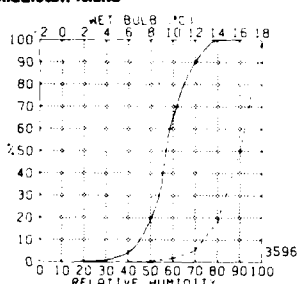
Kenai



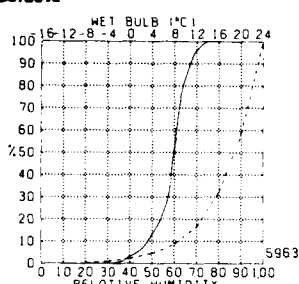
Anchorage



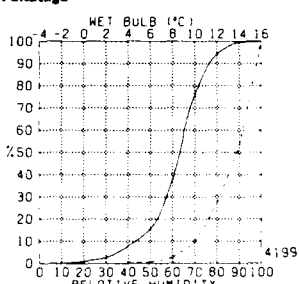
Middleton Island



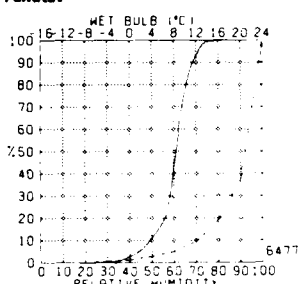
Cordova



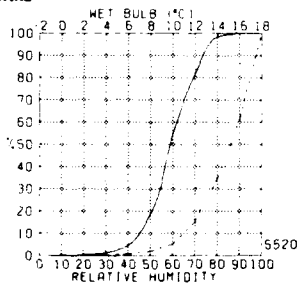
Yakutat



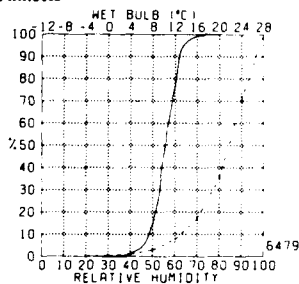
Yakutat



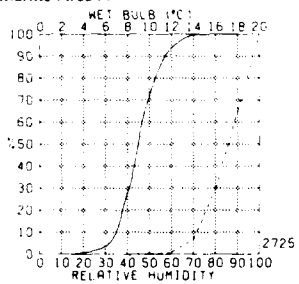
Sitka



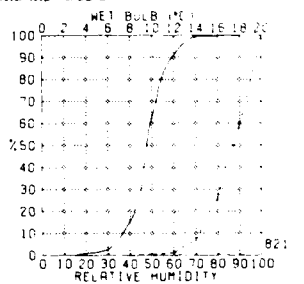
Annette



Marine Area A

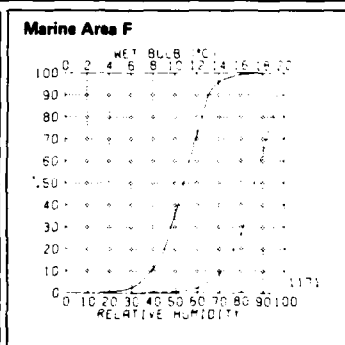
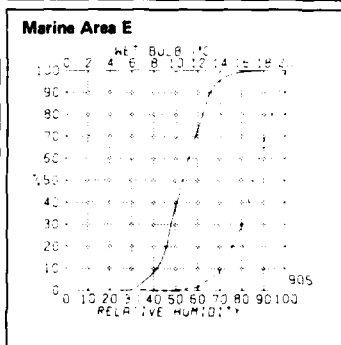
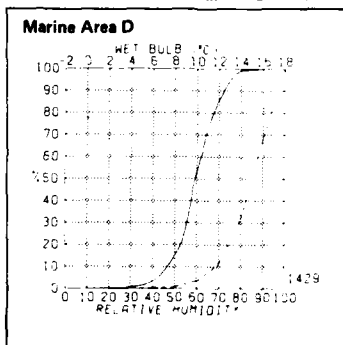
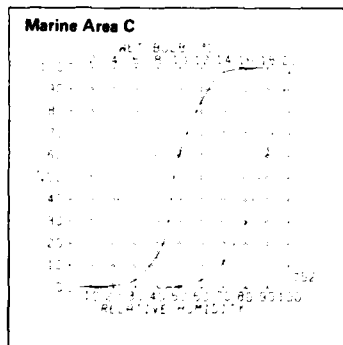
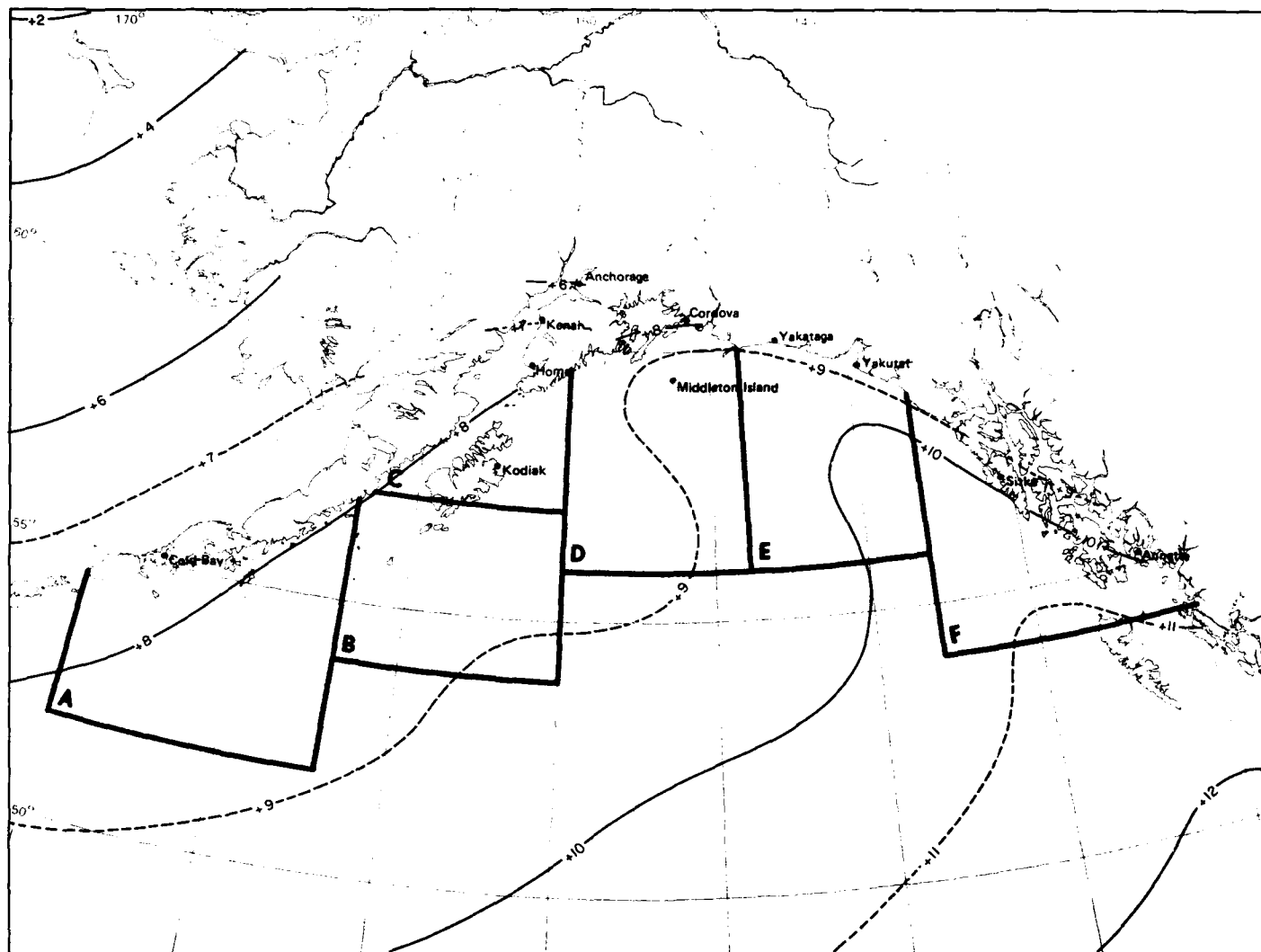


Marine Area B



September

4 Wet bulb/relative humidity



4 Mean dew point temperature

September

Legend

Air temperature/wind speed

WIND SPEED (KTS)	0-3	4-10	11-21	22-33	34
26-27	0	0	0	0	0
24-25	0	0	0	0	0
22-23	0	0	0	0	0
20-21	0	0	0	0	0
18-19	0	0	0	0	0
16-17	0	0	0	0	0
14-15	0	0	0	0	0
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
0-1	0	0	0	0	0
<0	0	0	0	0	0

Percent frequency of simultaneous occurrence of specified temperature (°C) and wind speed (knots)
 (1% of all observations reported temperature 2-3°C simultaneously with wind speed of 22-33 kts)
 Indicates < 5% but > 0
 Number of observations

Map - Air temperature extremes (°C)

BLACK LINE Maximum (99%) air temperature (1% of temperatures were greater than the given value)
 BLUE LINE Minimum (1%) air temperature (1% of temperatures were equal to or less than the given value)

The graph can be used to determine the extent of human discomfort from the combined effects of extreme heat or cold and winds or to estimate the likelihood of superstructure icing. Icing potential increases as the air temperature drops below freezing and the winds increase above 10 knots (16 mph) and may become quite severe with temperatures equal to or less than -9°C (16°F) and winds equal to or greater than 34 knots (39 mph).

Cold Bay

TEMP (°C)	0-3	4-10	11-21	22-33	34
20-21	0	0	0	0	0
18-19	0	0	0	0	0
16-17	0	0	0	0	0
14-15	0	0	0	0	0
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
<0	0	0	0	0	0

4799

Kodiak

TEMP (°C)	0-3	4-10	11-21	22-33	34
26-27	0	0	0	0	0
24-25	0	0	0	0	0
22-23	0	0	0	0	0
20-21	0	0	0	0	0
18-19	0	0	0	0	0
16-17	0	0	0	0	0
14-15	0	0	0	0	0
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
0-1	0	0	0	0	0
<0	0	0	0	0	0

6919

Homer

TEMP (°C)	0-3	4-10	11-21	22-33	34
18-19	0	0	0	0	0
16-17	0	0	0	0	0
14-15	0	0	0	0	0
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
0-1	0	0	0	0	0
<0	0	0	0	0	0

6395

Kenai

TEMP (°C)	0-3	4-10	11-21	22-33	34
20-21	0	0	0	0	0
18-19	0	0	0	0	0
16-17	0	0	0	0	0
14-15	0	0	0	0	0
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
0-1	0	0	0	0	0
<0	0	0	0	0	0

5266

Anchorage

TEMP (°C)	0-3	4-10	11-21	22-33	34
22-23	0	0	0	0	0
20-21	0	0	0	0	0
18-19	0	0	0	0	0
16-17	0	0	0	0	0
14-15	0	0	0	0	0
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
0-1	0	0	0	0	0
<0	0	0	0	0	0

5040

Middleton Island

TEMP (°C)	0-3	4-10	11-21	22-33	34
16-17	0	0	0	0	0
14-15	0	0	0	0	0
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
0-1	0	0	0	0	0
<0	0	0	0	0	0

3596

Cordova

TEMP (°C)	0-3	4-10	11-21	22-33	34
22-23	0	0	0	0	0
20-21	0	0	0	0	0
18-19	0	0	0	0	0
16-17	0	0	0	0	0
14-15	0	0	0	0	0
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
0-1	0	0	0	0	0
<0	0	0	0	0	0

5964

Yakutat

TEMP (°C)	0-3	4-10	11-21	22-33	34
22-23	0	0	0	0	0
20-21	0	0	0	0	0
18-19	0	0	0	0	0
16-17	0	0	0	0	0
14-15	0	0	0	0	0
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
0-1	0	0	0	0	0
<0	0	0	0	0	0

4438

Yakutat

TEMP (°C)	0-3	4-10	11-21	22-33	34
24-25	0	0	0	0	0
22-23	0	0	0	0	0
20-21	0	0	0	0	0
18-19	0	0	0	0	0
16-17	0	0	0	0	0
14-15	0	0	0	0	0
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
0-1	0	0	0	0	0
<0	0	0	0	0	0

6477

Sitka

TEMP (°C)	0-3	4-10	11-21	22-33	34
22-23	0	0	0	0	0
20-21	0	0	0	0	0
18-19	0	0	0	0	0
16-17	0	0	0	0	0
14-15	0	0	0	0	0
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
0-1	0	0	0	0	0
<0	0	0	0	0	0

5520

Annette

TEMP (°C)	0-3	4-10	11-21	22-33	34
24-25	0	0	0	0	0
22-23	0	0	0	0	0
20-21	0	0	0	0	0
18-19	0	0	0	0	0
16-17	0	0	0	0	0
14-15	0	0	0	0	0
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
0-1	0	0	0	0	0
<0	0	0	0	0	0

6477

Marine Area A

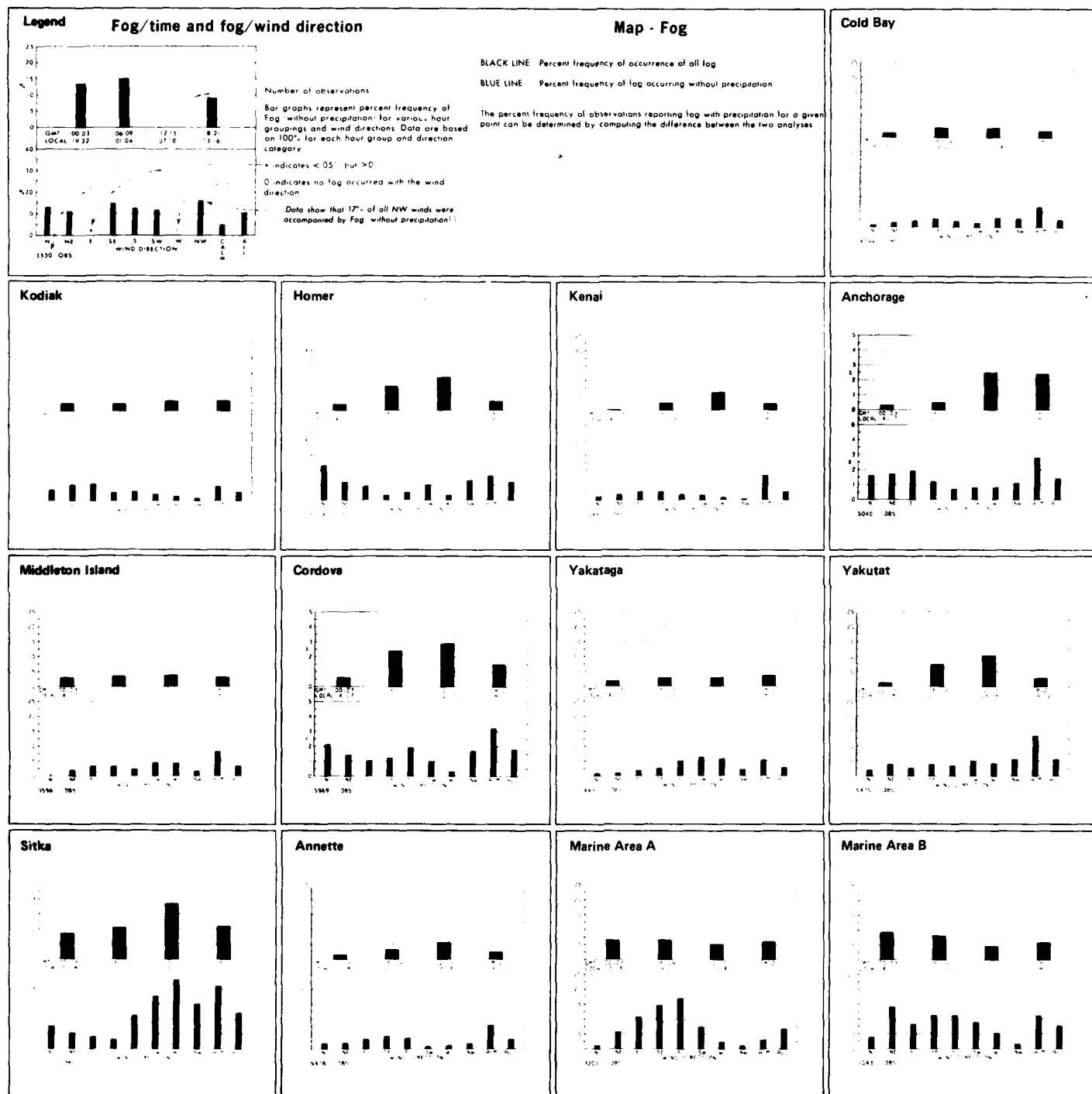
TEMP (°C)	0-3	4-10	11-21	22-33	34
18-19	0	0	0	0	0
16-17	0	0	0	0	0
14-15	0	0	0	0	0
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
0-1	0	0	0	0	0
<0	0	0	0	0	0

3861

Marine Area B

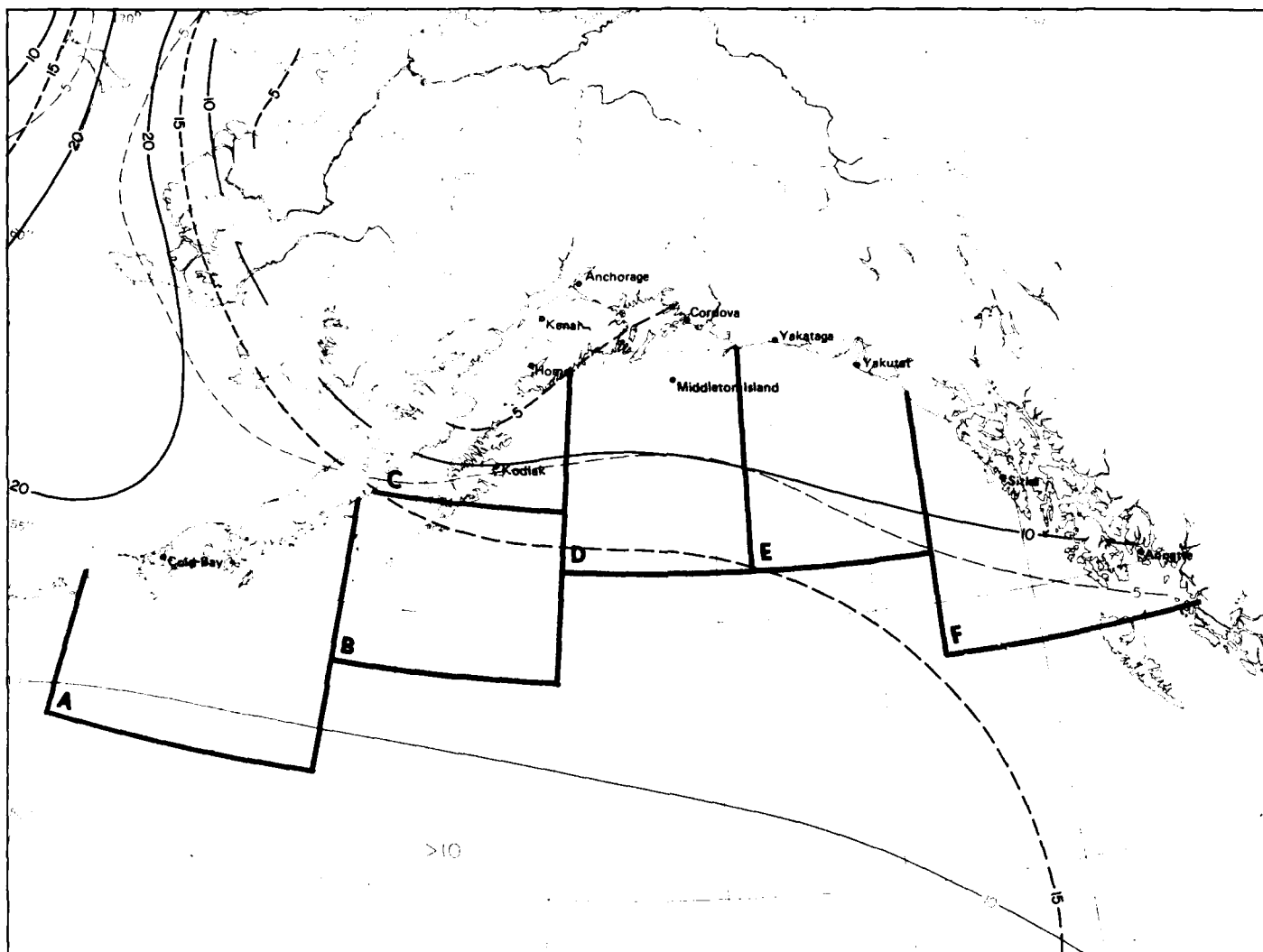
TEMP (°C)	0-3	4-10	11-21	22-33	34
16-17	0	0	0	0	0
14-15	0	0	0	0	0
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
0-1	0	0	0	0	0
<0	0	0	0	0	0

1155



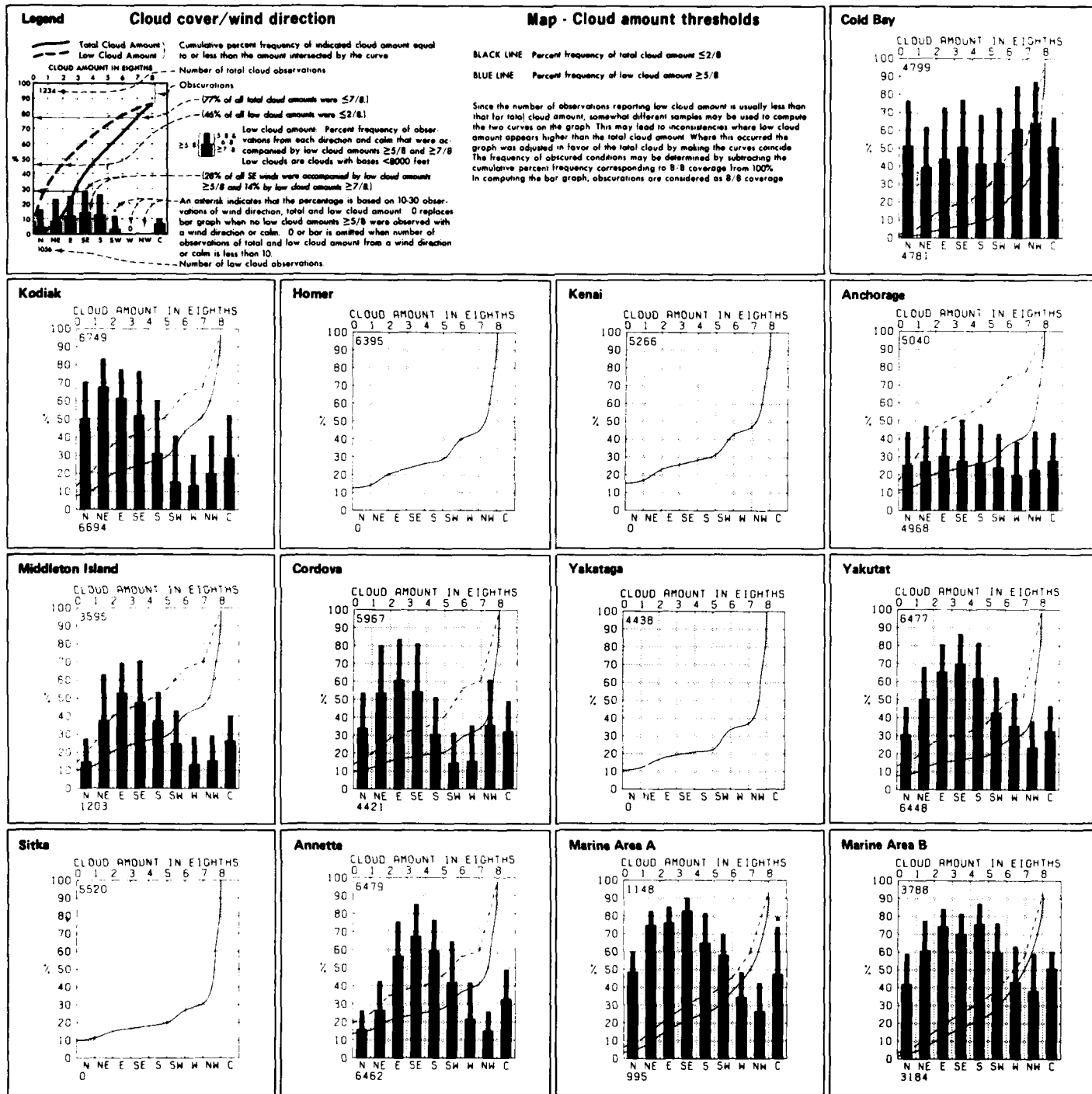
September

6 Fog/time and fog/wind direction



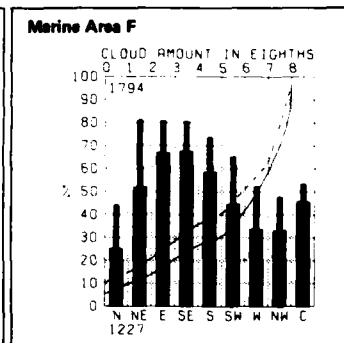
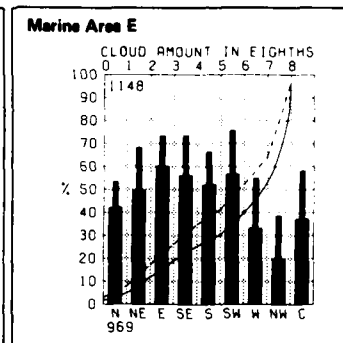
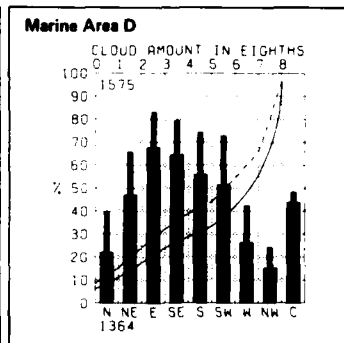
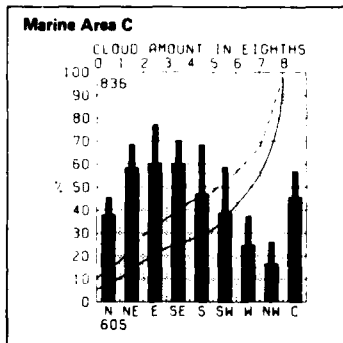
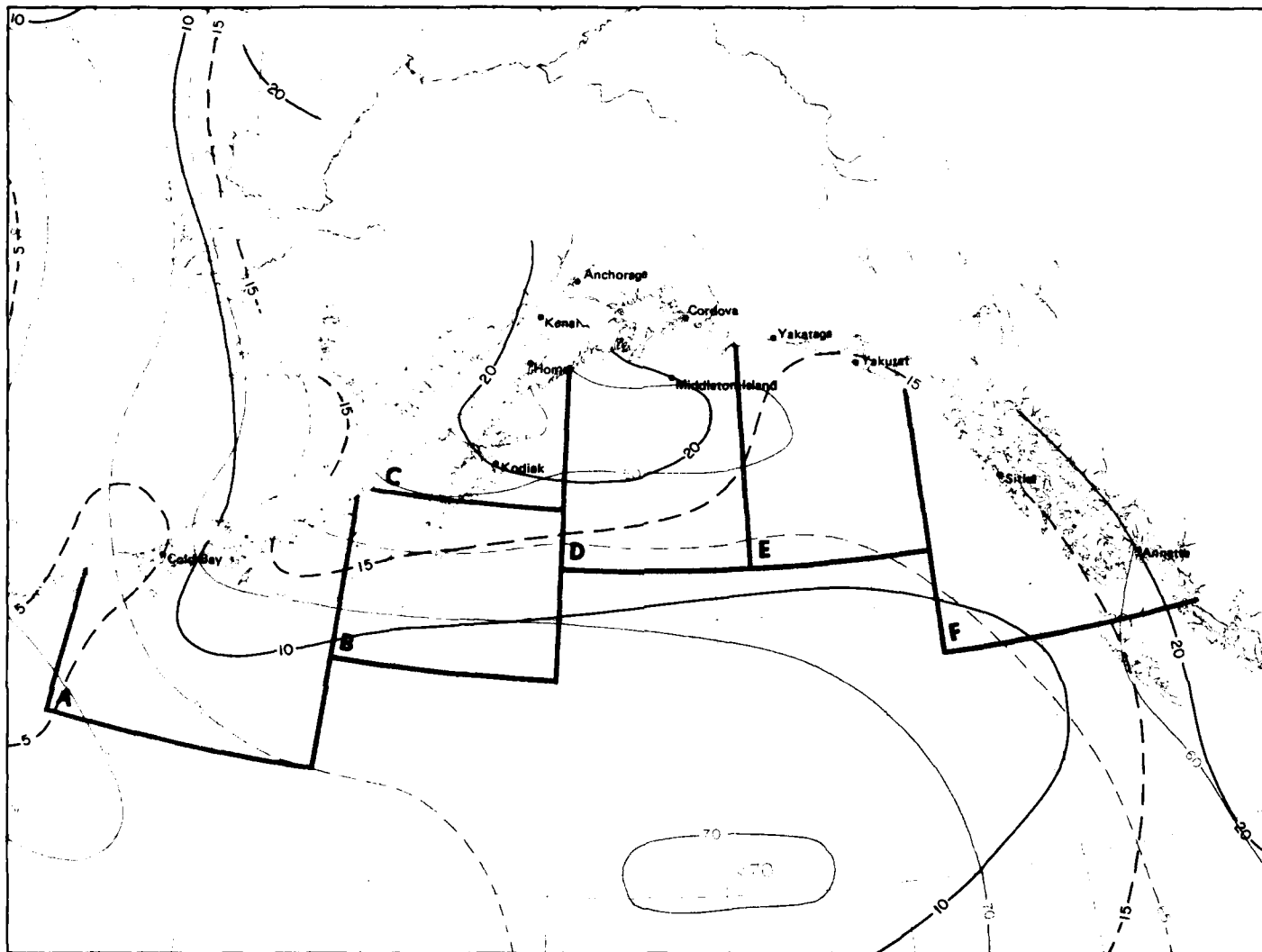
6 Fog

September



September

7 Cloud cover/wind direction

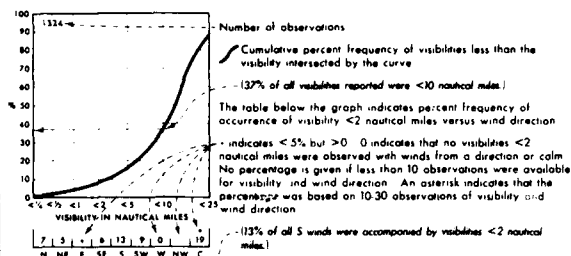


7 Cloud amount thresholds

September

Legend

Visibility/wind direction

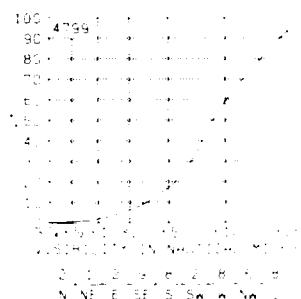


Map - Visibility thresholds

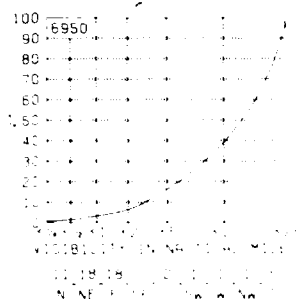
BLACK LINE Percent frequency of visibilities ≥ 5 nautical miles
BLUE LINE Percent frequency of visibilities <2 nautical miles

The percentage of visibility equal to or greater than a given value can be obtained from the graph by subtracting the cumulative percent frequency of that value from 100%. Visibility at sea is difficult to measure because of the lack of reference points. Also, some observers seem to report reduced visibilities at night because of darkness, though this tendency has abated in recent years. The coarseness of the coding intervals, however, tends to minimize serious biases in the summarized data. Visibilities greater than 25 nm should be interpreted cautiously because the earth's curvature makes it impossible to see 25 nm horizontally from the bridges of most ships.

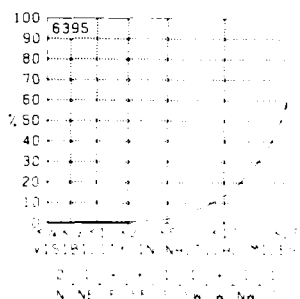
Cold Bay



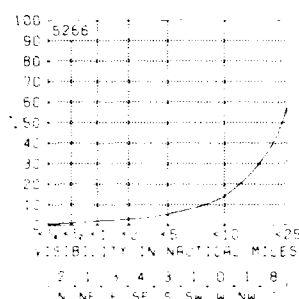
Kodiak



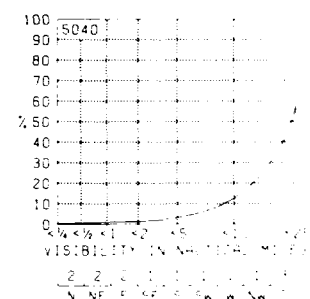
Homer



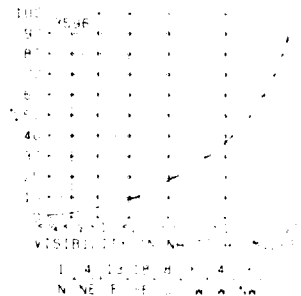
Kenai



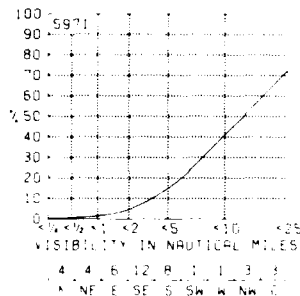
Anchorage



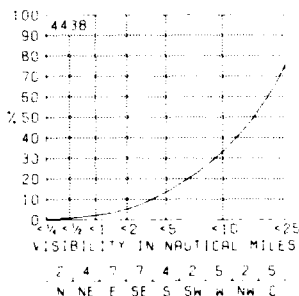
Middleton Island



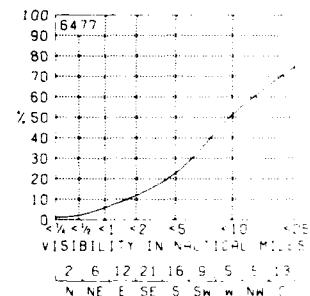
Cordova



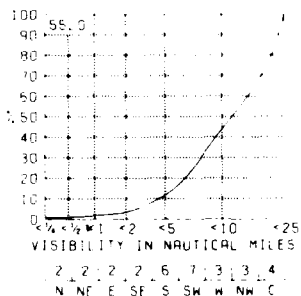
Yakutat



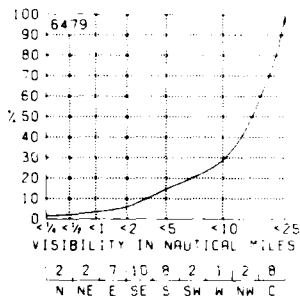
Yakutat



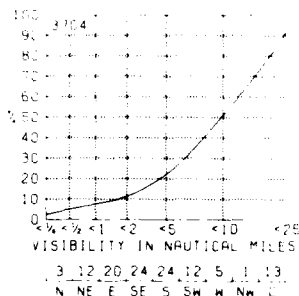
Sitka



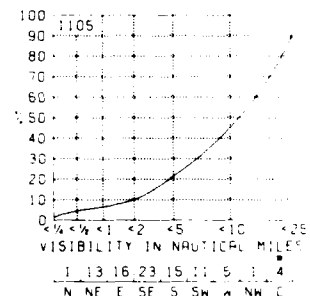
Annette



Marine Area A

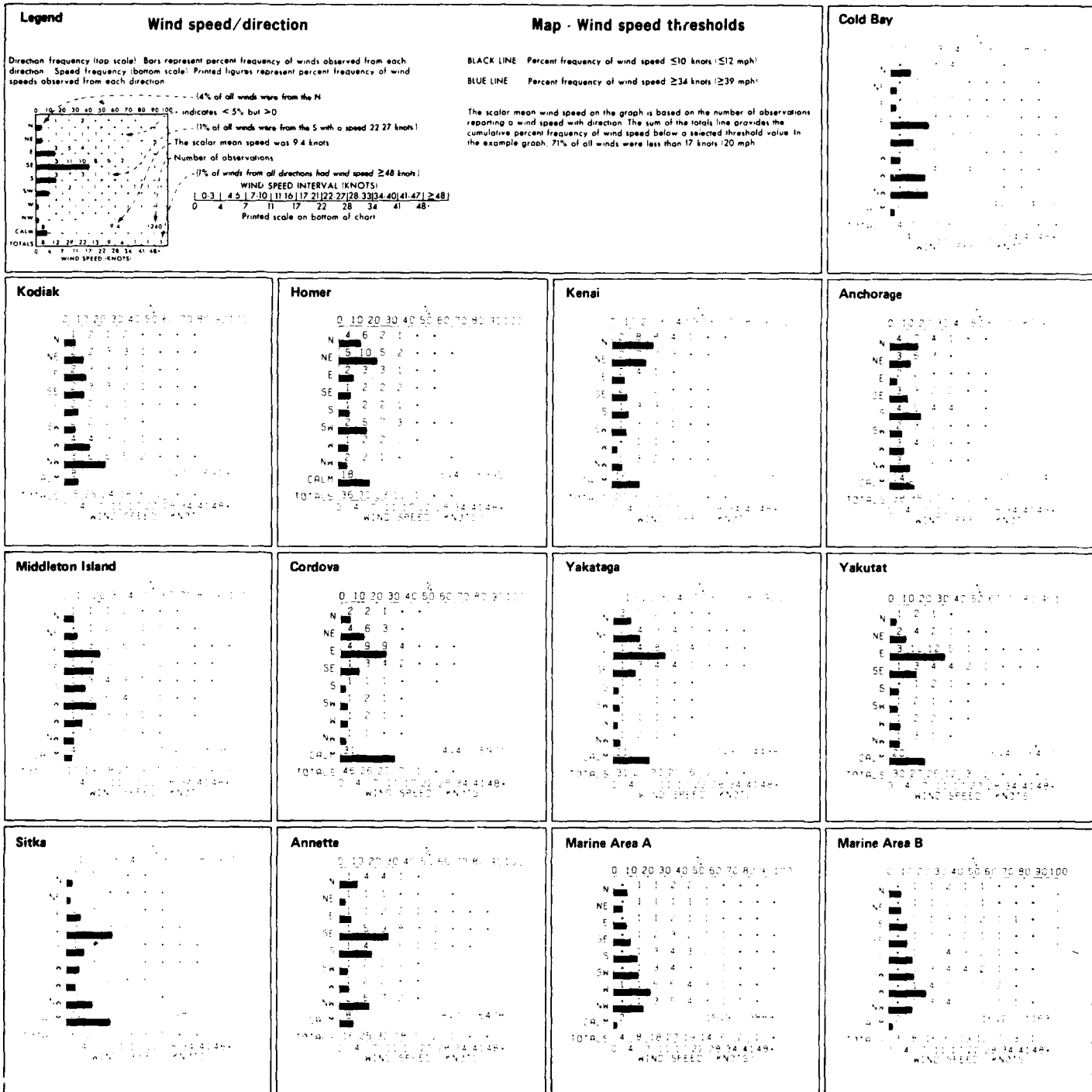


Marine Area B



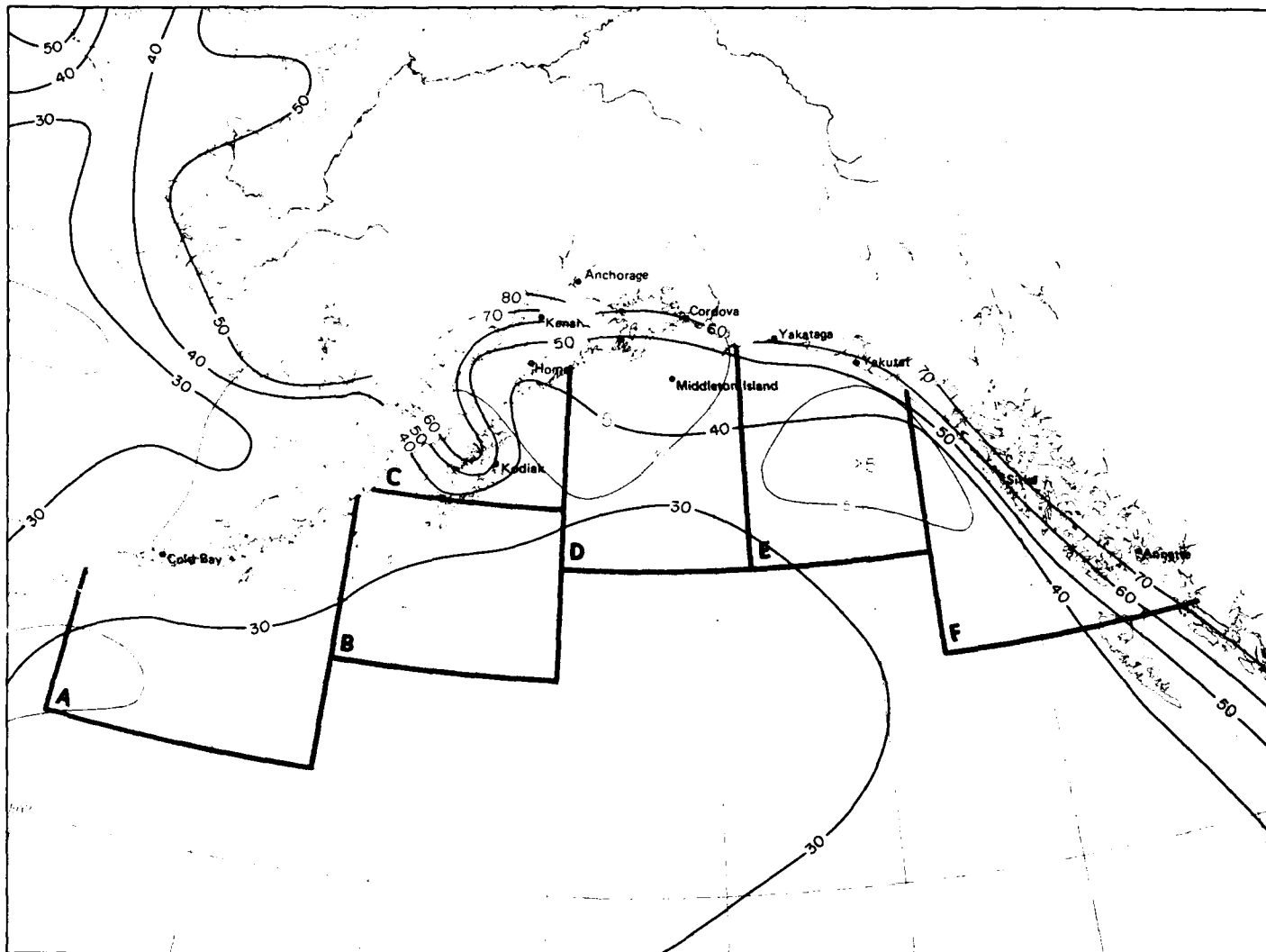
September

8 Visibility/wind direction



September

9 Wind speed/direction



Marine Area C

	0	10	20	30	40	50	60	70	80	90	100
N	1	1	1	1	1	1	1	1	1	1	1
NE	2	2	2	2	2	2	2	2	2	2	2
E	1	2	4	2	2	2	2	2	2	2	2
SE	1	2	4	2	2	2	2	2	2	2	2
S	1	2	4	2	2	2	2	2	2	2	2
SW	1	2	4	2	2	2	2	2	2	2	2
W	1	2	4	2	2	2	2	2	2	2	2
NW	1	2	4	2	2	2	2	2	2	2	2
CALM	1	2	4	2	2	2	2	2	2	2	2
TOTAL	1	2	10	12	14	14	14	14	14	14	14

WIND SPEED KNOTS

Marine Area D

	0	10	20	30	40	50	60	70	80	90	100
N	1	1	1	1	1	1	1	1	1	1	1
NE	1	2	2	2	2	2	2	2	2	2	2
E	1	2	2	2	2	2	2	2	2	2	2
SE	1	2	2	2	2	2	2	2	2	2	2
S	1	2	2	2	2	2	2	2	2	2	2
SW	1	2	2	2	2	2	2	2	2	2	2
W	1	2	2	2	2	2	2	2	2	2	2
NW	1	2	2	2	2	2	2	2	2	2	2
CALM	1	2	2	2	2	2	2	2	2	2	2
TOTAL	1	2	10	12	14	14	14	14	14	14	14

WIND SPEED KNOTS

Marine Area E

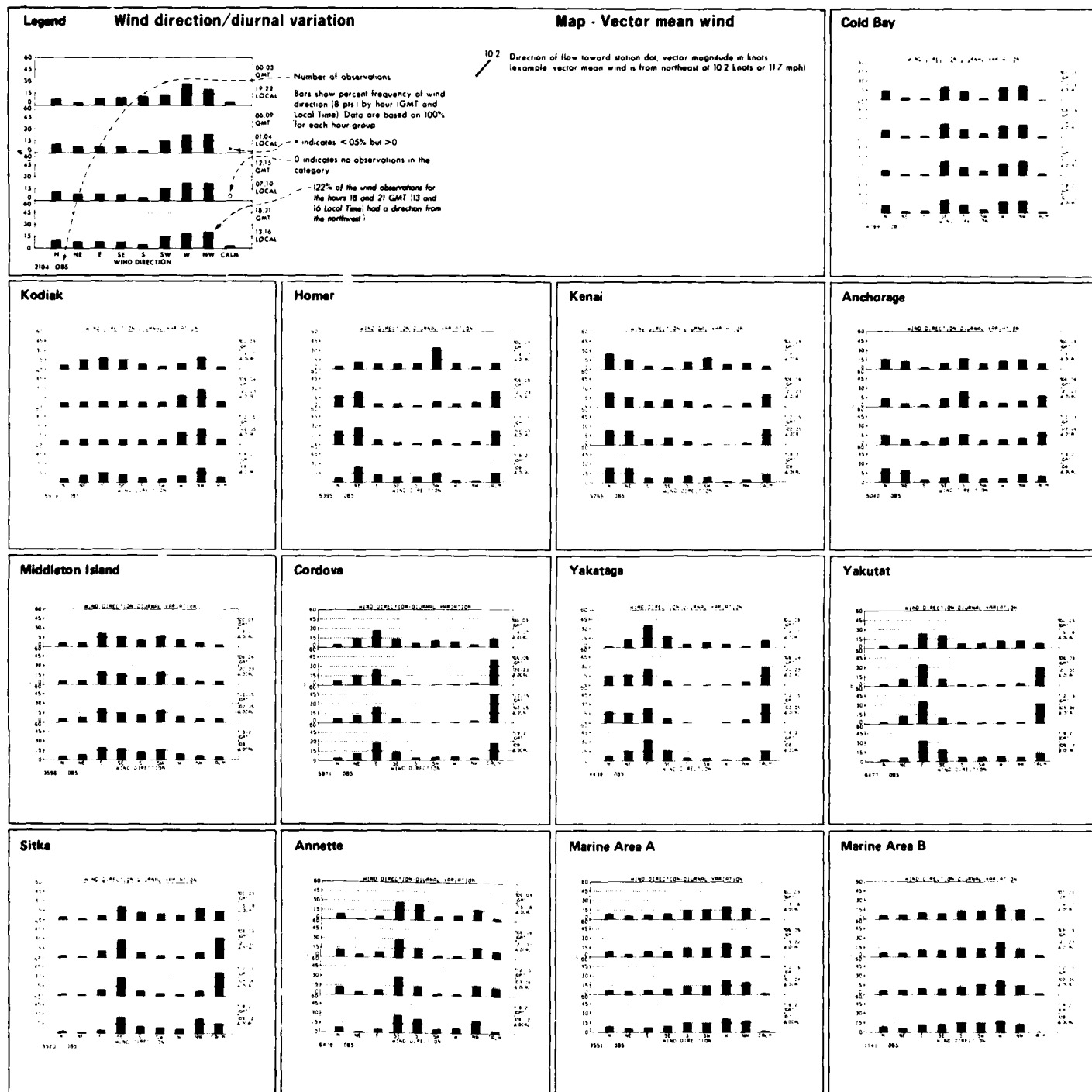
	0	10	20	30	40	50	60	70	80	90	100
N	1	1	1	1	1	1	1	1	1	1	1
NE	1	1	2	1	1	1	1	1	1	1	1
E	1	2	2	3	2	2	2	2	2	2	2
SE	1	2	3	4	3	2	2	2	2	2	2
S	1	2	3	4	2	2	2	2	2	2	2
SW	1	2	3	3	3	2	2	2	2	2	2
W	1	2	3	4	4	2	2	2	2	2	2
NW	1	2	3	3	3	2	2	2	2	2	2
CALM	1	2	3	3	3	2	2	2	2	2	2
TOTALS	8	13	21	23	15	10	8	8	8	8	8

WIND SPEED KNOTS

Marine Area F

	0	10	20	30	40	50	60	70	80	90	100
N	1	1	1	1	1	1	1	1	1	1	1
NE	1	1	1	1	1	1	1	1	1	1	1
E	1	2	2	2	2	2	2	2	2	2	2
SE	1	2	2	2	2	2	2	2	2	2	2
S	1	2	2	2	2	2	2	2	2	2	2
SW	1	2	2	2	2	2	2	2	2	2	2
W	1	2	2	2	2	2	2	2	2	2	2
NW	1	2	2	2	2	2	2	2	2	2	2
CALM	1	2	2	2	2	2	2	2	2	2	2
TOTALS	15	16	23	20	13	8	8	8	8	8	8

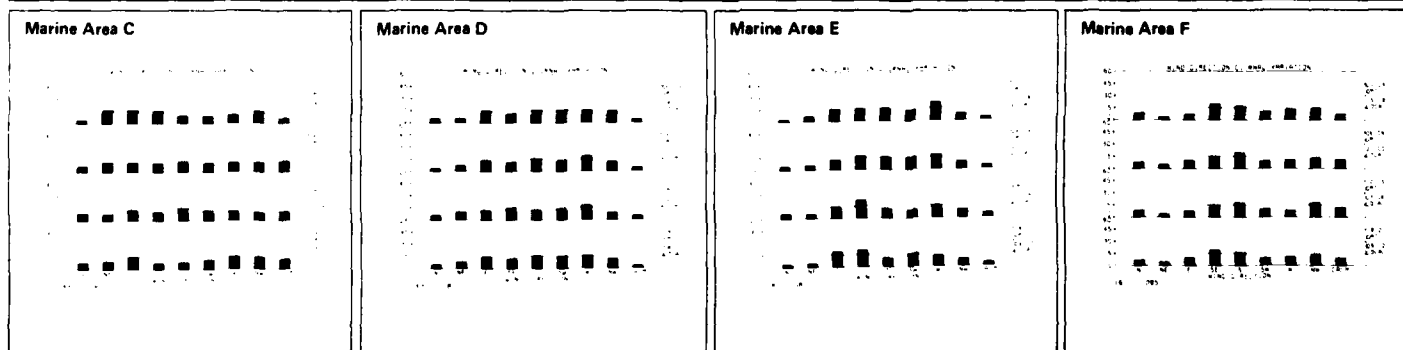
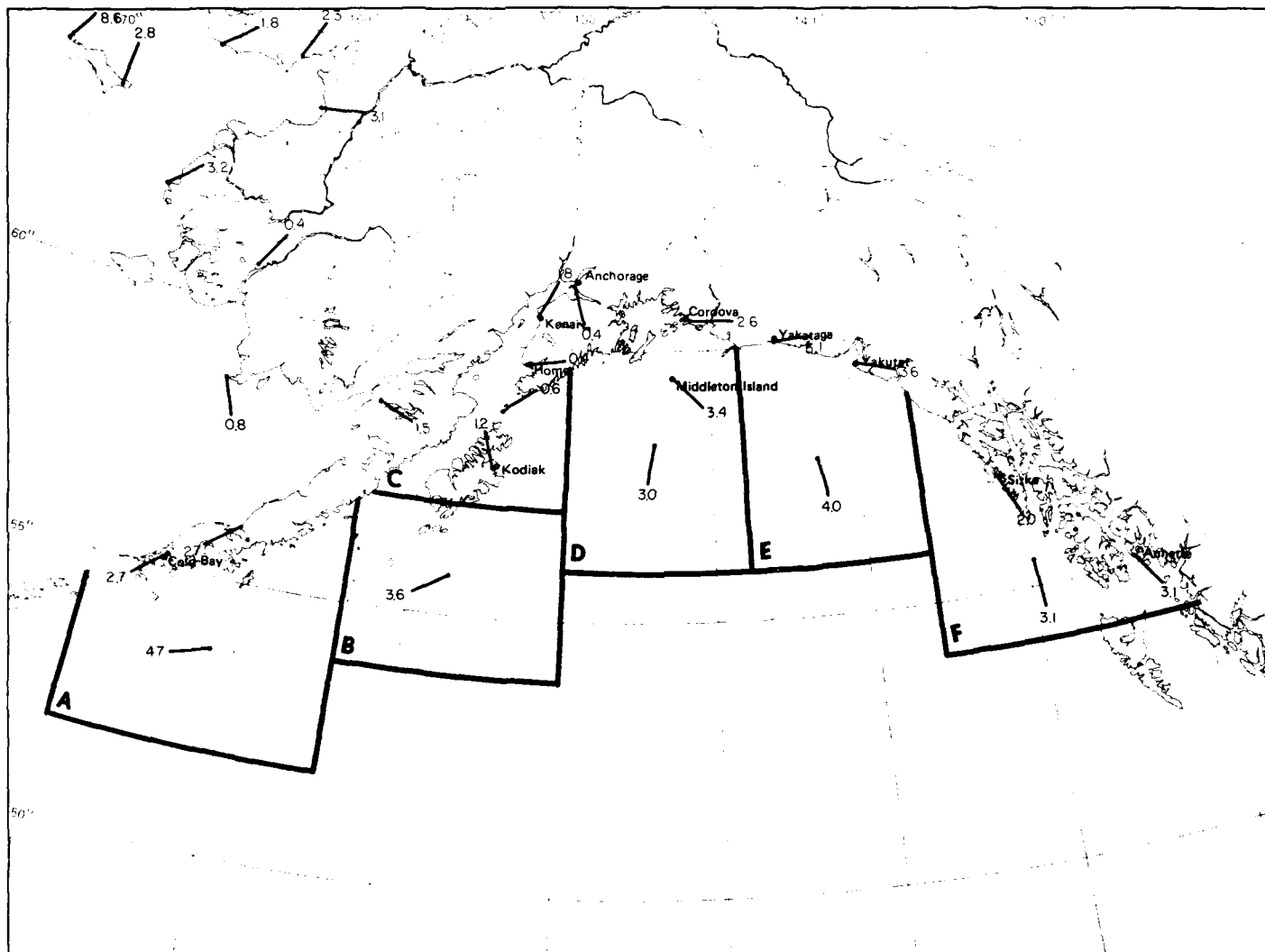
WIND SPEED KNOTS



September

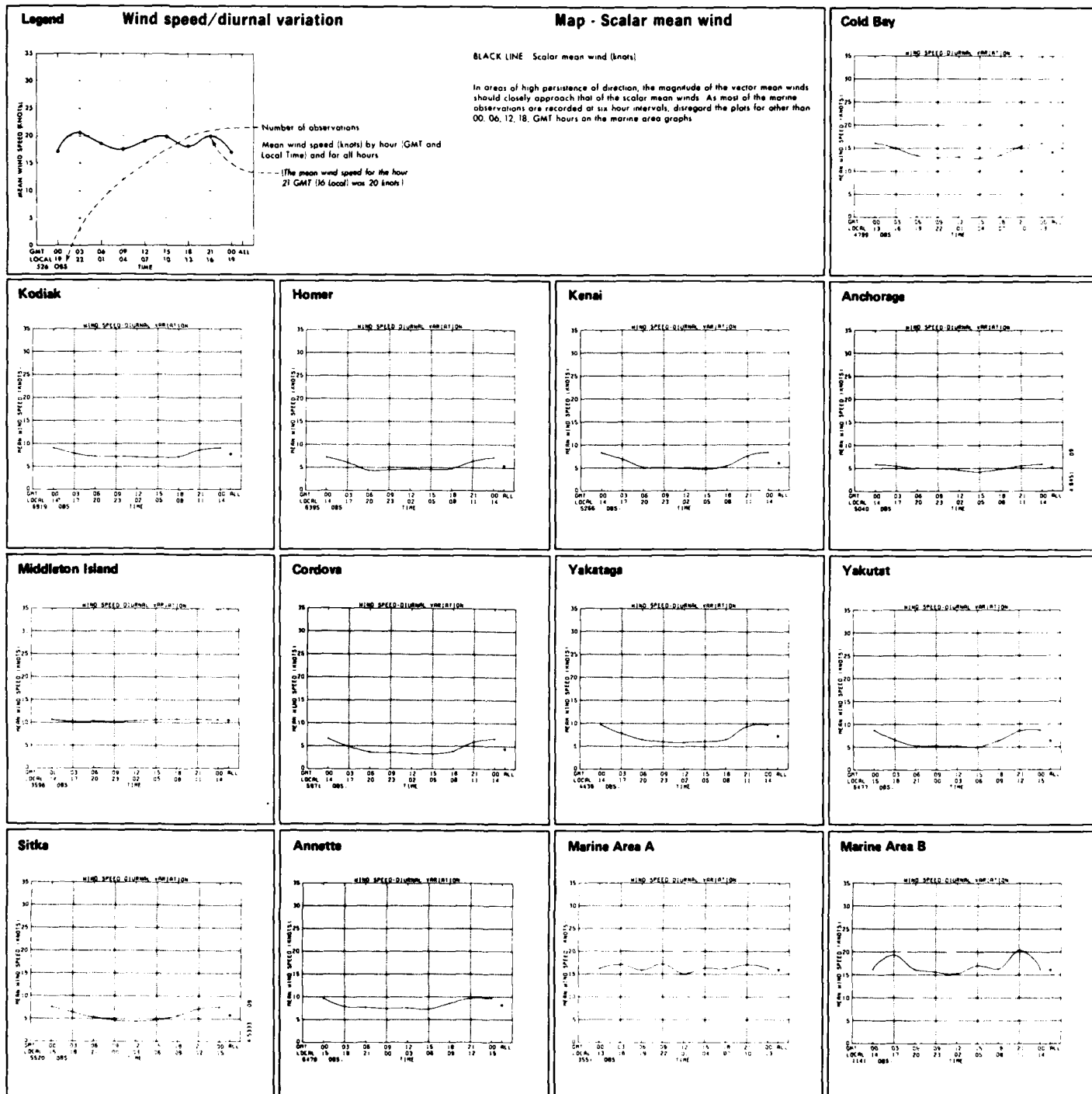
316

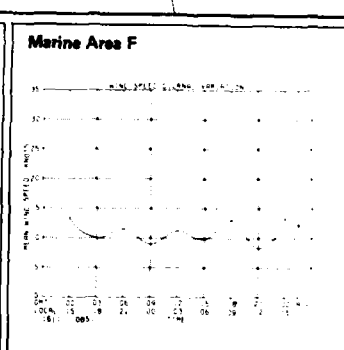
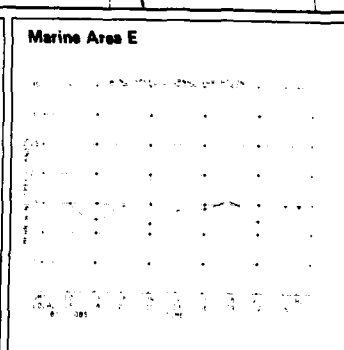
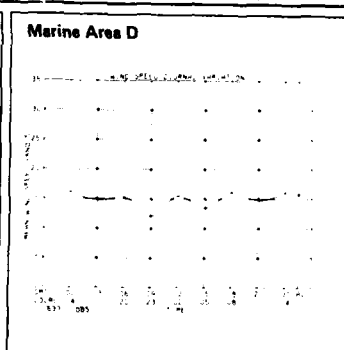
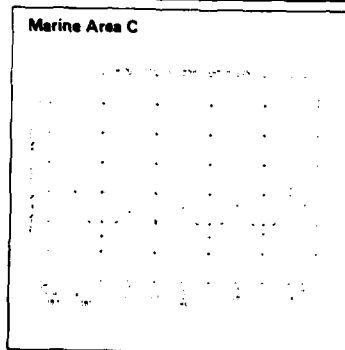
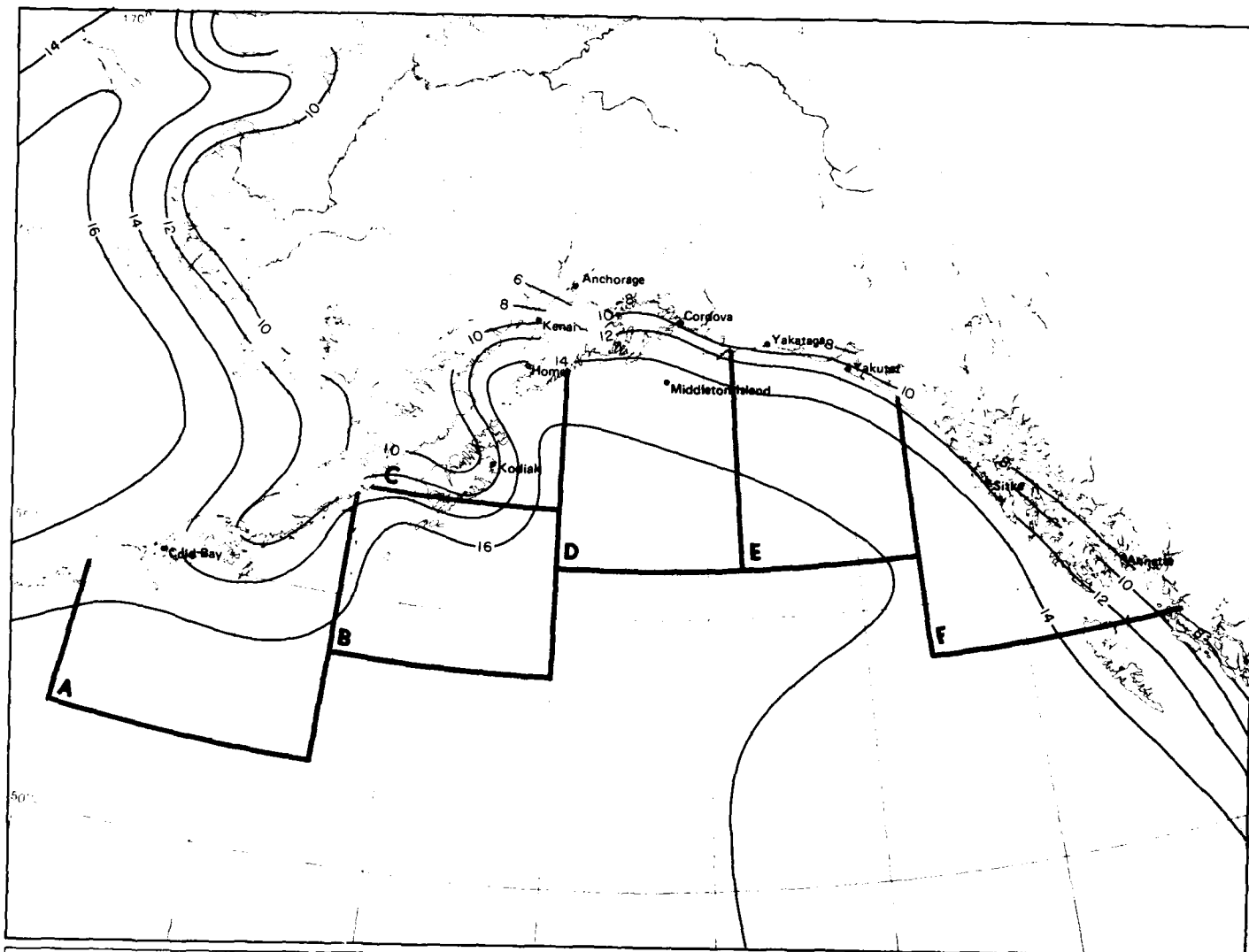
10 Wind direction/diurnal variation



10 Vector mean wind

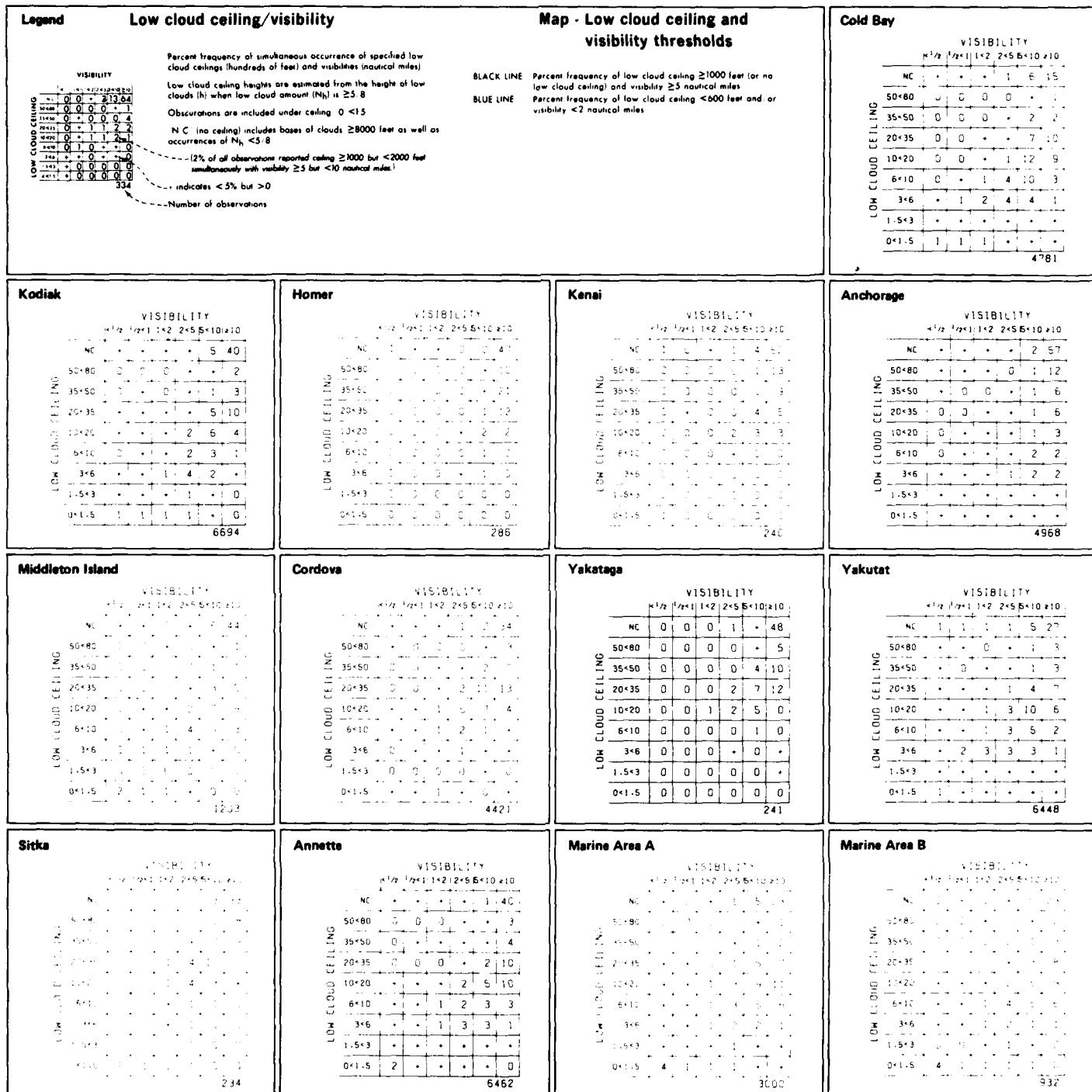
September

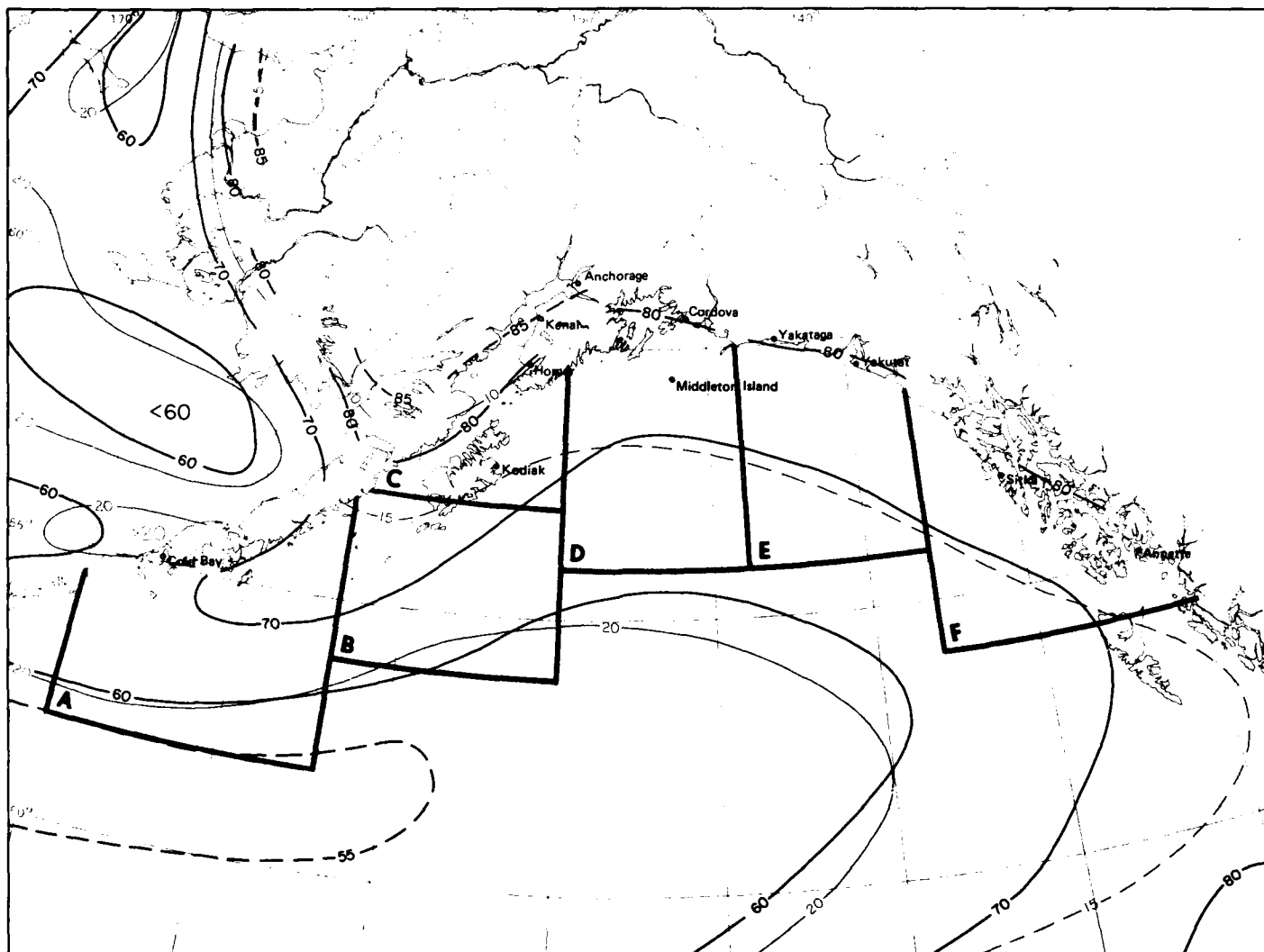




11 Scalar mean wind

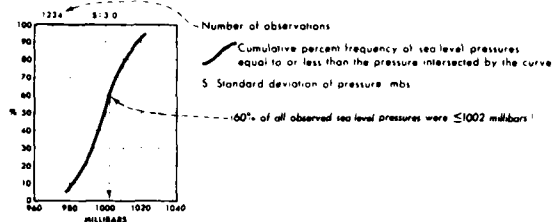
September





Legend

Sea level pressure

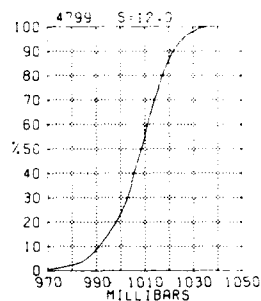


Map - Mean sea level pressure

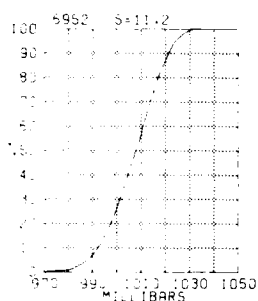
BLACK LINE Mean sea level pressure (millibars)

Sea level pressure is one of the most frequently recorded elements but one of the least accurate because of instrument and coding errors. Despite the inaccuracies of the individual readings, however, the large-scale patterns and mean gradients of the isopleth analyses are relatively accurate.

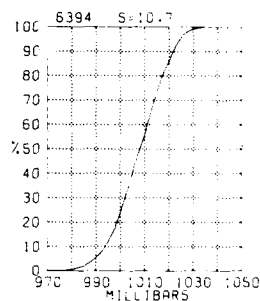
Cold Bay



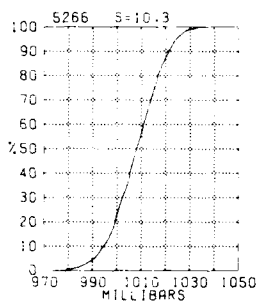
Kodiak



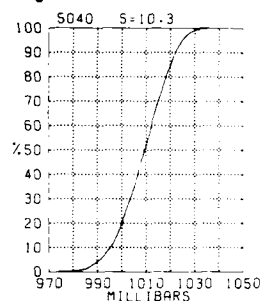
Homer



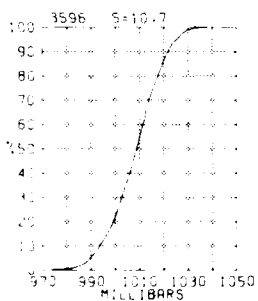
Kenai



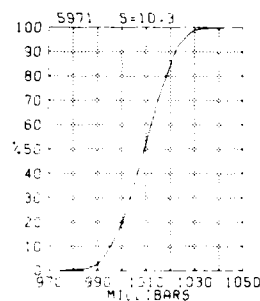
Anchorage



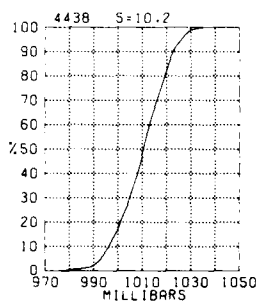
Middleton Island



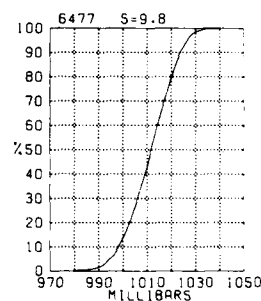
Cordova



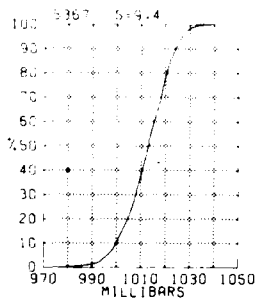
Yakutat



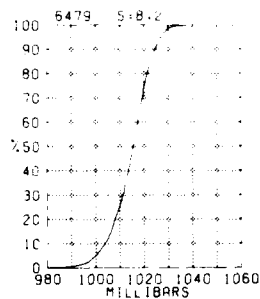
Yakutat



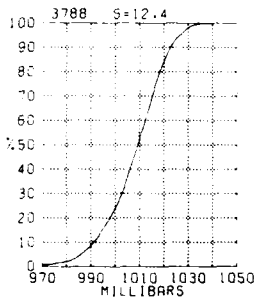
Sitka



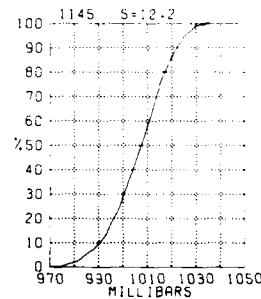
Annette



Marine Area A

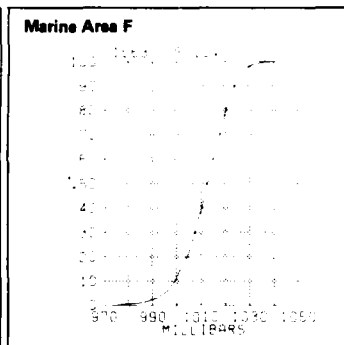
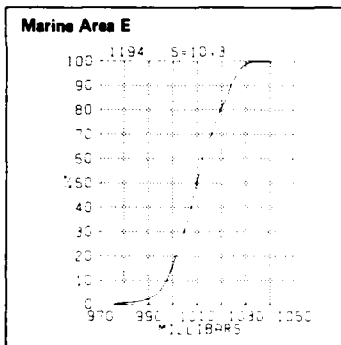
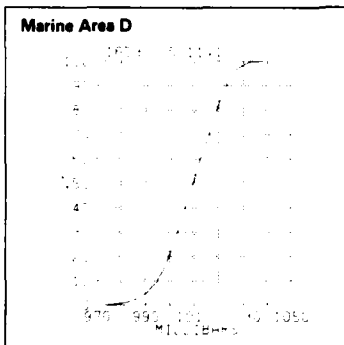
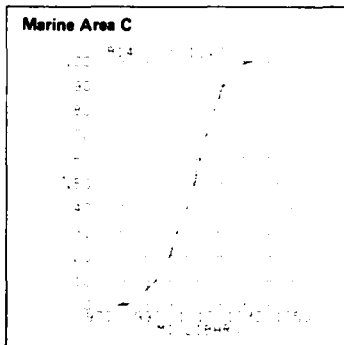
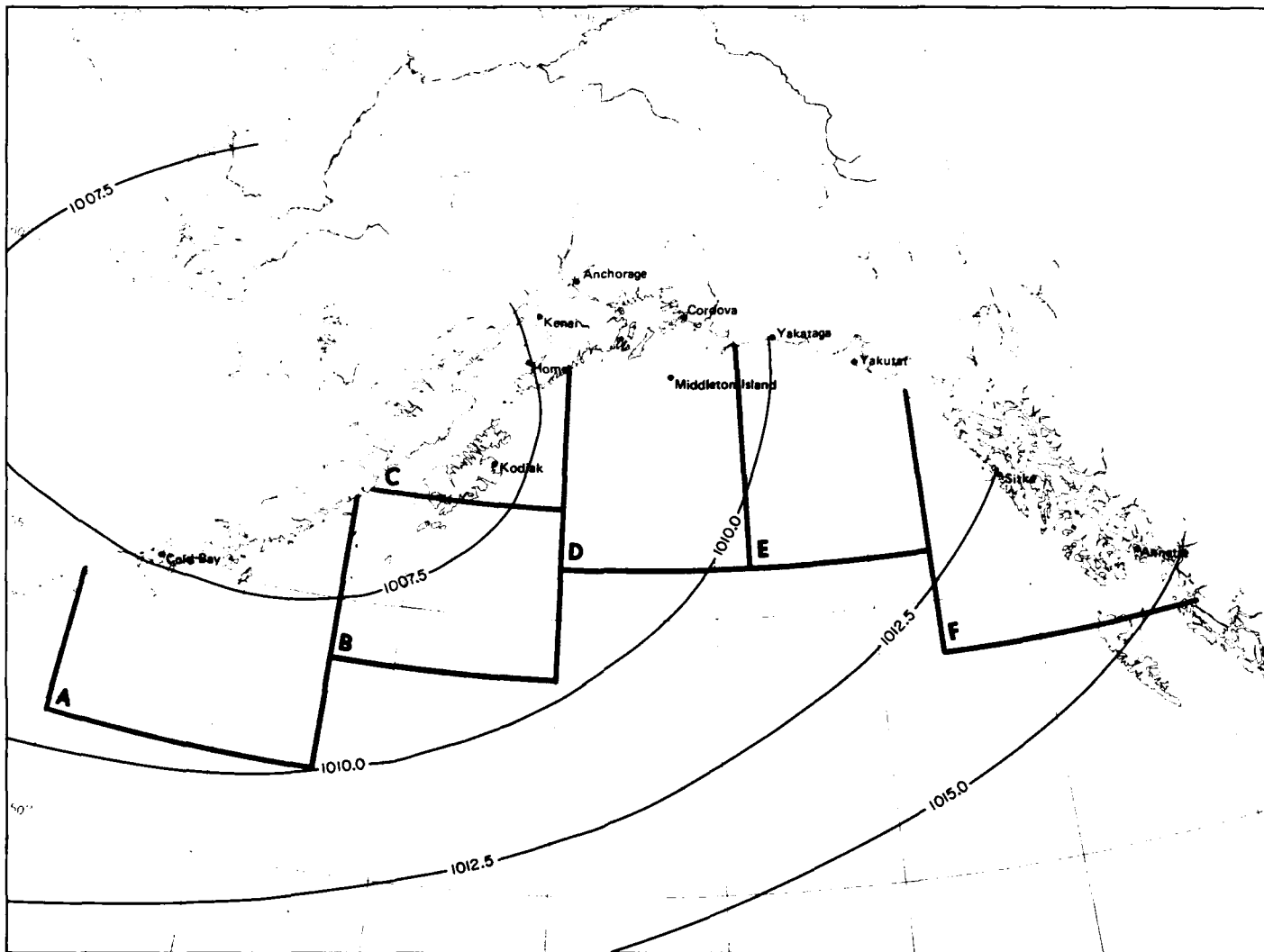


Marine Area B



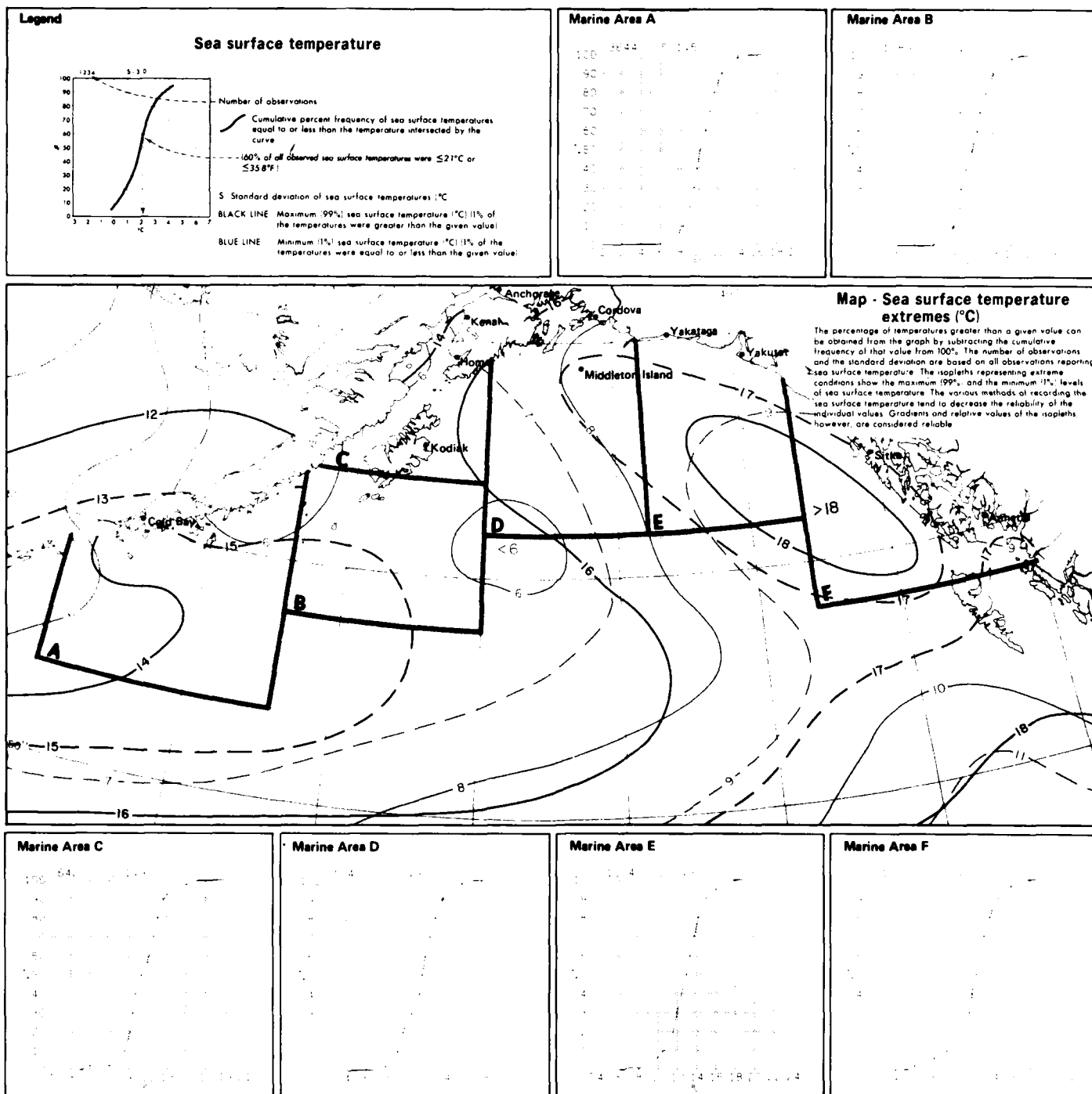
September

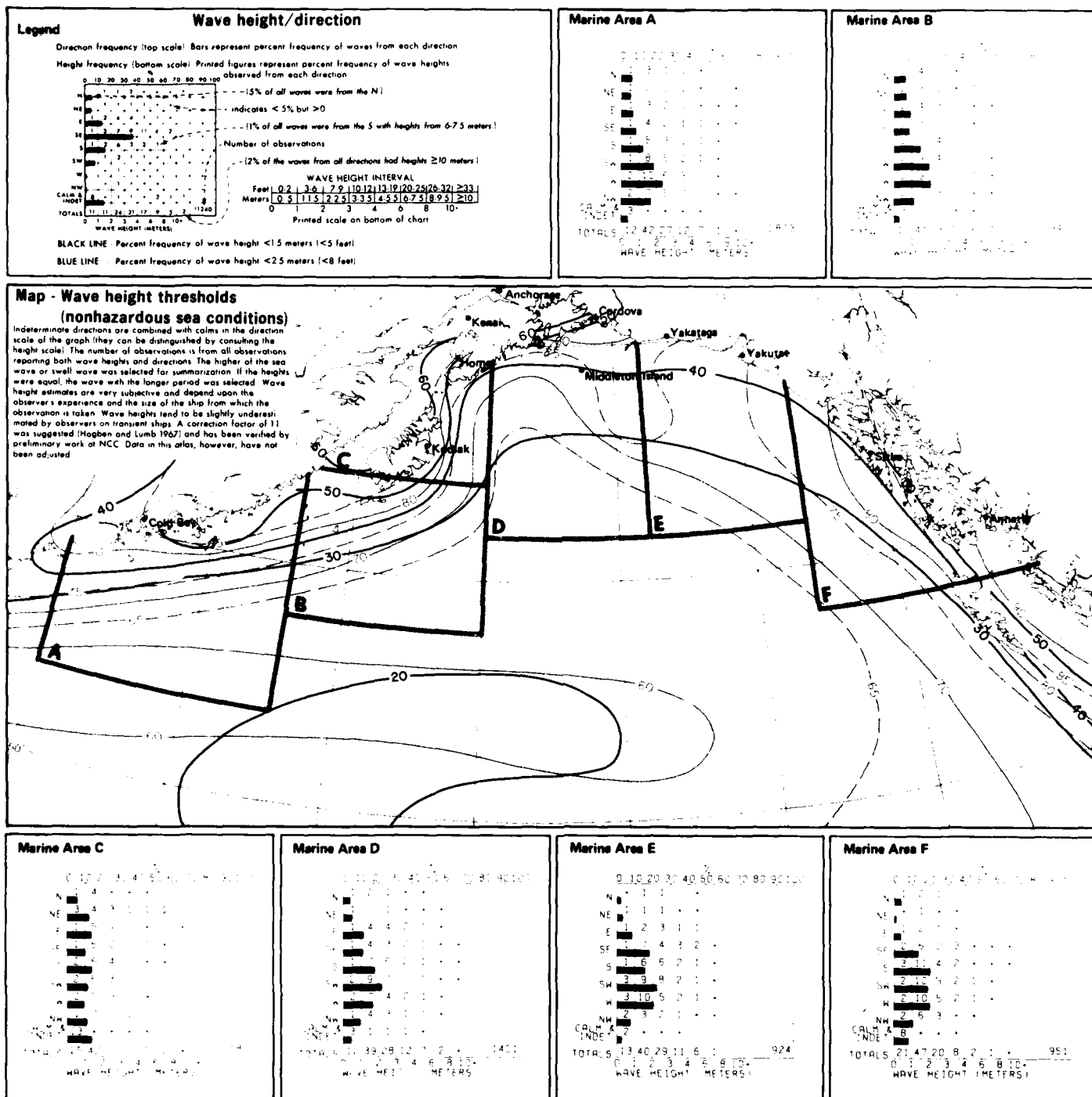
13 Sea level pressure



13 Mean sea level pressure

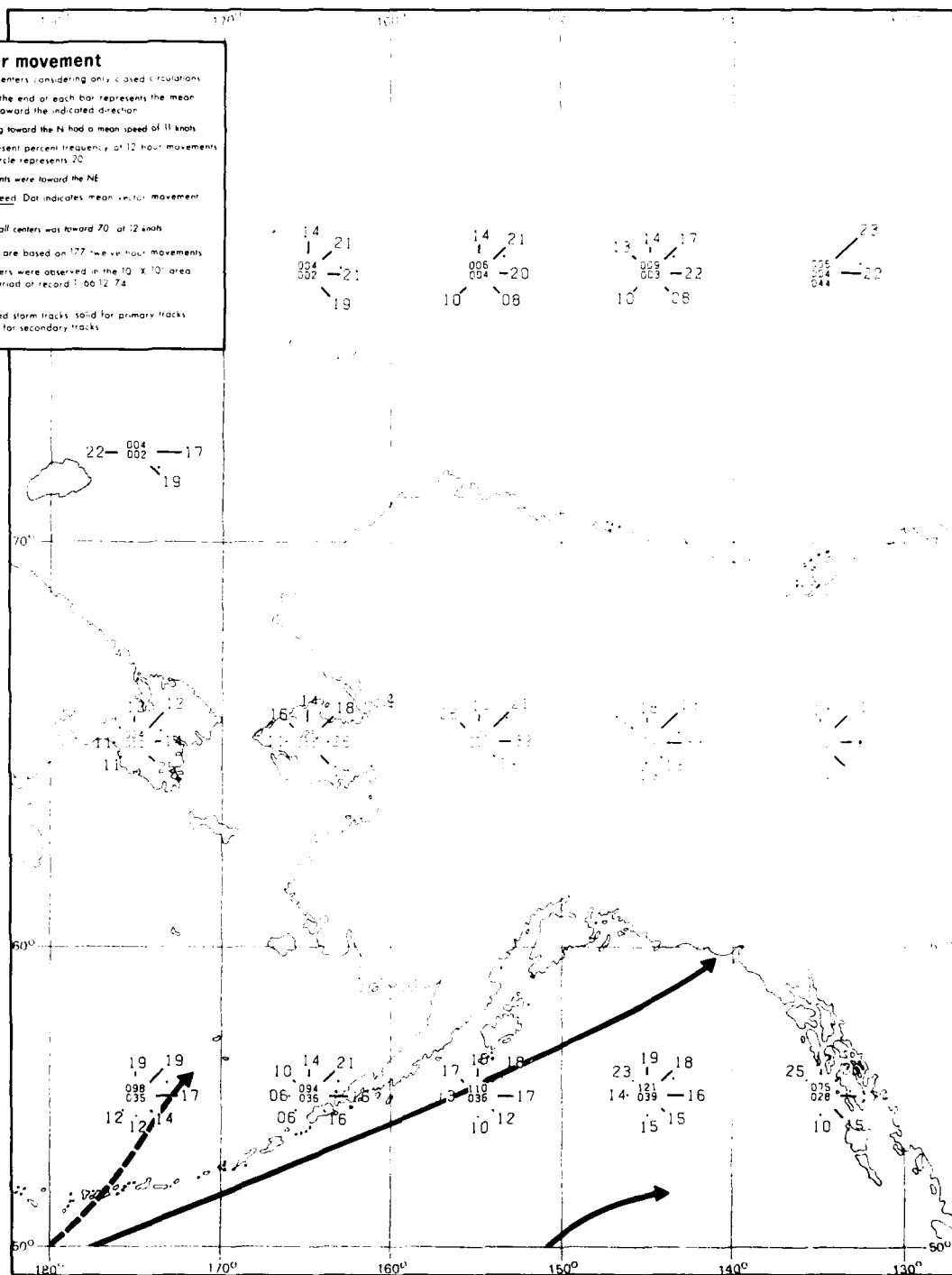
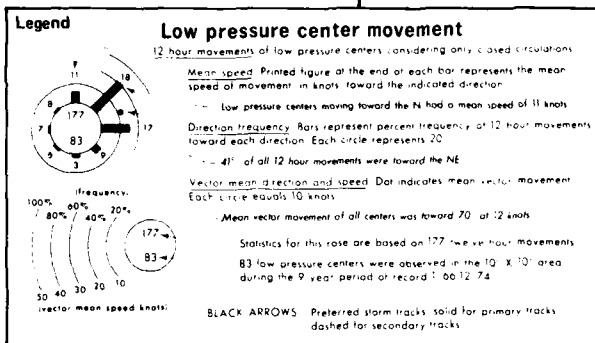
September





September

16 Wave height thresholds (nonhazardous)

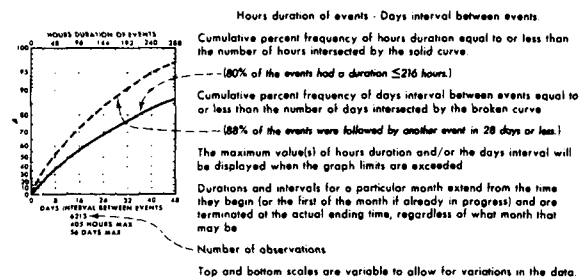


September

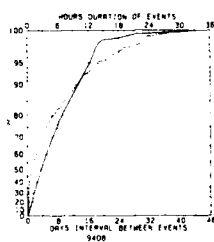
18 Low pressure center movement

Legend

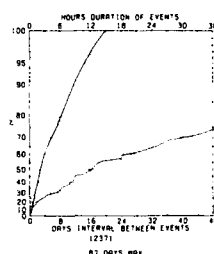
Persistence of visibility <2 n. mi.



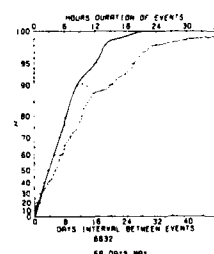
Kodiak



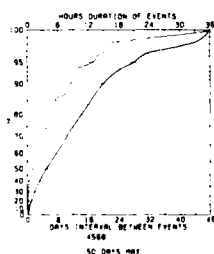
Homer



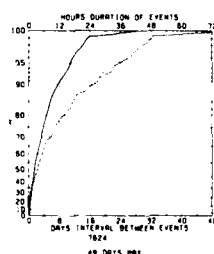
Kenai



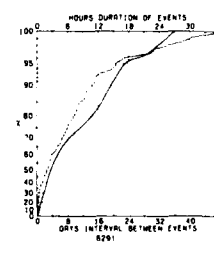
Middleton Island



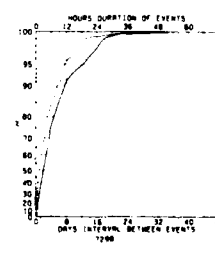
Cordova



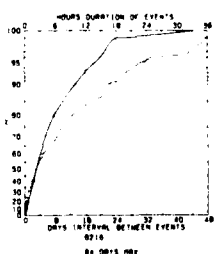
Yakutat



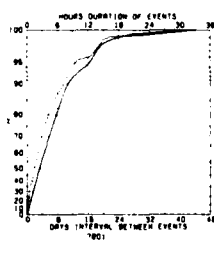
Yakutat



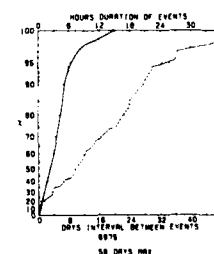
Sitka



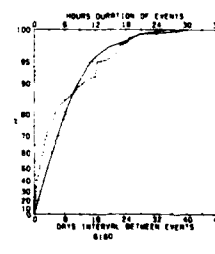
Annette



Anchorage



Cold Bay

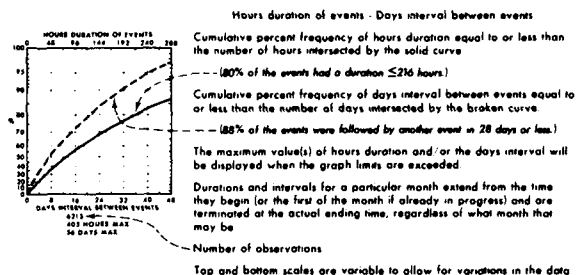


19 Persistence of visibility <2 n. mi.

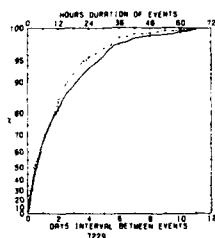
September

Legend

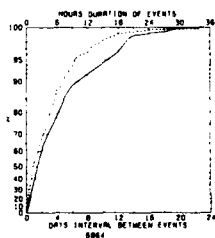
Persistence of wind ≥ 10 kts.



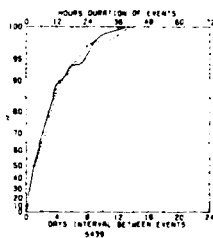
Kodiak



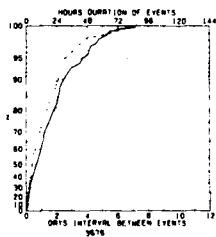
Homer



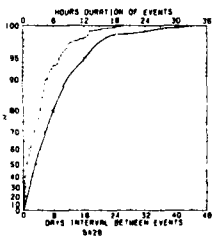
Kenai



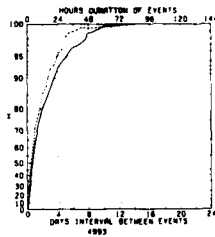
Middleton Island



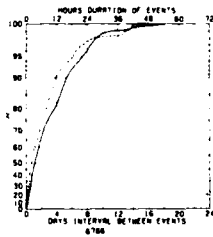
Cordova



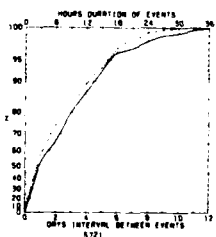
Yakutat



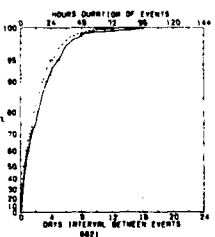
Yakutat



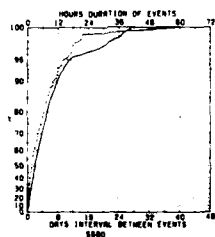
Sitka



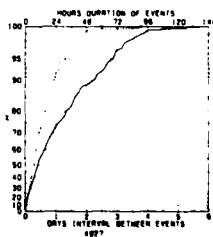
Annette



Anchorage



Cold Bay

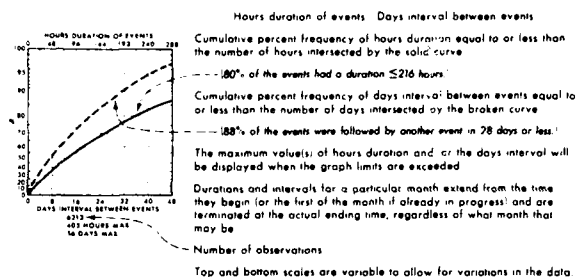


September

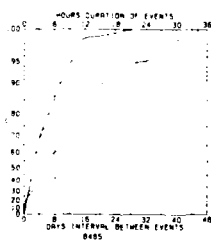
20 Persistence of wind ≥ 10 kts.

Legend

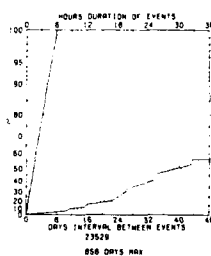
Persistence of wind ≥ 20 kts.



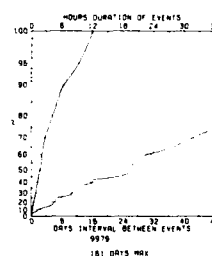
Kodiak



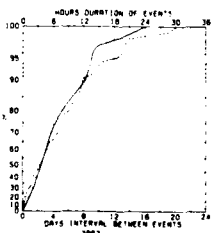
Homer



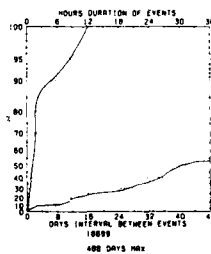
Kenai



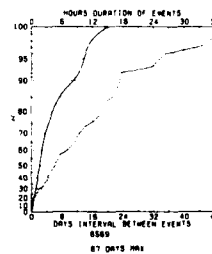
Middleton Island



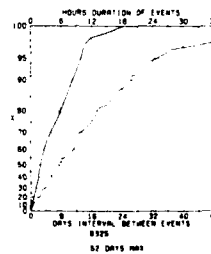
Cordova



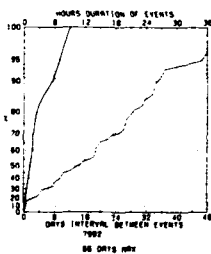
Yakutat



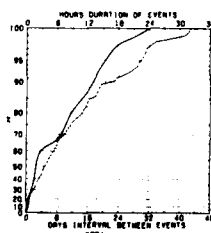
Yakutat



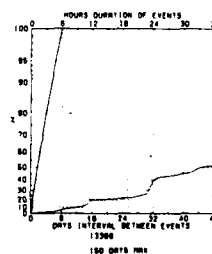
Sitka



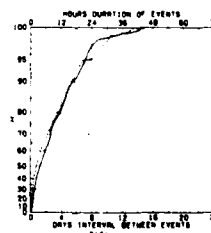
Annette



Anchorage

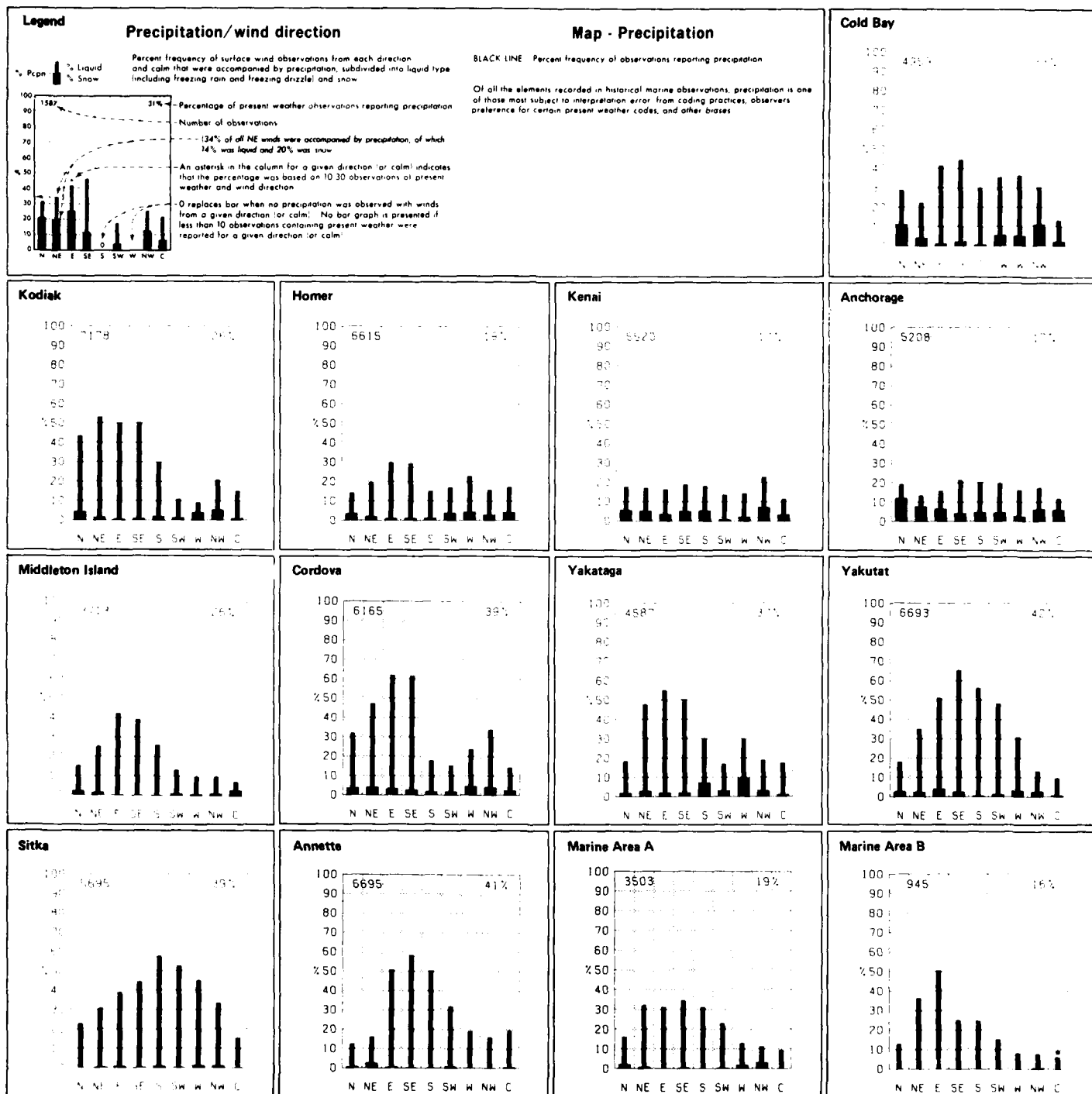


Cold Bay



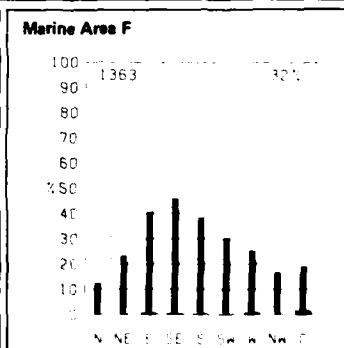
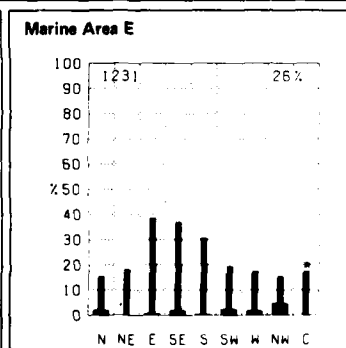
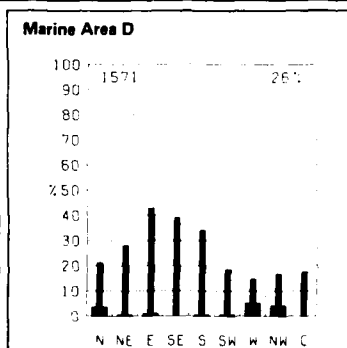
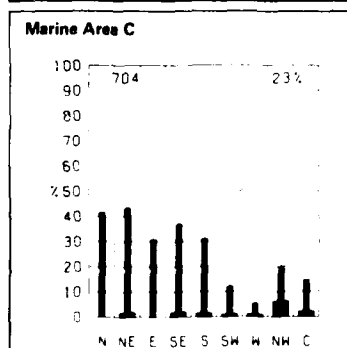
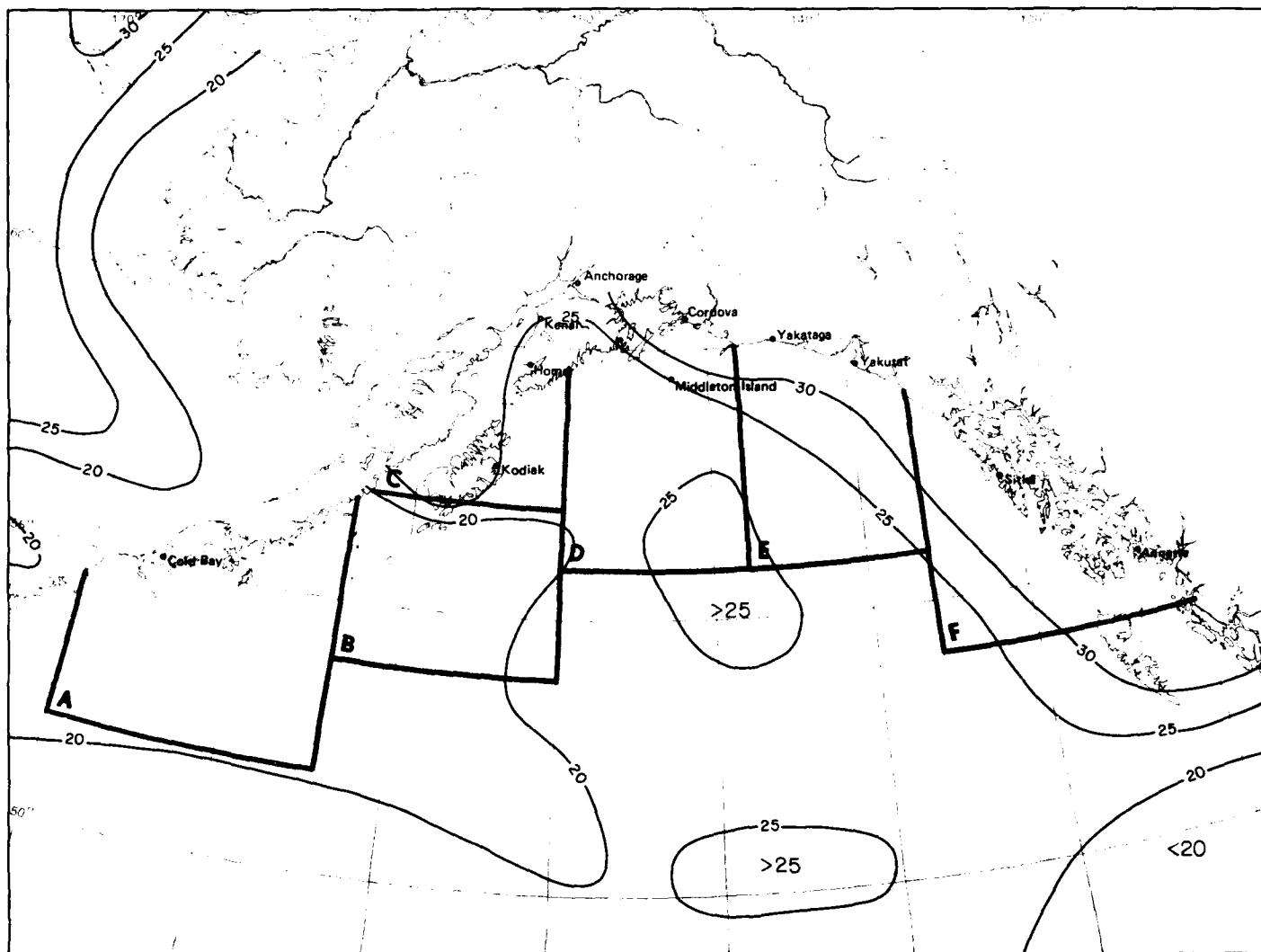
21 Persistence of wind ≥ 20 kts.

September



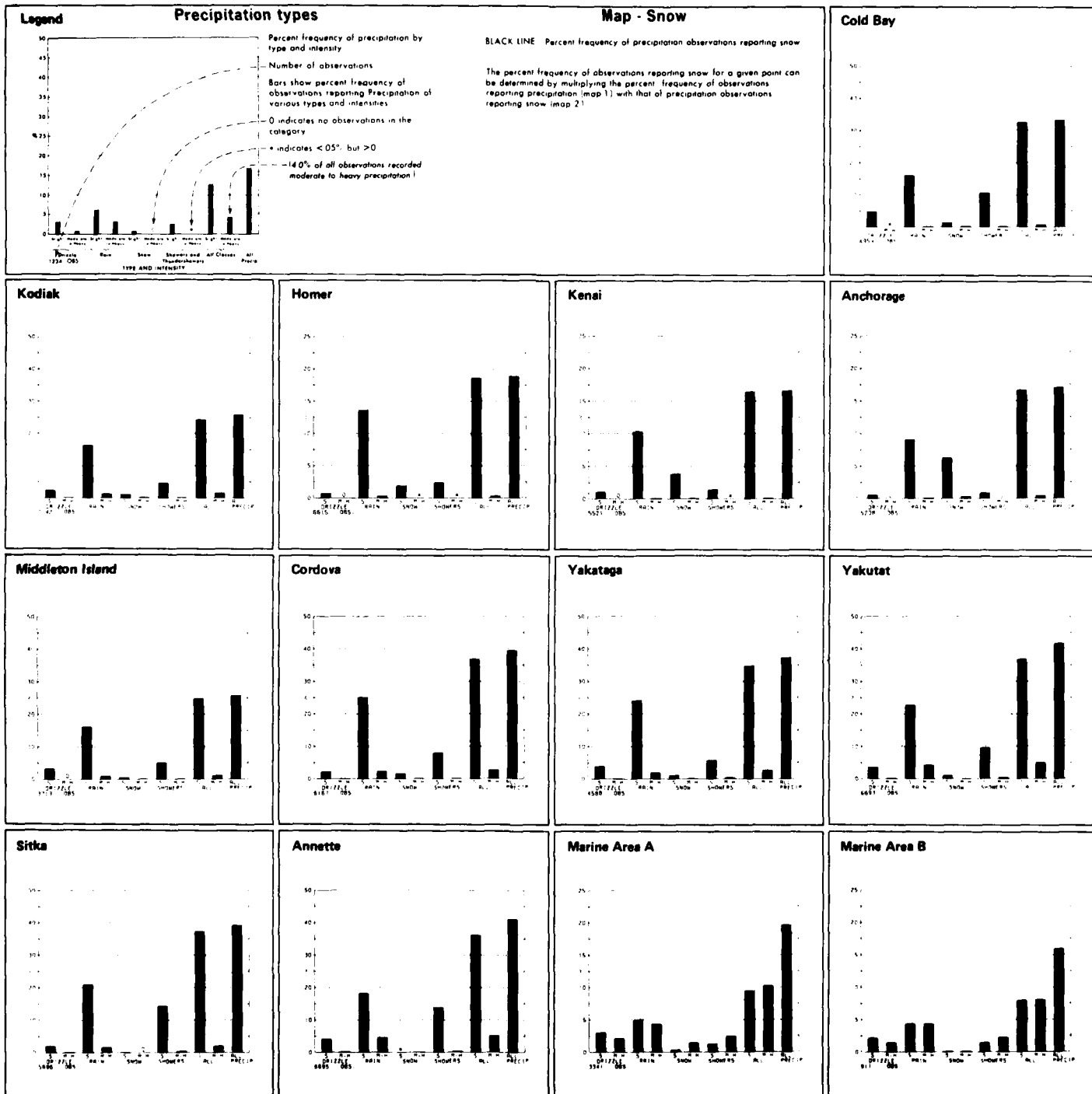
October

1 Precipitation/wind direction



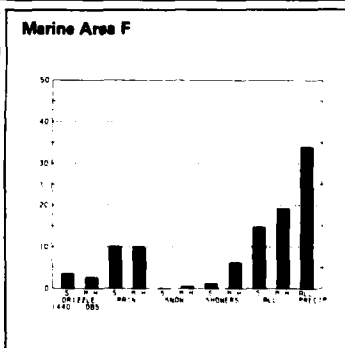
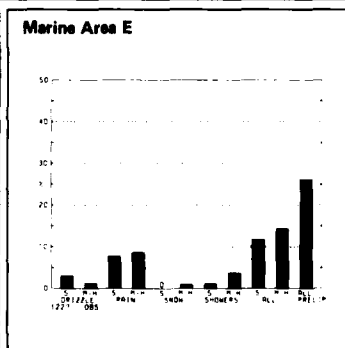
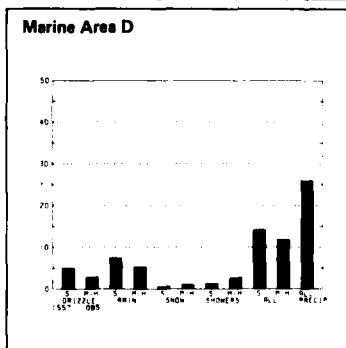
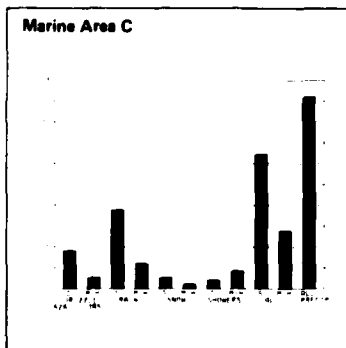
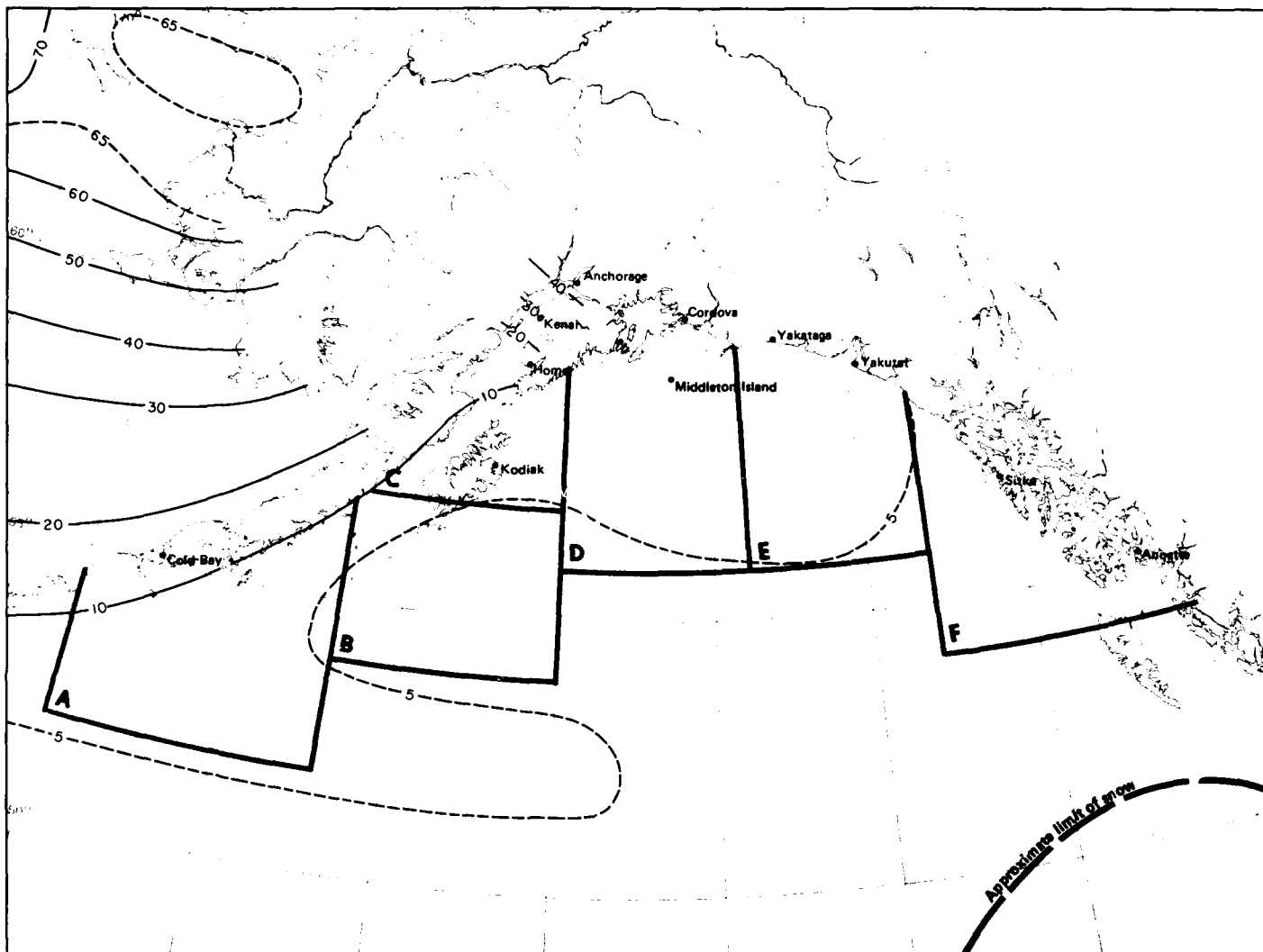
1 Precipitation

October



October

2 Precipitation types

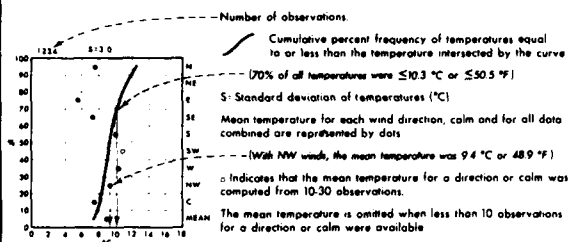


2 Snow

October

Legend

Air temperature/wind direction



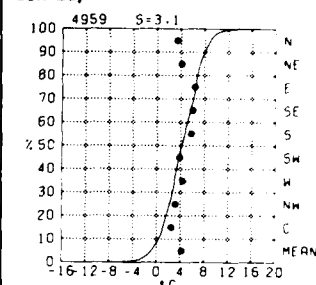
Map - Air temperature mean and thresholds

BLACK LINE - Percent frequency of temperature $\leq 50^{\circ}\text{C}$ ($\leq 32^{\circ}\text{F}$)
 RED LINE - Mean air temperature ($^{\circ}\text{C}$)
 BLUE LINE - Percent frequency of wind chill temperature $\leq 30^{\circ}\text{C}$ ($\leq 22^{\circ}\text{F}$)

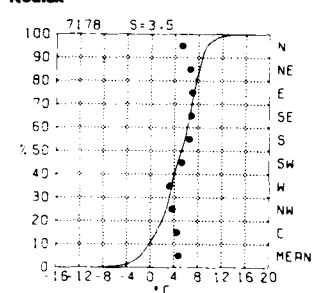
Air temperature readings recorded on transient ships in warm, sunny weather appear biased toward high temperatures, apparently because of improper instrument exposure and ventilation. Despite the inaccuracies, the large-scale patterns and mean gradients of the isopleth analyses are relatively accurate.

The temperature scale of the graph may vary in both range and class interval. The percentage of temperature observations greater than a given value can be obtained by subtracting the cumulative percent frequency of that value from 100%. The number of observations and the standard deviation plus the plotted points on the graphs are based on those observations reporting both temperature and wind direction. The cumulative curve is based on all observations reporting temperature with or without wind direction.

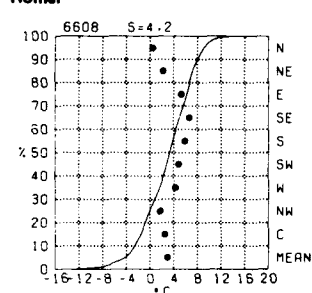
Cold Bay



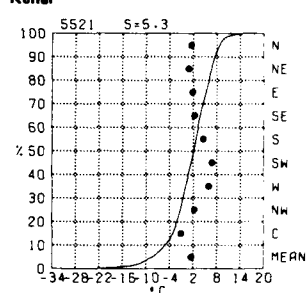
Kodiak



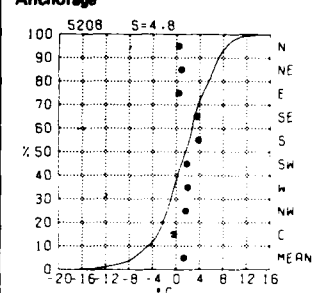
Homer



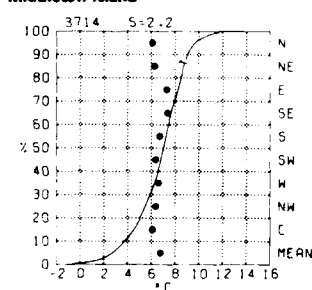
Kenai



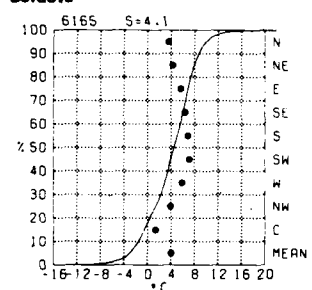
Anchorage



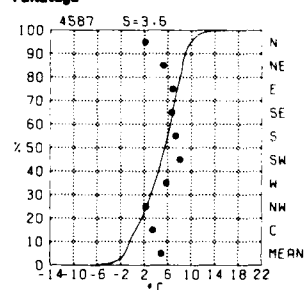
Middleton Island



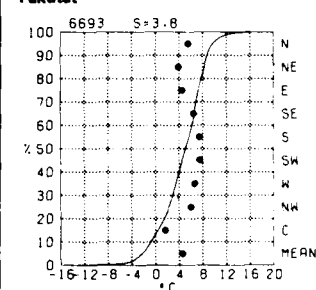
Cordova



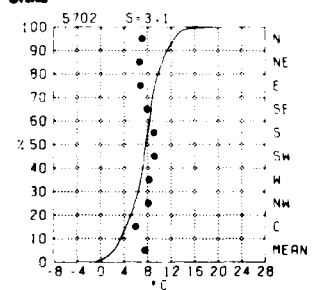
Yakutat



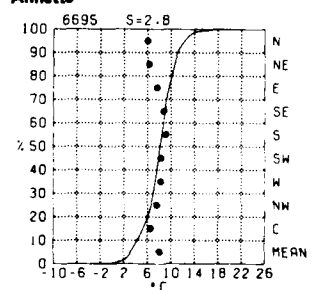
Yakutat



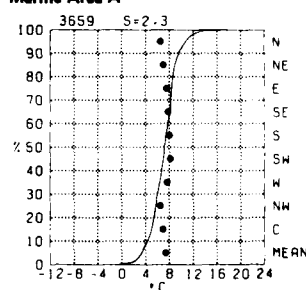
Sitka



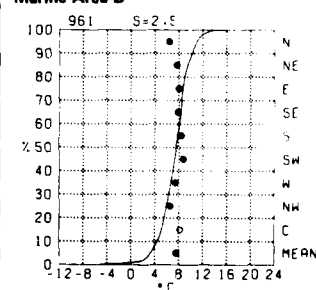
Annette



Marine Area A

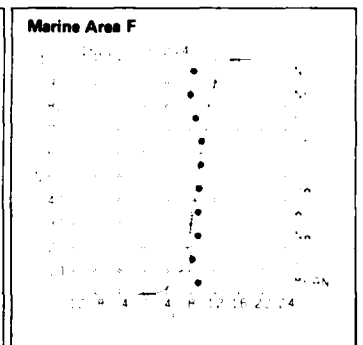
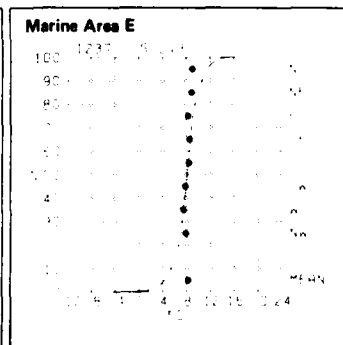
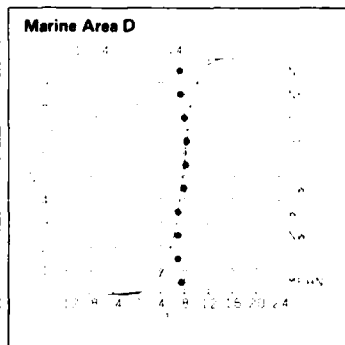
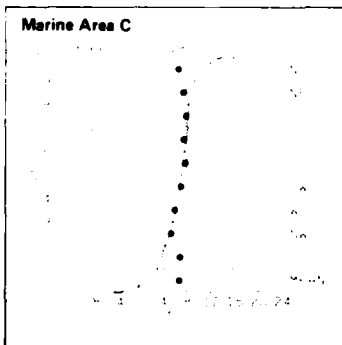
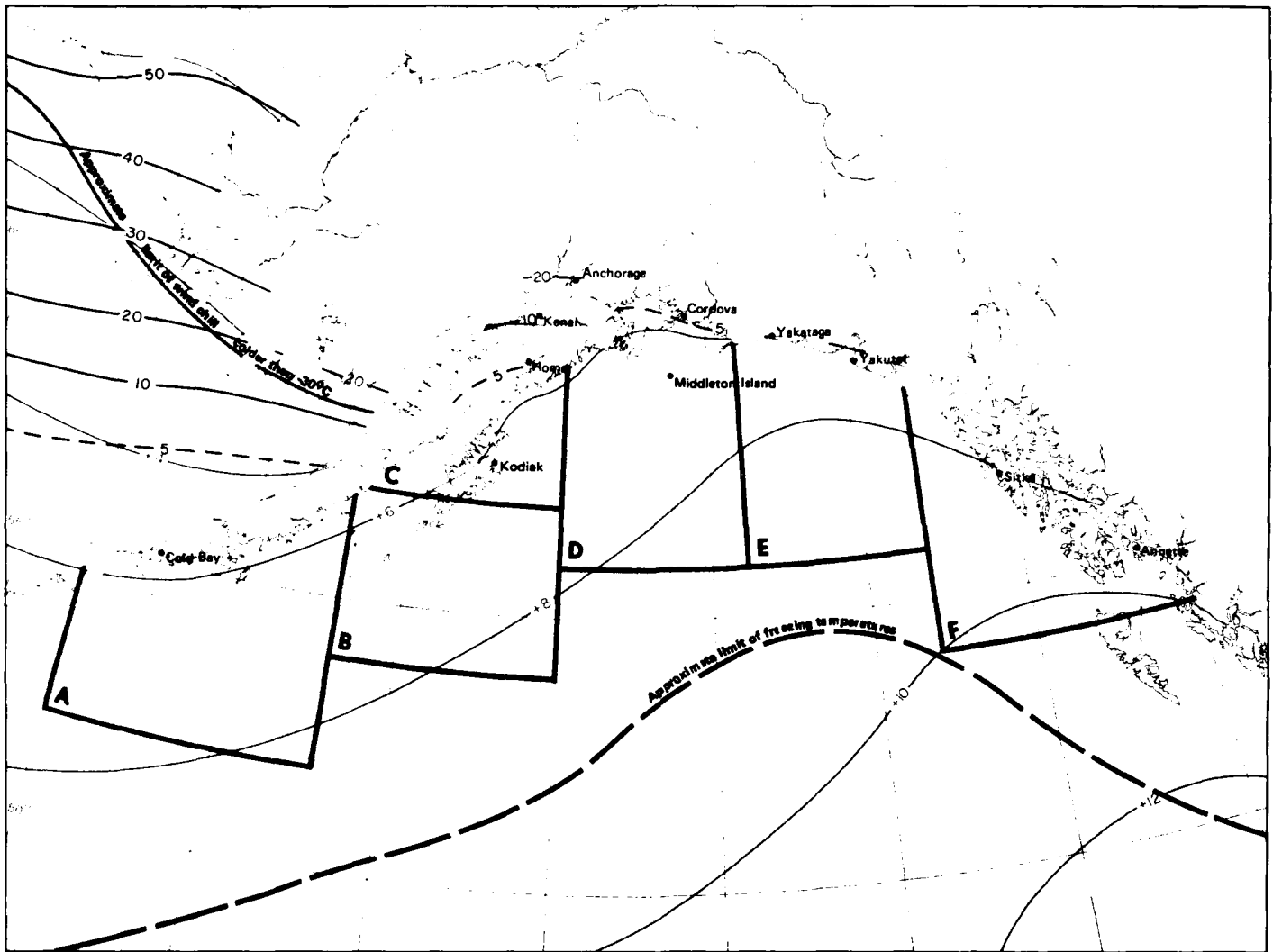


Marine Area B



October

3 Air temperature/wind direction

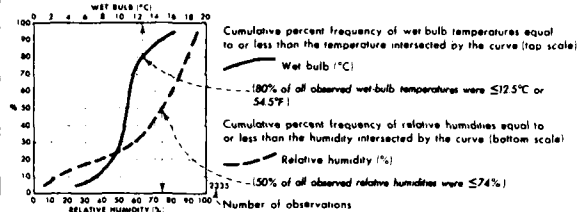


3 Air temperature mean and thresholds

October

Legend

Wet bulb/relative humidity

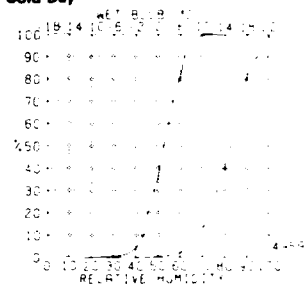


Map - Mean dew point temperature

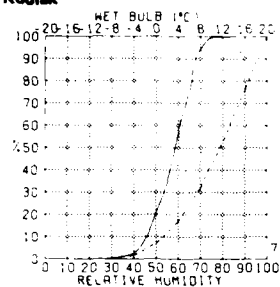
BLACK LINE Mean dew point temperature (°C)

The observation count of the graph reflects those observations reporting both air and wet bulb temperatures; both are required in computing the relative humidity. The percentage of observations of either element greater than a given value can be obtained by subtracting the cumulative percent frequency of that value from 100%.

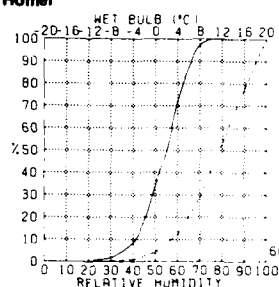
Cold Bay



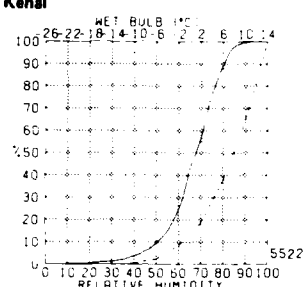
Kodiak



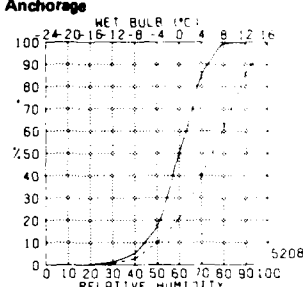
Homer



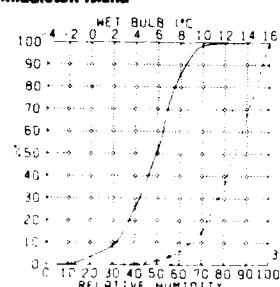
Kenai



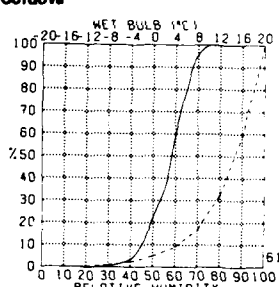
Anchorage



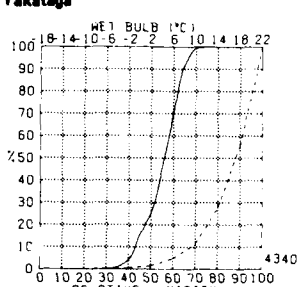
Middleton Island



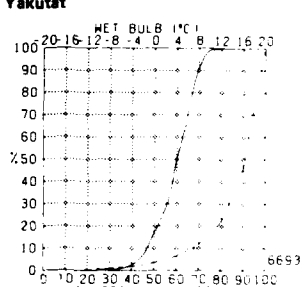
Cordova



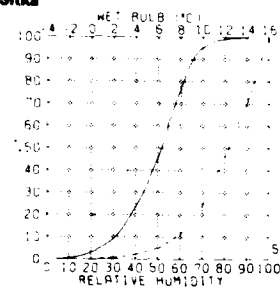
Yakutat



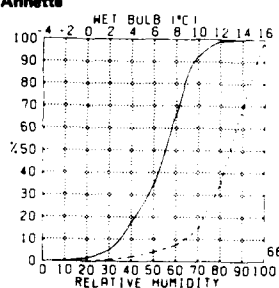
Yakutat



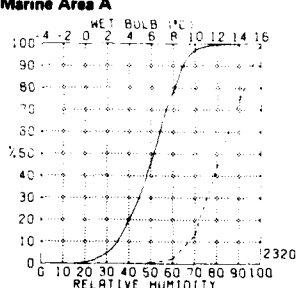
Sitka



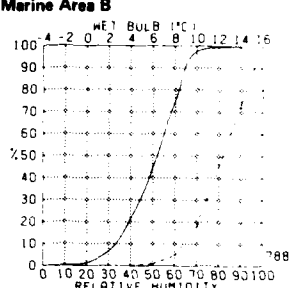
Annette



Marine Area A

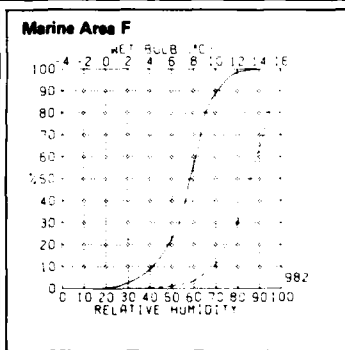
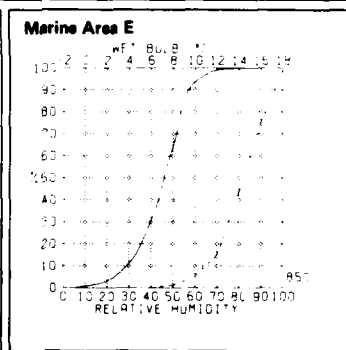
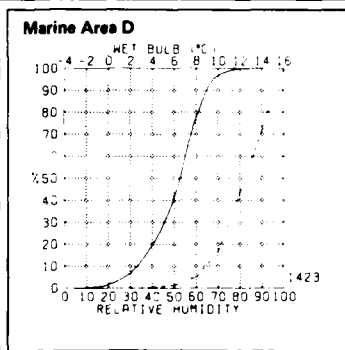
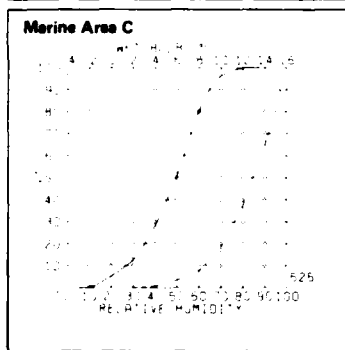
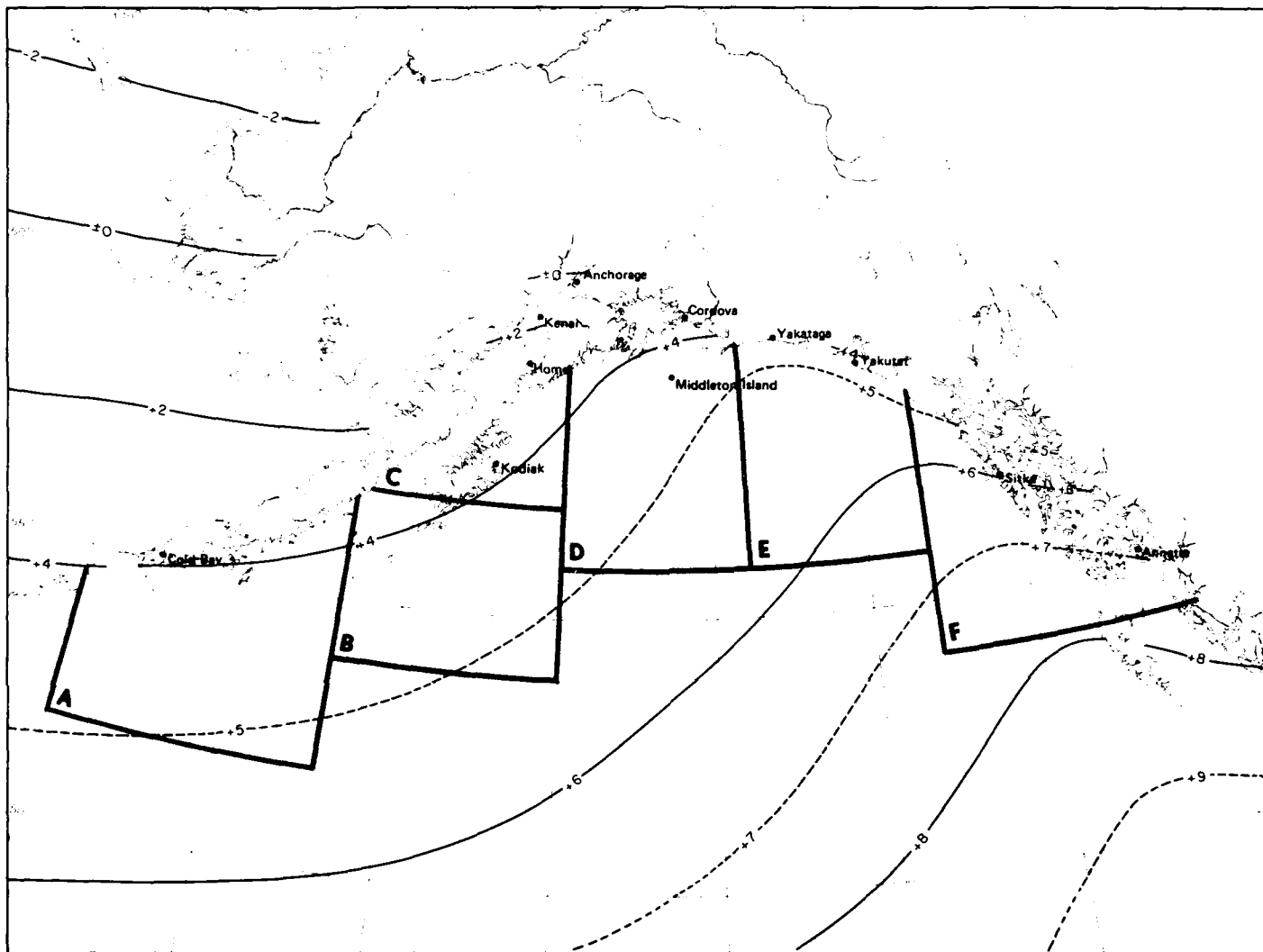


Marine Area B



October

4 Wet bulb/relative humidity

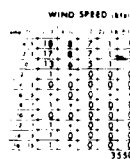


4 Mean dew point temperature

October

Legend

Air temperature/wind speed



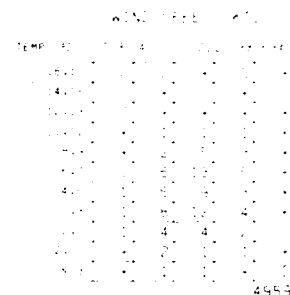
Percent frequency of simultaneous occurrence of specified temperature (°C) and wind speed (knots)
 1% of all observations reported temperature 23°C simultaneously with wind speed of 22-33 kts
 - Indicates < 5% but > 0
 Number of observations

Map - Air temperature extremes (°C)

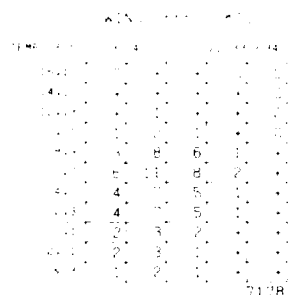
BLACK LINE Maximum 99% air temperature 1% of temperatures were greater than the given value
 BLUE LINE Minimum 1% air temperature 1% of temperatures were equal to or less than the given value

The graph can be used to determine the extent of human discomfort from the combined effects of extreme heat or cold and winds or to estimate the likelihood of superstructure icing (icing potential increases as the air temperature drops below freezing and the winds increase above 10 knots (12 mph) and may become quite severe with temperatures equal to or less than -9°C (-16°F) and winds equal to or greater than 34 knots (39 mph)

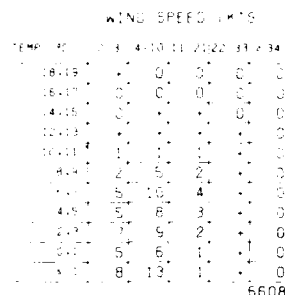
Cold Bay



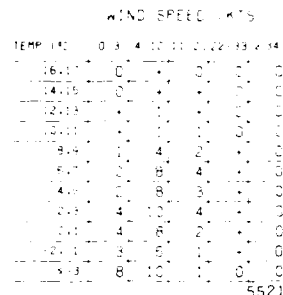
Kodiak



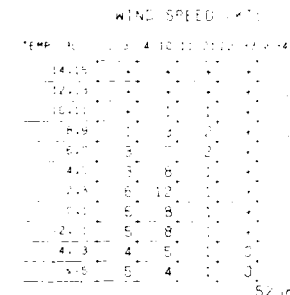
Homer



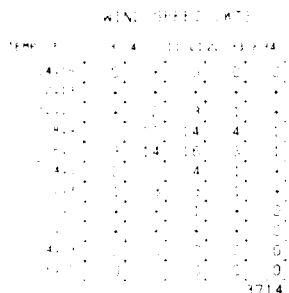
Kenai



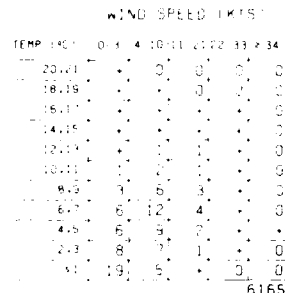
Anchorage



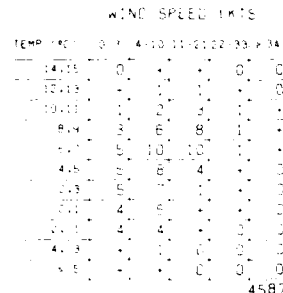
Middleton Island



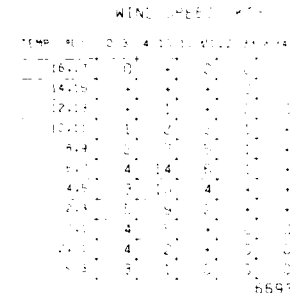
Cordova



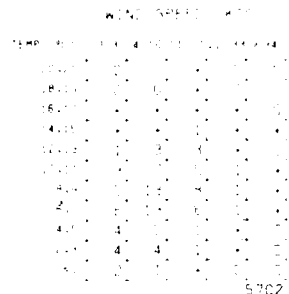
Yakutat



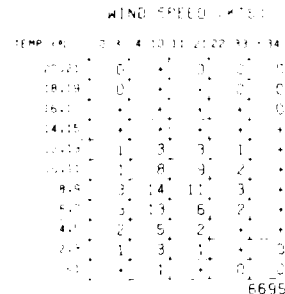
Yakutat



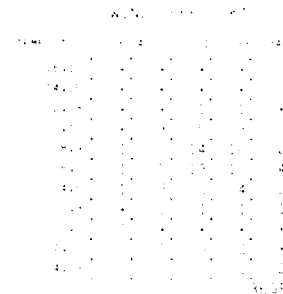
Sitka



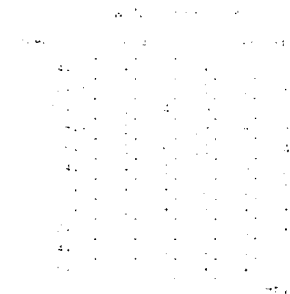
Annette



Marine Area A

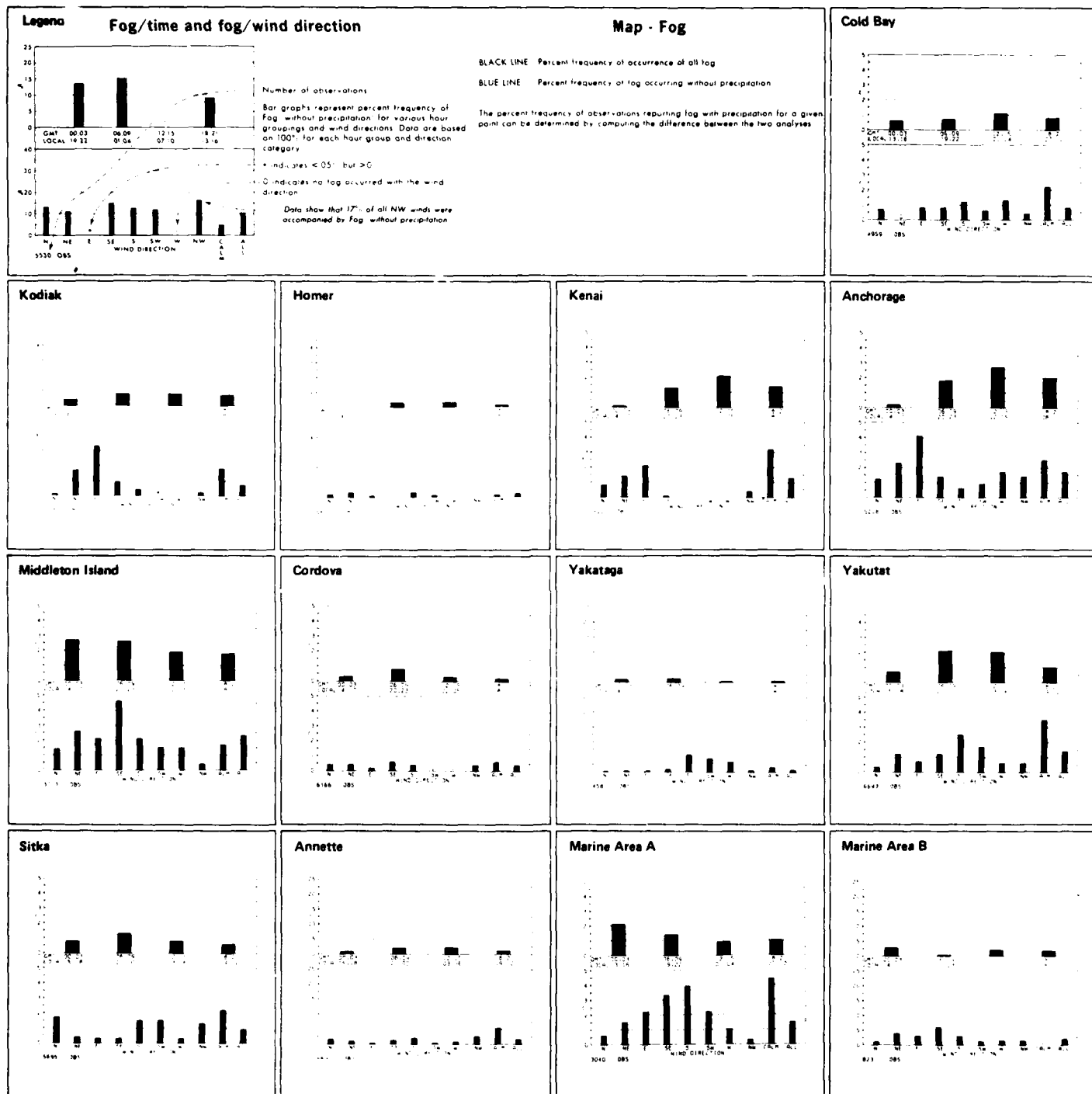


Marine Area B

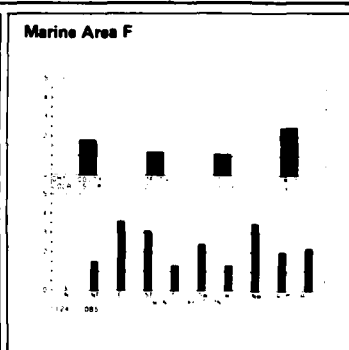
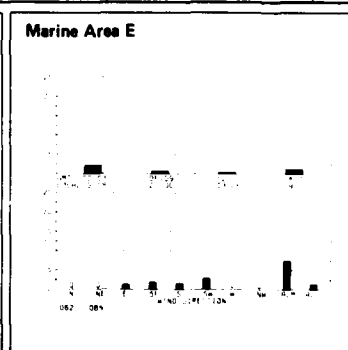
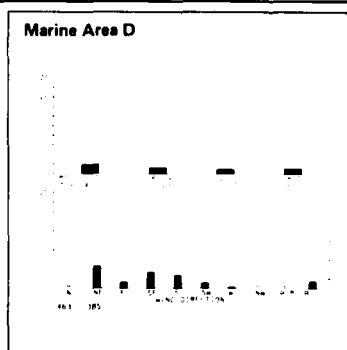
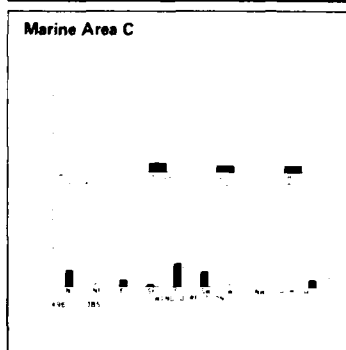
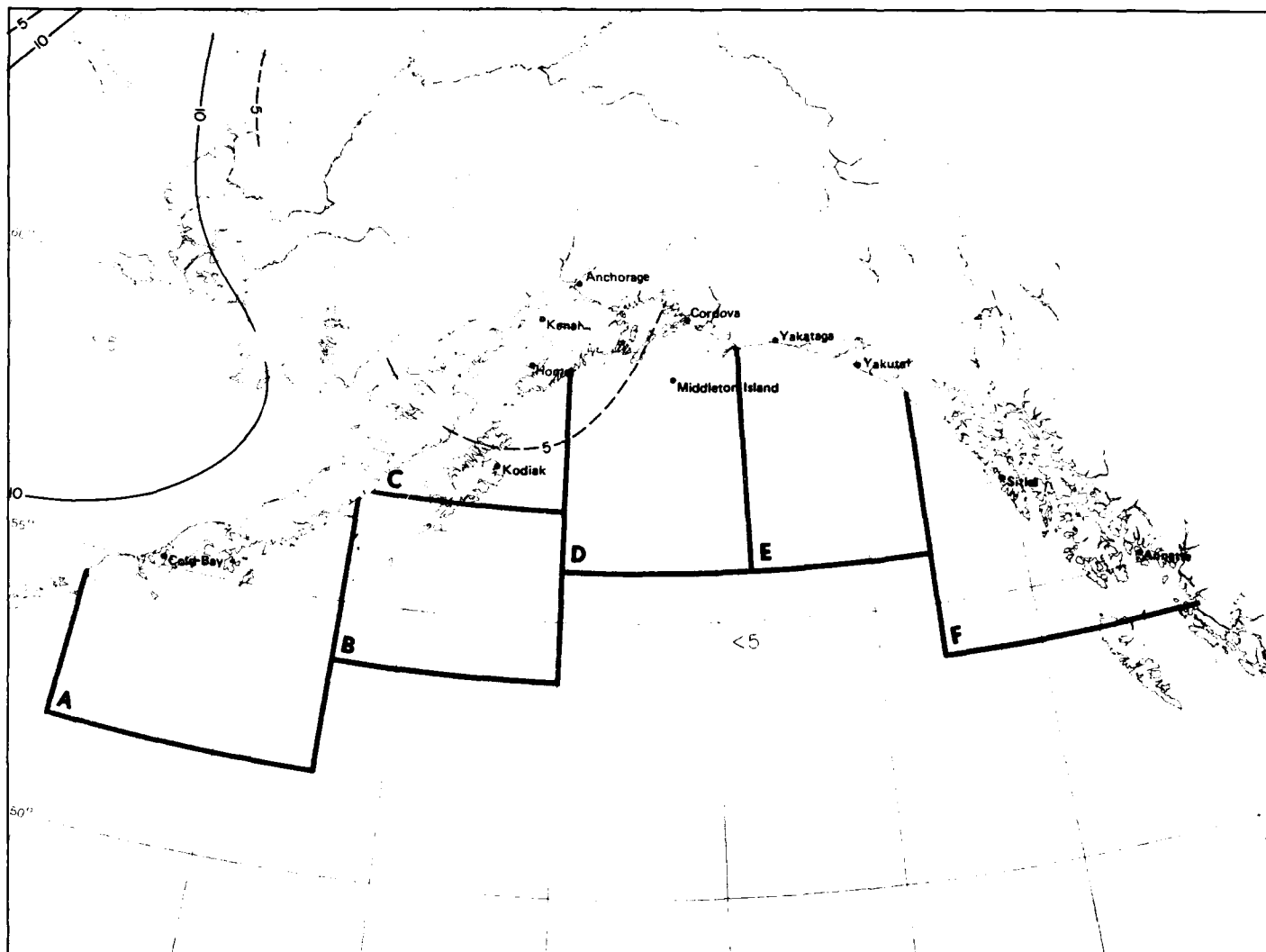


October

5 Air temperature/wind speed

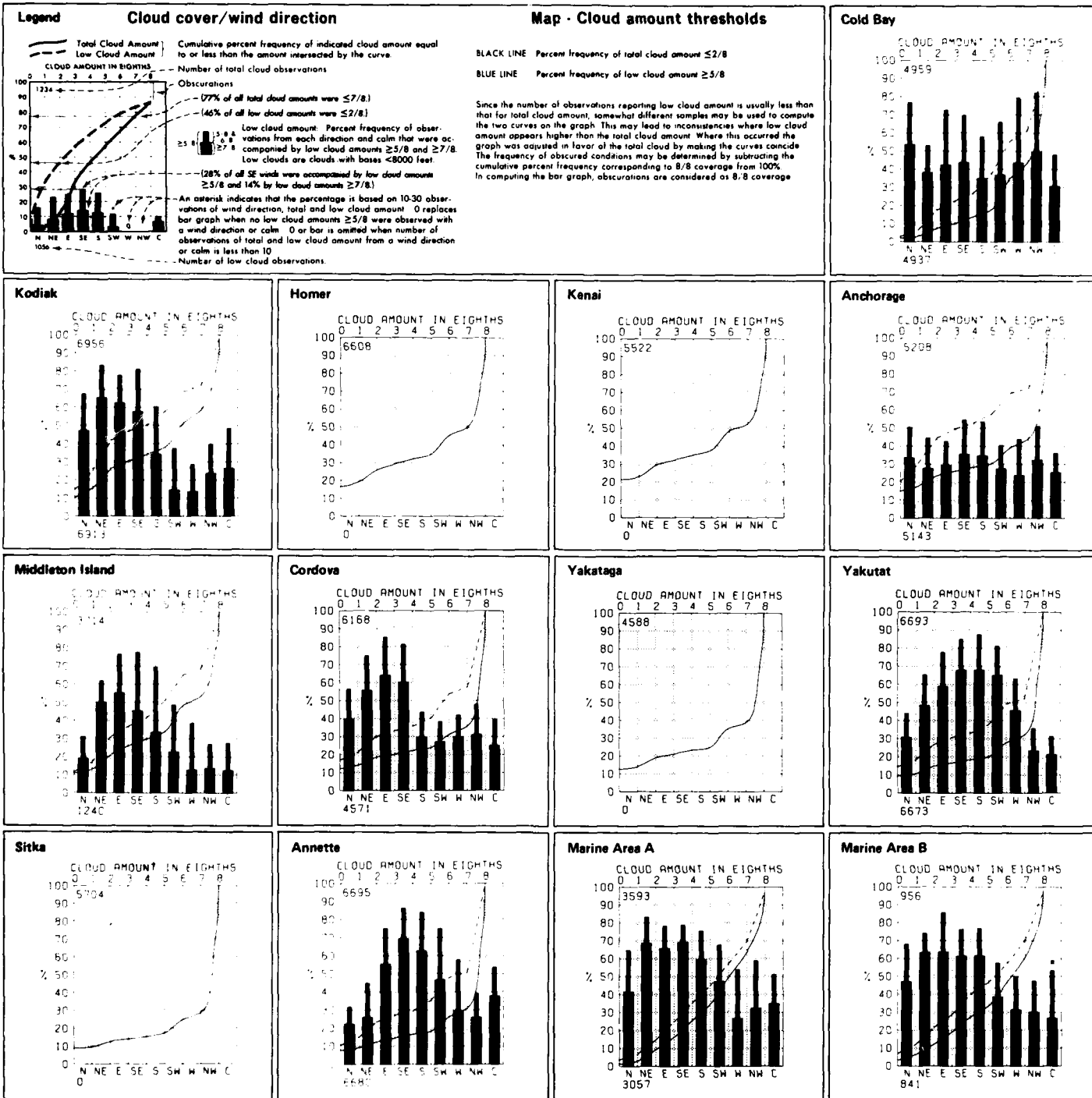


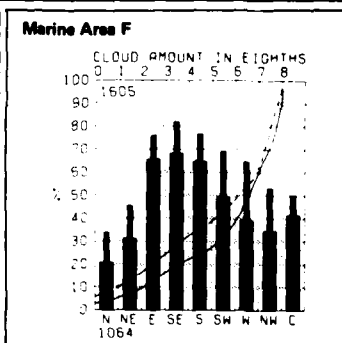
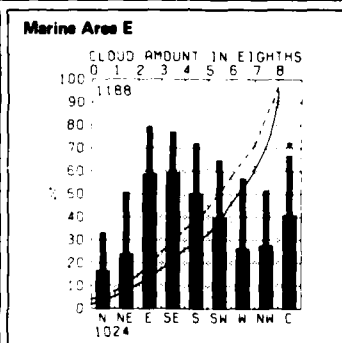
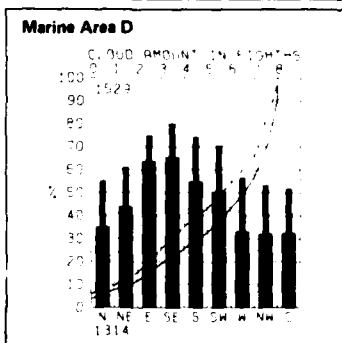
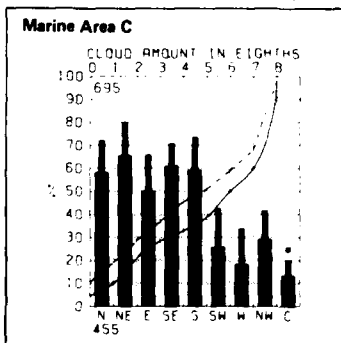
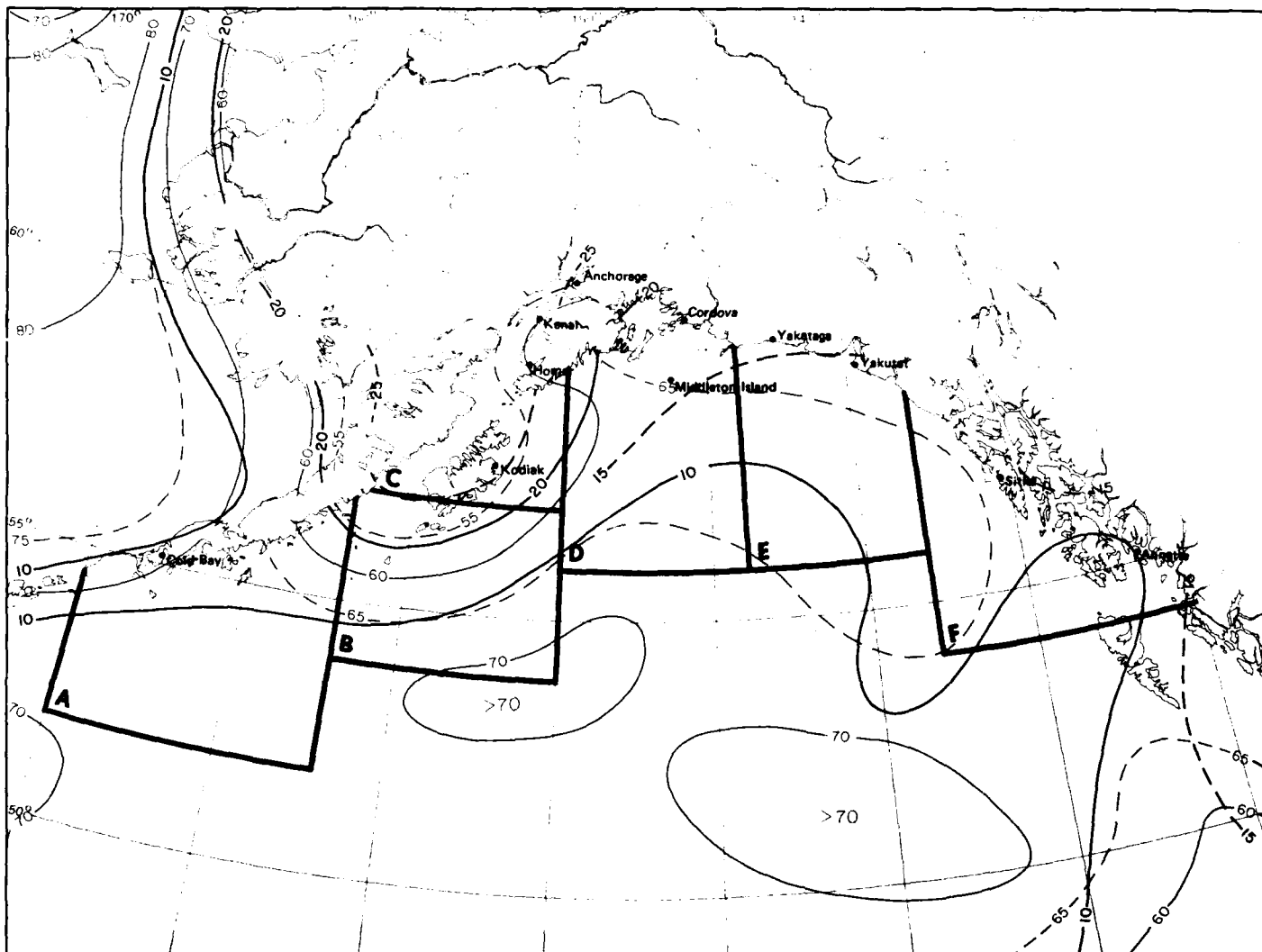
October



6 Fog

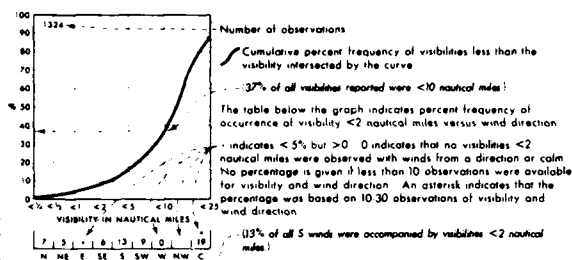
October





7 Cloud amount thresholds

October

Visibility/wind direction

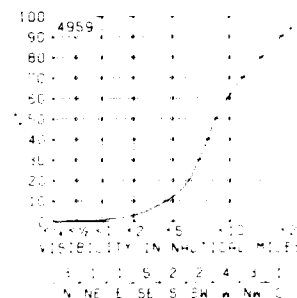
Map · Visibility thresholds

BLACK LINE Percent frequency of visibilities ≥ 5 nautical miles

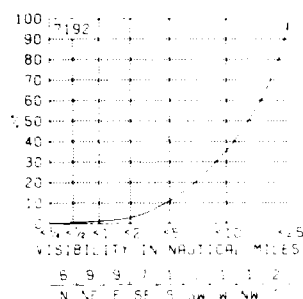
BLUE LINE Percent frequency of visibilities ≤ 2 nautical miles

The percentage of visibility equal to or greater than a given value can be obtained from the graph by subtracting the cumulative percent frequency of that value from 100%. Visibility at sea is difficult to measure because of the lack of reference points. Also, some observers seem to report reduced visibilities at night because of darkness, though this tendency has abated in recent years. The coarseness of the coding intervals, however, tends to minimize serious biases in the summarized data. Visibilities greater than 25 nm. should be interpreted cautiously because the earth's curvature makes it impossible to see 25 nm. horizontally from the bridges of most ships.

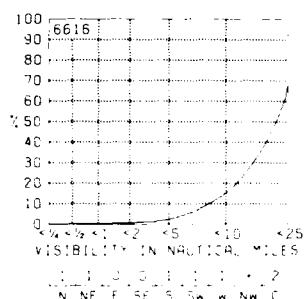
Cold Bay



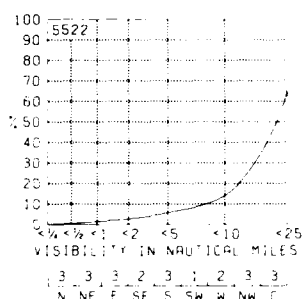
Kodiak



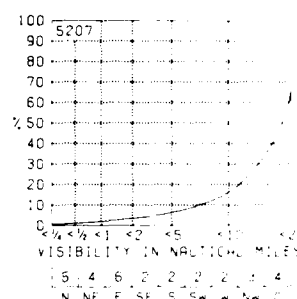
Homer



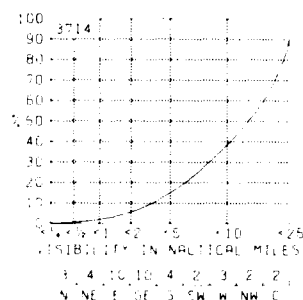
Kenai



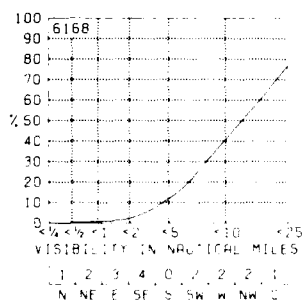
Anchorage



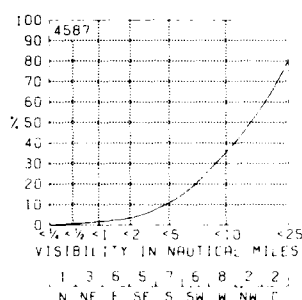
Middleton Island



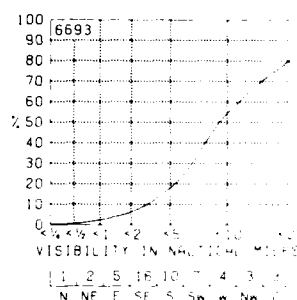
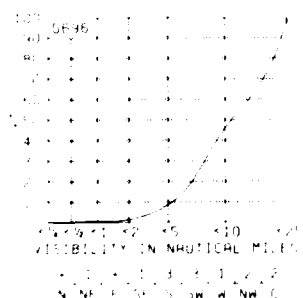
Cordova



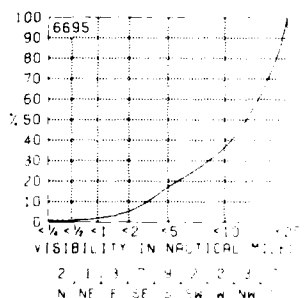
Yakataga



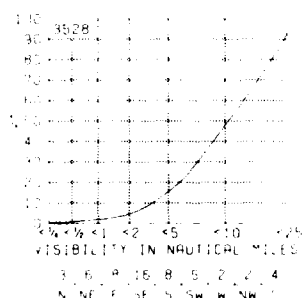
Yakutat

**Sitka**

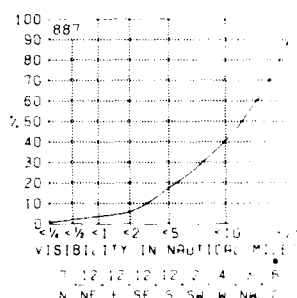
Annette

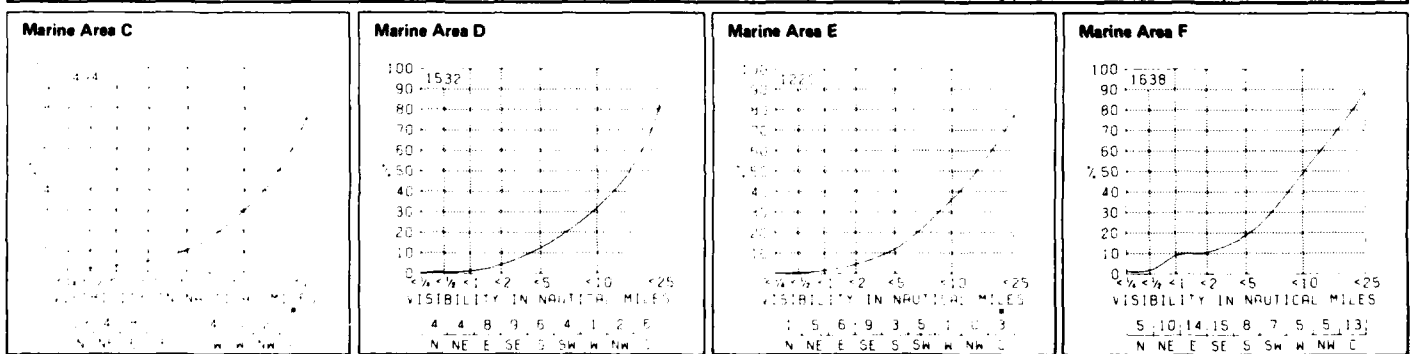
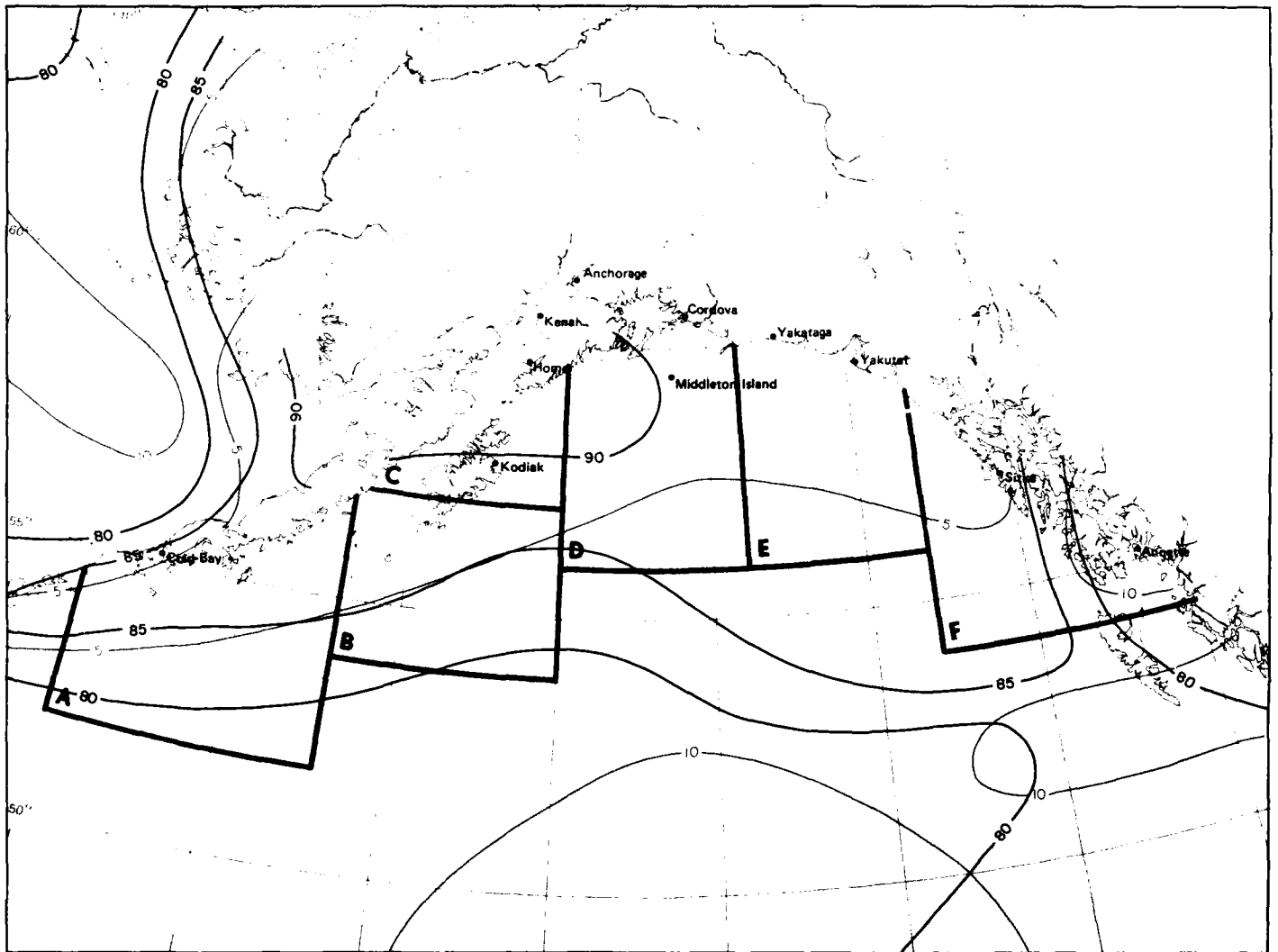


Marine Area A



Marine Area B



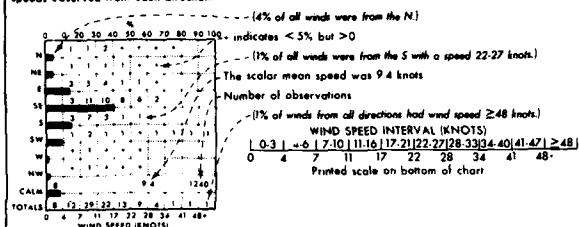


8 Visibility thresholds

October

Wind speed/direction

Direction frequency (top scale) Bars represent percent frequency of winds observed from each direction. Speed frequency (bottom scale) Printed figures represent percent frequency of wind speeds observed from each direction.



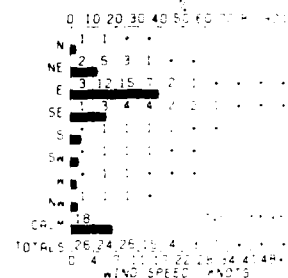
Map - Wind speed thresholds

BLACK LINE - Percent frequency of wind speed ≤ 10 knots (≤ 12 mph)

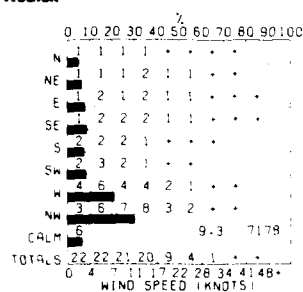
BLUE LINE - Percent frequency of wind speed ≥ 34 knots (≥ 39 mph)

The scalar mean wind speed on the graph is based on the number of observations reporting a wind speed with direction. The sum of the totals line provides the cumulative percent frequency of wind speed below a selected threshold value. In the example graph, 71% of all winds were less than 17 knots (20 mph).

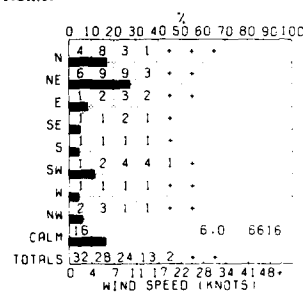
Cold Bay



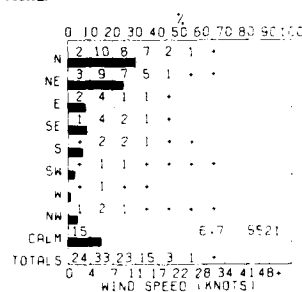
Kodiak



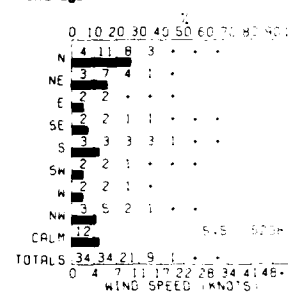
Homer



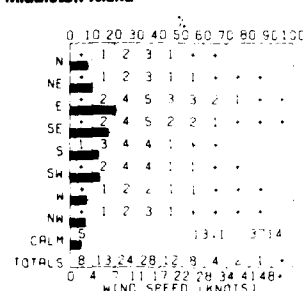
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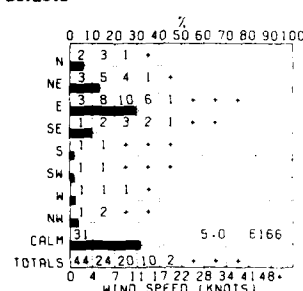
Anchorage



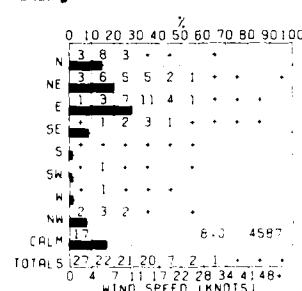
Middleton Island



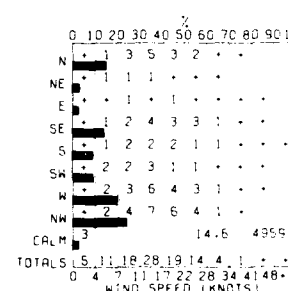
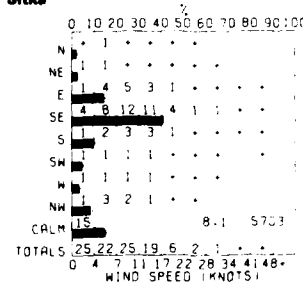
Cordova



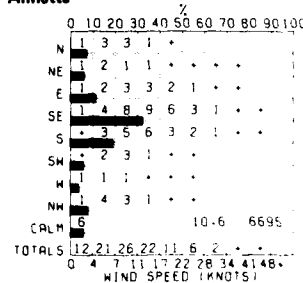
Yakataga



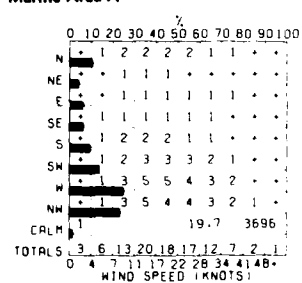
Yakutat

**Sitka**

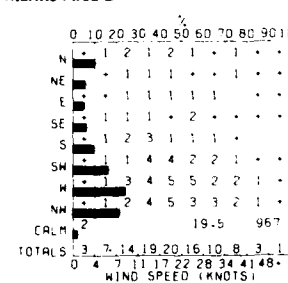
Annette

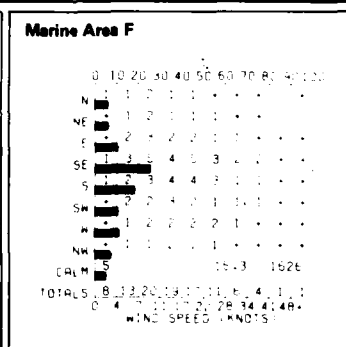
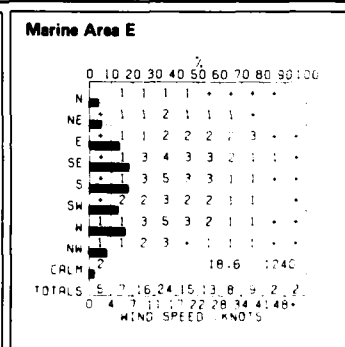
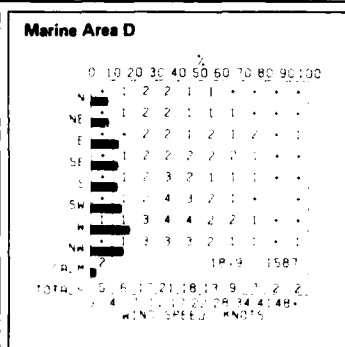
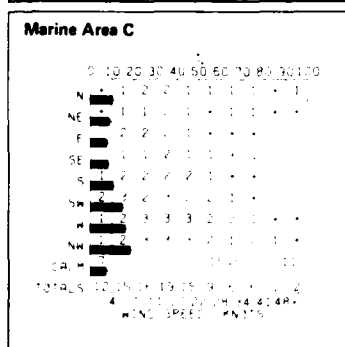
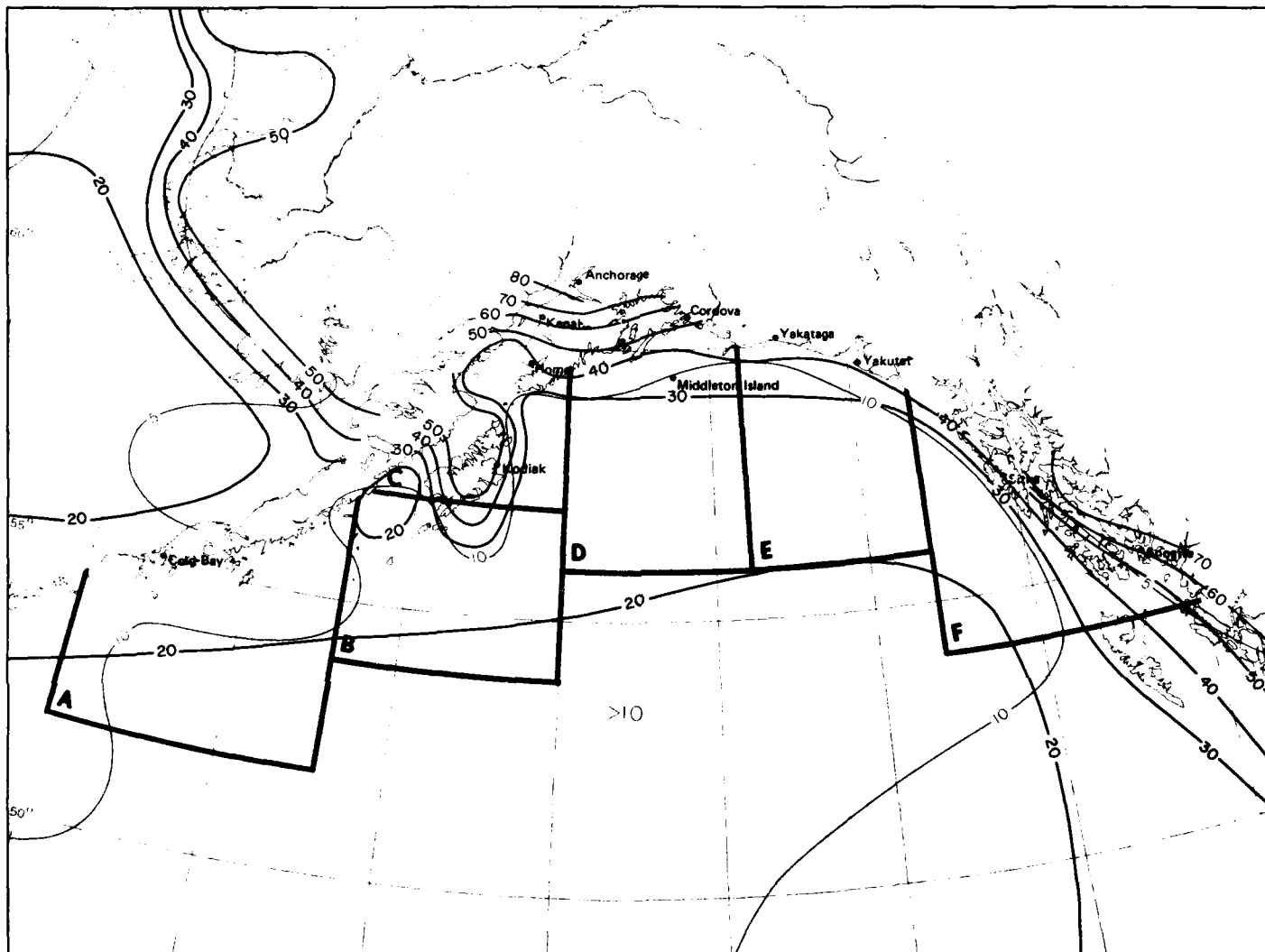


Marine Area A



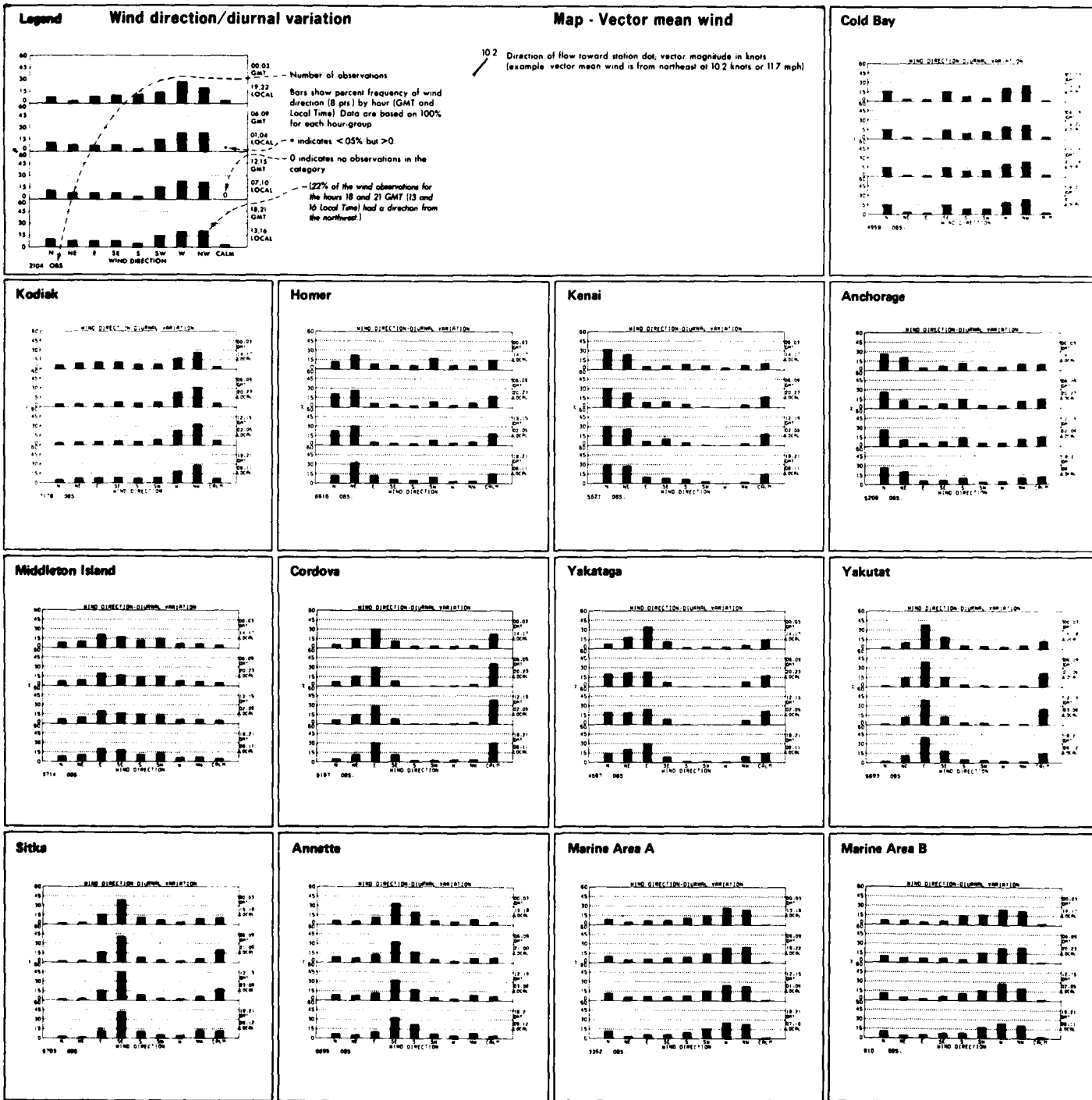
Marine Area B





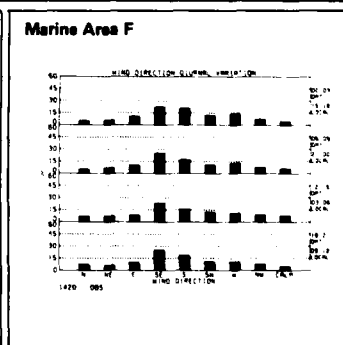
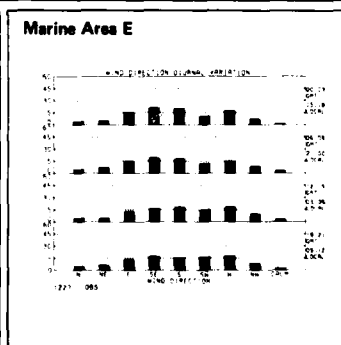
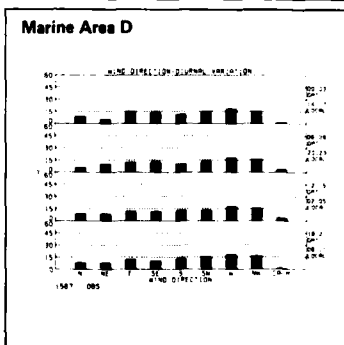
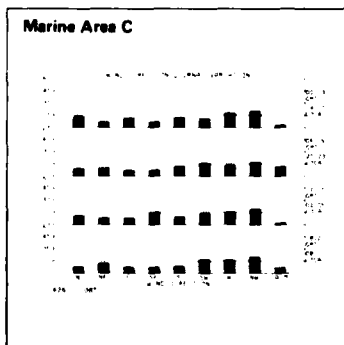
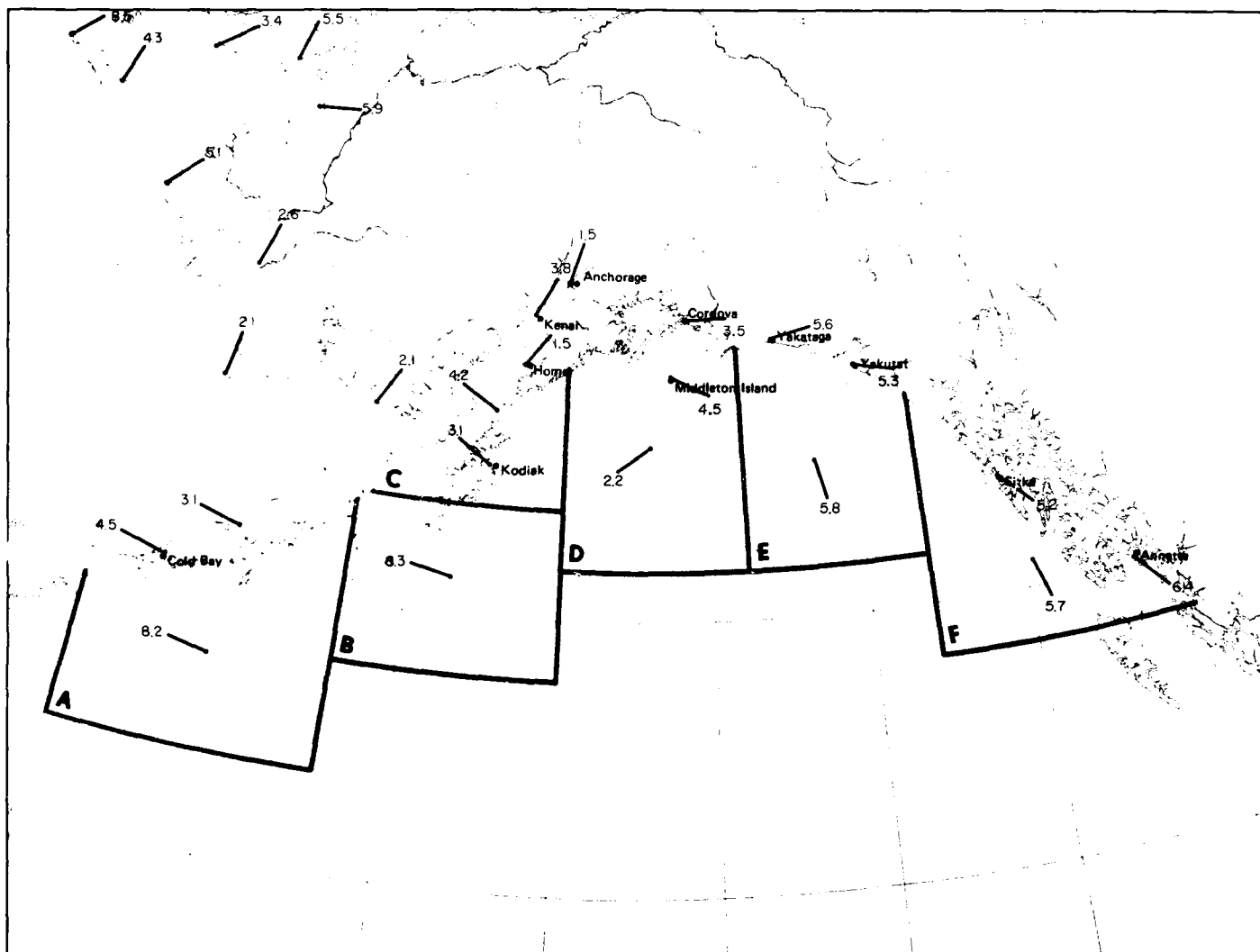
9 Wind speed thresholds

October



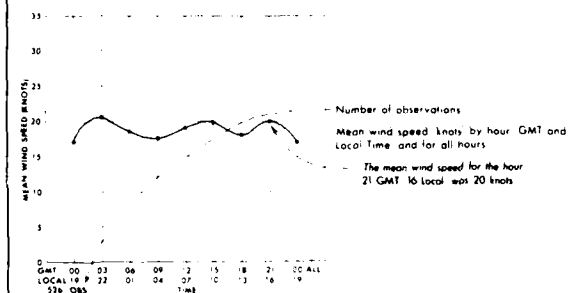
October

10 Wind direction/diurnal variation



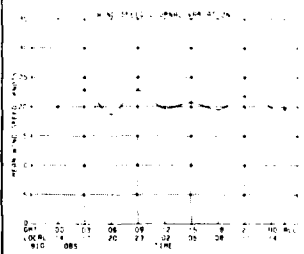
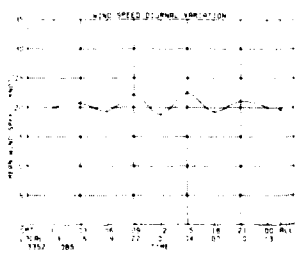
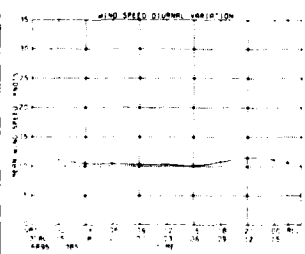
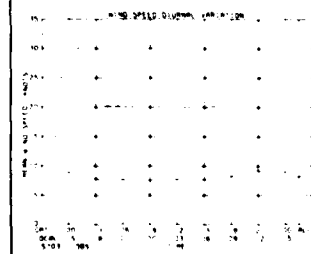
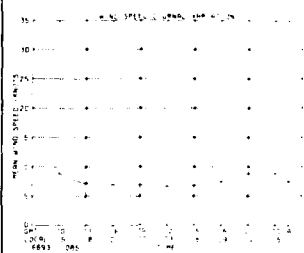
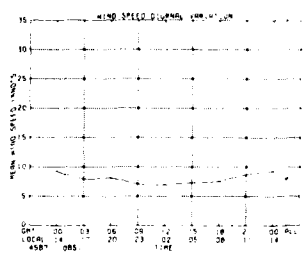
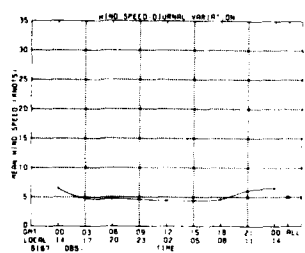
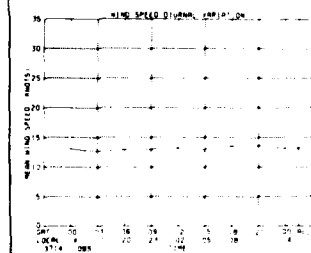
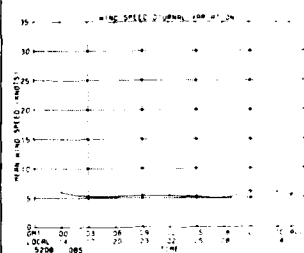
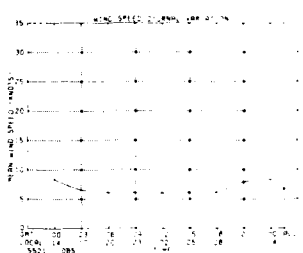
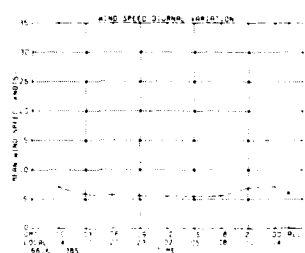
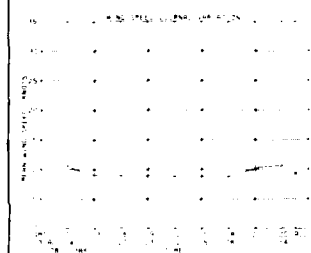
10 Vector mean wind

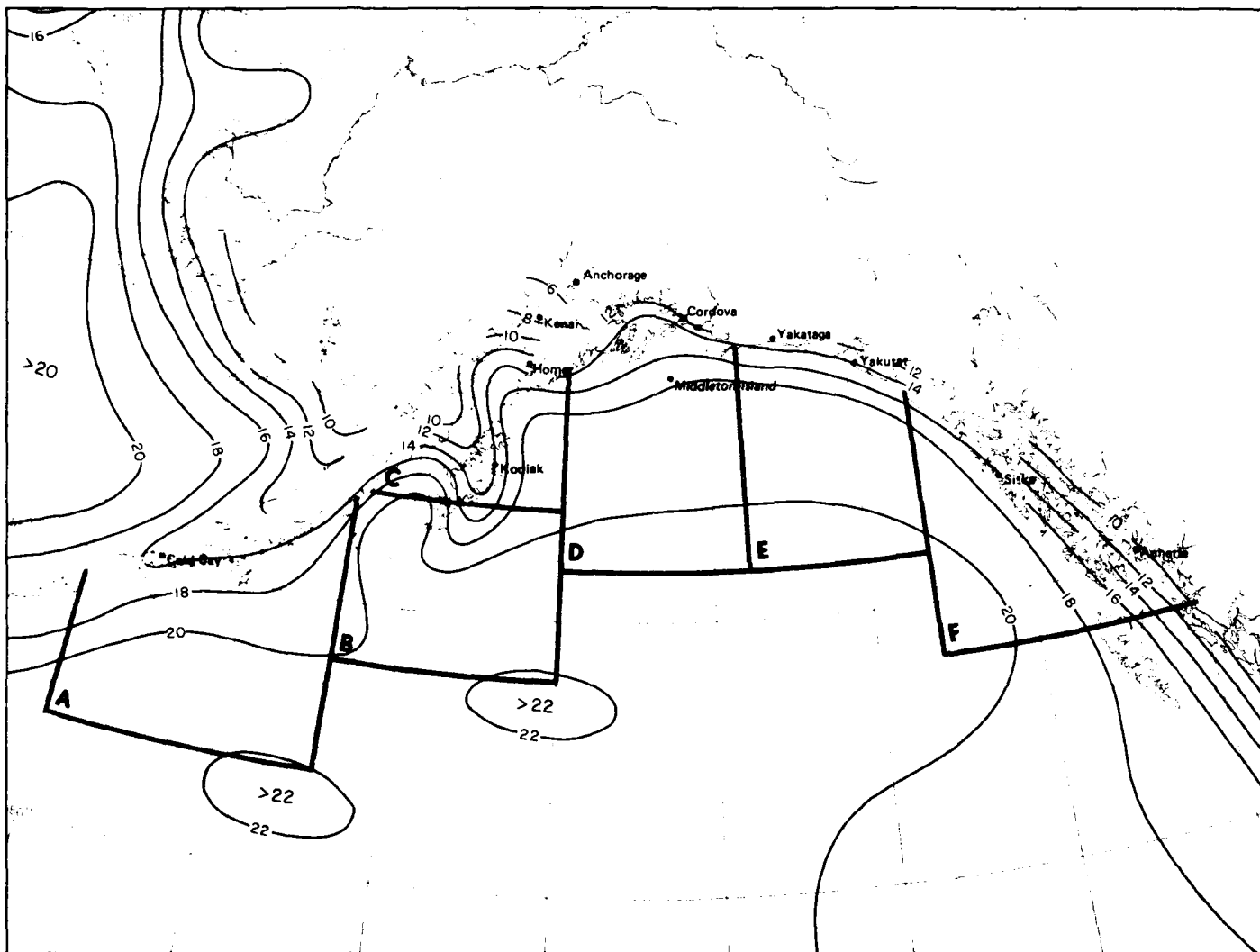
October



BLACK LINE Scalar mean wind (knots)

In areas of high persistence of direction the magnitude of the vector mean winds should closely approach that of the scalar mean winds. As most of the marine observations are recorded at six hour intervals, disregard the plots for other than 00 06, 12 18 GMT hours on the marine area graphs.

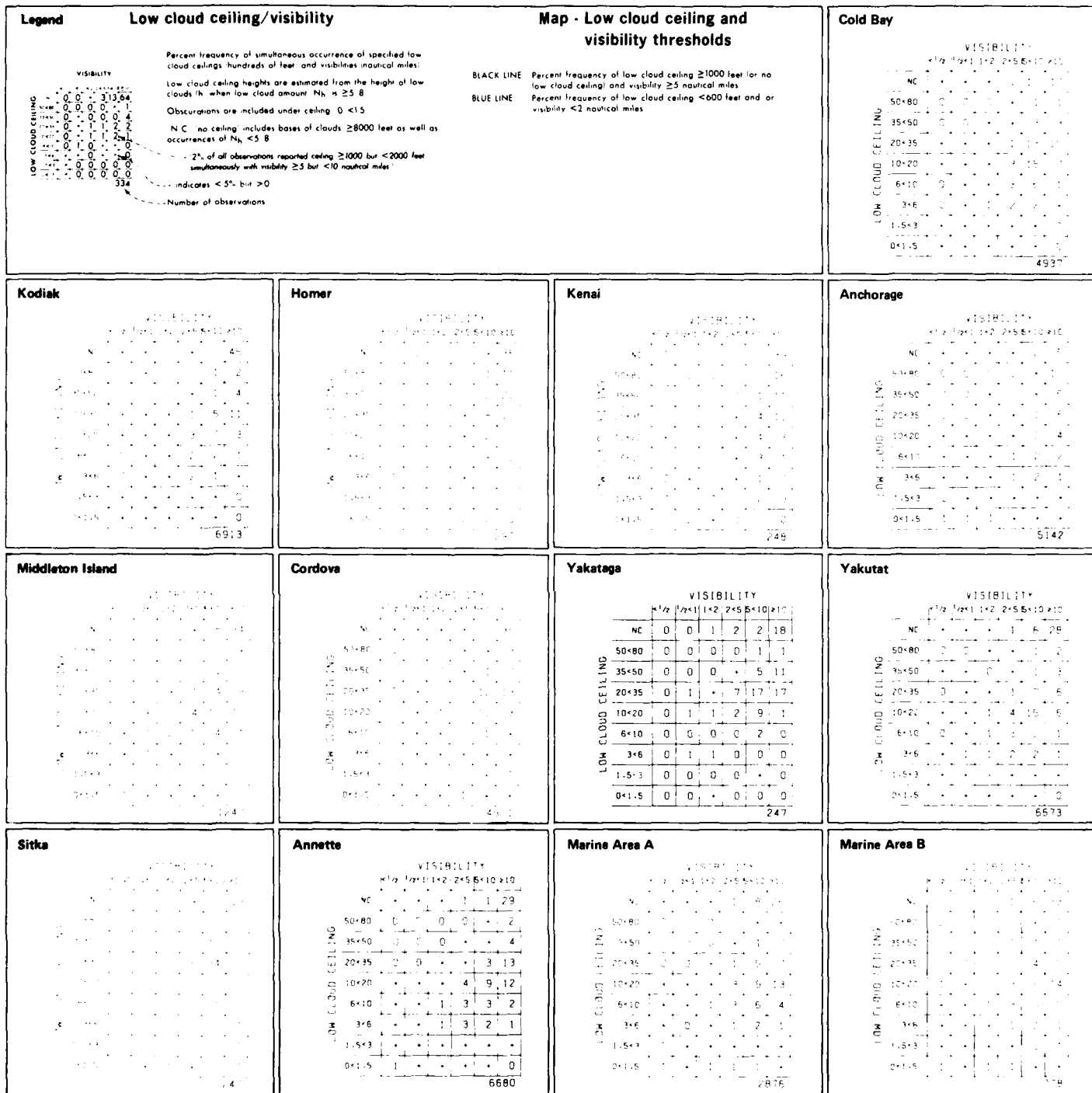




Marine Area C	Marine Area D	Marine Area E	Marine Area F
WIND SPEED (KNOTS) - 10 MIN. AVERAGE 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100	WIND SPEED (KNOTS) - 10 MIN. AVERAGE 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100	WIND SPEED (KNOTS) - 10 MIN. AVERAGE 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100	WIND SPEED (KNOTS) - 10 MIN. AVERAGE 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

11 Scalar mean wind

October

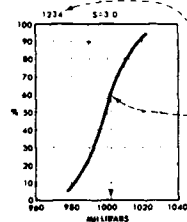


October

12 Low cloud ceiling/visibility

Legend

Sea level pressure



Number of observations
Cumulative percent frequency of sea level pressures equal to or less than the pressure intersected by the curve
S = Standard deviation of pressure (mb)

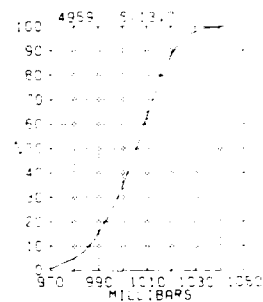
100% of all observed sea level pressures were ≤ 1002 millibars

Map - Mean sea level pressure

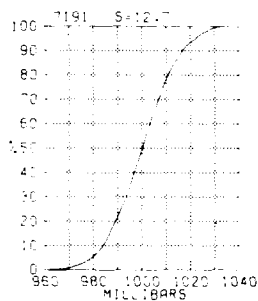
BLACK LINE Mean sea level pressure (millibars)

Sea level pressure is one of the most frequently recorded elements but one of the least accurate because of instrument and coding errors. Despite the inaccuracies of the individual readings, however, the large-scale patterns and mean gradients of the isopleth analyses are relatively accurate.

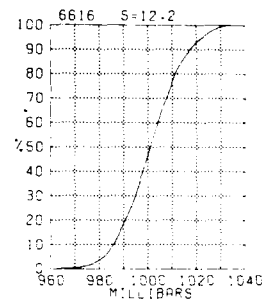
Cold Bay



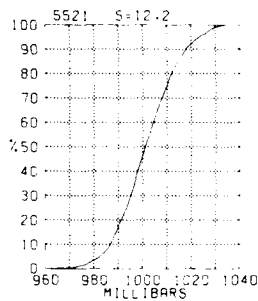
Kodiak



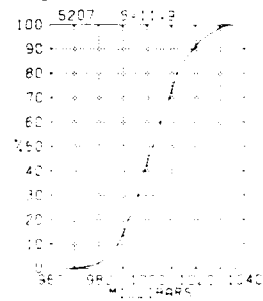
Homer



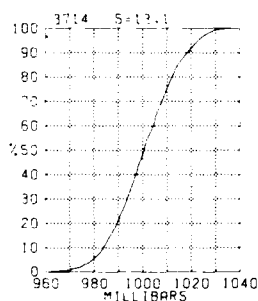
Kenai



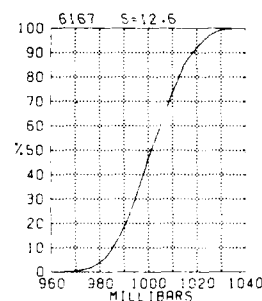
Anchorage



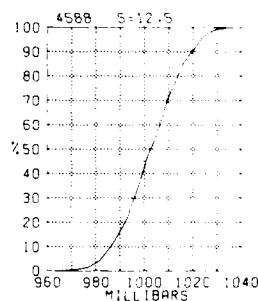
Middleton Island



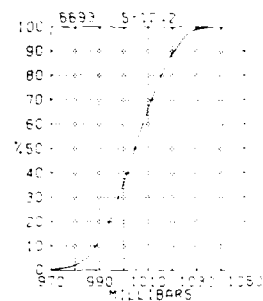
Cordova



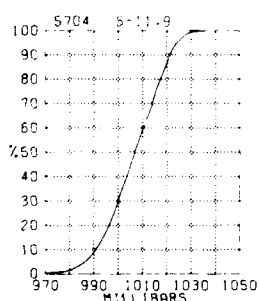
Yakutat



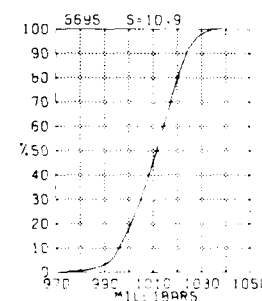
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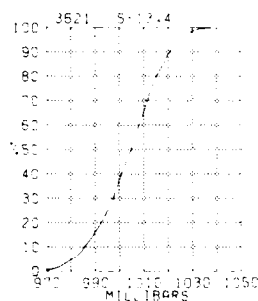
Sitka



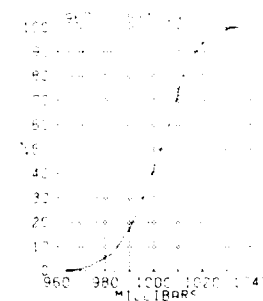
Annette



Marine Area A

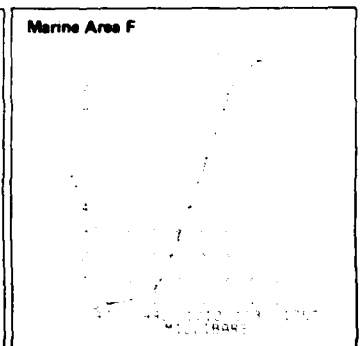
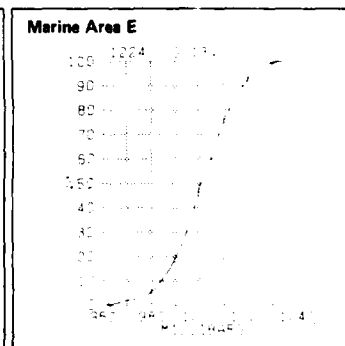
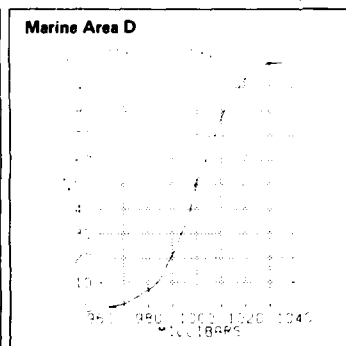
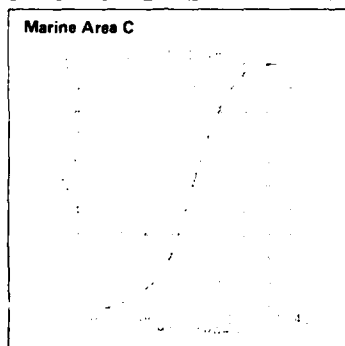
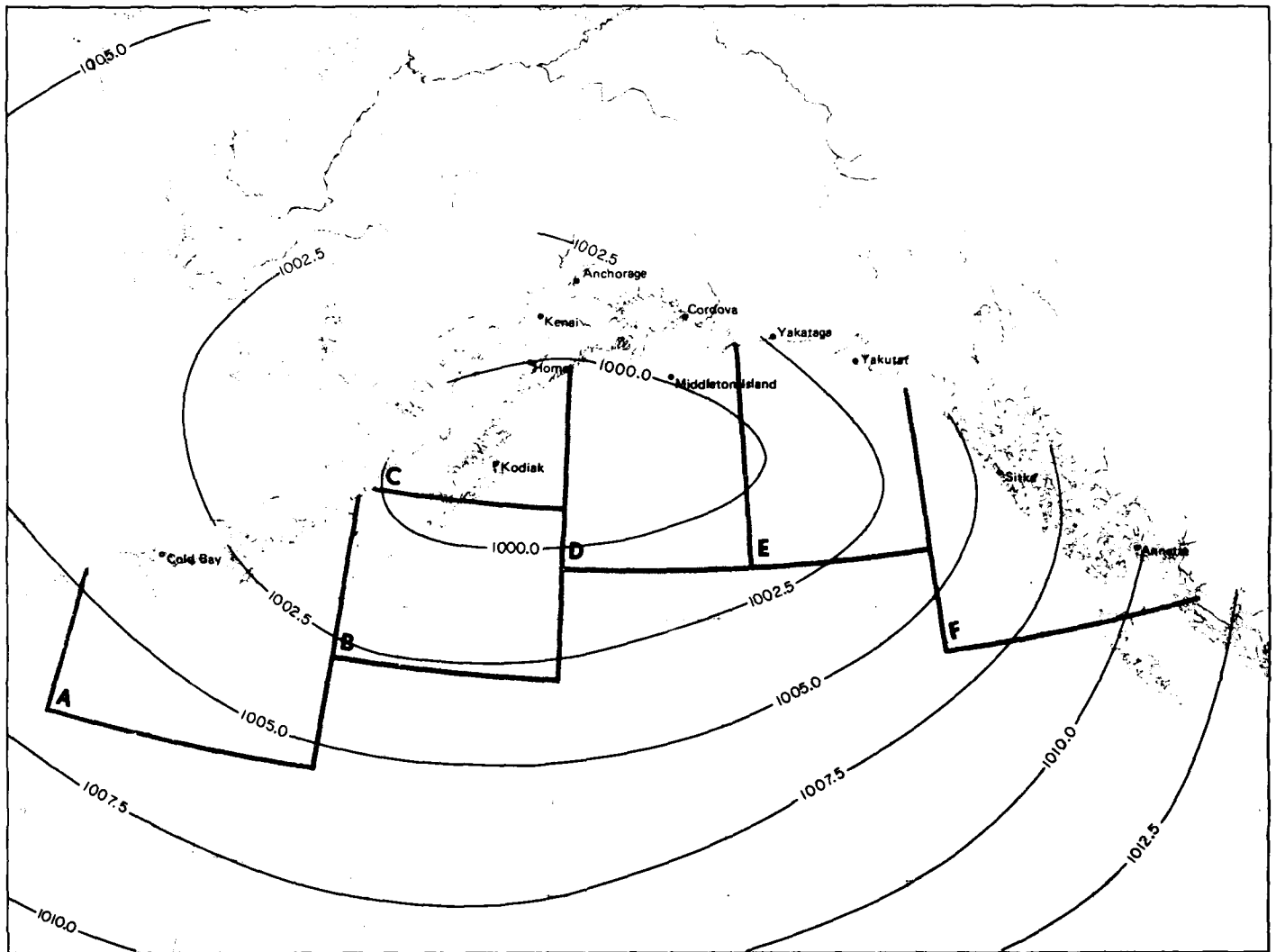


Marine Area B



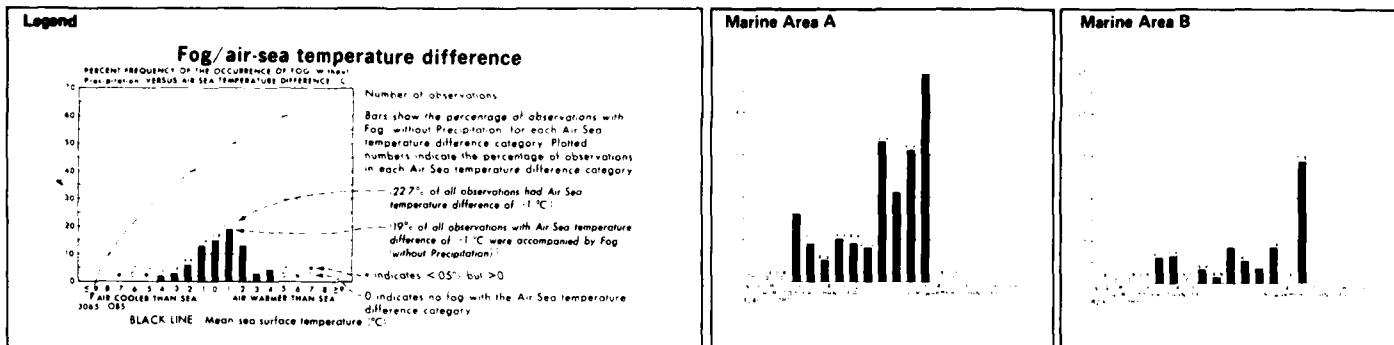
October

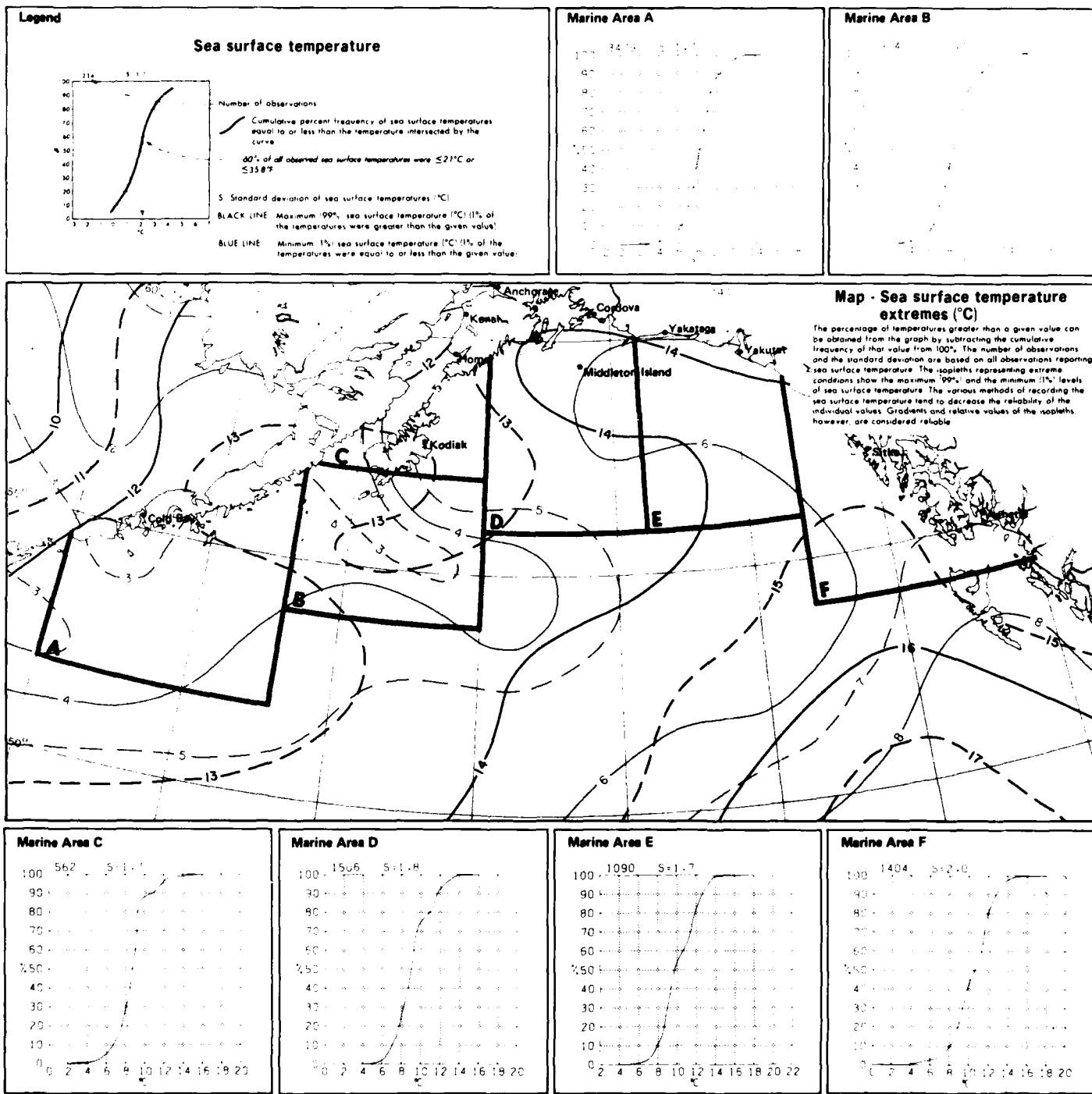
13 Sea level pressure



13 Mean sea level pressure

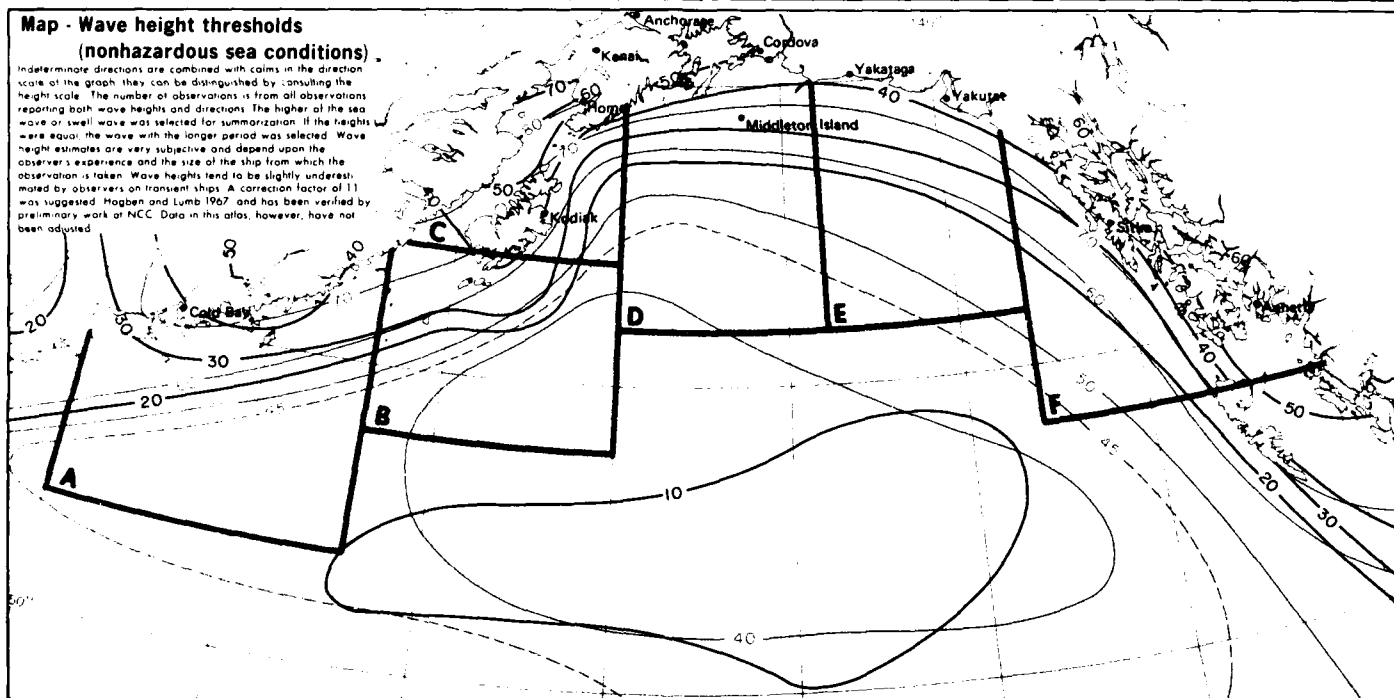
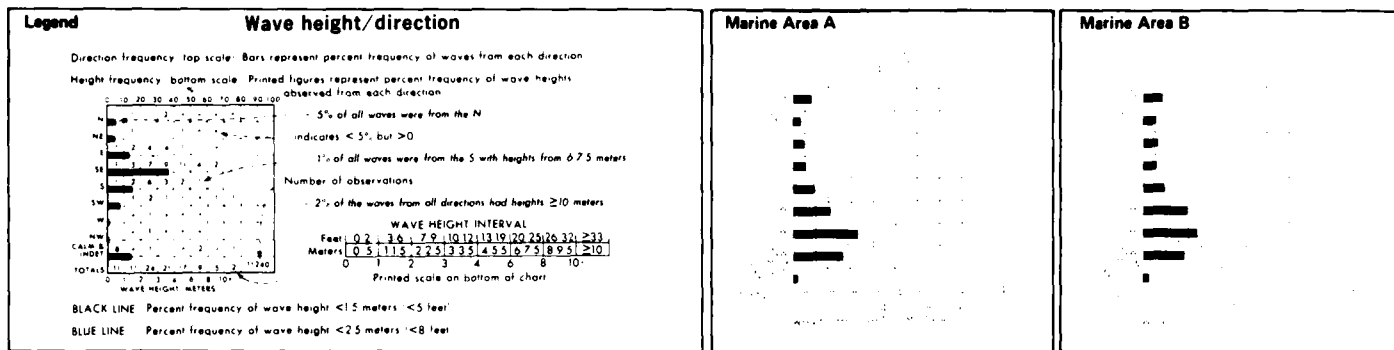
October

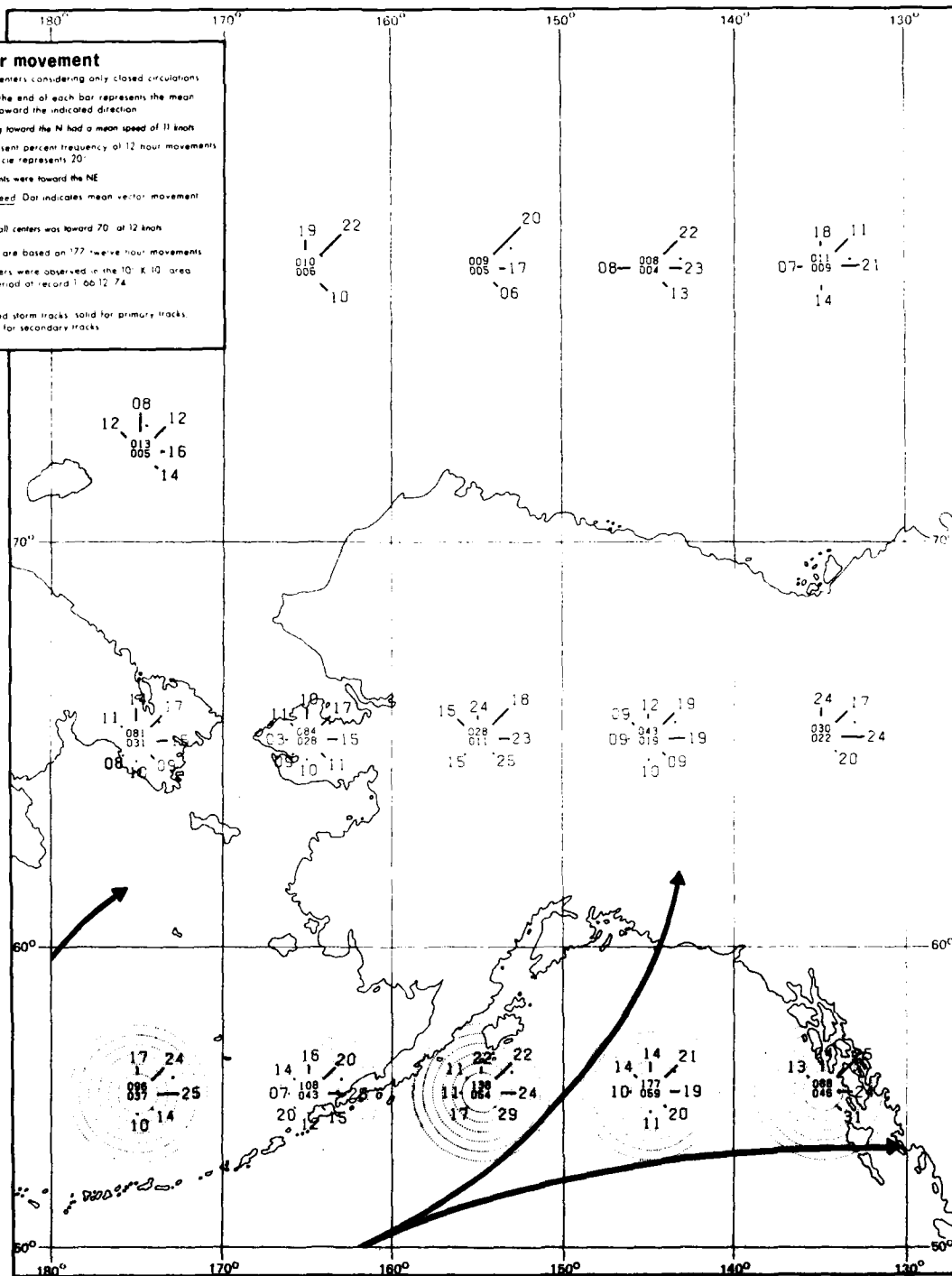
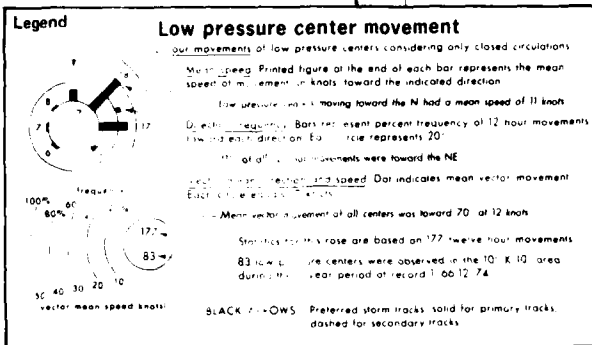




15 Sea surface temperature extremes

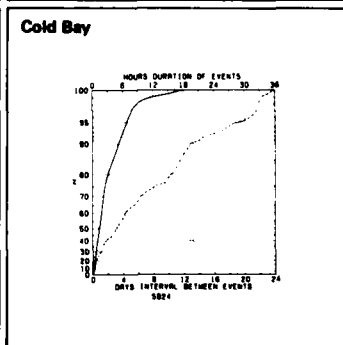
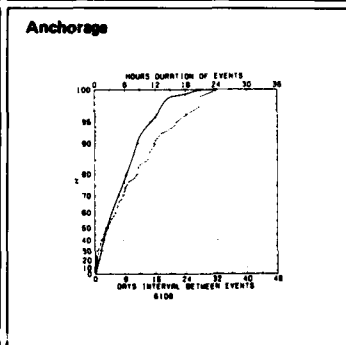
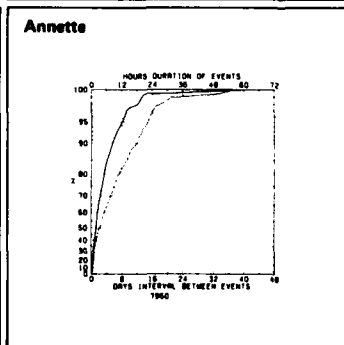
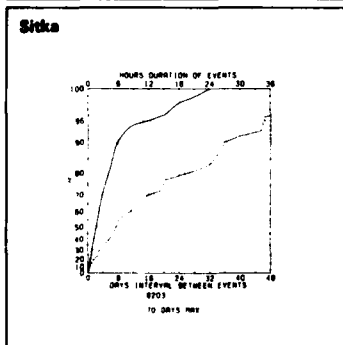
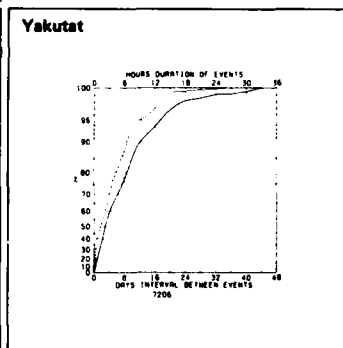
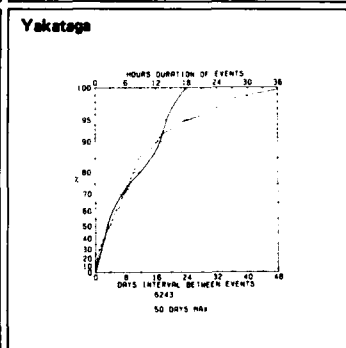
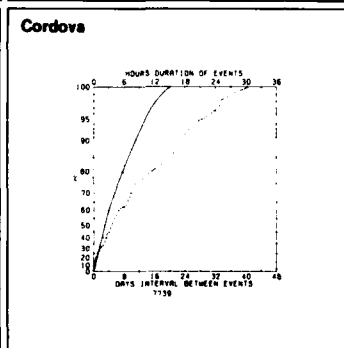
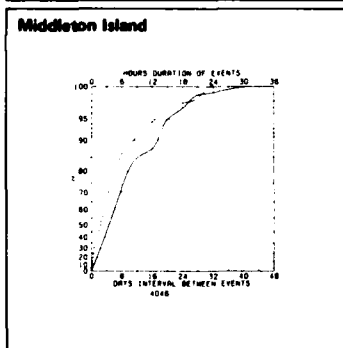
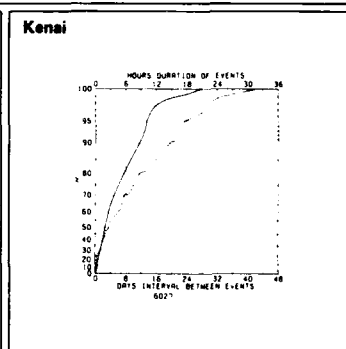
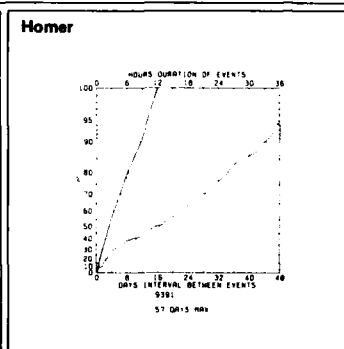
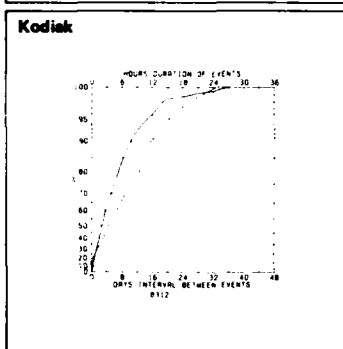
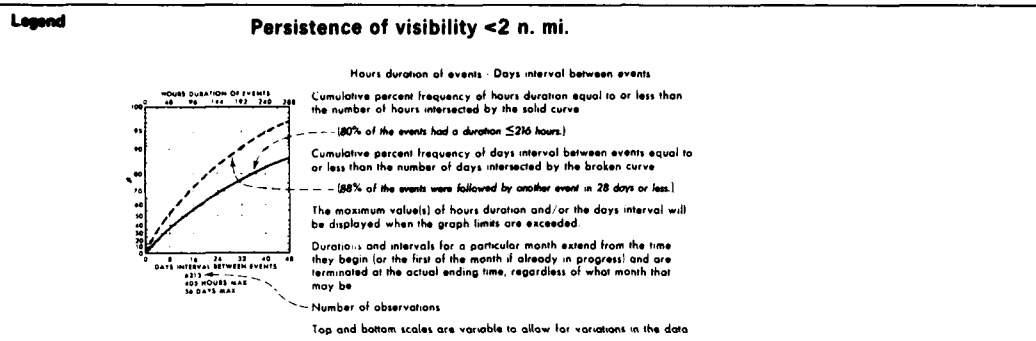
October





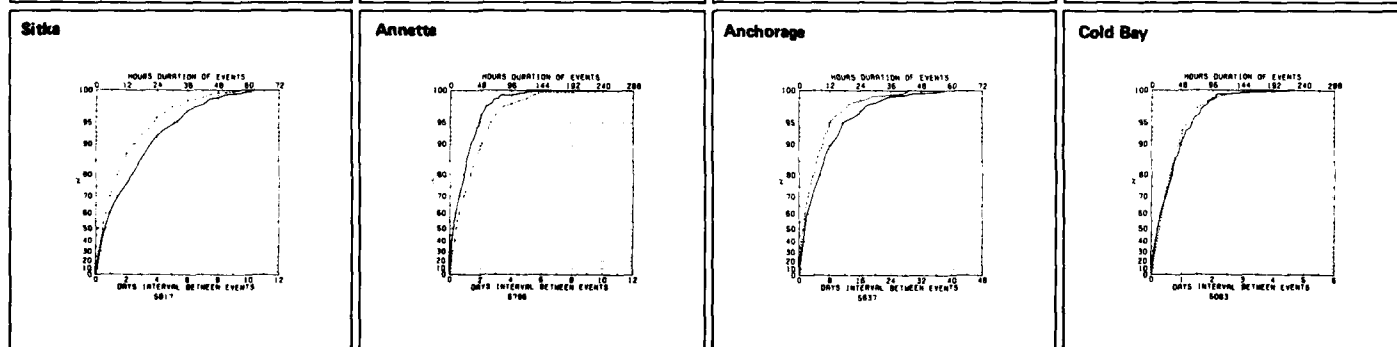
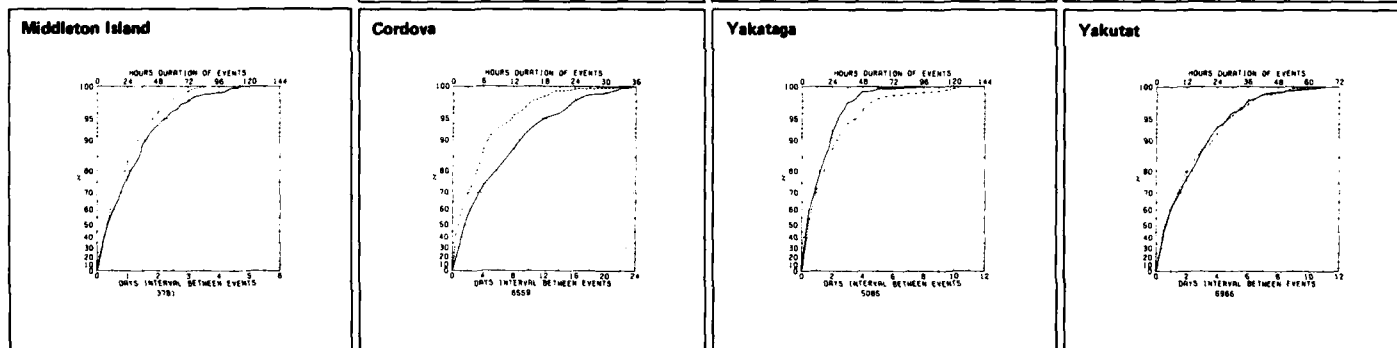
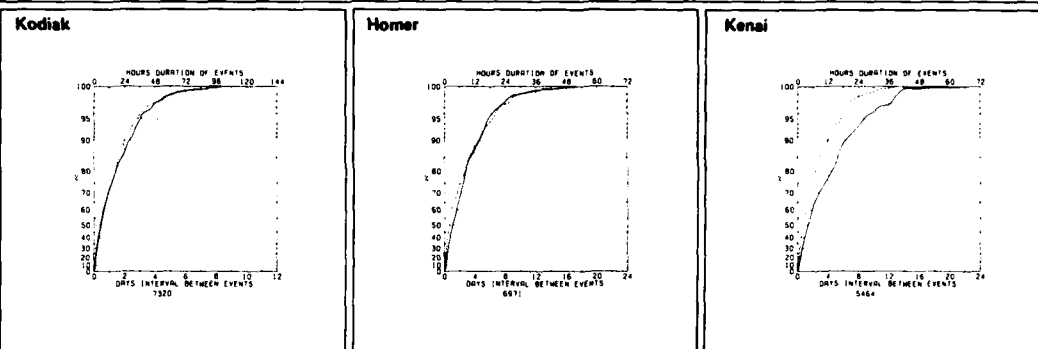
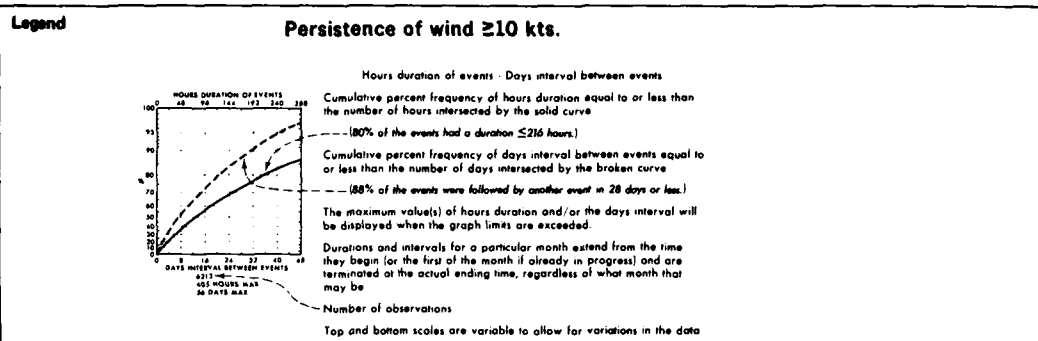
October

18 Low pressure center movement



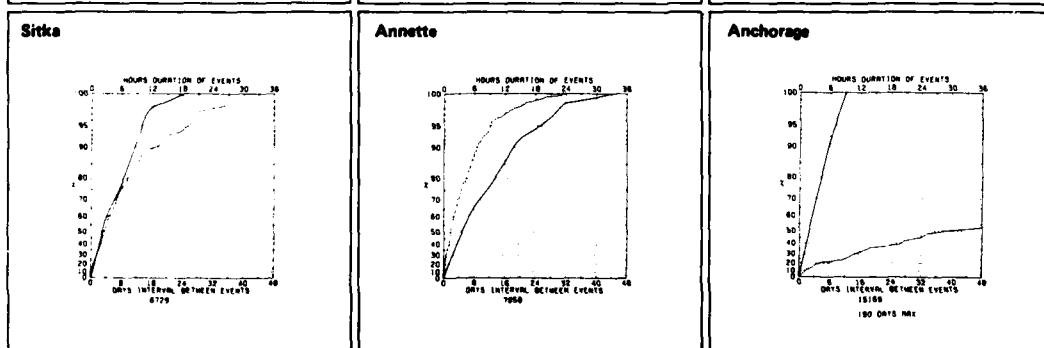
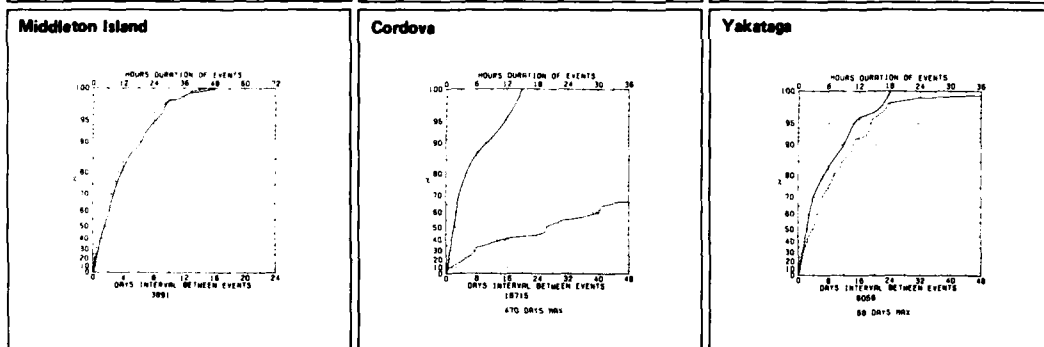
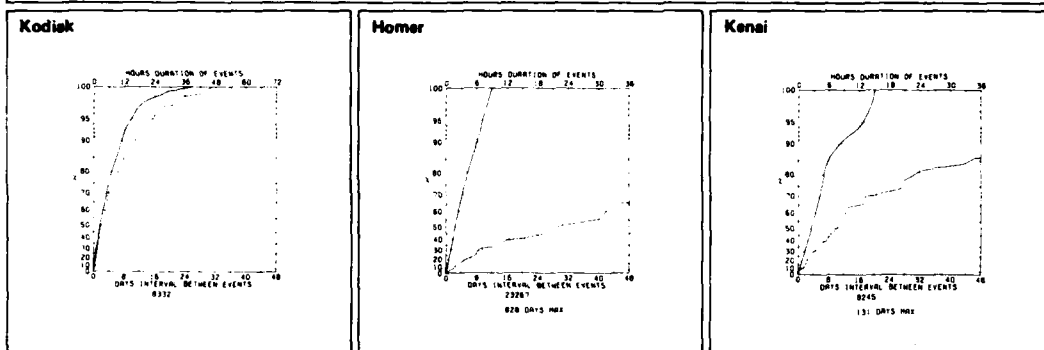
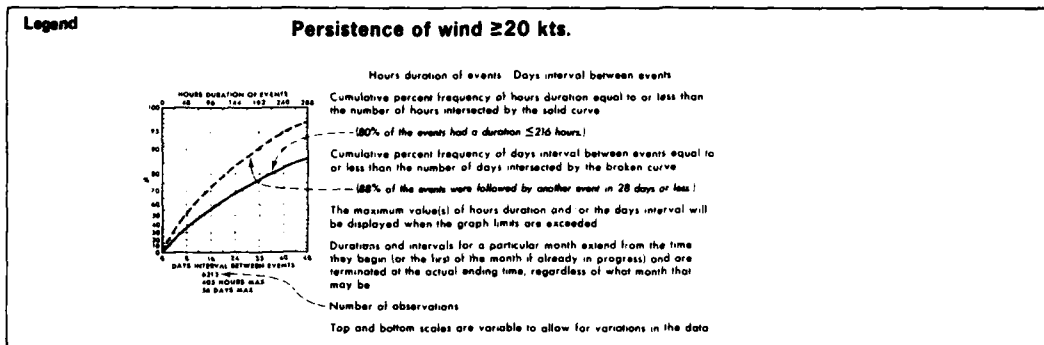
19 Persistence of visibility < 2 n. mi.

October



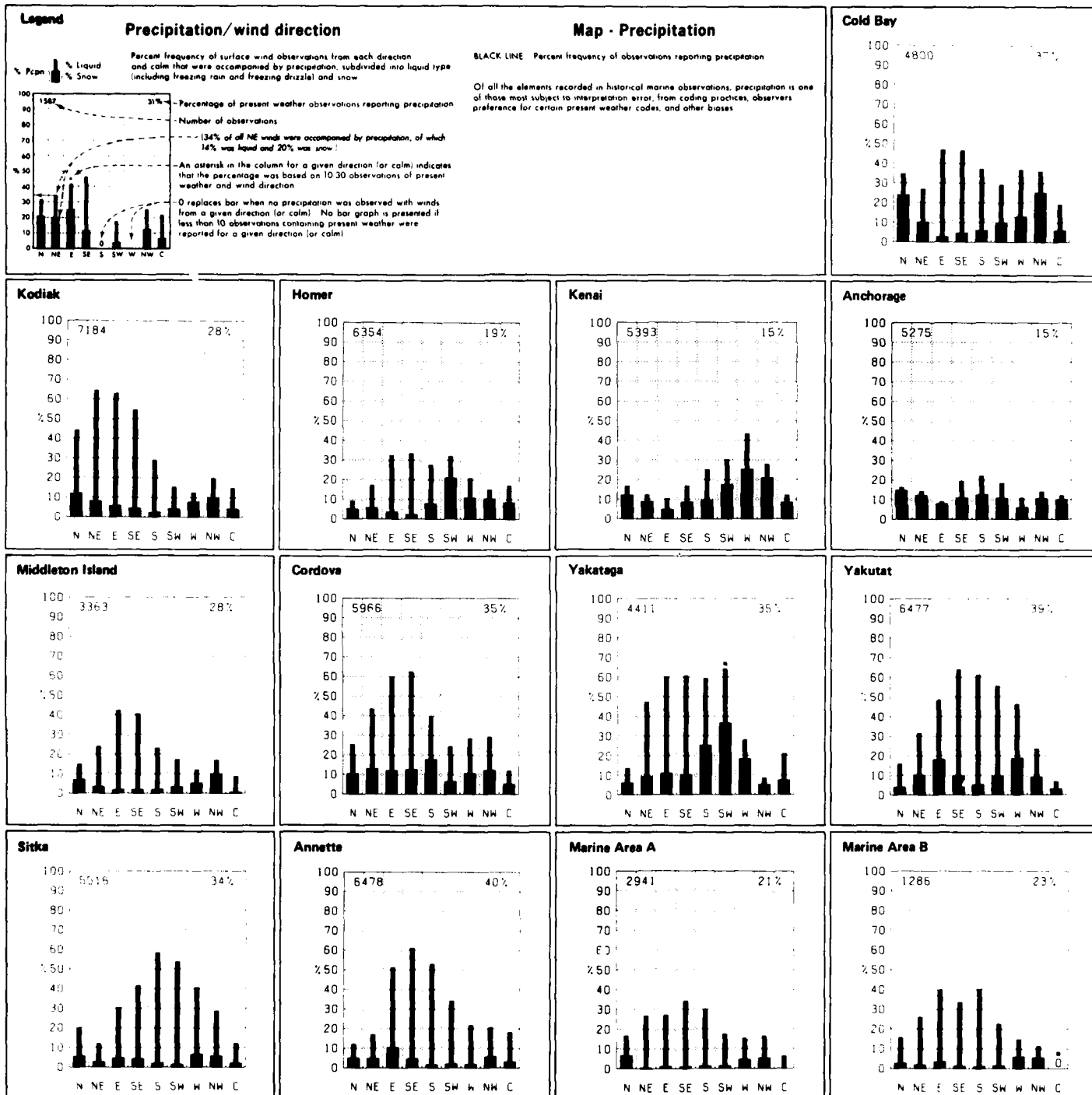
October

20 Persistence of wind ≥ 10 kts.



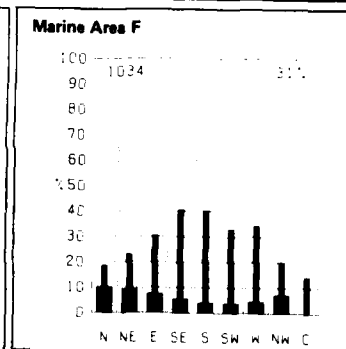
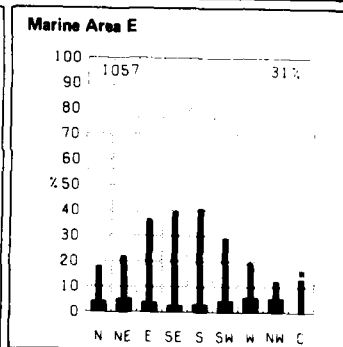
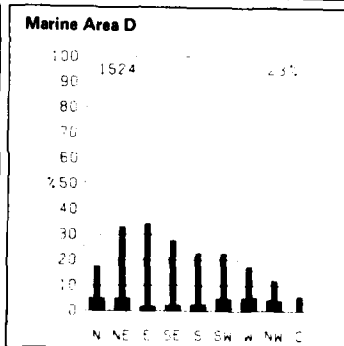
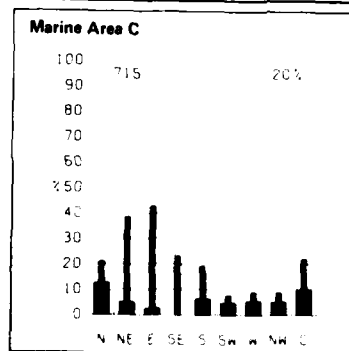
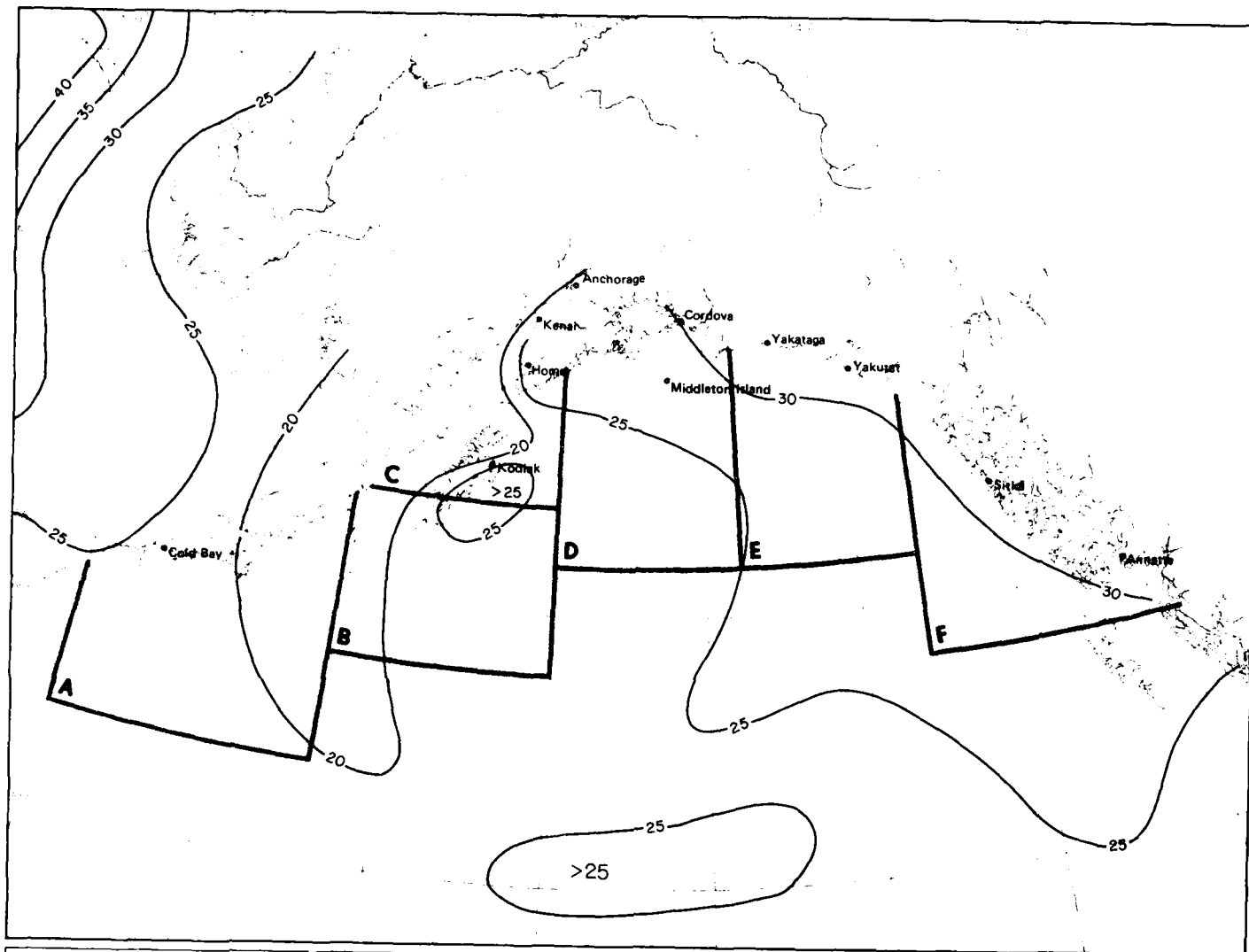
21 Persistence of wind ≥ 20 kts.

October



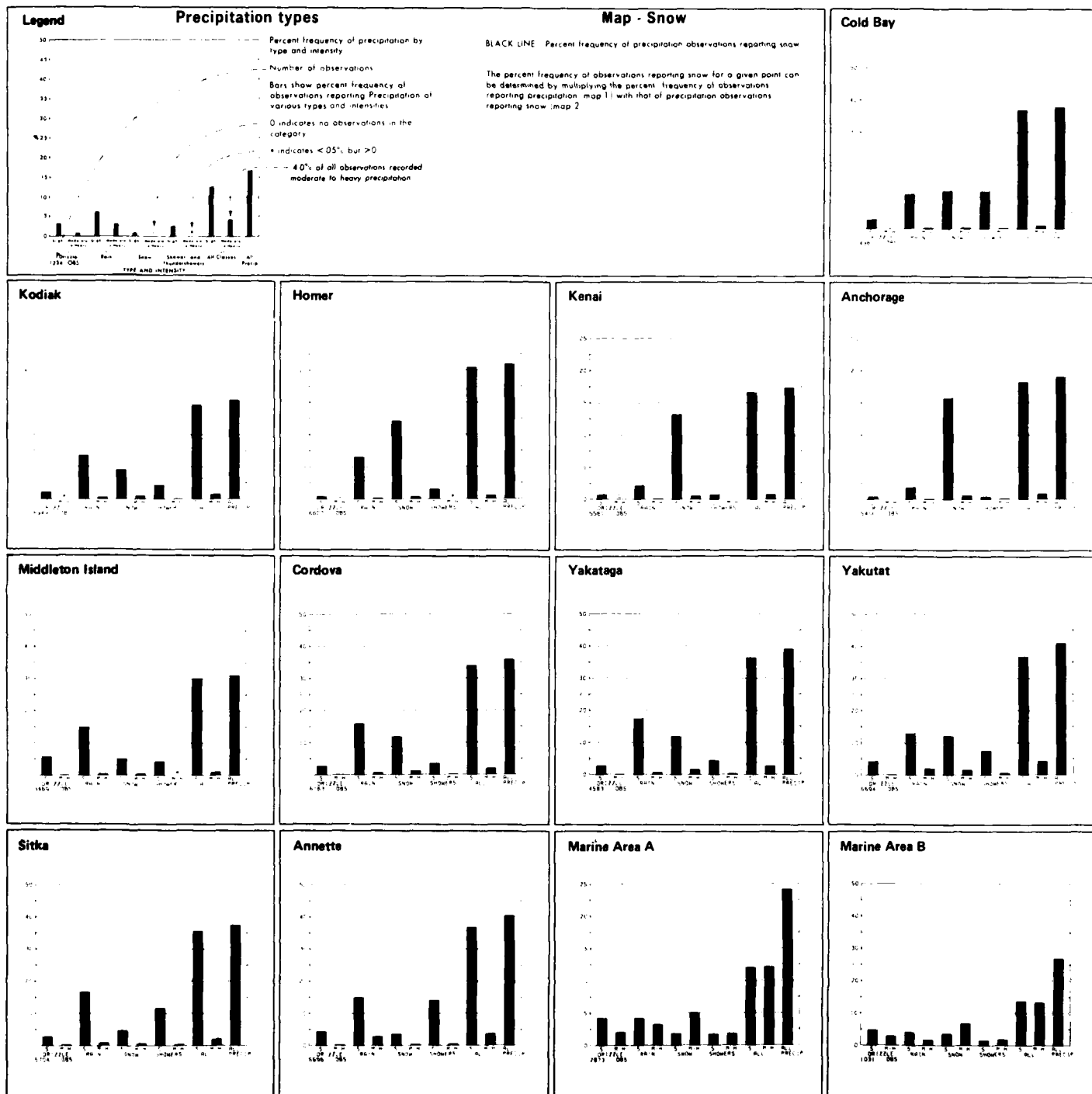
November

1 Precipitation/wind direction



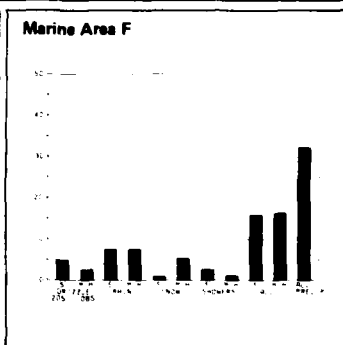
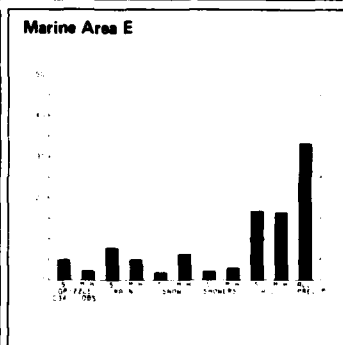
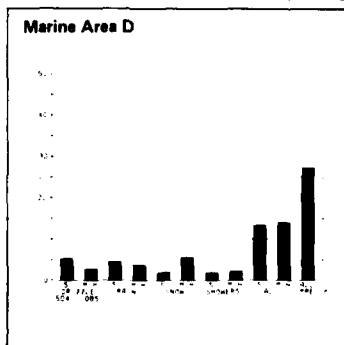
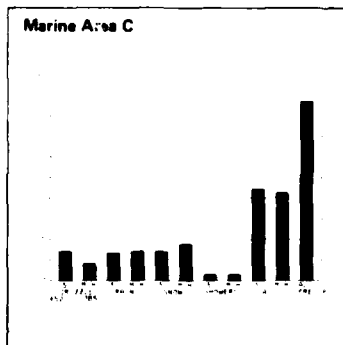
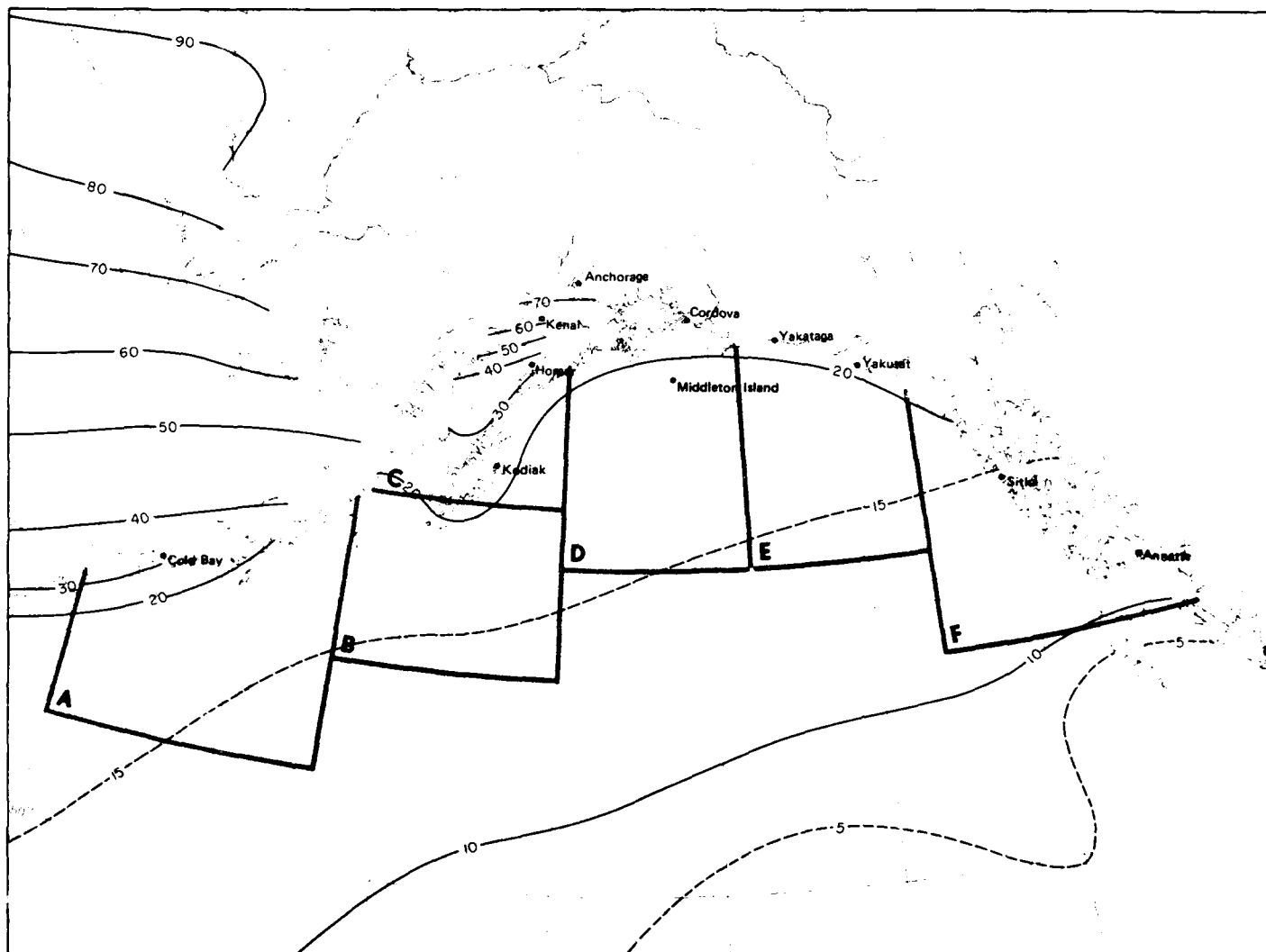
1 Precipitation

November



November

2 Precipitation types

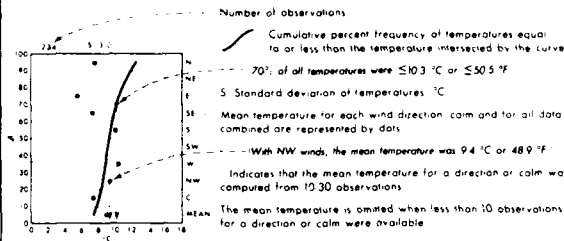


2 Snow

November

Legend

Air temperature/wind direction



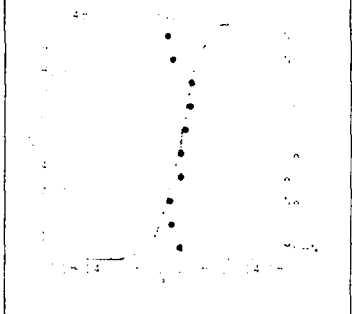
Map - Air temperature mean and thresholds

BLACK LINE Percent frequency of temperature $\leq 10^{\circ}\text{C}$ $\leq 50^{\circ}\text{F}$
 RED LINE Mean air temperature $^{\circ}\text{C}$
 BLUE LINE Percent frequency of wind-chill temperature $\leq 30^{\circ}\text{C}$ $\leq 22^{\circ}\text{F}$

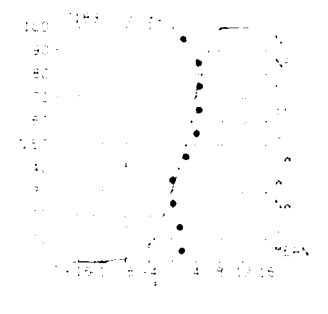
Air temperature readings recorded on transient ships in warm sunny weather appear biased toward high temperatures apparently because of improper instrument exposure and ventilation. Despite the inaccuracies the large scale patterns and mean gradients of the isopleth analyses are relatively accurate.

The temperature scale of the graph may vary in both range and class interval. The percentage of temperature observations greater than a given value can be obtained by subtracting the cumulative percent frequency of that value from 100%. The number of observations and the standard deviation plus the plotted points on the graphs are based on those observations reporting both temperature and wind direction. The cumulative curve is based on all observations reporting temperature with or without wind direction.

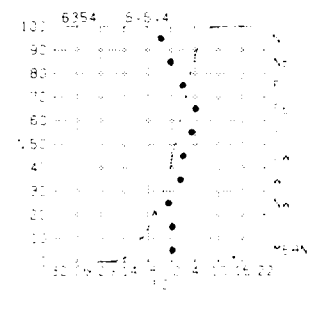
Cold Bay



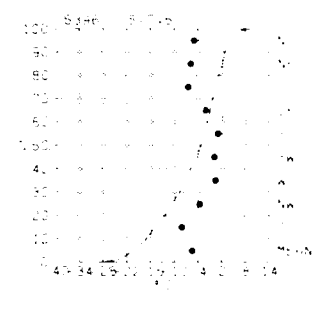
Kodiak



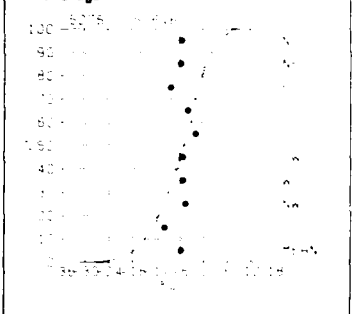
Homer



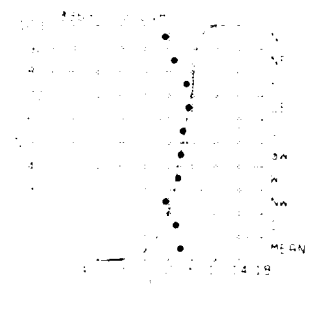
Kenai



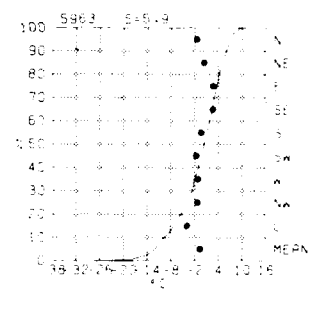
Anchorage



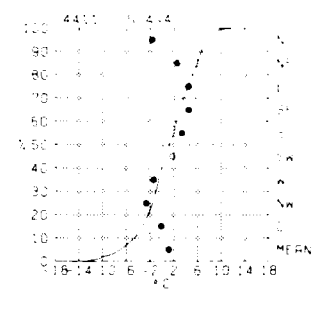
Middleton Island



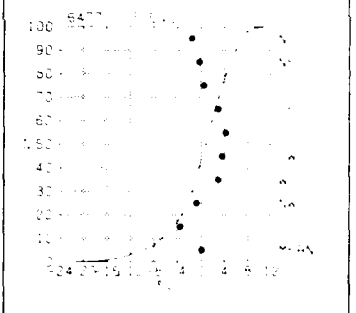
Cordova



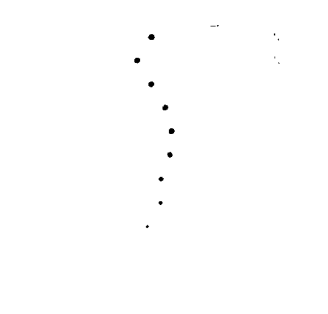
Yakutat



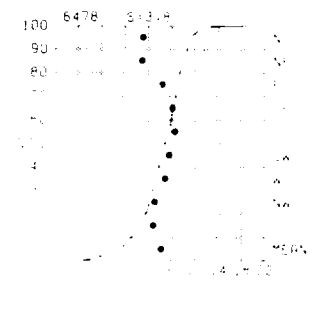
Yakutat



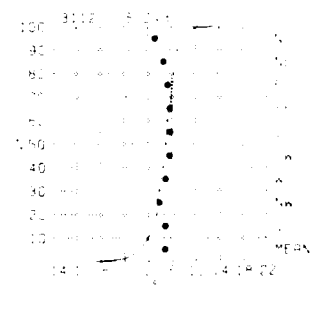
Sitka



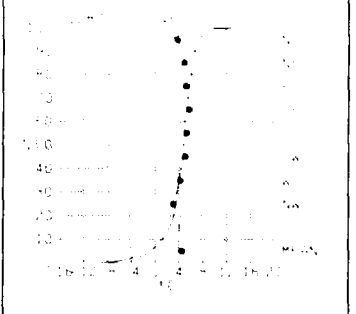
Annette

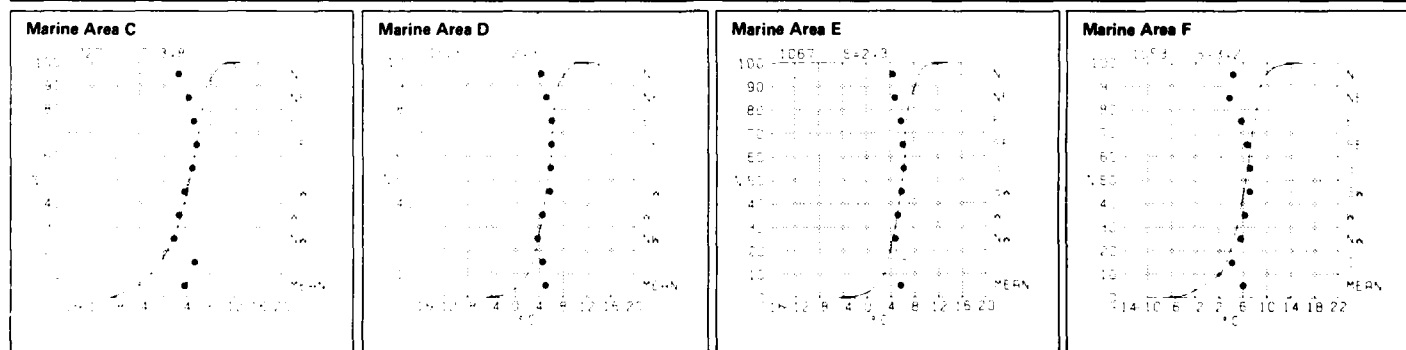
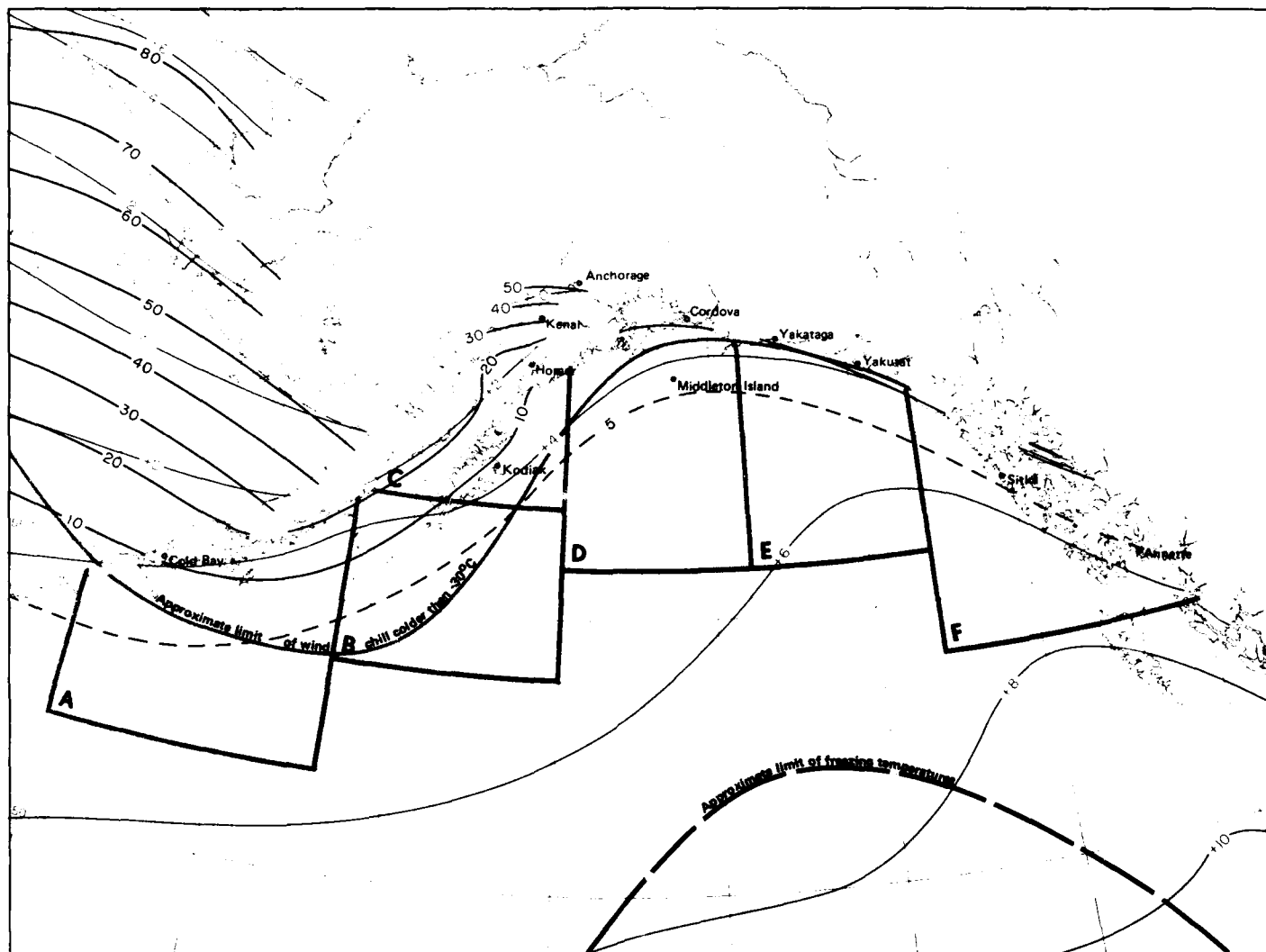


Marine Area A



Marine Area B



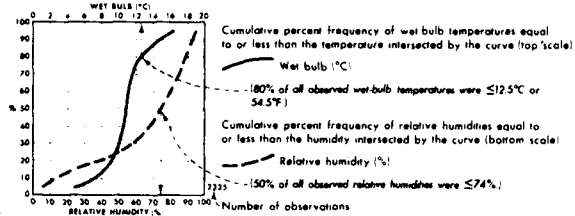


3 Air temperature mean and thresholds

November

Legend

Wet bulb/relative humidity

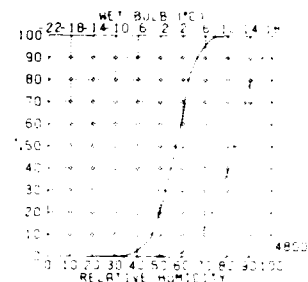


Map - Mean dew point temperature

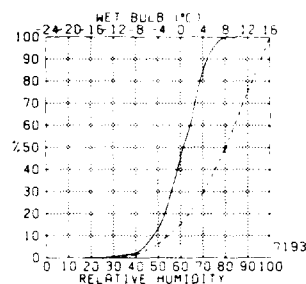
BLACK LINE Mean dew point temperature (°C)

The observation count of the graph reflects those observations reporting both air and wet bulb temperatures, both are required in computing the relative humidity. The percentage of observations of either element greater than a given value can be obtained by subtracting the cumulative percent frequency of that value from 100%.

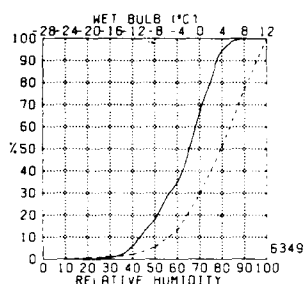
Cold Bay



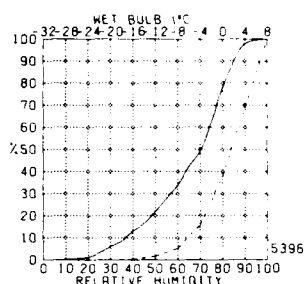
Kodiak



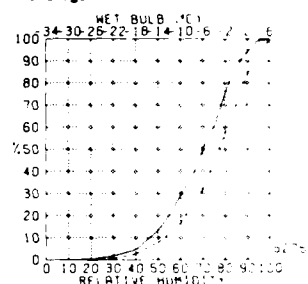
Homer



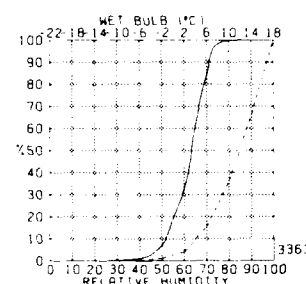
Kenai



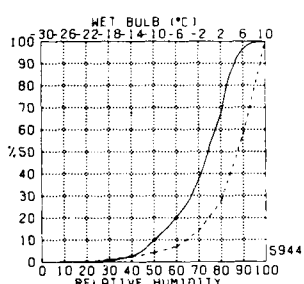
Anchorage



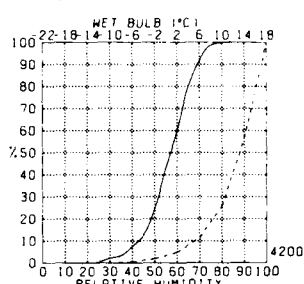
Middleton Island



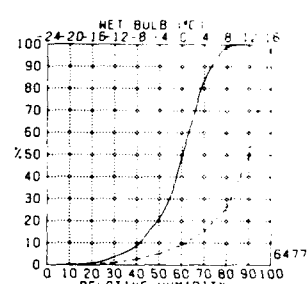
Cordova



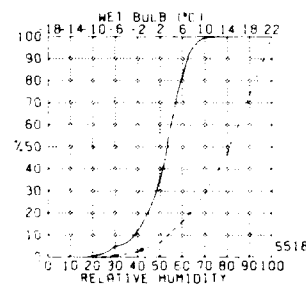
Yakutat



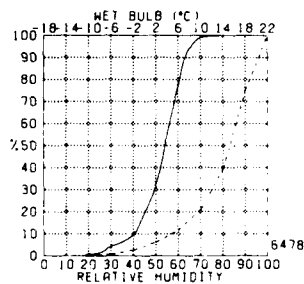
Yakutat



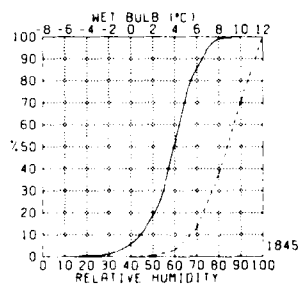
Sitka



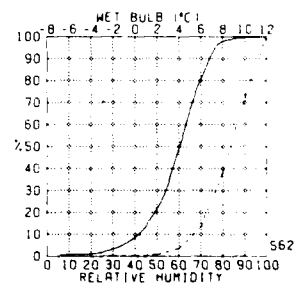
Annette



Marine Area A



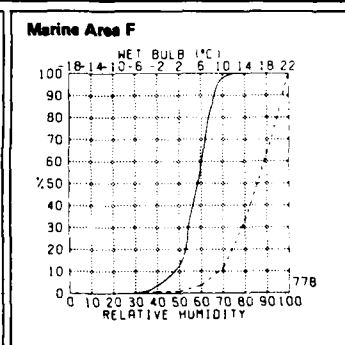
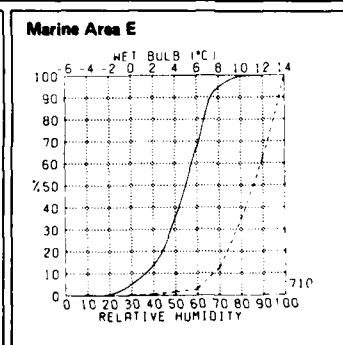
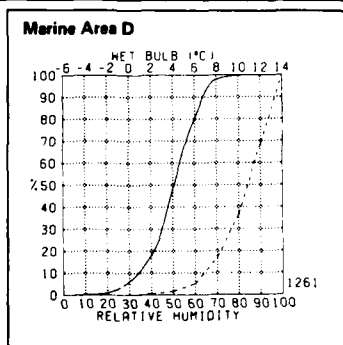
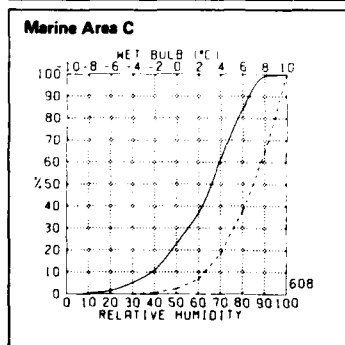
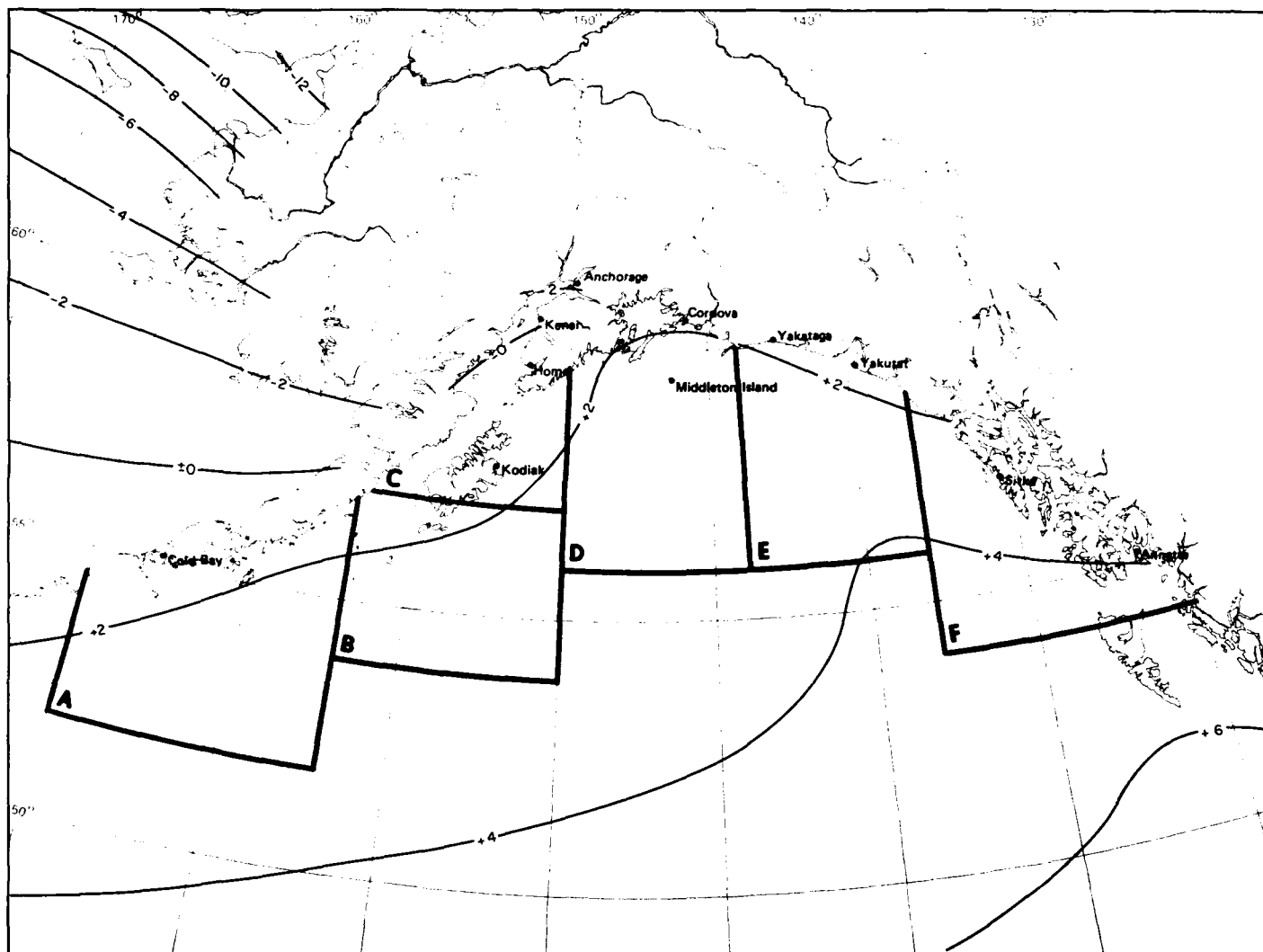
Marine Area B



November

372

4 Wet bulb/relative humidity

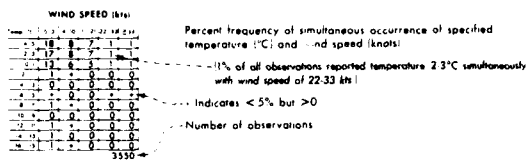


4 Mean dew point temperature

November

Legend

Air temperature/wind speed



Map - Air temperature extremes (°C)

BLACK LINE Maximum 99% air temperature 1% of temperatures were greater than the given value

BLUE LINE Minimum 1% air temperature 1% of temperatures were equal to or less than the given value

The graph can be used to determine the extent of human discomfort from the combined effects of extreme heat or cold and winds or to estimate the likelihood of superstructure icing (icing potential increases as the air temperature drops below freezing and the winds increase above 10 knots (12 mph) and may become quite severe with temperatures equal to or less than 9°C (16°F) and winds equal to or greater than 34 knots (39 mph).

Cold Bay

WIND SPEED (KTS)

TEMP (°C)	0-3	4-10	11-21	22-33	≥ 34
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
0-1	0	0	0	0	0
-2-1	0	0	0	0	0
-4-3	0	0	0	0	0
-6-5	0	0	0	0	0
≤ -7	0	0	0	0	0

4800

Kodiak

WIND SPEED (KTS)

TEMP (°C)	0-3	4-10	11-21	22-33	≥ 34
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
0-1	0	0	0	0	0
-2-1	0	0	0	0	0
-4-3	0	0	0	0	0
-6-5	0	0	0	0	0
≤ -7	0	0	0	0	0

7183

Homer

WIND SPEED (KTS)

TEMP (°C)	0-3	4-10	11-21	22-33	≥ 34
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
0-1	0	0	0	0	0
-2-1	0	0	0	0	0
-4-3	0	0	0	0	0
-6-5	0	0	0	0	0
≤ -7	0	0	0	0	0

6354

Kenai

WIND SPEED (KTS)

TEMP (°C)	0-3	4-10	11-21	22-33	≥ 34
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
0-1	0	0	0	0	0
-2-1	0	0	0	0	0
-4-3	0	0	0	0	0
-6-5	0	0	0	0	0
≤ -7	0	0	0	0	0

5396

Anchorage

WIND SPEED (KTS)

TEMP (°C)	0-3	4-10	11-21	22-33	≥ 34
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
0-1	0	0	0	0	0
-2-1	0	0	0	0	0
-4-3	0	0	0	0	0
-6-5	0	0	0	0	0
≤ -7	0	0	0	0	0

5275

Middleton Island

WIND SPEED (KTS)

TEMP (°C)	0-3	4-10	11-21	22-33	≥ 34
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
0-1	0	0	0	0	0
-2-1	0	0	0	0	0
-4-3	0	0	0	0	0
-6-5	0	0	0	0	0
≤ -7	0	0	0	0	0

3363

Cordova

WIND SPEED (KTS)

TEMP (°C)	0-3	4-10	11-21	22-33	≥ 34
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
0-1	0	0	0	0	0
-2-1	0	0	0	0	0
-4-3	0	0	0	0	0
-6-5	0	0	0	0	0
≤ -7	0	0	0	0	0

5963

Yakutat

WIND SPEED (KTS)

TEMP (°C)	0-3	4-10	11-21	22-33	≥ 34
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
0-1	0	0	0	0	0
-2-1	0	0	0	0	0
-4-3	0	0	0	0	0
-6-5	0	0	0	0	0
≤ -7	0	0	0	0	0

4411

Yakutat

WIND SPEED (KTS)

TEMP (°C)	0-3	4-10	11-21	22-33	≥ 34
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
0-1	0	0	0	0	0
-2-1	0	0	0	0	0
-4-3	0	0	0	0	0
-6-5	0	0	0	0	0
≤ -7	0	0	0	0	0

6477

Sitka

WIND SPEED (KTS)

TEMP (°C)	0-3	4-10	11-21	22-33	≥ 34
18-19	0	0	0	0	0
16-17	0	0	0	0	0
14-15	0	0	0	0	0
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
0-1	0	0	0	0	0
-2-1	0	0	0	0	0
-4-3	0	0	0	0	0
-6-5	0	0	0	0	0
≤ -7	0	0	0	0	0

5518

Annette

WIND SPEED (KTS)

TEMP (°C)	0-3	4-10	11-21	22-33	≥ 34
18-19	0	0	0	0	0
16-17	0	0	0	0	0
14-15	0	0	0	0	0
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
0-1	0	0	0	0	0
-2-1	0	0	0	0	0
-4-3	0	0	0	0	0
-6-5	0	0	0	0	0
≤ -7	0	0	0	0	0

6478

Marine Area A

WIND SPEED (KTS)

TEMP (°C)	0-3	4-10	11-21	22-33	≥ 34
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
0-1	0	0	0	0	0
-2-1	0	0	0	0	0
-4-3	0	0	0	0	0
-6-5	0	0	0	0	0
≤ -7	0	0	0	0	0

3112

Marine Area B

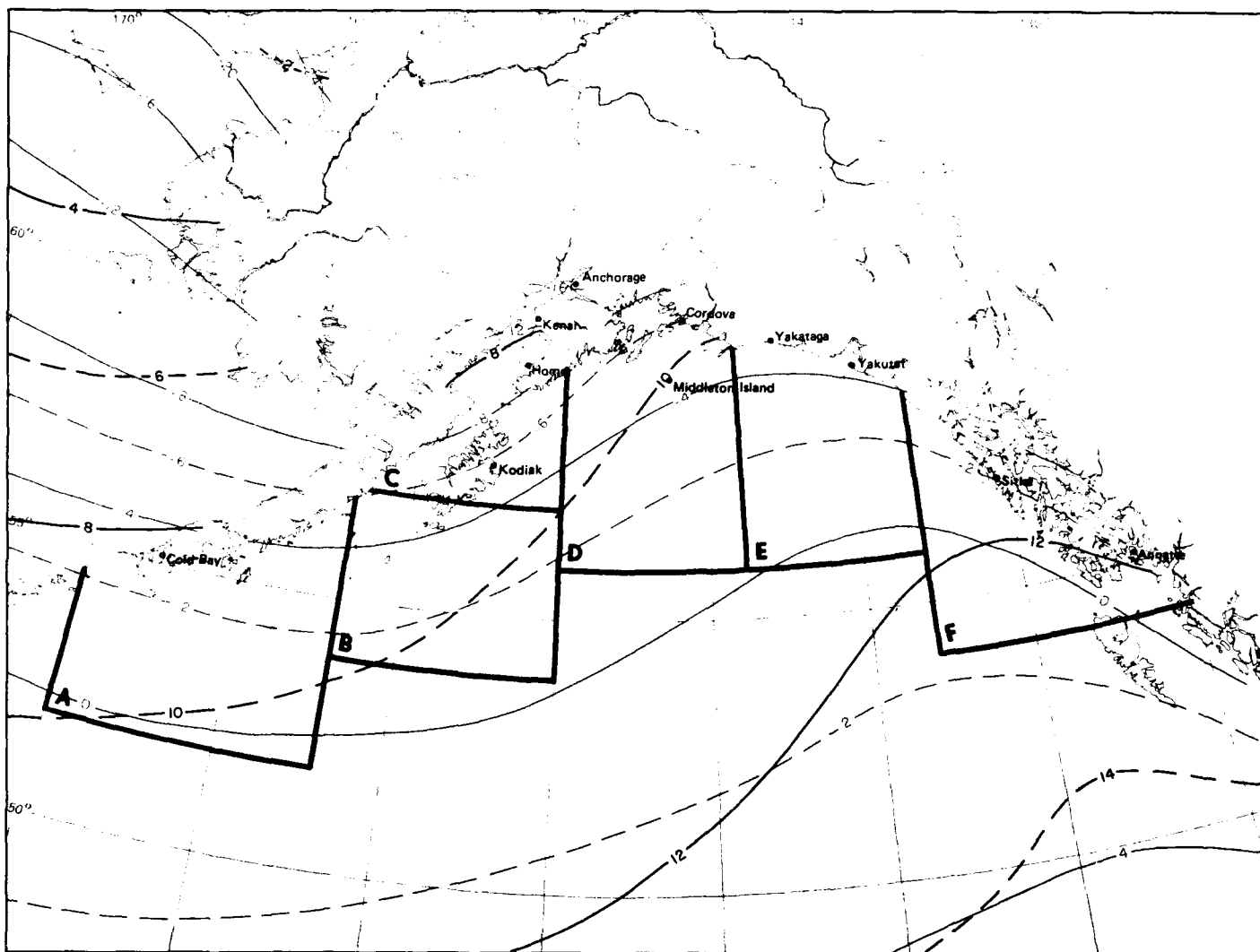
WIND SPEED (KTS)

TEMP (°C)	0-3	4-10	11-21	22-33	≥ 34
12-13	0	0	0	0	0
10-11	0	0	0	0	0
8-9	0	0	0	0	0
6-7	0	0	0	0	0
4-5	0	0	0	0	0
2-3	0	0	0	0	0
0-1	0	0	0	0	0
-2-1	0	0	0	0	0
-4-3	0	0	0	0	0
-6-5	0	0	0	0	0
≤ -7	0	0	0	0	0

1287

November

5 Air temperature/wind speed



Marine Area C												
TEMP. (°C)	1	2	3	4	5	6	7	8	9	10	11	12
12.19	+	+	+	+	+	+	+	+	+	+	+	0
10.11	+	+	+	+	+	+	+	+	+	+	+	+
8.9	2	2	4	+	+	+	+	+	+	+	+	+
6.9	4	4	6	11	9	4	+	+	+	+	+	+
4.5	2	5	8	9	2	+	+	+	+	+	+	+
2.3	+	4	4	7	2	+	+	+	+	+	+	+
0.0	+	+	+	+	+	+	+	+	+	+	+	+
2.3	+	+	+	+	+	+	+	+	+	+	+	+
4.5	+	+	+	+	+	+	+	+	+	+	+	+
6.9	+	+	+	+	+	+	+	+	+	+	+	+
8.9	+	+	+	+	+	+	+	+	+	+	+	+
12.19	+	+	+	+	+	+	+	+	+	+	+	+

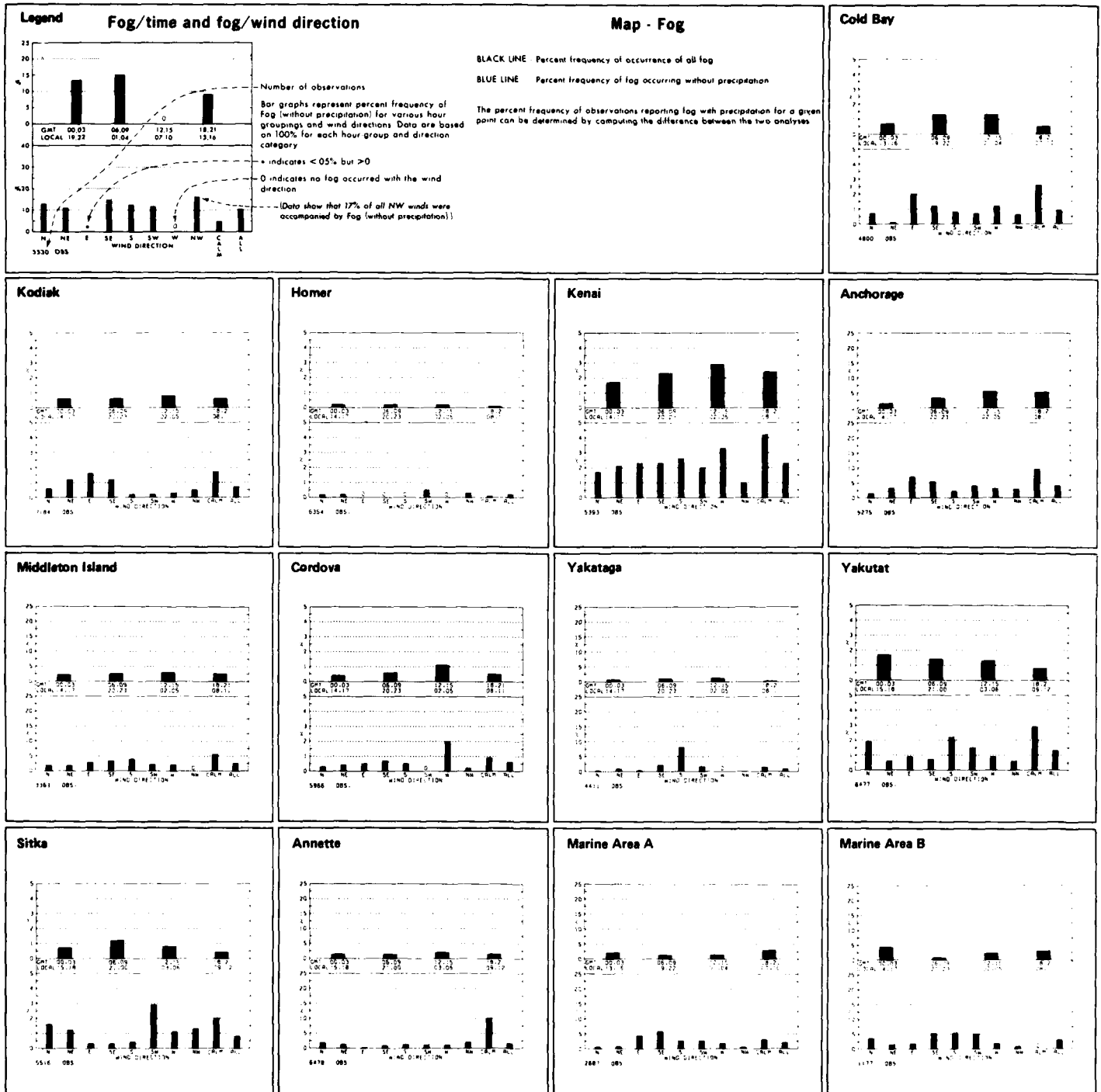
Marine Area D												
TEMP. (°C)	1	2	3	4	5	6	7	8	9	10	11	12
12.19	+	+	+	+	+	+	+	+	+	+	+	+
10.11	+	+	+	+	+	+	+	+	+	+	+	+
8.9	+	2	4	+	+	+	+	+	+	+	+	+
6.9	+	10	16	10	4	+	+	+	+	+	+	+
4.5	+	+	+	+	+	+	+	+	+	+	+	+
2.3	+	+	+	+	+	+	+	+	+	+	+	+
0.0	+	+	+	+	+	+	+	+	+	+	+	+
2.3	+	+	+	+	+	+	+	+	+	+	+	+
4.5	+	+	+	+	+	+	+	+	+	+	+	+
6.9	0	0	+	+	+	+	+	+	+	+	+	+
8.9	0	0	+	+	+	+	+	+	+	+	+	+
12.19	+	+	+	+	+	+	+	+	+	+	+	+

Marine Area E												
TEMP. (°C)	1	2	3	4	5	6	7	8	9	10	11	12
12.19	0	+	+	+	+	+	+	+	+	+	+	+
10.11	0	+	+	+	+	+	+	+	+	+	+	+
8.9	+	+	+	+	+	+	+	+	+	+	+	+
6.9	1	10	16	10	4	+	+	+	+	+	+	+
4.5	+	+	+	+	+	+	+	+	+	+	+	+
2.3	+	+	+	+	+	+	+	+	+	+	+	+
0.0	+	+	+	+	+	+	+	+	+	+	+	+
2.3	+	+	+	+	+	+	+	+	+	+	+	+
4.5	+	+	+	+	+	+	+	+	+	+	+	+
6.9	0	0	+	+	+	+	+	+	+	+	+	+
8.9	0	0	+	+	+	+	+	+	+	+	+	+
12.19	+	+	+	+	+	+	+	+	+	+	+	+

Marine Area F												
TEMP. (°C)	1	2	3	4	5	6	7	8	9	10	11	12
12.19	+	+	+	+	+	+	+	+	+	+	+	+
10.11	+	+	+	+	+	+	+	+	+	+	+	+
8.9	+	+	+	+	+	+	+	+	+	+	+	+
6.9	+	+	+	+	+	+	+	+	+	+	+	+
4.5	+	+	+	+	+	+	+	+	+	+	+	+
2.3	+	+	+	+	+	+	+	+	+	+	+	+
0.0	+	+	+	+	+	+	+	+	+	+	+	+
2.3	+	+	+	+	+	+	+	+	+	+	+	+
4.5	+	+	+	+	+	+	+	+	+	+	+	+
6.9	+	+	+	+	+	+	+	+	+	+	+	+
8.9	+	+	+	+	+	+	+	+	+	+	+	+
12.19	+	+	+	+	+	+	+	+	+	+	+	+

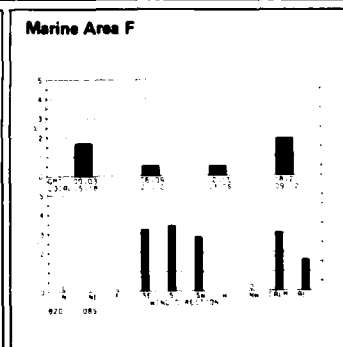
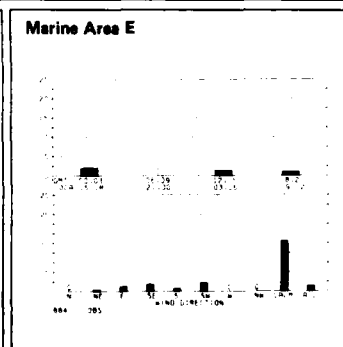
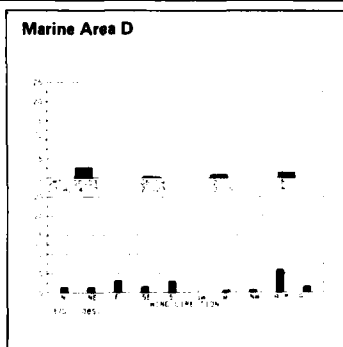
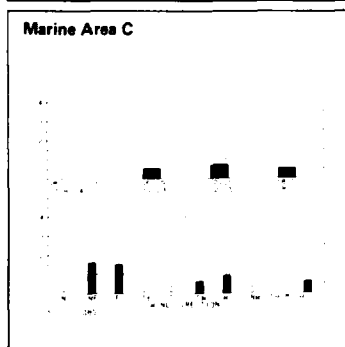
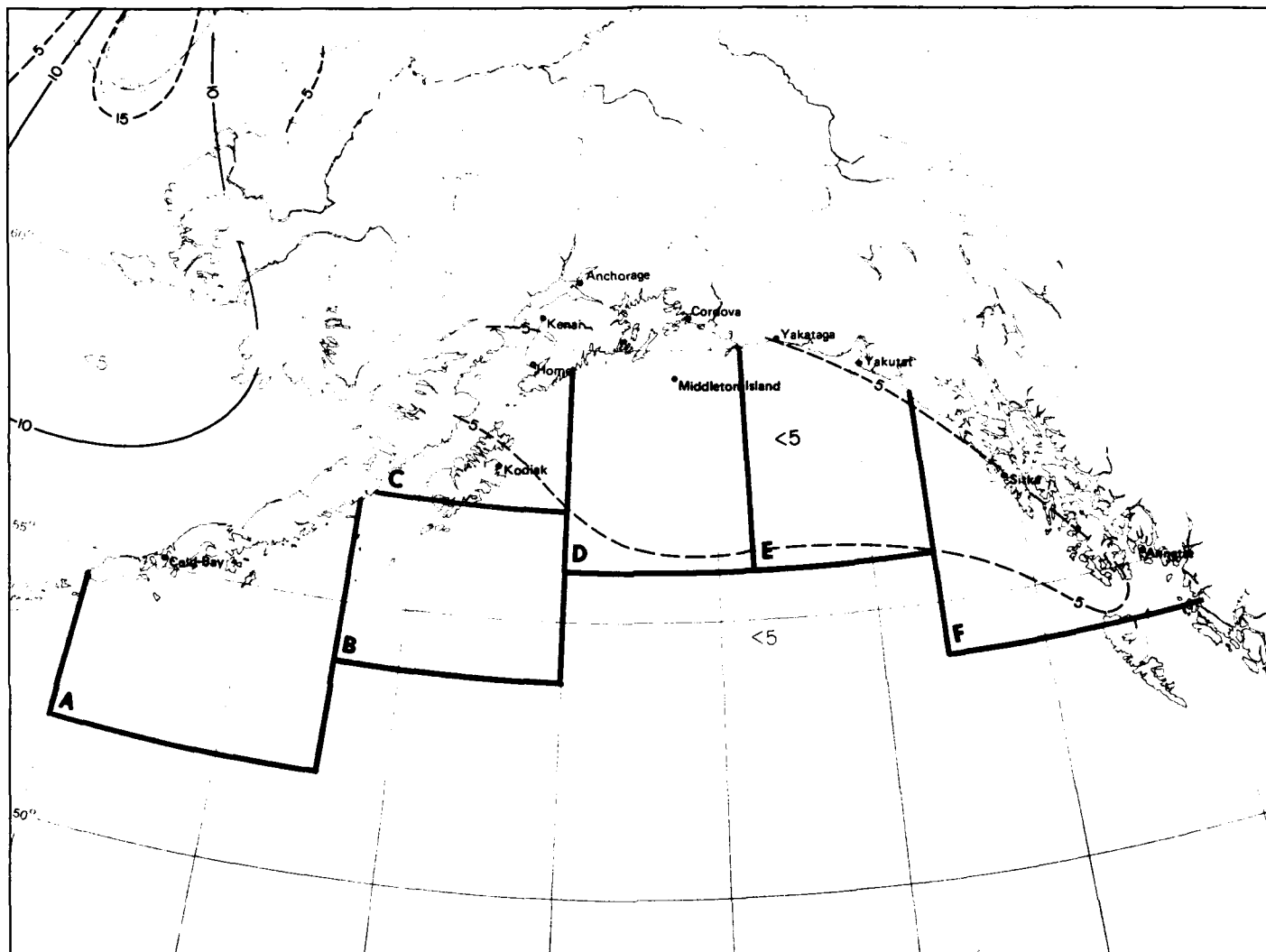
5 Air temperature extremes (°C)

November



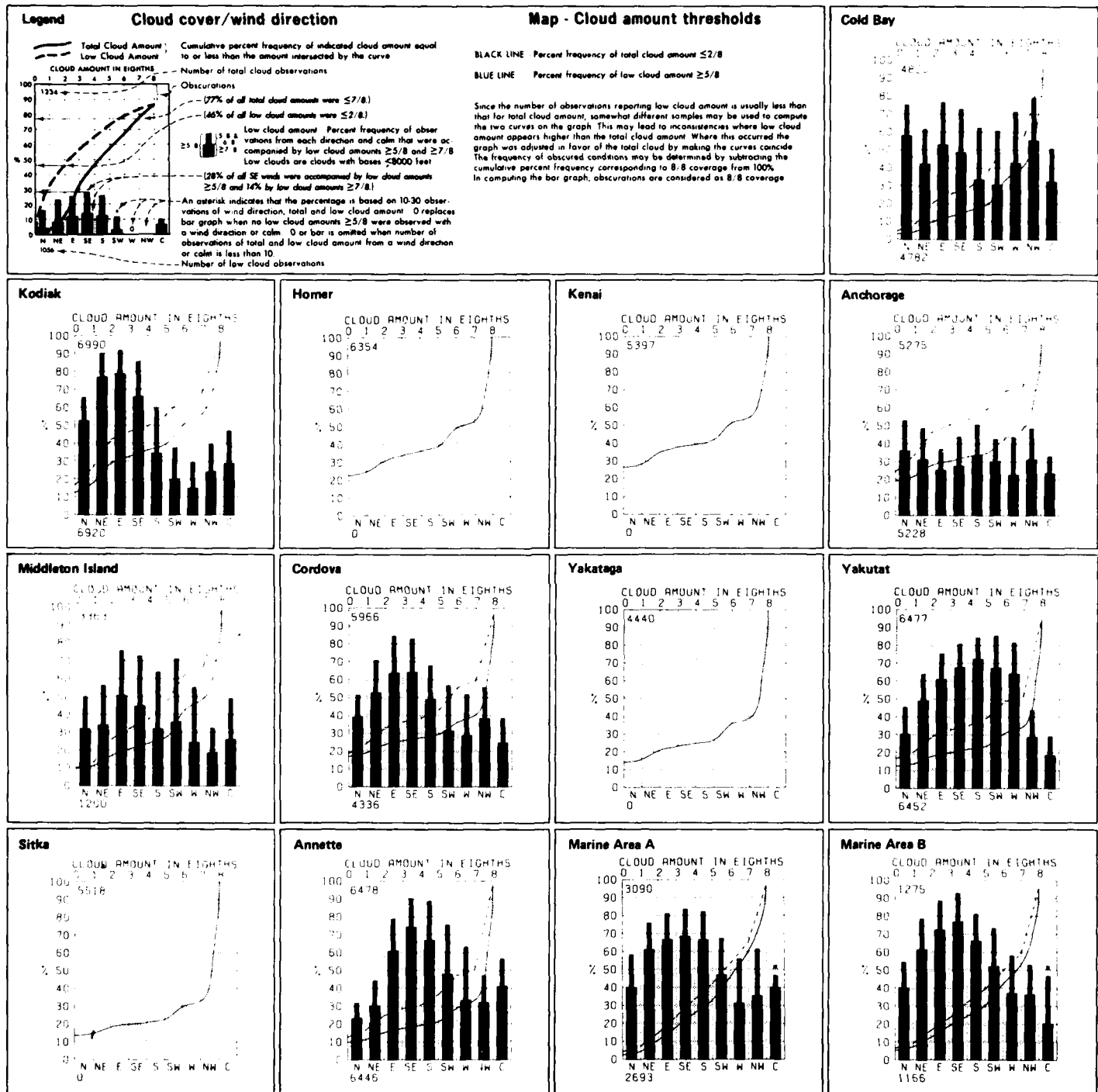
November

6 Fog/time and fog/wind direction



6 Fog

November

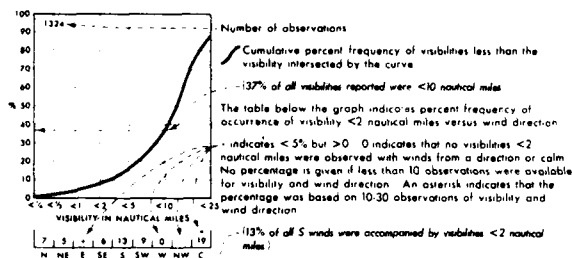


November

7 Cloud cover/wind direction

Legend

Visibility/wind direction

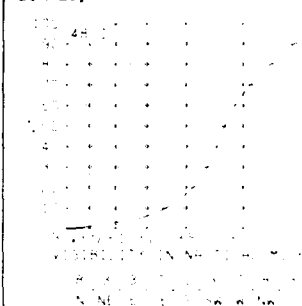


Map - Visibility thresholds

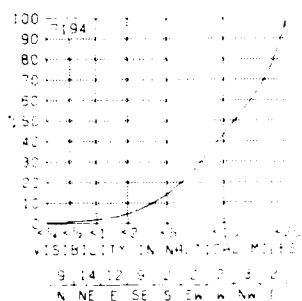
BLACK LINE Percent frequency of visibilities ≥ 5 nautical miles
BLUE LINE Percent frequency of visibilities ≤ 2 nautical miles

The percentage of visibility equal to or greater than a given value can be obtained from the graph by subtracting the cumulative percent frequency of that value from 100%. Visibility at sea is difficult to measure because of the lack of reference points. Also, some observers seem to report reduced visibilities at night because of darkness, though this tendency has abated in recent years. The coarseness of the coding intervals, however, tends to minimize serious biases in the summarized data. Visibilities greater than 25 nm. should be interpreted cautiously because the earth's curvature makes it impossible to see 25 nm. horizontally from the bridges of most ships.

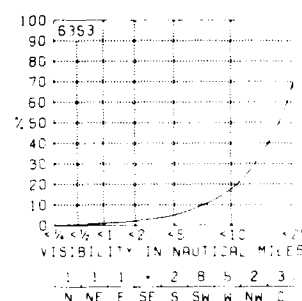
Cold Bay



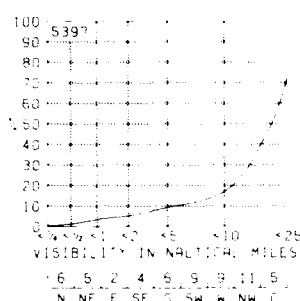
Kodiak



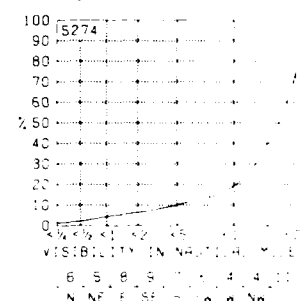
Homer



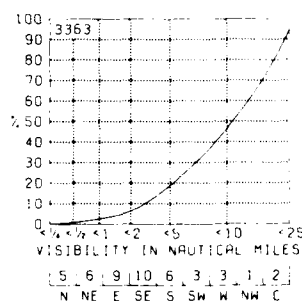
Kenai



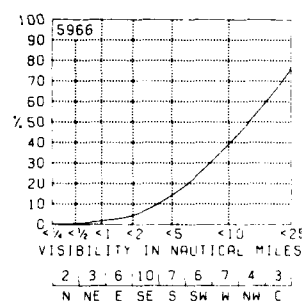
Anchorage



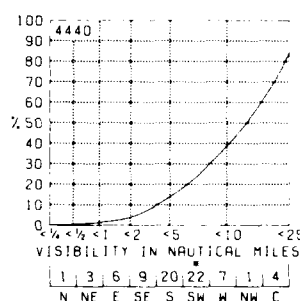
Middleton Island



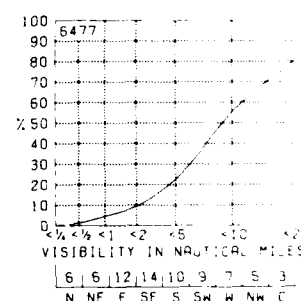
Cordova



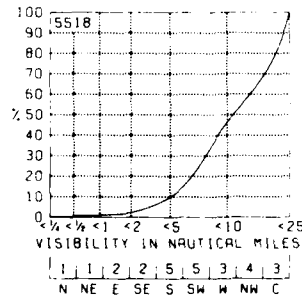
Yakutat



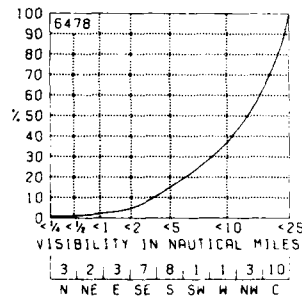
Yakutat



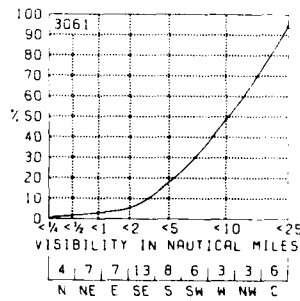
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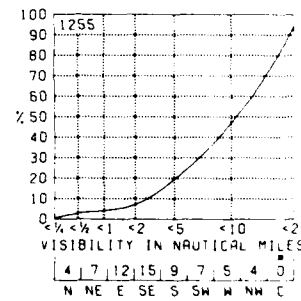
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Marine Area A

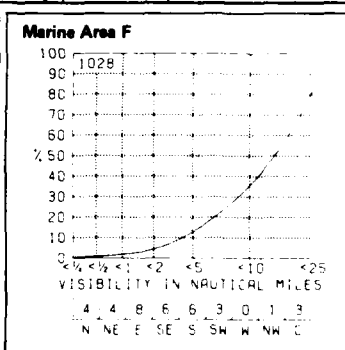
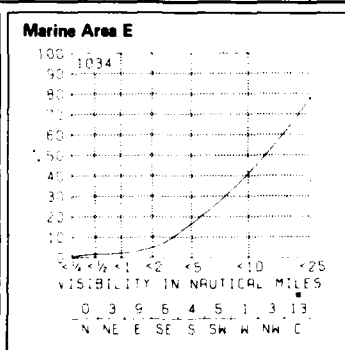
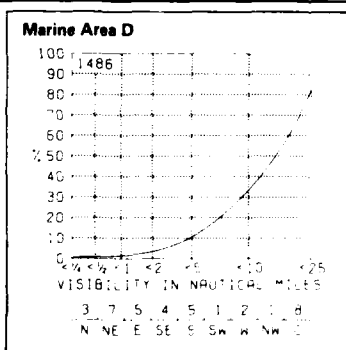
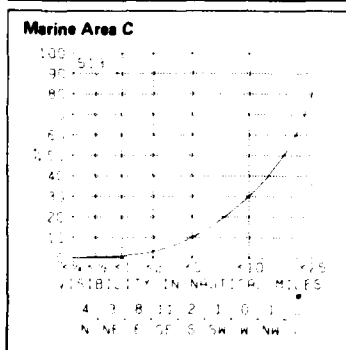
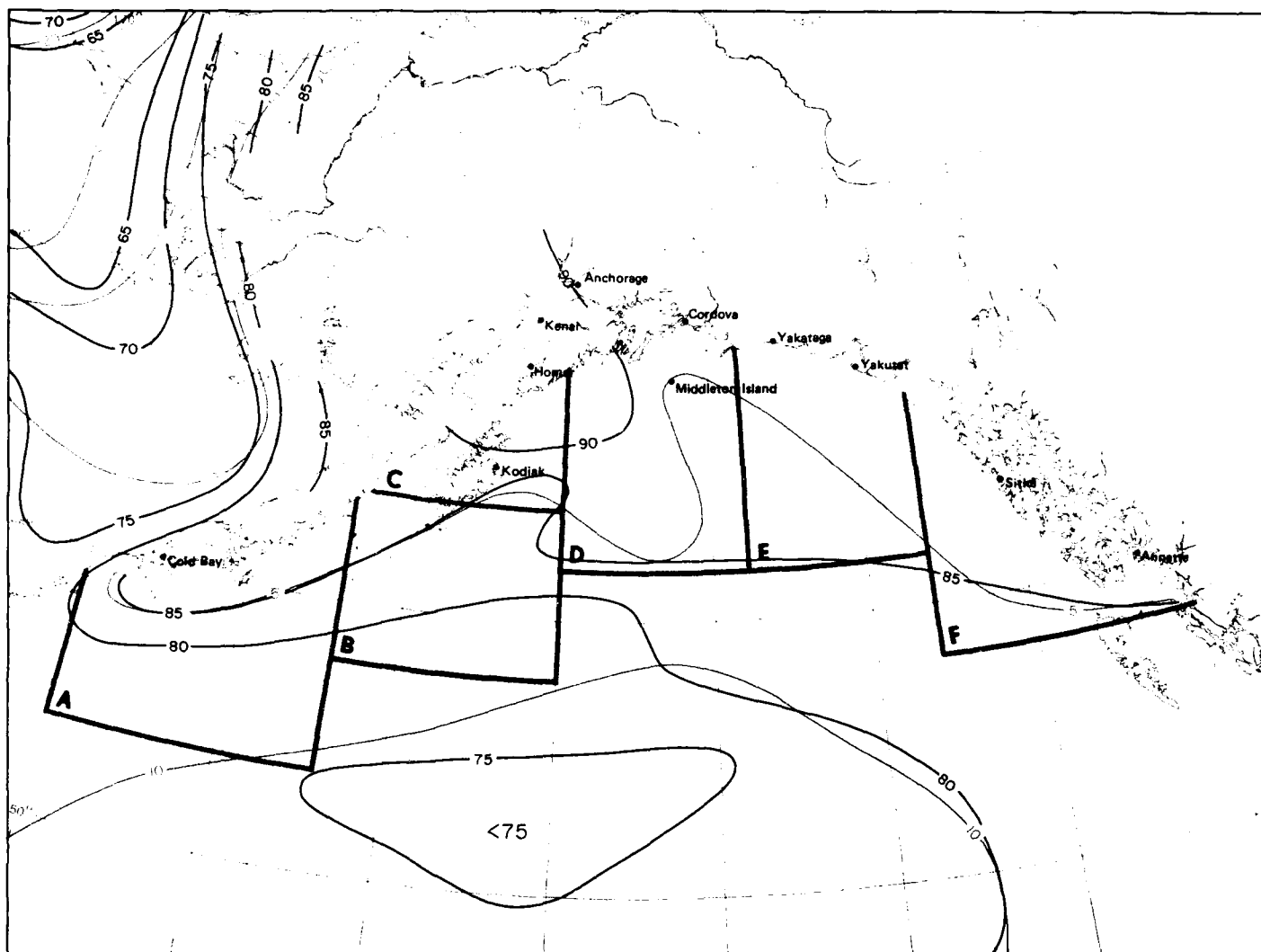


Marine Area B



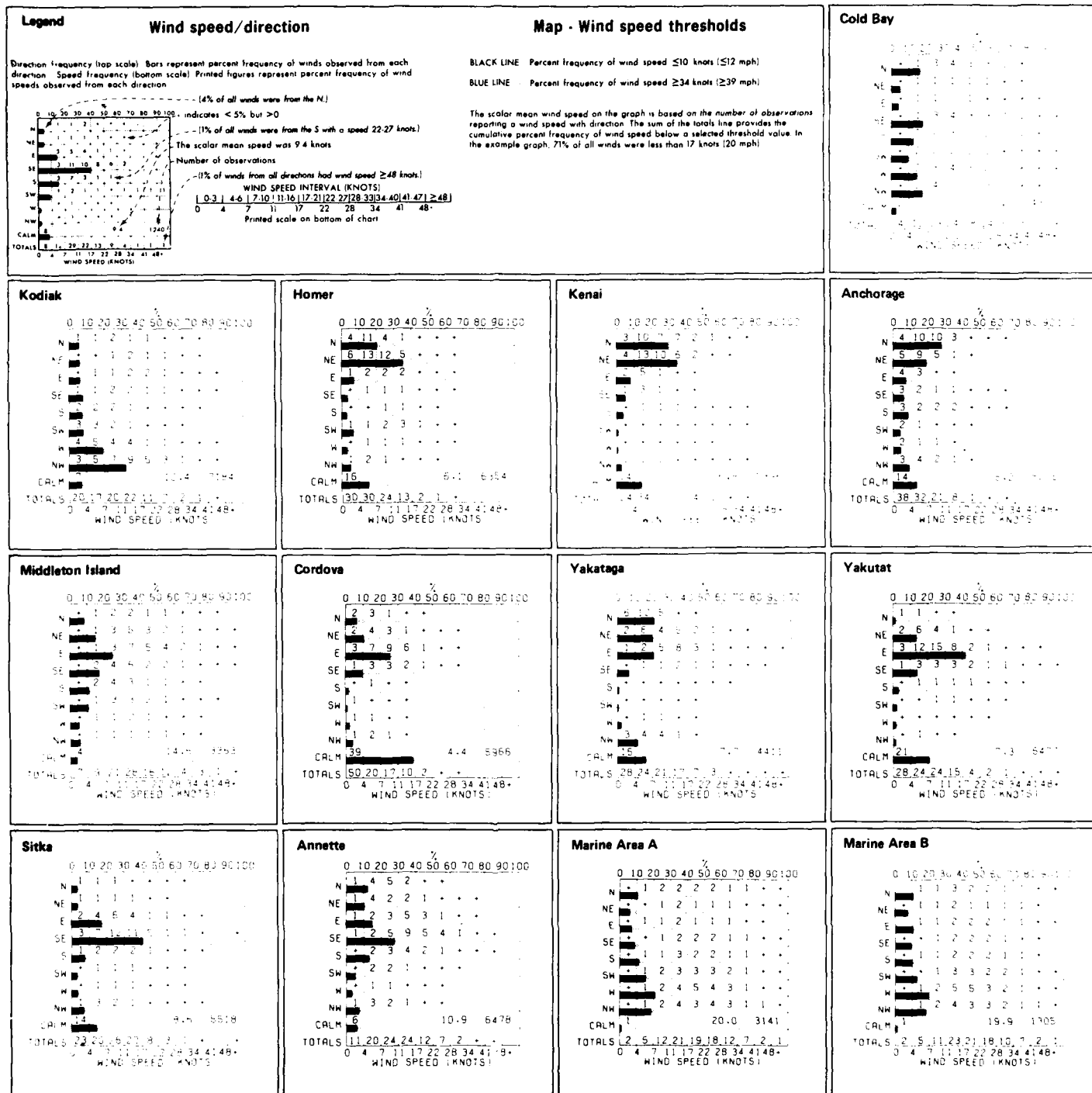
November

8 Visibility/wind direction



8 Visibility thresholds

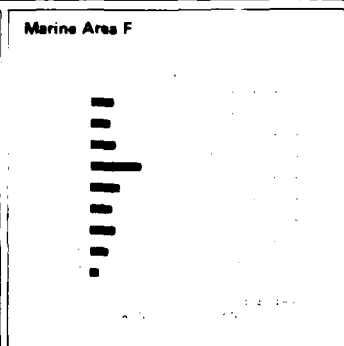
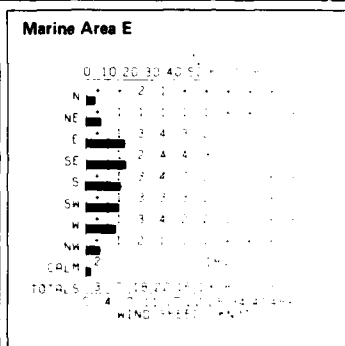
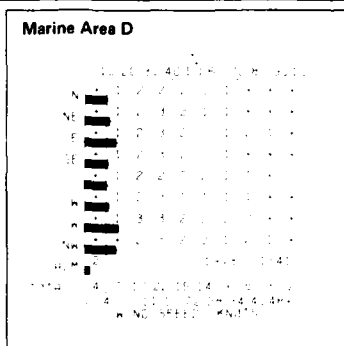
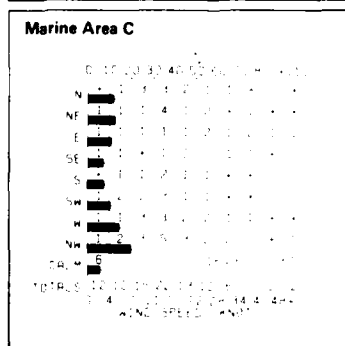
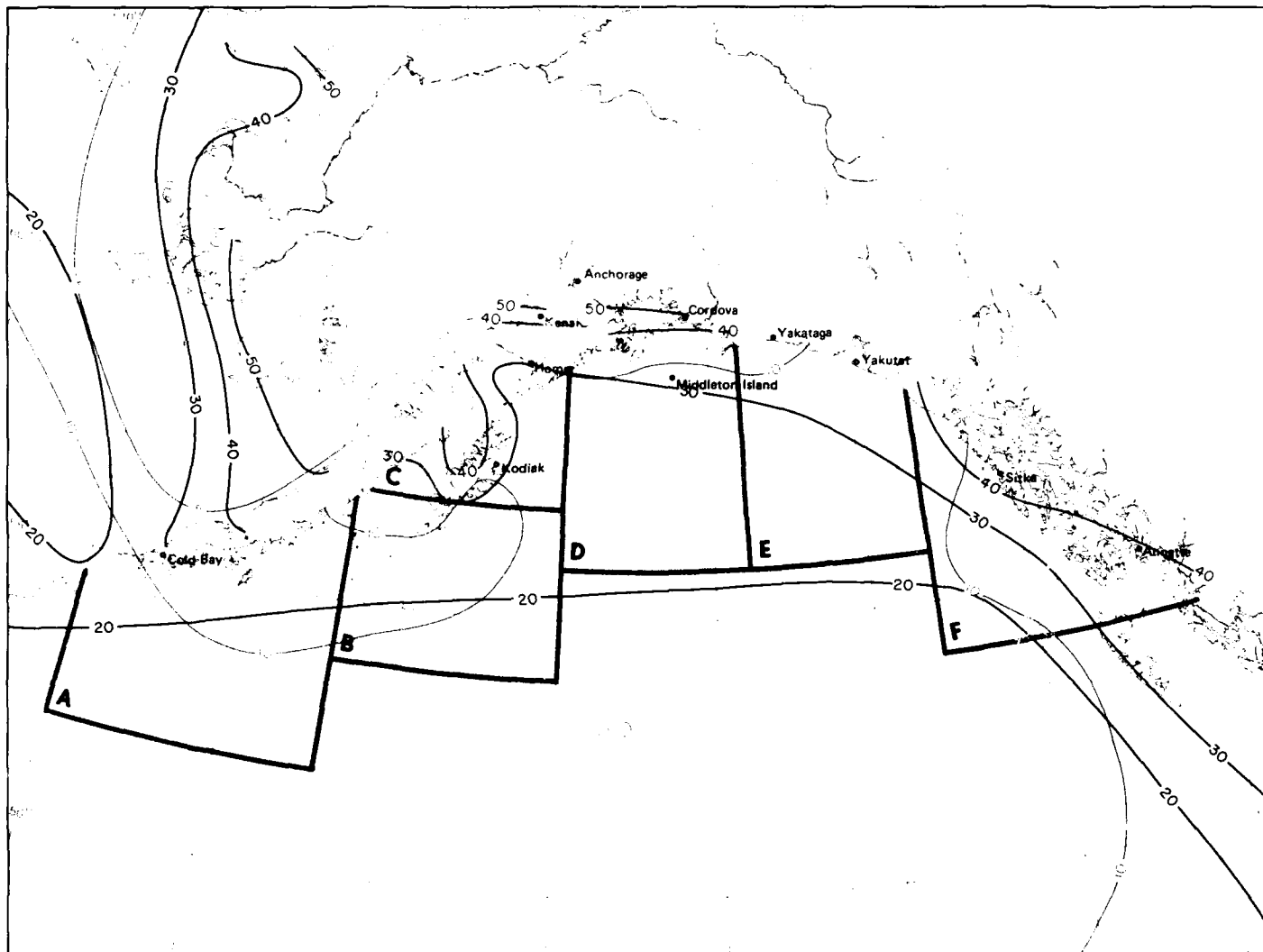
November



November

382

9 Wind speed/direction



9 Wind speed thresholds

November

AD-A081 310

ALASKA UNIV ANCHORAGE ARCTIC ENVIRONMENTAL INFORMATI--ETC P/O 4/2
CLIMATIC ATLAS OF THE OUTER CONTINENTAL SHELF WATERS AND COASTS--ETC(U)
1977 W A BROWER, M F DIAZ, A S PRECHTEL

UNCLASSIFIED

AEIDC-8-77-VOL-1

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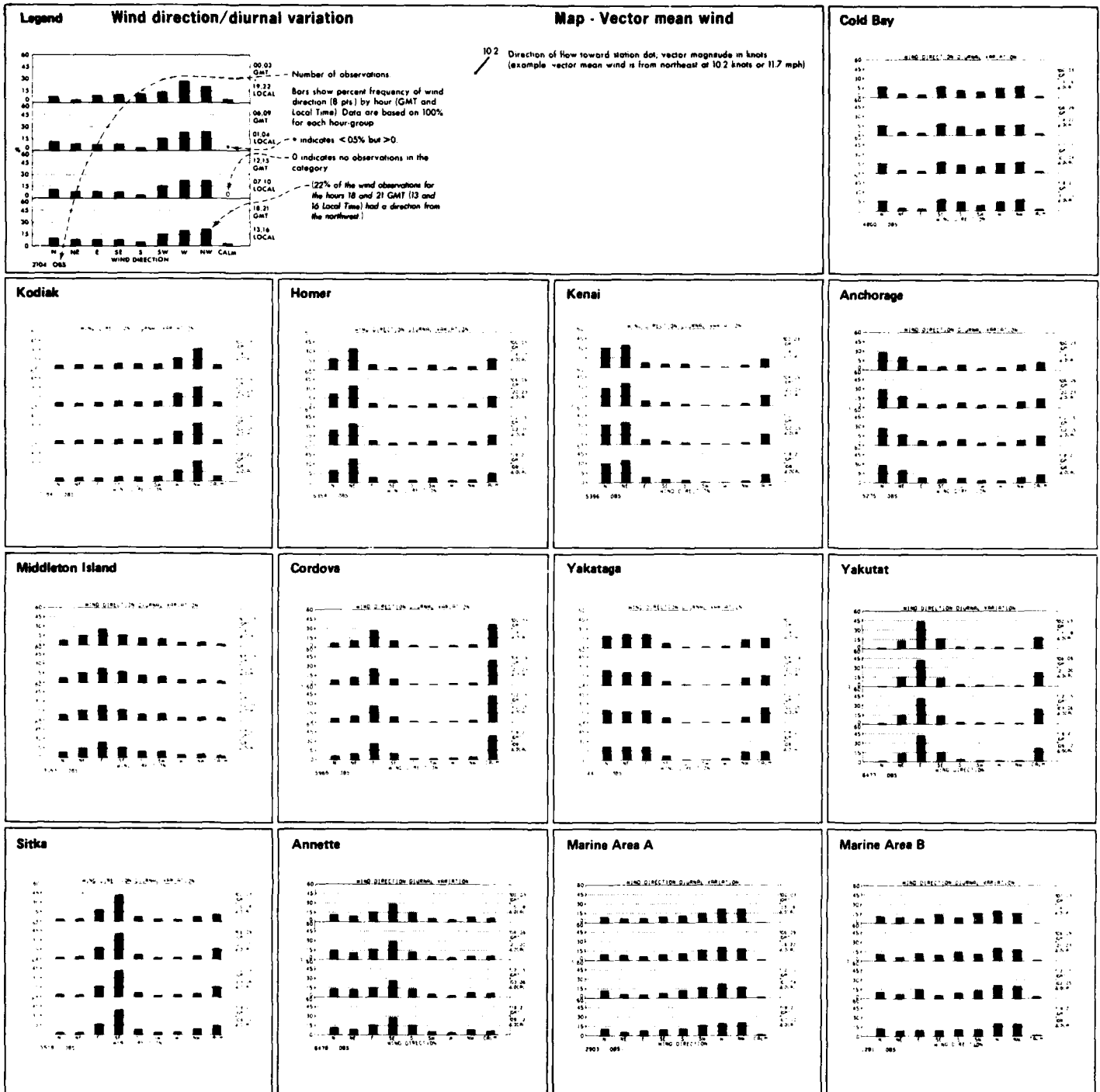
END

DATE

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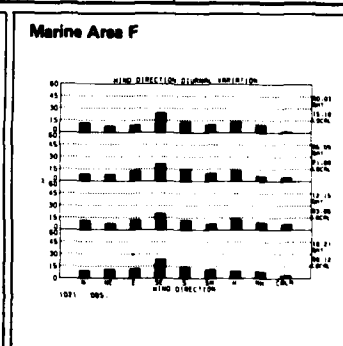
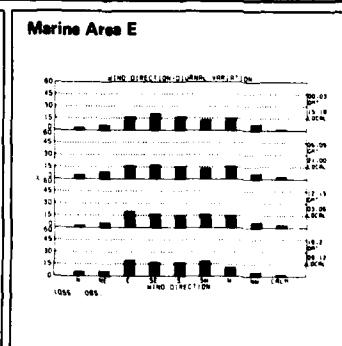
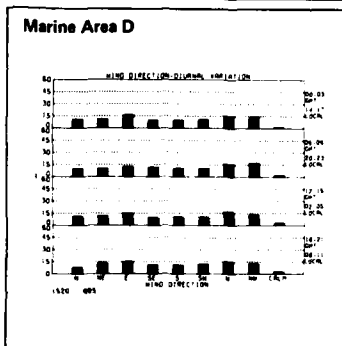
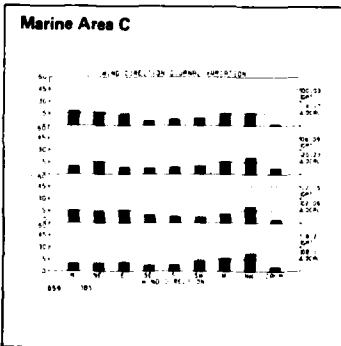
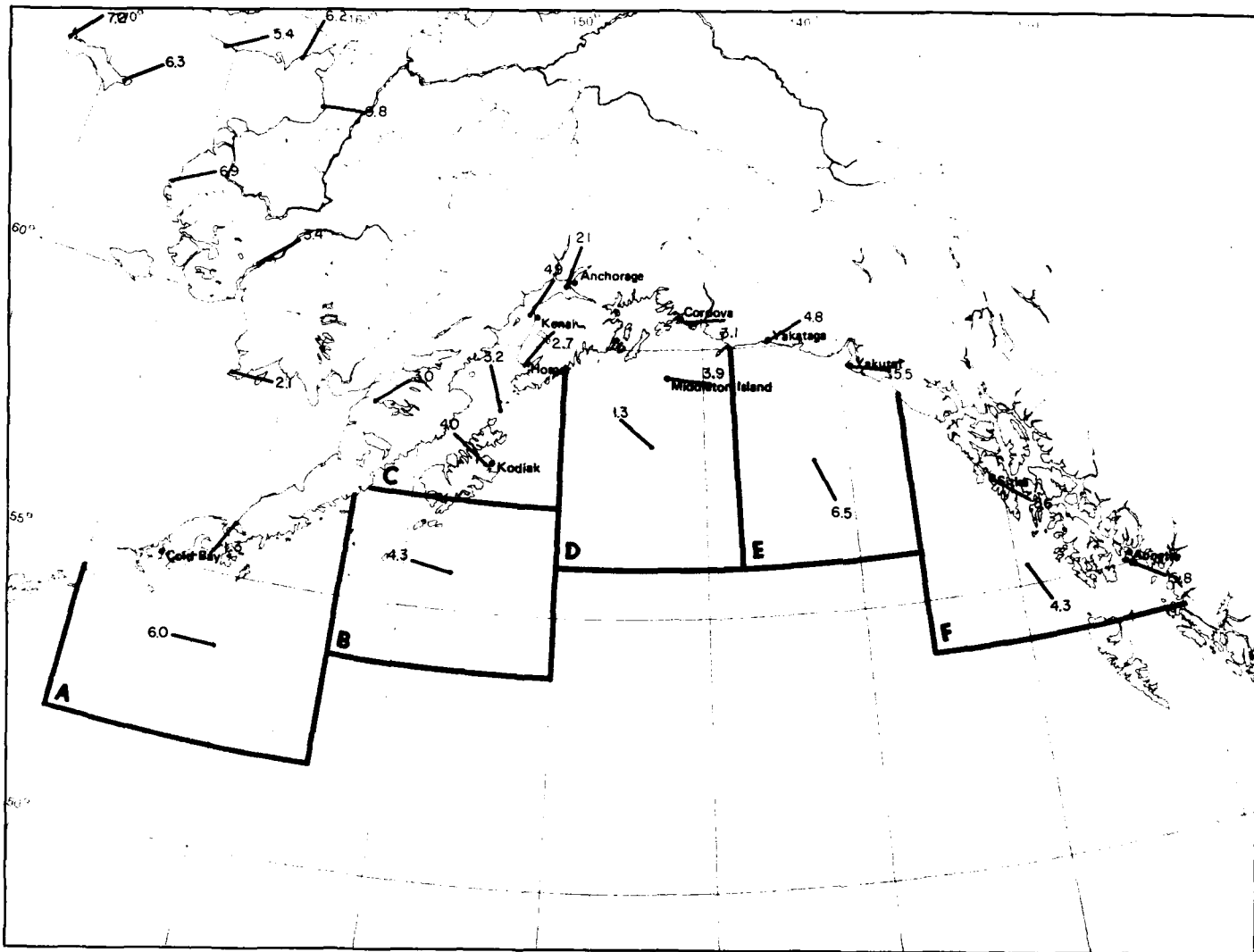
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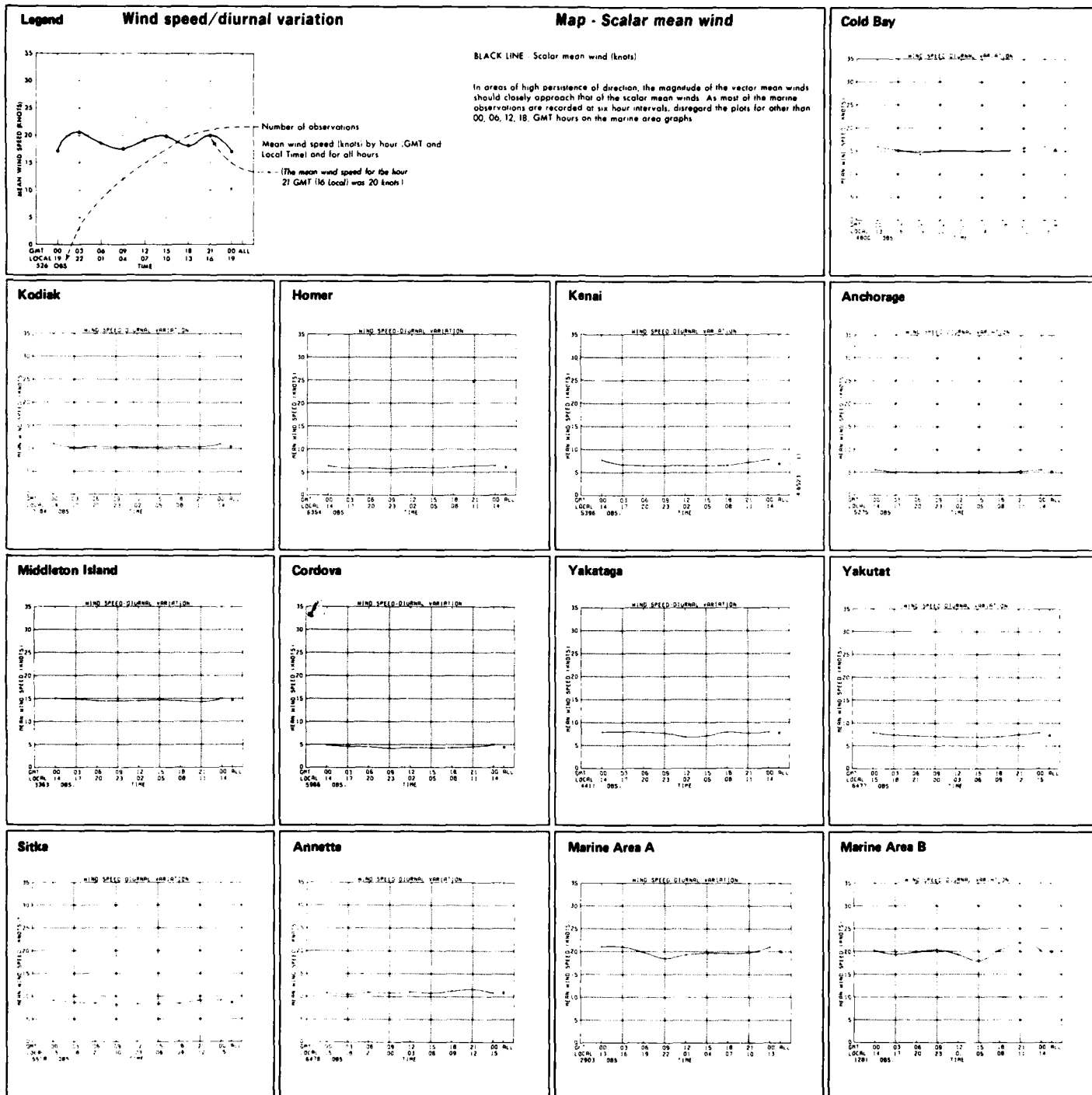
November

10 Wind direction/diurnal variation



10 Vector mean wind

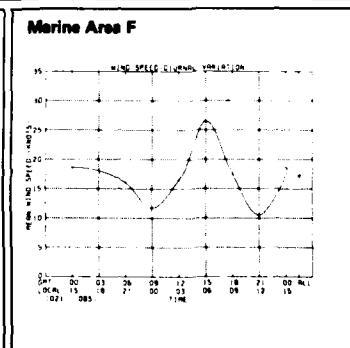
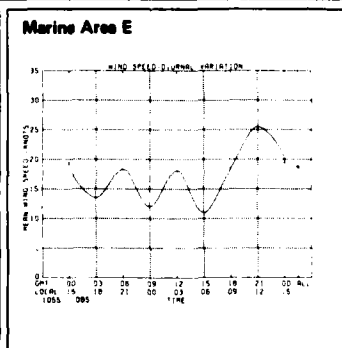
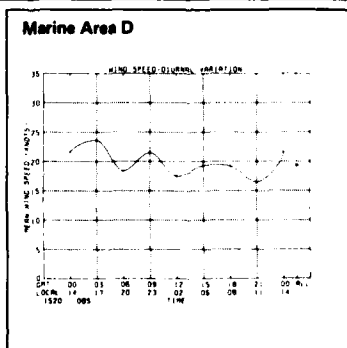
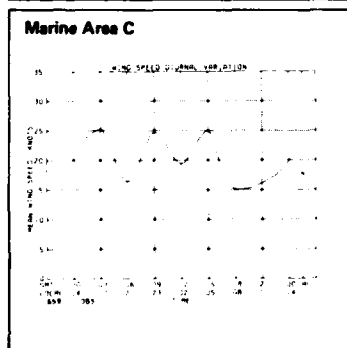
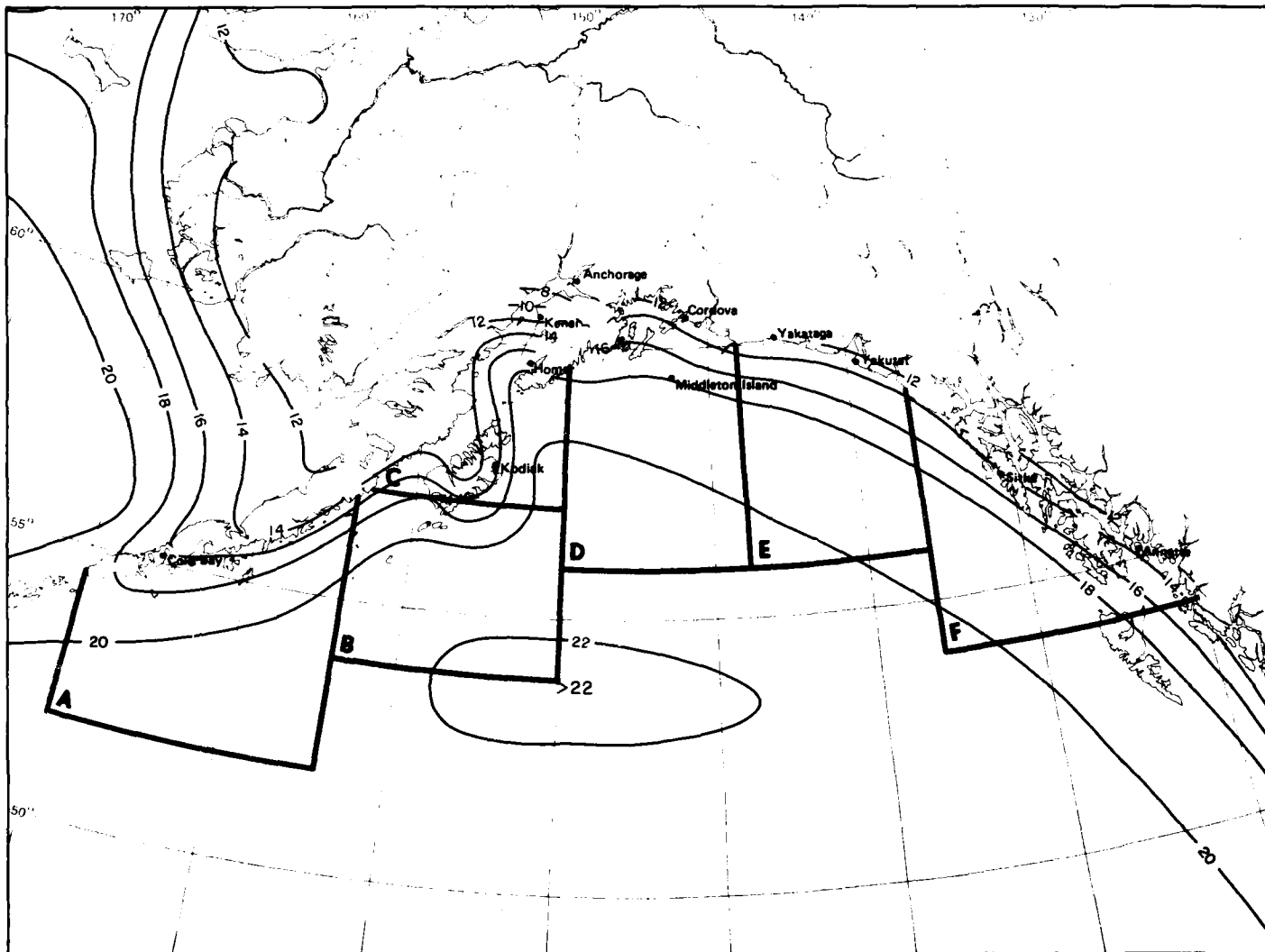
November



November

386

11 Wind speed/diurnal variation



11 Scalar mean wind

November

Legend

Low cloud ceiling/visibility

LOW CLOUD CEILING	VISIBILITY				
	<1/2	1/2<1	1-2	2-5	5-10
50+80	0	0	0	0	1
35+50	0	0	0	0	1
20+35	0	0	0	0	1
10+20	0	0	0	0	1
6+10	0	0	0	0	1
3+6	0	0	0	0	1
1.5+3	0	0	0	0	1
0+1.5	0	0	0	0	1

Percent frequency of simultaneous occurrence of specified low cloud ceilings (hundreds of feet) and visibilities (nautical miles).
 Low cloud ceiling heights are estimated from the height of low clouds (h) when low cloud amount (N_h) is $\geq 5/8$.
 Observations are included under ceiling '0' <1'.
 N.C. (no ceiling) includes bases of clouds ≥ 8000 feet as well as occurrences of N_h <5/8.
 -12% of all observations reported ceiling ≥ 1000 but <2000 feet simultaneously with visibility ≥ 5 but <10 nautical miles.
 * indicates <5% but >0.
 --- Number of observations.

Map - Low cloud ceiling and visibility thresholds

BLACK LINE Percent frequency of low cloud ceiling ≥ 1000 feet (or no low cloud ceiling) and visibility ≥ 5 nautical miles.
 BLUE LINE Percent frequency of low cloud ceiling <600 feet and/or visibility <2 nautical miles.

Cold Bay

LOW CLOUD CEILING	VISIBILITY				
	<1/2	1/2<1	1-2	2-5	5-10
NC	+	+	+	1	11
50+80	0	0	0	0	1
35+50	+	+	+	+	3
20+35	+	+	+	2	14
10+20	+	+	+	3	13
6+10	+	+	1	3	5
3+6	+	+	1	2	2
1.5+3	0	+	+	+	0
0+1.5	1	1	1	+	0

4782

Kodiak

LOW CLOUD CEILING	VISIBILITY				
	<1/2	1/2<1	1-2	2-5	5-10
NC	+	+	+	+	10
50+80	0	0	0	+	1
35+50	0	0	0	+	1
20+35	0	+	+	+	1
10+20	0	+	1	3	7
6+10	+	+	+	2	2
3+6	+	+	+	2	1
1.5+3	0	+	+	0	+
0+1.5	1	1	1	1	0

6919

Homer

LOW CLOUD CEILING	VISIBILITY				
	<1/2	1/2<1	1-2	2-5	5-10
NC	0	0	0	0	1
50+80	0	0	0	0	5
35+50	0	0	0	0	8
20+35	0	0	0	1	4
10+20	0	0	0	3	1
6+10	0	0	0	1	0
3+6	0	0	0	0	1
1.5+3	0	0	0	0	0
0+1.5	1	0	+	1	0

312

Kenai

LOW CLOUD CEILING	VISIBILITY				
	<1/2	1/2<1	1-2	2-5	5-10
NC	0	0	0	0	3
50+80	0	0	0	0	4
35+50	0	0	0	0	3
20+35	+	+	+	1	4
10+20	0	0	0	1	2
6+10	0	+	0	0	0
3+6	0	0	0	0	0
1.5+3	0	0	0	0	0
0+1.5	2	1	1	+	0

240

Anchorage

LOW CLOUD CEILING	VISIBILITY				
	<1/2	1/2<1	1-2	2-5	5-10
NC	1	+	+	1	2
50+80	0	0	+	+	9
35+50	0	0	+	+	5
20+35	0	+	+	+	1
10+20	+	+	+	1	1
6+10	+	+	+	1	1
3+6	+	+	+	1	2
1.5+3	+	+	+	+	+
0+1.5	1	1	1	1	0

5227

Middleton Island

LOW CLOUD CEILING	VISIBILITY				
	<1/2	1/2<1	1-2	2-5	5-10
NC	0	0	+	1	2
50+80	0	0	0	0	1
35+50	0	0	0	0	1
20+35	0	+	+	+	6
10+20	0	0	0	3	1
6+10	0	+	2	5	4
3+6	+	+	+	1	+
1.5+3	0	0	0	0	0
0+1.5	+	2	2	1	0

1200

Cordova

LOW CLOUD CEILING	VISIBILITY				
	<1/2	1/2<1	1-2	2-5	5-10
NC	+	+	+	1	2
50+80	0	0	0	+	4
35+50	0	0	0	+	1
20+35	0	+	+	1	10
10+20	0	+	1	5	9
6+10	0	+	+	1	1
3+6	0	+	+	+	+
1.5+3	0	+	0	0	0
0+1.5	+	1	1	1	0

4336

Yakutat

LOW CLOUD CEILING	VISIBILITY				
	<1/2	1/2<1	1-2	2-5	5-10
NC	0	0	0	0	3
50+80	0	0	+	0	6
35+50	0	0	0	1	2
20+35	0	0	0	6	6
10+20	0	0	3	7	4
6+10	0	+	0	0	0
3+6	0	0	0	0	0
1.5+3	0	0	0	0	0
0+1.5	2	3	3	3	1

235

Yakutat

LOW CLOUD CEILING	VISIBILITY				
	<1/2	1/2<1	1-2	2-5	5-10
NC	+	+	+	1	7
50+80	0	0	+	0	1
35+50	0	0	0	+	1
20+35	0	+	+	1	6
10+20	0	+	1	5	13
6+10	+	+	1	4	4
3+6	+	+	1	2	2
1.5+3	0	+	+	+	+
0+1.5	1	2	+	+	0

6452

Sitka

LOW CLOUD CEILING	VISIBILITY				
	<1/2	1/2<1	1-2	2-5	5-10
NC	0	0	0	0	6
50+80	0	0	0	0	1
35+50	0	0	0	0	9
20+35	0	0	0	9	18
10+20	0	0	4	10	4
6+10	0	+	2	1	0
3+6	0	0	0	+	0
1.5+3	0	0	0	0	0
0+1.5	1	0	1	3	0

240

Annette

LOW CLOUD CEILING	VISIBILITY				
	<1/2	1/2<1	1-2	2-5	5-10
NC	+	+	+	+	1
50+80	0	0	0	0	2
35+50	0	+	0	+	1
20+35	0	+	+	+	4
10+20	0	+	+	4	12
6+10	+	+	1	3	3
3+6	+	+	1	2	1
1.5+3	0	+	+	+	+
0+1.5	1	+	+	1	0

6446

Marine Area A

LOW CLOUD CEILING	VISIBILITY				
	<1/2	1/2<1	1-2	2-5	5-10
NC	0	0	+	1	2
50+80	0	0	0	+	1
35+50	0	+	+	1	3
20+35	0	+	+	1	5
10+20	+	+	+	3	8
6+10	+	+	1	3	6
3+6	0	+	+	2	2
1.5+3	+	+	+	+	+
0+1.5	1	+	1	1	+

2507

Marine Area B

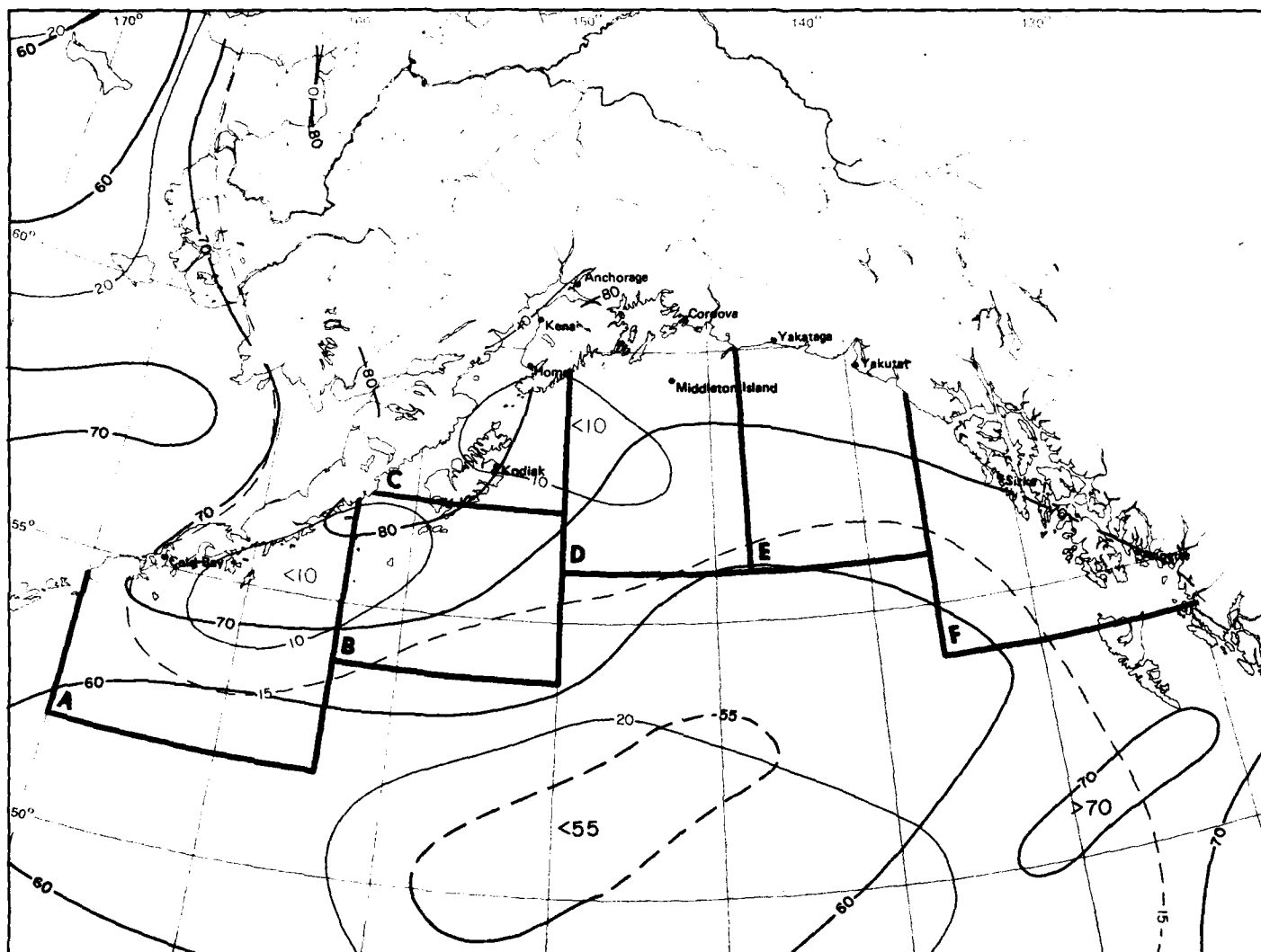
LOW CLOUD CEILING	VISIBILITY				
	<1/2	1/2<1	1-2	2-5	5-10
NC	0	0	+	1	4
50+80	0	0	0	+	0
35+50	0	0	+	1	2
20+35	+	+	+	3	9
10+20	+	+	1	2	6
6+10	1	+	+	2	4
3+6	0	+	+	1	1
1.5+3	0	0	0	+	+
0+1.5	2	1	1	1	0

1103

November

308

12 Low cloud ceiling/visibility



Marine Area C

VISIBILITY	
1/2 1/4 1/8 1/16 1/32 1/64 1/128 1/256	1 2 4 8 16 32 64 128
NC	0 0 0 0 0 0 0 0
50*80	0 0 0 0 0 0 0 0
35*50	0 0 0 0 0 0 0 0
20*35	0 0 0 0 0 0 0 0
10*20	0 0 0 0 0 0 0 0
6*10	0 0 0 0 0 0 0 0
3*6	0 0 0 0 0 0 0 0
1.5*3	0 0 0 0 0 0 0 0
0*1.5	0 0 0 0 0 0 0 0
	476

Marine Area D

VISIBILITY	
1/2 1/4 1/8 1/16 1/32 1/64 1/128 1/256	1 2 4 8 16 32 64 128
NC	0 0 0 0 0 0 0 0
50*80	0 0 0 0 0 0 0 0
35*50	0 0 0 0 0 0 0 0
20*35	0 0 0 0 0 0 0 0
10*20	0 0 0 0 0 0 0 0
6*10	0 0 0 0 0 0 0 0
3*6	0 0 0 0 0 0 0 0
1.5*3	0 0 0 0 0 0 0 0
0*1.5	0 0 0 0 0 0 0 0
	1189

Marine Area E

VISIBILITY	
1/2 1/4 1/8 1/16 1/32 1/64 1/128 1/256	1 2 4 8 16 32 64 128
NC	0 0 0 0 0 0 0 0
50*80	0 0 0 0 0 0 0 0
35*50	0 0 0 0 0 0 0 0
20*35	0 0 0 0 0 0 0 0
10*20	0 0 0 0 0 0 0 0
6*10	0 0 0 0 0 0 0 0
3*6	0 0 0 0 0 0 0 0
1.5*3	0 0 0 0 0 0 0 0
0*1.5	0 0 0 0 0 0 0 0
	776

Marine Area F

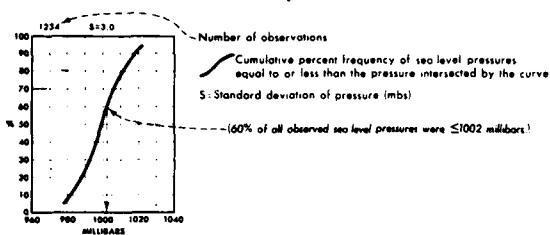
VISIBILITY	
1/2 1/4 1/8 1/16 1/32 1/64 1/128 1/256	1 2 4 8 16 32 64 128
NC	0 0 0 0 0 0 0 0
50*80	0 0 0 0 0 0 0 0
35*50	0 0 0 0 0 0 0 0
20*35	0 0 0 0 0 0 0 0
10*20	0 0 0 0 0 0 0 0
6*10	0 0 0 0 0 0 0 0
3*6	0 0 0 0 0 0 0 0
1.5*3	0 0 0 0 0 0 0 0
0*1.5	0 0 0 0 0 0 0 0
	776

12 Low cloud ceiling and visibility thresholds

November

Legend

Sea level pressure

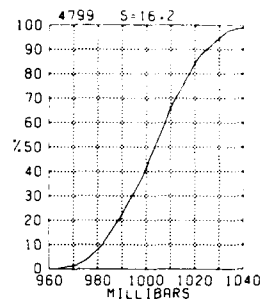


Map - Mean sea level pressure

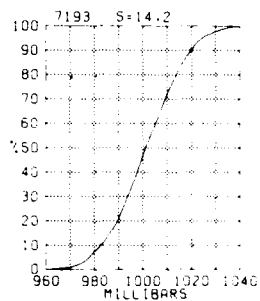
BLACK LINE - Mean sea level pressure (millibars)

Sea level pressure is one of the most frequently recorded elements but one of the least accurate because of instrument and coding errors. Despite the inaccuracies of the individual readings, however, the large-scale patterns and mean gradients of the isopleth analyses are relatively accurate.

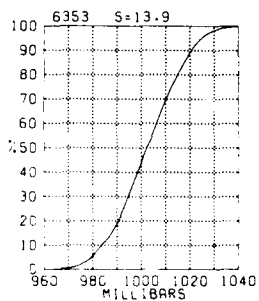
Cold Bay



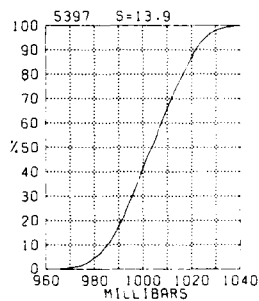
Kodiak



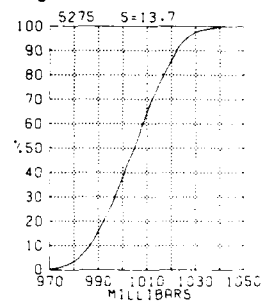
Homer



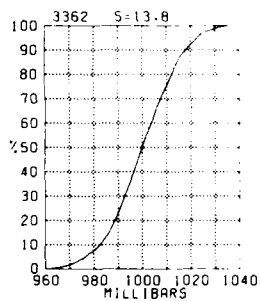
Kenai



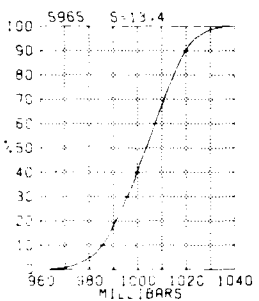
Anchorage



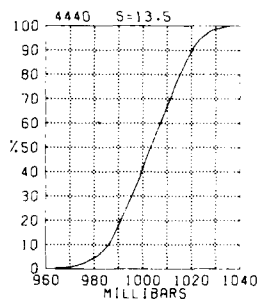
Middleton Island



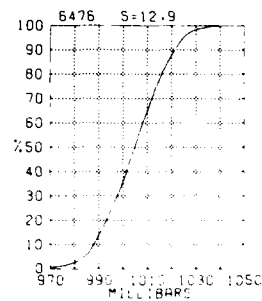
Cordova



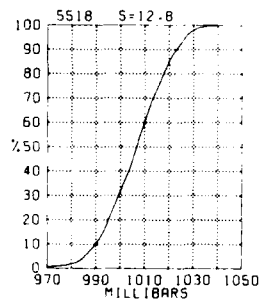
Yakutat



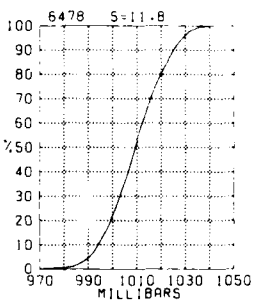
Yakutat



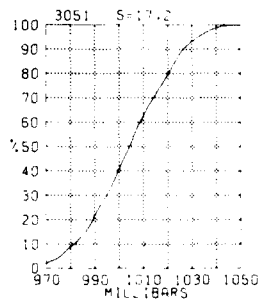
Sitka



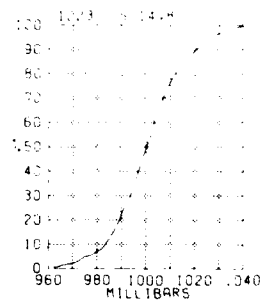
Annette



Marine Area A

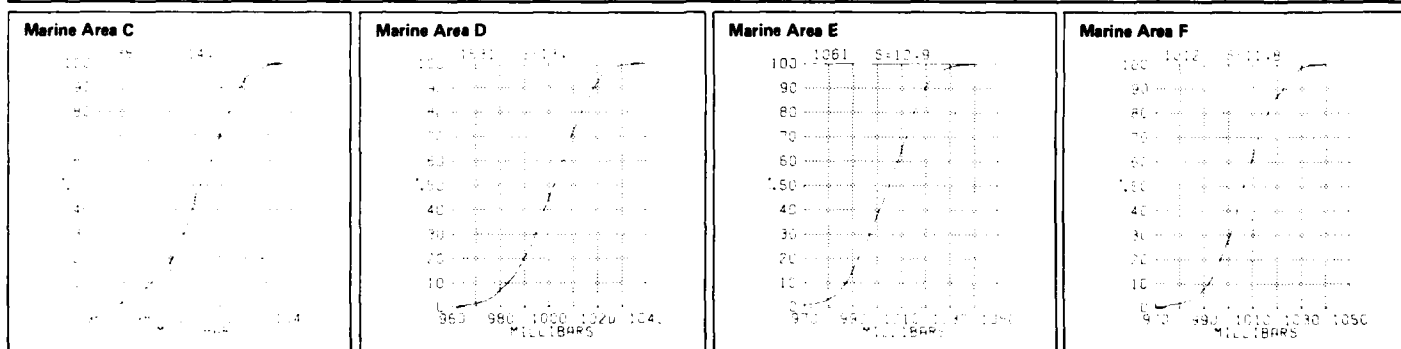
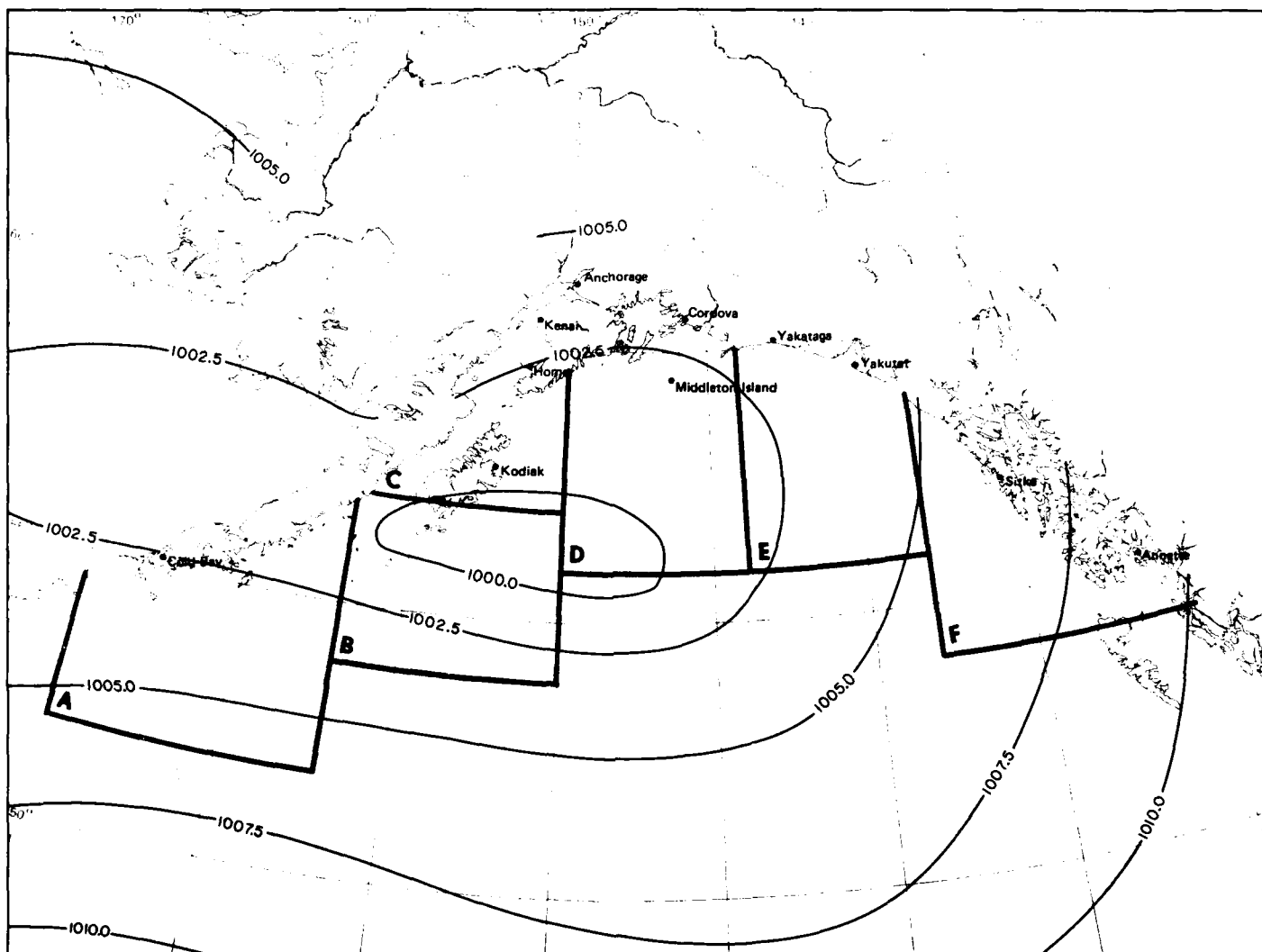


Marine Area B



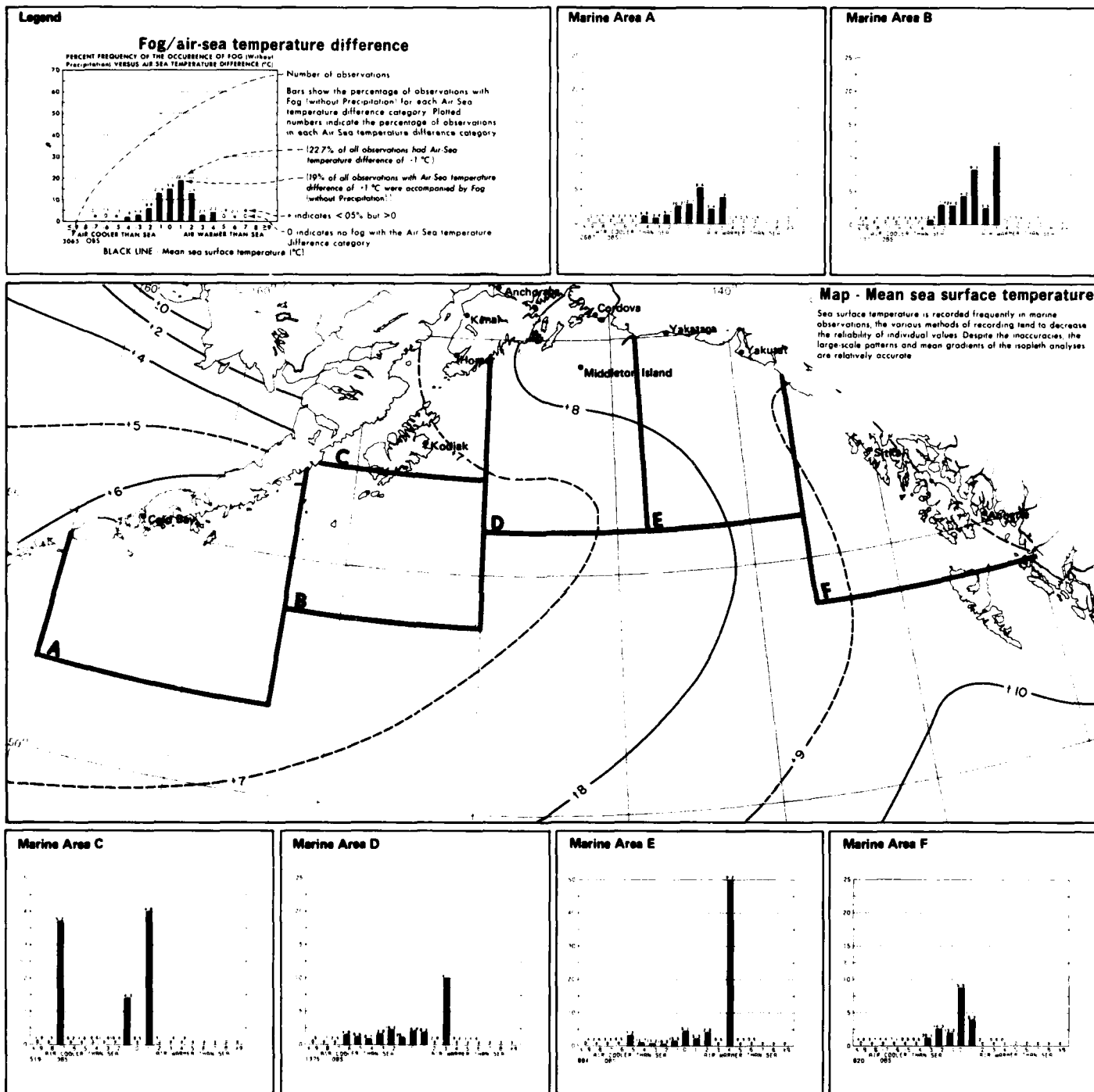
November

13 Sea level pressure



13 Mean sea level pressure

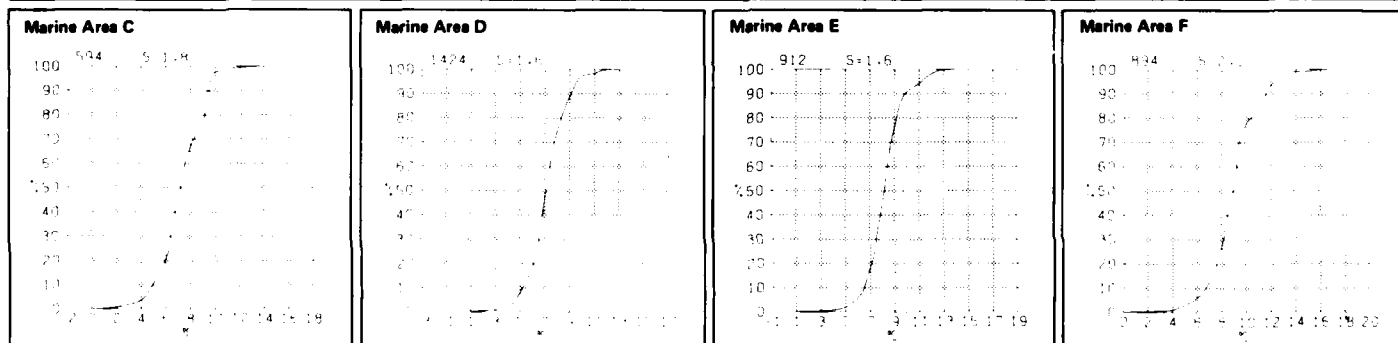
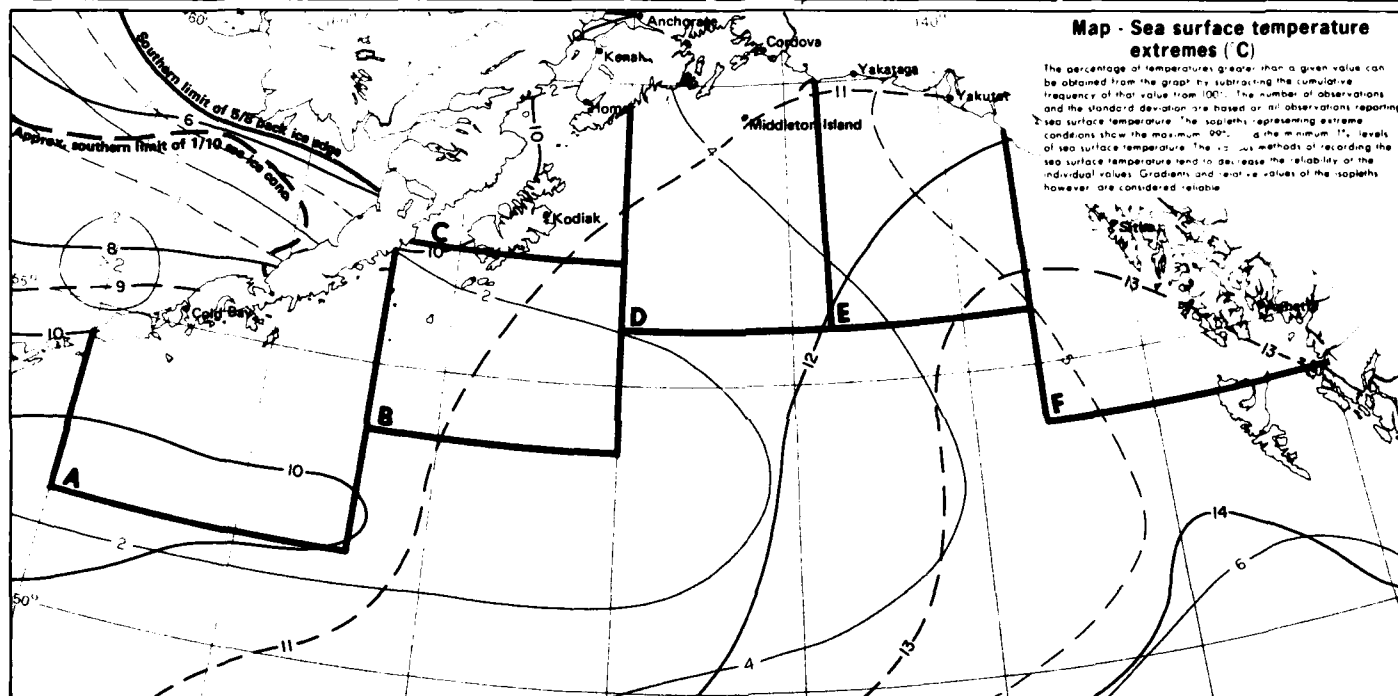
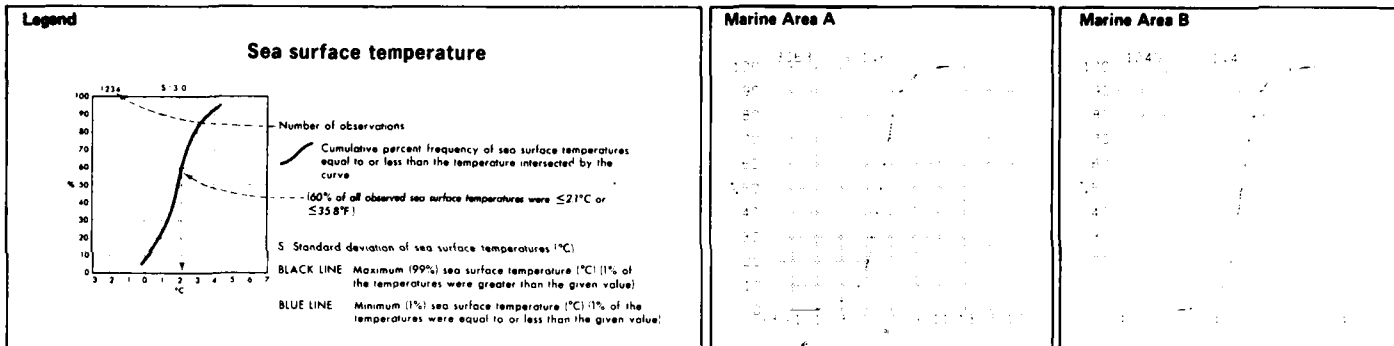
November



November

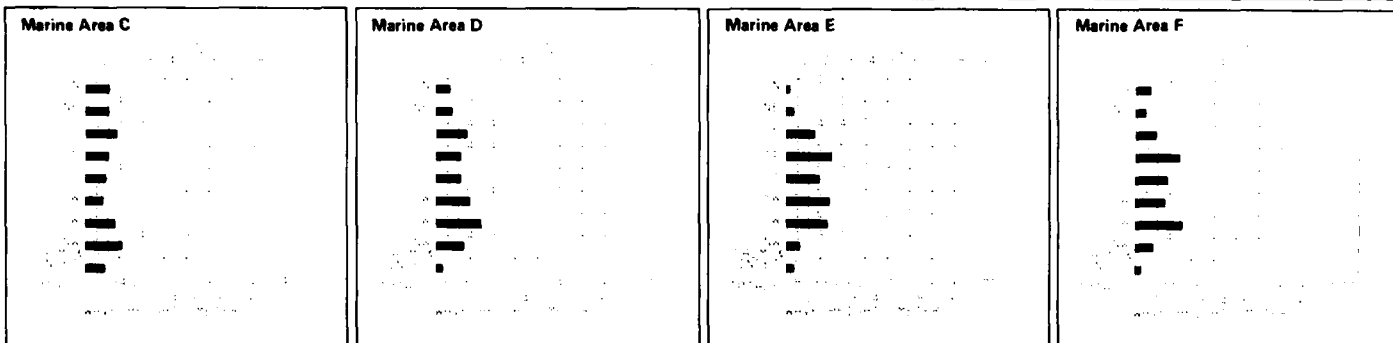
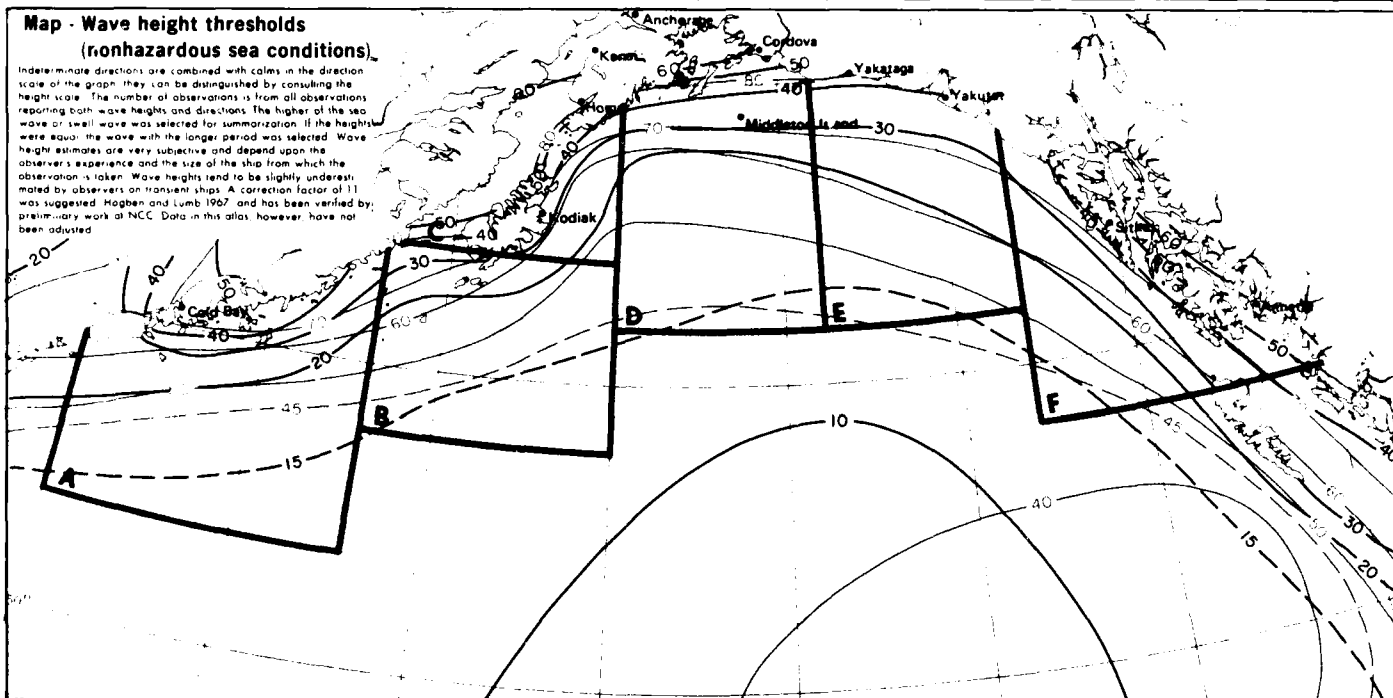
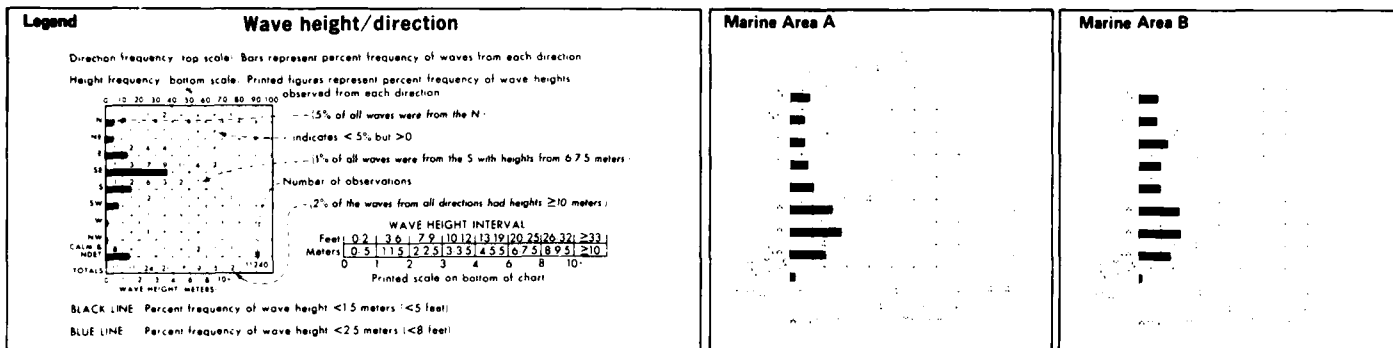
392

14 Fog/air-sea temperature difference
Mean sea surface temperature



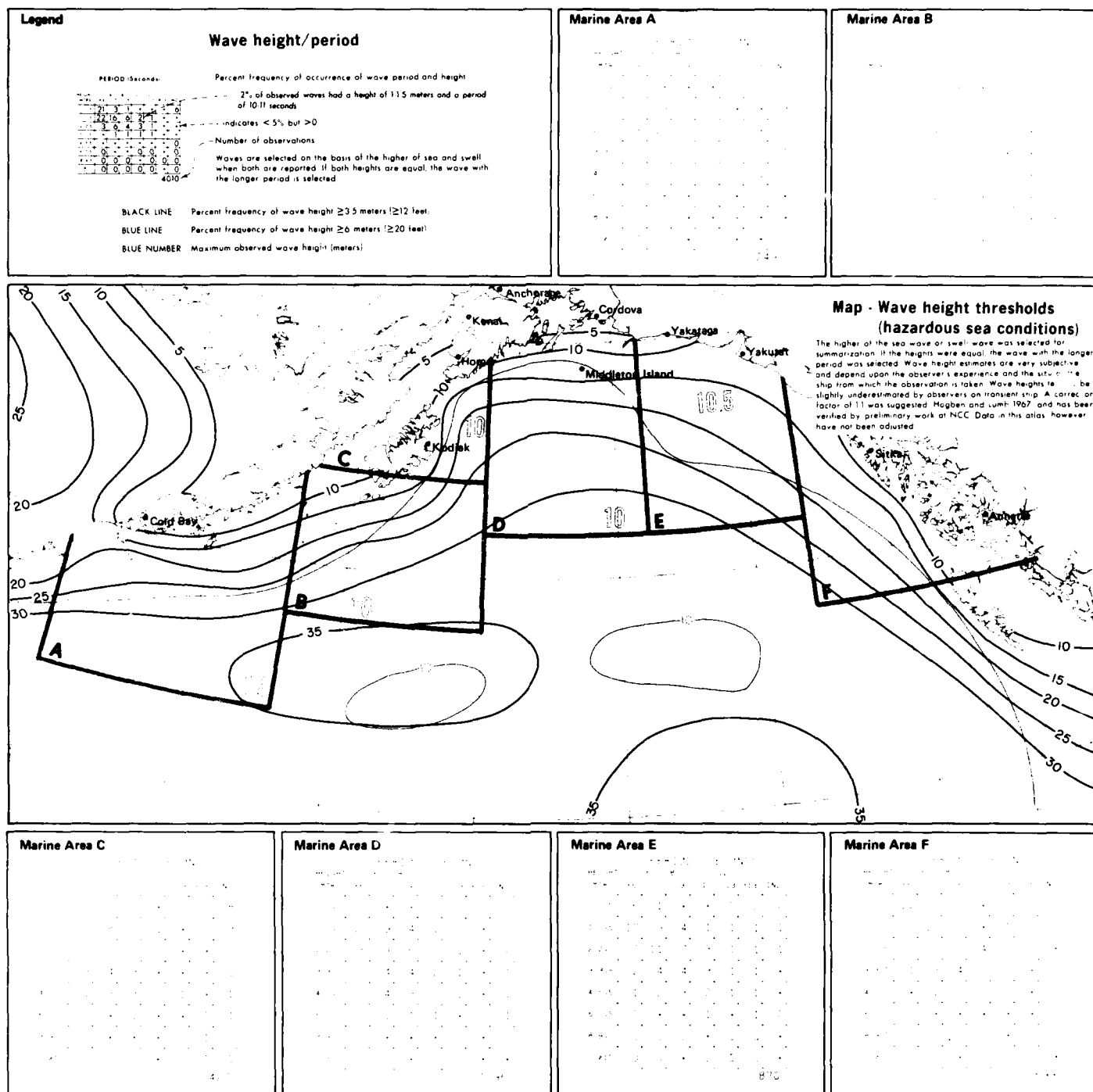
15 Sea surface temperature extremes

November



November

16 Wave height thresholds (nonhazardous)

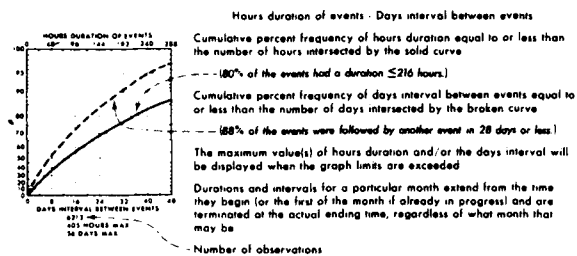


17 Wave height thresholds (hazardous)

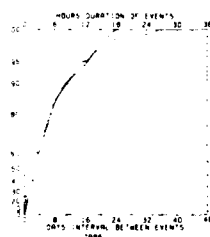
November

Legend

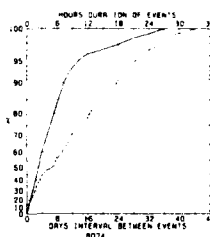
Persistence of visibility <2 n. mi.



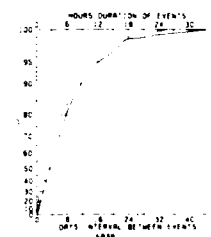
Kodiak



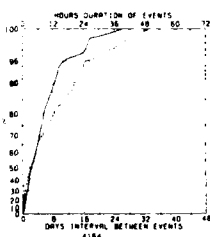
Homer



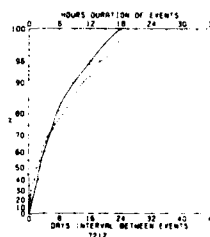
Kenai



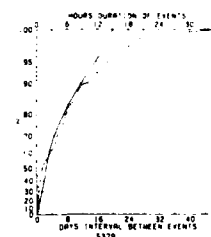
Middleton Island



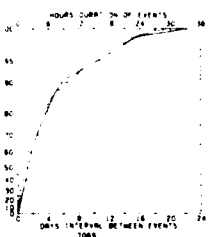
Cordova



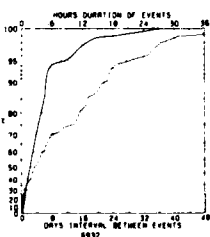
Yakutat



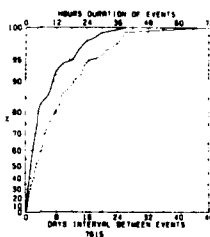
Yakutat



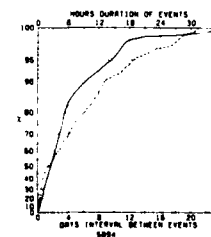
Sitka



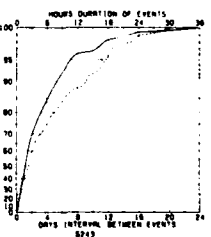
Annette



Anchorage



Cold Bay

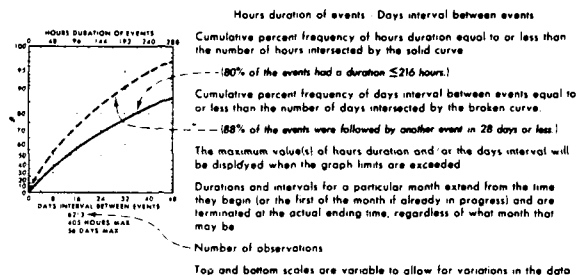


19 Persistence of visibility < 2 n. mi.

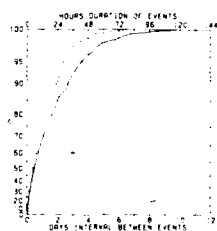
November

Legend

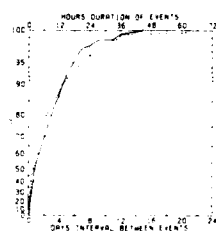
Persistence of wind ≥ 10 kts.



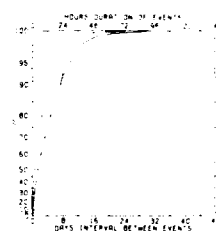
Kodiak



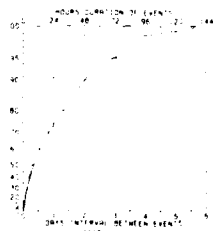
Homer



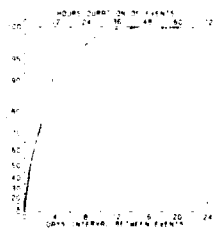
Kenai



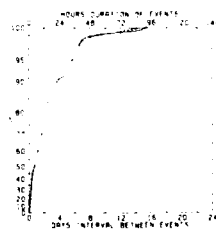
Middleton Island



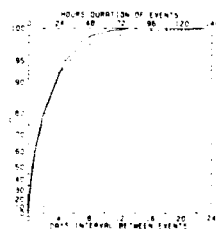
Cordova



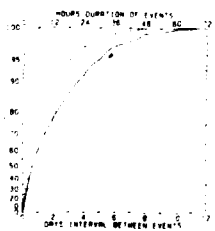
Yakutat



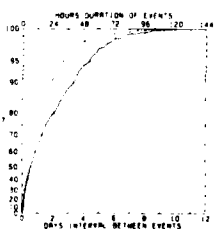
Yakutat



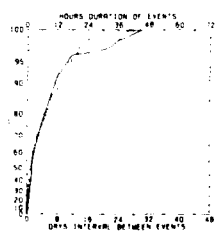
Sitka



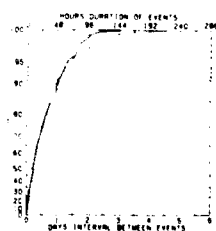
Annette



Anchorage



Cold Bay

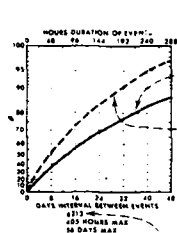


November

20 Persistence of wind ≥ 10 kts.

Legend

Persistence of wind ≥ 20 kts.



Hours duration of events - Days interval between events

Cumulative percent frequency of hours duration equal to or less than the number of hours intersected by the solid curve

— (80% of the events had a duration ≤ 216 hours.)

Cumulative percent frequency of days interval between events equal to or less than the number of days intersected by the broken curve

— (88% of the events were followed by another event in 28 days or less.)

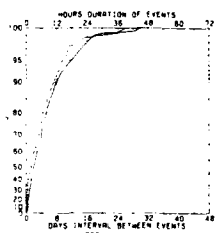
The maximum value(s) of hours duration and/or the days interval will be displayed when the graph limits are exceeded.

Durations and intervals for a particular month extend from the time they begin (or the first of the month if already in progress) and are terminated at the actual ending time, regardless of what month that may be.

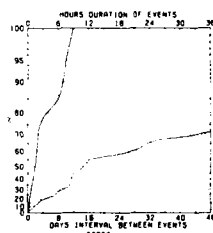
Number of observations

Top and bottom scales are variable to allow for variations in the data

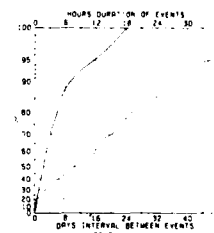
Kodiak



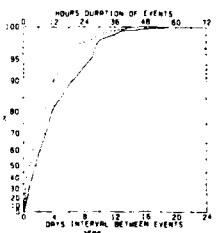
Homer



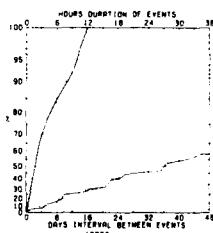
Kenai



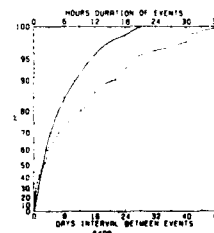
Middleton Island



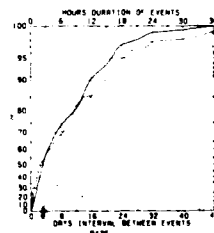
Cordova



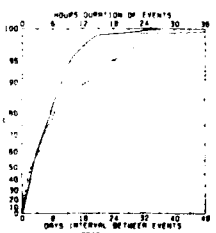
Yakutat



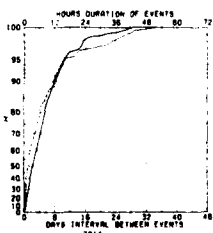
Yakutat



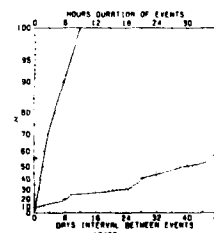
Sitka



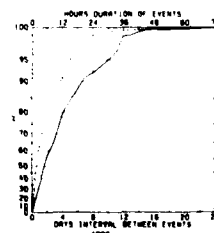
Annette



Anchorage

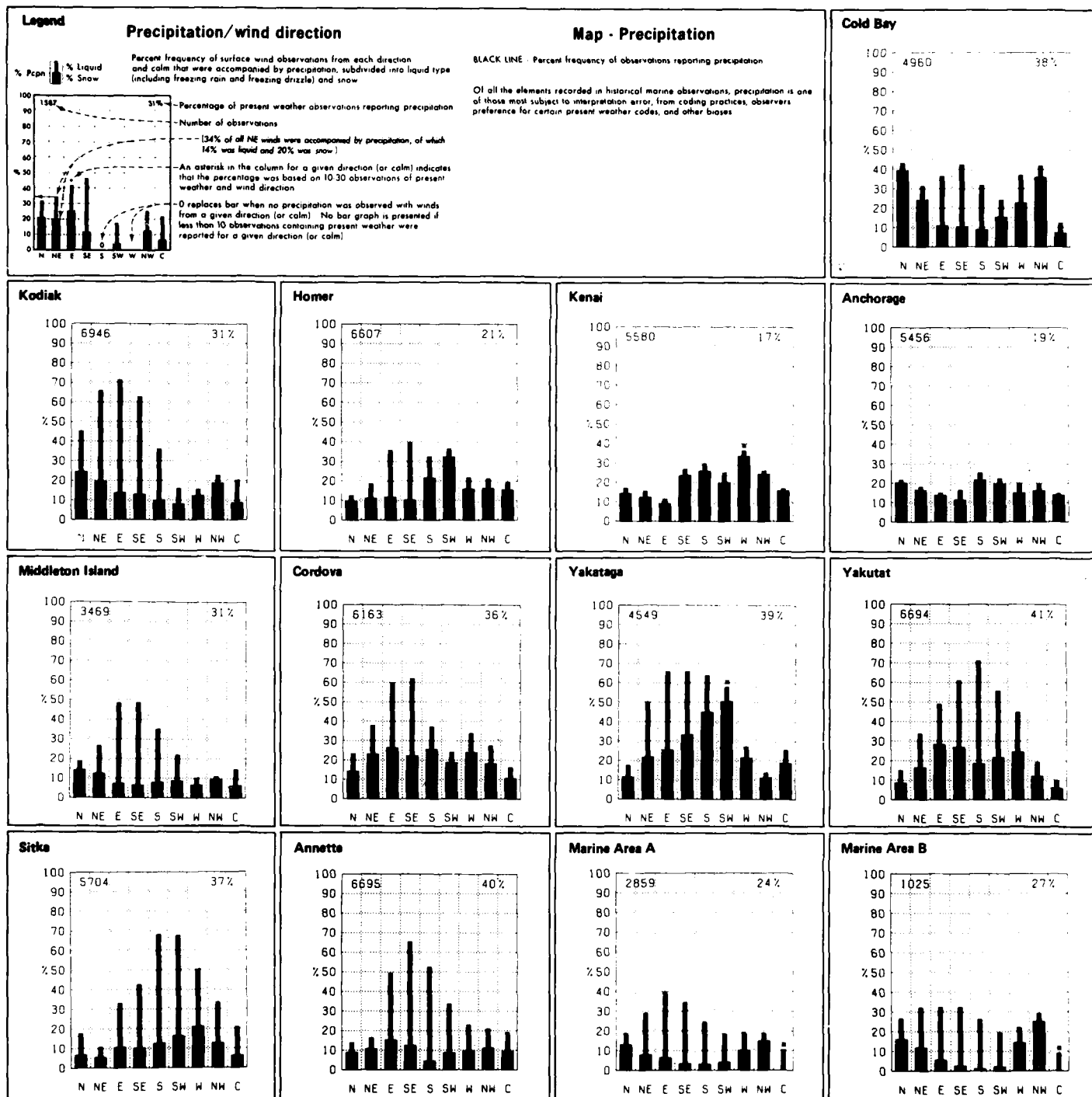


Cold Bay



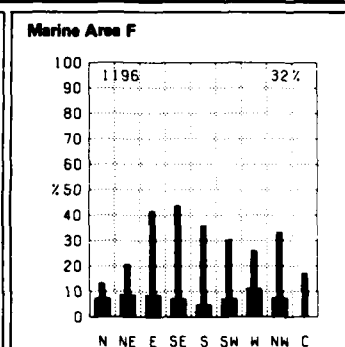
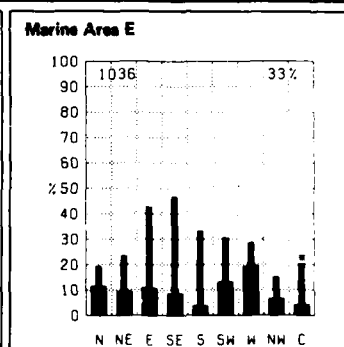
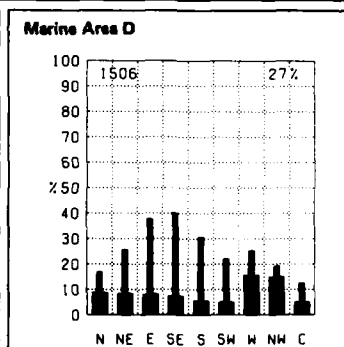
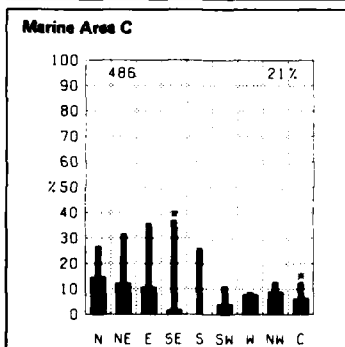
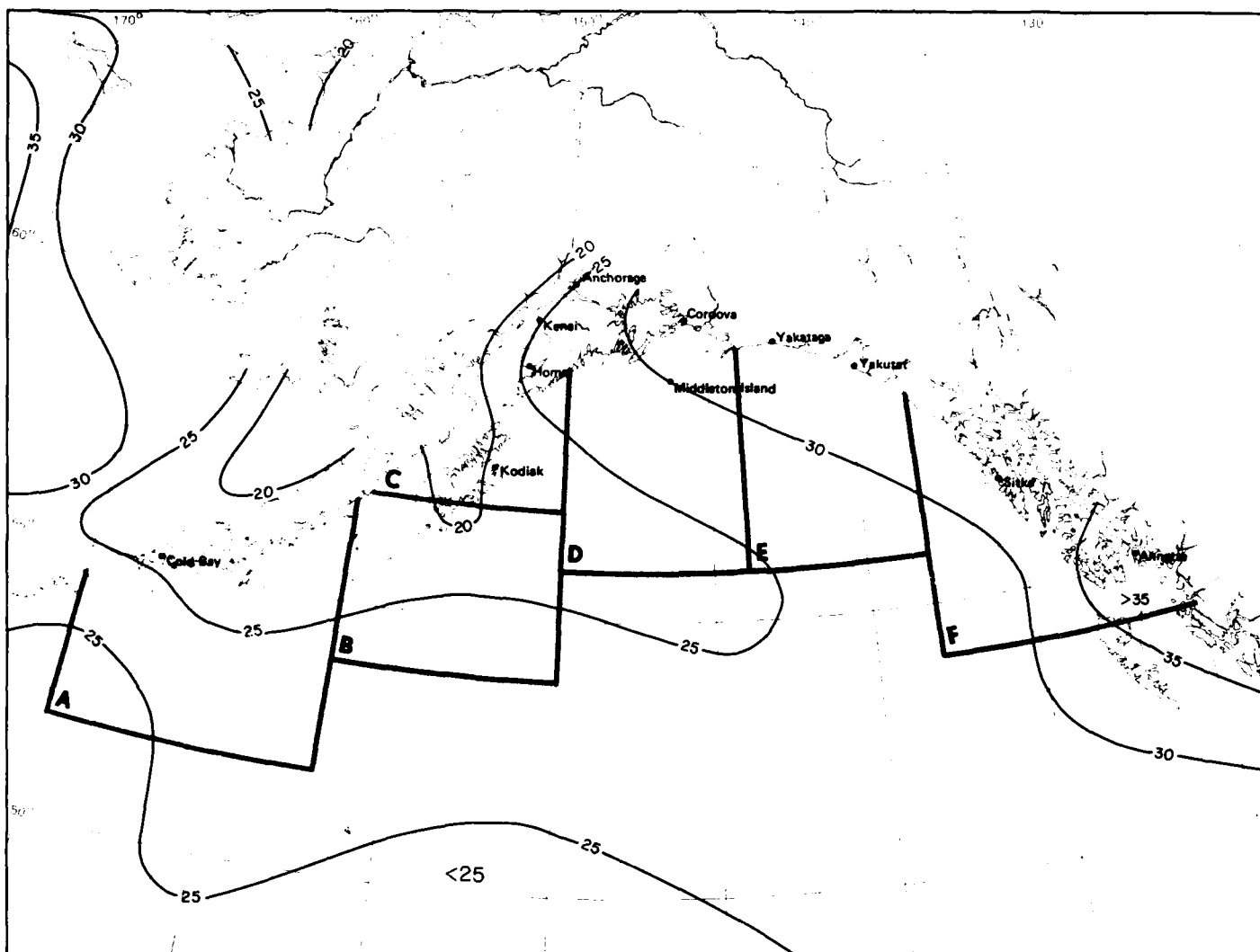
21 Persistence of wind ≥ 20 kts.

November



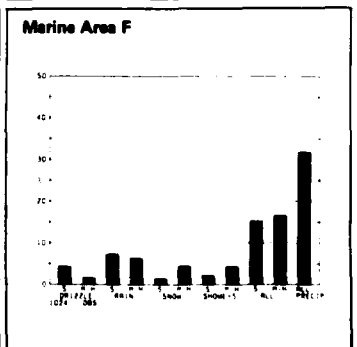
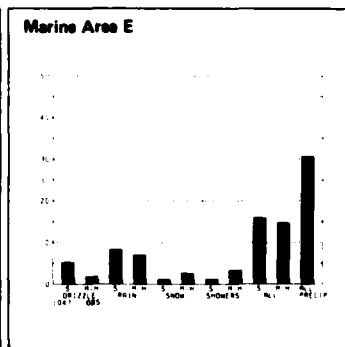
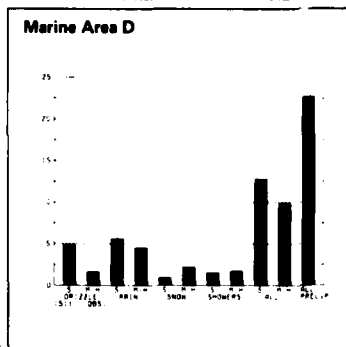
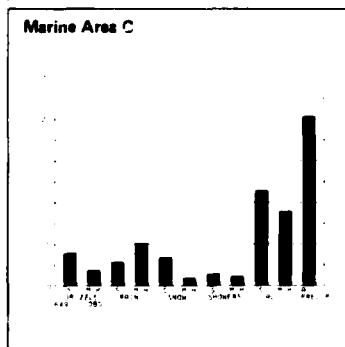
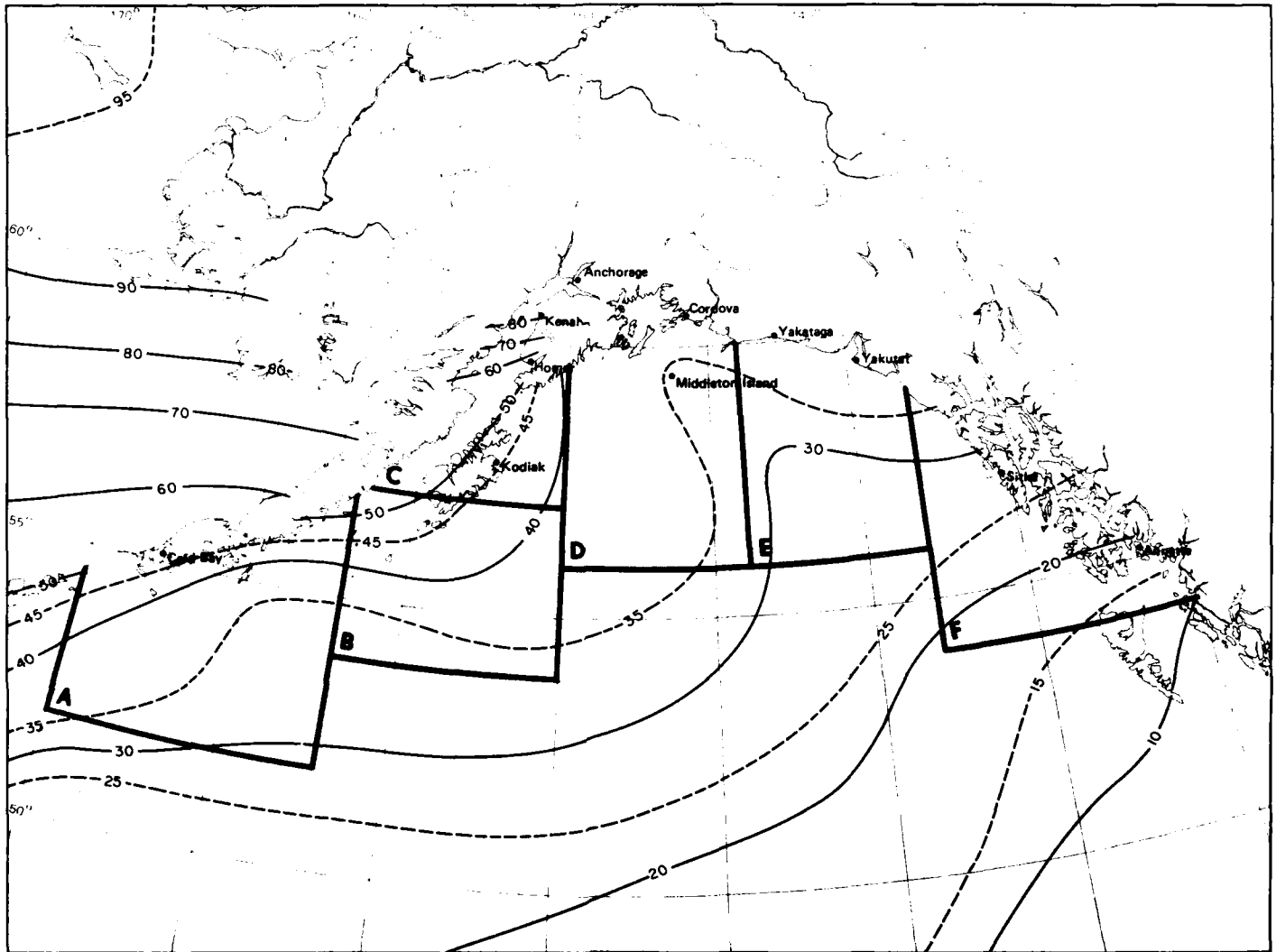
December

1 Precipitation/wind direction



1 Precipitation

December

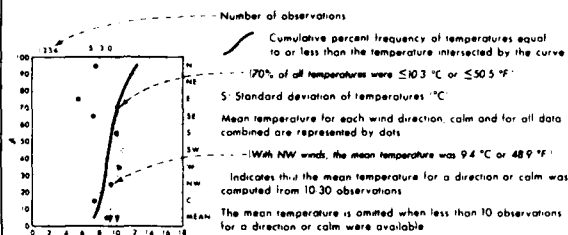


2 Snow

December

Legend

Air temperature/wind direction



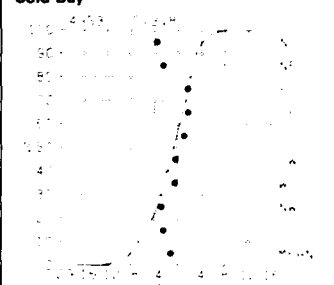
Map - Air temperature mean and thresholds

BLACK LINE Percent frequency of temperature $\leq 0^{\circ}\text{C}$ ($\leq 32^{\circ}\text{F}$)
 RED LINE Mean air temperature $^{\circ}\text{C}$
 BLUE LINE Percent frequency of wind chill temperature $\leq 30^{\circ}\text{C}$ ($\leq 22^{\circ}\text{F}$)

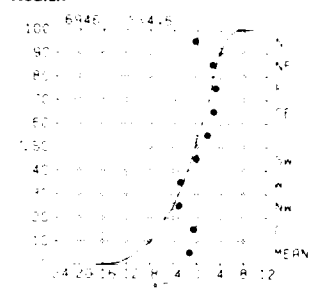
Air temperature readings recorded on transient ships in warm, sunny weather appear biased toward high temperatures, apparently because of improper instrument exposure and ventilation. Despite the inaccuracies, the large scale patterns and mean gradients of the isopleth analyses are relatively accurate.

The temperature scale of the graph may vary in both range and class interval. The percentage of temperature observations greater than a given value can be obtained by subtracting the cumulative percent frequency of that value from 100%. The number of observations and the standard deviation plus the plotted points on the graphs are based on those observations reporting both temperature and wind direction. The cumulative curve is based on all observations reporting temperature with or without wind direction.

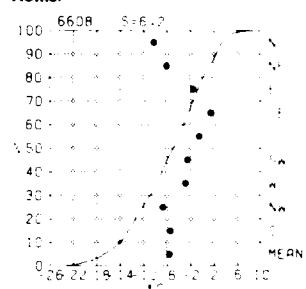
Cold Bay



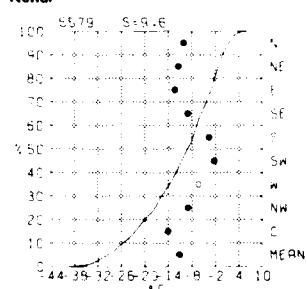
Kodiak



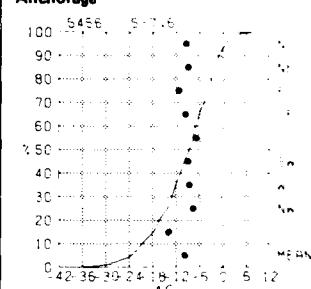
Homer



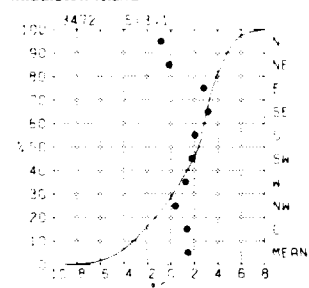
Kenai



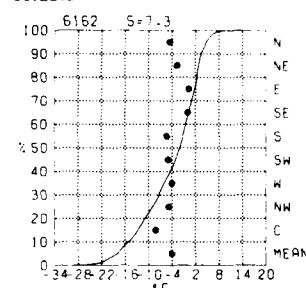
Anchorage



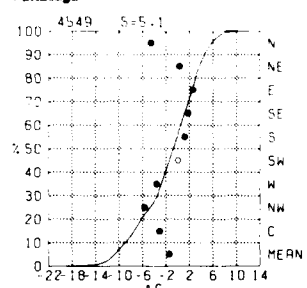
Middleton Island



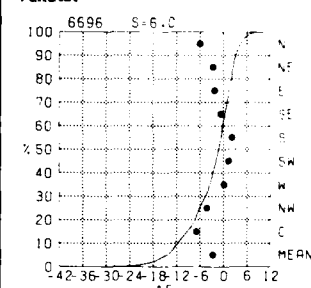
Cordova



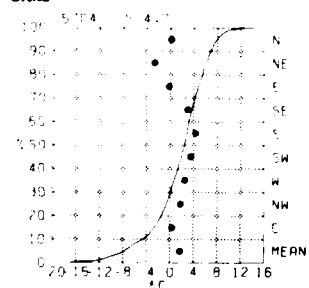
Yakutat



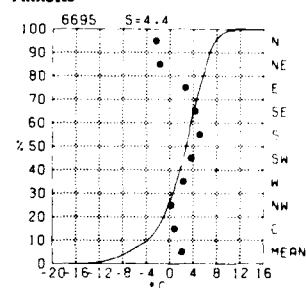
Yakutat



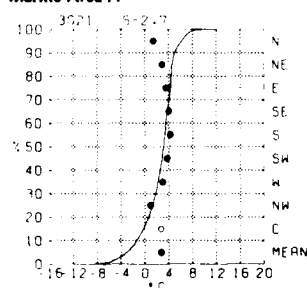
Sitka



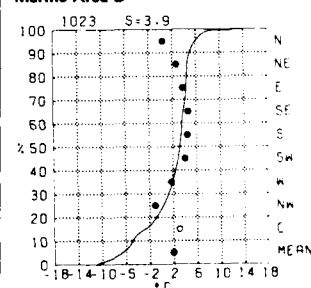
Annette



Marine Area A



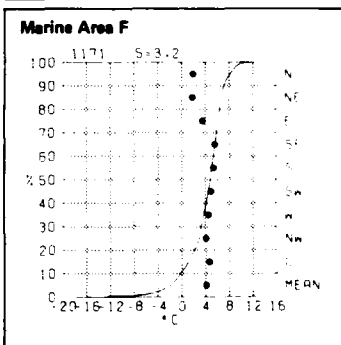
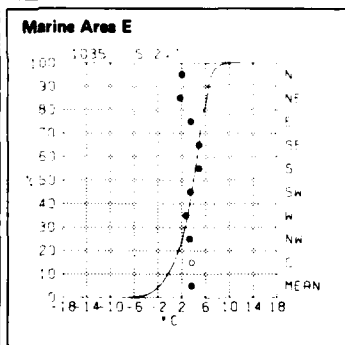
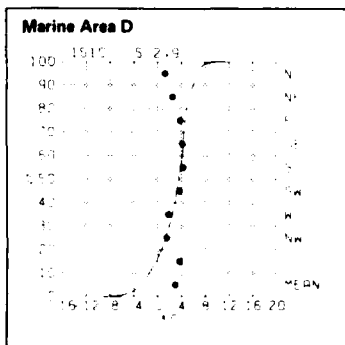
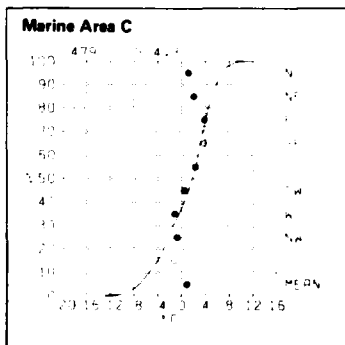
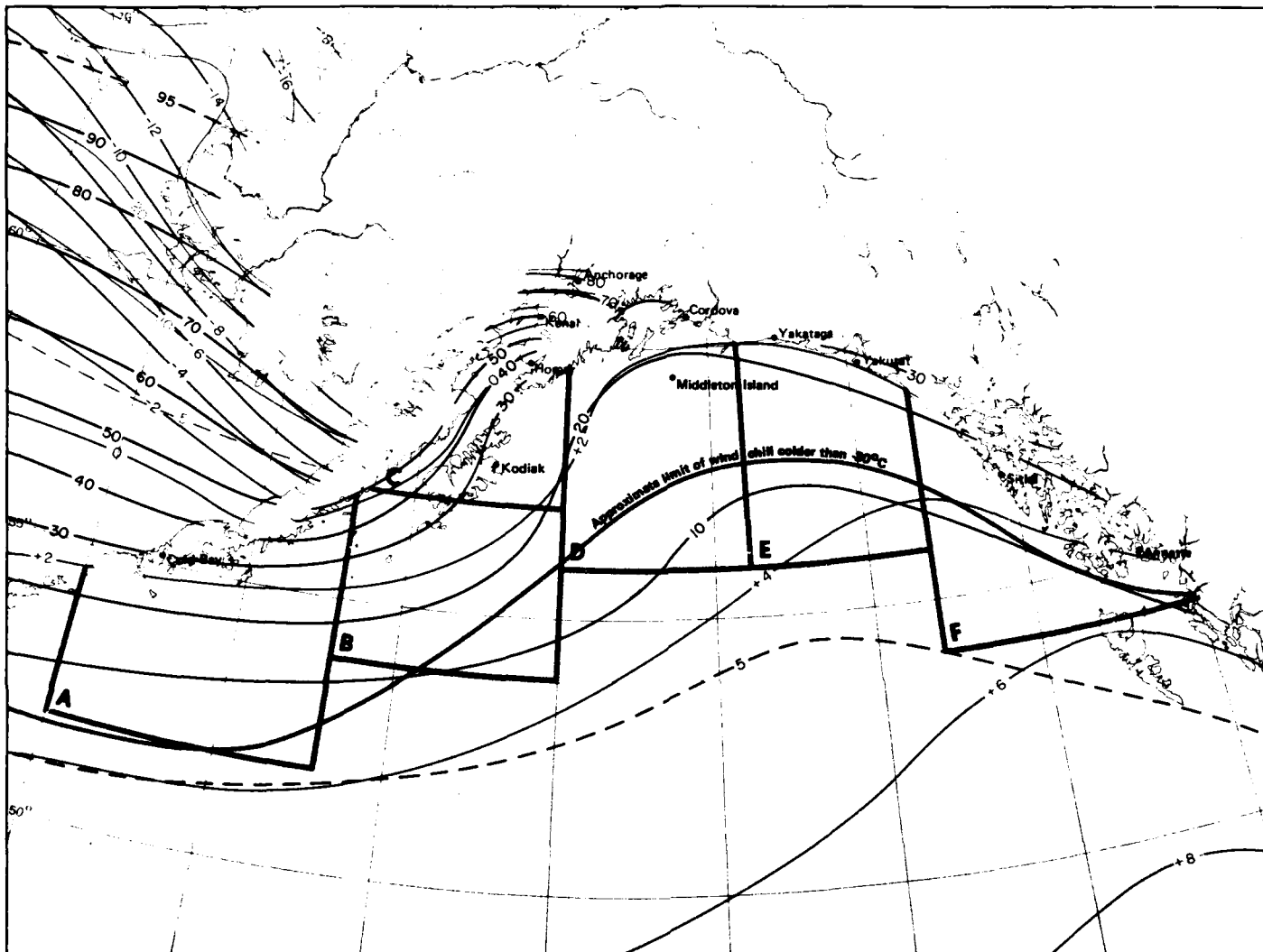
Marine Area B



December

404

3 Air temperature/wind direction

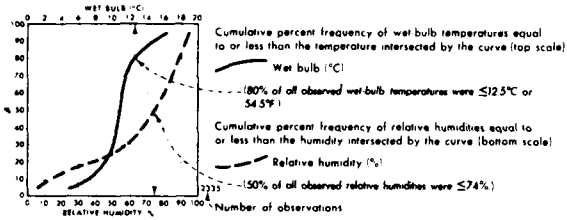


3 Air temperature mean and thresholds

December

Legend

Wet bulb/relative humidity

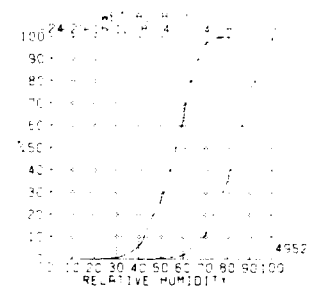


Map - Mean dew point temperature

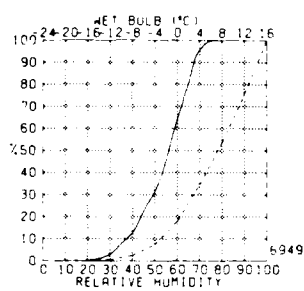
BLACK LINE - Mean dew point temperature (°C)

The observation count of the graph reflects those observations reporting both air and wet bulb temperatures, both are required in computing the relative humidity. The percentage of observations of either element greater than a given value can be obtained by subtracting the cumulative percent frequency of that value from 100%.

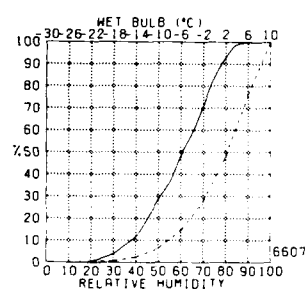
Cold Bay



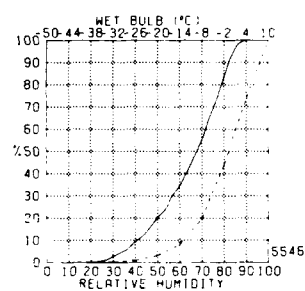
Kodiak



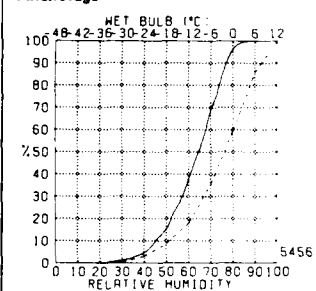
Homer



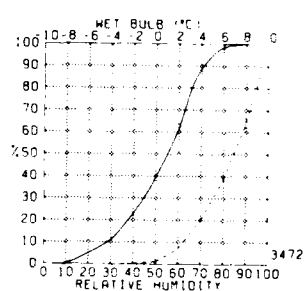
Kenai



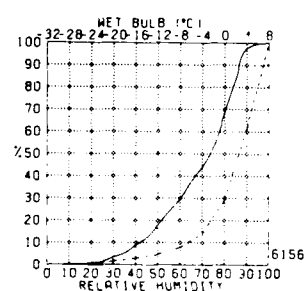
Anchorage



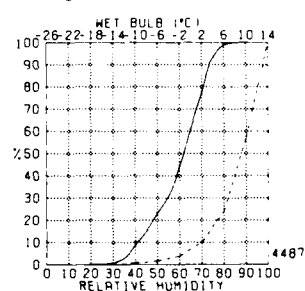
Middleton Island



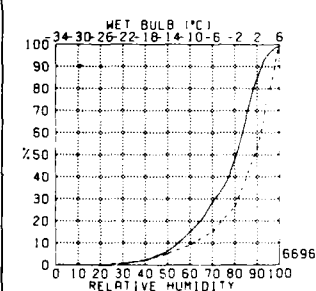
Cordova



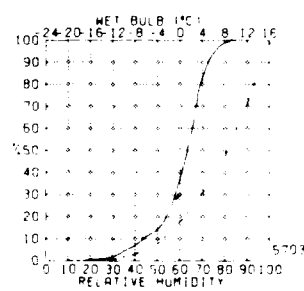
Yakutat



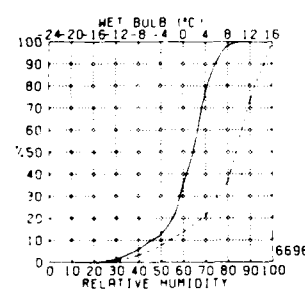
Yakutat



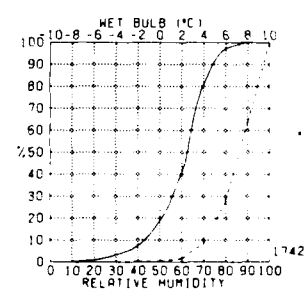
Sitka



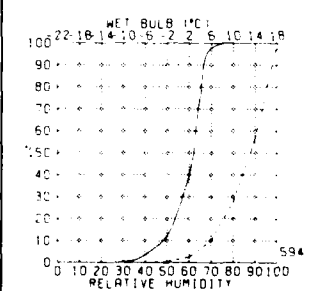
Annette



Marine Area A

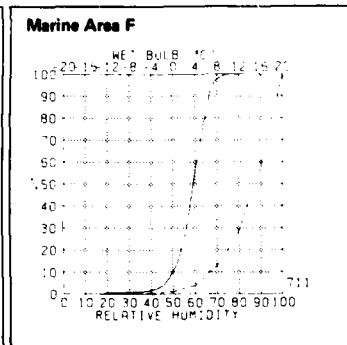
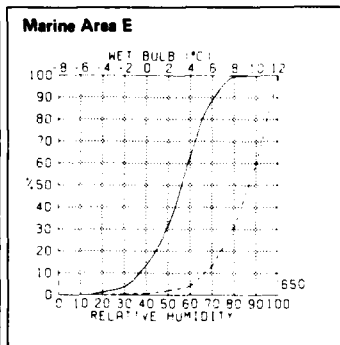
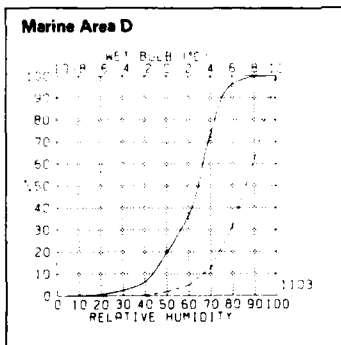
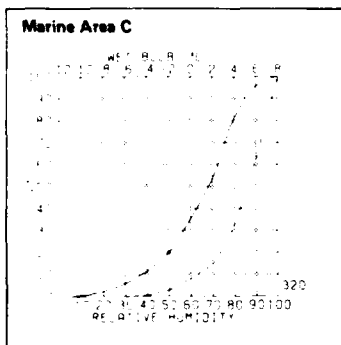
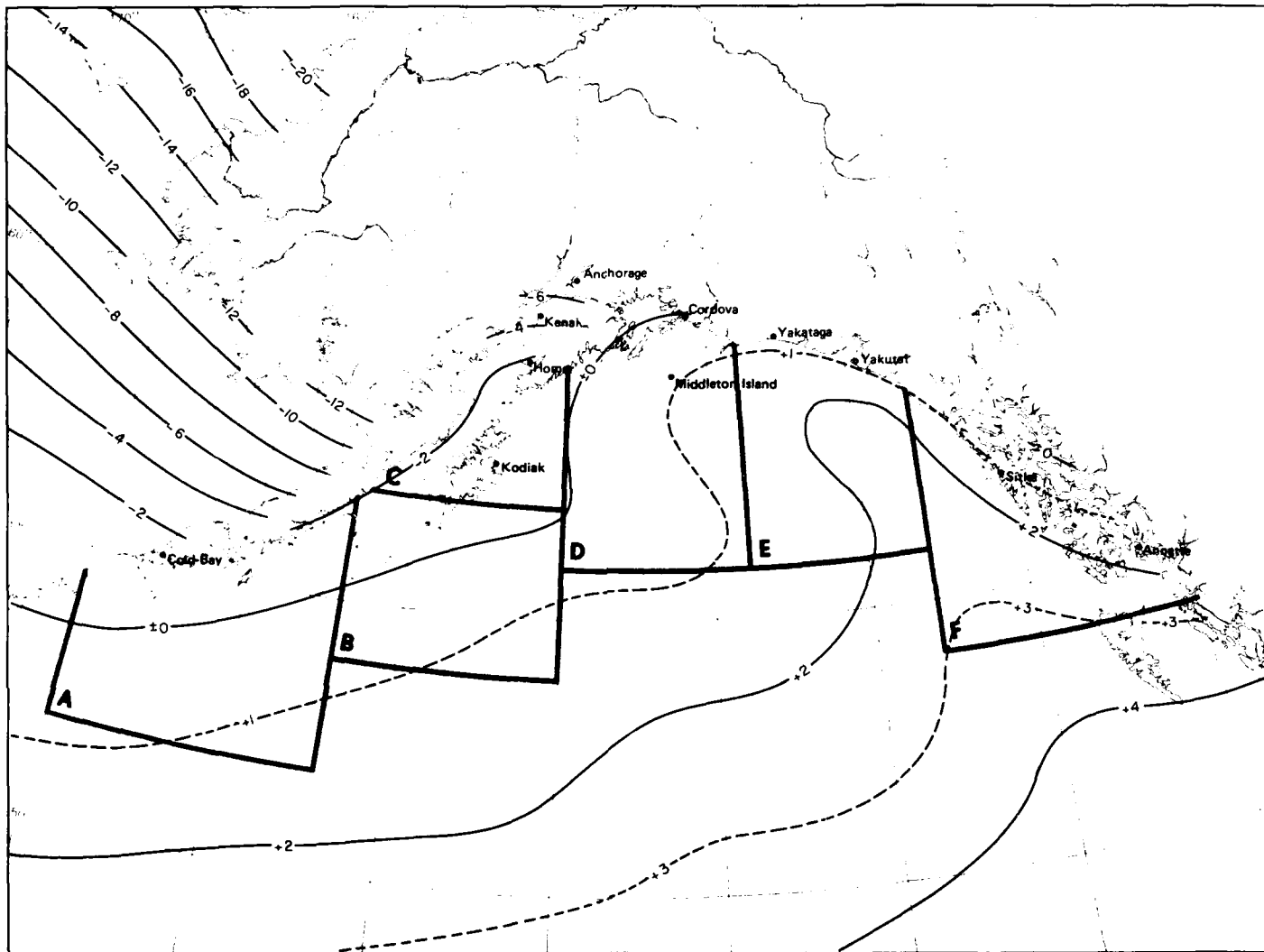


Marine Area B



December

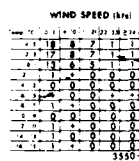
4 Wet bulb/relative humidity



4 Mean dew point temperature

December

Legend

Air temperature/wind speed

Percent frequency of simultaneous occurrence of specified temperature (°C) and wind speed (knots)

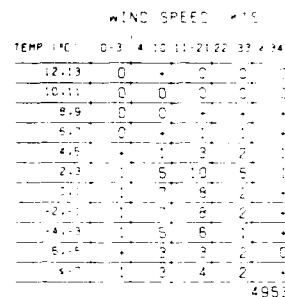
- - 13% of all observations reported temperature 2.3°C simultaneously with wind speed of 22-33 kts.
- - indicates < 5% but > 0
- Number of observations

Map - Air temperature extremes (°C)

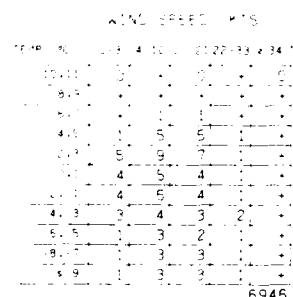
BLACK LINE	Maximum '99%' air temperature '1% of temperatures were greater than the given value'
BLUE LINE	Minimum '1%' air temperature '1% of temperatures were equal to or less than the given value'

The graph can be used to determine the extent of human discomfort from the combined effects of extreme heat or cold and winds or to estimate the likelihood of superstructure icing. Icing potential increases as the air temperature drops below freezing and the winds increase above 10 knots (12 mph) and may become quite severe with temperatures equal to or less than 9°C (16°F) and winds equal to or greater than 34 knots (39 mph).

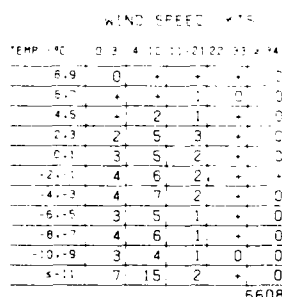
Cold Bay



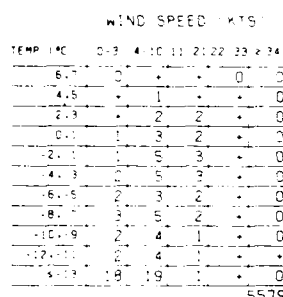
Kodiak



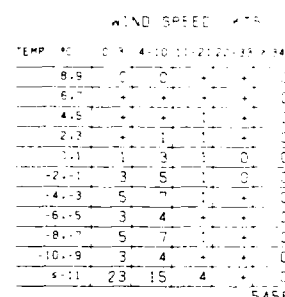
Homer



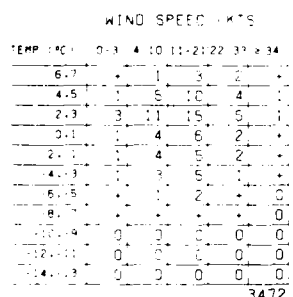
Kenai



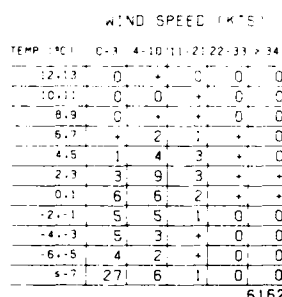
Anchorage



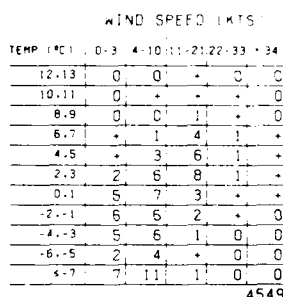
Middleton Island



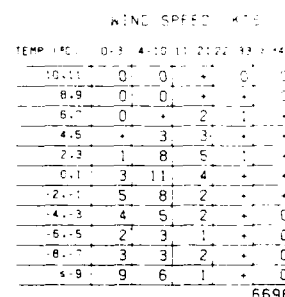
Cordova



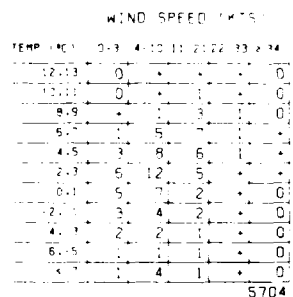
Yakataga



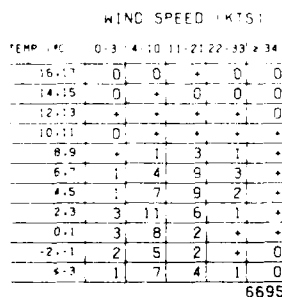
Yakutat



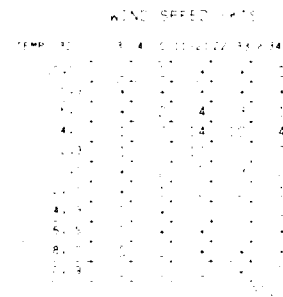
Sitka



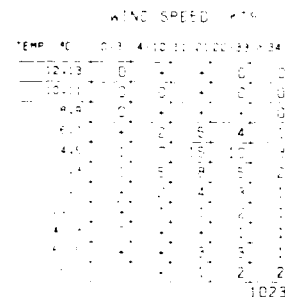
Annette

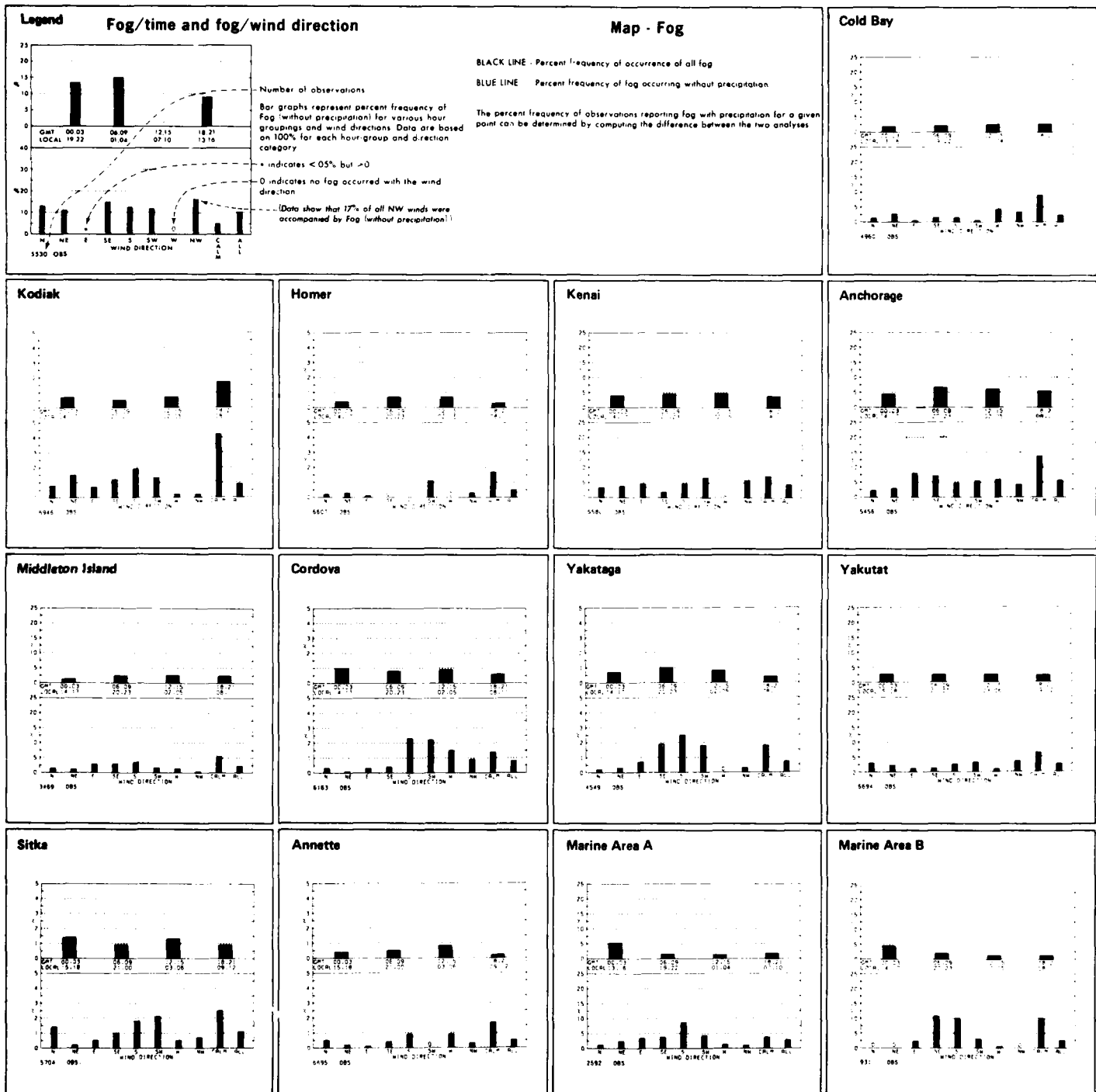


Marine Area A



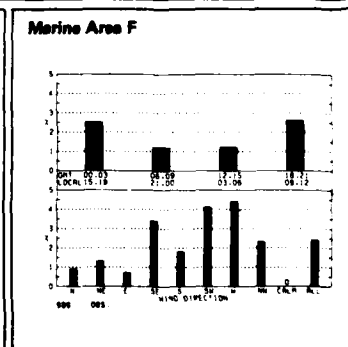
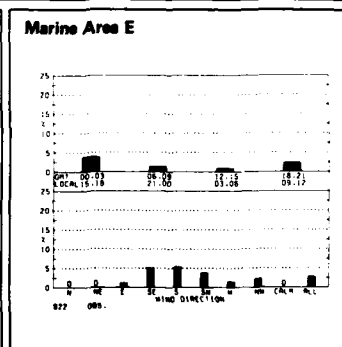
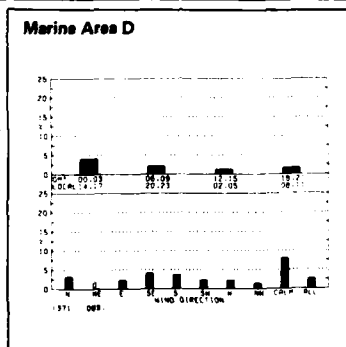
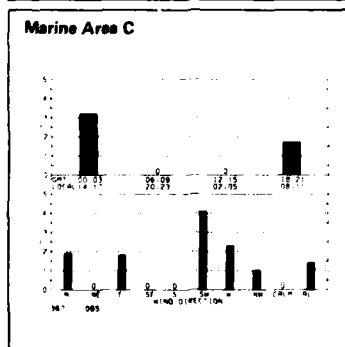
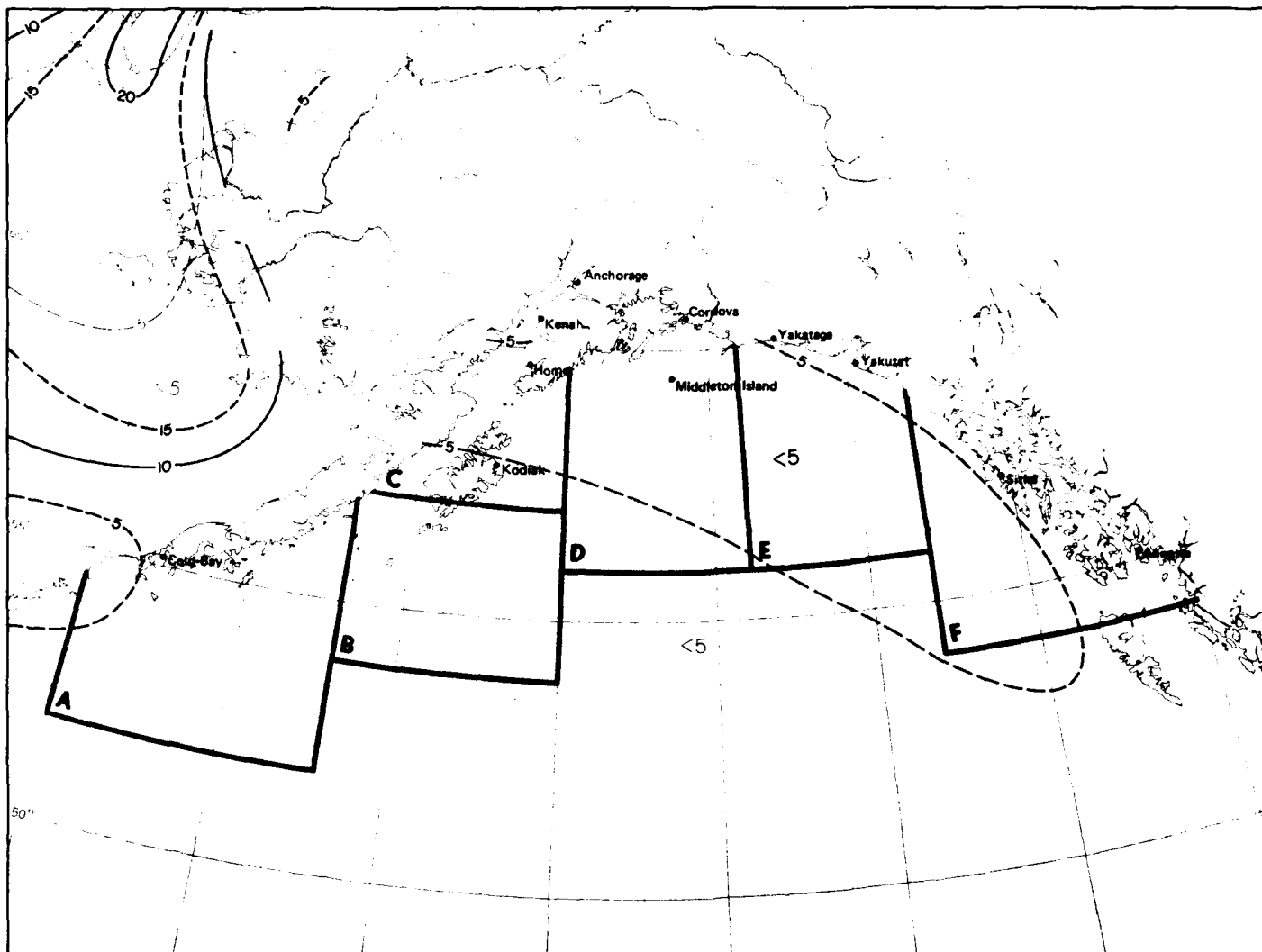
Marine Area B





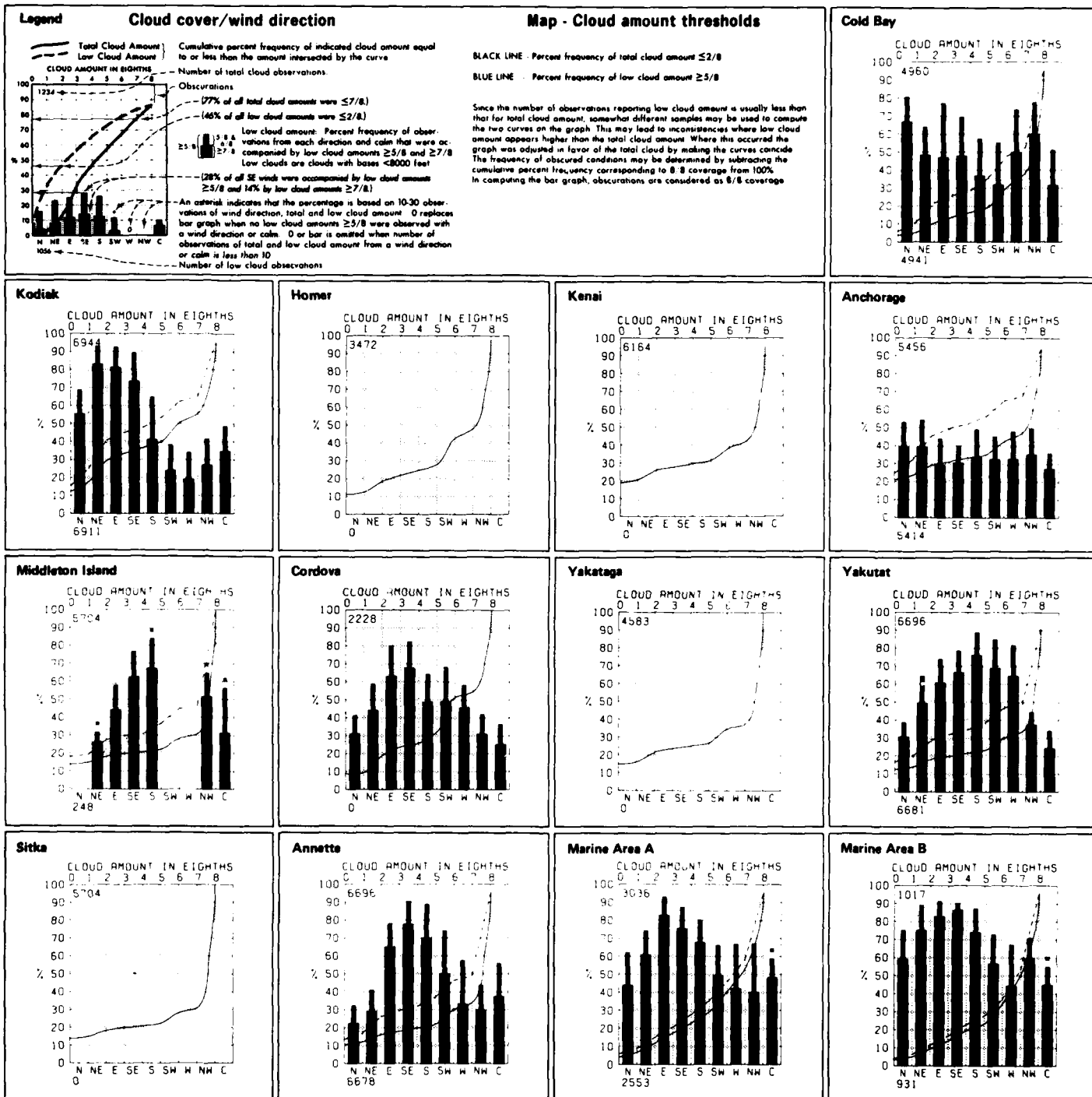
December

6 Fog/time and fog/wind direction



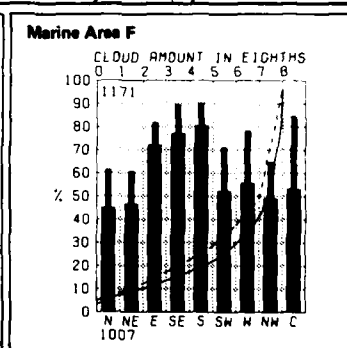
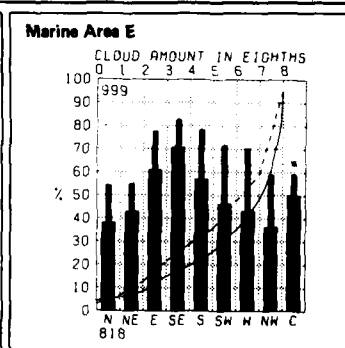
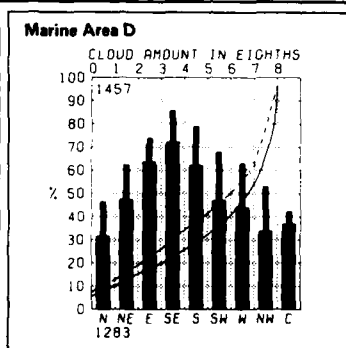
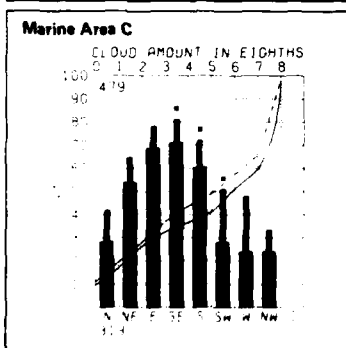
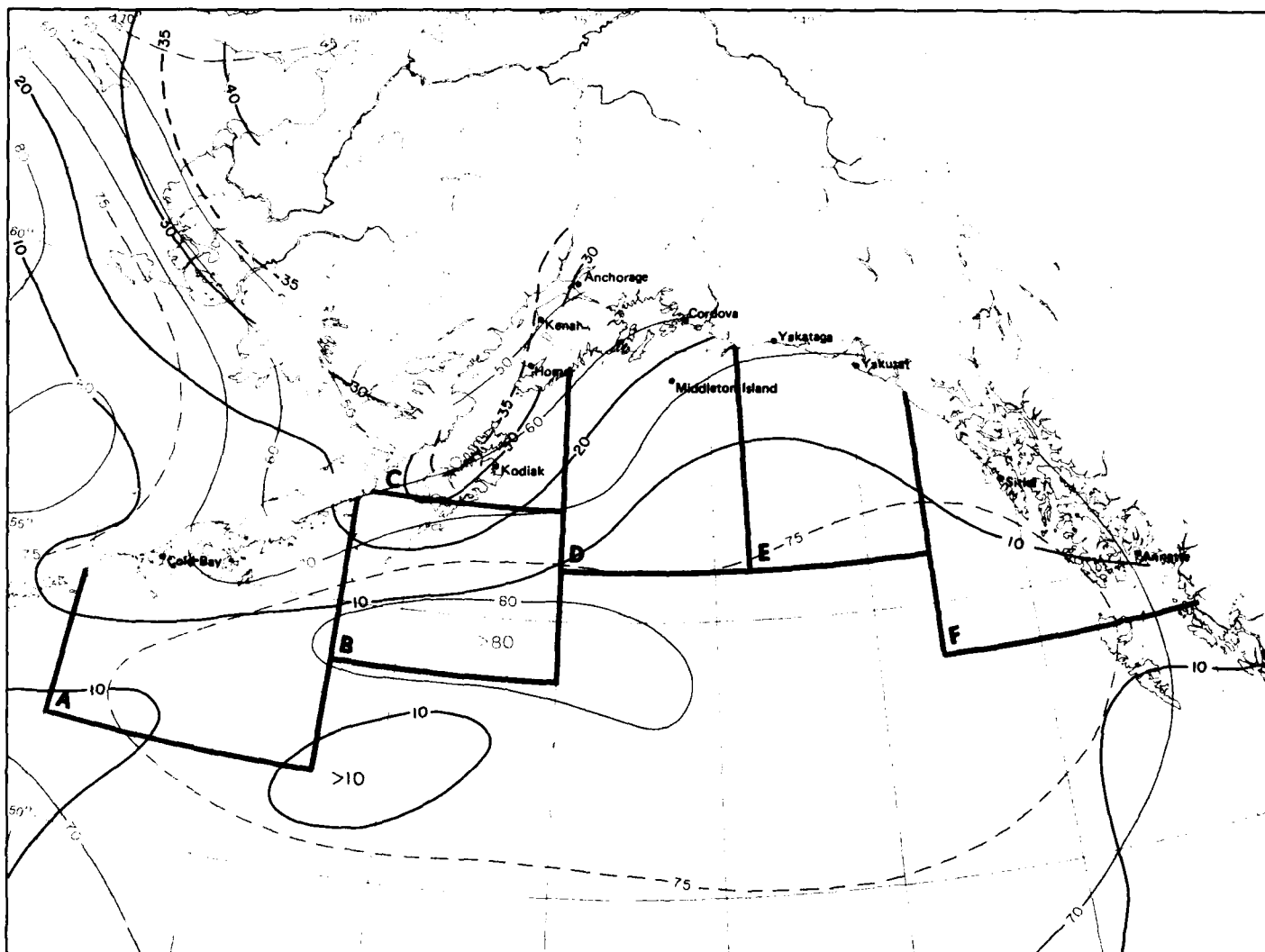
6 Fog

December



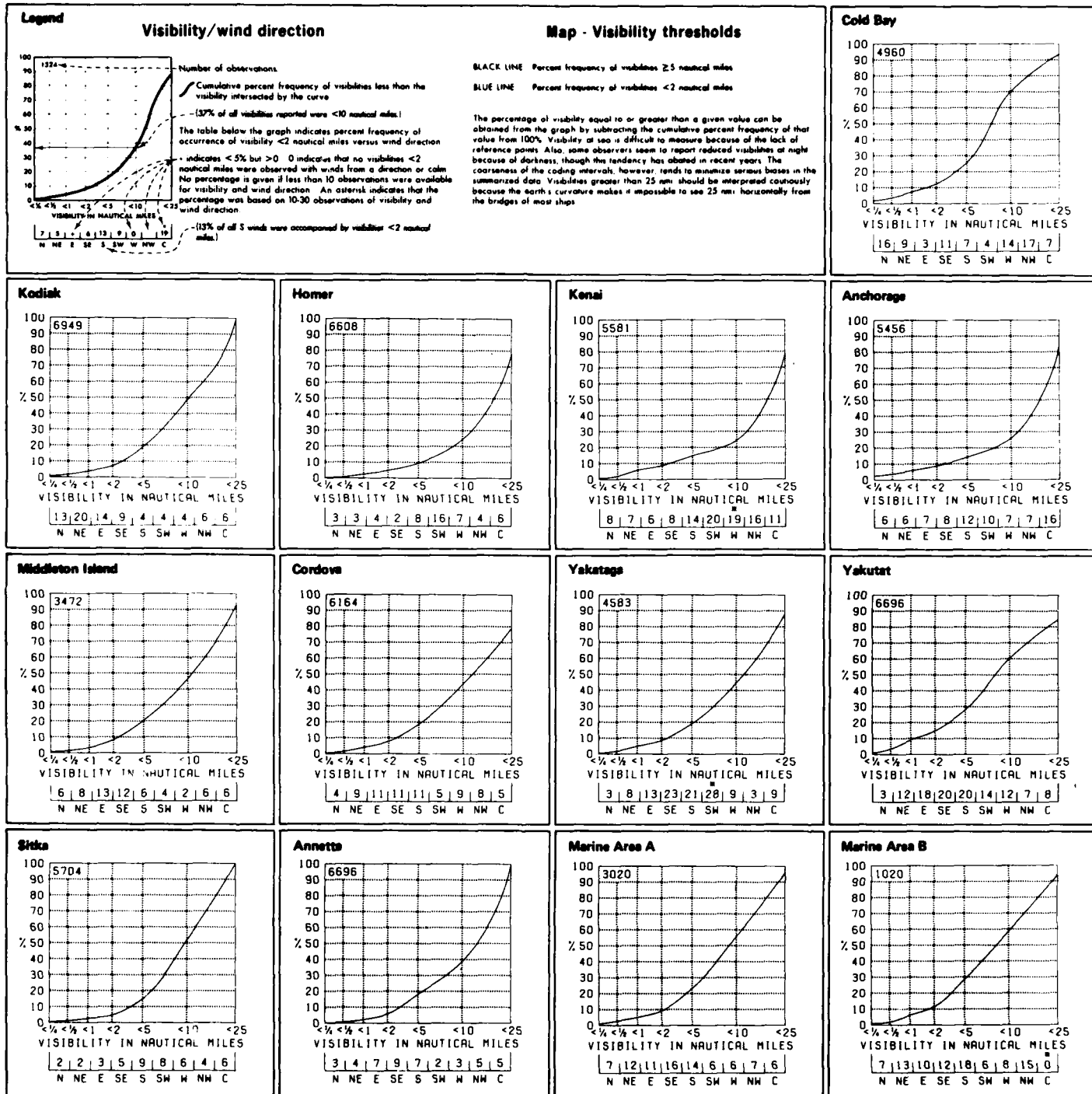
December

7 Cloud cover/wind direction



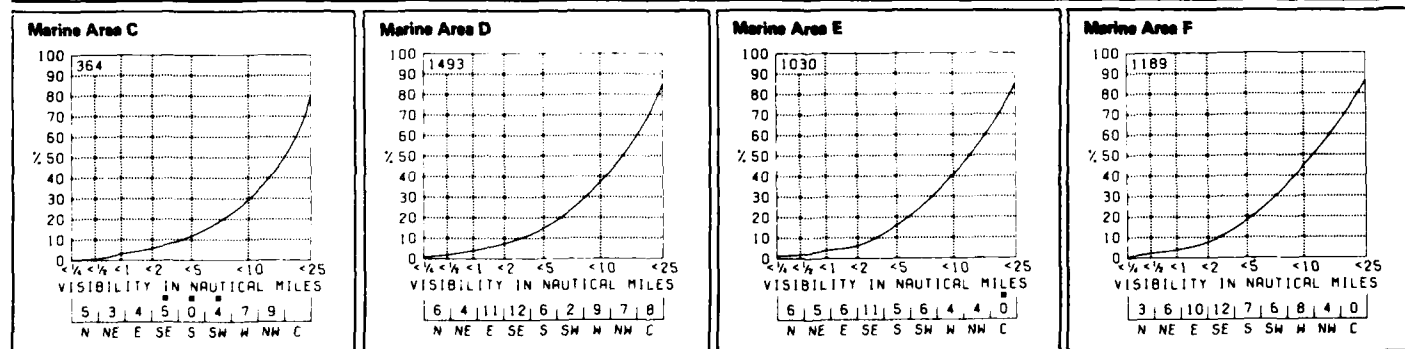
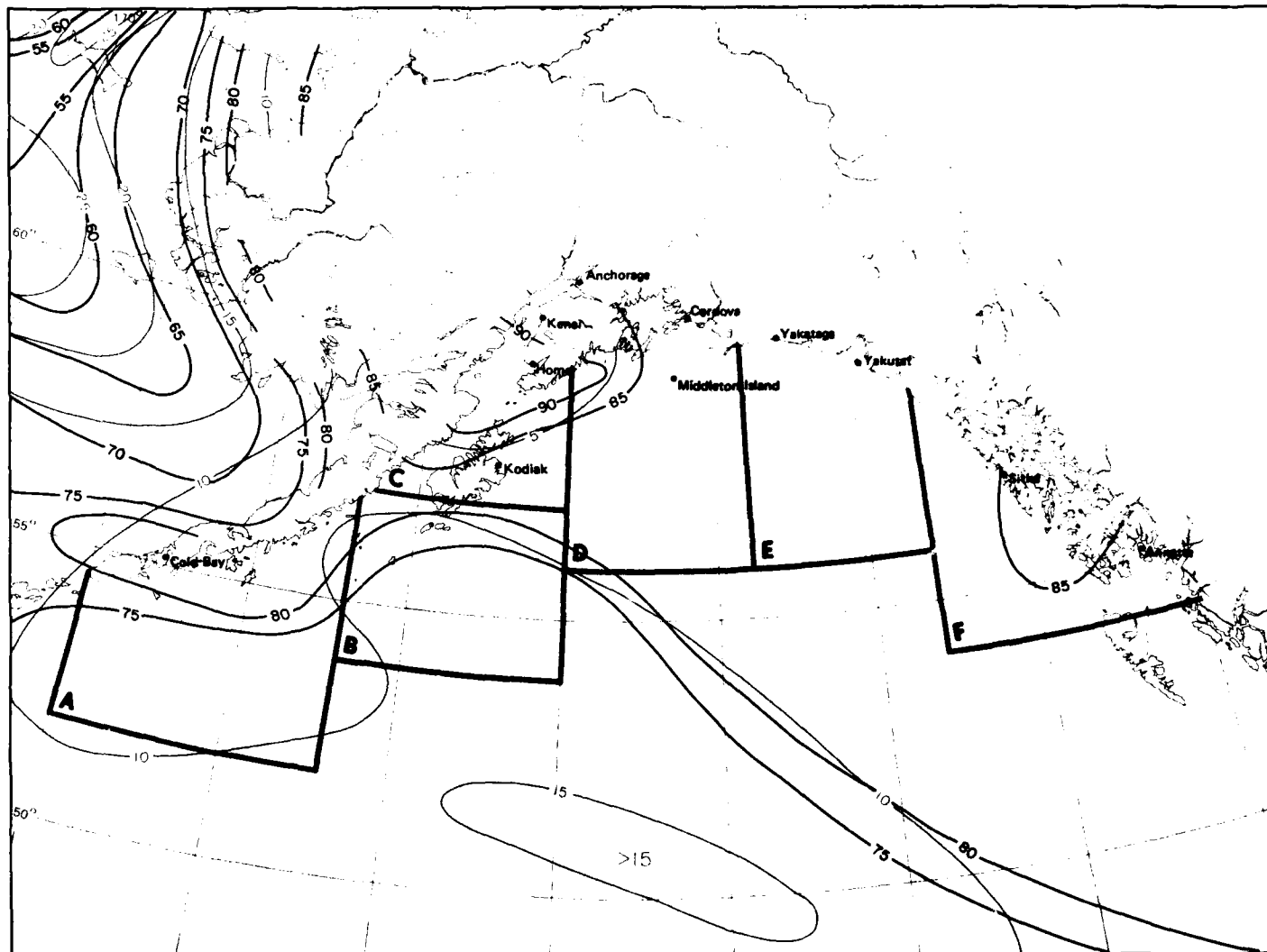
7 Cloud amount thresholds

December



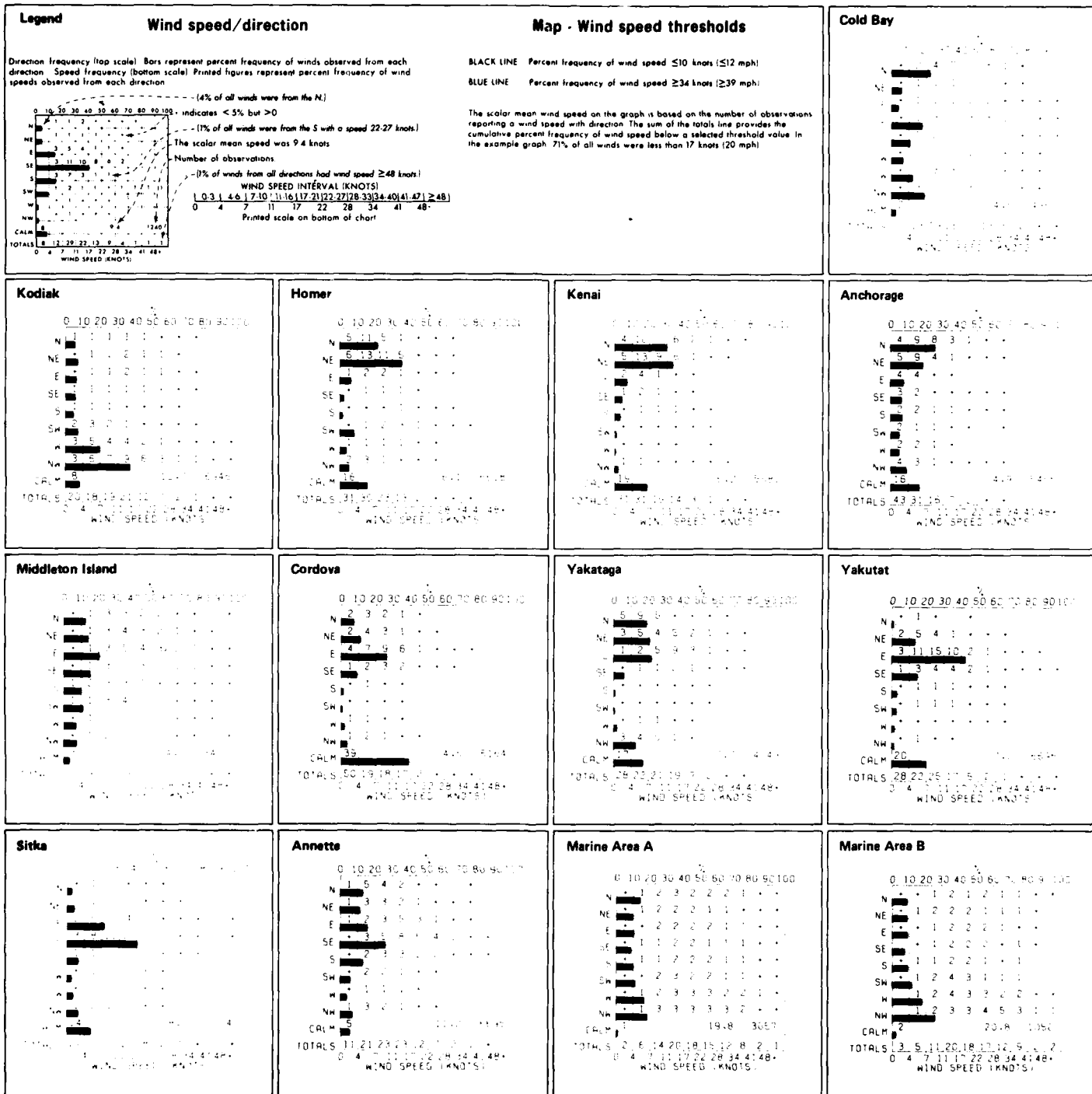
December

8 Visibility/wind direction



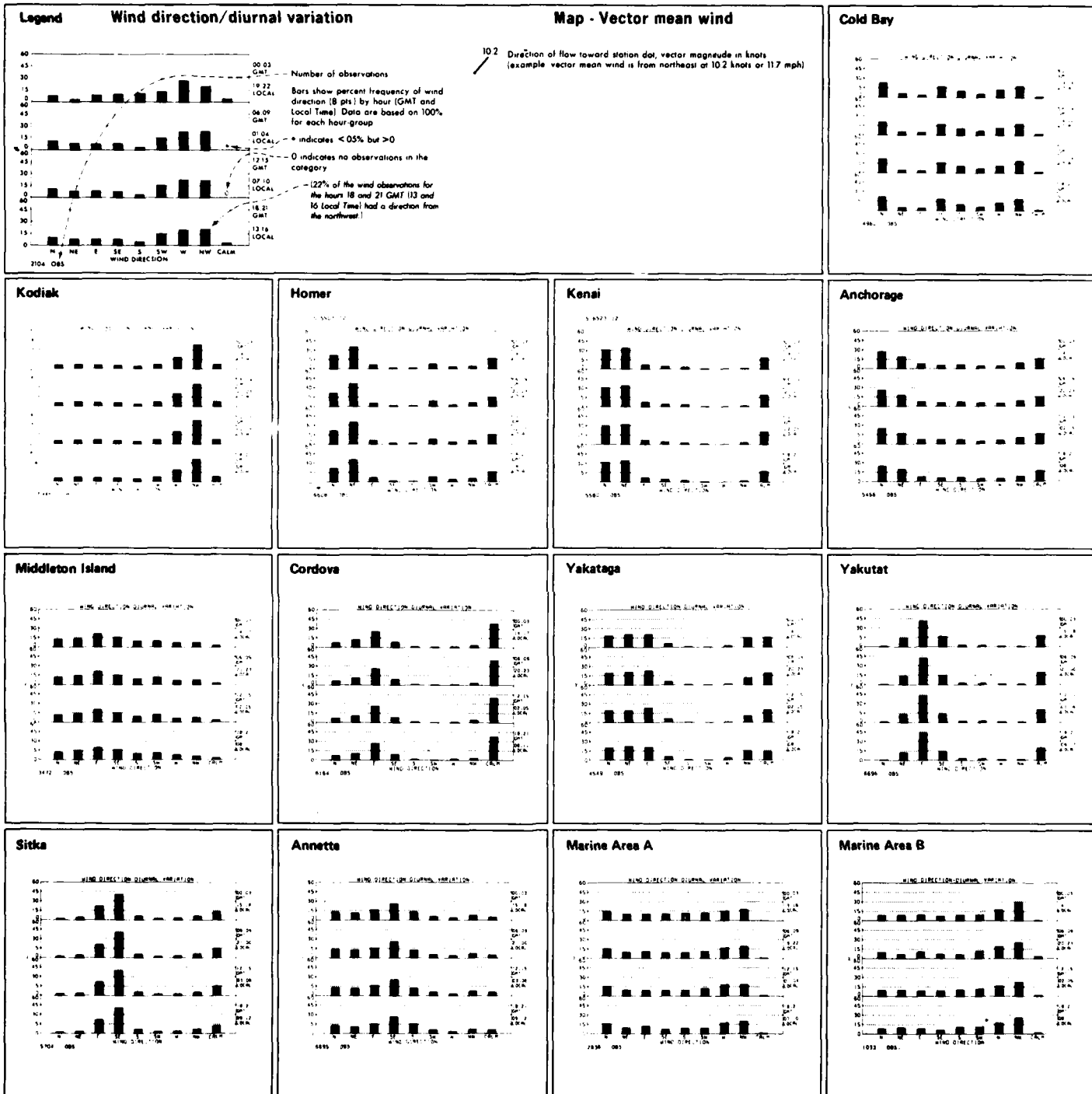
8 Visibility thresholds

December



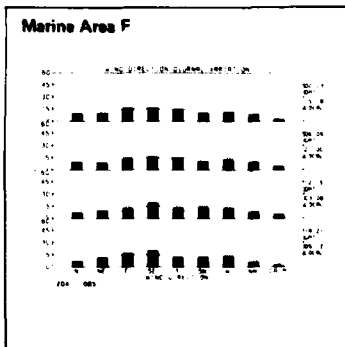
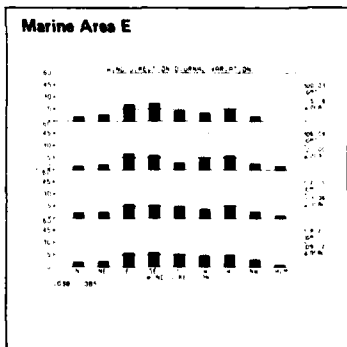
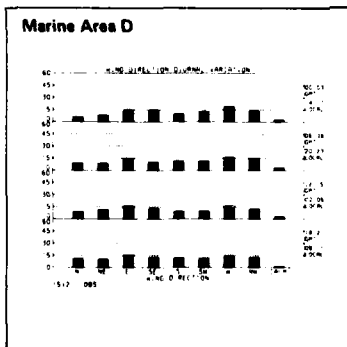
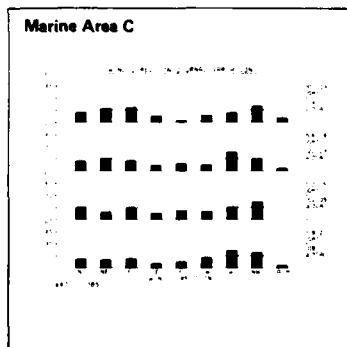
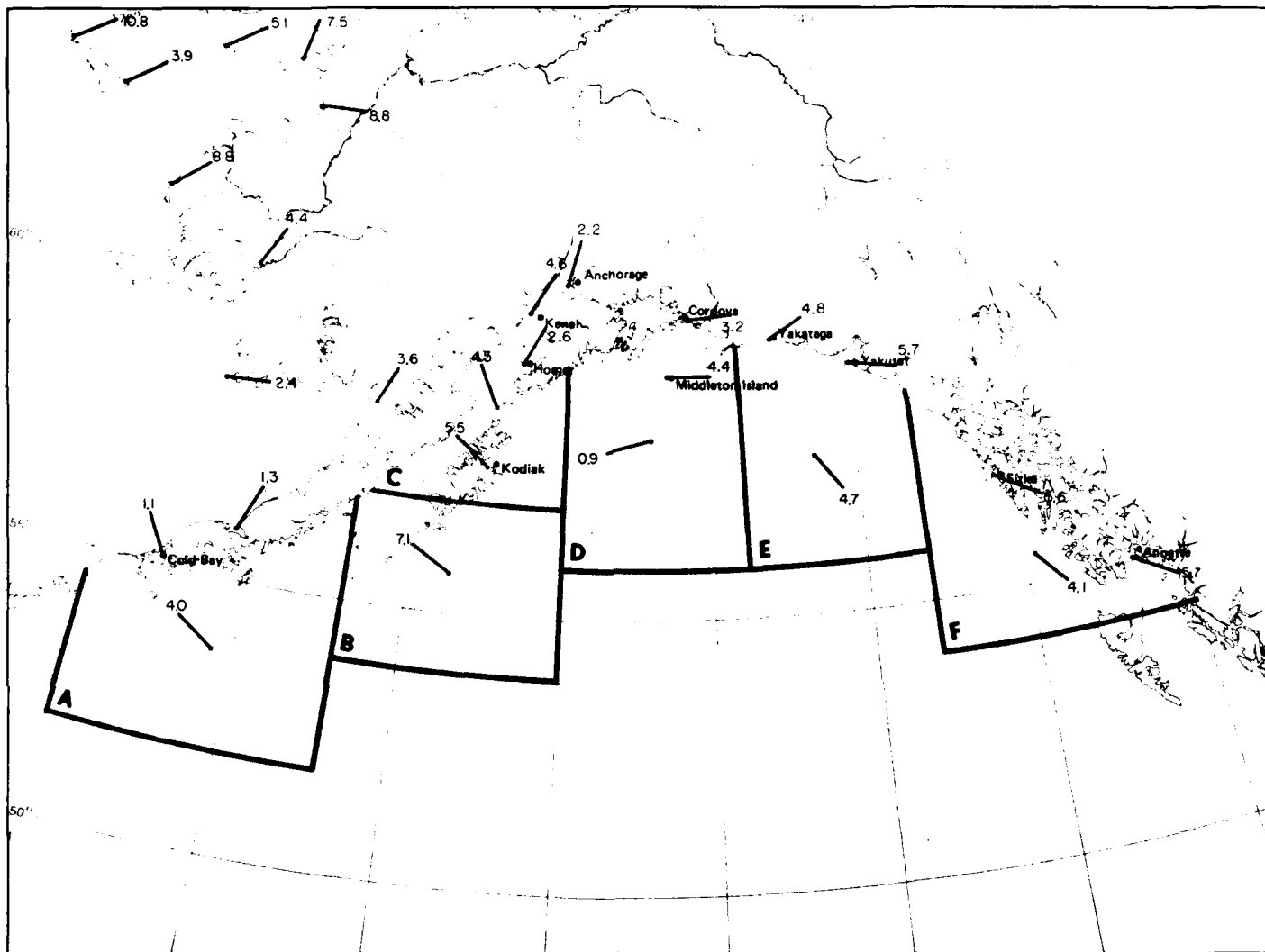
December

9 Wind speed/direction



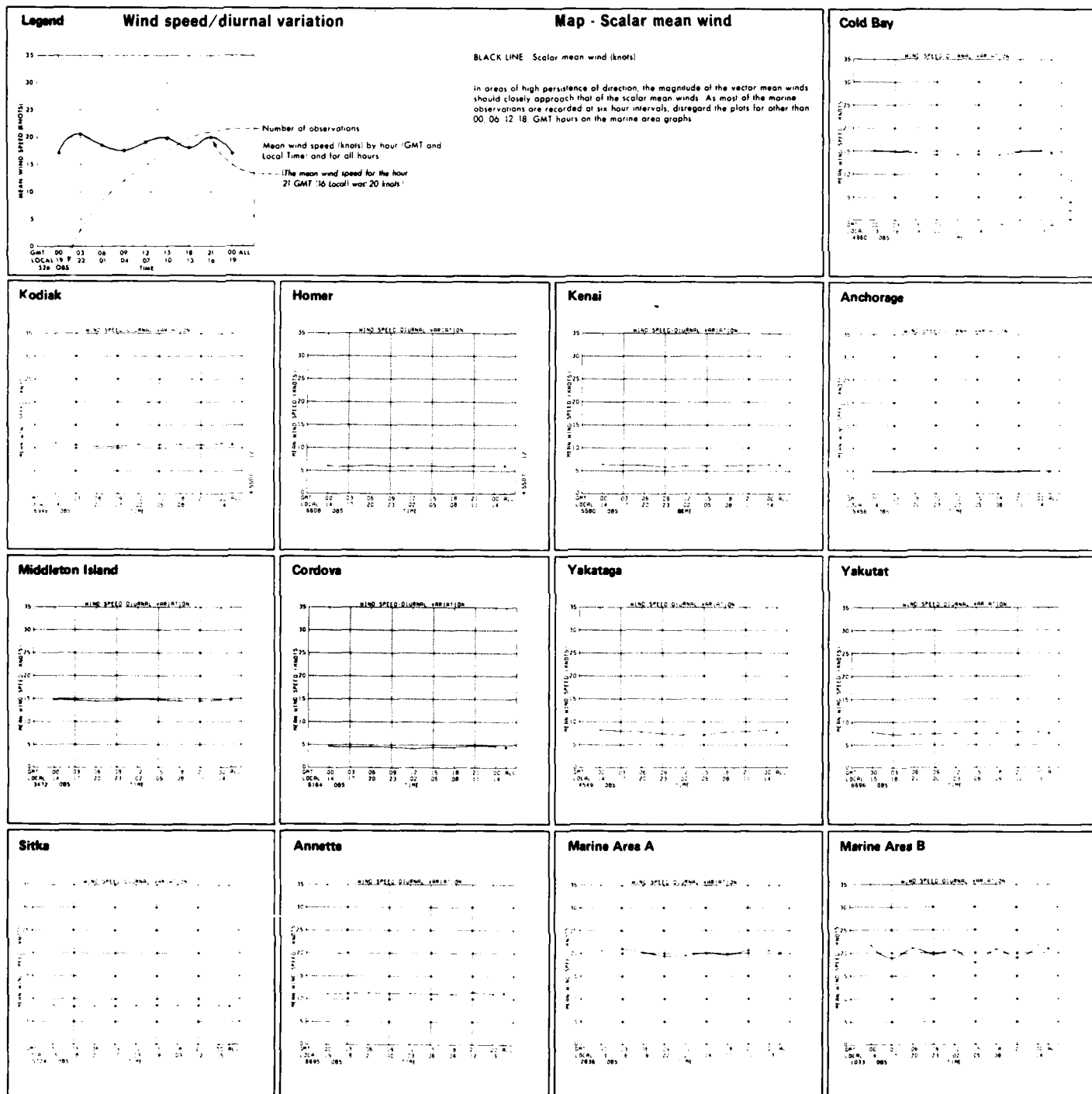
December

10 Wind direction/diurnal variation



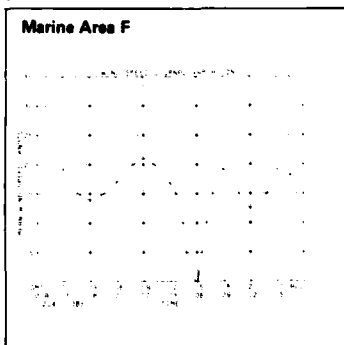
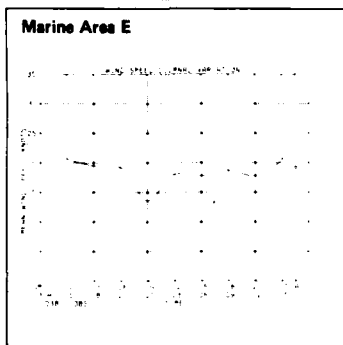
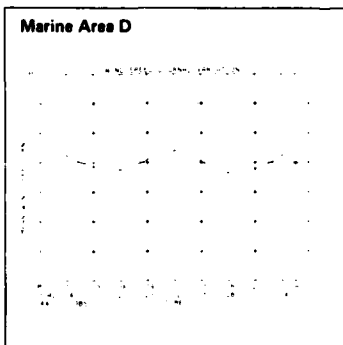
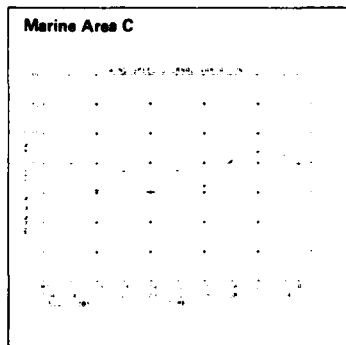
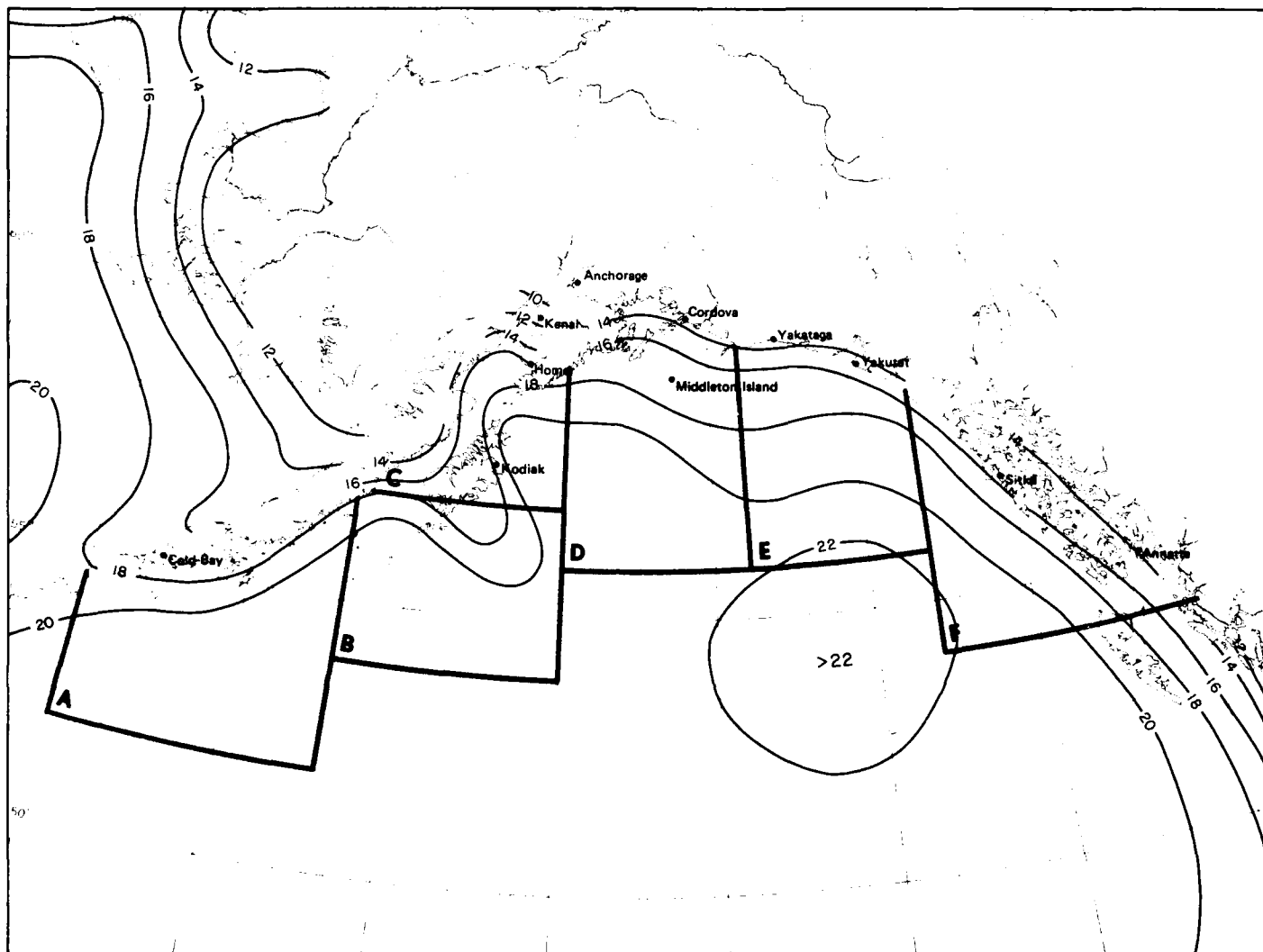
10 Vector mean wind

December



December

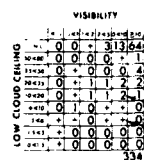
11 Wind speed/diurnal variation



11 Scalar mean wind

December

Low cloud ceiling/visibility



Percent frequency of simultaneous occurrence of specified low cloud ceilings (hundreds of feet) and visibilities (nautical miles)

Low cloud ceiling heights are estimated from the height of low clouds (h) when low cloud amount (N_h) is ≥ 8

Obscurations are included under ceiling $0 < 1.5$

N C (no ceiling) includes bases of clouds ≥ 8000 feet as well as occurrences of $N_h < 5.8$

--- (2% of all observations reported ceiling ≥ 1000 but < 2000 feet simultaneously with visibility ≥ 5 but < 10 nautical miles)

- - + indicates < 5% but > 0

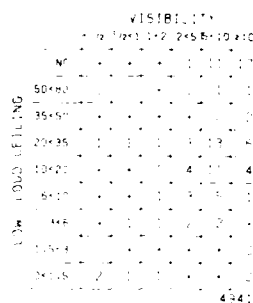
--Number of observations

Map - Low cloud ceiling and visibility thresholds

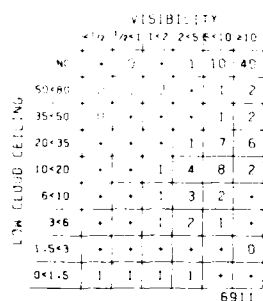
BLACK LINE Percent frequency of low cloud ceiling ≥ 1000 feet (or no low cloud ceiling) and visibility ≥ 5 nautical miles

BLUE LINE Percent frequency of low cloud ceiling <600 feet and/or visibility <2 nautical miles

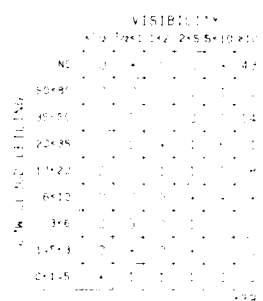
Cold Bay



Kodiak



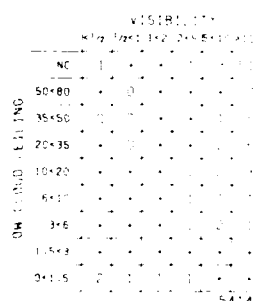
Homer



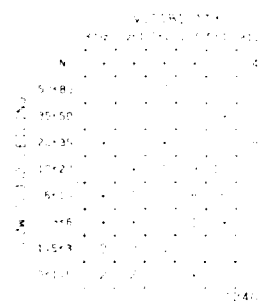
Kenai



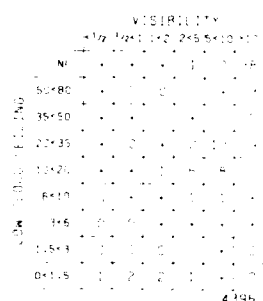
Anchorage



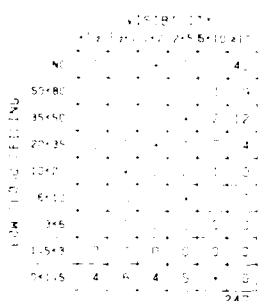
Middleton Island



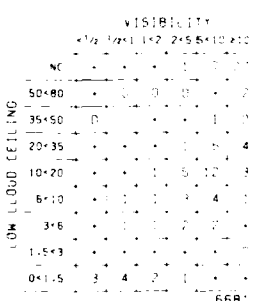
Cordova



Yakataga



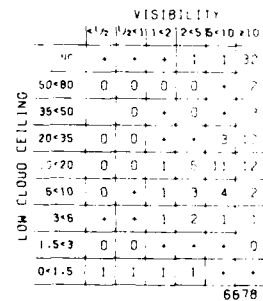
Yakutat



Sitka



Annette

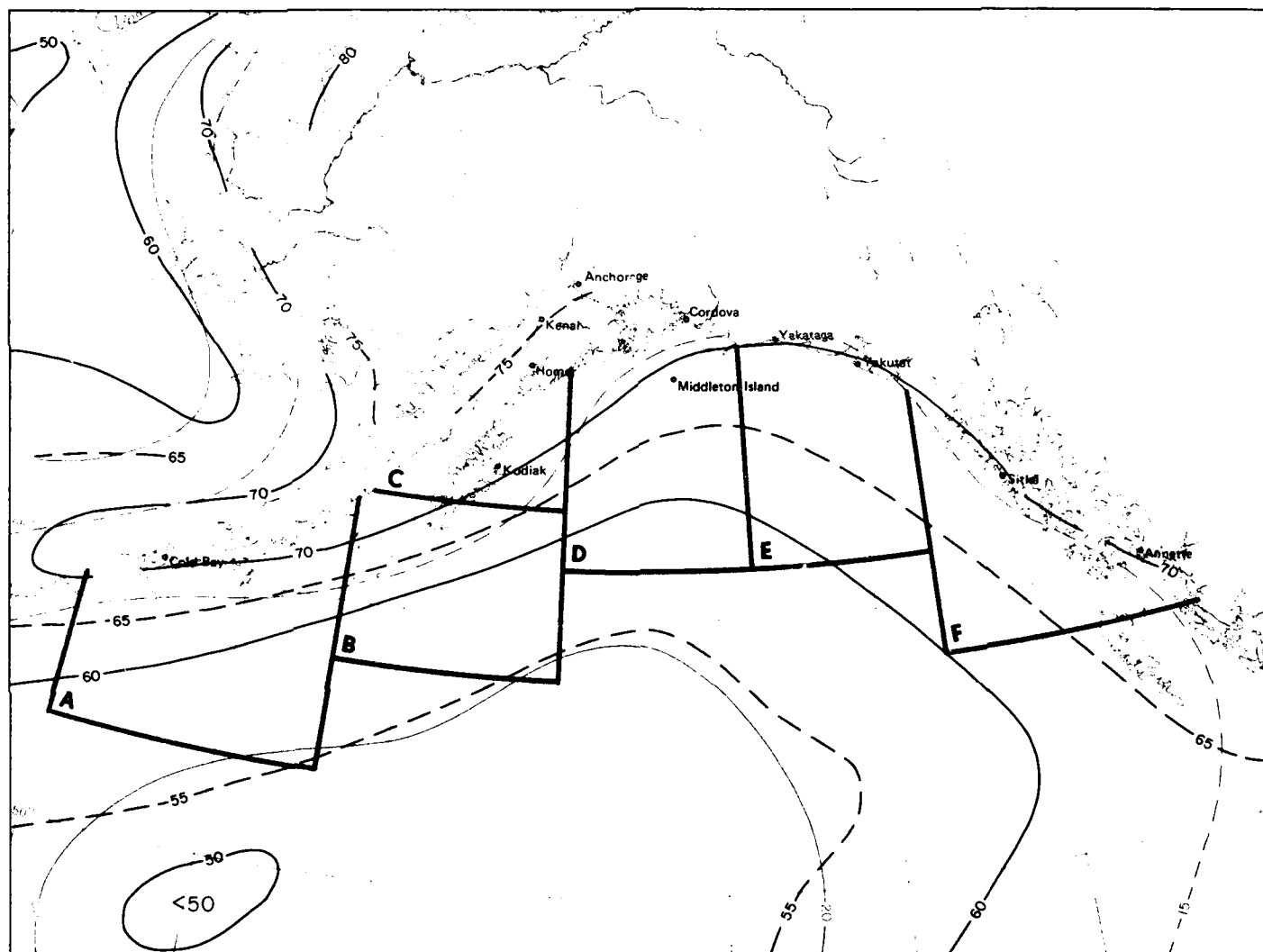


Marine Area A



Marine Area B





Marine Area C

Marine Area D

Marine Area E

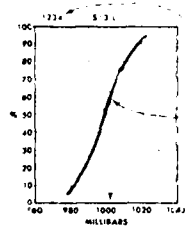
Marine Area F

12 Low cloud ceiling and visibility thresholds

December

Legend

Sea level pressure



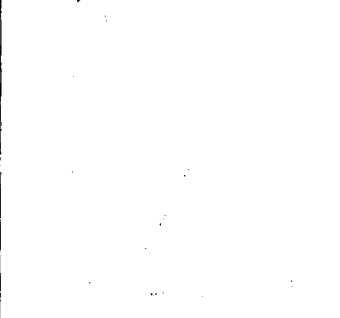
Number of observations
Cumulative percent frequency of sea level pressures equal to or less than the pressure intersected by the curve
S Standard deviation of pressure, mbs
60% of all observed sea level pressures were ≤ 1002 millibars

Map - Mean sea level pressure

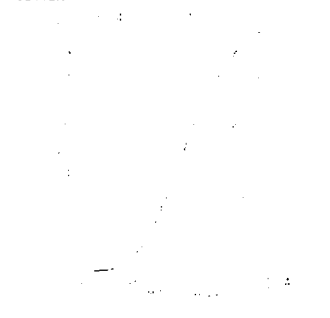
BLACK LINE - Mean sea level pressure, millibars

Sea level pressure is one of the most frequently recorded elements but one of the least accurate because of instrument and coding errors. Despite the inaccuracies of the individual readings, however, the large scale patterns and mean gradients of the isopleth analyses are relatively accurate.

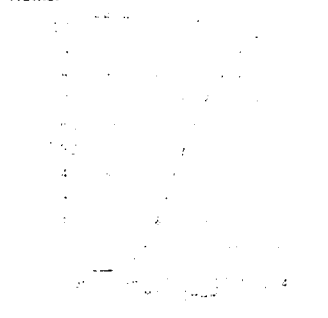
Cold Bay



Kodiak



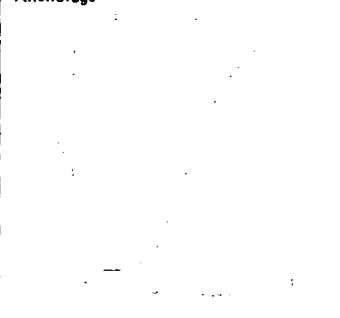
Homer



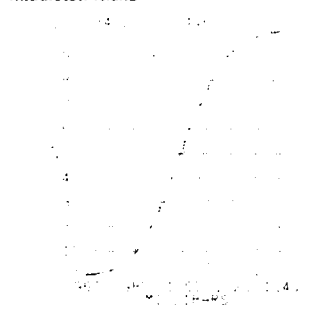
Kenai



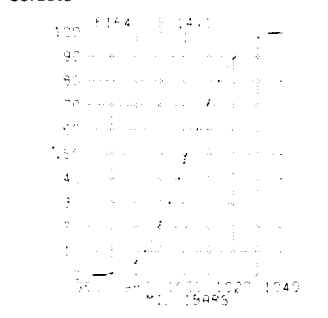
Anchorage



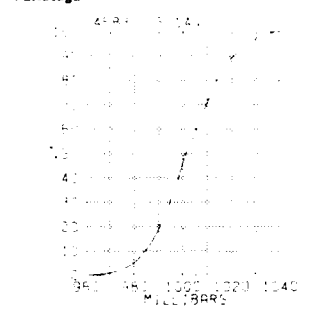
Middleton Island



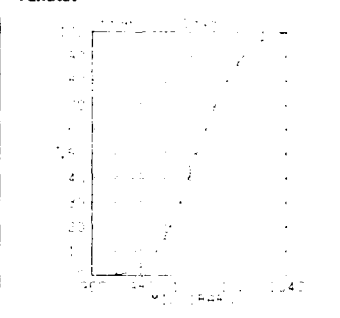
Cordova



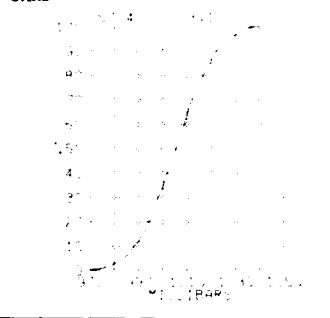
Yakutat



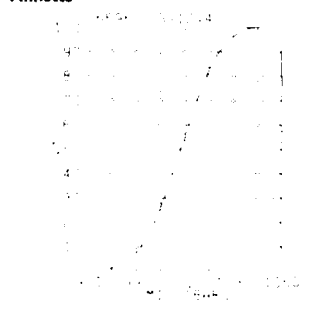
Yakutat



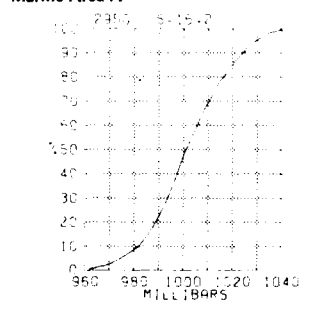
Sitka



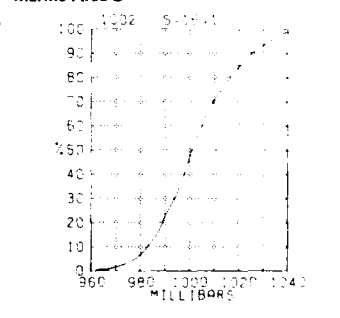
Annette



Marine Area A

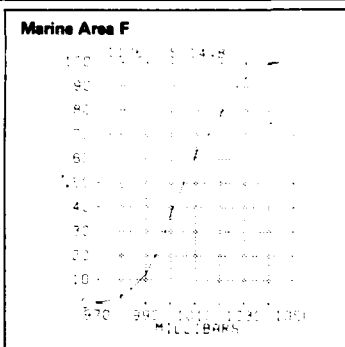
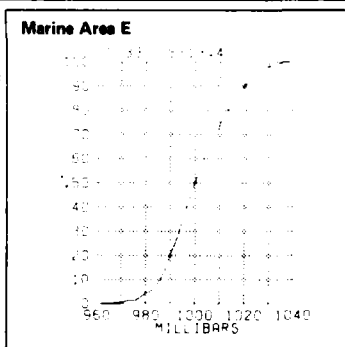
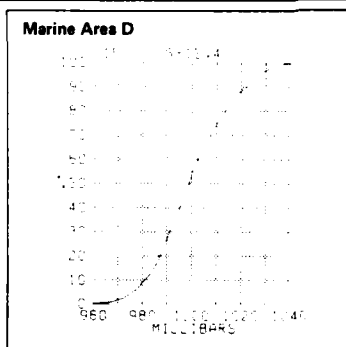
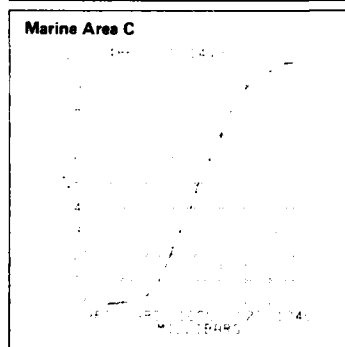
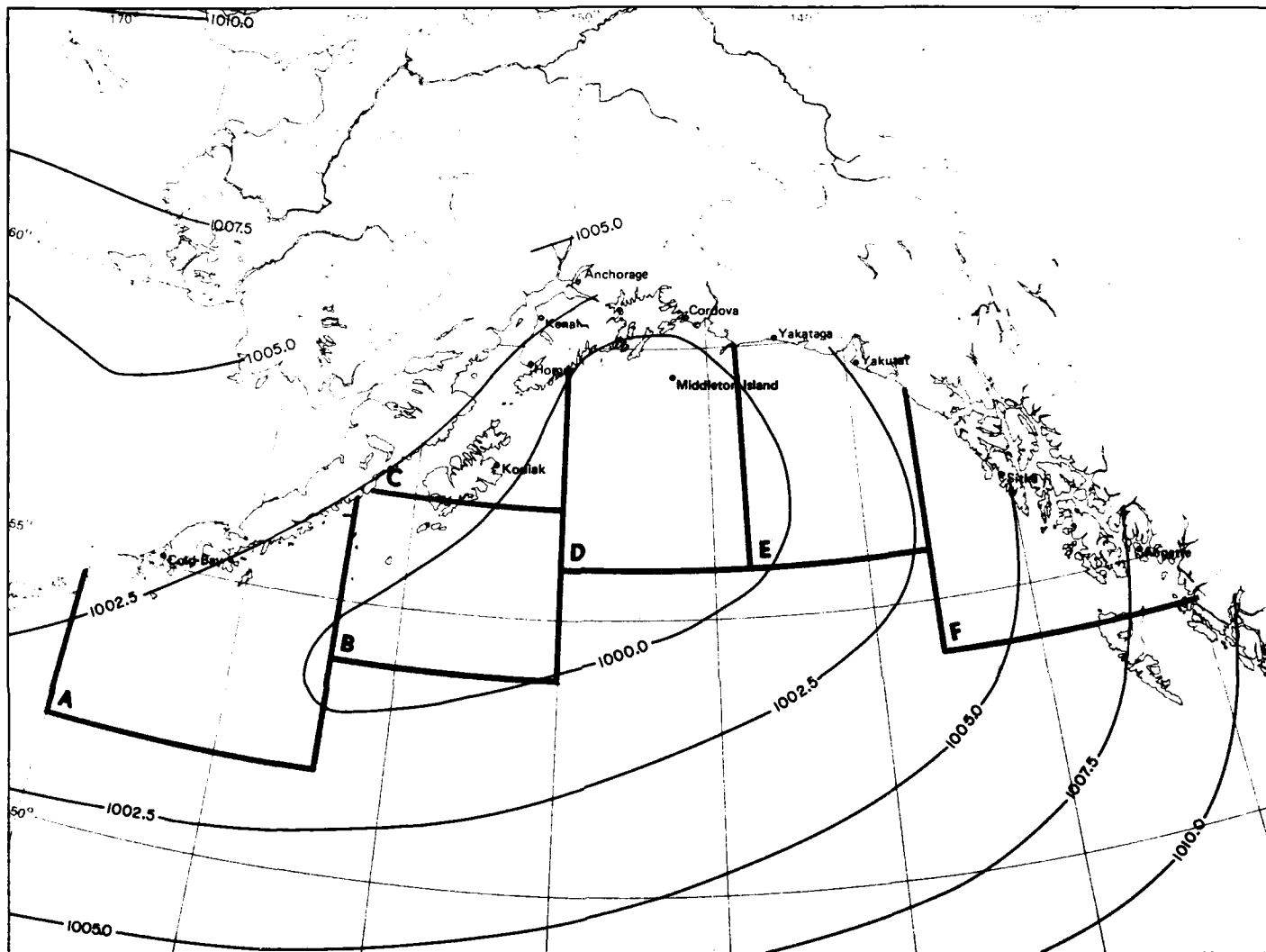


Marine Area B



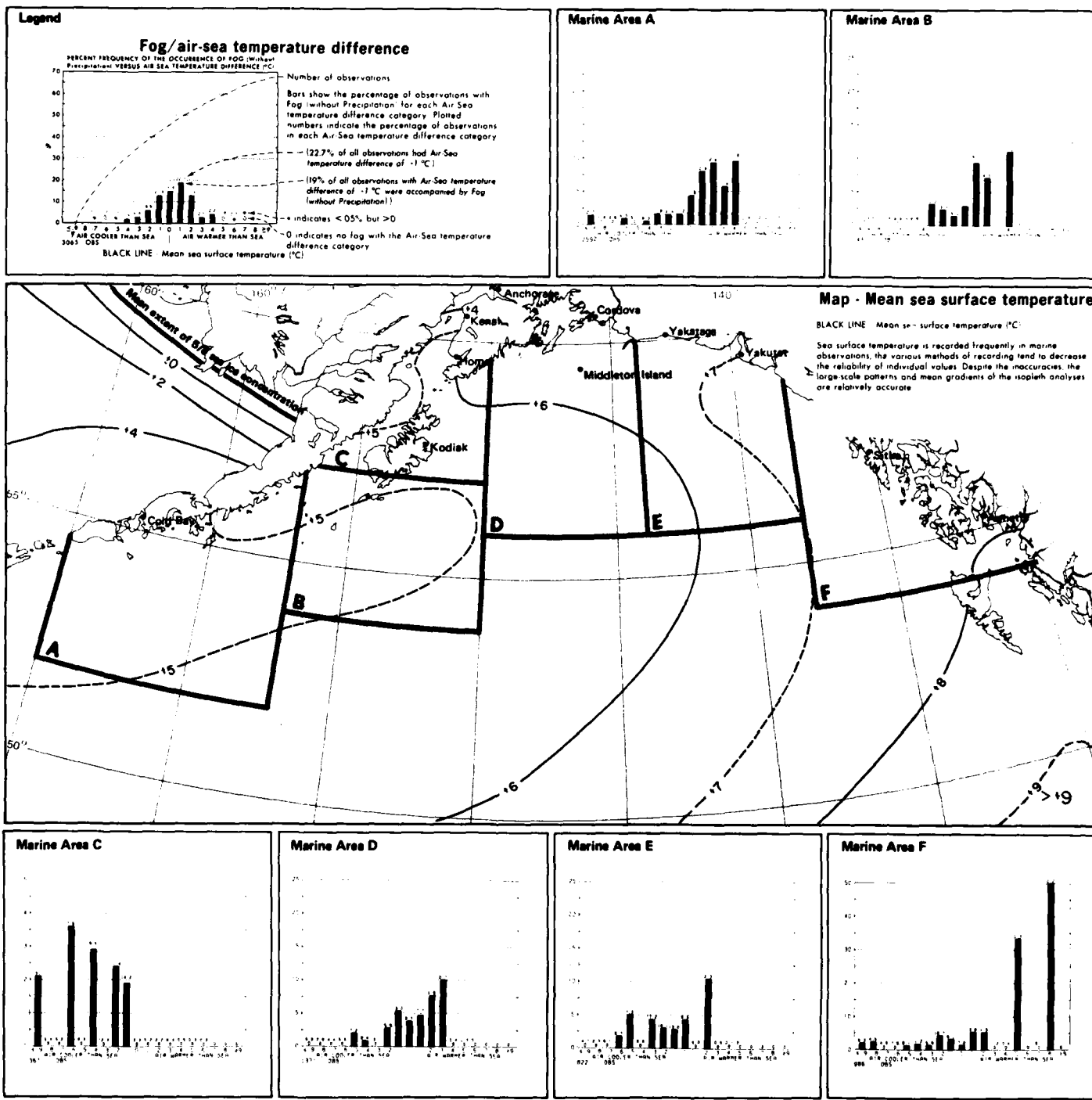
December

13 Sea level pressure



13 Mean sea level pressure

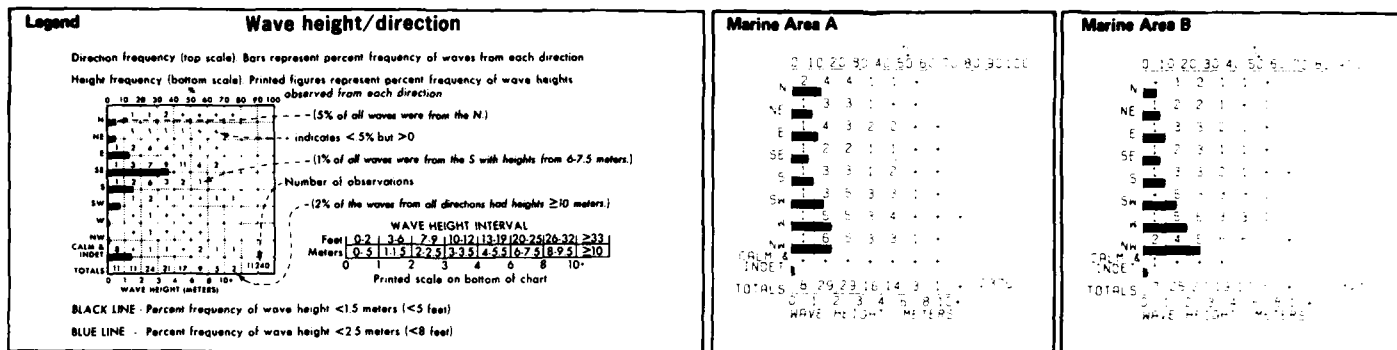
December

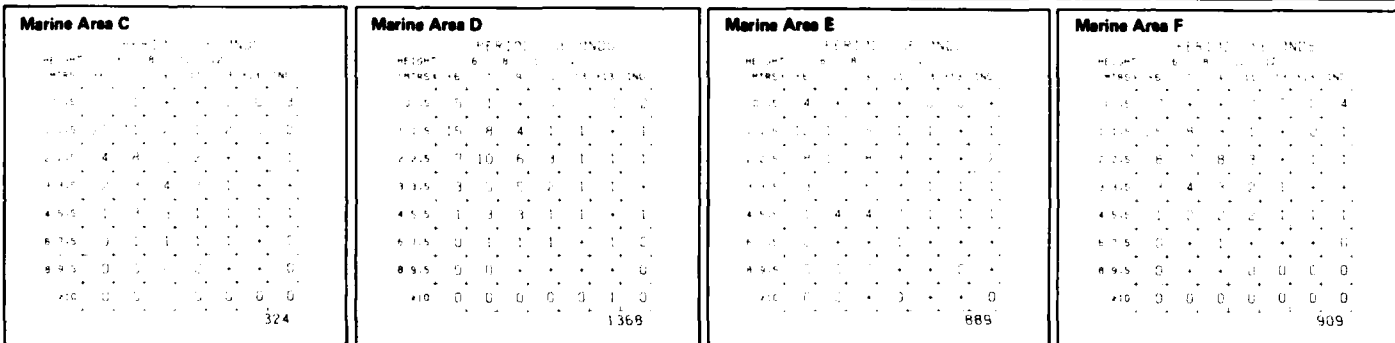
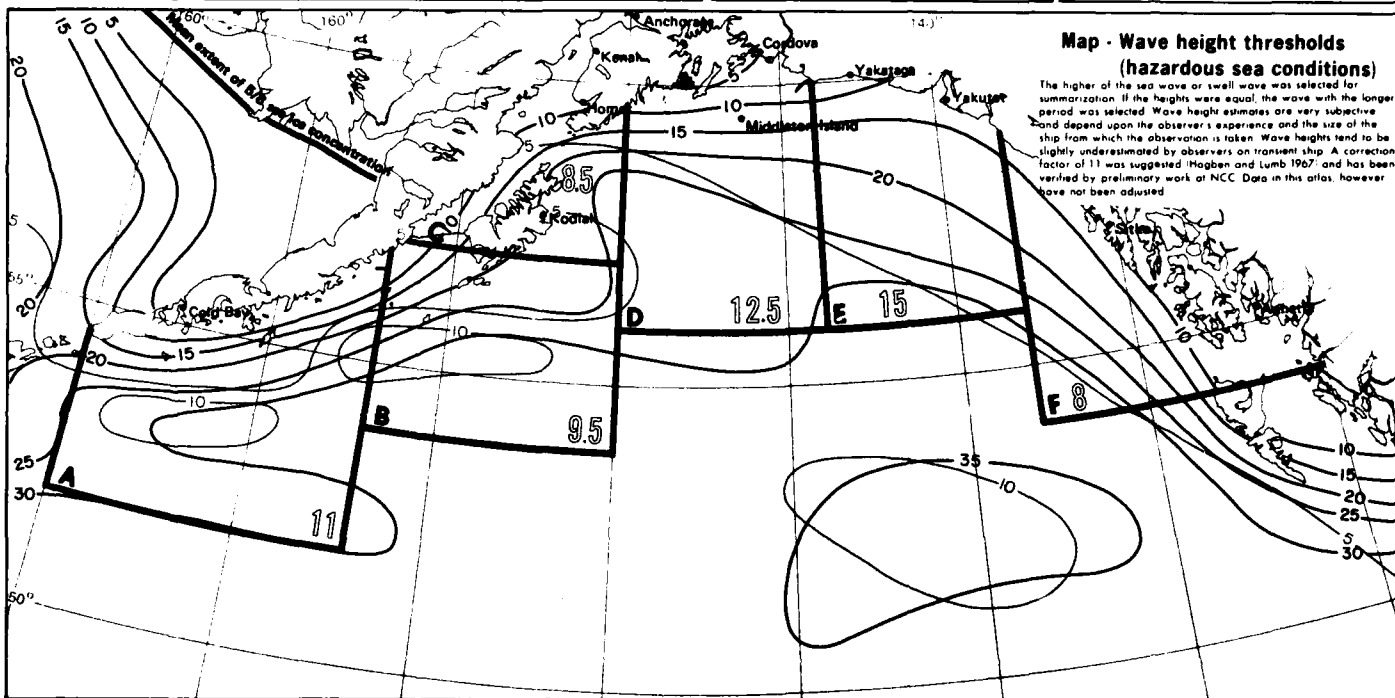
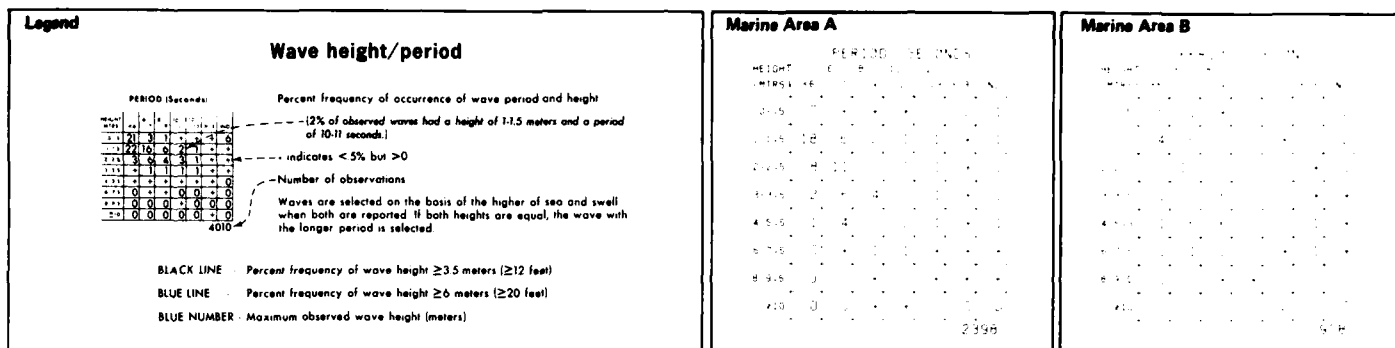


December

426

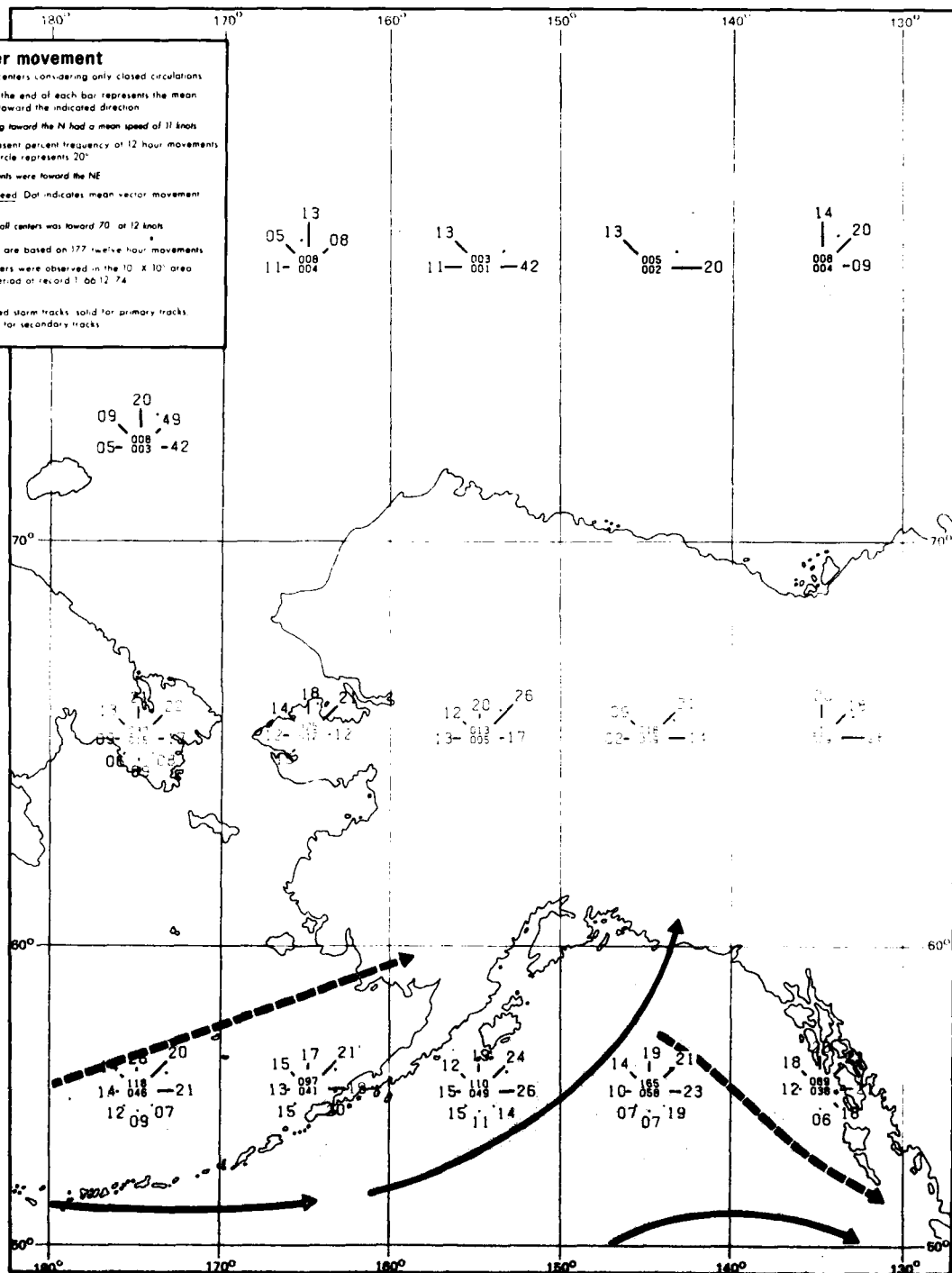
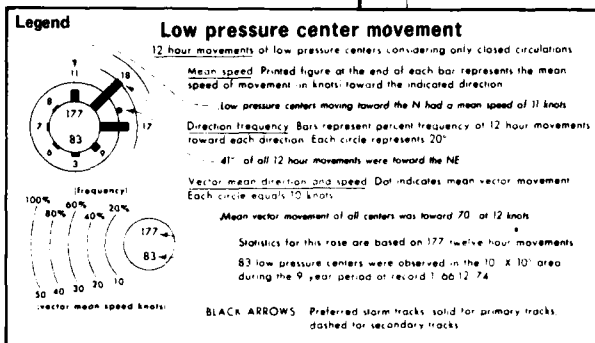
14 Fog/air-sea temperature difference
Mean sea surface temperature





17 Wave height thresholds (hazardous)

December

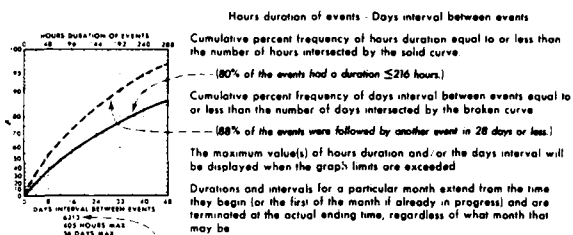


December

18 Low pressure center movement

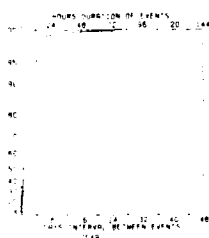
Legend

Persistence of visibility <2 n. mi.

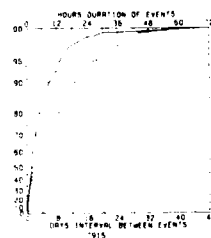


Top and bottom scales are variable to allow for variations in the data

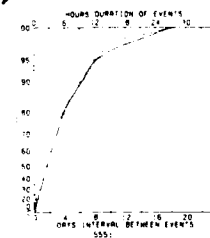
Kodiak



Homer



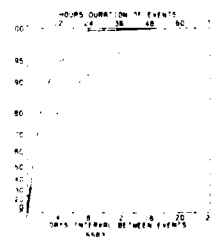
Kenai



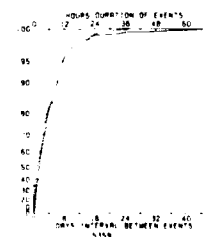
Middleton Island



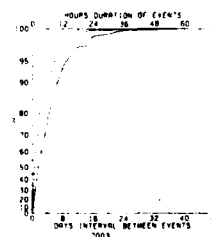
Cordova



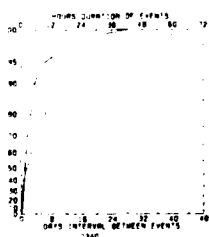
Yakutat



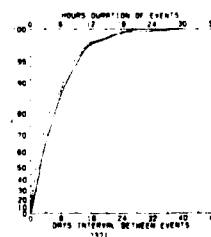
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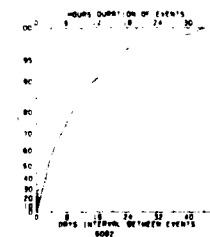
Sitka



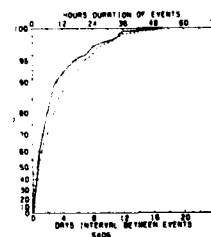
Annette



Anchorage



Cold Bay

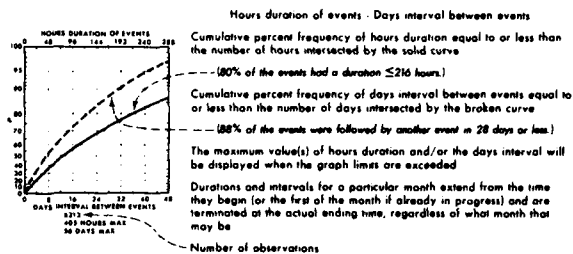


19 Persistence of visibility < 2 n. mi.

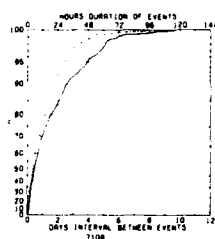
December

Legend

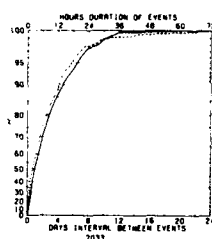
Persistence of wind ≥ 10 kts.



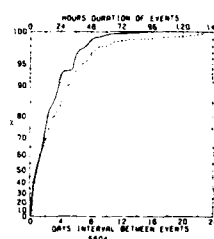
Kodiak



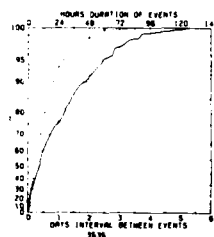
Homer



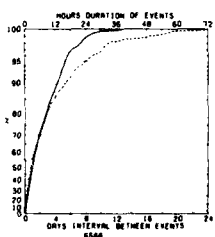
Kenai



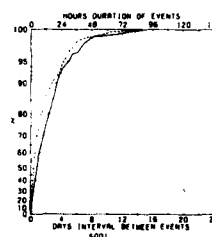
Middleton Island



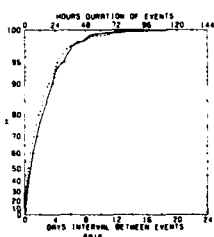
Cordova



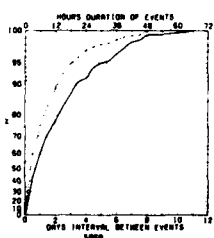
Yakutat



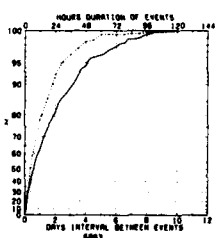
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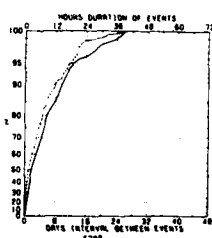
Sitka



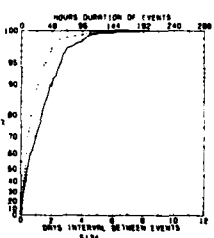
Annette



Anchorage



Cold Bay

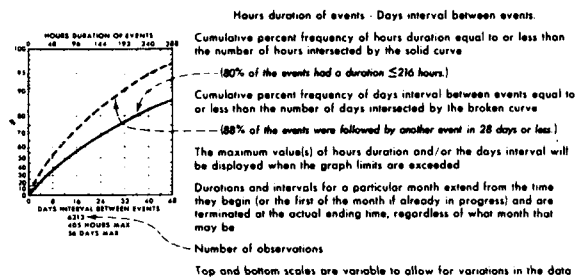


December

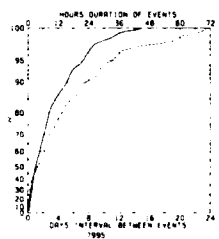
20 Persistence of wind ≥ 10 kts.

Legend

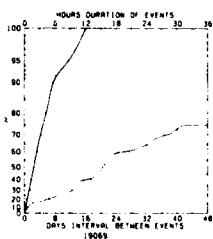
Persistence of wind ≥ 20 kts.



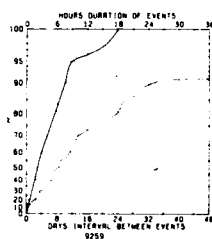
Kodiak



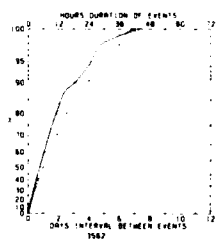
Homer



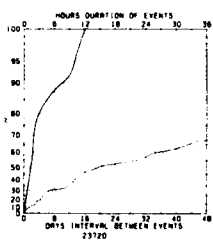
Kenai



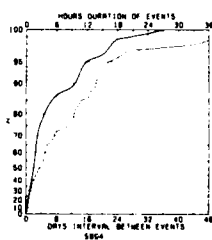
Middleton Island



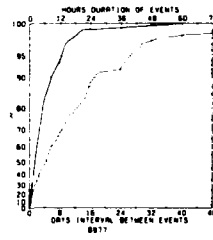
Cordova



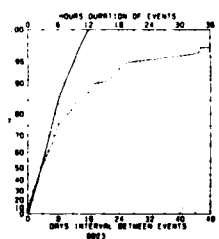
Yakutat



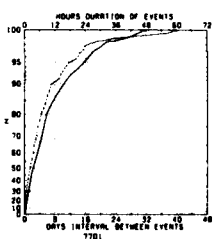
Yakutat



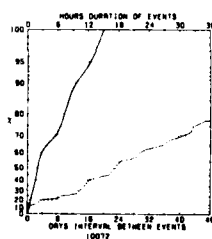
Sitka



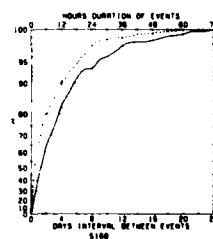
Annette



Anchorage



Cold Bay



21 Persistence of wind ≥ 20 kts.

December

Legend

Annual maximum winds and waves for selected return periods—Marine areas

Return periods for maximum sustained winds and for maximum significant and extreme wave heights are presented in tabular form for selected marine areas. Sustained winds are winds averaged over a period of one minute, the significant wave height is the average height of the highest one third of all waves (sea and swell) in view, and the extreme wave height is an empirical estimate of 1.8 times the significant wave height. Estimates presented in the tables were based primarily on methods described by Thom (see References). For example, on the average the Marine Area A can expect annual maximum sustained wind speed to exceed 105 knots once in 100 years.

Area C

Return period years	Maximum sustained wind-knots	Maximum significant wave-meters (feet)	Extreme wave- meters (feet)
5	72	12.5 (42)	23.0 (75)
10	78	14.0 (47)	26.0 (85)
25	87	17.0 (55)	30.0 (99)
50	94	19.0 (62)	34.0 (112)
100	102	21.5 (70)	38.0 (125)

Area D

Return period years	Maximum sustained wind-knots	Maximum significant wave-meters (feet)	Extreme wave- meters (feet)
5	73	13.0 (42)	23.0 (75)
10	79	14.5 (47)	26.0 (85)
25	88	17.0 (55)	30.0 (99)
50	96	19.0 (62)	34.0 (112)
100	104	21.5 (70)	38.0 (125)

Area A

Return period years	Maximum sustained wind-knots	Maximum significant wave-meters (feet)	Extreme wave- meters (feet)
5	74	13.0 (43)	23.5 (77)
10	80	14.5 (48)	26.5 (87)
25	89	17.5 (57)	31.0 (102)
50	97	19.5 (64)	35.0 (115)
100	105	22.0 (72)	39.0 (129)

Area E

Return period years	Maximum sustained wind-knots	Maximum significant wave-meters (feet)	Extreme wave- meters (feet)
5	72	12.5 (42)	23.0 (75)
10	78	14.0 (47)	26.0 (85)
25	87	17.0 (55)	30.5 (100)
50	94	19.0 (62)	34.0 (112)
100	102	21.5 (70)	38.0 (126)

Area B

Return period years	Maximum sustained wind-knots	Maximum significant wave-meters (feet)	Extreme wave- meters (feet)
5	75	13.5 (44)	24.0 (79)
10	82	15.0 (50)	27.0 (89)
25	91	17.5 (58)	32.0 (105)
50	99	20.0 (65)	36.0 (118)
100	107	22.0 (73)	40.5 (132)

Area F

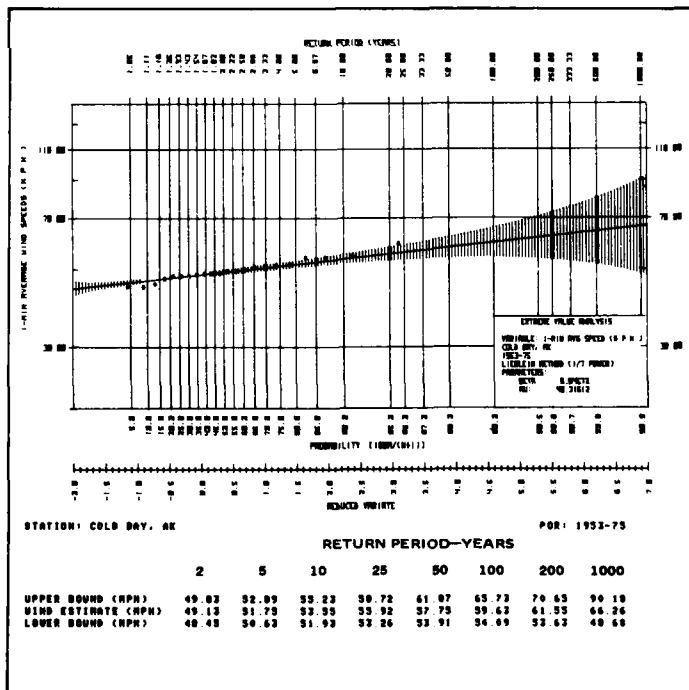
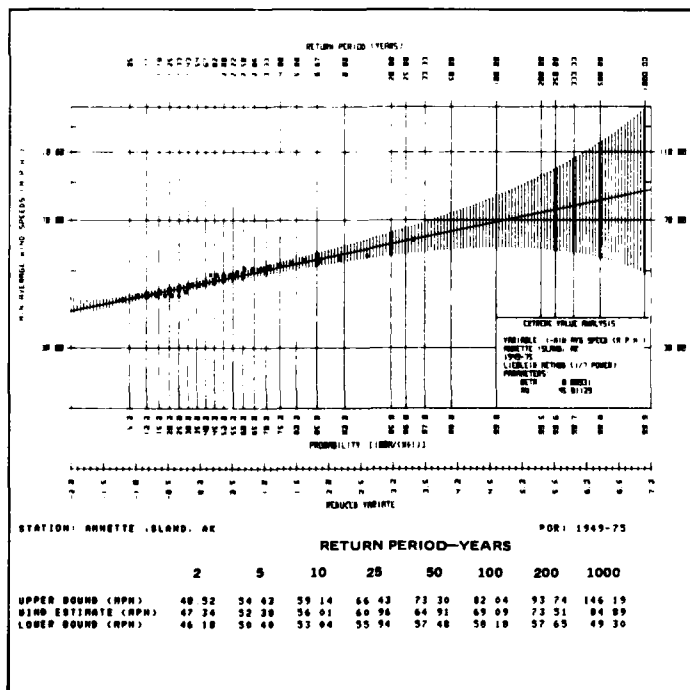
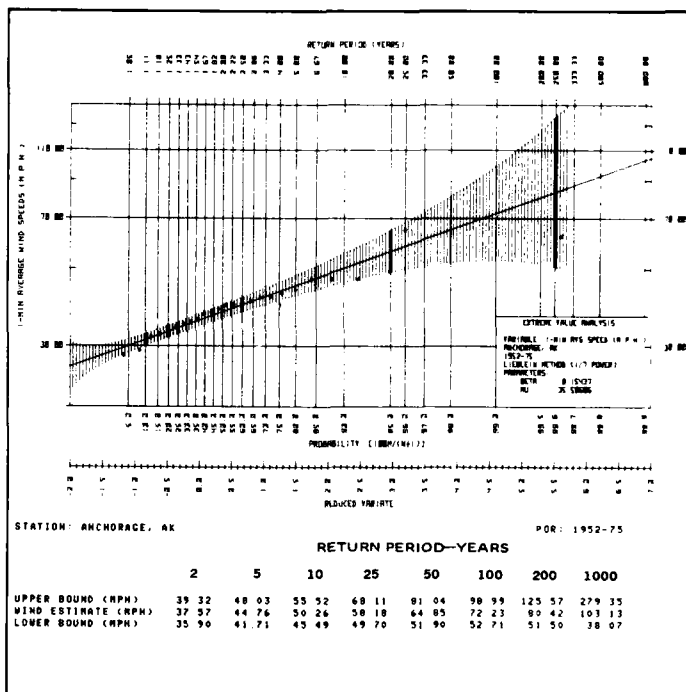
Return period years	Maximum sustained wind-knots	Maximum significant wave-meters (feet)	Extreme wave- meters (feet)
5	69	12.0 (40)	22.0 (72)
10	76	14.0 (46)	25.0 (82)
25	84	16.0 (53)	29.5 (96)
50	91	18.5 (60)	33.0 (108)
100	99	20.5 (67)	36.0 (121)

22 Annual maximum winds and waves for selected return periods—Marine areas

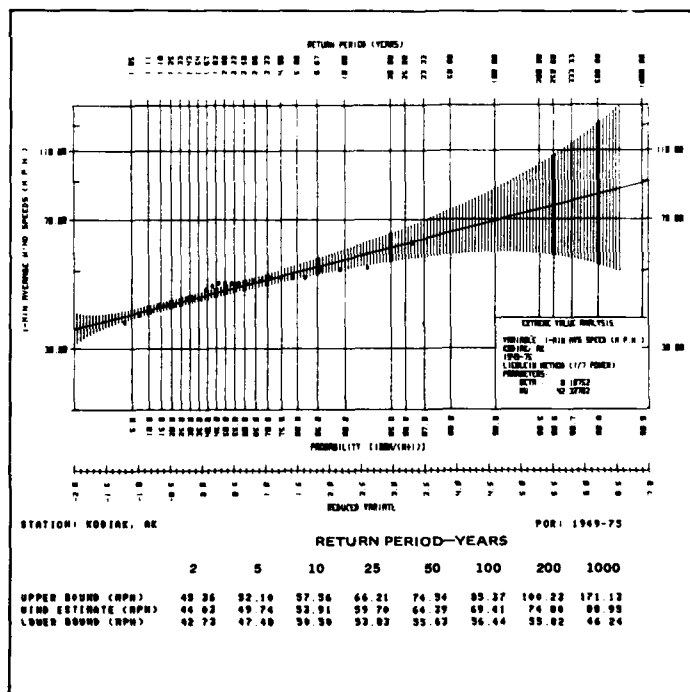
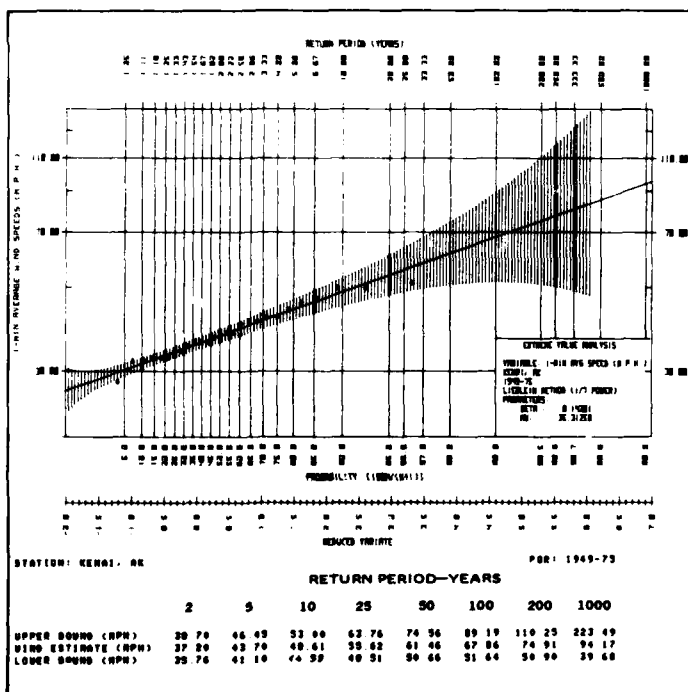
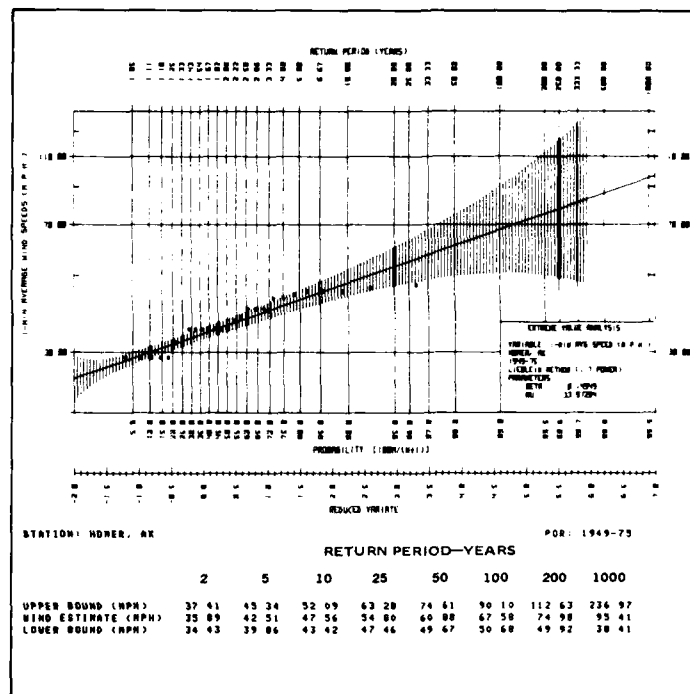
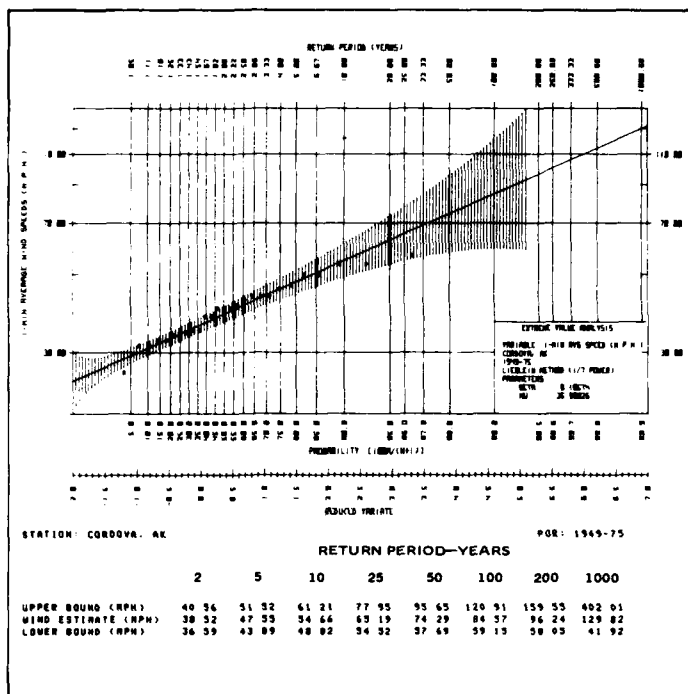
Legend

Annual maximum sustained winds for selected return periods

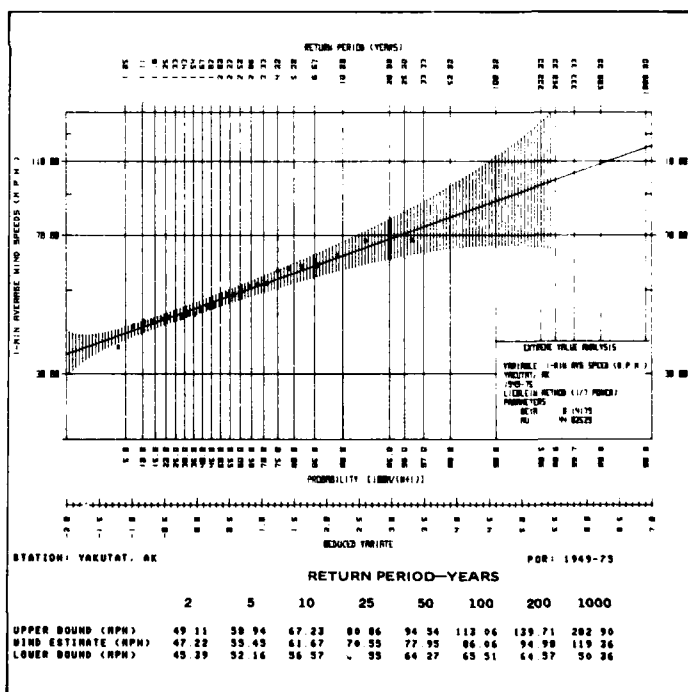
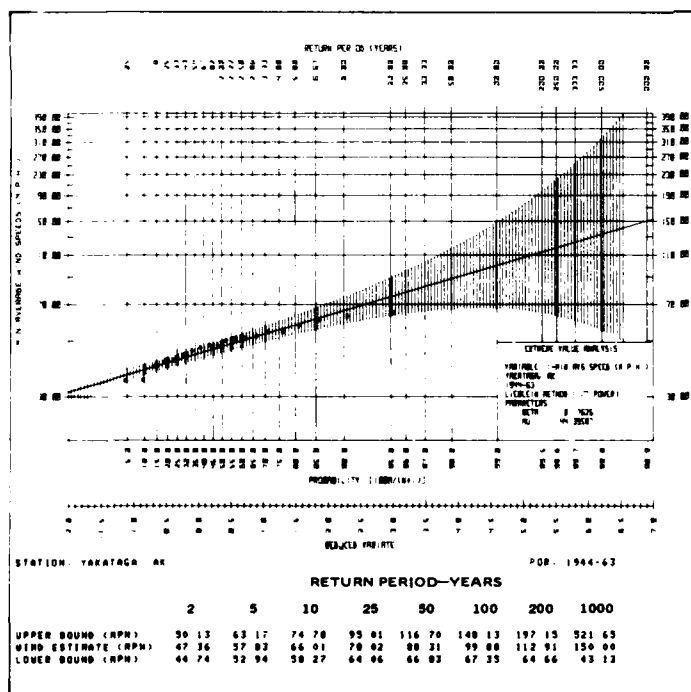
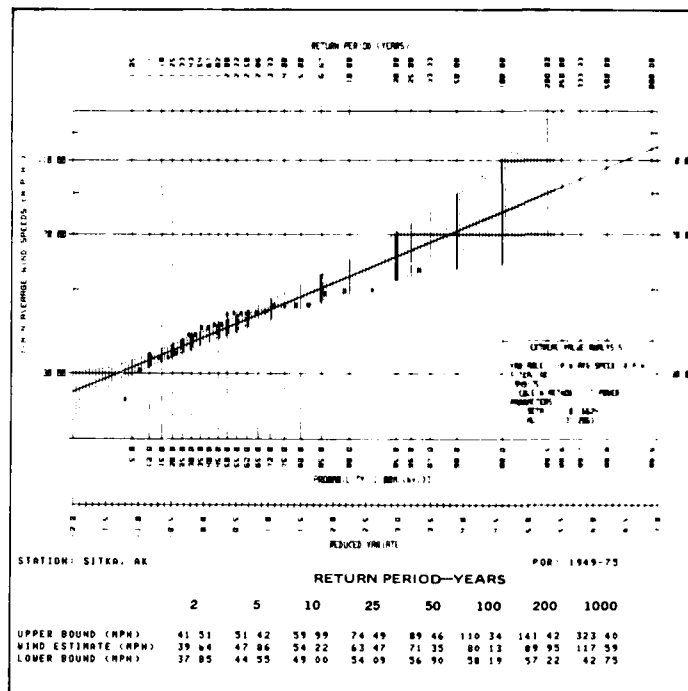
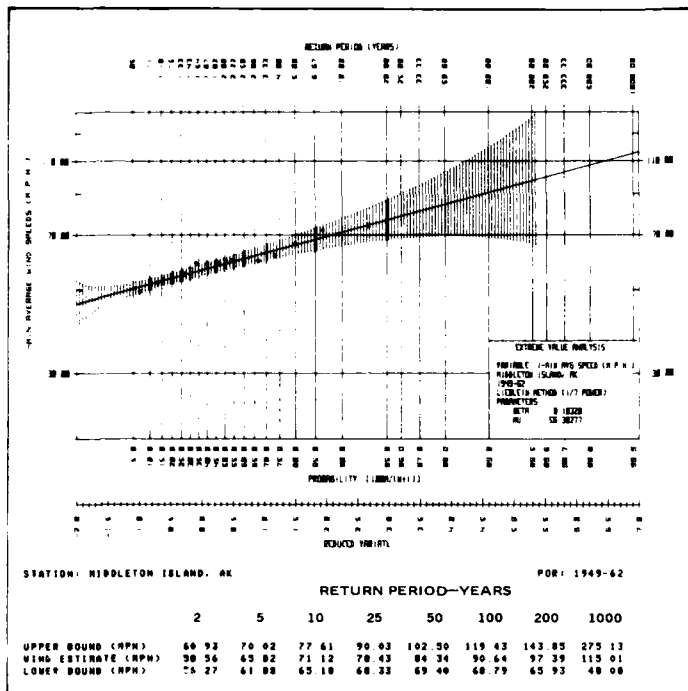
Values of annual maximum sustained wind speeds for selected return periods in years are presented in graphic and tabular form for selected coastal stations. For example, on the average Anchorage can expect annual maximum sustained wind speed to exceed 72 mph once in 100 years. Stated another way, the probability is 0.99 that the maximum sustained wind will be equal to or less than 72 mph; the probability of exceeding 72 mph in any year is 0.01 (the return period is the reciprocal of the latter probability). This is an estimate of the true 100-year return period value; the probability is 0.68 that the true 100-year value lies in the interval bounded by 53 and 99 mph.



23 Annual maximum sustained winds for selected return periods



23 Annual maximum sustained winds for selected return periods (cont.)



23 Annual maximum sustained winds for selected return periods (cont.)

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