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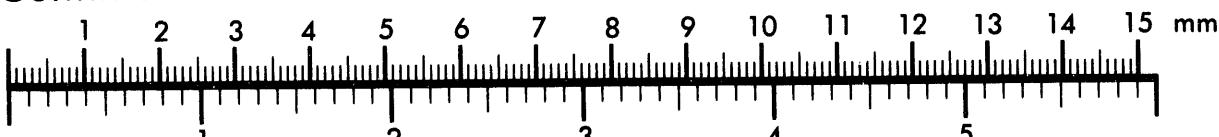
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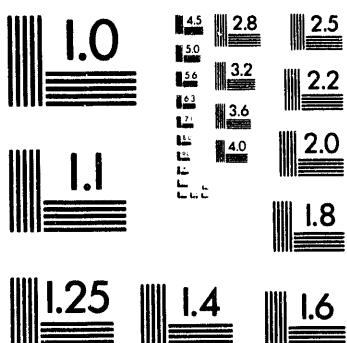
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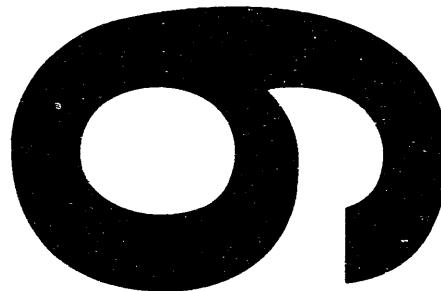
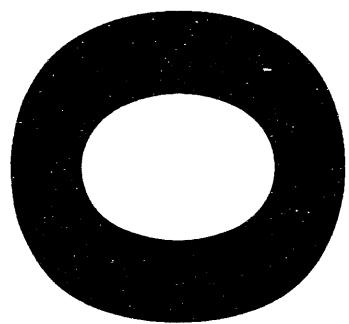
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Climatological Data Summary 1993 with Historical Data

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K. W. Burk

June 1994

Prepared for
the U.S. Department of Energy
under Contract DE-AC06-76RLO 1830

Pacific Northwest Laboratory
Richland, Washington 99352



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MASTER

PREFACE

This document uses English units (such as, mph, inches, and °F) when presenting all information. The decision to use English units was based on several factors. First, measurements made at the Hanford Meteorology Station are recorded and stored in English units. Second, previous Hanford climatological summaries were published using English units. Third, English units are still the standard in the National Oceanic and Atmospheric Administration (specifically, National Climatic Data Center and National Weather Service) reporting and publications. Finally, most users of this document are more familiar with meteorological parameters in English units, rather than their metric equivalents. For example, most users of this document think of a pleasant summer day being 86°F rather than 30°C.

Throughout this document the term "normal" is used to indicate climatological normal which is defined as an average value over a period of years of any meteorological element such as temperature, pressure, and rainfall. The accepted convention uses a 30-year time period, ending with the first year of each new decade (such as 1951-1980, 1961-1990, 1971-2000). The current time period used for climatological normals is 1961-1990.

Some useful conversions between English units and metric equivalents are:

$$1 \text{ foot} = 0.3048 \text{ meter}$$

$$1 \text{ mile} = 1.609 \text{ kilometer}$$

$$1 \text{ inch} = 2.54 \text{ centimeters}$$

$$1 \text{ mile per hour} = 0.447 \text{ meters/second}$$

$$^{\circ}\text{F} = (9/5 \times ^{\circ}\text{C}) + 32$$

$$^{\circ}\text{C} = 5/9 \times (^{\circ}\text{F} - 32)$$

SUMMARY

This document presents the climatological data summary for calendar year 1993. It presents updated historical climatologies for temperature, wind, precipitation, and other miscellaneous meteorological parameters from the Hanford Meteorology Station (HMS) and Hanford Meteorological Monitoring Network. It also presents climatological normal and extreme values of temperature and precipitation for the HMS.

Previous documents (Stone et al. 1983, for example) have included climatological data collected at the old Hanford Townsite, located approximately 10 miles east-northeast of the present HMS. The records for these two different sites (HMS and Hanford Townsite) have been frequently interchanged as if representing the same location. With the exception of Section 2.0, the remainder of this document uses data only from the HMS, with a period of record beginning December 7, 1944.

ACKNOWLEDGMENTS

The authors would like to thank S. A. Stage, who developed the software used for the wind rose plots throughout this document. We would also like to thank the staff of the Hanford Meteorology Station, both past and present, without whose weather observations over the past 50 years this document would not have been possible.

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1.0 INTRODUCTION

This document presents the calendar year 1993 climatological data summary for the Hanford Meteorology Station (HMS), and additional climatologies for temperature, wind, precipitation, and other meteorological parameters for the HMS and the automated stations of the Hanford Meteorological Monitoring Network (HMMN). Climatological normal and extreme values for temperature and precipitation are also presented. Currently 26 monitoring stations are within and located near the U.S. Department of Energy's (DOE's) Hanford Site in southeastern Washington State (Table 1.1 and Figure 1.1). A detailed description of each of the monitoring sites, including photographs of the topography surrounding each site, is provided in Glantz and Islam (1988).

TABLE 1.1. Site Numbers, Names, and Codes for the Hanford Meteorological Monitoring Network

SITE NUMBER	SITE NAME	SITE CODE	PERIOD OF OPERATION
1	Prosser Barricade	PROS	1/82 - Present
2	Emergency Operations Center	EOC	1/82 - Present
3	Army Loop Road	ARMY	1/82 - Present
4	Rattlesnake Springs	RSPG	1/82 - Present
5	Edna	EDNA	1/82 - Present
6	200 East	200E	1/82 - Present
7	200 West	200W	1/82 - Present
8B	Beverly	BVLY	8/91 - Present
8W	Wahluke (no longer active)	WAHL	1/82 - 7/91
9	Fast Flux Test Facility	FFT	1/82 - Present
10	Yakima Barricade	YAKB	1/82 - Present
11	300 Area	300A	1/82 - Present
12	Wye Barricade	WYEB	1/82 - Present
13	100-N	100N	1/82 - Present
14	WNP-2	WPPS	1/82 - Present
15	Franklin County	FRNK	1/82 - Present
16	Gable Mountain	GABL	1/82 - Present
17	Ringold	RING	1/82 - Present
18	Richland Airport	RICH	1/82 - Present
19	Sagehill (no longer active)	SAGE	1/82 - 1/93
20	Rattlesnake Mountain	RMTN	1/82 - Present
21	Hanford Meteorology Station	HMS	1/82 - Present
22	Pasco Airport	PASC	10/87 - Present
23	Gable West	GABW	3/86 - Present
24	100-F	100F	3/86 - Present
25	Vernita Bridge	VERN	2/88 - Present
26	622R (Co-located with #21 - HMS)	622R	1/82 - Present
27	Tri-City Vocational Skills Center	VSTA	2/91 - Present

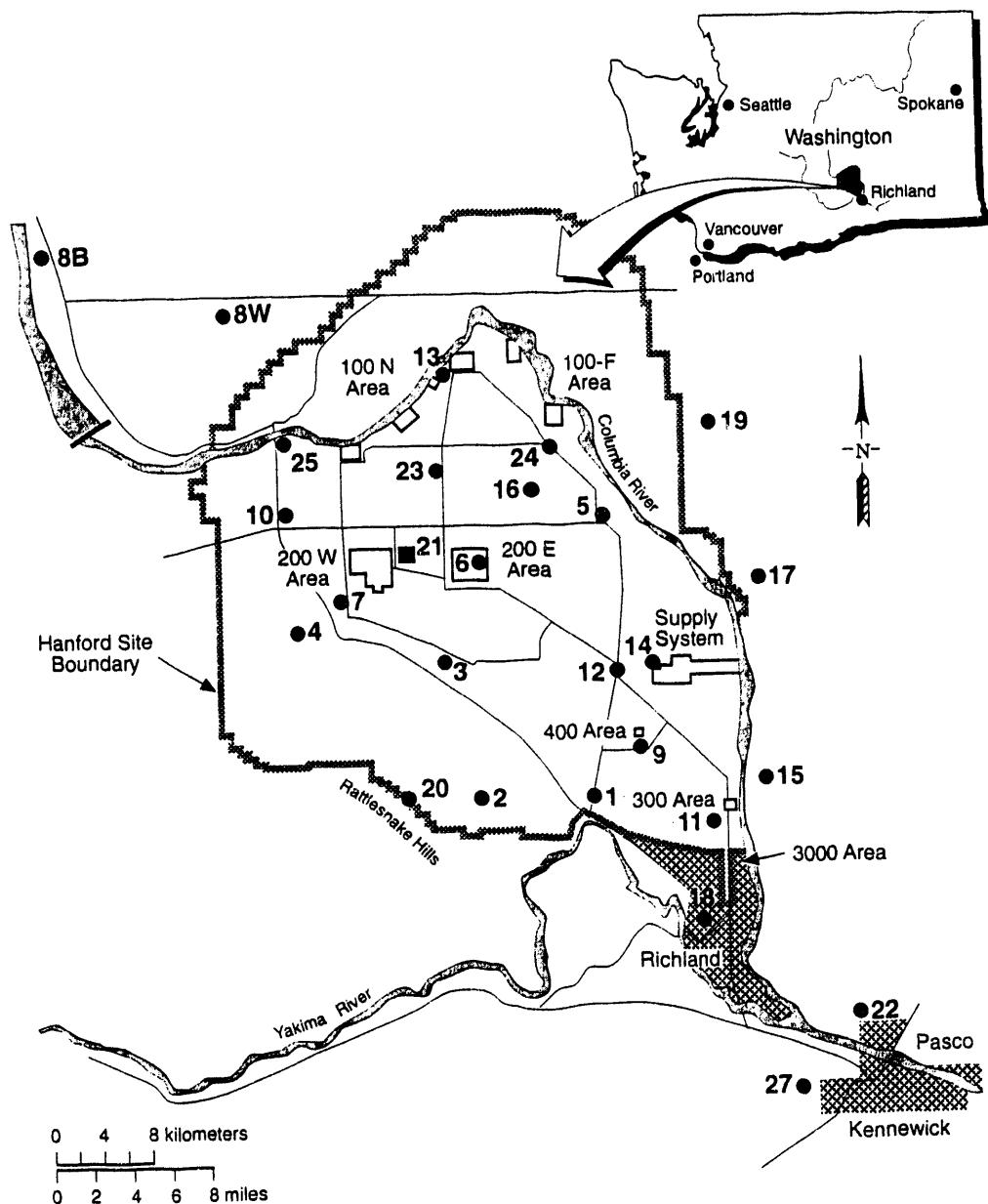


FIGURE 1.1. Map of the Hanford Site and Surrounding Areas
(See text for discussion of symbols and numbers)

The location of the Hanford Meteorology Station is indicated by a black square. Other meteorological monitoring locations are denoted by black circles. Station identification numbers are shown in bold type beside the square and circles. (In Table 1.1, names are provided for each of the numbered monitoring locations.)

Operation of the HMS is a function of the Meteorological and Climatological Services Project which is funded by the U.S. DOE, Richland Operations Office. This project, managed by the Pacific Northwest Laboratory,^(a) is responsible for providing DOE and Hanford Site contractors with ongoing meteorological and climatological services support, primarily for emergency response activities, Hanford Site work scheduling, and general site safety. Detailed, real-time meteorological data are needed in the event of a release of hazardous material to the atmosphere from any of the Hanford Site facilities. These data can be used to model atmospheric dispersion and to estimate the environmental impacts of the release. Meteorological data and weather forecasts are also necessary to assure that operations and activities on the Hanford Site are conducted safely, particularly where specific weather conditions might impact those operations or activities. The climatological database is also used in environmental studies, environmental impact reports, facility design, and planning operations.

During the period from April 1912 through March 1943, cooperative observers for the U.S. Weather Bureau (now the National Weather Service) recorded daily maximum and minimum temperatures, and precipitation, including measurements of unmelted snow at the Hanford Townsite, about 10 miles east-northeast of the present HMS. From late-1943 until mid-1944, the U.S. Weather Bureau recorded some meteorological operations in Richland. Then, in 1944 as part of the Manhattan Project, the Hanford Meteorology Station was established. Hourly observations began on December 7, 1944.

The HMS and its 410-ft (125-m) instrument tower are located near the center of the Hanford Site, between the 200 West and 200 East Areas (Figure 1.1, No 21). Hourly observations of wind direction, wind speed, and air temperature are made at multiple levels on the 410-ft tower. A variety of other meteorological parameters are also measured or observed. These parameters include present weather, dew point temperature, relative humidity, precipitation, atmospheric pressure, cloud cover, visibility, and solar radiation. Several climatological summaries of data collected at the HMS, at

(a) The Pacific Northwest Laboratory is operated by Battelle Memorial Institute for the U.S. Department of Energy under Contract DE-AC06-76RLO 1830.

the old Hanford Townsite, and Richland monitoring locations have been published over the past 30 years (Jenne and Kerns 1959, Stone et al. 1972, and Stone et al. 1983).

Beginning with calendar year 1994 monthly summaries and with this document, historical data from the old Hanford Townsite and Richland will no longer be included in these reports. The climatological data record from the HMS is now sufficiently long to stand alone.

The sections in this document are organized as follows:

- Section 2.0 - Calendar Year 1993 Summary
- Section 3.0 - Temperature Climatology
- Section 4.0 - Precipitation Climatology
- Section 5.0 - Wind Climatology
- Section 6.0 - Miscellaneous Climatological Statistics
- Section 7.0 - References
- Section 8.0 - Bibliography.

2.0 CALENDAR YEAR 1993 SUMMARY^(a)

Calendar year 1993 is the first year since 1985 with a below-normal average annual temperature. The average temperature for 1993 was 51.8°F, 1.5° below normal (53.3°F). The warmest year on record is 1992, which averaged 56.4°F; the coldest is 1985, which averaged 49.6°F.

Eight months during 1993 were cooler than normal, six of which were at least 2.0° below normal, and four of which were more than 5.0° below normal. July 1993 was a record cold month, averaging 70.5°F, 5.7° below normal (76.2°F). Four months were warmer than normal, three of which were at least 3.0° above normal. May had the greatest positive departure (+5.2°), and February the greatest negative (-7.2°).

Precipitation for calendar year 1993 totaled 7.83 inches, 125% of normal (6.26 inches). Calendar year snowfall totaled 36.2 inches, the third highest calendar year snowfall total on record. The highest was 45.1 inches in 1916. Normal yearly snowfall is 13.8 inches.

January 1993 was much colder and wetter than normal. The average temperature for the month was 24.8°F, 6.5° below normal. It was the coldest month at the HMS since December 1990, which averaged 24.1°F. Precipitation for the month totaled 1.30 inches, 165% of normal. Snowfall for January was 17.1 inches, the second highest monthly snowfall on record, compared to a normal January snowfall of 3.9 inches. January 1950 recorded 23.4 inches, the largest January snowfall on record.

February 1993 was another cold month, averaging 30.8°F, 7.2° below normal. The period from February 15 to 28 averaged 18.1° below normal, with numerous record low temperatures (see Table 2.1). The minimum temperature of 3°F on February 28 was the coldest temperature ever recorded that late in the winter season. February precipitation totaled 1.17 inches, 189% of normal

(a) Note: During 1993, the climatological database included data from the old Hanford Townsite, with the record beginning in 1912. Therefore, the calendar year 1993 summary includes some references to that data.

TABLE 2.1. Daily Temperature Records for 1993 (Previous record and year of occurrence in parentheses)

DATE	MAXIMUM		MINIMUM	
	HIGH	LOW	HIGH	LOW
Jan 13				-4*(-4, 1949)
Feb 22				11 (14, 1918)
Feb 24				11*(11, 1962)
Feb 25	28 (34, 1962)			4 (14, 1962)
Feb 26	28*(28, 1955)			10 (12, 1962)
Feb 27	26 (30, 1955)			
Feb 28	25 (27, 1962)			3 (12, 1960)
Mar 1	26 (34, 1967)			
May 3	58 (60, 1942)			
May 12	100 (98, 1931)			
May 19	92 (91, 1912)			
Jun 22		71 (73, 1963)		
Jul 13		77*(77, 1983)		
Jul 17		73 (77, 1987+)		
Aug 25				43 (46, 1925)
Sep 29	92 (91, 1990+)			
Sep 30	88*(88, 1991+)		64 (58, 1989+)	
Oct 27		43*(43, 1956)		
Dec 10	67 (64, 1946)			

+ Most recent of several occurrences.

* Ties record.

(0.62 of an inch). Snowfall for February totaled 12.4 inches, compared to a February normal of 2.0 inches, and was the fourth highest February snowfall on record.

February 1916 holds the record snowfall with 26.0 inches. The 10.2-inch snowfall that occurred between 6 p.m. on February 18 and 6 p.m. on February 19 was a new record 24-hr snowfall. The previous record was 8.8 inches on November 21 and 22, 1985.

The winter of 1992-93 (December 1992, January and February 1993) averaged 28.5°F, 5.1° below normal (33.6°F). The coldest winter on record averaged 24.2°F in 1948-49, and the warmest was 41.1°F in 1933-34. Winter season snowfall totaled 56.1 inches, the most snowy winter on record. The previous record was 43.6 inches during the winter of 1915-1916, and normal is 13.8 inches. Other snowfall records for the winter of 1992-1993 include:

- largest December snowfall with 21.0 inches (previous record 19.1 inches in 1964)
- second most snowy January with 17.1 inches (record January was 23.4 inches in 1950)
- fourth highest February snowfall with 12.4 inches (record February was 26.0 inches in 1916)
- third most snowy March with 3.5 inches (record March was 4.2 inches in 1951)
- most days with \geq 1 inch on ground: 71 (previous record 62 days in 1985-1986)
- most days with \geq 6 inches on ground: 41 (previous record 35 days in 1964-1965)
- most days with \geq 12 inches on ground: 9 (previous record 4 days in 1964-1965)
- greatest 24-hr snowfall: 10.2 inches on February 18 and 19 (previous record 8.8 inches on November 21 and 22, 1985).

March 1993 continued the 1993 pattern of cool months. The average temperature of 43.2°F was 2.4° below normal. It was the foggiest March on record, both for number of days with fog (10) and total duration of fog (129.1 hours). The previous records were 9 days in 1989, and 35.1 hours total duration in 1978. 1993 also had a record number of cloudy days in March (24); the previous record was 23 days in March 1977. Precipitation for March 1993 totaled 0.67 inch, 143% of normal (0.47 inch). March snowfall totaled 3.5 inches, the third snowiest March on record. Normal March snowfall is 0.3 inch.

April 1993 temperatures were nearly normal. The average temperature of 52.5°F was 0.2° below normal. No prolonged periods of either above or below normal temperatures prevailed. April precipitation totaled 0.71 inch, 173% of normal (0.41 inch). A thunderstorm on April 29, although dropping only 0.01 inch of rain at the HMS, left as much as 0.40 inch of precipitation at other Tri-Cities locations, with some reports of one-half inch hail.

May 1993 was the seventh warmest May on record. The average temperature of 66.5°F was 5.2° above normal. The warmest May occurred in 1947 and

averaged 68.8°F. Precipitation for May totaled 0.60 inch, 118% of normal (0.51 inch), and was the eighth consecutive month with above normal precipitation.

The spring season (March, April, and May) was slightly warmer and much wetter than normal. The temperature averaged 54.1°F, 0.9° above normal (53.2°F). The warmest springs occurred in 1992 and 1947 with average temperatures of 58.2°F, while the coolest, in 1955, averaged 48.0°F. 1993 spring-time precipitation totaled 1.98 inches, 142% of normal (1.39 inches). The wettest spring, in 1957, received 3.06 inches, while the driest, in 1968, received only 0.09 inch.

June 1993 was slightly cooler than normal, averaging 68.4°F, 1.3° below normal (69.7°F). Precipitation for June totaled only 0.12 inch, 32% of normal (0.38 inch).

July 1993 was the coolest July on record. The average temperature of 70.5°F, was 5.7° below normal (76.2°F). The previous coolest July was 70.6°F in 1986; the warmest, in 1985, averaged 82.2°F. Only three days during July 1993 had average temperatures that were above normal. July 1993 was the wettest July on record. Precipitation for the month totaled 1.76 inches, 978% of normal (0.18 inch). The previous wettest July, in 1966, received 0.81 inch. The 24-hr precipitation total of 1.39 inches on July 16-17 was a record 24-hr precipitation total for the month. The previous record was 0.59 inch in July 1947. The most precipitation in a 24-hr period at the HMS was 1.91 inches on October 1 and 2, 1957.

August 1993 was cooler than normal, averaging 73.1°F, 2.0° below normal (75.1°F). Precipitation for the month totaled 0.24 inch, 89% of normal (0.27 inch).

The summer of 1993 (June, July, and August) was the sixth coolest summer on record. The average summer-season temperature of 70.7°F was 3.0° below normal (73.7°F). The coolest summer was in 1980 and averaged 70.2°F; while the warmest, in 1958, averaged 78.2°F. Only three days in 1993 had a maximum temperature \geq 100°F. Precipitation for the summer of 1993 totaled

2.12 inches, 255% of normal (0.83 inch). The wettest summer, in 1950, received 2.92 inches; while the driest, in 1919, received only a trace.

September 1993 was slightly warmer than normal. The average temperature of 66.5°F was 0.8° above normal (65.7°F). Precipitation for September 1993 totaled only 0.04 inch, 13% of normal (0.31 inch).

October 1993 was warmer than normal, averaging 55.4°F, 2.5° above normal (52.9°F). Only eight days during the month had average temperatures below normal. Precipitation for the month totaled 0.09 inch, 24% of normal (0.38 inch).

November 1993 was much cooler than normal. The average temperature of 34.6°F was 5.6° below normal (40.2°F). The period from November 22 through 28 averaged 17.6°F below normal, due to an Arctic air mass that moved southward from Canada. The minimum temperature of -1°F on November 24 was only the third time the month of November has recorded sub-zero temperatures. Sub-zero readings also occurred in 1955 and 1985. November 1993 was the coldest November since 1985, which was the coldest November on record, averaging only 24.8°F. November 1993 was dry, receiving only 0.19 inch of precipitation, 21% of normal (0.91 inch). Snowfall totaled 1.4 inches, compared to a November normal of 1.8 inches. The peak wind gust of 67 mph on November 3 was the strongest gust recorded at the HMS since a gust of 73 mph occurred on January 28, 1990, and the strongest gust ever recorded in November. The previous November peak gust was 66 mph on November 14, 1981, with the all-time peak gust at the HMS being 80 mph on January 11, 1972.

The autumn season (September, October, and November) was slightly cooler and much drier than normal. The average temperature of 52.2°F compares to an autumn normal of 52.9°F. The warmest was 57.1° in 1990; the coolest, 44.5°F in 1985. Autumn precipitation totaled 0.32 inches, only 20% of normal (1.60 inches). The wettest autumn was 4.79 inches in 1973; the driest, 0.04 inch in 1976.

December 1993 was warmer than normal, averaging 35.4°F, 4.0° above normal (31.4°F). The weather during the second half of the month was dominated by a strong high pressure ridge which trapped cooler air near the

surface. Maximum temperatures during the period from December 16 through 31 had a range of only 6°, from 31°F to 37°F. December 1993 precipitation totaled 0.94 inch, 91% of normal (1.03 inches). December snowfall totaled 1.8 inches, compared to a December normal of 5.7 inches.

Following are some additional statistics for 1993:

CATEGORY	1993	NORMAL	RECORD MAX.
Days with maximum temperatures \geq 100°F	3	12	32
Days with maximum temperatures \geq 90°F	43	51	85
Days with minimum temperatures \leq 32°F	114	107	139
Days with minimum temperatures \leq 0°F	3	2	18
Days with thunderstorms	13	10	23
Days with fog (visibility \leq 6 mi)	67	45	76
Days with dense fog (visibility \leq 1/4 mi)	29	24	42
Days with peak wind gusts \leq 12 mph	75	50	87
Days with peak wind gusts \geq 25 mph	139	155	190
Days with peak wind gusts \geq 40 mph	23	26	57
Days with peak wind gusts \geq 50 mph	6	5	18

Table 2.1 lists the daily temperature records for 1993, with the previous record and year of occurrence. Table 2.2 lists the monthly and annual totals for numerous meteorological parameters for 1993. Tables 2.3, 2.4, and 2.5 list 1993 monthly and annual average temperature (°F), monthly and annual total precipitation (inches), and monthly and annual average wind speed (mph), respectively from the HMMN.

Figure 2.1 depicts the wind roses from the HMMN for 1993. Wind arrows indicate direction from which wind blows. Length of arrow is proportional to frequency of occurrence. Figure A.1(a) in Appendix A depicts 1993 wind roses from the individual HMMN stations (see Table 1.1 and Figure 1.1 for names and locations). Each petal of the wind rose represents the proportional amount of time that the wind blew from that direction. The width of the petal segments correspond to each wind speed category represented in Figure A.1(b) in Appendix A. Starting from the center of the rose, the narrowest segment

TABLE 2.2. Summary of Miscellaneous Meteorological Parameters for 1993

MONTH	TEMPERATURES (°F)		DEGREE DAYS BASE 65 (°F)		COOLING DEPARTURE*		HEATING DEPARTURE*		DEPARTURE*		PRECIPITATION (INCHES)		RELATIVE HUMIDITY (%)									
	AVGARES		EXTREMES		DAIILY MAXIMUM		DAIILY MINIMUM		MONTHLY		DAIILY HIGHEST		DAIILY LOWEST									
	DATE	HIGHEST DEPARTURE*	DATE	LOWEST DEPARTURE*	DATE	HIGHEST DEPARTURE*	DATE	LOWEST DEPARTURE*	DATE	LOWEST DEPARTURE*	DATE	HIGHEST DEPARTURE*	DATE	LOWEST DEPARTURE*								
J	31.2	18.4	24.8	-6.5	56	25	-4	13	1247	+203	0	0	1.30	+.51	0.35	-	17.1	+13.2	7.0	7-8	84.0	+.7.6
F	38.4	23.2	30.8	-7.2	52	12	3	28	958	+194	0	0	1.17	+.55	0.97	/	12.4	+10.4	10.2	18-19	75.6	+.5.3
M	52.5	33.9	43.2	-2.4	66	31	17	1	674	+72	0	0	0.67	+.20	0.15	19-20	3.5	+.3.2	2.0	1	69.1	+.13.2
A	64.3	40.6	52.5	-0.2	73	30	32	6	374	+2	0	-3	0.71	+.30	0.21	2-3	0	-1	0	0	57.1	+.9.9
M	81.0	51.9	66.5	+5.2	100	12	35	7	94	-70	139	+91	0.60	+.09	0.24	30-31	/	/	/	/	47.4	+.4.7
J	82.0	54.9	68.4	-1.3	98	26	46	13	23	-9	:27	-48	0.12	-.26	0.06	4-5	/	/	/	/	42.1	+.3.3
J	83.3	57.8	70.5	-5.7	96	28	50	30	1	-4	171	-180	1.76	+1.58	1.39	16-17	/	/	/	/	45.6	+.12.1
A	87.8	58.4	73.1	-2.0	100	6+	43	25	13	+8	265	-52	0.24	-.03	0.24	16	/	/	/	/	40.8	+.5.0
S	83.2	49.7	66.5	+0.8	98	3	37	23+	89	+.11	135	+37	0.04	-.27	0.04	14	/	/	/	/	40.3	-.2.4
O	69.7	41.1	55.4	+2.5	86	2	29	26	303	-74	6	+.3	0.09	-.28	0.05	6	0	-.1	0	56.0	+.8	
N	46.6	22.6	34.6	-5.6	65	3	-1	24	911	+165	0	0	0.19	-.72	0.13	28-29	1.4	-.4	0.8	22-23	66.7	-.6.7
D	40.7	30.1	35.4	+4.0	67	10	21	21	914	-128	0	0	0.94	-.09	0.37	7-8	1.8	-3.9	1.0	7	79.5	-.8
Y	63.4	40.2	51.8	-1.5	100	Aug	-4	Jan	5601	+370	843	-152	7.83	+1.57	1.39	Jul	36.2	+22.4	10.2	Feb	58.7	+.4.4
					6+			13							16-17							

*Departure columns indicate positive or negative departure of meteorological parameters from 30-year (1961-1990) climatological normals.

TABLE 2.2. (contd)

Mean Sky Cover (Tenths)		Solar Radiation (Langleys)		50-Foot Wind		Peak Gusts		Average Speed (mph)		Departure Date		Thunderstorms		Heavy Fog		Precipitation N=0.10 Inch		Snowfall N=1		A 32°F		A 0°F		Departure Min. Temp. (°F)		Number of Days	
J	8.5	+.4	101	-	8	175	22	37	30	6.0	-.5	51	SW	20	0	8	5	4	0	20	27	2					
F	6.9	-.7	172	-	15	300	26	35	2	5.8	-1.4	39	NNE	15	0	5	3	3	0	8	23	0					
M	8.3	+1.5	250	-	74	412	25	77	22	6.3	-2.0	40	SW	15	0	5	5	2	0	2	10	0					
A	7.1	+.5	380	-	72	578	30	170	8	8.0	-1.0	42	WSW	10+	2	1	5	0	0	0	1	10					
M	5.4	-.6	509	-	51	685	24	137	3	8.1	-1.0	54	SSW	27	1	0	3	0	7	0	0	0					
J	5.6	+.4	551	-	64	706	19	280	21	8.9	-.3	56	SW	9	5	0	0	0	6	0	0	0					
J	4.7	+1.4	532	-	100	656	6	303	17	8.4	-.4	45	NN	4	4	0	4	0	4	0	0	0					
A	2.8	-.7	517	-	21	626	2	104	16	7.7	-.2	39	MSW	19	1	0	1	0	15	0	0	0					
S	2.1	-1.9	409	+	1	500	2+	144	14	5.7	-1.7	40	NN	11	0	0	0	11	0	0	0	0					
O	6.0	+.3	240	-	19	358	1	39	27	4.9	-1.6	34	NN	31	0	1	0	0	0	0	5	0					
N	5.2	-2.6	141	+	18	227	1	40	29	5.3	-1.1	67	WSW	3	0	4	0	0	0	6	26	1					
D	9.1	+1.0	50	-	36	146	4	15	30+	4.7	-1.2	61	SSW	8	0	5	4	1	0	4	22	0					
Y	6.0	-.1	321	-	37	706	Jun	15	Dec	6.7	-1.0	67	MSW	3	13	29	30	10	43	40	114	3					

**TABLE 2.3. 1993 Monthly and Annual Average Temperature (°F)
from the Hanford Meteorological Monitoring Network**

<u>STATION</u>	<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>	<u>MAY</u>	<u>JUN</u>	<u>JUL</u>	<u>AUG</u>	<u>SEP</u>	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>	<u>ANNUAL</u>
1 PROS	24.5	29.4	41.6	51.7	65.5	67.6	68.8	71.9	64.6	52.1	33.4	35.5	50.6
2 EOC	24.6	29.7	42.2	51.2	65.1	66.3	67.8	72.1	67.7	55.4	35.9	34.5	51.0
3 ARMY	25.0	29.4	42.4	52.3	66.1	68.2	69.8	72.6	65.8	53.1	33.1	35.7	51.1
4 RSPG	25.5	30.1	42.1	52.0	63.7	65.4	69.0	71.7	65.7	53.5	33.2	35.5	50.4
5 EDNA	24.5	30.0	41.5	51.4	65.3	67.9	69.1	72.8	64.7	52.2	32.4	35.8	50.5
6 200E	24.7	30.8	42.6	52.7	66.8	68.3	69.5	73.2	67.7	55.2	35.4	35.7	51.8
7 200W	25.4	29.3	41.4	51.6	64.8	67.8	69.3	71.0	64.0	51.5	32.5	34.9	50.4
8 BVLY	26.1	31.4	42.4	52.4	66.8	67.7	69.7	72.7	66.6	55.0	34.9	36.0	51.8
9 FFTF	23.9	29.9	42.2	52.1	65.7	67.5	68.8	72.4	66.3	54.0	34.3	35.7	51.0
10 YAKB	24.9	30.2	42.3	51.8	65.9	67.8	69.3	73.0	66.9	54.4	33.6	35.3	51.3
11 300A	24.6	30.1	42.3	52.5	65.4	67.3	69.0	71.7	64.9	53.1	34.4	36.7	51.0
12 WYEB	24.1	29.8	42.0	51.9	65.7	67.8	69.3	72.5	66.2	53.6	33.5	35.5	51.0
13 100N	24.5	30.7	41.8	51.1	65.3	67.5	68.7	71.8	65.0	53.3	33.5	35.3	50.7
14 WPPS	24.0	29.6	41.4	51.4	64.8	67.3	68.8	71.7	64.8	52.5	32.6	35.8	50.5
15 FRNK	23.5	29.3	41.8	50.8	63.3	65.0	66.3	69.5	64.1	53.1	34.3	34.7	49.6
16 GABL	24.4	30.1	42.2	51.3	65.9	66.6	67.7	72.6	68.6	56.4	36.2	34.5	51.3
17 RING	24.7	29.8	41.9	51.2	64.3	65.4	67.0	69.9	63.1	52.2	32.9	35.4	49.8
18 RICH	25.0	30.6	43.1	53.3	66.0	67.6	69.2	72.2	66.1	54.6	35.9	36.7	51.7
20 RMTN	21.2	24.5	36.5	40.9	57.3	56.3	57.8	63.3	61.7	51.2	31.4	28.4	44.2
21 HMS	23.8	29.6	41.6	51.7	65.4	67.5	68.8	72.2	66.1	53.3	32.7	34.5	50.6
22 PASC	24.9	30.4	43.3	53.8	66.4	68.0	69.8	72.0	65.2	53.8	35.0	37.1	51.7
23 GABW	24.4	29.8	41.2	51.4	65.2	67.9	69.2	71.7	64.4	51.8	31.9	35.0	50.4
24 100F	24.7	30.4	41.7	51.6	65.5	68.0	69.1	72.2	65.0	52.7	32.8	35.8	50.9
25 VERN	24.8	30.0	41.5	51.2	65.0	67.2	69.1	72.3	66.0	54.8	34.8	36.6	51.2
26 622R	24.7	30.6	42.6	52.3	66.1	67.8	69.2	72.8	67.2	54.9	34.6	35.7	51.8
27 VSTA	25.3	30.7	43.3	53.2	65.5	67.1	68.6	71.5	65.4	54.0	36.1	36.7	51.4

TABLE 2.4. 1993 Monthly and Annual Precipitation (Inches)
from the Hanford Meteorological Monitoring Network

<u>STATION</u>	<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>	<u>MAY</u>	<u>JUN</u>	<u>JUL</u>	<u>AUG</u>	<u>SEP</u>	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>	<u>YEAR</u>
1 PROS	.51	.35	.90	.53	.62	.38	.99	.29	.10	.03	.12	1.25	6.07
2 EOC	1.30	.18	1.50	.91	.63	.58	1.48	.19	.14	.05	.22	1.48	8.66
3 ARMY	.34	.23	.58	.63	.57	.25	1.06	.21	.04	.03	.00	.00	3.94
4 RSPG	1.26	.55	.83	.59	.58	.09	1.76	.09	.01	.08	.20	.72	6.76
6 200E	.32	.11	.55	.73	.44	.13	2.14	.30	.01	.06	.12	.67	5.58
7 200W	.43	.06	.15	.34	.47	.07	1.77	.25	.03	.06	.20	1.10	4.93
8 BVLY	.60	.26	.38	.61	.39	.85	1.69	.00	.11	.06	.18	.75	5.88
10 YAKB	.43	.27	.51	.44	.32	.06	2.32	.05	.02	.13	.15	.84	5.54
11 300A	.28	.12	.65	.90	.73	.42	.73	.84	.03	.01	.17	.85	5.73
12 WYEB	.44	.14	.89	.78	.56	.45	.77	.24	.10	.03	.09	.66	5.15
14 WPPS	.47	.16	.81	1.00	.65	.59	.80	.26	.14	.04	.11	.52	5.55
17 RING	.88	.58	.44	.47	.87	.43	.75	.55	.10	.04	.19	.88	6.18
20 RMTN	.51	.49	.78	.59	.57	.52	.86	.23	.15	.02	.19	.47	5.38
22 PASC	.57	.10	.61	.73	.60	.48	.34	.92	.01	.09	.18	.72	5.35
24 100F	.84	.35	.70	.94	.74	.16	1.84	.38	.04	.10	.27	.97	7.33
26 622R	1.30	1.17	.67	.71	.60	.12	1.76	.24	.04	.09	.19	.94	7.83
27 VSTA	.63	.30	.69	.59	.46	.07	.21	1.02	.01	.08	.11	.77	4.94

TABLE 2.5. 1993 Monthly and Annual Average Wind Speed (mph) from the Hanford Meteorological Monitoring Network

<u>STATION</u>	<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>	<u>MAY</u>	<u>JUN</u>	<u>JUL</u>	<u>AUG</u>	<u>SEP</u>	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>	<u>ANNUAL</u>
1 PROS	6.3	7.1	6.8	8.0	8.4	8.0	8.2	7.4	5.0	4.5	5.9	6.2	6.8
2 EOC	9.1	8.3	8.4	10.4	9.6	9.6	8.7	8.3	6.6	5.7	7.9	7.8	8.4
3 ARMY	5.5	5.4	5.8	7.1	7.3	8.1	7.5	6.5	4.8	4.1	4.9	5.5	6.0
4 RSPG	4.8	5.6	5.7	8.1	7.8	7.8	7.2	7.0	6.6	6.3	6.8	5.1	6.5
5 EDNA	4.6	5.6	5.1	6.4	7.0	8.0	6.6	6.3	4.6	4.0	4.6	4.7	5.6
6 200E	6.0	5.9	6.3	8.0	8.2	9.6	8.9	7.7	5.8	4.9	5.4	5.7	6.9
7 200W	4.4	4.3	4.7	6.6	6.5	7.6	7.2	5.9	4.4	3.6	4.0	4.0	5.3
8 BVLY	6.9	5.9	6.0	6.4	7.5	10.3	9.0	7.2	5.6	5.2	5.4	4.7	6.7
9 FFTF	6.0	6.8	6.8	8.3	8.5	8.4	8.5	7.9	5.8	5.3	6.6	6.5	7.1
10 YAKB	5.9	6.0	6.1	7.8	8.1	9.7	9.2	7.9	6.1	5.3	5.5	5.0	6.9
11 300A	6.0	6.9	6.8	8.3	8.5	8.5	8.0	7.4	5.3	4.3	6.2	6.5	6.9
12 WYEB	5.6	6.3	6.3	7.8	8.2	8.4	8.1	7.5	5.7	4.8	5.9	5.9	6.7
13 100N	3.9	5.2	4.4	6.2	6.8	8.1	6.5	5.8	4.4	3.9	4.1	4.0	5.3
14 WPPS	5.4	5.8	6.0	7.6	7.3	7.5	7.7	7.0	4.9	4.5	5.4	5.6	6.2
15 FRNK	5.9	6.3	6.3	7.9	7.7	6.8	6.6	6.4	5.1	4.5	6.1	5.9	6.3
16 GABL	7.7	9.0	8.6	11.7	12.2	13.3	11.8	11.2	8.6	7.4	8.3	8.1	9.8
17 RING	4.5	5.7	5.1	6.6	6.6	6.5	5.9	4.9	4.3	4.1	5.0	4.5	5.3
18 RICH	4.9	6.0	5.8	7.5	7.1	7.2	6.9	6.0	4.2	3.6	5.2	5.6	5.8
20 RMTN	16.9	14.6	17.5	20.0	18.7	15.6	13.0	14.4	12.1	12.2	16.4	14.4	15.5
21 HMS	5.2	5.1	5.5	7.0	7.1	8.0	7.3	6.5	5.0	4.3	4.9	4.5	5.9
22 PASC	5.6	5.9	6.3	9.8	8.7	8.9	8.6	7.1	4.9	4.4	5.9	7.1	7.0
23 GABW	5.0	4.9	4.9	6.9	7.1	8.8	7.8	6.8	4.9	4.1	4.3	4.5	5.8
24 100F	4.0	5.1	4.8	6.6	6.8	7.9	6.5	6.0	4.5	4.0	4.6	4.3	5.4
25 VERN	6.4	5.8	6.0	7.0	7.6	9.7	8.9	7.5	5.4	5.0	5.3	5.3	6.7
26 622R	5.3	5.0	5.6	7.0	7.0	8.0	7.6	6.6	4.9	4.2	4.7	4.8	5.9
27 VSTA	3.9	4.6	5.0	8.2	7.1	7.2	6.9	6.0	4.2	4.0	5.0	5.2	5.6

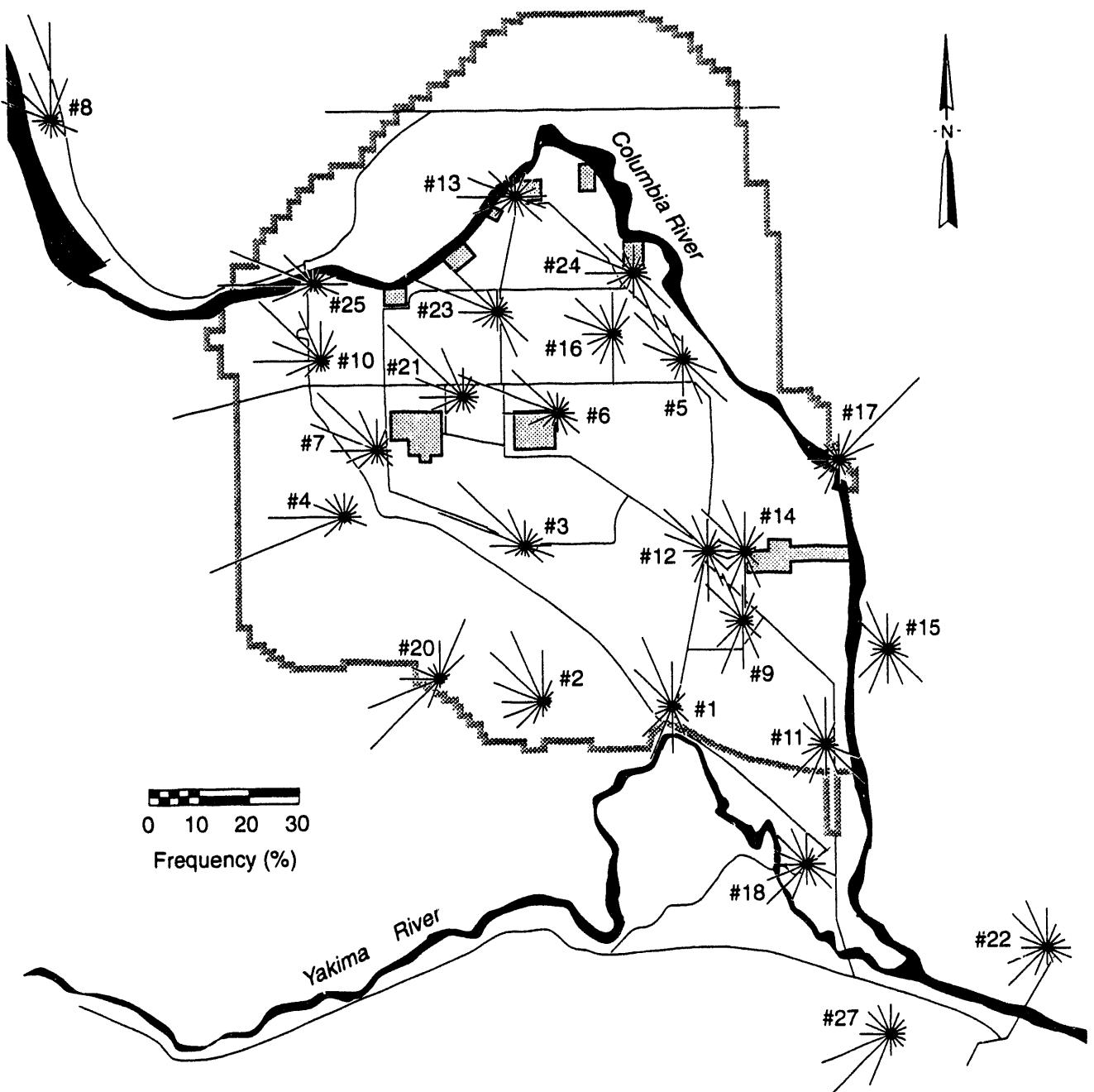


FIGURE 2.1. Hanford Meteorological Monitoring Network Wind Roses for 1993

represents winds in the 1- to 3-mph class, the next widest segment represents the 4- to 7-mph class, and so forth. The length of each of these segments is proportional to the frequency of occurrence for each speed class.

Figure A.1(b) is a wind speed histogram representing the proportional amount of time in each speed class. Table A.1 in Appendix A lists joint frequency distributions of wind direction versus wind speed class for the individual HMMN stations.

Figure 2.2 graphically depicts the 1993 daily observed maximum and minimum temperatures, and the normal maximum, minimum, and mean daily temperatures for the HMS.

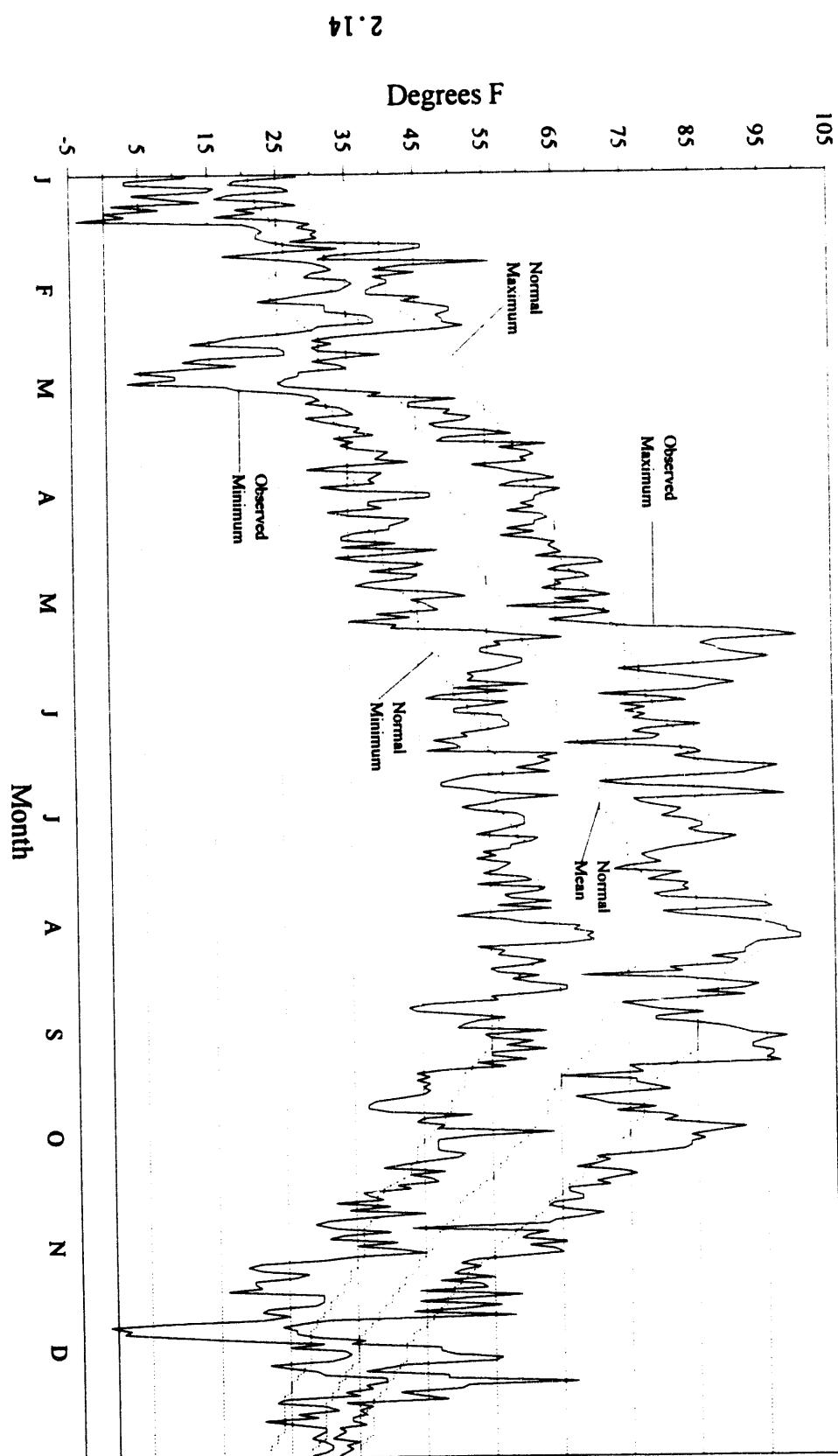


FIGURE 2.2. Observed Daily Temperatures for 1993 with Normal Temperatures

3.0 TEMPERATURE CLIMATOLOGY

3.1 MONTHLY, SEASONAL, AND ANNUAL AVERAGE TEMPERATURES

Monthly, seasonal, and annual average temperatures, computed from observed daily maximum and minimum temperatures for the period from 1945 through 1993, are presented in Tables 3.1 and 3.2. In these tables, the highest and lowest values, representing the warmest and coldest month, season, or year, are underlined in each column. Averages, based upon the entire period of record, as well as the climatological normal temperatures, averages based upon the period from 1961 to 1990, are indicated at the bottom of each table.

As indicated in Table 3.1, a much wider range and variability in temperatures is found during the late fall and winter months (November through February) than during the rest of the year. The range of average monthly temperatures for January is from 12.1°F (1950) to 42.5°F (1953), 30.4°; for November 21.7°; February 18.9°; and December 17.5°; whereas for the rest of the year the monthly range is from a low of 10.5° in April, to a high of 13.8° in June. The coldest month ever was January 1950 (12.1°F) and the hottest was July 1985 (82.2°F). As shown in Table 3.2, seasonal ranges are from 8.0° during the summer (June, July, and August) to 16.4° in winter (December, January, and February). The coldest season was the winter of 1948 to 1949 (24.2°F), and the hottest was the summer of 1958 (78.2°F).

3.2 DAYS WITH MAXIMUM TEMPERATURES \geq 100°F, \geq 90°F, AND \leq 32°F

Table 3.3 contains the number of days each year with maximum temperatures in the categories \geq 100°F, \geq 90°F, and \leq 32°F.

Maximum temperatures \geq 100°F have occurred as early as May 5 (1966) and as late as September 6 (1955). The annual number of days with maximum temperatures in this category has ranged from 1 (1954) to 28 (1958). The greatest number of consecutive days with maximum temperatures \geq 100°F is 11, and has occurred three times: July 22 through August 1, 1962; August 10 through 20, 1967; and August 6 through 16, 1981.

TABLE 3.1. Monthly and Annual Average Temperatures (°F)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1945	33.9	38.6	42.1	50.3	61.7	67.5	78.0	77.5	64.6	56.4	40.6	32.7	53.7
1946	34.4	39.6	45.5	53.7	64.2	66.9	76.1	76.6	63.5	49.5	35.8	34.8	53.4
1947	27.4	40.0	49.6	56.1	68.7	67.8	75.3	71.8	65.4	53.4	41.2	33.1	54.2
1948	32.0	31.8	42.1	49.4	55.5	67.0	74.9	72.8	71.8	64.4	51.0	40.8	26.9
1949	13.9	31.8	45.2	55.5	67.0	69.3	74.9	74.8	68.3	50.2	45.2	35.1	51.1
1950	<u>12.1</u>	30.7	42.3	49.9	59.0	66.5	75.4	76.4	67.5	51.1	40.7	36.2	50.6
1951	33.0	36.9	40.1	54.1	61.1	69.4	76.7	74.2	66.8	51.5	39.5	27.4	52.6
1952	25.2	36.7	44.1	55.2	62.7	67.1	77.0	74.0	69.0	59.0	34.0	34.8	53.2
1953	<u>42.5</u>	41.2	46.2	51.0	58.0	<u>63.0</u>	75.8	74.0	67.8	55.4	43.4	31.6	54.7
1954	<u>28.9</u>	39.3	41.5	51.4	62.9	<u>65.5</u>	73.9	71.4	65.1	51.4	46.0	34.0	52.6
1955	30.0	<u>35.3</u>	<u>39.4</u>	<u>47.5</u>	57.0	70.2	73.0	75.5	66.4	53.3	31.3	29.4	50.7
1956	31.8	<u>25.6</u>	43.8	56.2	65.3	65.7	78.9	75.3	67.3	52.1	36.6	34.6	52.8
1957	16.5	<u>34.1</u>	44.0	55.2	65.9	70.8	74.3	72.9	69.0	50.7	40.4	<u>38.5</u>	52.7
1958	37.1	<u>44.5</u>	43.5	51.3	68.1	73.9	81.2	79.4	65.6	54.4	40.6	<u>35.2</u>	56.2
1959	32.0	<u>35.5</u>	45.1	54.2	57.5	68.6	77.7	71.8	62.6	53.4	36.5	33.1	52.3
1960	23.3	37.4	45.1	52.6	58.5	70.1	81.8	71.4	67.7	54.5	41.2	29.0	52.7
1961	35.0	43.7	46.1	52.3	60.0	74.0	79.4	80.2	63.8	51.6	35.3	33.7	54.6
1962	29.8	36.6	42.6	55.6	56.9	68.3	76.0	71.9	67.1	52.6	43.2	36.8	53.1
1963	25.4	38.3	46.4	49.8	61.7	69.4	72.4	75.7	71.1	56.0	42.8	30.2	53.3
1964	35.6	38.1	43.8	50.2	59.7	67.7	74.5	<u>69.8</u>	63.0	53.3	38.2	25.5	51.6
1965	32.3	40.5	42.9	54.8	60.5	69.3	76.5	<u>74.7</u>	62.4	57.1	43.1	33.0	53.9
1966	34.0	39.9	45.4	54.6	63.2	66.9	73.3	75.6	68.8	53.4	43.7	38.2	54.8
1967	39.8	43.7	44.3	47.6	60.5	72.5	78.6	<u>81.5</u>	71.8	55.1	41.5	33.1	55.8
1968	35.7	41.8	49.0	51.3	62.4	69.8	79.7	<u>71.5</u>	66.8	50.3	41.7	30.6	54.2
1969	19.8	31.7	45.8	52.2	64.6	75.1	76.0	72.8	67.4	51.0	40.2	34.6	52.6
1970	30.7	40.6	45.0	49.0	61.5	73.6	78.6	76.3	61.8	50.9	39.7	30.8	53.2
1971	35.8	39.1	40.7	52.0	64.0	65.3	78.7	80.5	61.5	51.7	40.4	30.6	53.4
1972	30.5	34.8	47.0	49.6	64.3	69.7	76.2	77.6	61.4	52.3	39.9	27.3	52.6
1973	29.1	38.5	47.4	53.6	63.1	68.7	78.2	73.9	65.7	52.4	38.4	38.1	53.9
1974	29.4	40.9	45.2	52.9	57.9	72.6	74.5	75.5	68.0	52.5	41.6	36.2	53.9
1975	32.5	33.7	42.5	48.2	60.2	67.2	79.5	71.0	68.0	52.5	39.5	34.5	52.4
1976	32.0	37.6	41.4	50.8	60.5	65.6	75.1	70.8	69.0	52.4	40.6	30.7	52.2
1977	25.2	40.5	45.4	57.3	56.9	72.6	73.7	79.2	61.5	52.0	38.9	33.8	53.1
1978	32.9	37.9	47.5	51.9	58.6	70.3	75.7	72.7	63.8	52.2	32.3	27.5	51.9
1979	13.9	34.2	46.5	52.8	64.1	70.8	77.2	74.6	69.2	56.5	34.2	36.4	52.5
1980	23.7	34.6	44.5	55.2	61.4	64.7	74.7	71.2	66.0	52.6	41.0	36.6	52.2
1981	38.0	39.7	48.7	54.0	60.5	66.0	73.9	79.0	66.3	52.0	42.7	32.8	54.5
1982	29.8	40.9	48.5	49.4	60.4	73.1	74.9	75.5	65.5	51.4	36.9	32.0	52.8
1983	37.5	40.9	48.5	51.1	63.8	65.4	71.3	74.4	61.7	52.6	43.6	21.2	52.7
1984	31.6	38.7	47.2	50.5	<u>56.0</u>	65.7	76.1	74.0	62.1	<u>47.9</u>	39.4	23.6	51.1
1985	25.0	29.9	44.0	55.5	<u>63.2</u>	<u>70.2</u>	<u>82.2</u>	70.5	<u>58.8</u>	<u>49.8</u>	<u>24.8</u>	<u>21.0</u>	<u>49.6</u>
1986	34.0	39.1	48.6	50.9	62.3	73.0	70.6	79.2	62.2	54.7	42.3	32.4	54.1
1987	30.7	40.1	48.3	<u>58.0</u>	66.2	73.4	74.3	76.6	69.9	55.5	43.6	31.5	55.7
1988	31.9	41.0	45.9	<u>55.2</u>	61.1	69.2	77.3	75.2	65.6	<u>59.6</u>	44.2	31.8	54.8
1989	37.2	27.3	43.8	56.6	61.5	72.0	75.5	73.4	67.4	<u>54.0</u>	44.3	33.3	53.9
1990	40.4	37.6	48.0	57.9	60.7	70.1	80.8	76.8	<u>72.4</u>	52.3	<u>46.5</u>	24.1	55.6
1991	28.7	<u>44.5</u>	44.1	54.0	60.4	65.6	78.0	78.9	69.7	52.9	41.3	37.8	54.7
1992	37.5	<u>42.6</u>	<u>51.5</u>	56.0	67.2	<u>76.8</u>	76.6	76.9	64.5	55.7	41.2	30.0	<u>56.4</u>
1993	24.8	30.8	<u>43.2</u>	52.5	66.5	<u>68.4</u>	<u>70.5</u>	73.1	66.4	55.4	34.6	35.4	51.8
AVG	30.3	37.5	45.0	52.8	61.8	69.3	76.2	74.9	65.9	53.1	39.9	32.2	53.2
*NORMAL	31.3	38.0	45.6	52.7	61.3	69.7	76.2	75.1	65.7	52.9	40.2	31.4	53.3

* Normal temperatures are averages for the period from 1961-1990.

— The highest and lowest averages in each column are underlined.

TABLE 3.2. Seasonal Average Temperatures (°F)

<u>YEAR</u>	<u>WINTER DEC-FEB</u>	<u>SPRING MAR-MAY</u>	<u>SUMMER JUN-AUG</u>	<u>AUTUMN SEP-NOV</u>
1945	----	51.4	74.3	53.9
1946	35.6	54.5	73.2	49.6
1947	34.1	58.1	71.6	53.3
1948	32.3	49.9	72.3	52.1
1949	<u>24.2</u>	55.9	73.0	54.6
1950	26.0	50.4	72.8	53.1
1951	35.4	51.8	73.4	52.6
1952	29.8	54.0	72.7	54.0
1953	39.5	51.7	70.9	55.5
1954	35.3	51.9	70.3	54.2
1955	33.1	<u>48.0</u>	72.9	50.3
1956	28.9	55.1	73.3	52.0
1957	28.4	55.0	72.7	53.4
1958	40.0	54.3	<u>78.2</u>	53.5
1959	34.2	52.3	<u>72.7</u>	50.8
1960	31.3	52.1	74.4	54.5
1961	35.9	52.8	77.9	50.2
1962	33.4	51.7	72.1	54.3
1963	33.5	52.6	72.5	56.6
1964	34.6	51.2	70.7	51.5
1965	32.8	52.7	73.5	54.2
1966	35.6	54.4	71.9	55.3
1967	<u>40.6</u>	50.8	77.5	56.1
1968	36.9	54.2	73.7	52.9
1969	27.4	54.2	74.6	52.9
1970	35.3	51.8	76.2	50.8
1971	35.2	52.2	74.8	51.2
1972	32.0	53.6	74.5	51.2
1973	31.6	54.7	73.6	52.2
1974	36.1	52.0	74.2	54.0
1975	34.1	50.3	72.6	53.3
1976	34.7	50.9	70.5	54.0
1977	32.1	53.2	75.2	50.8
1978	34.7	52.7	72.9	49.4
1979	25.2	54.5	74.2	53.3
1980	31.6	53.7	<u>70.2</u>	53.2
1981	38.1	54.4	73.0	53.7
1982	33.6	51.9	74.6	51.2
1983	36.8	54.5	70.4	52.6
1984	30.5	51.2	71.9	49.8
1985	26.2	54.2	74.3	<u>44.5</u>
1986	31.4	53.9	74.3	53.1
1987	34.4	57.5	74.8	56.3
1988	34.8	54.1	73.9	56.5
1989	32.1	54.0	73.6	55.2
1990	37.1	55.5	75.9	<u>57.1</u>
1991	32.4	52.8	74.2	54.6
1992	39.3	<u>58.2</u>	76.8	53.8
1993	28.5	<u>54.1</u>	70.7	52.1
AVG	33.3	53.2	73.5	53.0
*NORMAL	33.6	53.2	73.7	52.9

* Normal temperatures are averages for the period from 1961-1990.
 The highest and lowest averages in each column are underlined.

TABLE 3.3. Monthly and Seasonal Number of Days with Maximum Temperature ($^{\circ}\text{F}$) Above or Below Certain Thresholds

YEAR	MAXIMUM TEMPERATURE $\geq 100^{\circ}\text{F}$			MAXIMUM TEMPERATURE $\geq 90^{\circ}\text{F}$			MAXIMUM TEMPERATURE $\leq 32^{\circ}\text{F}$								
	MAY JUN JUL AUG SEP TOTAL			APR MAY JUN JUL AUG SEP OCT TOTAL			OCT NOV DEC JAN FEB MAR TOTAL								
	MAY	JUN	JUL	APR	MAY	JUN	JUL	AUG	SEP	OCT	DEC	JAN	FEB	MAR	TOTAL
1945	0	0	8	4	0	12	1	1	7	22	5	0	56	1944-45	--
1946	0	0	7	6	0	13	1	0	4	15	18	0	0	38	1945-46
1947	1	0	2	0	0	3	0	8	4	17	11	2	0	42	1946-47
1948	0	2	0	0	0	2	0	1	9	14	7	7	0	38	1947-48
1949	0	1	6	2	1	10	0	8	8	15	18	8	0	57	1948-49
1950	0	0	2	3	2	7	0	1	5	20	22	8	0	56	1949-50
1951	0	0	8	3	0	11	0	1	8	23	19	5	0	56	1950-51
1952	0	0	9	4	0	13	0	2	5	21	17	12	0	57	1951-52
1953	0	0	4	4	0	8	0	0	0	21	13	11	0	45	1952-53
1954	0	0	1	0	0	1	0	0	2	3	20	9	3	37	1953-54
1955	0	2	5	2	2	11	0	0	9	12	19	8	0	48	1954-55
1956	0	0	10	5	0	15	0	7	2	22	16	7	0	54	1955-56
1957	0	1	6	10	11	0	28	0	8	14	8	6	0	39	1956-57
1958	1	0	8	1	0	9	0	1	7	21	12	3	0	44	1957-58
1959	0	0	16	5	0	21	0	1	12	28	12	5	0	58	1958-59
1960	0	0	16	5	0	21	0	1	12	28	12	5	0	58	1959-60
1961	0	7	8	10	0	25	0	1	15	26	24	1	0	67	1960-61
1962	0	0	10	1	0	11	0	0	11	17	10	8	0	46	1961-62
1963	0	3	0	3	0	6	0	4	7	8	18	11	0	48	1962-63
1964	0	0	6	0	0	6	0	0	5	14	10	2	0	31	1963-64
1965	0	0	6	5	0	11	0	1	7	20	12	1	0	41	1964-65
1966	1	0	2	4	0	7	0	5	2	15	21	7	0	50	1965-66
1967	0	2	6	15	0	23	0	2	13	25	27	12	0	79	1966-67
1968	0	0	10	3	0	13	1	1	5	22	12	4	0	45	1967-68
1969	0	3	4	2	0	9	0	6	17	20	15	7	0	65	1968-69
1970	0	9	11	5	0	25	0	2	15	22	19	0	0	58	1969-70
1971	0	0	16	11	0	27	0	2	20	26	2	0	52	1970-71	0
1972	0	0	5	10	0	15	0	5	8	21	19	5	0	58	1971-72
1973	0	2	10	5	0	17	0	6	7	21	18	4	0	56	1972-73
1974	0	6	5	3	0	14	0	0	18	16	18	6	0	58	1973-74
1975	0	0	9	0	0	9	0	2	4	22	12	8	0	48	1974-75
1976	0	1	2	0	1	4	0	1	4	17	9	4	0	35	1975-76
1977	0	0	1	2	13	0	16	1	0	13	16	22	0	52	1976-77
1978	0	1	1	6	0	13	0	0	12	17	11	2	0	42	1977-78
1979	0	2	7	1	0	10	0	1	13	23	20	7	0	64	1978-79
1980	0	0	3	0	0	3	0	0	0	18	9	2	0	29	1979-80

TABLE 3.3. (contd)

YEAR	MAXIMUM TEMPERATURE $\geq 100^{\circ}\text{F}$						MAXIMUM TEMPERATURE $\geq 90^{\circ}\text{F}$						MAXIMUM TEMPERATURE $\leq 32^{\circ}\text{F}$									
	MAY	JUN	JUL	AUG	SEP	TOTAL	APR	MAY	JUN	JUL	AUG	SEP	OCT	TOT	OCT	NOV	DEC	JAN	FEB	MAR	TOTAL	
1981	0	0	3	13	0	16	1	0	4	19	22	11	0	57	1980-81	0	1	6	0	2	0	9
1982	0	2	5	3	0	10	0	0	15	16	17	5	0	53	1981-82	0	0	8	10	2	0	20
1983	1	0	1	0	0	2	0	8	2	9	13	0	0	32	1982-83	0	3	10	5	0	0	18
1984	0	0	3	3	0	6	0	1	4	21	16	4	0	46	1983-84	0	0	25	12	1	0	38
1985	0	1	15	0	0	16	0	3	10	30	7	0	0	50	1984-85	0	2	18	29	9	0	58
1986	3	1	0	6	0	10	0	6	11	9	27	3	0	56	1985-86	0	15	25	5	1	0	46
1987	1	5	3	4	1	14	2	6	15	14	19	12	0	68	1986-87	0	0	7	9	0	0	16
1988	0	0	8	3	3	14	0	4	11	19	20	7	0	61	1987-88	0	0	16	11	1	0	28
1989	0	0	2	2	0	4	0	0	13	20	9	3	0	45	1988-89	0	0	11	2	8	1	22
1990	0	0	11	9	0	20	0	1	8	24	15	12	0	60	1989-90	0	2	6	0	1	0	9
1991	0	0	4	8	0	12	0	0	1	25	23	5	0	54	1990-91	0	0	15	13	0	0	28
1992	0	7	5	9	0	21	0	8	16	15	17	3	0	59	1991-92	0	0	3	0	0	0	3
1993	1	0	0	2	0	3	0	7	6	4	15	11	0	43	1992-93	0	1	11	20	8	2	42
1994	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1993-94	0	6	4	--	--	--	10
AVG	0	1	6	4	0	12	0	3	8	19	16	5	0	51	AVG	0	2	9	11	3	0	25
*NORM	0	2	6	5	0	13	0	2	9	19	17	5	0	52	NORMAL	0	2	10	10	2	0	24

* Normal temperatures are averages for the period from 1961-1990.

— Greatest and least seasonal totals are underlined.

One particularly notable period of above-normal temperatures occurred July 15 through August 13, 1971. This 30-day period included 27 days with maximum temperatures $\geq 100^{\circ}\text{F}$ in 3 separate periods of 9 consecutive days each. The lowest maximum temperature during the 30-day period was 98°F and the highest was 112°F . The average maximum temperature during this period was 104.7°F .

Table 3.4 lists the dates of all occurrences of maximum temperatures $\geq 104^{\circ}\text{F}$.

Maximum temperatures $\geq 90^{\circ}\text{F}$ occur an average of 51 times per year, and vary from a low of 29 (1980) to a high of 79 (1967). The earliest occurrences have varied from April 24 (1977) through July 2 (1953), with an average annual date of May 21 (see Table 3.5). The latest annual occurrence of maximum temperatures $\geq 90^{\circ}\text{F}$ has varied from August 17 (1983) through September 29 (1993 and earlier years). The average date for the period from 1946 through 1993 is September 14. The longest period of consecutive maximum temperatures $\geq 90^{\circ}\text{F}$ is 32 days from July 13 through August 13, 1971.

The average seasonal number of days with maximum temperatures $\leq 32^{\circ}\text{F}$ is 25. The earliest seasonal occurrence of a day with a maximum temperature $\leq 32^{\circ}\text{F}$ has been October 30 (1971) and the latest March 11 (1950). The number of winter days with maximum temperatures $\leq 32^{\circ}\text{F}$ has varied from 2 (winter of 1966-1967) to 58 (winter of 1984-1985). The greatest consecutive number of days with maximum temperatures $\leq 32^{\circ}\text{F}$ is 29 days, from December 30, 1984 through January 27, 1985. During the period from December 27, 1978 through February 4, 1979 (40 days), only 1 maximum temperature $> 32^{\circ}\text{F}$ occurred. The average maximum temperature for that period was 21°F .

Table 3.6 lists the monthly and annual monthly maximum temperatures.

TABLE 3.4. Days With Maximum Temperatures $\geq 104^{\circ}\text{F}$

TEMP	DATE(S) OF OCCURRENCE					
113	8/ 4/61					
112	8/ 9/71					
111	6/23/92	7/31/71				
110	7/12/90 7/17/60	7/20/79	7/ 9/75	8/ 8/72	7/ 6/68	7/18/60
109	8/14/92	7/11/90	7/19/79	8/ 7/72	8/10/71	8/ 1/71
108	6/24/92 8/11/71 8/18/67	8/ 5/90 7/27/71 8/17/67	7/18/79 7/19/71 8/16/67	7/27/75 7/28/68 7/31/65	7/ 5/75 7/ 8/68 7/13/61	8/12/71 7/ 4/68 6/17/61
107	8/13/92 7/28/82 7/28/71 7/28/58	8/ 1/92 8/ 8/81 7/ 5/68 7/14/55	7/31/92 7/17/79 8/ 3/61	6/25/92 8/18/77 7/22/59	7/14/87 8/ 8/71 7/20/59	7/29/82 7/30/71 7/19/59
106	8/18/92 7/25/84 7/10/75 8/ 1/65 7/ 9/52	7/18/92 7/22/80 7/29/73 7/12/64	6/22/92 8/ 9/78 7/15/73 7/24/62	9/ 1/87 7/23/78 8/ 6/72 6/16/61	6/30/87 8/17/77 7/20/71 6/22/58	7/ 9/85 8/13/77 7/ 4/70 7/19/56
105	7/17/92 7/20/85 8/ 4/78 7/19/70 8/30/67 8/ 2/61 7/30/52	7/ 3/91 7/27/82 8/ 3/78 7/16/70 8/20/67 8/11/60 7/10/52	7/22/90 7/26/82 7/ 4/75 7/ 8/70 8/19/67 7/19/60	7/15/90 8/16/81 7/21/71 7/27/68 8/15/67 7/ 7/60	7/26/88 8/13/81 7/18/71 7/ 7/68 8/13/67 7/13/55	8/ 9/87 8/12/81 8/23/70 7/ 3/68 7/ 3/67 8/ 4/52
104	7/10/90 7/29/85 8/10/81 8/20/77 7/19/73 7/16/71 8/11/67 6/18/61 8/11/58 7/21/56 7/31/49	7/25/88 7/21/85 8/ 7/81 8/12/77 6/22/73 7/ 9/70 7/12/67 8/10/60 7/17/58 7/22/55 7/30/49	7/21/88 7/ 8/85 7/27/81 7/30/74 8/28/72 7/ 3/70 7/30/65 7/16/60 7/11/58 8/15/53 7/15/49	7/20/88 7/ 4/85 7/ 4/81 7/28/74 8/ 9/72 6/23/70 7/25/62 7/18/59 8/22/56 7/23/51 6/29/48	5/31/86 8/ 7/82 8/ 8/78 8/ 1/73 8/13/71 6/21/70 7/23/62 8/25/58 7/24/56 7/17/51 8/20/46	5/30/86 8/11/81 7/25/78 7/27/73 8/ 7/71 8/31/67 8/14/61 8/24/58 7/23/56 8/ 1/49

TABLE 3.5. Record of Annual First and Last Dates with Maximum Temperatures $\geq 90^{\circ}\text{F}$ and Minimum Temperatures $\leq 32^{\circ}\text{F}$

YEAR	MAXIMUM TEMP $\geq 90^{\circ}\text{F}$		MINIMUM TEMP $\leq 32^{\circ}\text{F}$		GROWING* DAYS
	FIRST IN SPRING	LAST IN SUMMER	LAST IN SPRING	FIRST IN FALL	
1945	MAY 30	SEP 14	APR 10	OCT 18	190
1946	APR 25	AUG 24	APR 7	OCT 11	186
1947	MAY 6	SEP 12	APR 7	NOV 4	210
1948	MAY 26	SEP 13	MAY 2	OCT 17	167
1949	MAY 8	SEP 27	MAY 3	OCT 8	157
1950	MAY 26	SEP 23	APR 27	NOV 8	194
1951	MAY 22	SEP 19	APR 21	OCT 15	176
1952	MAY 24	SEP 26	APR 29	NOV 1	185
1953	JUL 2	SEP 15	APR 15	OCT 24	191
1954	MAY 17	SEP 10	MAY 1	OCT 1	152
1955	JUN 6	SEP 10	MAY 14	OCT 31	169
1956	MAY 16	SEP 19	APR 6	OCT 22	198
1957	MAY 29	SEP 15	MAR 26	OCT 22	209
1958	MAY 18	SEP 10	MAR 19	OCT 21	215
1959	MAY 13	SEP 13	MAY 5	OCT 30	177
1960	MAY 10	SEP 18	APR 21	OCT 11	172
1961	MAY 25	SEP 4	APR 19	OCT 20	183
1962	JUN 8	SEP 26	MAY 4	NOV 12	191
1963	MAY 20	SEP 29	APR 16	OCT 25	191
1964	JUN 23	SEP 24	APR 19	OCT 16	179
1965	MAY 28	SEP 1	MAY 5	OCT 16	163
1966	MAY 3	SEP 22	APR 19	OCT 14	177
1967	MAY 20	SEP 28	APR 28	OCT 26	180
1968	APR 29	SEP 9	APR 22	OCT 21	181
1969	MAY 9	SEP 12	APR 26	OCT 13	169
1970	MAY 16	AUG 31	MAY 11	OCT 7	148
1971	MAY 11	SEP 10	APR 22	OCT 16	176
1972	MAY 13	SEP 16	APR 30	SEP 25	147
1973	MAY 13	SEP 11	APR 8	OCT 4	178
1974	JUN 10	SEP 25	MAY 16	OCT 6	142
1975	MAY 30	SEP 15	APR 29	OCT 23	176
1976	MAY 16	SEP 29	APR 23	OCT 19	178
1977	APR 24	AUG 22	APR 14	OCT 27	195
1978	JUN 2	SEP 3	APR 23	OCT 7	166
1979	MAY 22	SEP 20	APR 19	OCT 31	194
1980	JUL 1	SEP 6	APR 11	OCT 22	193
1981	APR 30	SEP 18	APR 13	OCT 14	183
1982	JUN 10	SEP 8	APR 21	OCT 18	179
1983	MAY 23	AUG 17	APR 16	OCT 11	177
1984	MAY 29	SEP 18	APR 13	OCT 14	183
1985	MAY 18	AUG 29	APR 21	OCT 7	168
1986	MAY 25	SEP 4	APR 30	NOV 9	192
1987	APR 27	SEP 23	APR 20	OCT 16	178
1988	MAY 11	SEP 14	APR 9	OCT 27	200
1989	JUN 1	SEP 24	MAR 30	OCT 29	212
1990	MAY 5	SEP 29	MAR 27	OCT 17	203

TABLE 3.5. (contd)

YEAR	MAXIMUM TEMP $\geq 90^{\circ}\text{F}$		MINIMUM TEMP $\leq 32^{\circ}\text{F}$		GROWING* DAYS
	FIRST IN SPRING	LAST IN SUMMER	LAST IN SPRING	FIRST IN FALL	
1991	JUN 10	SEP 26	APR 8	OCT 22	196
1992	MAY 4	SEP 3	APR 8	OCT 15	189
1993	MAY 10	<u>SEP 29+</u>	APR 6	OCT 20	196
AVERAGE	MAY 21	SEP 14	APR 20	OCT 19	181
NORMAL	MAY 21	SEP 14	APR 21	OCT 18	179

* Days between last freezing temperature in Spring, and first freezing temperature in Fall.

+ Also in previous years.
The earliest and latest dates in each column are underlined.

Only six days were recorded when the daily maximum temperature was $\leq 0^{\circ}\text{F}$. These days are:

DATE	MAX. TEMP.	DATE	MAX. TEMP.
Jan. 31, 1950	-2°F	Jan. 27, 1957	0°F
Feb. 1, 1950	-3°F	Dec. 29, 1968	-2°F
Feb. 2, 1950	-3°F	Dec. 30, 1968	-2°F

3.3 DAYS WITH MINIMUM TEMPERATURES $\leq 32^{\circ}\text{F}$ OR $\leq 0^{\circ}\text{F}$

The monthly and seasonal number of days with minimum temperatures at or below 32°F or 0°F are listed in Table 3.7.

The seasonal average number of days with minimum temperatures $\leq 32^{\circ}\text{F}$ is 106; however, the number ranges from 70 (winter of 1991-1992) to 143 (winter of 1984-1985). The greatest consecutive number of days with minimum temperatures of $\leq 32^{\circ}\text{F}$ is 93 days, from November 9, 1978 through February 9, 1979.

The first autumn temperature $\leq 32^{\circ}\text{F}$ has occurred as early as September 25 (1972), and as late as November 12 (1962). The average date is October 19 (Table 3.5). The last date in spring for minimum temperatures $\leq 32^{\circ}\text{F}$ has varied from March 19 (1958) to May 16 (1974), with an average date of April 20. The average number of days between last freezing temperature in the spring and first freezing temperature in the fall is 181 days.

TABLE 3.6. Monthly and Annual Maximum Temperatures (°F)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1945	61	65	72	76	90	98	104	105	93	84	72	57	105
1946	57	60	76	91	89	98	105	104	89	75	64	64	105
1947	57	68	76	88	101	97	103	98	94	83	63	55	103
1948	60	64	73	76	91	104	98	97	98	78	57	52	104
1949	48	56	64	84	98	102	104	104	100	74	65	60	104
1950	50	63	64	78	90	99	102	103	102	76	62	55	103
1951	55	65	65	82	94	97	104	101	97	79	60	58	104
1952	50	55	70	89	92	94	106	105	97	85	62	54	106
1953	63	65	69	78	88	86	103	104	97	81	65	59	104
1954	59	63	65	83	98	94	100	99	92	73	62	54	100
1955	50	58	63	77	86	102	107	101	101	75	66	56	107
1956	59	56	64	85	96	95	106	104	94	79	64	59	106
1957	48	65	66	89	97	100	102	96	98	73	60	59	102
1958	60	63	63	78	101	106	107	104	97	89	67	60	107
1959	59	60	65	79	91	97	107	103	92	77	70	64	107
1960	55	55	83	82	90	96	110	105	94	82	63	52	110
1961	60	64	68	75	94	108	108	113	90	81	58	56	113
1962	63	60	70	85	81	98	106	100	97	76	67	56	106
1963	56	64	70	72	93	102	96	101	98	83	61	57	102
1964	57	60	74	73	88	95	106	97	90	80	60	57	106
1965	60	67	71	82	91	96	108	106	91	84	64	56	108
1966	56	59	78	81	100	95	100	102	99	82	64	56	102
1967	62	67	65	71	92	101	105	108	98	78	65	62	108
1968	66	64	68	90	90	99	110	102	97	73	60	59	110
1969	44	46	74	80	95	103	101	102	96	74	63	54	103
1970	56	60	67	71	92	104	106	105	89	86	63	58	106
1971	72	66	65	76	92	99	111	112	91	85	64	50	112
1972	59	68	76	78	96	98	103	110	95	83	58	65	110
1973	51	61	68	80	98	104	106	104	98	76	62	58	106
1974	61	59	69	77	86	103	104	103	92	80	64	60	104
1975	56	58	65	75	90	95	110	98	96	82	75	62	110
1976	59	59	69	80	90	100	102	98	102	84	71	57	102
1977	61	70	73	94	82	100	101	107	87	75	68	64	107
1978	51	57	74	76	87	101	106	106	90	81	69	54	106
1979	37	62	76	83	94	102	110	101	96	84	59	59	110
1980	51	59	68	87	87	88	106	98	95	89	65	69	106
1981	55	66	70	91	89	96	104	107	99	83	65	58	107
1982	57	68	71	81	88	102	107	104	94	75	63	62	107
1983	61	62	64	77	103	92	100	99	87	78	67	46	103
1984	60	62	67	79	94	96	106	103	92	81	61	52	106
1985	36	60	68	82	95	102	106	97	86	74	66	39	106
1986	57	72	74	84	104	103	99	103	95	84	63	52	104
1987	55	60	70	93	102	106	107	105	106	87	66	59	107
1988	54	71	71	83	94	99	105	102	102	88	69	57	105
1989	67	53	67	80	88	97	101	103	94	80	73	58	103
1990	60	64	76	81	94	96	110	108	98	80	68	57	110
1991	59	66	69	82	83	93	105	103	95	88	65	59	105
1992	60	62	78	85	98	111	107	109	91	87	62	53	111
1993	56	52	66	73	100	98	96	100	98	86	65	67	100

TABLE 3.7. Monthly and Seasonal Number of Days with Minimum Temperature ($^{\circ}$ F) Below Certain Thresholds

SEASON	MINIMUM TEMPERATURE $\leq 32^{\circ}$ F										MINIMUM TEMPERATURE $\leq 0^{\circ}$ F				
	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	TOTAL	NOV	DEC	JAN	FEB	TOTAL
1944-45	--	--	--	--	27	18	12	6	0	63	--	--	0	0	0
1945-46	0	5	14	25	27	20	10	2	0	103	0	0	0	0	0
1946-47	0	8	23	24	27	19	6	1	0	108	0	0	1	0	1
1947-48	0	0	11	26	25	24	21	7	1	115	0	0	0	0	0
1948-49	0	8	15	30	31	25	11	4	1	125	0	2	9	0	11
1949-50	0	10	4	25	30	22	18	4	0	113	0	0	14	4	18
1950-51	0	0	13	19	26	25	21	2	0	106	0	0	0	0	0
1951-52	0	6	19	26	31	24	20	6	0	132	0	0	0	0	0
1952-53	0	0	25	19	9	15	12	4	0	84	0	0	0	0	0
1953-54	0	1	14	22	23	16	19	4	1	100	0	0	2	0	2
1954-55	0	6	6	26	30	25	22	10	1	126	0	0	0	0	0
1955-56	0	1	22	28	25	26	14	2	0	118	1	0	2	3	6
1956-57	0	3	18	21	31	23	11	0	0	107	0	0	12	1	13
1957-58	0	2	17	16	19	5	16	0	0	75	0	0	0	0	0
1958-59	0	4	14	24	25	24	14	2	1	108	0	0	2	0	2
1959-60	0	2	24	26	31	21	10	4	0	118	0	0	1	0	1
1960-61	0	4	15	29	23	10	7	5	0	93	0	0	0	0	0
1961-62	0	7	28	26	27	17	19	0	1	125	0	0	1	0	1
1962-63	0	0	13	17	27	17	11	2	0	87	0	0	2	0	2
1963-64	0	5	8	31	26	26	16	4	0	116	0	0	0	0	0
1964-65	0	5	13	29	25	18	19	1	1	111	0	2	0	0	2
1965-66	0	1	8	25	26	22	13	3	0	98	0	0	0	0	0
1966-67	0	3	11	18	20	17	18	9	0	96	0	0	0	0	0
1967-68	0	1	17	25	23	13	6	5	0	90	0	0	0	0	0
1968-69	0	4	8	24	30	25	15	1	0	107	0	4	5	1	10
1969-70	0	5	19	21	28	13	16	7	1	110	0	0	0	0	0
1970-71	0	8	14	28	24	19	20	7	0	120	0	0	0	0	0
1971-72	0	9	18	27	25	23	13	6	0	121	0	0	3	1	4
1972-73	3	6	13	23	30	23	10	4	0	112	0	7	1	0	8
1973-74	0	4	14	16	19	15	12	0	1	81	0	0	8	0	8
1974-75	0	4	12	26	29	24	17	7	0	119	0	0	0	0	0
1975-76	0	2	23	28	30	22	19	6	0	130	0	0	0	0	0
1976-77	0	8	17	30	30	19	14	1	0	119	0	0	0	0	0
1977-78	0	3	18	25	22	17	11	4	0	100	0	1	2	0	3
1978-79	0	7	26	31	31	21	13	2	0	131	0	3	8	2	13
1979-80	0	1	23	22	31	22	13	3	0	115	0	0	1	0	1
1980-81	0	4	16	16	17	17	11	6	0	87	0	0	0	0	0
1981-82	0	5	13	23	27	17	12	12	0	109	0	0	2	0	2
1982-83	0	4	21	26	20	13	4	9	0	97	0	0	0	0	0
1983-84	0	3	11	31	26	17	5	2	0	95	0	4	0	0	4
1984-85	0	14	20	31	31	25	20	2	0	143	0	4	0	3	7
1985-86	0	7	23	31	23	17	8	4	0	113	5	1	0	0	6
1986-87	0	0	11	29	25	17	9	2	0	93	0	0	0	0	0
1987-88	0	3	11	25	29	22	13	2	0	105	0	0	0	0	0
1988-89	0	1	12	23	24	25	11	0	0	96	0	0	0	4	4
1989-90	0	2	11	25	18	20	11	0	0	87	0	0	0	0	0

TABLE 3.7. (contd)

SEASON	MINIMUM TEMPERATURE $\leq 32^{\circ}\text{F}$										MINIMUM TEMPERATURE $\leq 0^{\circ}\text{F}$				
	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	TOTAL	NOV	DEC	JAN	FEB	TOTAL
1990-91	0	2	11	27	27	14	14	2	0	97	0	8	0	0	8
1991-92	0	6	8	18	22	11	3	2	0	70	0	0	0	0	<u>0**</u>
1992-93	0	1	9	29	27	23	10	1	0	100	0	0	2	0	<u>2</u>
1993-94	0	5	26	22	--	--	--	--	--	53	1	0	--	--	1
AVERAGE	0	4	16	25	26	19	13	4	0	106	0	1	2	0	3
*NORMAL	0	4	15	25	26	19	13	4	0	107	0	1	1	0	3

* Normals are averages for the period from 1961-1990.

— Greatest and least seasonal totals are underlined.

** Most recent of numerous occurrences.

The daily minimum temperature is $\leq 0^{\circ}\text{F}$ (Table 3.7), an average of three days per winter season; however, nearly half of all winters have no minimum temperatures in this category. The most of those days in any season was 18 (winter of 1949-1950) and the least of those days was 0 (as recently as the winter of 1991-1992). The greatest number of consecutive days with minimum temperatures $\leq 0^{\circ}\text{F}$ is 11 days, from January 25 through February 4, 1950. During this same period, four consecutive days had minimum temperatures $\leq -20^{\circ}\text{F}$. Table 3.8 lists all days with minimum temperatures $\leq 0^{\circ}\text{F}$. Table 3.9 lists monthly and annual minimum temperatures.

3.4 MONTHLY EXTREME DAILY MAXIMUM AND MINIMUM TEMPERATURES

Monthly extreme daily maximum and minimum temperatures are presented in Table 3.10. Note that a greater temperature range exists during the winter months than in summer. February temperatures have ranged from 72°F to -23°F , a range of 95° , while July temperatures have ranged from 111°F to 39°F , a range of 82° . August also has an 82° range, from 113°F to 41°F .

3.5 NORMAL AND EXTREME DAILY TEMPERATURES

Table 3.11 lists the normal and extreme daily maximum and minimum temperatures. Climatological normals are computed every 10 years, and are based upon a 30-year period, ending with the first year of each new decade.

TABLE 3.8. Days With Minimum Temperatures $\leq 0^{\circ}\text{F}$

TEMP	DATE(S) OF OCCURRENCE					
-23	2/ 3/50	2/ 1/50				
-22		1/26/57				
-21	1/27/57	2/ 2/50	1/31/50			
-18	1/29/50					
-14	12/30/68	1/29/57	1/28/57			
-13	11/23/85	12/22/83	1/ 9/74	12/16/64	1/30/50	
-12	12/22/90	11/24/85	2/ 1/79	12/17/64	1/25/57	
-11	1/ 1/79	1/17/50	1/14/50	1/25/49		
-10	12/29/90 2/ 2/56	12/21/90 2/ 1/56	2/ 2/79	12/30/78	1/ 6/74	12/29/68
-9	12/23/83	1/ 6/79	12/31/78	1/ 2/78	1/ 8/74	
-8	12/ 1/85 1/16/50	1/ 6/82	1/ 7/74	12/10/72	1/23/69	1/30/57
-7	1/ 7/79	1/31/56	1/28/50	1/ 5/50		
-6	11/22/85 1/28/69	1/31/79 1/18/57	1/ 5/74 1/20/54	12/13/72 1/ 4/50	12/ 8/72 1/24/49	1/29/69 1/11/49
-5	2/ 5/89 1/15/50	2/ 4/85	1/ 1/78	1/10/74	12/12/72	12/ 9/72
-4	1/13/93 1/11/74 1/12/49	12/23/90 12/11/72	2/ 4/89 1/28/72	12/19/84 1/12/63	12/21/83 1/28/49	1/27/79 1/13/49
-3	2/ 6/89 12/29/78 1/11/63	11/25/85 12/31/77 1/17/57	2/ 3/85 1/31/69	12/18/84 1/30/69	1/10/80 12/31/68	1/ 8/79 12/28/68
-2	12/31/90 1/ 4/74 1/10/49	12/30/90 12/14/72 12/27/48	12/20/90 1/22/62	12/21/84 1/31/57	12/20/84 1/19/57	1/ 5/79 1/20/49
-1	11/24/93 1/18/60 11/14/55	11/26/85 1/ 4/59 2/ 4/50	1/ 8/73 2/ 2/57 1/25/50	2/ 3/72 1/16/57 1/13/50	1/26/72 2/ 3/56	2/ 1/69 1/30/56
0	1/11/93 1/28/79 1/26/50	12/24/90 1/27/72 1/ 4/49	2/ 2/89 1/ 3/59 12/26/48	2/ 6/85 1/24/57 1/15/47	12/27/83 1/21/54	1/ 7/82 1/27/50

TABLE 3.9. Monthly and Annual Minimum Temperatures (°F)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1945	21	14	10	28	38	46	53	47	35	26	16	13	10
1946	18	18	25	30	33	44	50	49	35	21	16	6	6
1947	0	11	23	32	42	45	53	50	40	34	22	16	0
1948	14	1	13	28	32	51	49	47	34	22	20	-2	-2
1949	-11	3	27	30	31	42	49	47	38	23	28	10	-11
1950	-21	-23	20	27	38	44	49	51	38	34	21	22	-23
1951	6	18	22	26	37	41	51	47	39	27	23	4	4
1952	5	16	24	27	37	42	49	46	42	34	7	17	5
1953	24	20	23	27	36	40	52	51	37	30	24	20	20
1954	-6	17	18	26	28	41	45	48	36	26	23	14	-6
1955	18	15	6	26	31	42	43	48	37	32	-1	9	-1
1956	-7	-10	15	28	38	40	54	49	39	31	15	2	-10
1957	-22	-1	28	34	48	48	51	52	36	32	20	23	-22
1958	16	29	23	34	38	47	49	53	34	30	9	21	9
1959	-1	19	25	30	30	41	49	49	41	26	6	14	-1
1960	-1	10	13	30	33	46	52	41	40	30	22	14	-1
1961	16	27	25	31	38	44	50	56	36	26	10	3	3
1962	-2	7	15	33	31	37	42	49	40	34	16	16	-2
1963	-4	8	22	28	36	45	49	49	45	23	17	7	-4
1964	15	19	15	30	35	45	50	44	39	30	20	-13	-13
1965	10	18	14	32	32	48	50	42	33	30	26	10	10
1966	17	19	19	26	37	38	48	50	43	29	22	22	17
1967	23	20	20	27	34	47	52	56	43	30	17	6	6
1968	10	15	25	23	33	42	51	47	39	30	23	-14	-14
1969	-8	-1	22	31	38	52	53	45	41	29	19	19	-8
1970	8	21	24	26	30	46	50	52	34	23	11	8	8
1971	8	15	15	27	36	44	44	51	38	13	21	5	5
1972	-4	-1	24	26	36	45	50	49	30	20	24	-8	-8
1973	-1	21	26	27	34	45	46	46	43	31	16	14	-1
1974	-13	23	21	33	32	41	48	48	40	29	24	17	-13
1975	14	10	19	21	33	38	53	46	44	26	15	14	10
1976	16	10	11	25	35	37	47	44	42	28	13	12	10
1977	4	21	24	31	34	39	49	48	36	28	9	-3	-3
1978	-9	17	25	30	37	44	50	47	41	21	7	-10	-10
1979	-11	-12	20	29	38	45	39	53	42	32	13	19	-12
1980	-3	19	25	28	38	40	47	42	41	30	18	9	-3
1981	23	8	24	24	35	40	45	48	34	27	19	8	8
1982	-8	9	24	24	33	47	45	51	41	26	18	13	-8
1983	12	15	29	27	37	40	49	50	35	29	22	-13	-13
1984	10	24	25	30	33	37	51	47	36	12	25	-4	-4
1985	5	-5	21	26	33	44	56	46	33	26	-13	-8	-13
1986	12	15	29	28	37	43	48	54	38	33	16	18	12
1987	9	18	24	30	38	43	49	51	41	31	17	9	9
1988	14	9	24	31	35	42	47	52	38	32	28	8	8
1989	15	-5	14	35	39	46	49	52	44	27	21	19	-5
1990	22	9	24	37	39	47	46	52	48	31	28	-12	-12
1991	5	26	22	31	38	44	55	47	42	23	23	20	5
1992	19	22	32	27	37	49	54	43	40	30	17	12	12
1993	-4	3	17	32	35	46	50	43	37	29	-1	21	4

TABLE 3.10. Monthly Normal Temperatures (°F) and Monthly Extremes of Maximum and Minimum Temperatures (°F)

MONTH	NORMAL (1961-1990)			DAILY EXTREME											
	MAX	MIN	MEAN	MAXIMUM						MINIMUM					
				HIGH	DAY	YEAR	LOW	DAY	YEAR	HIGH	DAY	YEAR	LOW	DAY	YEAR
January	38.4	24.0	31.1	72	31	1971	-2	31	1950	53	30	1971	-22	26	1957
February	47.3	28.8	38.2	72	25	1986	-3	1	1950	60	24	1986	-23	3	1950
March	57.3	33.9	45.7	83	25	1960	24	3	1960	50	15	1992	6	5	1955
April	66.0	39.6	52.7	94	24	1977	41	6	1945	64	28	1987	21	5	1975
May	75.2	47.4	61.2	104	31	1986	51	11	1967	71	29	1986	28	1	1954
June	83.9	55.3	69.7	111	23	1992	55	3	1966	80	24	1992	37	3	1962
													37	2	1976
													37	1	1984
July	91.4	60.9	76.1	111	31	1971	59	2	1966	79	18	1960	39	2	1979
										79	10	1975			
August	90.2	59.9	75.1	113	4	1961	67	20	1959	81	4	1961	41	22	1960
September	80.1	51.2	65.6	106	1	1987	52	22	1984	72	7	1955	30	27	1972
													30	25	1972
October	65.7	40.3	52.9	89	4	1980	32	30	1971	60	24	1945	12	31	1984
				89	3	1958				60	15	1988			
										60	2	1988			
November	48.7	31.9	40.2	75	3	1975	6	24	1985	60	9	1989	-13	23	1985
December	38.1	24.7	31.2	69	26	1980	-2	30	1968	56	2	1975	-14	30	1968
							-2	29	1968						

TABLE 3.11. Normal and Extreme Daily Maximum and Minimum Temperatures (°F)

JANUARY												
DAY	NORMAL (1961-1990)			MAXIMUM				EXTREME (1945-1993)				MINIMUM
	MAX	MIN	MEAN	HIGH	YR	LOW	YR	HIGH	YR	LOW	YR	
	1	35	21	28	57	64	8	69	38	81+	-11	79
2	35	21	28	56	63	15	69	42	63	-9	78	
3	36	21	28	63	89	12	50	41	81	0	59	
4	36	21	29	60	90	13	59	39	54	-6	50	
5	36	22	29	59	90+	12	50	39	81	-7	50	
6	36	22	29	59	90+	10	82	39	56	-10	74	
7	36	22	29	63	62	9	79	45	90	-8	74	
8	36	22	29	56	83+	5	74	44	53	-9	74	
9	36	22	29	60	90+	5	74	41	90	-13	74	
10	36	23	30	61	83	10	74	40	83	-5	74	
11	37	23	30	60	83+	13	63	37	90	-6	49	
12	38	24	31	59	53	15	63	47	53	-4	63+	
13	38	24	31	59	91	10	50	42	66	-4	93+	
14	39	25	32	60	61	7	50	48	61	-11	50	
15	39	26	33	60	74+	5	50	50	74	-5	50	
16	40	26	33	61	74	8	50	48	89	-8	50	
17	40	26	33	56	89	5	50	40	89	-11	50	
18	40	26	33	62	89	10	50	38	89	-6	57	
19	40	26	33	63	68	13	50	47	68	-2	57	
20	40	26	33	66	68	11	54	47	72	-6	54	
21	40	26	33	65	68	14	54	42	72	0	54	
22	40	26	33	56	90	16	69	43	81	-2	62	
23	40	26	32	63	53	10	69	43	81	-8	69	
24	40	25	32	59	84+	13	57	43	58	-6	49	
25	40	25	32	59	92+	6	50	41	74+	-12	57	
26	40	25	32	61	71	2	57	46	62	-22	57	
27	40	25	32	60	84+	0	57	36	82+	-21	57	
28	40	25	32	61	67	6	57	41	53	-14	57	
29	40	24	32	62	67	3	50	44	92+	-18	50	
30	40	24	32	67	89+	11	57	53	71	-13	50	
31	40	24	32	72	71	-2	50	45	53	-21	50	
FEBRUARY												
1	40	24	32	63	71	-3	50	42	92	-23	50	
2	41	24	33	61	91+	0	50	42	68	-21	50	
3	41	24	33	60	67+	1	50	46	91	-23	50	
4	41	24	33	65	67	11	85	43	68	-5	85	
5	41	25	33	61	65	23	85	39	61	-5	89	
6	42	25	33	61	67	19	85	37	61	-3	89	
7	42	25	34	59	53	20	48	41	55	2	89	
8	43	26	35	56	78	22	56	45	45	5	89	
9	44	27	35	65	51	23	56	39	61+	4	85	
10	45	28	37	65	77	30	56+	50	51	7	85	
11	46	28	37	66	88	27	54	39	93+	9	48	
12	47	29	38	70	77	24	49	40	77	6	48	
13	48	30	39	66	71	25	49	42	47	3	49	
14	48	30	39	62	82	22	80	54	82	11	90	
15	49	31	40	67	82	19	56	48	81	5	56	
16	49	31	40	69	77	20	56	48	81	4	56	
17	49	31	40	67	77+	22	56	48	48	9	56	
18	50	31	40	66	81	24	56	46	81	9	90	
19	50	31	41	66	91+	28	56	45	58	14	90	
20	50	31	41	68	82	32	57+	51	61	15	86	
21	51	31	41	71	88	29	57	43	68	13	57	

TABLE 3.11. (contd)

DAY	NORMAL (1961-1990)			EXTREME (1945-1993)							
	MAX	MIN	MEAN	MAXIMUM				MINIMUM			
				HIGH	YR.	LOW	YR.	HIGH	YR.	LOW	YR.
<u>FEBRUARY (contd)</u>											
22	51	31	41	62	47	29	57	42	58	11	93
23	51	31	41	68	47	34	93+	43	83+	19	93
24	52	31	41	72	86	32	62	60	86	11	93+
25	52	31	42	72	86	28	93	49	86	4	93
26	52	31	42	65	57+	28	93+	46	92	10	93
27	52	31	42	68	72	26	93	44	92	7	62
28	52	31	42	67	67	25	93	48	72	3	93
29	52	31	42	63	88+	40	60	43	92	12	60
<u>MARCH</u>											
1	52	31	42	64	88	26	93	41	68	15	71+
2	52	31	42	66	68	26	60	46	87	14	60
3	52	31	42	66	68	24	60	50	87	14	89
4	52	31	42	63	53	26	55	46	87	7	55
5	53	31	42	68	72	33	89+	50	87	6	55
6	54	32	43	65	67+	33	57	43	79	18	60
7	55	32	44	66	53	42	74	42	86+	21	74
8	55	33	44	67	53	33	51	46	83	20	76
9	56	33	44	69	53	40	51	47	83	22	51
10	56	33	45	69	72	40	48	45	87+	13	48
11	56	33	45	67	89	32	50	42	89+	21	50
12	57	34	45	68	92	37	51	48	87	15	56
13	57	34	45	70	92	38	51	44	87+	22	69+
14	57	34	46	72	92	40	49	45	61	23	53
15	58	34	46	70	65+	37	49	50	92	23	76
16	58	34	46	76	72	43	89	45	92	23	55
17	59	35	47	76	72	38	65	48	69	17	65
18	59	35	47	76	47	41	65	47	90	14	65
19	59	35	47	76	47	48	65+	47	47	16	65
20	59	35	47	76	47	49	50	49	88	22	74
21	59	35	47	74	60	41	75	46	47	26	82+
22	59	35	47	74	78+	47	71	47	78	24	64+
23	59	35	47	77	60	39	64	45	56+	20	48
24	59	35	47	78	60	38	55	45	60+	15	64
25	59	35	47	83	60	35	55	48	52	23	64+
26	60	35	47	71	78+	38	65	49	92+	21	85
27	60	35	48	73	69+	47	79	46	89	24	75
28	61	36	48	75	66	42	54	49	78	19	75
29	61	36	49	78	66	49	54	48	60	18	54
30	62	37	49	75	92	52	67	47	92+	20	54
31	62	37	49	78	92	51	75	47	61	28	53
<u>APRIL</u>											
1	63	37	50	80	90	45	76	50	59	24	82
2	63	37	50	83	92	48	82	50	87	25	76
3	64	37	50	76	77	50	63+	48	77	23	75
4	64	38	51	82	60	45	75	56	91	27	50
5	64	38	51	78	77+	51	75	54	60	21	75
6	65	38	51	82	77	41	45	51	62	28	67+
7	65	38	52	85	77	45	53	53	60	26	54
8	65	38	52	81	66	51	53	47	60	27	92+
9	65	38	52	80	85	48	92	49	74	29	75+
10	65	38	52	85	68	53	83+	47	57	24	81
11	65	38	52	79	88	52	83	51	56+	27	83

TABLE 3.11. (contd)

DAY	NORMAL (1961-1990)			EXTREME (1945-1993)							
	MAX	MIN	MEAN	MAXIMUM				MINIMUM			
				HIGH	YR	LOW	YR	HIGH	YR	LOW	YR
<u>APRIL (contd)</u>											
12	66	39	52	83	88	52	68	48	82+	28	71+
13	66	39	52	88	47	54	55	59	88	23	68
14	66	39	52	85	62+	47	75	55	85	29	83
15	66	39	52	82	88	55	75+	54	87	27	55
16	66	39	52	83	54	53	63	54	92	28	82
17	65	40	52	84	49	48	63	52	90	26	55
18	65	40	52	87	52	51	67	50	83+	29	68
19	65	40	52	78	56	50	51	54	89+	27	66
20	66	40	53	84	56	45	67	53	90+	28	82
21	66	40	53	85	56	52	67	60	56	26	85+
22	66	41	54	81	82+	53	88	52	81+	28	72
23	67	41	54	88	81+	56	79+	58	77	30	78
24	68	41	54	94	77	53	75	56	52	28	86+
25	68	42	55	89	52	56	58	59	52	31	55
26	68	42	55	85	92	53	48	57	78	28	48
27	69	42	55	90	87	50	90	57	92	27	70
28	69	42	56	93	87	56	67	64	87	27	67
29	70	43	56	90	68	47	67	60	87	29	52
30	70	43	57	91	81	56	67+	56	81	29	86
<u>MAY</u>											
1	71	43	57	87	47	53	69	59	77	28	54
2	71	43	57	89	71	56	88	60	71	32	48
3	71	44	58	91	66	58	93	60	71	31	49
4	72	44	58	94	66	56	63	56	71+	31	62
5	72	45	58	100	66	52	61	65	66	30	59
6	73	45	59	98	92	56	86	62	87	34	77
7	73	45	59	99	87	61	90	66	92	33	84
8	73	46	59	102	87	56	62	67	87	36	81
9	74	46	60	97	87	56	48	66	49	34	73
10	74	46	60	96	49	53	67	66	49	34	70
11	74	46	60	98	49	51	67	68	49	30	70
12	74	46	60	100	93	57	70	66	93	34	85
13	74	46	60	93	73+	57	55	65	49	34	85
14	75	47	61	98	73	56	55	61	73+	31	55
15	75	47	61	97	73	57	59	64	73+	35	74
16	75	47	61	95	73	54	55	60	73	32	74
17	76	48	62	96	73	61	74	59	85	38	88+
18	76	48	62	98	54	62	74	67	56	36	72
19	77	48	62	92	93	56	62	70	56	33	75
20	77	48	62	93	47	58	60	59	56	36	71
21	77	49	63	94	58	62	60+	59	58	37	74+
22	77	49	63	98	58	63	64	64	58	33	60
23	77	49	63	95	85+	59	62	66	58	35	64
24	77	49	63	96	92	54	62	63	81	35	75
25	77	50	63	98	92+	62	84	65	83	38	91+
26	77	50	64	101	58+	54	80	69	47	38	78
27	78	50	64	93	83	62	89	69	58	37	73
28	78	50	64	99	83	61	89	63	72+	38	79+
29	78	51	64	103	83	68	89+	71	86	35	76
30	79	51	65	104	86	62	76+	68	86	41	55
31	79	52	65	104	86	54	71	69	86	40	76+

TABLE 3.11. (contd)

DAY	NORMAL (1961-1990)			EXTREME (1945-1993)							
				MAXIMUM				MINIMUM			
	MAX	MIN	MEAN	HIGH	YR	LOW	YR	HIGH	YR	LOW	YR
JUNE											
1	80	52	66	103	86	64	76	69	86	37	84
2	80	52	66	99	70	65	80	69	89+	37	76
3	81	53	67	103	70	55	66	68	86+	37	62
4	81	54	67	103	69	60	74	66	86+	40	80+
5	81	54	68	101	78	60	88	73	69	43	76+
6	81	54	68	102	70+	62	51+	68	77	46	62
7	82	54	68	100	77	56	50	69	77	44	61
8	82	54	68	100	48	59	64	69	69	40	53
9	82	54	68	98	55	68	59	68	69+	44	85+
10	82	54	68	98	55	69	72	68	79	41	59
11	82	54	68	100	55	64	61	70	55	40	56
12	83	55	69	98	74	68	54	67	87+	42	68
13	83	55	69	99	74	59	80	67	89	42	52
14	84	56	70	103	74	67	65	68	87	44	78+
15	85	56	70	102	61	70	65	72	63	44	54
16	85	57	71	106	61	62	49	70	63	41	54
17	86	57	72	108	61	70	73	75	61	40	81
18	86	57	72	104	61	69	64	75	58	41	54
19	86	57	72	102	85	69	53	73	58	43	86
20	86	57	72	102	82	63	91	73	59	42	53
21	86	57	72	104	70	62	84	73	58	45	56
22	86	57	72	106	92+	71	93	74	92	46	87+
23	86	57	72	111	92	68	72	75	58	44	52
24	86	57	71	108	92	66	72	80	92	40	83
25	86	56	71	107	92	72	80+	79	92	42	76
26	86	56	71	103	87	70	75	74	70	41	76+
27	86	56	71	102	92	64	46	75	87	45	64+
28	86	56	71	102	87+	66	82+	68	87	38	75
29	86	56	71	104	48	65	52	74	87	46	71+
30	86	56	71	106	87	71	55	71	87	42	49
JULY											
1	86	57	72	103	87	66	66	75	87	46	73+
2	87	57	72	102	67	59	66	66	63	39	79
3	87	58	72	105	91+	71	66	70	67	46	90
4	88	58	73	108	68	71	86	75	70	48	66
5	88	59	73	108	75	66	51	76	75	47	80
6	89	59	74	110	68	71	55	76	68	44	71
7	89	59	74	105	68+	75	81	73	68	45	71
8	89	59	74	108	68	71	72	74	85	45	81
9	89	60	74	110	75	76	55	78	75	50	72+
10	90	60	75	106	75	67	74	79	75	49	76
11	90	60	75	109	90	76	74	78	75	46	81
12	90	60	75	110	90	75	88	75	90	50	74
13	90	60	75	108	61	77	93+	73	90+	49	76
14	90	61	76	107	87+	77	83	78	61	50	83
15	91	61	76	106	73	71	82	76	55	45	82
16	91	61	76	105	70	68	86	74	90	48	74
17	92	61	76	110	60	73	93	77	58	48	86
18	92	61	77	110	60	78	87	79	60	49	86
19	92	61	77	109	79	72	49	77	79	51	77
20	93	62	77	110	79	75	65+	74	56	53	68+
21	93	62	78	105	71	68	65	77	88	49	49
22	94	62	78	107	59	74	92	75	85	47	82
23	94	63	78	106	78	69	92	74	62+	49	63

TABLE 3.11. (contd)

DAY	NORMAL (1961-1990)			EXTREME (1945-1993)							
	MAX	MIN	MEAN	MAXIMUM			MINIMUM				
	HIGH	YR	LOW	YR	HIGH	YR	LOW	YR			
<u>JULY (contd)</u>											
24	94	63	79	106	62	78	63	75	62	52	52+
25	95	63	79	106	84	73	90	77	62	51	49+
26	95	63	79	105	88+	66	55	76	88	54	48
27	95	64	79	108	75+	74	48	74	73+	52	86
28	95	64	79	108	68	77	50+	76	68	49	59
29	95	63	79	107	82	80	93+	78	82	52	50
30	95	63	79	107	71	78	75	74	90	49	50
31	94	63	79	111	71	75	85	74	71+	53	64+
<u>AUGUST</u>											
1	94	63	78	109	71	77	76+	80	49	51	87
2	94	62	78	105	61	75	56	75	77+	46	64
3	94	62	78	107	61	77	62	73	86	52	59
4	93	62	78	113	61	78	64+	81	61	48	54
5	93	62	78	108	90	77	46	72	91	45	69
6	94	62	78	106	72	80	48	77	90	49	46
7	94	63	78	109	72	70	62	73	71	50	48
8	94	63	78	110	72	75	62	79	82+	48	49
9	94	63	78	112	71	78	47	78	90	51	75
10	94	63	78	109	71	76	85	77	71	52	47
11	93	63	78	108	71	79	83	73	58	50	85
12	93	62	77	108	71	79	78	77	92	52	57
13	92	61	77	107	92	74	68	79	92	49	84
14	91	60	76	109	92	70	68	78	92+	49	84+
15	90	60	75	105	67	72	60	76	45	51	74
16	89	59	74	108	67	68	93	70	81	48	76
17	89	59	74	108	67	78	72+	68	91	47	76
18	89	59	74	108	67	71	80	70	91+	47	76
19	88	59	74	105	67	70	68	76	91	46	80+
20	88	59	74	105	67	67	59	77	82	49	52
21	88	59	74	103	91+	70	60	74	82+	47	85+
22	88	59	73	104	56	70	92	76	61+	41	60
23	88	58	73	105	70	69	92	74	61	45	92
24	87	58	73	104	58	70	68	71	66	43	92
25	87	58	72	104	58	72	77	68	88+	43	93
26	87	58	72	100	84	68	56	67	58	44	93+
27	87	57	72	101	72	73	68	71	67	47	78+
28	86	57	72	104	72	70	51	74	86	42	80
29	86	56	71	102	67	72	51	73	67	42	65
30	86	56	71	105	67	68	51	71	67	44	64
31	85	56	71	104	67	72	71	73	67	45	65
<u>SEPTEMBER</u>											
1	85	56	71	106	87	61	71	70	87	44	80
2	85	56	71	102	50	70	71	70	49	47	75+
3	85	55	70	101	88	72	70	67	55+	44	80+
4	85	55	70	102	88	68	59	68	55	44	80
5	85	55	70	100	55	72	60	68	63	43	69
6	85	55	70	101	55	72	92	65	57+	44	83
7	85	54	69	97	58	60	78	72	55	42	92+
8	84	54	69	99	81	61	85	69	63	42	76+
9	83	53	68	98	81+	66	85	68	69	40	62
10	82	53	67	97	93	68	85	65	63	43	82+
11	81	52	67	98	90+	62	85	66	69	41	88

TABLE 3.11. (contd)

DAY	NORMAL (1961-1990)			EXTREME (1945-1993)							
	MAX	MIN	MEAN	MAXIMUM				MINIMUM			
	HIGH	YR	LOW	YR	HIGH	YR	LOW	YR	HIGH	YR	LOW
<u>SEPTEMBER (contd)</u>											
12	81	52	66	96	69	62	70	67	53	38	49
13	80	51	66	98	48	59	80	62	60+	40	74
14	80	51	65	93	75+	62	92	61	90+	38	70
15	79	51	65	96	79+	58	59	60	88+	35	70
16	79	51	65	96	81+	62	65+	65	79	35	65
17	79	51	65	97	81	59	86	62	51	33	65
18	78	50	64	98	81	57	83	61	79	34	65
19	78	50	64	96	67	62	83	67	56	36	57
20	78	50	64	93	79	66	72+	62	92	37	83
21	78	49	63	98	67	67	61	65	62	38	93+
22	77	49	63	93	66	52	84	68	66	36	81+
23	77	49	63	93	87	54	77	62	92	34	81
24	77	49	63	94	52	60	72	60	50	34	72+
25	77	48	63	97	52	56	77	66	49	30	72
26	77	48	62	92	52	57	48	61	79	32	72
27	76	48	62	92	63+	58	77	60	49	30	72
28	76	48	62	92	67	58	77	62	76	33	85
29	76	47	61	92	93	57	77	61	89	34	85+
30	75	46	61	88	93+	63	54+	64	93	35	85
<u>OCTOBER</u>											
1	75	46	60	88	91+	61	59	59	92	30	54
2	74	45	60	86	93+	56	67	60	88	32	54
3	73	45	59	89	58	55	50	58	88+	33	73+
4	73	44	58	89	80	55	50	57	88	32	73
5	72	44	58	87	58	52	57	52	88+	34	82+
6	72	44	58	85	80	53	57+	57	60	30	74
7	71	44	57	86	80	48	57	57	88	29	74
8	70	44	57	84	65	51	85	58	87	26	85
9	70	43	56	83	88+	52	58	54	53	26	85
10	69	43	56	82	88	50	62	54	84	33	59
11	69	43	56	84	52	52	68+	55	63	30	60
12	68	43	55	82	91	54	66	56	52	34	85+
13	68	42	55	78	64+	57	69	55	88	31	69
14	67	41	54	77	91+	58	90+	59	88	24	69
15	66	40	53	81	63	53	92	60	88	29	70
16	66	39	53	79	63	54	92+	54	88	29	84
17	65	39	52	76	63	49	50	49	55	29	71+
18	65	38	51	76	73	47	49	50	52	27	49
19	64	38	51	78	92+	51	84	52	92	27	69+
20	63	38	50	74	78	45	47	54	73	23	49
21	63	38	50	73	91+	50	68	54	63	20	84
22	63	38	50	74	59	46	50	51	52	20	84
23	62	38	50	73	66+	39	84	51	60	25	84
24	61	38	50	75	77+	49	57	60	45	26	75
25	61	37	49	75	55	49	57	51	79	26	78
26	60	37	48	69	92	50	80	50	86+	21	78
27	59	36	48	74	85	43	93+	54	81	23	70
28	58	36	47	68	65+	35	91	52	49	18	71
29	58	36	47	70	53	42	91+	48	74	13	71
30	57	36	46	75	67	32	71	49	86+	20	72
31	56	36	46	75	67	34	84	54	67	12	84

TABLE 3.11. (contd)

DAY	NORMAL (1961-1990)			EXTREME (1945-1993)							
				MAXIMUM				MINIMUM			
	MAX	MIN	MEAN	HIGH	YR	LOW	YR	HIGH	YR	LOW	YR
NOVEMBER											
1	56	36	46	70	45	31	84	49	87	22	78
2	56	36	46	68	75	38	91	51	85	22	89+
3	55	36	45	75	75	36	73	53	83	24	61
4	55	36	45	71	75	32	73	46	89+	16	73
5	54	35	44	63	89	31	73	48	88	20	73+
6	53	35	44	64	58	32	73	49	89	19	73
7	53	35	44	69	78	34	45	48	80	19	93+
8	52	34	43	64	80	30	45	48	89	20	48
9	51	34	43	73	89	32	45	60	89	18	86
10	51	34	42	73	89	35	86	56	89	16	86
11	50	34	42	66	89	32	85	48	89	14	78
12	50	33	42	65	91	20	55	52	49	6	55
13	49	33	41	64	87	14	55	46	90	6	59
14	49	33	41	64	53	19	55	45	53	-1	55
15	49	32	40	65	53	18	55	46	83	1	55
16	48	32	40	65	76	18	55	49	54	7	59
17	48	31	40	71	76	22	55	46	83+	10	61
18	48	31	39	64	46	25	55	47	54	11	55
19	47	31	39	67	62	22	85	44	54	14	85
20	47	30	38	65	58	24	85	47	74	3	85
21	46	30	38	63	58	17	85	46	65	3	85
22	46	29	38	65	67+	17	85	53	90	-6	85
23	45	29	37	70	59	11	85	54	90	-13	85
24	45	29	37	67	59	6	85	57	90	-12	85
25	44	28	36	65	62	11	85	48	62	-3	85
26	43	28	36	65	49	15	85	45	49	-1	85
27	43	28	35	63	49	12	85	46	49	8	85
28	43	28	35	62	73	11	85	43	73	7	85
29	42	28	35	57	90+	14	85	38	73+	8	85
30	42	28	35	60	51	15	85	41	66	6	85
DECEMBER											
1	42	28	35	65	72	14	85	45	81	-8	85
2	42	28	35	64	77	20	85	56	75	8	85
3	42	28	35	62	82+	27	85+	54	75	8	85
4	42	28	35	60	75	23	72	41	52	1	72
5	41	28	34	58	91+	21	72	41	87	7	72
6	41	27	34	59	87	16	56	43	87	8	56
7	40	27	33	58	73+	18	56	40	52	2	56
8	40	26	33	58	89	17	72	48	46	-6	72
9	40	26	33	64	46	13	72	44	56	-5	72
10	39	25	32	67	93	13	72	42	67+	-8	72
11	39	25	32	59	91+	11	72	36	93+	-4	72
12	39	25	32	57	88	22	72	42	77+	-5	72
13	38	25	31	56	88+	13	72	40	73+	-6	72
14	38	24	31	57	79+	15	72	48	79	-2	72
15	37	24	31	64	59	16	72	41	56	2	72
16	37	24	30	56	73	4	64	43	73	-13	64
17	37	24	30	57	71+	5	64	41	62	-12	64
18	36	24	30	56	56	13	64	38	62	-3	84
19	36	24	30	54	66	17	84	40	66	-4	84
20	37	24	30	57	74	11	84	37	66+	-2	90+
21	37	24	30	61	72	11	90	43	73	-10	90
22	37	24	30	59	80	7	90	42	72	-13	83
23	37	24	30	57	63	6	83	40	72	-9	83

TABLE 3.11. (contd)

DAY	NORMAL (1961-1990)			EXTREME (1945-1993)							
	MAX	MIN	MEAN	HIGH	YR	LOW	YR	HIGH	YR	LOW	YR
<u>DECEMBER (contd)</u>											
24	37	24	30	55	61+	15	90+	39	80+	0	90
25	37	23	30	65	80	16	90	41	72	1	90
26	36	23	30	69	80	20	90+	53	80	0	48
27	36	23	29	62	80+	19	48	40	49	-2	48
28	35	22	29	56	57+	14	68	38	49	-3	68
29	35	22	28	60	49	-2	68	39	62	-10	90+
30	35	21	28	54	70	-2	68	39	88+	-14	68
31	35	21	28	56	62	4	68	44	80	-9	78

+ Latest of several occurrences.

The current normal period is 1961 through 1990, and the next will be 1971 through 2000. The normal temperatures in Table 3.11 are computed using a 7-day running mean, centered about each day.

Four possible temperature extremes are presented for each day, a record high and low maximum, and a record high and low minimum. These daily records, plus the year of occurrence, are also indicated in Table 3.11.

4.0 PRECIPITATION CLIMATOLOGY

4.1 MONTHLY AND ANNUAL TOTALS

Table 4.1 shows monthly and annual precipitation totals for the period of record from 1946 through 1993. Normal monthly precipitation amounts for the period from 1961 to 1990, and averages for the entire period of record are indicated at the bottom of the table. Monthly and annual extremes are underlined in each column. The wettest year on record was 1950 with 11.45 inches of precipitation, while the driest was 1976 with 2.99 inches.

The months of November through February in this period provide 3.35 inches, or 54%, of the normal annual precipitation. December is the wettest month, receiving 1.03 inches, while July is the driest, receiving only 0.18 inch. The wettest month on record was June 1950 with 2.92 inches, while the driest months, September 1991, August 1988, and August 1955, received no precipitation.

4.2 SEASONAL PRECIPITATION

Table 4.2 provides seasonal precipitation information, with normal and average seasonal data at the bottom of the table. The extremes for each season are underlined. The wettest season was the winter of 1958-1959 with 5.06 inches, while the driest, the summer of 1973, received only 0.03 inch.

4.3 AVERAGE NUMBER OF DAYS WITH SPECIFIED AMOUNTS OF PRECIPITATION

Table 4.3 presents information on the average number of days per year with precipitation events in the following categories: \geq Trace, ≥ 0.01 inch, ≥ 0.10 inch, ≥ 0.25 inch, ≥ 0.50 inch and ≥ 1.00 inch. A trace, designated with a letter T throughout this document, is less than .005 inch of precipitation. An average of 125 days per year have a trace or more of precipitation; however, only 24 days receive totals of 0.10 inch or more. During the 48-year period of record, only 3 days have had an inch or more of precipitation.

TABLE 4.1. Monthly and Annual Precipitation (Inches)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1945	---	---	---	---	---	---	---	---	---	---	---	---	---
1946	---	---	---	---	---	---	0.15	0.35	0.52	0.65	0.66	0.11	---
1947	0.32	0.27	0.42	0.70	0.02	1.07	0.71	0.68	1.34	2.20	0.81	0.75	9.29
1948	1.36	0.69	0.07	0.95	1.71	1.47	0.40	0.39	0.16	0.45	0.95	1.11	9.71
1949	0.13	0.68	1.12	0.02	0.16	0.01	0.01	0.03	0.23	0.10	1.47	1.16	4.12
1950	1.80	1.06	0.87	0.47	0.27	2.92	0.07	T	0.01	2.46	0.55	0.97	11.45
1951	0.84	0.51	0.46	0.53	0.43	1.38	0.37	0.15	0.10	0.71	0.82	0.70	7.00
1952	0.65	0.50	0.06	0.13	0.58	1.07	T	0.08	0.08	0.04	0.20	0.77	4.16
1953	2.16	0.25	0.17	0.77	0.28	0.55	T	0.96	0.13	0.20	0.96	0.49	6.92
1954	1.48	0.28	0.59	0.07	0.41	0.10	0.22	0.42	0.51	0.42	0.86	0.35	5.71
1955	0.56	0.22	0.17	0.40	0.59	0.28	0.57	0	0.77	0.40	1.54	2.03	7.53
1956	1.71	0.56	0.10	T	0.22	0.86	T	0.38	0.01	1.03	0.15	0.58	5.60
1957	0.48	0.23	1.86	0.38	0.82	0.47	0.05	0.02	0.34	2.72	0.39	0.53	8.29
1958	1.74	1.48	0.46	0.64	0.74	0.81	0.02	T	0.05	0.19	0.77	1.84	8.74
1959	2.05	1.17	0.40	0.20	0.50	0.23	T	0.03	1.26	0.56	0.41	0.26	7.07
1960	0.51	0.58	0.67	0.53	0.71	0.14	T	0.26	0.23	0.23	0.92	0.64	5.42
1961	0.33	2.10	1.02	0.48	0.80	0.42	0.15	0.09	T	0.07	0.49	0.89	6.84
1962	0.13	0.90	0.14	0.34	1.35	0.12	T	0.50	0.38	0.95	0.65	0.60	6.06
1963	0.95	0.69	0.53	1.17	0.43	0.28	0.31	0.01	0.02	0.04	0.74	1.14	6.31
1964	0.37	0.01	0.03	0.11	0.04	0.90	0.04	0.24	0.09	0.28	0.94	2.34	5.39
1965	0.93	0.14	0.03	0.09	0.15	0.49	0.11	0.03	0.11	0.01	1.17	0.39	3.65
1966	0.68	0.03	0.39	0.03	0.05	0.43	0.81	T	0.27	0.39	2.25	0.60	5.93
1967	0.32	T	0.14	0.90	0.56	0.57	T	T	0.05	0.13	0.16	0.43	3.26
1968	0.88	0.58	0.02	0.01	0.06	0.19	0.04	0.51	0.25	0.93	1.23	1.25	5.95
1969	1.24	0.54	0.10	1.22	0.51	0.75	T	T	0.48	0.10	0.13	1.29	6.36
1970	2.47	0.75	0.27	0.45	0.54	0.25	0.01	T	0.03	0.24	0.71	0.61	6.33
1971	0.78	0.10	1.02	0.07	0.56	0.71	0.13	0.09	1.13	0.18	0.46	1.07	6.30
1972	0.19	0.27	0.58	0.10	2.03	0.66	0.16	0.56	0.02	T	0.55	1.27	6.39
1973	0.90	0.21	0.08	T	0.24	0.01	T	0.02	0.43	1.72	2.64	2.02	8.27
1974	0.90	0.41	0.52	0.46	0.28	0.12	0.71	T	0.01	0.21	0.71	0.97	5.30
1975	1.70	0.98	0.33	0.42	0.38	0.24	0.32	1.16	0.03	0.87	0.60	0.70	7.73
1976	0.56	0.36	0.23	0.41	0.08	0.11	0.13	0.96	T	0.04	T	0.11	2.99
1977	0.08	0.57	0.41	T	0.65	0.37	0.06	1.36	0.66	0.15	0.63	1.47	6.41
1978	1.52	0.92	0.30	0.46	0.41	0.09	0.52	0.57	0.11	T	1.21	0.26	6.37
1979	0.54	0.17	0.54	0.52	0.10	T	0.09	0.38	0.20	0.67	1.36	0.99	5.56
1980	1.32	1.30	0.30	0.86	1.41	0.96	T +	0.02	0.85	0.33	0.44	1.89	9.68
1981	0.56	0.60	0.70	0.02	0.99	0.43	0.19	0.03	0.60	0.39	1.08	1.45	7.04
1982	0.33	0.57	0.30	0.75	0.28	0.75	0.22	0.20	0.55	1.33	0.91	1.79	7.98
1983	1.44	1.36	1.00	0.42	0.52	0.68	0.31	0.12	0.46	0.52	2.12	2.12	11.07
1984	0.23	0.94	1.01	0.60	0.55	0.99	0.06	T	0.42	0.07	1.83	0.57	7.27
1985	0.34	0.82	0.36	0.01	0.12	0.15	0.12	0.01	0.63	0.46	1.24	0.84	5.10
1986	1.76	1.37	0.76	T +	0.30	T +	0.21	0.02	0.96	0.29	0.65	0.77	7.09
1987	0.80	0.19	1.05	0.14	0.17	0.11	0.50	0.07	0.01	T +	0.40	1.63	5.07
1988	0.48	T +	0.39	1.12	0.33	0.11	0.13	0 +	0.39	0.01	0.82	0.40	4.18
1989	0.21	1.67	1.56	0.84	0.59	0.01	0.01	0.26	0.02	0.42	1.04	0.29	6.92
1990	0.77	0.09	0.10	0.40	0.86	0.36	0.14	0.83	T	0.78	0.02	0.72	5.07
1991	0.33	0.19	1.12	0.45	0.49	1.44	0.29	0.07	0	0.53	1.44	0.40	6.75
1992	0.44	0.94	0.09	0.94	T	1.14	0.38	0.20	0.27	0.61	1.07	1.82	7.90
1993	1.30	1.17	0.67	0.71	0.60	0.12	1.76	0.24	0.04	0.09	0.19	0.94	7.83
AVG	0.88	0.63	0.50	0.43	0.51	0.54	0.22	0.26	0.32	0.52	0.86	0.94	6.62
*NORMAL	0.79	0.62	0.47	0.41	0.51	0.38	0.18	0.27	0.31	0.39	0.91	1.03	6.26

* Normal precipitation figures are averages for the period 1961-1990.

— Greatest and least values for each column are underlined.

+ Most recent of multiple occurrences.

TABLE 4.2. Seasonal Precipitation (Inches)

<u>YEAR</u>	<u>WINTER+ DEC-FEB</u>	<u>SPRING MAR-MAY</u>	<u>SUMMER JUN-AUG</u>	<u>AUTUMN SEP-NOV</u>
1945	----	----	----	----
1946	----	----	----	1.83
1947	<u>0.70</u>	1.14	2.46	4.35
1948	<u>2.80</u>	2.73	2.26	1.56
1949	1.92	1.30	0.05	1.80
1950	3.02	1.61	<u>2.99</u>	3.02
1951	2.32	1.42	1.90	1.63
1952	1.85	0.77	1.15	0.32
1953	3.18	1.22	1.51	1.29
1954	2.25	1.07	0.74	1.79
1955	1.13	1.16	0.85	2.71
1956	<u>4.30</u>	0.32	1.24	1.19
1957	1.29	<u>3.06</u>	0.54	3.45
1958	3.75	<u>1.84</u>	0.83	1.01
1959	<u>5.06</u>	1.10	0.26	2.23
1960	1.35	1.91	0.40	1.38
1961	3.07	2.30	0.66	0.56
1962	1.92	1.83	0.62	1.98
1963	2.24	2.13	0.60	0.80
1964	1.52	0.18	1.18	1.31
1965	3.41	0.27	0.63	1.29
1966	1.10	0.47	1.24	2.91
1967	0.92	1.60	0.57	0.34
1968	1.89	<u>0.09</u>	0.74	2.41
1969	3.03	<u>1.83</u>	0.75	0.71
1970	4.51	1.26	0.26	0.98
1971	1.49	1.65	0.93	1.77
1972	1.53	2.71	1.38	0.57
1973	2.38	0.32	<u>0.03</u>	<u>4.79</u>
1974	3.33	1.26	<u>0.83</u>	0.93
1975	3.65	1.13	1.72	1.50
1976	1.62	0.72	1.20	0.04
1977	0.76	1.06	1.79	<u>1.44</u>
1978	3.91	1.17	1.18	1.32
1979	0.97	1.16	0.47	2.23
1980	3.61	2.57	0.98	1.62
1981	3.05	1.71	0.65	2.07
1982	2.35	1.33	1.17	2.79
1983	4.59	1.94	1.11	3.10
1984	3.29	2.16	1.05	2.32
1985	1.73	0.49	0.28	2.33
1986	3.97	1.06	0.23	1.90
1987	1.76	1.36	0.68	0.41
1988	2.11	1.84	0.24	1.22
1989	2.28	2.99	0.28	1.48
1990	1.15	1.36	1.33	0.80
1991	1.24	2.06	1.80	1.97
1992	1.78	1.03	1.72	1.95
1993	4.29	1.98	2.12	0.32
AVG	2.45	1.44	1.01	1.70
*NORMAL	2.44	1.40	0.83	1.60

* Normal precipitation figures are averages for the period 1961-1990.

— Greatest and least values for each column are underlined.

+ For the Winter season, December is included in the previous year.

TABLE 4.3. Average Number of Days with Precipitation of Specified Amount

<u>MONTH</u>	<u>TRACE OR MORE</u>	<u>0.01 INCH OR MORE</u>	<u>0.10 INCH OR MORE</u>	<u>0.25 INCH OR MORE</u>	<u>0.50 INCH OR MORE</u>	<u>1.00 INCH OR MORE</u>
Jan	16	9	3	1	#	0
Feb	12	7	2	1	#	0
Mar	11	6	2	#	#	0
Apr	10	5	2	#	#	0
May	10	5	2	1	#	0
Jun	9	5	2	1	#	#
Jul	5	2	1	#	#	#
Aug	6	3	1	#	#	0
Sep	6	3	1	#	#	0
Oct	9	5	2	1	#	#
Nov	14	8	3	1	#	0
Dec	17	10	3	1	#	0
Annual	125	68	24	7	1*	#

* Although the number of days with 0.50 inch or more averages less than 1/2 day for any one month, 61 such days have been recorded during 48 years of record.

Used to denote an average of less than 1/2 day.

4.4 TOTAL TIME WITH PRECIPITATION OBSERVED

The total time during which precipitation was observed at the HMS includes all types of precipitation. These data are presented in Table 4.4. No record was kept for the hours 1600 through 2400 from July 1971 through June 1974; therefore, a 3-year gap exists in the record for those hours.

TABLE 4.4. Monthly and Annual Averages and Extremes in Total Time with Precipitation Observed: July 1946 Through June 1971, July 1974 Through December 1993

<u>MONTH</u>	<u>AVERAGES</u>		<u>GREATEST</u>			<u>LEAST</u>		
	<u>NO. OF HOURS</u>	<u>% OF TIME</u>	<u>NO. OF HOURS</u>	<u>% OF TIME</u>	<u>YEAR</u>	<u>NO. OF HOURS</u>	<u>% OF TIME</u>	<u>YEAR</u>
Jan	91.8	12.3	212.0	28.5	1969	29.2	3.9	1949
Feb	56.7	8.4	106.8	15.9	1958	4.7	0.7	1967
Mar	40.2	5.4	135.2	18.2	1957	7.3	1.0	1968
Apr	29.6	4.1	69.2	9.6	1953	1.6	0.2	1985
May	31.2	4.2	89.9	12.1	1948	1.2	0.2	1992
Jun	27.8	3.9	80.8	11.2	1950	2.9	0.4	1986
Jul	10.9	1.5	38.2	5.1	1966	0.5	0.1	1984
Aug	13.0	1.7	61..	8.3	1968	0.0	0.0	1988+
Sep	16.2	2.3	52.2	7.2	1959	0.0	0.0	1991
Oct	31.9	4.3	119.9	16.1	1947	0.4	0.1	1978
Nov	62.2	8.6	146.5	20.3	1985	7.1	1.0	1990
Dec	92.0	12.4	230.5	31.0	1985	25.8	3.5	1976
Annual	503.5	5.7	738.0	8.4	1950	286.7	3.3	1990

+ Most recent of several occurrences.

The months of November through February, which contribute more than half of the annual precipitation, have received precipitation more than 10% of the time (10.4%), more than three times greater than the other eight months of the year (3.4%).

4.5 NOTABLE WET PERIODS

Seven periods are listed when precipitation was abnormally high:

PERIOD	NUMBER OF DAYS WITH TRACE OR MORE			TOTAL AMOUNT (INCHES)	
	ALTOGETHER	GREATEST CONSECUTIVE	MEASURABLE PRECIP.	WATER EQUIV.	SNOW-FALL
Oct 7 - Nov 4, 1947	23 out of 29	10	17	2.21	0
Jan 3 - 28, 1950	21 out of 26	10	15	1.80	23.4
Nov 11 - Dec 19, 1950	33 out of 39	12	20	1.37	3.7
Nov 16 - Dec 22, 1955	31 out of 37	15	24	3.19	22.7
Oct 31 - Dec 7, 1973	32 out of 38	14	20	3.45	8.1
Nov 15 - Dec 7, 1985	17 out of 23	8	14	1.96	25.2
Dec 27, 1992 - Jan 23, 1993	26 out of 29	12	19	2.02	26.8

From a precipitation standpoint, 1973 was an unusual year. Total precipitation for the year was 8.27 inches or 132% of normal (6.25 inches). The period from March 30 through September 18 was extremely dry, receiving only 0.29 inch of precipitation during that 173-day period, while the period from October 31 through December 7 was a notable wet period (see previous table). During the months of October, November, and December 1973, 6.38 inches of precipitation were recorded, 289% of normal (2.21 inches) for those months.

4.6 NOTABLE DRY PERIODS

The HMS is in a semi-arid region, thus it experiences many dry periods. January, March, and December are the only months that have always received measurable precipitation (1946-1993). A total of 37 months during the period of record have been without measurable precipitation, with the months of July

and August accounting for 20 of those months. The record number of consecutive days with zero precipitation (not even a trace) occurred in 1988, when the period from July 14 through September 17 (66 days) was totally dry. The following list indicates some long periods with small amounts of precipitation.

NOTABLE DRY PERIODS				
<u>YEAR</u>	<u>FROM</u>	<u>TO</u>	NUMBER OF DAYS	TOTAL PRECIP. (INCHES)
1952	Jun 30	Nov 10	134	0.20
1967	Jun 22	Nov 7	139	0.18
1968	Feb 24	Aug 13	172	0.32
1973	Mar 30	Sep 18	173	0.29
1976	Aug 26	Dec 31	128	0.15
1985	Mar 31	Sep 7	161	0.43
1986	May 6	Sep 12	129	0.30
1987	Jul 19	Oct 31	105	0.08
1988	Jun 6	Sep 17	105	0.13

The driest year on record (1946 to 1993) was 1976. Total precipitation for that year was 2.99 inches, less than half of normal. During the period from September through December, the total precipitation was 0.15 inch, which was 6% of normal (2.52 inches) for those months.

4.7 SNOWFALL

Snowfall, which includes all frozen precipitation, has varied from a seasonal total of 0.3 inch in 1957-58 to 56.1 inches in 1992-93. Table 4.5 provides information on monthly and seasonal snowfall amounts, as well as the dates and amounts of earliest and latest snowfall each season. The earliest measurable snowfall (0.3 inch) was recorded on October 26, 1957, while the latest measurable snowfall (1.0 inch) was recorded on April 6, 1982. The average date of the first measurable snow is November 30, and the last measurable snow date is February 13. Normal snowfall for the period 1961 to 1990, and averages for the entire period of record are indicated at the bottom of the table. Monthly and seasonal extremes are underlined in each column.

TABLE 4.5. Monthly and Seasonal Snowfall (Inches) Including First and Last Dates of Both Trace and Measurable Snowfalls

SEASON	OCT	NOV	DEC	JAN	FEB	MAR	APR	TOTAL	FIRST DATE	FIRST AMT	MEASURABLE DATE	MEASURABLE AMT	LAST DATE	LAST AMT
1945-46	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1946-47	T	7.2	0.5	3.3	T	T	0	11.0			11/17	0.2	1/31	2.2
1947-48	0	T	3.0	2.6	5.5	0.1	T	11.2	11/14	T	12/3	0.1	3/9	0.1
1948-49	0	1.7	8.1	1.8	6.9	T	0	18.5	11/7	T	11/18	0.2	2/21	0.2
1949-50	T	0	0.7	23.4	3.1	1.5	T	28.7	10/18	T	12/16	0.1	3/13	0.3
1950-51	0	0.8	2.9	5.3	5.3	4.2	0	18.5	11/19	T	11/30	0.8	3/12	1.1
1951-52	0	0.5	4.4	7.5	3.1	T	0	15.5			11/25	0.5	2/24	0.1
1952-53	0	T	3.1	2.7	0	T	0	5.8	11/22	T	12/1	0.3	1/2	2.7
1953-54	0	0	1.0	14.3	1.6	T	0	16.9			12/8	1.0	2/11	1.6
1954-55	0	0	1.8	6.0	2.4	0.7	T	10.9	12/3	T	12/4	1.8	3/25	0.7
1955-56	0	12.7	13.4	10.2	2.2	T	0	38.5			11/2	0.2	2/23	0.1
1956-57	T	0.1	2.5	7.9	1.4	4.0	T	15.9	10/26	T	11/26	0.1	3/6	1.7
1957-58	0.3	0	T	T	0	T	0	0.3			10/26	0.3	10/26	0.3
1958-59	0	T	0.9	4.5	12.7	0	0	18.1	11/14	T	12/6	0.4	2/19	1.2
1959-60	0	0.3	1.0	5.9	T	1.5	0	8.7	11/4	T	11/15	0.1	3/5	1.4
1960-61	0	0	3.3	1.9	0	1.6	0	6.8	12/9	T	12/10	0.1	3/5	1.6
1961-62	0	0.5	6.1	0.4	2.4	0.9	0	10.3	11/18	T	11/23	0.1	3/9	0.1
1962-63	0	T	T+	7.1	0.6	0	0	7.7	11/29	T	1/30	0.4	2/1	0.6
1963-64	0	T	6.4	2.9	T	T	T	9.3	11/19	T	12/8	4.3	1/24	1.5
1964-65	0	0.1	19.1	6.6	T	T	0	25.8	11/21	T	11/29	0.1	1/23	3.1
1965-66	0	T	6.9	2.6	T	T	0	9.5	11/23	T	12/23	0.6	1/22	0.2
1966-67	0	0.4	2.8	0.1	0	0	0	3.3			11/11	0.2	1/26	0.1
1967-68	0	0	5.7	4.5	0.3	0	T	10.5	12/6	T	12/9	0.6	2/17	0.3
1968-69	0	T	9.7	15.9	2.1	0	0	27.7	11/16	T	12/19	0.1	2/23	2.0
1969-70	0	T	2.7	6.6	T	0.2	0	9.5	11/29	T	12/8	1.3	3/1	0.2
1970-71	0	0.5	4.4	2.0	T	0.6	0	7.5	11/22	T	11/30	0.5	3/14	0.1
1971-72	0.6	T	8.1	4.9	1.4	0.1	T	15.1	11/27	T	11/29	0.1	2/5	0.1
1972-73	0	T	7.2	4.3	1.7	0	0	13.2	12/2	T	12/3	1.7	2/10	1.7
1973-74	1.5	6.6	7.5	3.9	0	T	0	19.5			10/31	1.5	1/12	2.3
1974-75	0	0	0.7	2.5	12.1	T	T	15.3	12/2	T	12/12	0.3	2/9	1.7

TABLE 4.5. (contd)

<u>SEASON</u>	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>	<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>	<u>TOTAL</u>	<u>FIRST DATE</u>	<u>FIRST AMT</u>	<u>FIRST MEASURABLE DATE</u>	<u>FIRST AMT</u>	<u>LAST MEASURABLE DATE</u>	<u>LAST AMT</u>	<u>LAST DATE</u>	<u>LAST AMT</u>
1975-76	0	1.7	3.8	6.0	0.2	T	T	11.7			11/10	0.6	2/3	0.2	4/1	T
1976-77	0	0	0.2	2.9	T	T	0	3.1	12/4	T	12/23	0.2	1/31	0.2	3/27	T
1977-78	0	2.1	3.4	2.9	0.9	T	0	9.3	11/15	T	11/18	0.1	2/26	0.1	3/5	T
1978-79	0	10.1	1.4	10.3	0.5	0.1	0	22.6	11/15	T	11/18	5.3	3/3	0.1		
1979-80	0	5.6	7.3	8.7	4.5	0.3	0	26.2			11/22	1.4	3/5	0.3		
1980-81	0	0.3	2.2	T	T	0	0	2.5			11/14	0.3	12/6	0.3	2/13	T
1981-82	0	0	12.1	2.4	T	T	1.0	15.5	12/3	T	12/13	2.5	4/6	1.0		
1982-83	0	0.2	4.6	3.2	2.3	0	0	10.3	11/12	T	11/26	0.2	2/9	0.3		
1983-84	0	T	17.8	1.5	T	0	0	19.3	11/28	T	12/2	0.5	1/21	1.5	2/9	T
1984-85	T	4.9	5.8	1.3	8.5	1.4	0	21.9	10/23	T	11/24	0.2	3/4	1.4		
1985-86	0	<u>18.3</u>	7.6	2.7	5.5	0	0	34.1			11/10	0.6	2/21	0.9		
1986-87	0	0	5.1	3.3	0	0	0	8.4			12/4	0.4	1/26	0.1		
1987-88	0	1.1	4.7	5.6	0	0	0.2	11.6			11/30	1.1	1/20	0.1	1/31	T
1988-89	0	0	3.5	0.2	<u>17.0</u>	3.1	T	23.8			12/18	0.3	3/5	0.2	5/18	T
1989-90	0	0	1.4	0.6	0.7	T	0	2.7	12/25	T	12/26	0.3	2/17	0.2		
1990-91	0	<u>0+</u>	6.1	3.8	<u>0+</u>	0.1	0	10.0			12/18	0.1	3/2	0.1		
1991-92	1.2	<u>T</u>	0.6	0.3	<u>T</u>	0	0	2.1			10/28	0.8	1/5	0.3	2/7	T
1992-93	0	2.1	<u>21.0</u>	17.1	12.4	3.5	0	<u>56.1</u>			11/21	0.2	3/3	1.5	3/16	T
1993-94	<u>0+</u>	1.4	1.8	<u>0</u>	0.9	<u>0+</u>	<u>0+</u>	4.1			11/22	0.6	2/26	0.3		
AVE	0.1	1.5	5.3	5.0	2.5	0.5	T	15.0	11/20		11/30		2/13		3/11	
*NORMAL	0.1	1.7	5.7	3.9	2.0	0.3	T	13.8	11/24		12/3		2/12		3/8	

* Normal snowfall figures are averages for 1961-1990.

— Greatest and least values for each column are underlined.

+ Most recent of multiple occurrences.

Table 4.6 lists some miscellaneous snowfall statistics for the HMS for the period from 1946 through 1993. Included in this table are average number of days per month with snow depth above certain threshold values, greatest number of days per month with snow depth above certain threshold values, record number of consecutive days with snow depth above certain threshold values, and record monthly snow depth and 24-hr snowfall amounts. The record snow depth at the HMS is 15.6 inches, recorded in December 1985. The record number of days with snow depth \geq 6 inches was 43 days in the winter of 1992-1993.

4.8 NORMAL AND MAXIMUM DAILY PRECIPITATION

Table 4.7 contains normal and maximum values of precipitation (minimum values are not needed, because every day of the year has a minimum value of zero). The normal precipitation values are based upon the period from 1961 through 1990, while the daily maximum values are for the entire period of record (1945 through 1993). The maximum daily value for each month is underlined.

Only four days during the year received no precipitation (not even a trace) during the entire period of record. Those days are July 23 and September 6, 7, and 24. The days with the most measurable precipitation events are December 15 and 19, with 15 events each. Climatologically speaking, the wettest period of the year is from December 14 through 24, each day with a normal precipitation value of 0.04 inch, and the driest period is from July 23 through August 11, with each day having a normal value of only a trace. October 1, 1957 recorded the greatest 1-day precipitation, 1.60 inches.

TABLE 4.6. Miscellaneous Snowfall Statistics, 1946 Through 1993

	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>	<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>SEASON</u>
Average Number of Days of Given Depth at 0400 PST							
≥ 1"	#	1	7	9	4	#	21
≥ 3"	0	1	3	6	2	#	12
≥ 6"	0	#	1	3	1	#	5
≥ 12"	0	0	#	#	0	0	#
Record Greatest Number of Days of Given Depth at 0400 PST							
≥ 1"	0	(1978) 12	(1985) 31	(1969) 31	(1989) 20	(1989) 7	(1992-93) 72
≥ 3"	0	(1978) 12	(1985) 31	(1993) 27	(1950) 16	(1993) 6	(1985-86) 58
≥ 6"	0	(1978) 6	(1985) 23	(1993) 25	(1993) 9	(1993) 5	(1992-93) 43
≥ 12"	0	0	(1964) 4	(1993) 10	0	0	(1992-93) 10
4.10 Record Greatest Depth	(1973) 1.5	(1985) 10.0	(1985) 15.6	(1993) 15.0	(1969) 10.0	(1993) 9.1	(Dec 1985) 15.6
Greatest in 24 Hours	(1973) 1.5	(1985) 8.8	(1985) 6.6	(1954) 7.1	(1993) 10.2	(1989) 2.7	(Feb 1993) 10.2
Record Consecutive Number of Days of Given Depth at 0400 PST	<u>Number of Days</u>	<u>From</u>	<u>To</u>				
≥ 1"	60	November 20, 1985	January 18, 1986				
≥ 3"	57	November 22, 1985	January 17, 1986				
≥ 6"	32	December 20, 1964	January 20, 1965				
≥ 12"	6	January 15, 1993	January 20, 1993				

() Denotes year of occurrence.
+ Denotes also in earlier years.
Denotes less than 1/2 day.

TABLE 4.7. Normal and Maximum Daily Precipitation (Inches)

DAY	NORMAL PERIOD (1961-1990)			HISTORICAL PERIOD (1945-1993)		
	NORMAL	NUMBER OF YEARS		MAXIMUM	YEAR	MAXIMUM
		W/MEAS.	W/TRACE			
JANUARY						
1	0.02	5	10	0.20	1987	0.20
2	0.02	9	9	0.17	1983	0.27
3	0.02	8	7	0.28	1966	0.28
4	0.02	7	10	0.17	1976	0.25
5	0.02	9	8	0.23	1966	0.23
6	0.02	4	8	0.50	1983	0.87
7	0.02	8	5	0.31	1990	0.31
8	0.02	7	9	0.25	1978	0.59
9	0.02	8	9	0.20	1980+	0.24
10	0.03	10	5	0.20	1979+	0.21
11	0.03	4	10	0.17	1980	0.48
12	0.03	9	10	0.32	1973	0.58
13	0.03	10	8	0.33	1980	0.37
14	0.03	10	3	0.43	1978	0.43
15	0.03	7	5	0.18	1968	0.34
16	0.03	10	6	0.53	1971	0.70
17	0.02	5	7	0.10	1986	0.18
18	0.02	7	8	0.25	1974	0.25
19	0.02	8	1	0.32	1970	0.39
20	0.02	5	6	0.26	1985	0.32
21	0.02	6	5	0.15	1984	0.16
22	0.02	6	7	0.54	1970	0.54
23	0.03	8	9	0.27	1965	0.27
24	0.03	8	6	0.22	1970	0.22
25	0.03	6	6	0.72	1975	0.72
26	0.03	8	4	0.36	1970	0.36
27	0.03	6	6	0.20	1981	0.32
28	0.03	6	7	0.19	1986	0.19
29	0.03	9	4	0.31	1965	0.33
30	0.03	8	8	0.12	1986	0.12
31	0.03	9	10	0.94	1963	<u>0.94</u>
FEBRUARY						
1	0.03	8	4	0.72	1961	0.72
2	0.02	5	8	0.26	1963	0.26
3	0.02	5	6	0.06	1990	0.12
4	0.02	5	5	0.28	1975	0.28
5	0.02	7	7	0.07	1978	0.15
6	0.02	10	2	0.18	1961	0.18
7	0.02	5	4	0.27	1985	0.27
8	0.02	5	8	0.12	1985	0.12
9	0.02	9	5	0.37	1962	0.43
10	0.02	5	5	0.64	1961	0.64
11	0.02	10	3	0.30	1969	0.30
12	0.03	9	6	0.20	1986	0.42
13	0.02	10	6	0.21	1981	0.21
14	0.03	5	11	0.39	1986	0.39
15	0.03	12	7	0.30	1970	0.30
16	0.03	7	7	0.42	1989	0.42
17	0.03	10	7	0.42	1989	0.42
18	0.03	9	2	0.34	1983	0.34
19	0.02	9	5	0.14	1989	<u>0.78</u>
20	0.02	5	3	0.18	1984	0.18
21	0.02	8	3	0.20	1986	0.36

TABLE 4.7. (contd)

DAY	NORMAL PERIOD (1961-1990)				HISTORICAL PERIOD (1945-1993)		
	NORMAL	NUMBER OF YEARS			YEAR	MAXIMUM	YEAR
		W/MEAS.	W/TRACE	MAXIMUM			
<u>FEBRUARY (contd)</u>							
22	0.02	4	5	0.15	1989	0.21	1949
23	0.02	5	4	0.22	1968	0.22	1968
24	0.02	5	5	0.10	1981	0.33	1950
25	0.02	9	3	0.22	1983	0.25	1948
26	0.02	6	4	0.30	1976	0.30	1976
27	0.02	9	3	0.24	1980	0.24	1980
28	0.02	7	4	0.33	1977	0.33	1977
29	0.02	1	1	0.04	1984	0.04	1984
<u>MARCH</u>							
1	0.02	8	4	0.15	1972	0.15	1972
2	0.01	4	8	0.07	1989	0.20	1991+
3	0.01	3	7	0.15	1977	0.15	1991+
4	0.01	9	6	0.16	1985	0.44	1957
5	0.01	6	7	0.23	1989	0.23	1989
6	0.02	7	3	0.07	1971+	0.24	1957
7	0.02	6	4	0.21	1986	0.21	1986
8	0.02	8	2	0.19	1988	0.23	1951
9	0.02	6	6	0.31	1989	0.31	1989
10	0.02	11	4	0.06	1980+	0.08	1950
11	0.02	8	6	0.24	1989	0.24	1989
12	0.02	9	6	0.42	1987	0.42	1987
13	0.02	7	8	0.35	1983	0.35	1983
14	0.02	9	3	0.14	1970	0.14	1970
15	0.02	7	4	0.18	1987	0.25	1949
16	0.01	7	5	0.22	1989	0.34	1949
17	0.01	3	7	0.05	1967	0.16	1949
18	0.01	7	5	0.04	1989	0.25	1949
19	0.01	3	4	0.12	1987	0.12	1987
20	0.01	5	4	0.43	1984	0.43	1984
21	0.01	5	2	0.10	1984+	0.18	1958
22	0.02	4	8	0.22	1961	0.22	1961
23	0.02	7	4	0.26	1986	0.26	1986
24	0.02	4	2	0.12	1961	0.52	1991
25	0.02	9	3	0.43	1971	0.43	1971
26	0.02	5	6	0.50	1981	0.50	1981
27	0.02	5	4	0.42	1979	0.42	1979
28	0.02	5	3	0.13	1982	0.13	1982
29	0.01	8	1	0.15	1983	0.15	1983
30	0.01	4	7	0.23	1974	0.23	1974
31	0.01	4	6	0.14	1976	0.14	1976
<u>APRIL</u>							
1	0.01	3	12	0.18	1983	0.22	1958
2	0.01	6	3	0.10	1979	0.18	1948
3	0.01	2	3	0.03	1963	0.18	1947
4	0.01	5	9	0.13	1984	0.18	1948
5	0.01	6	6	0.44	1969	0.44	1969
6	0.01	6	3	0.36	1982	0.36	1982
7	0.01	3	1	0.22	1984	0.30	1953
8	0.01	5	2	0.17	1976	0.18	1991
9	0.01	3	10	0.12	1980	0.32	1992

TABLE 4.7. (contd)

DAY	NORMAL	NORMAL PERIOD (1961-1990)			HISTORICAL PERIOD (1945-1993)		
		NUMBER OF YEARS	W/MEAS.	W/TRACE	MAXIMUM	YEAR	MAXIMUM
<u>APRIL (contd)</u>							
10	0.01	2	6	0.03	1969	0.10	1958
11	0.01	4	9	0.23	1982	0.23	1982
12	0.01	4	5	0.08	1961	0.09	1992
13	0.01	1	3	0.01	1990	0.39	1992
14	0.01	4	4	0.17	1975+	0.17	1975+
15	0.01	3	8	0.09	1962	0.17	1991
16	0.02	4	7	0.08	1979+	0.11	1948
17	0.02	6	6	0.36	1988	0.36	1988
18	0.02	4	6	0.31	1967	0.31	1967
19	0.02	7	9	0.41	1970	0.41	1970
20	0.02	6	6	0.56	1980	<u>0.56</u>	<u>1980</u>
21	0.02	2	7	0.07	1989	0.07	1989
22	0.02	7	6	0.12	1974	0.22	1960
23	0.01	6	5	0.22	1974	0.22	1974
24	0.01	4	8	0.22	1975	0.22	1975
25	0.02	3	6	0.35	1989	0.35	1989
26	0.02	2	7	0.04	1989	0.25	1955
27	0.02	7	5	0.28	1989+	0.28	1989+
28	0.02	6	5	0.48	1988	0.51	1951
29	0.02	2	3	0.30	1961	0.30	1961
30	0.02	6	4	0.12	1984	0.12	1984
<u>MAY</u>							
1	0.02	5	6	0.19	1984	0.19	1984
2	0.01	5	1	0.17	1975	0.17	1975
3	0.01	4	3	0.29	1977	0.29	1977
4	0.01	6	5	0.10	1967	0.10	1967
5	0.02	8	3	0.28	1963	0.28	1963
6	0.02	4	6	0.20	1986	0.20	1986
7	0.02	3	1	0.39	1983	0.39	1983
8	0.02	5	7	0.55	1972	0.55	1972
9	0.02	5	5	0.25	1961	0.40	1948
10	0.02	6	7	0.39	1961	0.39	1961
11	0.02	4	4	0.19	1967	0.39	1951
12	0.02	4	7	0.50	1970	0.50	1970
13	0.01	4	2	0.11	1985	0.15	1952
14	0.01	4	6	0.25	1978	0.25	1978
15	0.01	3	6	0.06	1975	0.29	1955
16	0.01	0	8	T	1988+	0.14	1991
17	0.01	4	3	0.13	1982	0.25	1959
18	0.01	5	2	0.13	1981	0.13	1981
19	0.01	7	3	0.15	1965	0.55	1948
20	0.02	4	1	0.70	1972	0.70	1972
21	0.02	3	4	0.69	1972	0.69	1972
22	0.02	6	5	0.12	1984	0.12	1984
23	0.03	5	6	0.33	1990	0.33	1990
24	0.03	4	5	0.51	1962	0.51	1962
25	0.02	6	2	0.74	1981	0.74	1981
26	0.02	4	6	0.79	1980	<u>0.79</u>	<u>1980</u>
27	0.02	6	2	0.11	1990	0.11	1990
28	0.02	5	7	0.28	1988	0.28	1988
29	0.02	5	3	0.11	1961	0.11	1961
30	0.01	6	1	0.14	1987	0.14	1987
31	0.02	2	5	0.35	1971	0.35	1971

TABLE 4.7. (contd)

DAY	NORMAL PERIOD (1961-1990)				HISTORICAL PERIOD (1945-1993)		
	NORMAL	NUMBER OF YEARS W/MEAS.	W/TRACE	MAXIMUM	YEAR	MAXIMUM	YEAR
JUNE							
1	0.02	3	5	0.29	1977	0.29	1977
2	0.02	5	6	0.12	1966	0.12	1966
3	0.02	6	9	0.30	1971	0.30	1971
4	0.02	6	3	0.25	1984	0.45	1951
5	0.02	4	4	0.14	1981	0.49	1991
6	0.02	6	3	0.36	1990	0.54	1951
7	0.01	5	5	0.15	1972	0.71	1947
8	0.01	6	6	0.49	1964	0.49	1964
9	0.02	3	4	0.07	1963	0.22	1948
10	0.02	2	7	0.08	1983	0.14	1956
11	0.01	3	5	0.13	1961	0.39	1950
12	0.01	4	8	0.60	1969	0.79	1992
13	0.01	6	4	0.35	1980	0.49	1948
14	0.01	4	2	0.04	1983	0.37	1956
15	0.01	4	1	0.15	1964	0.15	1964
16	0.01	2	5	0.14	1980	0.18	1948
17	0.01	2	5	0.48	1965	1.09	1950
18	0.01	2	5	0.07	1983	0.07	1983
19	0.01	1	3	0.01	1983	0.09	1991
20	0.01	5	2	0.24	1984	0.24	1984
21	0.01	5	2	0.32	1967	0.32	1967
22	0.01	4	7	0.14	1971	0.14	1971
23	0.01	7	2	0.17	1963	0.17	1963
24	0.01	5	3	0.21	1972	0.21	1972
25	0.01	3	4	0.02	1980	0.03	1954
26	0.01	2	6	0.27	1982	0.27	1982
27	0.01	4	3	0.37	1983	0.37	1983
28	0.01	2	8	0.23	1984	0.24	1992
29	0.01	4	2	0.16	1984	0.53	1991
30	0.01	1	1	0.06	1976	0.06	1976
JULY							
1	0.01	5	3	0.31	1966	0.31	1966
2	0.01	3	6	0.34	1966	0.34	1966
3	0.01	3	3	0.31	1978	0.31	1978
4	0.01	3	4	0.10	1986	0.10	1986
5	0.01	1	3	0.19	1981	0.36	1951
6	0.01	1	3	0.02	1979	0.04	1993
7	0.01	3	2	0.30	1963	0.30	1963
8	0.01	5	3	0.14	1974	0.14	1974
9	0.01	3	2	0.27	1987	0.27	1987
10	0.01	2	5	0.05	1972	0.16	1954
11	0.01	2	4	0.04	1979	0.04	1979
12	T	0	4	T	1982+	T	1982+
13	T	2	5	0.28	1975	0.28	1975
14	T	1	2	0.03	1966	0.05	1957
15	T	2	2	0.04	1975	0.08	1991
16	T	4	3	0.07	1966	0.50	1993
17	T	3	1	0.05	1987+	0.89	1993
18	T	2	2	0.12	1987	0.12	1987
19	T	2	2	0.45	1974	0.45	1974
20	T	2	2	0.09	1965	0.09	1965
21	T	1	2	0.02	1965	0.02	1965
22	T	0	2	T	1987+	T	1993+

TABLE 4.7. (contd)

DAY	NORMAL	NORMAL PERIOD (1961-1990)			HISTORICAL PERIOD (1945-1993)		
		NUMBER OF YEARS W/MEAS.	W/TRACE	MAXIMUM	YEAR	MAXIMUM	YEAR
<u>JULY (contd)</u>							
23	T	2	0	0.15	1961	0.28	1992
24	T	2	2	0.06	1990	0.07	1955
25	T	3	2	0.23	1983	0.23	1983
26	T	0	1	T	1978	0.22	1955
27	T	1	1	0.02	1983	0.31	1947
28	T	1	3	0.06	1984	0.28	1947
29	T	1	1	0.01	1964	0.01	1993+
30	T	0	3	T	1987+	T	1987+
31	T	1	2	0.12	1985	0.12	1991+
<u>AUGUST</u>							
1	T	2	1	0.08	1976+	0.08	1976+
2	T	1	3	0.01	1976	0.01	1976
3	T	1	2	0.29	1962	0.29	1962
4	T	1	2	0.01	1985	0.04	1948
5	T	0	3	T	1984+	T	1991+
6	T	1	2	0.11	1976	0.11	1976
7	T	2	1	0.33	1976	0.33	1976
8	T	0	4	T	1989+	0.08	1952
9	T	2	2	0.10	1982	0.10	1982
10	T	0	3	T	1984+	0.01	1947
11	T	1	4	0.01	1983	0.11	1947
12	0.01	3	5	0.18	1962	0.18	1962
13	0.01	4	2	0.04	1987+	0.04	1987+
14	0.01	5	3	0.09	1979	0.09	1979
15	0.01	3	1	0.42	1972	0.42	1972
16	0.01	1	1	0.01	1968	0.24	1993
17	0.01	0	3	T	1980+	T	1980+
18	0.01	4	3	0.69	1975	0.69	1975
19	0.01	3	5	0.05	1979	0.18	1954
20	0.01	4	6	0.03	1978	0.22	1953
21	0.02	3	4	0.76	1990	<u>0.76</u>	<u>1990</u>
22	0.01	6	1	0.18	1978	0.18	1978
23	0.02	4	1	0.14	1975	0.14	1975
24	0.02	6	1	0.38	1977	0.38	1977
25	0.01	2	6	0.29	1976	0.29	1976
26	0.01	3	4	0.19	1968	0.38	1953
27	0.01	5	3	0.14	1989	0.14	1989
28	0.01	2	4	0.13	1975	0.13	1975
29	0.01	6	1	0.28	1977	0.51	1947
30	0.01	2	4	0.61	1977	0.61	1977
31	0.01	2	3	0.02	1961	0.02	1961+
<u>SEPTEMBER</u>							
1	0.01	7	2	0.43	1971	0.43	1971
2	0.01	2	4	0.17	1971	0.17	1971
3	0.01	3	1	0.13	1979	0.13	1979
4	0.01	1	1	0.02	1977	0.19	1960
5	T	3	2	0.19	1971	0.19	1971
6	T	3	0	0.29	1971	0.29	1971
7	T	2	0	0.04	1978	0.23	1947
8	0.01	2	3	0.10	1985	0.10	1985
9	T	2	4	0.07	1985	0.07	1985

TABLE 4.7. (contd)

DAY	NORMAL	NORMAL PERIOD (1961-1990)			HISTORICAL PERIOD (1945-1993)		
		NUMBER OF YEARS	W/MEAS.	W/TRACE	MAXIMUM	YEAR	MAXIMUM
<u>SEPTEMBER (contd)</u>							
10	0.01	3	3	0.06	1985	0.06	1985
11	0.01	4	1	0.10	1966	0.10	1966
12	0.01	0	3	T	1980+	0.03	1958
13	0.01	5	2	0.79	1980	<u>0.79</u>	<u>1980</u>
14	0.01	3	4	0.04	1985	0.41	1959
15	0.01	2	5	0.54	1986	0.54	1986
16	0.02	2	7	0.03	1985	0.66	1947
17	0.01	4	5	0.26	1969	0.26	1969
18	0.01	4	6	0.22	1983	0.41	1959
19	0.01	6	4	0.26	1973	0.26	1973
20	0.01	4	8	0.13	1988	0.13	1988
21	0.01	2	4	0.03	1971	0.03	1971
22	0.01	4	4	0.20	1984	0.20	1984
23	0.01	4	2	0.21	1986	0.21	1986
24	0.01	4	0	0.10	1977	0.10	1977
25	0.01	3	3	0.25	1982	0.25	1982
26	0.01	4	1	0.22	1981	0.22	1981
27	0.01	4	2	0.38	1981	0.43	1955
28	0.01	5	3	0.34	1962	0.34	1962
29	0.01	3	1	0.07	1986	0.07	1986
30	0.01	2	3	0.02	1969	0.03	1953+
<u>OCTOBER</u>							
1	T	2	5	0.01	1969+	<u>1.60</u>	<u>1957</u>
2	T	5	5	0.06	1967	0.31	1957
3	T	2	1	0.04	1975	0.14	1950
4	T	1	4	0.01	1970	0.15	1950
5	T	0	9	T	1981+	0.25	1950
6	T	5	4	0.22	1973	0.22	1973
7	0.01	3	3	0.25	1985	0.25	1985
8	0.01	1	5	0.06	1964	0.49	1950
9	0.01	5	2	0.09	1968	0.32	1947
10	0.01	5	4	0.09	1985	0.32	1959
11	0.01	3	7	0.43	1968	0.43	1968
12	0.01	6	3	0.52	1962	0.52	1962
13	0.01	2	3	0.04	1980	0.09	1957
14	0.01	4	3	0.11	1962	0.43	1950
15	0.01	1	1	0.01	1980	0.15	1947
16	0.01	0	1	T	1975	0.24	1947
17	0.01	2	3	0.16	1968	0.23	1950
18	0.01	4	3	0.28	1979	0.28	1979
19	0.02	5	4	0.12	1979	0.64	1947
20	0.02	5	5	0.15	1968	0.37	1947
21	0.02	8	3	0.45	1975	0.45	1975
22	0.02	5	9	0.20	1983	0.23	1957
23	0.02	4	2	0.39	1973	0.39	1973
24	0.02	4	5	0.11	1979	0.12	1991
25	0.02	5	3	0.22	1975	0.22	1975
26	0.02	6	3	0.12	1989	0.18	1956
27	0.02	7	4	0.09	1969	0.33	1956
28	0.02	4	6	0.93	1982	0.93	1982
29	0.02	7	8	0.18	1986	0.38	1950
30	0.02	3	7	0.52	1990	0.52	1990
31	0.02	3	6	0.64	1973	0.64	1973

TABLE 4.7. (contd)

DAY	NORMAL	NORMAL PERIOD (1961-1990)			HISTORICAL PERIOD (1945-1993)		
		NUMBER OF YEARS	W/MEAS.	W/TRACE	MAXIMUM	YEAR	MAXIMUM
NOVEMBER							
1	0.02	7	3	0.18	1987	0.26	1948
2	0.02	6	2	0.25	1984	0.25	1984
3	0.02	8	3	0.28	1965	0.28	1965
4	0.02	9	5	0.19	1973	0.24	1991
5	0.02	9	2	0.19	1963	0.19	1963
6	0.02	8	4	0.30	1980	0.30	1980+
7	0.03	5	7	0.23	1963	0.23	1963
8	0.03	9	6	0.50	1968	0.50	1968
9	0.04	8	7	0.16	1973	0.27	1949
10	0.04	11	4	0.66	1983	<u>0.66</u>	1983
11	0.04	12	3	0.26	1970	0.26	1970
12	0.04	10	4	0.57	1973	0.57	1973
13	0.04	7	4	0.47	1981	0.47	1981
14	0.04	7	6	0.35	1966	0.35	1966
15	0.04	12	5	0.17	1985	0.17	1985+
16	0.03	9	5	0.42	1979	0.42	1979
17	0.03	9	7	0.12	1974	0.18	1955
18	0.03	7	4	0.46	1982	0.46	1982
19	0.03	7	5	0.37	1966	0.37	1966
20	0.03	4	7	0.42	1966	0.42	1966
21	0.03	6	8	0.50	1985	0.50	1985
22	0.03	6	10	0.30	1979	0.30	1979
23	0.03	12	5	0.42	1983	0.63	1949
24	0.03	10	7	0.37	1965	0.37	1965
25	0.03	5	10	0.25	1977	0.25	1977
26	0.03	8	6	0.11	1986+	0.54	1955
27	0.03	9	6	0.49	1984	0.49	1984
28	0.02	9	7	0.19	1986	0.19	1986
29	0.03	8	7	0.18	1978	0.18	1978
30	0.03	9	5	0.30	1962	0.30	1962
DECEMBER							
1	0.03	8	4	0.19	1966	0.29	1955
2	0.04	8	8	0.34	1985+	0.34	1985+
3	0.04	7	9	0.56	1980	0.56	1980
4	0.03	13	3	0.28	1974	0.28	1974
5	0.04	11	7	0.43	1963	0.43	1963
6	0.04	12	8	0.18	1985	0.18	1985
7	0.03	8	5	0.32	1983	0.36	1948
8	0.03	5	7	0.36	1963	0.36	1963
9	0.03	9	8	0.55	1987	0.55	1987
10	0.03	9	4	0.25	1990	0.54	1958
11	0.04	6	8	0.33	1969	0.53	1958
12	0.04	10	5	0.29	1982	0.29	1982
13	0.03	8	5	0.76	1977	<u>0.76</u>	1977
14	0.04	12	5	0.25	1964	0.25	1964
15	0.04	15	2	0.22	1981	0.22	1981
16	0.04	9	9	0.30	1961	0.30	1961
17	0.04	10	5	0.22	1973	0.22	1973
18	0.04	11	8	0.22	1981	0.27	1960
19	0.04	15	7	0.19	1964	0.20	1953
20	0.04	13	7	0.33	1982	0.33	1982
21	0.04	10	10	0.54	1964	0.61	1955
22	0.04	9	5	0.59	1964	0.59	1964

TABLE 4.7. (contd)

DAY	NORMAL PERIOD (1961-1990)			HISTORICAL PERIOD (1945-1993)		
	NORMAL	NUMBER OF YEARS W/MEAS.	W/TRACE	MAXIMUM	YEAR	MAXIMUM
DECEMBER (contd)						
23	0.04	7	7	0.31	1975	0.31
24	0.04	11	8	0.36	1968	0.36
25	0.03	12	6	0.26	1980	0.26
26	0.03	9	6	0.19	1973	0.25
27	0.03	11	7	0.36	1973	0.36
28	0.02	10	11	0.09	1990+	0.10
29	0.02	9	7	0.55	1983	0.55
30	0.02	5	9	0.15	1979	0.15
31	0.02	4	9	0.29	1968	0.29

+ Latest of several occurrences.

5.0 WIND CLIMATOLOGY

5.1 MONTHLY AND ANNUAL PREVAILING WIND DIRECTIONS, AVERAGE SPEEDS, AND PEAK GUSTS

At the HMS, the prevailing wind direction for every month of the year is either WNW or NW (Table 5.1), and the peak gusts for every month are from the SSW, SW, or WSW. The highest monthly average wind speeds occur in June and the lowest in December. The variability in monthly average wind speeds is much greater in the winter months than during the remainder of the year. The highest January average (10.3 mph) is more than 3.5 times greater than the lowest (2.9 mph), while in June the highest average (10.7 mph) is only 1.4 times greater than the lowest (7.7 mph).

5.2 NUMBER OF DAYS WITH PEAK GUSTS ABOVE OR BELOW SPECIFIC THRESHOLDS

Table 5.2 lists the number of days by month and year with peak wind gusts (at 50 feet) above or below specific threshold wind speeds. June and July have the highest average number of days with gusts \geq 25 mph (nearly 20 each); however, March has the highest average number of days with gusts \geq 40 mph (3 days), and January the highest average number of days with gusts \geq 50 mph (0.9 day). January also has the record highest number of gusts \geq 40 mph and 50 mph at 11 and 7 days respectively in 1990. Calendar year 1990 recorded the most days with gusts \geq 40 mph and 50 mph at 57 and 18 days, respectively. Of particular interest is that previous records for these categories were 41 days \geq 40 mph in 1961, and 10 days \geq 50 mph in 1972.

5.3 PERCENT FREQUENCY OF MONTHLY AND ANNUAL WIND DIRECTION AND SPEED AT 50 FEET

Table 5.3 presents HMS data on the percent frequency of monthly and annual wind direction and wind speed at 50 feet. This table shows that for every month of the year the prevailing wind direction is either from the WNW or NW. Winds are relatively evenly distributed from the NNE through the SSW at between 2 and 4% on an annual average for each direction.

TABLE 5.1. Monthly and Annual Prevailing Wind Directions, Average Speeds (mph), and Peak Gusts (mph) at 50 Feet (1945 Through 1993)

<u>MONTH</u>	<u>PREVAILING DIRECTION</u>	<u>AVERAGE SPEED</u>	<u>HIGHEST AVERAGE</u>	<u>YEAR</u>	<u>LOWEST AVERAGE</u>	<u>YEAR</u>	<u>PEAK GUSTS</u>		
							<u>SPEED</u>	<u>DIRECTION</u>	<u>YEAR</u>
JAN	NW	6.3	10.3	1972	2.9	1985	80	SW	1972
FEB	NW	7.0	10.8	1976	4.6	1963	65	SW	1971
MAR	WNW	8.2	10.7	1977+	5.9	1958	70	SW	1956
APR	WNW	8.9	11.1	1972+	7.4	1989+	73	SSW	1972
MAY	WNW	8.8	10.7	1983	5.8	1957	71	SSW	1948
JUN	WNW	9.1	10.7	1983+	7.7	1950+	72	SW	1957
JUL	WNW	8.6	10.7	1983	6.8	1955	69	WSW	1979
AUG	WNW	7.9	9.1	1946	6.0	1956	66	SW	1961
SEP	WNW	7.5	9.2	1961	5.4	1957	65	SSW	1953
OCT	WNW	6.5	9.1	1946	4.4	1952	63	SSW	1950
NOV	NW	6.2	10.0	1990	2.9	1956	67	WSW	1993
DEC	NW	5.9	8.3	1968	3.3	1985	71	SW	1955
YEAR	NW	7.6	8.4	1983	6.2	1989	80	SW	JAN 1972

+ Also in earlier years.

TABLE 5.2. Number of Days With Peak Gusts Above or Below Specific Thresholds (1945 Through 1993)

MONTH	DAYS WITH PEAK GUSTS \leq 12 MPH					DAYS WITH PEAK GUSTS \geq 25 MPH					DAYS WITH PEAK GUSTS \geq 40 MPH					DAYS WITH PEAK GUSTS \geq 50 MPH				
	Avg.	Max	Year	Min	Year	Avg.	Max	Year	Min	Year	Avg.	Max	Year	Min	Year	Avg.	Max	Year	Min	Year
JAN	10.0	29	1985	3	1968	7.8	21	1953	0	1985+	2.9	11	1990+	0	1988+	0.9	7	1990	0	1991+
FEB	6.6	16	1963	0	1990	8.5	17	1976+	2	1952+	2.4	10	1976	0	1993+	0.6	4	1972	0	1993+
MAR	2.9	8	1992	0	1983+	12.9	21	1977	4	1992	2.8	9	1956	0	1992+	0.6	4	1956	0	1993+
APR	0.6	6	1951	0	1993+	17.3	26	1954	8	1946	3.0	8	1991	0	1984+	0.4	2	1972+	0	1993+
MAY	0.3	3	1955	0	1993+	18.5	26	1978	9	1945	2.2	6	1990+	0	1982+	0.2	2	1993+	0	1992+
JUN	0.1	1	1980+	0	1993+	19.5	26	1963	11	1950+	2.2	7	1985	0	1982+	0.3	2	1992+	0	1991+
JUL	0.1	1	1957+	0	1993+	19.4	25	1984	11	1955	1.6	5	1988	0	1981+	0.1	1	1979+	0	1993+
AUG	0.3	2	1972	0	1993+	15.4	22	1988+	7	1945	1.1	5	1951	0	1993+	0.1	1	1984+	0	1993+
SEP	2.4	9	1987	0	1991+	11.2	17	1971	7	1975+	1.4	4	1946	0	1981+	0.2	2	1953	0	1993+
OCT	7.0	15	1974	2	1975+	8.5	17	1985+	3	1987+	1.6	8	1967	0	1993+	0.2	2	1967	0	1993+
NOV	9.4	20	1956+	2	1977+	8.4	16	1990	0	1979	2.3	8	1990	0	1982+	0.5	4	1990	0	1992+
DEC	11.1	23	1985	3	1968	7.4	15	1968	0	1985	2.4	8	1857+	0	1989+	0.7	3	1975+	0	1992+
ANNUAL	50.9	87	1952	28	1973	154.8	190	1953	123	1952	25.9	57	1990	10	1978	4.7	18	1990	0	1985

+ Most recent of multiple occurrences.

TABLE 5.3. Percent Frequency of Monthly and Annual Wind Direction and Wind Speed at 50 Feet (1955 Through 1993)

<u>WIND DIRECTION</u>													
DIRECTION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
N	4.5	5.1	4.8	4.2	3.9	3.8	4.8	4.8	6.0	5.3	4.6	4.5	4.7
NNE	3.5	4.6	4.5	3.5	3.4	3.2	4.3	4.0	5.4	4.2	3.5	3.1	3.9
NE	3.0	3.6	3.4	3.4	3.4	3.1	3.7	3.5	4.3	3.6	2.9	2.7	3.4
ENE	2.2	2.1	2.0	2.2	2.4	2.1	2.5	2.4	2.3	2.5	2.5	2.4	2.3
E	2.6	2.1	2.2	2.4	2.4	2.4	2.8	3.0	3.0	2.9	2.7	2.6	2.6
ESE	2.8	2.6	2.7	2.4	2.6	2.6	2.7	3.3	3.1	3.7	3.3	3.1	2.9
SE	4.3	3.7	3.9	3.1	3.3	3.1	3.1	3.7	3.9	5.3	4.6	4.7	3.9
SSE	3.3	3.1	3.3	2.8	2.8	2.5	2.2	2.7	2.9	3.7	3.7	3.5	3.0
S	3.3	3.2	3.6	3.2	2.8	2.7	2.4	2.6	2.6	3.5	4.0	3.5	3.1
SSW	4.8	4.3	5.1	4.4	3.4	3.4	2.6	3.0	3.3	4.1	5.0	4.7	4.0
SW	6.7	7.6	9.1	8.9	6.6	6.6	5.7	6.0	5.6	6.8	7.5	6.7	7.0
WSW	6.6	7.2	10.3	11.9	10.4	9.6	8.5	8.7	9.2	8.4	7.7	7.0	8.8
W	6.6	8.3	9.7	11.8	11.7	11.1	9.9	10.8	11.4	10.4	8.4	7.1	9.8
WNW	14.8	14.7	14.6	16.6	18.8	19.3	19.4	18.0	15.4	13.2	12.6	13.7	15.9
NW	19.2	18.2	14.3	14.2	17.5	19.6	20.0	17.7	14.9	13.4	15.7	18.1	16.9
NNW	7.1	6.8	5.6	4.5	4.2	4.6	5.2	5.3	5.7	6.5	7.0	6.9	5.8
Calm	4.7	2.7	.9	.5	.5	.4	.3	.5	1.1	2.5	4.3	5.4	2.0
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<u>WIND SPEED</u>													
SPEED	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Calm	4.7	2.7	.9	.5	.5	.4	.3	.5	1.1	2.5	4.3	5.4	2.0
1-3	31.6	25.7	17.7	13.6	12.3	10.2	11.3	14.4	19.3	28.0	30.9	34.4	20.8
4-7	33.3	34.6	35.6	33.7	34.3	35.3	38.4	41.3	39.9	38.0	34.1	32.0	35.9
8-12	19.4	23.5	27.2	28.6	30.1	29.7	29.1	27.4	25.6	20.8	19.7	18.1	24.9
13-18	6.9	8.7	12.2	15.8	16.0	16.8	14.6	11.8	10.2	7.5	7.0	6.4	11.1
19-24	2.6	3.2	4.6	6.1	5.7	6.4	5.4	4.0	3.3	2.5	2.7	2.5	4.1
25-31	1.1	1.3	1.5	1.6	1.0	1.2	.9	.6	.6	.6	1.0	1.0	1.0
32-38	.3	.3	.3	.1	.0	.0	.0	.0	.0	.0	.2	.2	.1
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
>46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

The wind speed class with the highest frequency of occurrence is 4 to 7 mph, with winds in that category nearly 36% of the time. The speed class with the second highest frequency is 8 to 12 mph, at nearly 25%. Winds averaging over 25 mph occur only slightly more than 1% of the time on an annual basis, with the highest frequency occurring in March (1.8%).

5.4 COMPOSITE WIND ROSES AND JOINT FREQUENCY DISTRIBUTIONS FOR THE HANFORD METEOROLOGICAL MONITORING NETWORK

Figure 5.1 and Table B.1 (Appendix B) contain composite wind roses and joint frequency distributions for the entire Hanford Meteorological Monitoring Network (see Table 1.1 and Figure 1.1) for the period from 1982 through 1993. In Figure 5.1, wind arrows indicate the direction from which the wind blows and are proportional in length to the frequency of occurrence as indicated in Table B.1. Table B.1 presents composite joint frequency distributions by direction and speed class for each of the stations in the network.

5.5 MONTHLY AND ANNUAL WIND ROSES AND WIND SPEED HISTOGRAMS FOR THE HANFORD METEOROLOGICAL MONITORING NETWORK

Figures B.1(a) and B.1(b) in Appendix B present monthly wind roses and wind speed histograms for all the Hanford Meteorological Monitoring Network stations for the period from 1982 through 1993. Figure B.1(a) depicts the wind roses for the stations. Each petal of the wind rose represents the proportional amount of time the wind blew from that direction. The widths of the petal segments correspond to the wind speed categories represented in Figure B.1(b). Starting from the center of the rose, the narrowest segment represents winds in the 1-3 mph class, the next widest segment represents the 4-7 mph class, and so forth. The length of each of these segments is proportional to the frequency of occurrence for the speed class. Figure B.1(b) contains wind speed histograms representing the proportional amount of time in each speed class.

Figures B.2(a) and B.2(b) in Appendix B present monthly wind roses and wind speed histograms for the 60-m level of the 100N, 300 Area, Fast Flux Test Facility, and HMS towers for the period from 1986 through 1993.

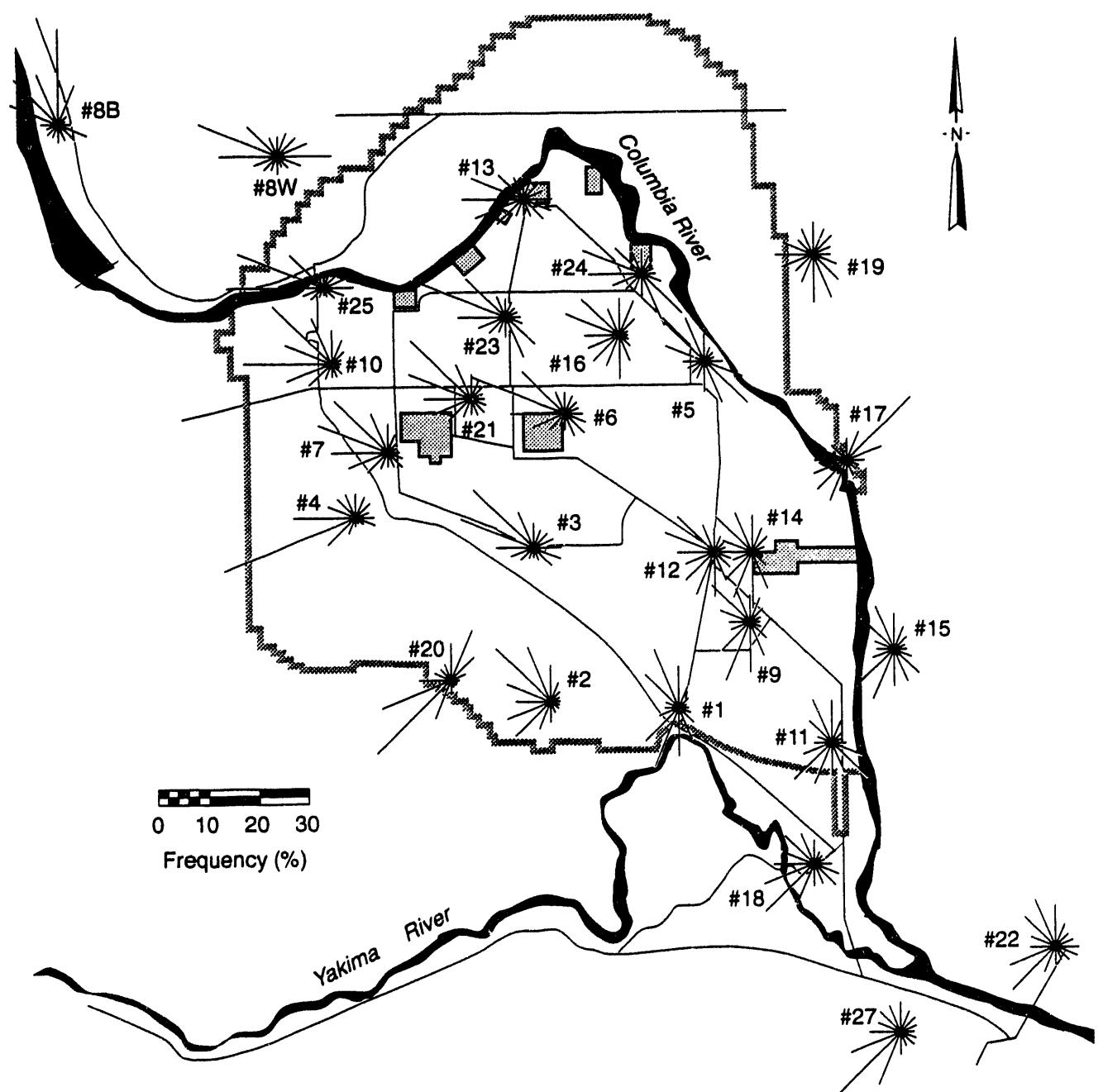


FIGURE 5.1. Hanford Meteorological Monitoring Network Wind Roses for the Period from 1982 Through 1993

6.0 MISCELLANEOUS CLIMATOLOGICAL STATISTICS

6.1 SKY COVER

The term sky cover is used to express the portion of the celestial dome that is 1) covered, but not necessarily hidden, by clouds or obscuring phenomena aloft; 2) hidden by an obscuring phenomenon on the ground (such as fog or smoke); 3) or a combination of both 1 and 2. The sky cover is determined hourly by scanning the sky and estimating the number of tenths that are covered (0 denotes clear sky and 10 denotes overcast). Average monthly sunrise to sunset sky covers for the period from 1946 through 1993 are shown in Table 6.1. Also shown in Table 6.1 are the number of clear, partly cloudy, and cloudy days for the period from 1954 through 1993. The number of clear, partly cloudy, and cloudy days is the result of assigning each day to one of the following categories:

<u>Category</u>	<u>Average Sky Cover</u>
Clear	0-3 tenths
Partly cloudy	4-7 tenths
Cloudy	8-10 tenths

During the period of record (1954 through 1993), an average of 195 sunny days (the sum of the clear and partly cloudy days) have been recorded per year at the HMS.

6.2 FOG AND DENSE FOG

Table 6.2 shows the average monthly and annual number of days with fog and dense fog. Fog is reported anytime horizontal visibility is reduced to 6 miles or less, due to the suspension of water droplets in the surface layer of the atmosphere. Dense fog is reported when horizontal visibility is reduced to 1/4 mile or less. Most fog at the HMS is radiation fog, a common type of fog which forms on nights characterized by light wind, clear sky, and

TABLE 6.1. Average Sky Cover (Sunrise to Sunset) (1946 Through 1993) and Number of Days Clear, Partly Cloudy, and Cloudy (1954 Through 1993)

MONTH	SKY COVER (SCALE 0-10)				NUMBER OF CLEAR DAYS				PARTLY CLOUDY DAYS	NUMBER OF CLOUDY DAYS						
	Avg	Max	Year	Min	Year	Avg	Max	Year	Min	Year	Avg	Max	Year	Min	Year	
JAN	8.0	9.2	1978	4.3	1949	3	9	1984	0	1955+	5	23	28	1978	17	1963
FEB	7.5	9.3	1980	6.1	1989	4	9	1991+	0	1984+	5	19	26	1980+	12	1964
MAR	6.8	8.5	1978	4.9	1965	6	12	1979+	1	1978+	8	17	24	1993	9	1979+
APR	6.4	8.1	1963	3.7	1951	6	12	1962	1	1963	9	15	21	1979+	6	1956
MAY	5.9	8.1	1993	3.6	1992	8	18	1992	1	1977	11	12	19	1977+	3	1992
JUN	5.3	7.0	1950	2.8	1961	10	21	1961	5	1972+	10	10	15	1983+	5	1979+
JUL	3.1	5.0	1983	0.9	1953	19	26	1960	12	1987+	7	5	12	1976	0	1984+
AUG	3.4	5.9	1968	0.6	1955	18	30	1955	9	1978	8	5	13	1983+	0	1988+
SEP	3.9	6.7	1978	1.4	1990+	15	27	1975	6	1978	7	8	16	1977	0	1990
OCT	5.7	8.0	1975	3.3	1987	10	20	1987	1	1975	8	13	22	1973	6	1986
NOV	7.6	9.1	1972	5.2	1993	5	12	1993	1	1973+	5	20	25	1973+	13	1993
DEC	8.1	9.3	1985	6.4	1978	4	9	1978	1	1985+	4	23	29	1985	17	1978
ANNUAL	5.9	6.6	1978+	5.1	1949	108	134	1967	80	1977	87	170	193	1978	146	1991

+ Most recent of multiple occurrences.

TABLE 6.2. Monthly and Annual Number of Days with Fog and Dense Fog (1945 Through 1993)

MONTH	DAYS WITH FOG (VISIBILITY \leq 6 MI)					DAYS WITH DENSE FOG (VISIBILITY \leq 1/4 MI)				
	Avg.	Max	Year	Min	Year	Avg.	Max	Year	Min	Year
JAN	11.0	25	1979	0	1949	5.8	15	1976	0	1949
FEB	6.6	20	1963	0	1988+	3.3	11	1963	0	1988+
MAR	2.2	10	1993	0	1990+	0.9	5	1993+	0	1990+
APR	0.4	3	1992	0	1987+	0.1	1	1993+	0	1992+
MAY	0.2	3	1948	0	1993+	< 0.1	1	1958	0	1993+
JUN	0.1	2	1971	0	1993+	< 0.1	1	1971	0	1993+
JUL	< 0.1	1	1966	0	1993+	0	0		0	
AUG	0.1	1	1985+	0	1993+	< 0.1	1	1985+	0	1993+
SEP	0.3	2	1985+	0	1993+	0.1	1	1992+	0	1993+
OCT	2.0	9	1962	0	1989+	1.0	7	1980	0	1991+
NOV	9.5	19	1985+	0	1990	5.4	13	1965	0	1990+
DEC	14.0	25	1989+	2	1968	7.6	17	1950	2	1968+
ANNUAL	46.4	84	1985-86	22	1948-49	24.2	42	1950-51	9	1948-49

+ Most recent of multiple occurrences.

Longest duration of fog: 113.7 hrs, December 16-20, 1985

Longest duration of dense fog: 47.0 hours, December 1957

moist air in the lower levels of the atmosphere. Nearly 90% of both fog and dense fog at the HMS occurs during the late fall and winter months, although fog has been observed every month of the year.

6.3 PSYCHROMETRIC DATA

Psychrometric data include observations of dry bulb, wet bulb, and dew-point temperatures and relative humidity. The dry bulb temperature is the temperature of the ambient air; the wet bulb temperature is the lowest temperature to which a parcel of air, under constant pressure, can be cooled by evaporating water into it. The dew point temperature is the temperature to which a given parcel of air, under constant pressure and water-vapor content, must be cooled to attain saturation. Relative humidity is the ratio of the

actual water-vapor content of the air to the one where saturation would occur if the pressure and temperature remained unchanged.

Table 6.3 presents monthly and annual averages and extremes of dry bulb, wet bulb, dew point temperatures and relative humidity from the HMS for the period from 1950 through 1993.

6.4 SOLAR RADIATION

Table 6.4 presents average and extreme daily solar radiation values by month for the period from 1953 through 1993. These data are reported in langleys. (A langley is a unit defined as 1 gram calorie per square centimeter.)

TABLE 6.3. Monthly Averages of Psychrometric Data (1950 Through 1993)*

CATEGORY	<u>MONTHLY AVERAGES</u>												
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
Dry Bulb	30.6	37.4	44.9	53.1	62.1	69.9	77.0	75.6	66.2	53.1	39.9	32.3	53.5
Wet Bulb	28	34	38	43	49	55	58	58	52	45	36	30	44
Rel. Hum.	76.9	70.7	56.7	47.1	42.7	39.5	33.3	35.6	42.0	56.2	73.4	80.2	54.5
Dewpoint	23.8	27.7	28.8	31.4	36.7	41.5	43.4	43.8	40.0	36.0	31.1	26.4	34.2
<u>EXTREMES OF MONTHLY AVERAGES</u>													
<u>Dry Bulb</u>													
Highest	43.0	44.6	51.6	58.6	68.7	77.3	83.3	82.5	72.7	59.5	46.3	38.8	56.6
Year	1953	1991	1992	1987	1958	1992	1985	1967	1990	1988	1990	1953	1992
Lowest	12.0	25.8	39.6	48.3	57.0	64.2	71.3	70.6	58.9	48.1	25.7	21.9	50.2
Year	1950	1956	1955	1955	1984	1953	1986	1964	1985	1984	1985	1985	1985
<u>Wet Bulb</u>													
Highest	39	41	44	47	55	59	62	61	56	50	42	36	47
Year	1953	1956	1992	1992	1958	1992+	1985+	1991+	1990+	1988	1954	1991+	1992
Lowest	12	23	33	39	45	51	56	55	48	40	24	21	41
Year	1950	1956	1955	1955	1959	1983+	1986+	1980+	1970	1984	1985	1985	1985
<u>Rel. Hum.</u>													
Highest	88.8	86.9	69.1	64.5	61.9	53.5	45.6	47.8	55.5	74.2	88.7	90.5	58.9
Year	1960	1963	1993	1963	1948	1950	1993	1976	1977	1962	1979	1950	1978
Lowest	60.0	54.0	44.0	36.9	31.2	30.0	21.9	24.5	33.2	42.5	62.8	69.0	49.4
Year	1963	1967	1965	1966	1966	1949	1959	1967	1974	1952	1976	1968	1967
<u>Dewpoint</u>													
Highest	34.4	36.7	37.2	37.1	43.8	47.5	50.1	48.4	45.4	43.5	38.3	34.3	37.7
Year	1953	1992+	1986	1992+	1957	1958	1975	1976	1963	1962	1954	1950	1958
Lowest	6.5	17.3	20.8	26.0	30.4	37.5	35.4	38.4	33.8	30.2	19.4	15.1	31.5
Year	1950	1956	1965+	1982	1964	1954	1959	1955	1970	1984	1985	1983	1955

* Dry bulb wet bulb, and dew point temperatures in °F, relative humidity in %.

+ Most recent of multiple occurrences.

TABLE 6.4. Solar Radiation - Average and Extreme Daily Values (1953 Through 1993)

	<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>	<u>MAY</u>	<u>JUN</u>	<u>JUL</u>	<u>AUG</u>	<u>SEP</u>	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>	<u>YEAR</u>
AVERAGE	110	188	324	455	558	612	634	541	409	257	126	86	358
HIGHEST YEAR	277 1969	422 1958	542 1968	704 1972	838 1977	821 1971	808 1974	721 1957	591 1970	434 1973	295 1971	196 1972	838 MAY 1977
LOWEST YEAR	16 1976+	21 1976	44 1979	75 1974	67 1962	92 1992	118 1972	104 1993	61 1957	33 1974	14 1969	9 1973	9 DEC 1973

+ Most recent of multiple occurrences.

The highest daily values occur with a clear sky and clean air, and the lowest daily values commonly occur on days overcast with low stratus clouds. The lowest midday values of hourly solar radiation occurred on May 18, 1980, as the dense ash cloud from the morning eruption of the Mount St. Helens volcano passed over eastern Washington. Hourly solar radiation values dropped to zero at 1100 hours and remained at zero for the rest of that day.

6.5 THUNDERSTORMS

A thunderstorm day is one in which thunder is heard at the observing station one or more times during a calendar day. If a thunderstorm were to begin just before midnight, and continue until after midnight, it is possible to have two thunderstorm days from a single storm.

Table 6.5 shows that thunderstorms have occurred in every month of the year, except January and November. The thunderstorm season is essentially from April through September. The average number of thunderstorm days per year is 10; however, the total has varied from a low of 3 in 1949, to a high of 23 in 1948. The largest number of thunderstorms in any single month has been 8 in June 1972, July 1983, and August 1953.

Prior to 1975, wet bulb temperatures $\geq 75^{\circ}\text{F}$ had never been observed at the HMS. On July 8, 9, and 10 of that year, 7 hourly observations were made of wet bulb temperature $\geq 75^{\circ}\text{F}$.

TABLE 6.5. Average Number of Days of Various Meteorological Phenomenon (1945 Through 1993)

PHENOMENON	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
Thunderstorm	0	≤ 1	0.2	0.8	1.6	2.4	2.0	2.1	0.8	0.2	0	≤ 1	10.1
Dust or Blowing Dust	0.4	0.1	0.5	0.6	0.7	0.4	0.4	0.3	0.5	0.3	0.2	0.2	4.8
Glaze	2.2	0.7	0.1	0	0	0	0	0	0	0	0.8	2.5	6.3

6.6 DUST AND BLOWING DUST

The criteria for both dust and blowing dust is that horizontal visibility be reduced to 6 miles or less. Dust is carried into the area from a distant source and may occur without strong winds. Blowing dust occurs when dust is being picked up locally and occurs with stronger winds. Both dust and blowing dust have occurred at the HMS, but, in most cases, it is blowing dust. Table 6.5 presents the average number of days per month and year of dust and blowing dust during the period from 1945 through 1993. The average number of days per year with dust or blowing dust is 5. The greatest number of such days in any year was 20 days in 1980, while the fewest was 0 in 1987 and earlier years. The greatest number of days with dust or blowing dust in any one month was 9 in May 1980.

6.7 GLAZE

Glaze is a coating of ice formed when rain or drizzle freezes on contact with any surface having a temperature that is below freezing. Table 6.5 provides data on the number of days per month and year with glaze for the period from 1945 through 1993. The average number of days with freezing rain or freezing drizzle is 6. The highest number of days with glaze in any winter season was 18 during the winter of 1969-1970; the least, 1 day during the winter of 1987-1988 and earlier winters. The greatest number of such days in any single month was 9 in January 1970.

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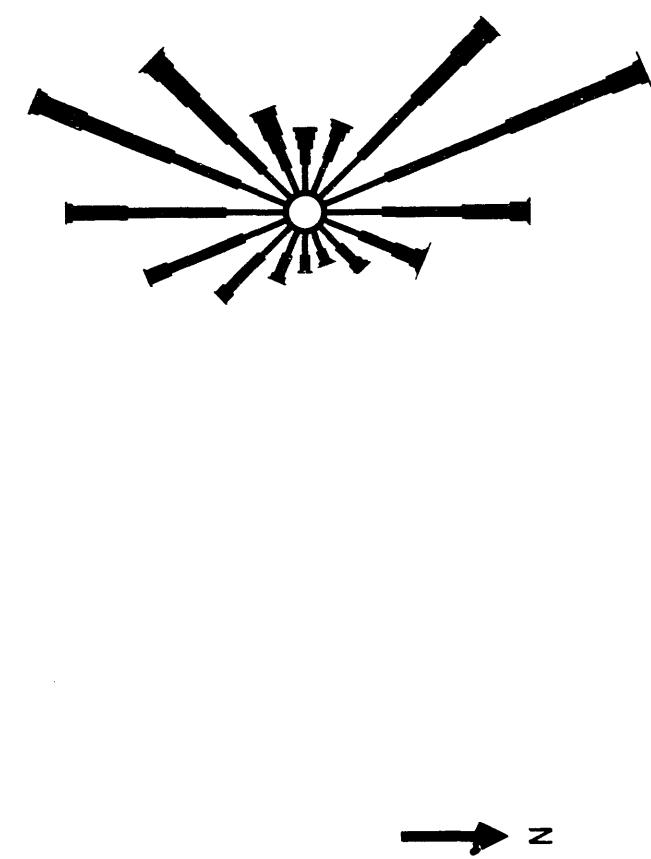
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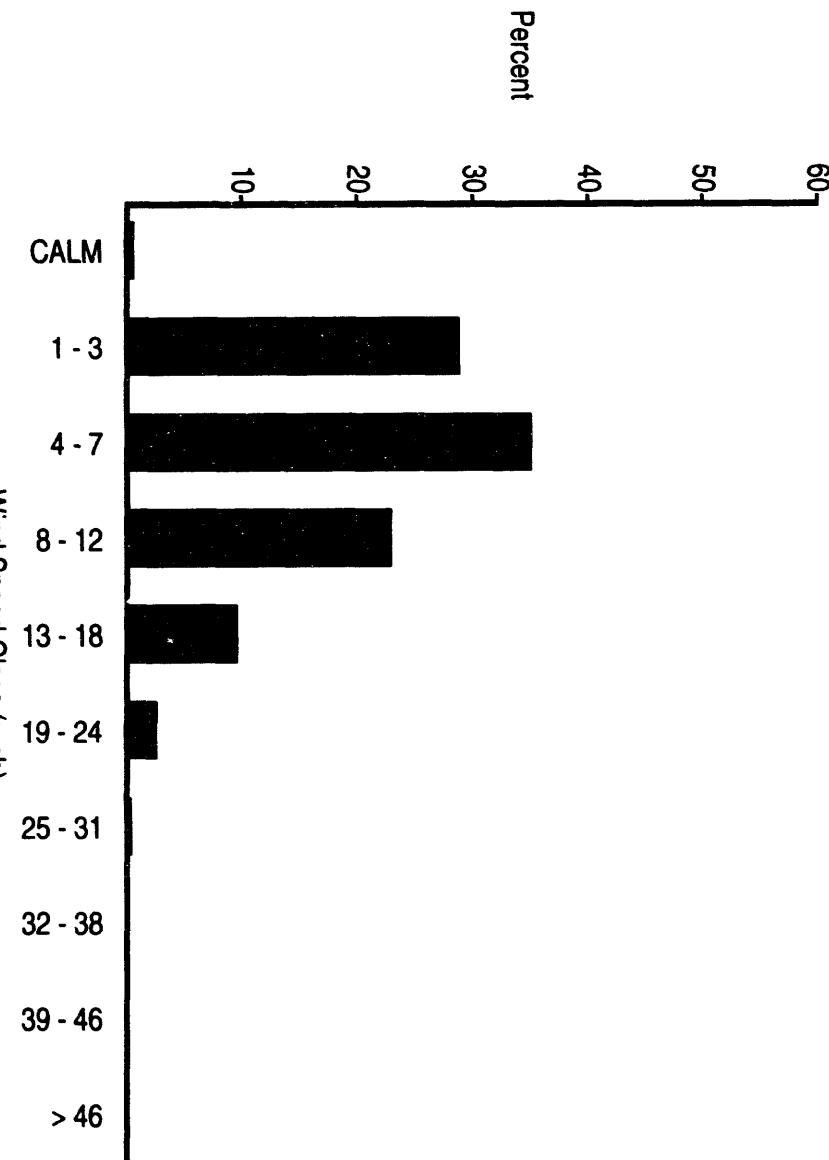
APPENDIX A

1993 WIND CLIMATOLOGY



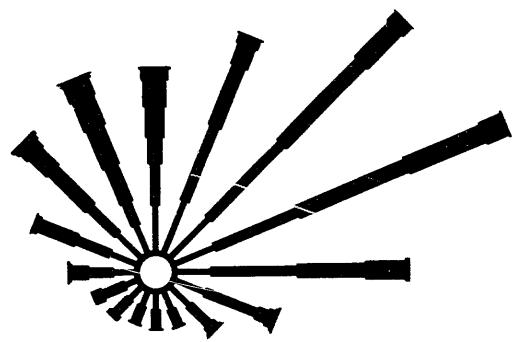
(a) Wind Rose

Period: 1/93 - 12/93



(b) Wind Speed Histogram

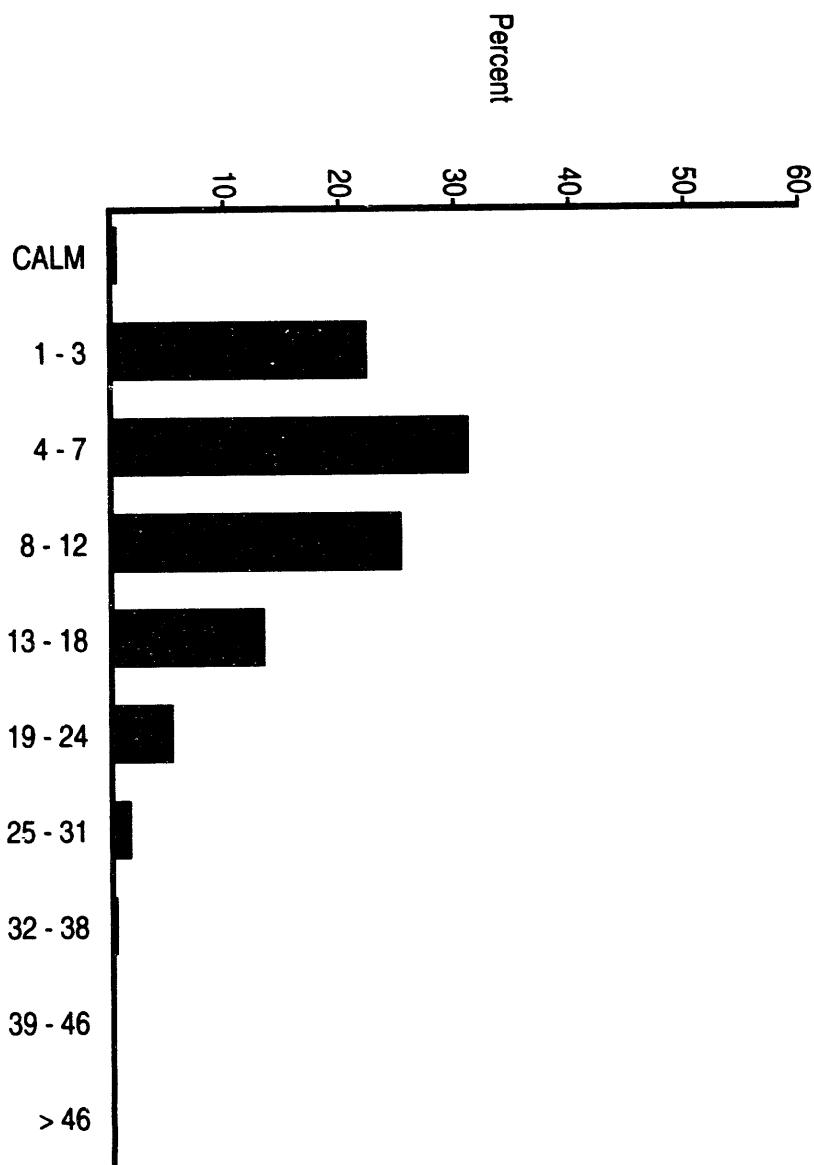
FIGURE A.1. Wind Rose and Wind Speed Histogram



N

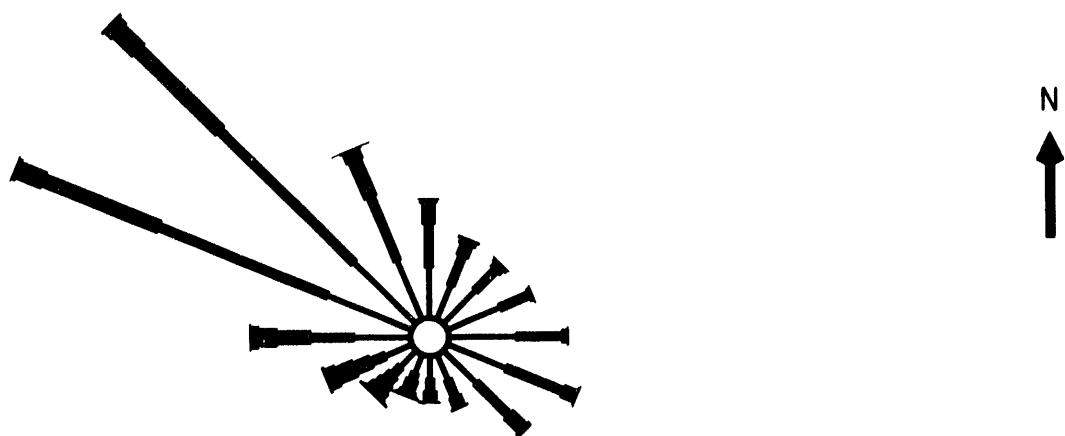
(a) Wind Rose

Period: 1/93 - 12/93



(b) Wind Speed Histogram

FIGURE A.1. (contd)



(a) Wind Rose

Period: 1/93 - 12/93

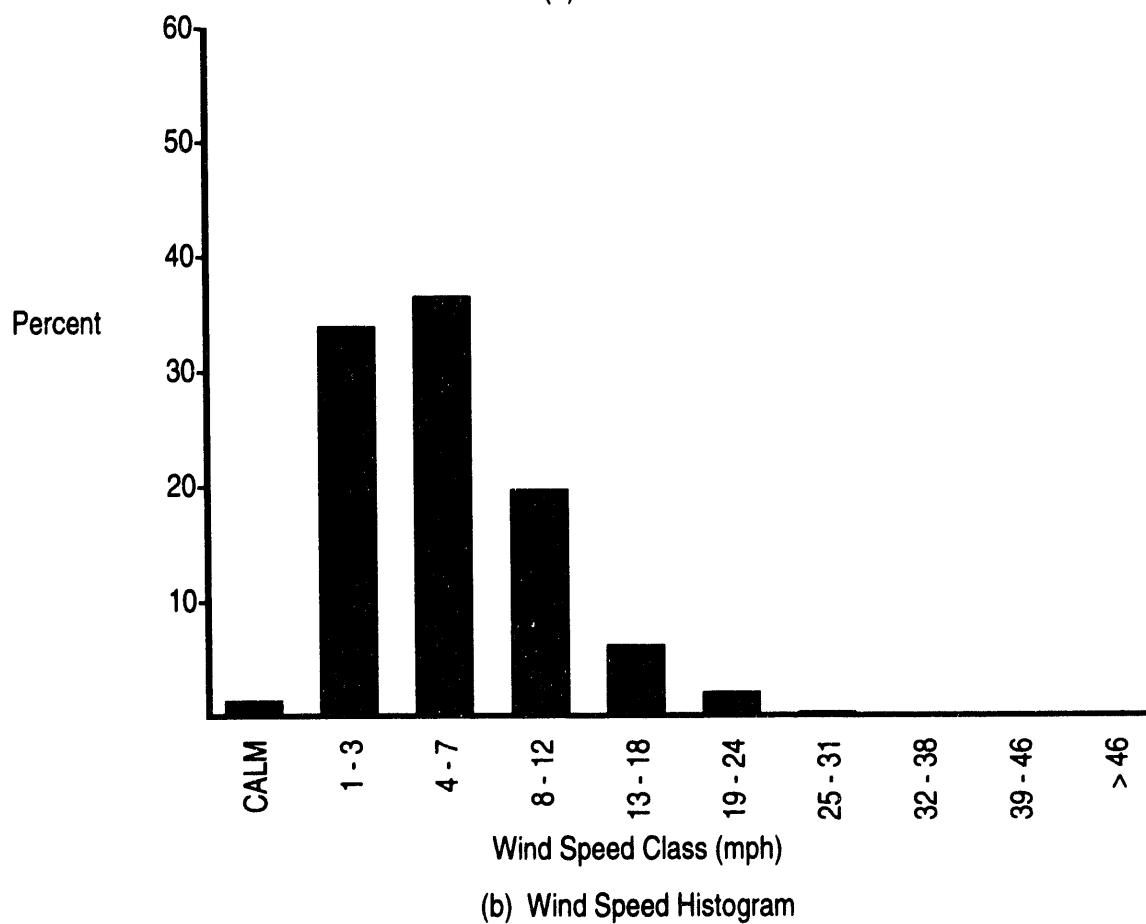
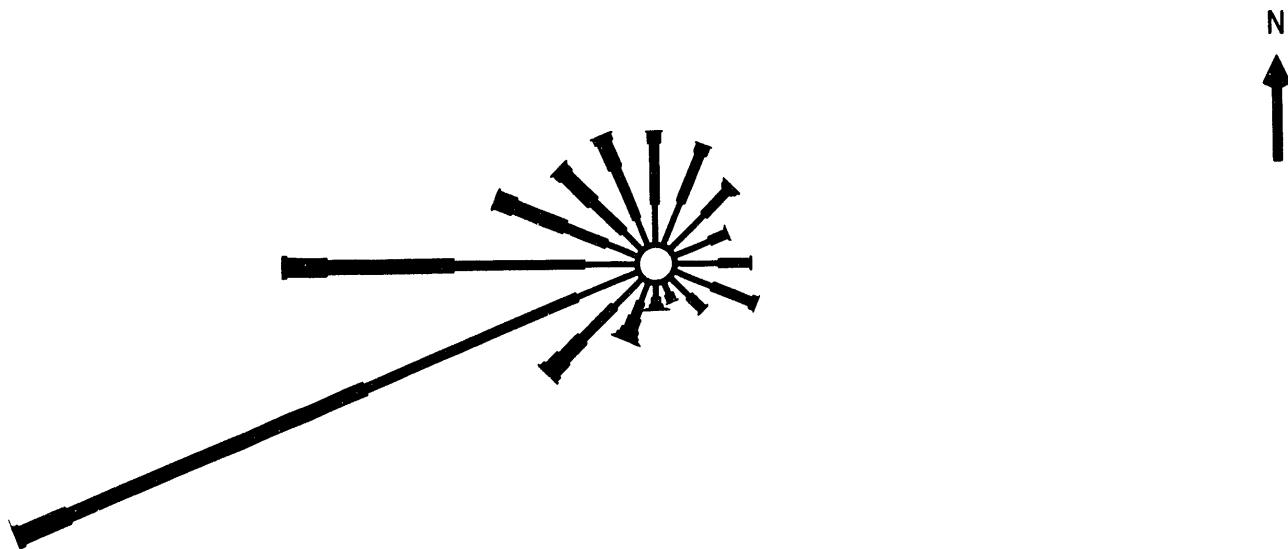
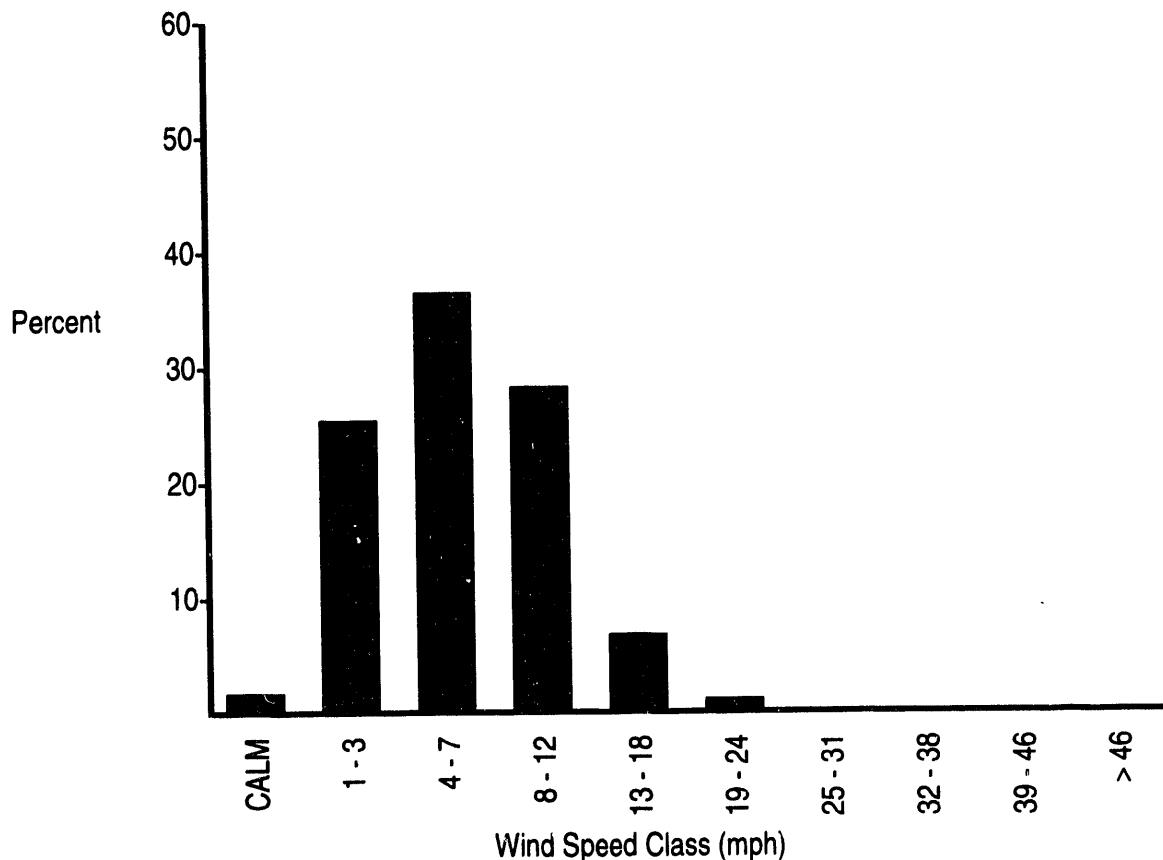


FIGURE A.1. (contd)



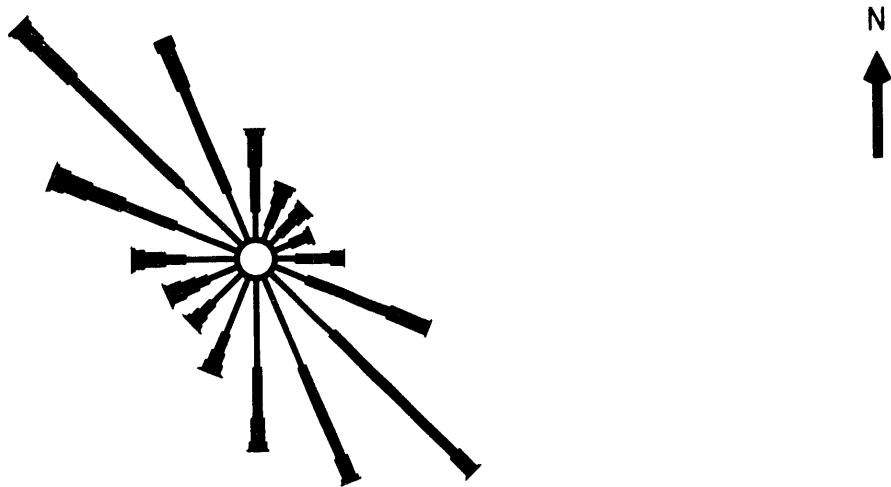
(a) Wind Rose

Period: 1/93 - 12/93



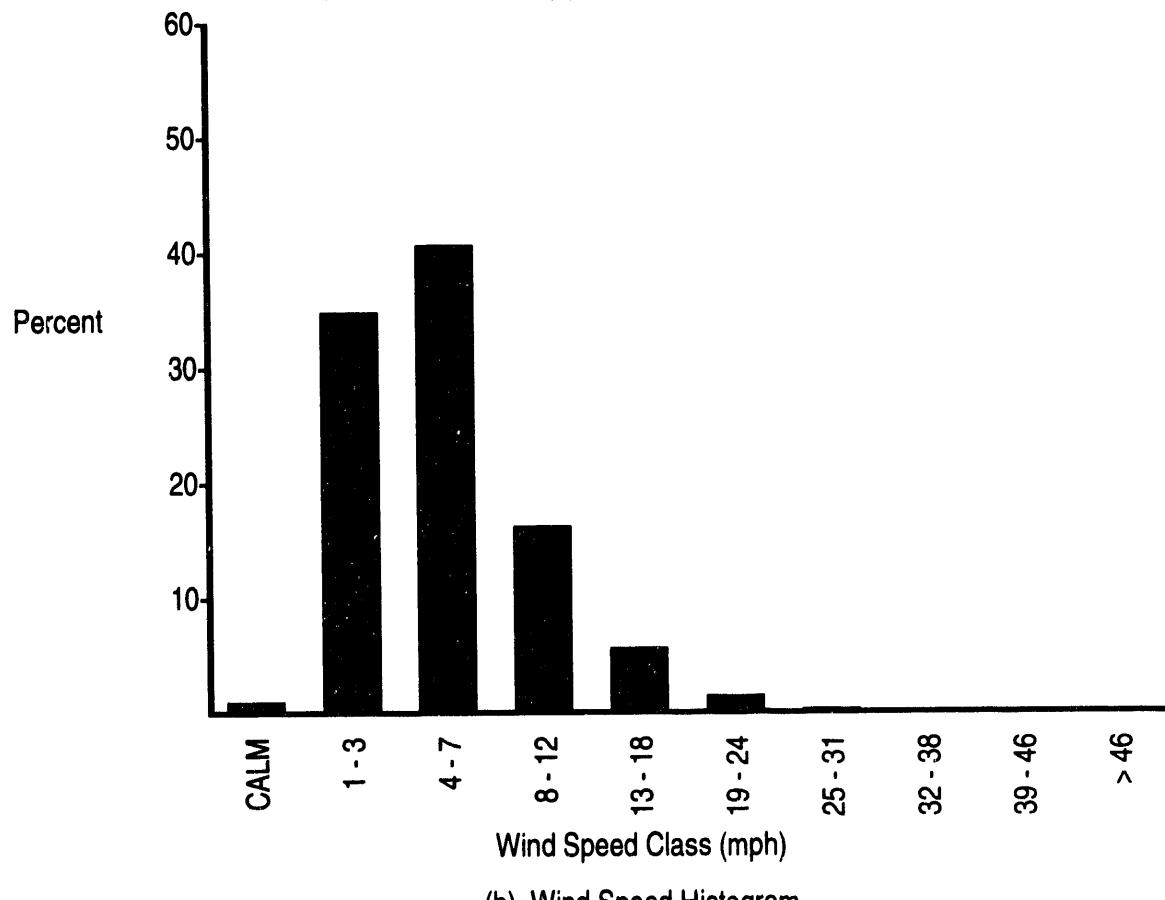
(b) Wind Speed Histogram

FIGURE A.1. (contd)



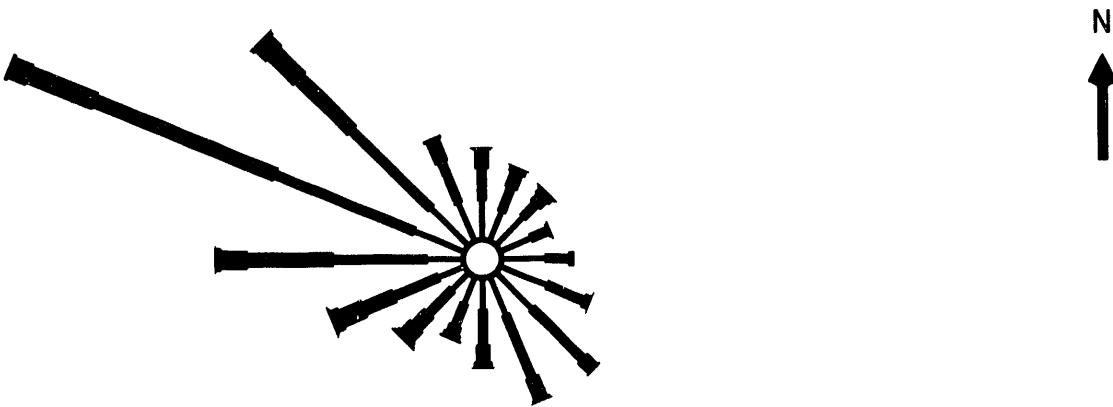
(a) Wind Rose

Period: 1/93 - 12/93



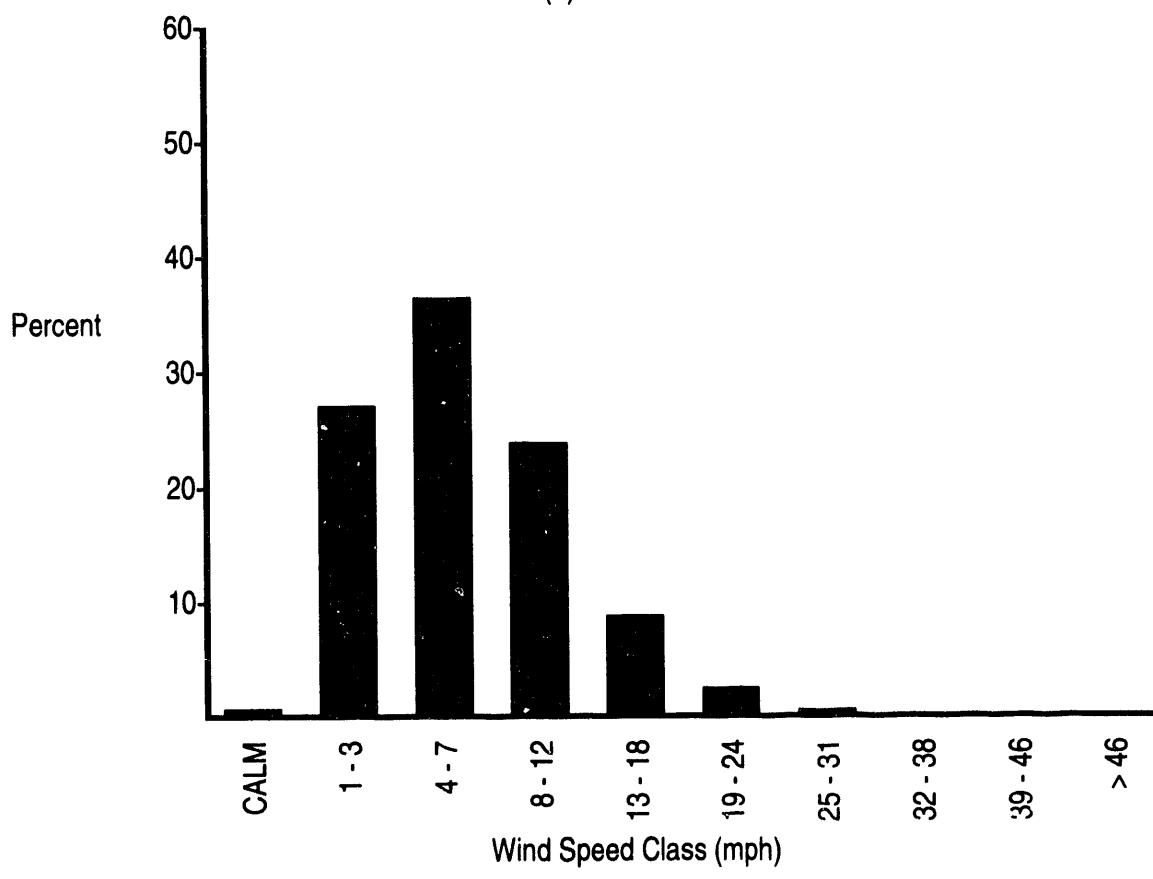
(b) Wind Speed Histogram

FIGURE A.1. (contd)



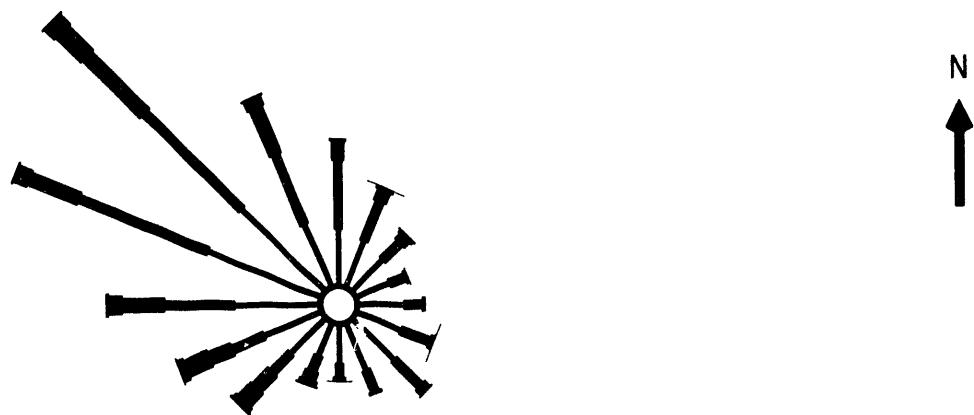
(a) Wind Rose

Period: 1/93 - 12/93



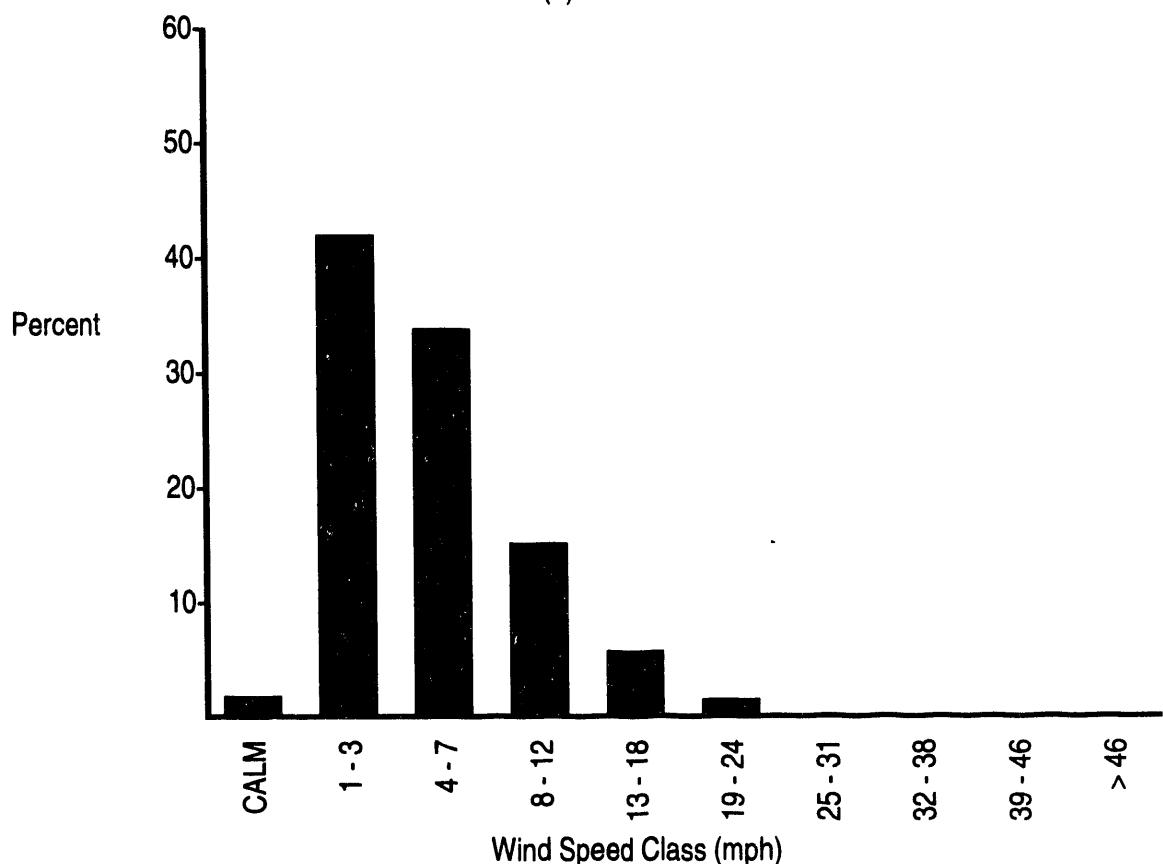
(b) Wind Speed Histogram

FIGURE A.1. (contd)



(a) Wind Rose

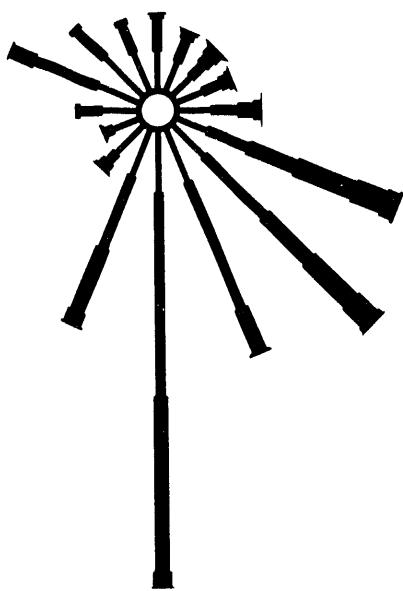
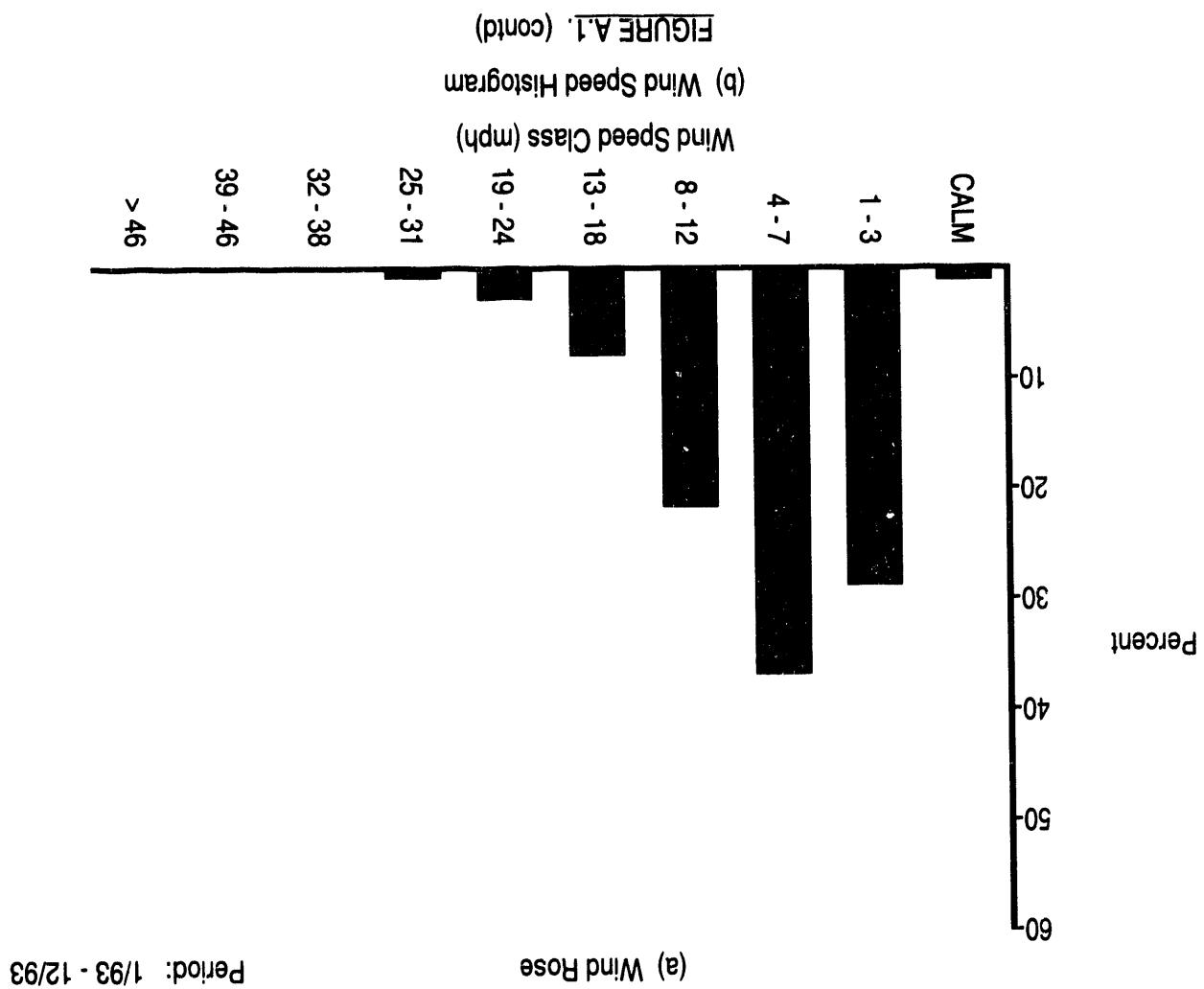
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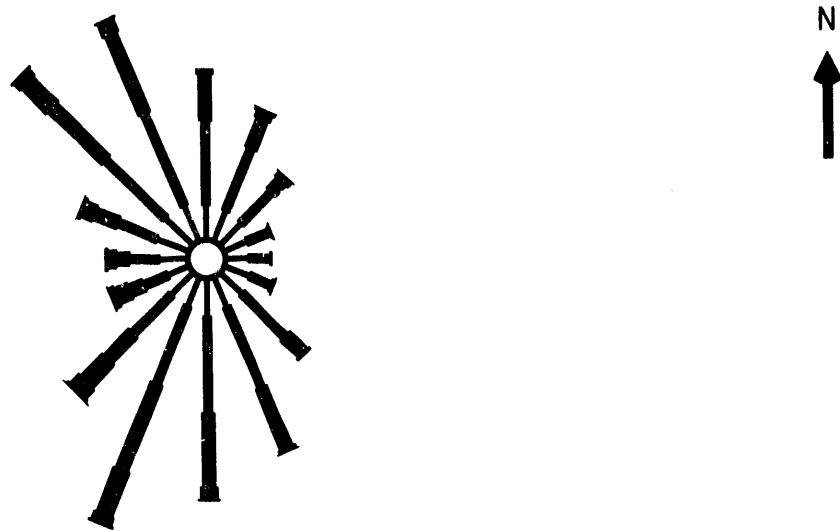


(b) Wind Speed Histogram

FIGURE A.1. (contd)

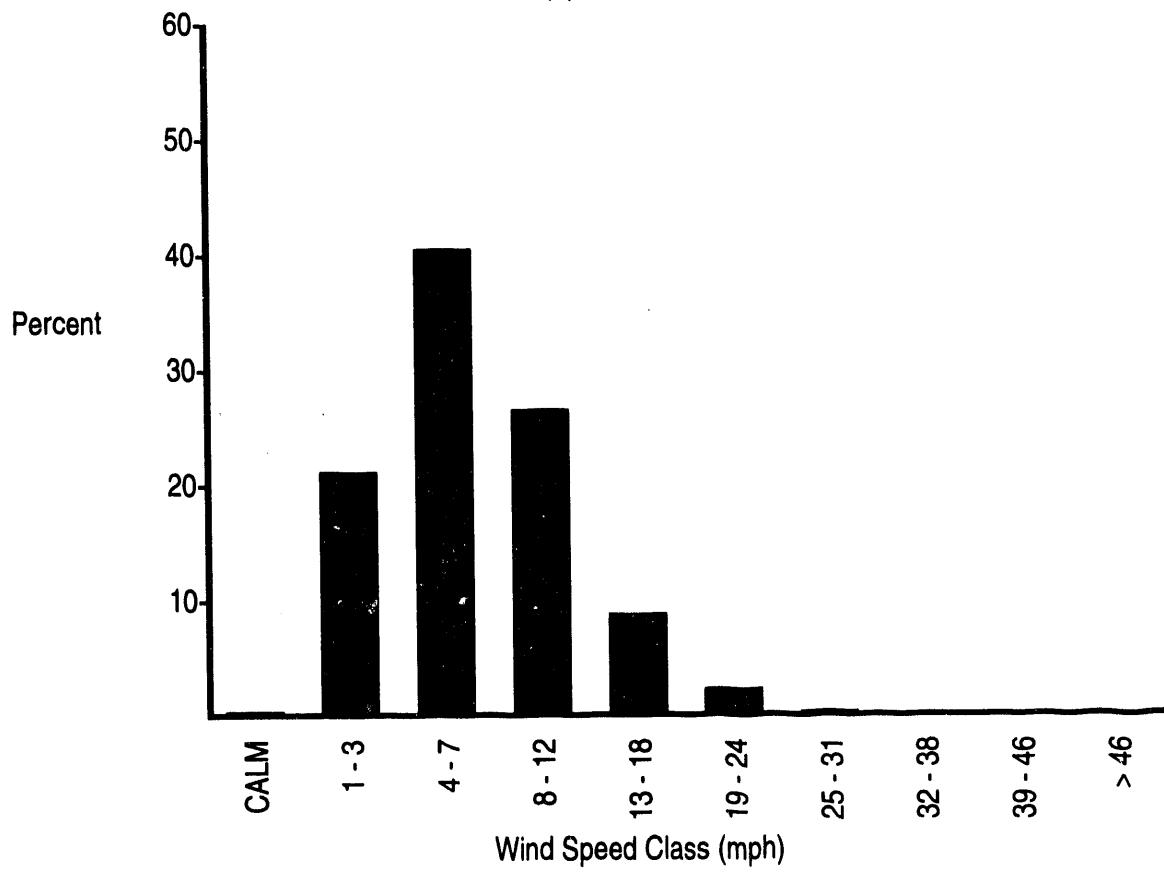
A.8





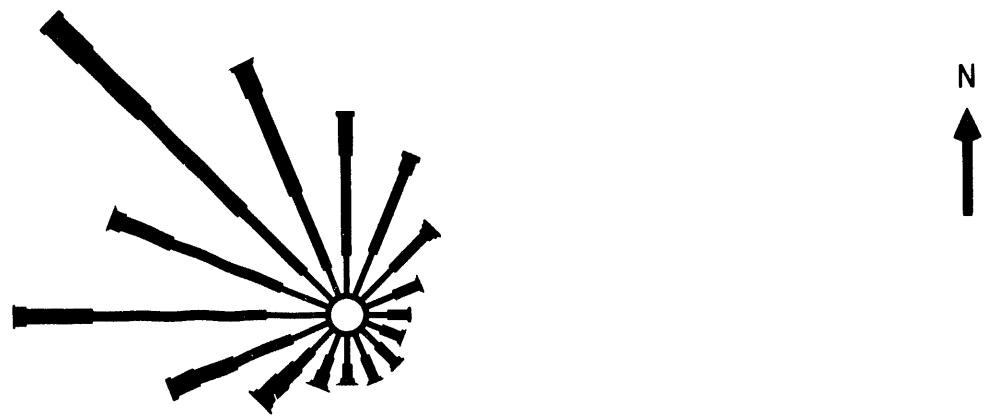
(a) Wind Rose

Period: 1/93 - 12/93



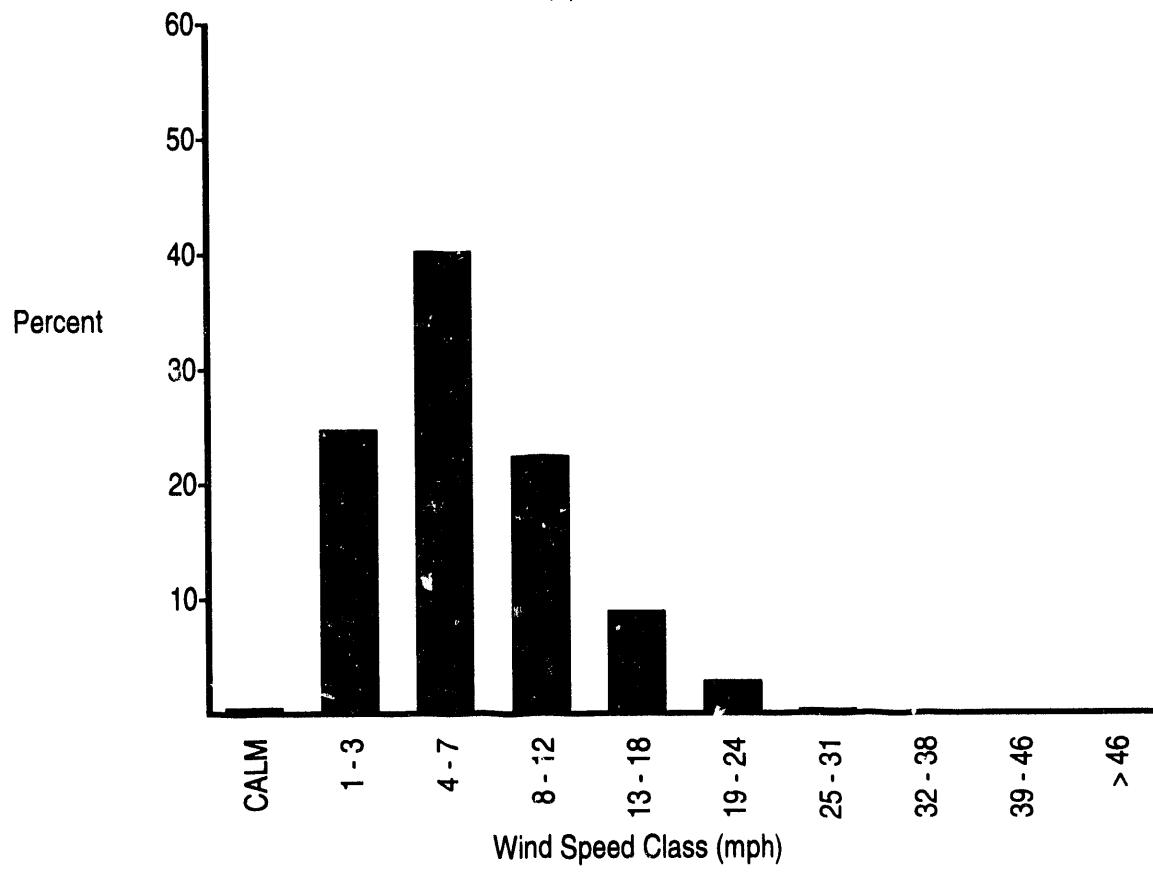
(b) Wind Speed Histogram

FIGURE A.1. (contd)



(a) Wind Rose

Period: 1/93 - 12/93

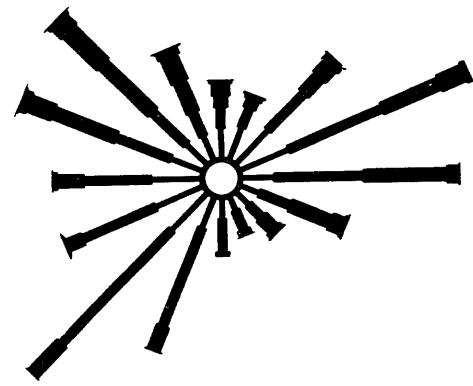


(b) Wind Speed Histogram

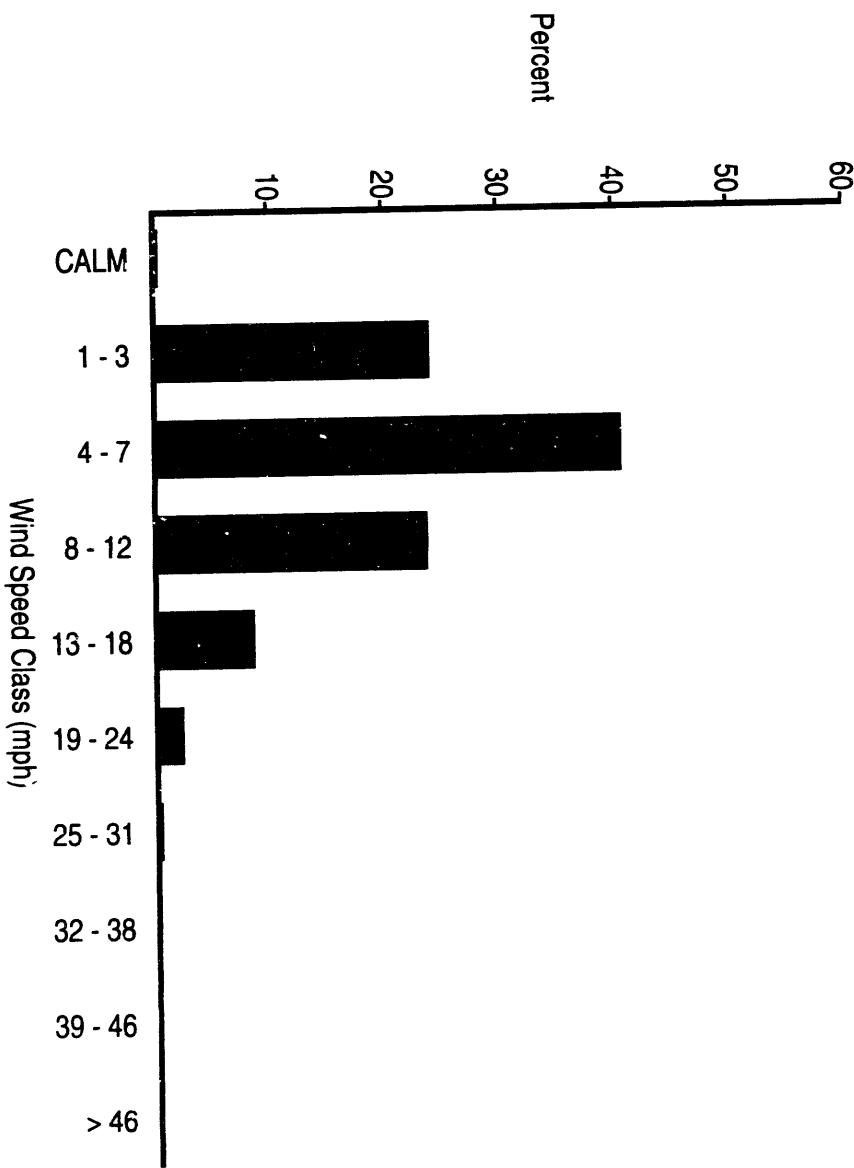
FIGURE A.1. (contd)

(a) Wind Rose

Period: 1/93 - 12/93



N



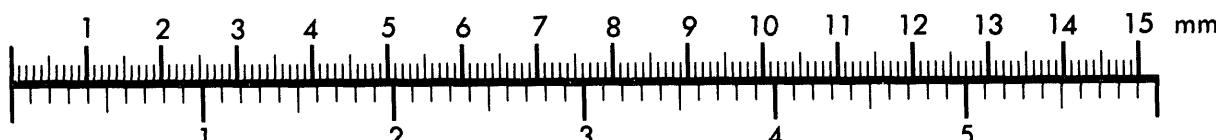
(b) Wind Speed Histogram
FIGURE A.1. (contd)



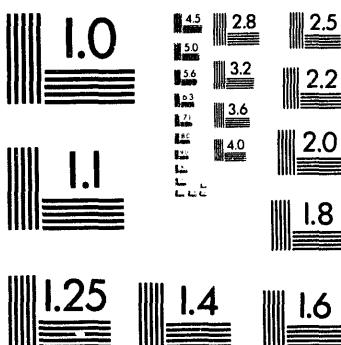
Association for Information and Image Management

1100 Wayne Avenue, Suite 1100
Silver Spring, Maryland 20910
301/587-8202

Centimeter

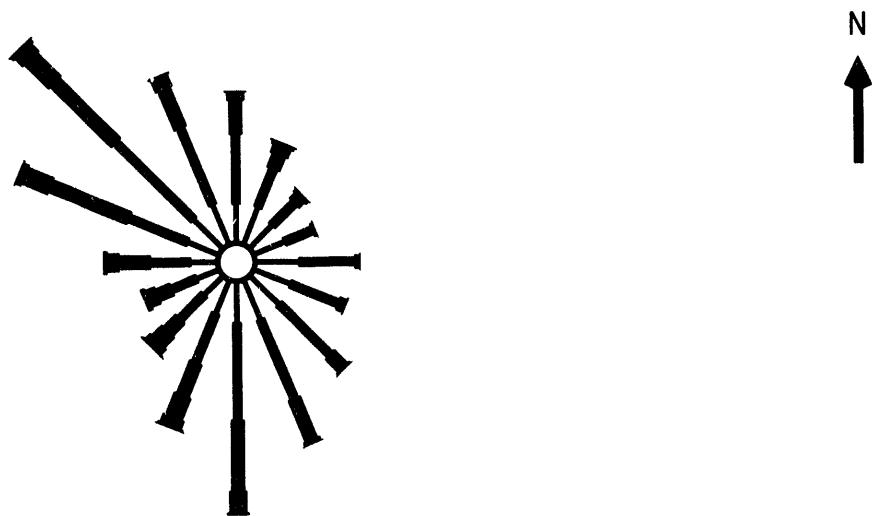


Inches



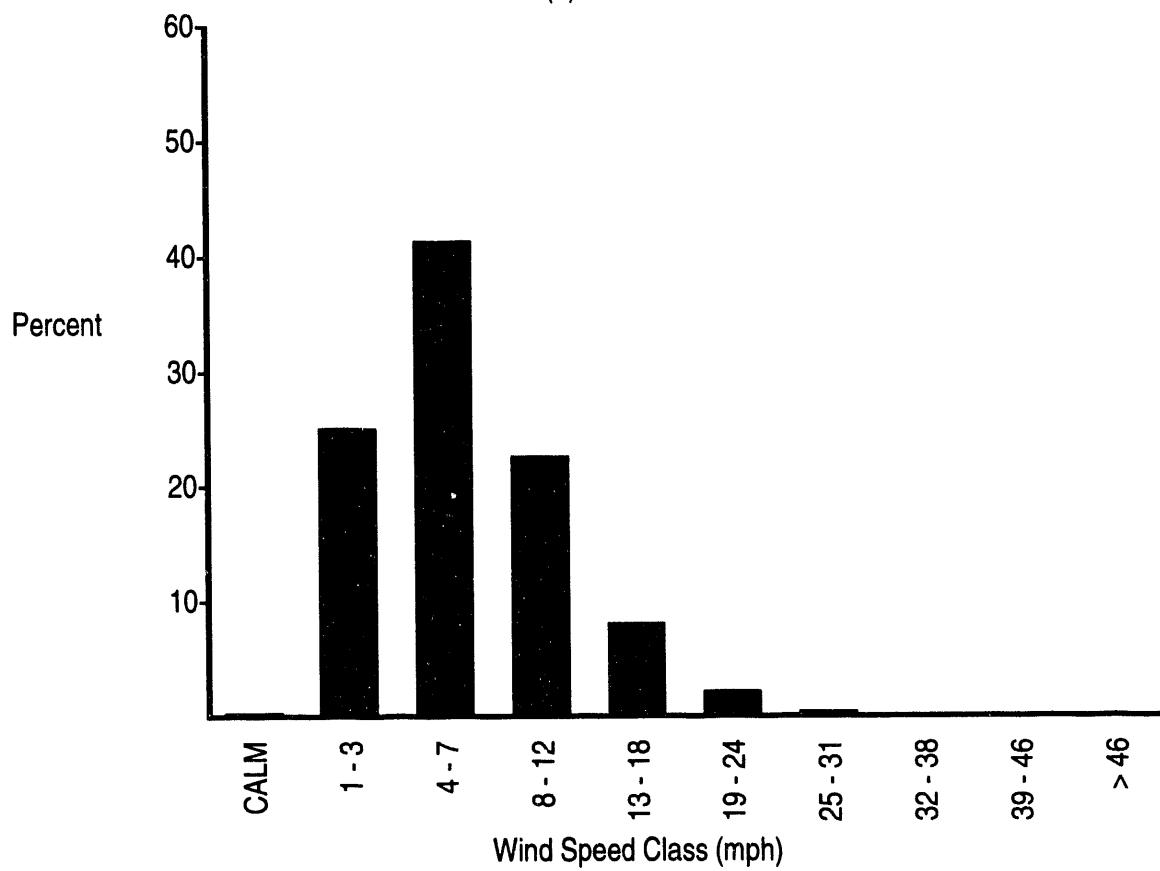
MANUFACTURED TO AIIM STANDARDS
BY APPLIED IMAGE, INC.

20f6



(a) Wind Rose

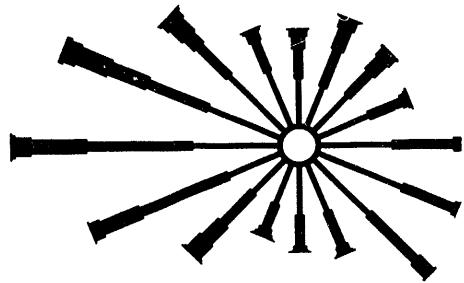
Period: 1/93 - 12/93



(b) Wind Speed Histogram

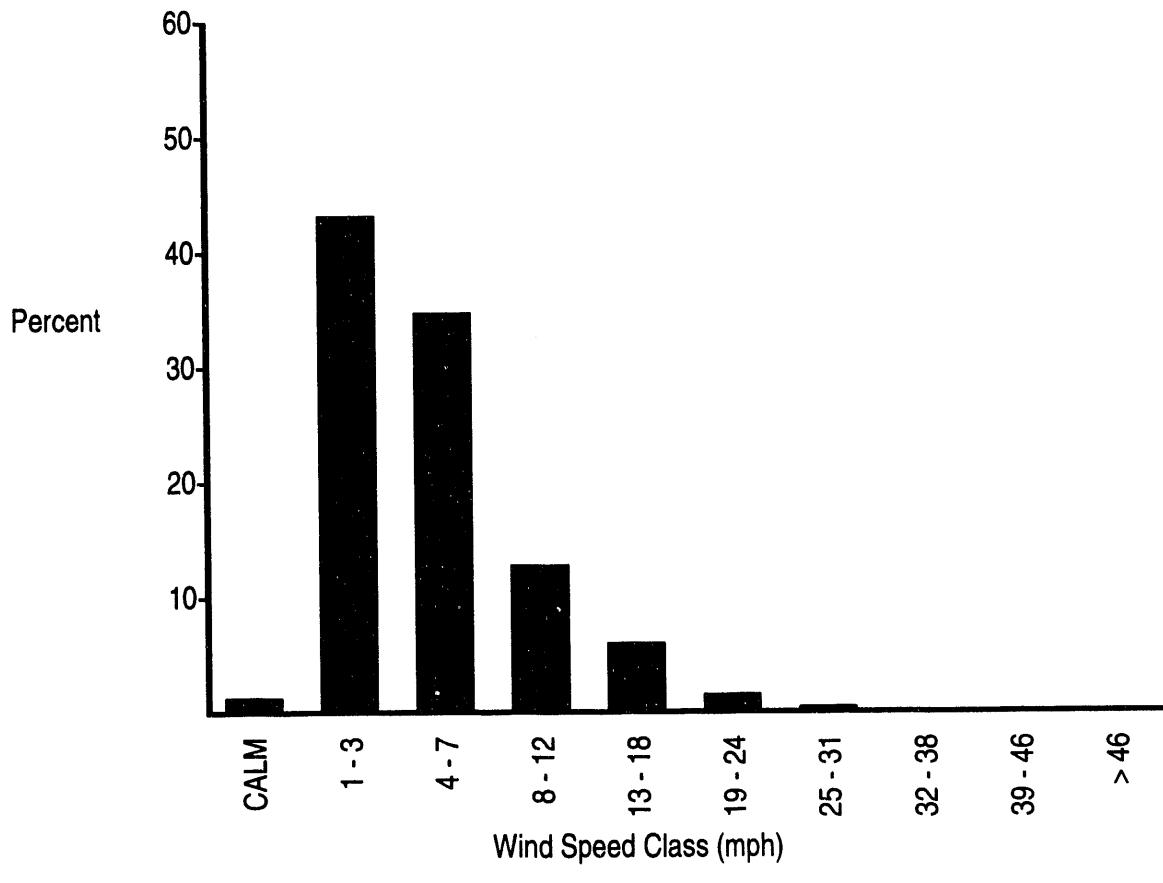
FIGURE A.1. (contd)

N
↑



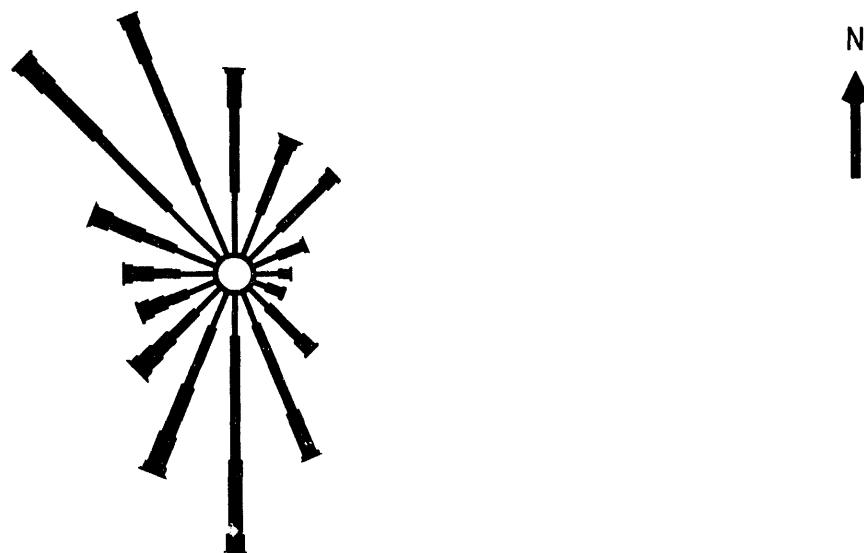
(a) Wind Rose

Period: 1/93 - 12/93



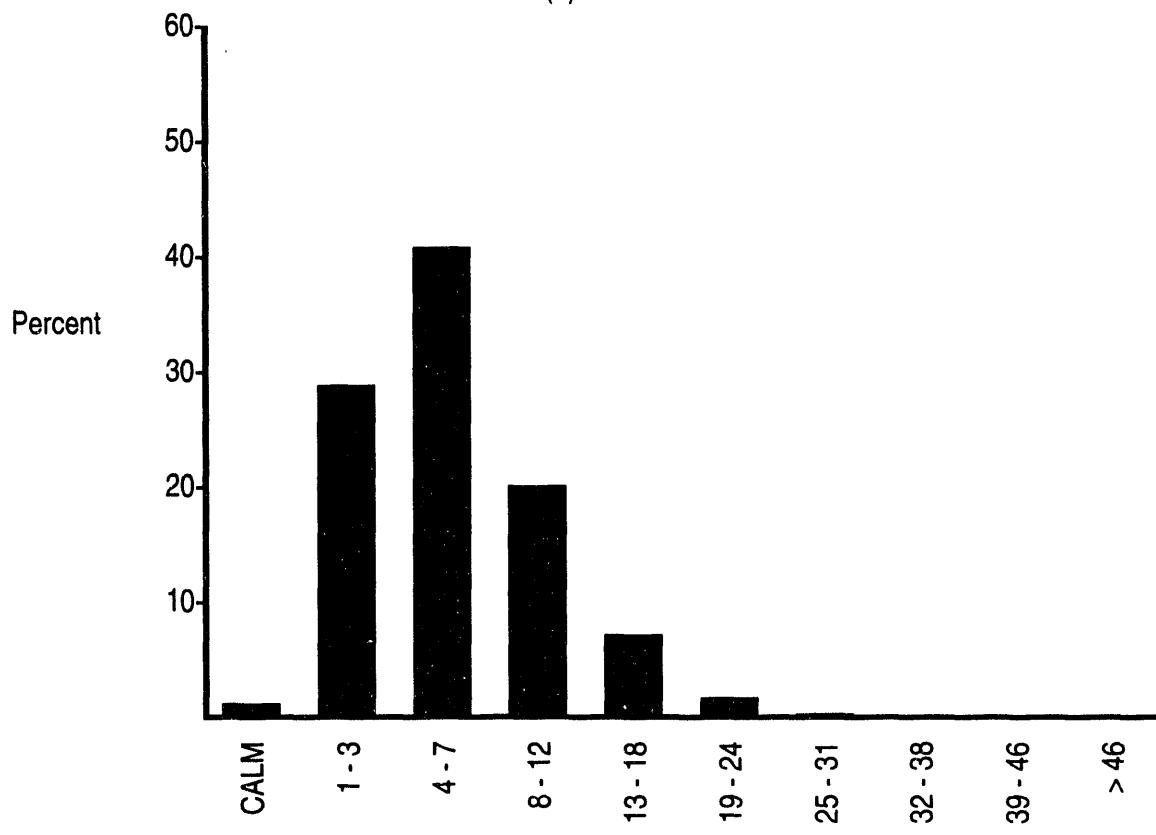
(b) Wind Speed Histogram

FIGURE A.1. (contd)



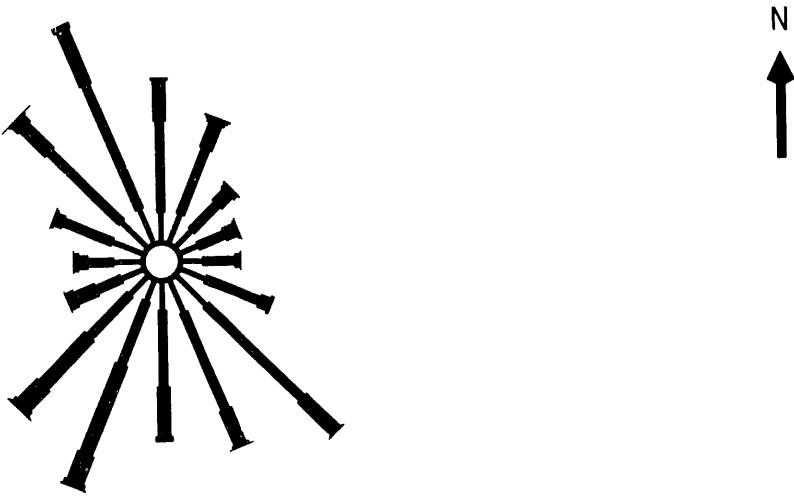
(a) Wind Rose

Period: 1/93 - 12/93



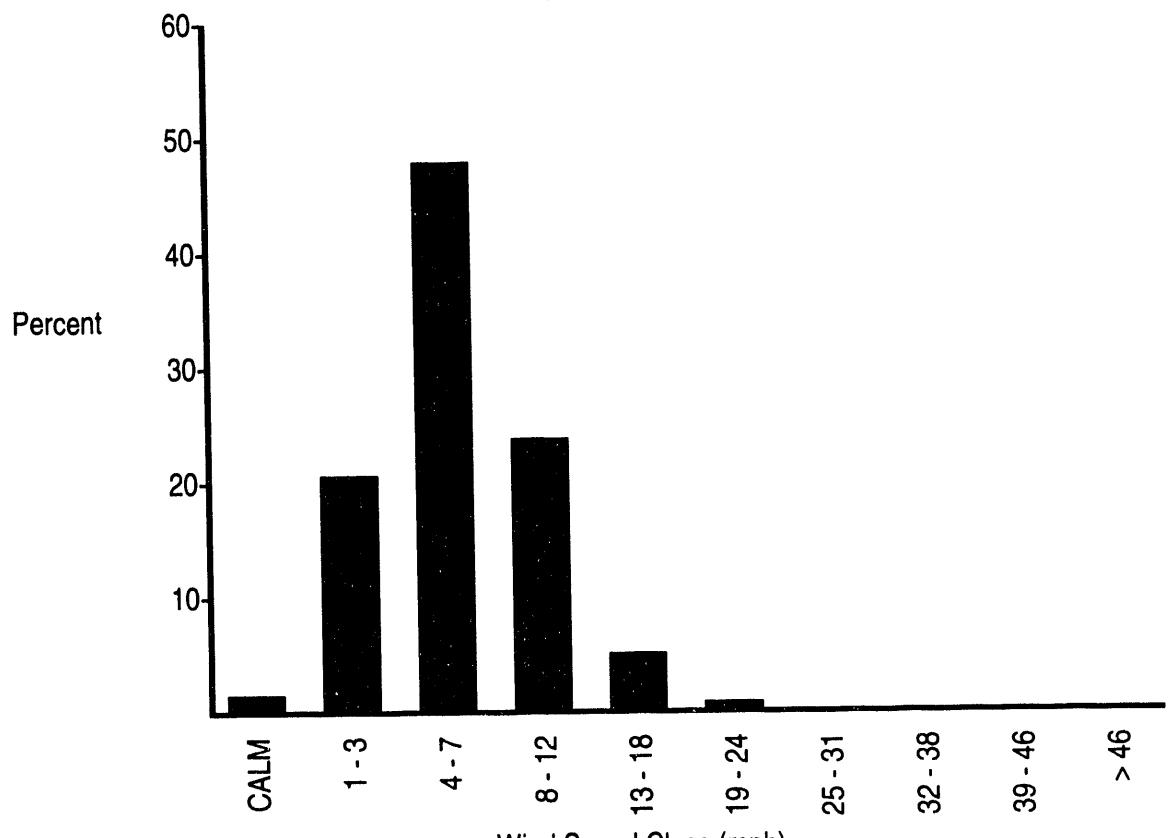
(b) Wind Speed Histogram

FIGURE A.1. (contd)



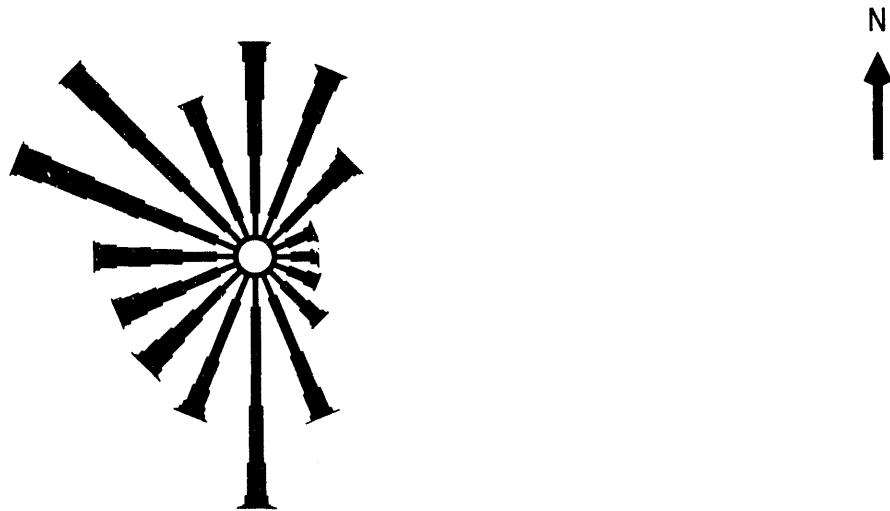
(a) Wind Rose

Period: 1/93 - 12/93



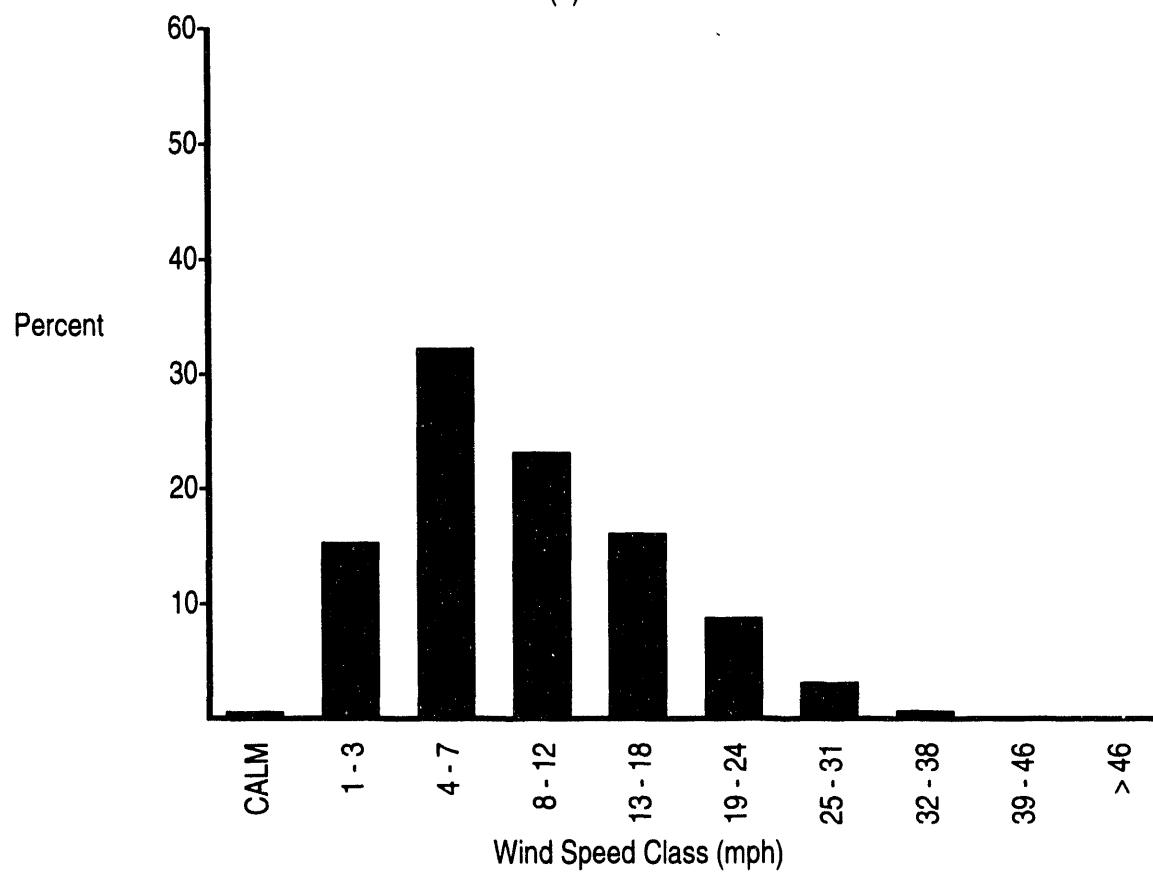
(b) Wind Speed Histogram

FIGURE A.1. (contd)



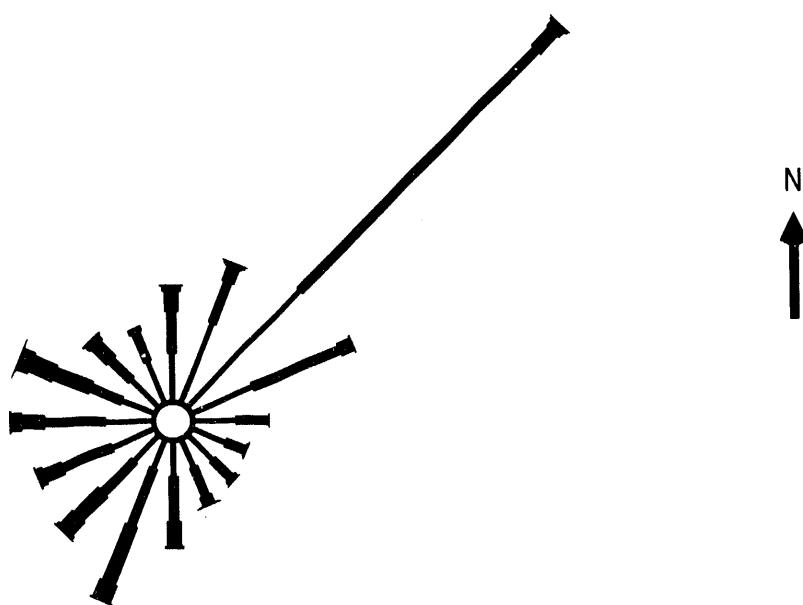
(a) Wind Rose

Period: 1/93 - 12/93



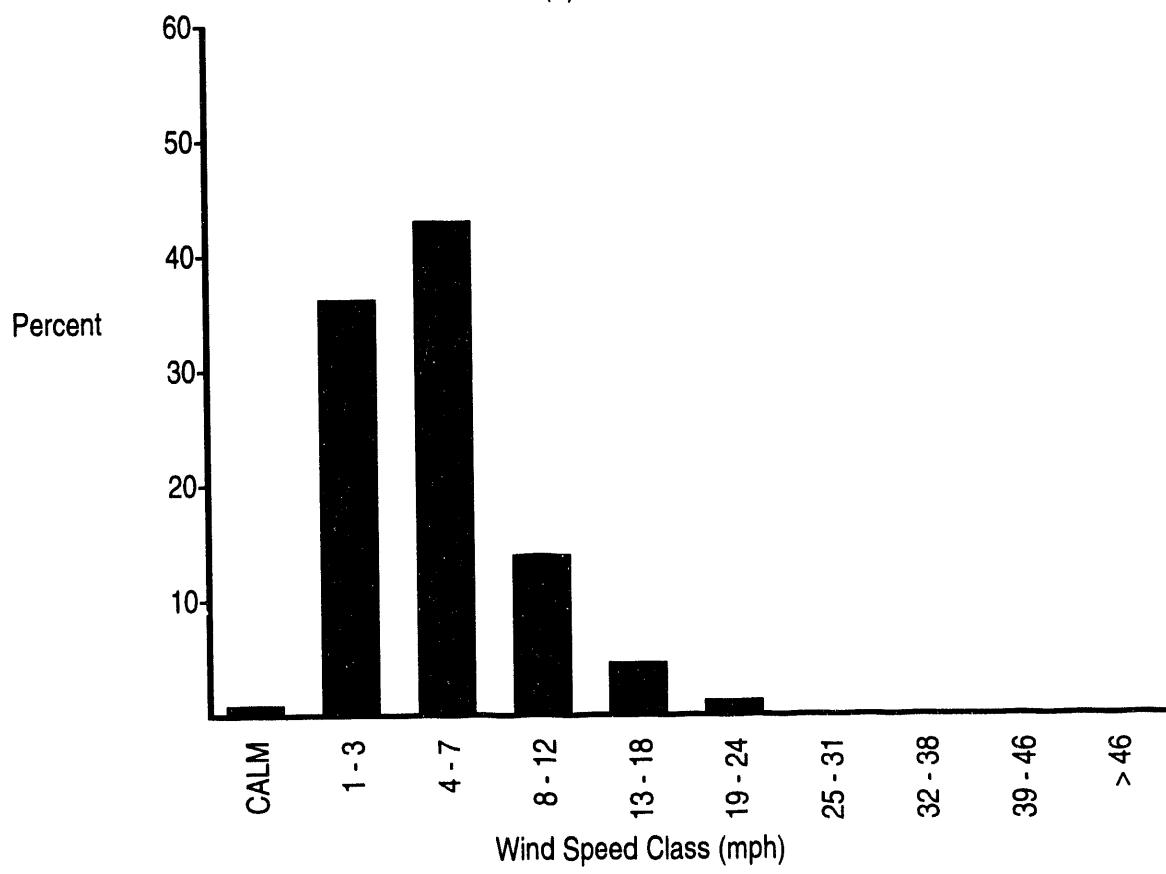
(b) Wind Speed Histogram

FIGURE A.1. (contd)



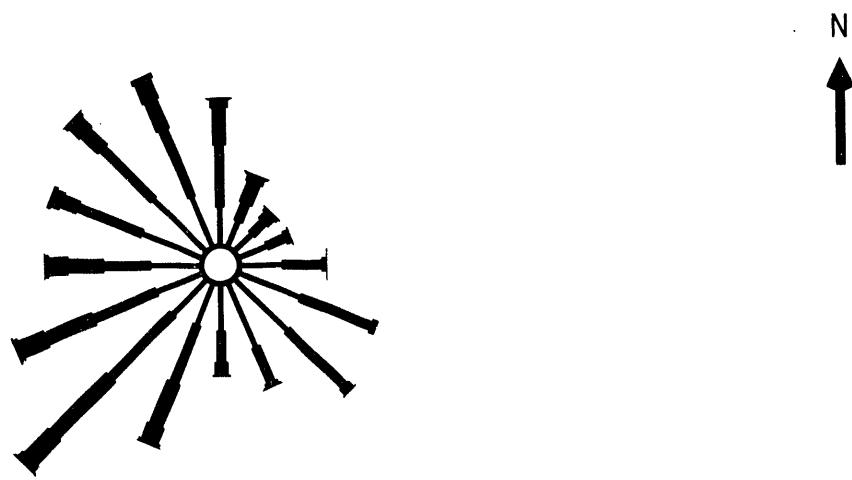
(a) Wind Rose

Period: 1/93 - 12/93



(b) Wind Speed Histogram

FIGURE A.1. (contd)



(a) Wind Rose

Period: 1/93 - 12/93

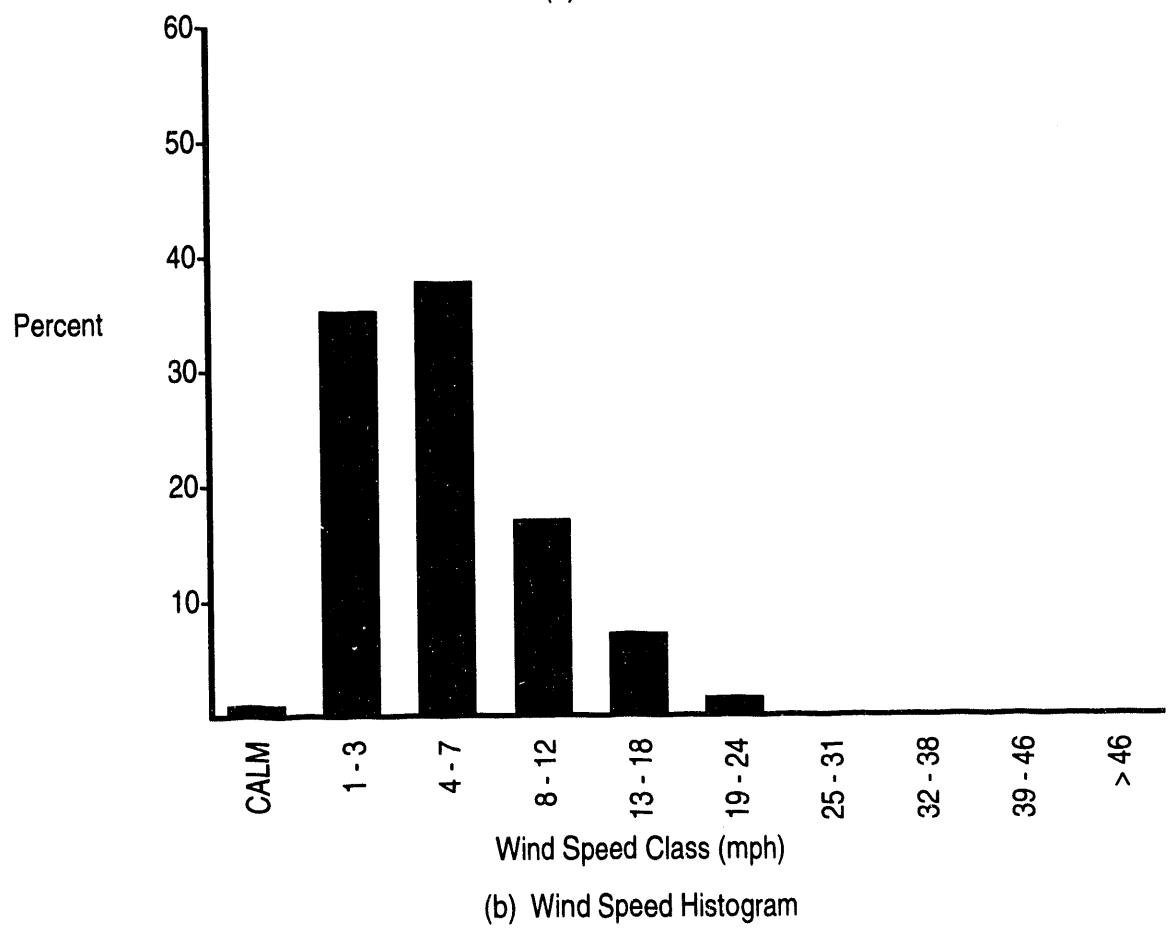
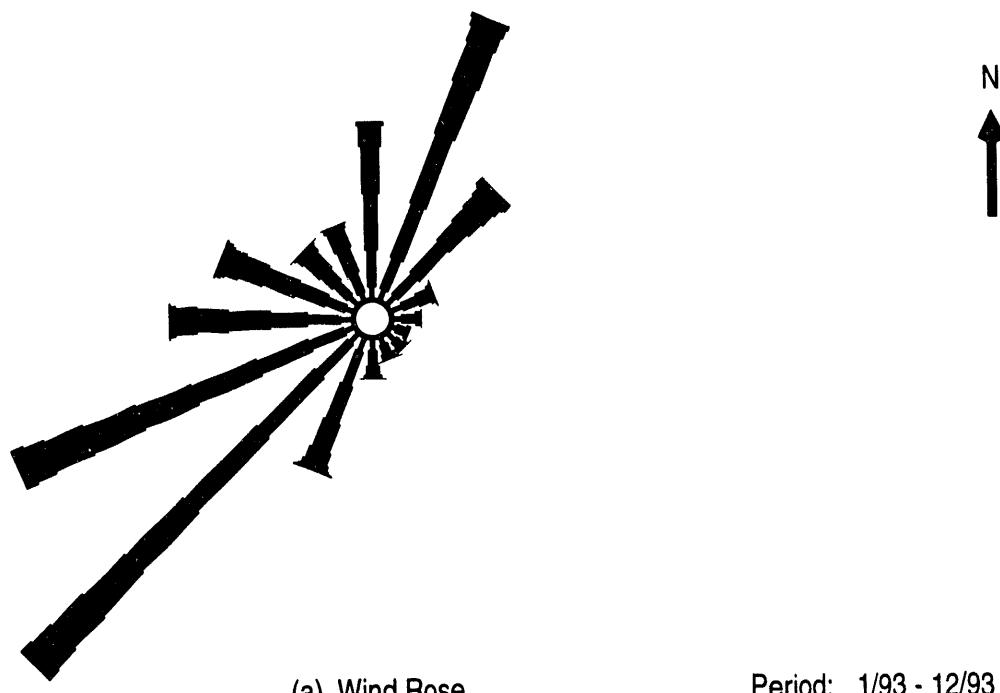
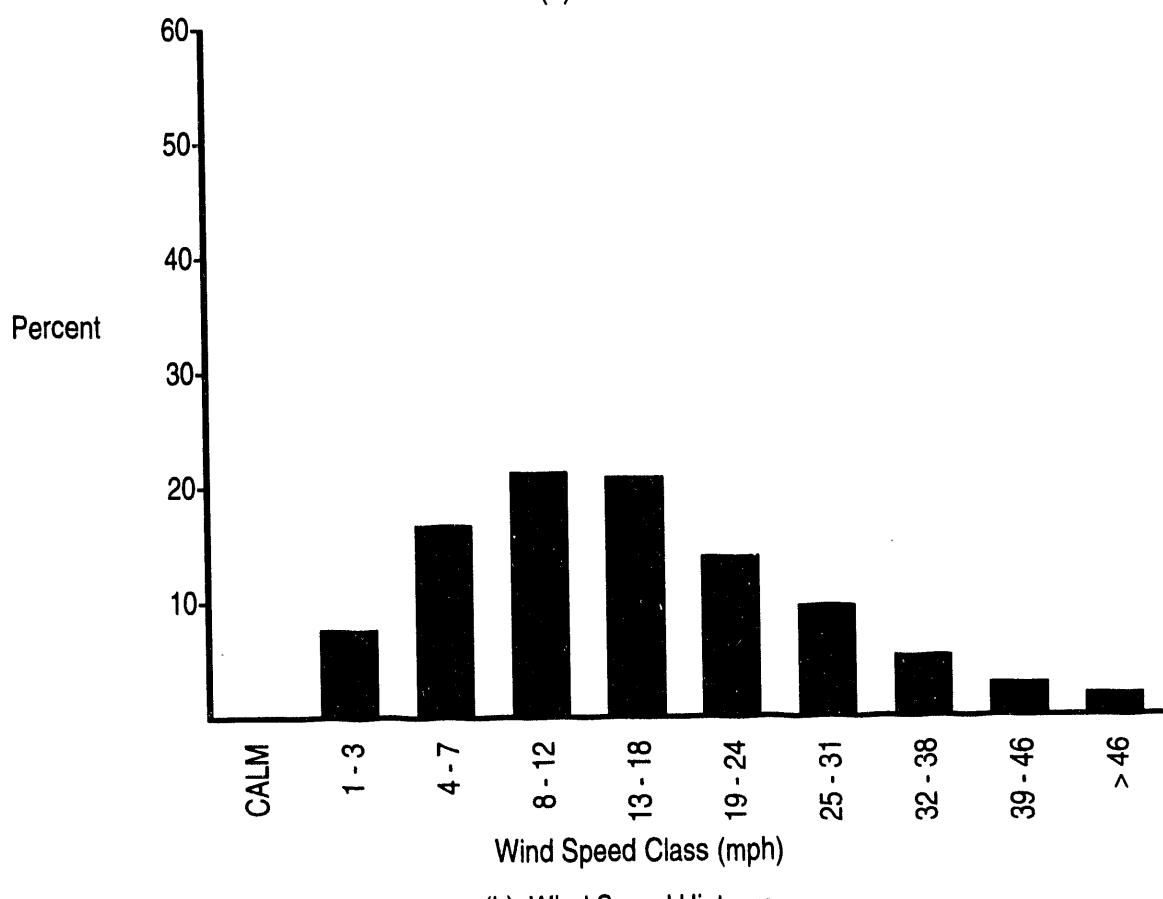


FIGURE A.1. (contd)



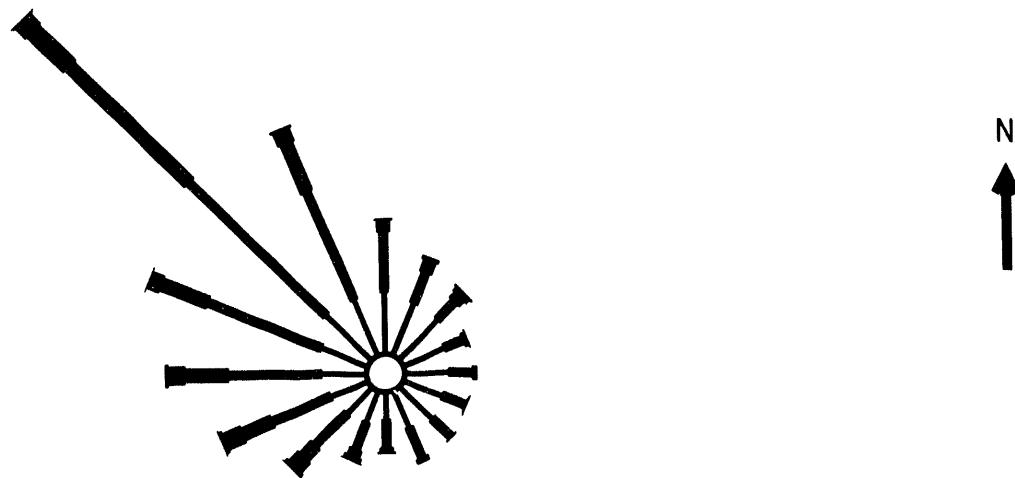
(a) Wind Rose

Period: 1/93 - 12/93



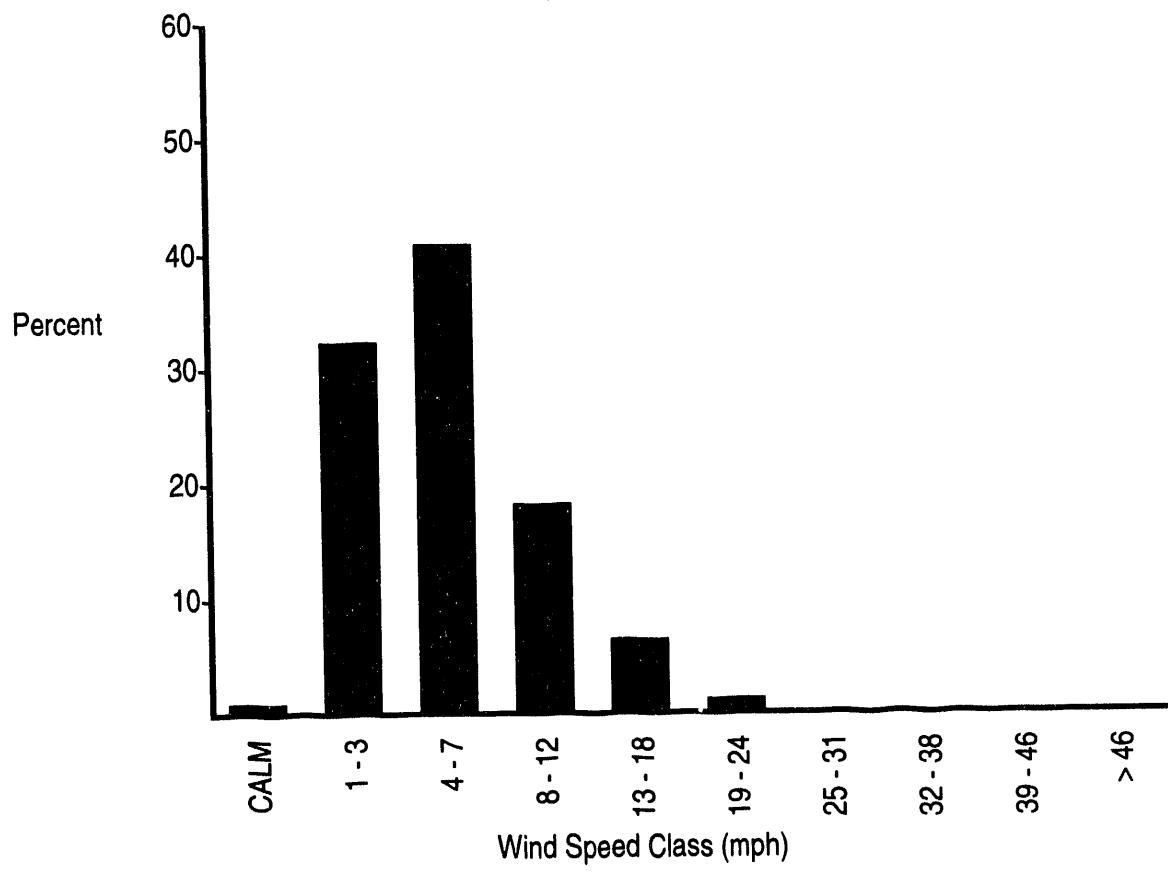
(b) Wind Speed Histogram

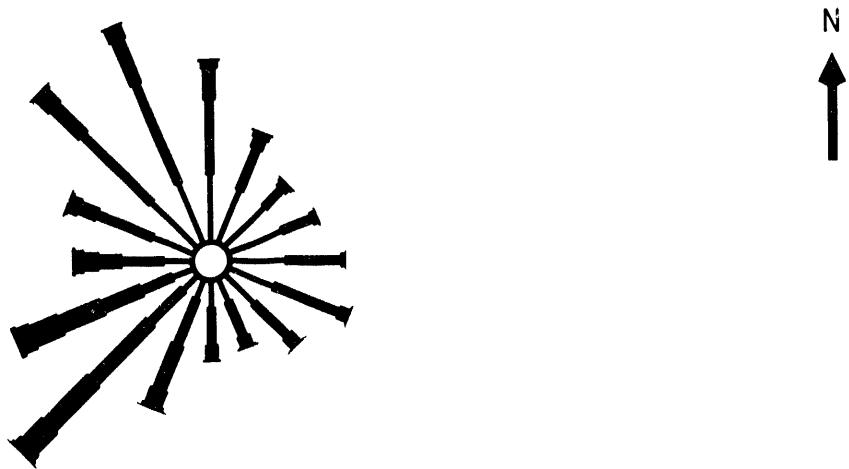
FIGURE A.1. (contd)



(a) Wind Rose

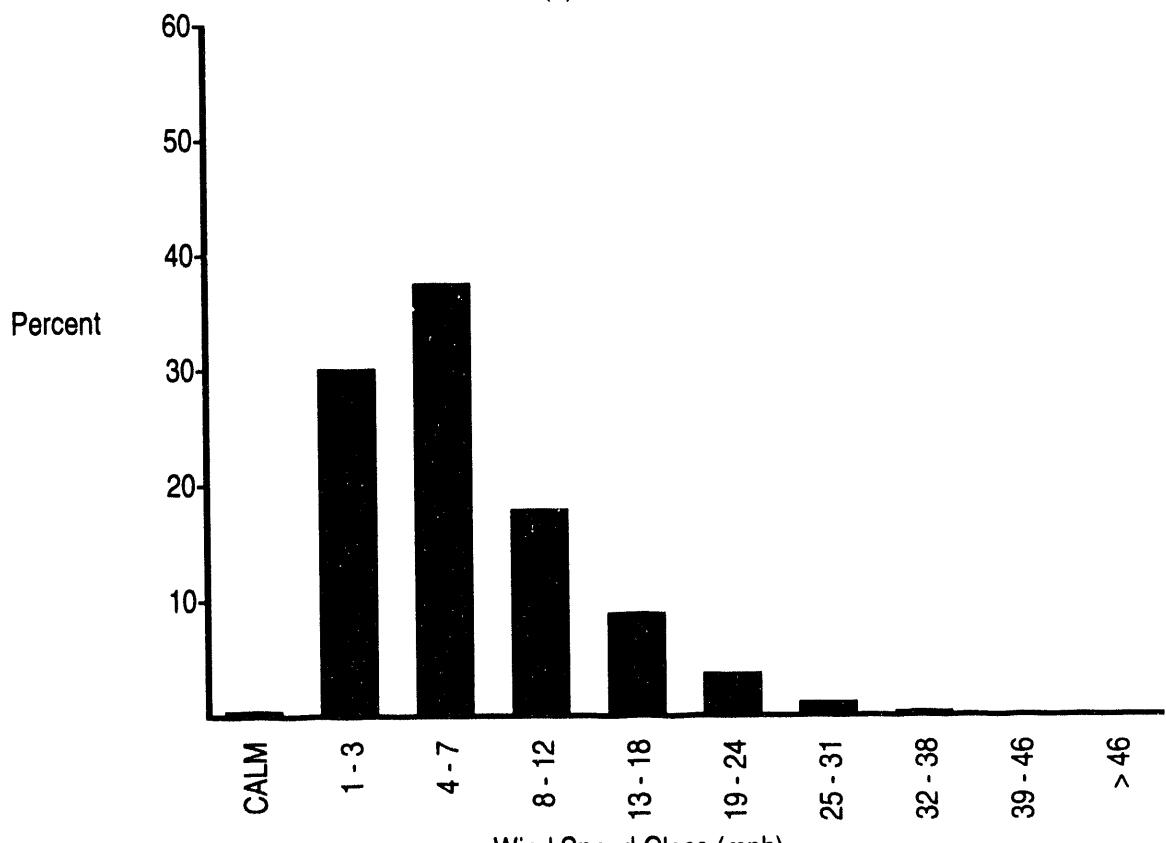
Period: 1/93 - 12/93

FIGURE A.1. (contd)



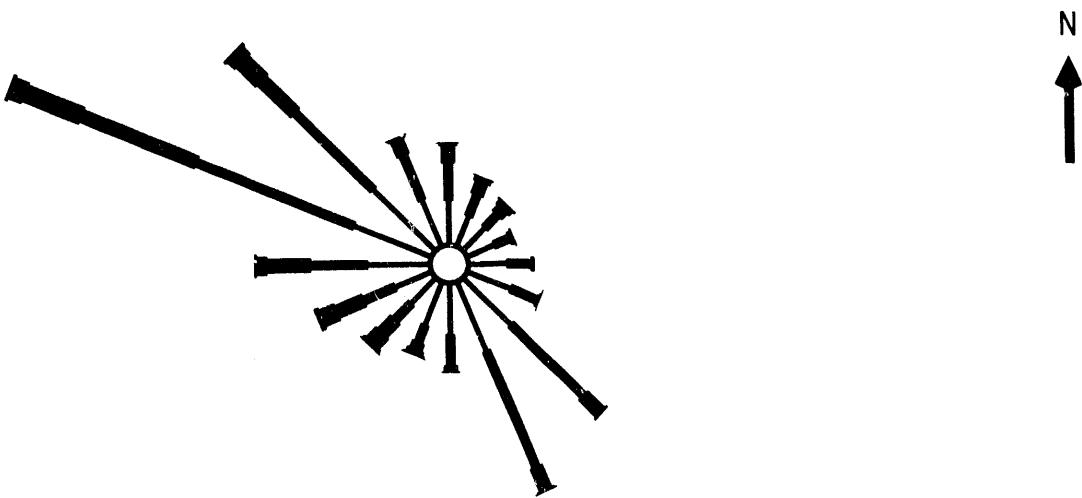
(a) Wind Rose

Period: 1/93 - 12/93



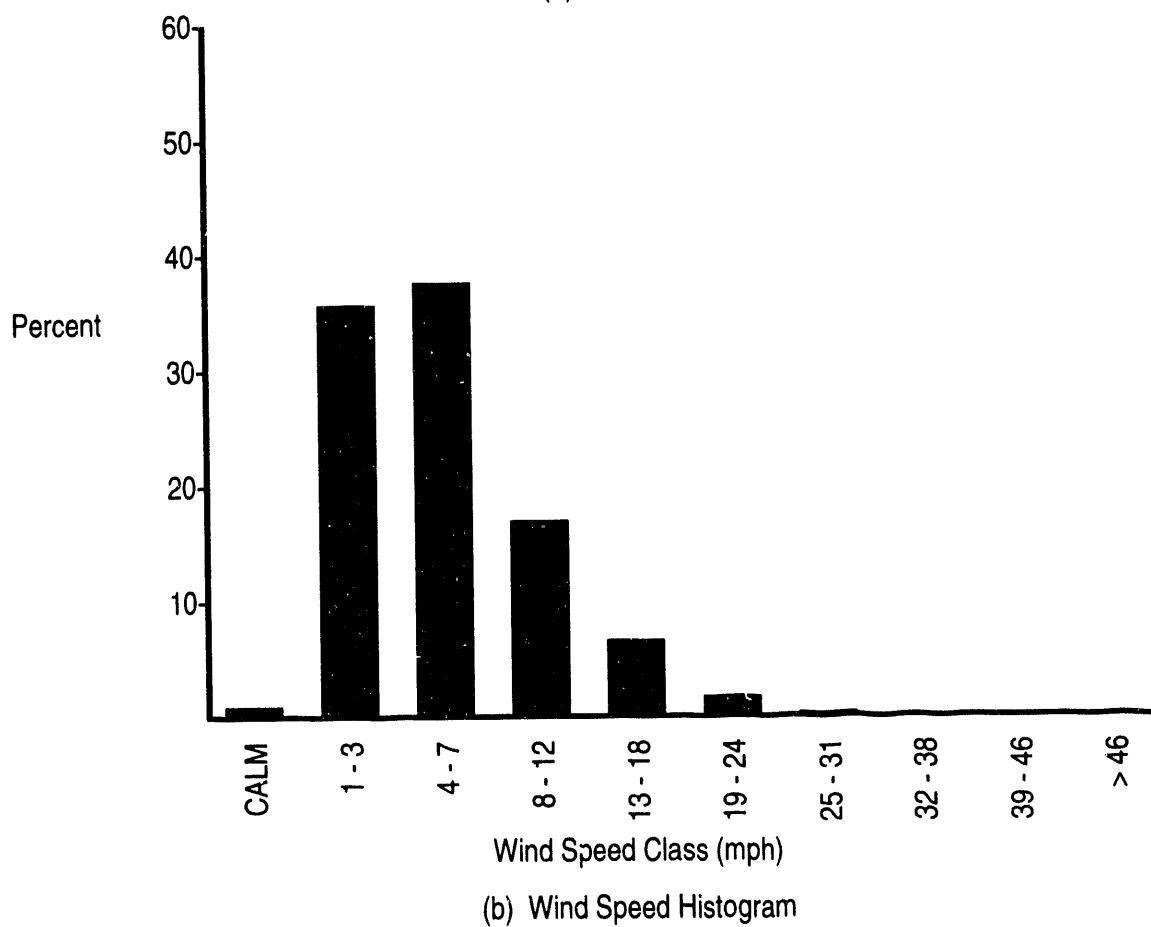
(b) Wind Speed Histogram

FIGURE A.1. (contd)



(a) Wind Rose

Period: 1/93 - 12/93



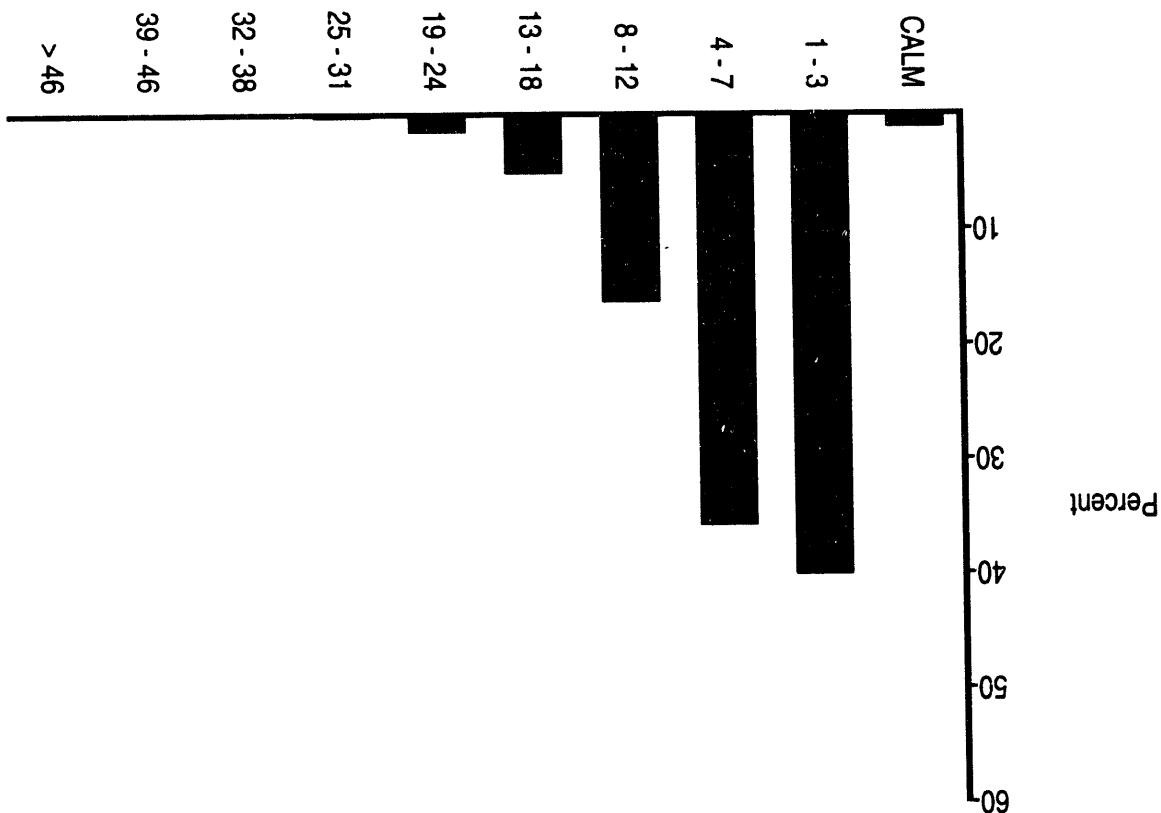
(b) Wind Speed Histogram

FIGURE A.1. (contd)

FIGURE A.1. (contd)

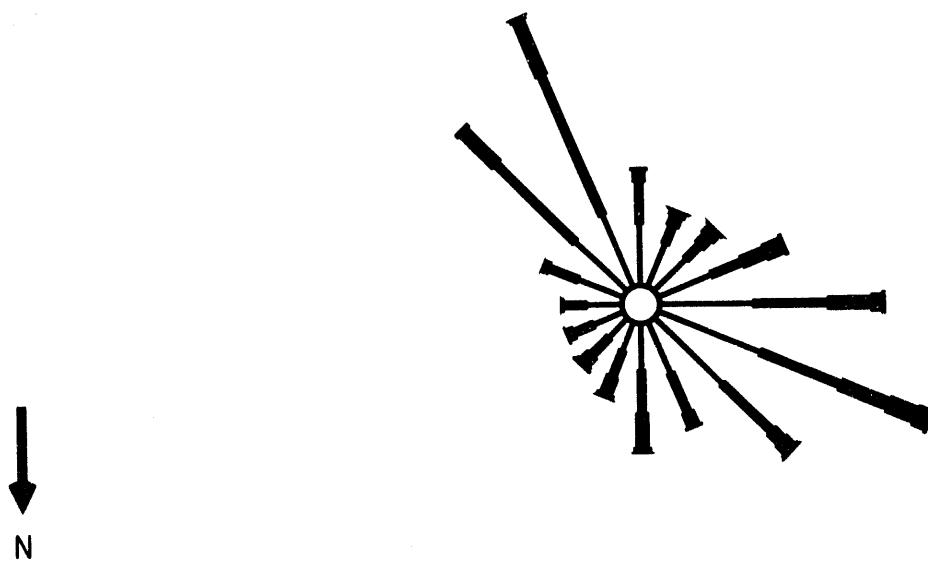
(b) Wind Speed Histogram

Wind Speed Class (mph)



(a) Wind Rose

Period: 1/93 - 12/93



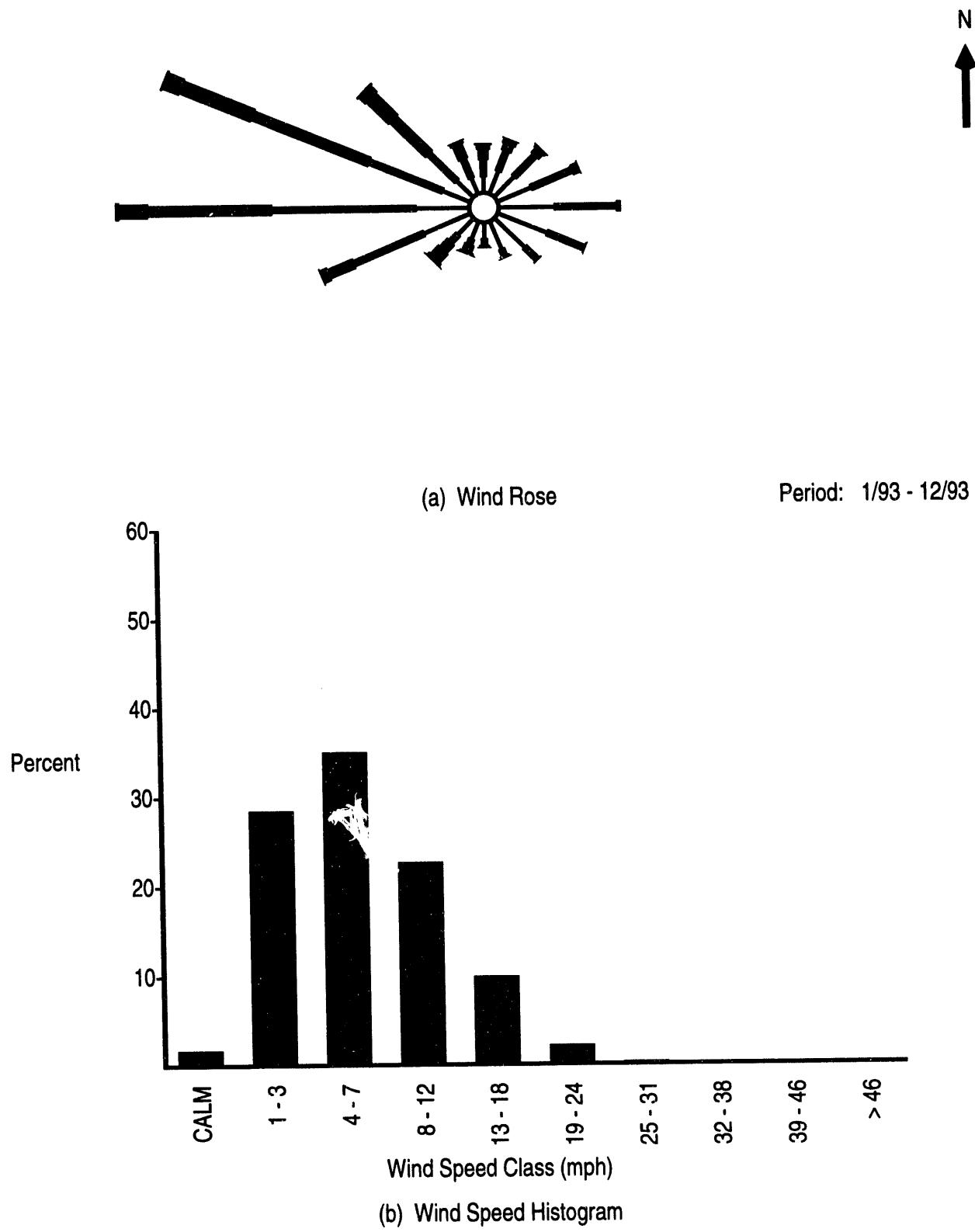
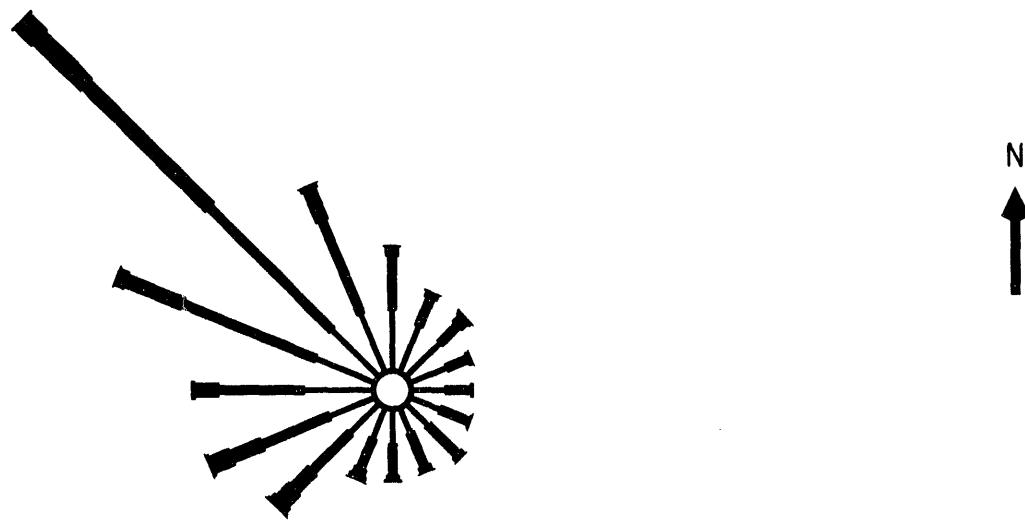
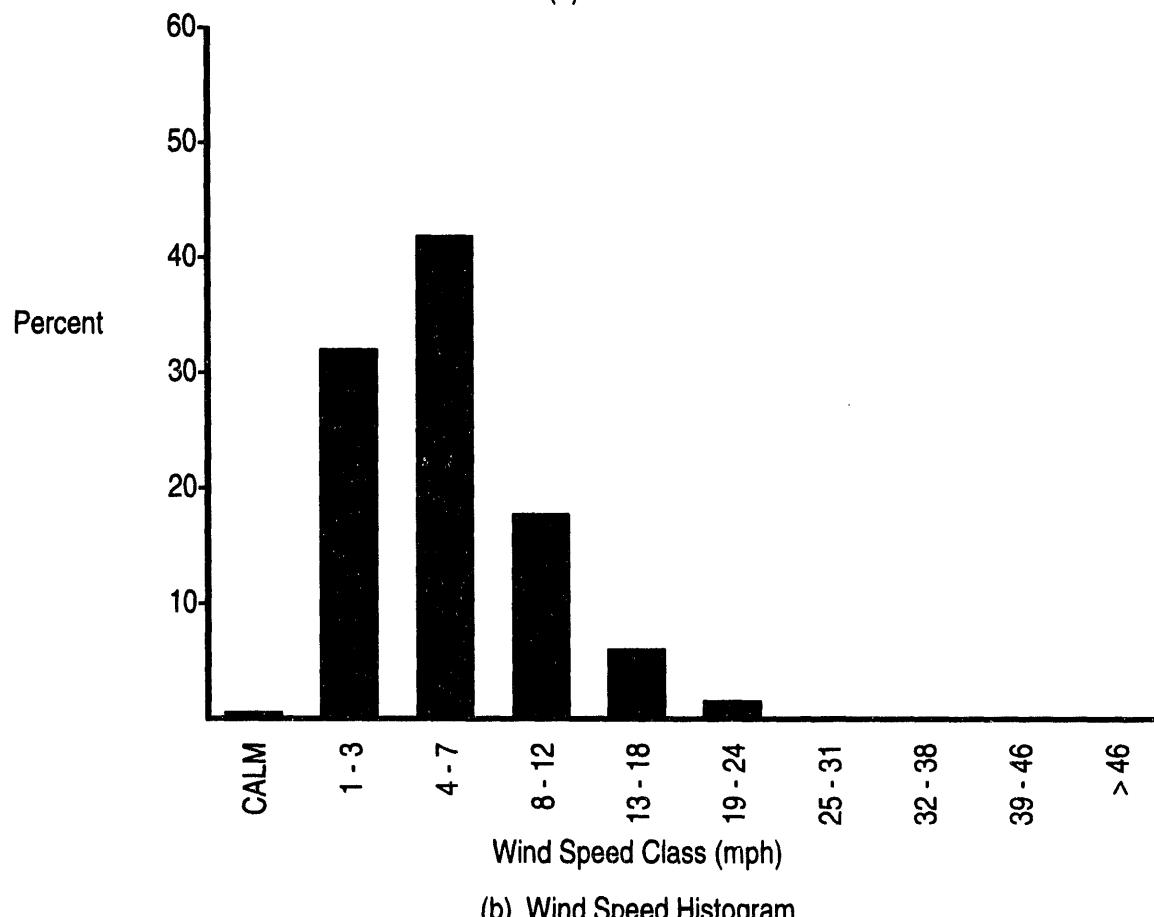


FIGURE A.1. (contd)



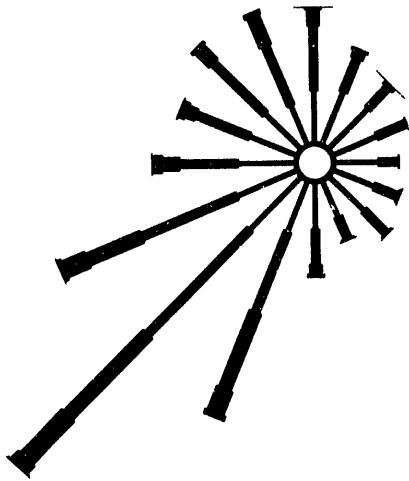
(a) Wind Rose

Period: 1/93 - 12/93



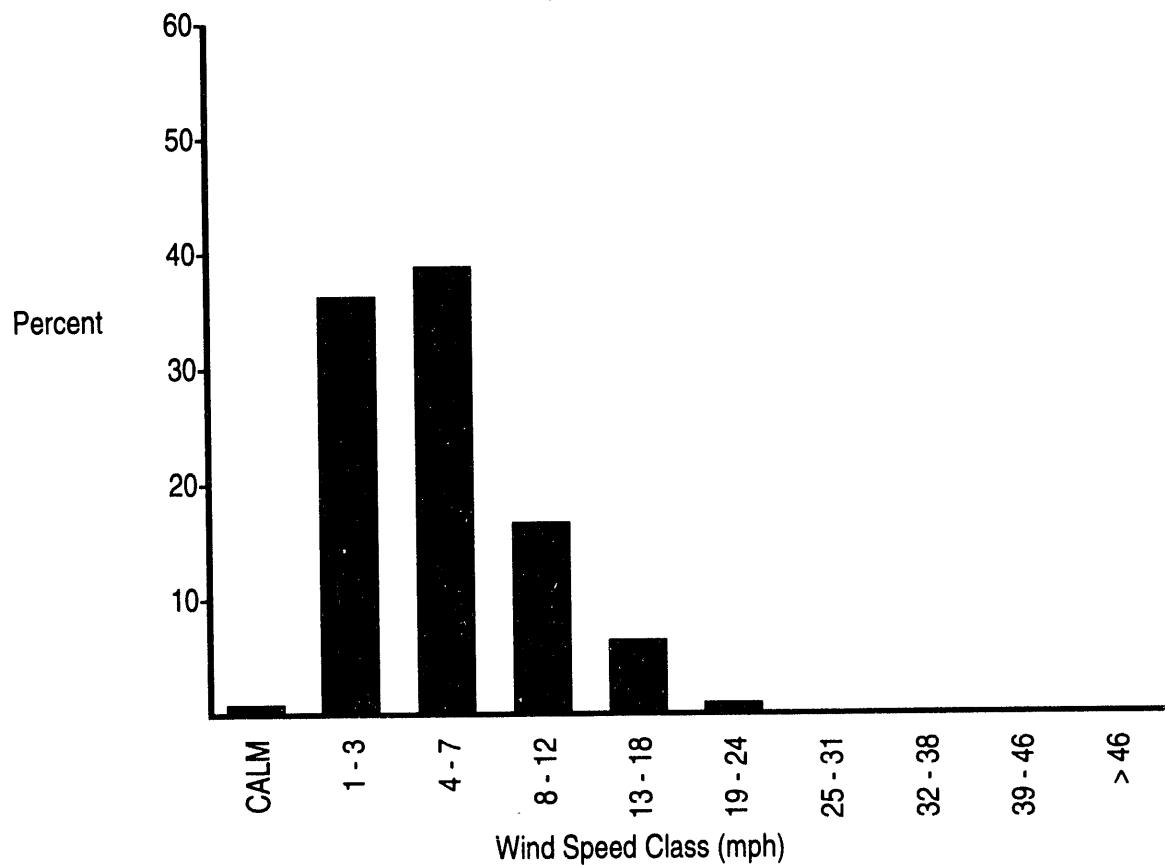
(b) Wind Speed Histogram

FIGURE A.1. (contd)

N
↑

(a) Wind Rose

Period: 1/93 - 12/93



(b) Wind Speed Histogram

FIGURE A.1. (contd)

TABLE A.1. 1993 Joint Frequency Distribution (%) for Meteorological Monitoring Network Wind Stations

Station: (1) PROS

	Begin: 1/93												End: 12/93												Total Hours:	8573
	DIRECTION																									
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM	TOTAL								
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.6	.6							
1-3	2.5	1.8	1.3	1.0	1.0	1.1	1.8	2.1	2.6	2.3	1.7	1.2	1.3	1.6	2.6	3.0	.0	28.8								
4-7	3.5	1.6	.9	.5	.7	1.0	2.1	3.5	4.3	3.2	2.0	.9	.7	1.0	3.4	5.7	.0	35.0								
8-12	2.1	.9	.3	.1	.1	.2	.5	1.0	2.4	4.1	2.4	.6	.4	.4	2.6	4.8	.0	22.9								
13-18	.8	.3	.2	.0	.0	.0	.0	.1	.3	2.0	1.7	.9	.3	.2	1.5	1.3	.0	9.6								
19-24	.1	.1	.0	.0	.0	.0	.0	.0	.0	.3	.6	.3	.1	.1	.5	.3	.0	2.6								
25-31	.0	.1	.0	.0	.0	.0	.0	.0	.0	.1	.2	.0	.0	.0	.0	.0	.0	.4								
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0								
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0								
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0								
TOTAL	9.0	4.7	2.7	1.6	1.8	2.4	4.4	6.6	9.6	11.9	8.6	4.0	2.9	3.4	10.6	15.2	.6	100.0								

Station: (2) EOC

	Begin: 1/93												End: 12/93												Total Hours:	8571
	DIRECTION																									
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM	TOTAL								
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.6	.6							
1-3	1.6	1.5	1.2	.9	.8	.7	.8	.6	1.0	1.3	1.5	1.4	2.1	2.5	2.5	1.9	.0	22.3								
4-7	3.8	2.4	1.2	.8	.9	.8	.9	1.0	1.1	1.6	1.7	1.1	1.8	3.5	4.6	3.9	.0	31.1								
8-12	3.0	.5	.3	.1	.1	.1	.3	.5	.8	1.8	2.3	1.7	1.2	2.8	4.9	5.2	.0	25.2								
13-18	1.7	.3	.1	.0	.0	.0	.0	.0	.1	.2	1.1	1.8	1.3	1.0	2.1	3.6	.0	13.3								
19-24	.2	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.4	1.4	1.2	.4	.5	1.1	.0	5.3							
25-31	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.2	.8	.5	.1	.0	.0	.0								
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.2	.1	.0	.0	.0	.0								
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0								
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0								
TOTAL	10.3	4.8	2.8	1.8	1.7	1.6	1.9	2.1	3.0	4.9	7.3	8.4	8.1	10.3	14.6	15.7	.6	100.0								

Station: (3) ARMY

	Begin: 1/93												End: 12/93												Total Hours:	8507
	DIRECTION																									
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM	TOTAL								
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.4	1.4							
1-3	2.2	1.6	2.0	2.5	2.9	2.7	2.0	1.1	1.0	.8	1.0	1.3	2.4	3.9	3.8	2.8	.0	33.8								
4-7	1.9	1.4	1.2	1.4	2.0	2.7	2.0	.8	.5	.3	.5	.7	1.9	7.9	8.2	3.0	.0	36.5								
8-12	.9	.5	.2	.1	.2	.6	.8	.5	.5	.5	.4	.7	1.4	5.4	5.0	1.7	.0	19.7								
13-18	.2	.2	.2	.1	.1	.1	.2	.1	.1	.2	.4	.8	.8	.8	1.2	1.2	.5	.0	6.1							
19-24	.0	.1	.0	.0	.0	.0	.0	.0	.0	.1	.3	.5	.3	.2	.4	.1	.0	2.0								
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.1	.0	.0	.1	.0	.3								
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0								
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0	.1								
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0								
TOTAL	5.2	3.8	3.6	4.0	5.2	6.1	5.0	2.5	2.1	2.0	2.7	4.1	7.0	18.7	18.7	8.0	1.4	100.0								

Station: (4) RSPG

	Begin: 1/93												End: 12/93												Total Hours:	8419
	DIRECTION																									
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM	TOTAL								
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.7	1.7							
1-3	1.8	2.0	2.1	1.7	1.9	1.8	1.2	.6	.6	.9	1.8	2.9	2.2	1.5	1.1	1.3	.0	25.4								
4-7	2.6	2.3	1.4	.8	1.4	1.8	.8	.4	.3	.7	2.0	10.1	5.7	1.9	1.8	2.4	.0	36.5								
8-12	.5	.4	.1	.1	.1	.3	.1	.0	.2	.5	1.2	14.0	5.5	2.4	1.6	1.2	.0	28.3								
13-18	.0	.0	.2	.0	.0	.0	.0	.0	.0	.3	.7	2.2	1.7	.8	.4	.3	.0	.0	.8							
19-24	.0	.0	.1	.0	.0	.0	.0	.0	.0	.2	.2	.3	.2	.1	.0	.0	.0	.0								
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0	.0	.0								
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0								
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0								

TABLE A.1. (contd)

Station: (5) EDNA

	Begin: 1/93												End: 12/93					8466
	DIRECTION																	
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM	TOTAL
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.0	1.0
1-3	1.2	.6	.6	.8	.9	1.5	3.8	4.3	3.9	2.7	1.8	1.4	2.2	2.9	3.7	2.3	.0	34.8
4-7	2.0	1.0	.9	.7	1.5	3.8	7.5	4.3	2.2	.9	.6	.5	.9	2.5	6.6	4.9	.0	40.6
8-12	1.4	.6	.5	.2	.6	1.8	1.1	.9	1.0	.5	.4	.7	.9	1.6	2.2	1.8	.0	16.2
13-18	.2	.3	.2	.1	.0	.0	.1	.2	.3	.4	.2	.7	.4	1.1	.9	.5	.0	5.6
19-24	.0	.1	.0	.0	.0	.0	.0	.0	.1	.1	.0	.1	.1	.6	.3	.0	.0	1.4
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.2	.1	.0	.0	.3
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TOTAL	4.8	2.6	2.3	1.8	3.0	7.2	12.4	9.7	7.5	4.5	3.2	3.4	4.6	8.7	13.7	9.7	1.0	100.0

Station: (6) 200E

	Begin: 1/93												End: 12/93					8557
	DIRECTION																	
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM	TOTAL
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.7	.7
1-3	1.7	1.4	1.7	1.5	1.9	2.2	2.2	1.8	1.3	1.2	1.0	1.2	1.6	2.3	2.3	1.8	.0	27.1
4-7	1.4	1.1	.8	.8	1.0	1.7	3.1	3.0	1.6	1.1	1.4	2.1	4.1	6.5	4.8	1.9	.0	36.4
8-12	.8	.7	.4	.1	.3	.3	.7	1.0	.7	.4	.8	1.4	3.7	8.5	3.2	1.0	.0	23.9
13-18	.1	.2	.3	.0	.0	.0	.1	.1	.2	.2	.6	1.1	1.2	3.1	1.6	.1	.0	8.8
19-24	.0	.0	.1	.0	.0	.0	.0	.0	.0	.1	.4	.2	.8	.6	.0	.0	.0	2.5
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.1	.0	.1	.2	.0	.0	.5
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TOTAL	4.0	3.4	3.2	2.4	3.2	4.2	6.0	5.9	3.9	2.9	4.1	6.3	10.8	21.4	12.7	4.9	.7	100.0

Station: (7) 200W

	Begin: 1/93												End: 12/93					8556
	DIRECTION																	
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM	TOTAL
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.8	1.8
1-3	2.5	2.2	1.9	1.6	2.0	2.1	2.5	2.3	1.7	1.6	2.1	2.7	3.7	5.3	5.1	2.9	.0	41.9
4-7	3.0	1.8	1.1	.7	.8	1.4	1.6	1.0	.6	.7	1.2	1.5	3.1	6.1	5.9	3.3	.0	33.7
8-12	.8	.5	.3	.1	.1	.2	.3	.1	.2	.4	1.0	1.1	1.8	2.3	3.5	2.2	.0	15.1
13-18	.1	.1	.1	.0	.0	.0	.0	.1	.0	.2	.8	1.1	.6	.6	1.5	.4	.0	5.7
19-24	.0	.0	.0	.0	.0	.0	.0	.0	.0	.2	.3	.1	.1	.6	.1	.0	.0	1.5
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0	.1	.0	.0	.2
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TOTAL	6.4	4.7	3.5	2.4	3.0	3.6	4.5	3.4	2.5	2.9	5.3	6.7	9.3	14.4	16.7	8.9	1.8	100.0

Station: (8) BVLY

	Begin: 1/93												End: 12/93					8520
	DIRECTION																	
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM	TOTAL
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.1	1.1
1-3	2.7	2.2	1.7	1.3	1.6	2.0	2.4	1.9	1.7	1.4	1.2	1.3	1.5	1.4	1.9	2.5	.0	28.8
4-7	8.9	3.4	.5	.4	.9	3.0	1.6	1.3	1.4	1.1	.7	.8	1.2	1.9	3.7	6.0	.0	36.8
8-12	7.7	2.9	.3	.1	.2	1.1	.2	.2	.2	.3	.4	.3	.6	2.2	2.7	2.0	.0	21.6
13-18	.7	.6	.1	.1	.0	.0	.0	.0	.1	.4	.2	.3	.2	2.7	2.5	.1	.0	7.9
19-24	.0	.1	.0	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0	1.4	1.1	.0	.0	2.8
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0	.0	.5	.3	.0	.0	.9
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0	.2
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TOTAL	19.9	9.2	2.7	1.8	2.7	6.1	4.3	3.4	3.4	2.9	2.8	2.7	3.7	10.4	12.3	10.6	1.1	100.0

TABLE A.1. (contd)

Station: (9) FFTF

	DIRECTION															Total Hours:	8573		
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM		
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.4		
1-3	1.5	1.4	1.3	1.0	1.0	1.1	1.3	1.4	1.6	1.4	1.3	1.0	1.2	1.5	1.6	1.6	.0	21.1	
4-7	3.7	2.9	1.9	1.1	1.0	1.0	2.7	3.8	4.2	3.6	2.4	1.1	1.3	1.8	3.6	4.4	.0	40.5	
8-12	2.0	1.4	.6	.1	.1	.1	1.0	2.9	3.2	4.1	1.6	.7	.6	1.1	3.3	3.7	.0	26.5	
13-18	.2	.3	.3	.0	.0	.0	.0	.1	.2	.5	2.1	1.4	.6	.4	.5	1.5	.6	.0	8.8
19-24	.0	.1	.0	.0	.0	.0	.0	.0	.1	.4	.6	.3	.1	.2	.4	.1	.0	2.3	
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.1	.0	.0	.0	.1	.0	.0	.4	
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0	
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0	
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0	
TOTAL	7.4	6.1	4.1	2.3	2.0	2.3	5.1	8.2	9.7	11.6	7.3	3.7	3.6	5.1	10.5	10.4	.4	100.0	

Station: (10) YAKB

	DIRECTION															Total Hours:	8500	
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM	
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.5	
1-3	1.8	2.1	2.0	1.4	.9	.8	1.0	1.1	1.3	1.1	1.3	1.8	2.7	2.3	1.8	1.3	.0	24.7
4-7	4.3	3.8	2.0	1.1	.9	.9	1.0	1.1	.6	.7	.9	2.7	7.6	5.1	3.8	3.6	.0	40.2
8-12	1.7	.6	.3	.1	.1	.1	.2	.1	.2	.5	.9	1.8	2.9	2.3	6.0	4.6	.0	22.4
13-18	.2	.2	.2	.0	.0	.0	.1	.0	.0	.1	1.1	1.1	.5	.5	3.6	1.3	.0	8.9
19-24	.0	.0	.1	.0	.0	.0	.0	.0	.0	.0	.2	.3	.1	.1	1.9	.2	.0	2.8
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0	.3	.0	.0	.4
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0
TOTAL	8.0	6.7	4.5	2.7	1.9	1.8	2.3	2.3	2.2	2.6	4.6	7.6	13.7	10.3	17.4	11.0	.5	100.0

Station: (11) 300A

	DIRECTION															Total Hours:	8535	
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM	
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.4	
1-3	1.5	.9	.8	.6	.9	1.4	2.2	2.2	2.2	1.5	1.3	1.2	1.3	1.5	2.1	2.3	.0	24.0
4-7	3.9	1.5	.8	.9	1.4	4.6	6.9	3.5	2.9	2.5	2.0	1.1	.9	.9	2.2	4.5	.0	40.6
8-12	3.7	1.9	.7	.3	.2	1.1	1.9	.7	1.2	3.0	3.0	1.5	.5	.4	1.0	2.7	.0	23.7
13-18	.5	.5	.2	.0	.0	.0	.0	.0	.2	1.1	2.1	1.2	.5	.2	.7	1.1	.0	8.6
19-24	.0	.1	.1	.0	.0	.0	.0	.0	.0	.3	.6	.3	.2	.1	.3	.2	.0	2.3
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.2	.0	.0	.0	.0	.0	.0	.4
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0
TOTAL	9.6	5.0	2.6	1.9	2.5	7.2	11.0	6.5	6.5	8.5	9.2	5.3	3.5	3.1	6.3	10.9	.4	100.0

Station: (12) WYEB

	DIRECTION															Total Hours:	8574	
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM	
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.3	
1-3	1.7	1.7	1.4	1.4	1.9	1.7	1.8	1.9	1.8	1.6	1.1	1.0	1.1	1.4	1.8	1.8	.0	25.1
4-7	3.0	1.8	1.4	1.3	2.5	2.3	3.1	3.7	4.2	2.3	1.5	1.2	1.8	2.8	4.8	3.6	.0	41.3
8-12	1.5	.7	.3	.1	.2	.3	.8	2.0	3.1	1.5	.7	.7	1.4	3.7	3.7	1.8	.0	22.6
13-18	.4	.4	.2	.0	.0	.0	.1	.2	1.0	1.0	.6	.4	.5	1.2	1.5	.6	.0	8.0
19-24	.0	.1	.0	.0	.0	.0	.0	.0	.1	.4	.3	.2	.2	.3	.5	.1	.0	2.2
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.2	.0	.0	.4
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0
TOTAL	6.6	4.7	3.3	2.9	4.6	4.3	5.8	7.7	10.2	7.0	4.4	3.5	5.0	9.4	12.4	7.9	.3	100.0

TABLE A.1. (contd)

Station: (13) 100N

	DIRECTION												Total Hours:			8573		
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM	
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.3	1.3
1-3	2.0	1.9	2.2	2.4	3.2	4.0	3.4	2.3	2.2	1.9	2.0	2.5	3.8	3.4	3.4	2.6	.0	43.2
4-7	1.3	1.7	1.4	1.5	2.7	2.4	2.9	1.6	1.3	1.1	1.9	4.1	4.6	2.8	1.8	1.4	.0	34.7
8-12	.6	1.0	.8	.2	.3	.2	.9	.3	.2	.2	1.0	1.8	2.4	1.7	.6	.4	.0	12.8
13-18	.3	.5	.4	.1	.0	.0	.1	.1	.0	.1	.8	.5	.7	1.5	.8	.1	.0	6.0
19-24	.0	.0	.1	.1	.0	.0	.0	.0	.0	.1	.1	.0	.2	.5	.4	.0	.0	1.6
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.2	.1	.0	.0	.5
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TOTAL	4.2	5.1	4.8	4.4	6.2	6.6	7.2	4.3	3.8	3.5	5.8	9.0	11.7	10.2	7.2	4.6	1.3	100.0

Station: (14) WPPS

	DIRECTION												Total Hours:			8536		
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM	
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.2	1.2
1-3	2.8	2.0	1.9	1.2	1.1	.7	1.2	1.5	1.9	1.7	1.5	1.4	1.5	2.0	3.2	3.4	.0	28.8
4-7	3.6	2.4	2.7	1.2	.5	.7	1.9	4.2	5.4	2.8	1.6	1.1	1.2	1.5	4.5	5.7	.0	40.8
8-12	1.5	.7	.5	.2	.1	.2	.7	2.0	3.3	2.3	.9	.7	.9	1.5	3.0	1.6	.0	20.1
13-18	.2	.3	.2	.0	.0	.0	.1	.2	.8	1.4	.7	.5	.3	.8	1.2	.5	.0	7.1
19-24	.0	.1	.0	.0	.0	.0	.0	.0	.3	.4	.1	.1	.1	.4	.0	.0	.0	1.7
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.1	.0	.0	.0	.1	.0	.0	.3
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TOTAL	8.1	5.6	5.3	2.5	1.7	1.5	3.9	7.9	11.3	8.6	5.2	3.7	4.0	5.9	12.3	11.3	1.2	100.0

Station: (15) FRNK

	DIRECTION												Total Hours:			8573		
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM	
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.6	1.6
1-3	1.3	1.4	1.0	.9	1.0	1.2	1.9	1.6	1.3	1.0	1.2	1.1	1.3	1.5	1.6	1.6	.0	20.6
4-7	4.0	3.1	1.6	1.3	1.4	2.5	5.8	4.6	3.3	3.0	2.5	1.2	1.1	2.3	4.4	5.9	.0	47.9
8-12	1.8	1.2	.7	.5	.3	.4	2.0	1.7	2.2	4.2	2.9	1.0	.4	.4	1.6	2.6	.0	23.8
13-18	.1	.1	.2	.1	.0	.1	.1	.1	.2	1.3	1.2	.4	.2	.1	.4	.2	.0	5.1
19-24	.0	.1	.0	.0	.0	.0	.0	.0	.0	.2	.2	.0	.0	.0	.1	.0	.0	.9
25-31	.0	.1	.0	.0	.0	.0	.0	.0	.0	.1	.1	.0	.0	.0	.0	.0	.0	.2
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
39-45	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TOTAL	7.2	5.9	3.6	2.8	2.6	4.3	9.8	7.9	7.0	9.8	8.1	3.7	3.0	4.3	8.0	10.4	1.6	100.0

Station: (16) GABL

	DIRECTION												Total Hours:			8575		
	N	NNE	NE	ENE	E	FSE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM	
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.6	.6
1-3	1.1	1.1	.9	.7	.7	.7	.9	1.1	1.4	1.3	1.1	.9	.8	1.0	.9	.9	.0	15.3
4-7	2.5	2.5	1.8	.9	.9	.8	1.3	2.7	4.3	2.8	1.6	1.7	1.5	1.7	2.6	2.6	.0	32.2
8-12	2.4	2.0	1.0	.3	.3	.5	.7	1.8	2.5	1.3	1.2	1.1	1.4	1.8	2.8	2.0	.0	23.1
13-18	1.6	1.6	.6	.1	.0	.1	.2	1.0	1.4	.8	.8	.8	1.5	2.4	2.4	.8	.0	16.1
19-24	.7	.6	.5	.0	.0	.0	.1	.2	.4	.3	.7	.8	.7	2.1	1.5	.1	.0	8.7
25-31	.1	.1	.2	.0	.0	.0	.0	.0	.1	.2	.3	.4	.2	1.1	.4	.0	.0	3.1
32-38	.0	.1	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.2	.0	.0	.0	.7
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.2
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TOTAL	8.5	7.9	5.0	2.0	1.9	2.1	3.1	6.7	10.2	6.7	6.0	5.7	6.2	10.4	10.5	6.5	.6	100.0

TABLE A.1. (contd)

Station: (17) RING

	DIRECTION												Total Hours:	8439				
	Begin: 1/93 End: 12/93																	
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM	TOTAL
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.9	.9
1-3	2.1	3.7	7.1	2.9	1.9	1.6	1.5	1.3	1.6	1.4	1.6	2.0	2.1	1.6	1.7	1.9	.0	36.1
4-7	1.8	1.9	14.7	4.1	1.4	.9	1.1	1.4	2.0	2.7	1.9	2.3	2.7	1.4	1.2	1.4	.0	43.0
8-12	.9	.7	1.1	.6	.1	.1	.2	.4	1.1	2.7	1.5	.9	1.0	1.7	.9	.2	.0	13.9
13-18	.2	.1	.3	.1	.0	.0	.0	.0	.1	.8	.8	.3	.5	1.1	.3	.0	.0	4.6
19-24	.0	.1	.1	.0	.0	.0	.0	.0	.0	.1	.2	.1	.1	.5	.1	.0	.0	1.3
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.2
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TOTAL	5.1	6.6	23.4	7.7	3.4	2.6	2.9	3.2	4.7	7.6	6.0	5.6	6.3	6.4	4.2	3.6	.9	100.0

Station: (18) RICH

	DIRECTION												Total Hours:	8573				
	Begin: 1/93 End: 12/93																	
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SS	WSW	W	WNW	NW	NNW	CALM	TOTAL	
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.0	1.0	
1-3	1.7	1.2	1.1	1.3	1.8	2.9	3.2	3.0	2.1	1.9	2.2	2.2	2.2	2.8	3.2	2.4	.0	35.2
4-7	2.7	.8	.7	.9	1.7	3.3	3.4	1.7	1.4	2.8	3.9	3.0	2.1	3.0	3.2	3.2	.0	37.8
8-12	1.6	1.0	.4	.2	.2	.3	.3	.2	.5	2.0	3.5	2.2	1.5	.8	1.0	1.4	.0	17.0
13-18	.4	.3	.2	.0	.0	.0	.0	.1	.1	.7	1.5	1.2	.9	.4	.6	.9	.0	7.2
19-24	.1	.1	.0	.0	.0	.0	.0	.0	.0	.2	.3	.2	.2	.2	.2	.2	.0	1.6
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0	.0	.2
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TOTAL	6.4	3.4	2.4	2.5	3.8	6.5	7.0	4.9	4.1	7.6	11.4	8.8	6.9	7.1	8.2	8.0	1.0	100.0

Station: (20) RMTN

	DIRECTION												Total Hours:	8186				
	Begin: 1/93 End: 12/93																	
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SS	WSW	W	WNW	NW	NNW	CALM	TOTAL	
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.2	.2	
1-3	.6	.5	.5	.5	.4	.3	.4	.3	.5	.7	.5	.5	.6	.4	.5	.4	.0	7.6
4-7	1.6	1.5	1.2	.7	.6	.4	.3	.4	.7	1.6	2.0	1.6	1.4	.9	.8	.9	.0	16.7
8-12	2.4	2.5	1.8	.6	.3	.2	.2	.3	.4	1.7	3.6	2.5	1.6	1.4	.7	1.2	.0	21.2
13-18	2.1	3.2	1.1	.2	.0	.0	.0	.0	.2	1.4	4.5	3.0	1.8	1.5	.9	.9	.0	20.8
19-24	.9	2.4	.8	.1	.0	.0	.0	.0	.0	.6	3.5	2.6	1.4	1.1	.3	.2	.0	13.9
25-31	.2	1.8	.7	.0	.0	.0	.0	.0	.0	.2	2.6	2.5	.9	.6	.1	.0	.0	9.6
32-38	.0	.7	.4	.0	.0	.0	.0	.0	.0	.1	1.9	1.8	.3	.1	.0	.0	.0	5.3
39-46	.0	.4	.1	.0	.0	.0	.0	.0	.0	.0	1.1	.9	.1	.2	.0	.0	.0	2.9
> 46	.0	.2	.4	.0	.0	.0	.0	.0	.0	.1	.6	.6	.0	.1	.0	.0	.0	1.9
TOTAL	7.8	13.2	6.9	2.1	1.3	.8	1.0	1.1	1.8	6.3	20.3	16.0	8.1	6.3	3.4	3.5	.2	100.0

Station: (21) HMS

	DIRECTION												Total Hours:	8552				
	Begin: 1/93 End: 12/93																	
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SS	WSW	W	WNW	NW	NNW	CALM	TOTAL	
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.9	.9	
1-3	2.7	2.4	2.4	1.9	1.9	1.8	2.0	1.7	1.2	1.4	1.6	1.7	1.9	2.1	2.7	2.7	.0	32.3
4-7	2.7	1.4	1.1	.9	1.0	1.1	1.2	1.4	1.2	1.3	2.0	2.8	4.1	5.4	8.3	5.1	.0	40.8
8-12	.5	.5	.3	.2	.2	.0	.0	.2	.2	.3	.7	1.4	1.9	2.2	7.2	2.3	.0	18.2
13-18	.1	.2	.2	0	0	0	0	0	.1	.2	.6	.9	.8	.5	2.3	.6	.0	6.4
19-24	.0	.0	.1	0	0	0	0	0	0	.2	.2	.1	.0	.6	.1	.0	.0	1.3
25-31	.0	.0	.0	0	0	0	0	0	0	0	0	0	0	.0	.1	.0	.0	.1
32-38	.0	.0	.0	0	0	0	0	0	0	0	0	0	0	0	0	.0	.0	.0
39-46	.0	.0	.0	0	0	0	0	0	0	0	0	0	0	0	0	0	.0	.0
> 46	.0	.0	.0	0	0	0	0	0	0	0	0	0	0	0	0	0	.0	.0
TOTAL	5.9	4.6	4.1	3.0	3.1	3.0	3.2	3.4	2.7	3.3	5.0	6.9	8.8	10.2	21.2	10.7	.9	100.0

TABLE A.1. (contd)

Station: (22) PASC

	DIRECTION												Total Hours:				8536	
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM	
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.5	.5
1-3	2.9	2.4	2.5	2.5	2.4	2.1	1.7	1.1	1.2	.9	.9	1.0	1.2	1.9	2.7	2.8	.0	30.1
4-7	3.2	2.0	1.0	1.4	2.4	3.1	2.1	1.6	1.7	2.2	2.0	1.4	1.8	2.6	4.2	4.7	.0	37.5
8-12	1.4	.5	.2	.2	.2	.4	.6	.4	.7	2.1	3.6	1.9	1.0	.8	1.7	2.1	.0	17.8
13-18	.3	.3	.1	.1	.0	.1	.0	.1	.1	.7	2.7	2.0	.7	.4	.8	.7	.0	8.9
19-24	.1	.1	.0	.0	.0	.0	.0	.0	.0	.2	1.2	1.3	.4	.1	.2	.1	.0	3.7
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.3	.6	.1	.1	.0	.0	.0	1.2
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.2	.2	.0	.0	.0	.0	.0	.4
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0
TOTAL	7.9	5.2	3.9	4.2	5.0	5.6	4.4	3.2	3.6	6.1	10.9	8.4	5.2	5.9	9.6	10.2	.5	100.0

Station: (23) GABW

	DIRECTION												Total Hours:				8573	
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM	
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.9	.9
1-3	1.9	1.4	1.4	1.3	1.7	2.0	2.9	3.3	2.2	2.0	1.6	1.7	2.7	3.6	3.8	2.2	.0	35.7
4-7	1.6	1.0	.8	.7	1.0	1.2	4.4	5.5	1.4	.8	1.0	1.5	2.5	7.4	4.7	2.1	.0	37.6
8-12	.8	.6	.3	.2	.2	.1	1.1	1.1	.3	.3	.8	1.3	1.9	5.4	2.0	.7	.0	17.0
13-18	.1	.2	.2	.0	.0	.0	.1	.1	.0	.2	.6	.7	.5	2.6	1.2	.1	.0	6.6
19-24	.0	.0	.1	.0	.0	.0	.0	.0	.0	.1	.2	.2	.1	.6	.4	.0	.0	1.8
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.1	.0	.0	.3
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0
TOTAL	4.4	3.2	2.8	2.2	2.9	3.4	8.4	9.9	3.9	3.4	4.1	5.4	7.7	19.8	12.3	5.1	.9	100.0

Station: (24) 100F

	DIRECTION												Total Hours:				8506	
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM	
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.2	1.2
1-3	2.0	1.3	1.1	1.4	1.5	2.0	3.1	3.4	2.7	2.0	1.9	2.4	4.0	4.7	4.1	2.4	.0	40.0
4-7	1.9	1.2	1.1	.9	1.0	1.4	4.8	6.6	1.8	.8	.9	1.5	3.3	3.8	2.9	1.9	.0	35.7
8-12	1.5	.8	.5	.3	.1	.4	2.0	2.6	.5	.5	.5	1.1	1.9	2.3	.6	.7	.0	16.2
13-18	.2	.2	.2	.1	.0	.0	.2	.2	.1	.2	.4	.8	.5	1.3	.5	.1	.0	5.1
19-24	.0	.0	.1	.0	.0	.0	.0	.1	.0	.1	.1	.2	.2	.6	.1	.0	.0	1.5
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.1	.0	.0	.3
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0
TOTAL	5.7	3.6	2.9	2.7	2.6	3.8	10.1	12.8	5.2	3.6	3.9	6.0	9.9	12.8	8.3	5.0	1.2	100.0

Station: (25) VERN

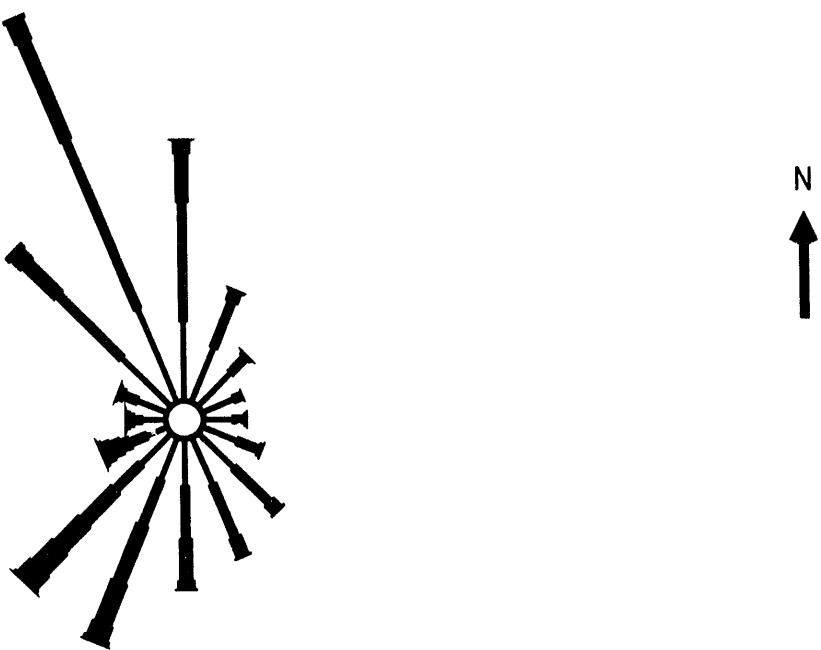
	DIRECTION												Total Hours:				8532	
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM	
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.7	1.7
1-3	.9	1.3	1.6	2.0	3.1	2.9	2.3	1.6	.9	1.0	1.2	2.8	3.0	1.6	1.3	.9	.0	28.4
4-7	1.0	1.2	1.6	2.5	3.5	2.3	1.0	.4	.4	.3	.6	4.3	8.1	4.4	2.2	1.2	.0	35.0
8-12	.6	.4	.3	.4	.3	.1	.1	.1	.1	.4	.6	1.5	6.9	7.0	2.8	.9	.0	22.6
13-18	.2	.3	.2	.0	.0	.0	.0	.0	.0	.1	.7	.4	1.7	4.3	1.8	.2	.0	9.9
19-24	.1	.0	.1	.0	.0	.0	.0	.0	.0	.2	.1	.2	1.0	.5	.1	.0	.0	2.2
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.1	.0	.0	.3
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0
TOTAL	2.8	3.3	3.8	5.0	6.8	5.3	3.4	2.2	1.4	1.9	3.3	9.1	19.8	18.4	8.6	3.2	1.7	100.0

TABLE A.1. (contd)

Station: (26) 622R	Begin:	1/93	End:	12/93	Total Hours:													
					8472													
			DIRECTION															
CALM	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM	TOTAL
1-3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.6	.6
4-7	2.7	2.2	2.1	1.7	1.4	1.3	1.3	1.2	1.5	1.4	1.8	2.1	3.0	2.8	2.9	2.7	.0	32.0
8-12	2.4	1.3	1.1	1.0	1.1	1.4	1.8	1.6	1.4	2.3	3.2	3.7	6.3	7.5	4.4	.0	41.8	
13-18	.4	.3	.4	.2	.1	.3	.2	.3	.2	.3	.2	.1	.4	1.0	2.6	7.5	1.5	.0
19-24	.0	.0	.1	.0	.0	.0	.0	.0	.1	.2	.8	1.0	.2	.5	2.9	.2	.0	6.1
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0	1.0	.0	.0	1.6
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.2
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TOTAL	5.5	3.8	3.7	2.9	2.7	2.8	3.4	3.0	3.2	3.4	6.4	7.8	8.0	12.2	21.9	8.8	.6	100.0
Station: (27) VSTA	Begin:	1/93	End:	12/93	Total Hours:	8560												
			DIRECTION															
CALM	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM	TOTAL
1-3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.9	.9
4-7	2.3	2.5	2.4	2.1	1.9	1.9	2.1	1.7	2.1	2.4	3.2	2.8	2.5	2.2	2.2	1.8	.0	36.2
8-12	2.8	1.6	1.3	1.4	.9	1.1	1.4	1.0	1.5	3.8	6.4	4.5	2.6	2.5	3.2	2.8	.0	38.8
13-18	.7	.3	.2	.0	.1	.1	.1	.1	.4	3.6	4.9	2.6	.7	.4	.9	1.4	.0	16.6
19-24	.1	.0	.0	.0	.0	.0	.0	.0	.2	1.1	2.6	1.1	.5	.3	.2	.0	.0	6.4
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.2	.5	.2	.0	.1	.0	.0	.0	.0	1.0
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TOTAL	6.0	4.5	3.9	3.5	2.9	3.2	3.6	2.8	4.2	11.1	17.7	11.2	6.3	5.5	6.4	6.3	.9	100.0

APPENDIX B

WIND CLIMATOLOGY



(a) Wind Rose

January Data
Period: 1982 - 1993

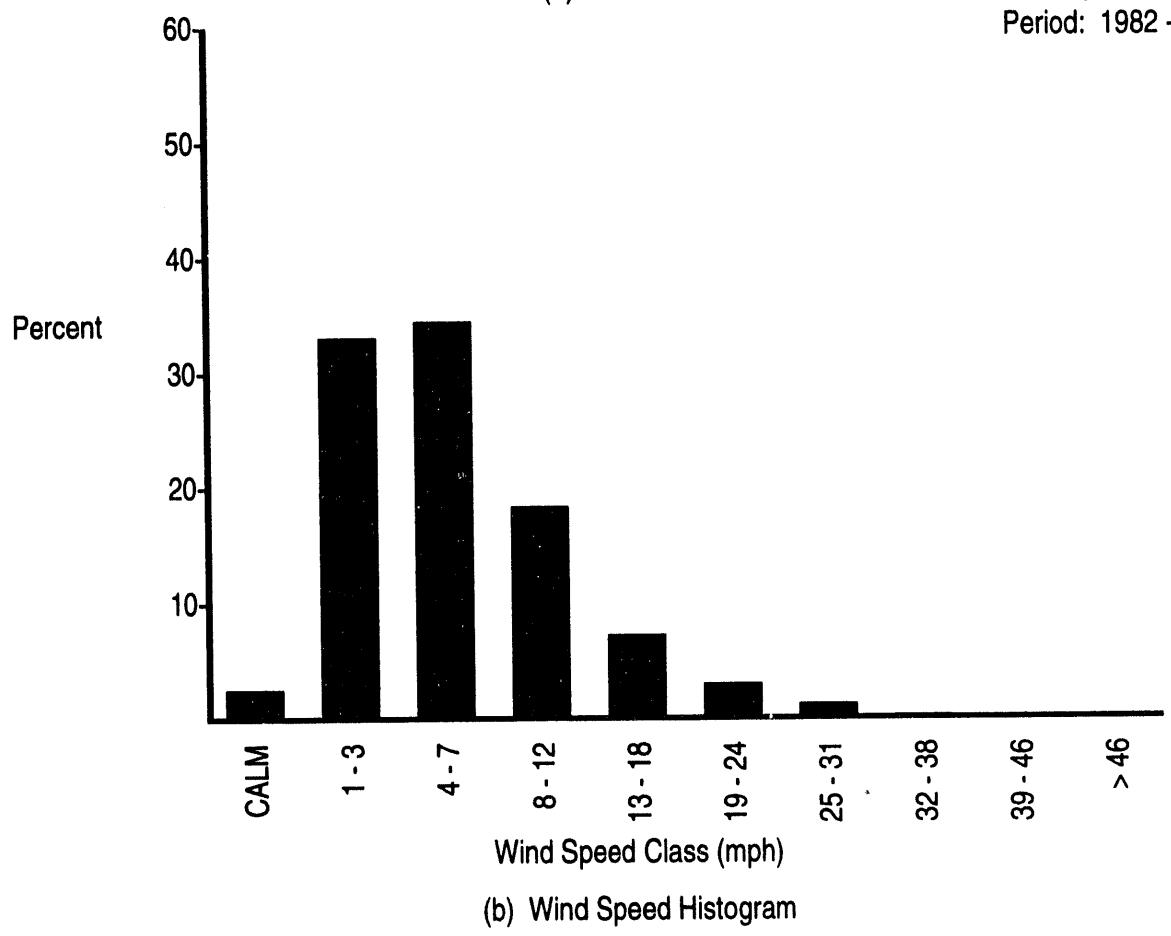
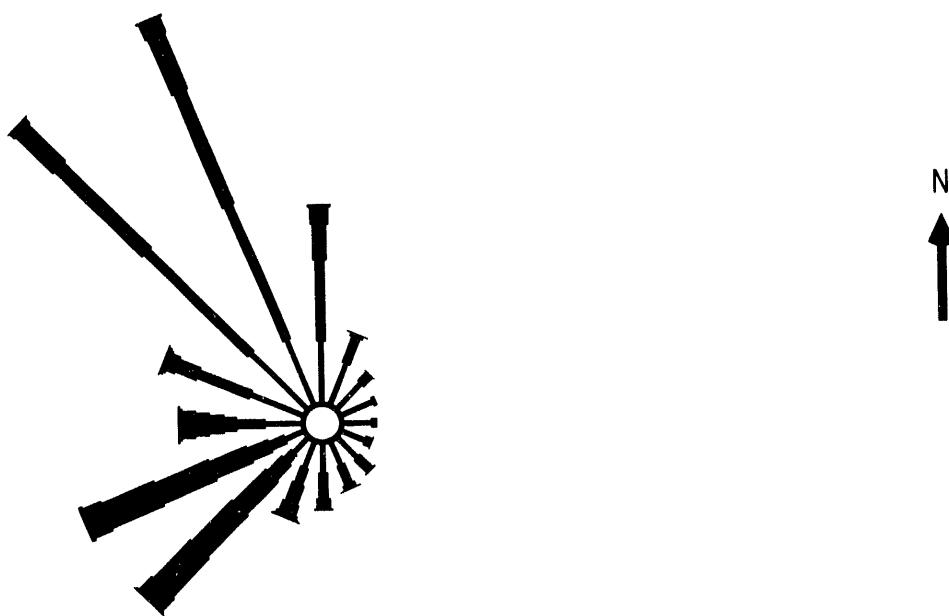
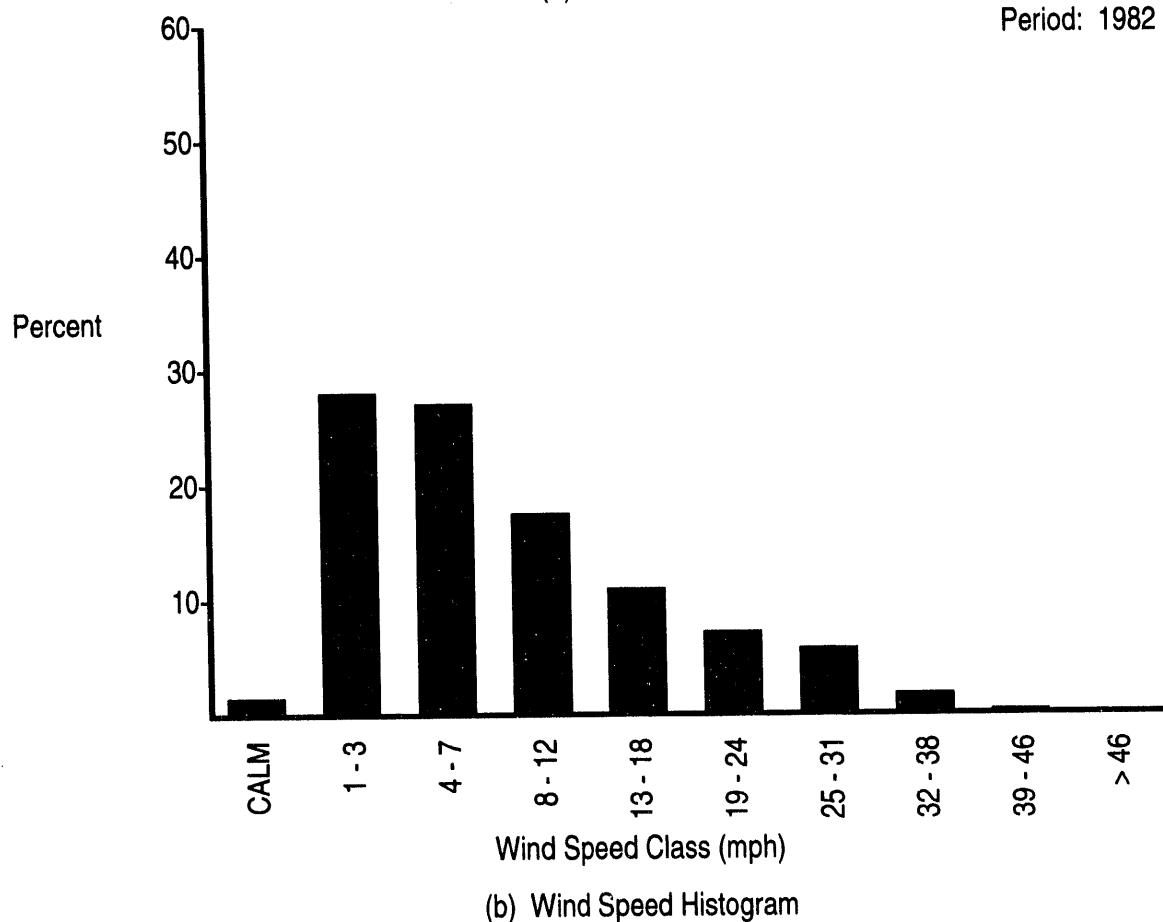


FIGURE B.1. Wind Rose and Wind Speed Histogram



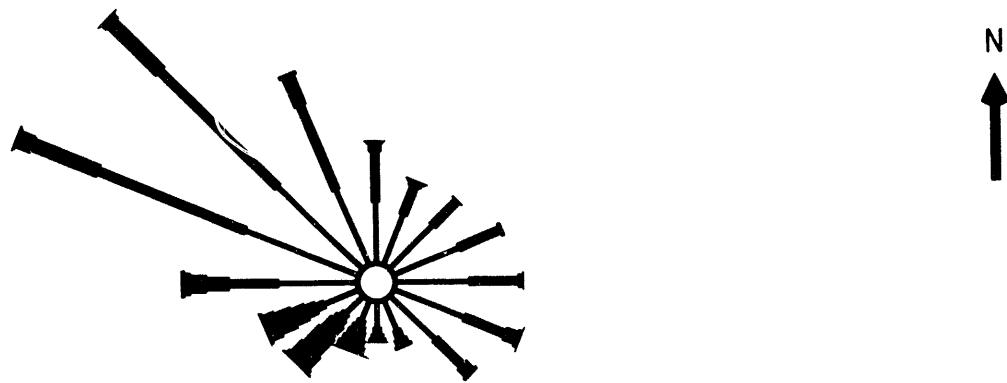
(a) Wind Rose

January Data
Period: 1982 - 1993



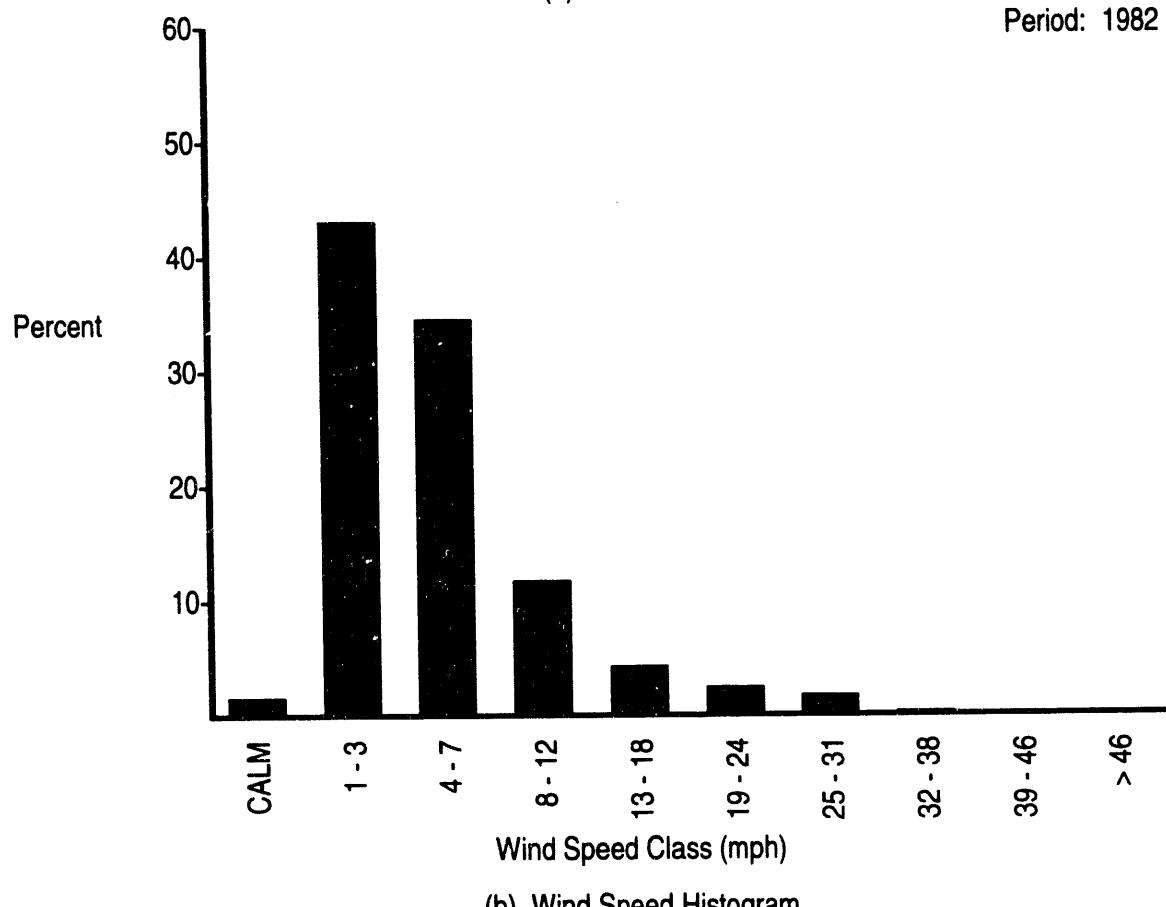
(b) Wind Speed Histogram

FIGURE B.1. (contd)



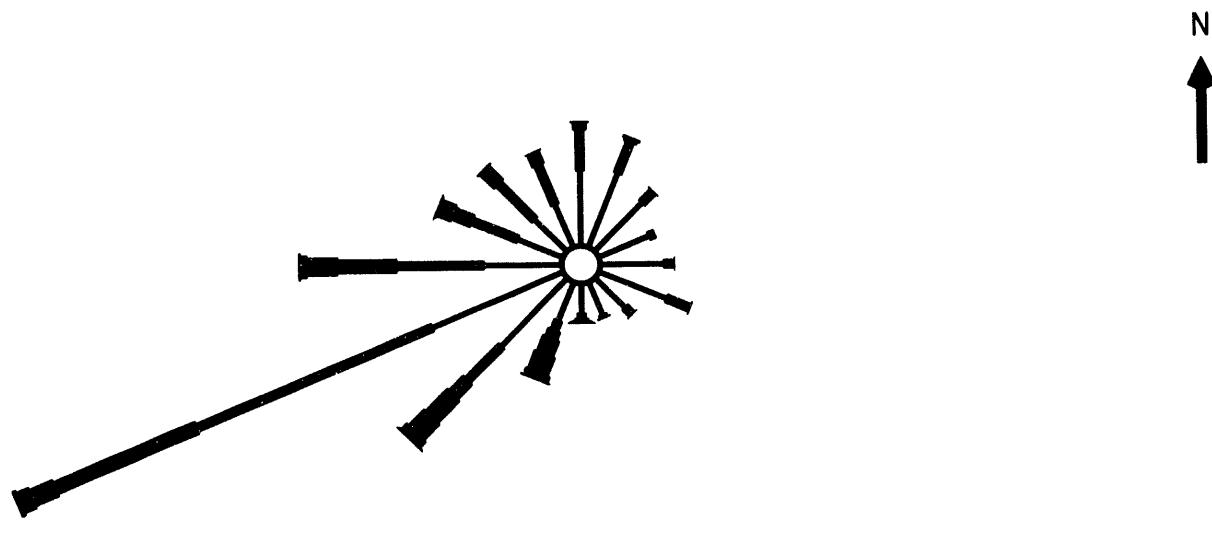
(a) Wind Rose

January Data
Period: 1982 - 1993



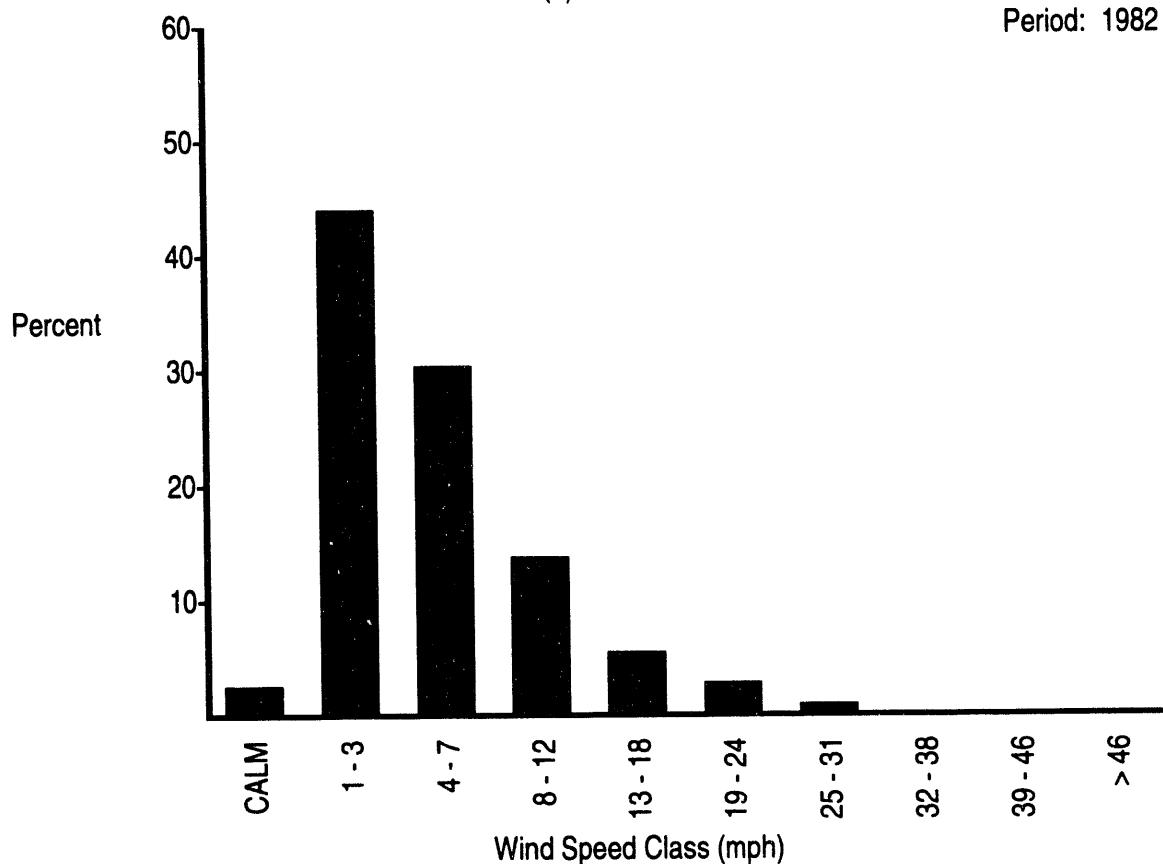
(b) Wind Speed Histogram

FIGURE B.1. (contd)



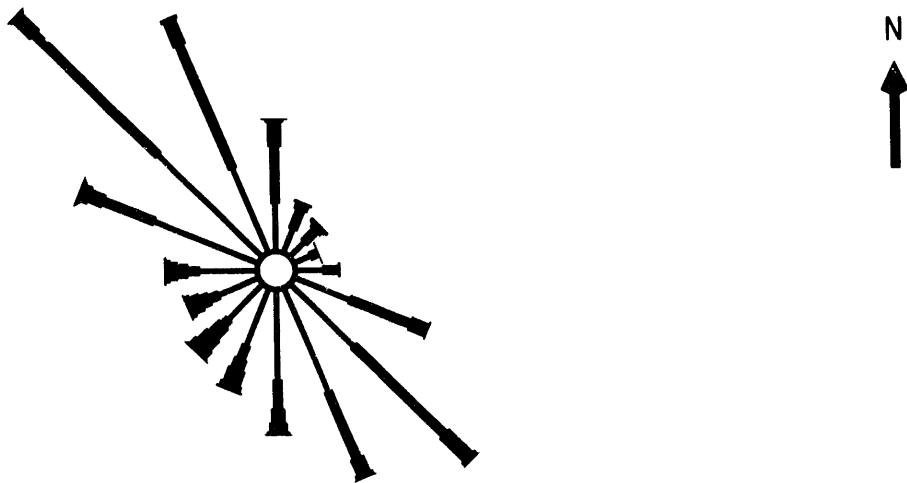
(a) Wind Rose

January Data
Period: 1982 - 1993



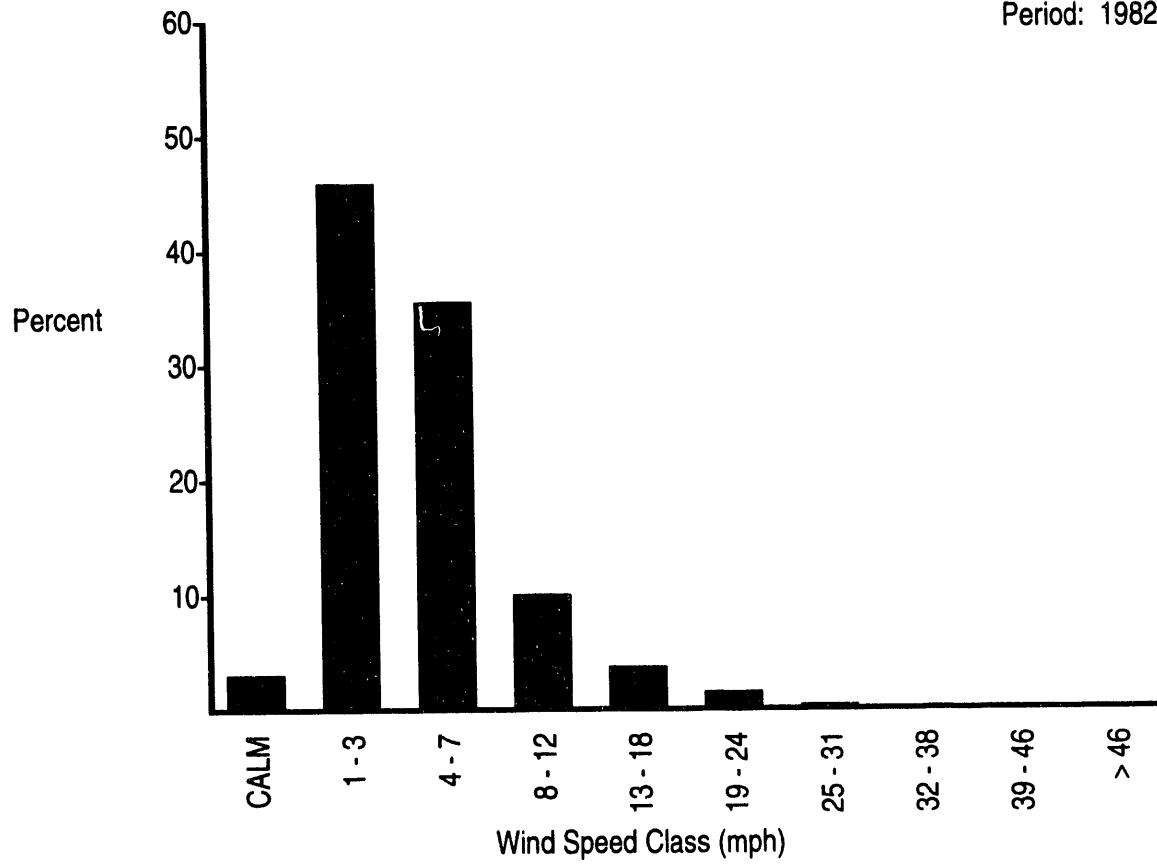
(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

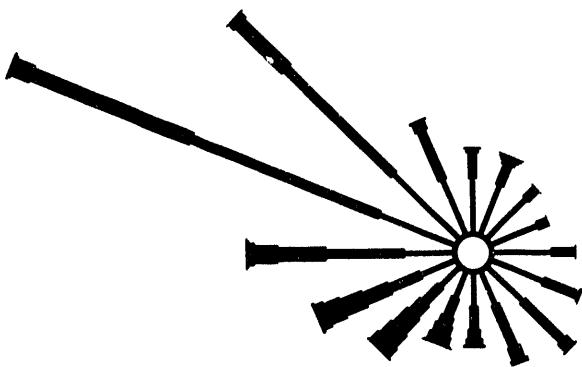
January Data
Period: 1982 - 1993



(b) Wind Speed Histogram

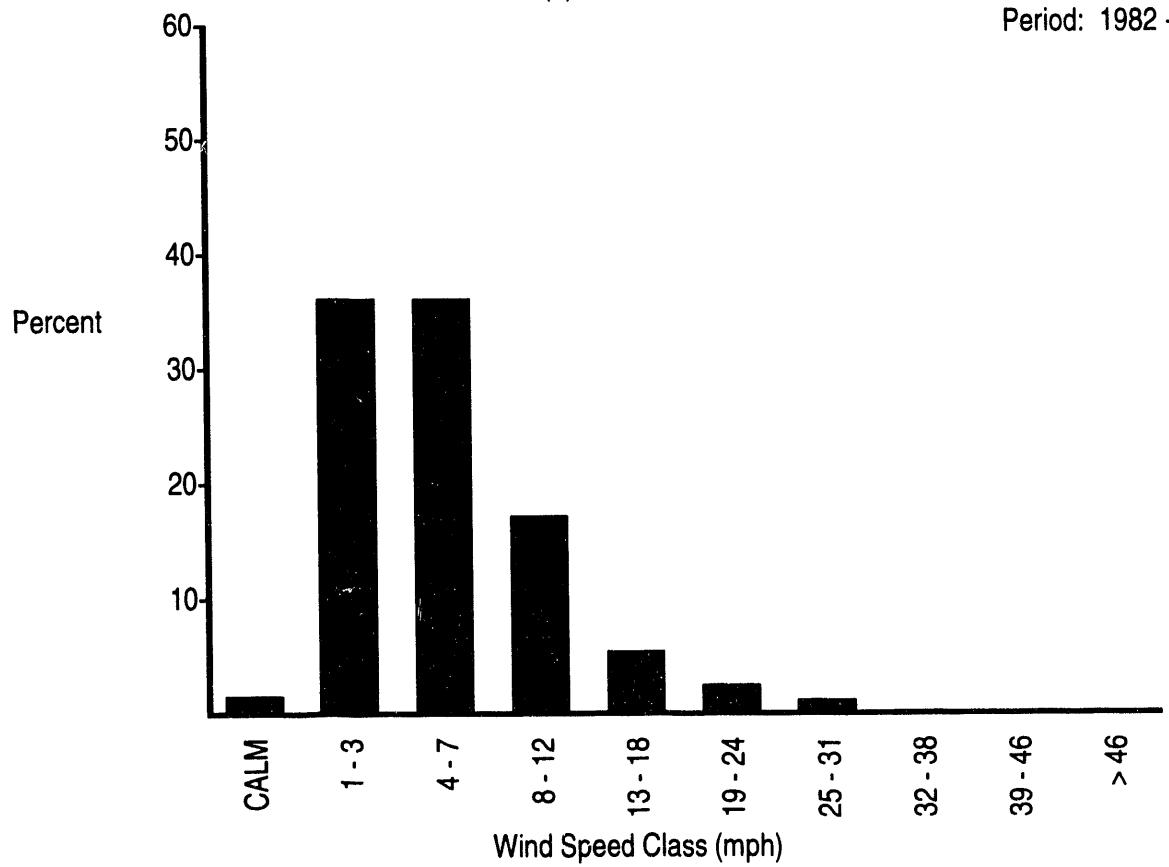
FIGURE B.1. (contd)

N



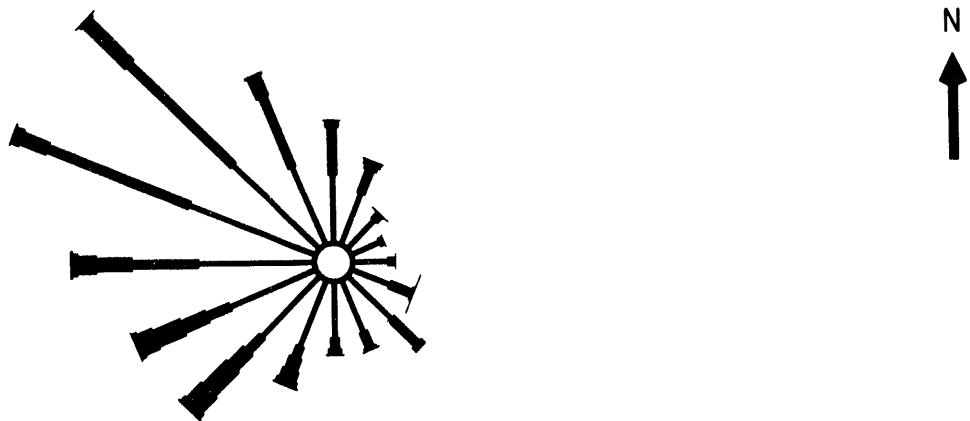
(a) Wind Rose

January Data
Period: 1982 - 1993



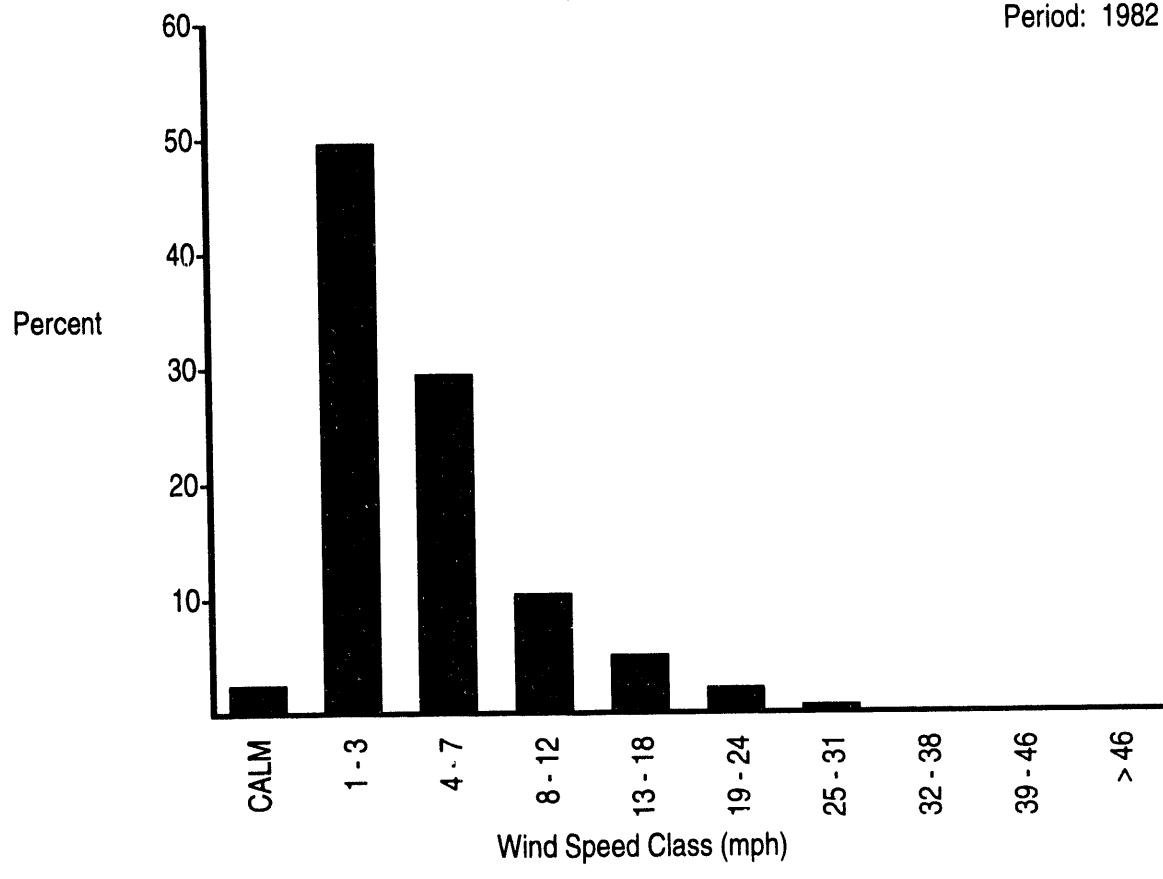
(b) Wind Speed Histogram

FIGURE B.1. (contd)



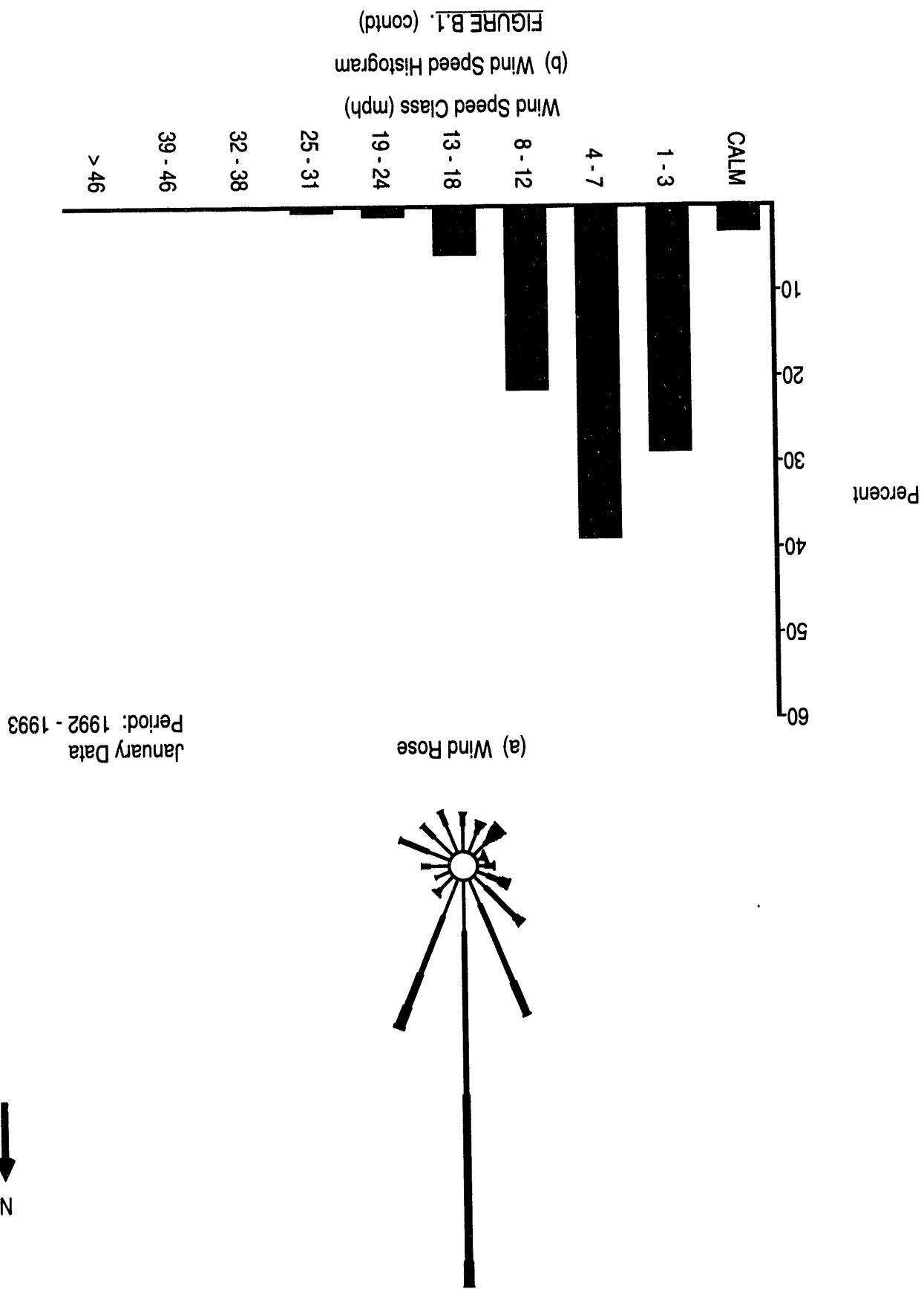
(a) Wind Rose

January Data
Period: 1982 - 1993

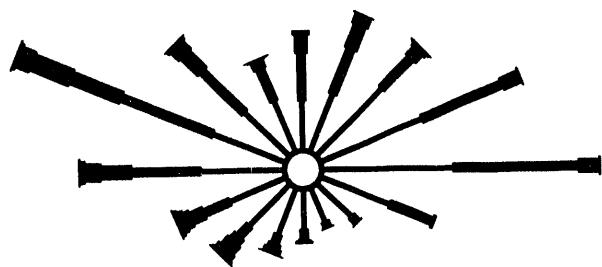


(b) Wind Speed Histogram

FIGURE B.1. (contd)

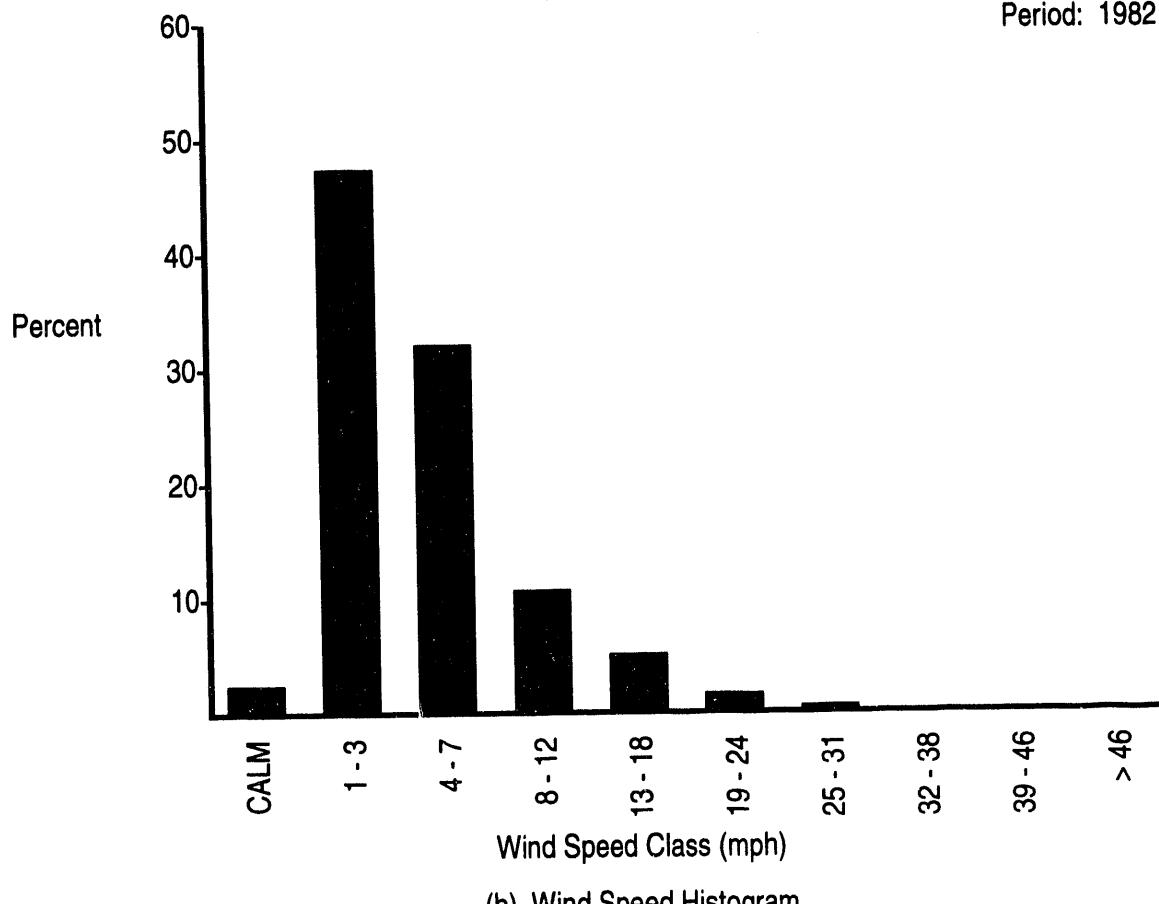


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(a) Wind Rose

January Data
Period: 1982 - 1991

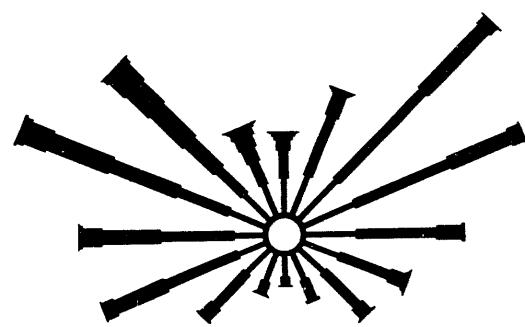


(b) Wind Speed Histogram

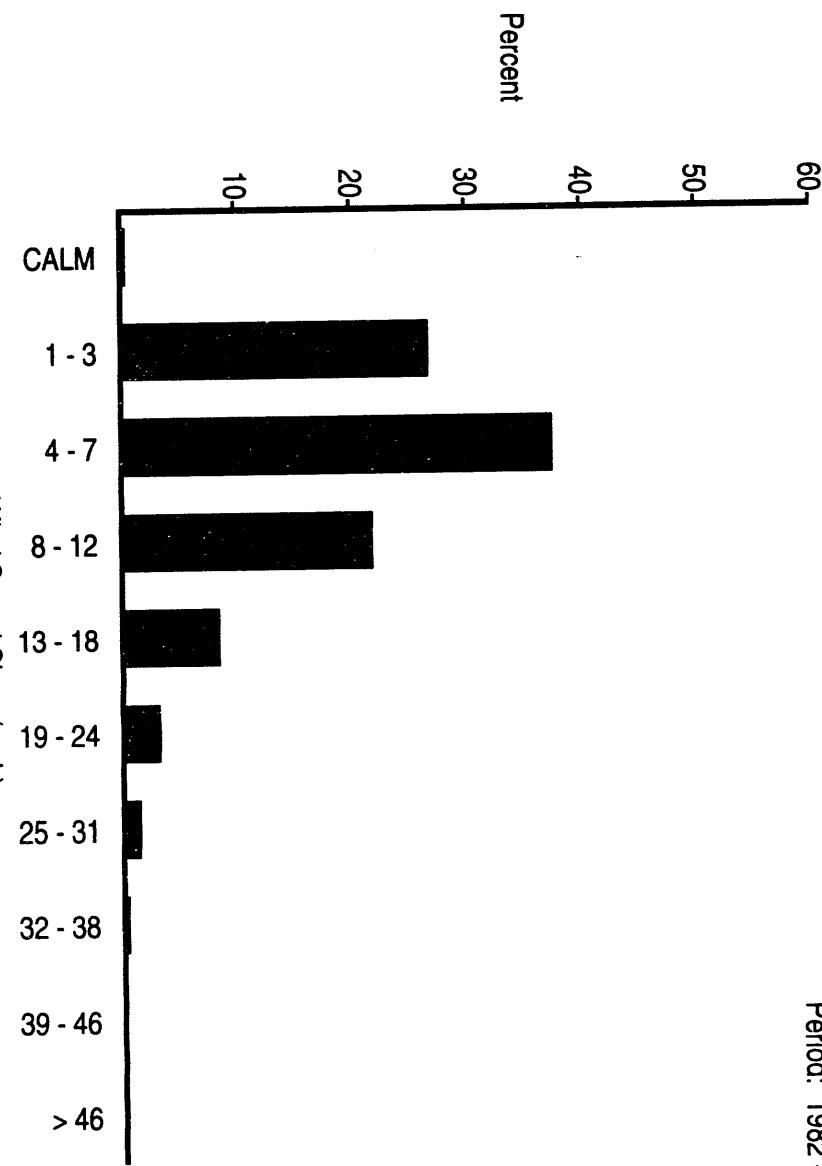
FIGURE B.1. (contd)

January Data
Period: 1982 - 1993

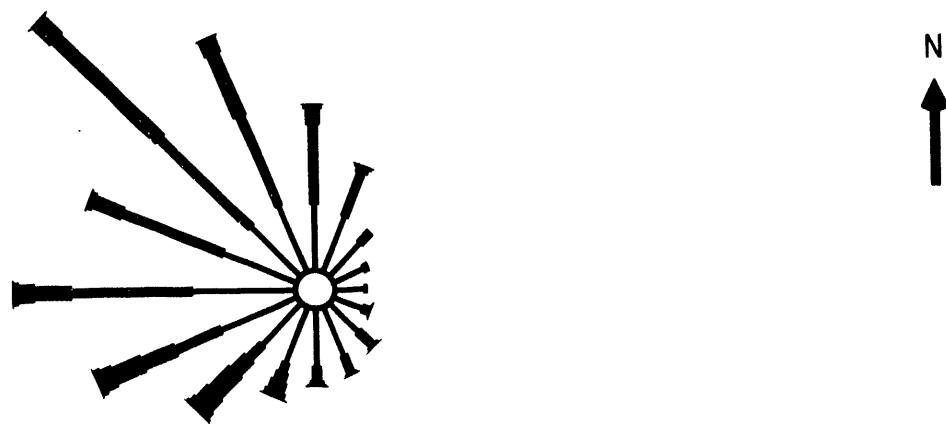
(a) Wind Rose



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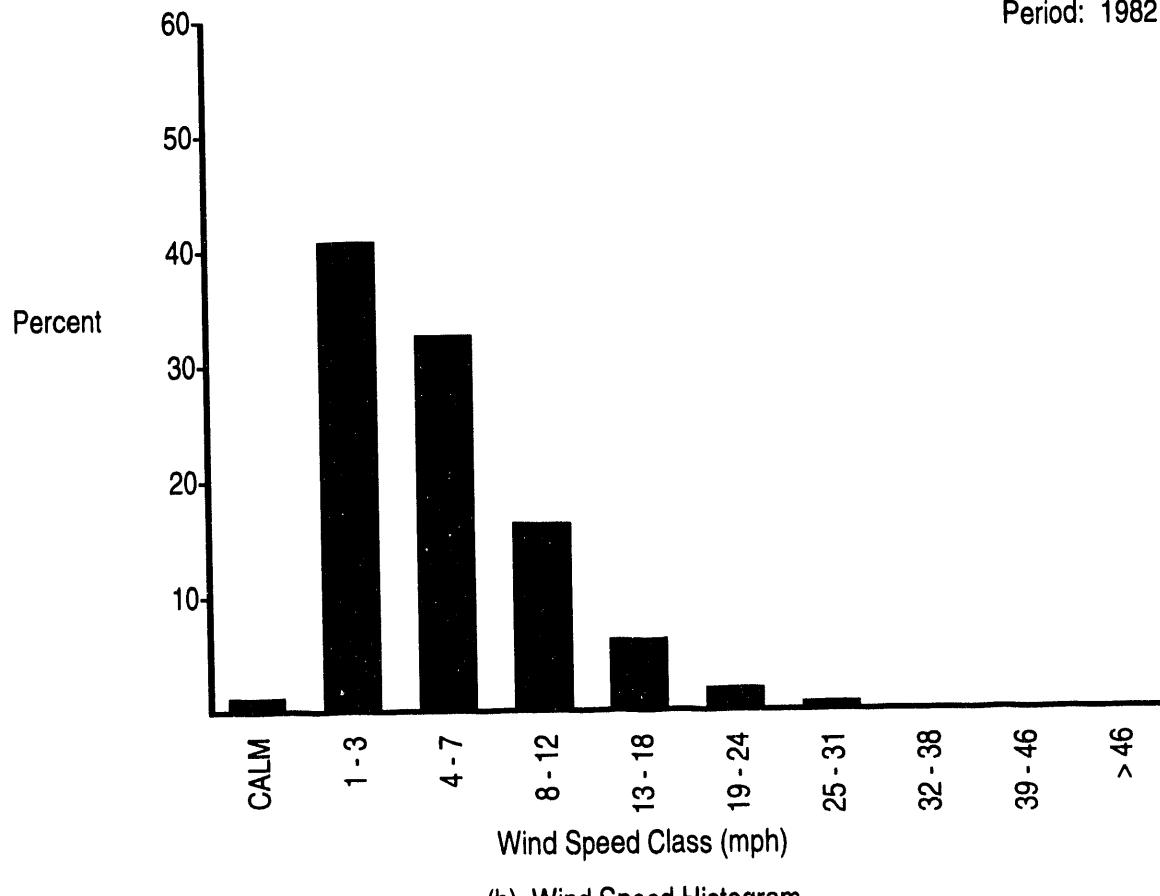


(b) Wind Speed Histogram
FIGURE B.1. (contd)



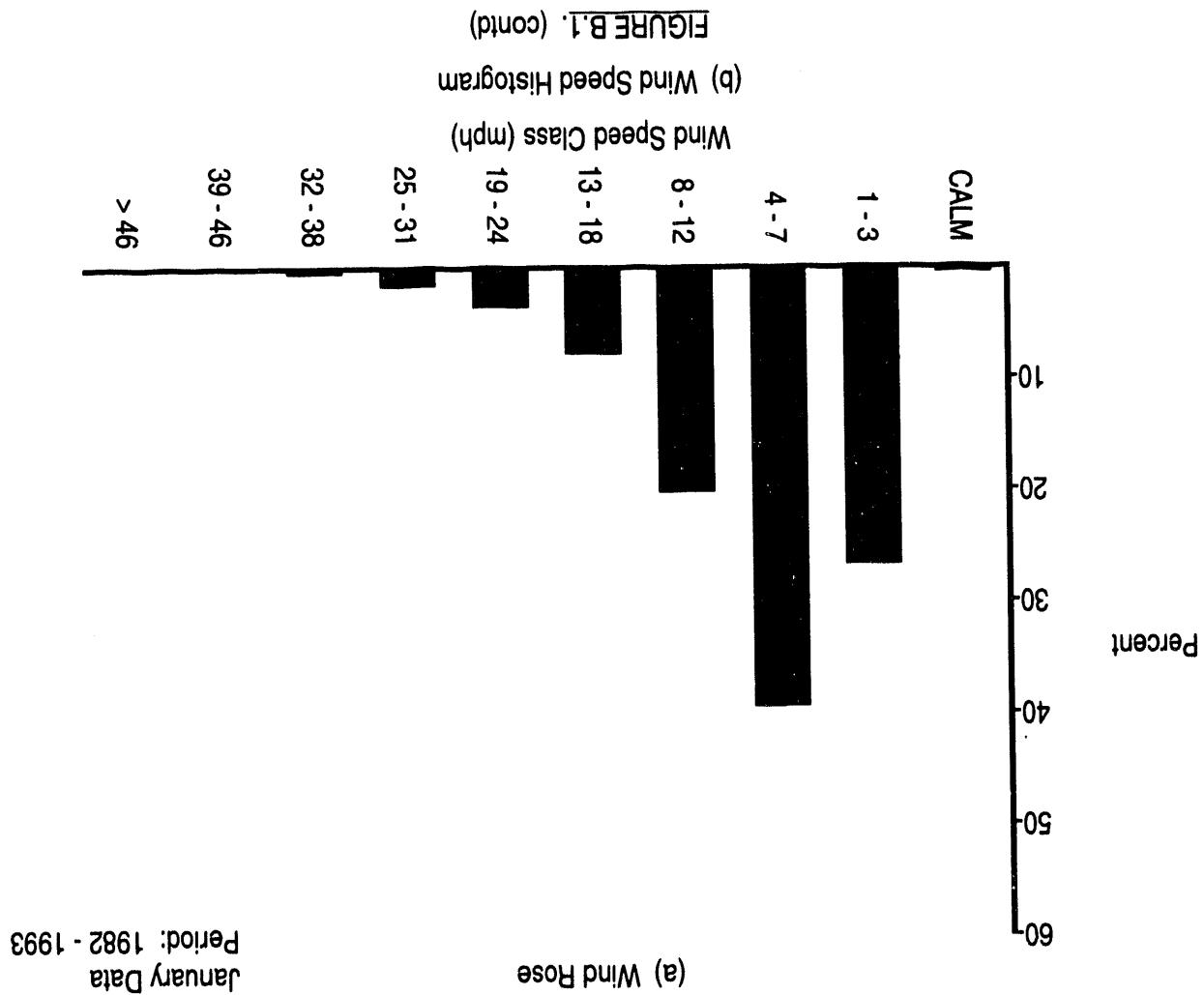
(a) Wind Rose

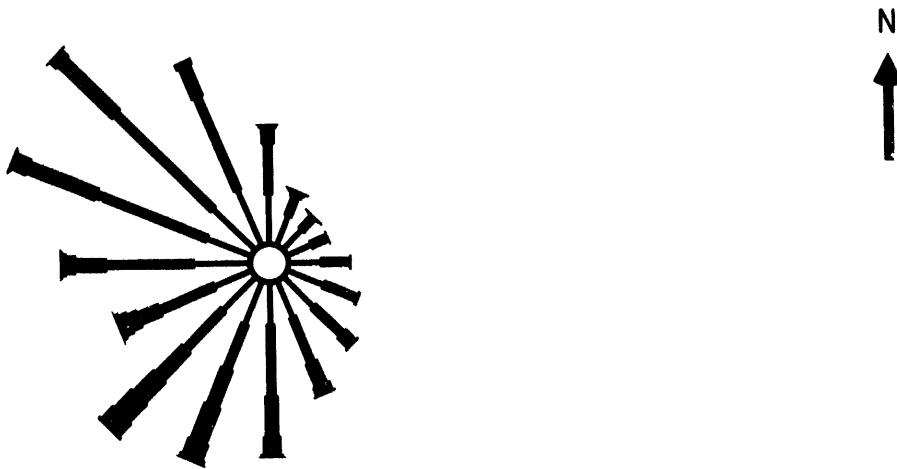
January Data
Period: 1982 - 1993



(b) Wind Speed Histogram

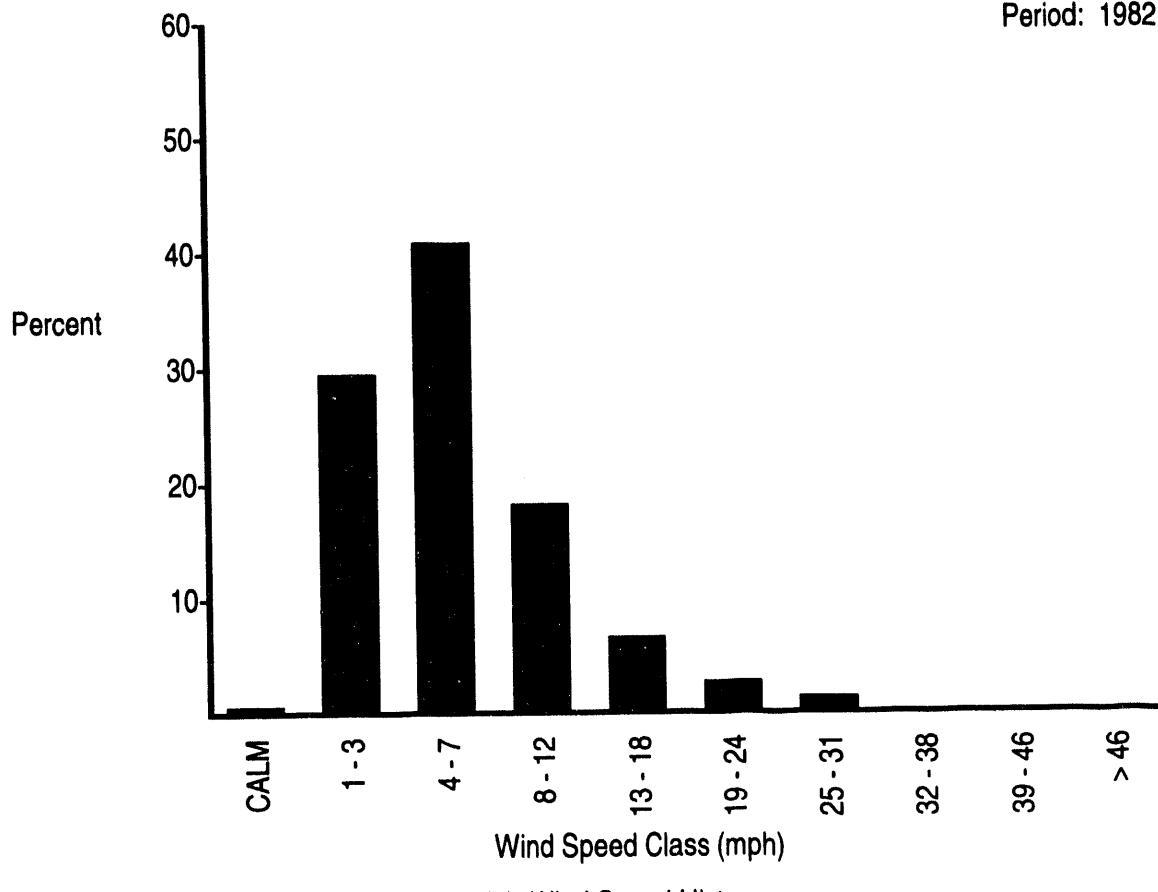
FIGURE B.1. (contd)





(a) Wind Rose

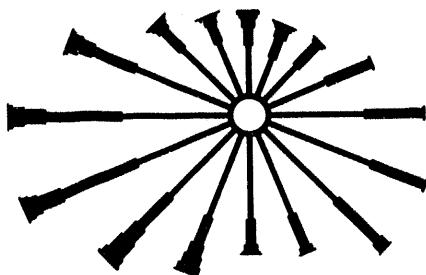
January Data
Period: 1982 - 1993



(b) Wind Speed Histogram

FIGURE B.1. (contd)

N



(a) Wind Rose

January Data
Period: 1982 - 1993

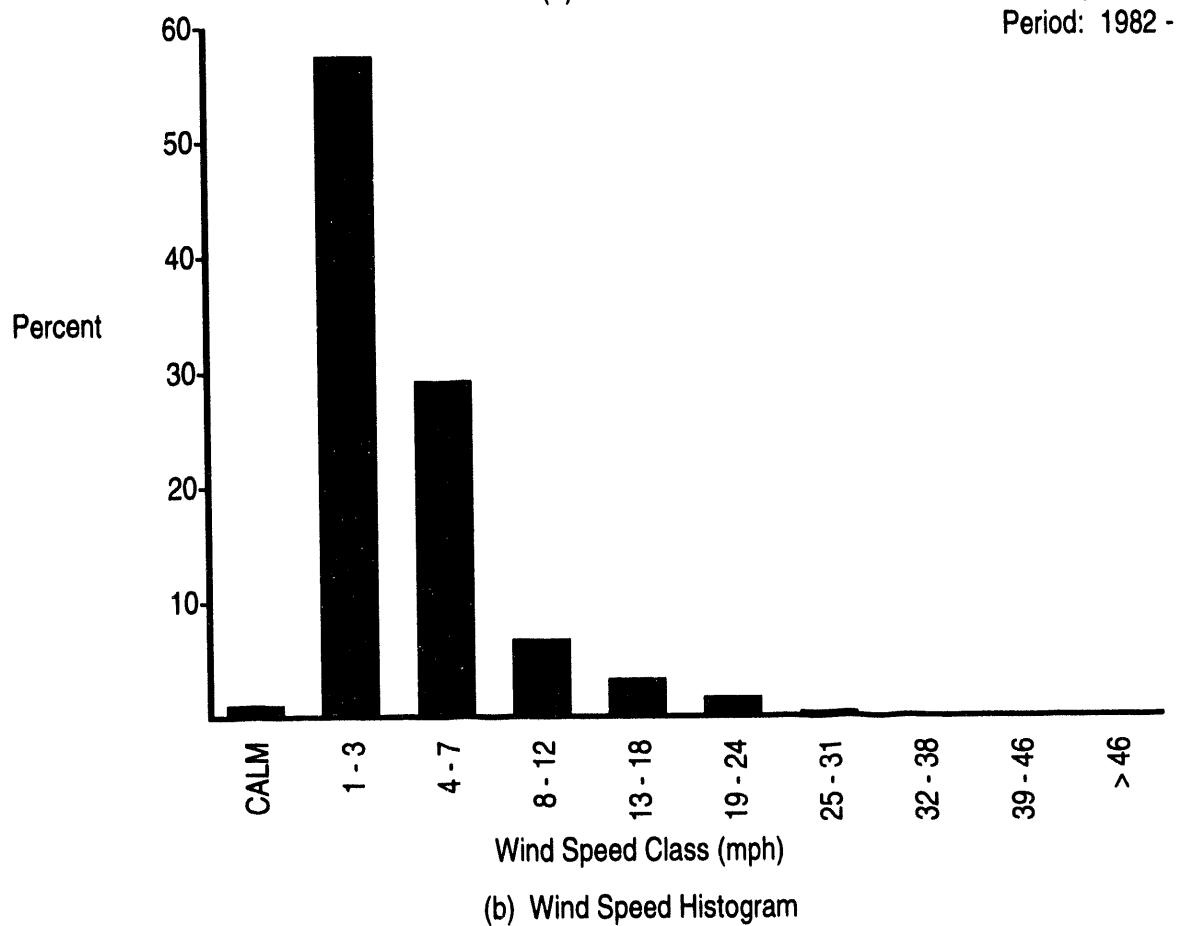
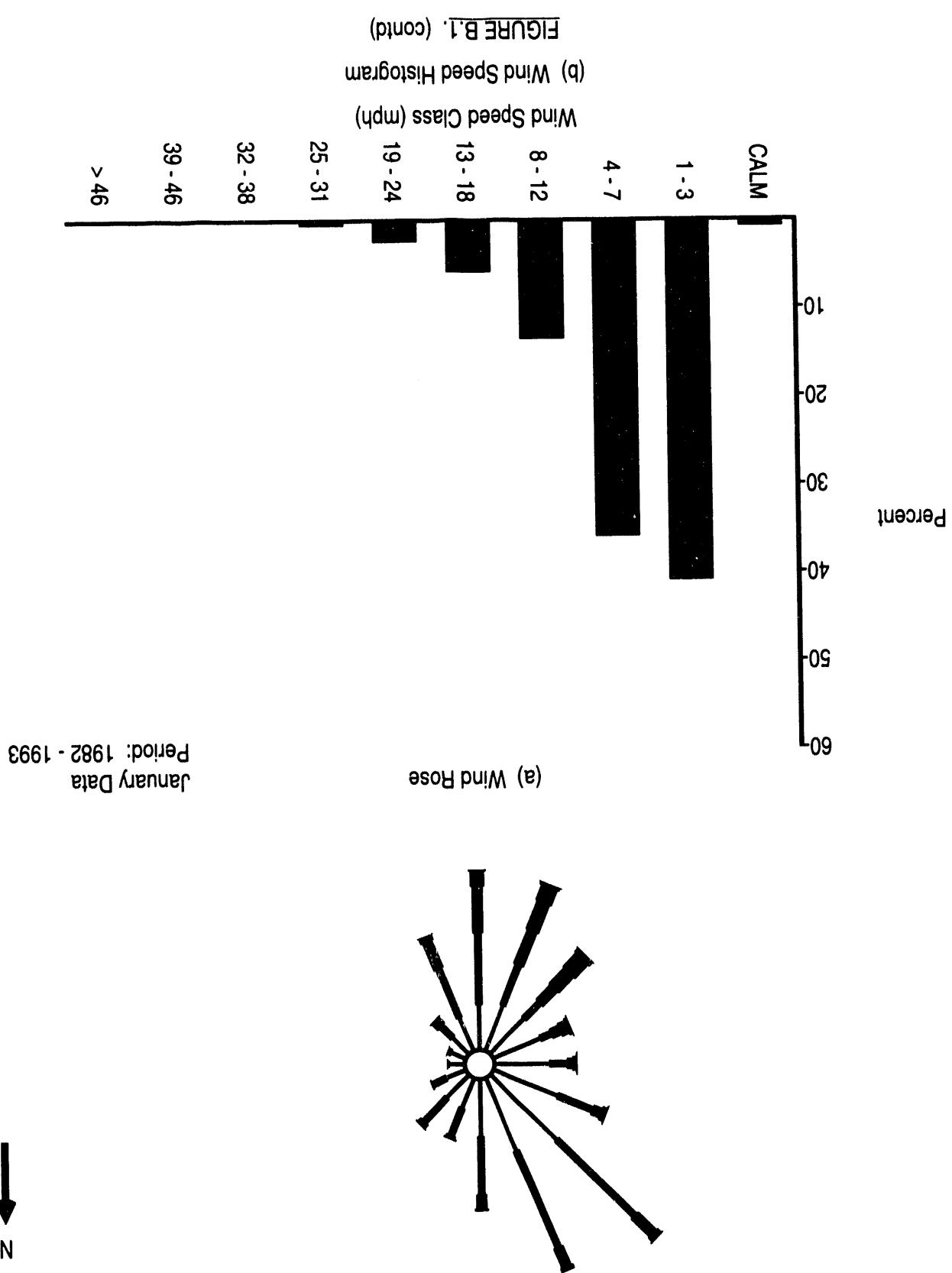
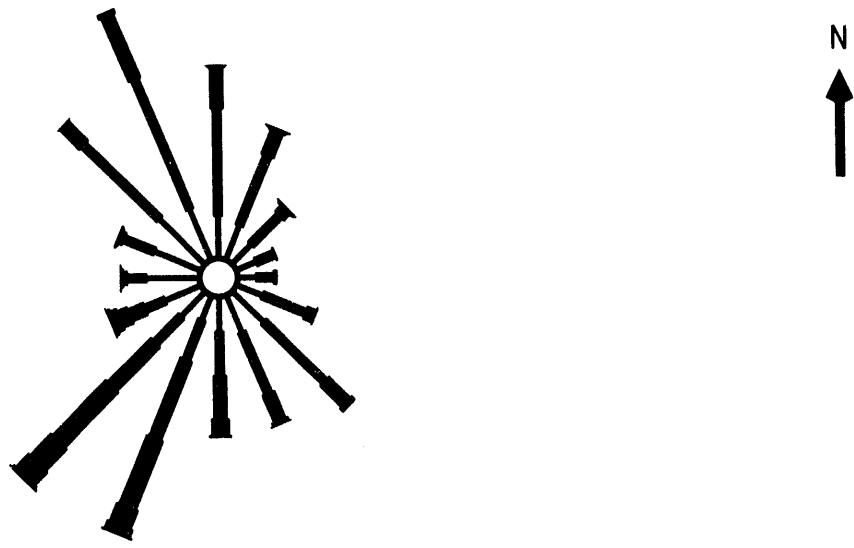


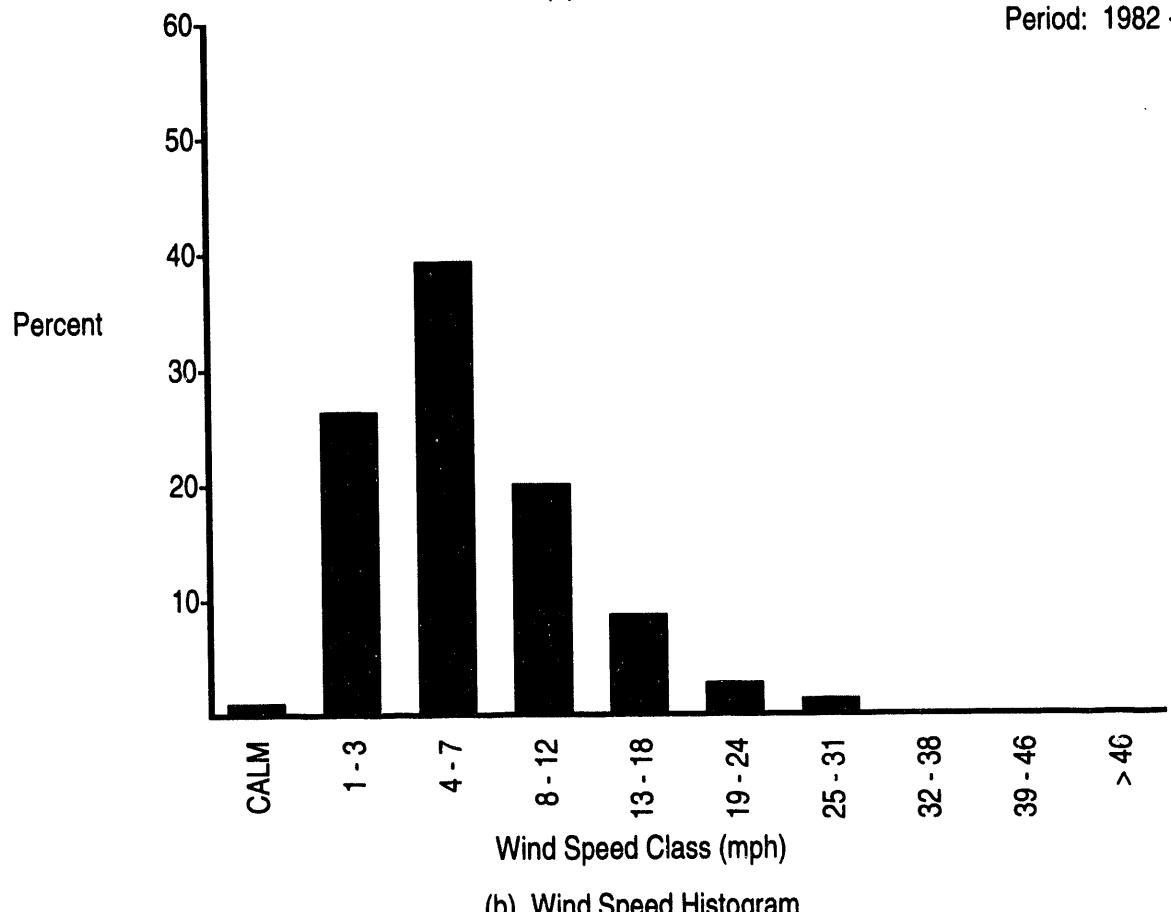
FIGURE B.1. (contd)





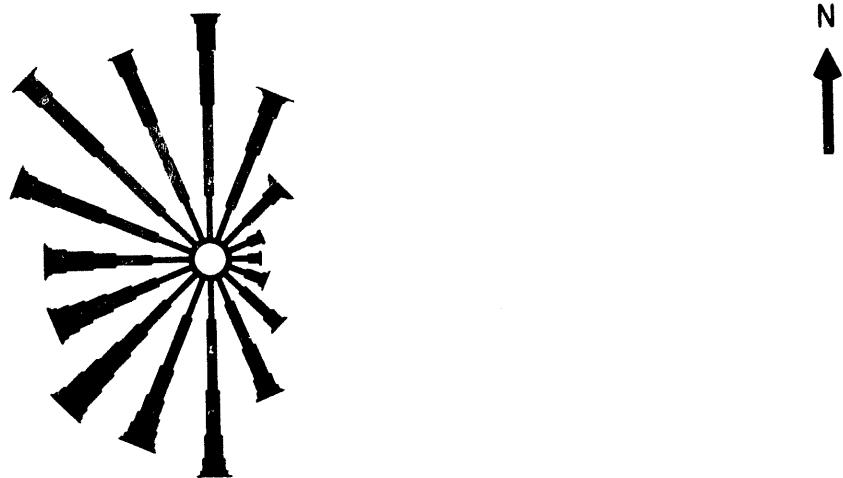
(a) Wind Rose

January Data
Period: 1982 - 1993



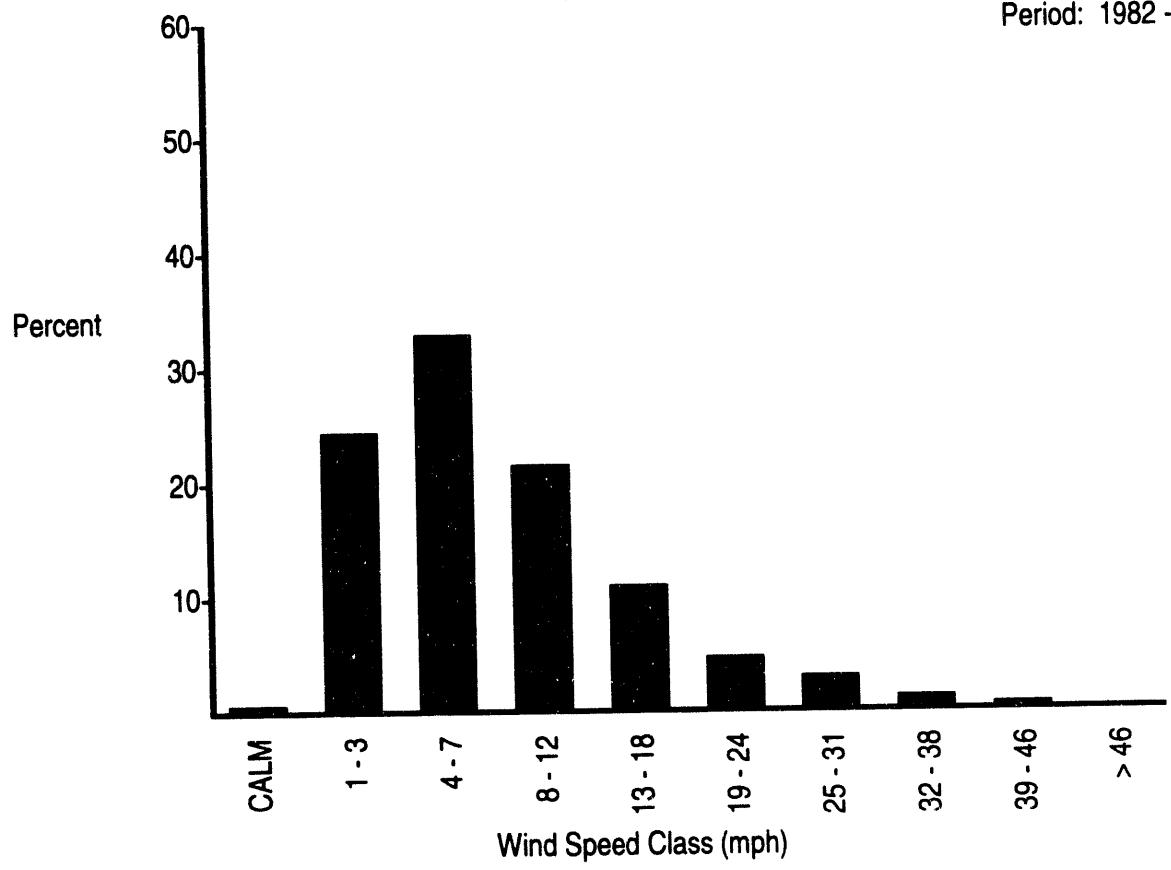
(b) Wind Speed Histogram

FIGURE B.1. (contd)



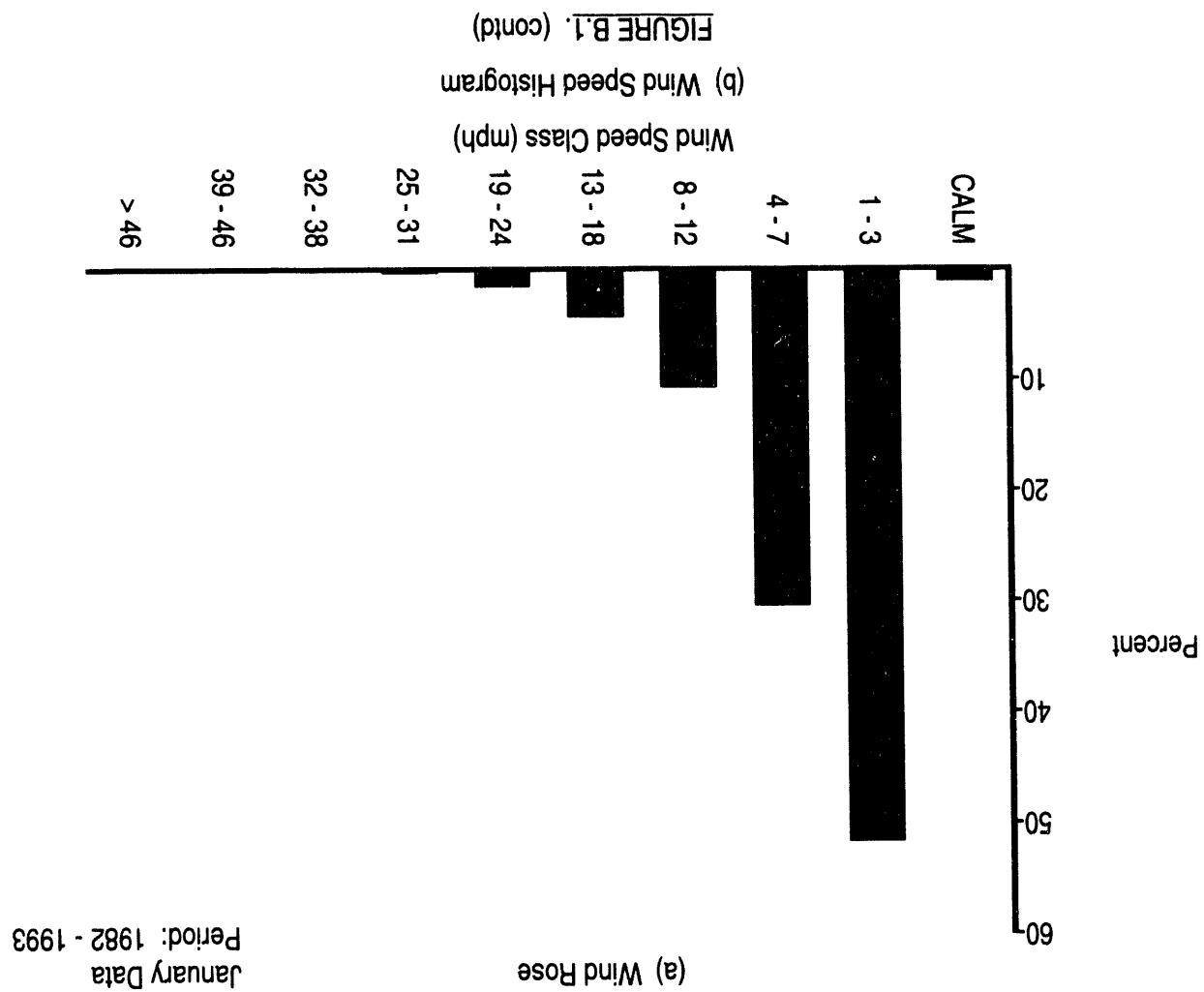
(a) Wind Rose

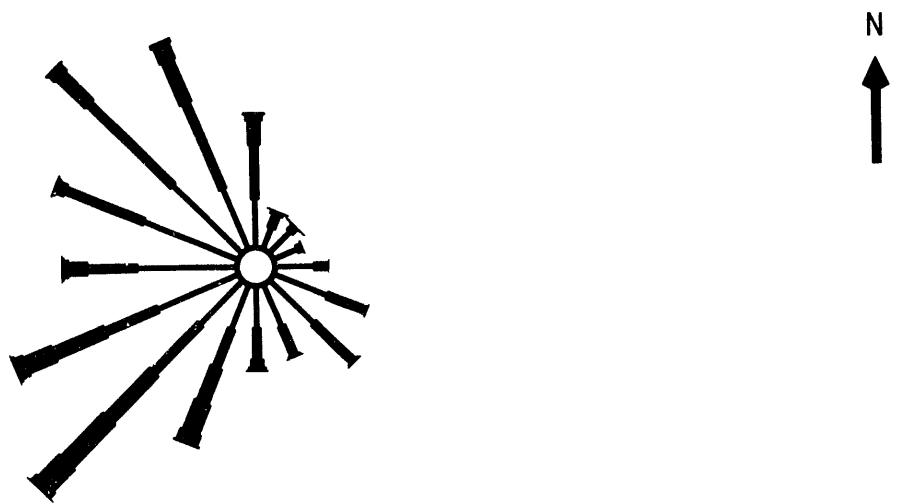
January Data
Period: 1982 - 1993



(b) Wind Speed Histogram

FIGURE B.1. (contd)





(a) Wind Rose

January Data
Period: 1982 - 1993

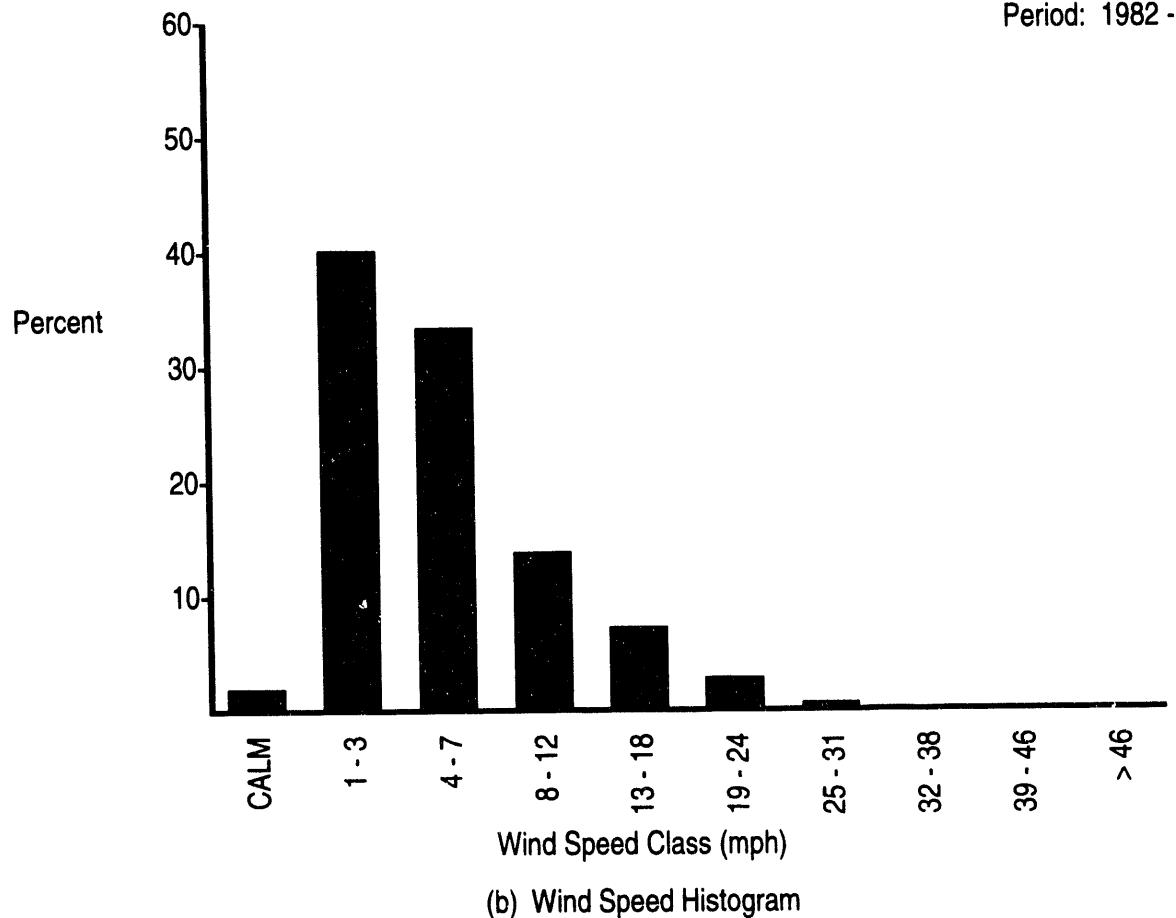
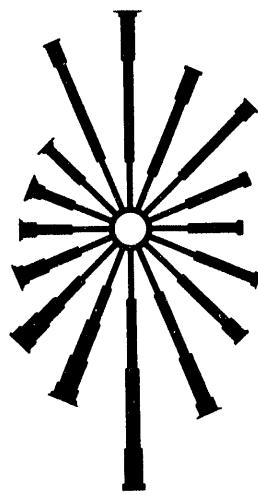


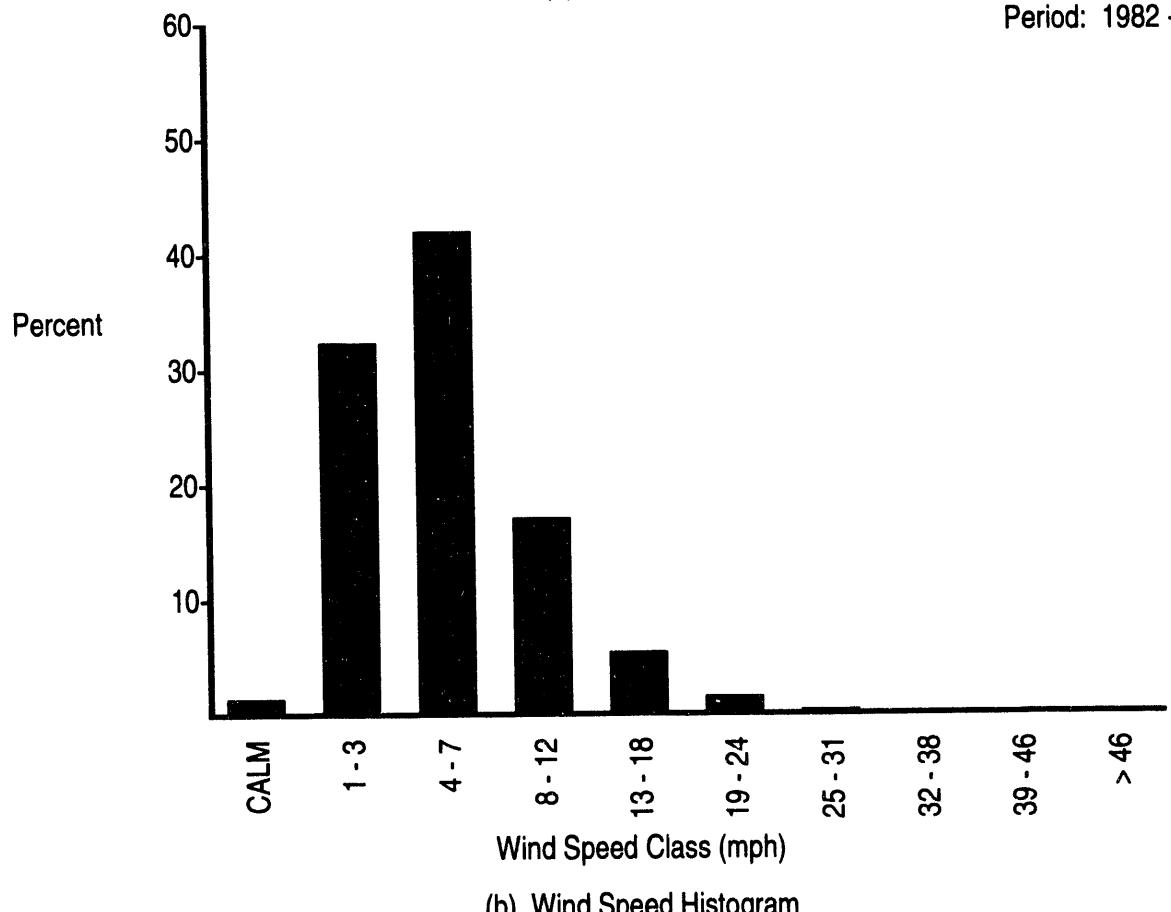
FIGURE B.1. (contd)

N



(a) Wind Rose

January Data
Period: 1982 - 1992



(b) Wind Speed Histogram

FIGURE B.1. (contd)

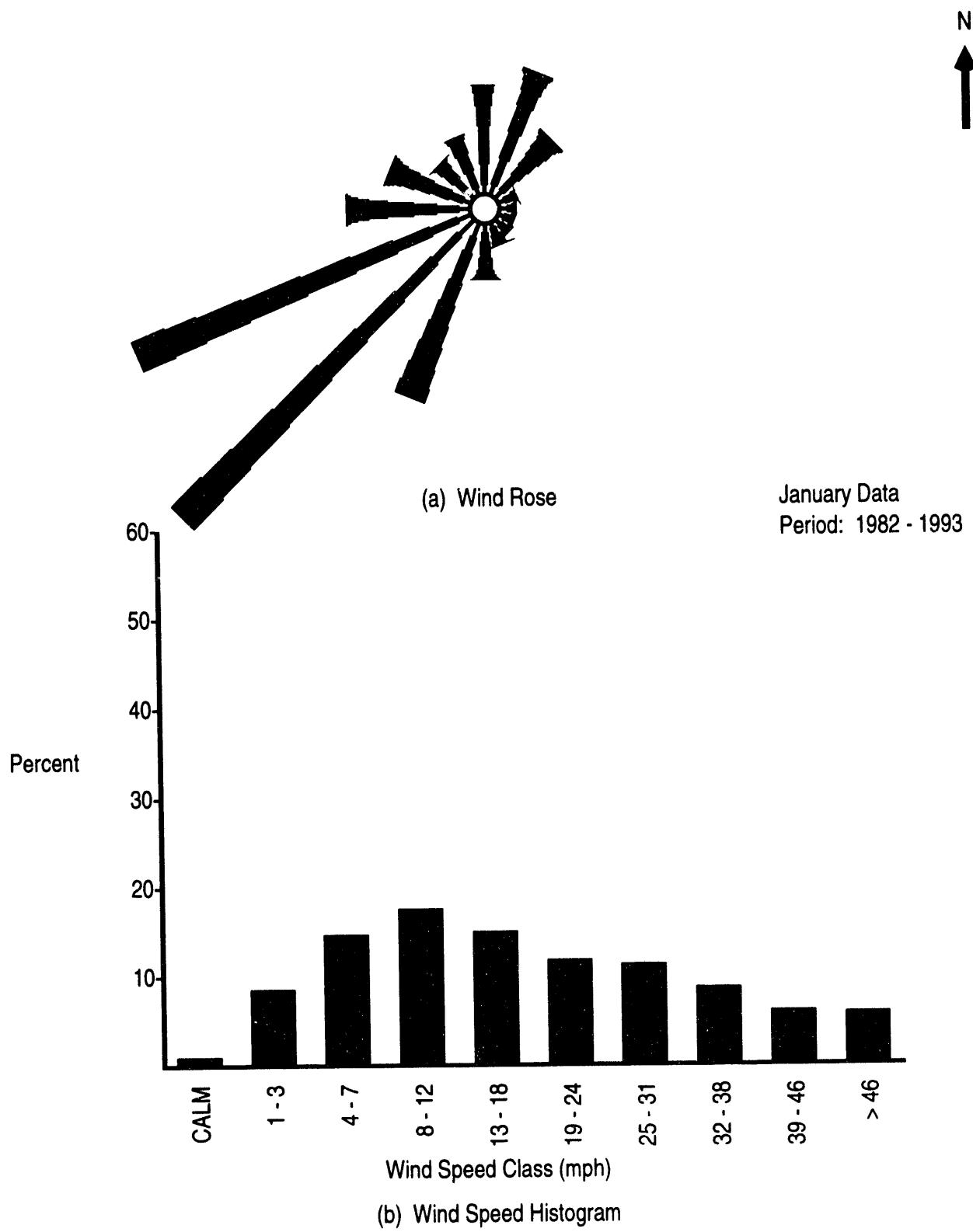
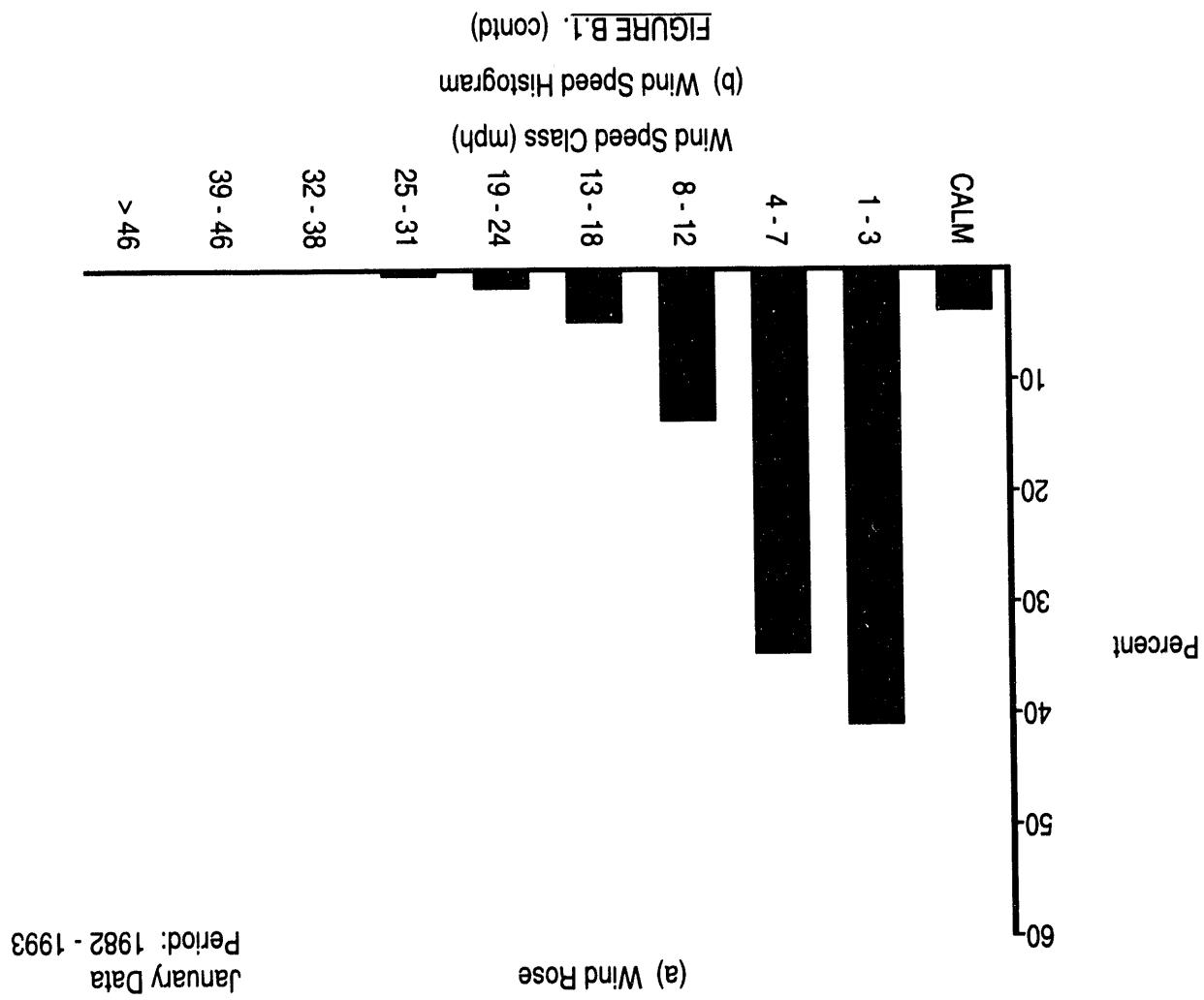
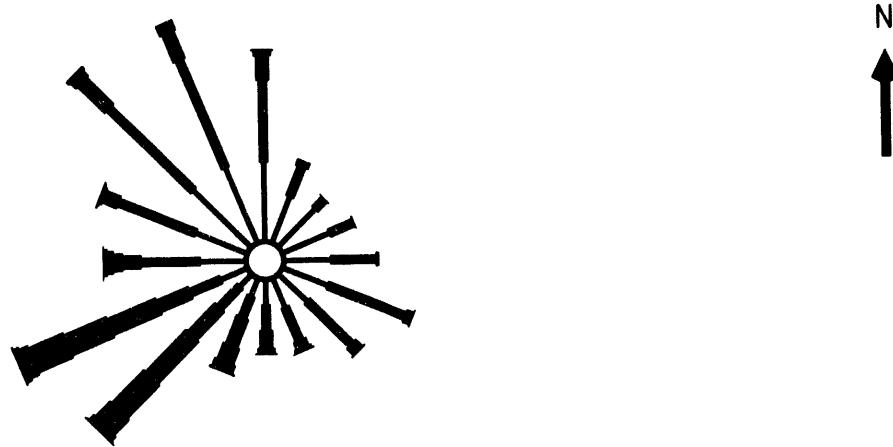


FIGURE B.1. (contd)

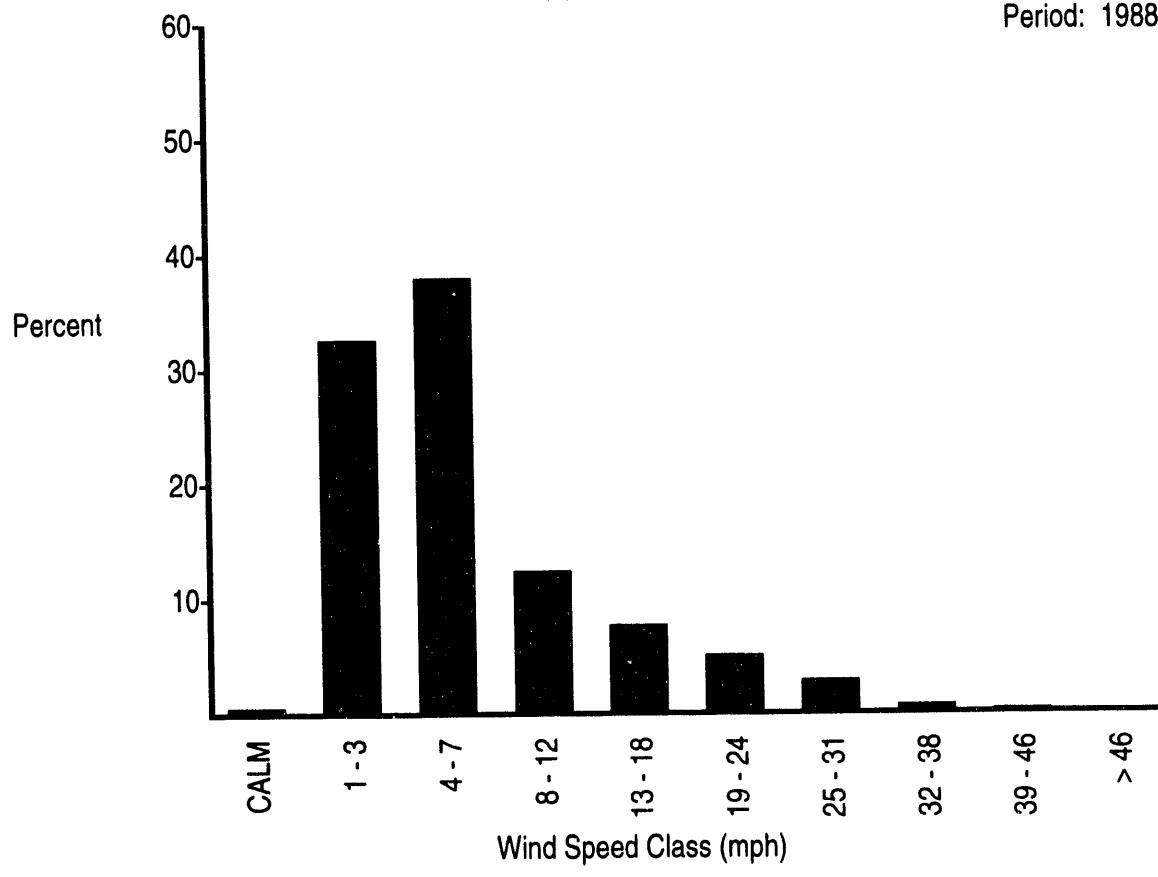


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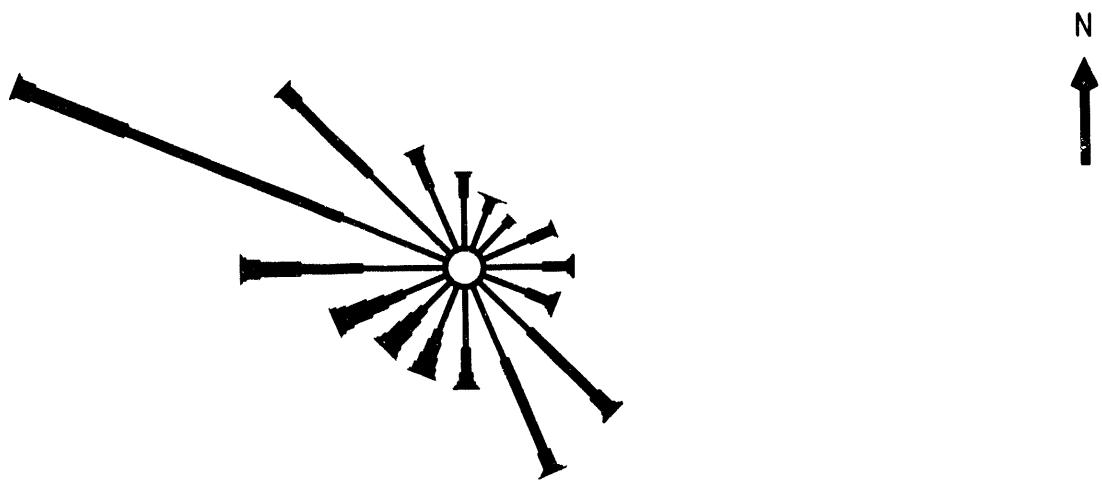
(a) Wind Rose

January Data
Period: 1988 - 1993

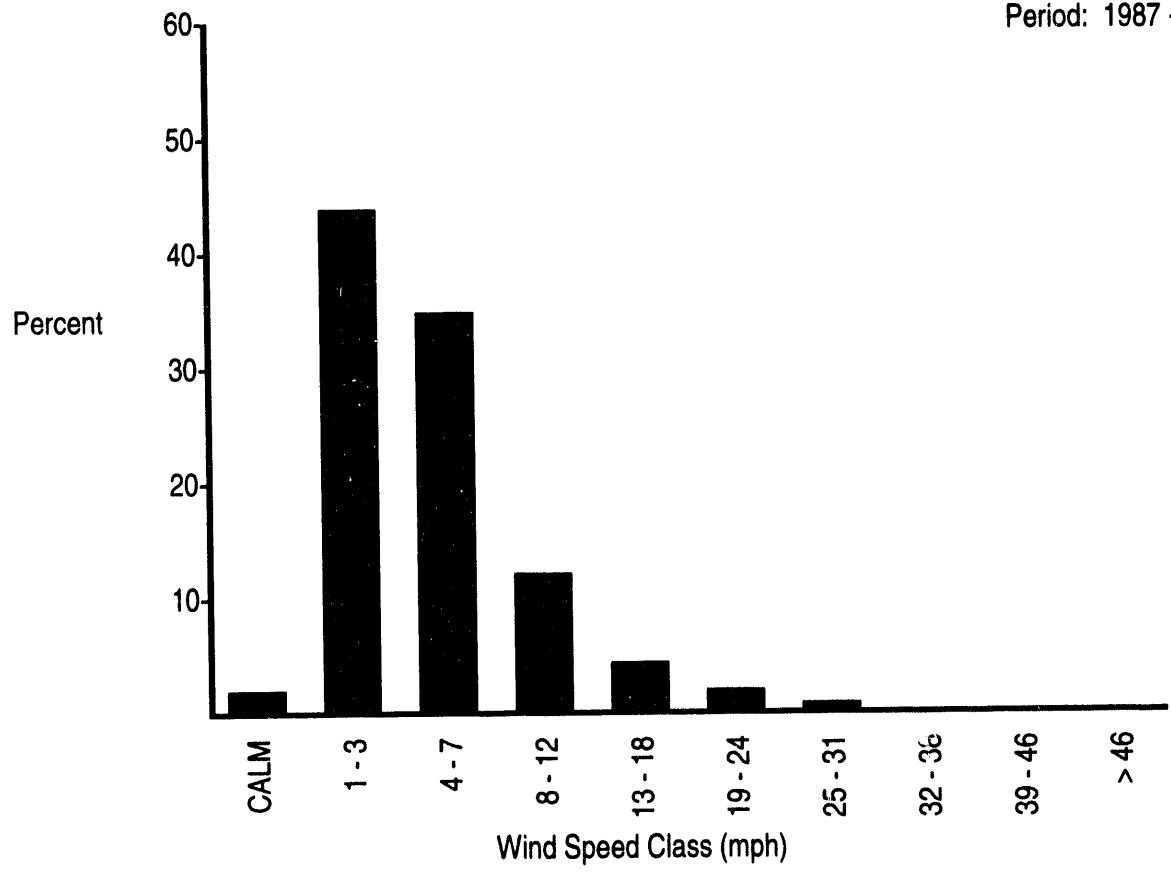


(b) Wind Speed Histogram

FIGURE B.1. (contd)

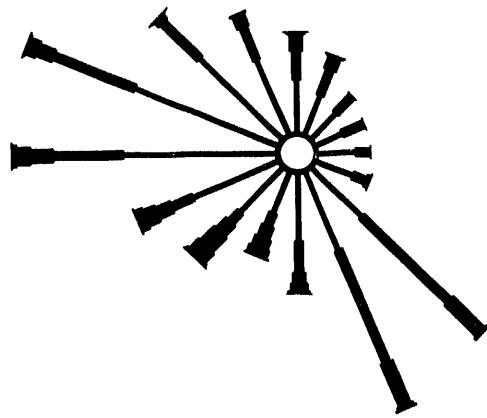


(a) Wind Rose

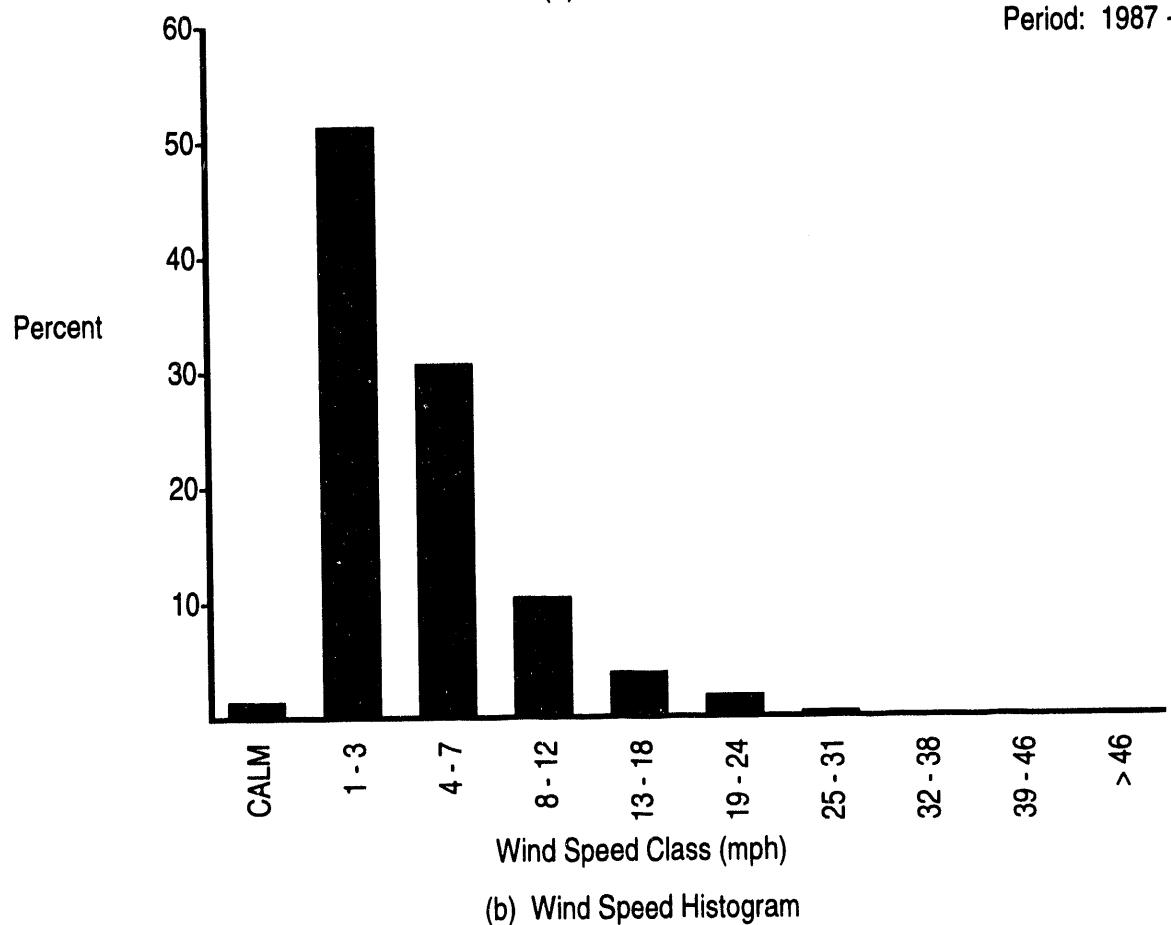
January Data
Period: 1987 - 1993

(b) Wind Speed Histogram

FIGURE B.1. (contd)

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(a) Wind Rose

January Data
Period: 1987 - 1993FIGURE B.1. (contd)

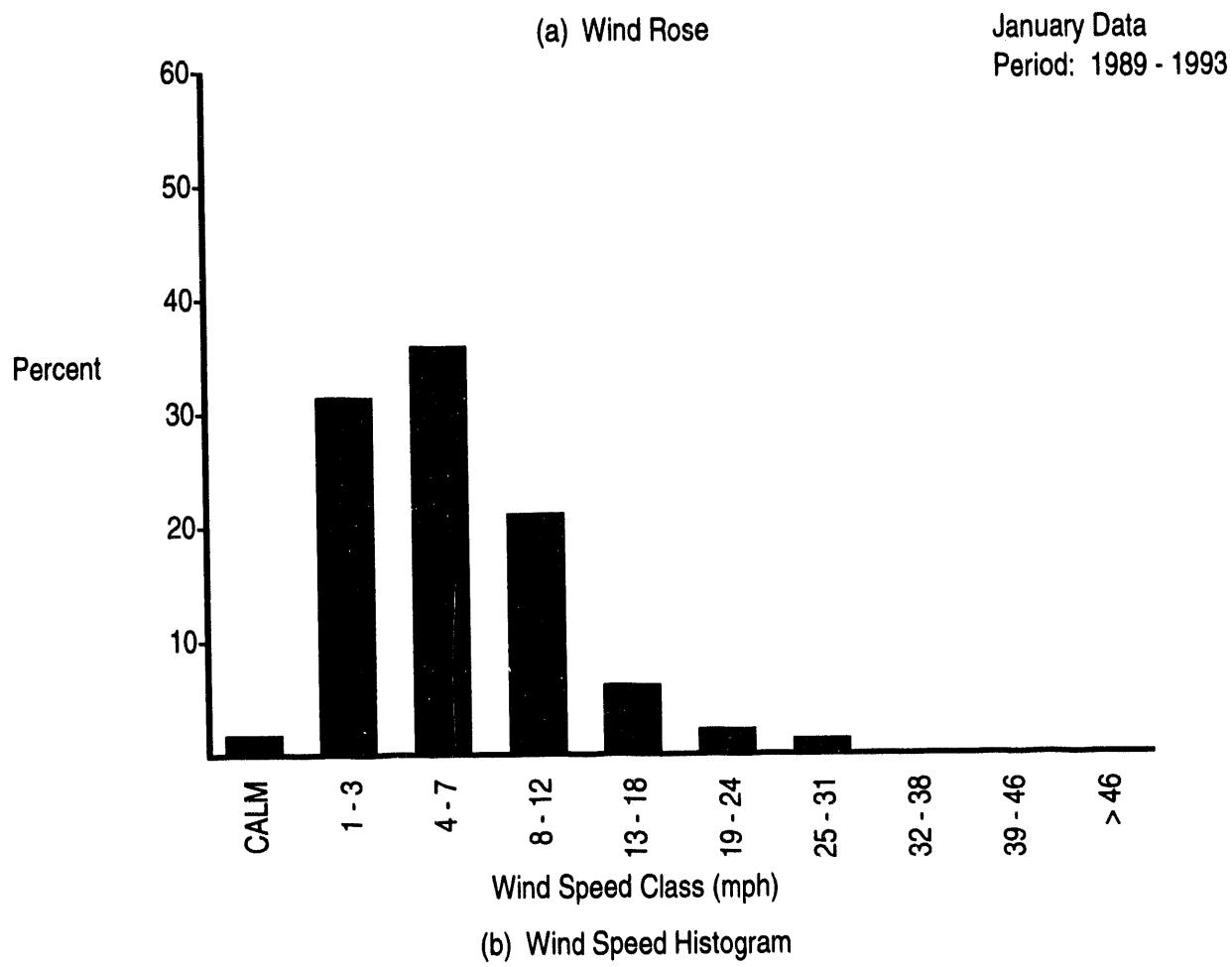
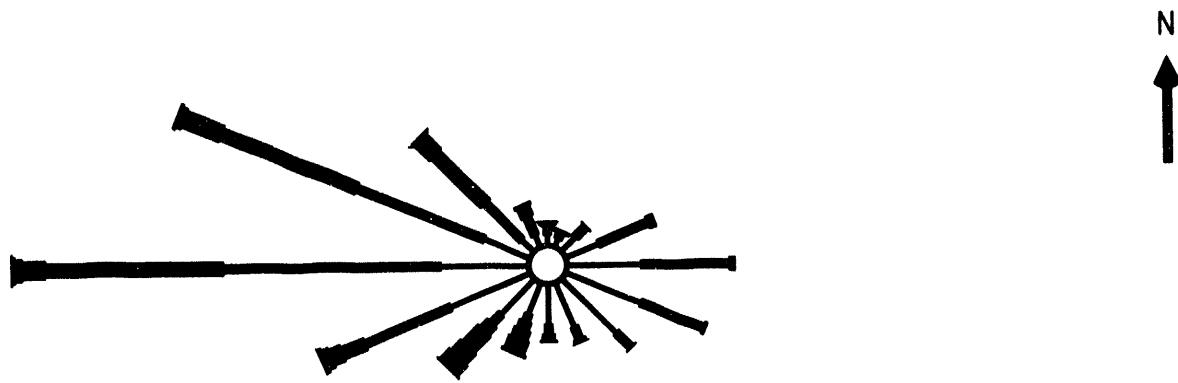
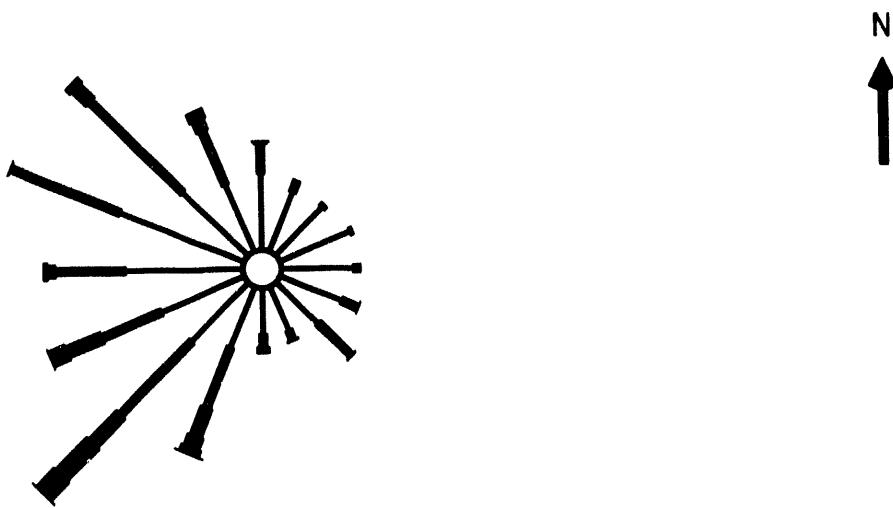
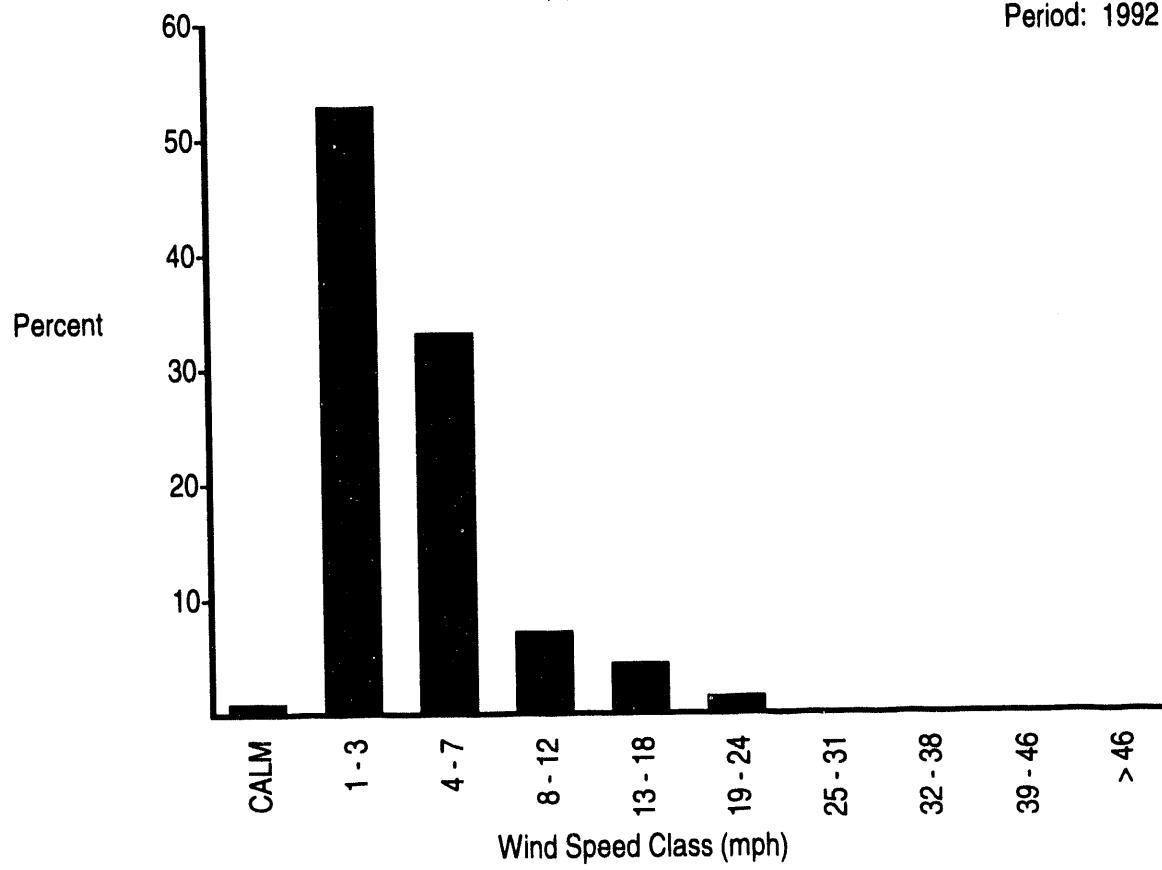


FIGURE B.1. (contd)



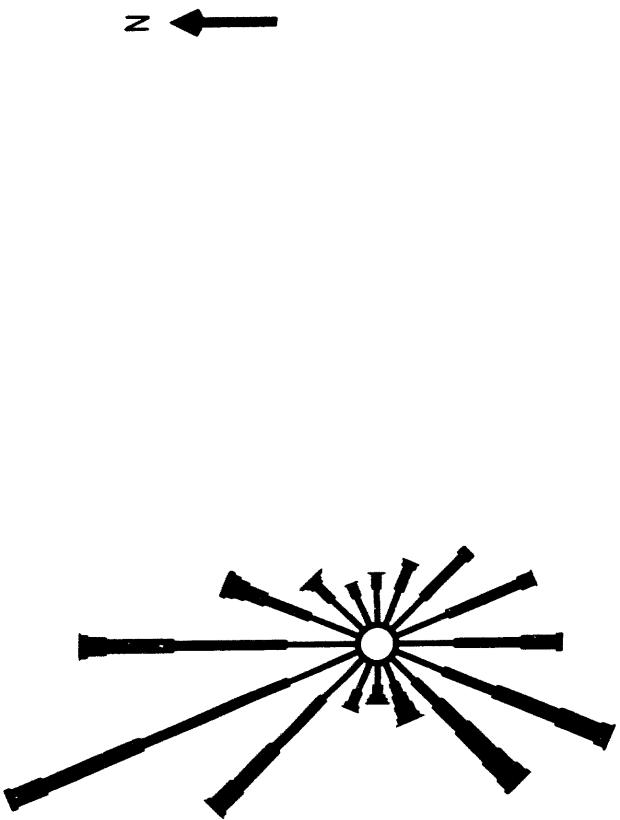
(a) Wind Rose

January Data
Period: 1992 - 1993



(b) Wind Speed Histogram

FIGURE B.1. (contd)



February Data
Period: 1982 - 1993
(a) Wind Rose

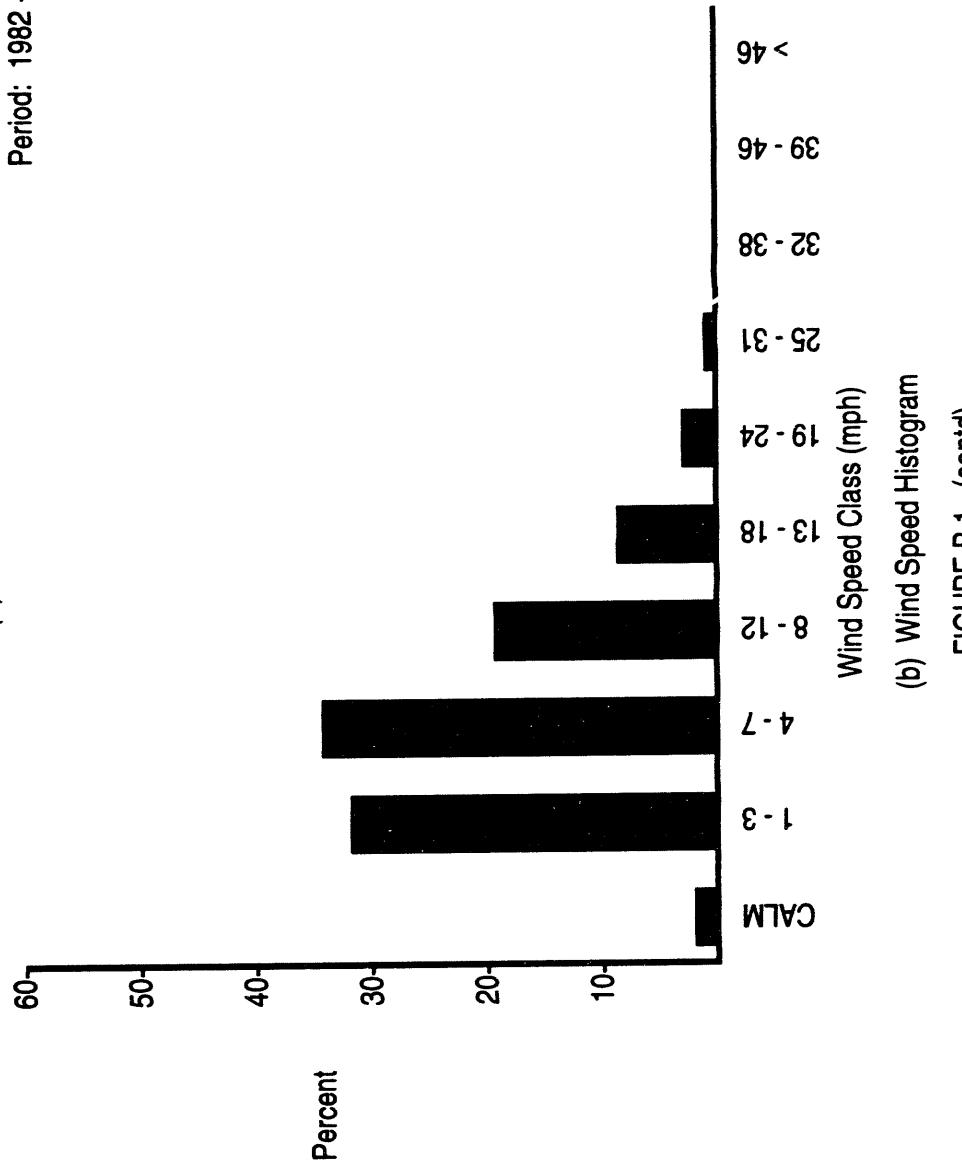
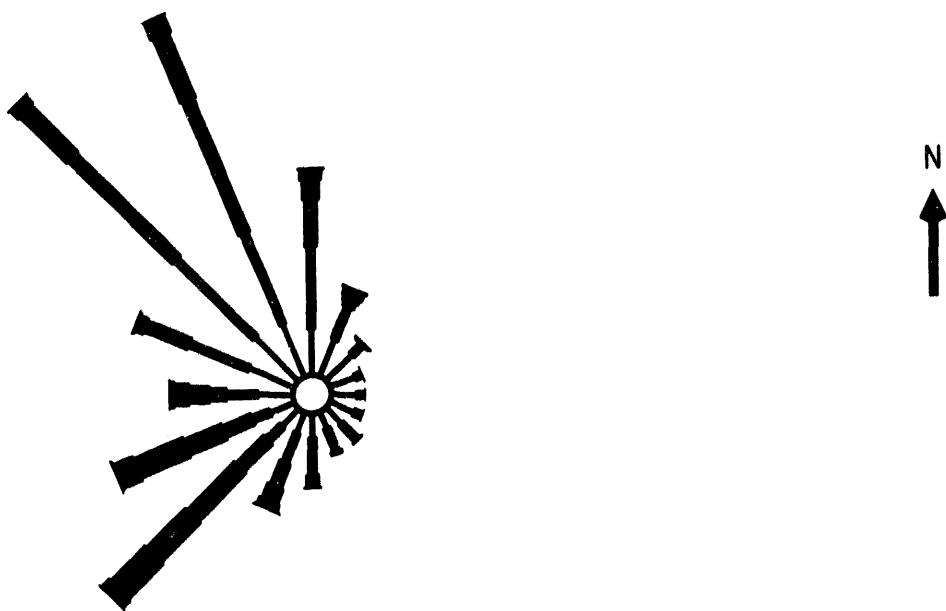
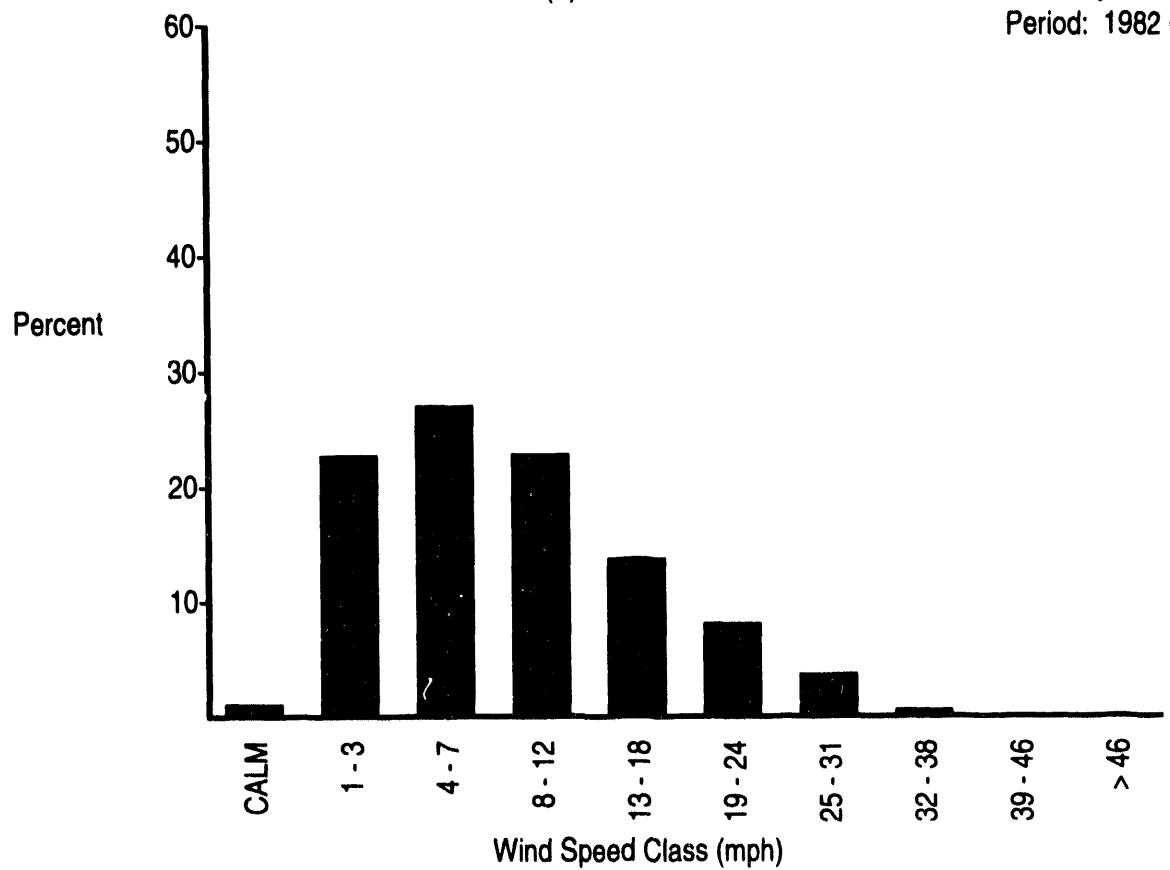


FIGURE B.1. (contd)



(a) Wind Rose

February Data
Period: 1982 - 1993



(b) Wind Speed Histogram

FIGURE B.1. (contd)

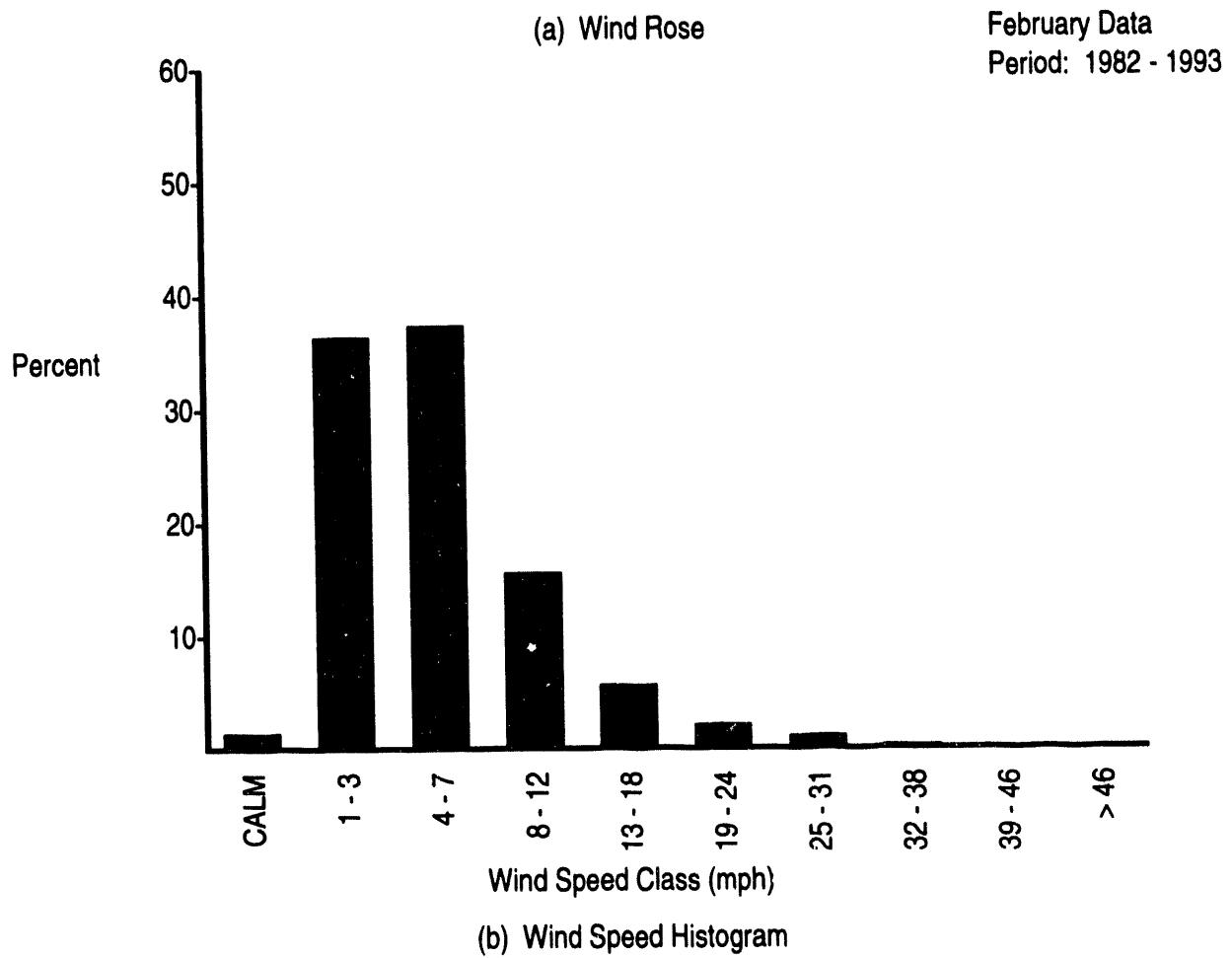
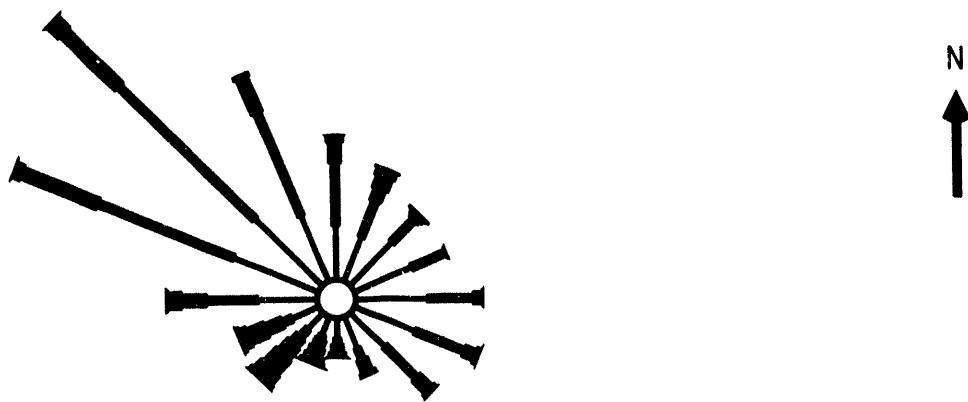
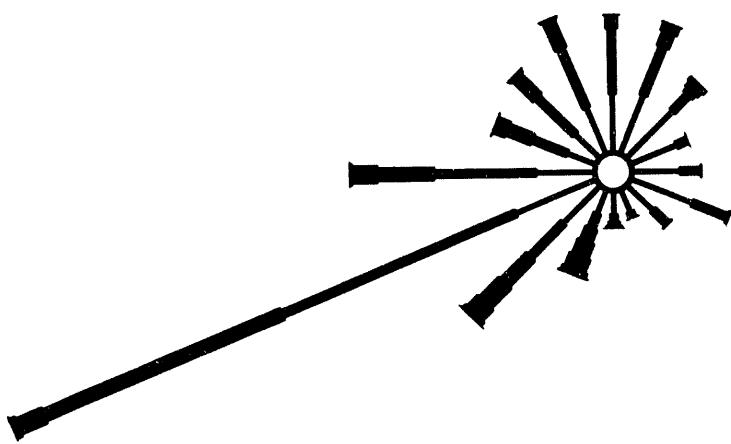


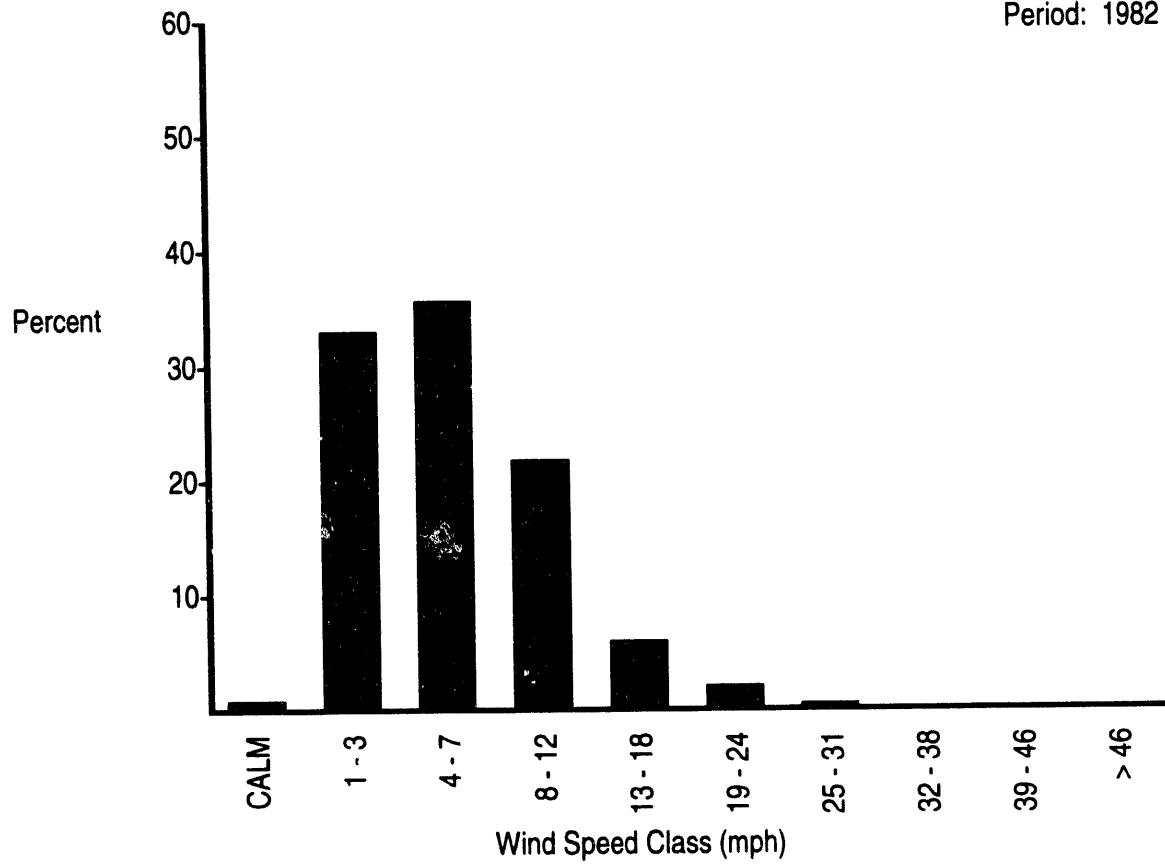
FIGURE B.1. (contd)

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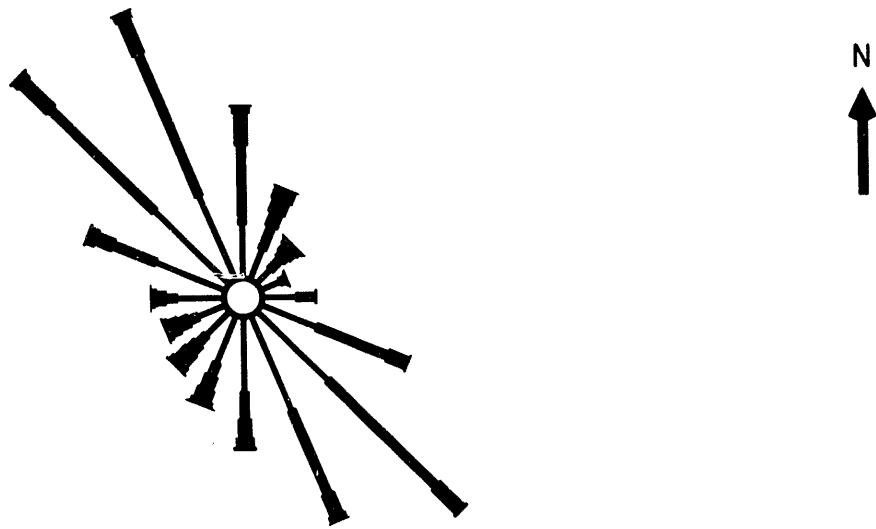
(a) Wind Rose

February Data
Period: 1982 - 1993



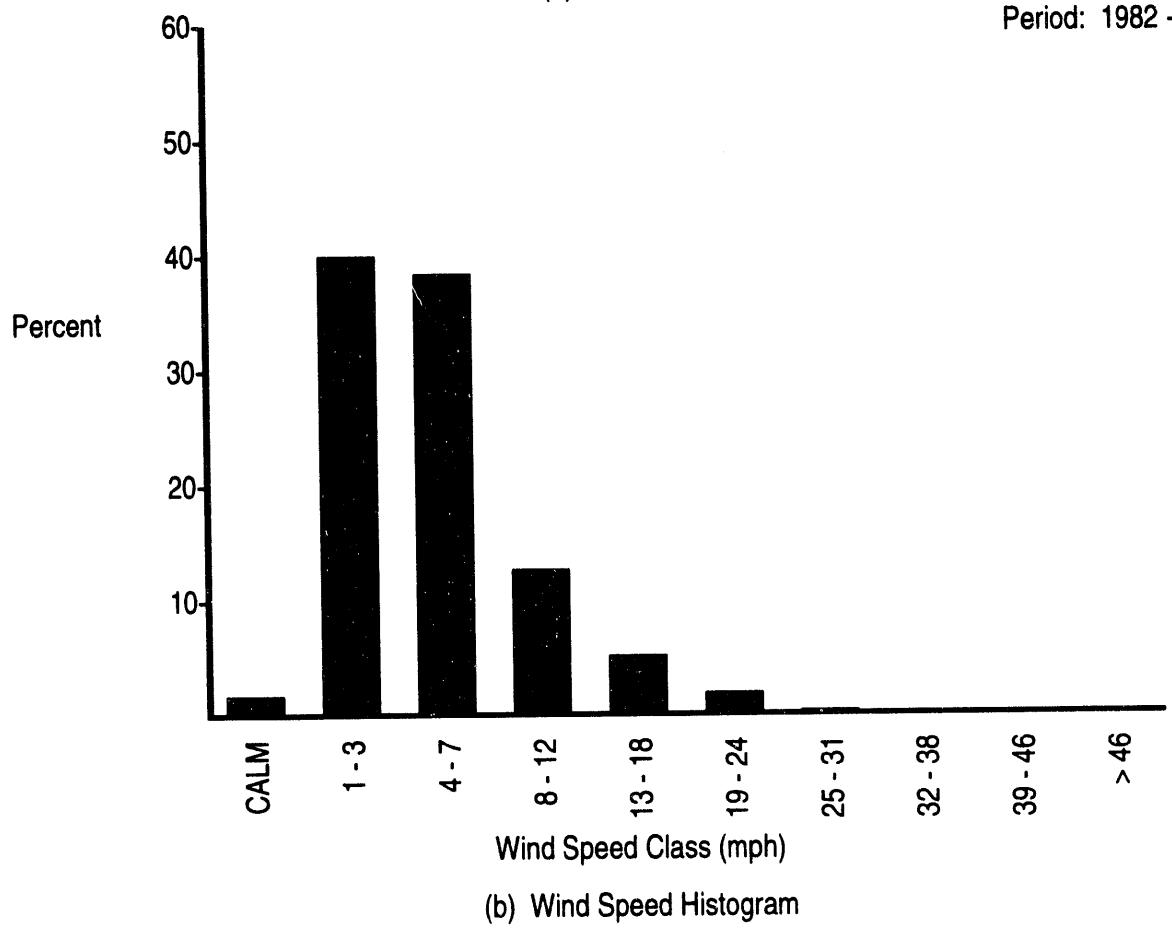
(b) Wind Speed Histogram

FIGURE B.1. (contd)



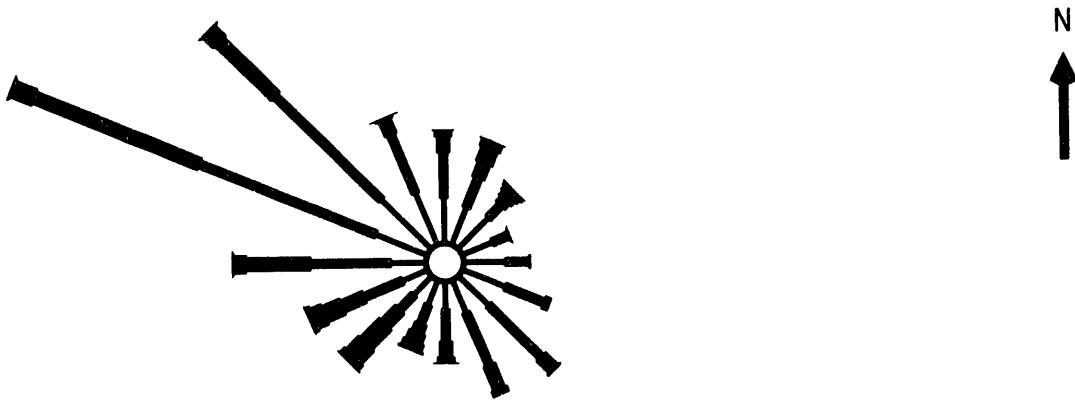
(a) Wind Rose

February Data
Period: 1982 - 1993



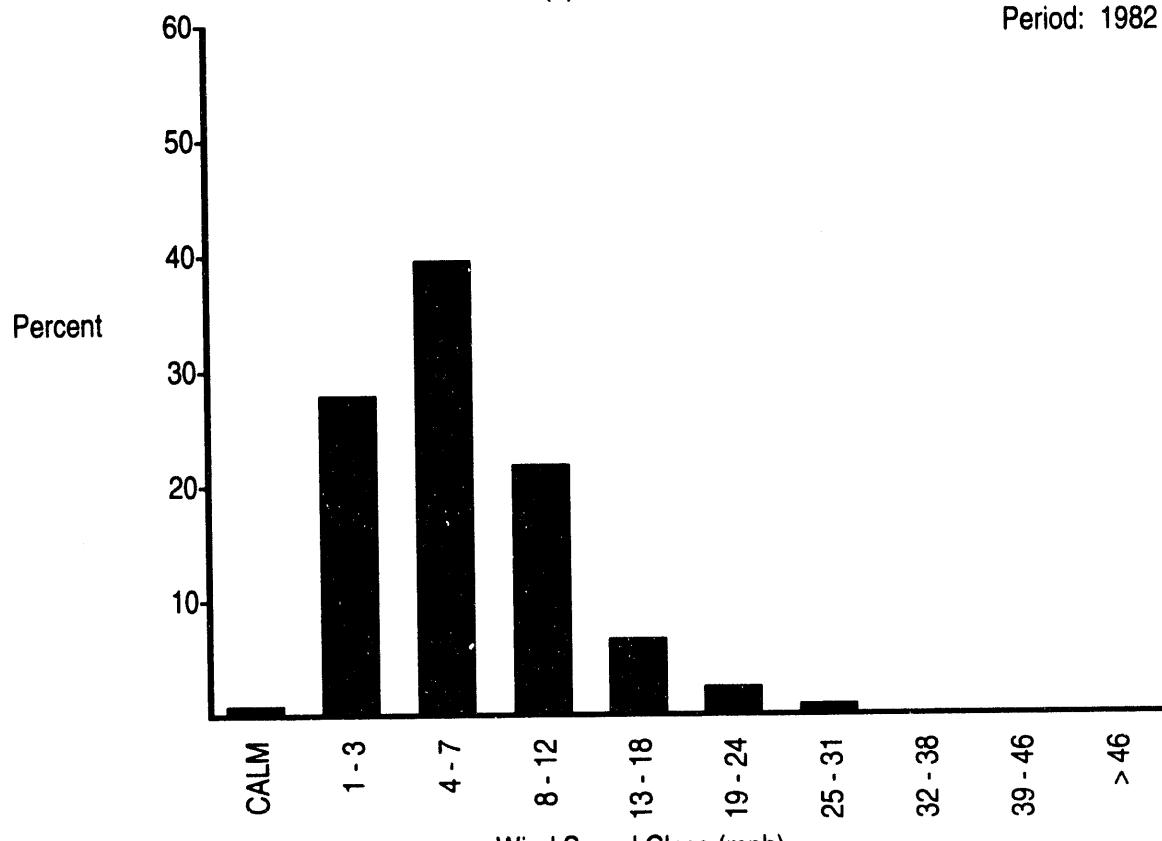
(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

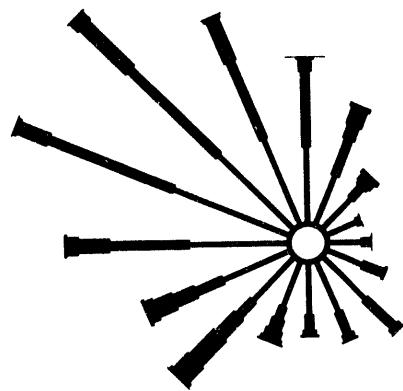
February Data
Period: 1982 - 1993



(b) Wind Speed Histogram

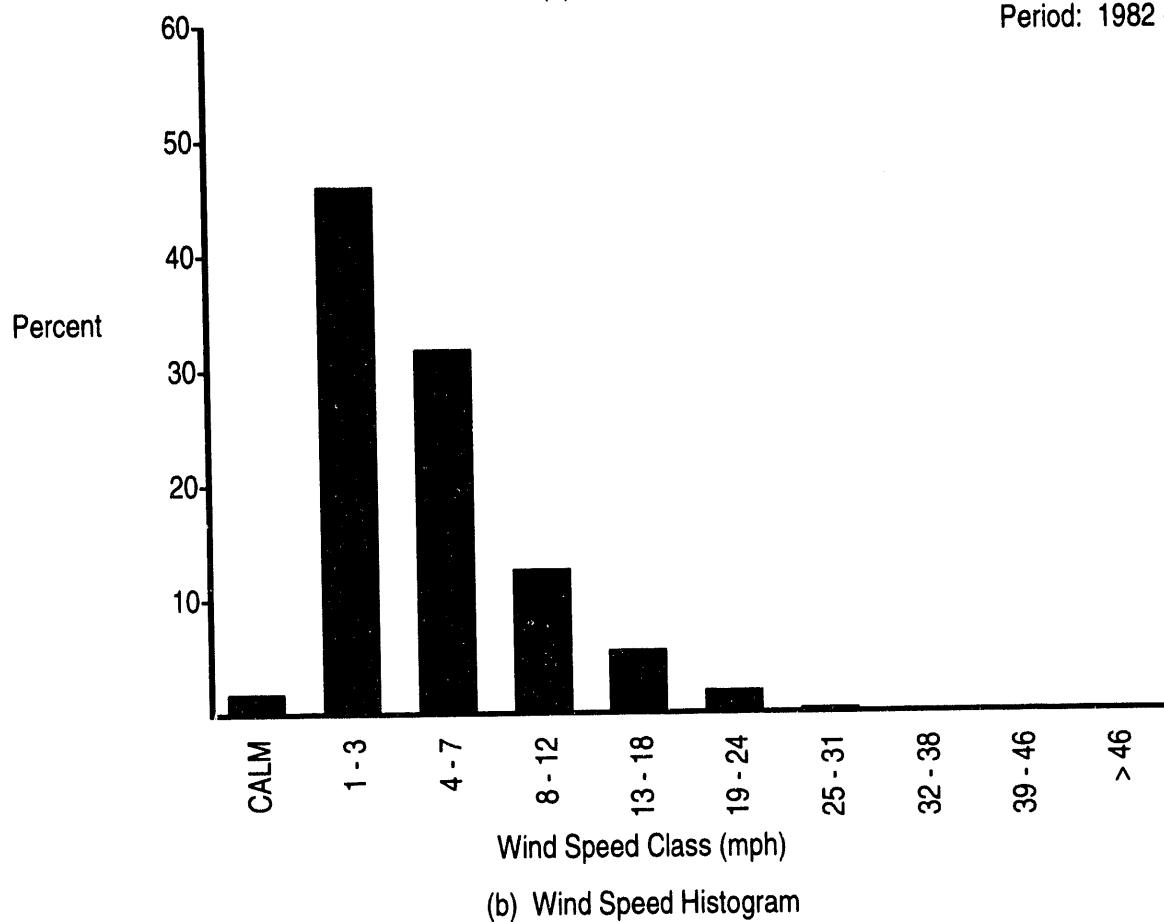
FIGURE B.1. (contd)

N
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(a) Wind Rose

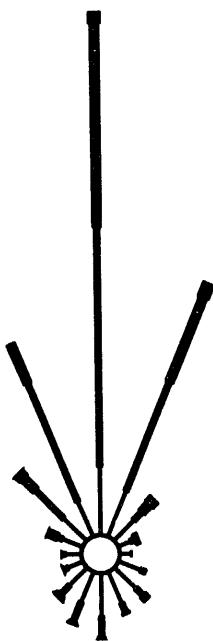
February Data
Period: 1982 - 1993



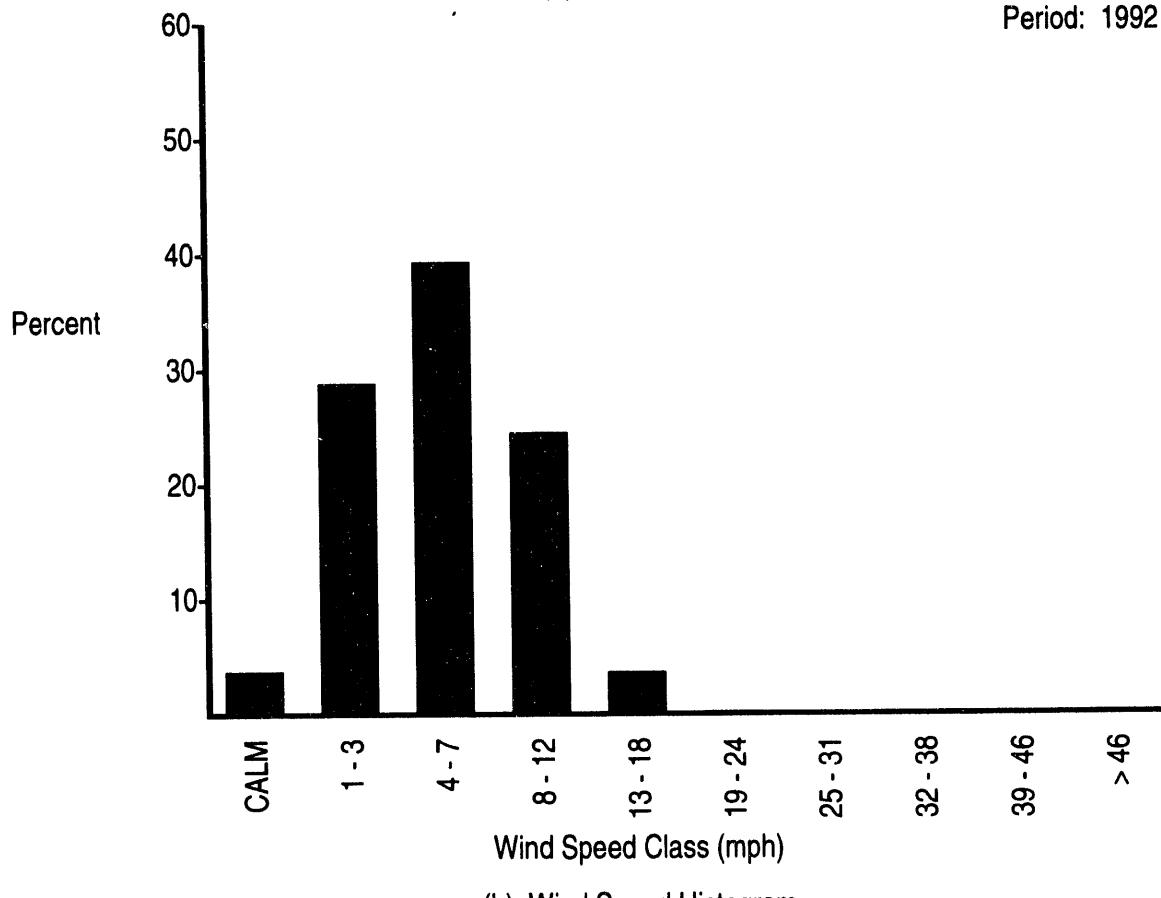
(b) Wind Speed Histogram

FIGURE B.1. (contd)

N



(a) Wind Rose

February Data
Period: 1992 - 1993

(b) Wind Speed Histogram

FIGURE B.1. (contd)

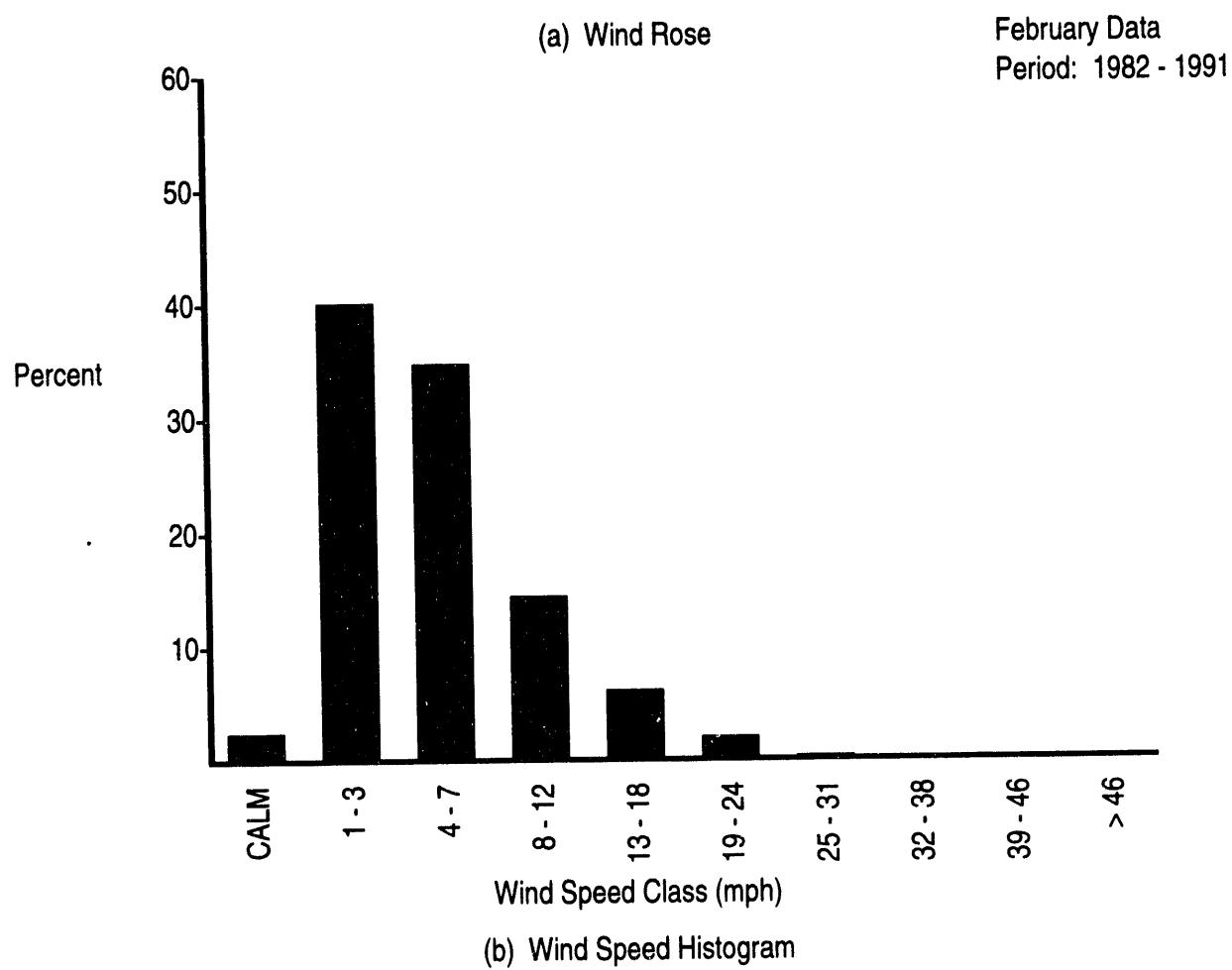
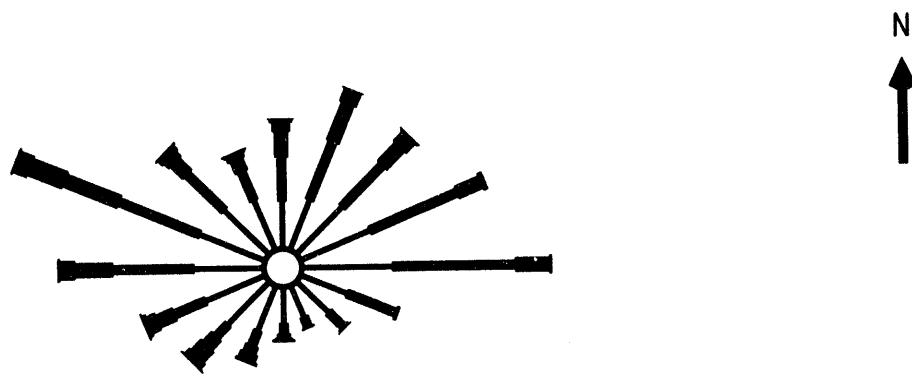
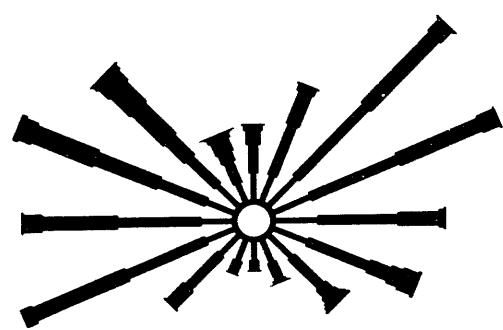
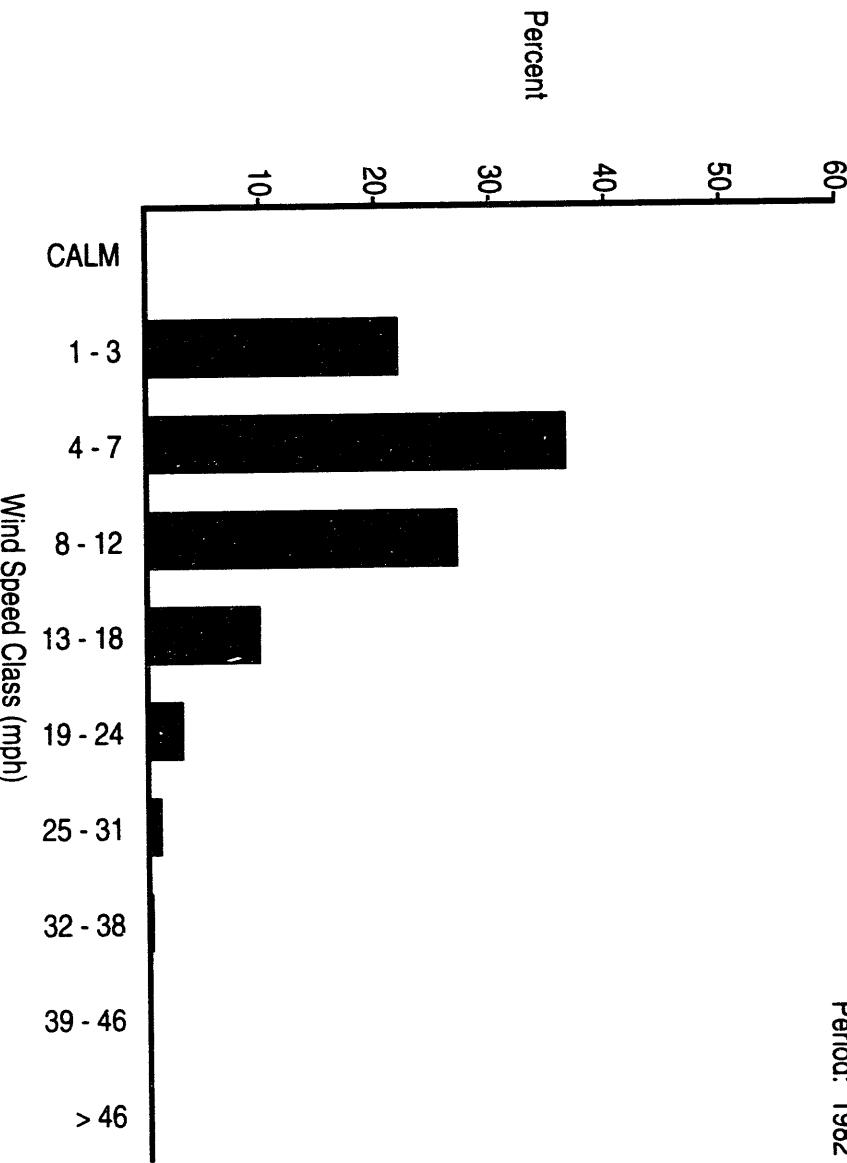


FIGURE B.1. (contd)

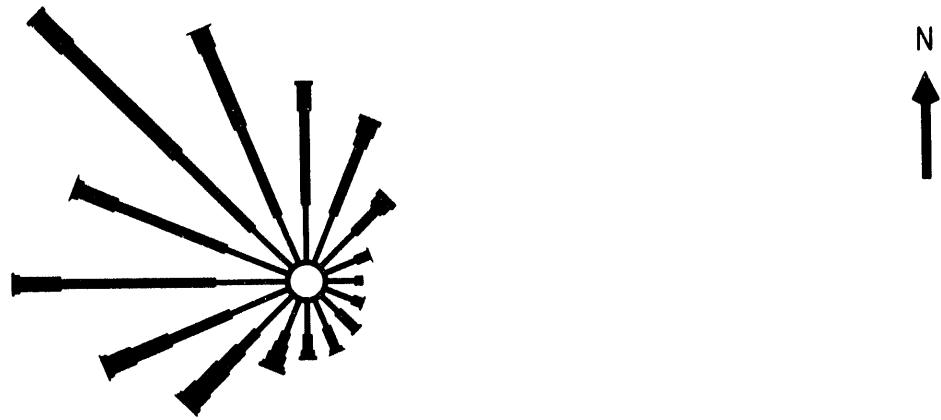
(a) Wind Rose
February Data
Period: 1982 - 1993



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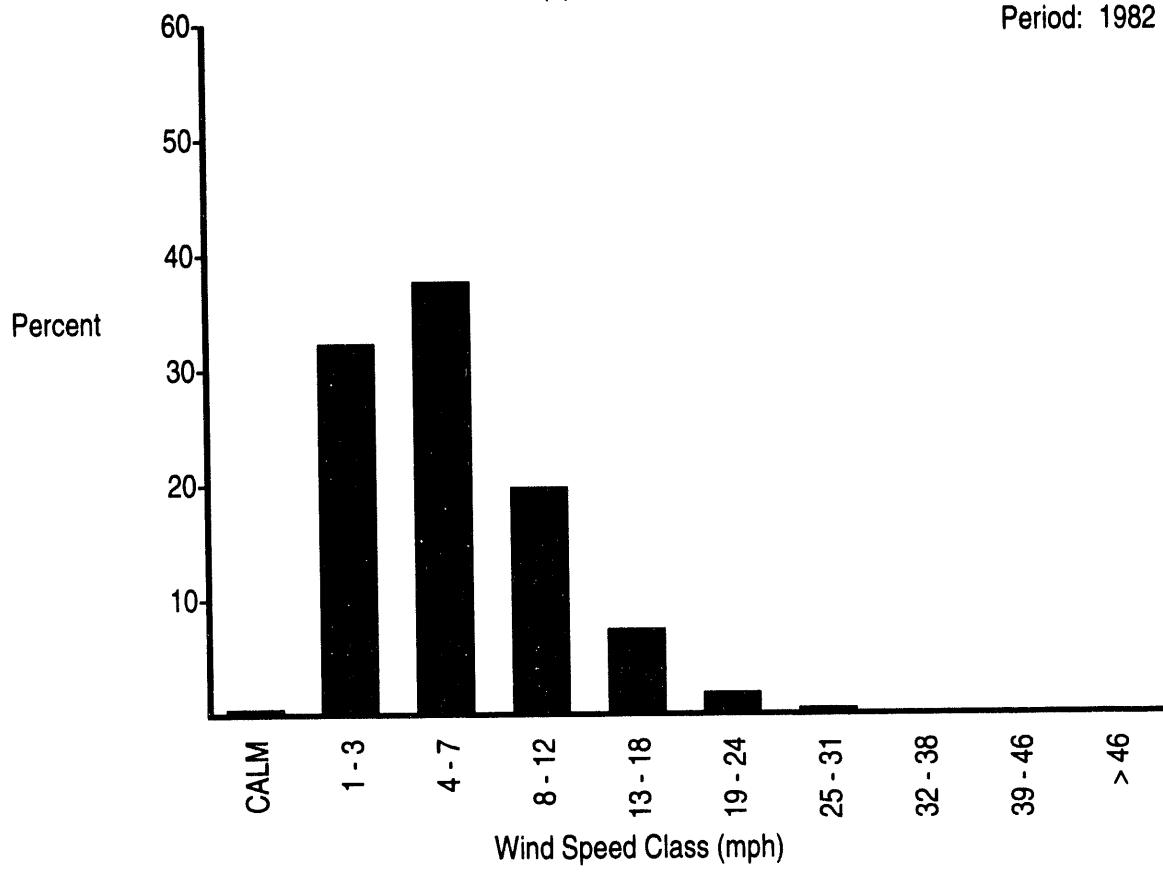


(b) Wind Speed Histogram
FIGURE B.1. (contd)



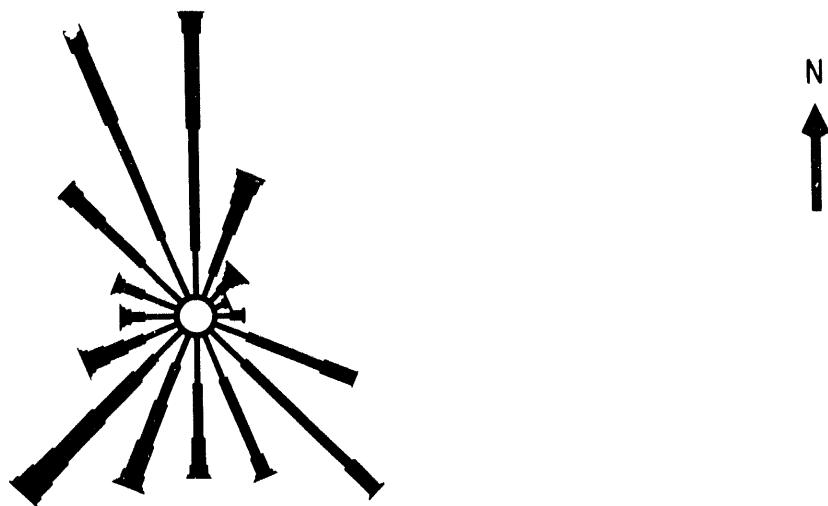
(a) Wind Rose

February Data
Period: 1982 - 1993



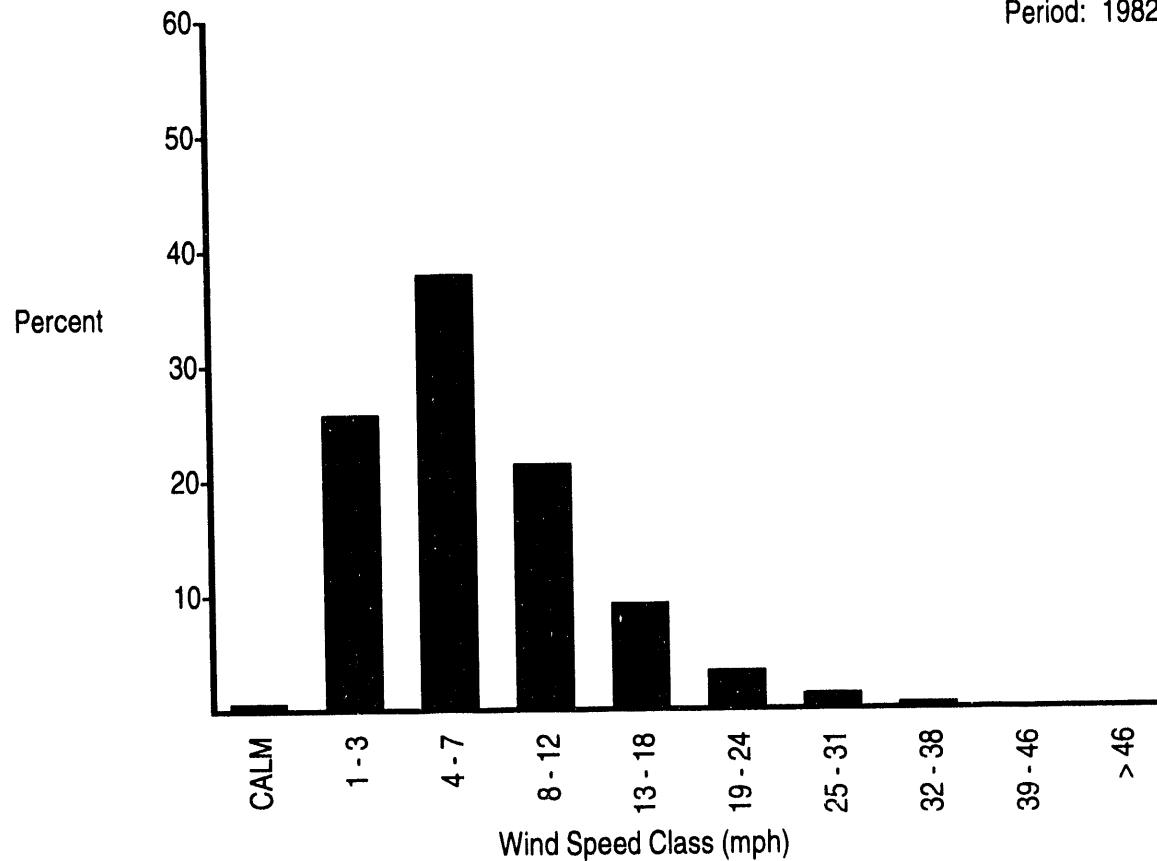
(b) Wind Speed Histogram

FIGURE B.1. (contd)



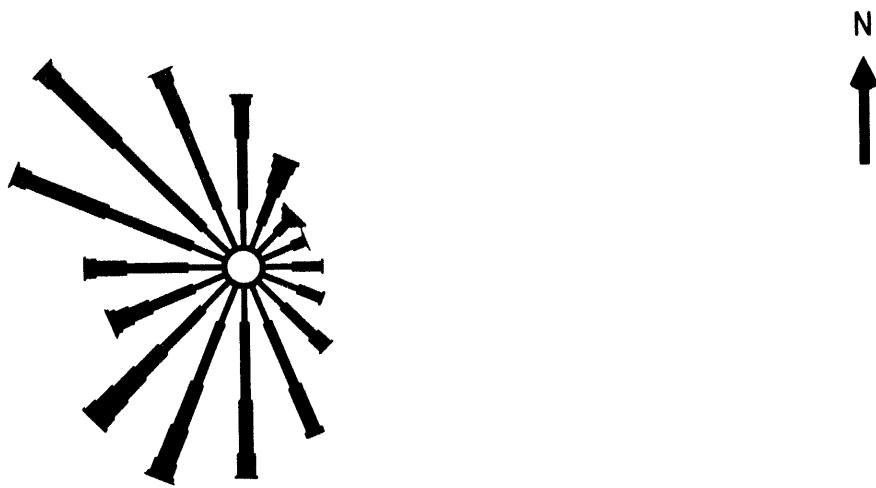
(a) Wind Rose

February Data
Period: 1982 - 1993



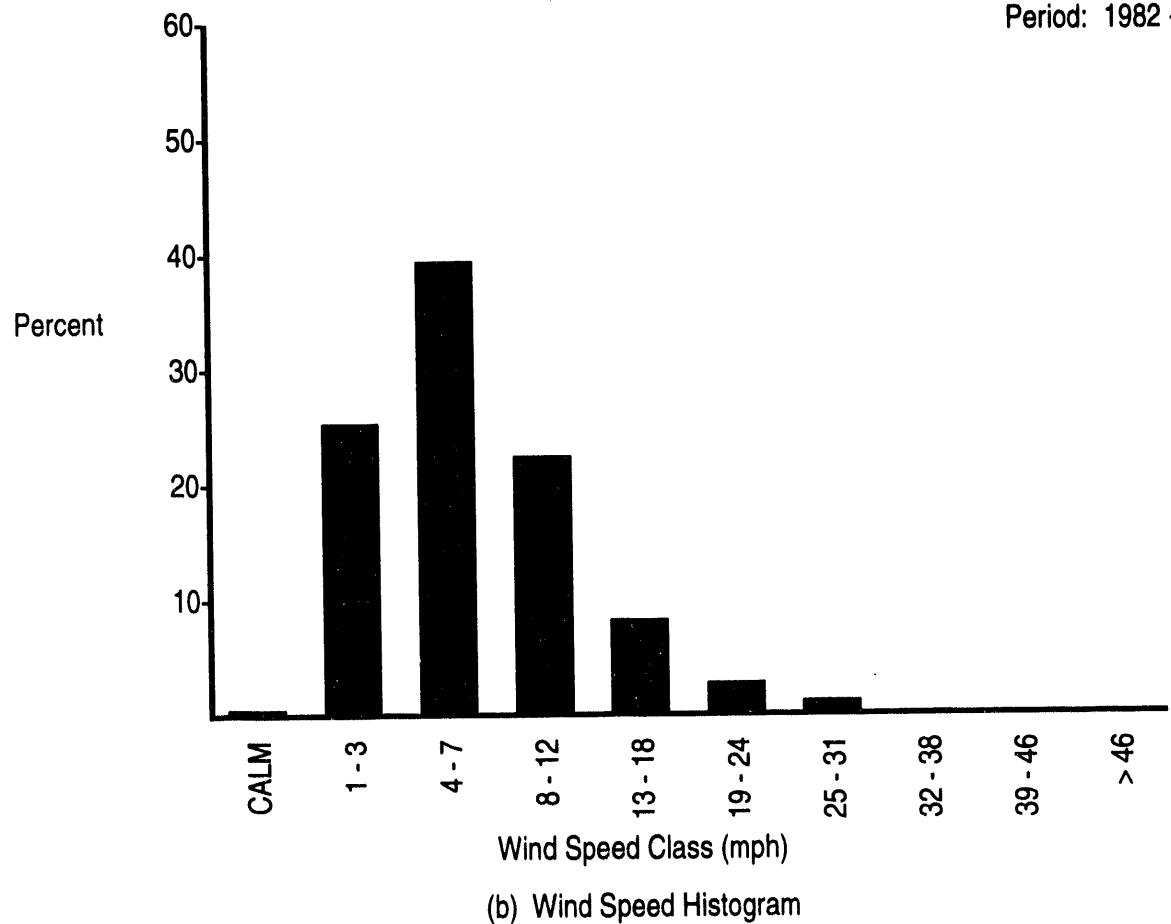
(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

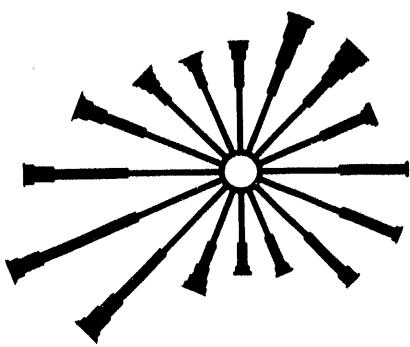
February Data
Period: 1982 - 1993



(b) Wind Speed Histogram

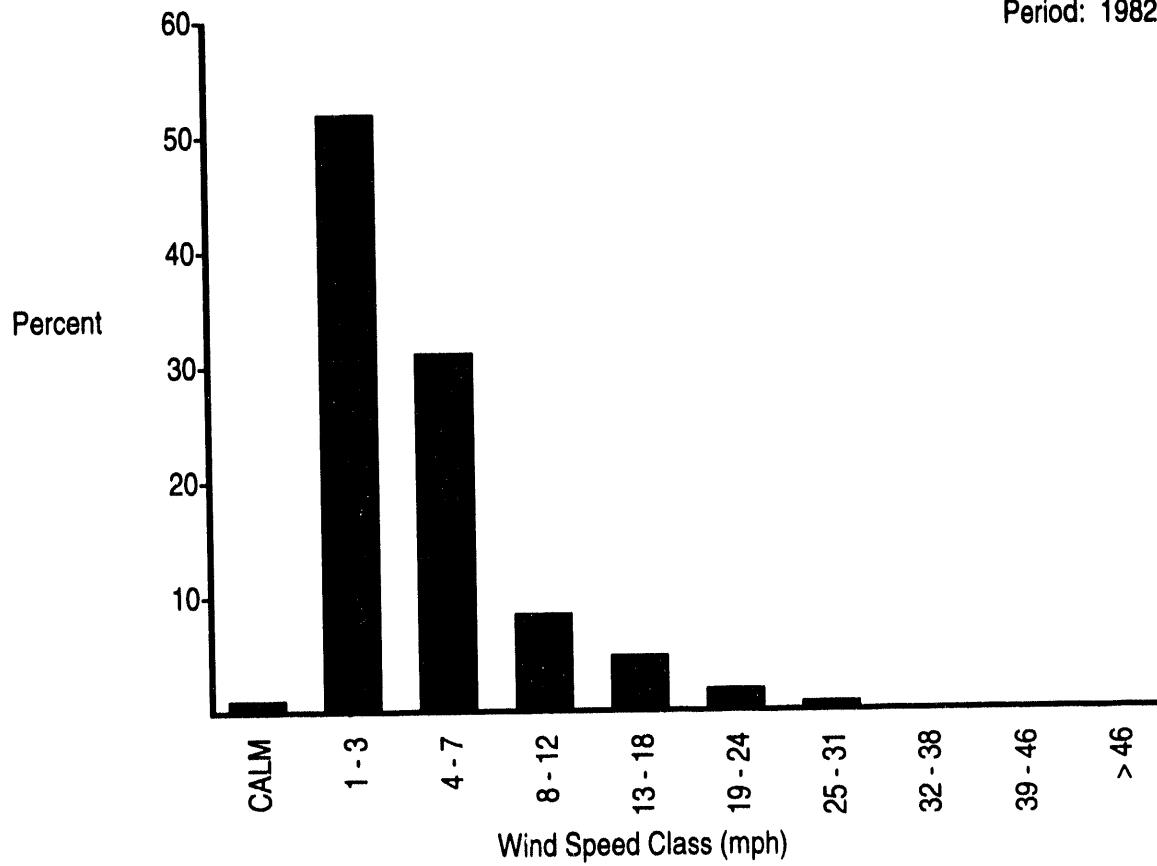
FIGURE B.1. (contd)

N
↑



(a) Wind Rose

February Data
Period: 1982 - 1993



(b) Wind Speed Histogram

FIGURE B.1. (contd)

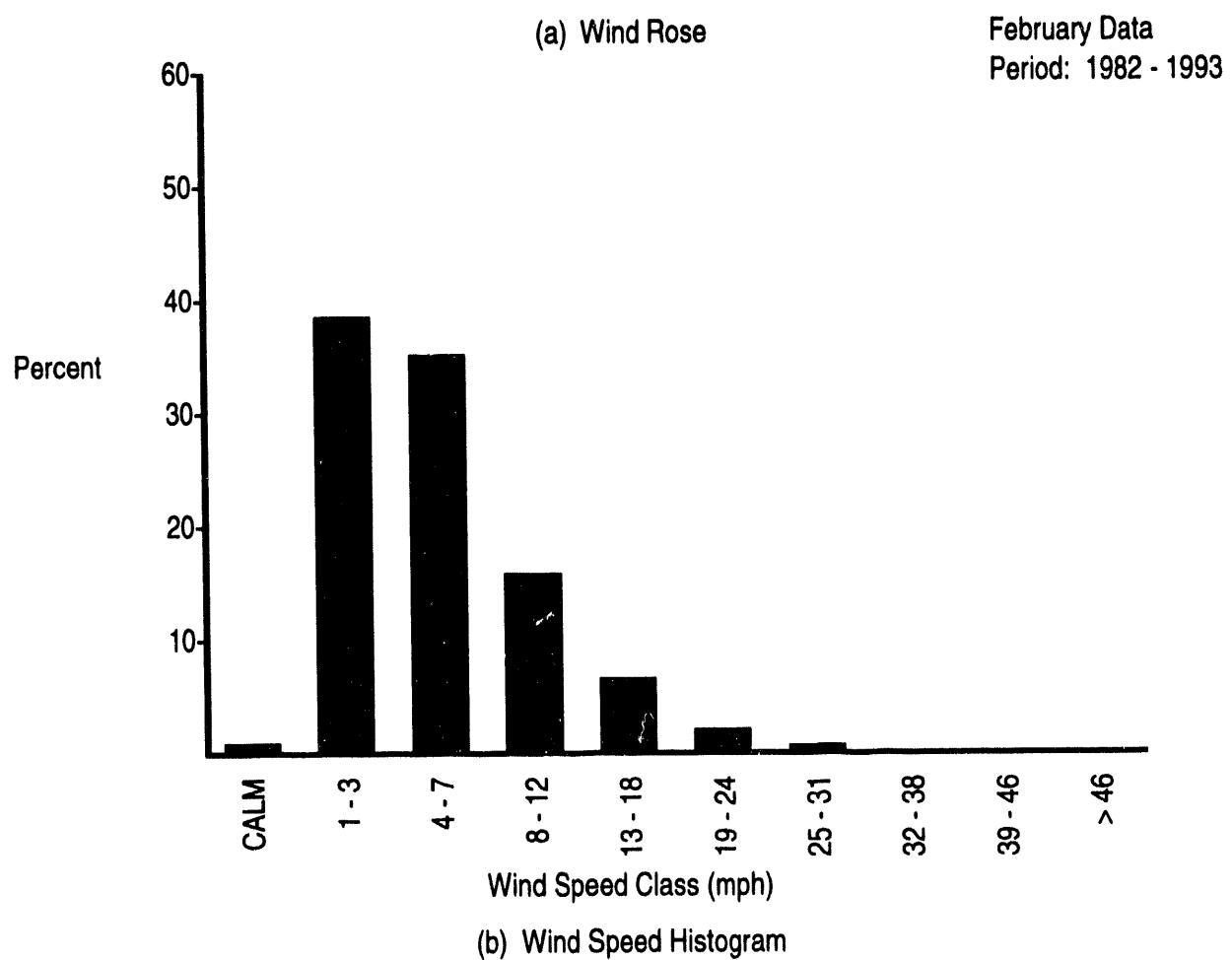
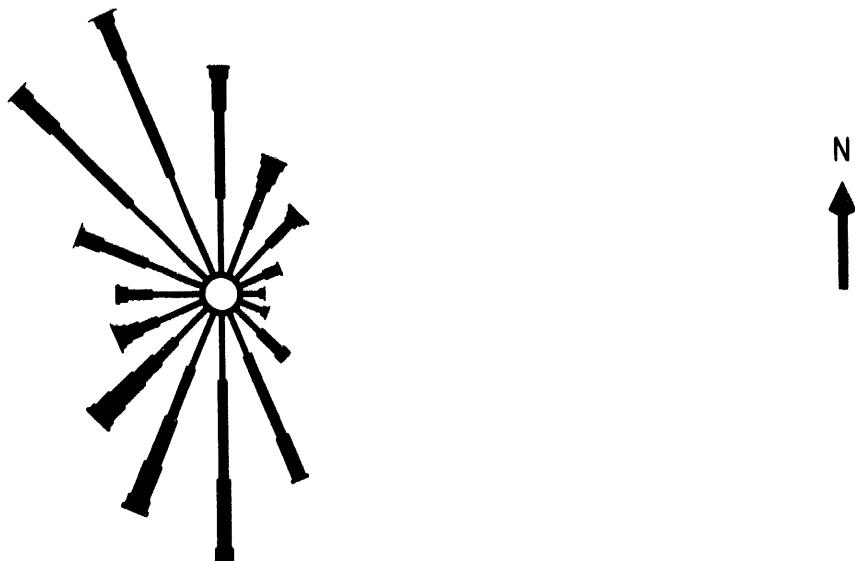
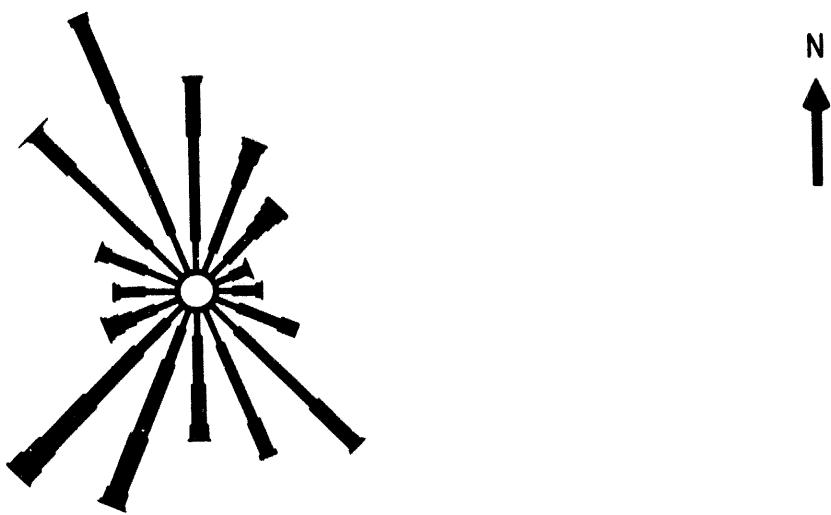
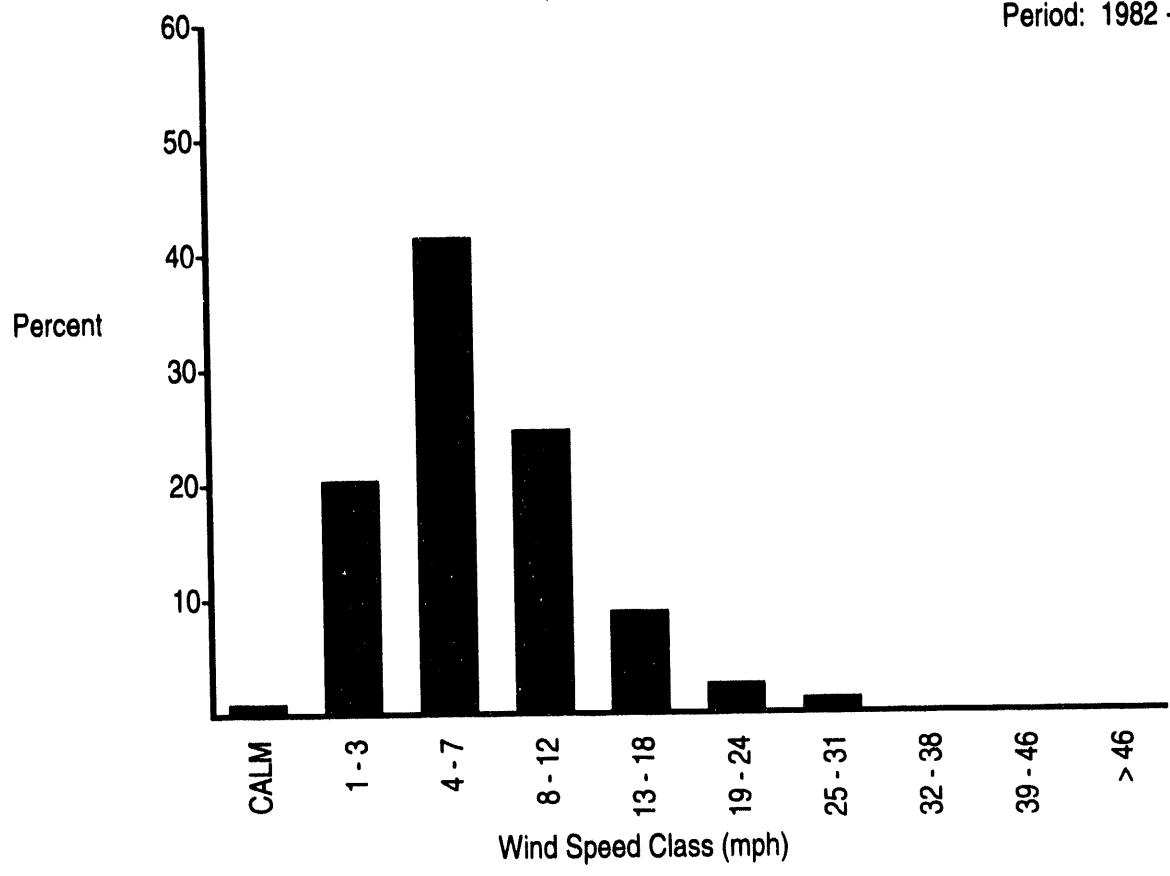


FIGURE B.1. (contd)



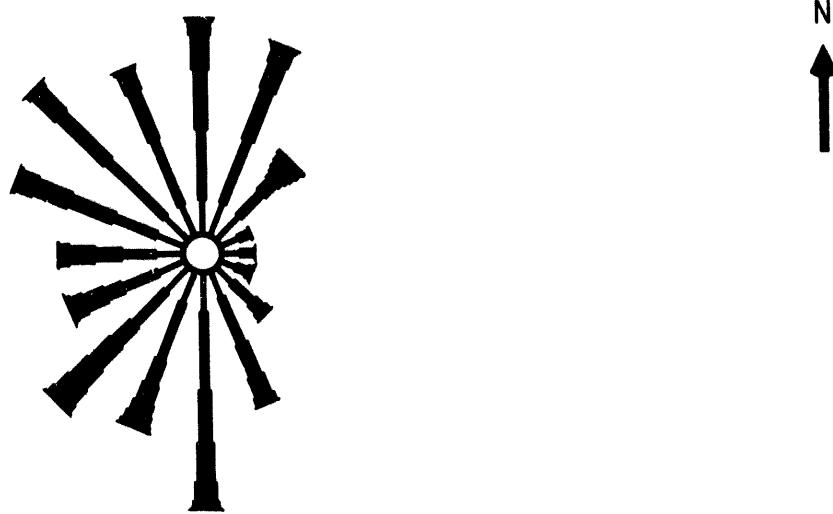
(a) Wind Rose

February Data
Period: 1982 - 1993



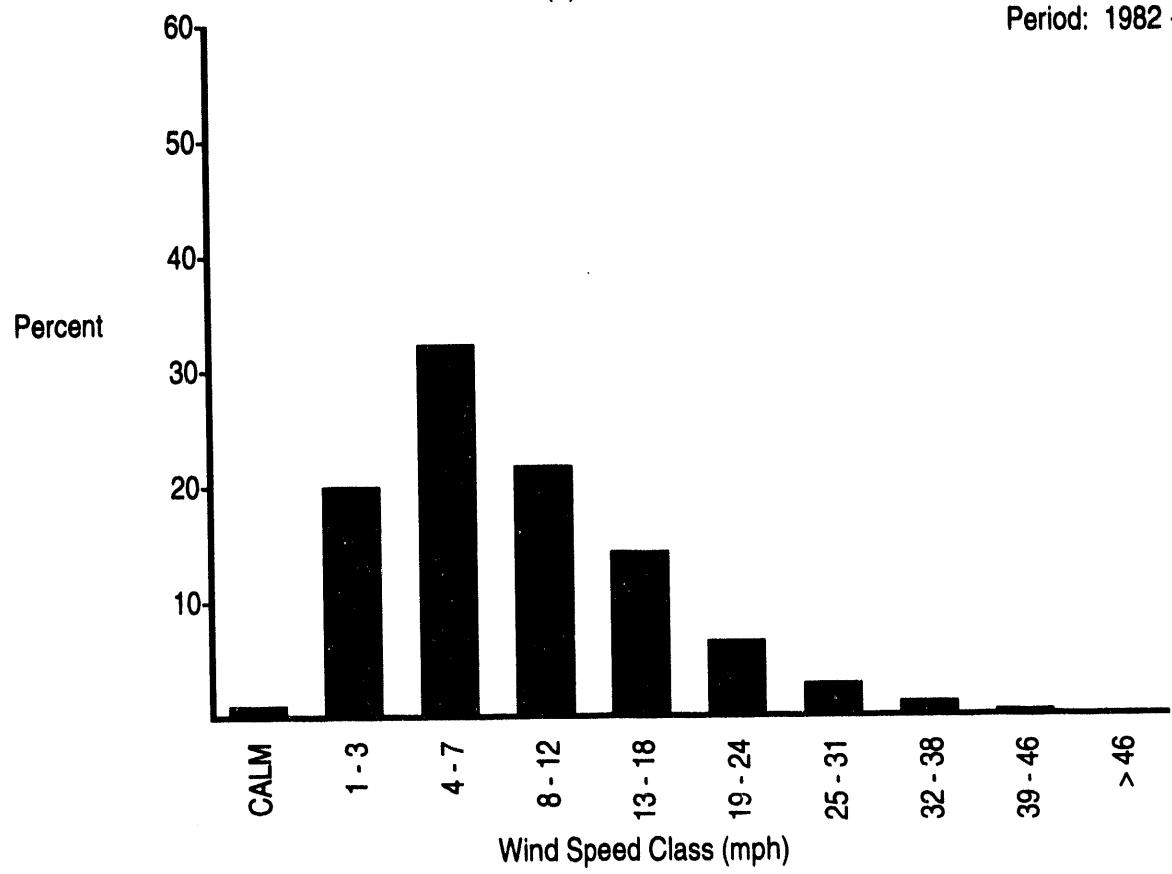
(b) Wind Speed Histogram

FIGURE B.1. (contd)



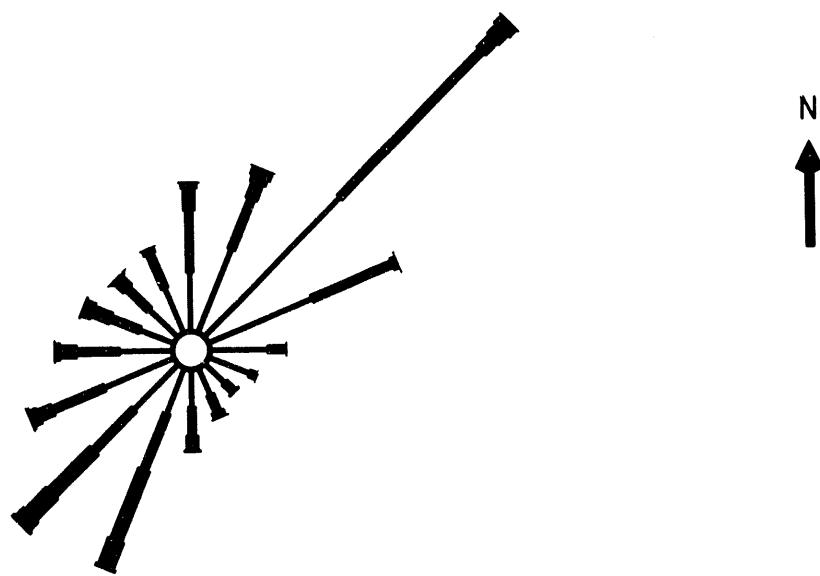
(a) Wind Rose

February Data
Period: 1982 - 1993



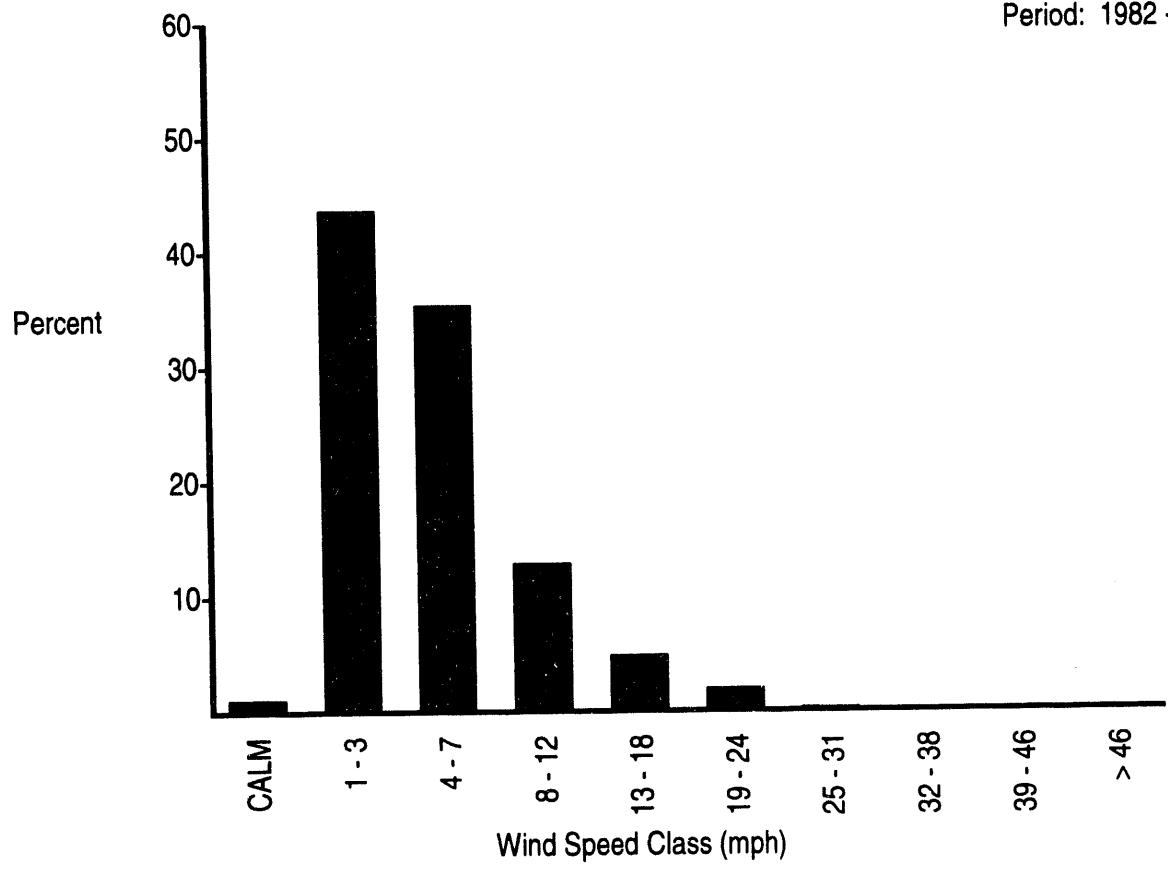
(b) Wind Speed Histogram

FIGURE B.1. (contd)



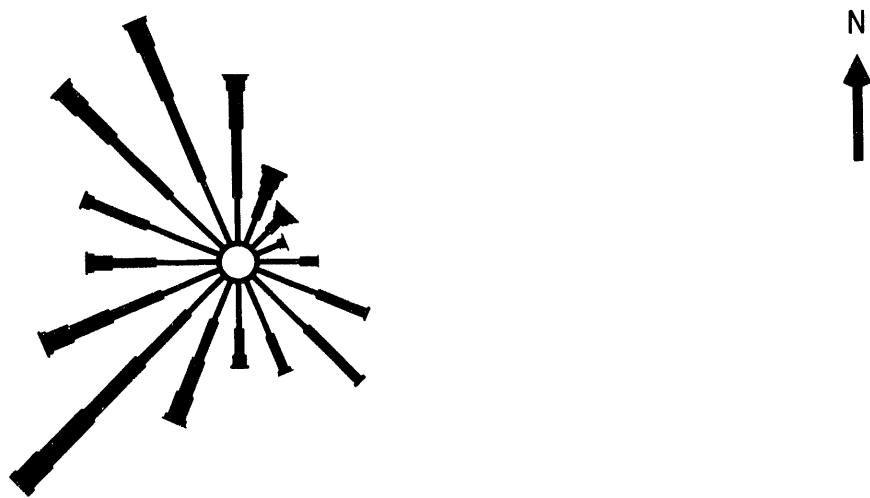
(a) Wind Rose

February Data
Period: 1982 - 1993



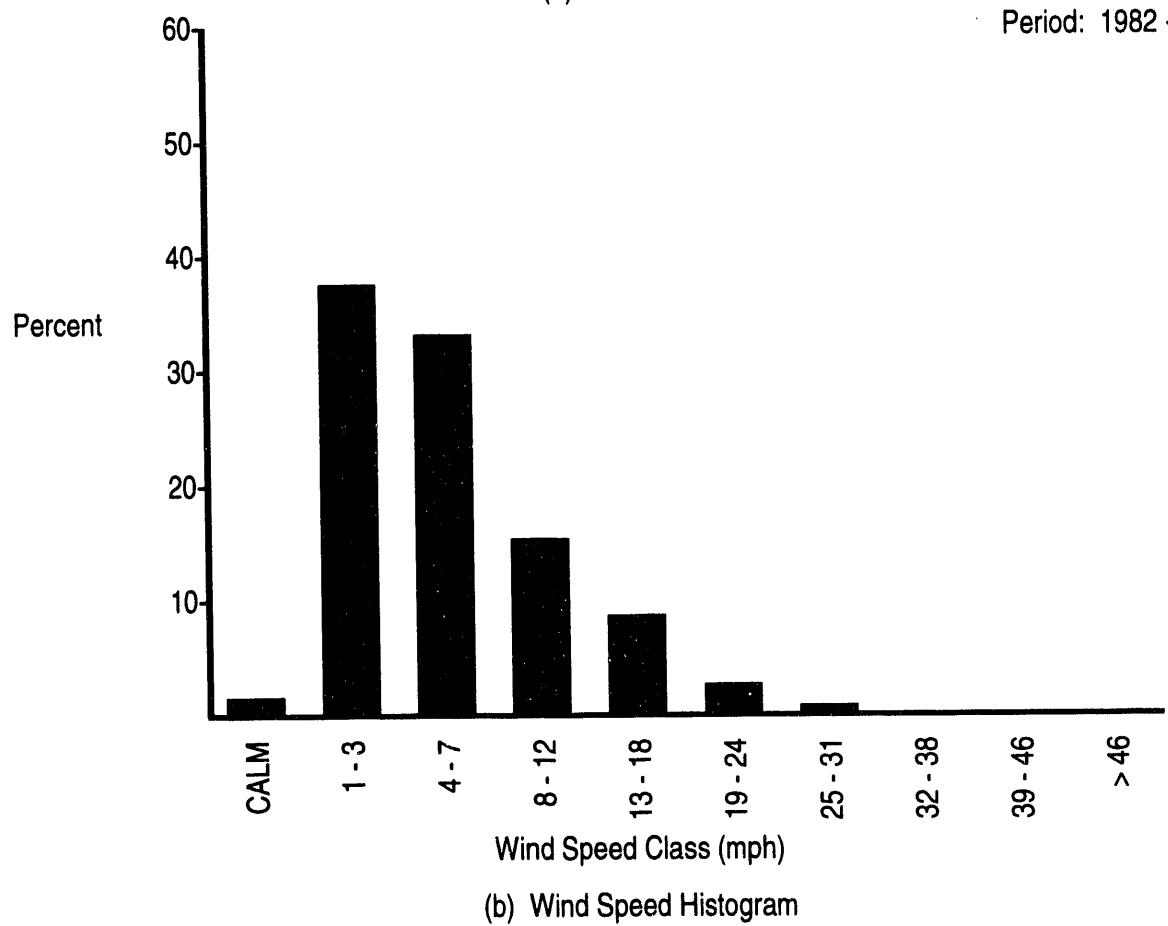
(b) Wind Speed Histogram

FIGURE B.1. (contd)



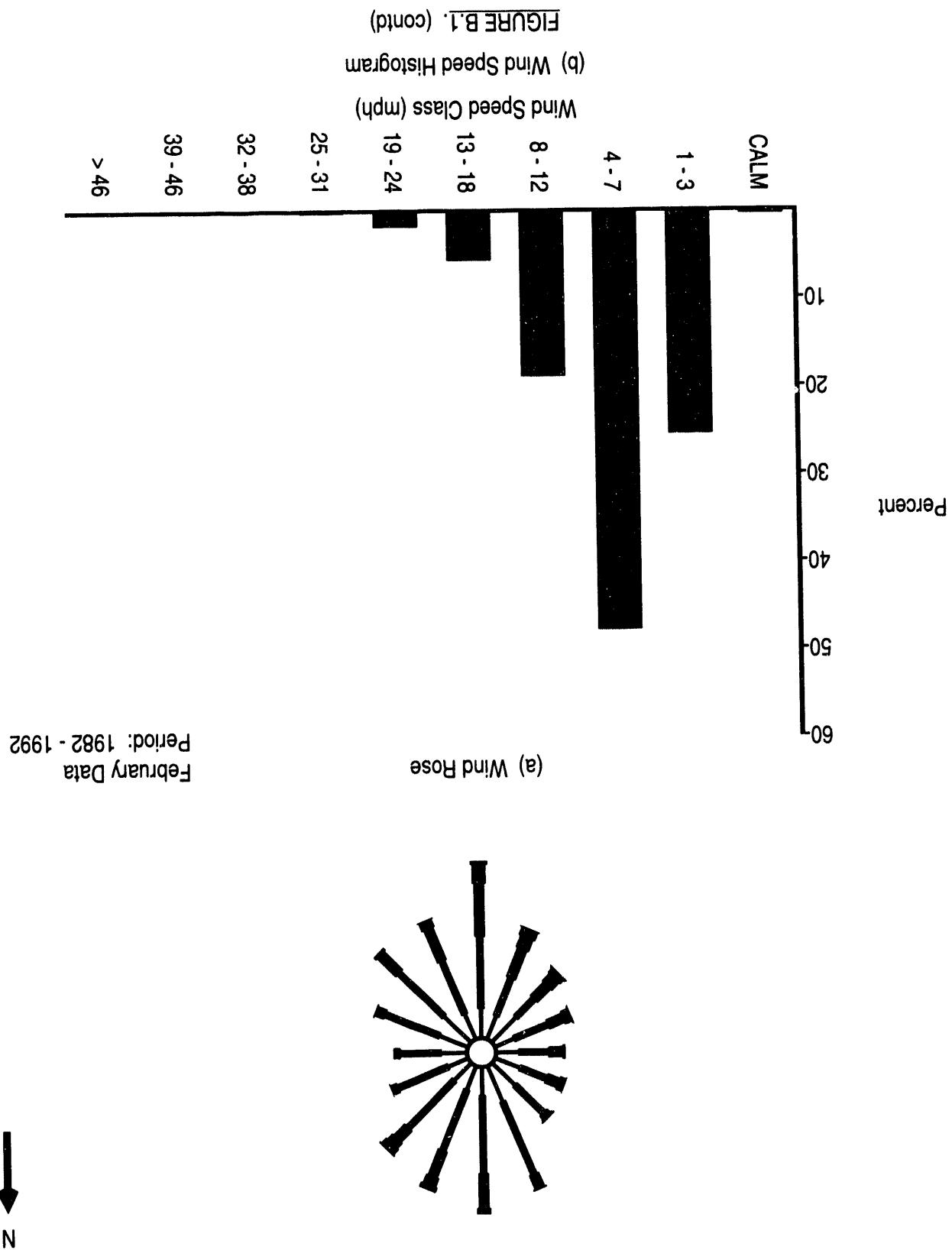
(a) Wind Rose

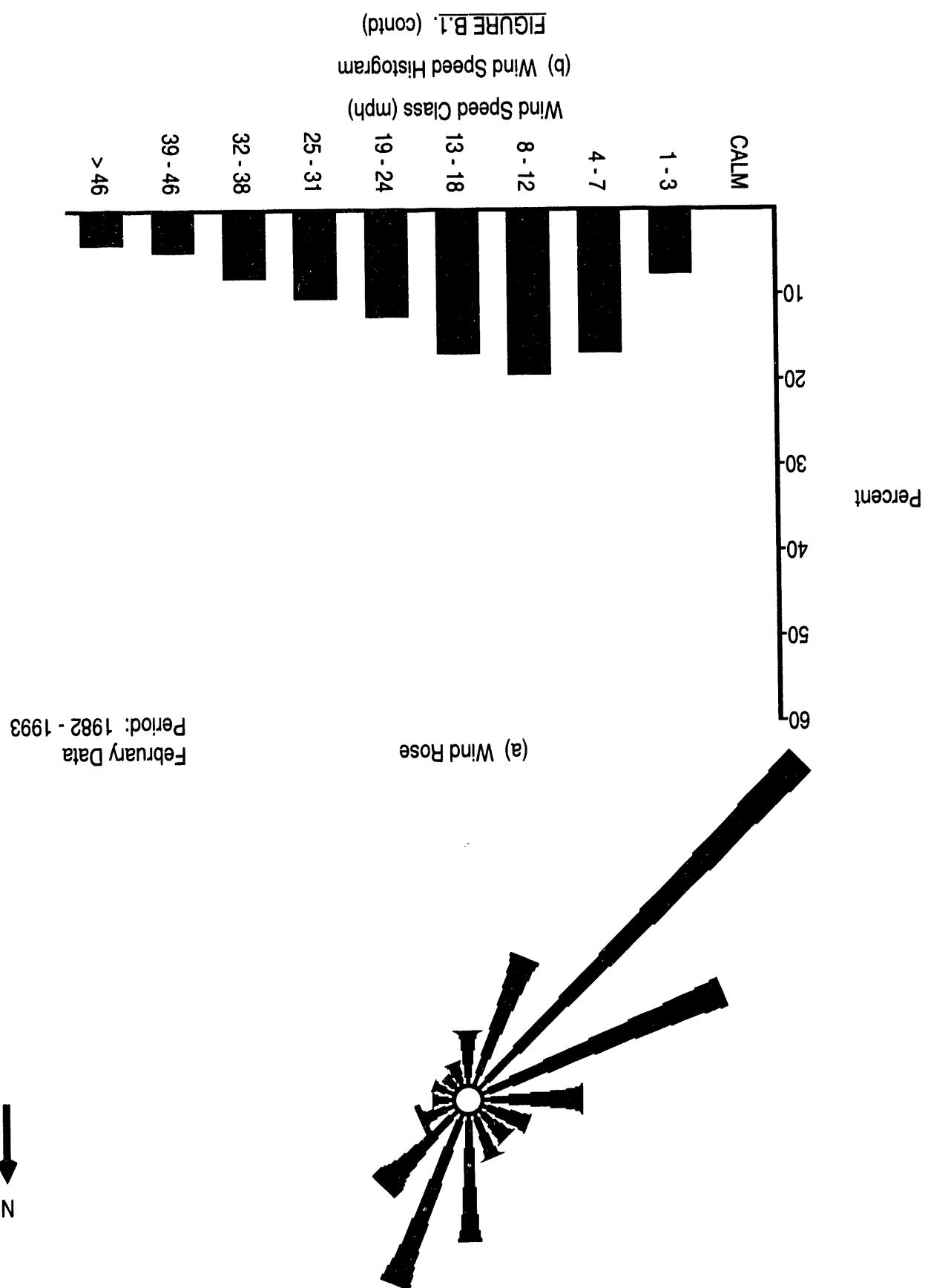
February Data
Period: 1982 - 1993

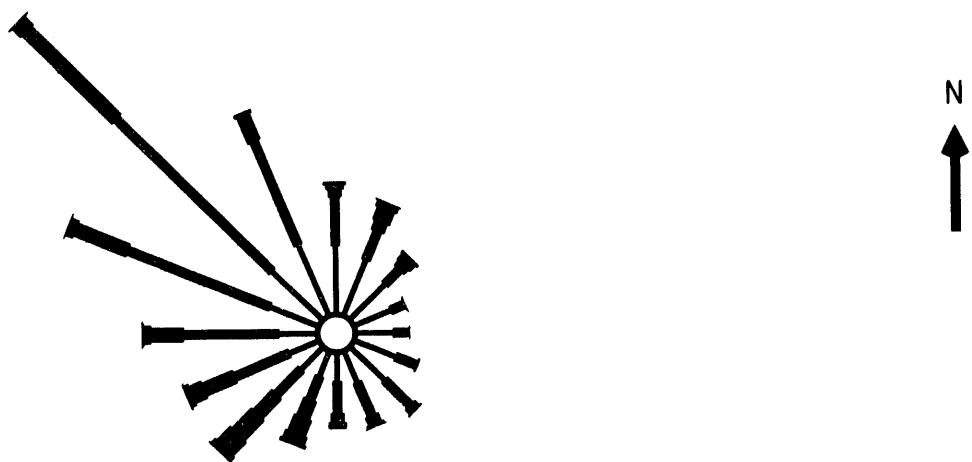


(b) Wind Speed Histogram

FIGURE B.1. (contd)







(a) Wind Rose

February Data
Period: 1982 - 1993

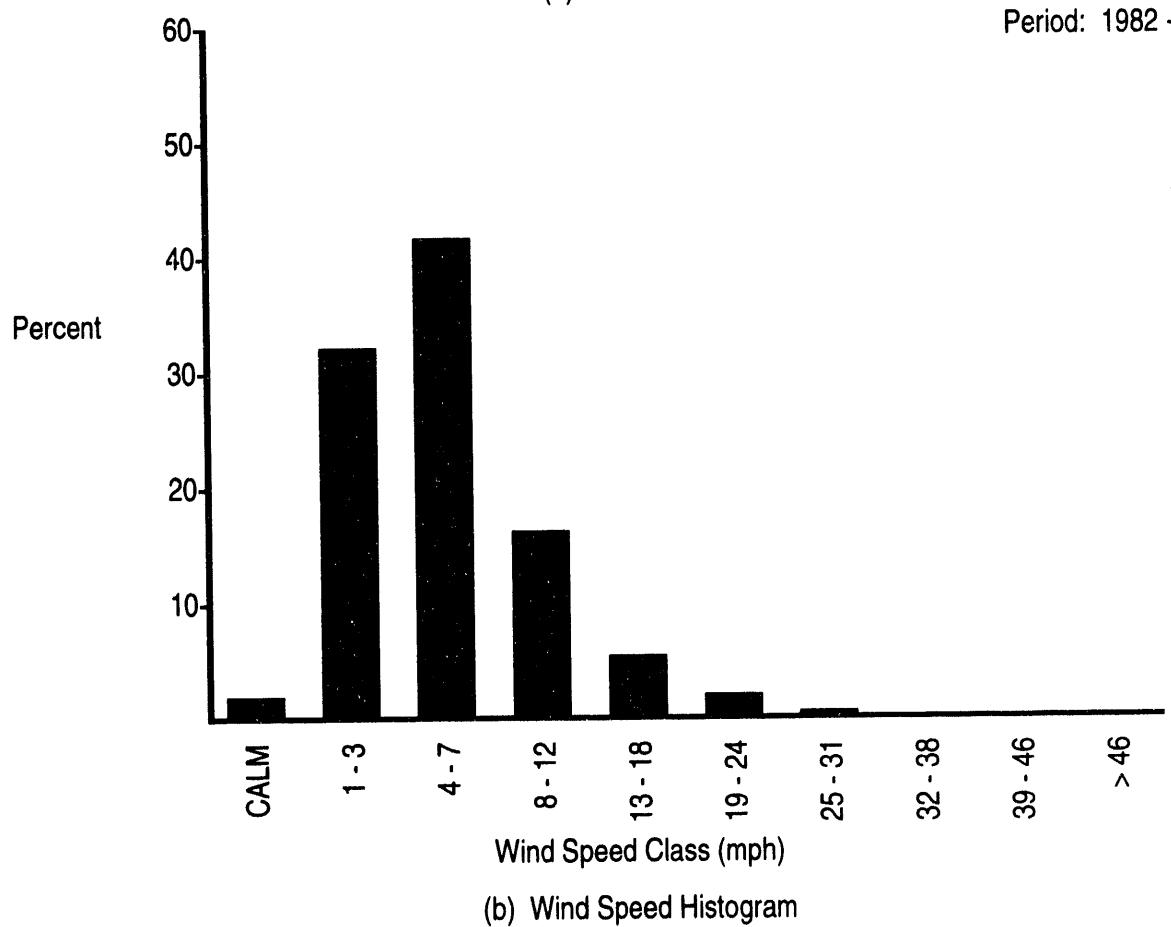
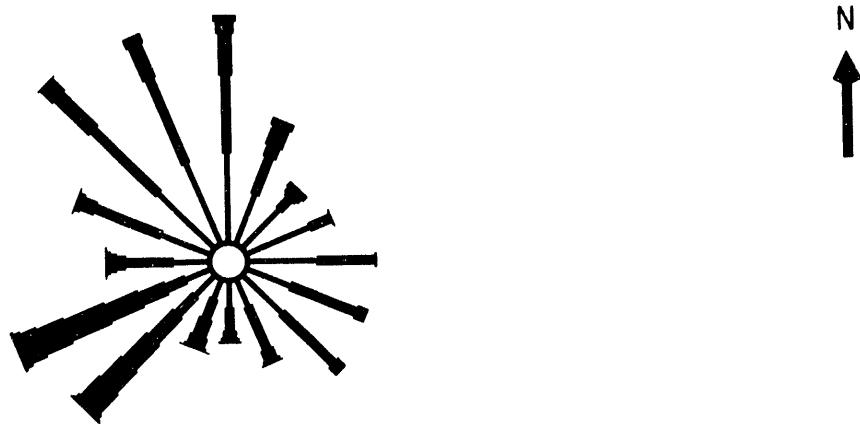
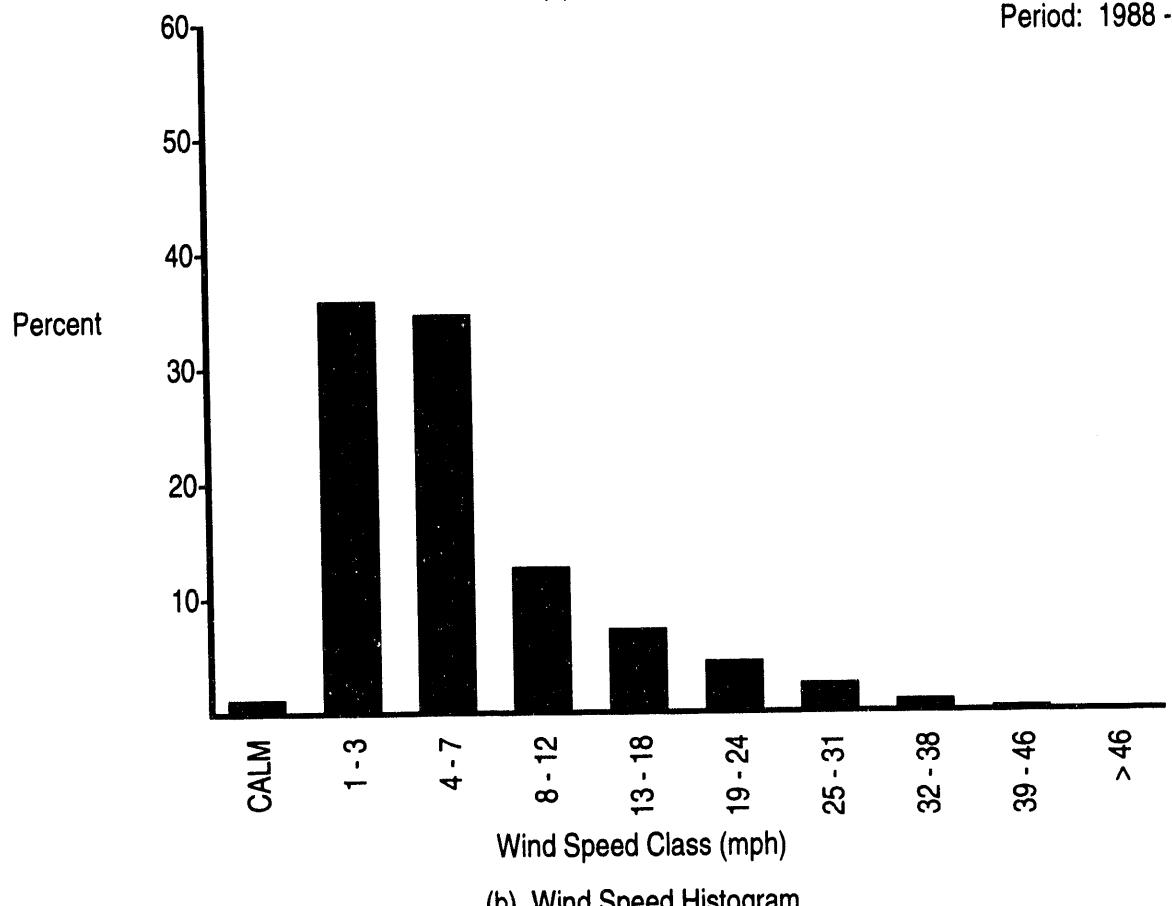


FIGURE B.1. (contd)



(a) Wind Rose

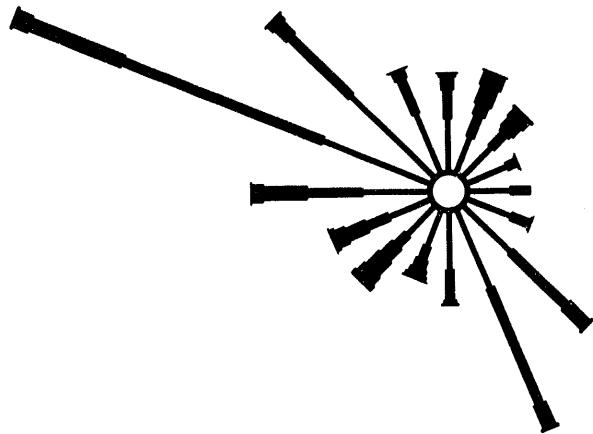
February Data
Period: 1988 - 1993



(b) Wind Speed Histogram

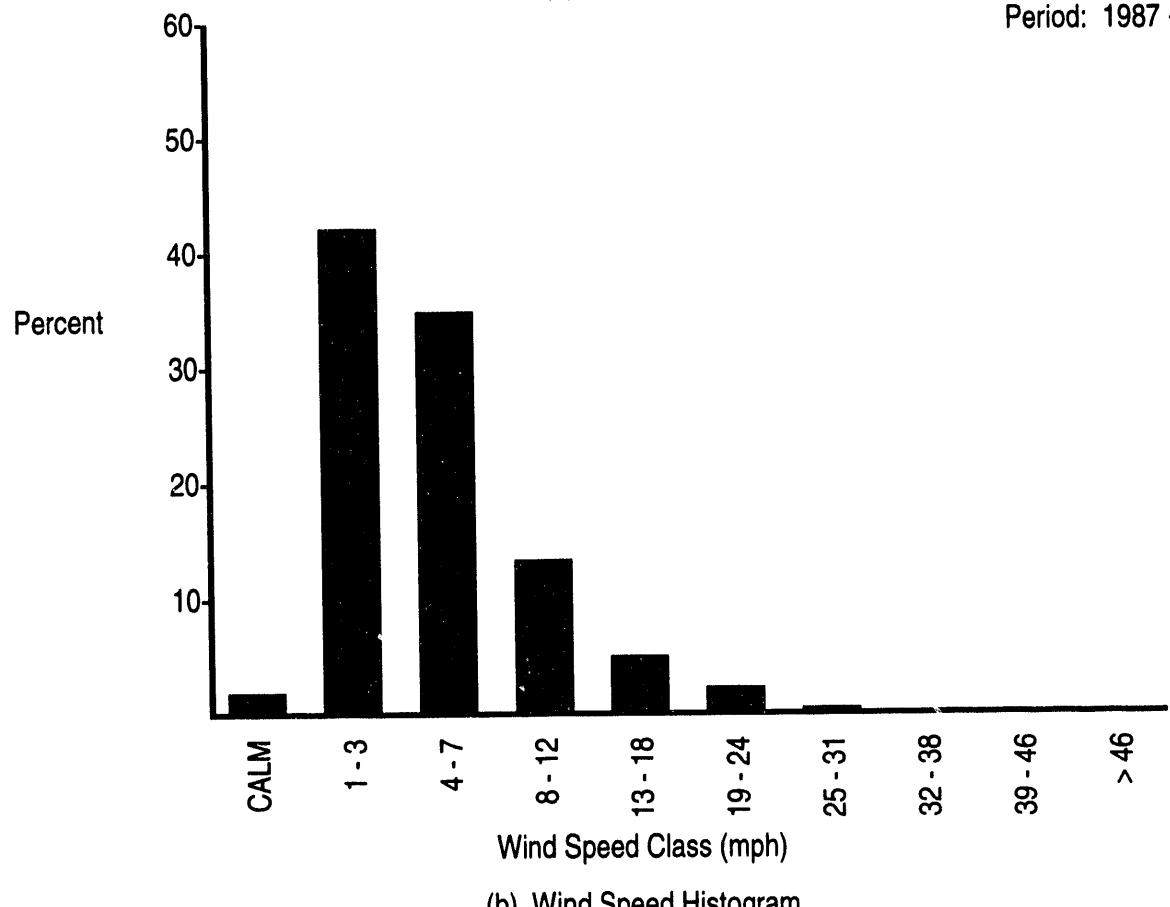
FIGURE B.1. (contd)

N
↑



(a) Wind Rose

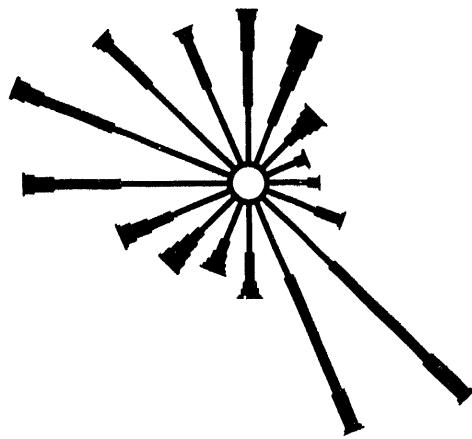
February Data
Period: 1987 - 1993



(b) Wind Speed Histogram

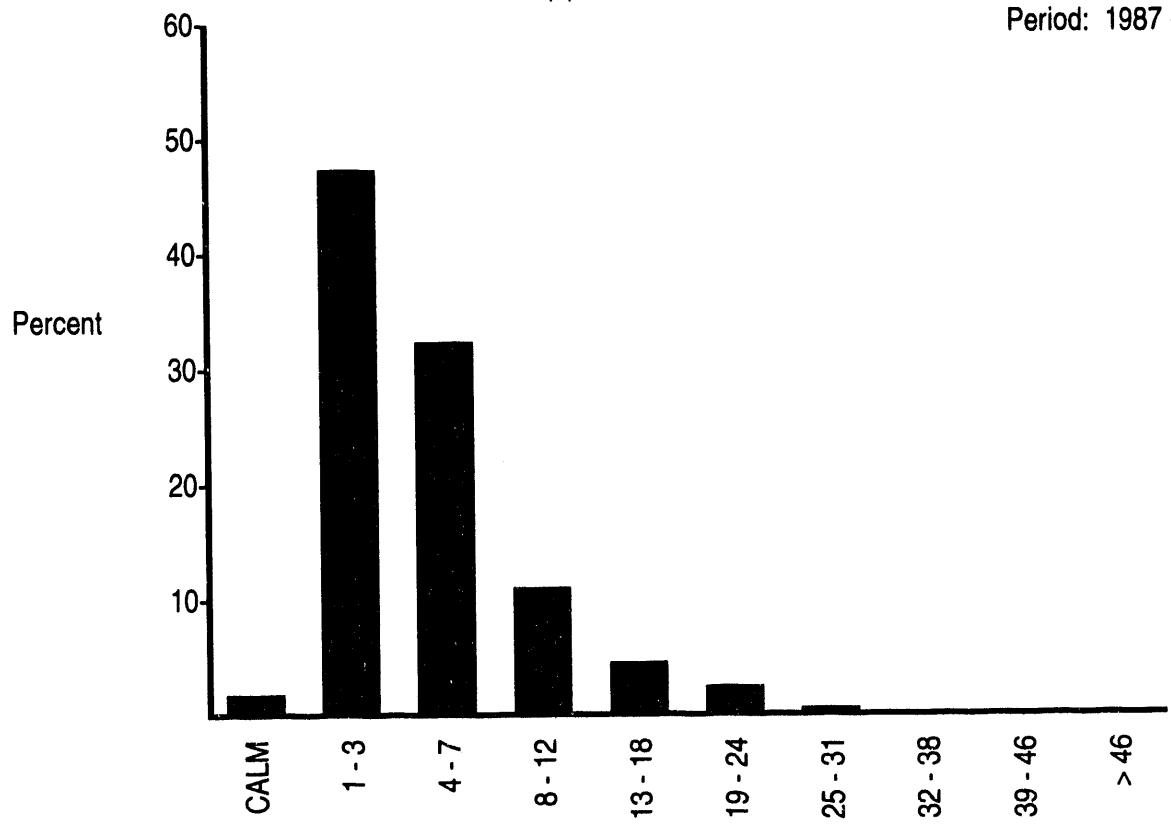
FIGURE B.1. (contd)

N
↑



(a) Wind Rose

February Data
Period: 1987 - 1993



(b) Wind Speed Histogram

FIGURE B.1. (contd)

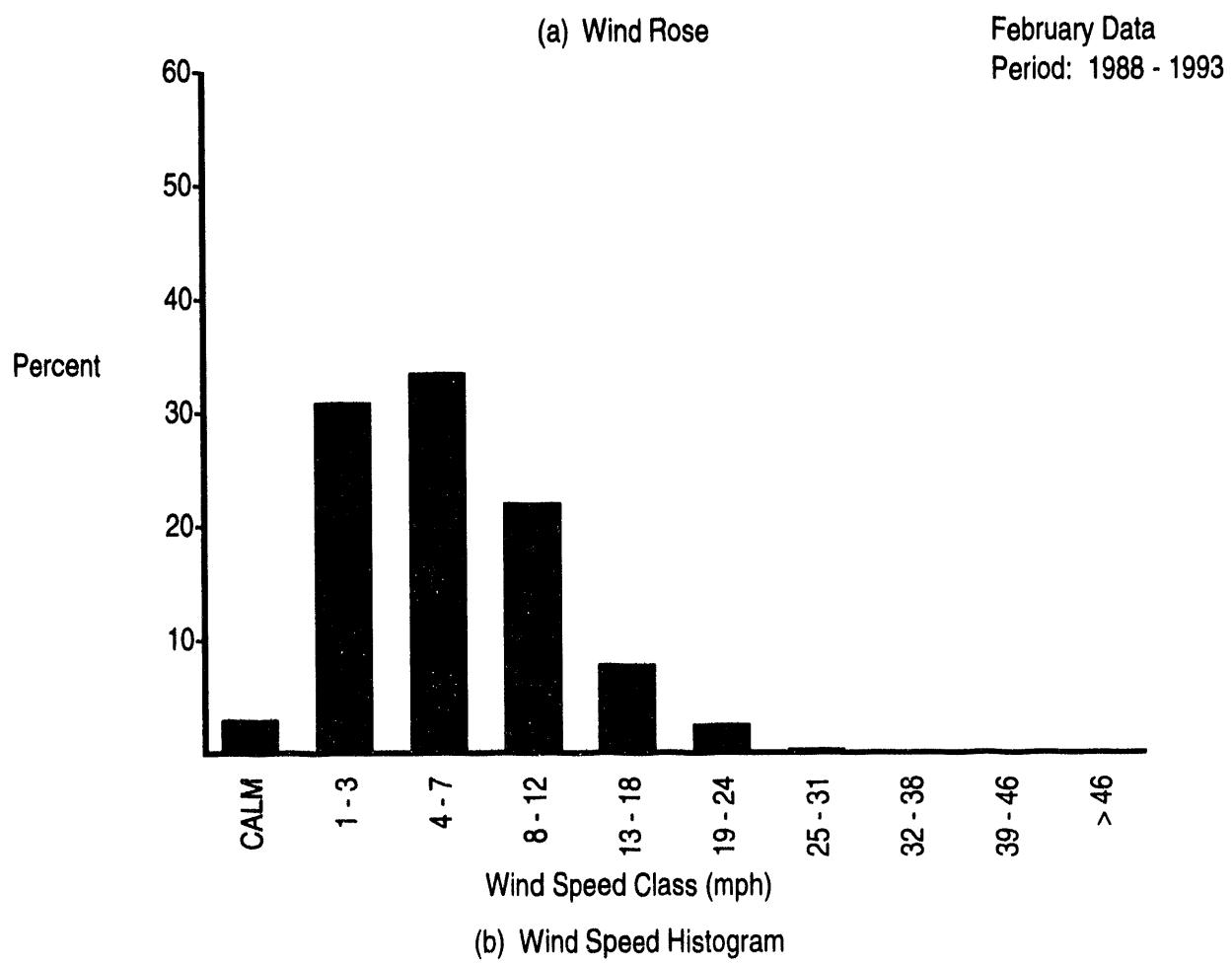
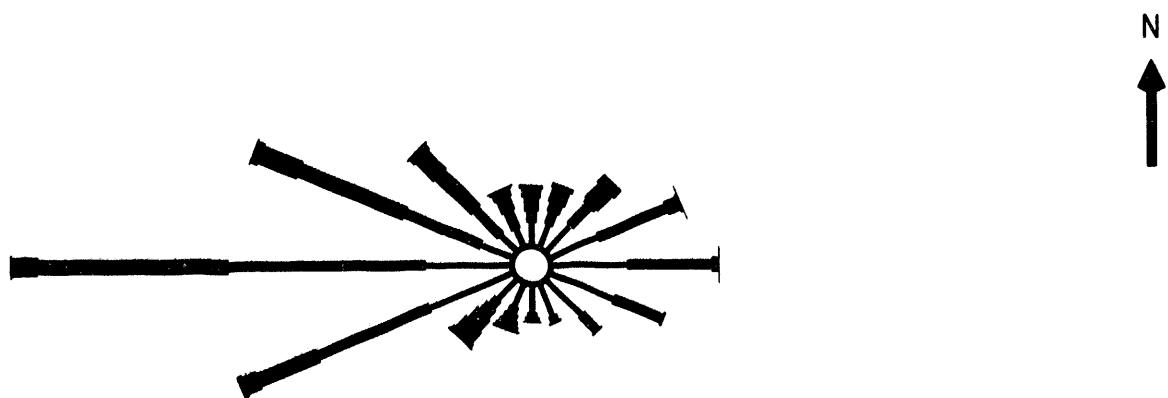
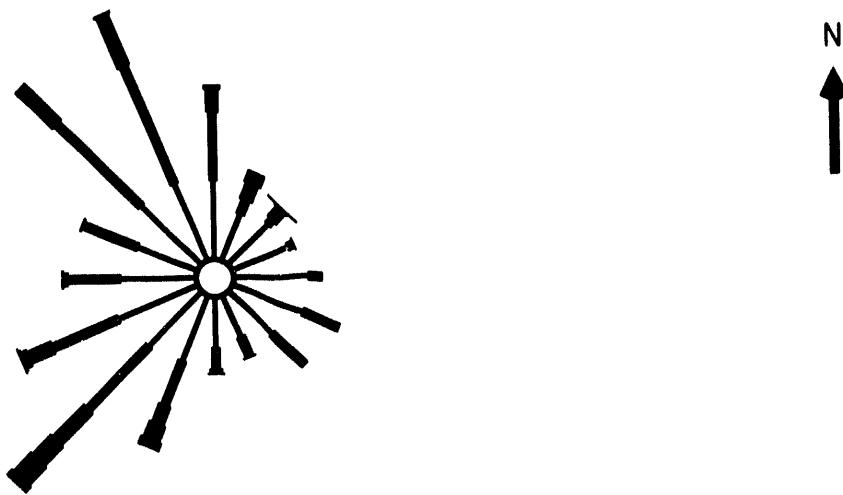
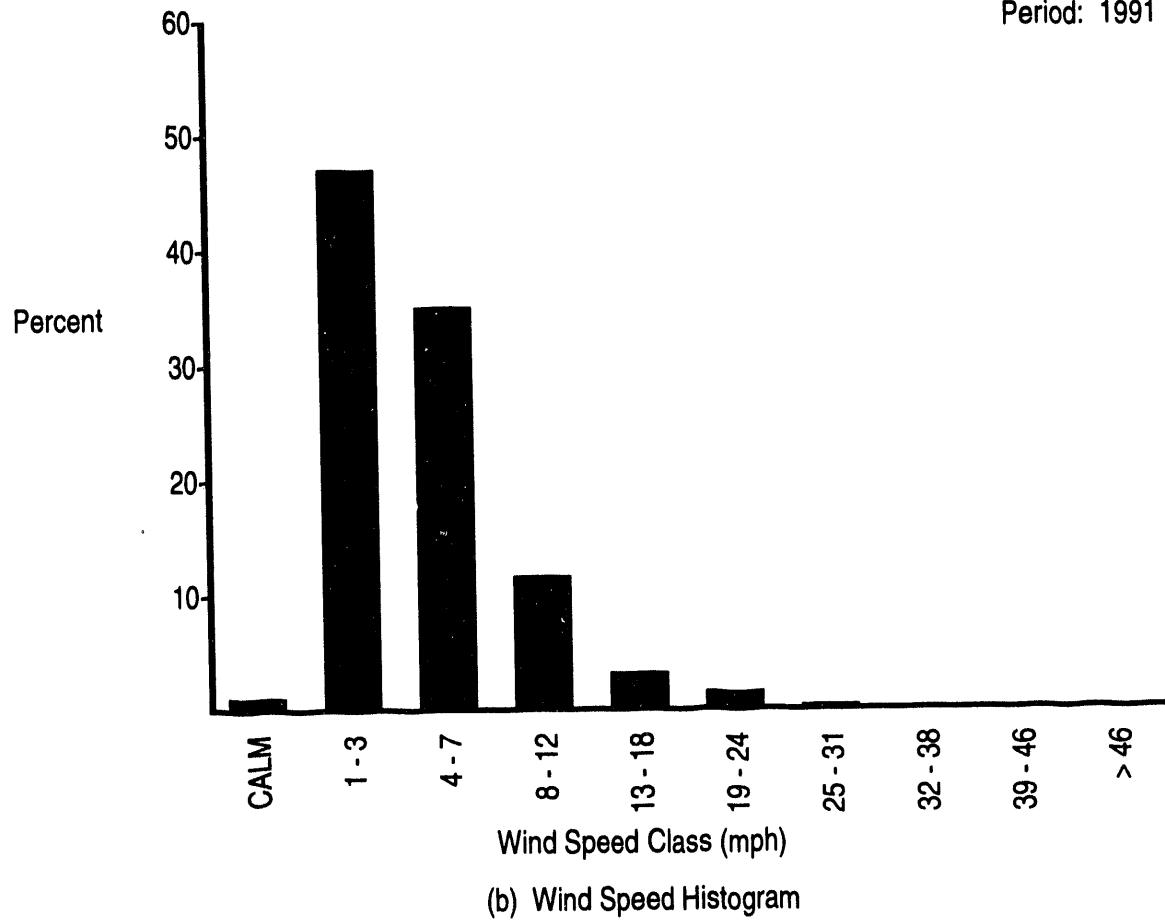


FIGURE B.1. (contd)



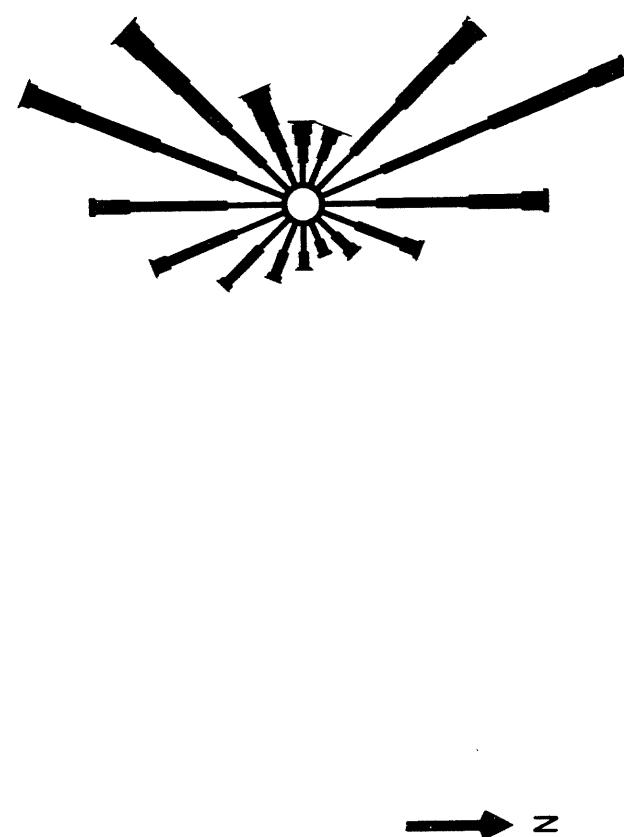
(a) Wind Rose

February Data
Period: 1991 - 1993



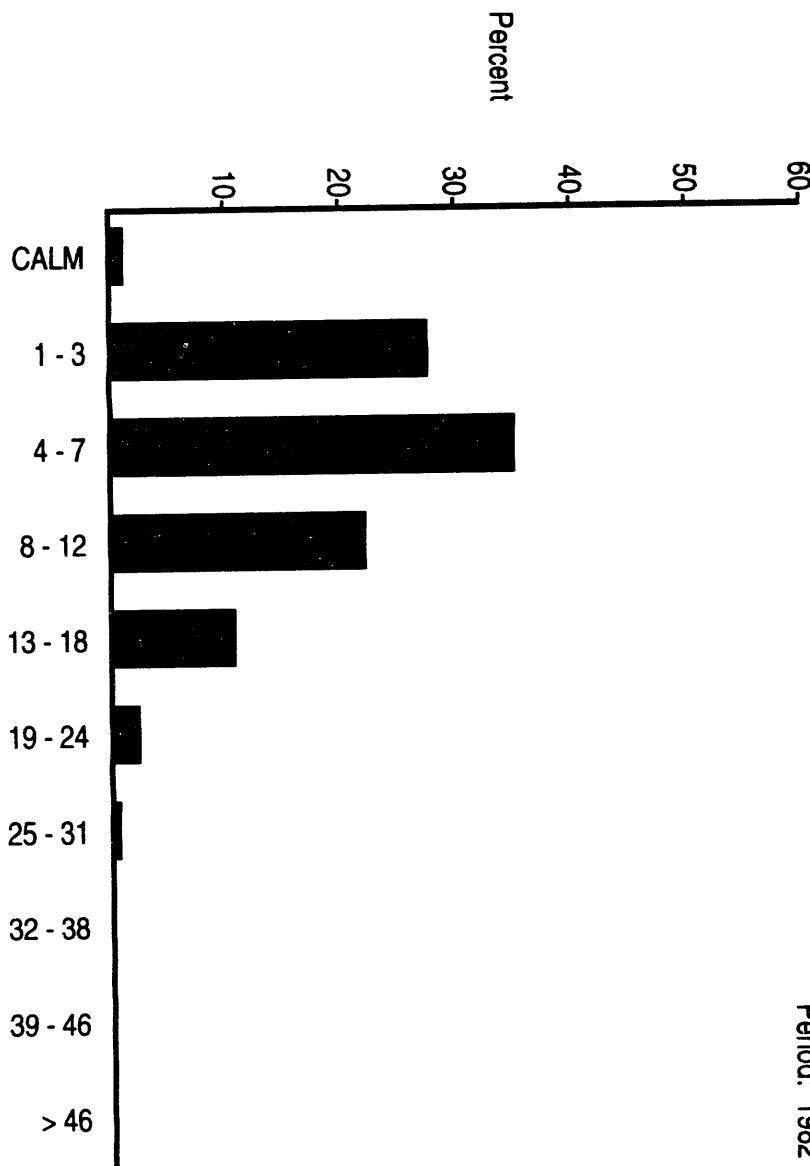
(b) Wind Speed Histogram

FIGURE B.1. (contd)



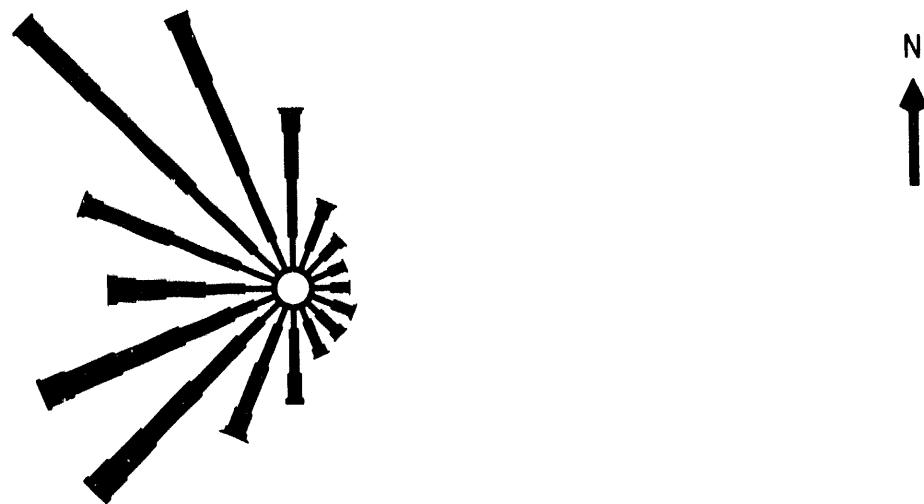
(a) Wind Rose

March Data
Period: 1982 - 1993



(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

March Data
Period: 1982 - 1993

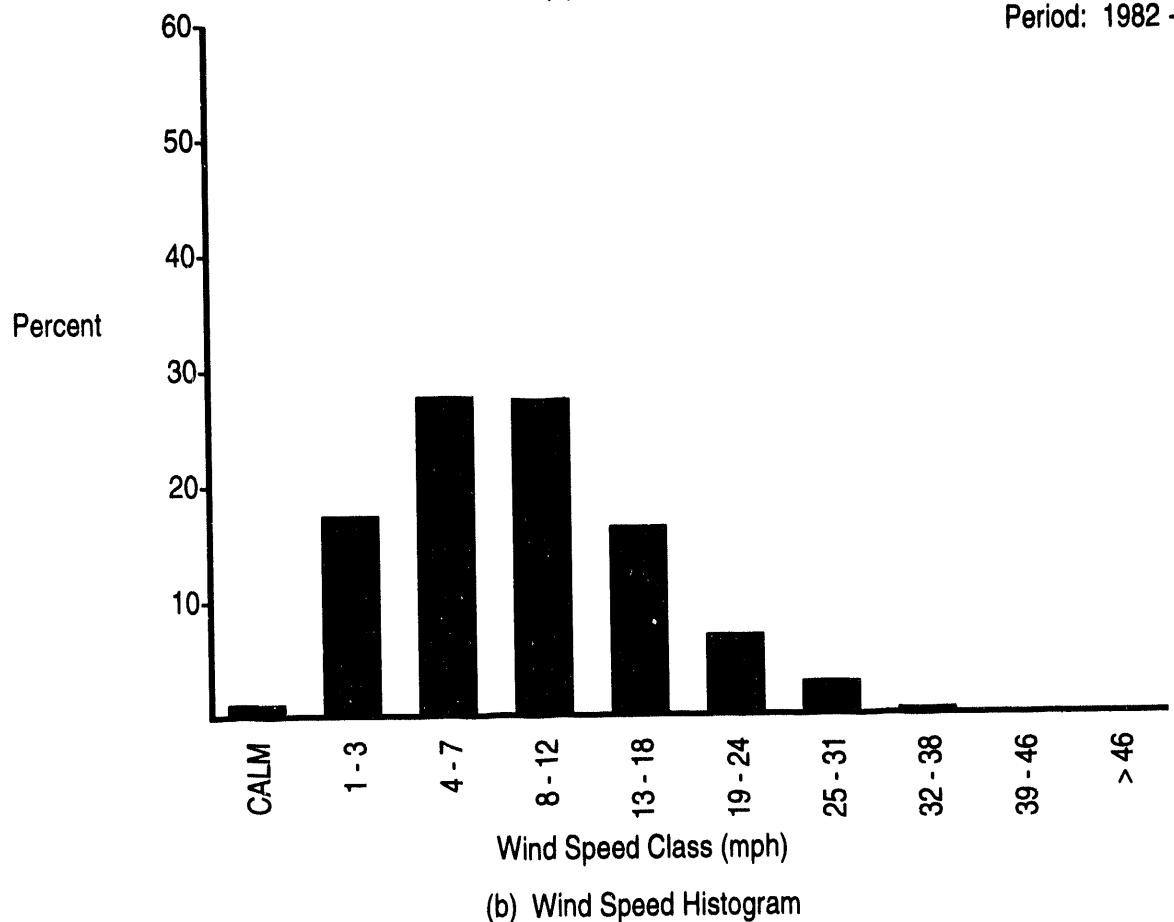
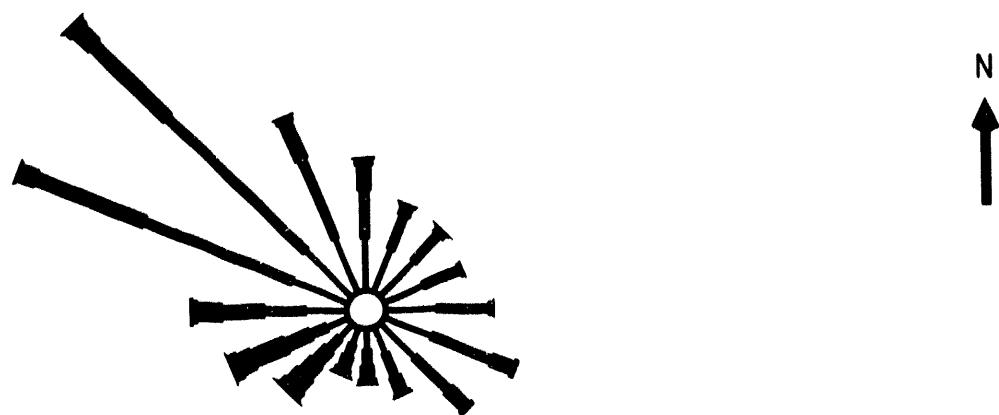
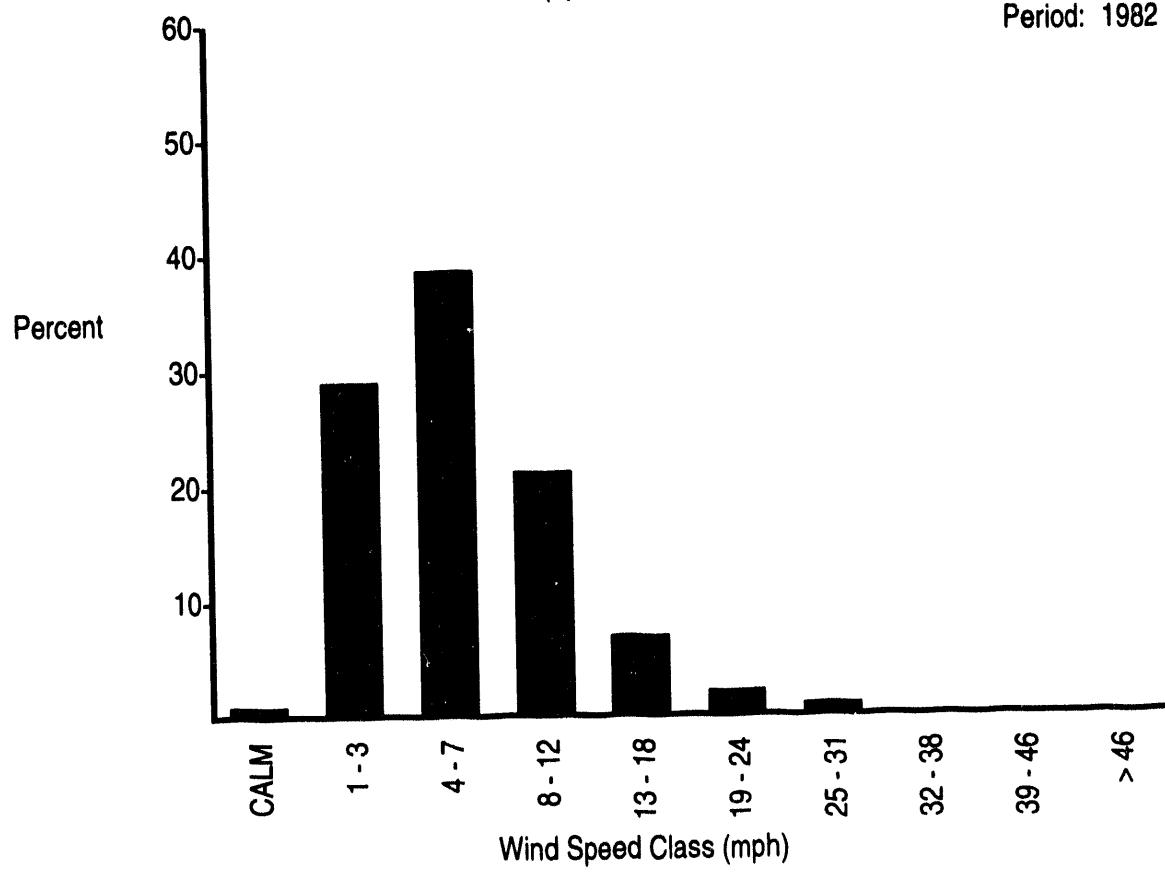


FIGURE B.1. (contd)



(a) Wind Rose

March Data
Period: 1982 - 1993



(b) Wind Speed Histogram

FIGURE B.1. (contd)

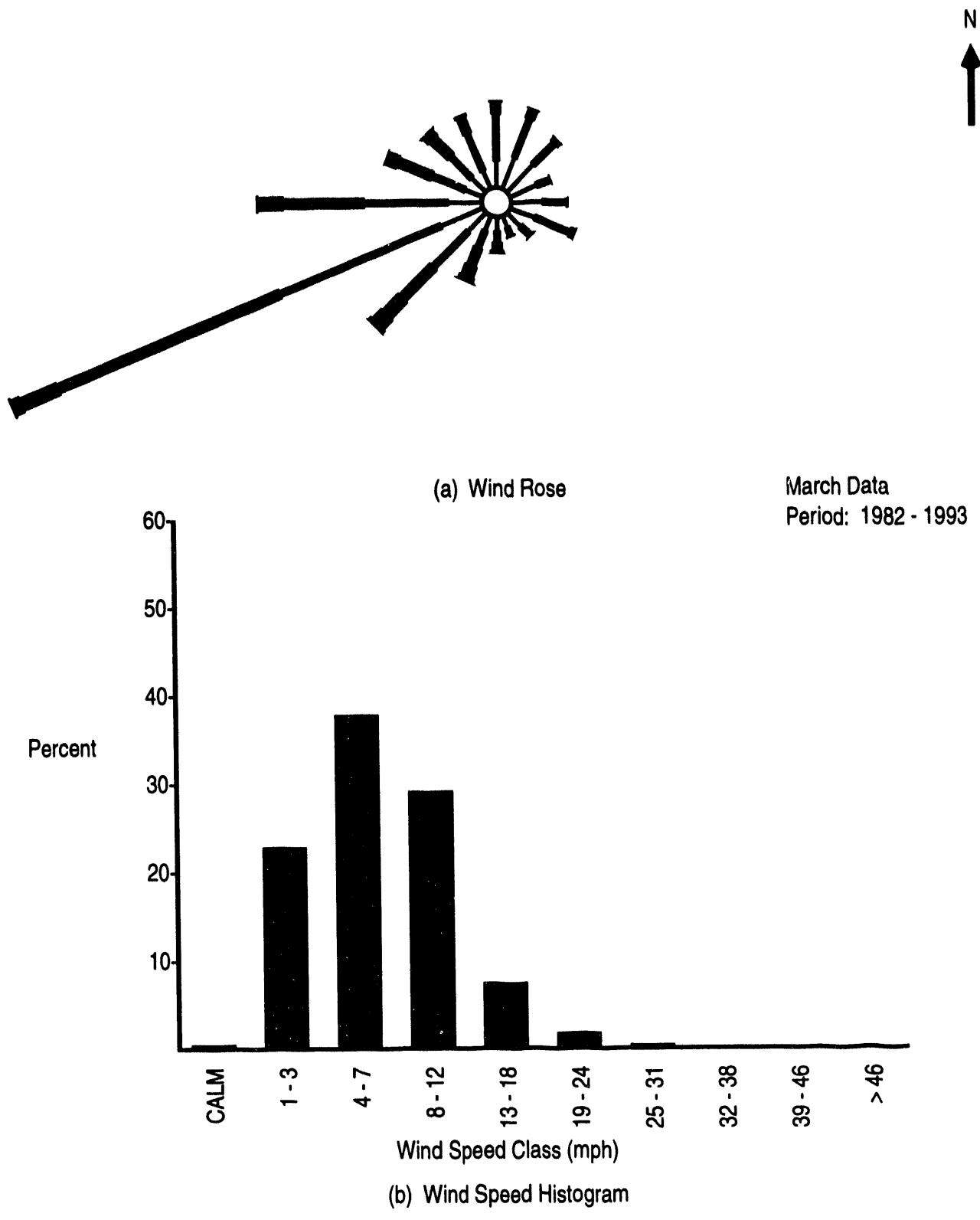
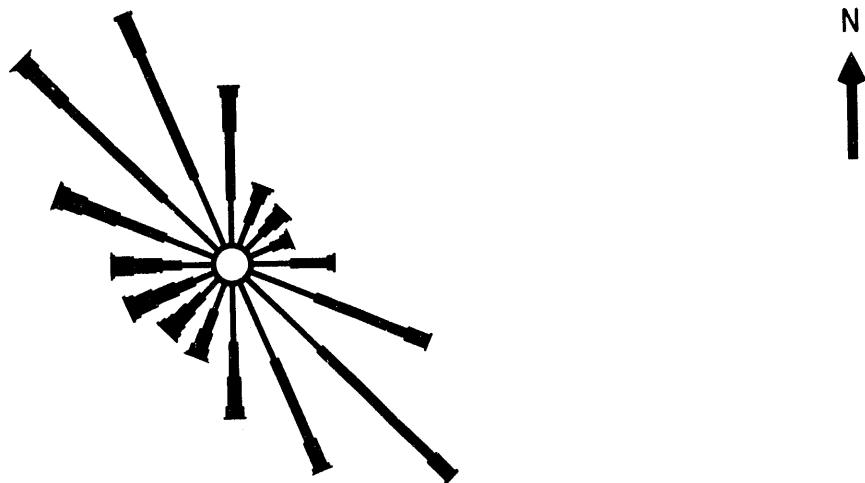
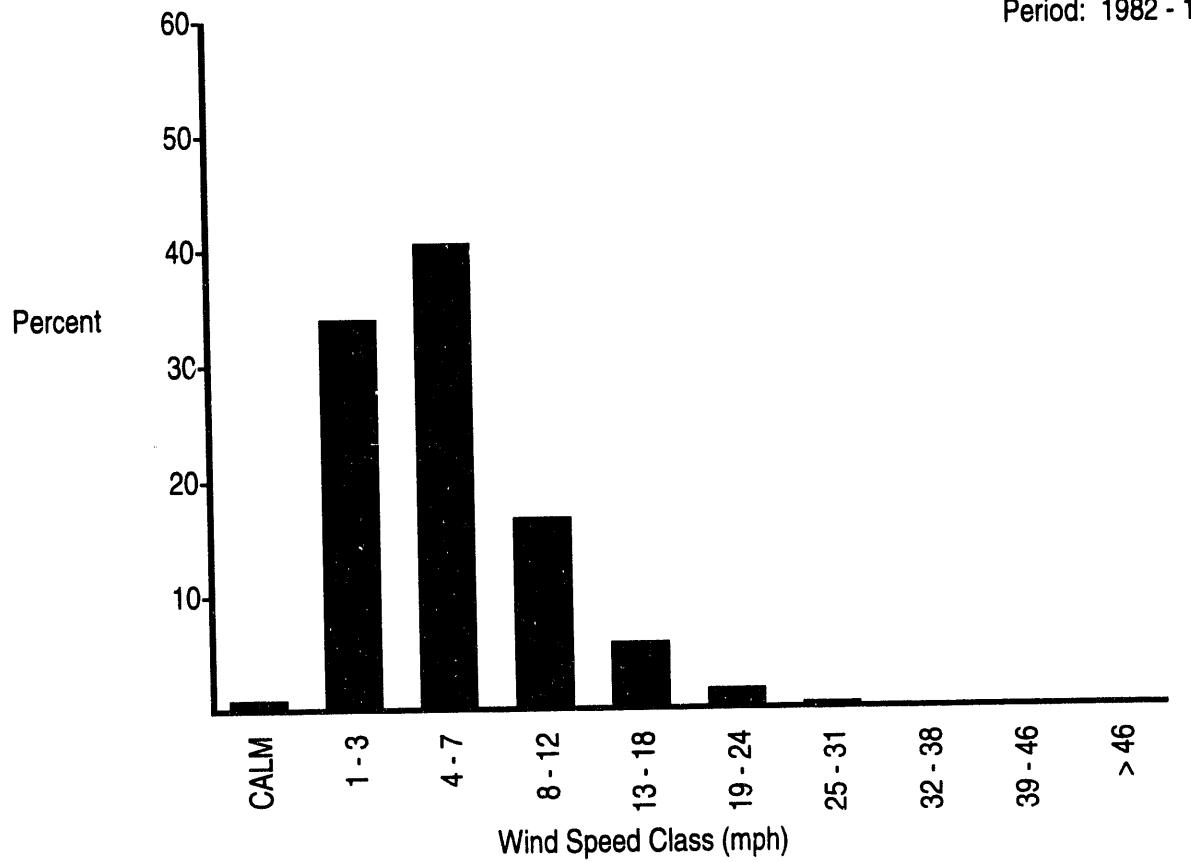


FIGURE B.1. (contd)



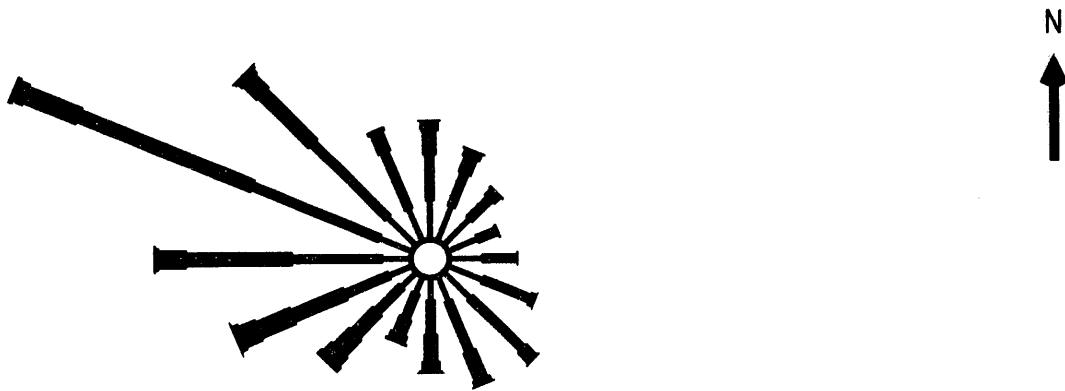
(a) Wind Rose

March Data
Period: 1982 - 1993



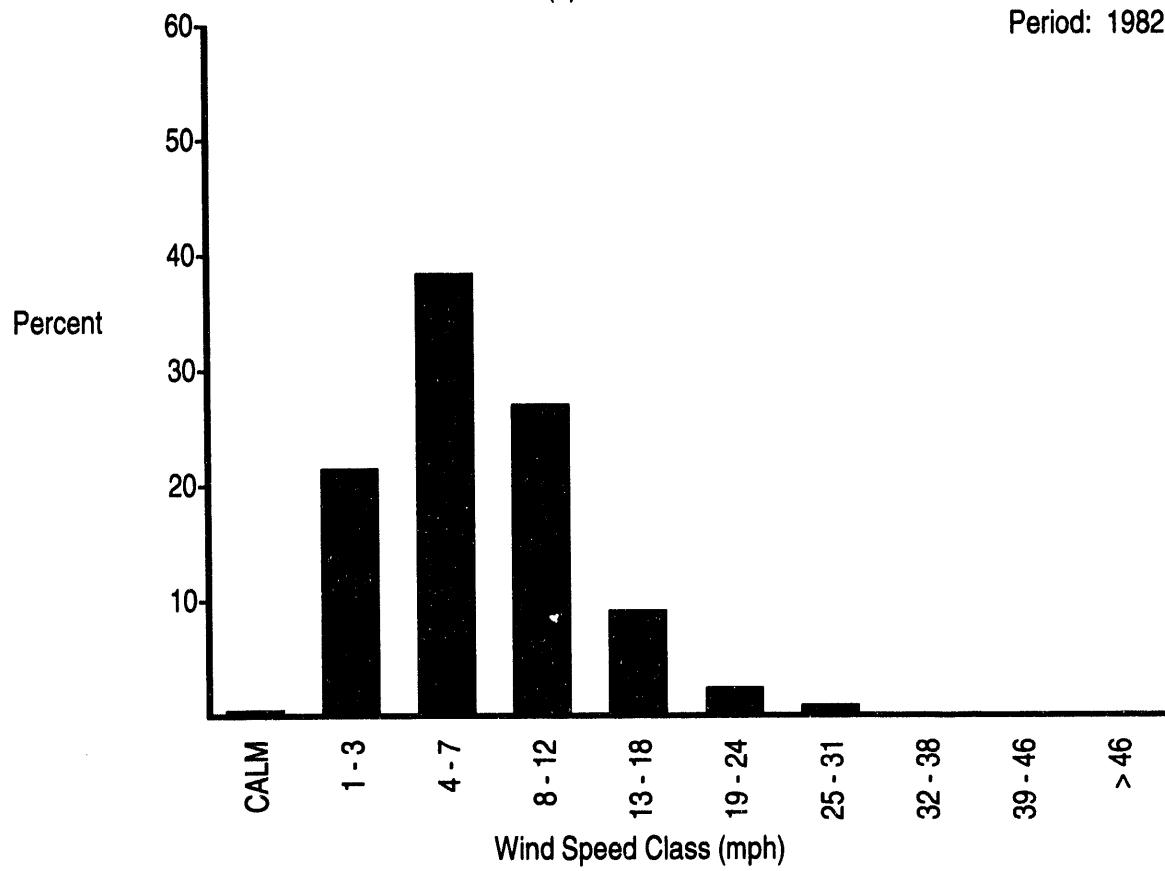
(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

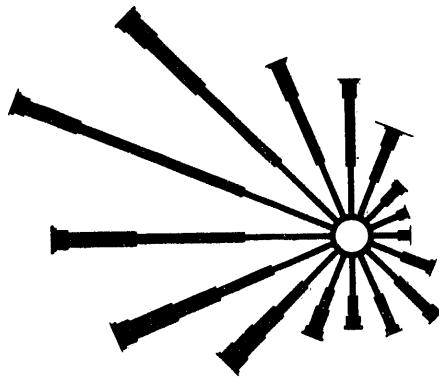
March Data
Period: 1982 - 1993



(b) Wind Speed Histogram

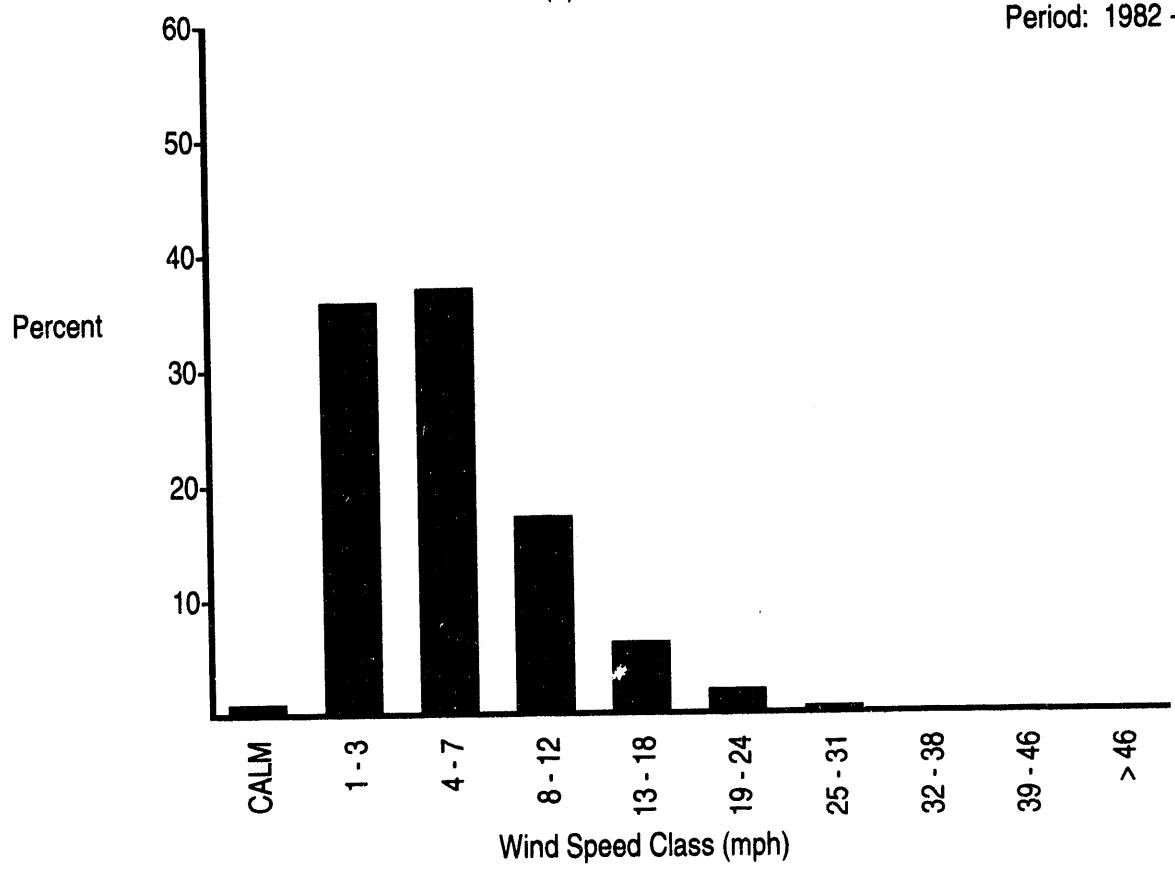
FIGURE B.1. (contd)

N
↑



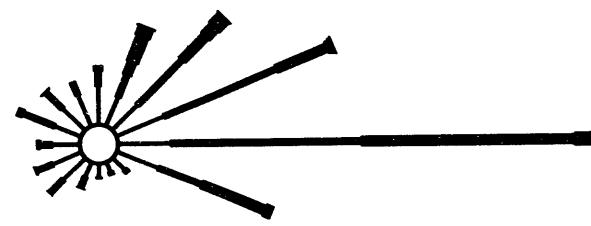
(a) Wind Rose

March Data
Period: 1982 - 1993



(b) Wind Speed Histogram

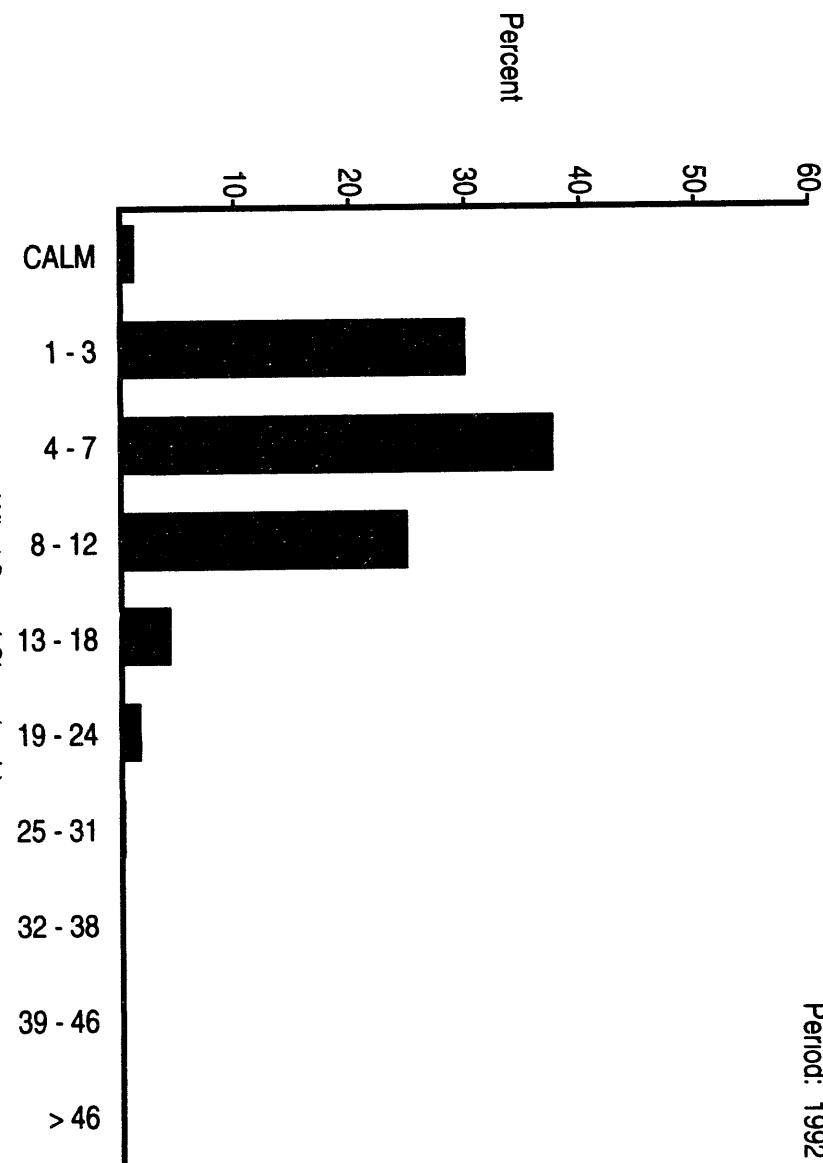
FIGURE B.1. (contd)



(a) Wind Rose

March Data
Period: 1992 - 1993

↑ N



(b) Wind Speed Histogram

FIGURE B.1. (contd)

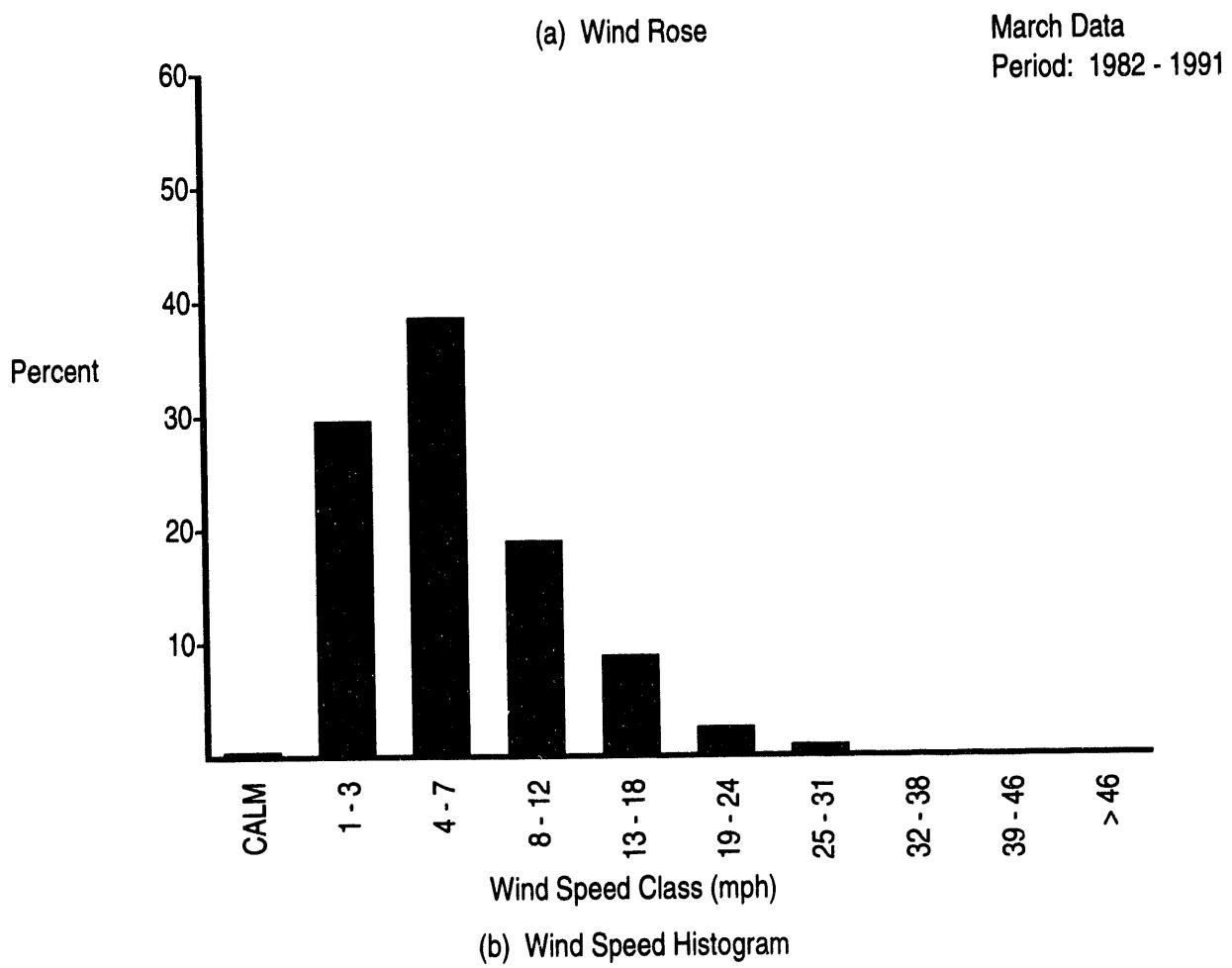
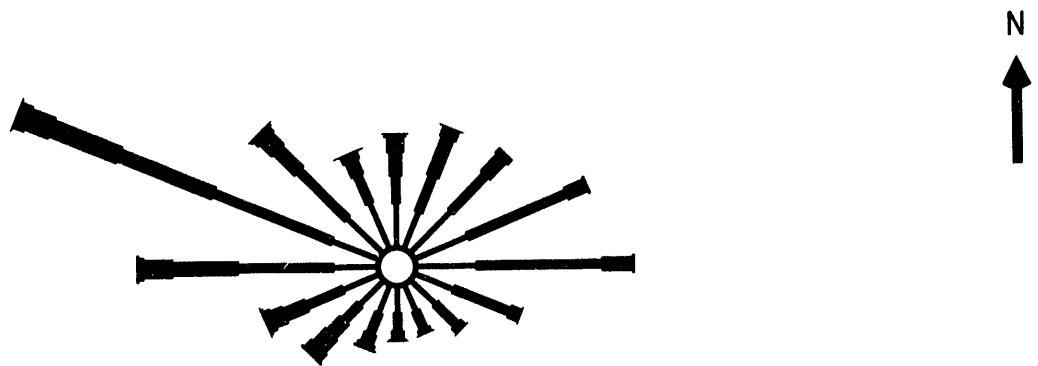
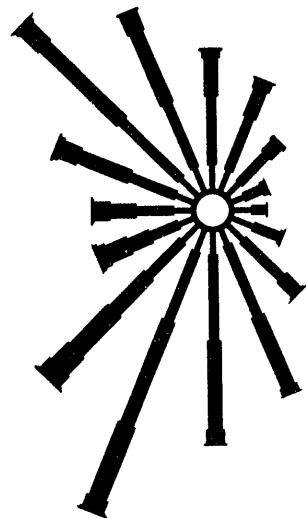
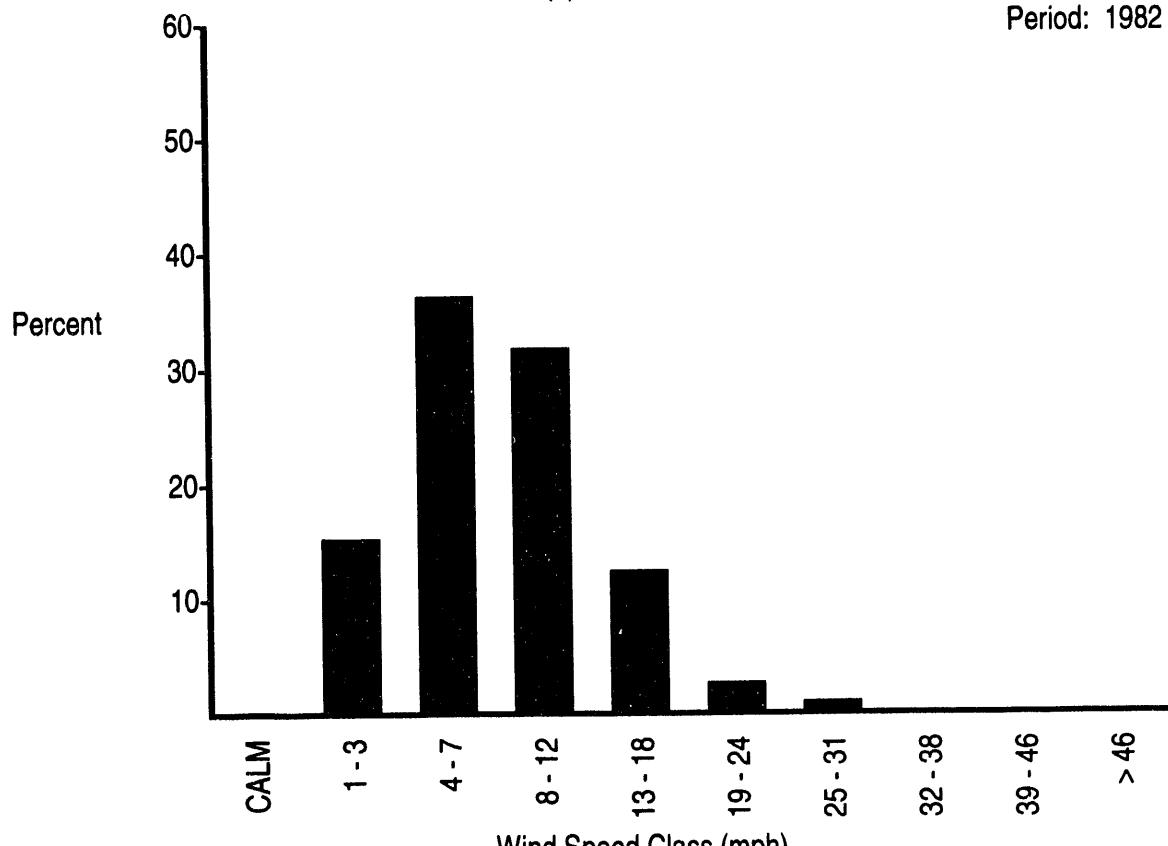


FIGURE B.1. (contd)

N
↑

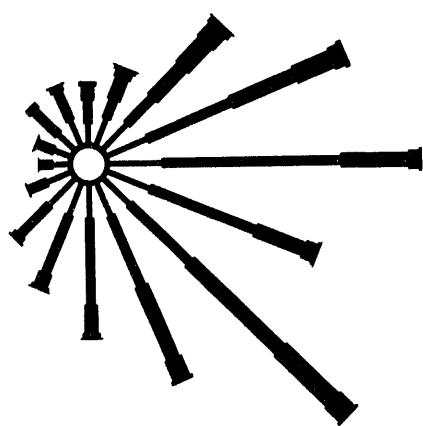
(a) Wind Rose

March Data
Period: 1982 - 1993

(b) Wind Speed Histogram

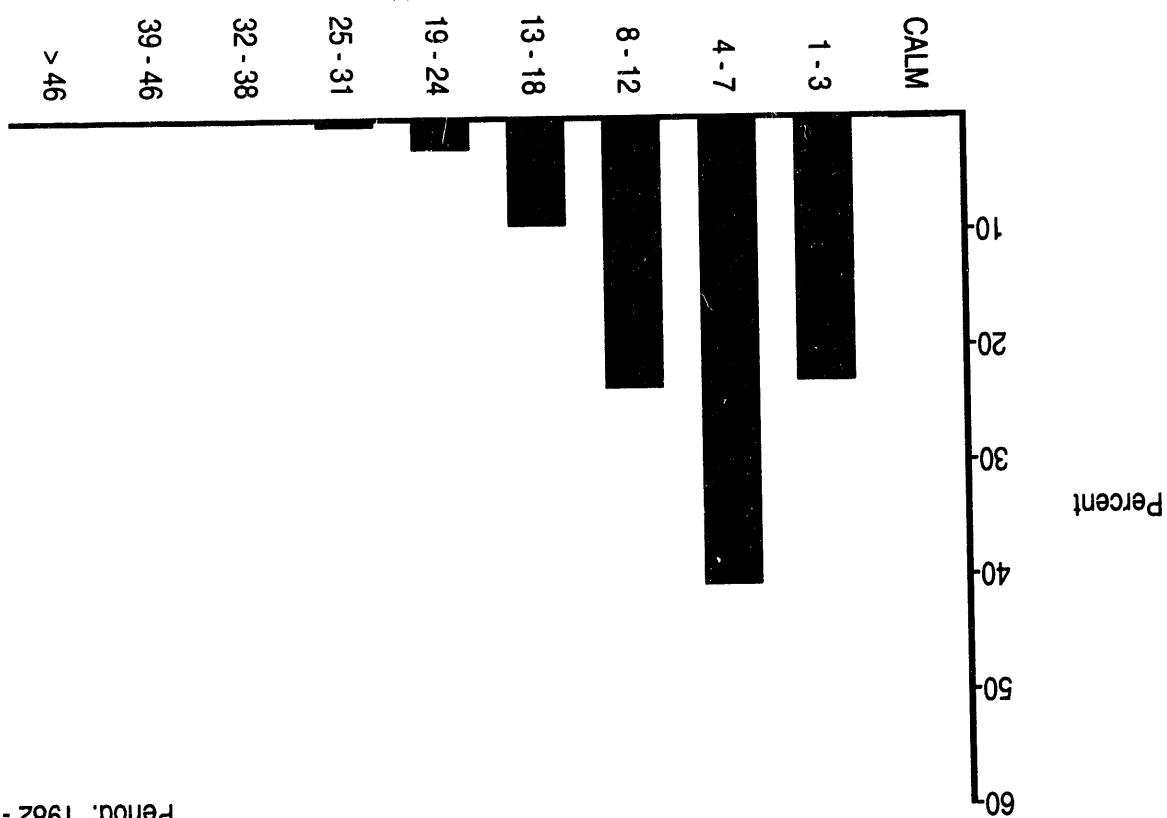
FIGURE B.1. (contd)

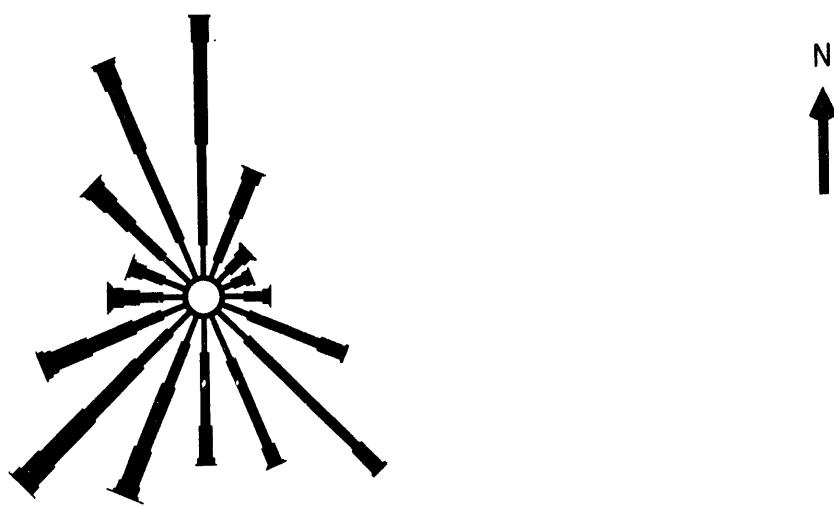
(a) Wind Rose
March Data
Period: 1982 - 1993



Station #10 - YAKB

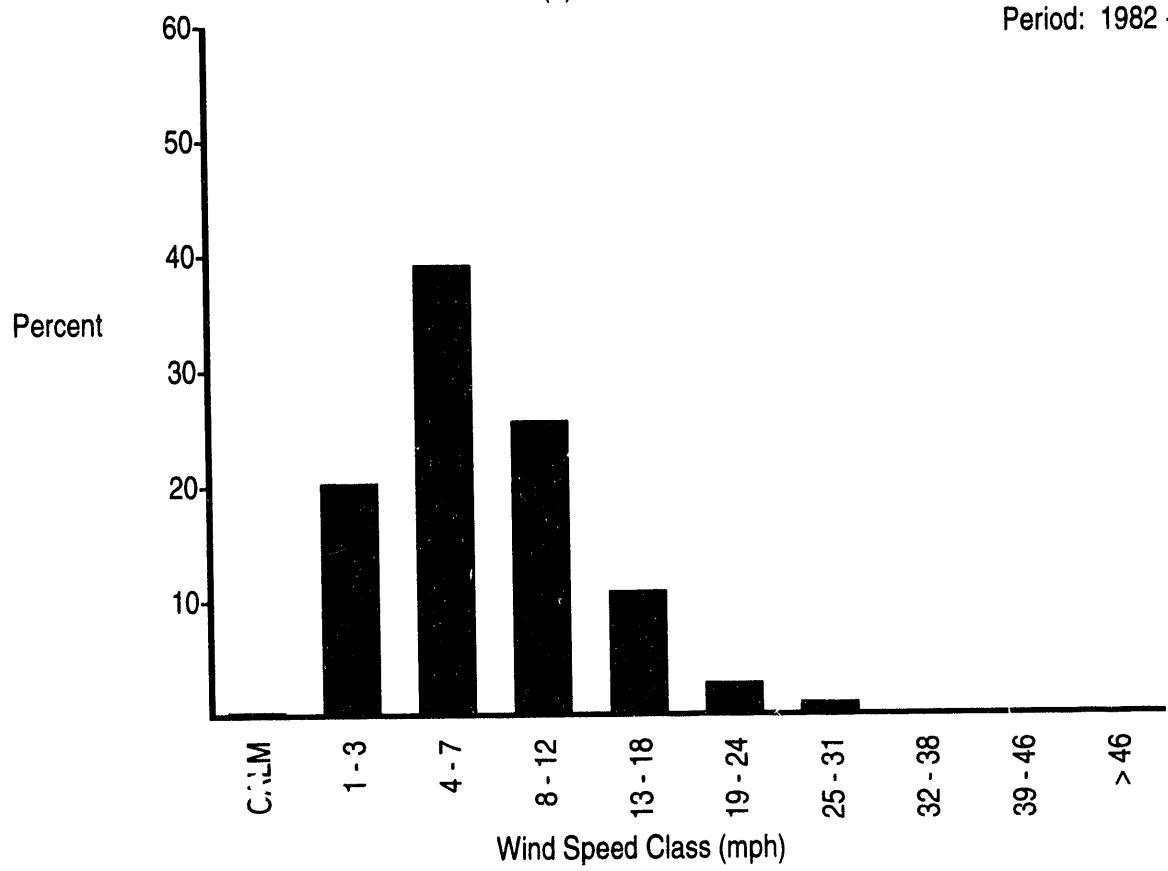
FIGURE B.1. (contd)
(b) Wind Speed Histogram
Wind Speed Class (mph)





(a) Wind Rose

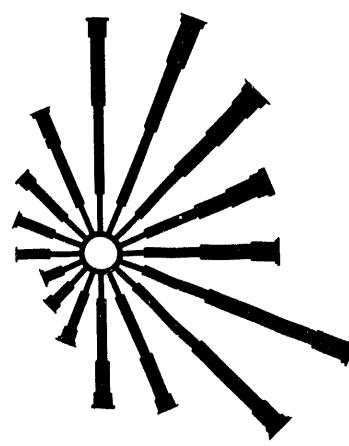
March Data
Period: 1982 - 1993



(b) Wind Speed Histogram

FIGURE B.1. (contd)

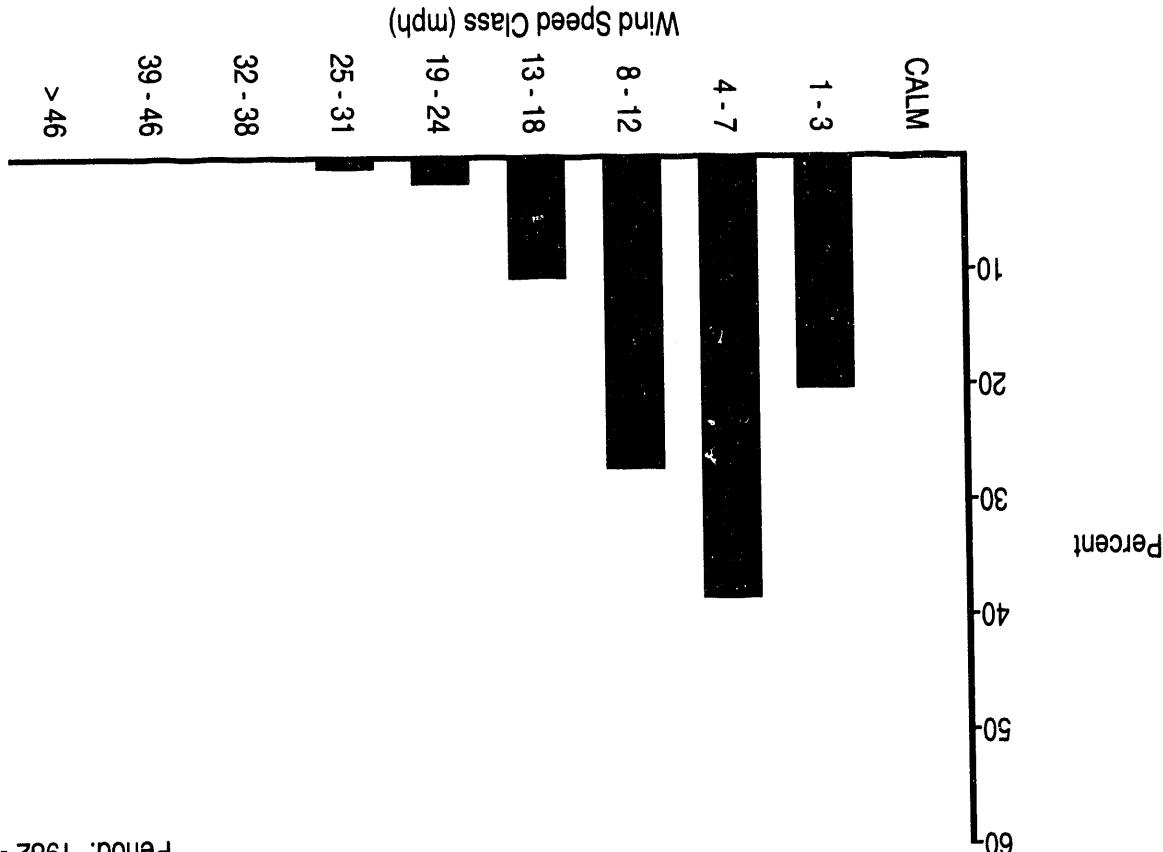
(a) Wind Rose
March Data
Period: 1982 - 1993



↓
N

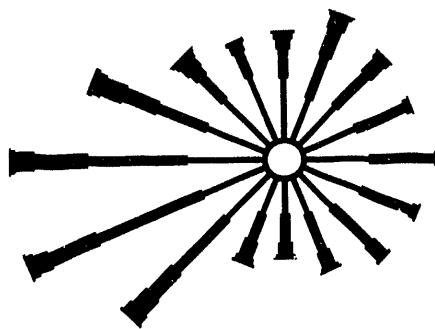
FIGURE B.1. (contd)

(b) Wind Speed Histogram



Wind Speed Class (mph)

N
↑



(a) Wind Rose

March Data
Period: 1982 - 1993

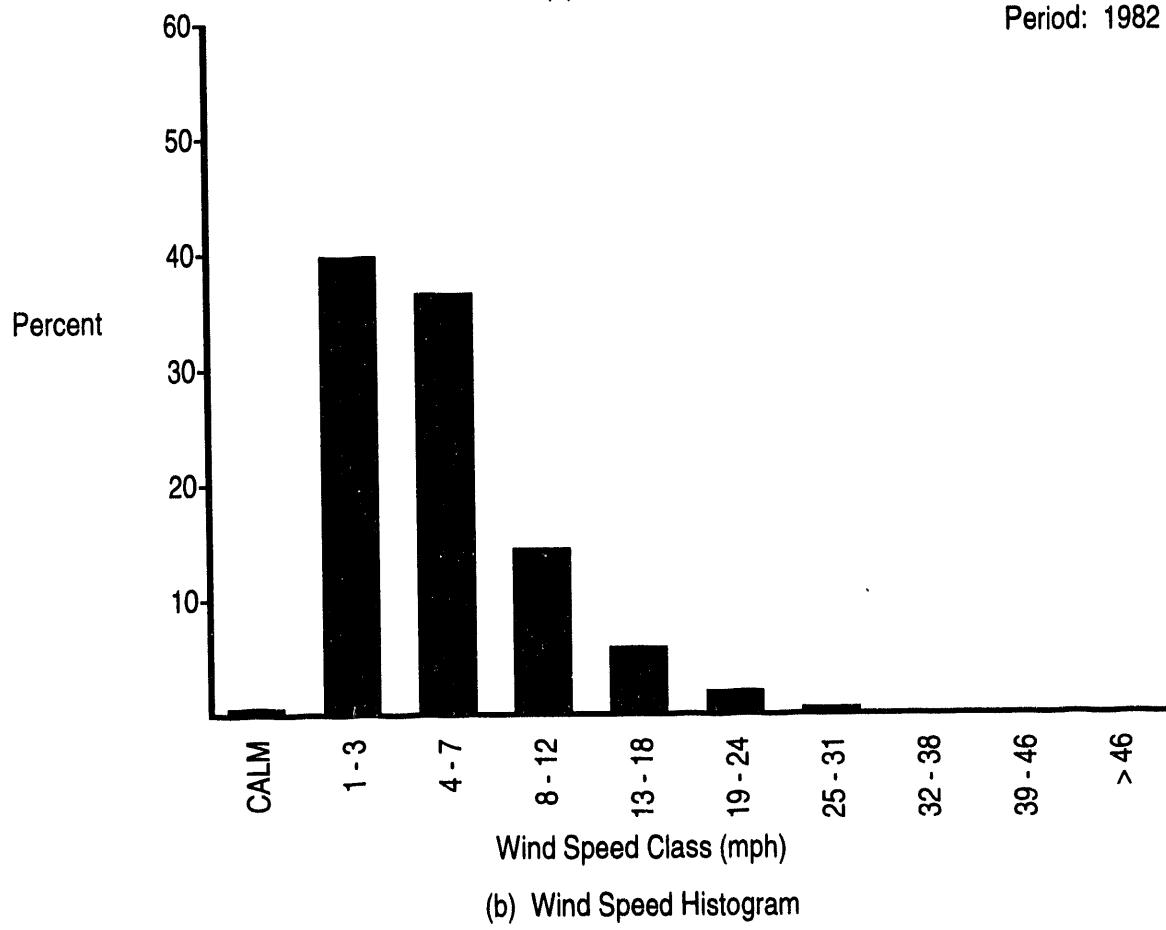
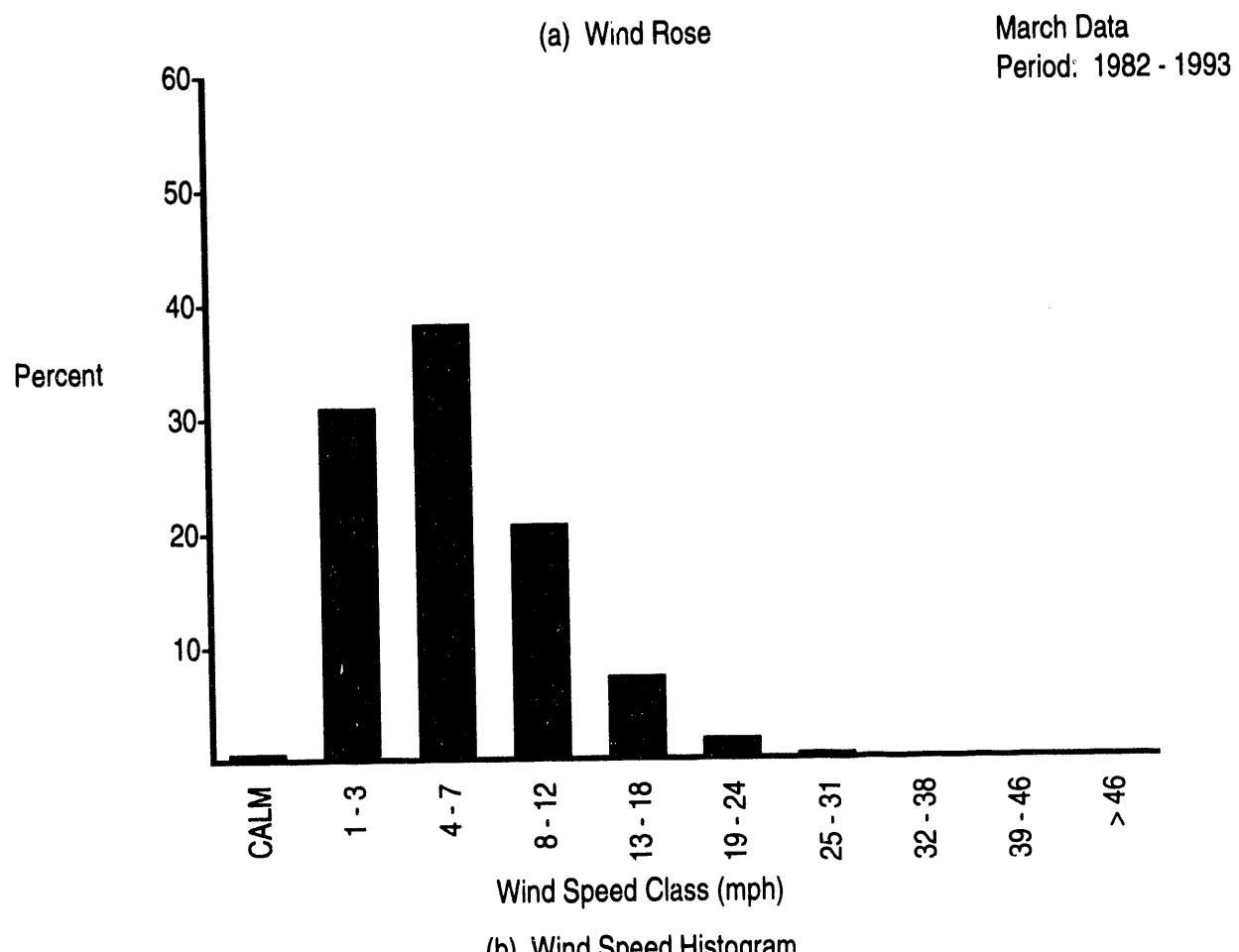
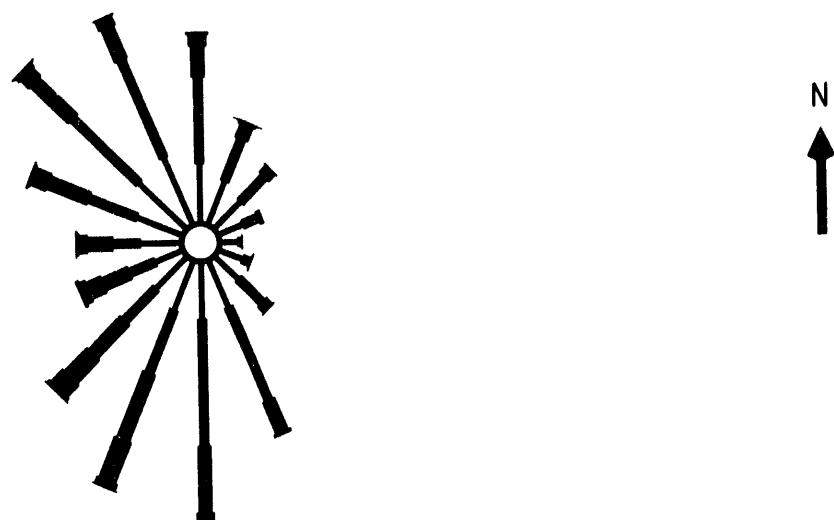
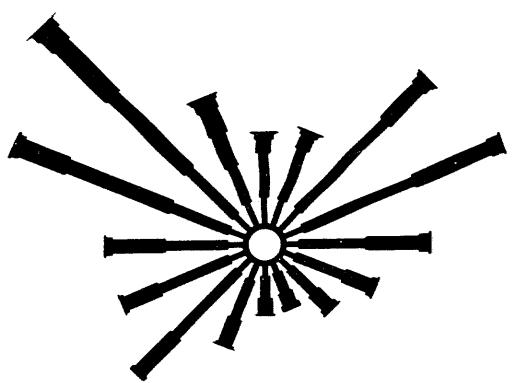


FIGURE B.1. (contd)



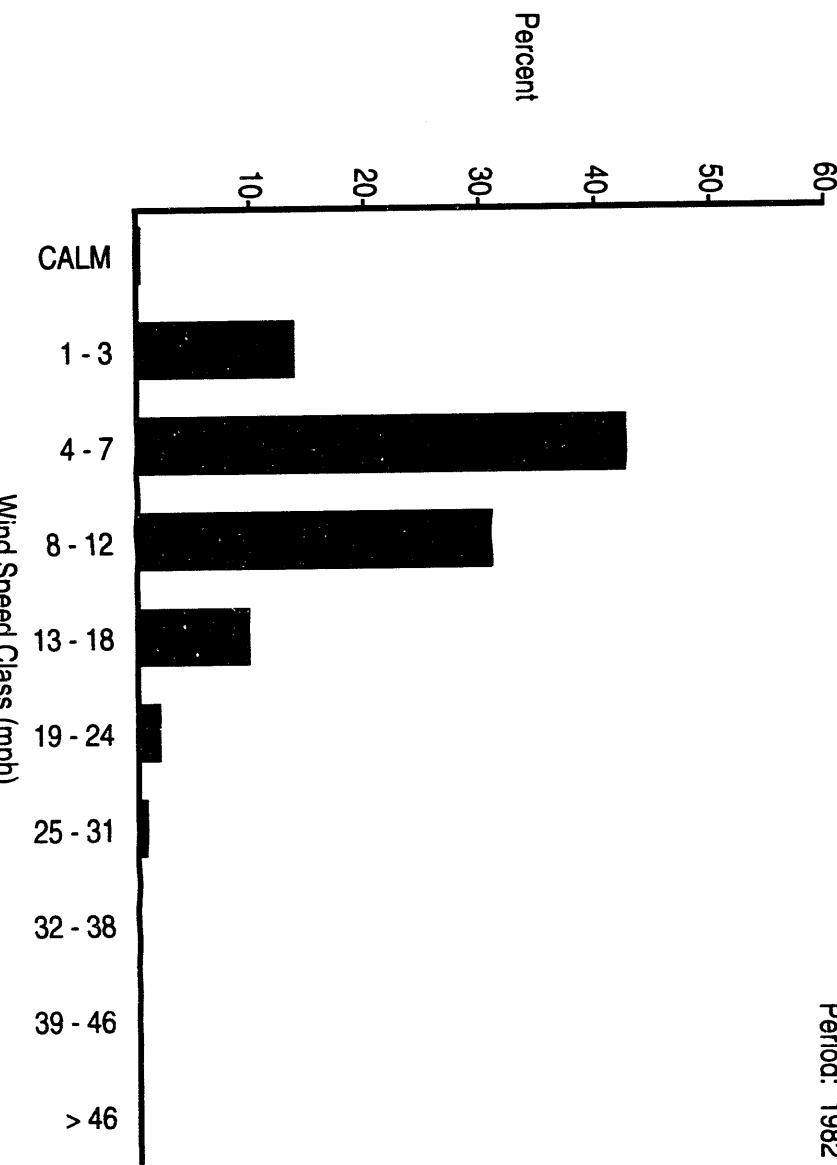
(b) Wind Speed Histogram

FIGURE B.1. (contd)

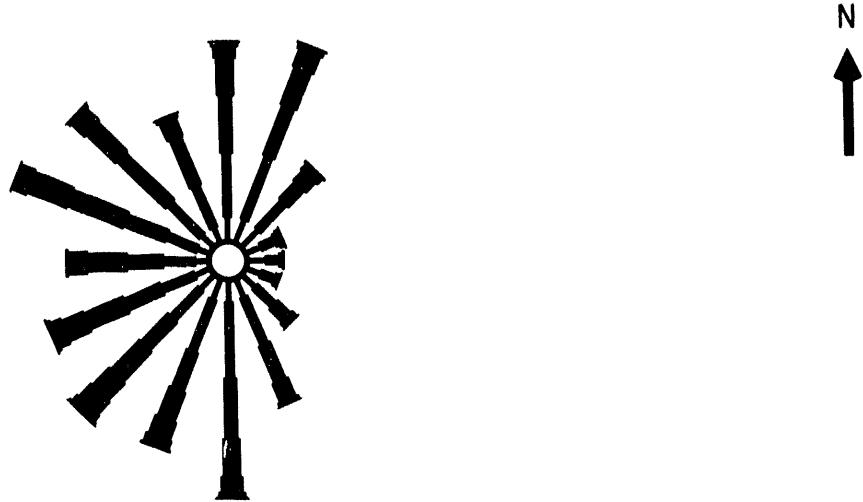


→ N

(a) Wind Rose
March Data
Period: 1982 - 1993

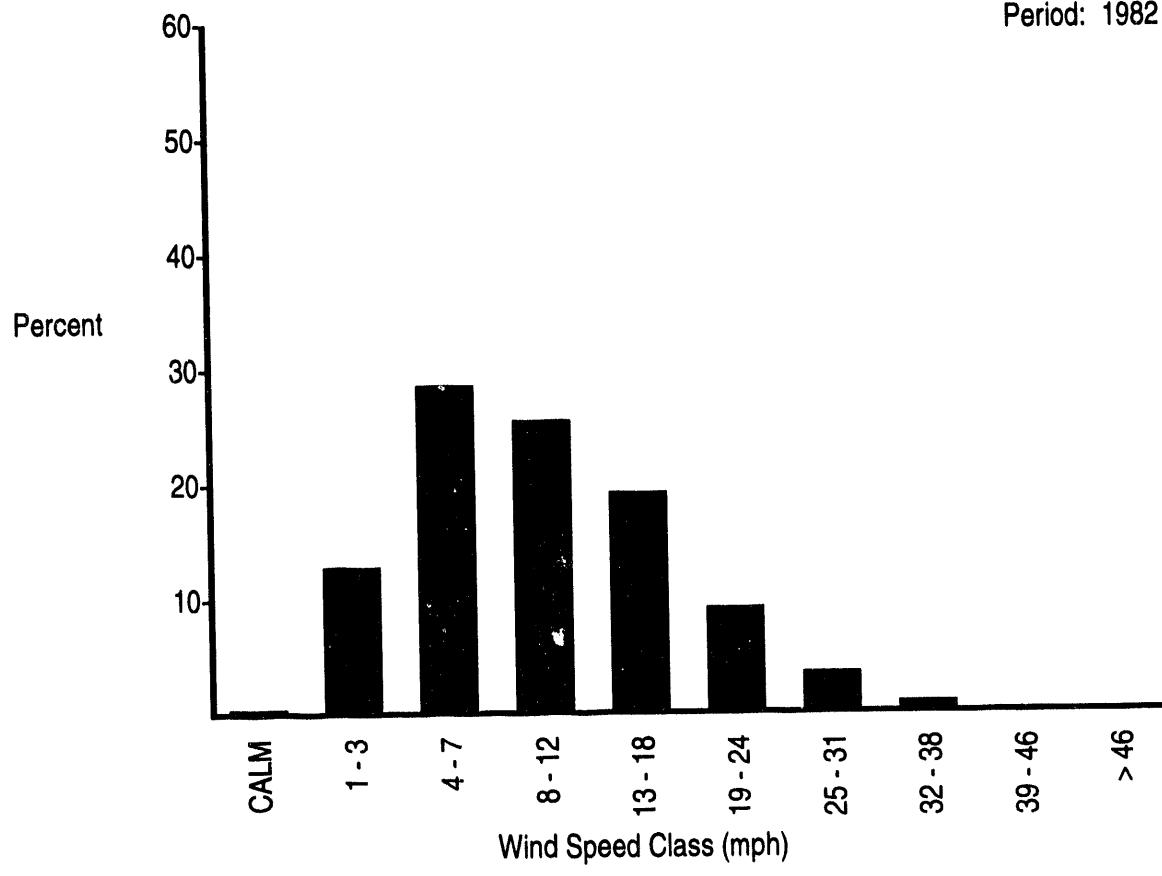


(b) Wind Speed Histogram
FIGURE B.1. (contd)



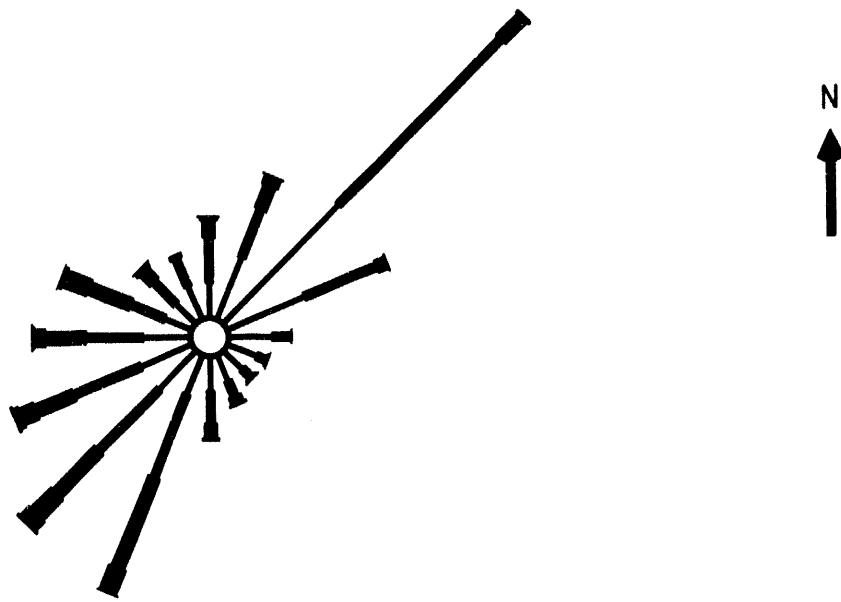
(a) Wind Rose

March Data
Period: 1982 - 1993



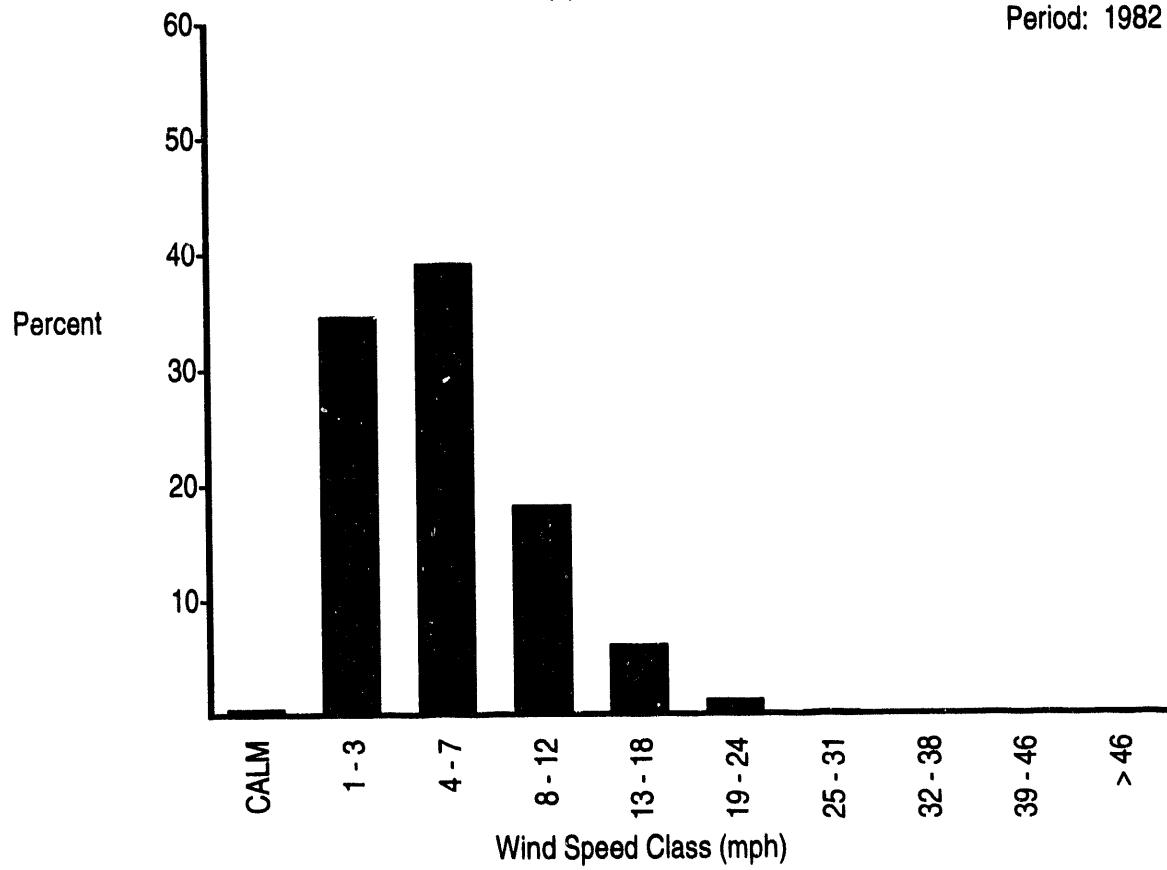
(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

March Data
Period: 1982 - 1993



(b) Wind Speed Histogram

FIGURE B.1. (contd)



AIIM

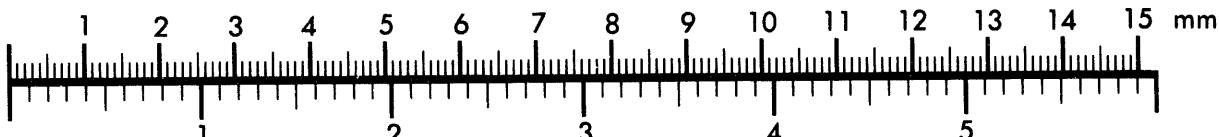
Association for Information and Image Management

1100 Wayne Avenue, Suite 1100

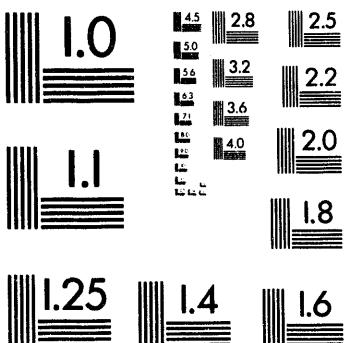
Silver Spring, Maryland 20910

301/587-8202

Centimeter



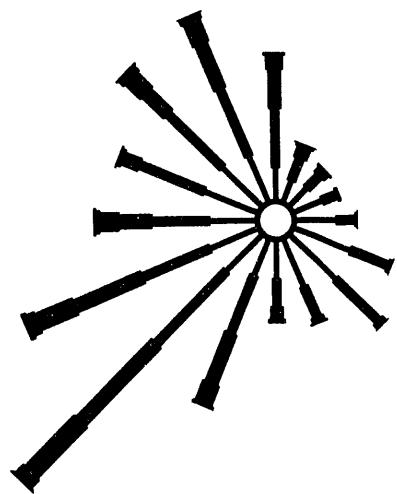
Inches



MANUFACTURED TO AIIM STANDARDS
BY APPLIED IMAGE, INC.

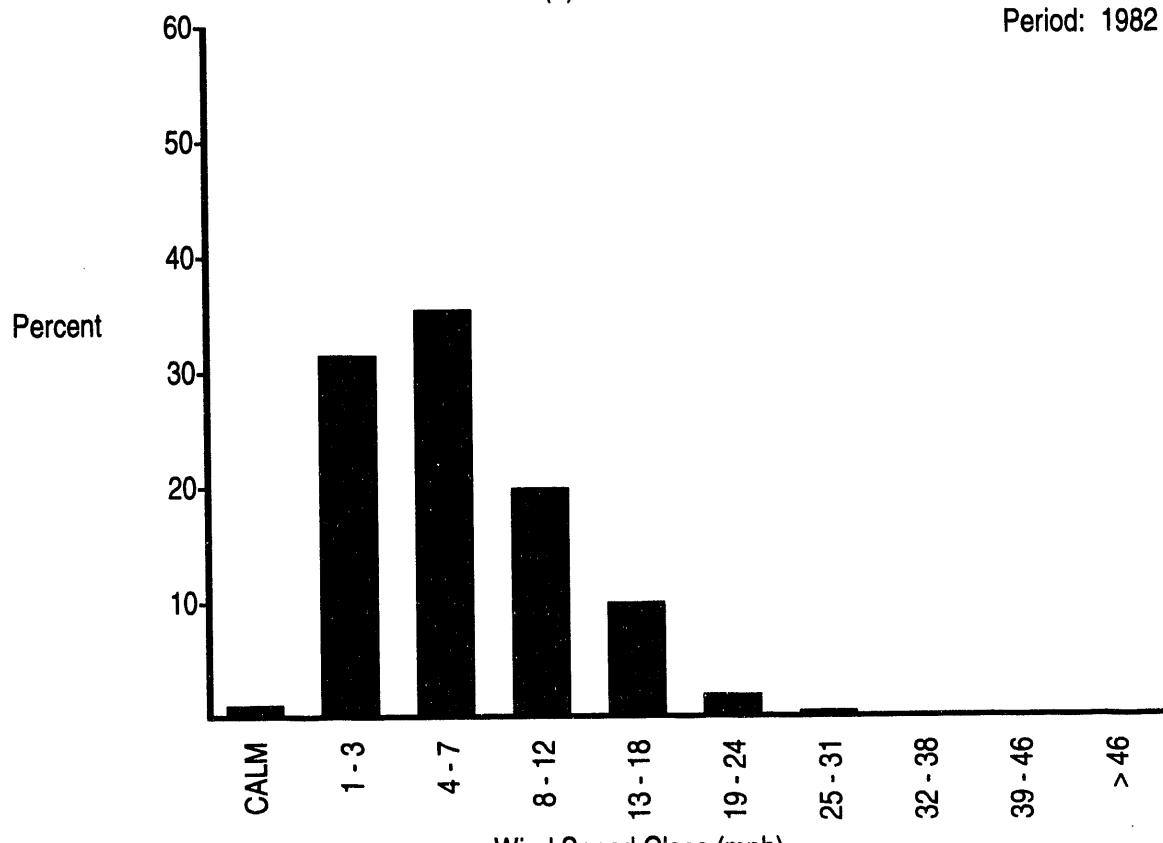
3 of 6

N
↑



(a) Wind Rose

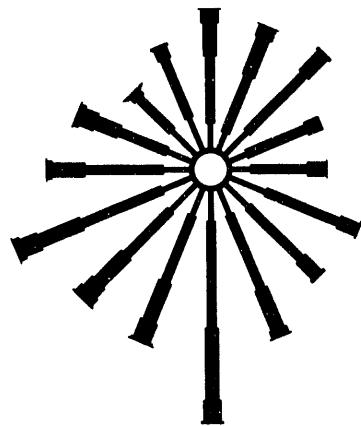
March Data
Period: 1982 - 1993



(b) Wind Speed Histogram

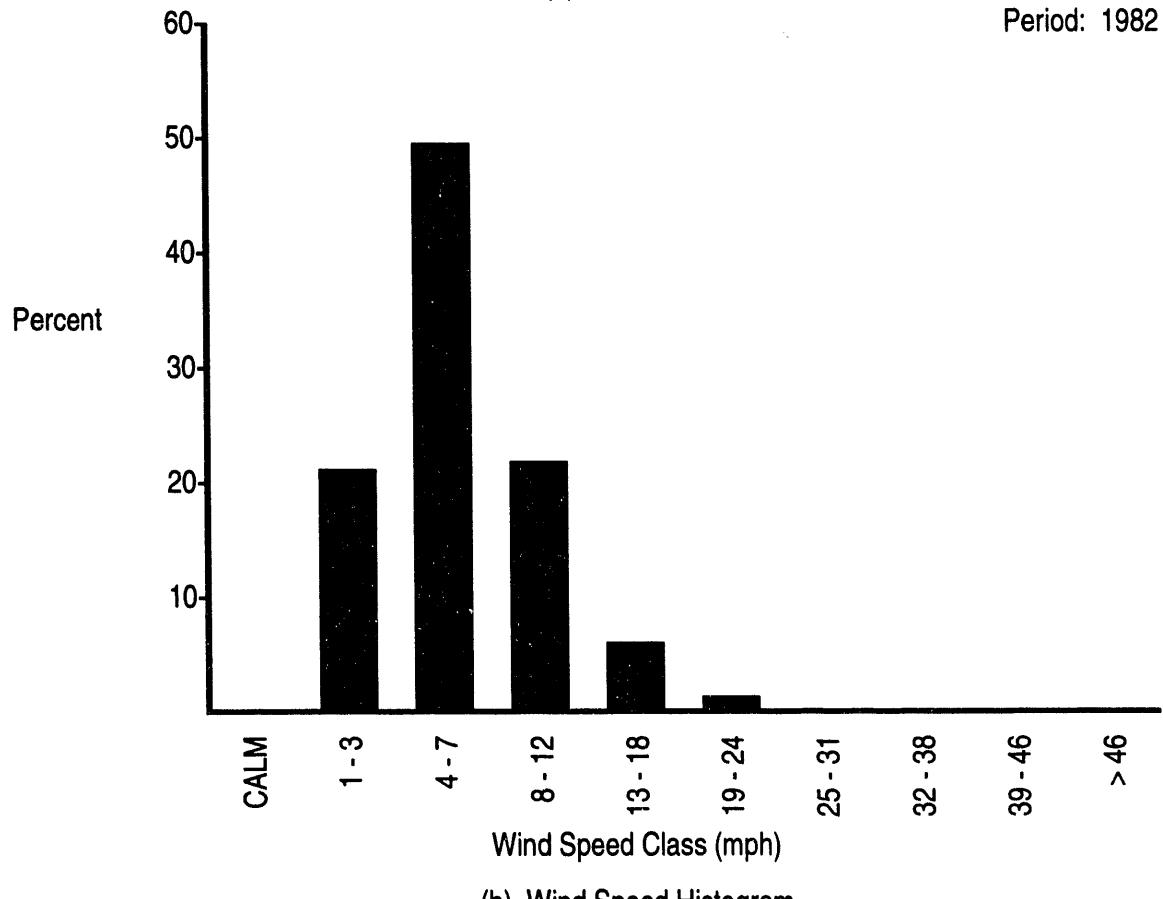
FIGURE B.1. (contd)

N
↑



(a) Wind Rose

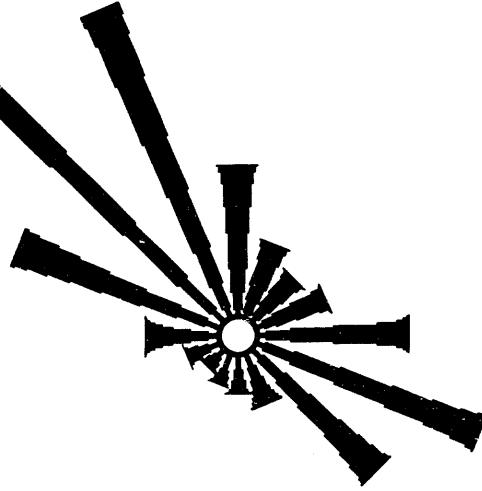
March Data
Period: 1982 - 1992



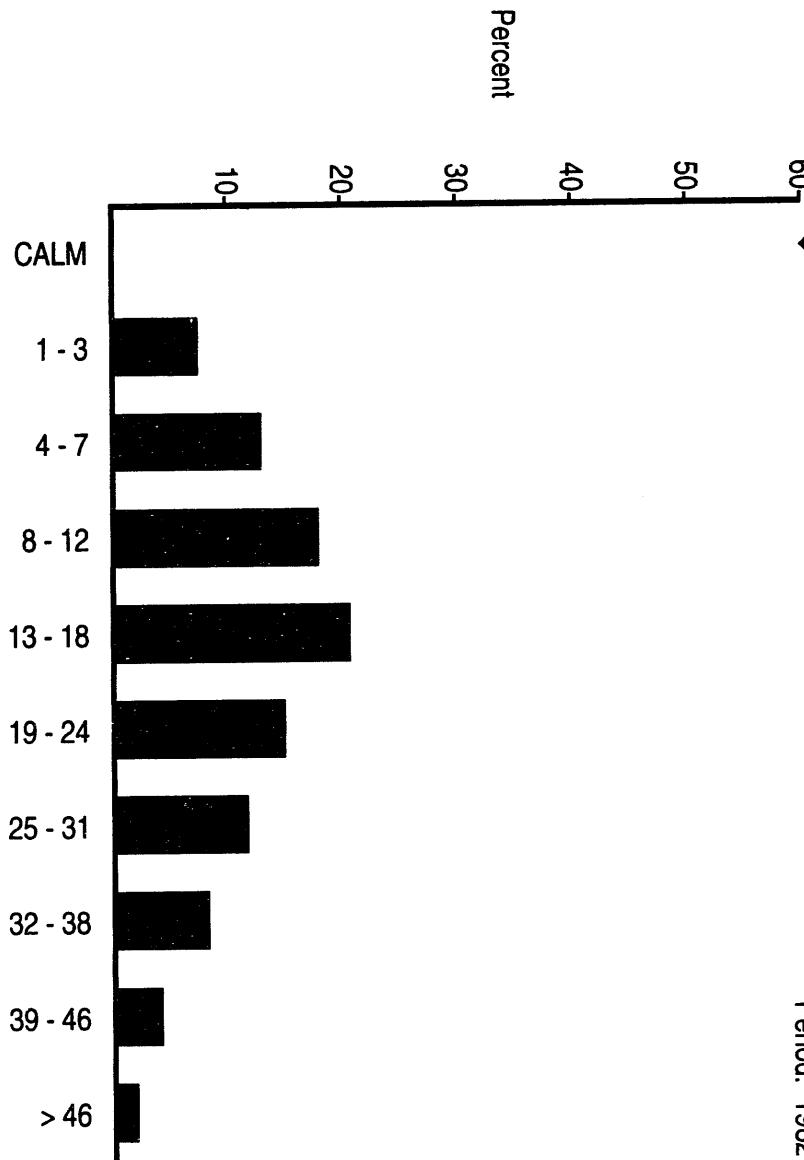
(b) Wind Speed Histogram

FIGURE B.1. (contd)

(a) Wind Rose
March Data
Period: 1982 - 1993

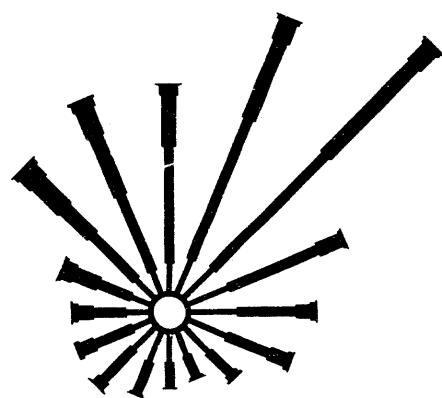


→ N



(b) Wind Speed Histogram

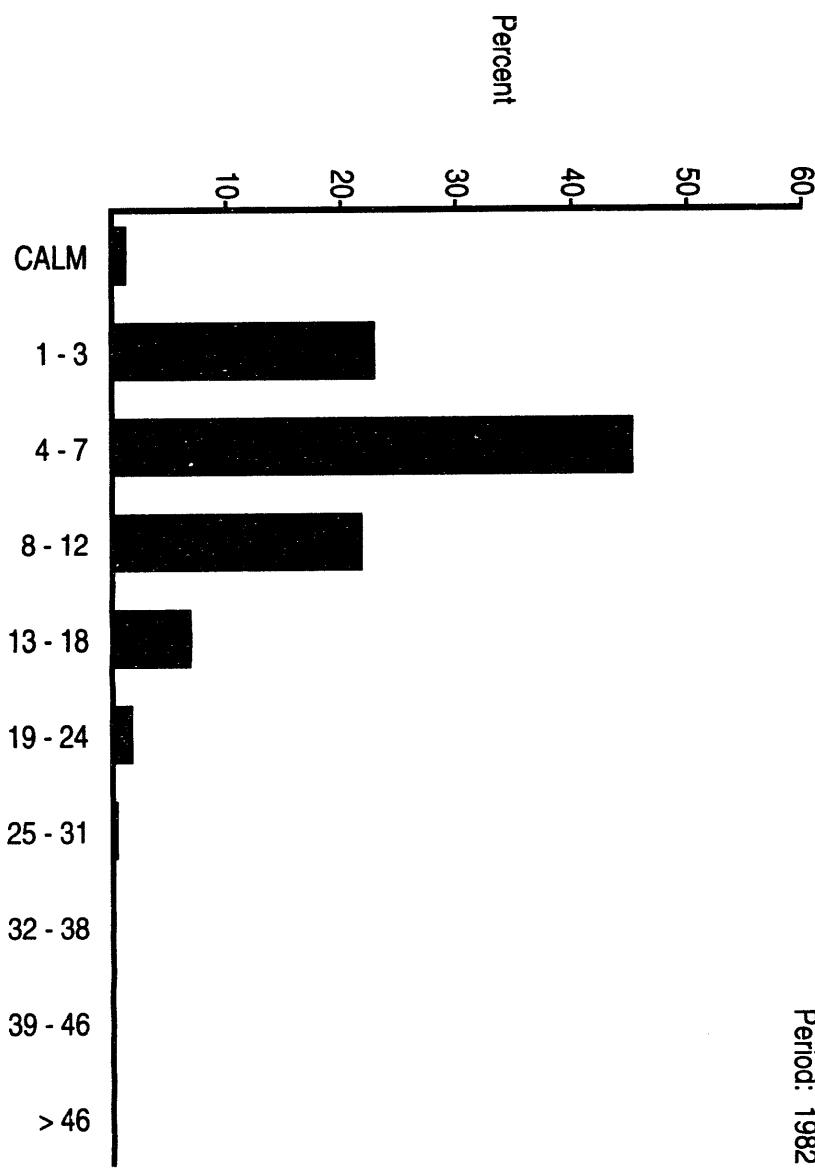
FIGURE B.1. (contd)



→ N

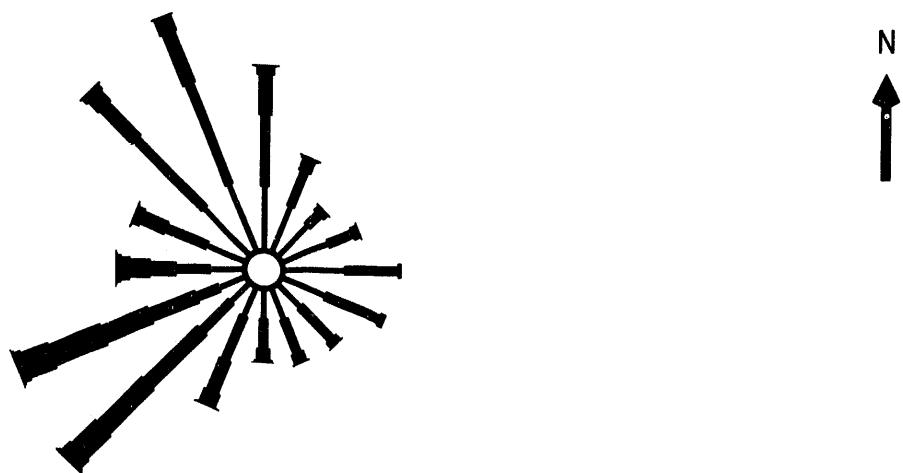
(a) Wind Rose

March Data
Period: 1982 - 1993



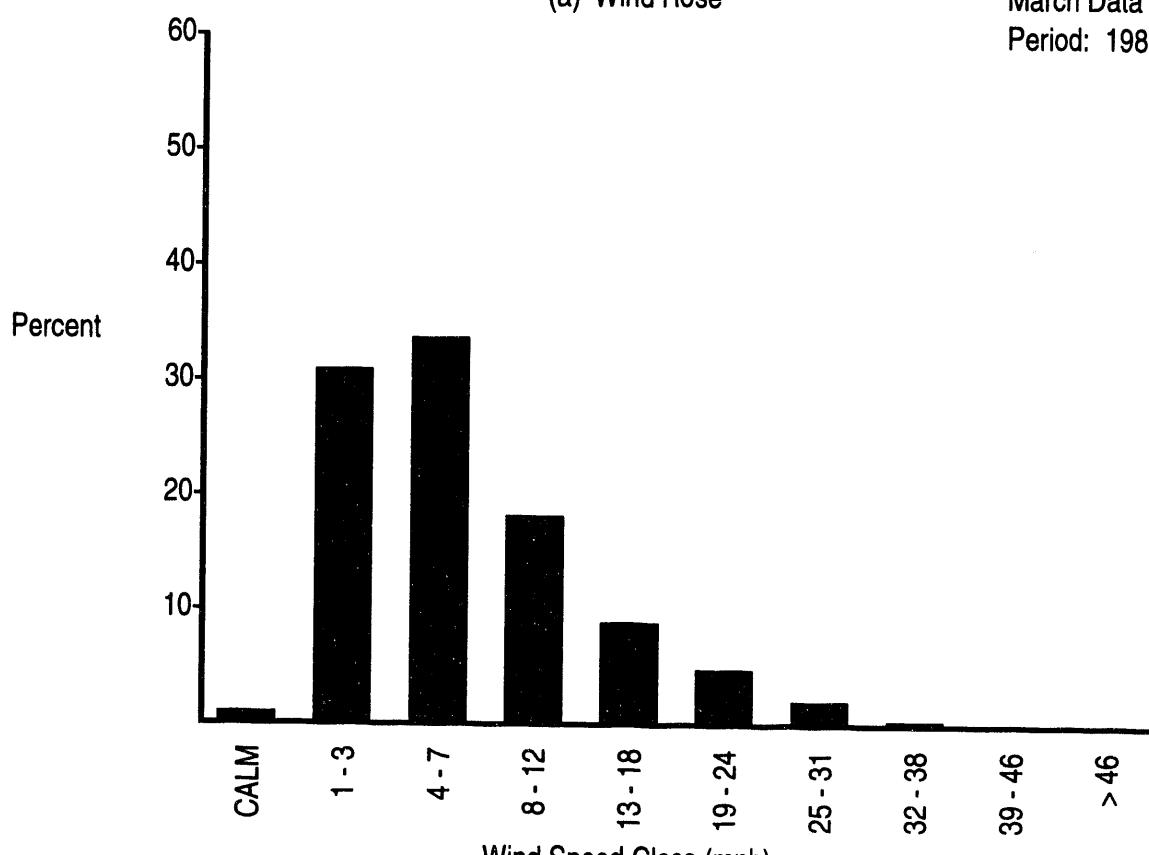
(b) Wind Speed Histogram

FIGURE B.1. (contd)



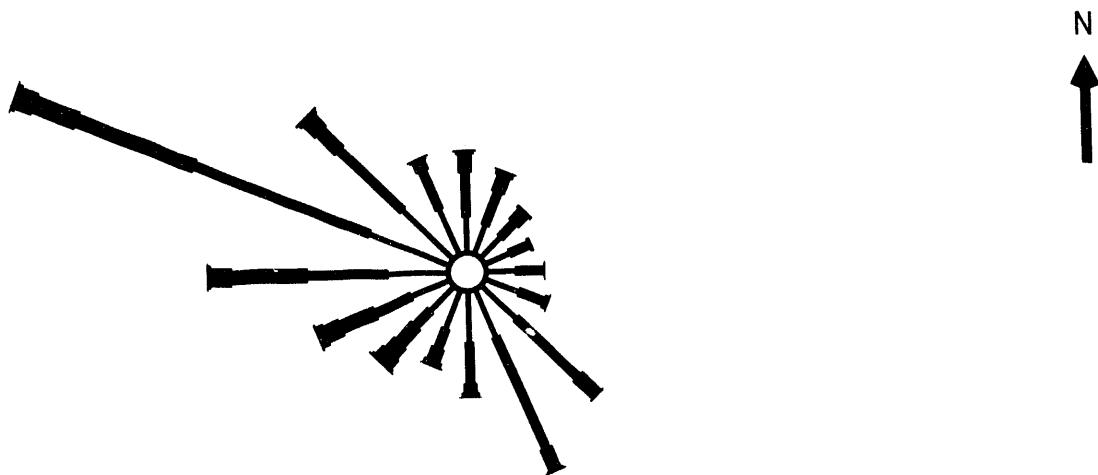
(a) Wind Rose

March Data
Period: 1988 - 1993



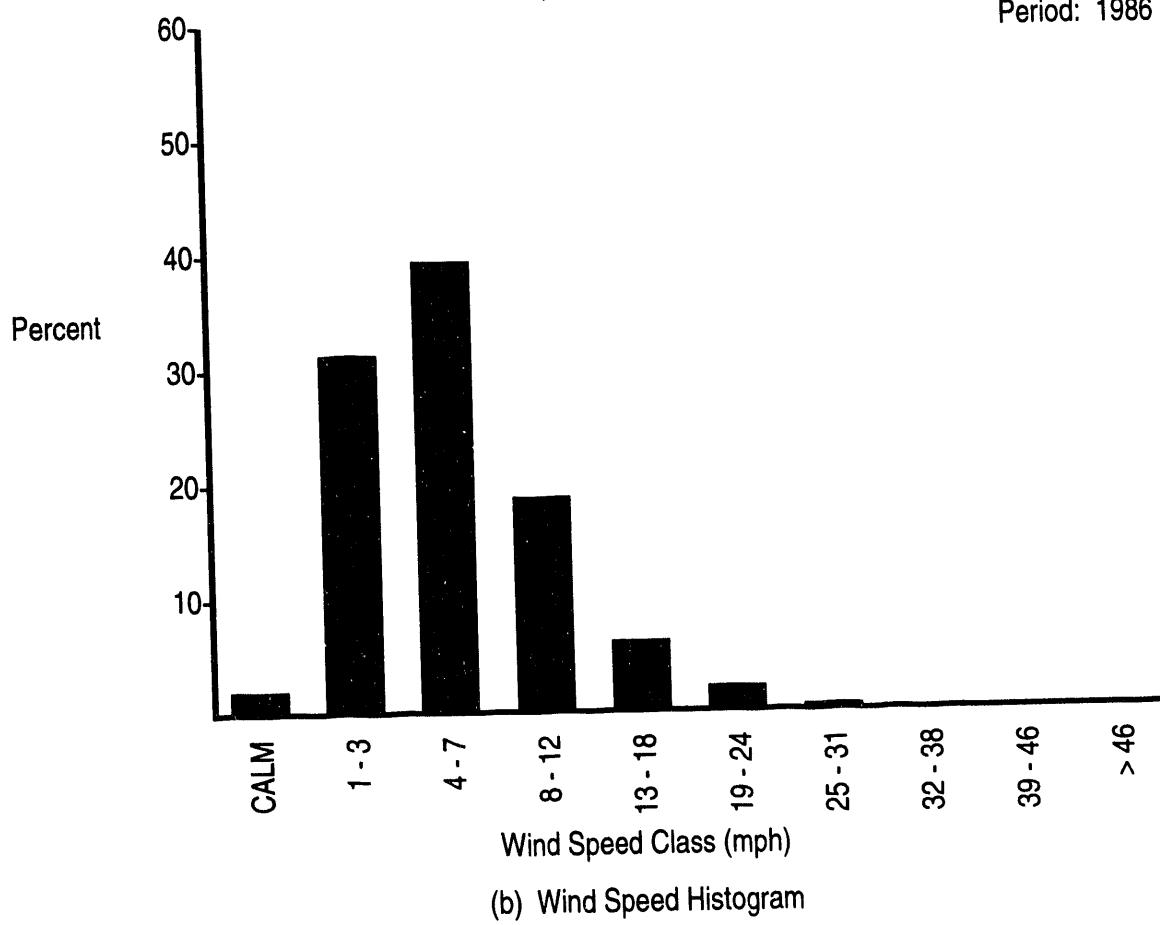
(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

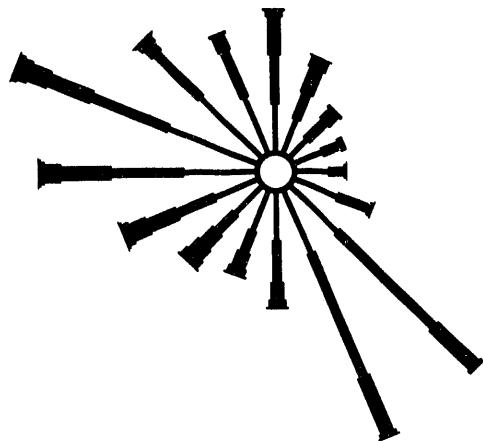
March Data
Period: 1986 - 1993



(b) Wind Speed Histogram

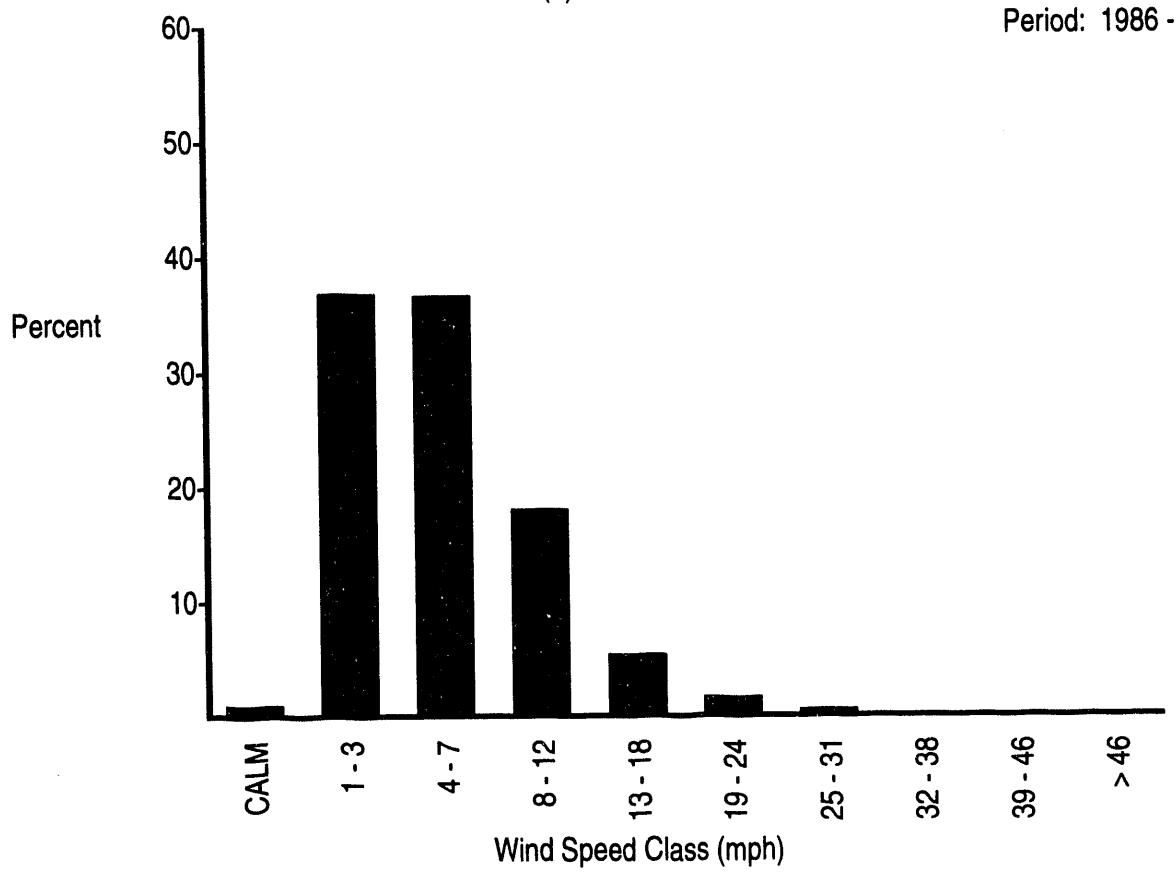
FIGURE B.1. (contd)

N
↑



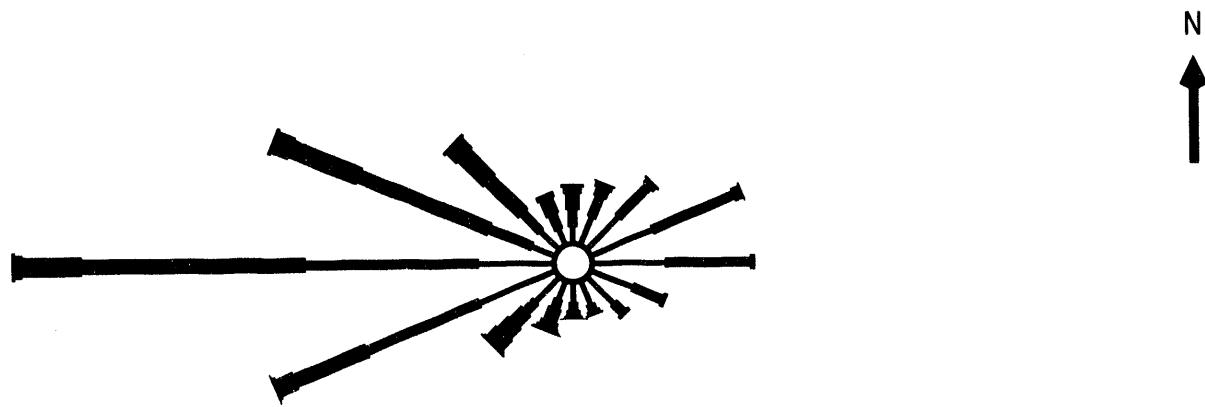
(a) Wind Rose

March Data
Period: 1986 - 1993



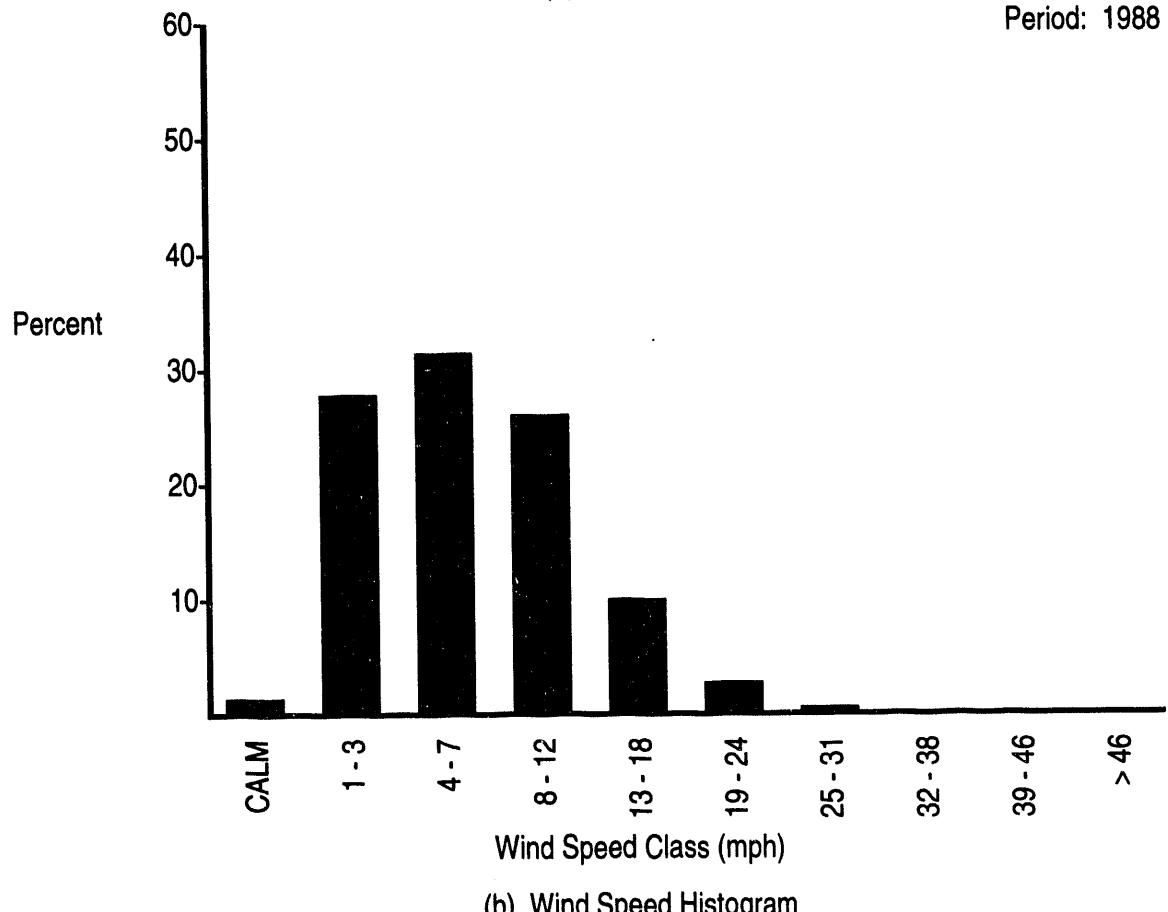
(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

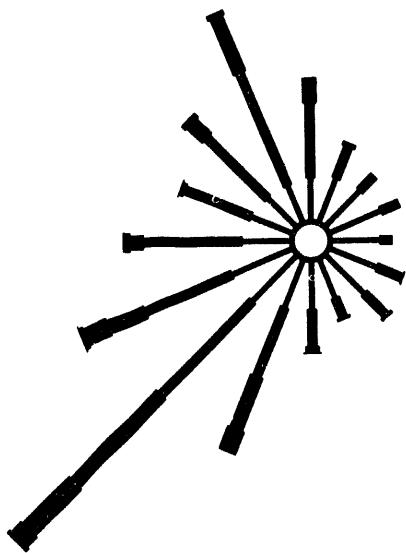
March Data
Period: 1988 - 1993



(b) Wind Speed Histogram

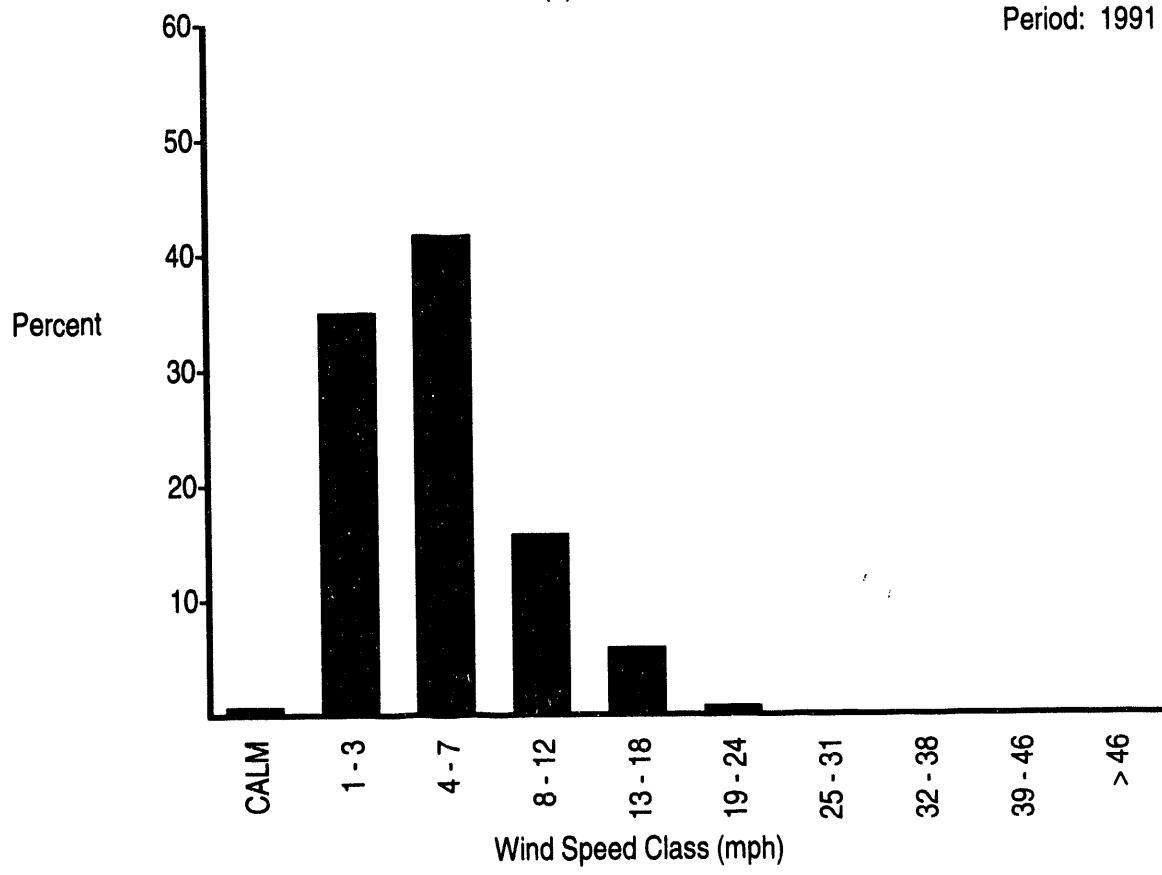
FIGURE B.1. (contd)

N
↑



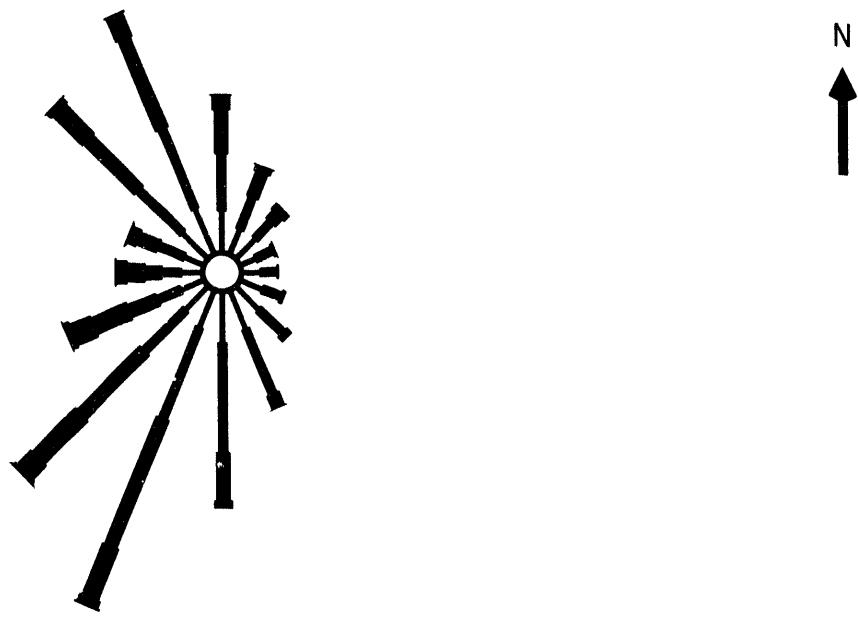
(a) Wind Rose

March Data
Period: 1991 - 1993



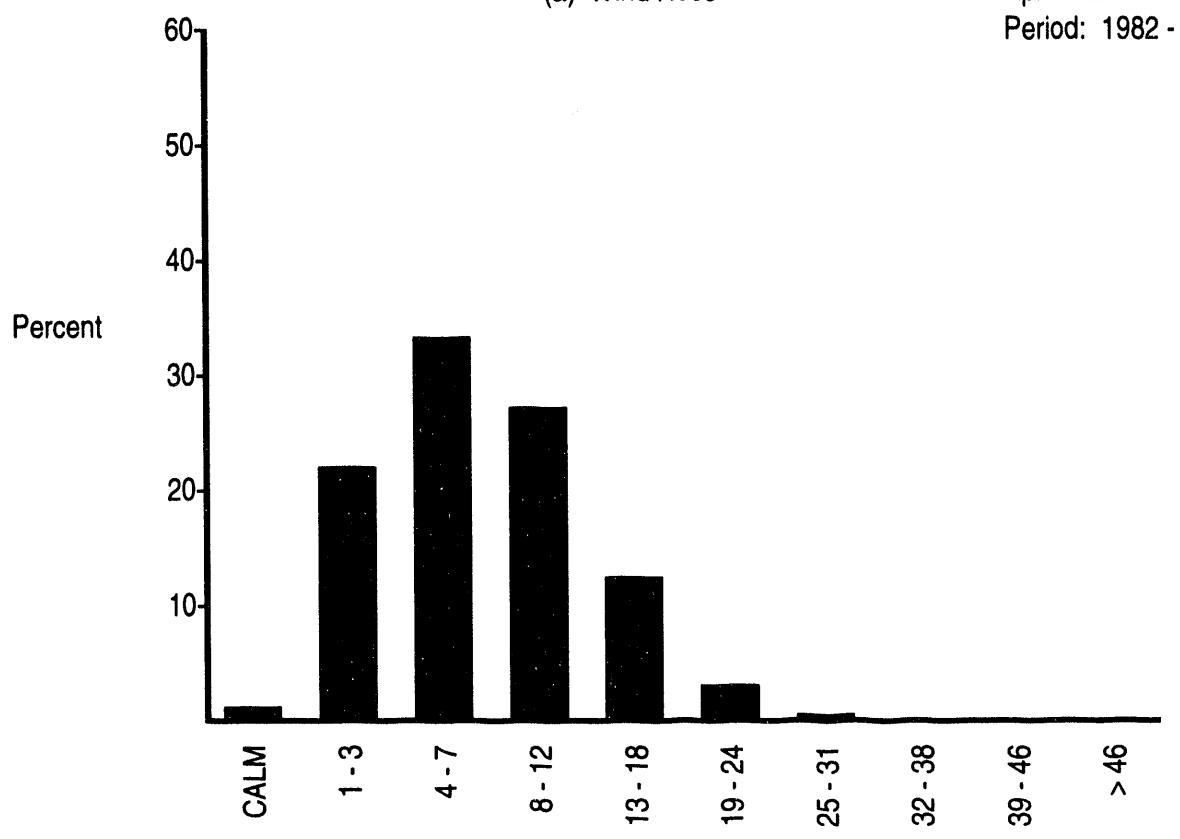
(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

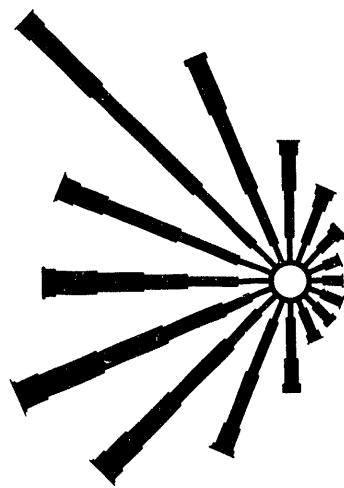
April Data
Period: 1982 - 1993



(b) Wind Speed Histogram

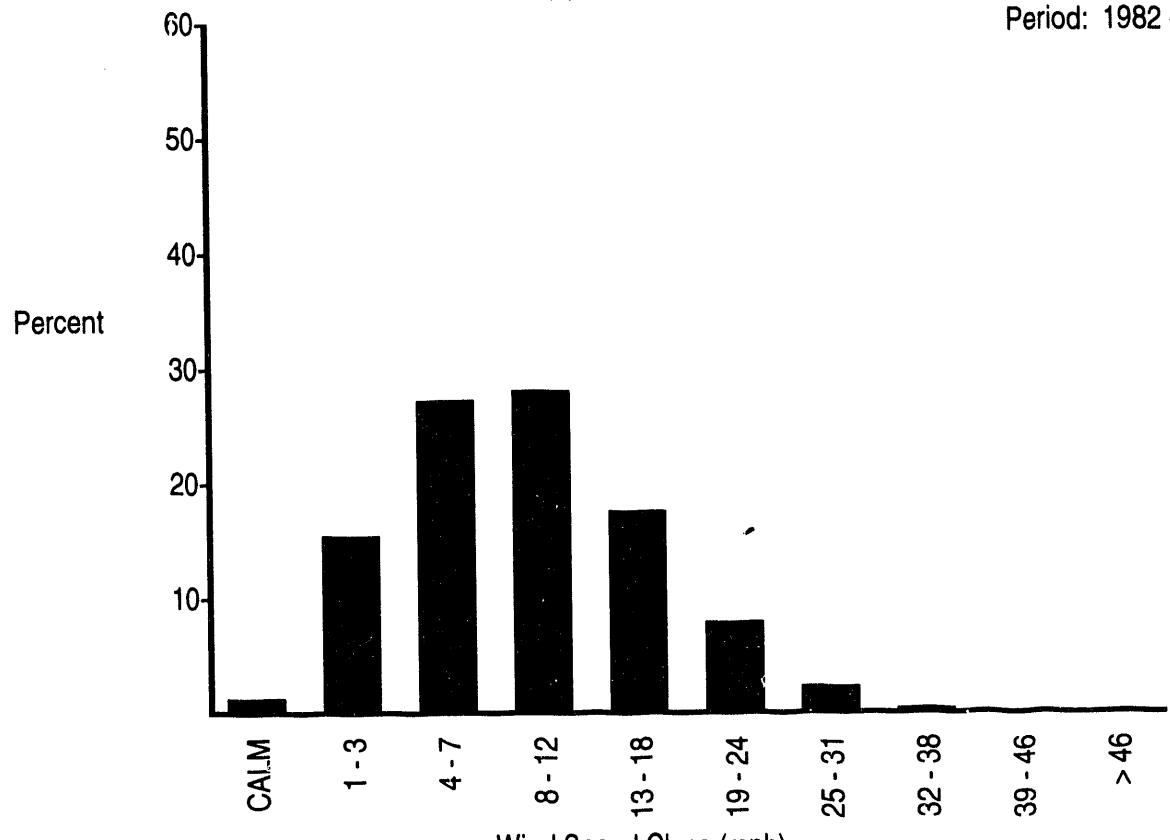
FIGURE B.1. (contd)

N
↑



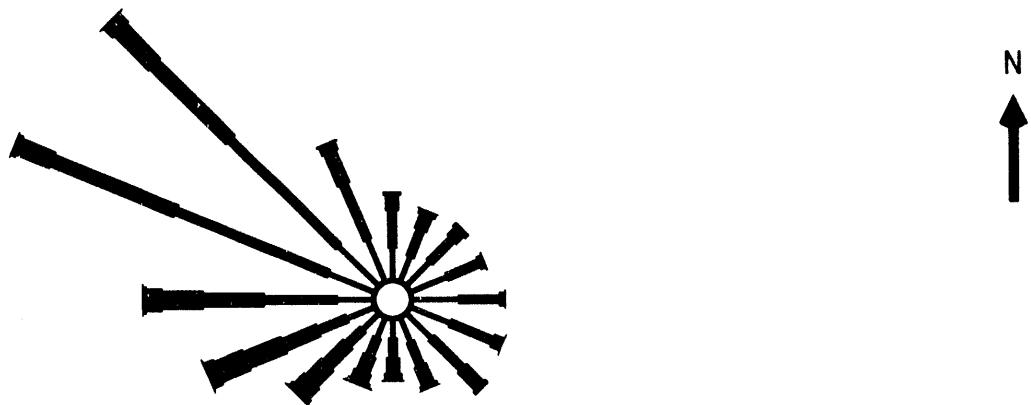
(a) Wind Rose

April Data
Period: 1982 - 1993



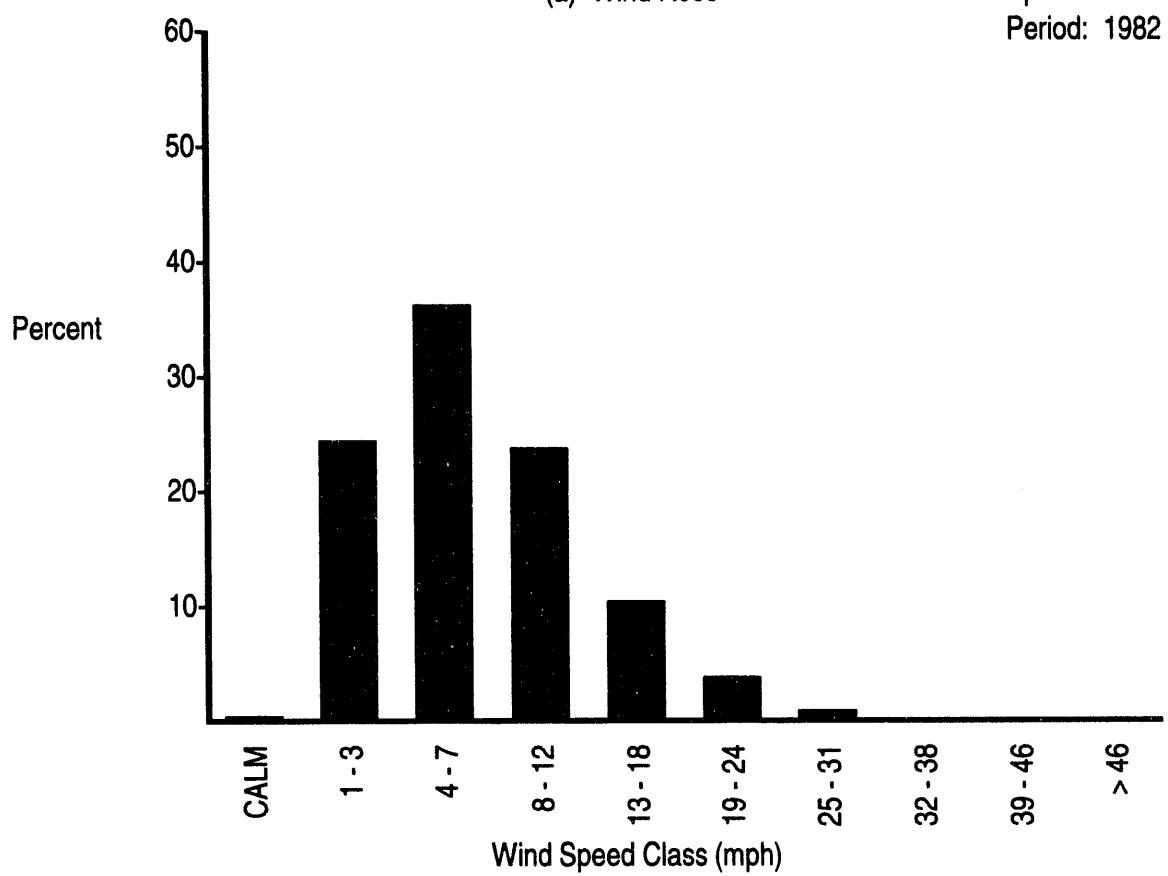
(b) Wind Speed Histogram

FIGURE B.1. (contd)



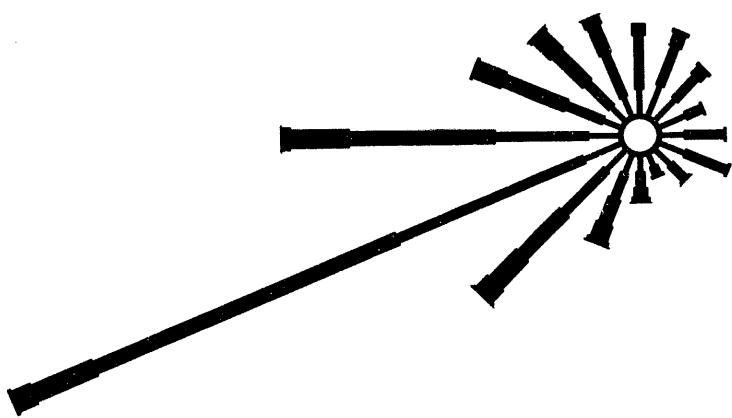
(a) Wind Rose

April Data
Period: 1982 - 1993

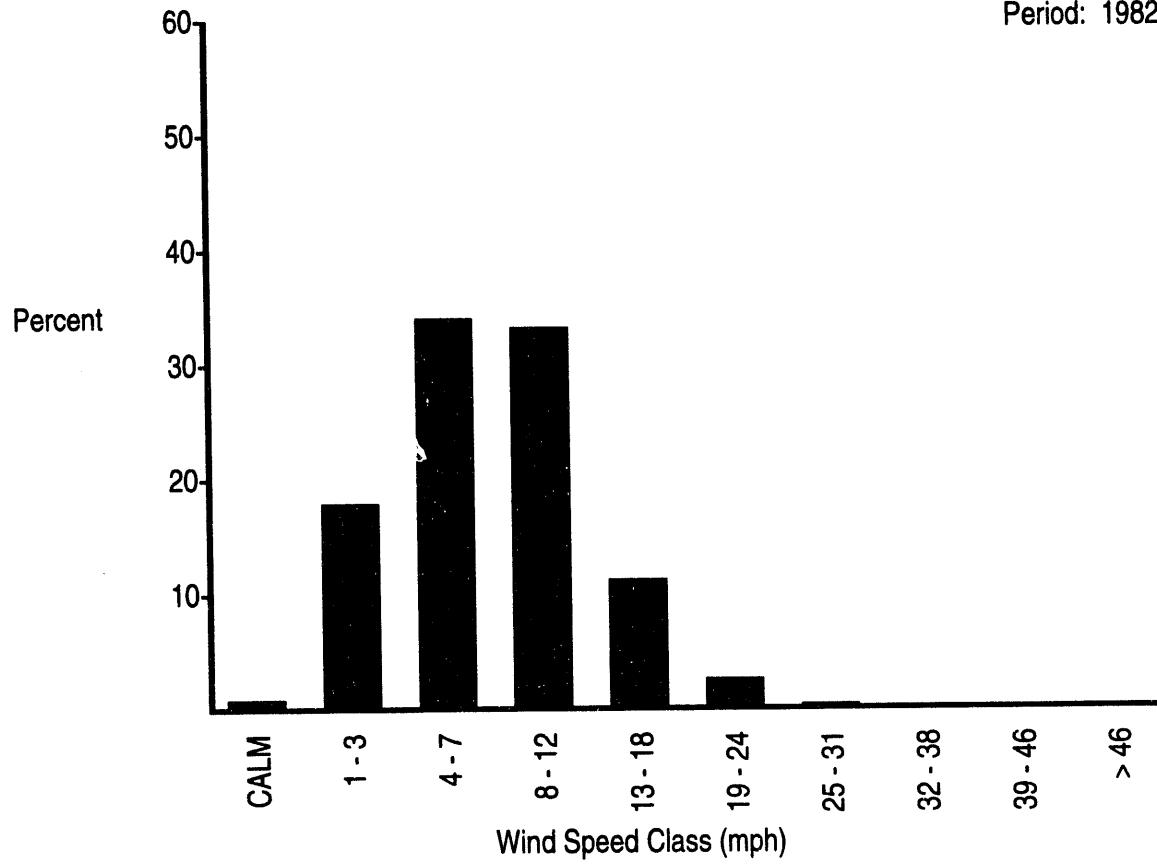


(b) Wind Speed Histogram

FIGURE B.1. (contd)

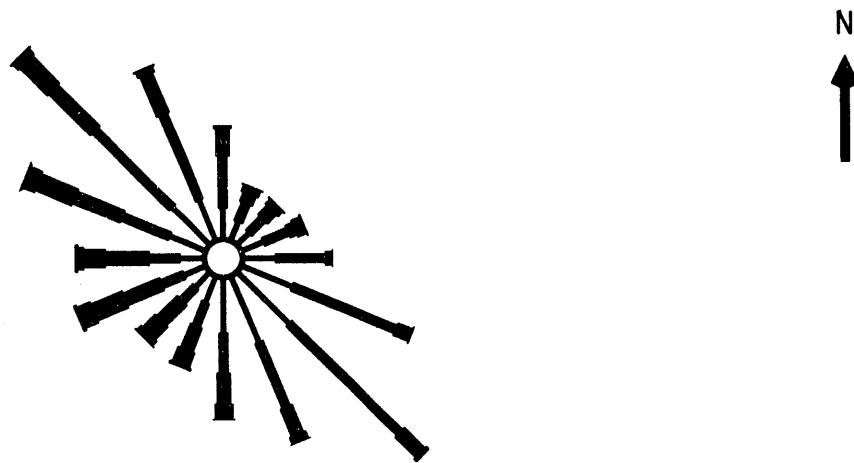
N
↑

(a) Wind Rose

April Data
Period: 1982 - 1993

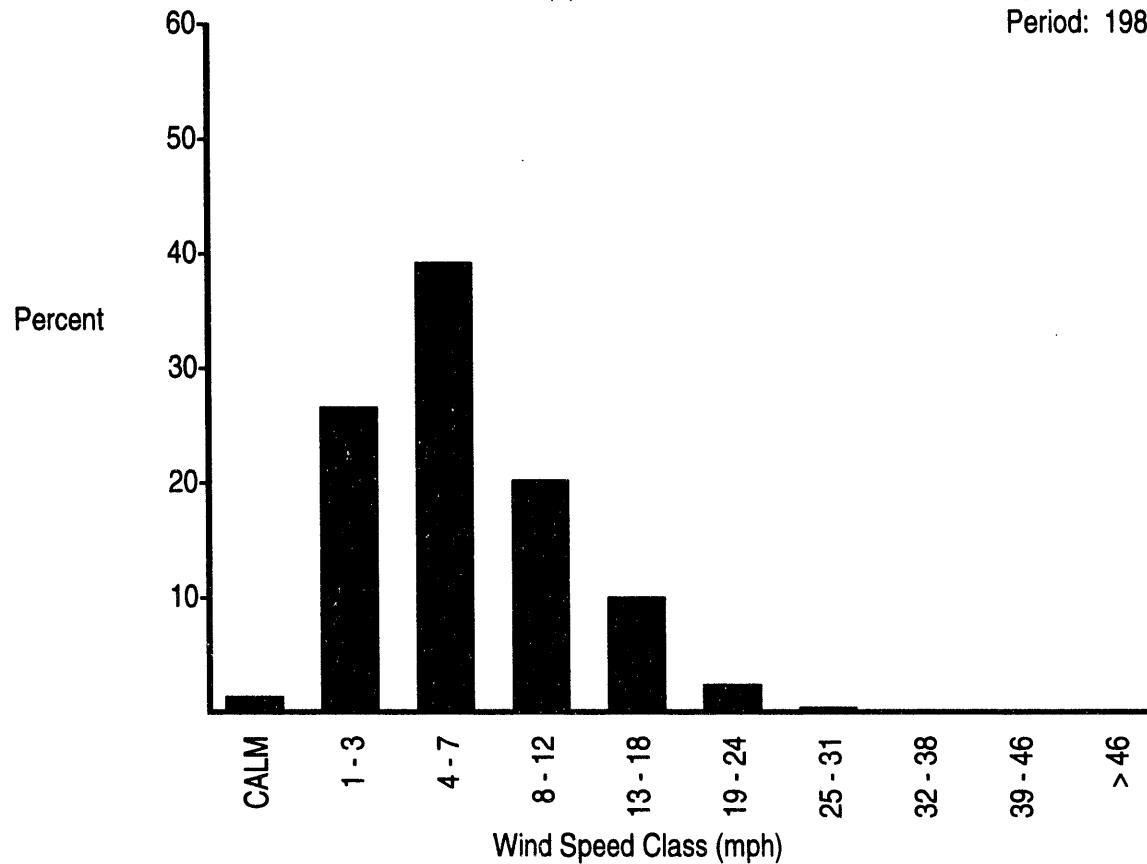
(b) Wind Speed Histogram

FIGURE B.1. (contd)



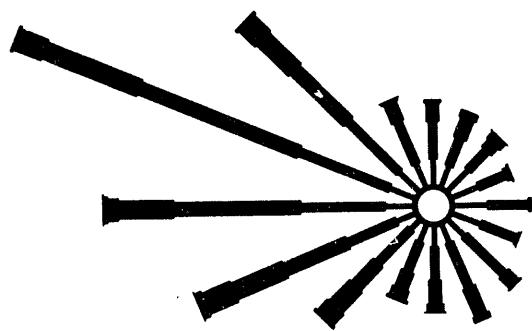
(a) Wind Rose

April Data
Period: 1982 - 1993

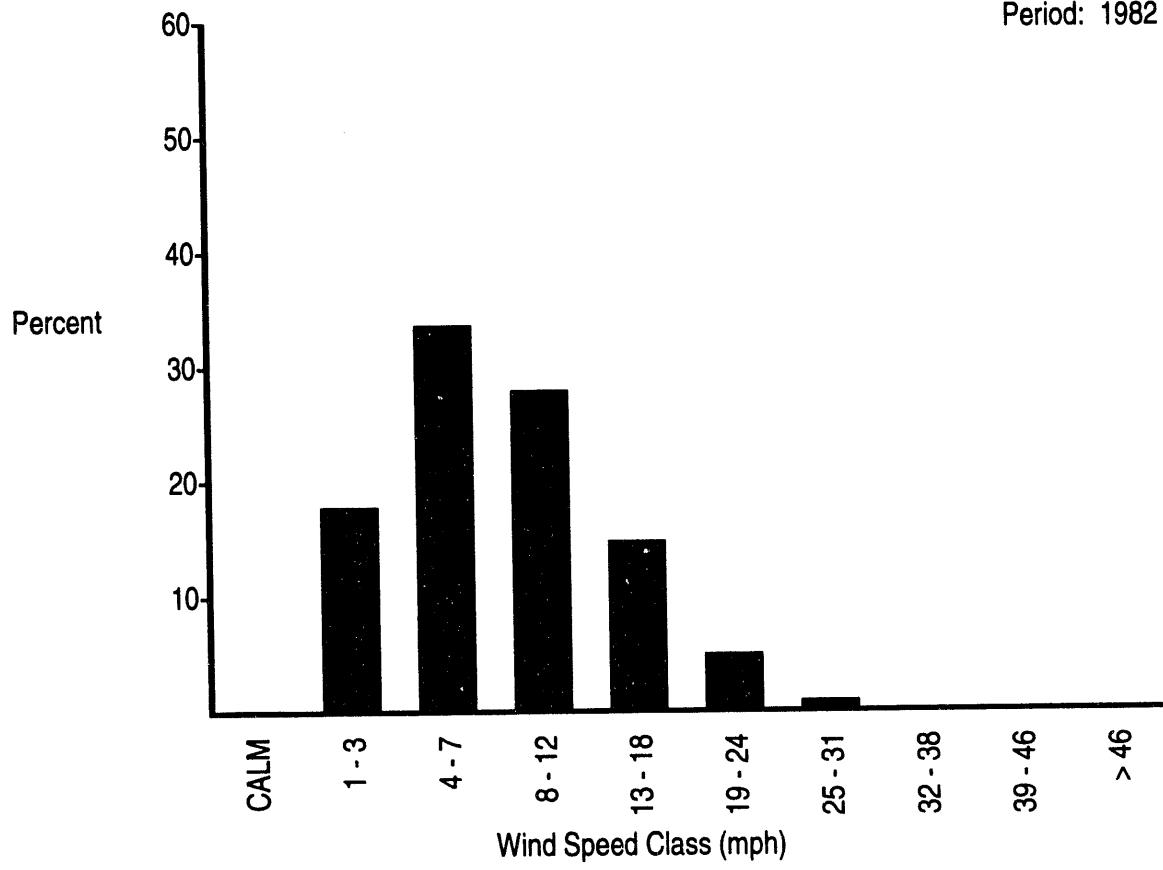


(b) Wind Speed Histogram

FIGURE B.1. (contd)

N
↑

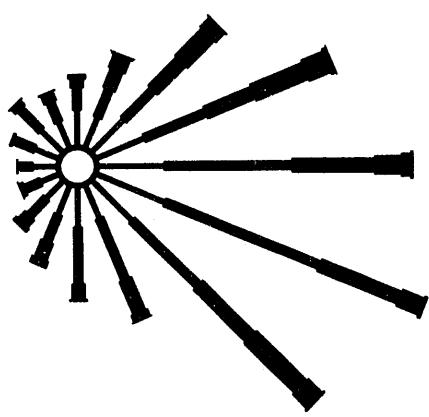
(a) Wind Rose

April Data
Period: 1982 - 1993

(b) Wind Speed Histogram

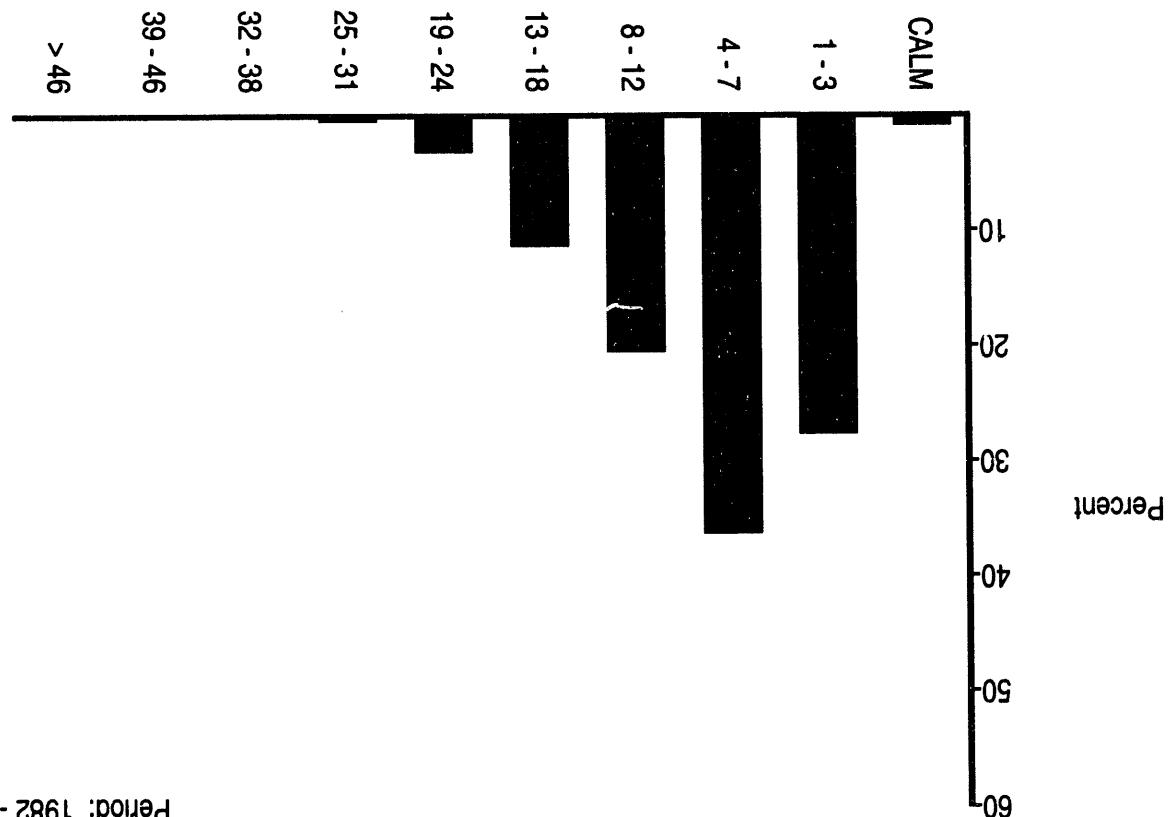
FIGURE B.1. (contd)

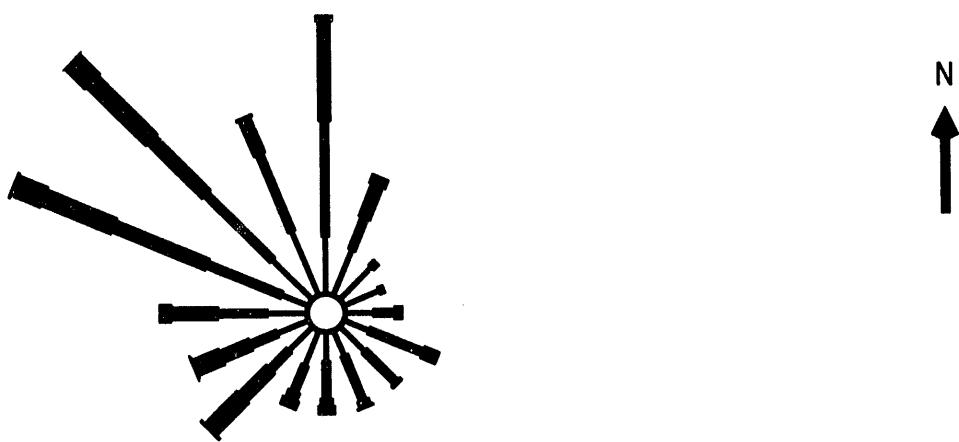
(a) Wind Rose
April Data
Period: 1982 - 1993



↓
N

(b) Wind Speed Histogram





(a) Wind Rose

April Data
Period: 1992 - 1993

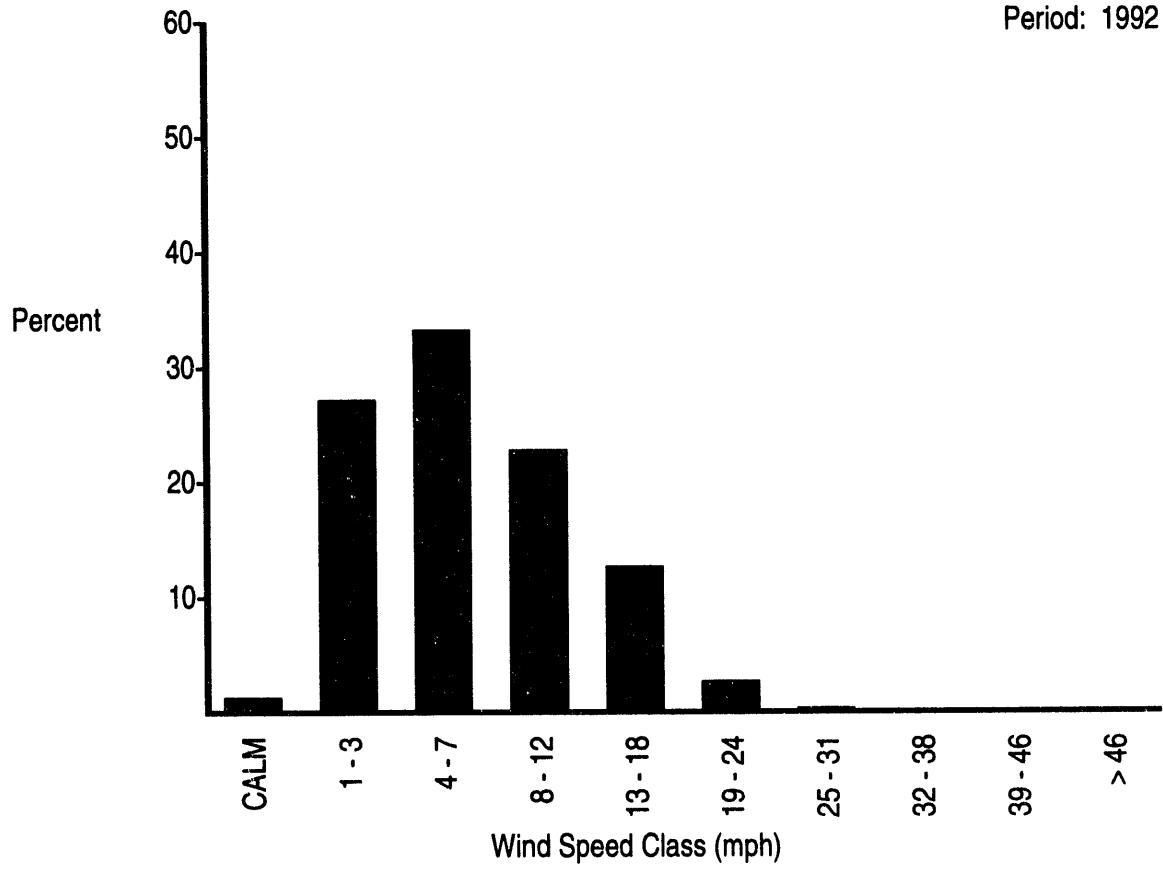
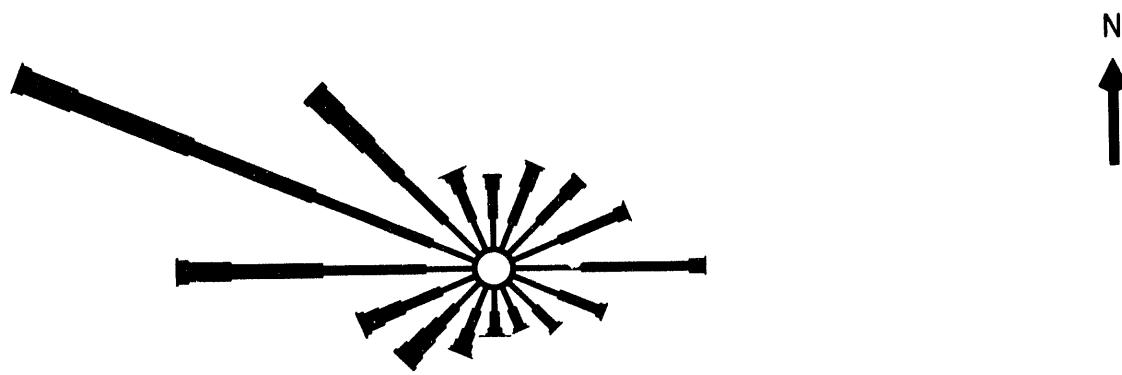
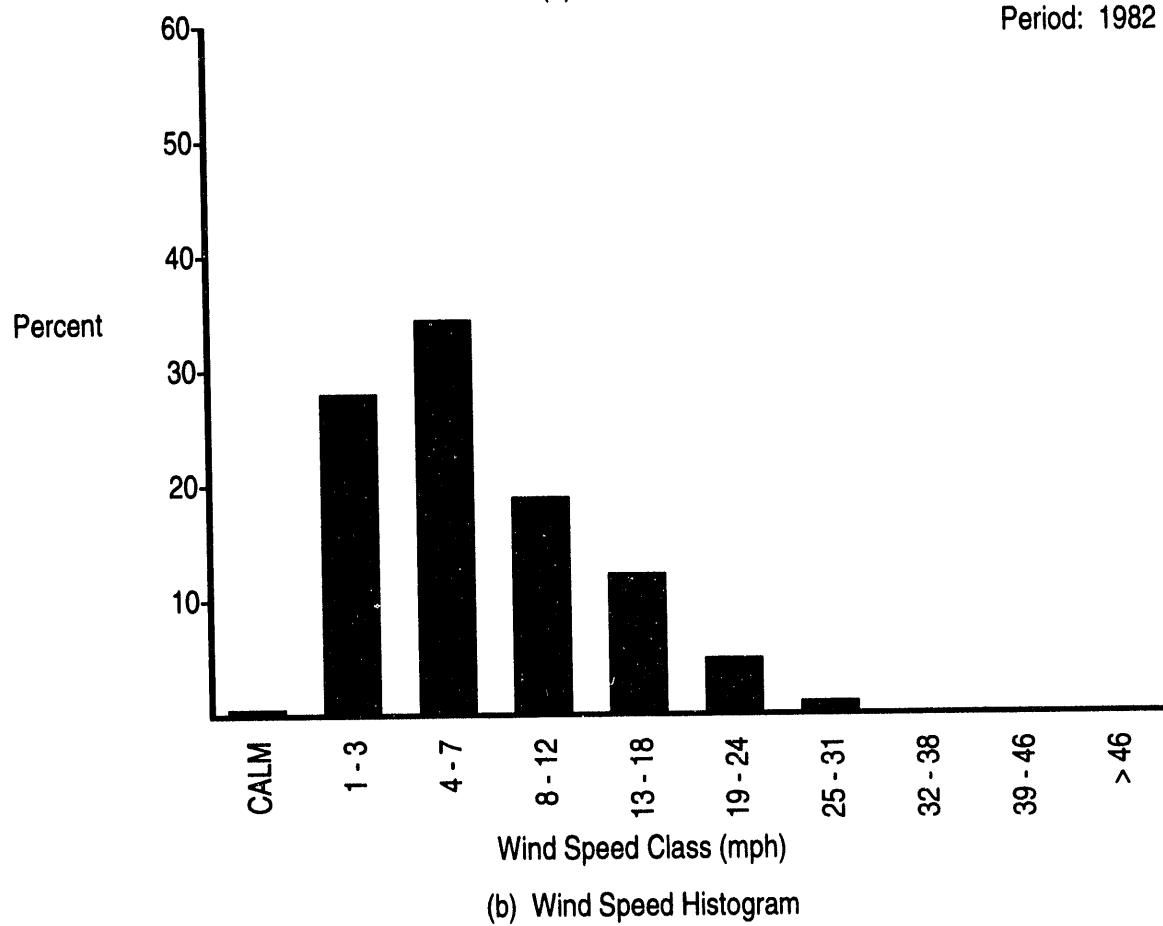


FIGURE B.1. (contd)



(a) Wind Rose

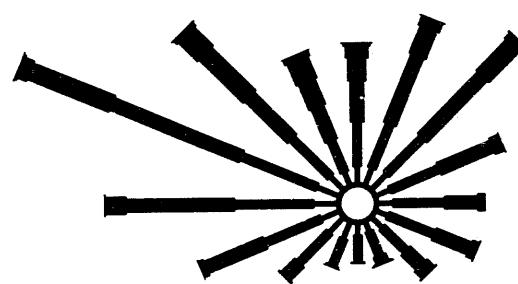
April Data
Period: 1982 - 1991



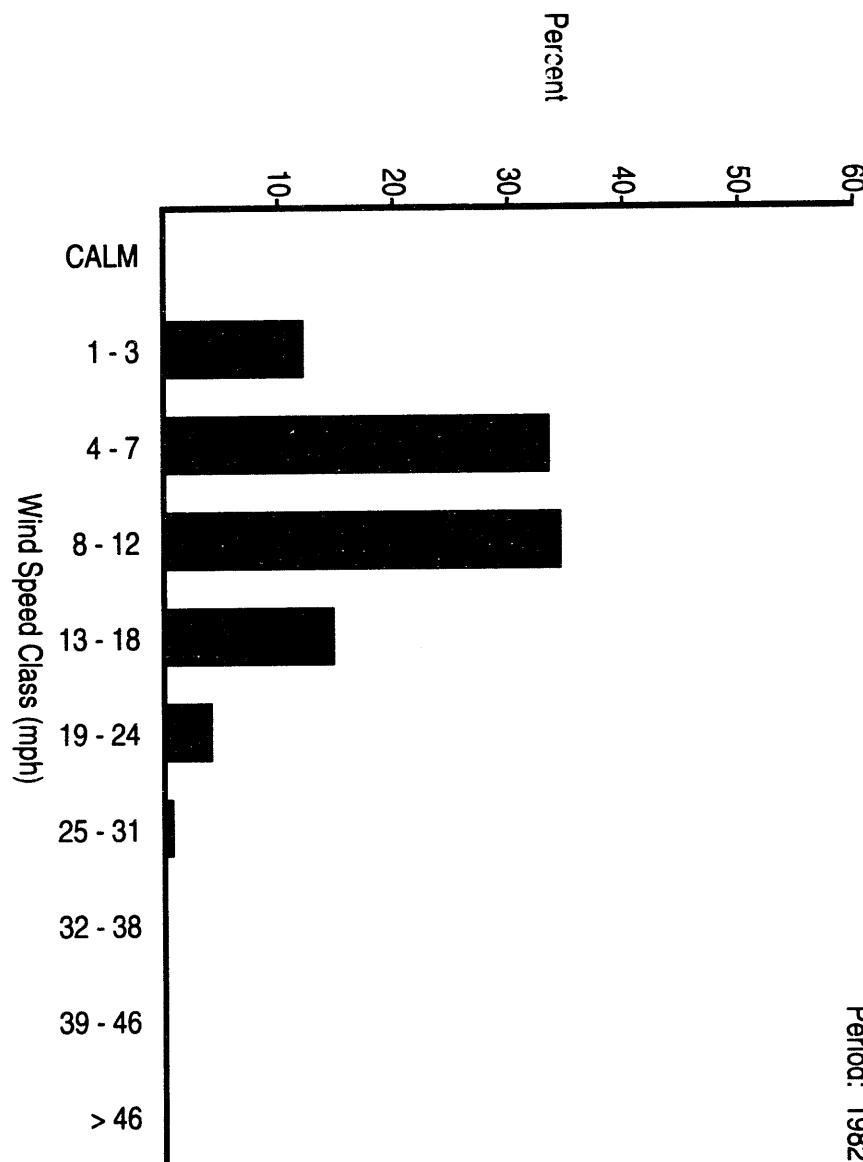
(b) Wind Speed Histogram

FIGURE B.1. (contd)

(a) Wind Rose
April Data
Period: 1982 - 1993

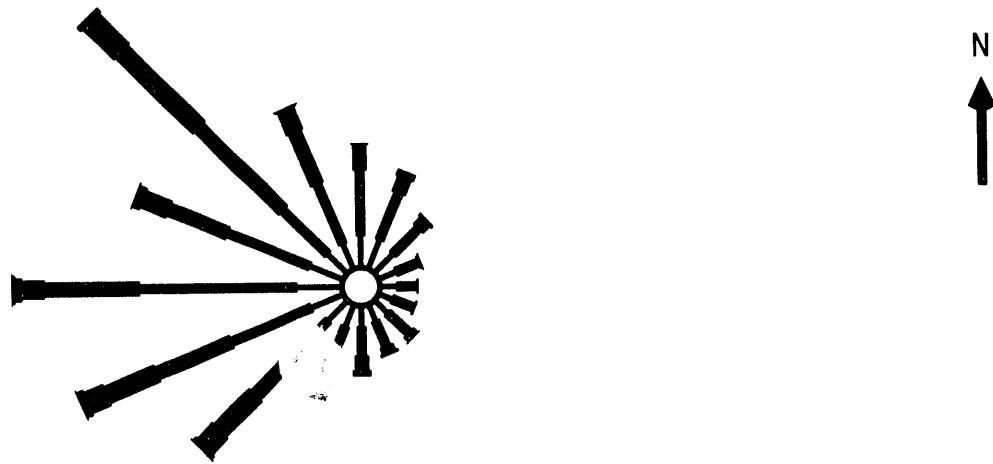


→ N



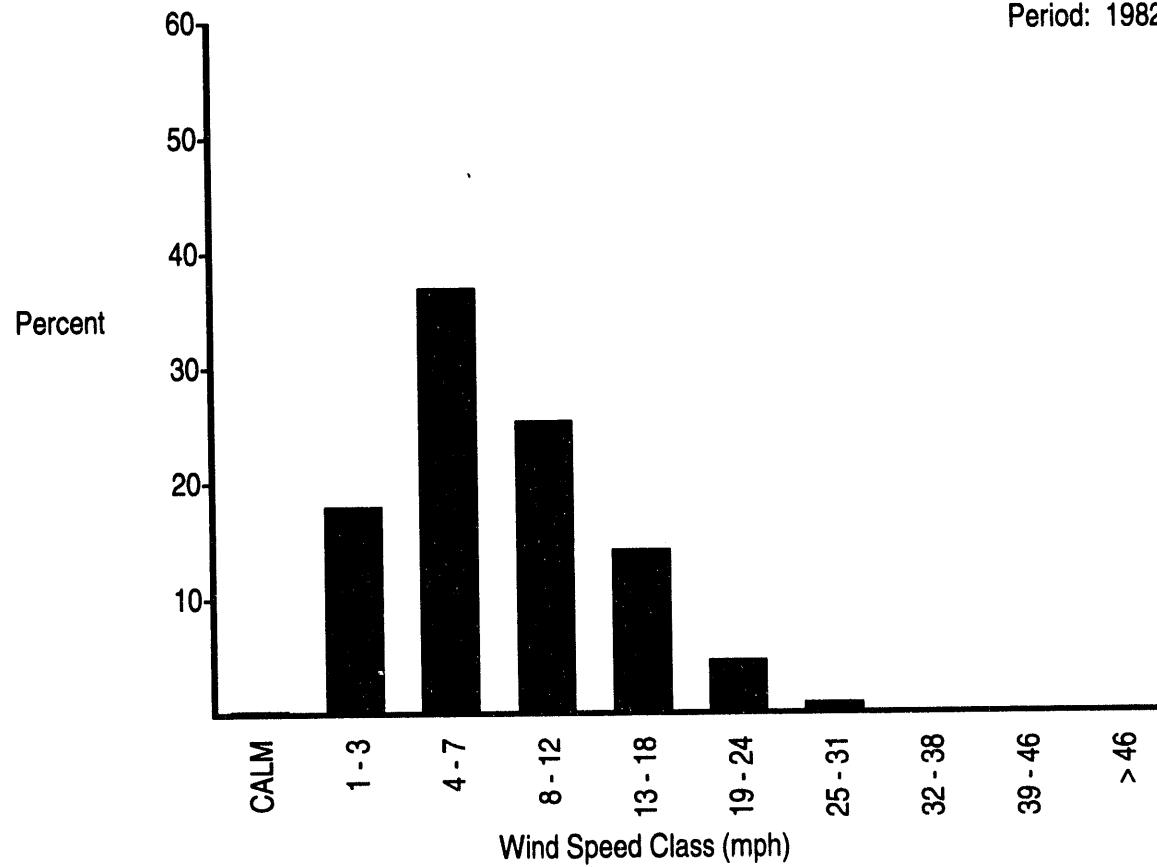
(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

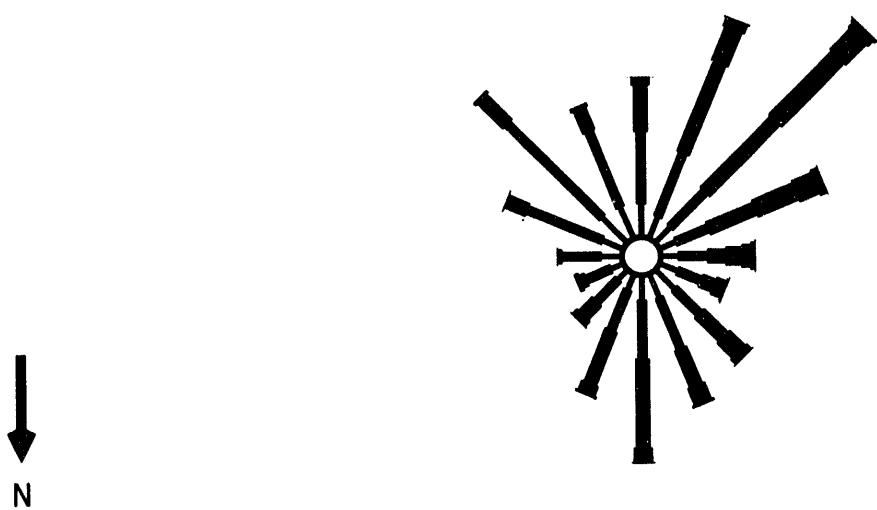
April Data
Period: 1982 - 1993



(b) Wind Speed Histogram

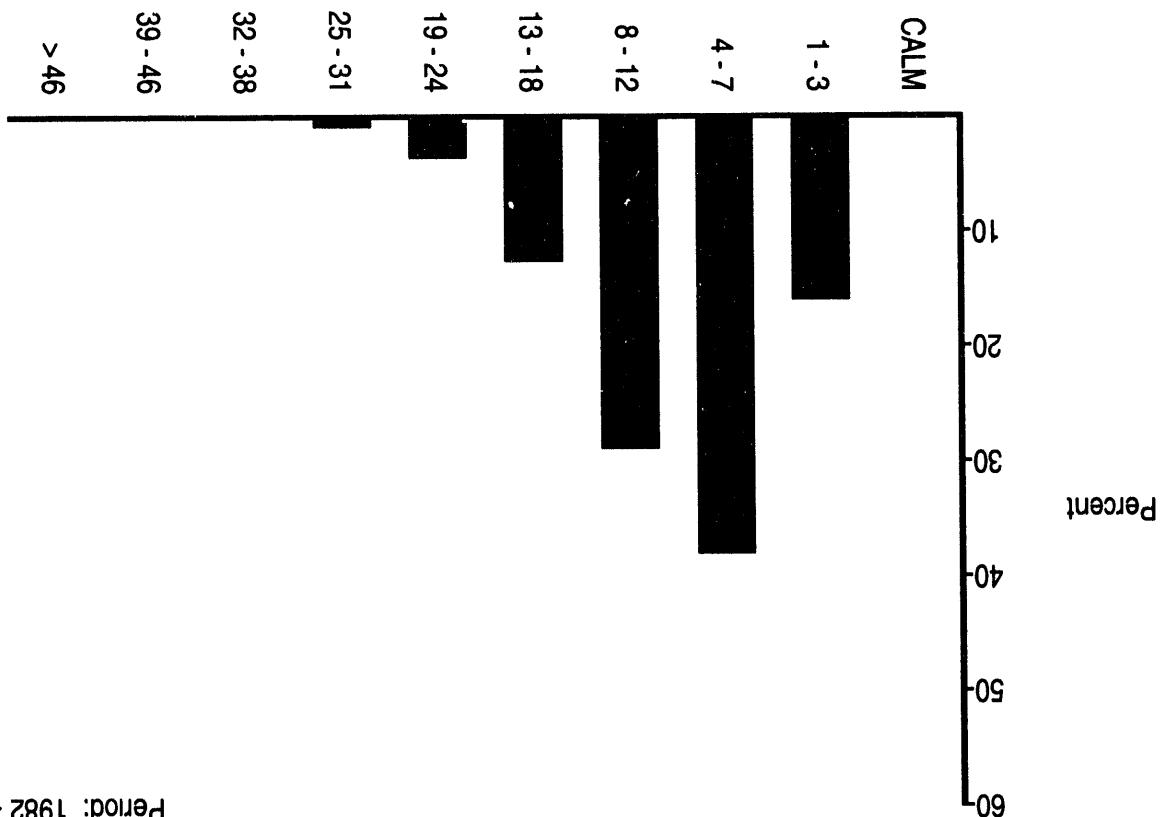
FIGURE B.1. (contd)

(a) Wind Rose
April Data
Period: 1982 - 1993

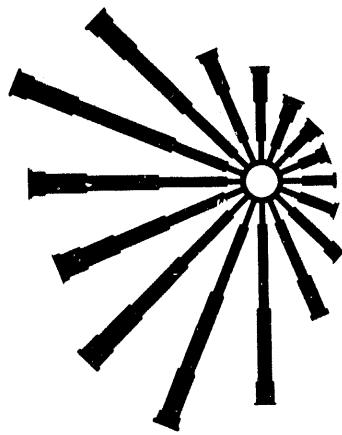


Station #11 - 300A

FIGURE B.1. (cont'd)
(b) Wind Speed Histogram
Wind Speed Class (mph)

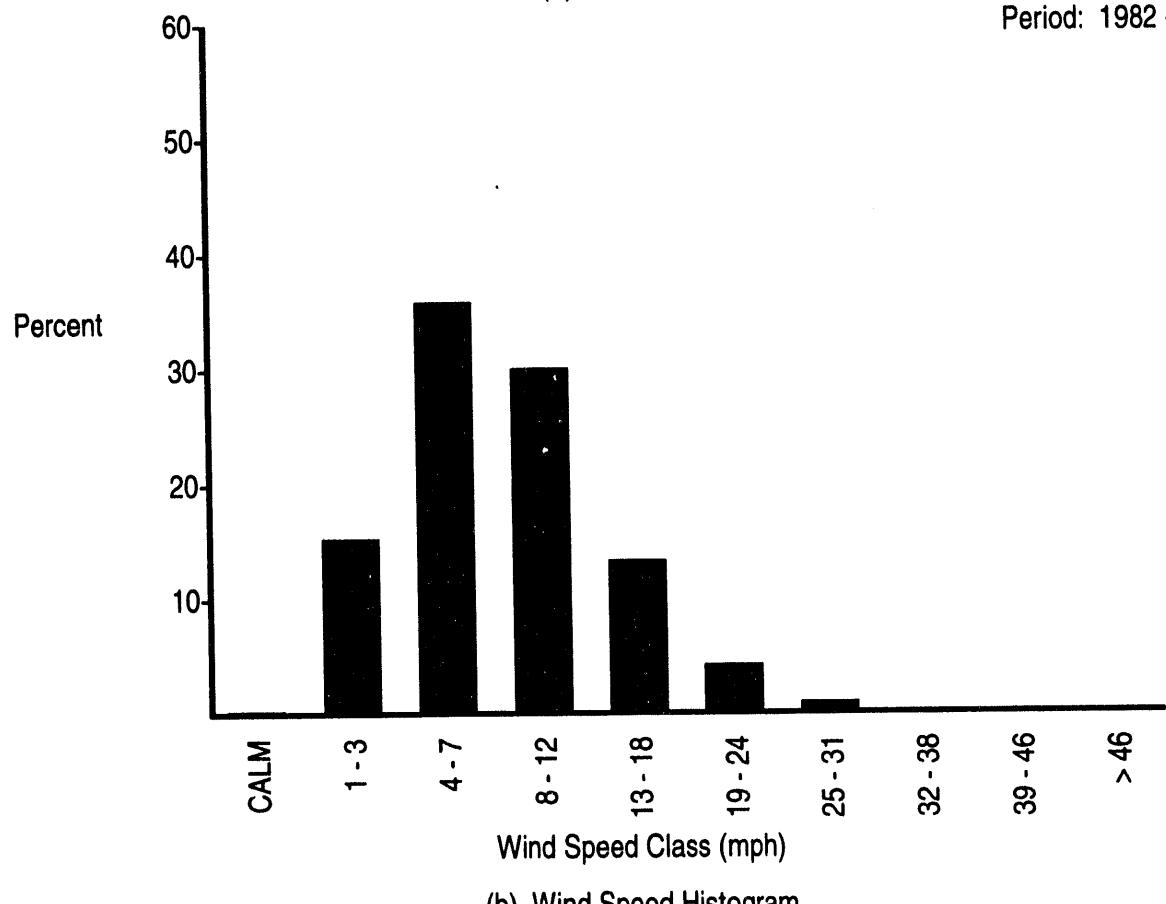


N
↑



(a) Wind Rose

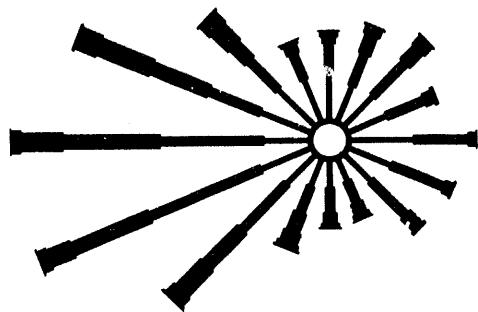
April Data
Period: 1982 - 1993



(b) Wind Speed Histogram

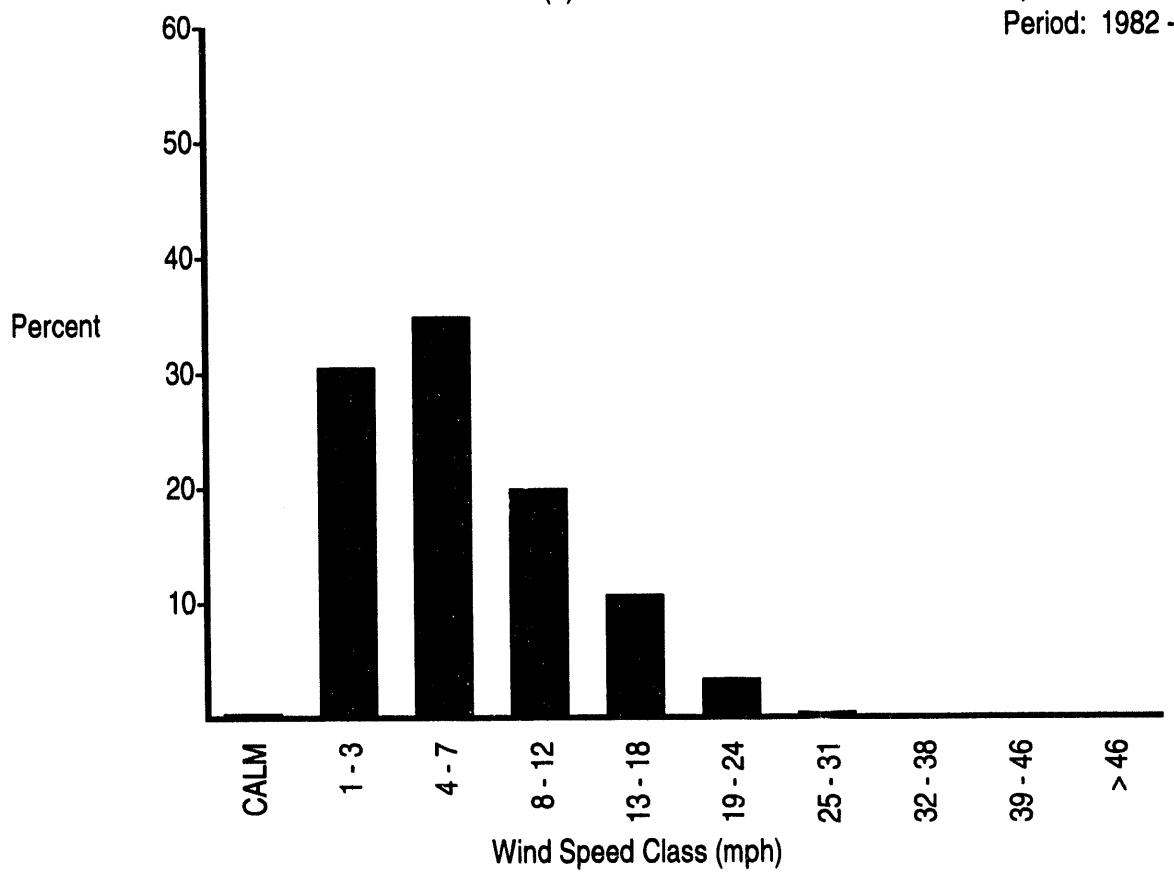
FIGURE B.1. (contd)

N
↑



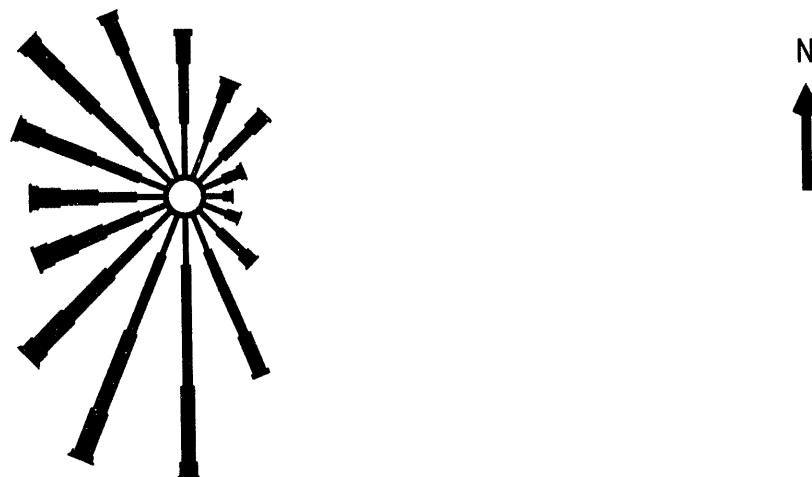
(a) Wind Rose

April Data
Period: 1982 - 1993



(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

April Data
Period: 1982 - 1993

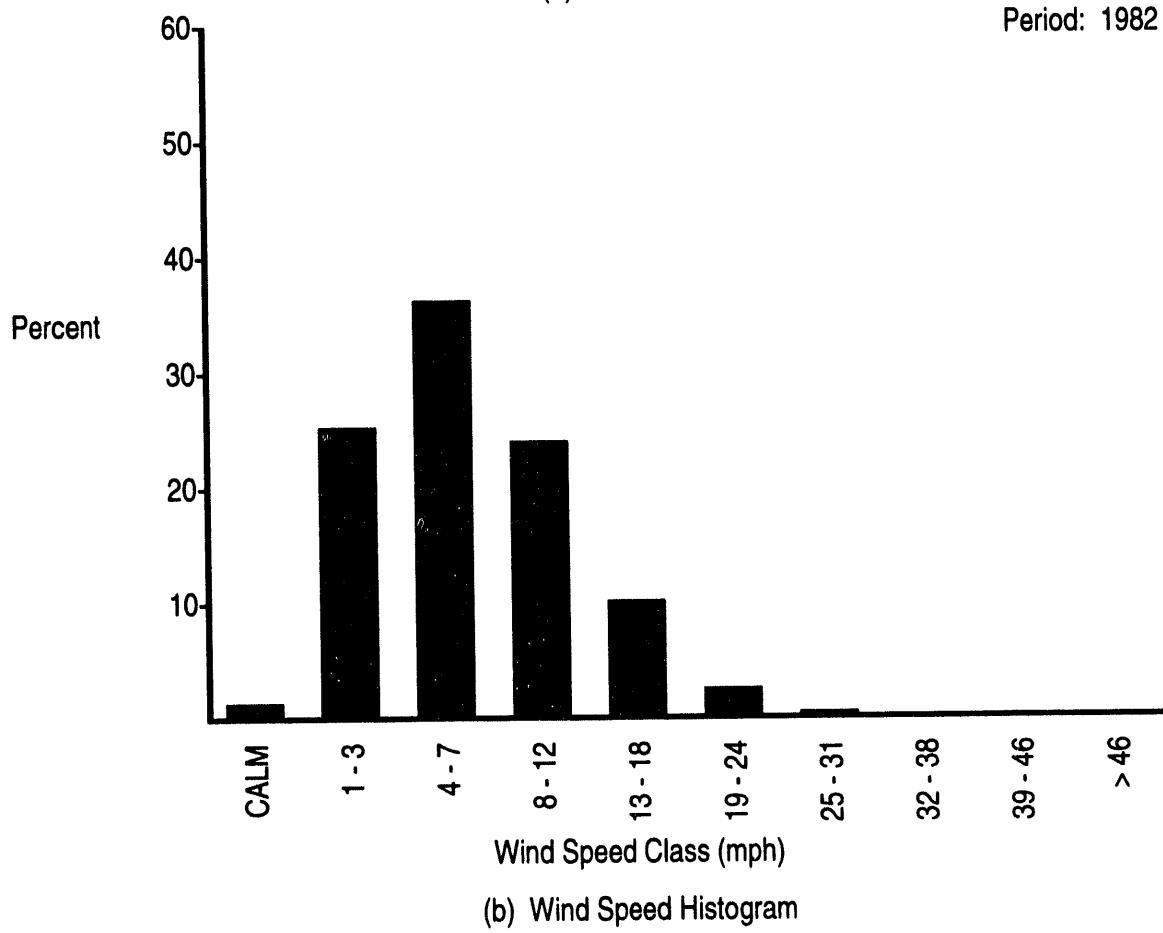
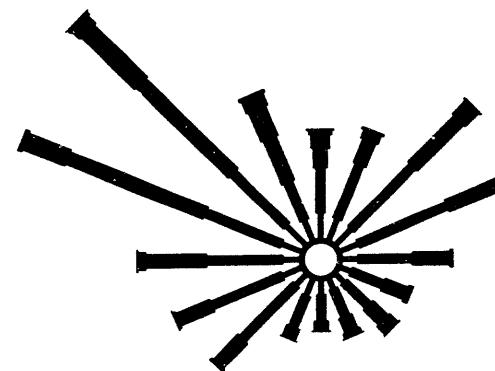


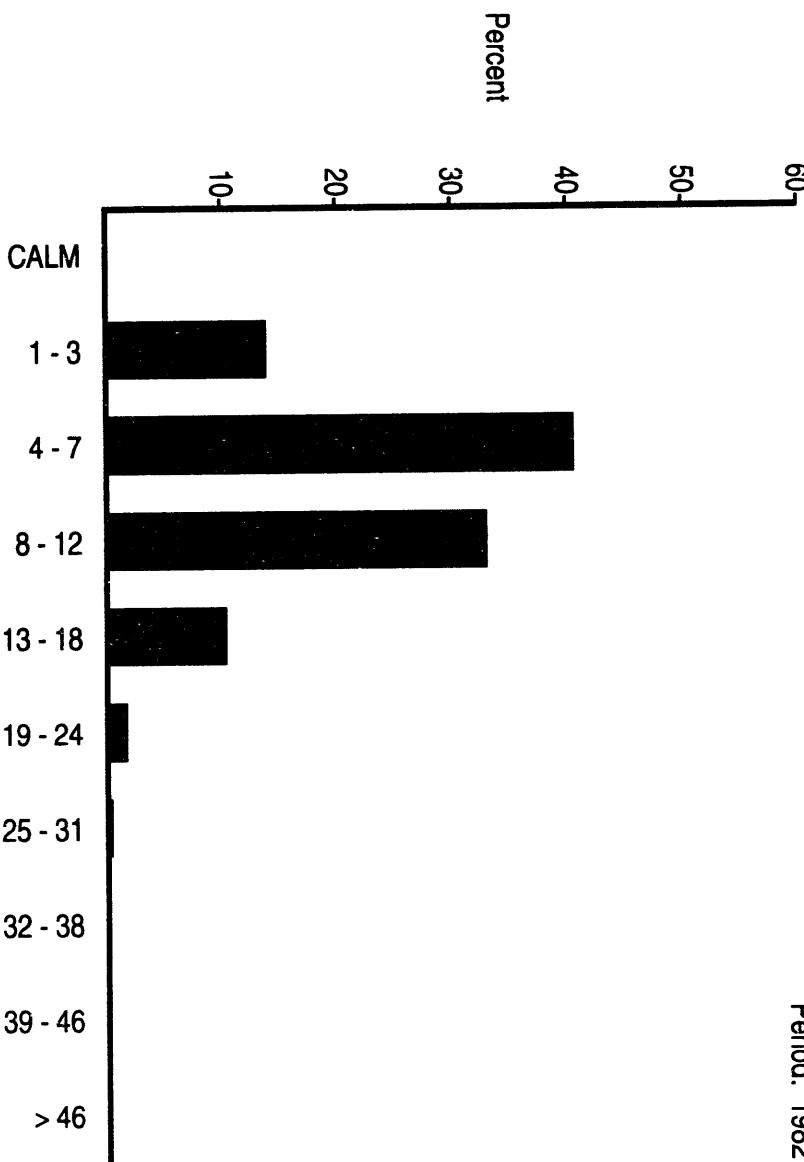
FIGURE B.1. (contd)



(a) Wind Rose

April Data
Period: 1982 - 1993

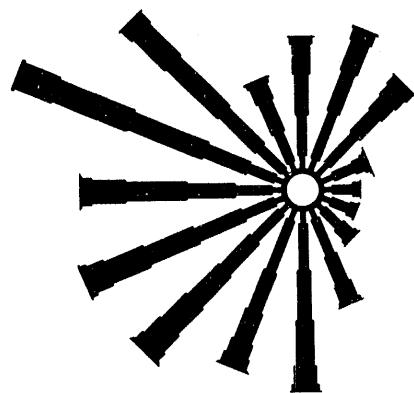
→ N



(b) Wind Speed Histogram

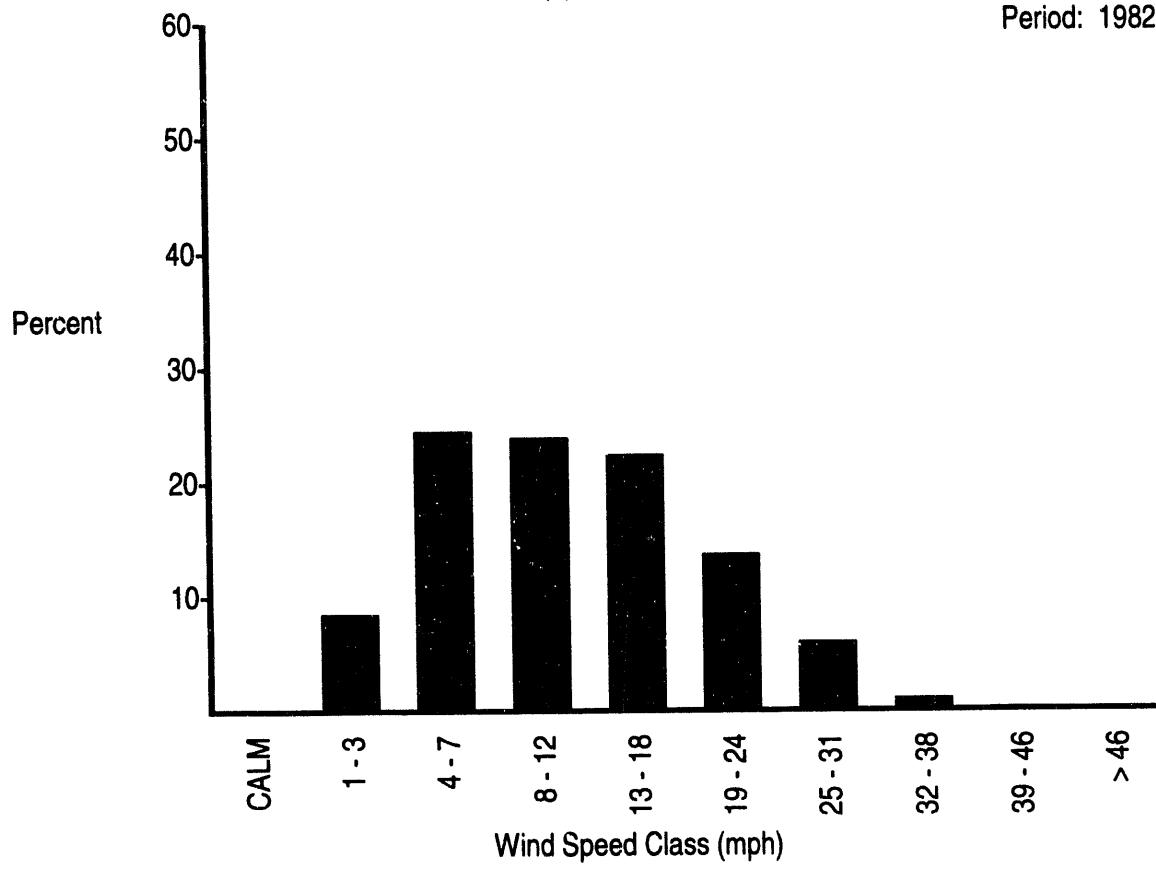
FIGURE B.1. (contd)

N
↑



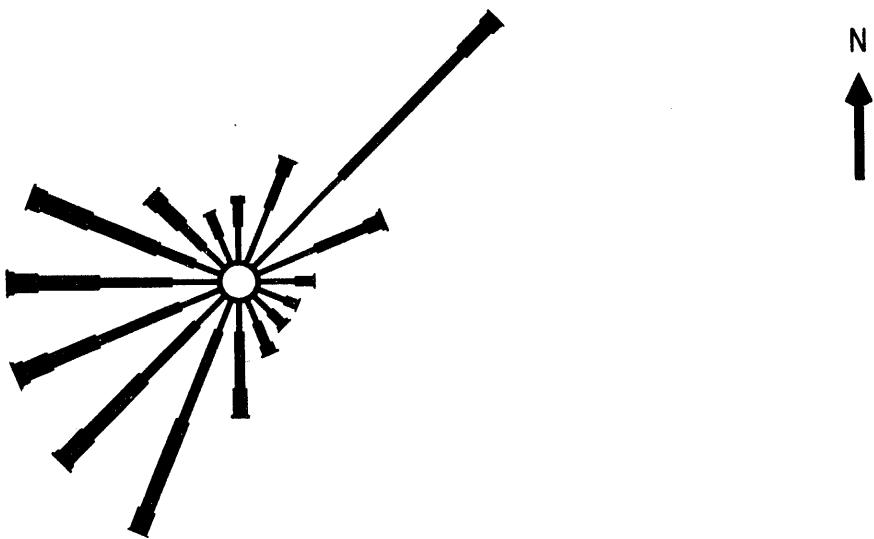
(a) Wind Rose

April Data
Period: 1982 - 1993



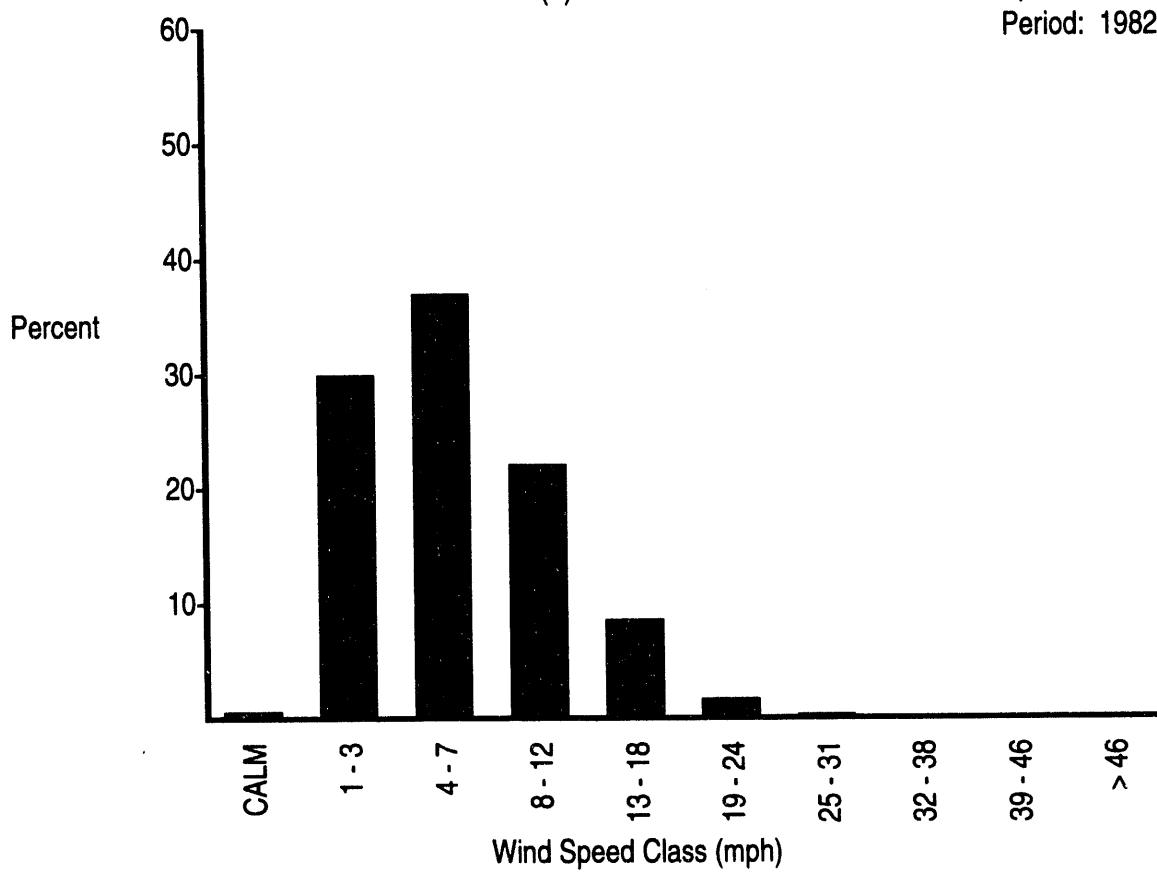
(b) Wind Speed Histogram

FIGURE B.1. (contd)



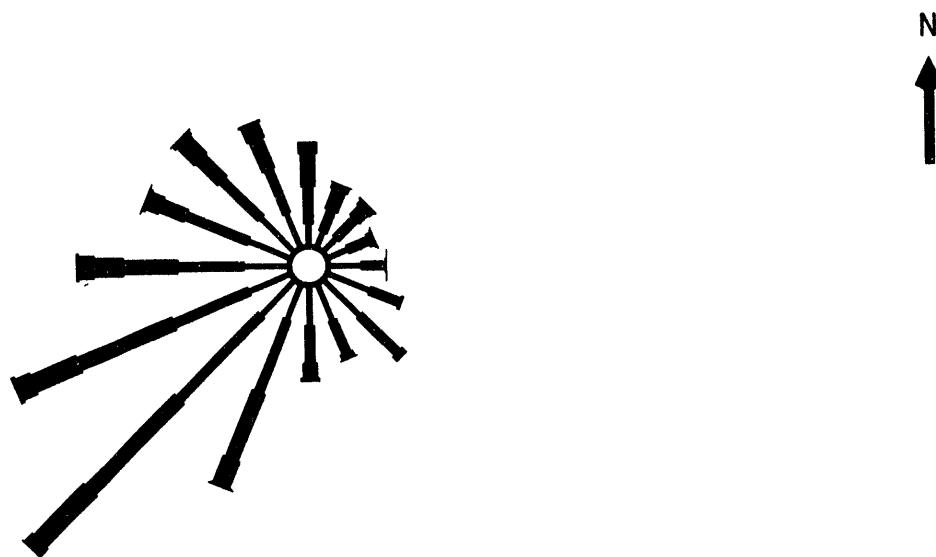
(a) Wind Rose

April Data
Period: 1982 - 1993



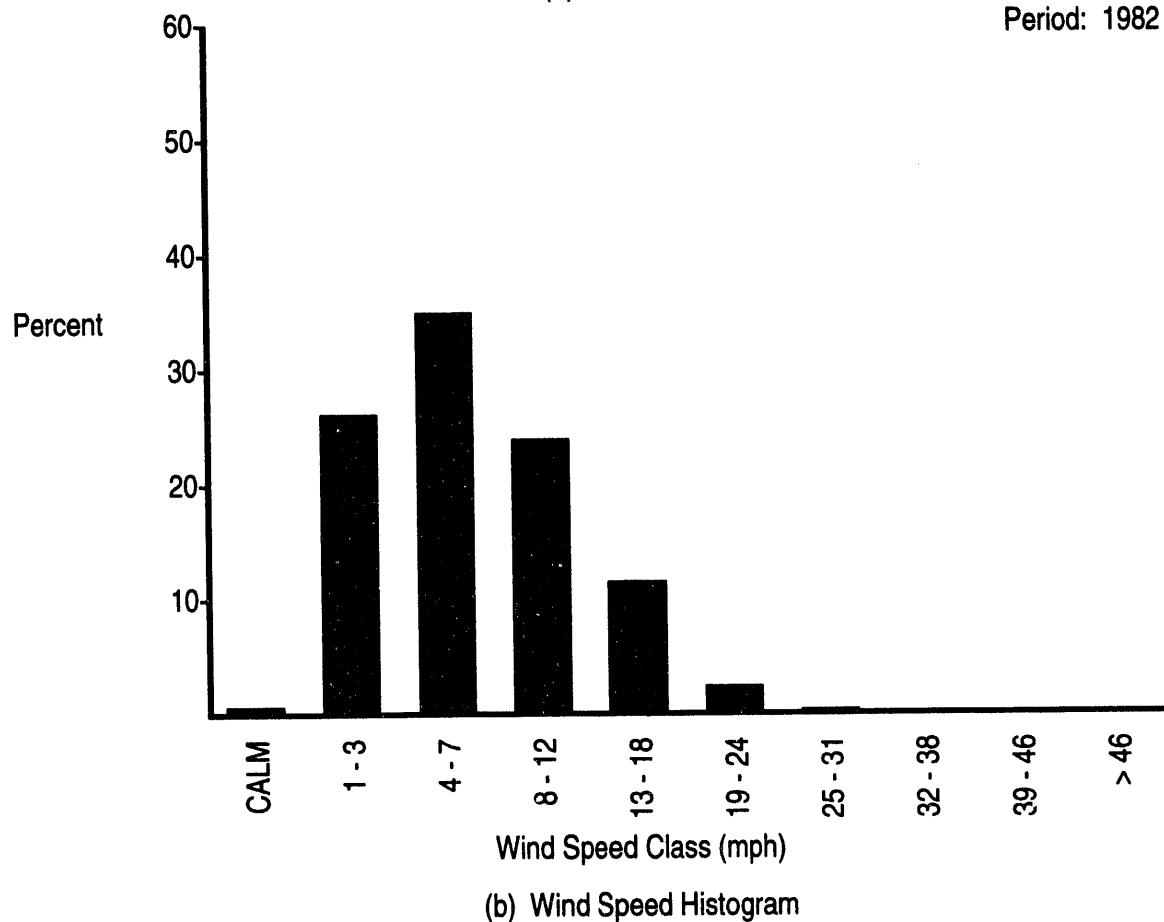
(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

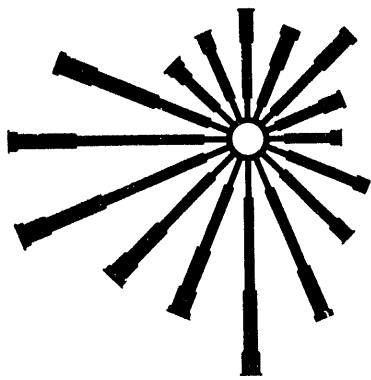
April Data
Period: 1982 - 1993



(b) Wind Speed Histogram

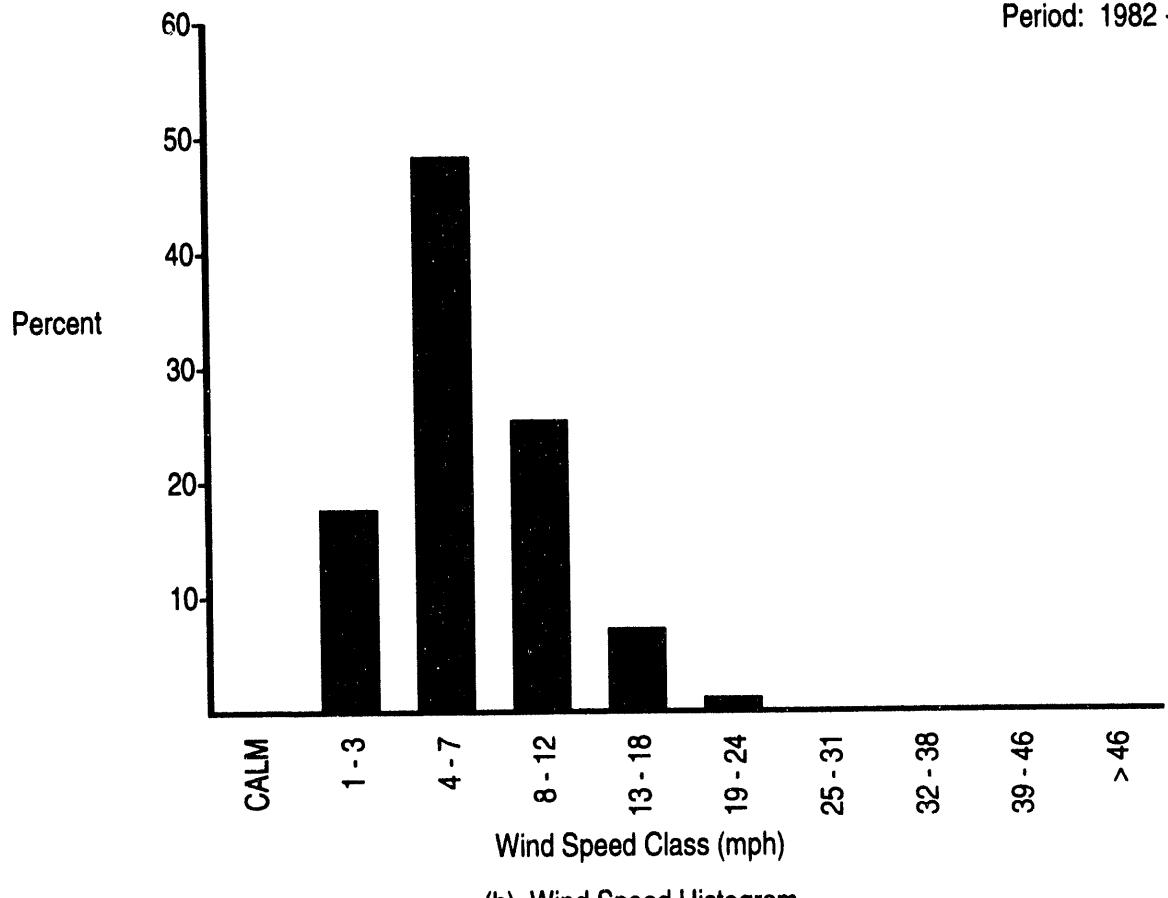
FIGURE B.1. (contd)

N
↑



(a) Wind Rose

April Data
Period: 1982 - 1992



(b) Wind Speed Histogram

FIGURE B.1. (contd)

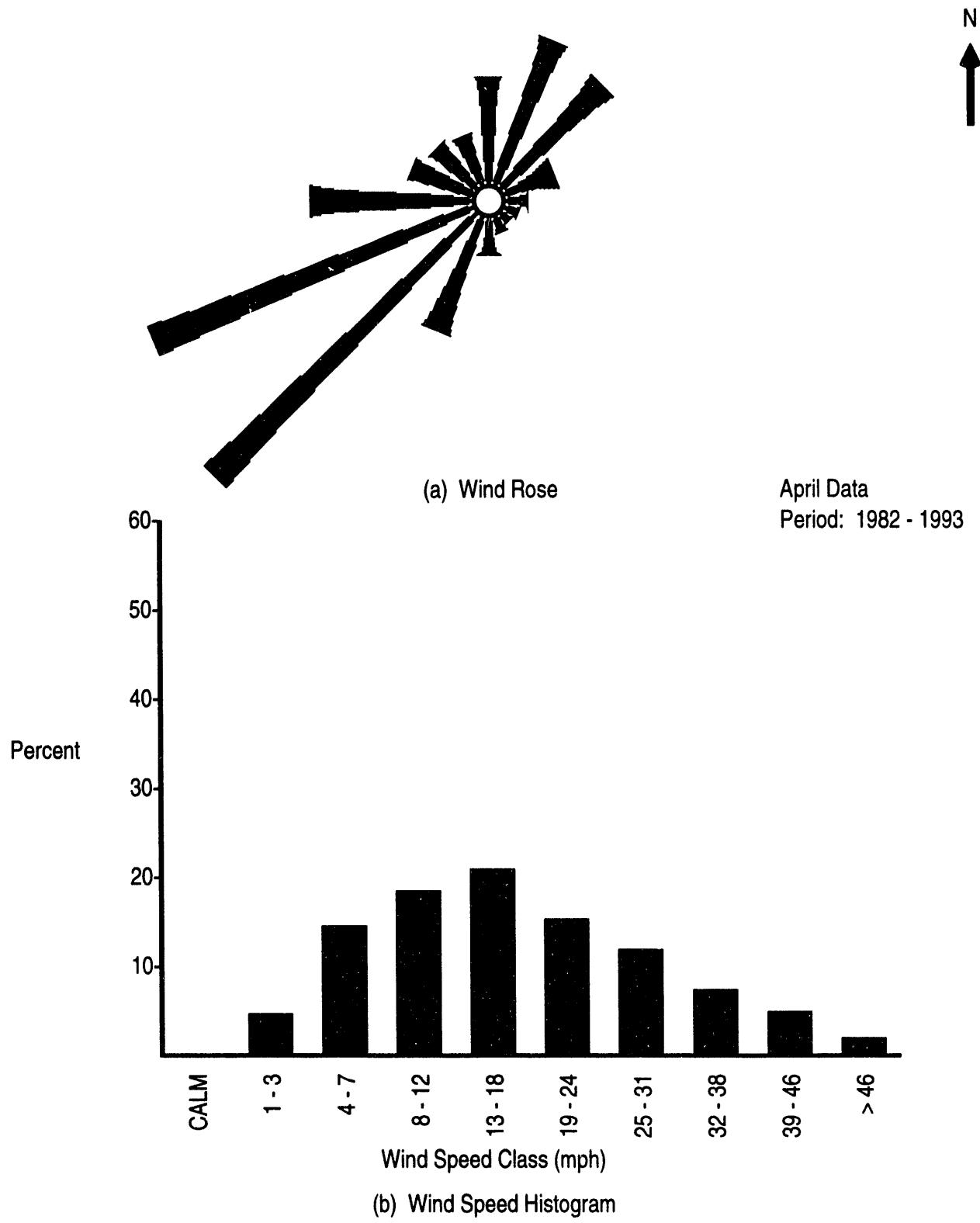
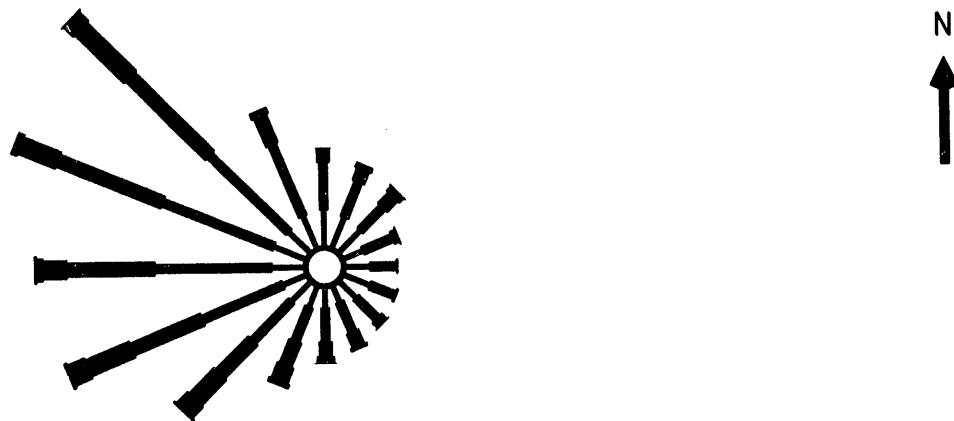
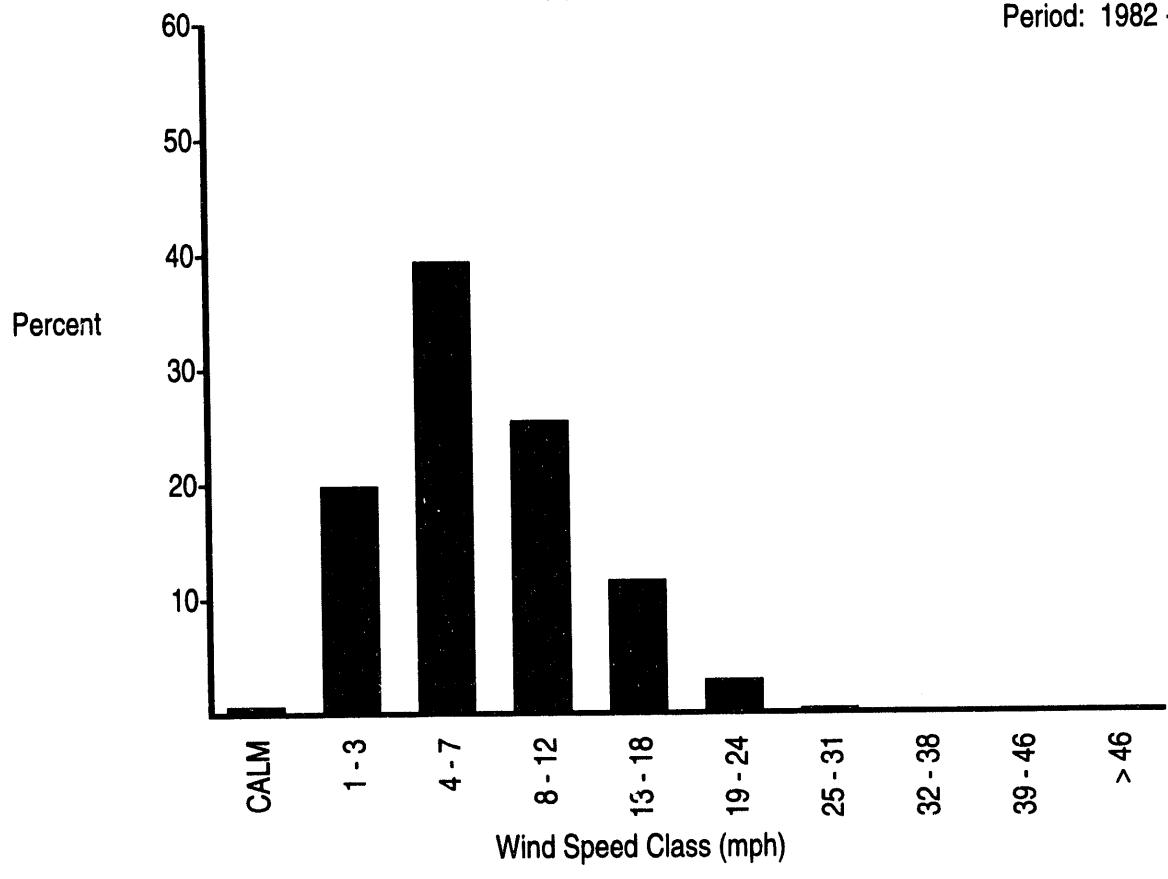


FIGURE B.1. (contd)



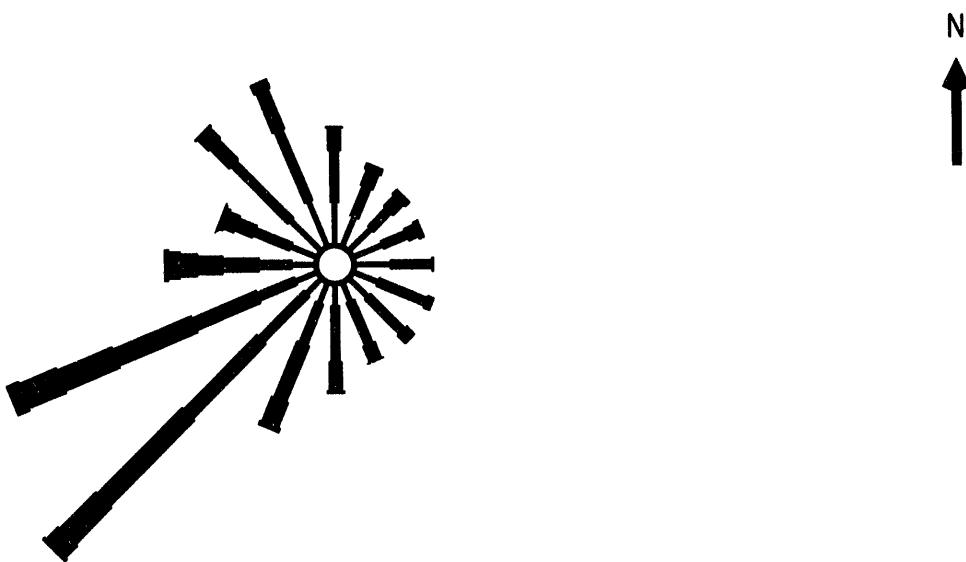
(a) Wind Rose

April Data
Period: 1982 - 1993



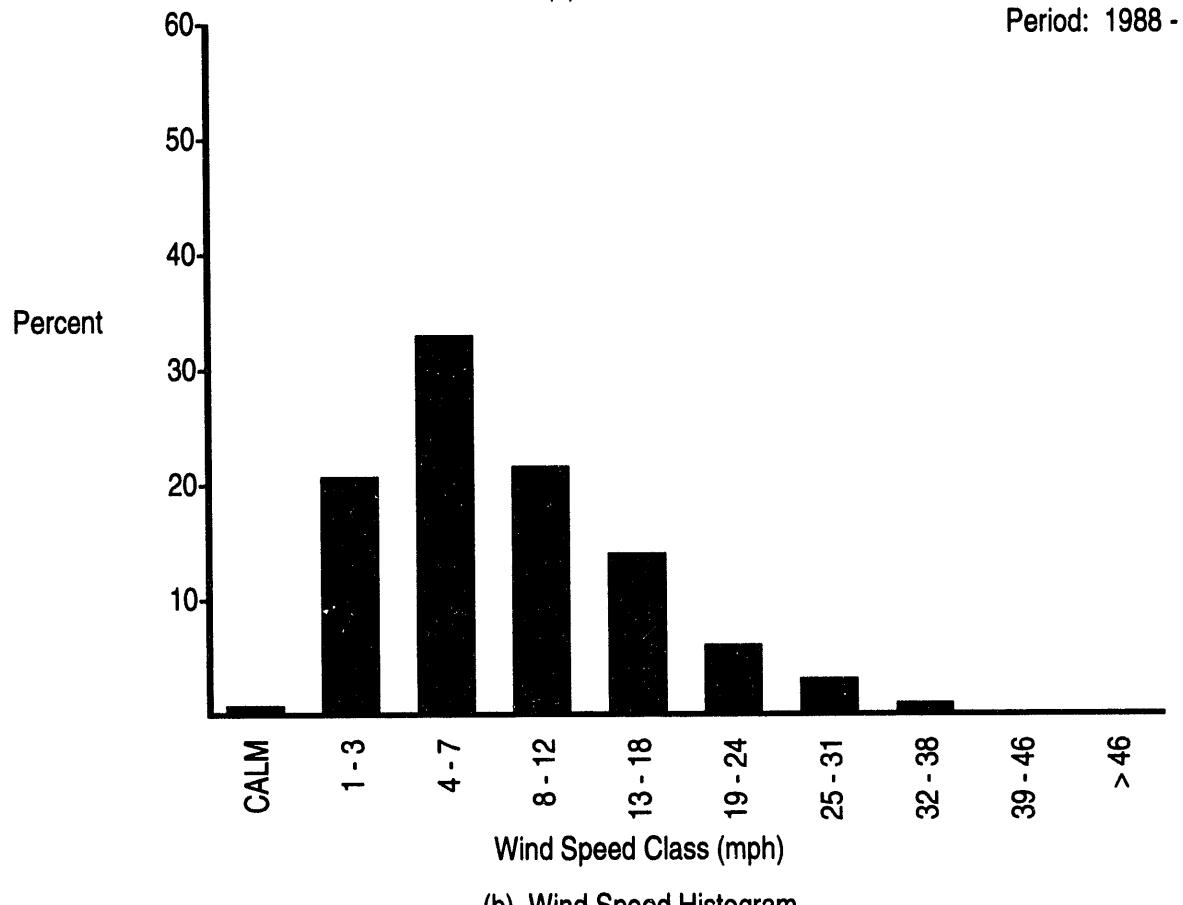
(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

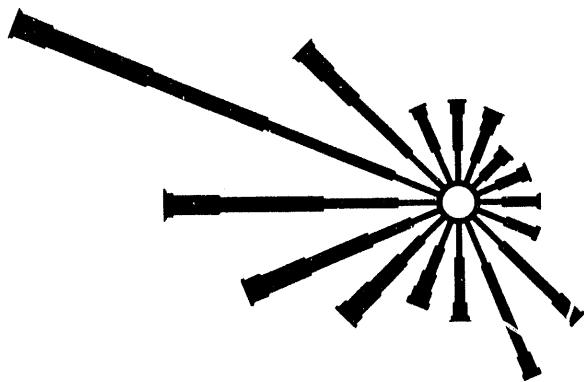
April Data
Period: 1988 - 1993



(b) Wind Speed Histogram

FIGURE B.1. (contd)

N
↑



(a) Wind Rose

April Data
Period: 1986 - 1993

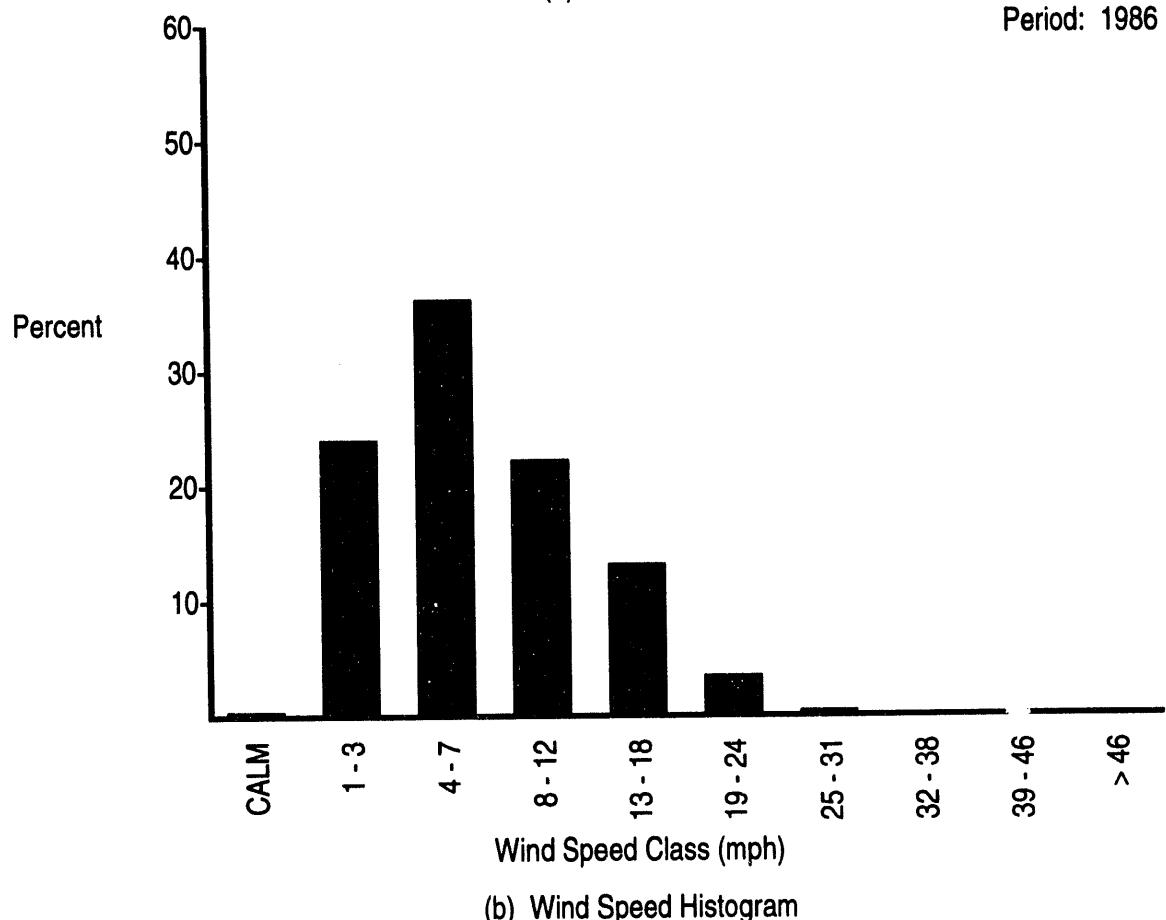
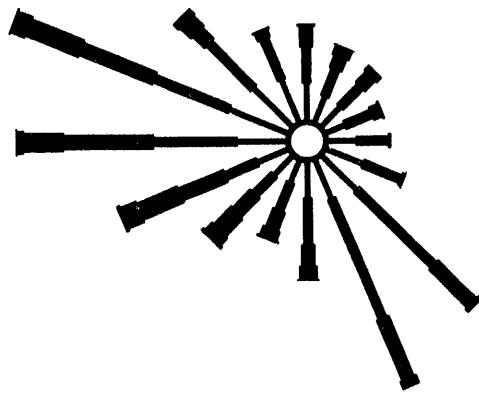


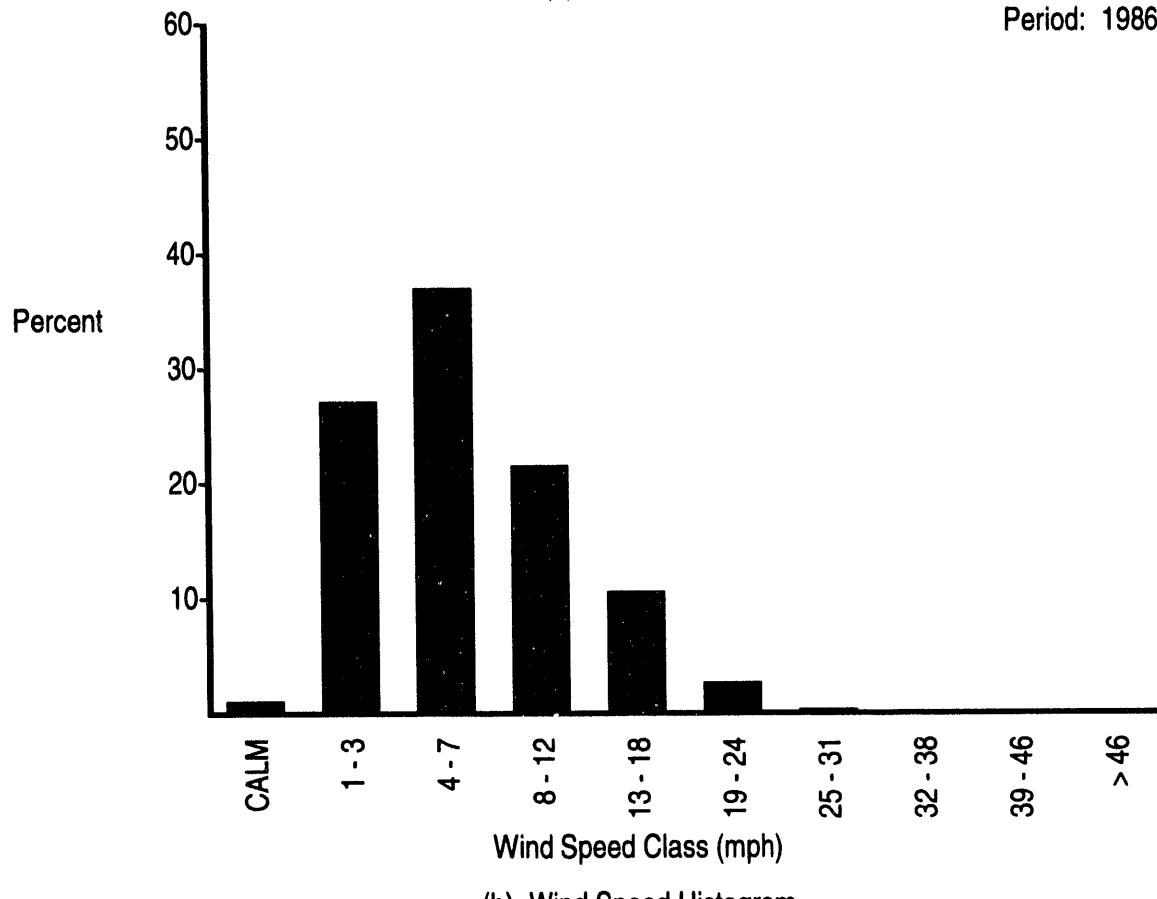
FIGURE B.1. (contd)

N
↑



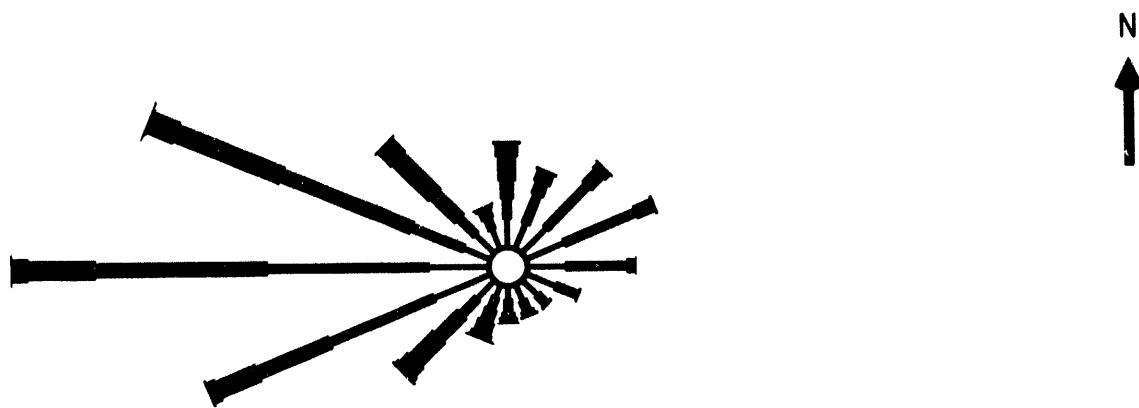
(a) Wind Rose

April Data
Period: 1986 - 1993



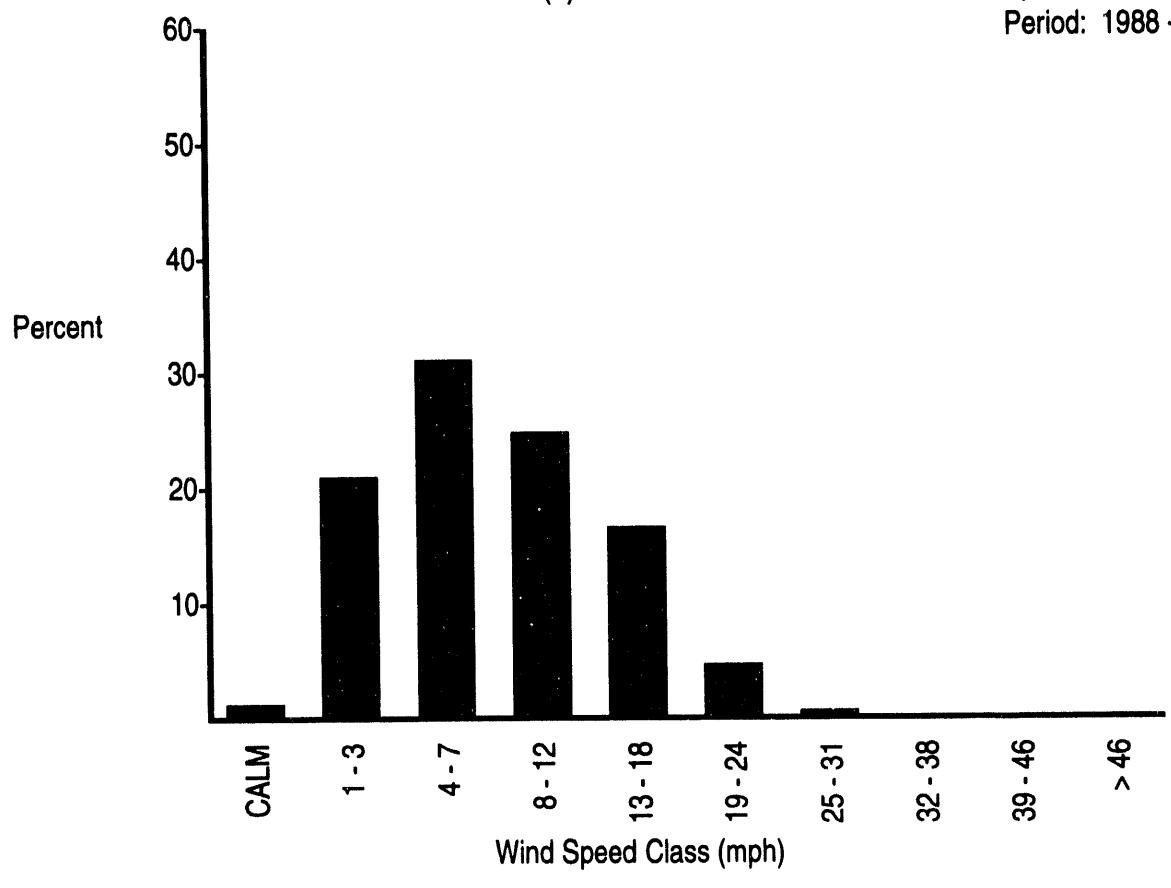
(b) Wind Speed Histogram

FIGURE B.1. (contd)



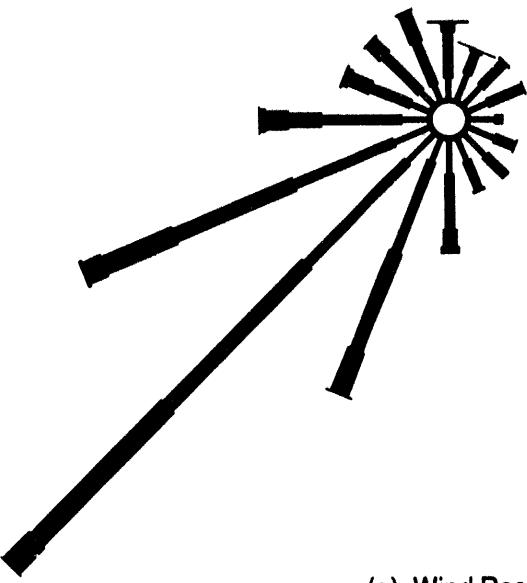
(a) Wind Rose

April Data
Period: 1988 - 1993

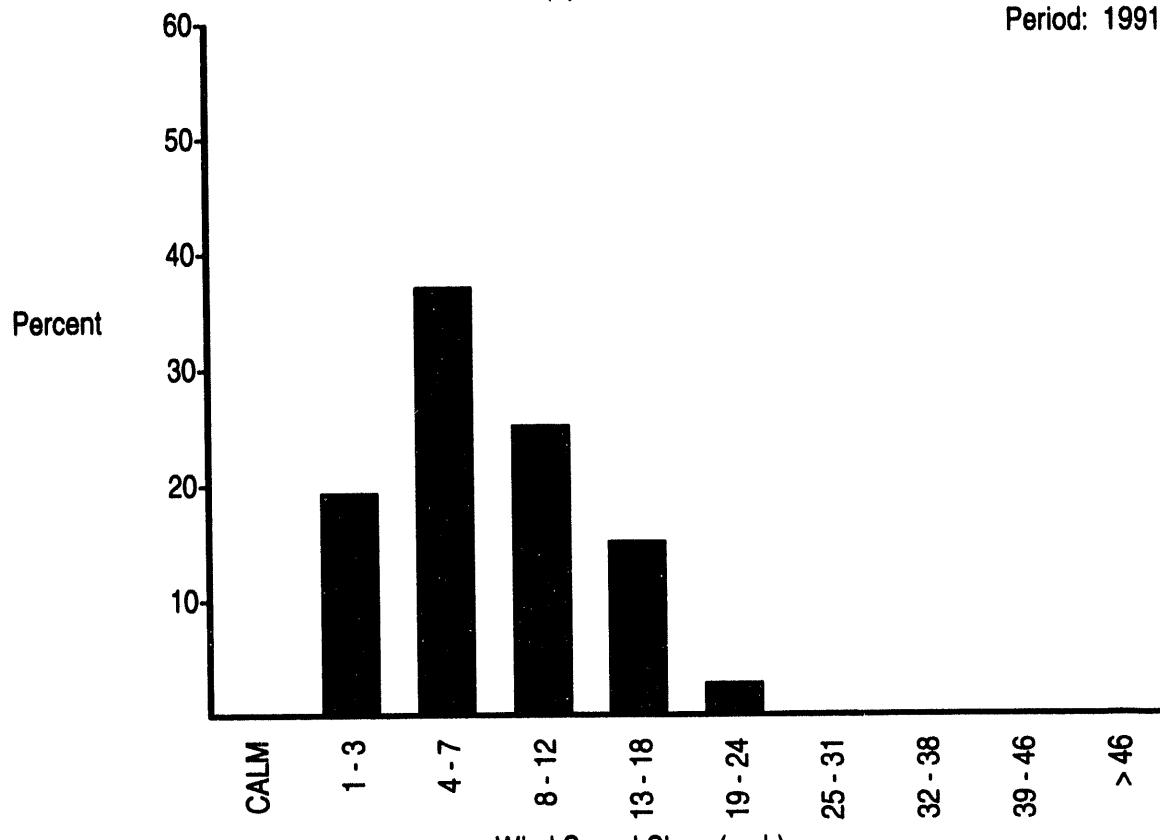


(b) Wind Speed Histogram

FIGURE B.1. (contd)

N
↑

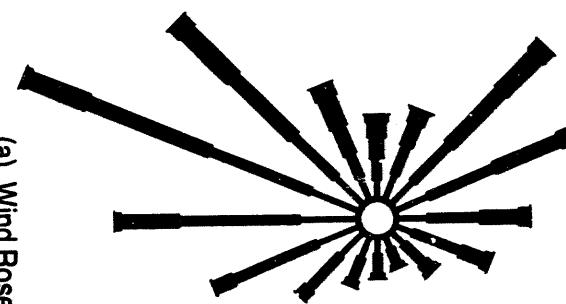
(a) Wind Rose

April Data
Period: 1991 - 1993

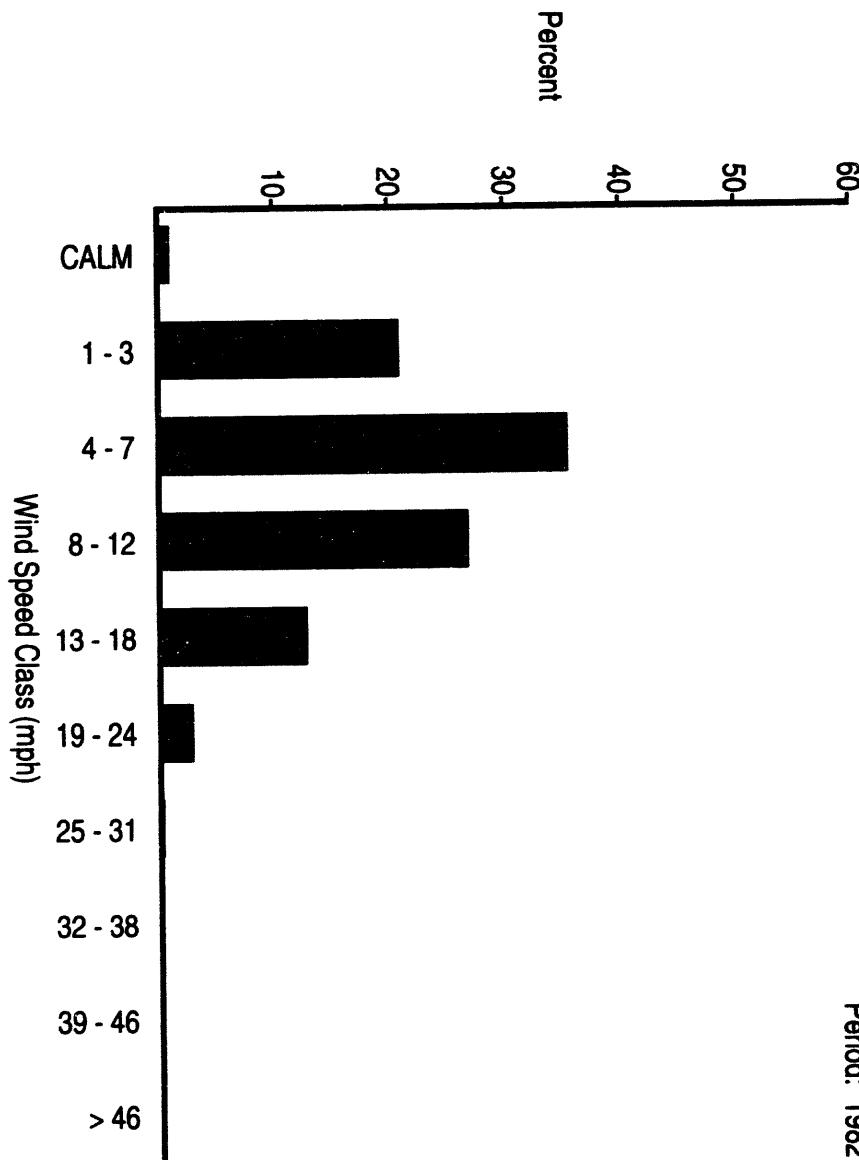
(b) Wind Speed Histogram

FIGURE B.1. (contd)

May Data
Period: 1982 - 1993

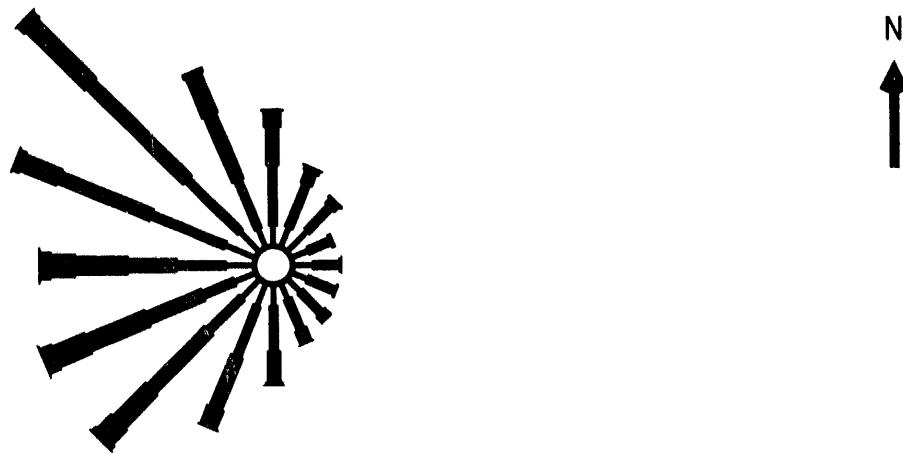


→ N



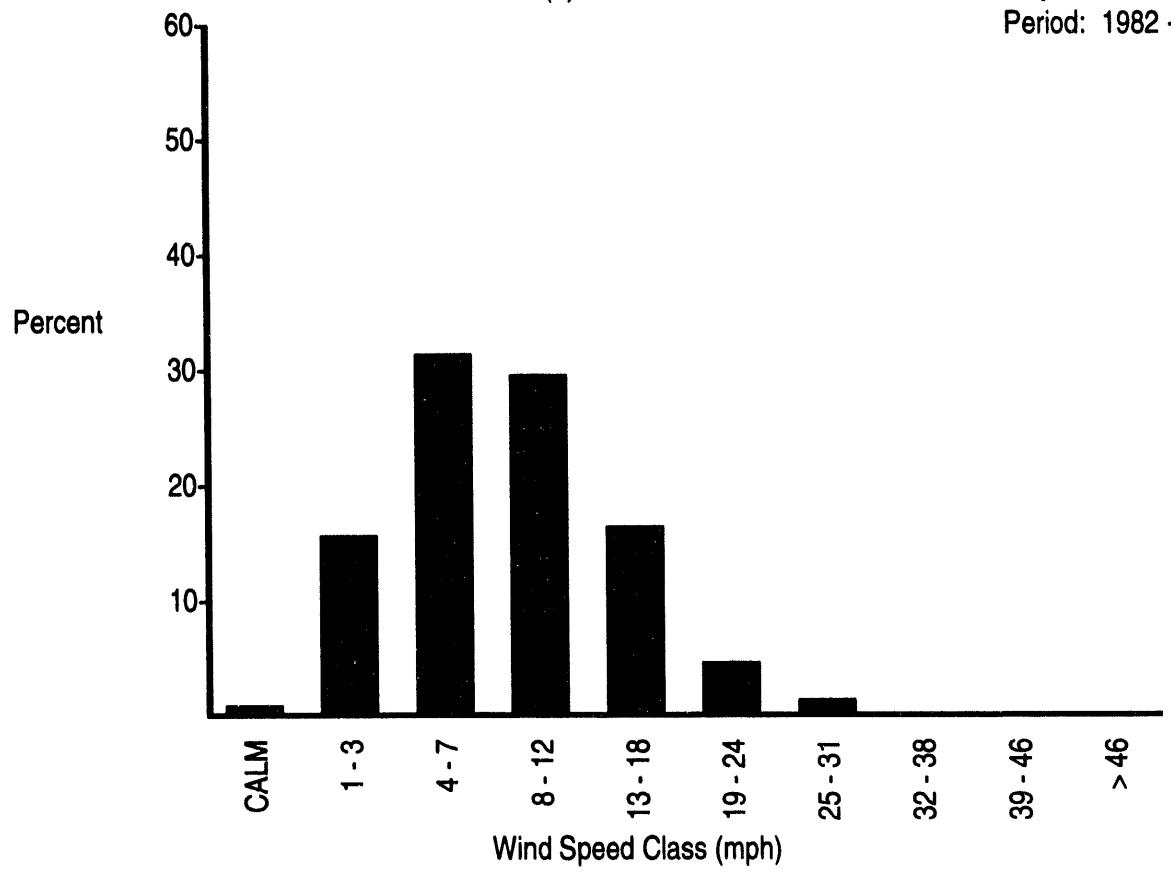
(b) Wind Speed Histogram

FIGURE B.1. (contd)



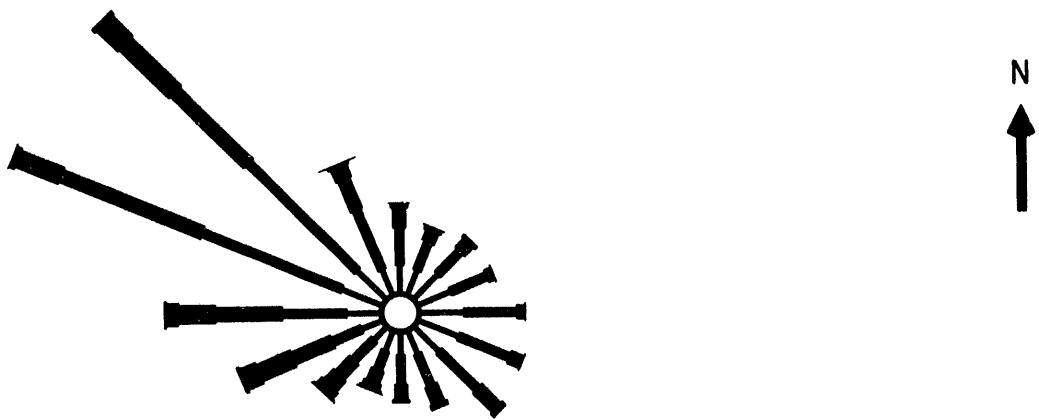
(a) Wind Rose

May Data
Period: 1982 - 1993



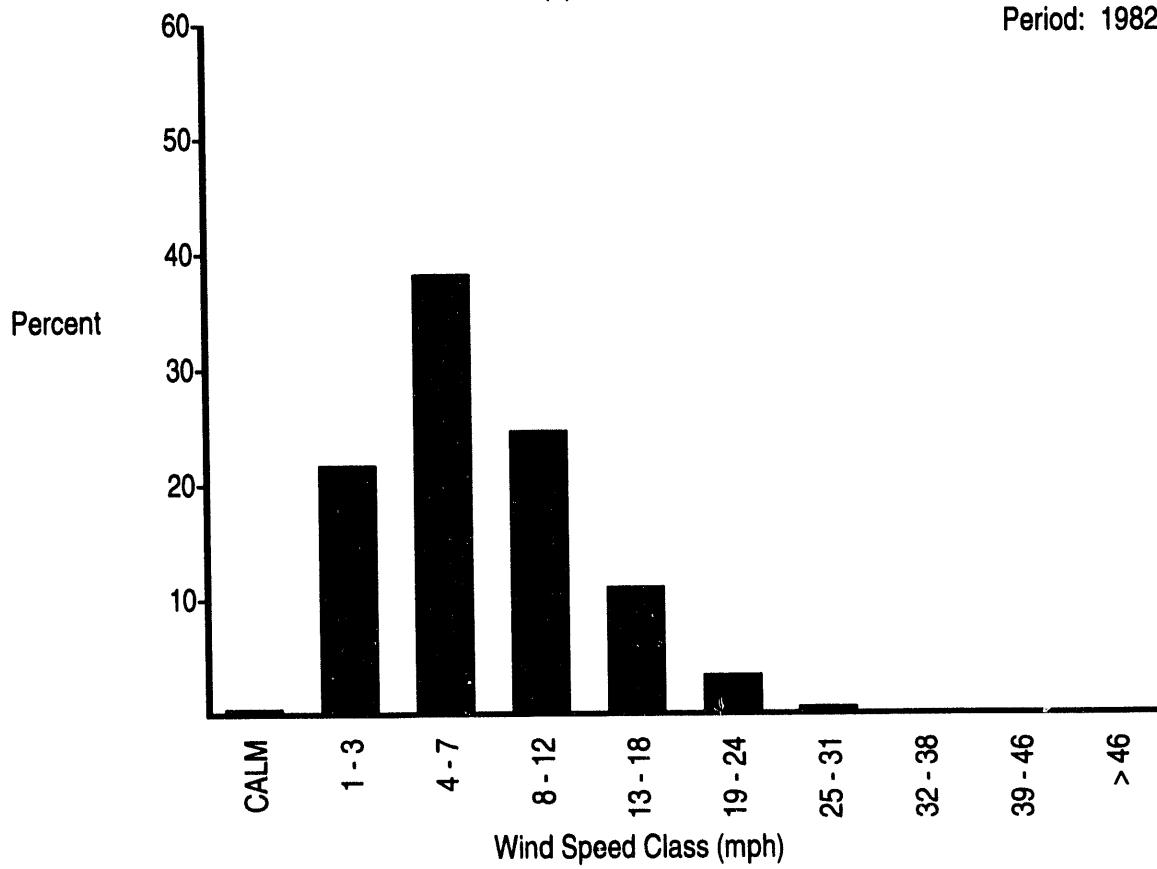
(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

May Data
Period: 1982 - 1993



(b) Wind Speed Histogram

FIGURE B.1. (contd)

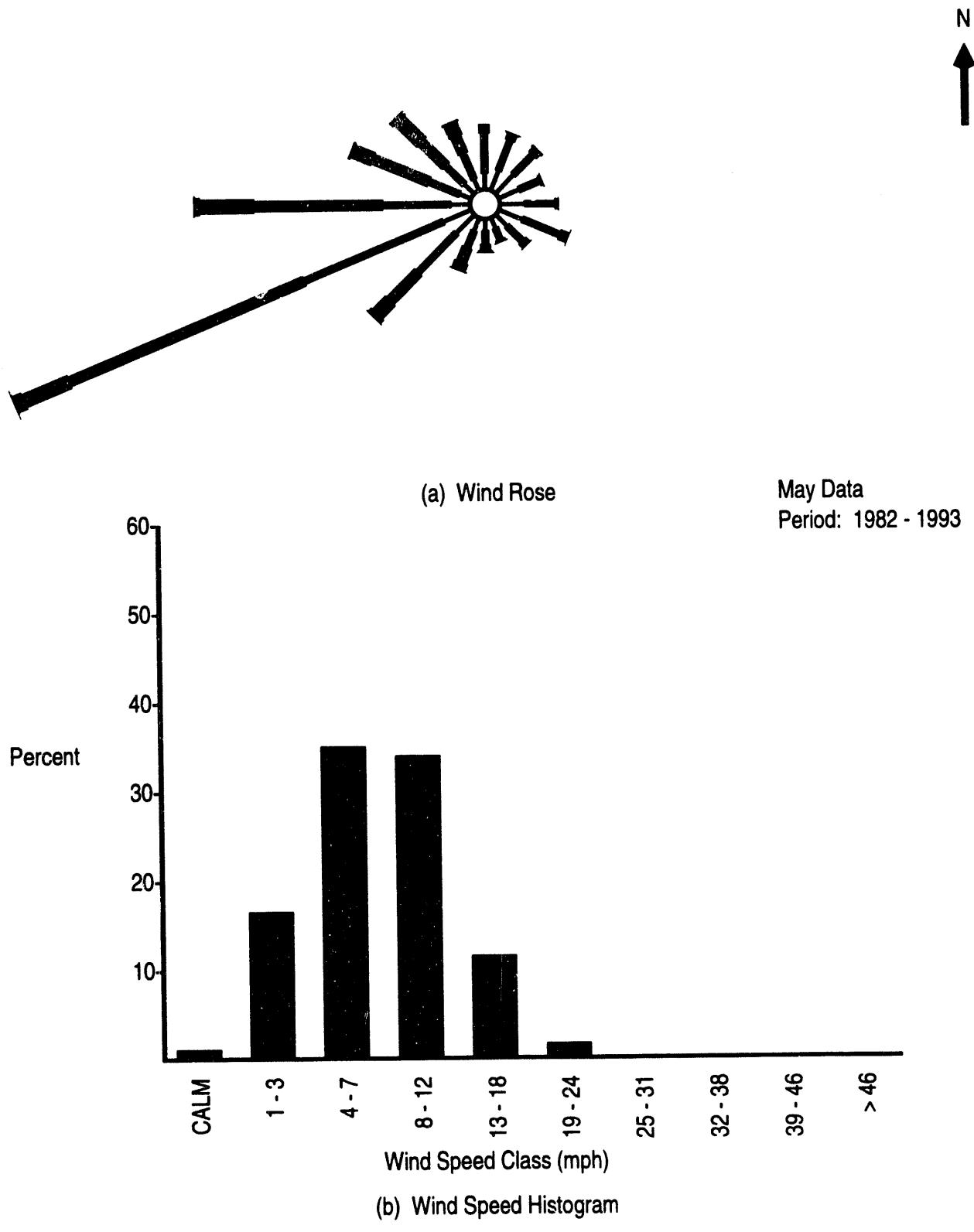
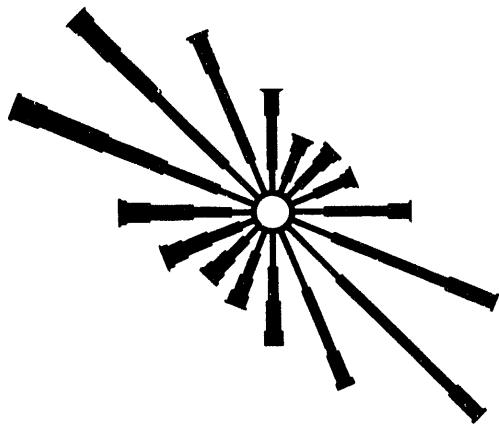


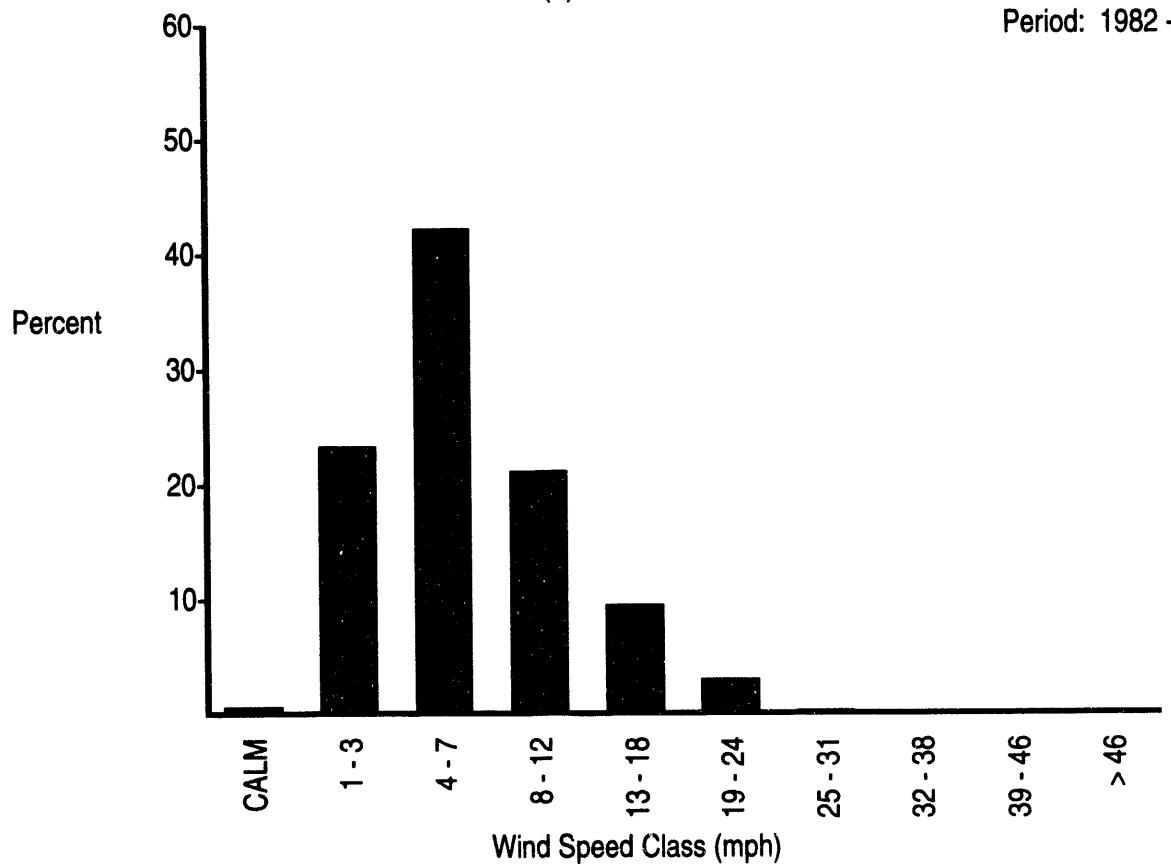
FIGURE B.1. (contd)

N
↑



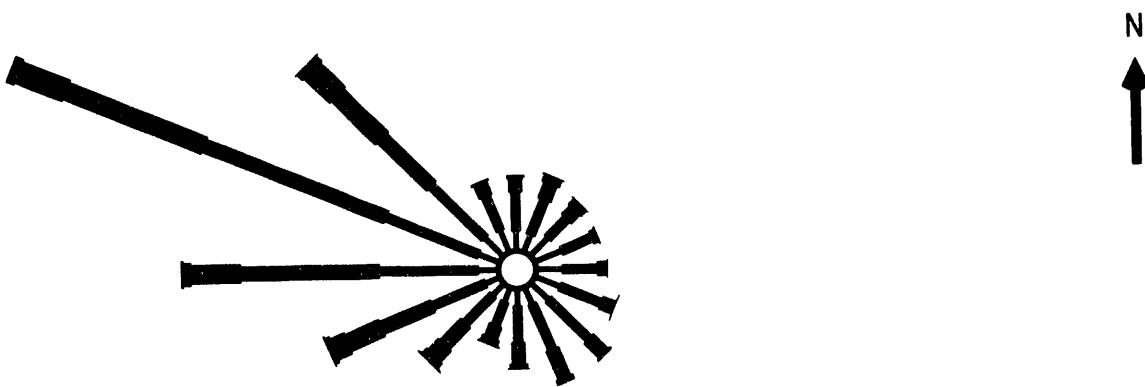
(a) Wind Rose

May Data
Period: 1982 - 1993



(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

May Data
Period: 1982 - 1993

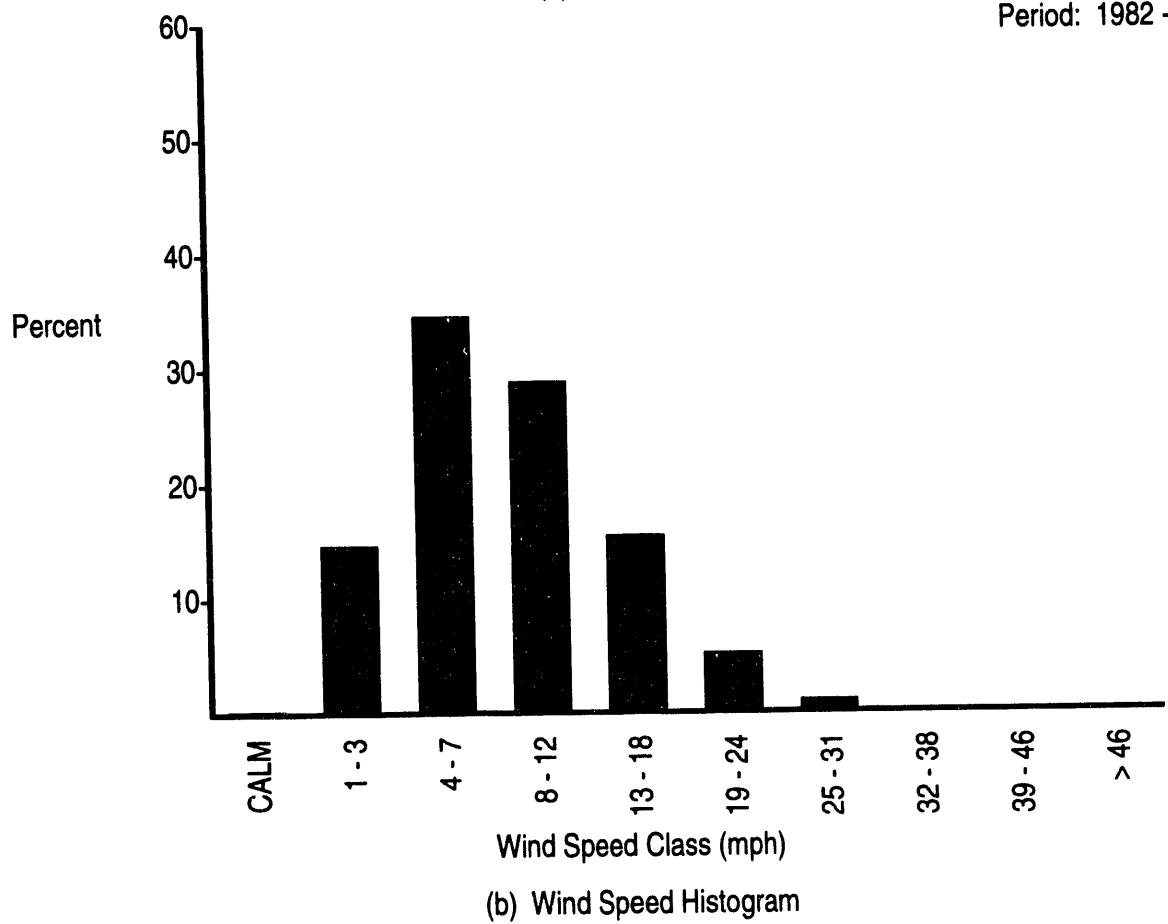
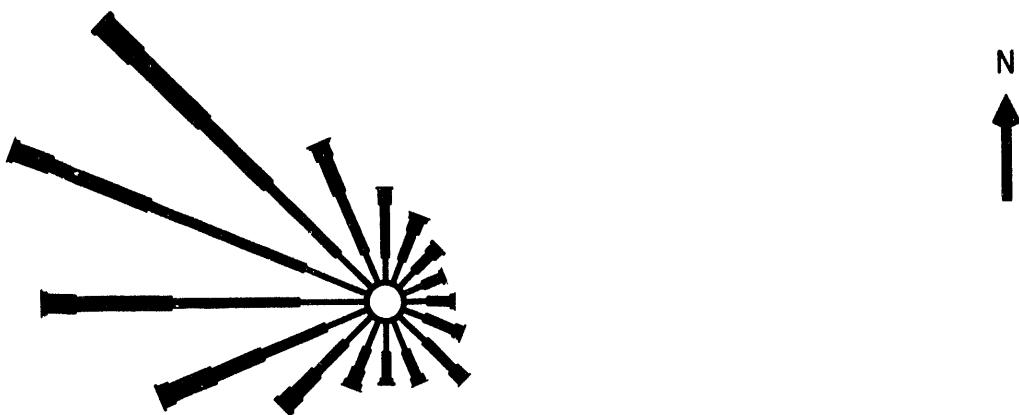
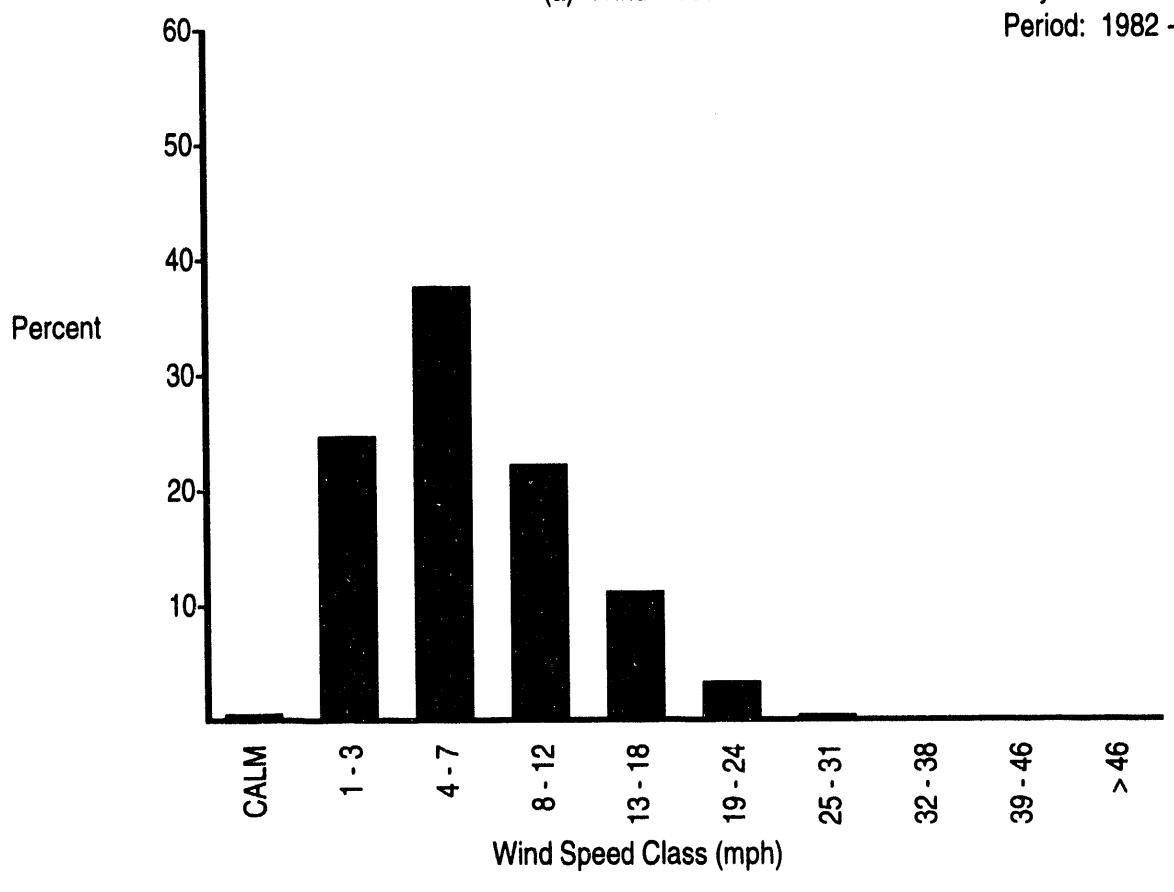


FIGURE B.1. (contd)



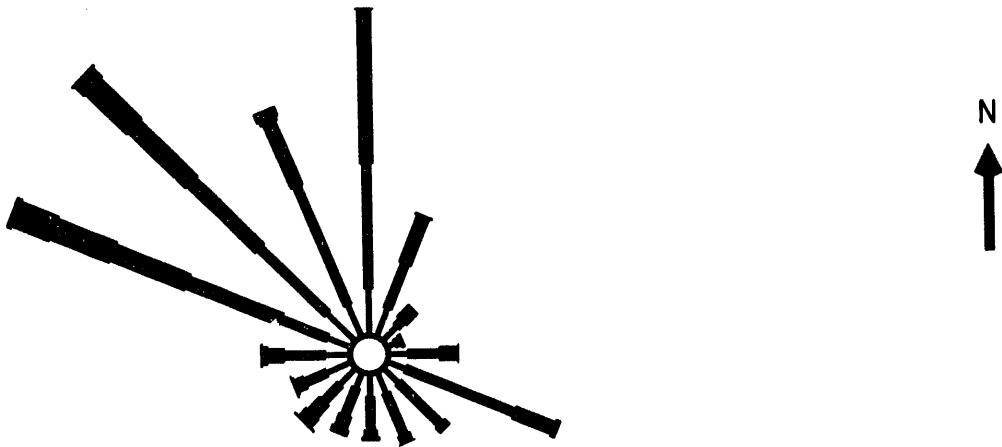
(a) Wind Rose

May Data
Period: 1982 - 1993



(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

May Data
Period: 1992 - 1993

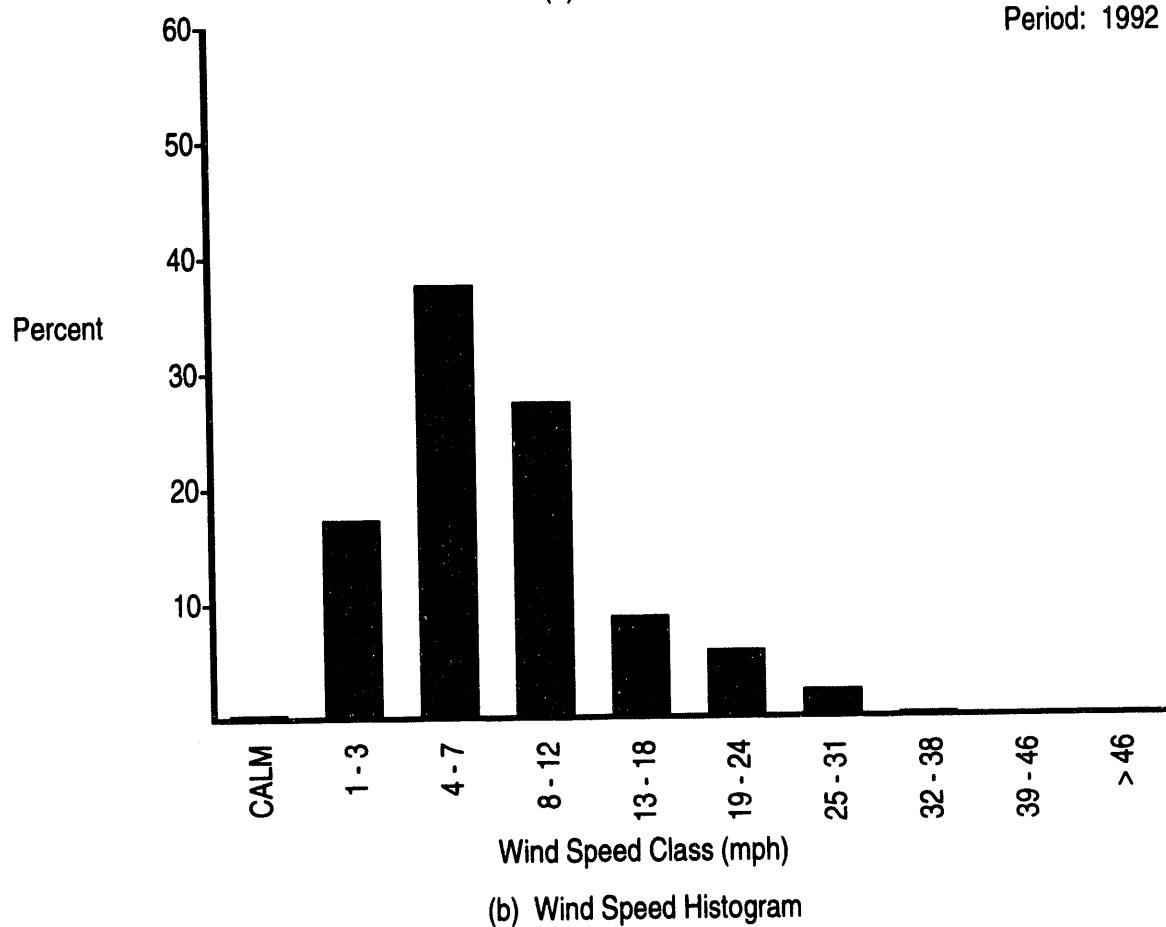
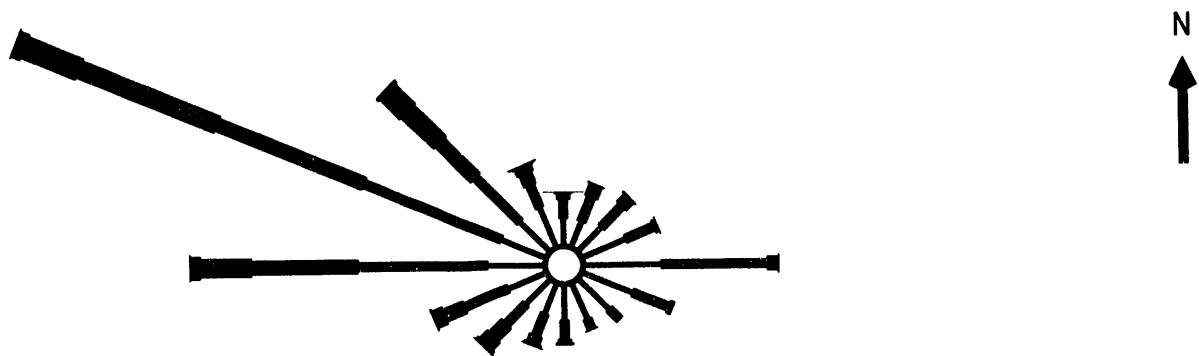
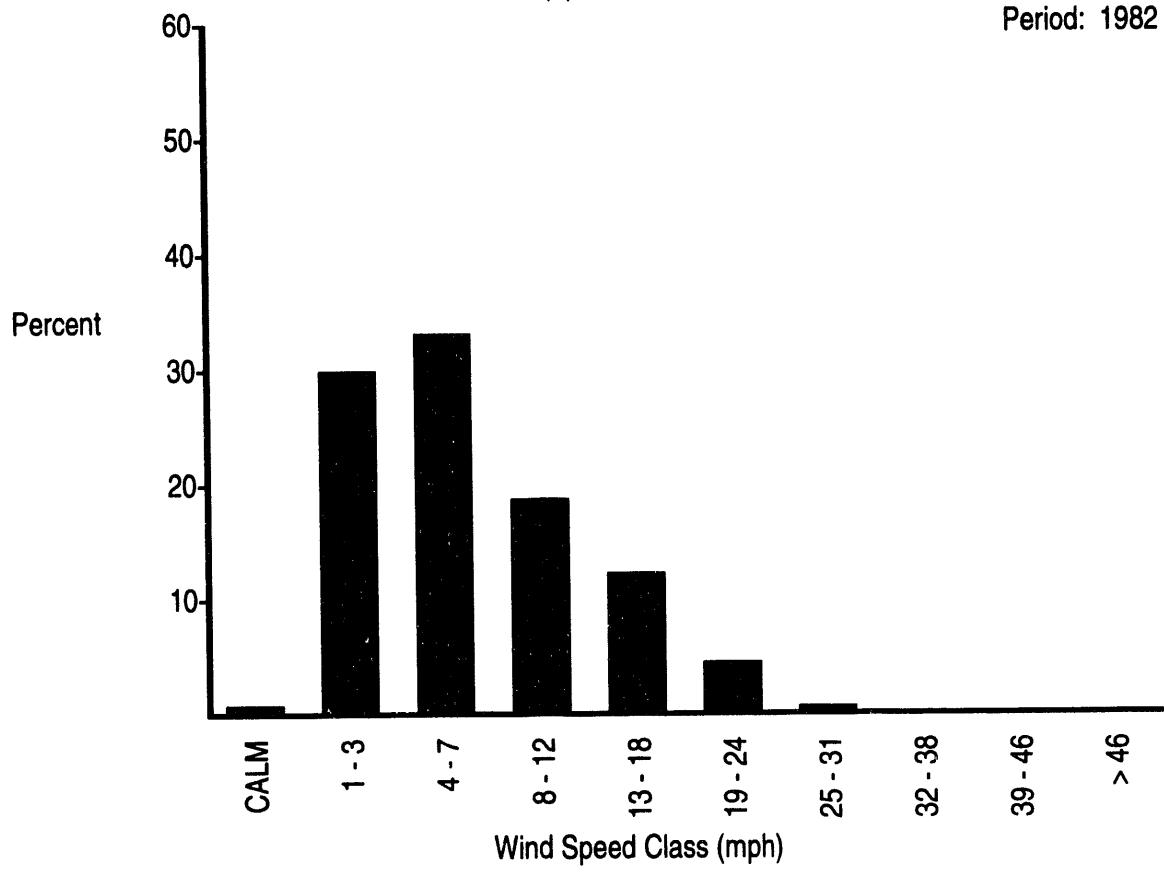


FIGURE B.1. (contd)



(a) Wind Rose

May Data
Period: 1982 - 1991

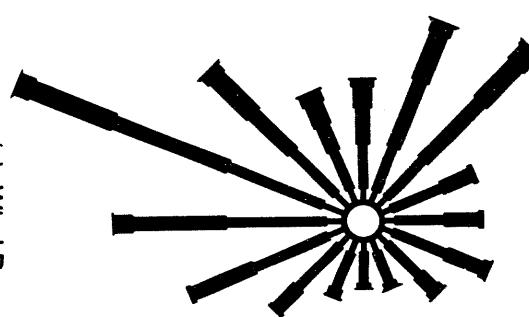


(b) Wind Speed Histogram

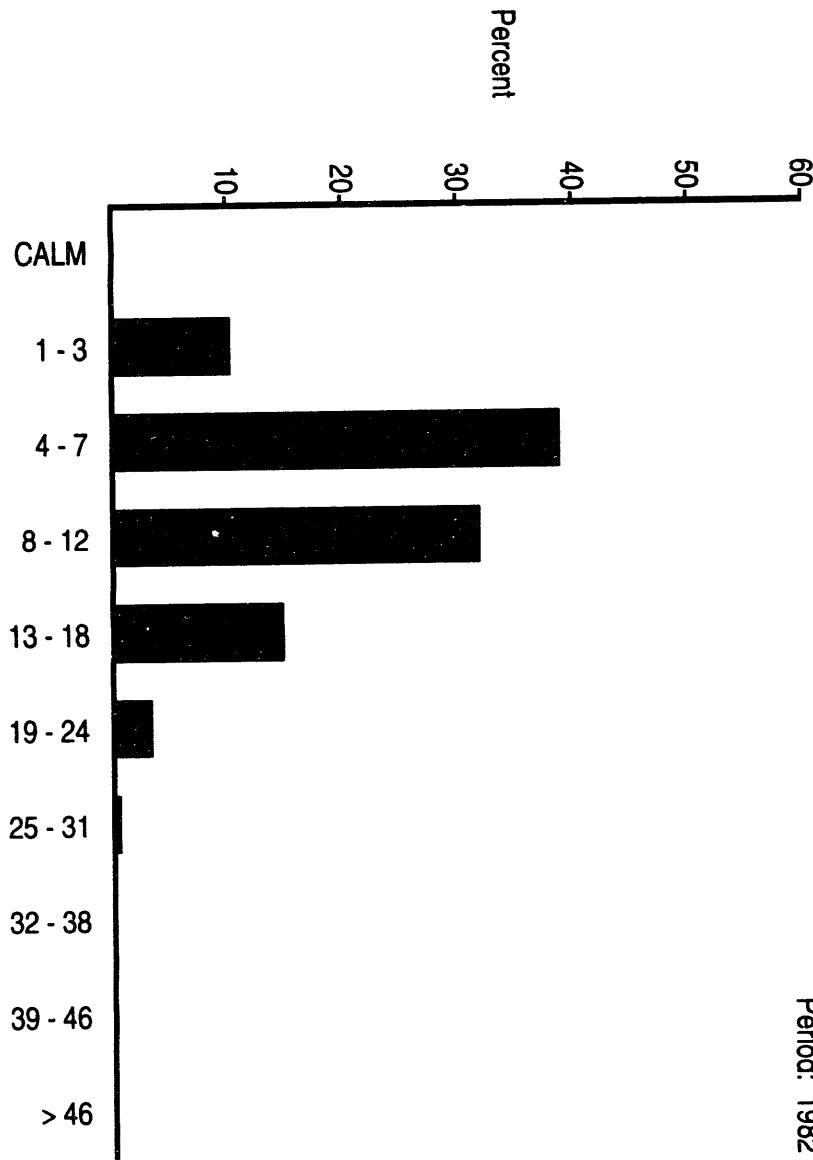
FIGURE B.1. (contd)

May Data
Period: 1982 - 1993

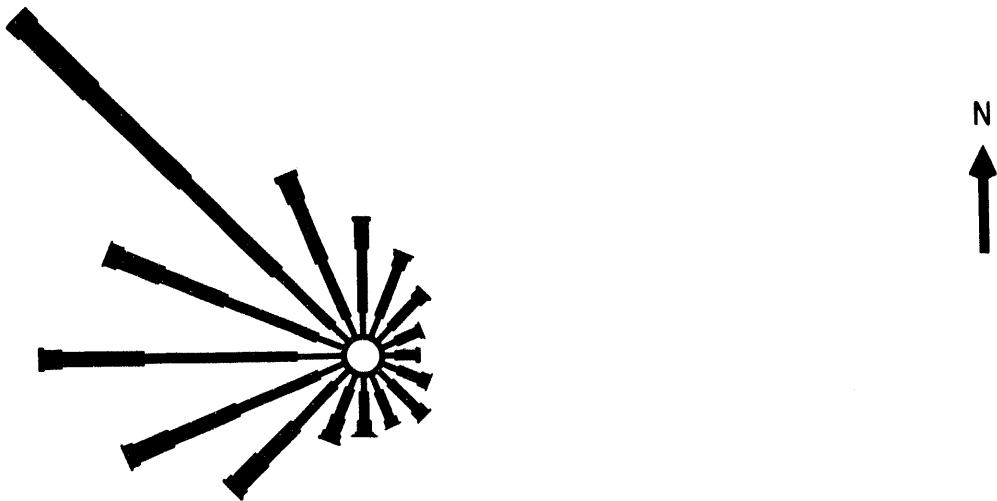
(a) Wind Rose



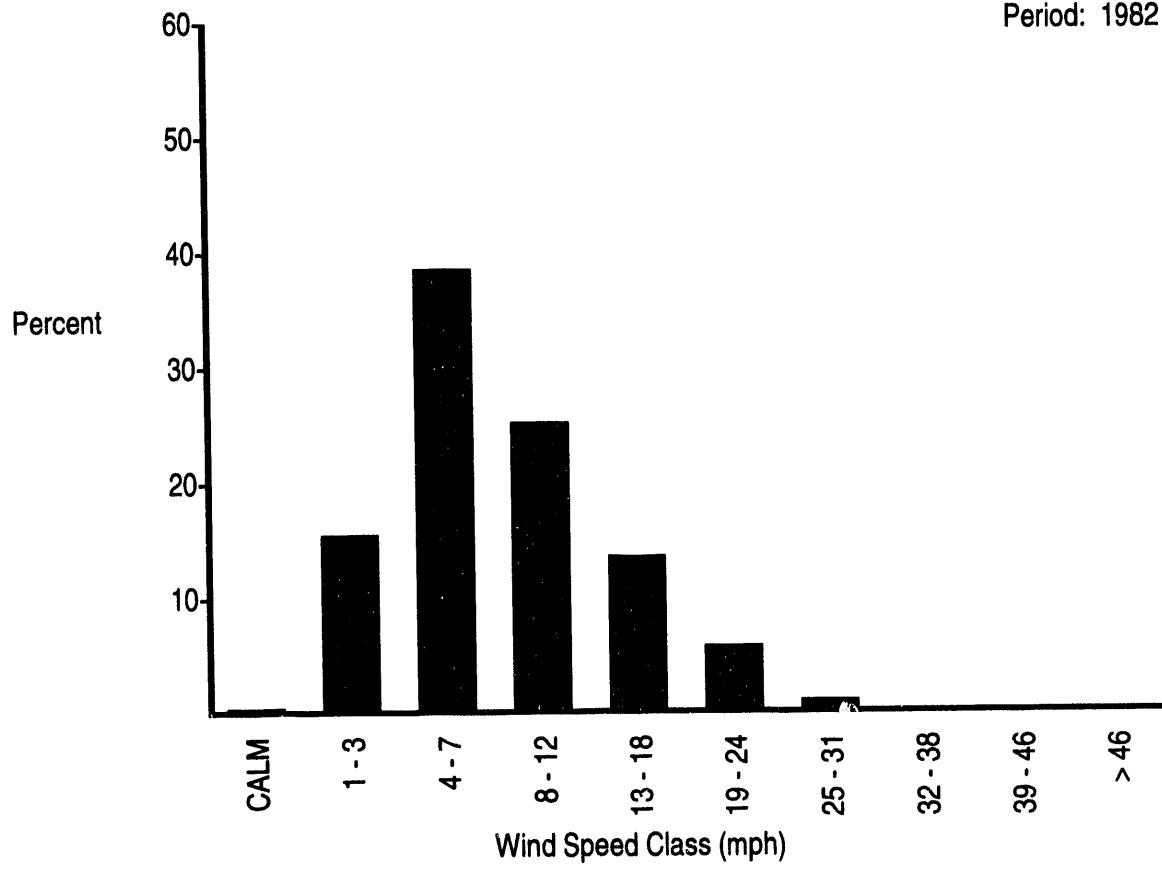
→ N



(b) Wind Speed Histogram
FIGURE B.1. (contd)



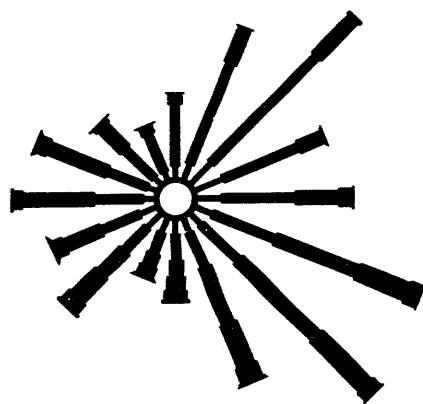
(a) Wind Rose

May Data
Period: 1982 - 1993

(b) Wind Speed Histogram

FIGURE B.1. (contd)

N



(a) Wind Rose

May Data
Period: 1982 - 1993

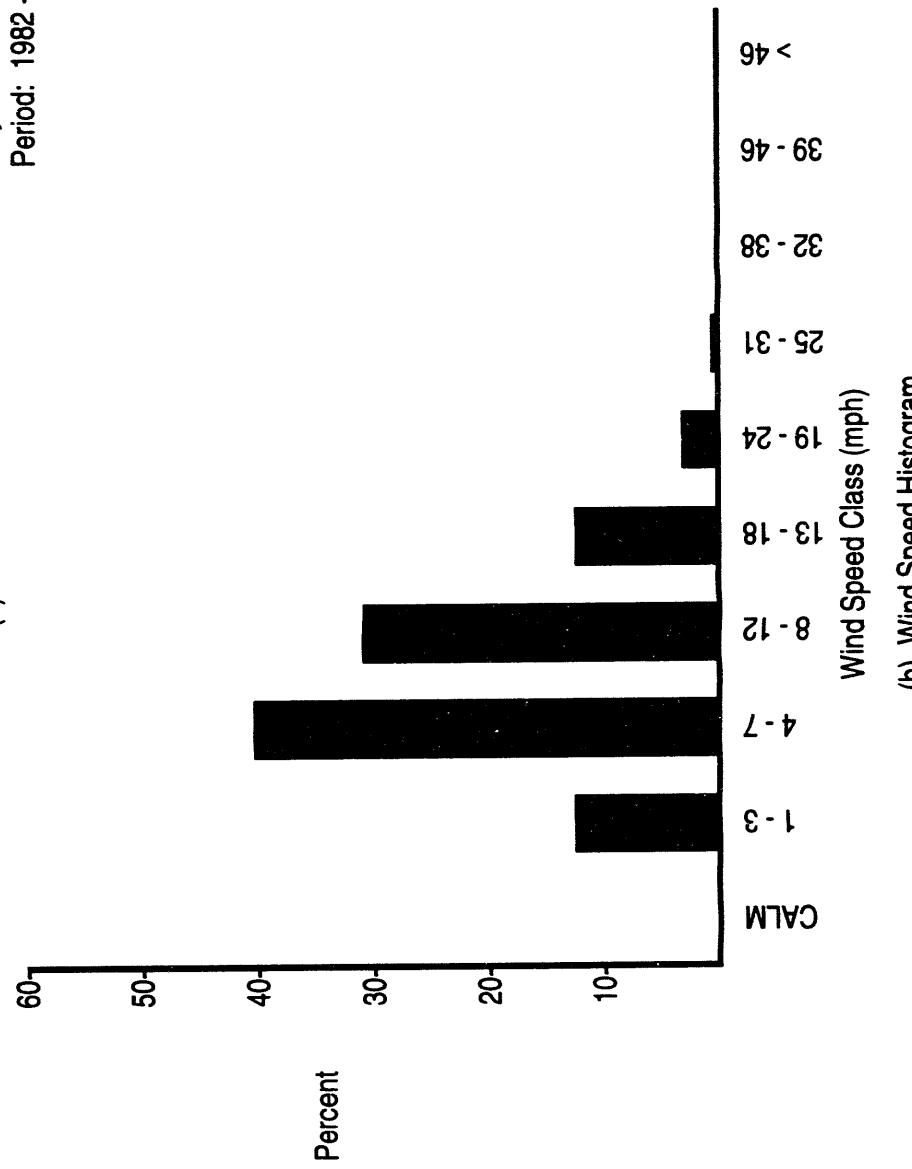
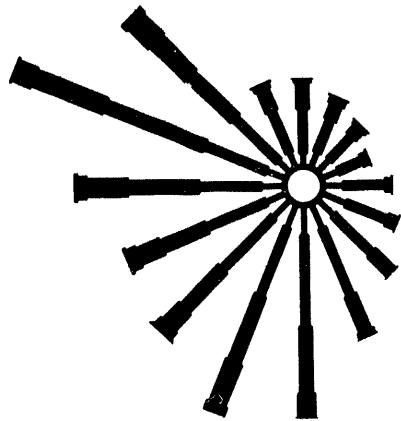


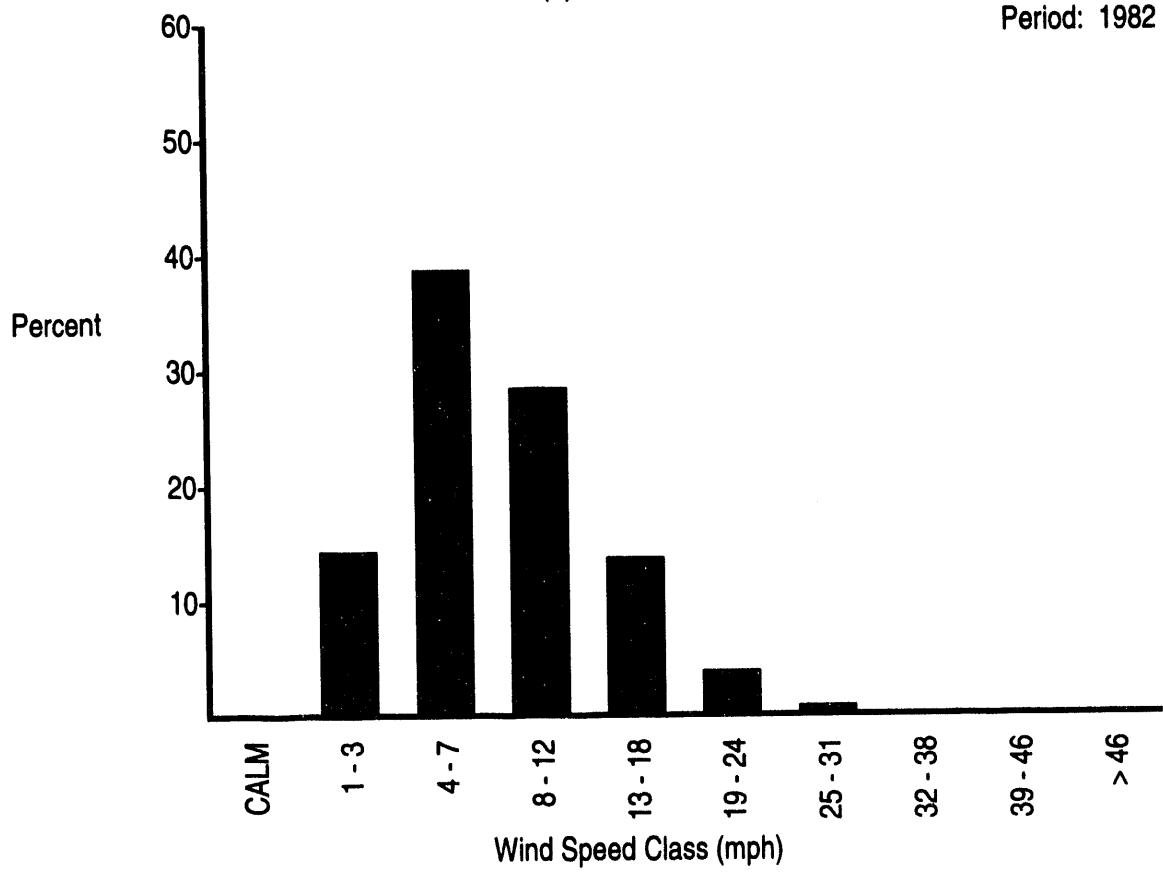
FIGURE B.1. (contd)

N
↑



(a) Wind Rose

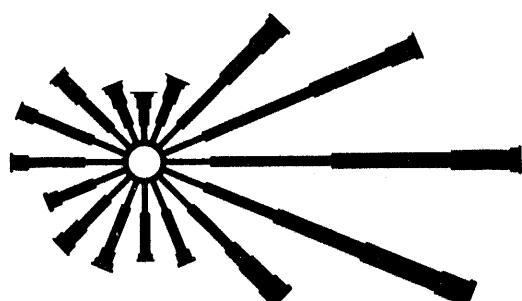
May Data
Period: 1982 - 1993



(b) Wind Speed Histogram

FIGURE B.1. (contd)

(a) Wind Rose
May Data
Period: 1982 - 1993

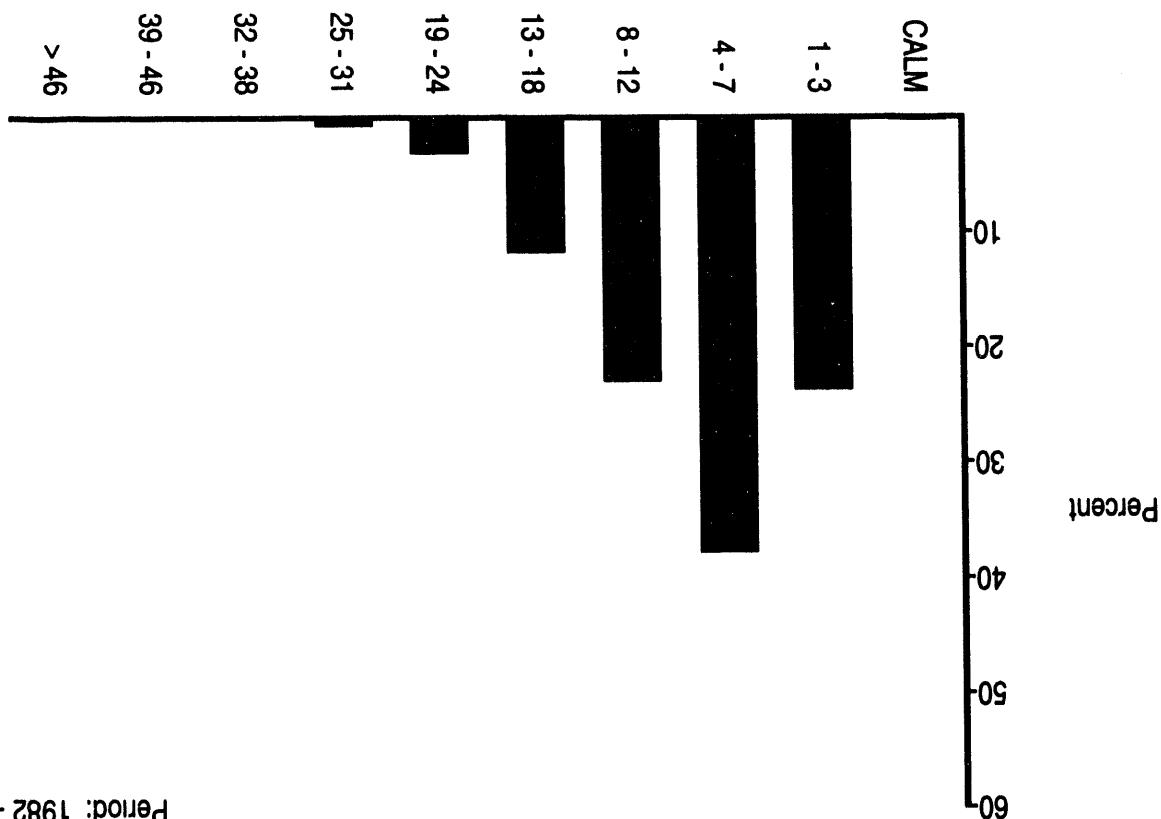


N
↓

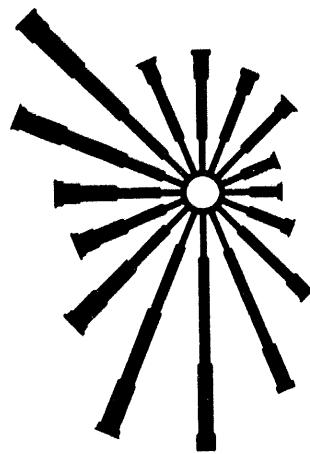
FIGURE B.1. (contd)

(b) Wind Speed Histogram

Wind Speed Class (mph)



N
↑



(a) Wind Rose

May Data
Period: 1982 - 1993

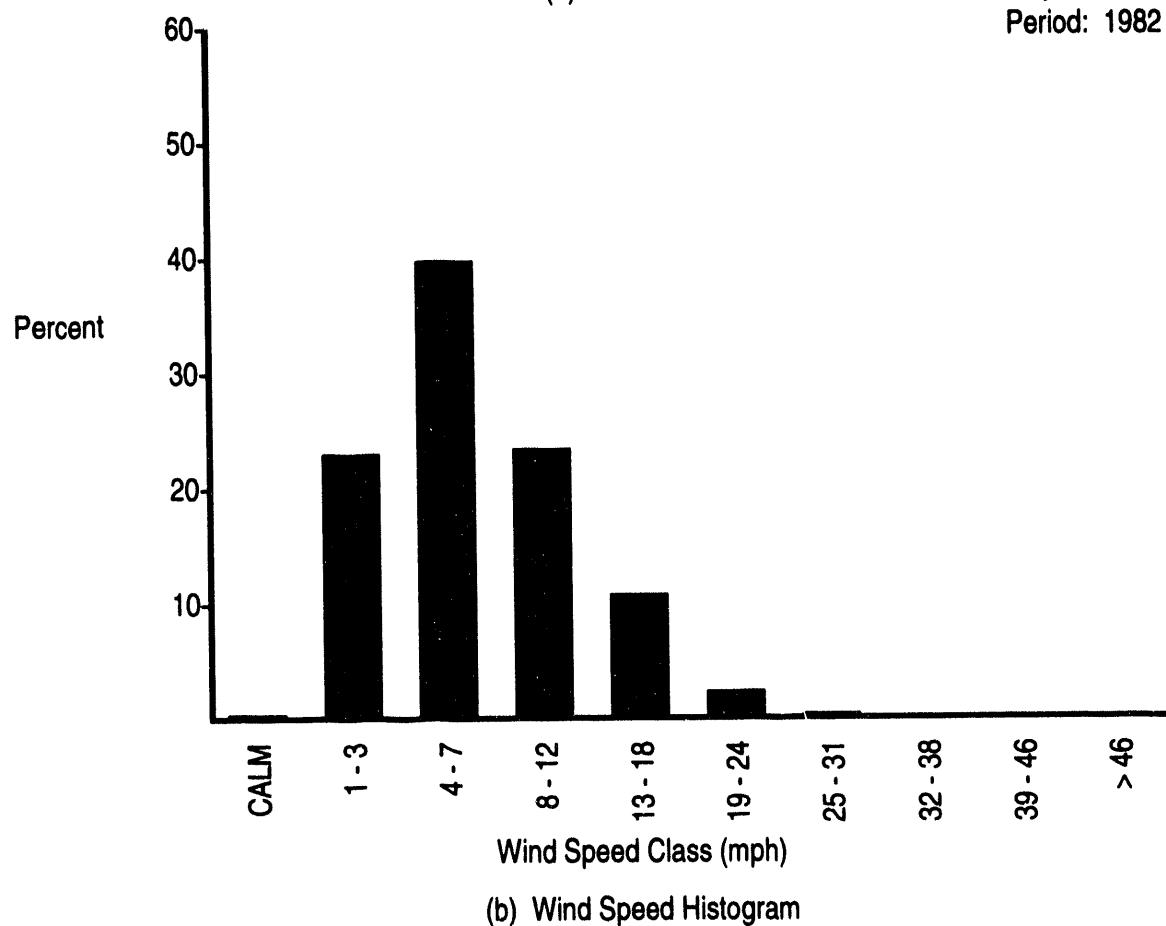
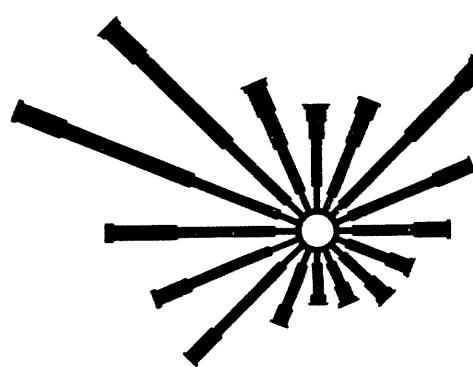
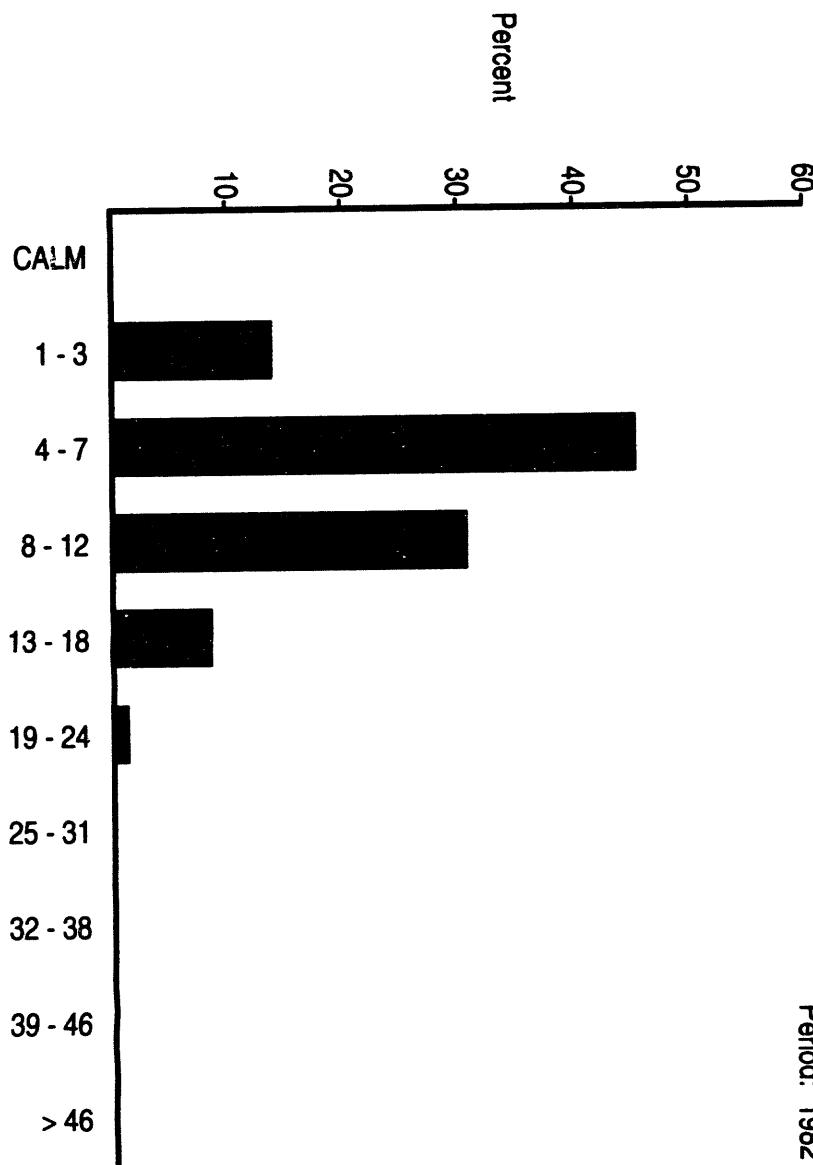


FIGURE B.1. (contd)

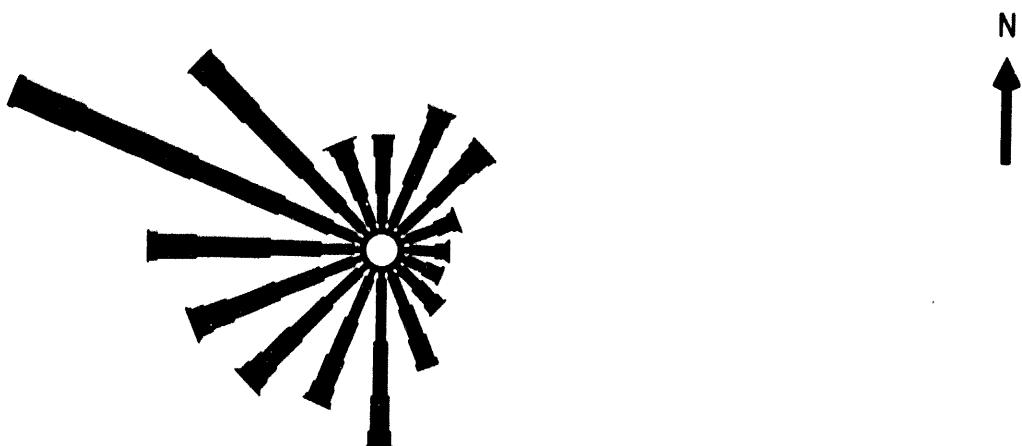


(a) Wind Rose

May Data
Period: 1982 - 1993

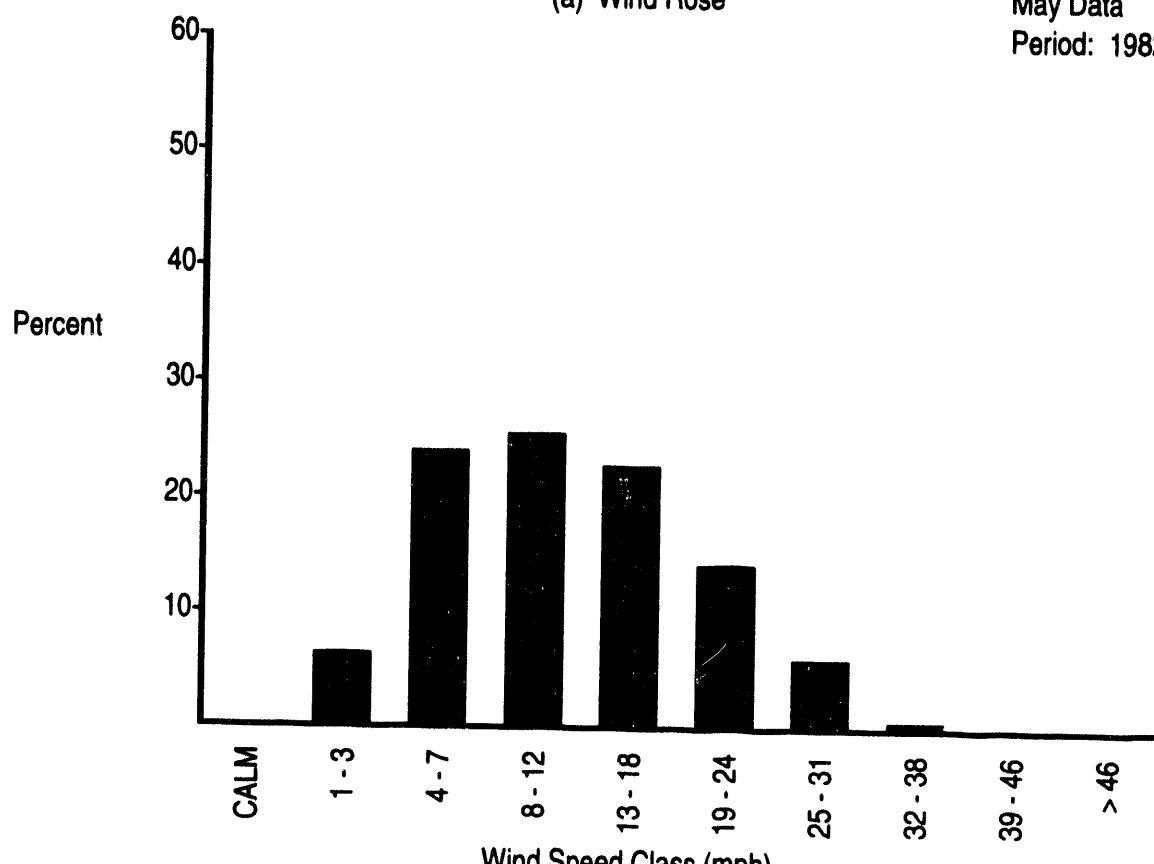


- (b) Wind Speed Histogram
FIGURE B.1. (contd)



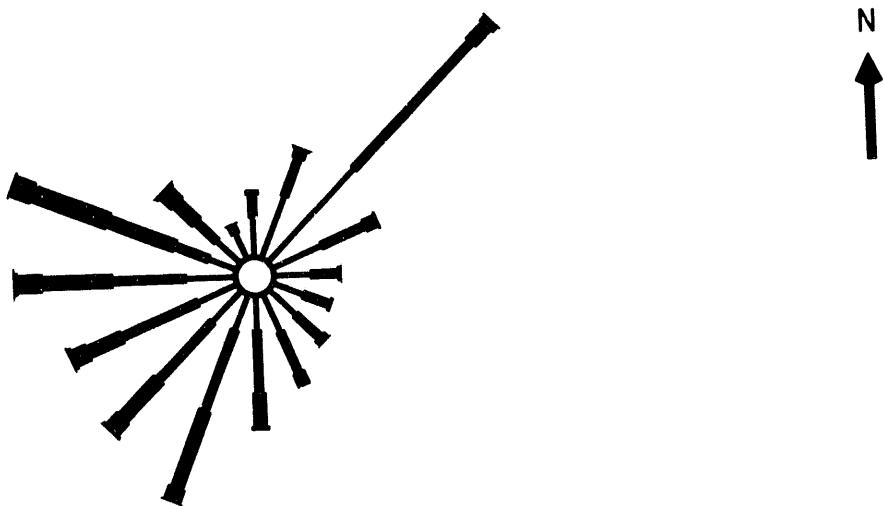
(a) Wind Rose

May Data
Period: 1982 - 1993



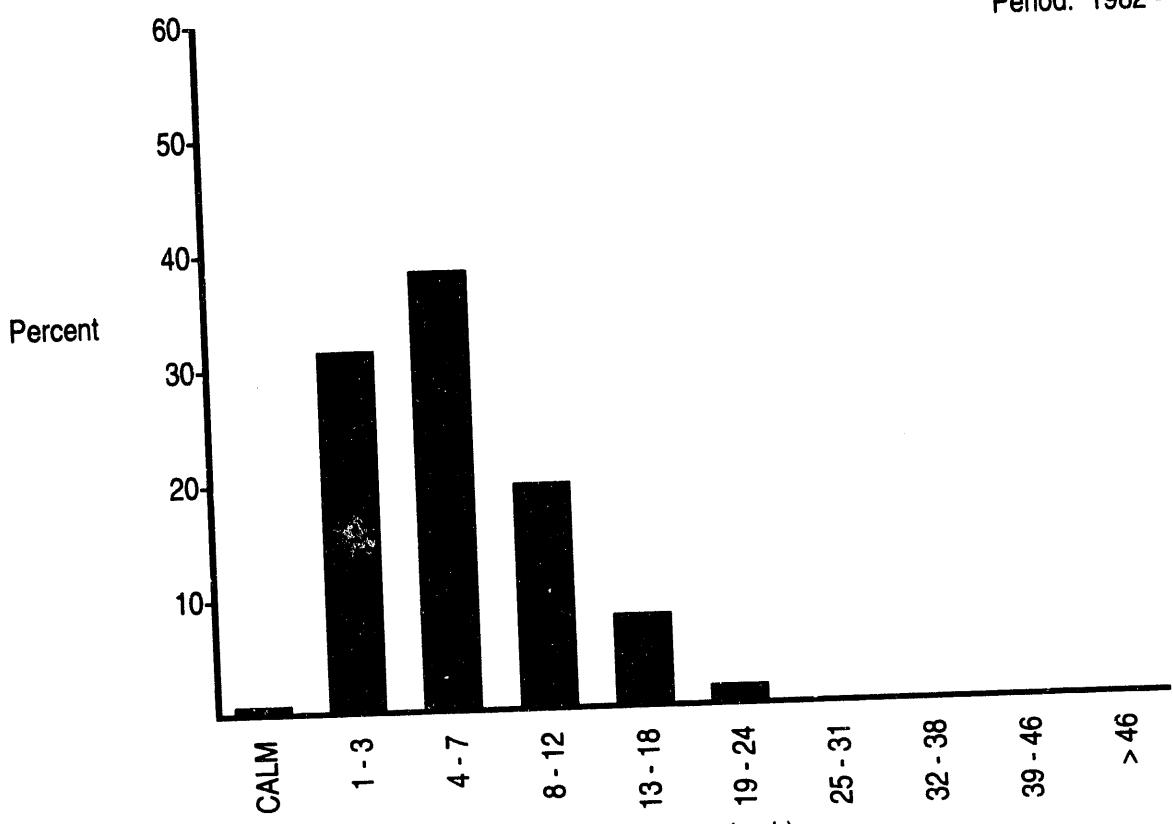
(b) Wind Speed Histogram

FIGURE B.1. (contd)



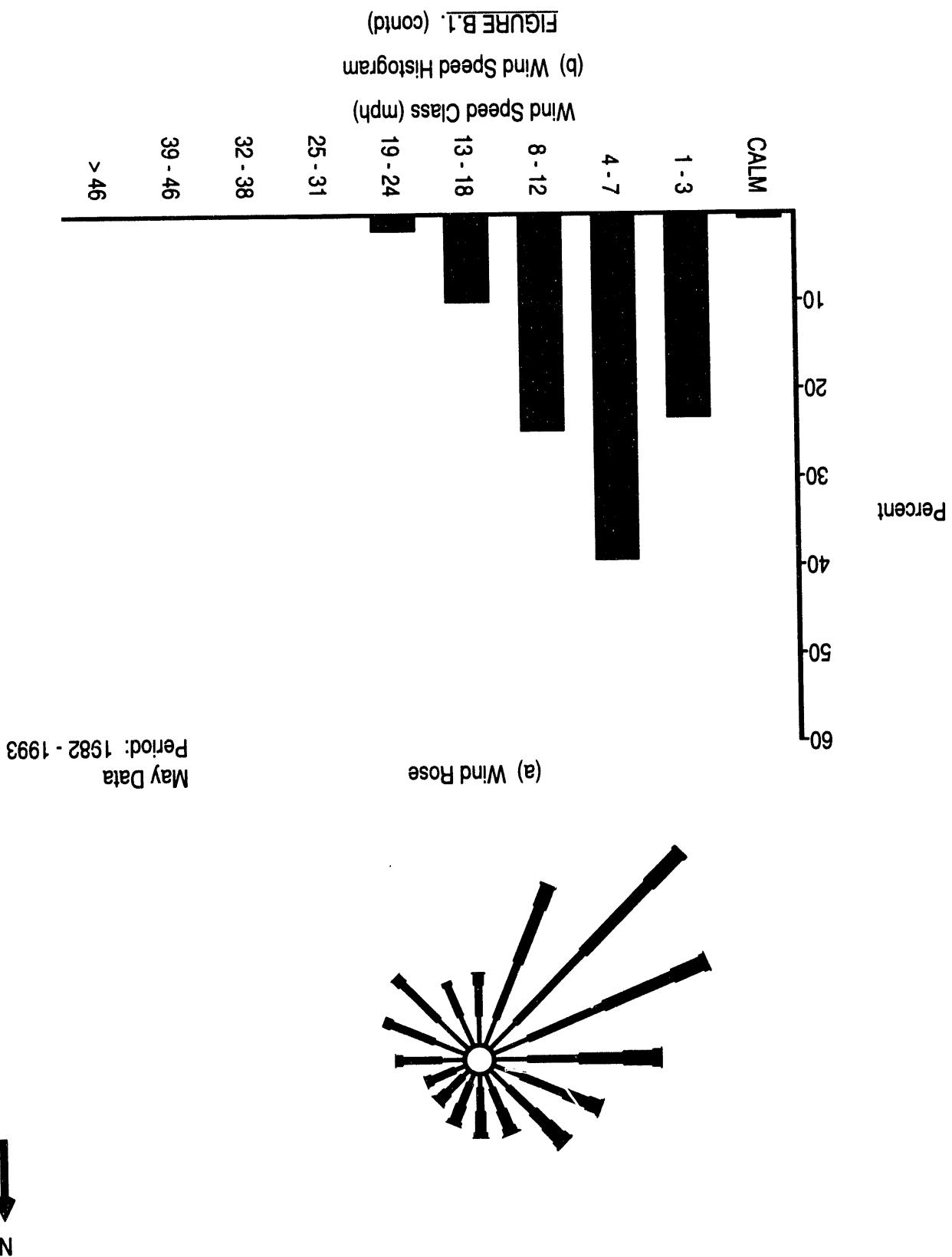
(a) Wind Rose

May Data
Period: 1982 - 1993

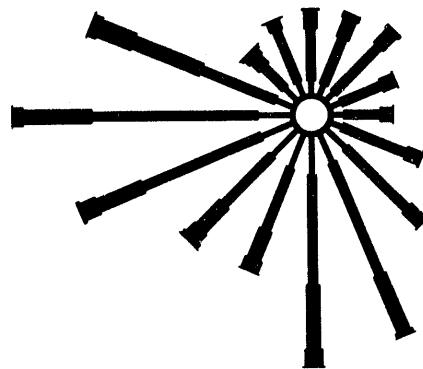


(b) Wind Speed Histogram

FIGURE B.1. (contd)

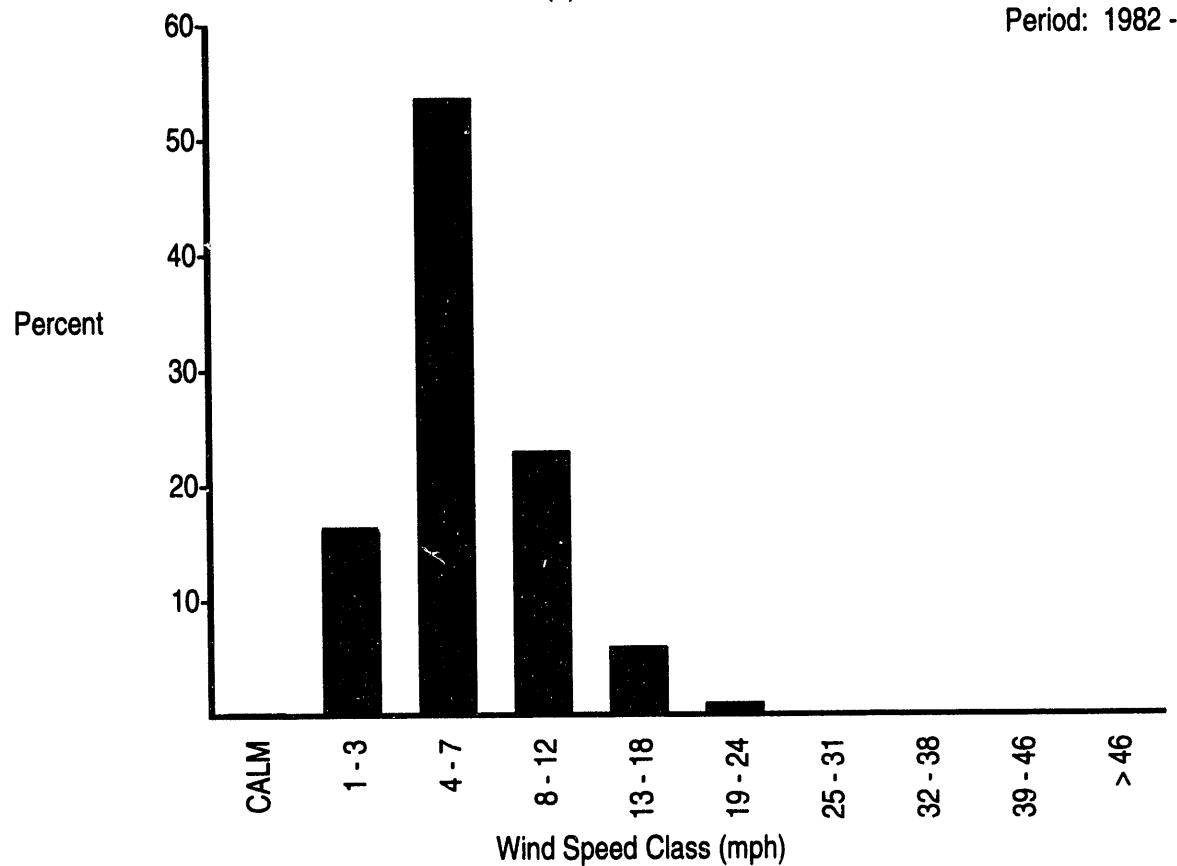


N
↑



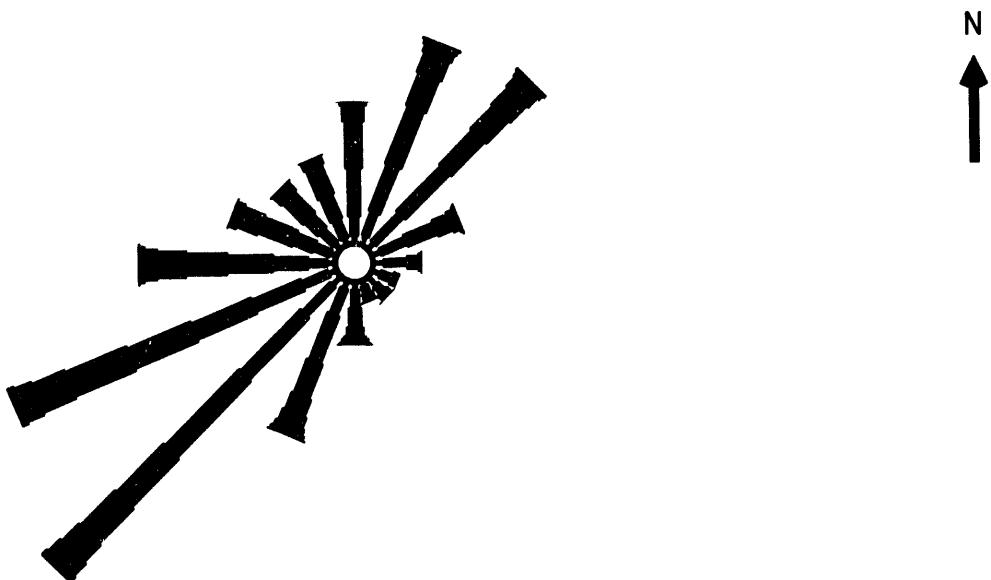
(a) Wind Rose

May Data
Period: 1982 - 1992



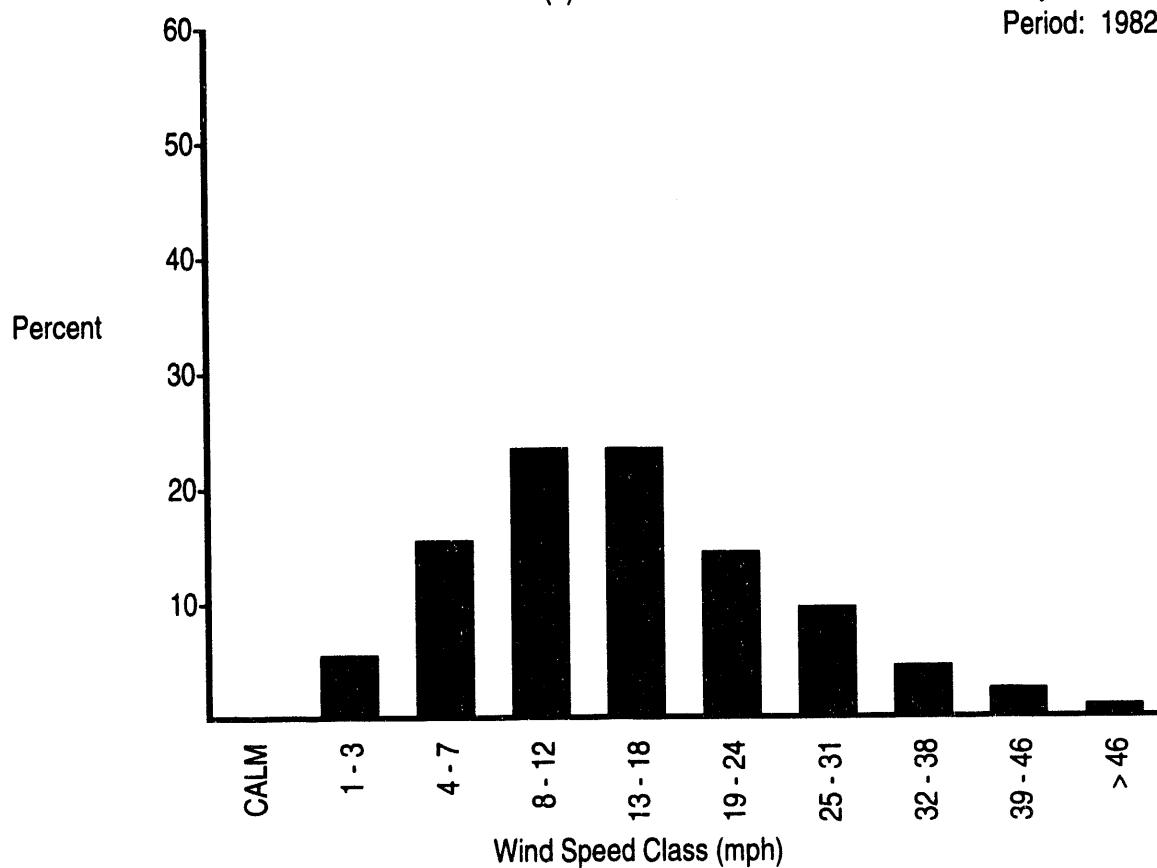
(b) Wind Speed Histogram

FIGURE B.1. (contd)



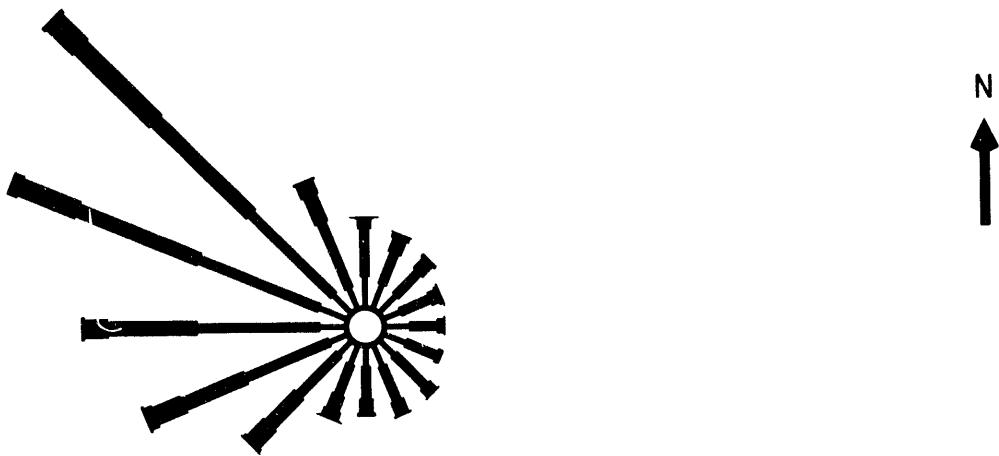
(a) Wind Rose

May Data
Period: 1982 - 1993



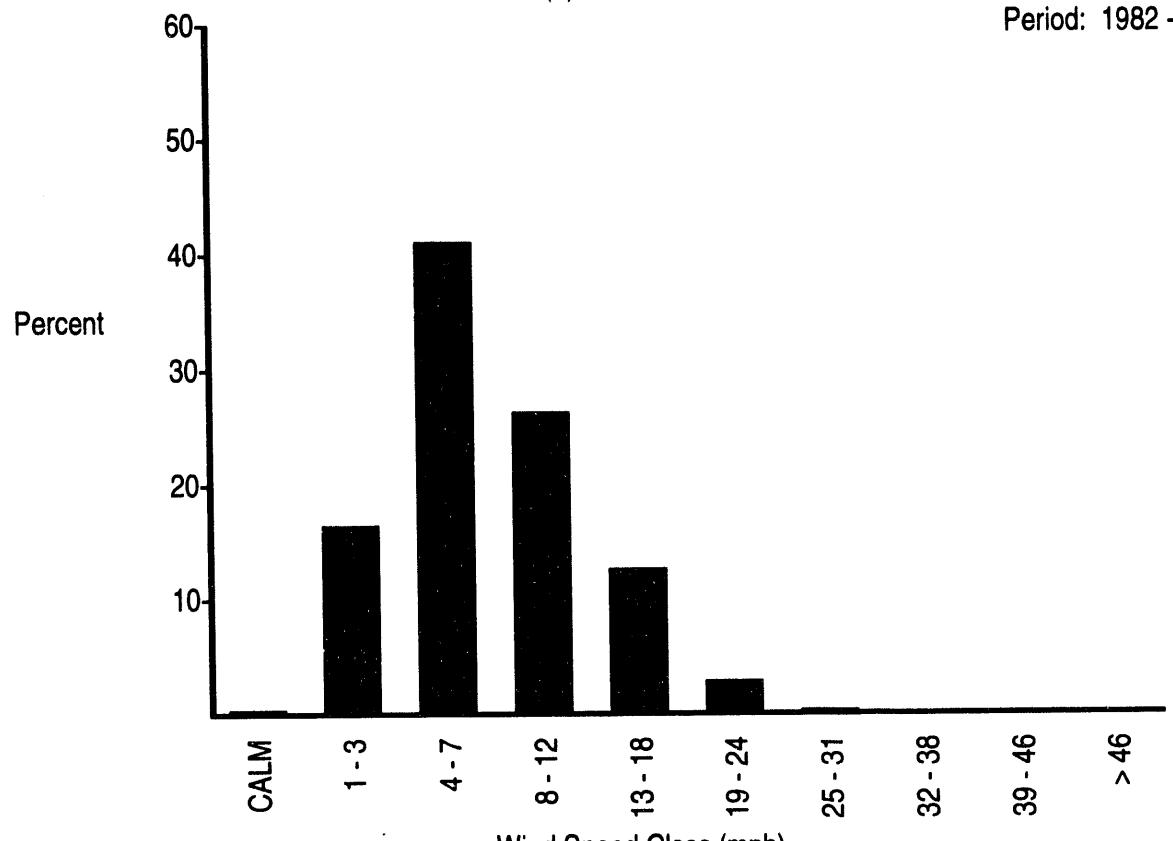
(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

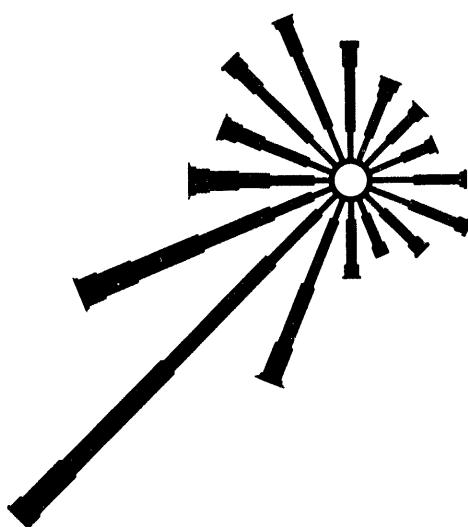
May Data
Period: 1982 - 1993



(b) Wind Speed Histogram

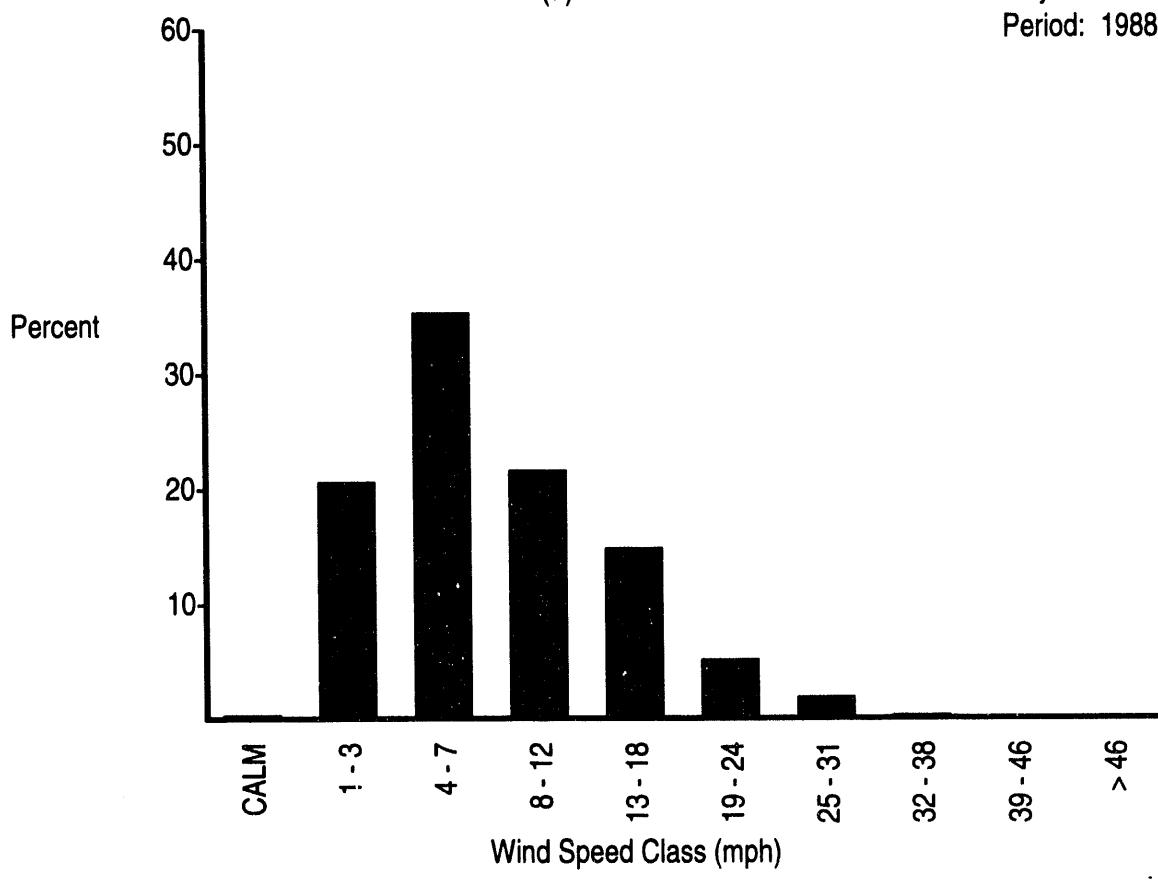
FIGURE B.1. (contd)

N



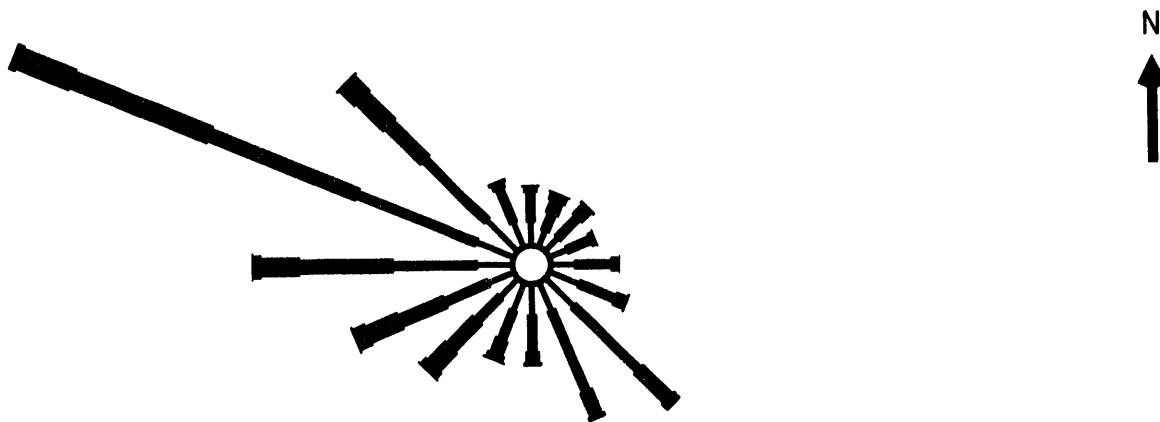
(a) Wind Rose

May Data
Period: 1988 - 1993



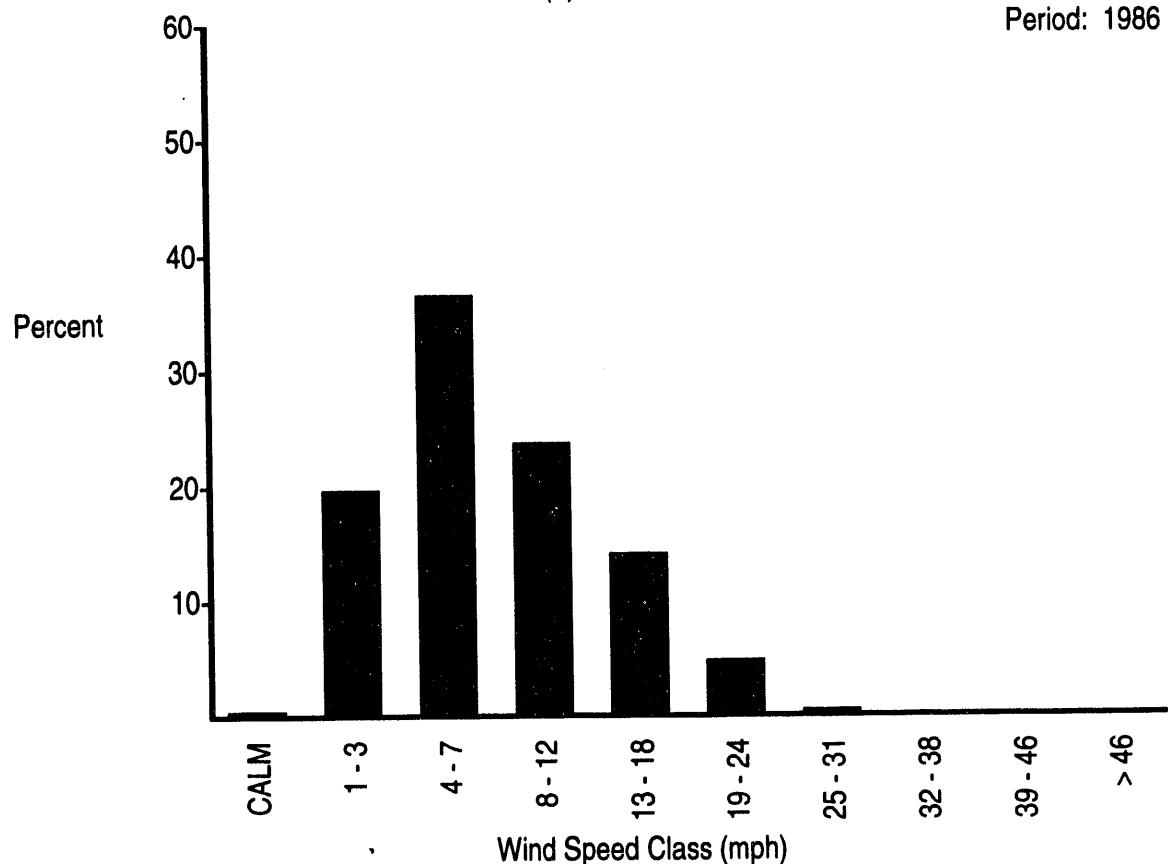
(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

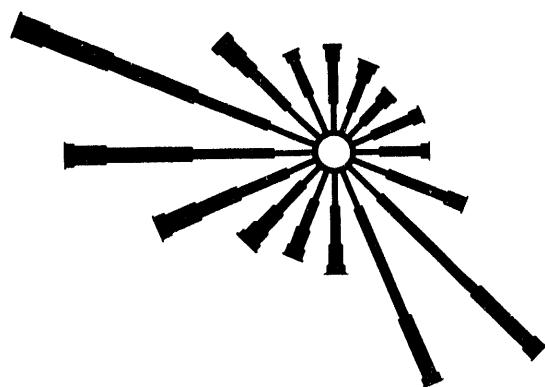
May Data
Period: 1986 - 1993



(b) Wind Speed Histogram

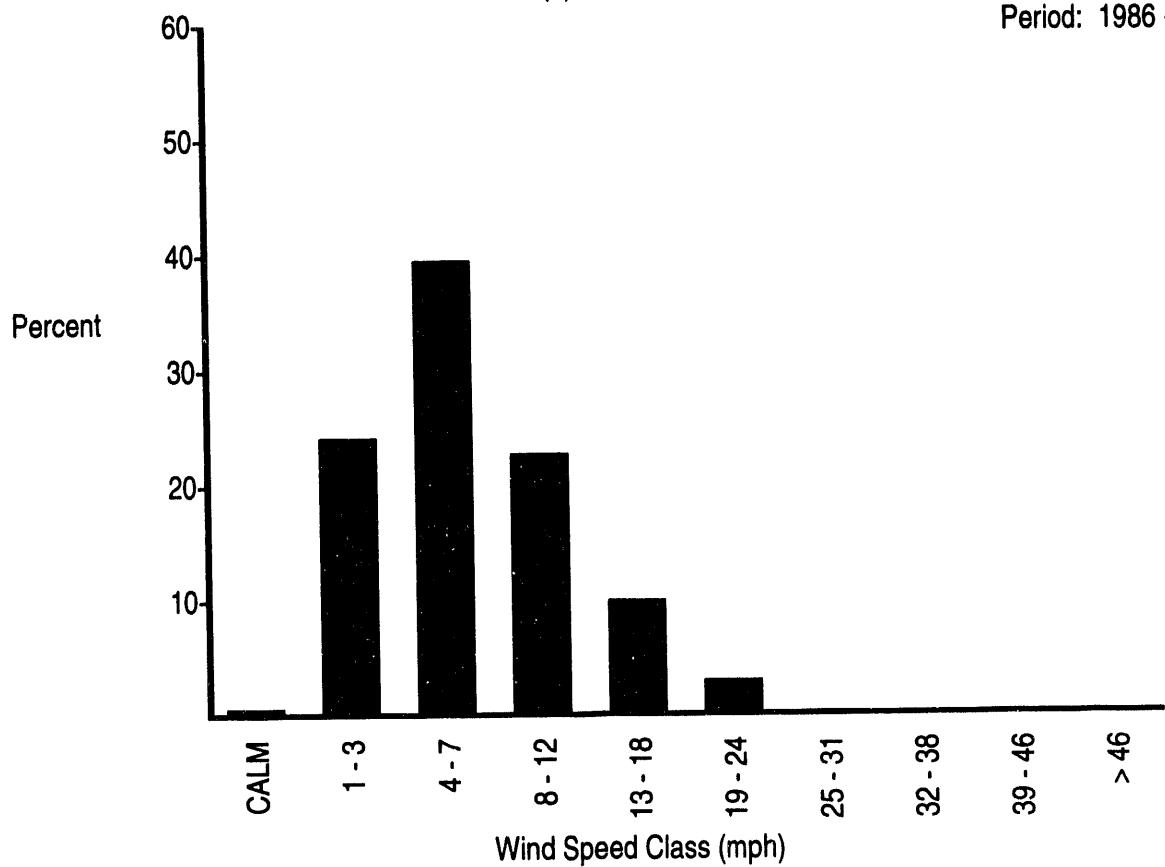
FIGURE B.1. (contd)

N
↑



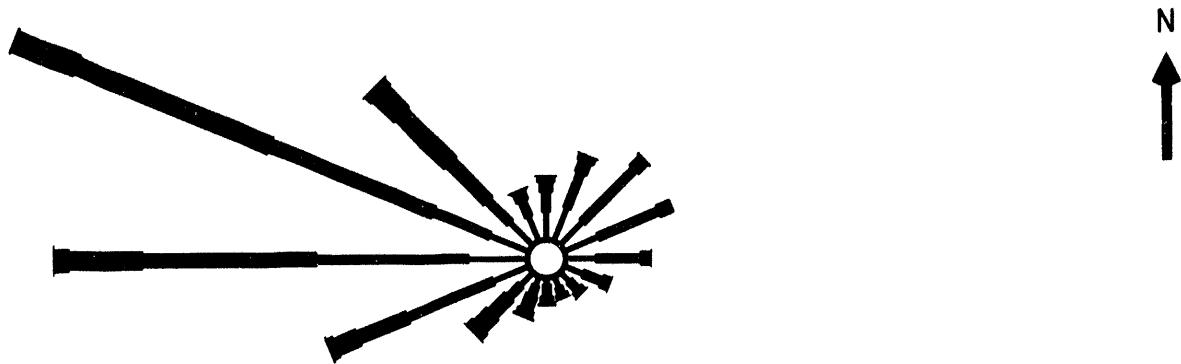
(a) Wind Rose

May Data
Period: 1986 - 1993



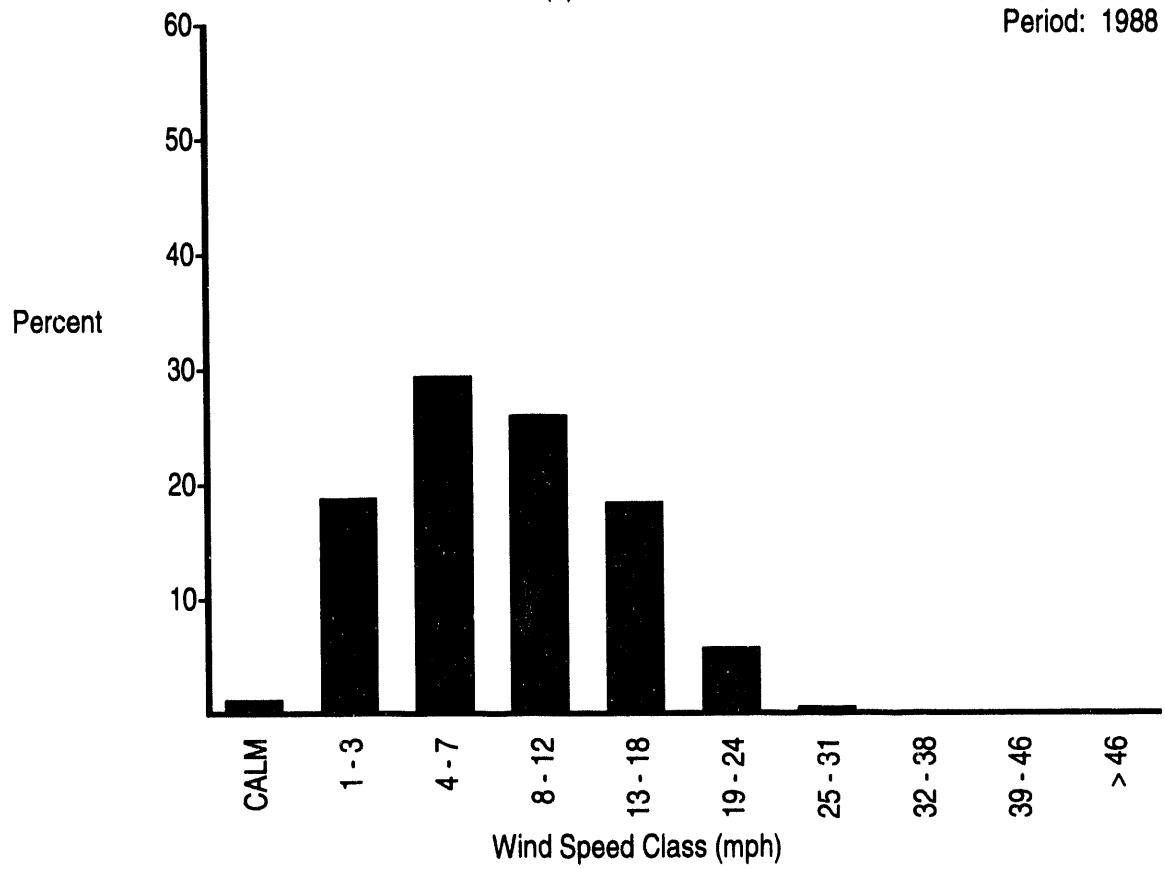
(b) Wind Speed Histogram

FIGURE B.1. (contd)



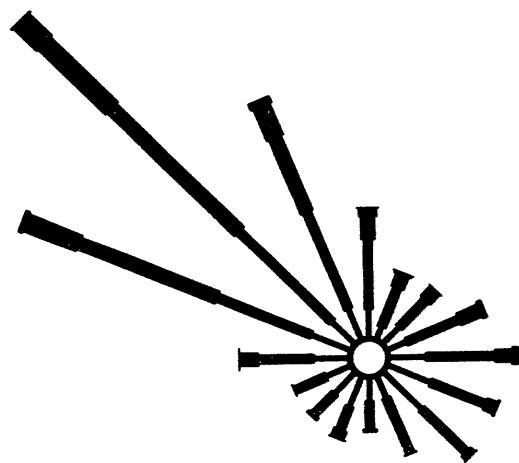
(a) Wind Rose

May Data
Period: 1988 - 1993



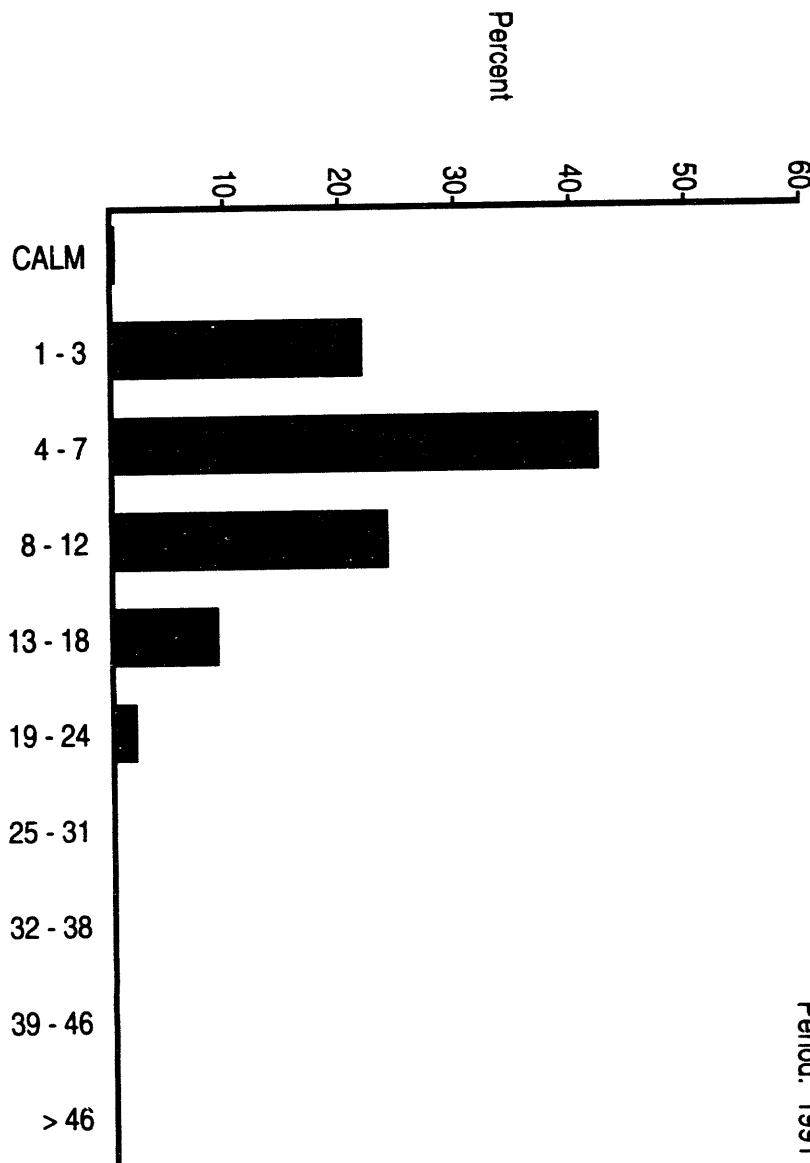
(b) Wind Speed Histogram

FIGURE B.1. (contd)



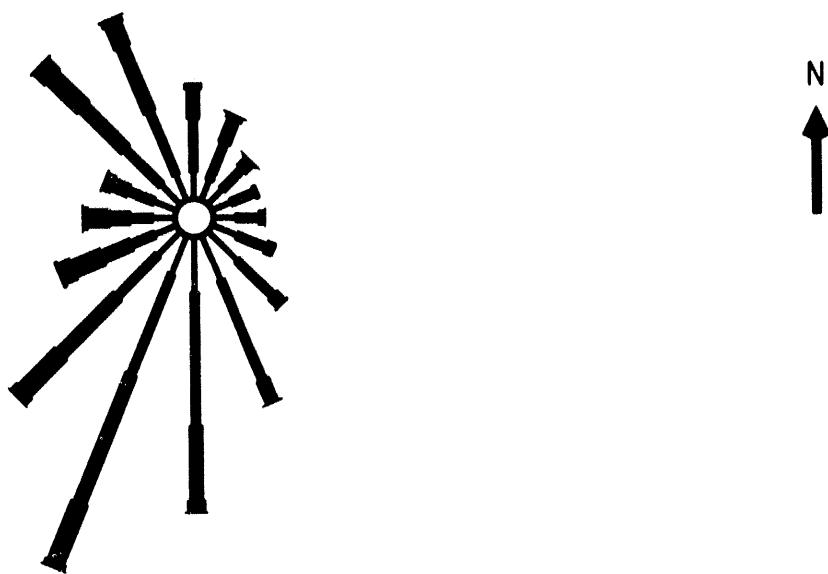
(a) Wind Rose

May Data
Period: 1991 - 1993



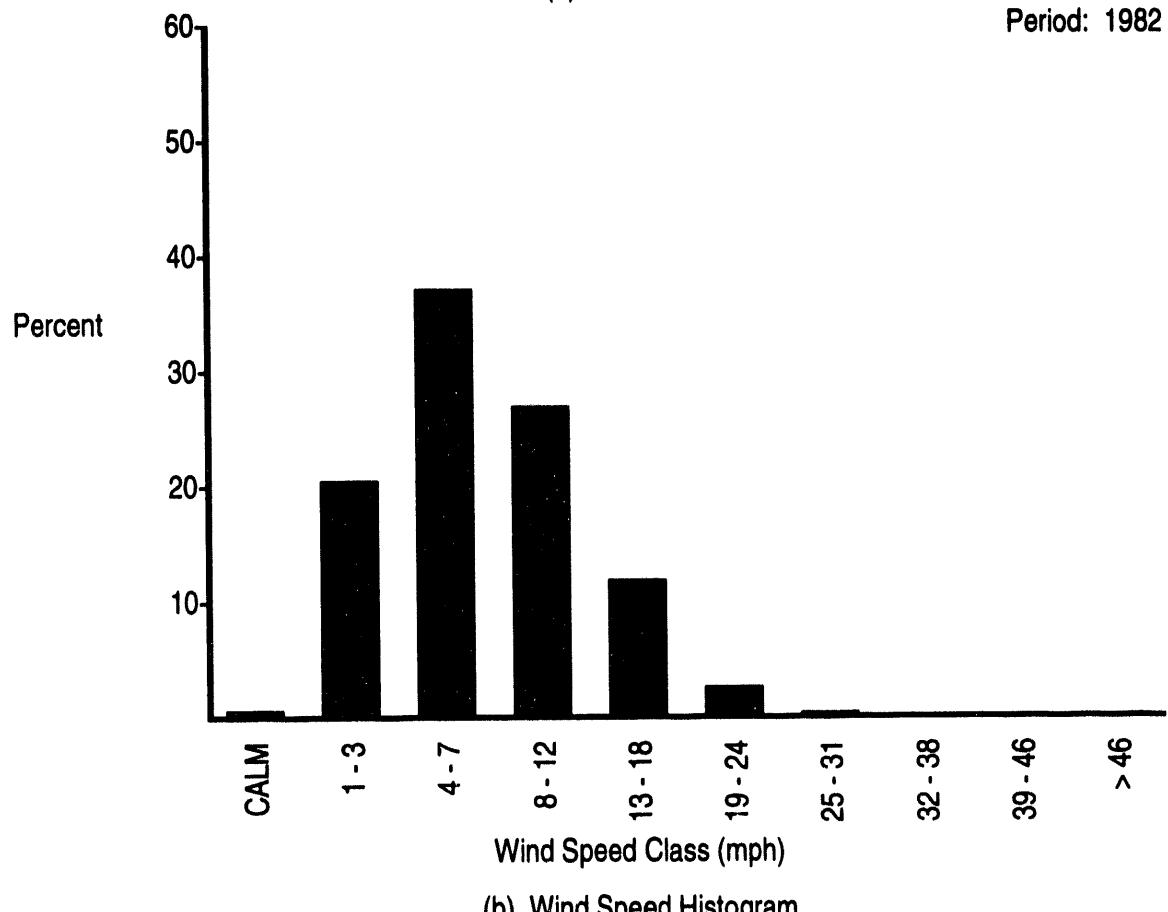
(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

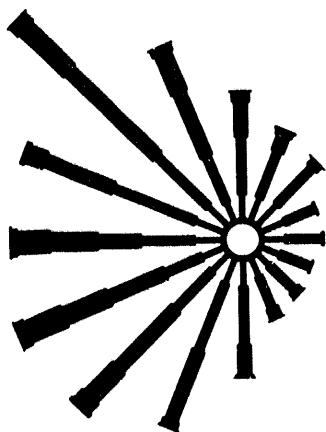
June Data
Period: 1982 - 1993



(b) Wind Speed Histogram

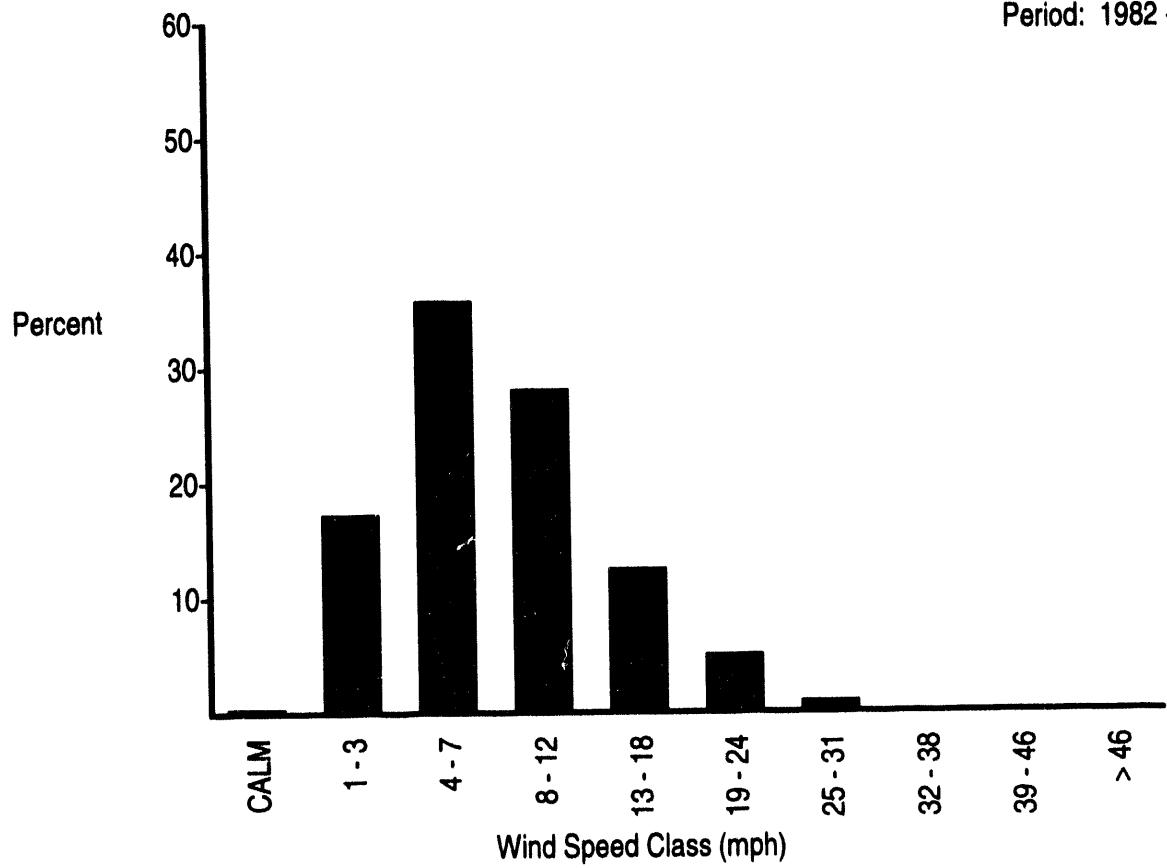
FIGURE B.1. (contd)

N
↑



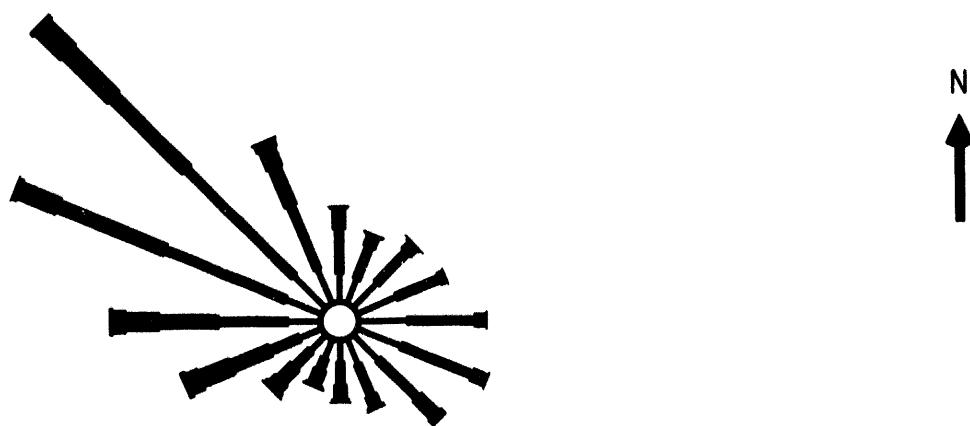
(a) Wind Rose

June Data
Period: 1982 - 1993



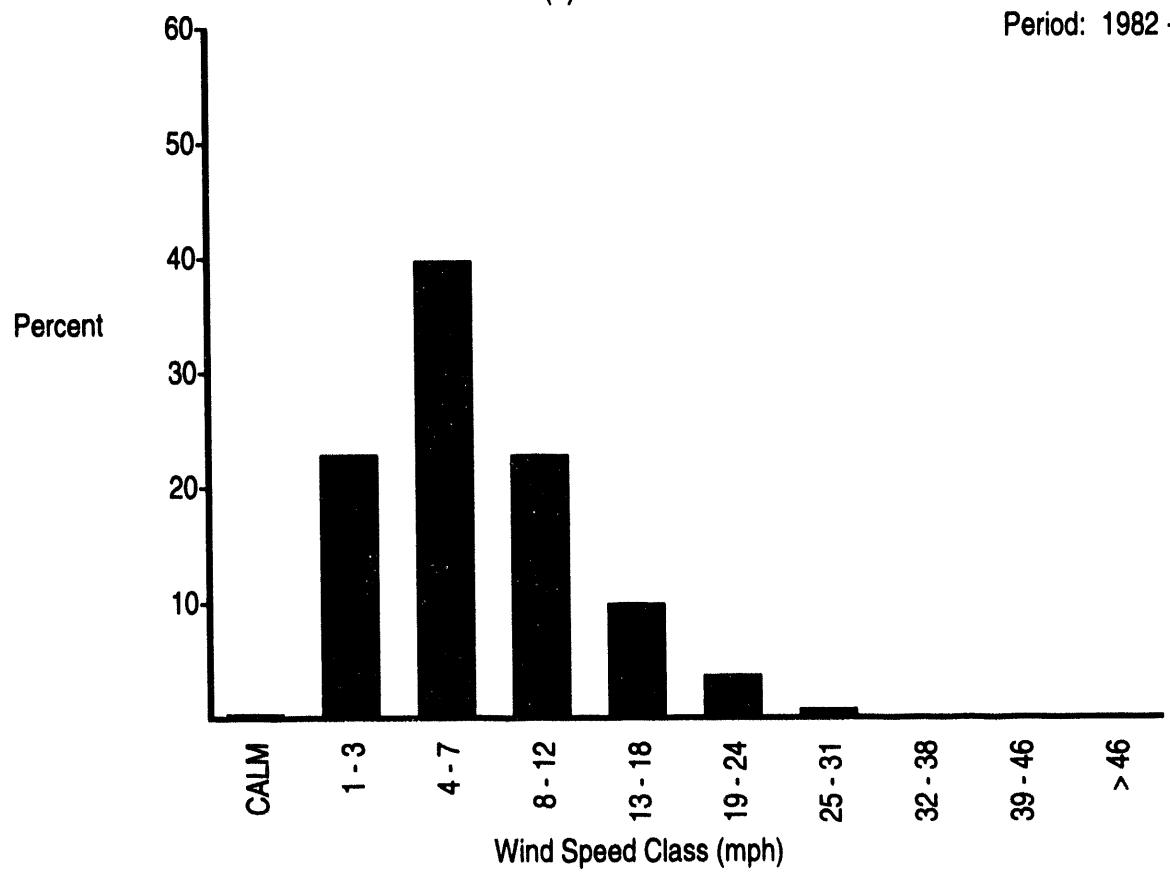
(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

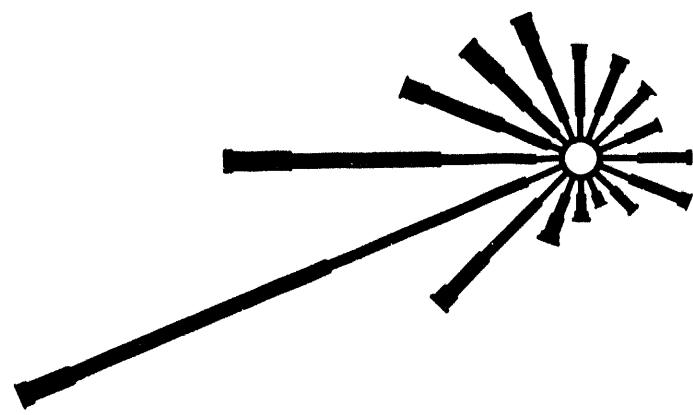
June Data
Period: 1982 - 1993



(b) Wind Speed Histogram

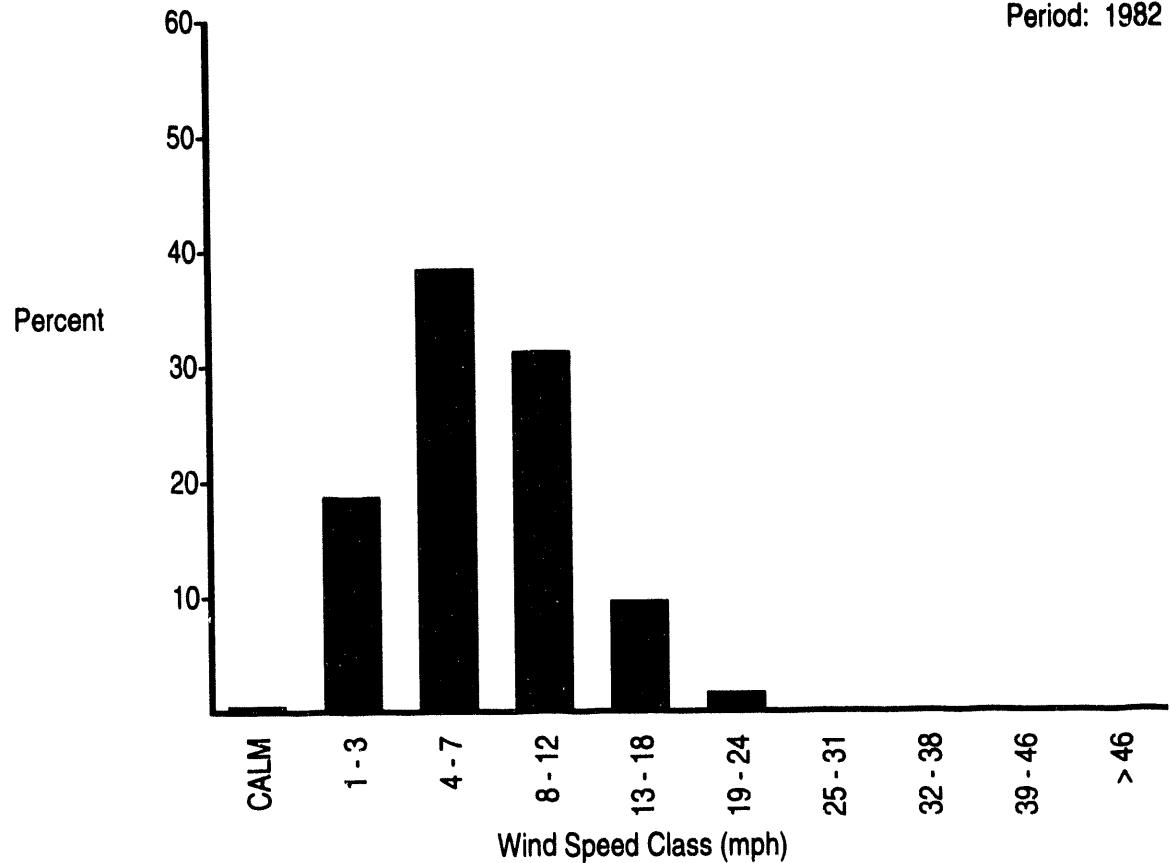
FIGURE B.1. (contd)

N
↑



(a) Wind Rose

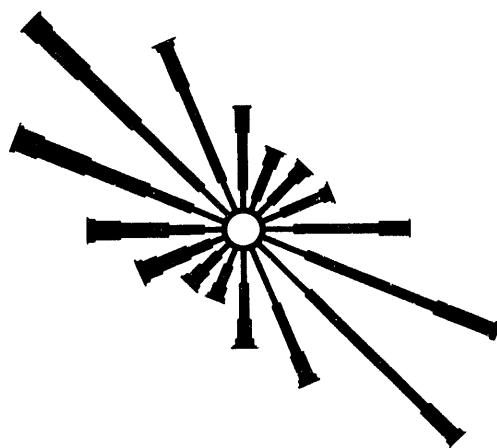
June Data
Period: 1982 - 1993



(b) Wind Speed Histogram

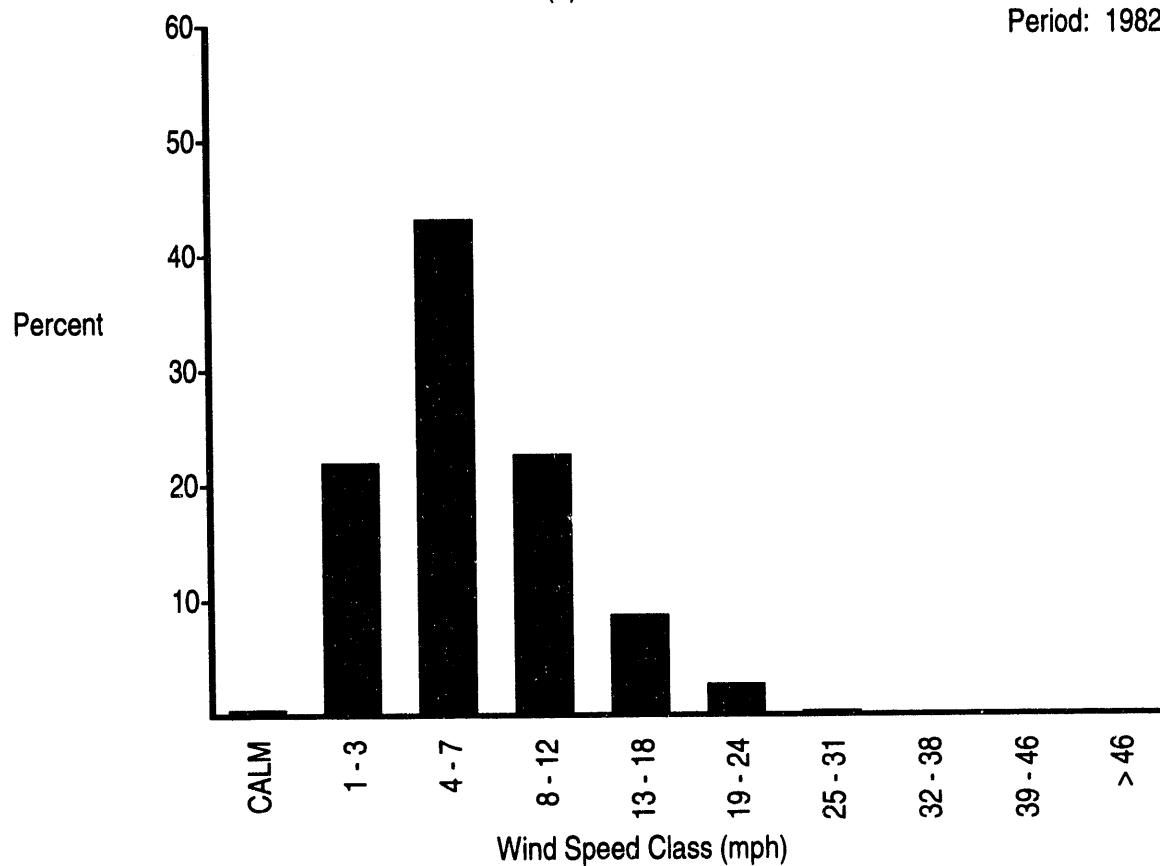
FIGURE B.1. (contd)

N
↑



(a) Wind Rose

June Data
Period: 1982 - 1993



(b) Wind Speed Histogram

FIGURE B.1. (contd)

(a) Wind Rose
June Data
Period: 1982 - 1993

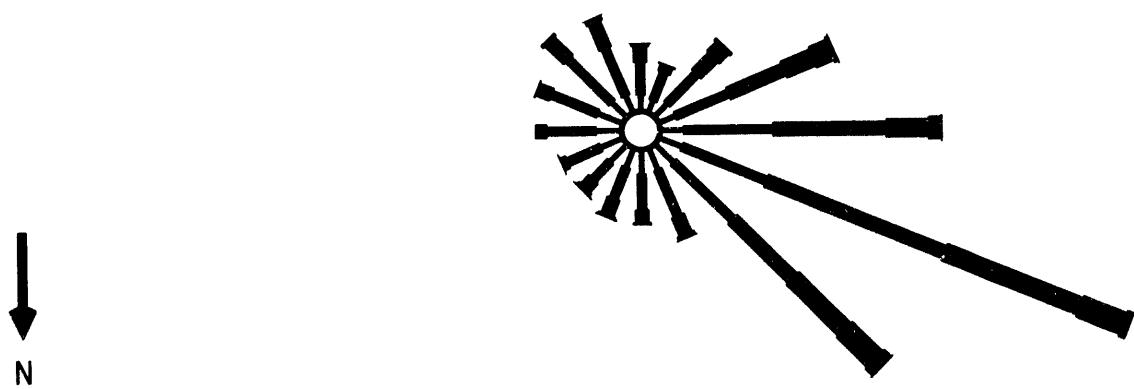
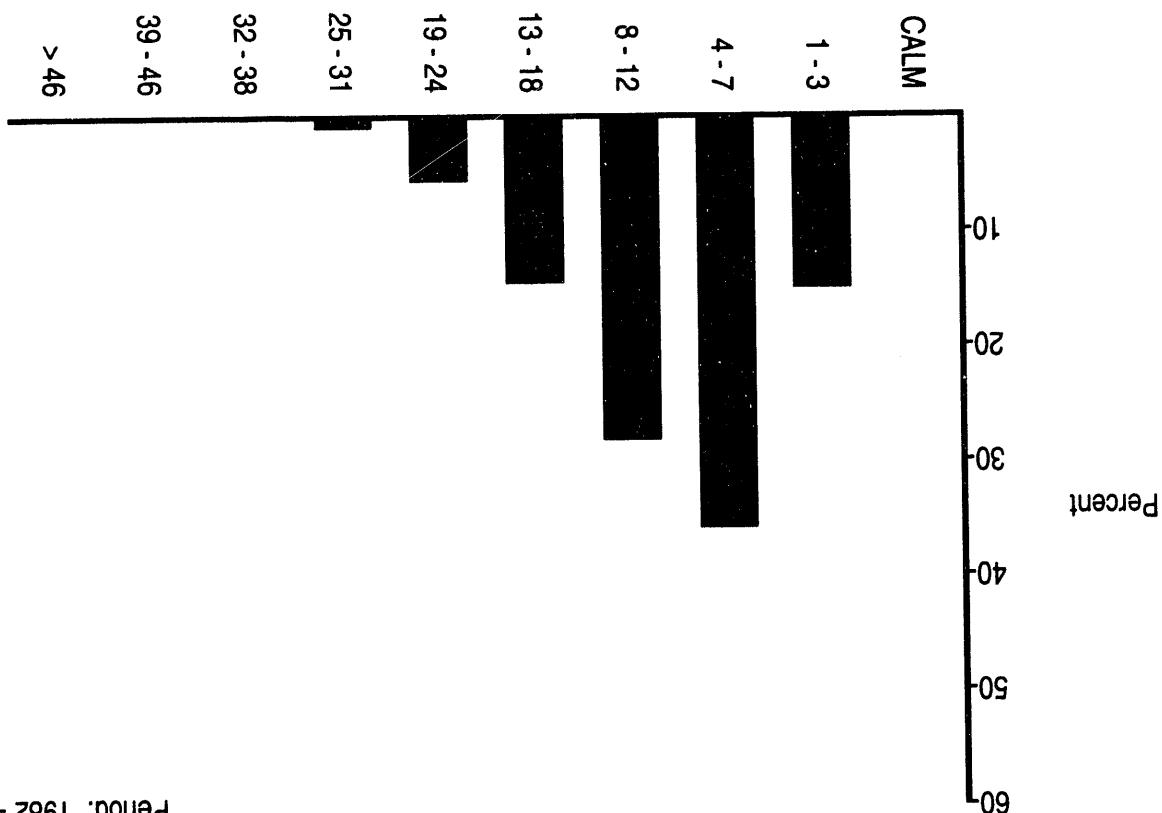
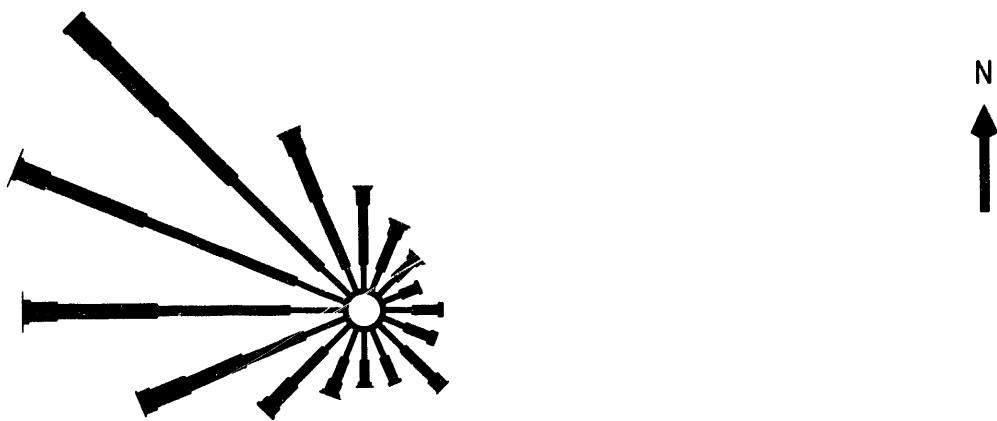


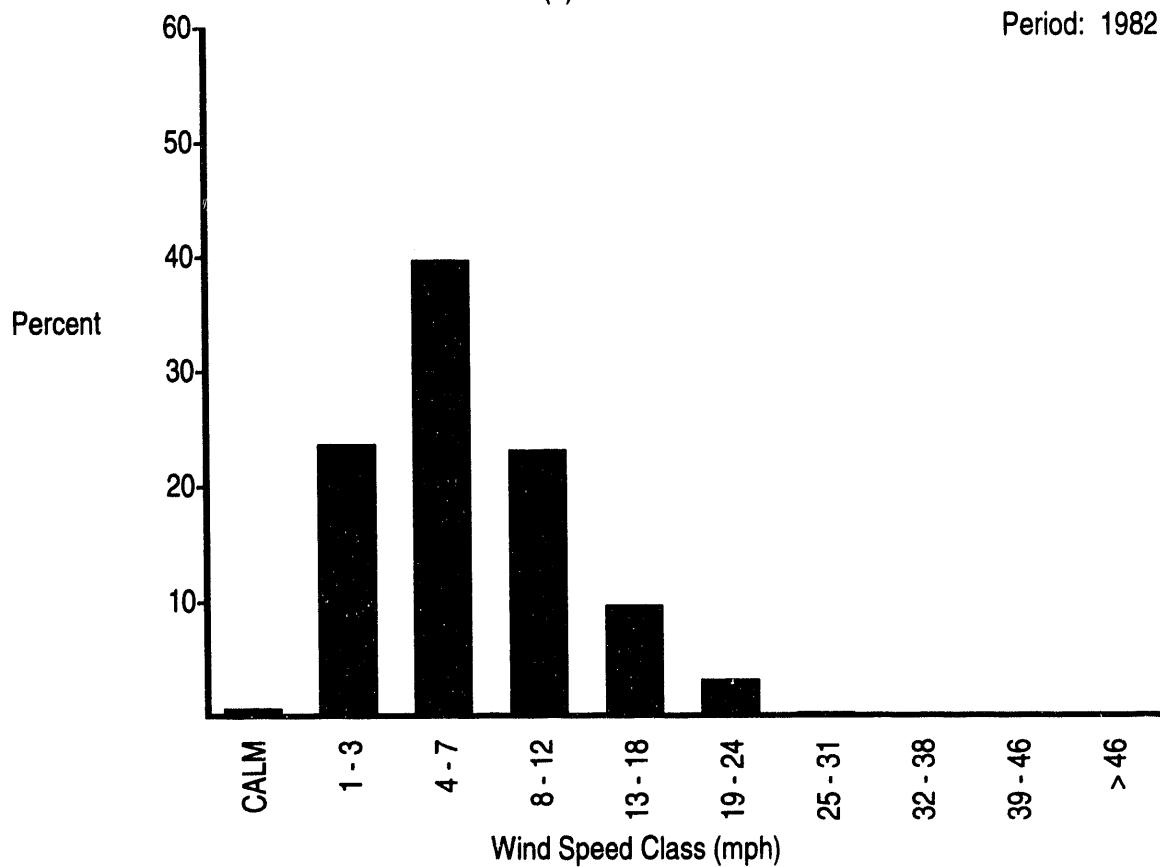
FIGURE B.1. (contd)
(b) Wind Speed Histogram
Wind Speed Class (mph)





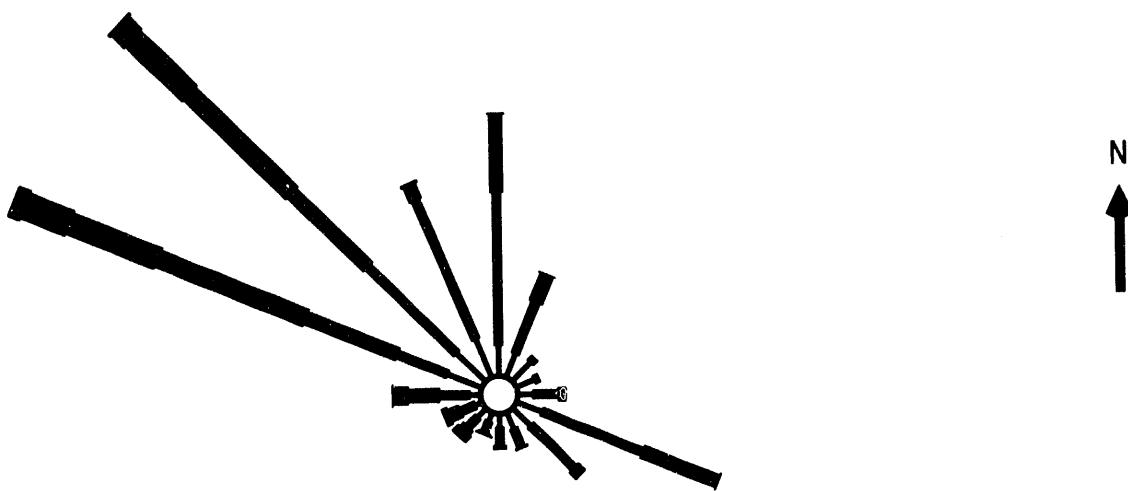
(a) Wind Rose

June Data
Period: 1982 - 1993

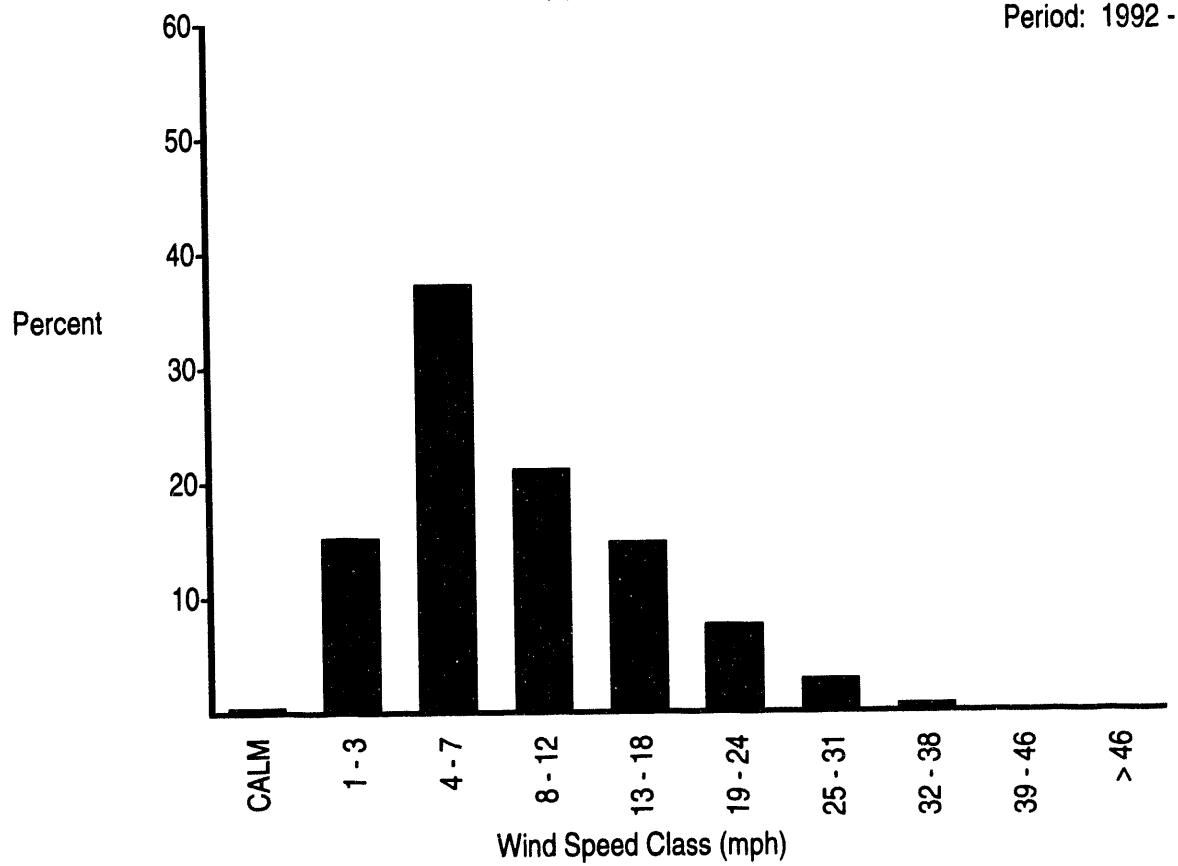


(b) Wind Speed Histogram

FIGURE B.1. (contd)

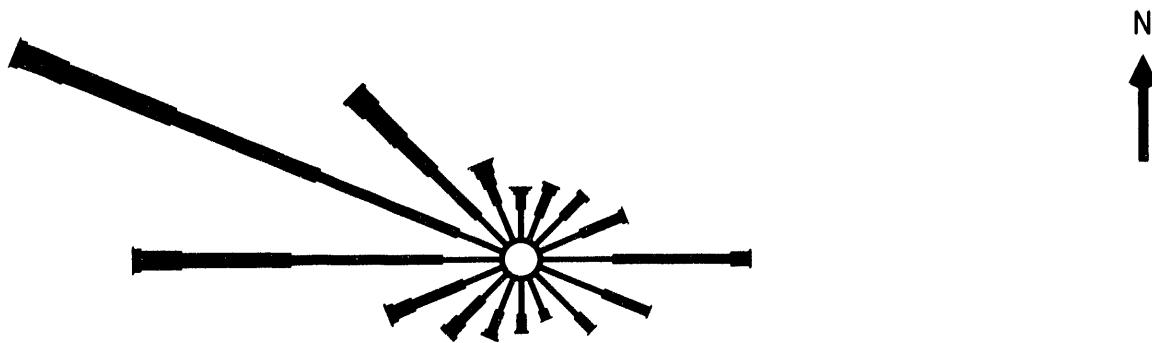


(a) Wind Rose

June Data
Period: 1992 - 1993

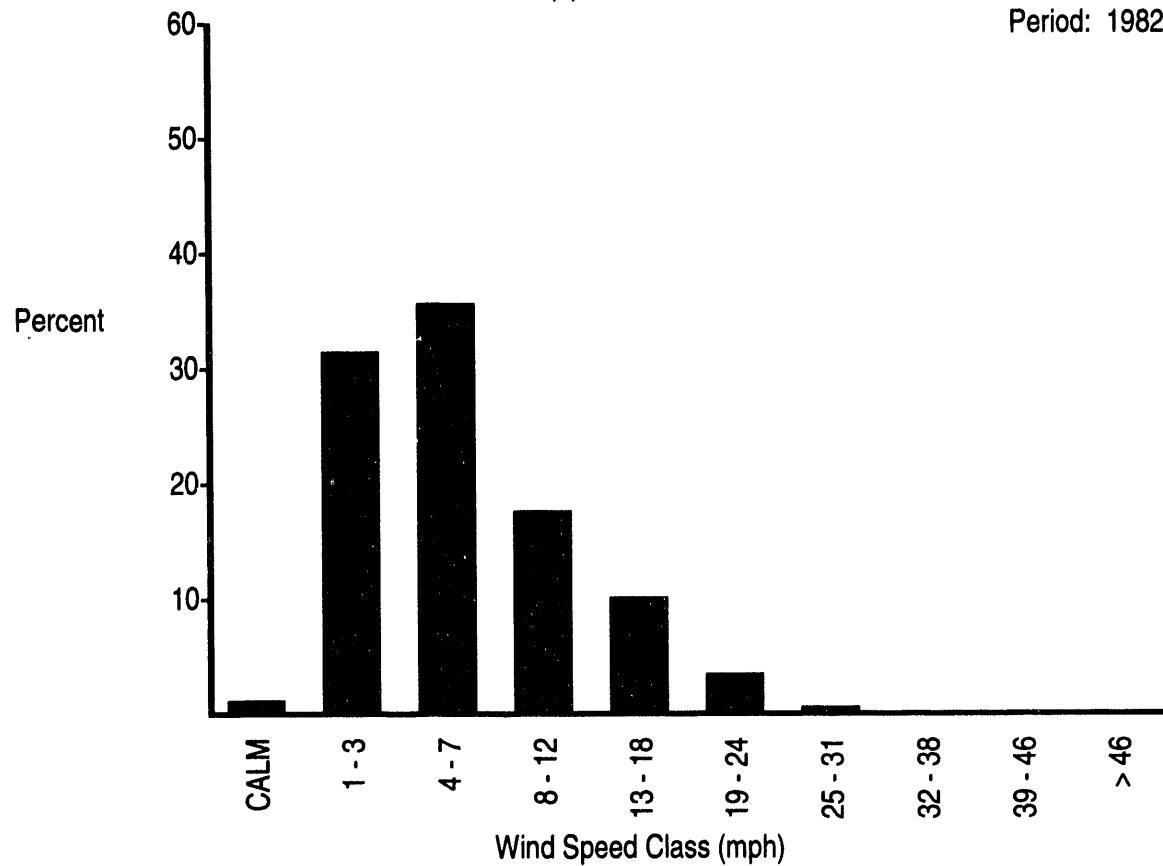
(b) Wind Speed Histogram

FIGURE B.1. (contd)



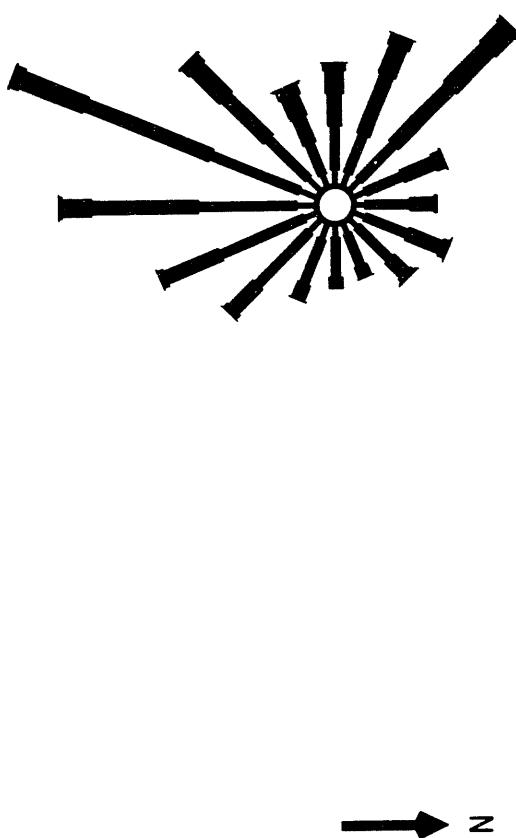
(a) Wind Rose

June Data
Period: 1982 - 1991



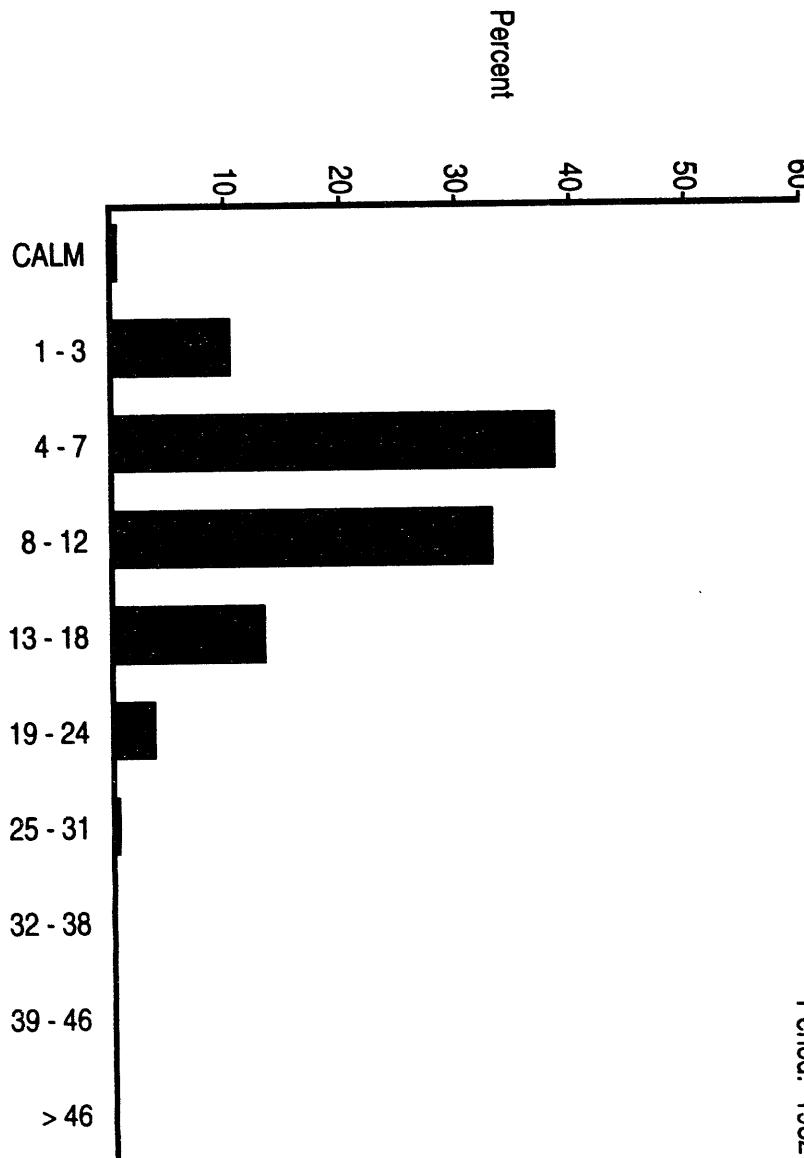
(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

June Data
Period: 1982 - 1993



(b) Wind Speed Histogram

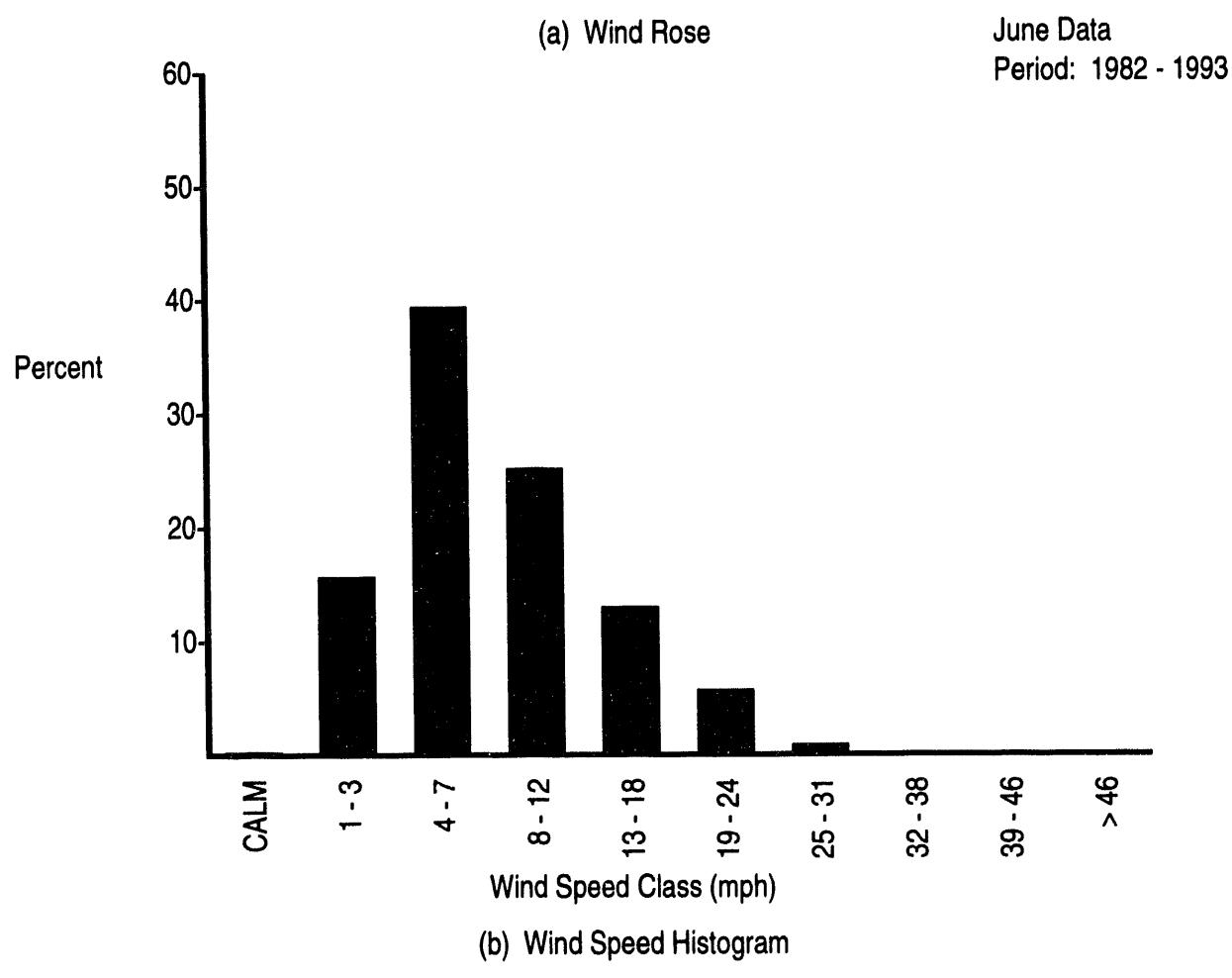
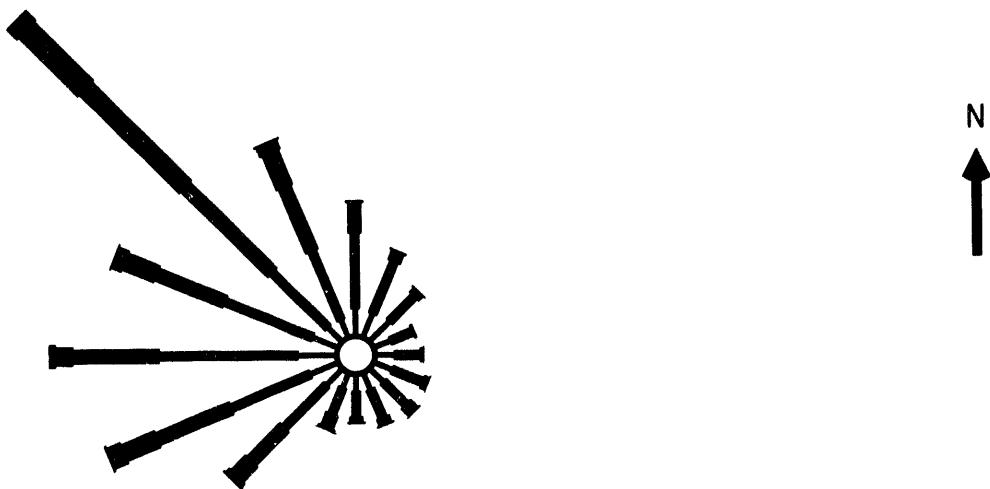
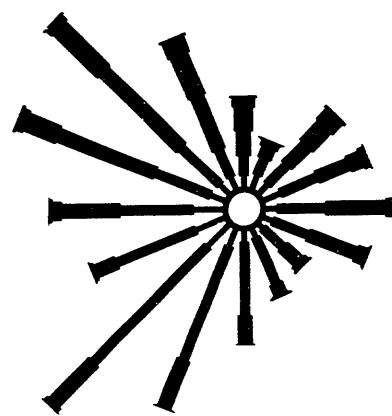
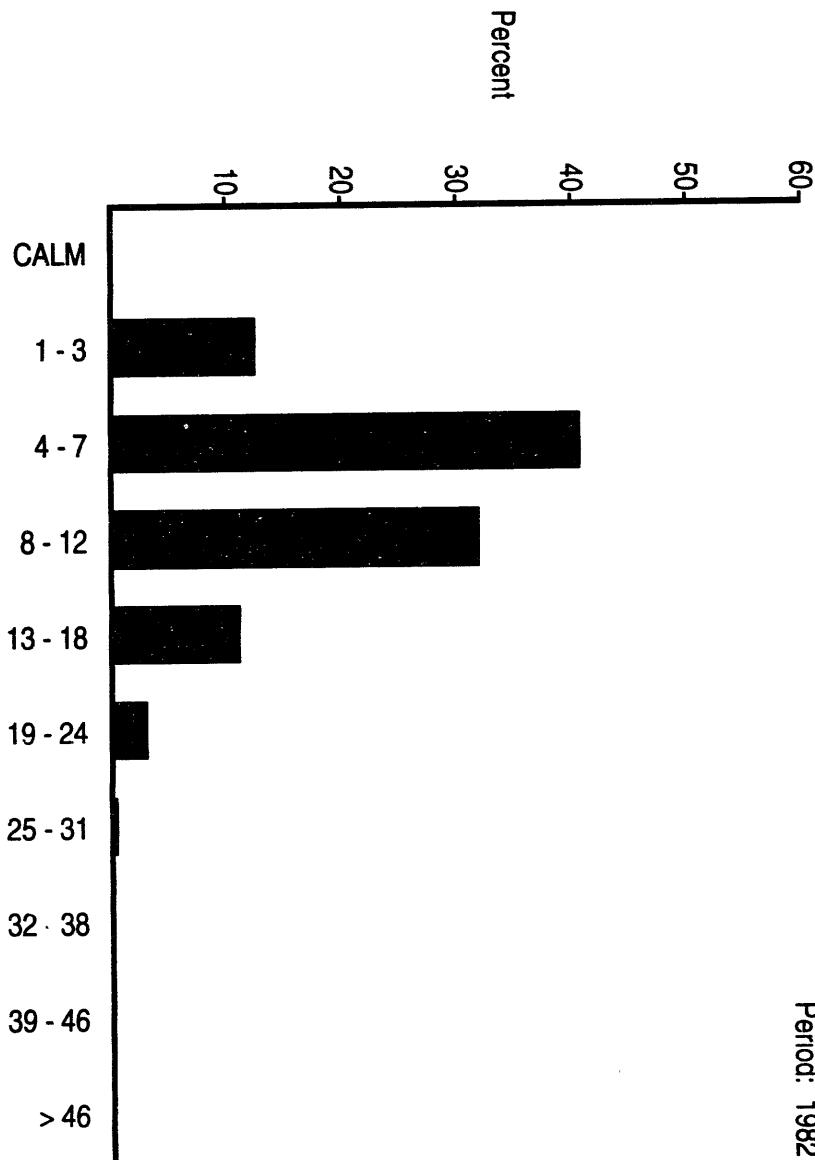


FIGURE B.1. (contd)

(a) Wind Rose
June Data
Period: 1982 - 1993

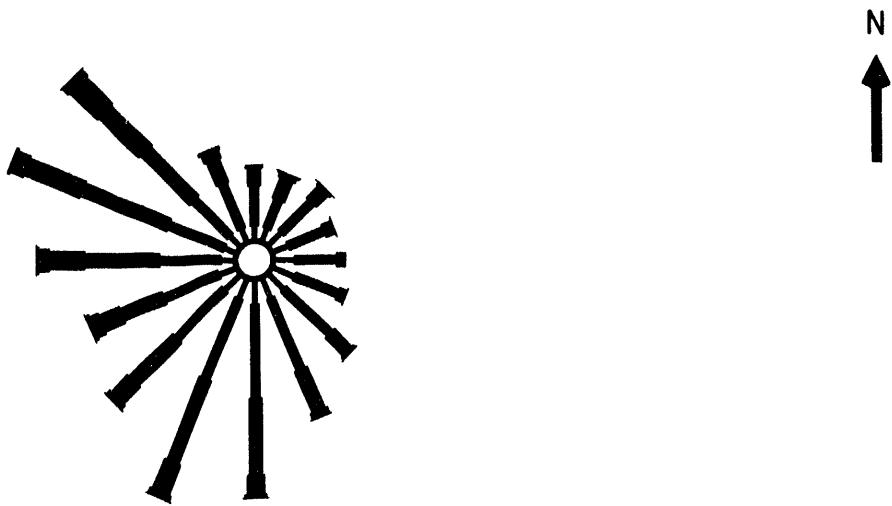


→ N



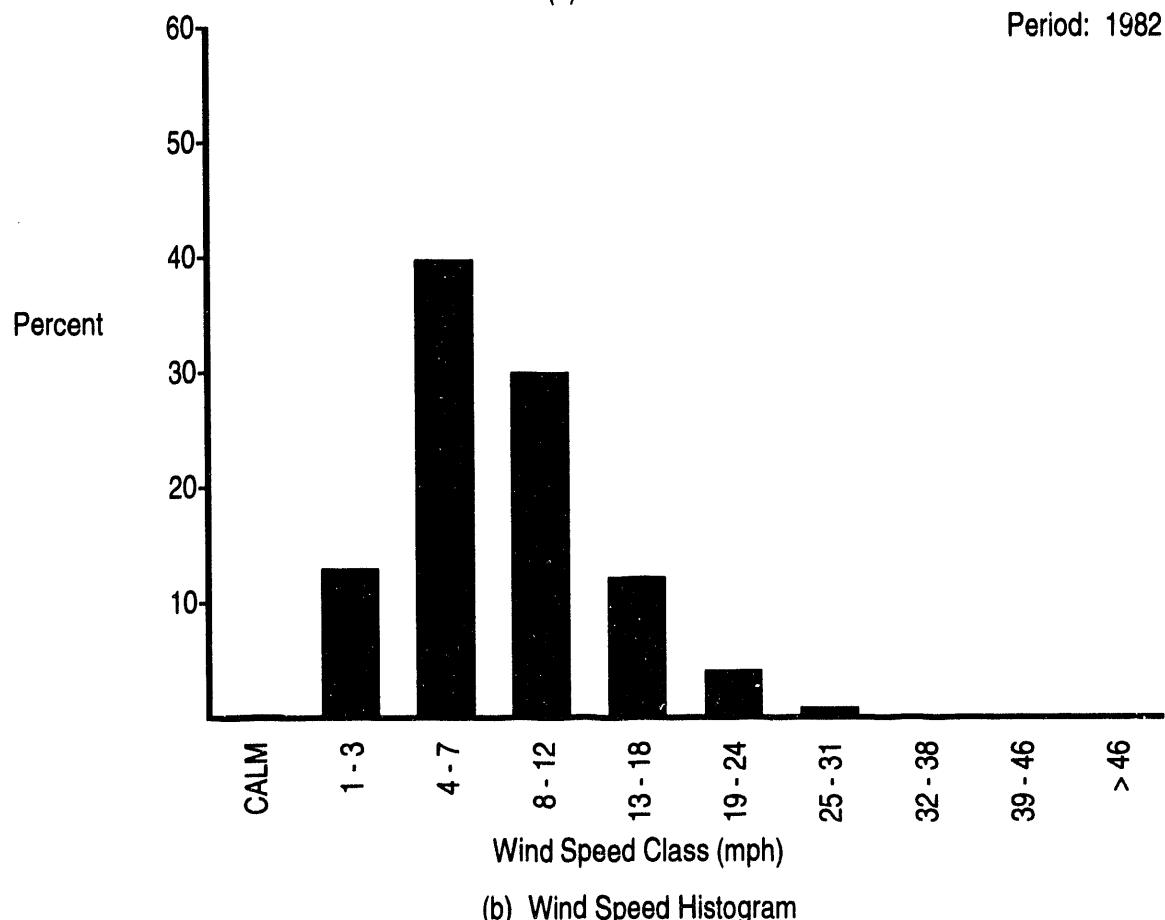
(b) Wind Speed Histogram

FIGURE B.1. (contd)



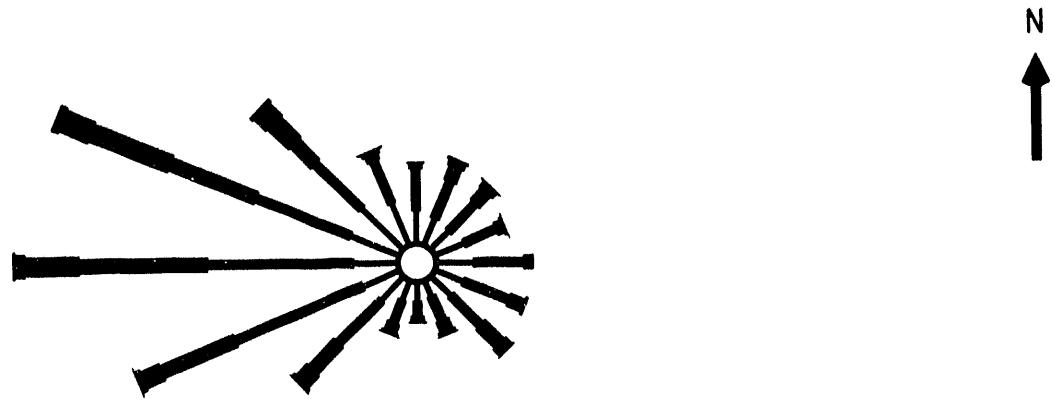
(a) Wind Rose

June Data
Period: 1982 - 1993



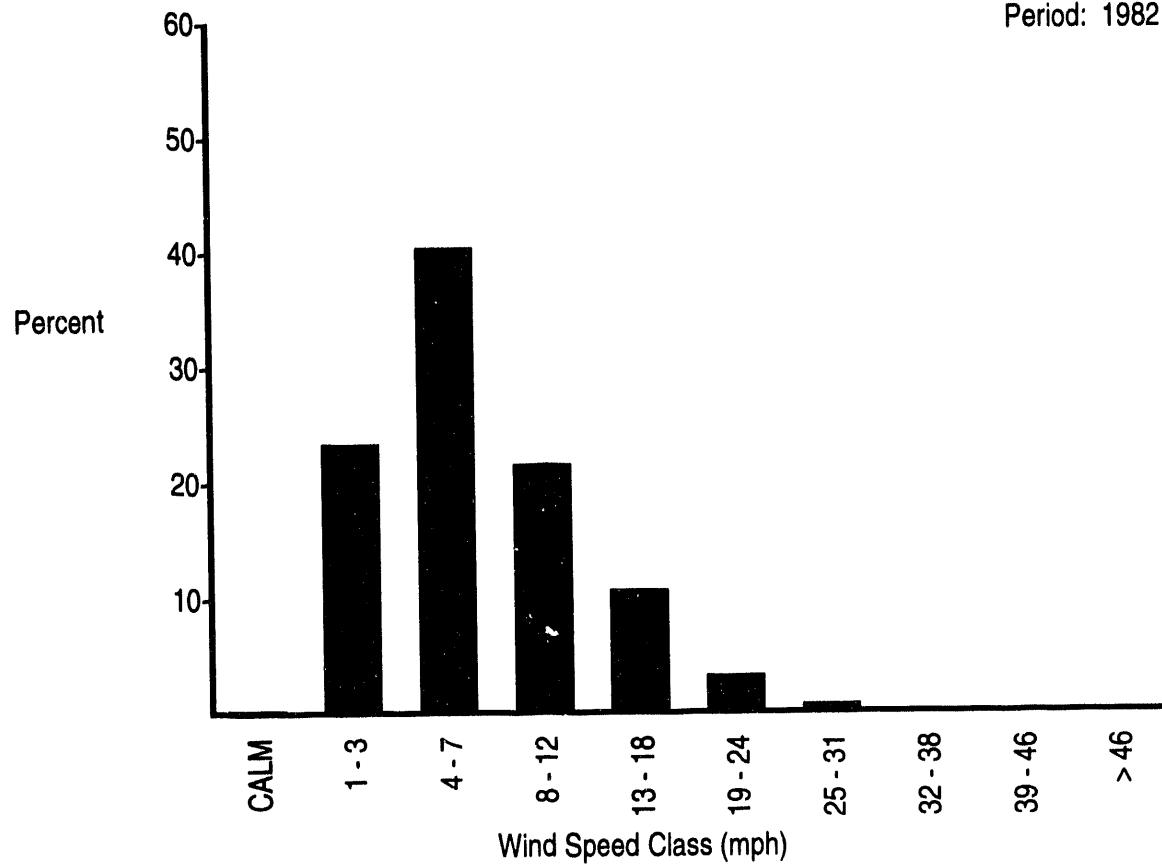
(b) Wind Speed Histogram

FIGURE B.1. (contd)



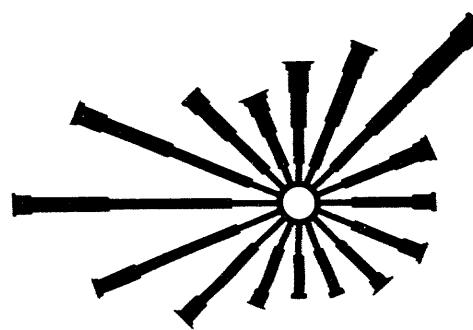
(a) Wind Rose

June Data
Period: 1982 - 1993



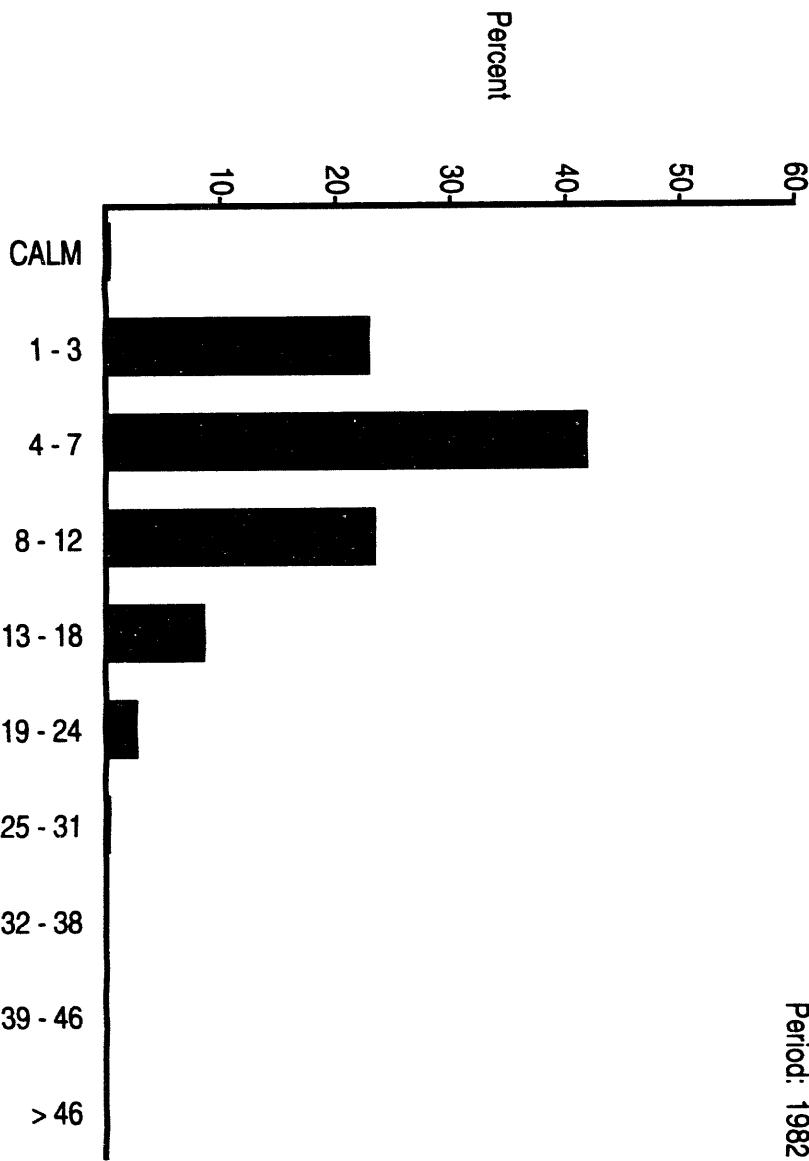
(b) Wind Speed Histogram

FIGURE B.1. (contd)

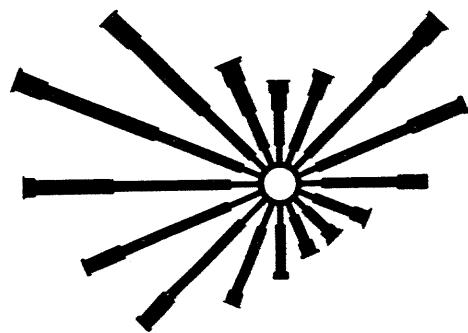


→ N

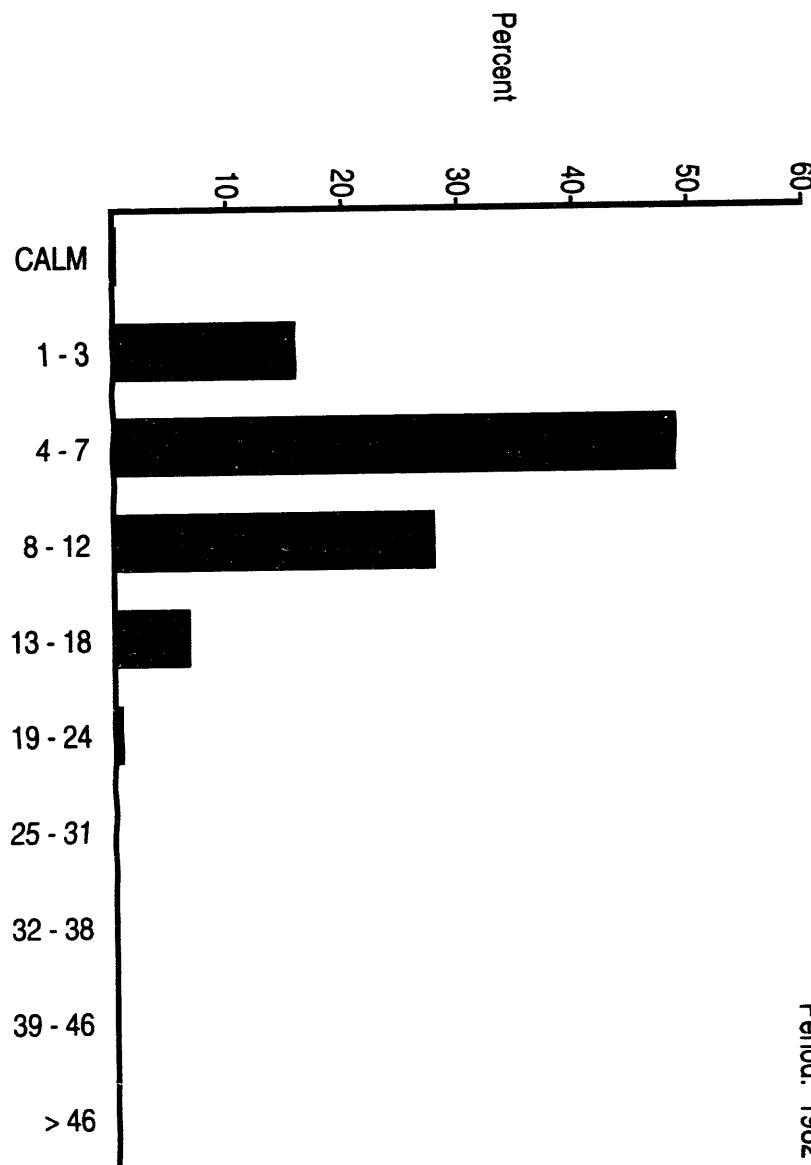
(a) Wind Rose
June Data
Period: 1982 - 1993

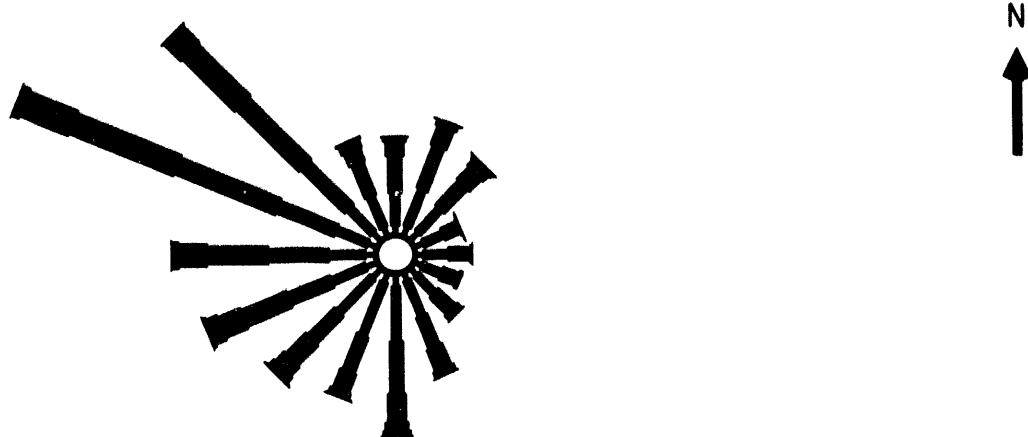


(b) Wind Speed Histogram
FIGURE B.1. (contd)



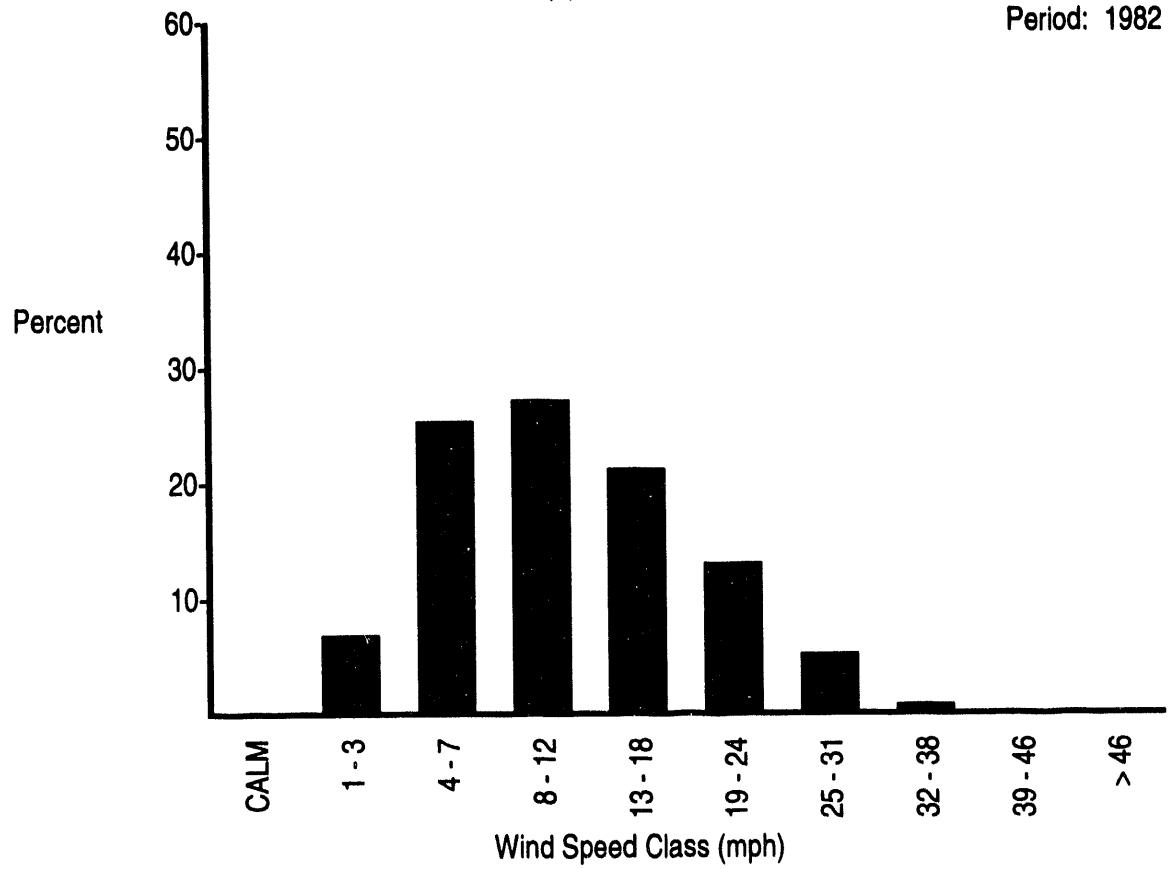
(a) Wind Rose

June Data
Period: 1982 - 1993(b) Wind Speed Histogram
FIGURE B.1. (contd)



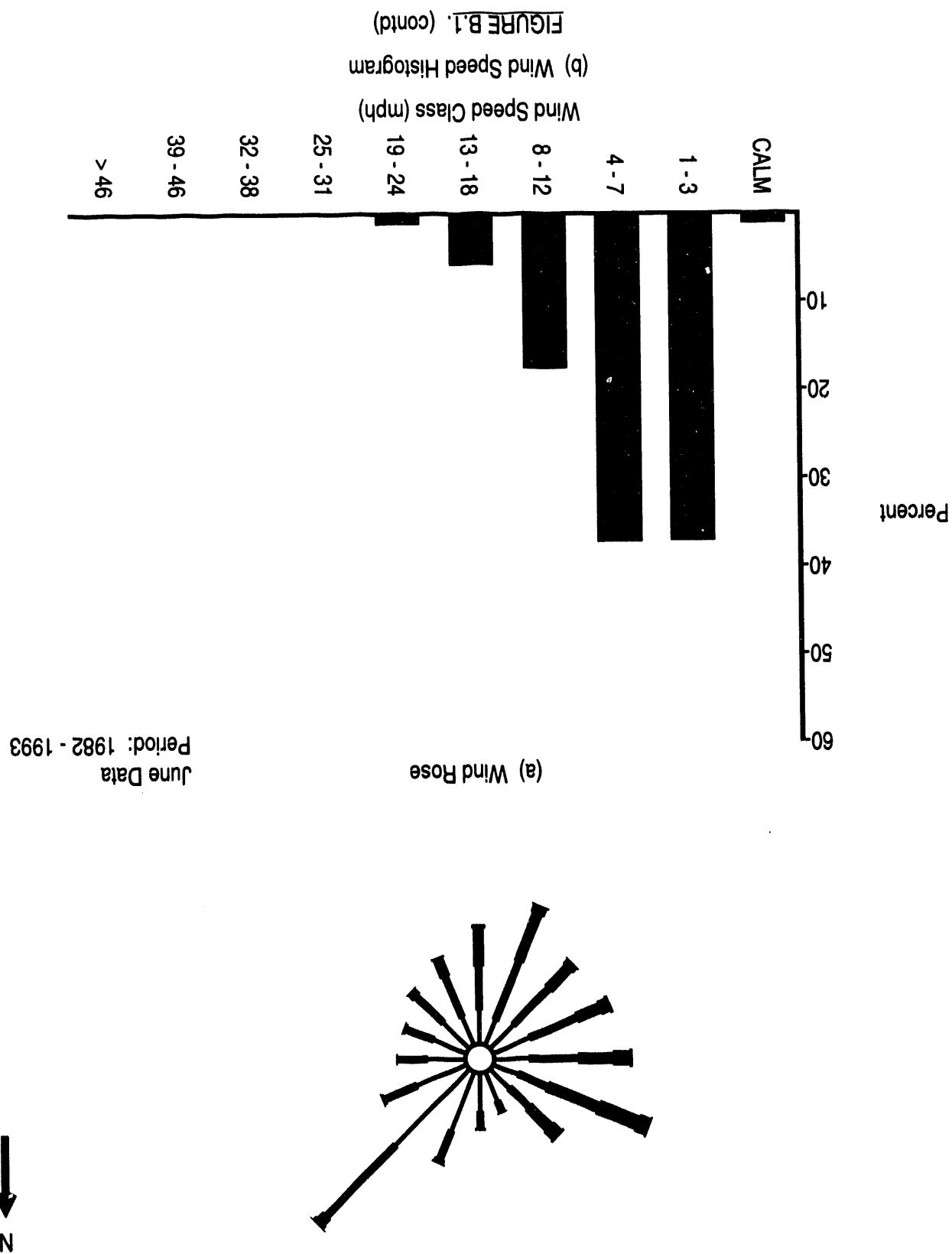
(a) Wind Rose

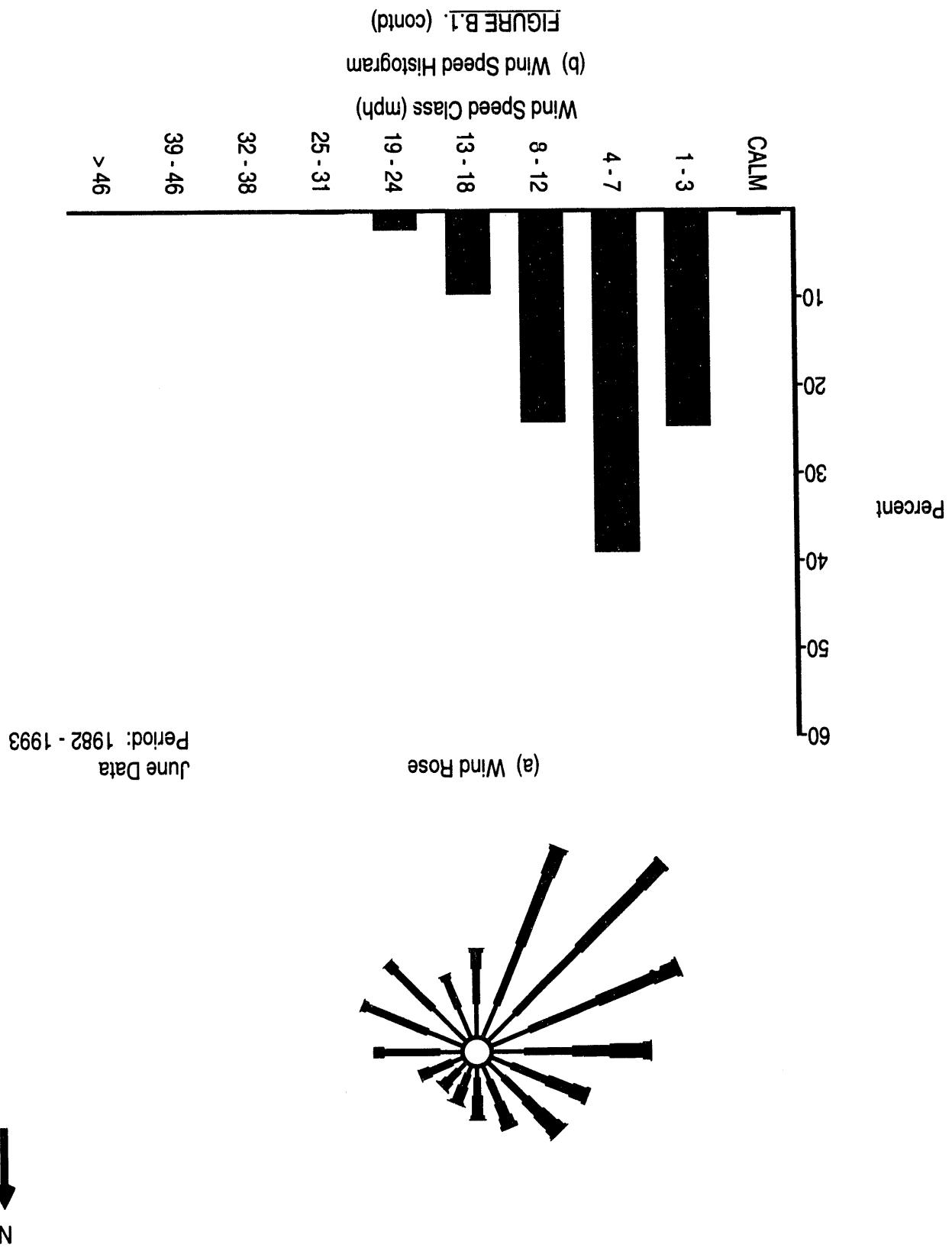
June Data
Period: 1982 - 1993

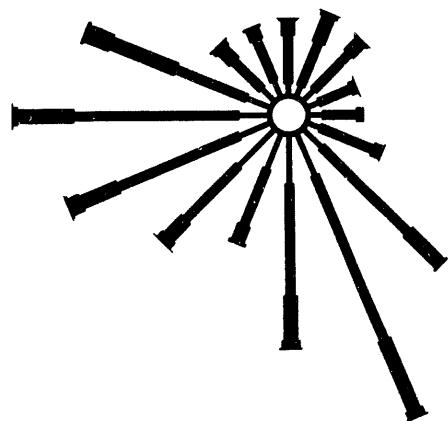


(b) Wind Speed Histogram

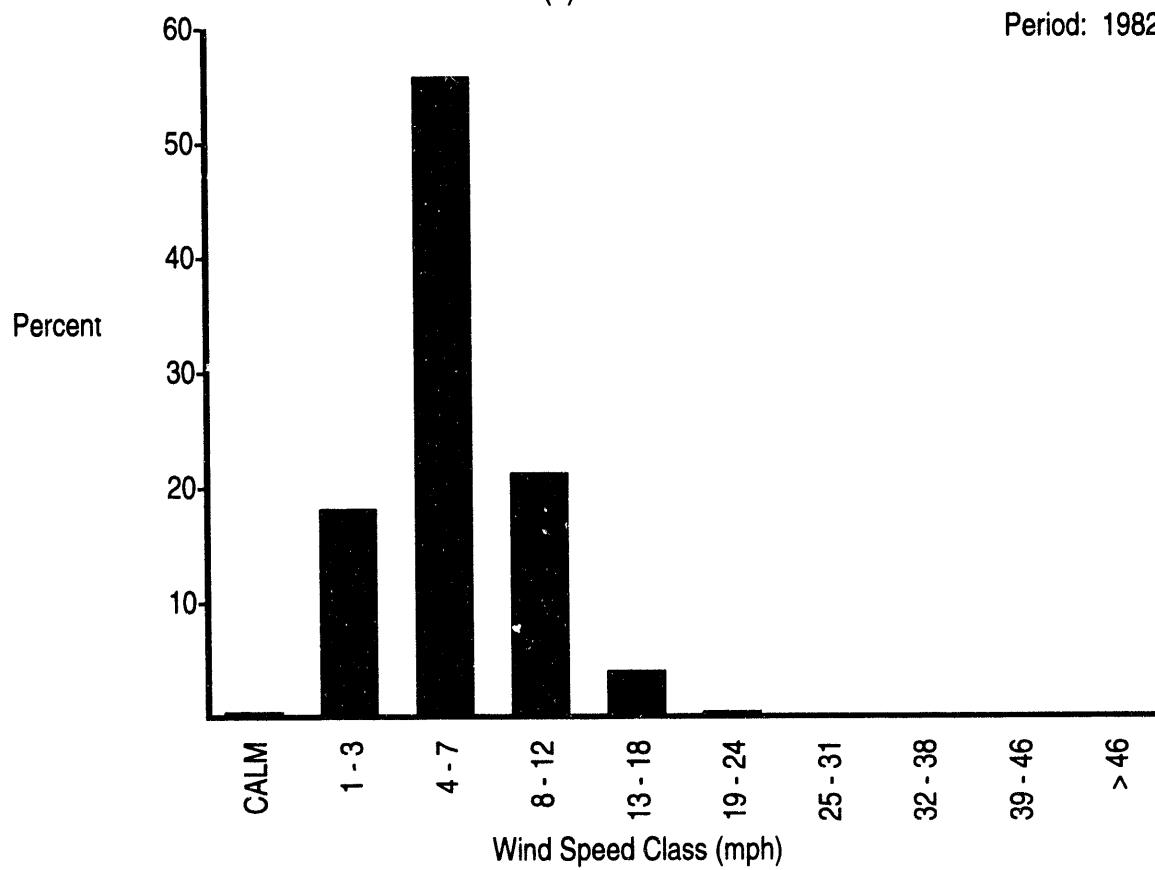
FIGURE B.1. (contd)





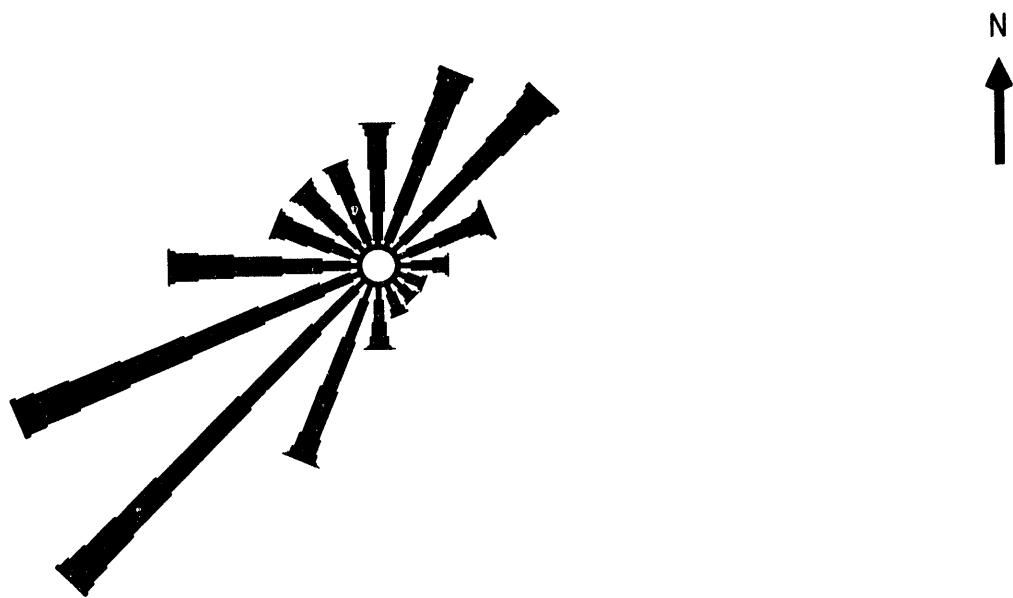
N
↑

(a) Wind Rose

June Data
Period: 1982 - 1992

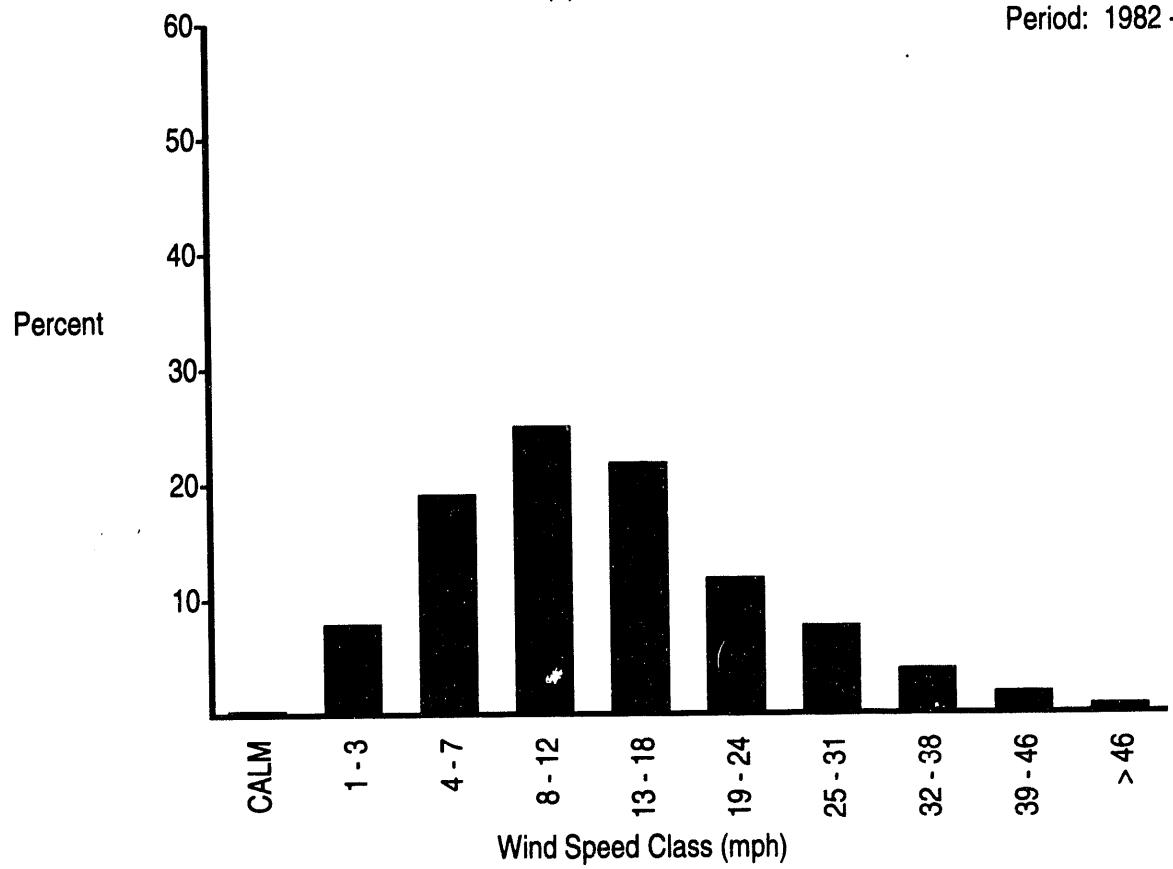
(b) Wind Speed Histogram

FIGURE B.1. (contd)



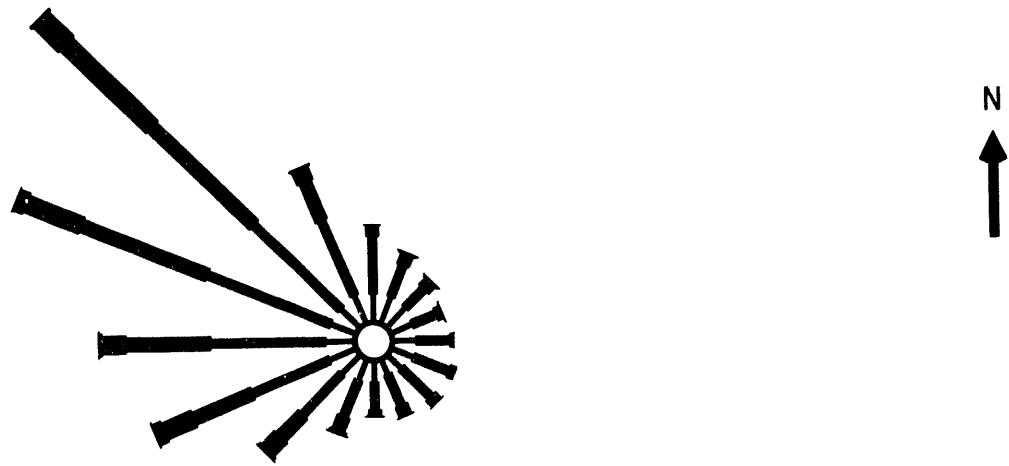
(a) Wind Rose

June Data
Period: 1982 - 1993



(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

June Data
Period: 1982 - 1993

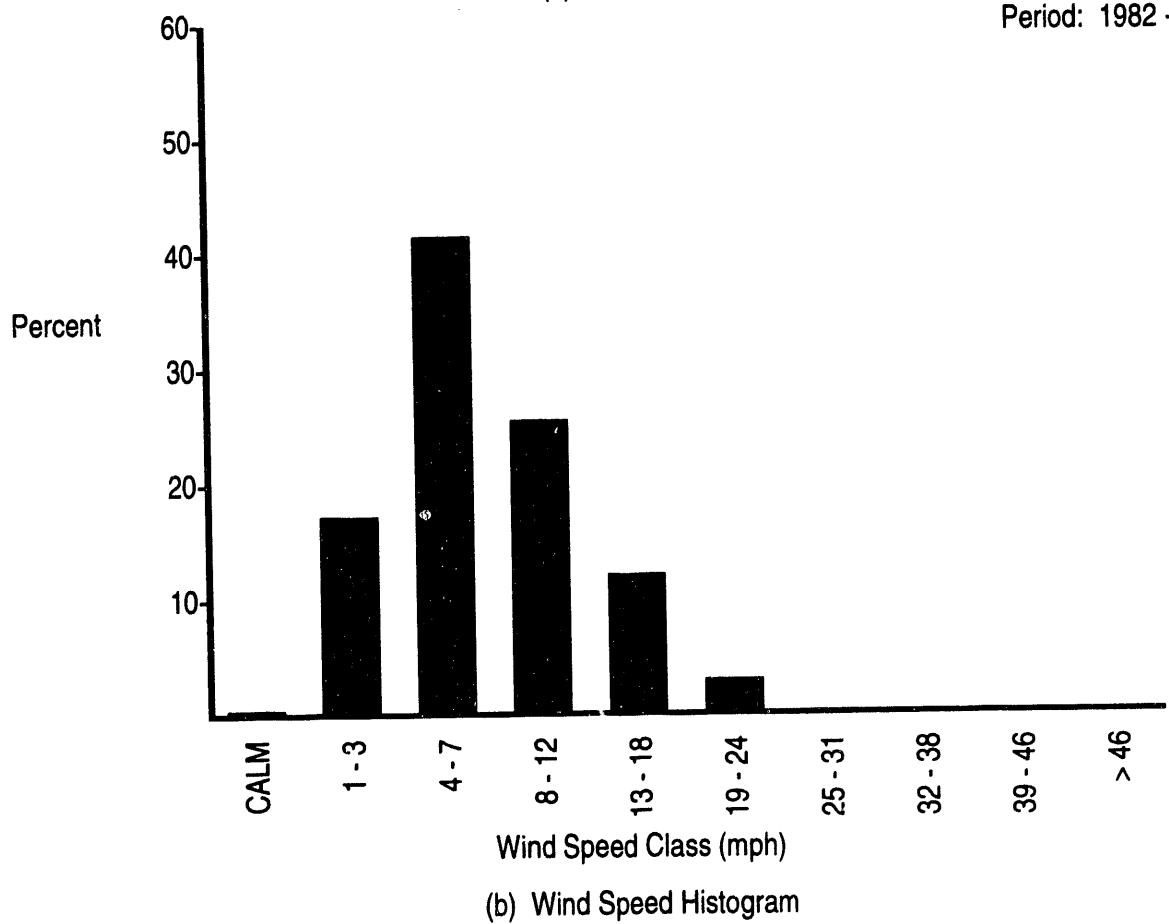
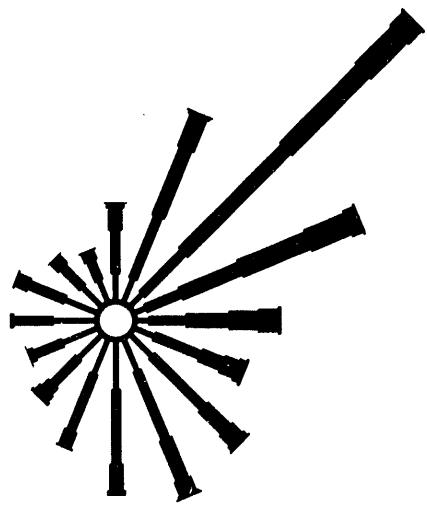


FIGURE B.1. (contd)

(a) Wind Rose
June Data
Period: 1988 - 1993

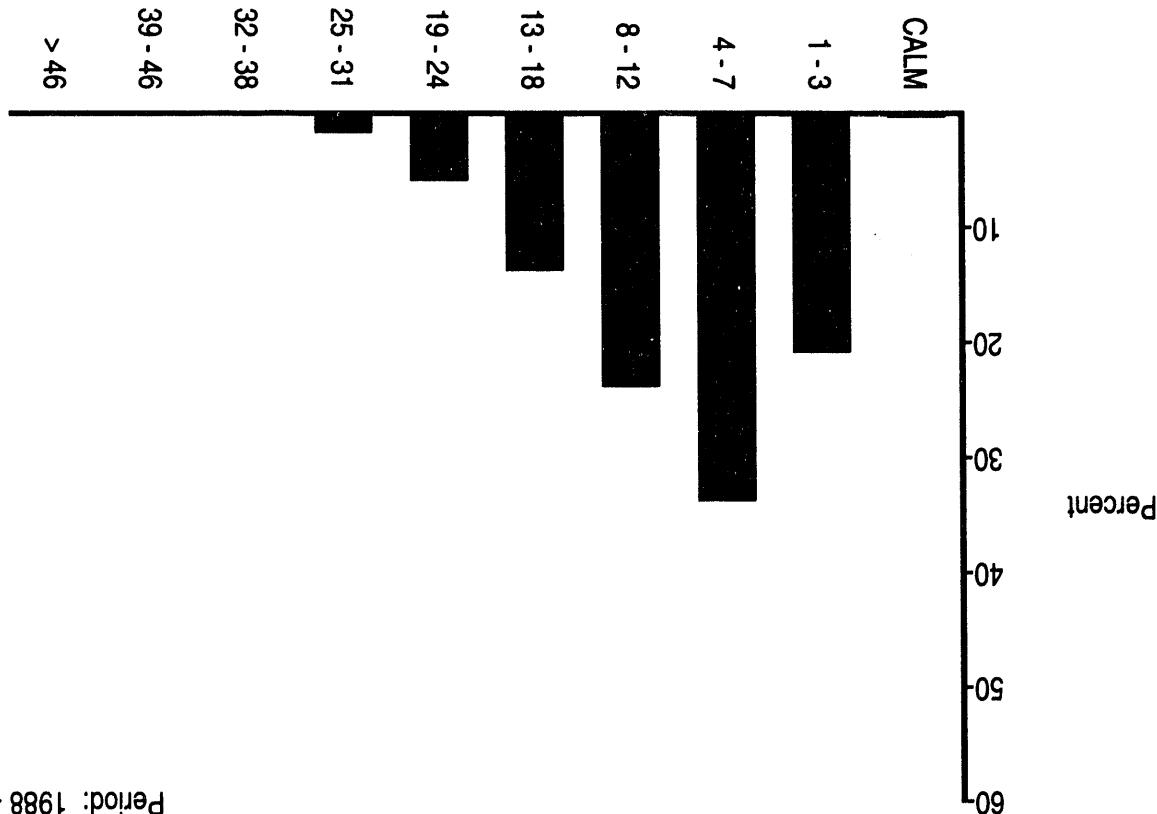


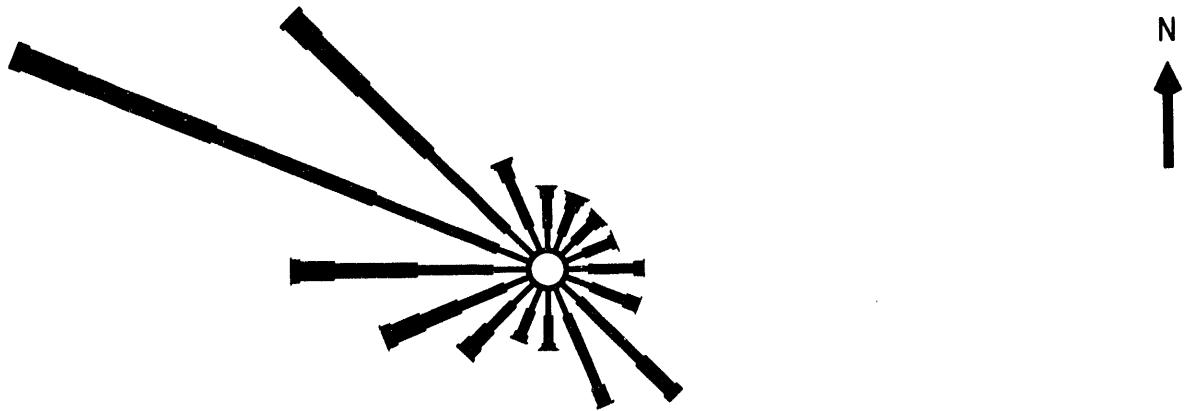
N

FIGURE B.1. (contd)

(b) Wind Speed Histogram

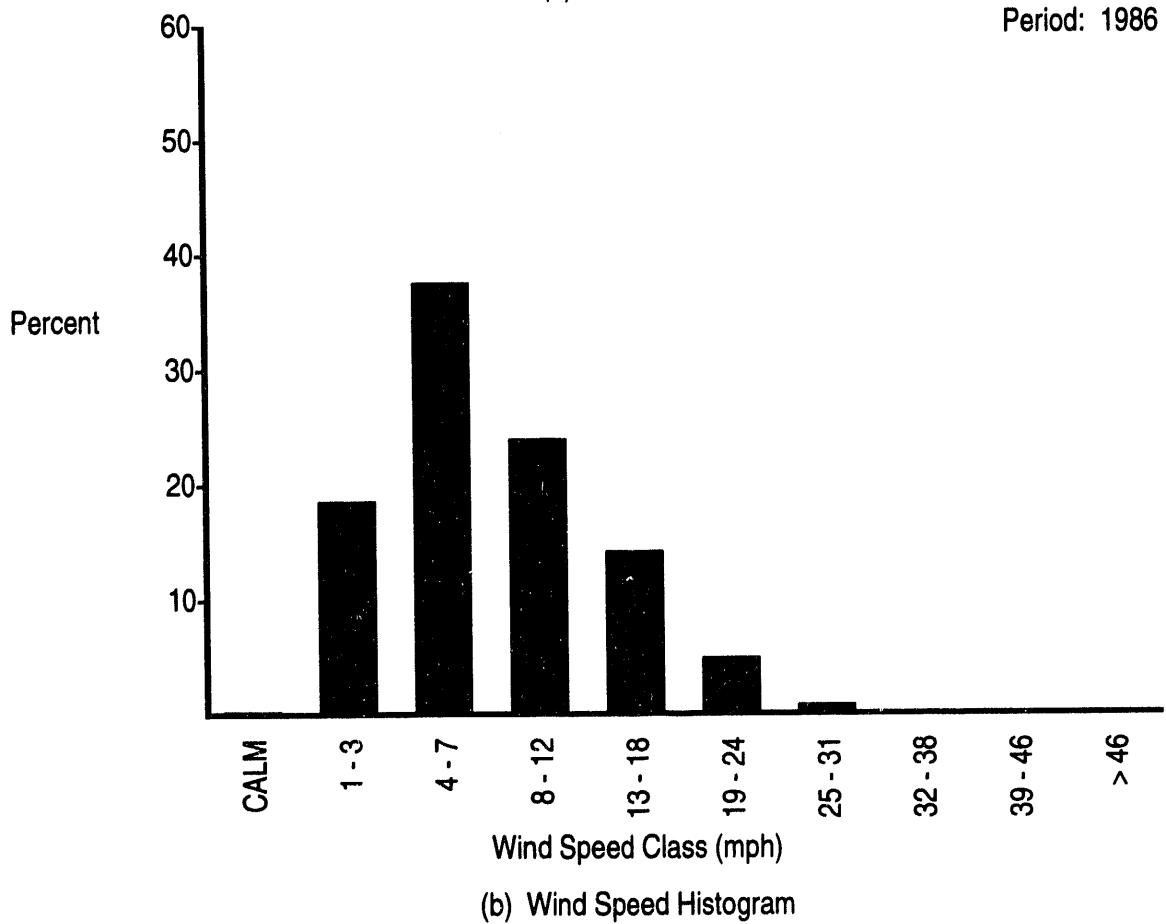
Wind Speed Class (mph)





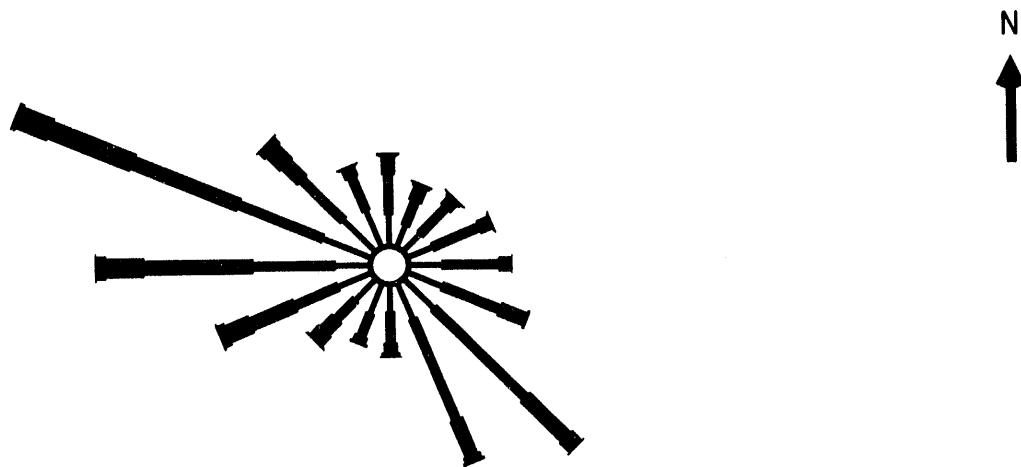
(a) Wind Rose

June Data
Period: 1986 - 1993



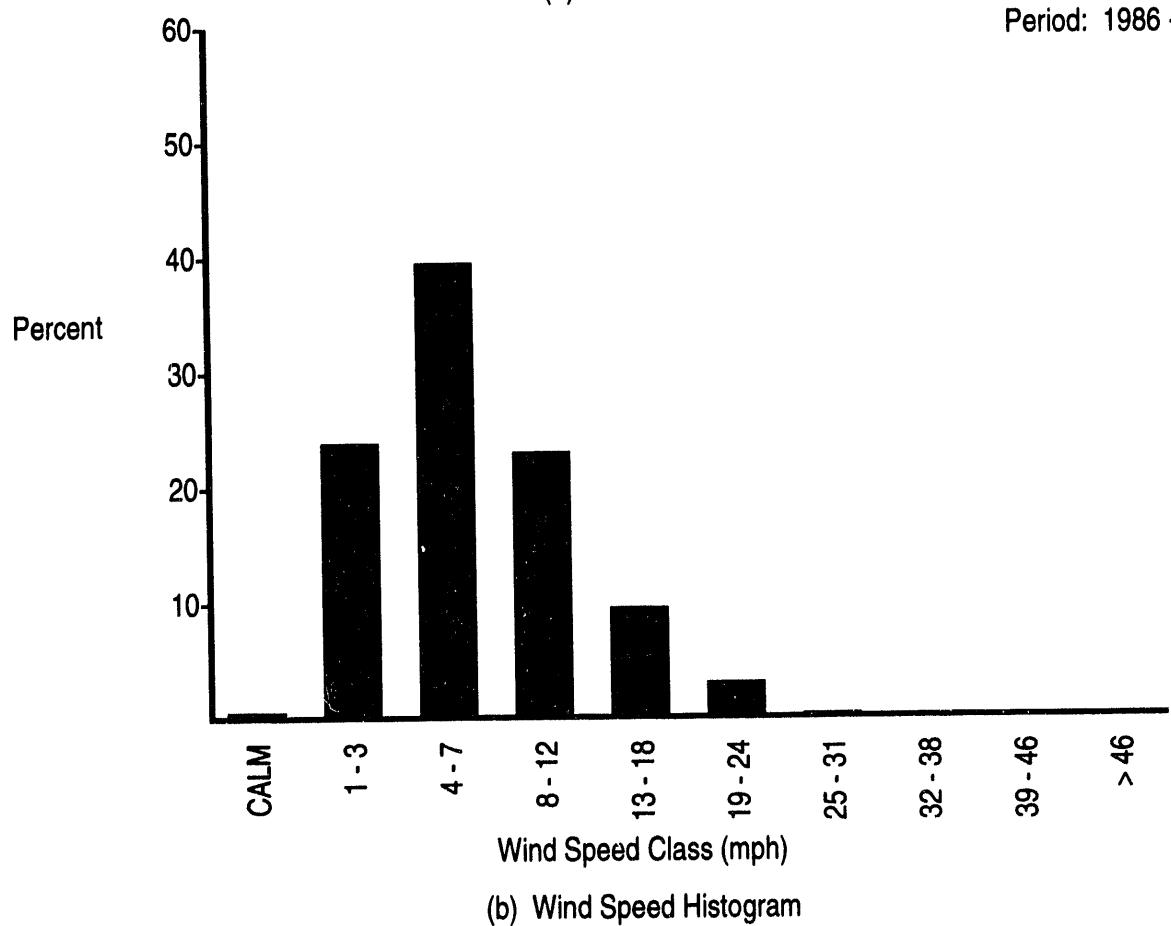
(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

June Data
Period: 1986 - 1993



(b) Wind Speed Histogram

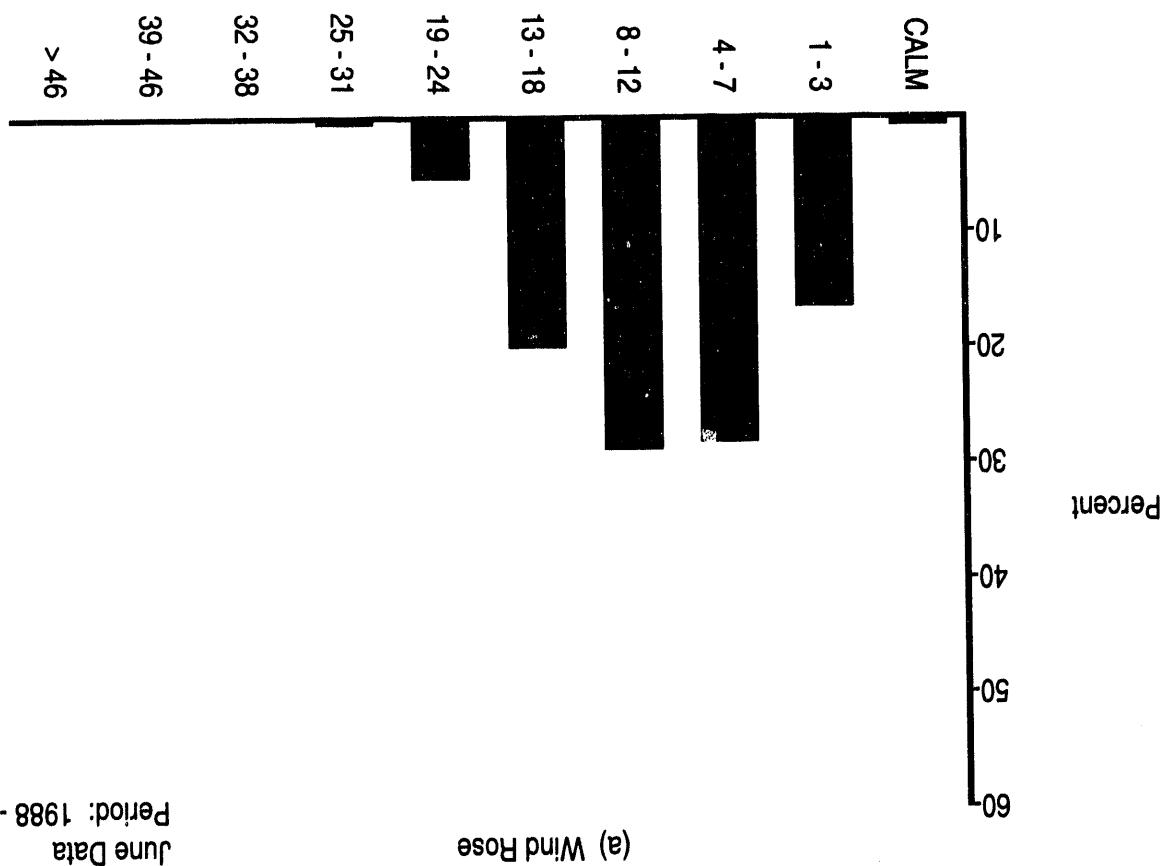
FIGURE B.1. (contd)

B.161

FIGURE B.1. (contd)

(b) Wind Speed Histogram

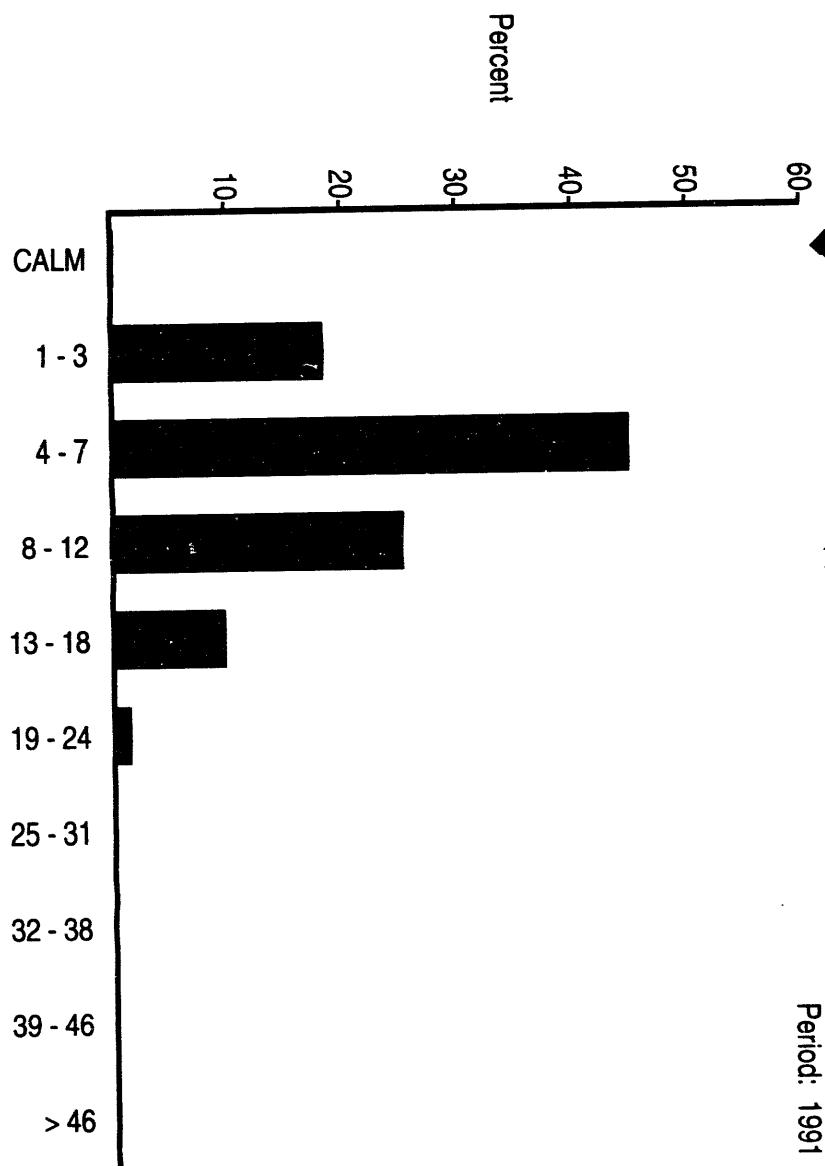
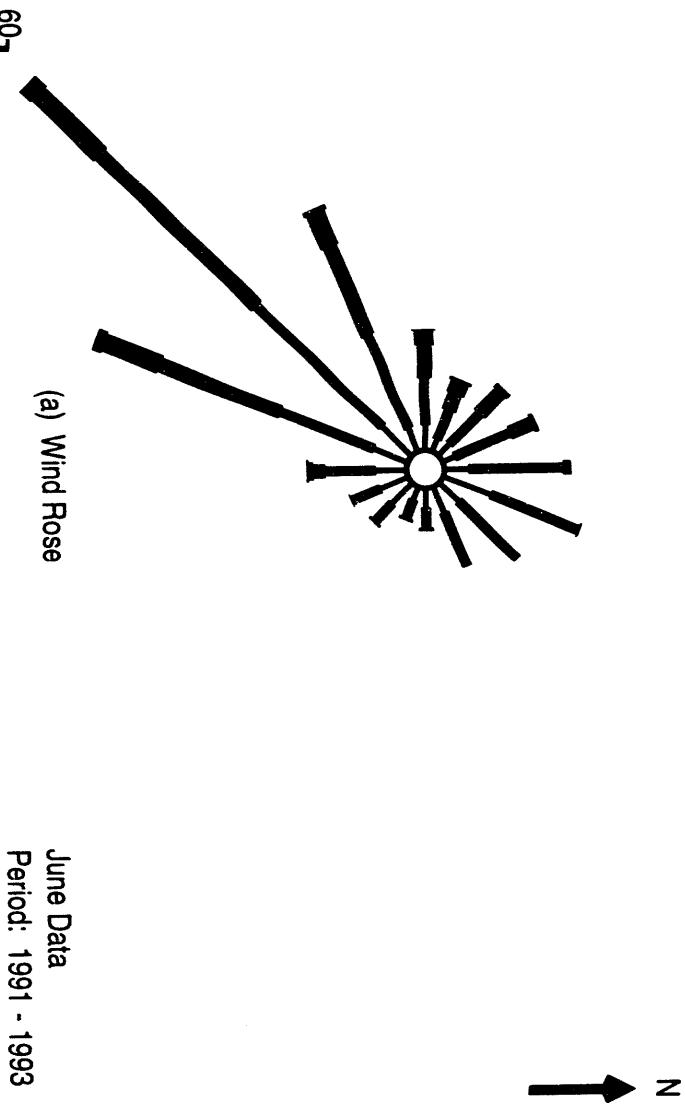
Wind Speed Class (mph)



(a) Wind Rose

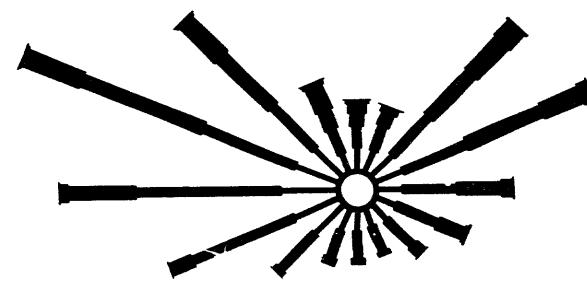
June Data
Period: 1988 - 1993



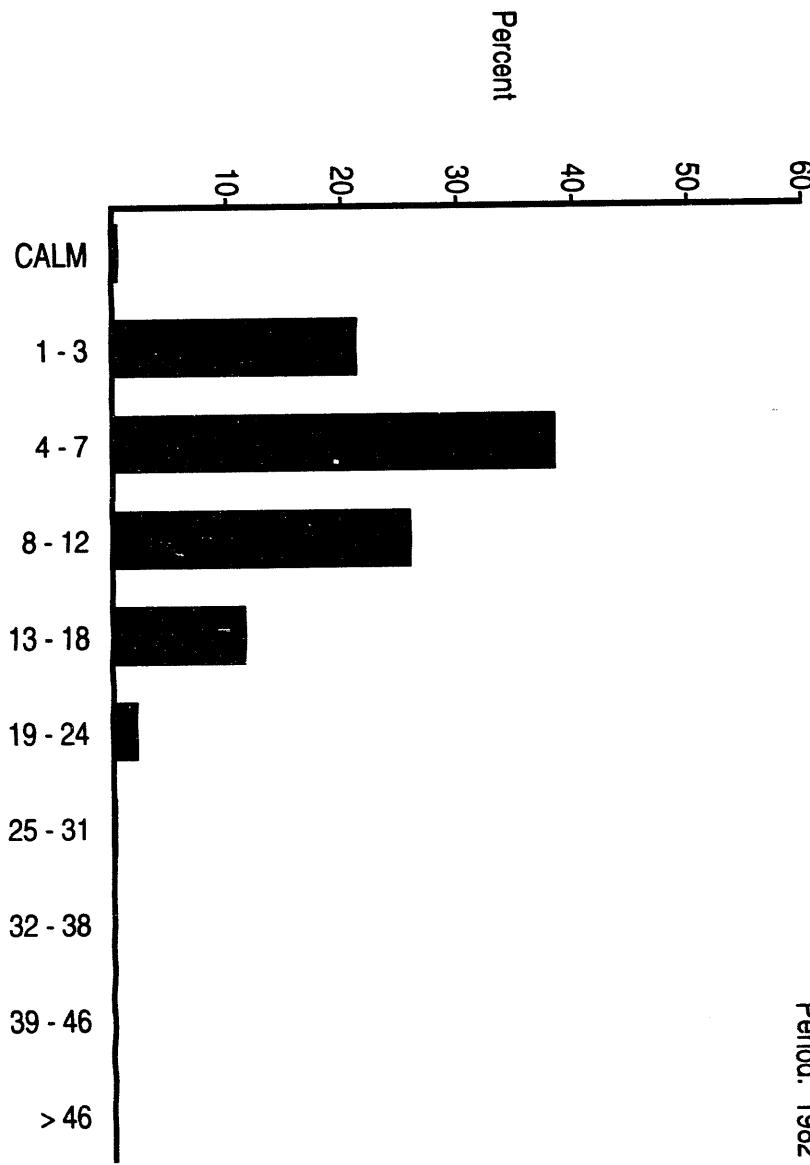


(b) Wind Speed Histogram
FIGURE B.1. (contd)

July Data
Period: 1982 - 1993

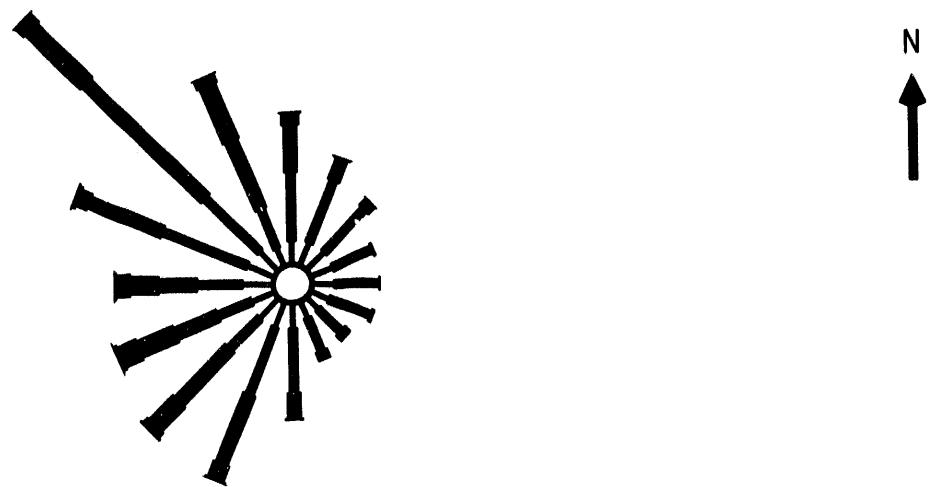


(a) Wind Rose



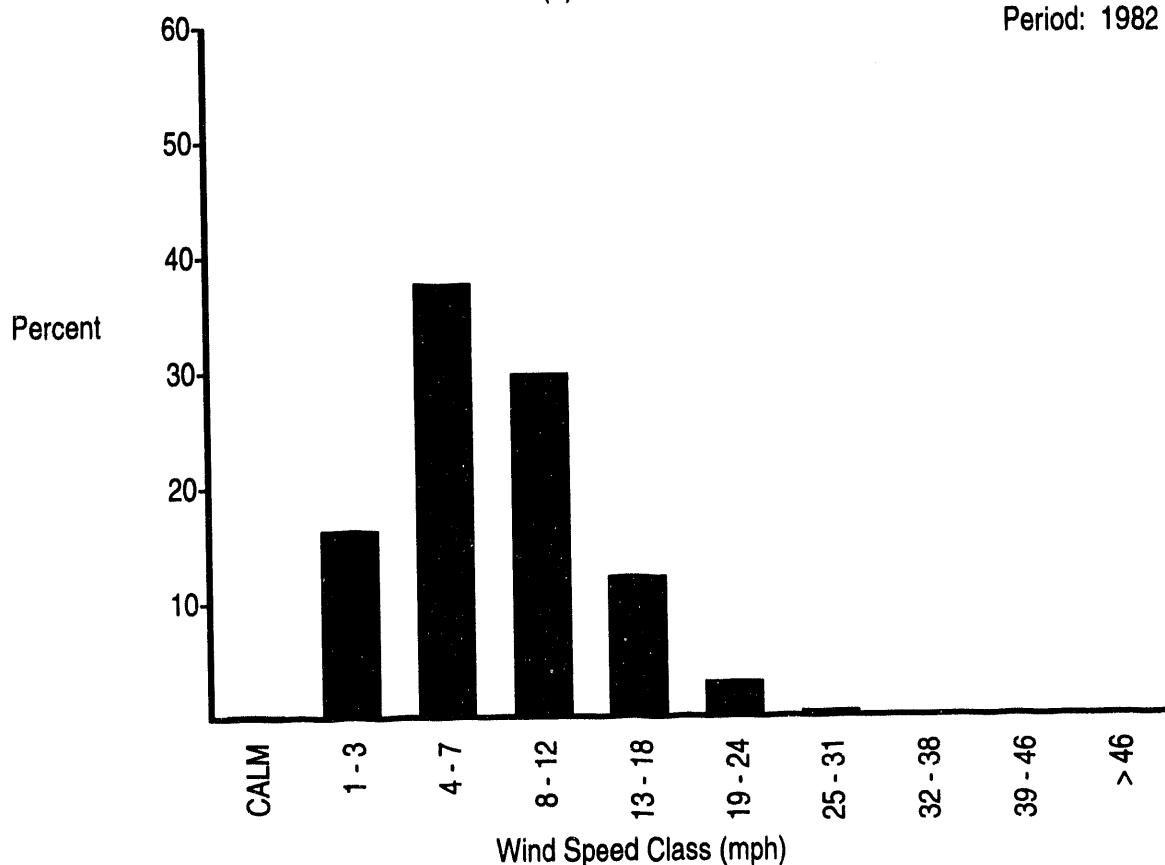
(b) Wind Speed Histogram

FIGURE B.1. (contd)



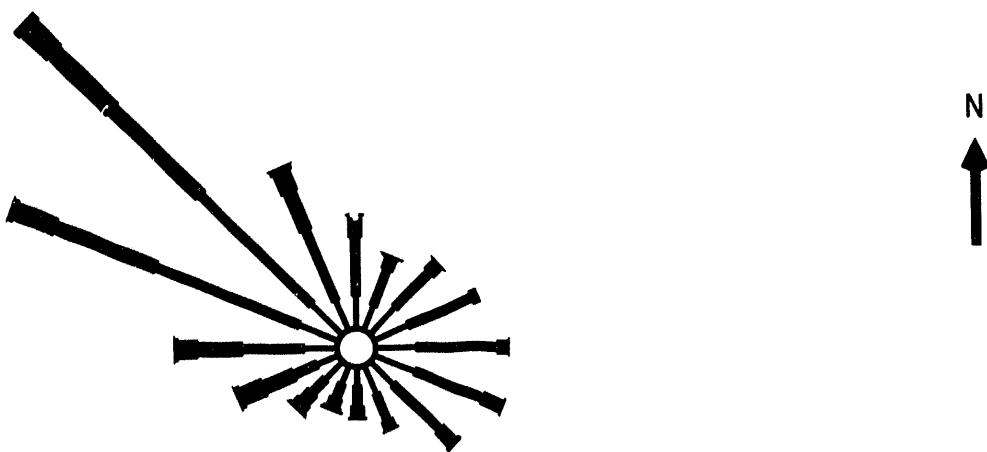
(a) Wind Rose

July Data
Period: 1982 - 1993



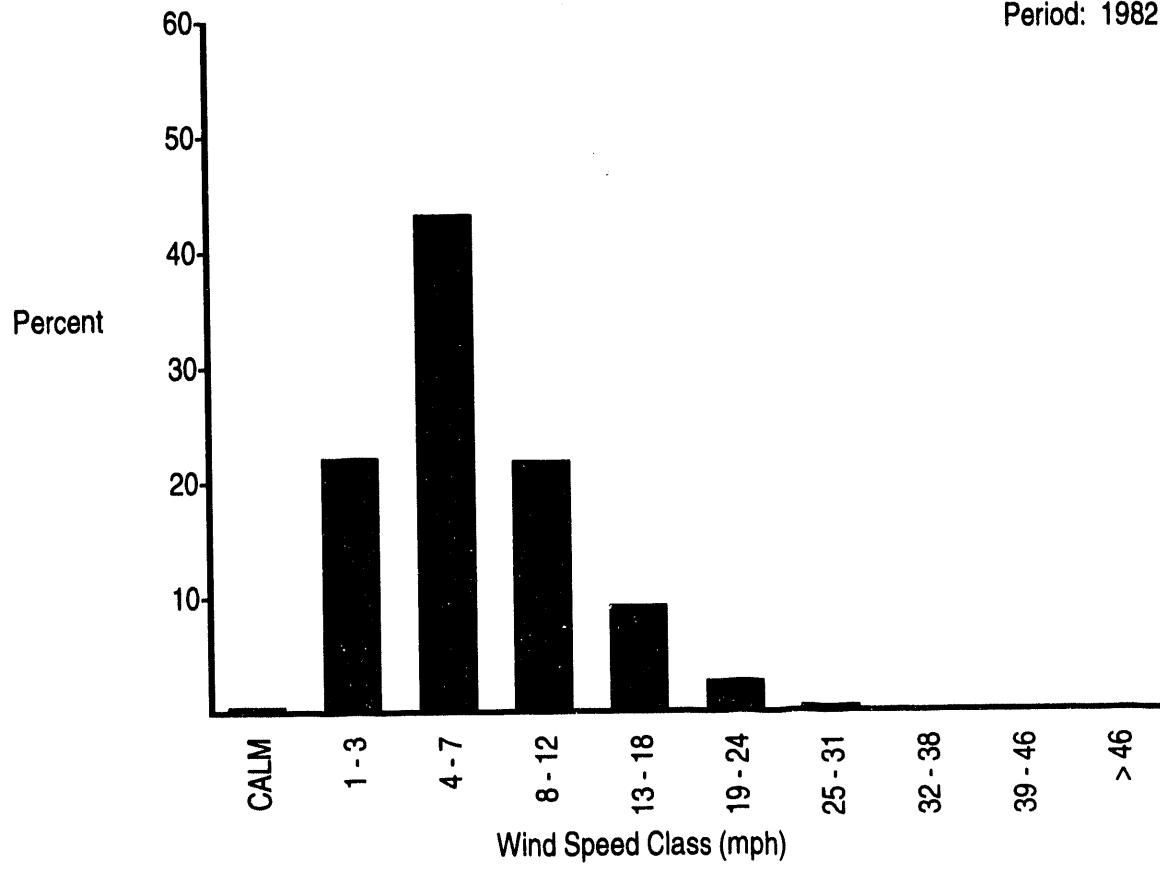
(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

July Data
Period: 1982 - 1993



(b) Wind Speed Histogram

FIGURE B.1. (contd)

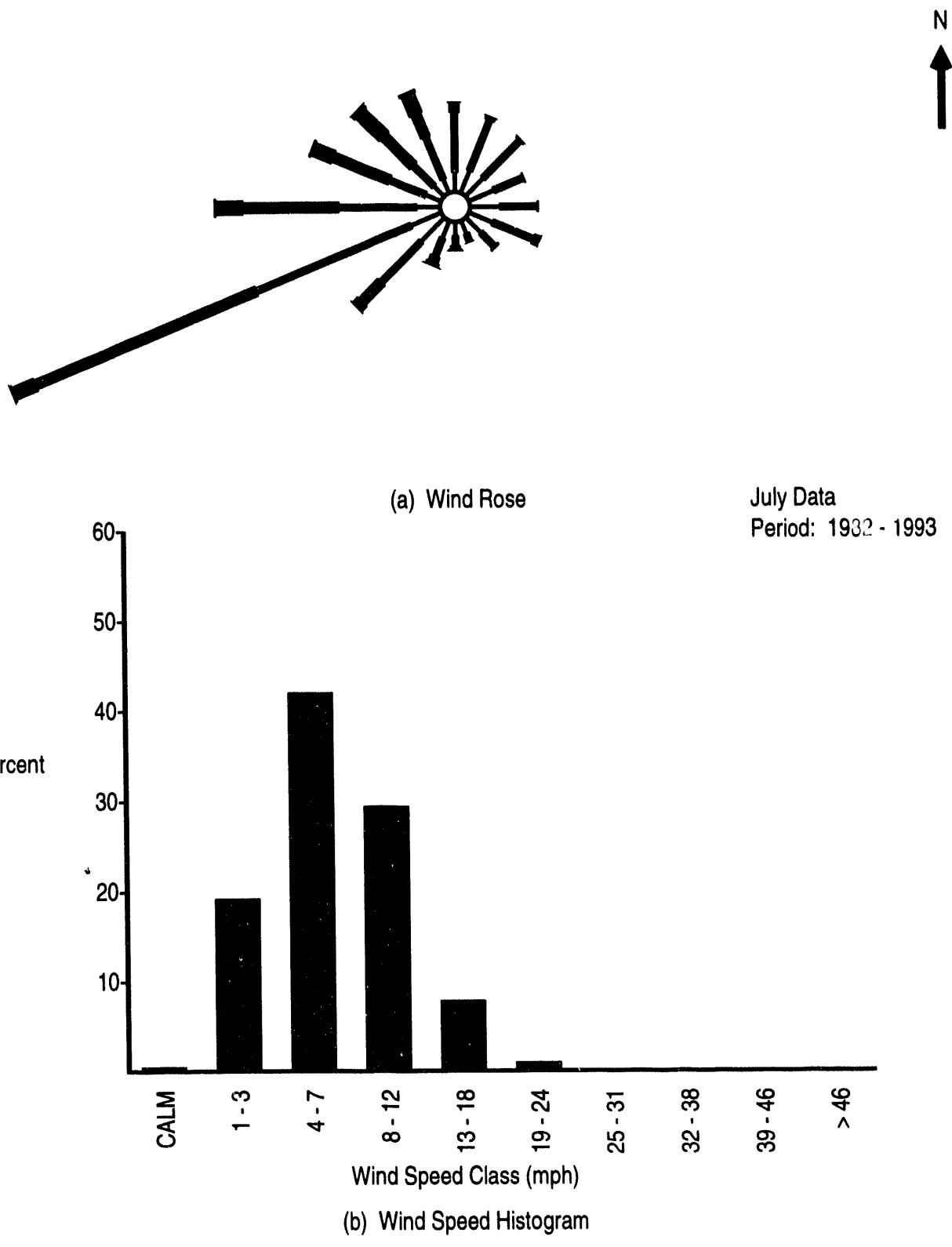
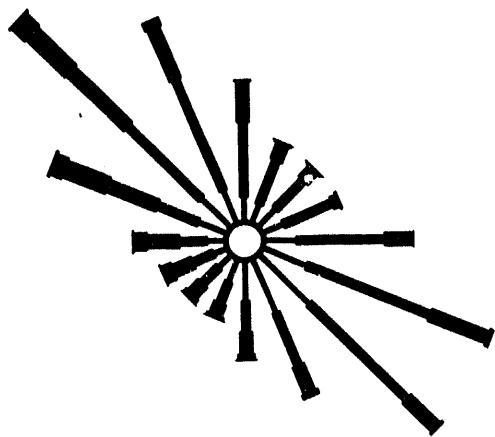


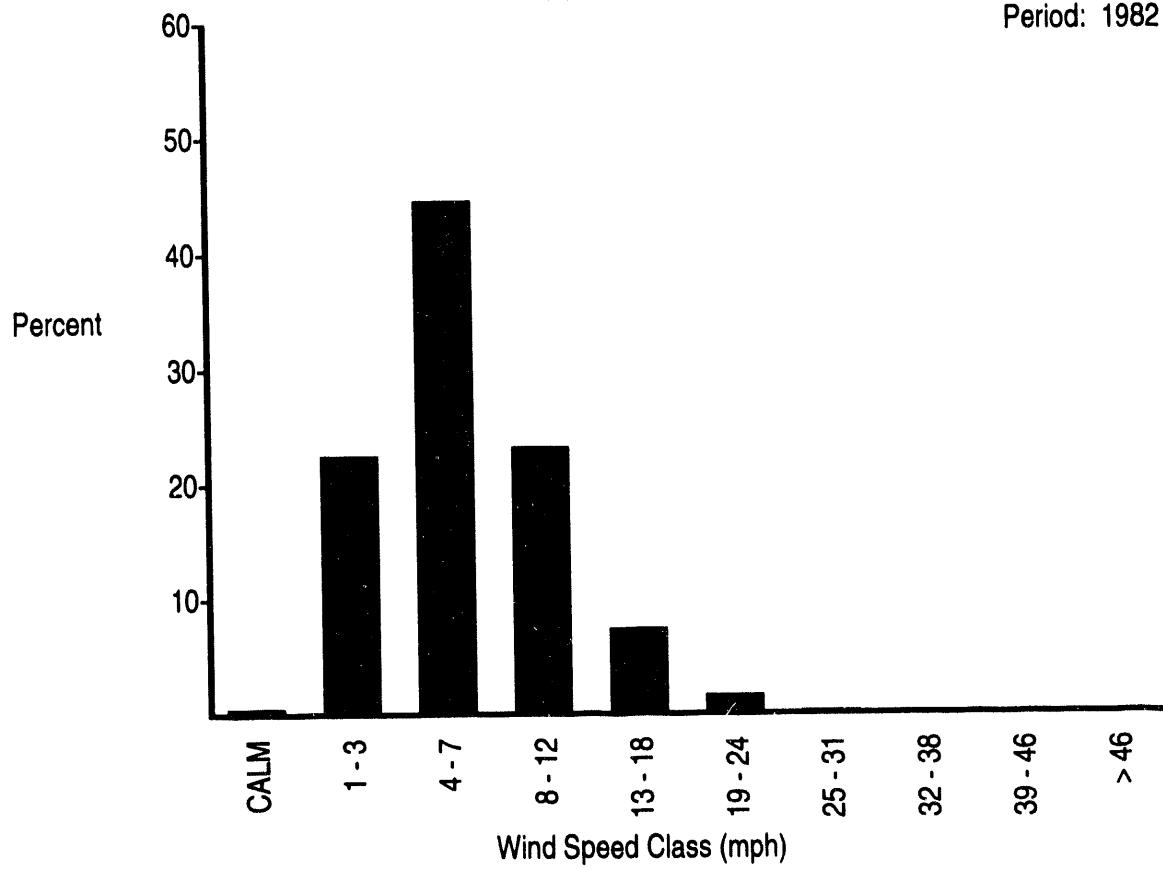
FIGURE B.1. (contd)

N
↑



(a) Wind Rose

July Data
Period: 1982 - 1993



(b) Wind Speed Histogram

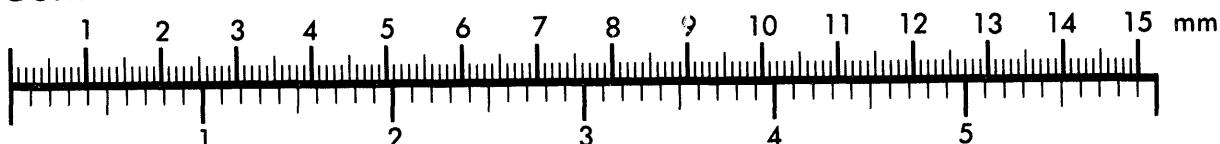
FIGURE B.1. (contd)



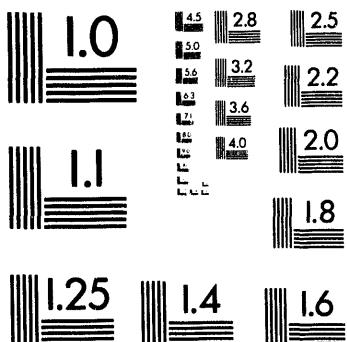
Association for Information and Image Management

1100 Wayne Avenue, Suite 1100
Silver Spring, Maryland 20910
301/587-8202

Centimeter

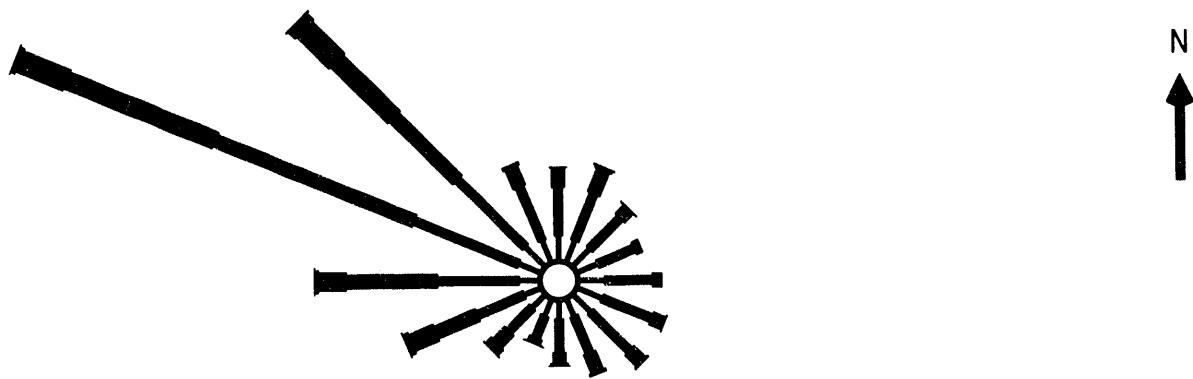


Inches



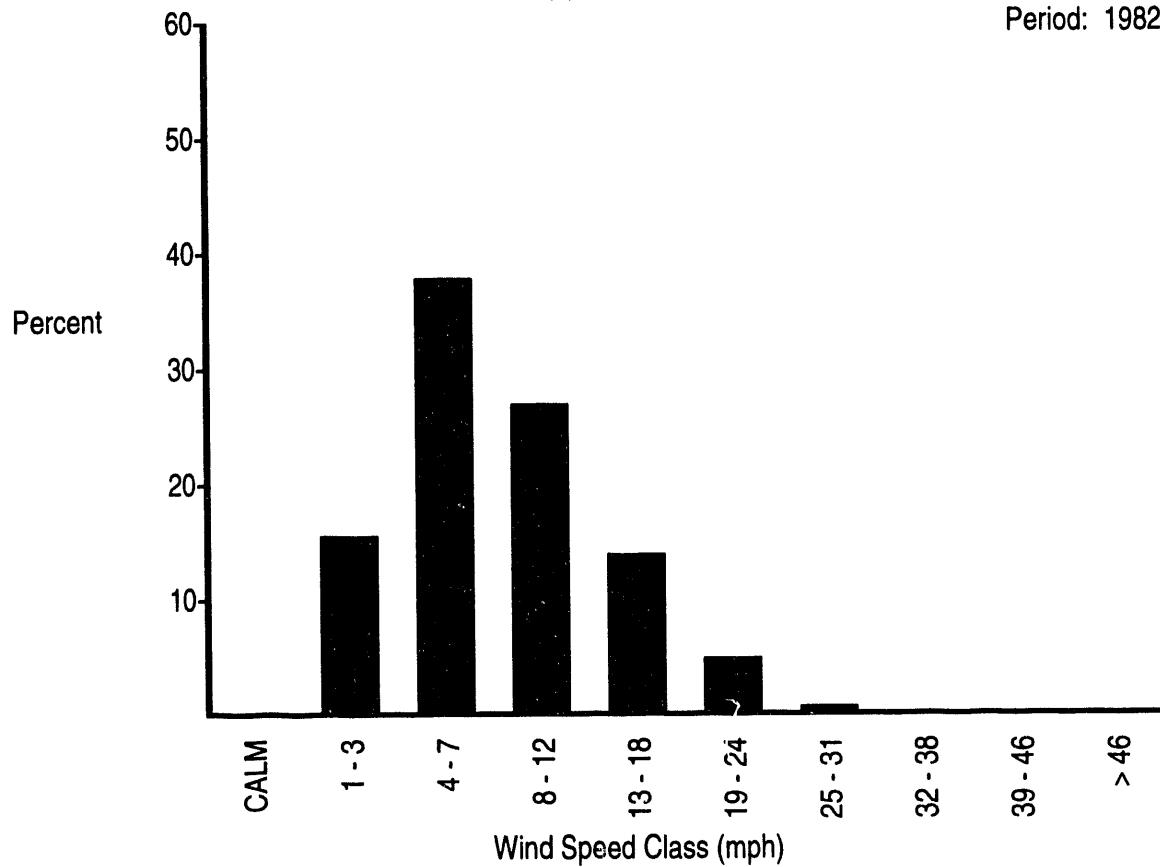
MANUFACTURED TO AIIM STANDARDS
BY APPLIED IMAGE, INC.

4 of 6



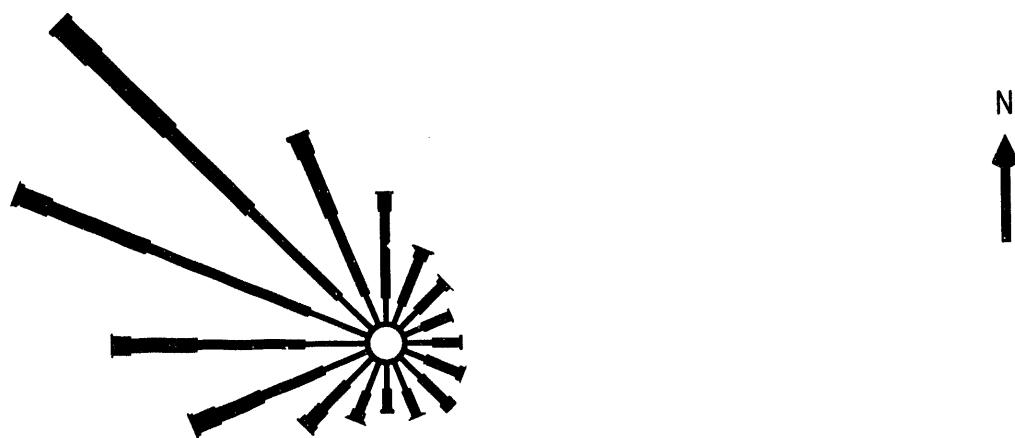
(a) Wind Rose

July Data
Period: 1982 - 1993



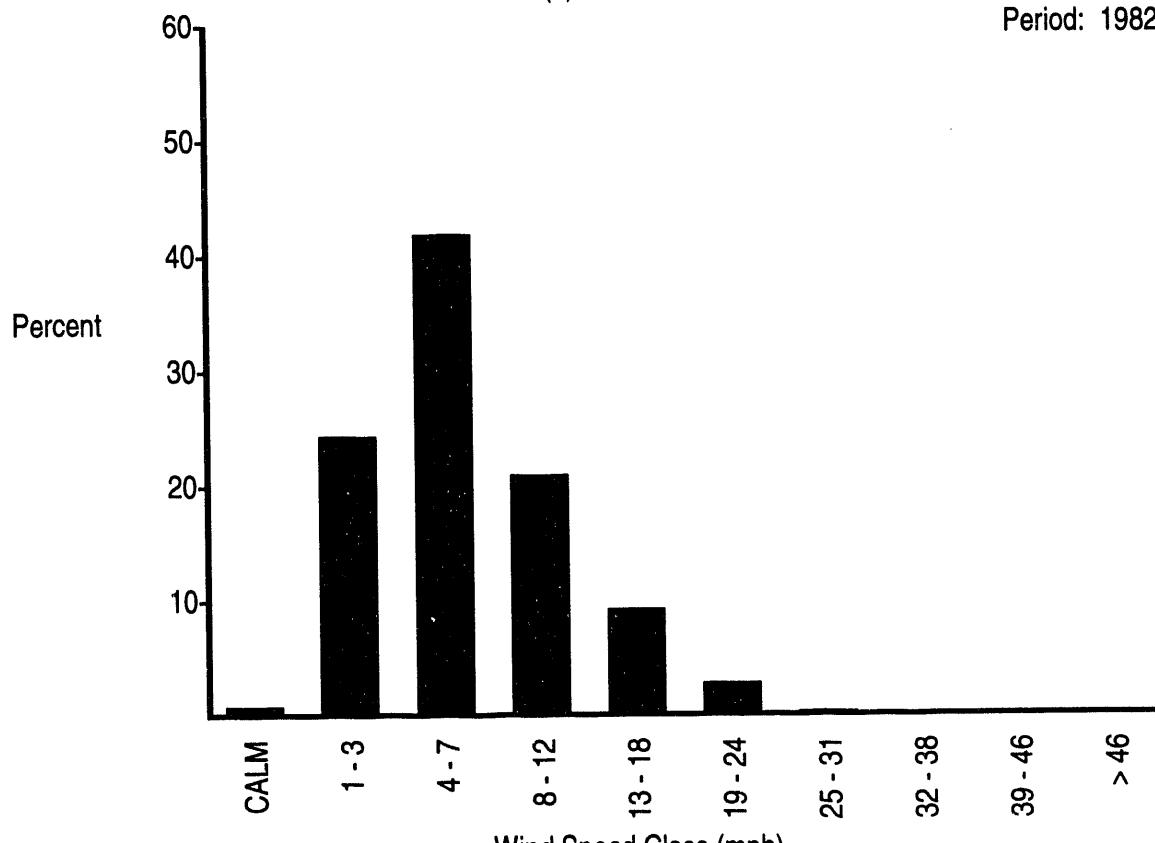
(b) Wind Speed Histogram

FIGURE B.1. (contd)



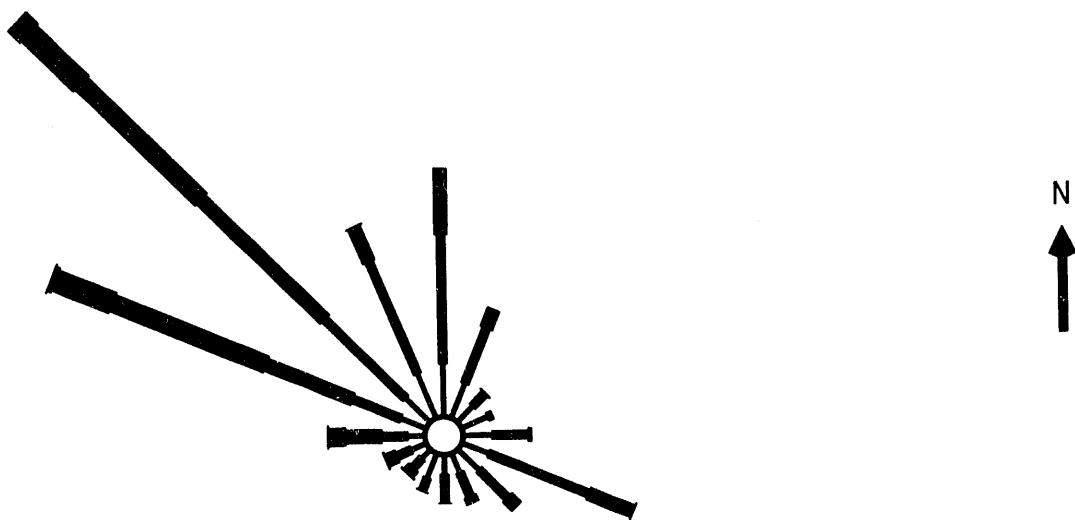
(a) Wind Rose

July Data
Period: 1982 - 1993

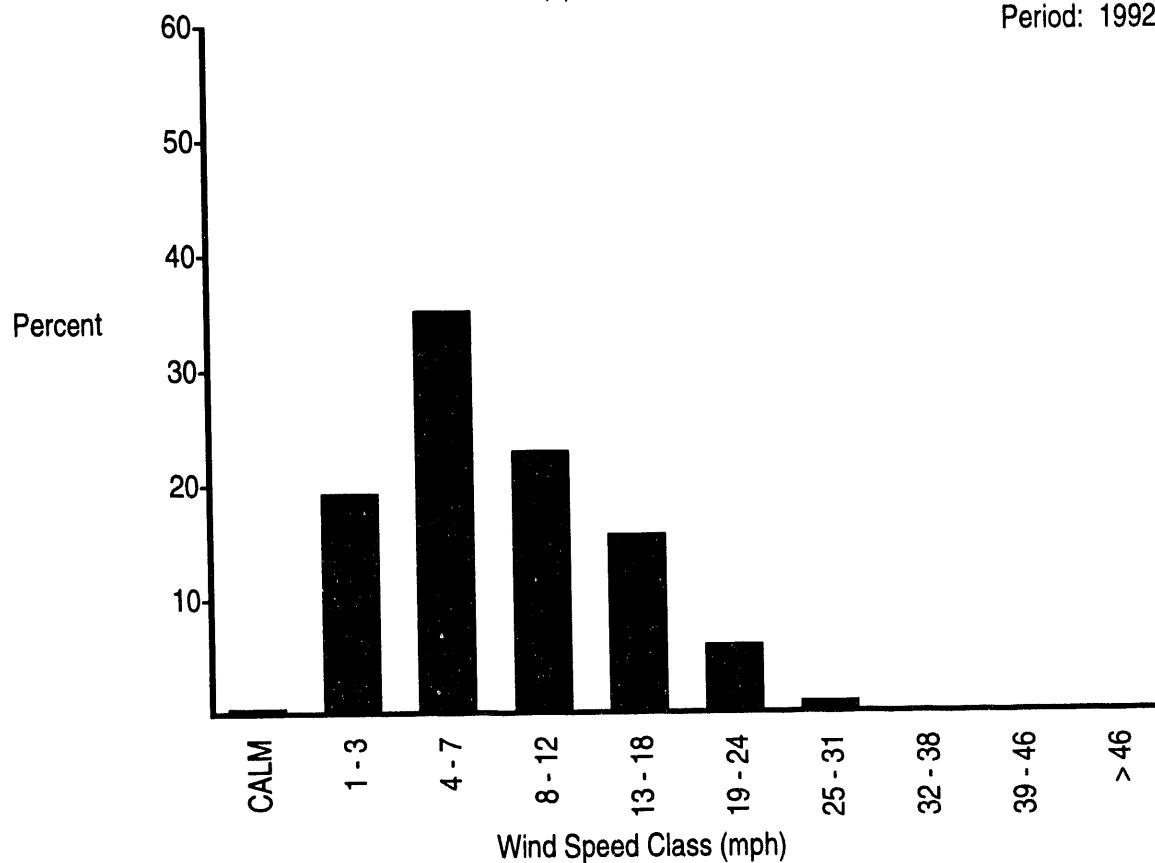


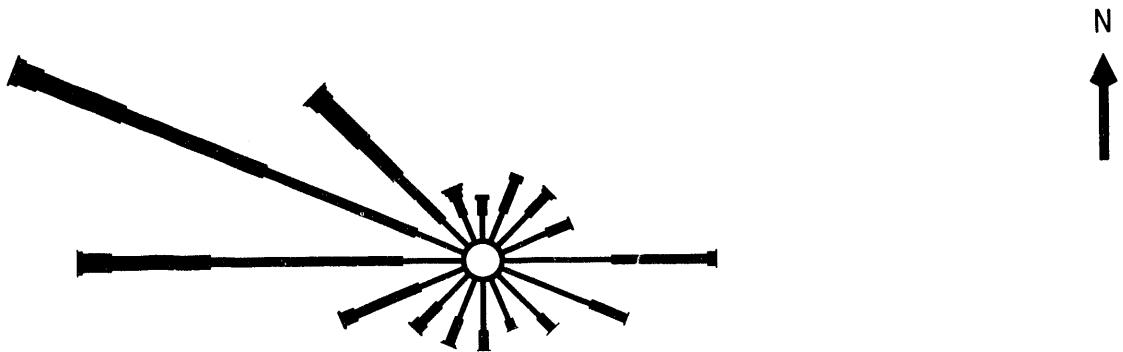
(b) Wind Speed Histogram

FIGURE B.1. (contd)



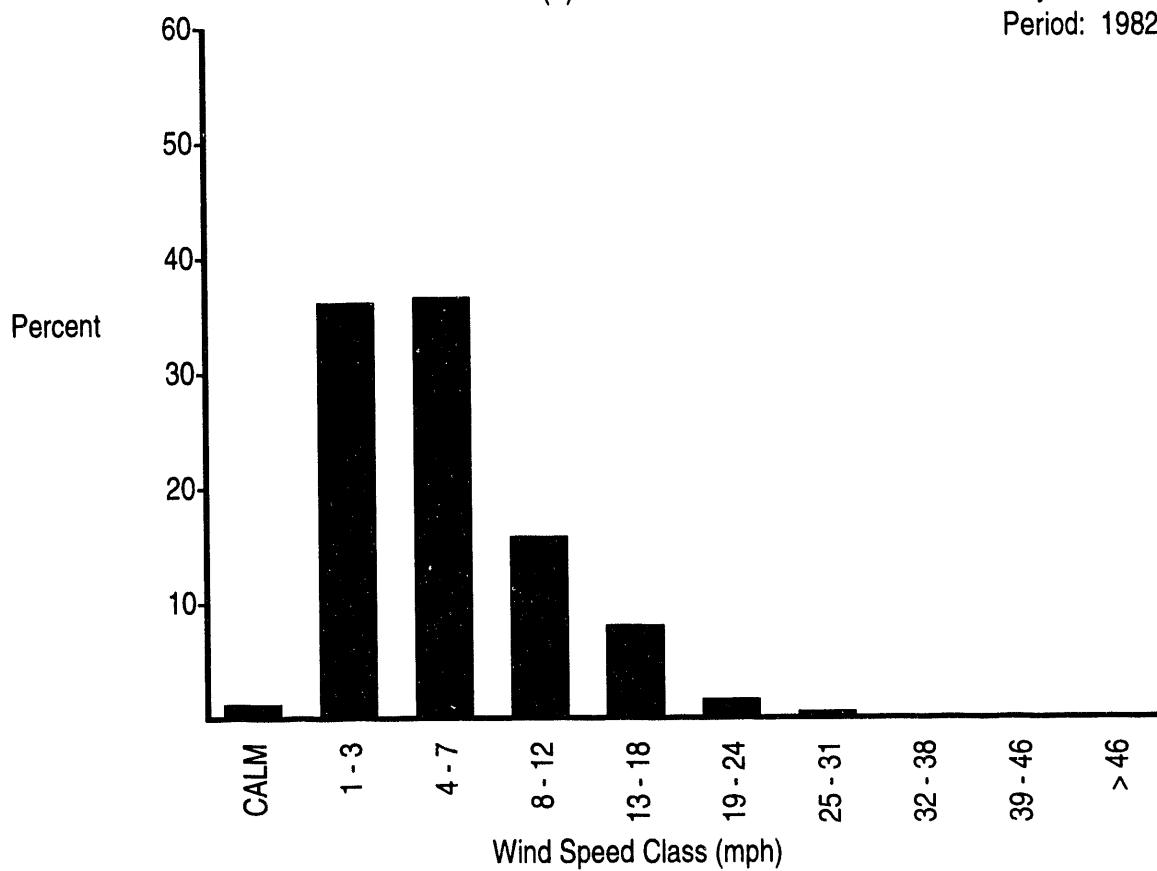
(a) Wind Rose

July Data
Period: 1992 - 1993FIGURE B.1. (contd)



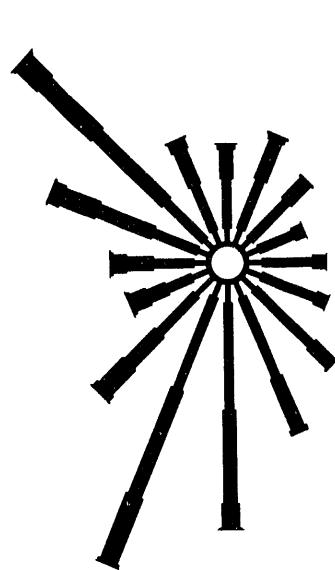
(a) Wind Rose

July Data
Period: 1982 - 1991



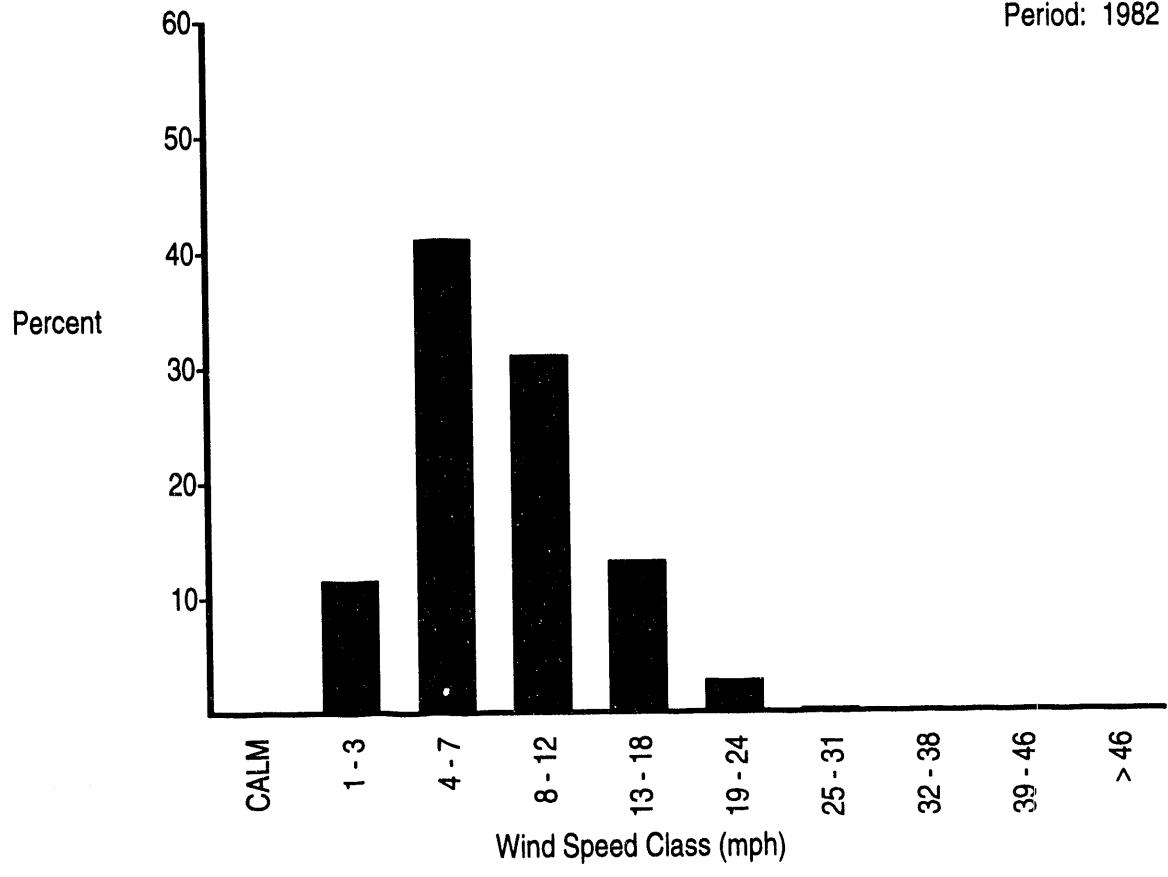
(b) Wind Speed Histogram

FIGURE B.1. (contd)



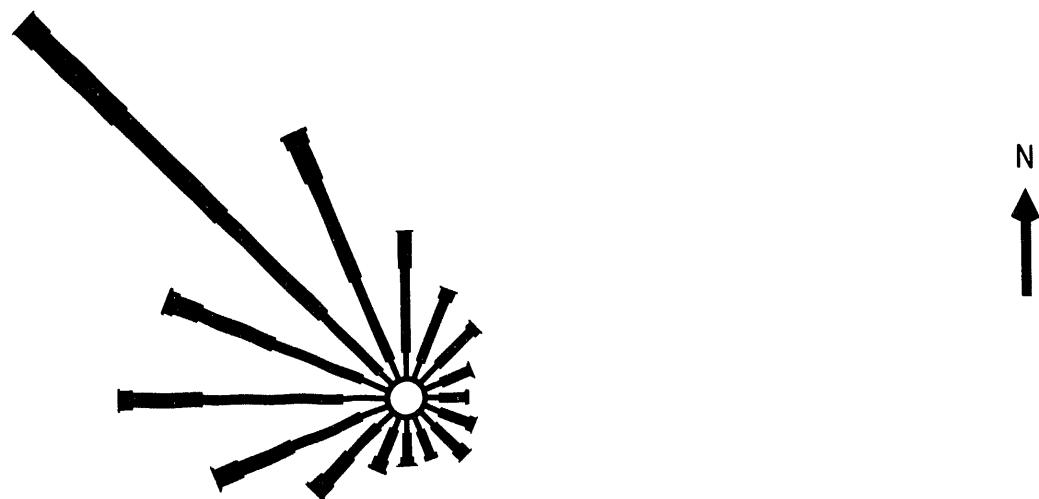
(a) Wind Rose

July Data
Period: 1982 - 1993



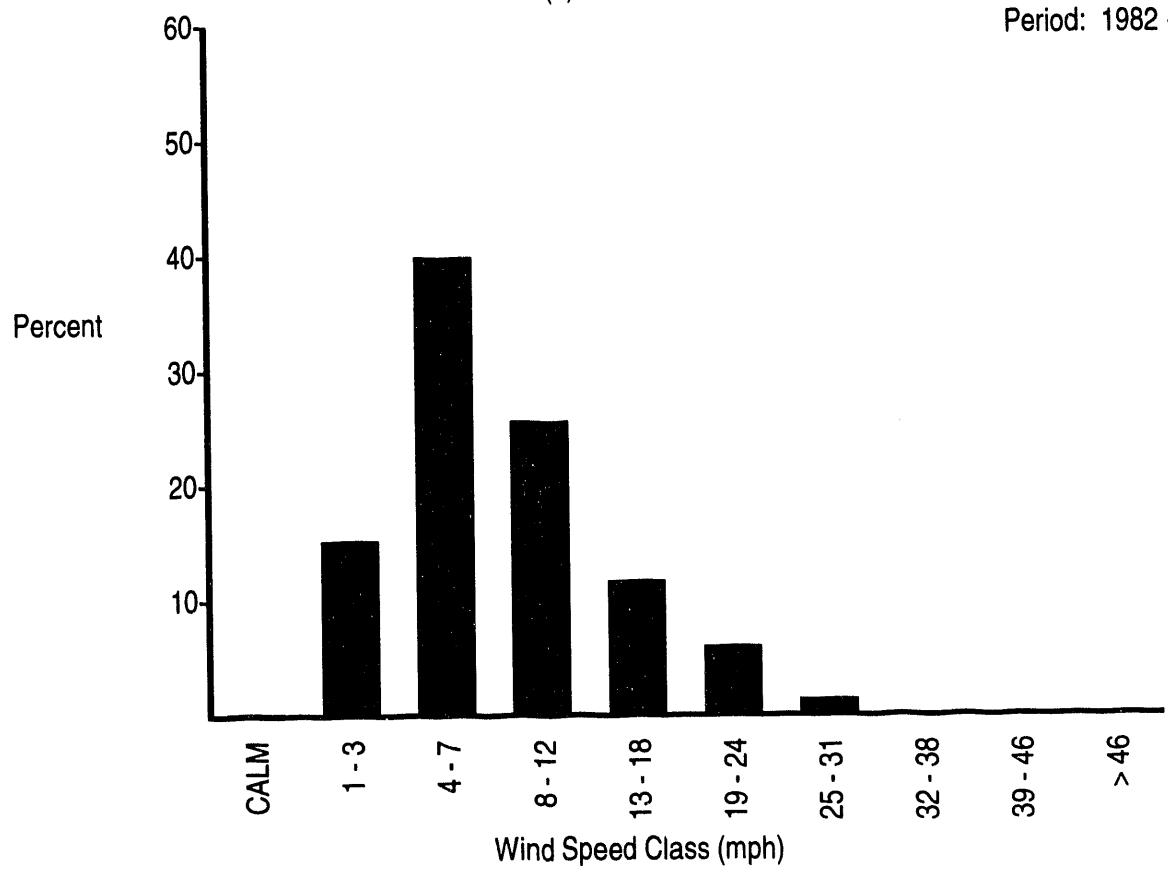
(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

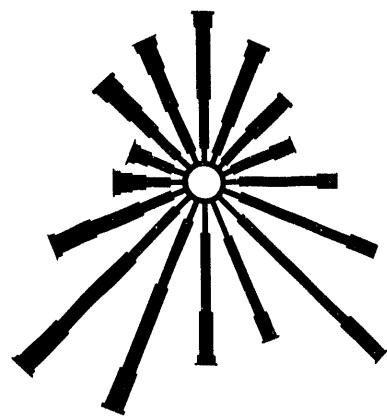
July Data
Period: 1982 - 1993



(b) Wind Speed Histogram

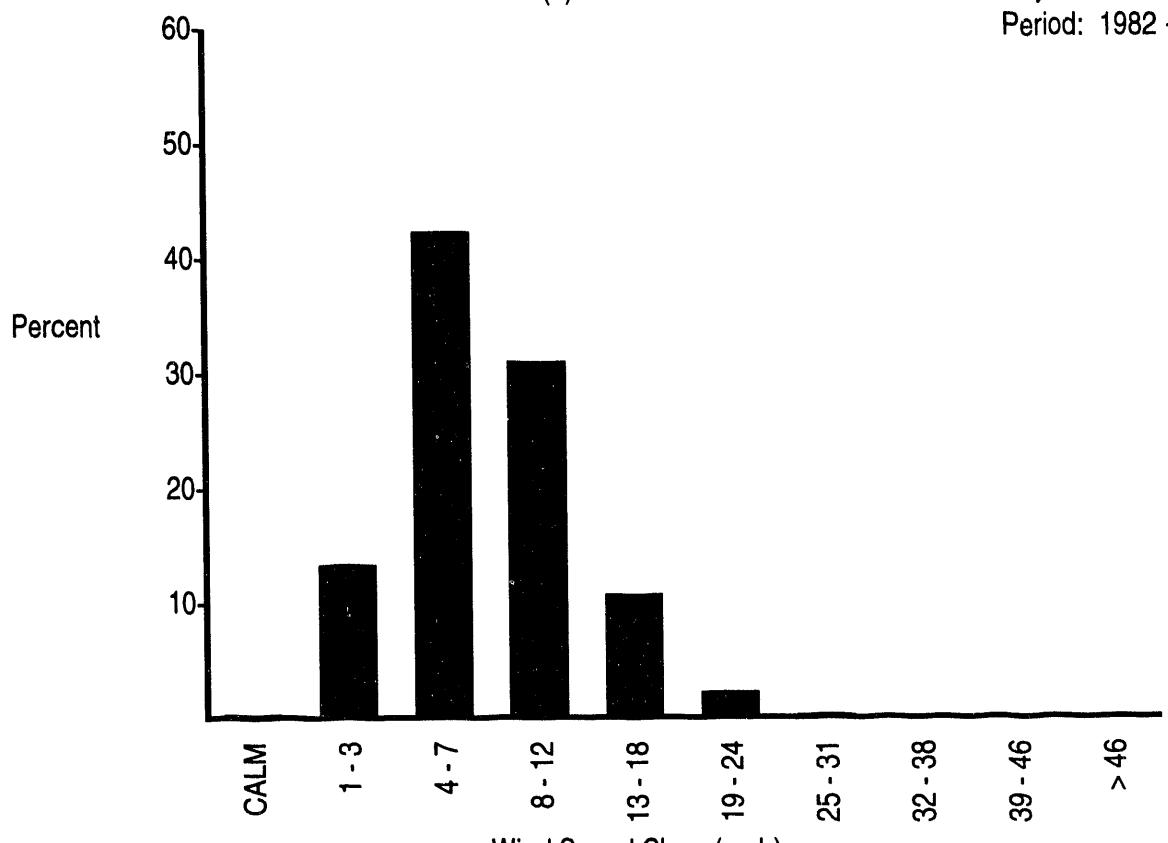
FIGURE B.1. (contd)

N
↑



(a) Wind Rose

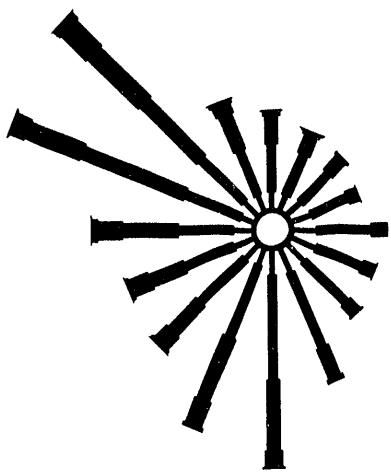
July Data
Period: 1982 - 1993



(b) Wind Speed Histogram

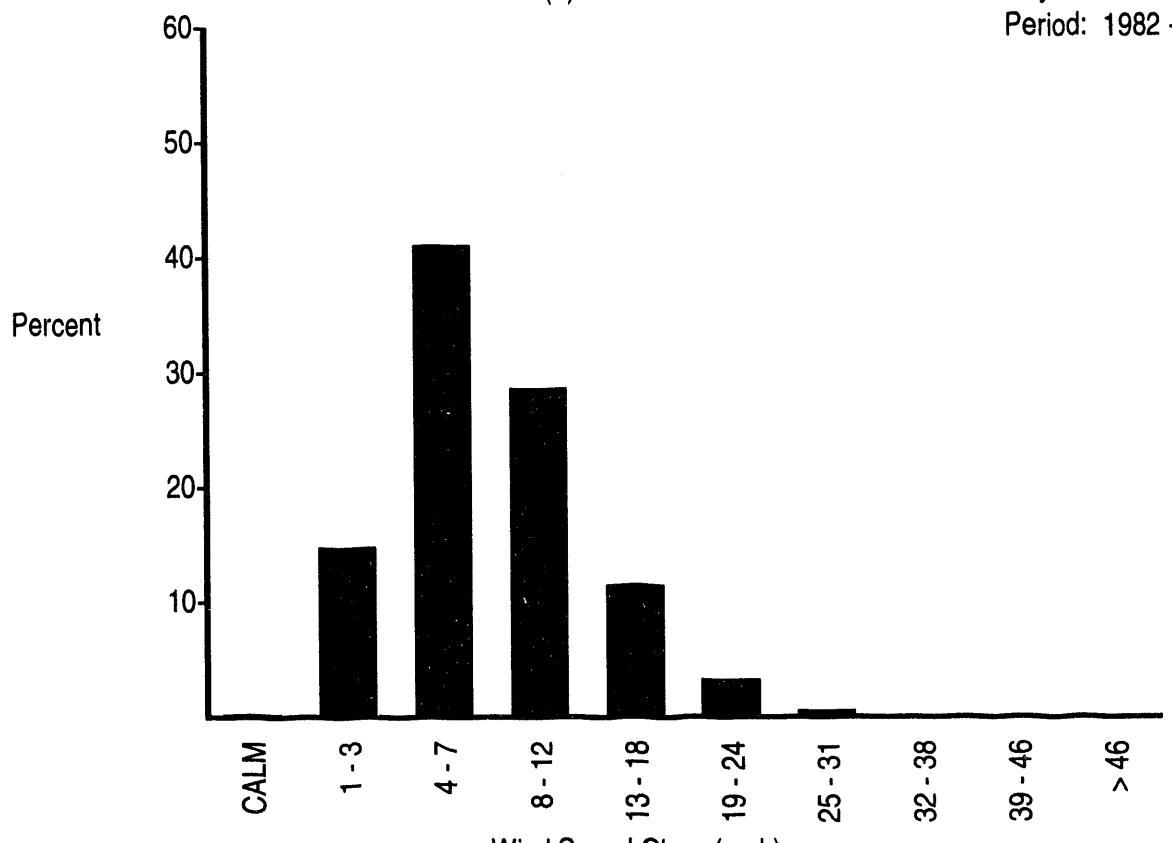
FIGURE B.1. (contd)

N
↑



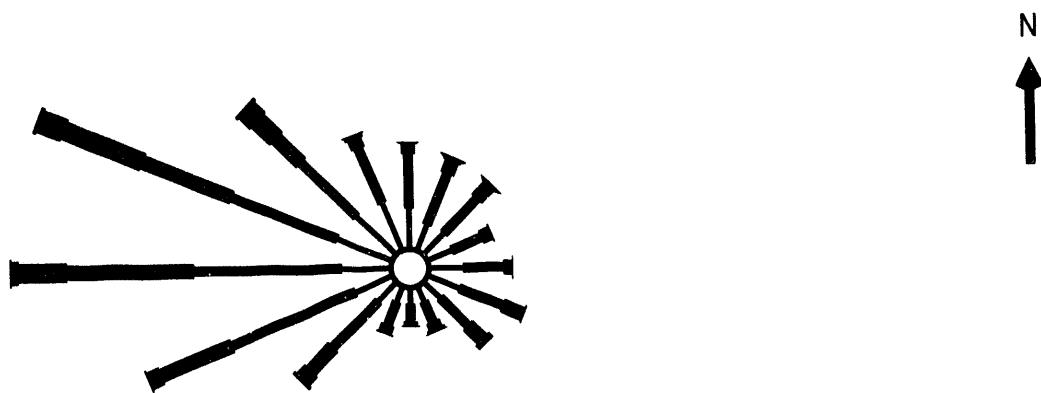
(a) Wind Rose

July Data
Period: 1982 - 1993



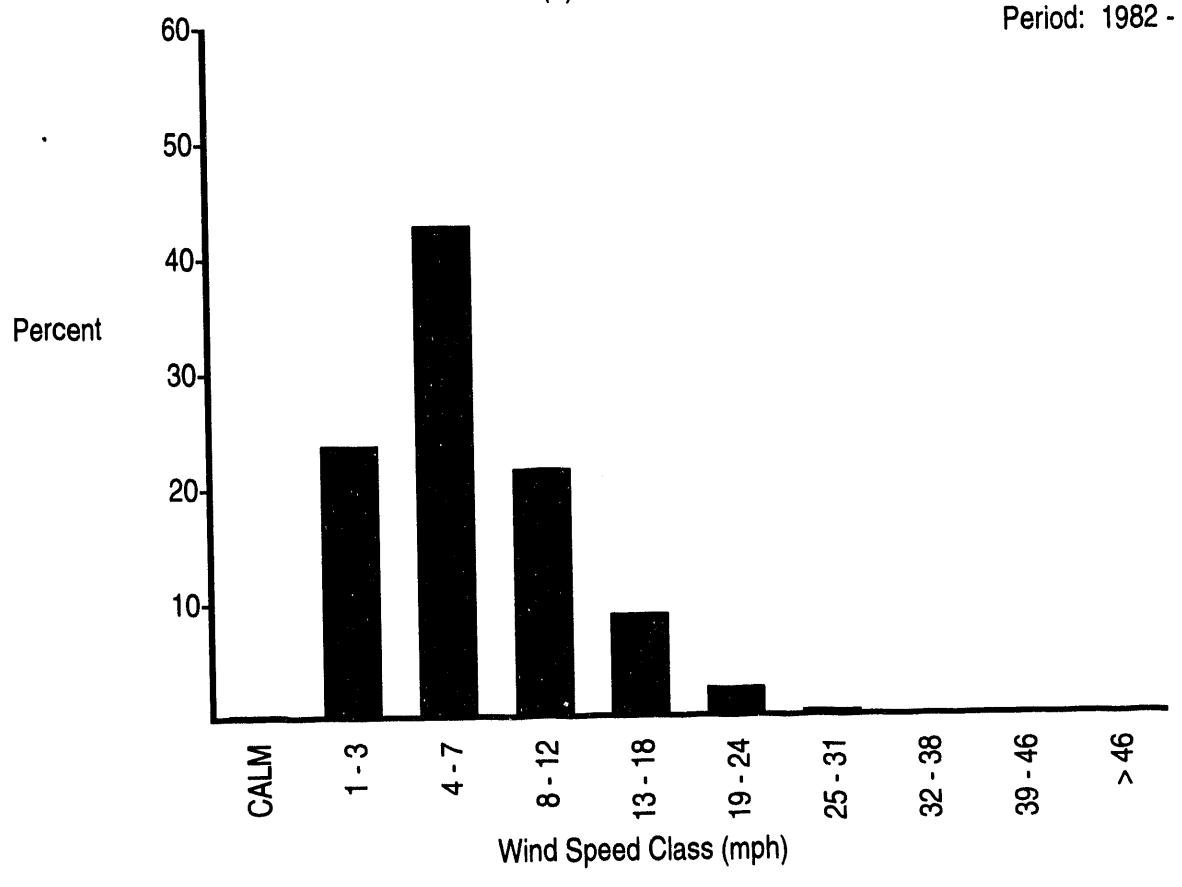
(b) Wind Speed Histogram

FIGURE B.1. (contd)



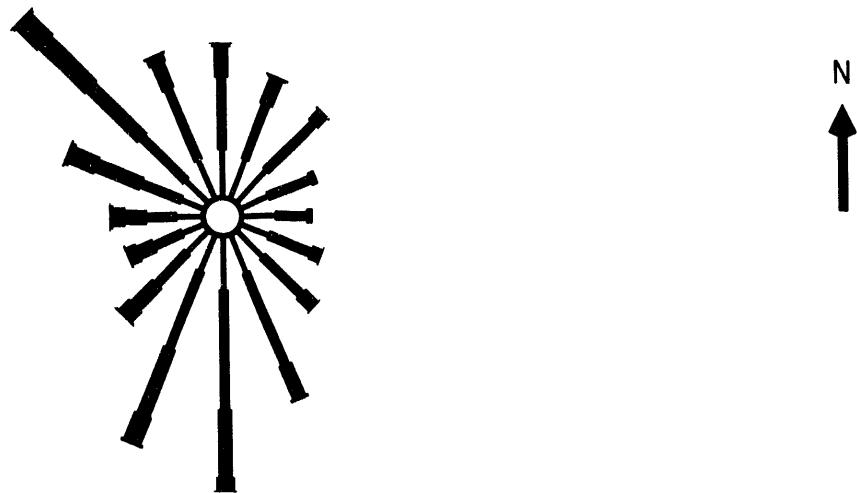
(a) Wind Rose

July Data
Period: 1982 - 1993



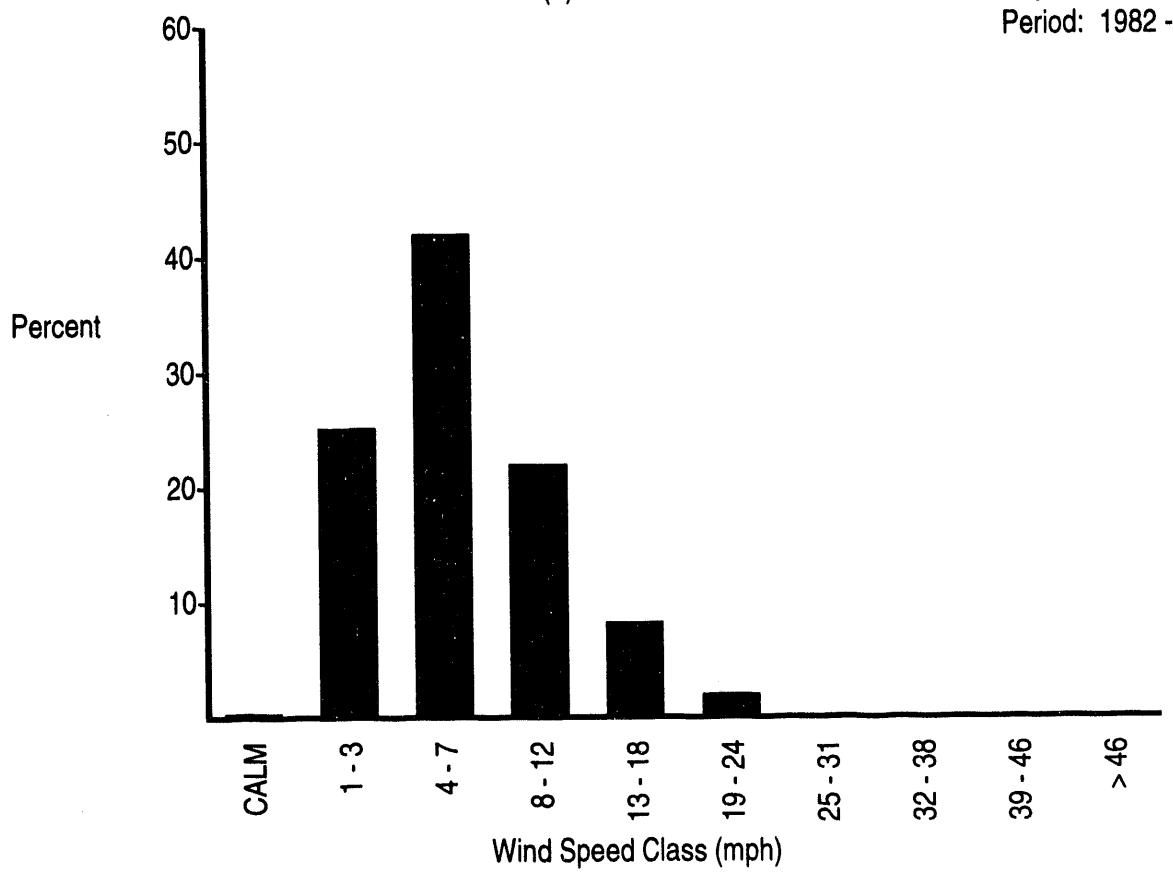
(b) Wind Speed Histogram

FIGURE B.1. (contd)



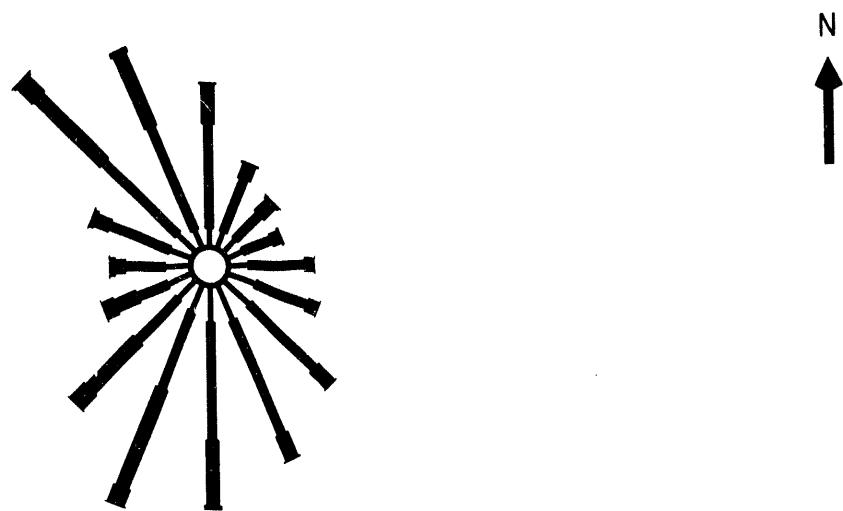
(a) Wind Rose

July Data
Period: 1982 - 1993



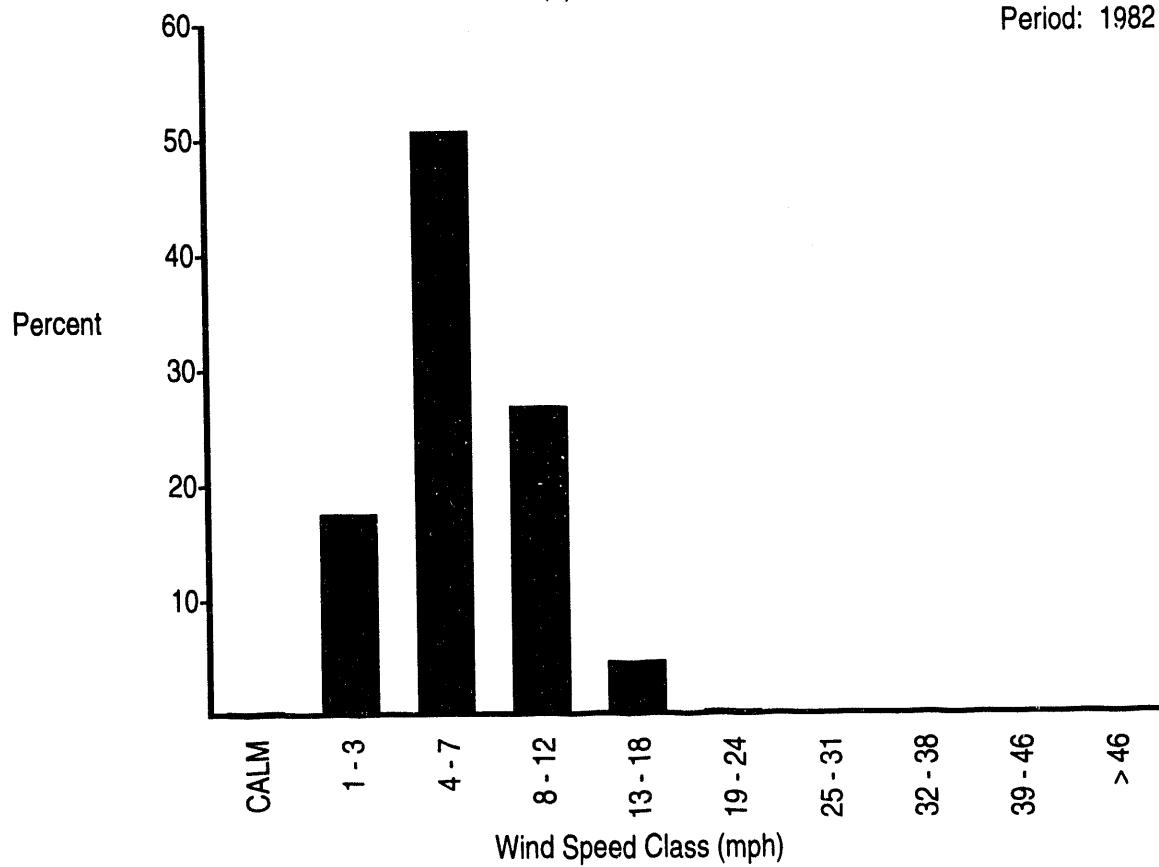
(b) Wind Speed Histogram

FIGURE B.1. (contd)



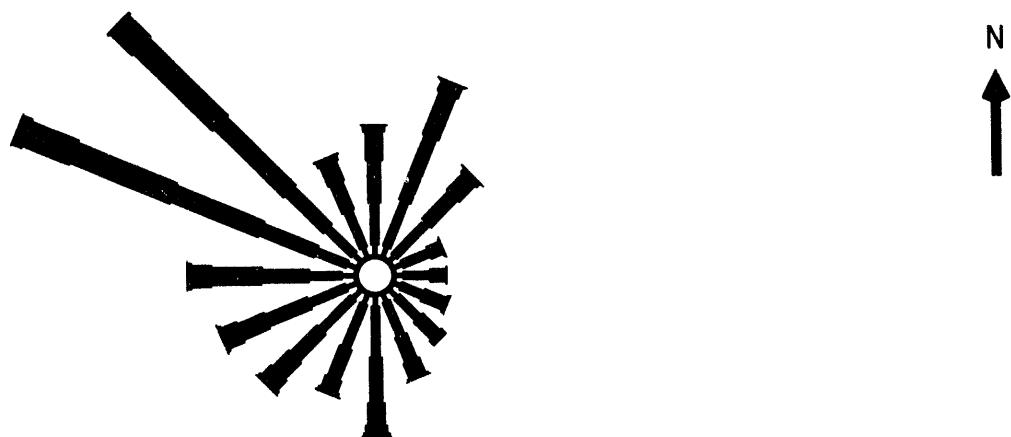
(a) Wind Rose

July Data
Period: 1982 - 1993



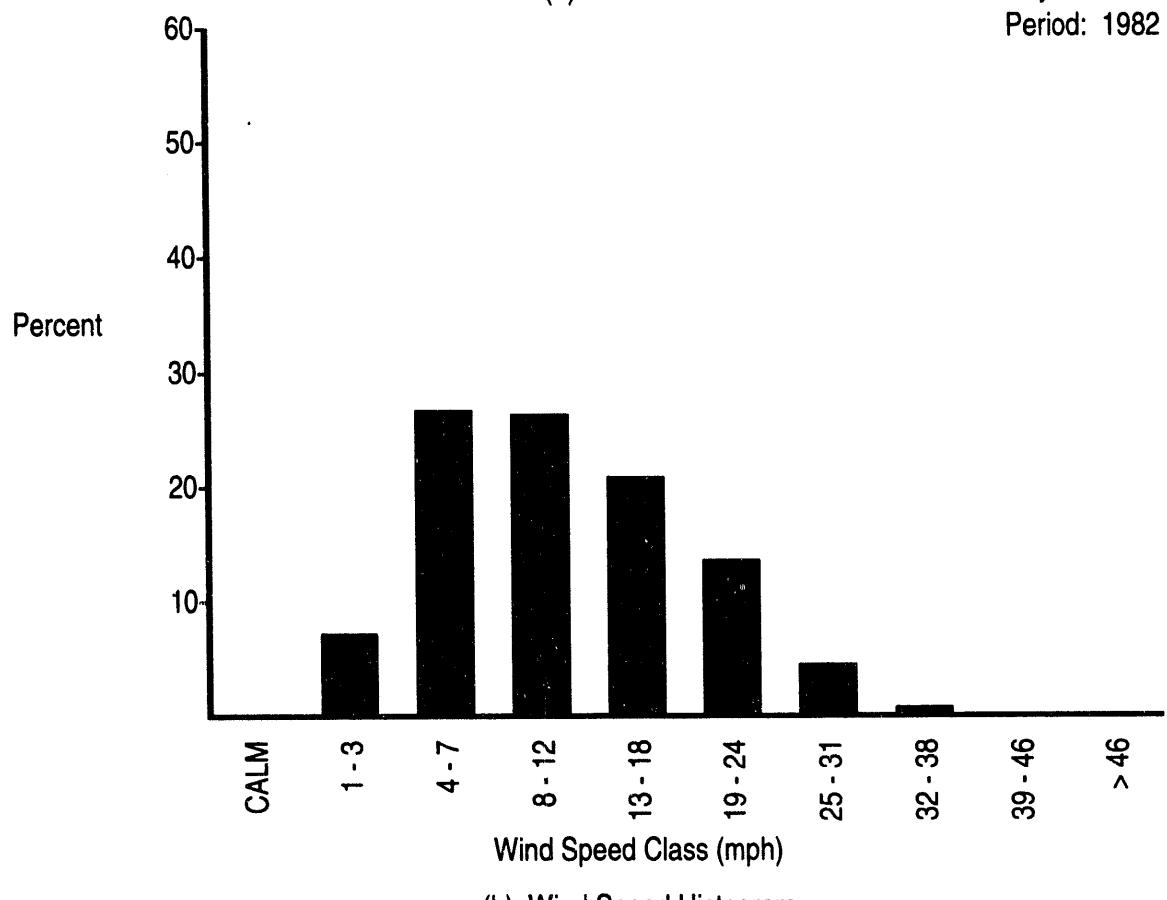
(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

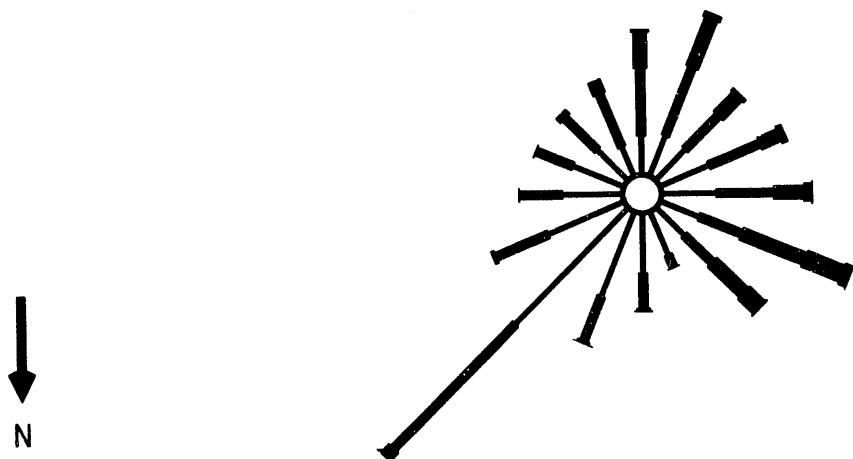
July Data
Period: 1982 - 1993



(b) Wind Speed Histogram

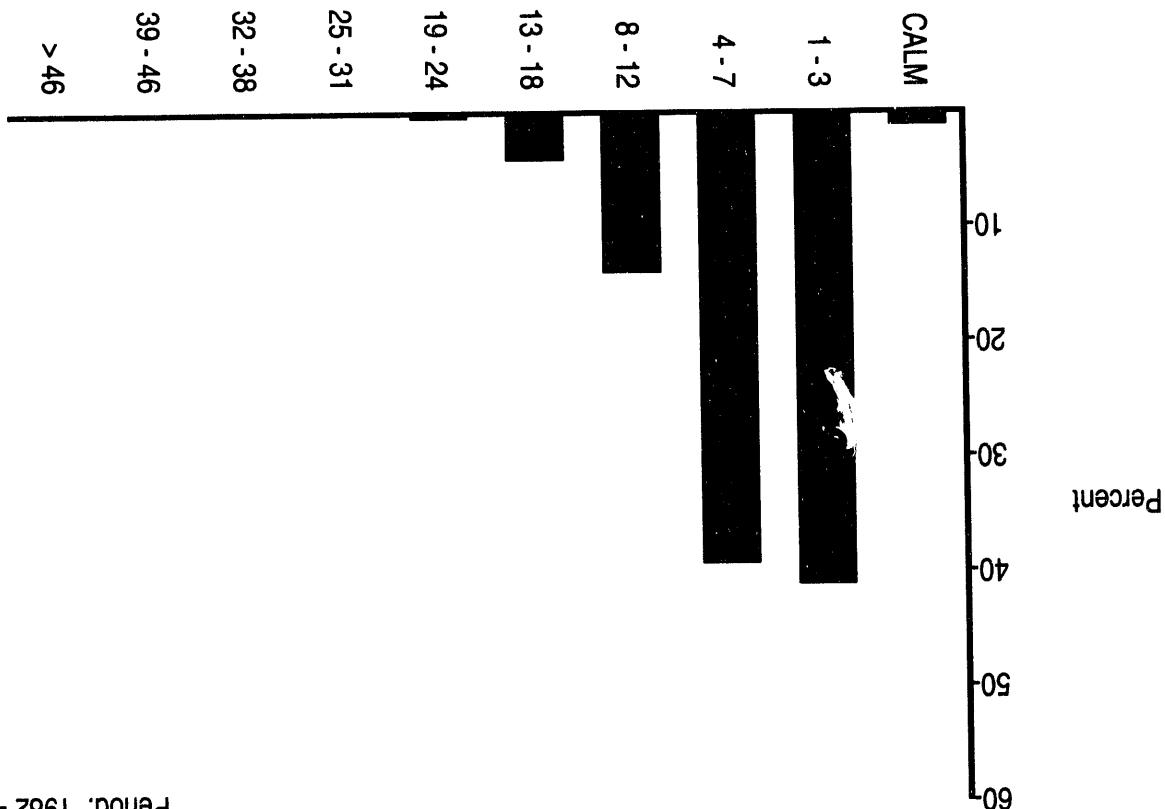
FIGURE B.1. (contd)

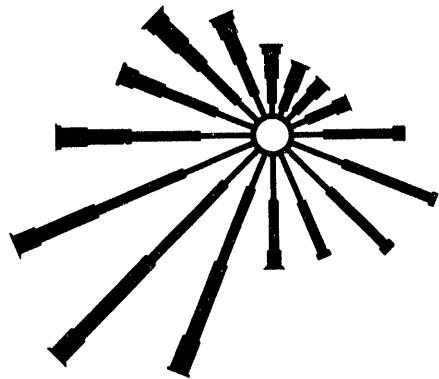
(a) Wind Rose
July Data
Period: 1982 - 1993



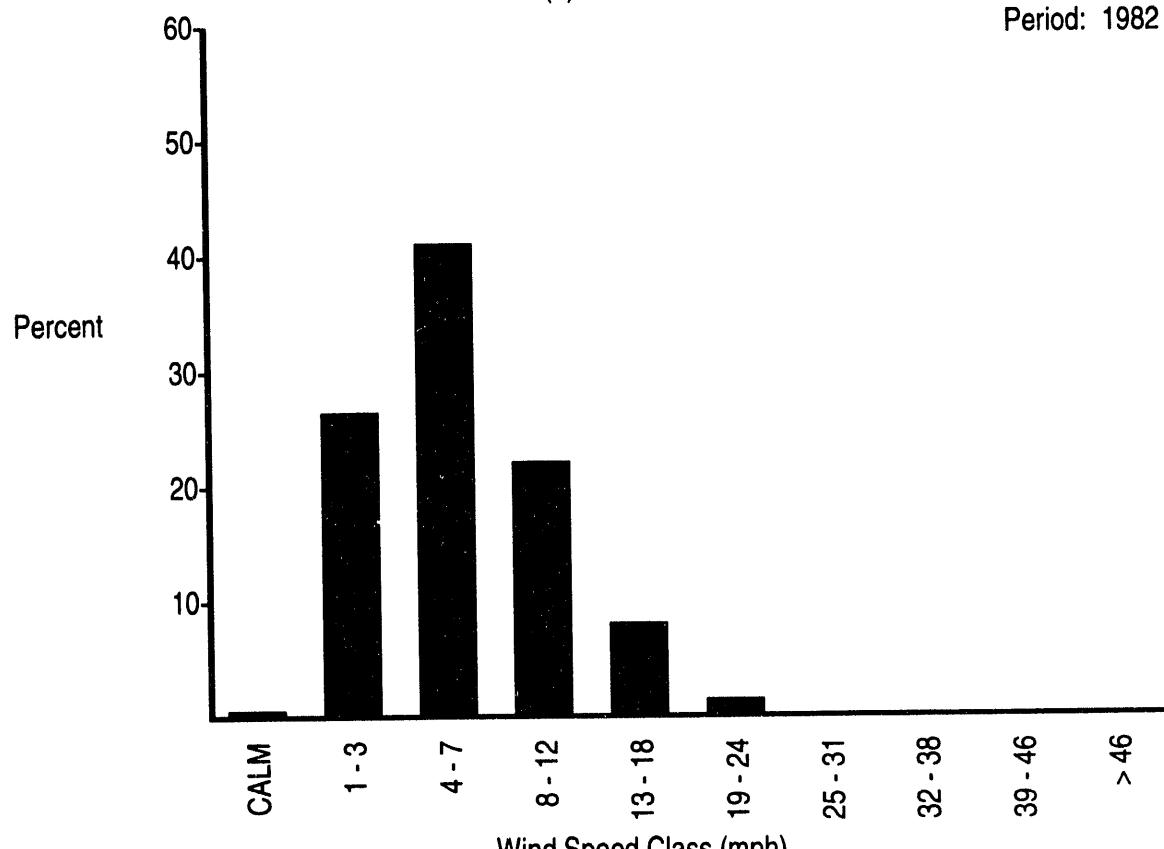
Station #17 - RING

FIGURE B.1. (contd)
(b) Wind Speed Histogram
Wind Speed Class (mph)



N
↑

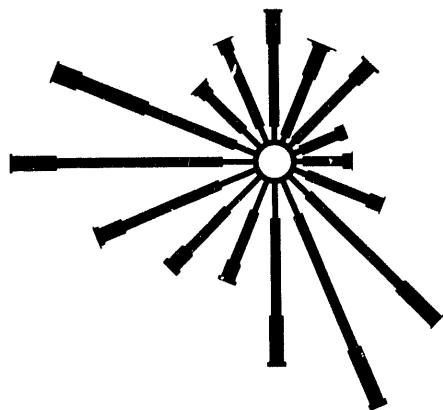
(a) Wind Rose

July Data
Period: 1982 - 1993

(b) Wind Speed Histogram

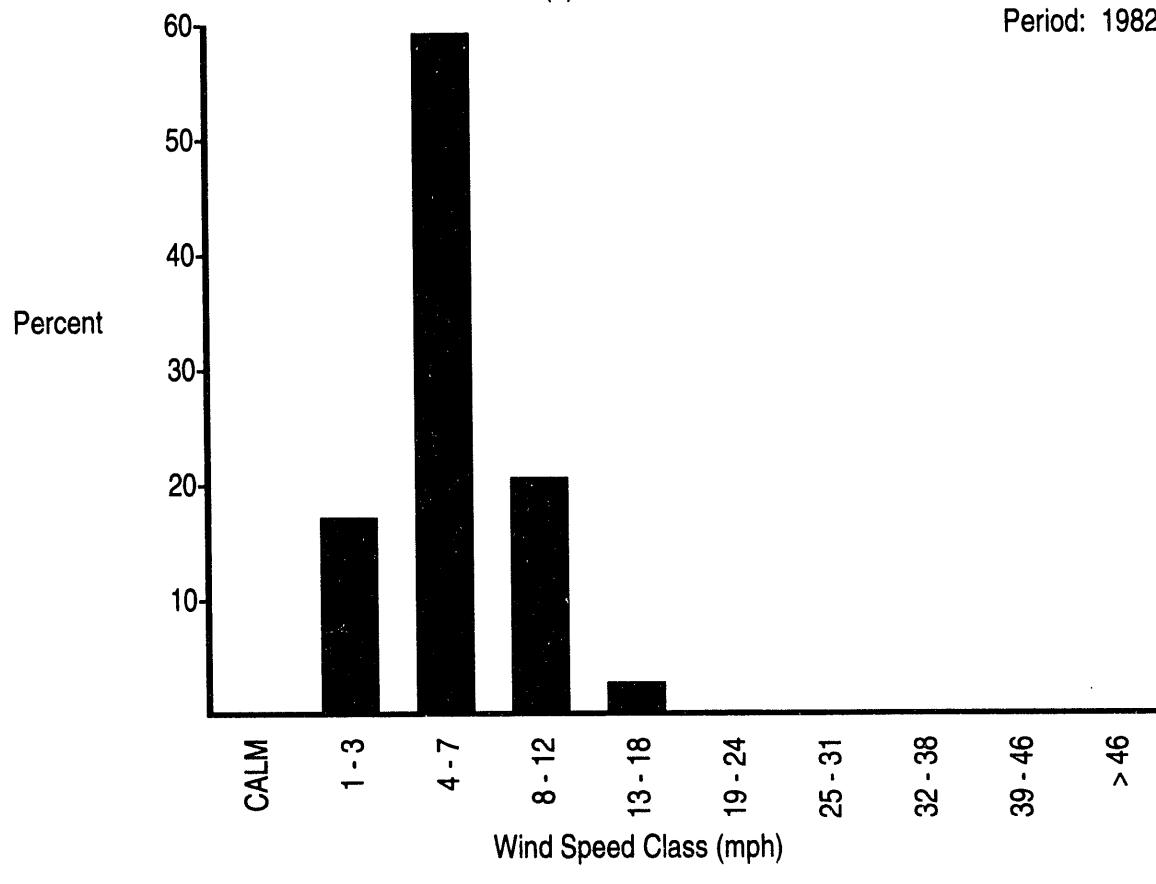
FIGURE B.1. (contd)

N



(a) Wind Rose

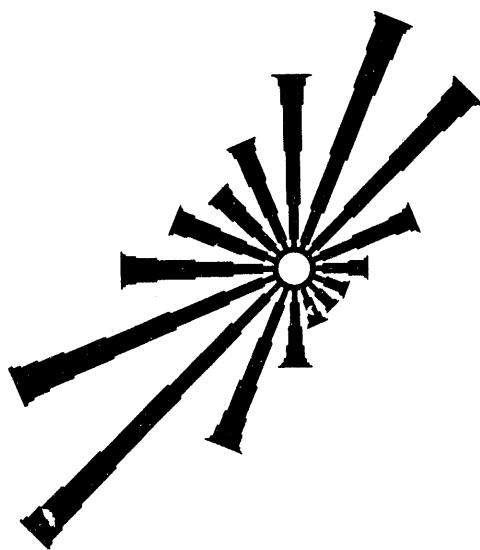
July Data
Period: 1982 - 1992



(b) Wind Speed Histogram

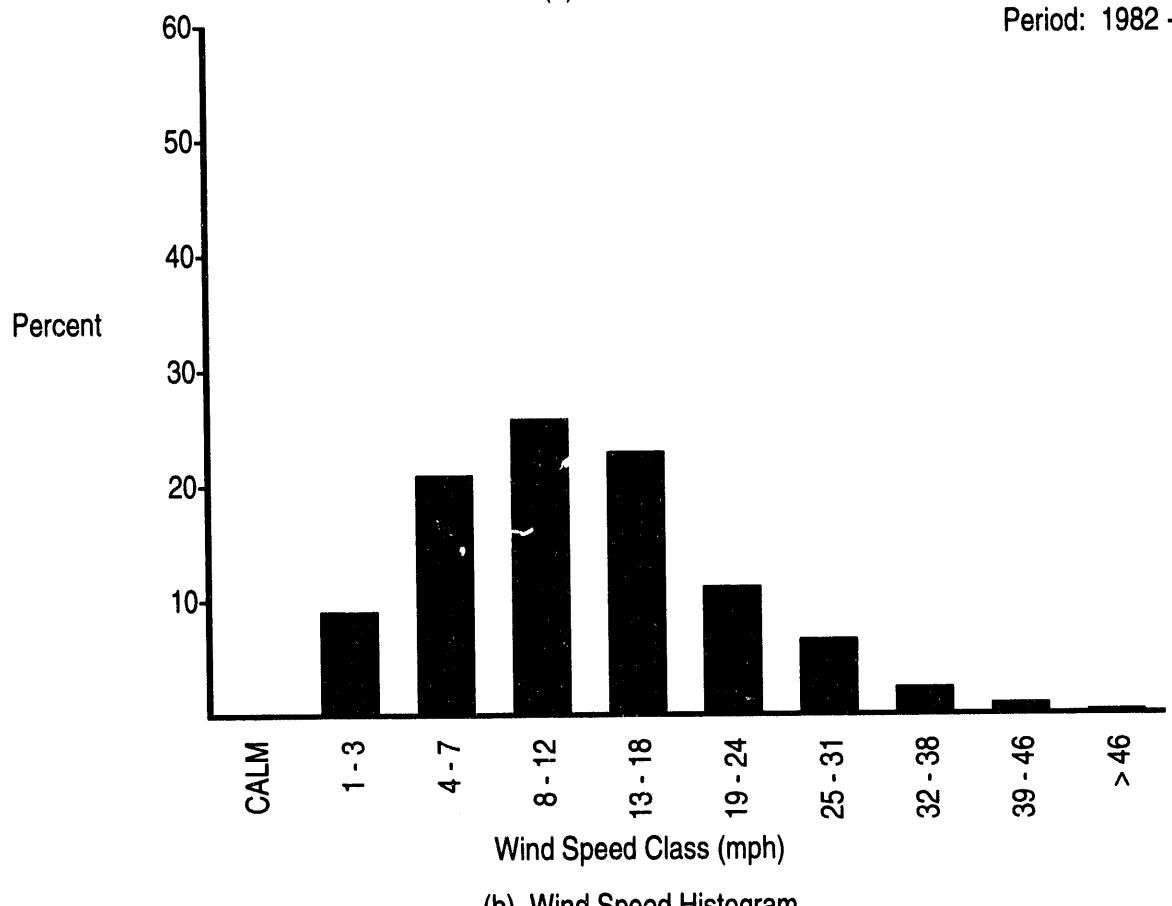
FIGURE B.1. (contd)

N
↑



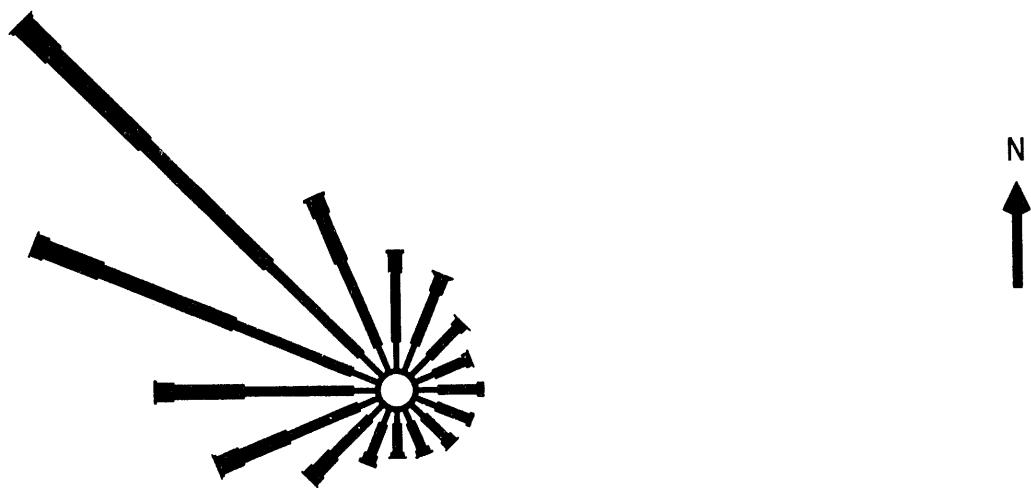
(a) Wind Rose

July Data
Period: 1982 - 1993



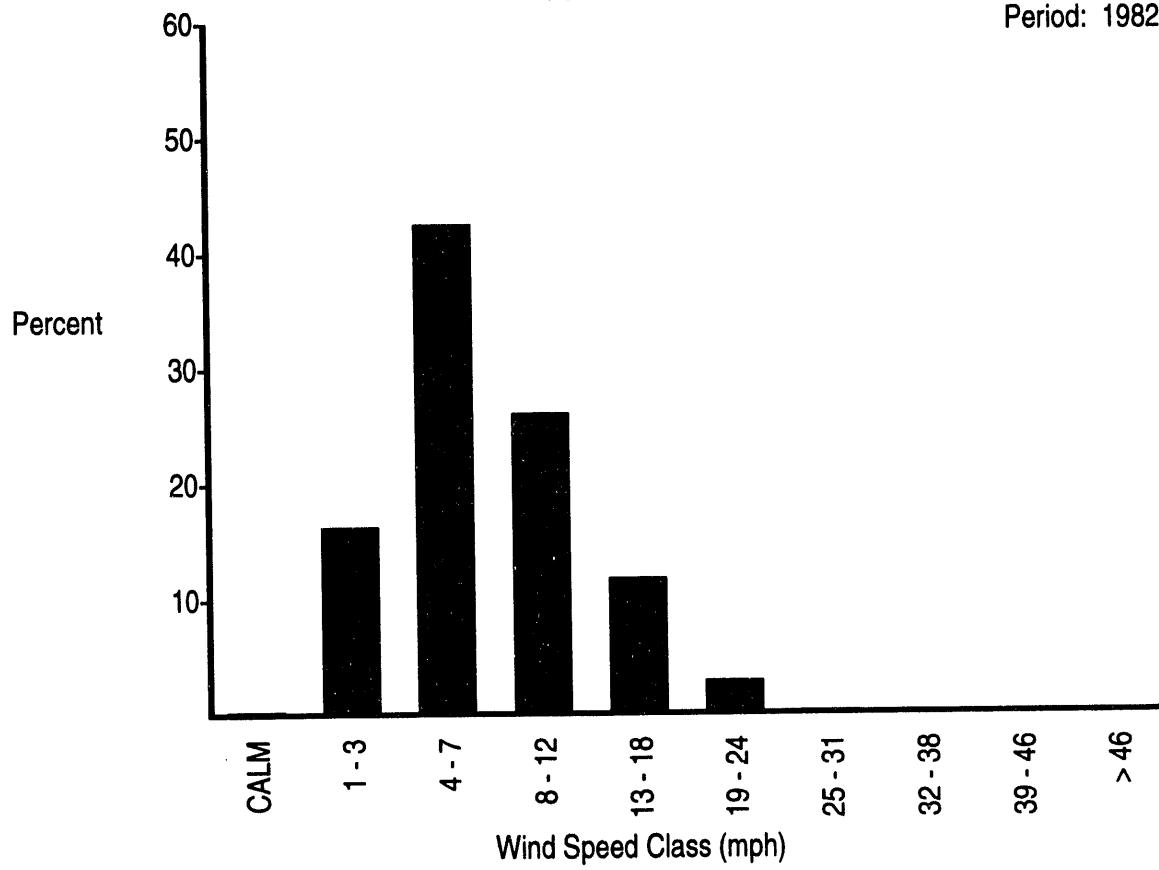
(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

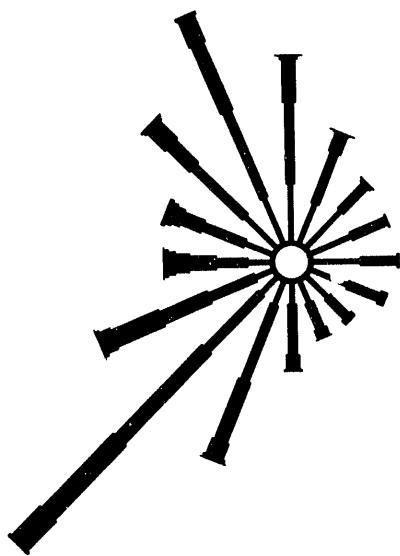
July Data
Period: 1982 - 1993



(b) Wind Speed Histogram

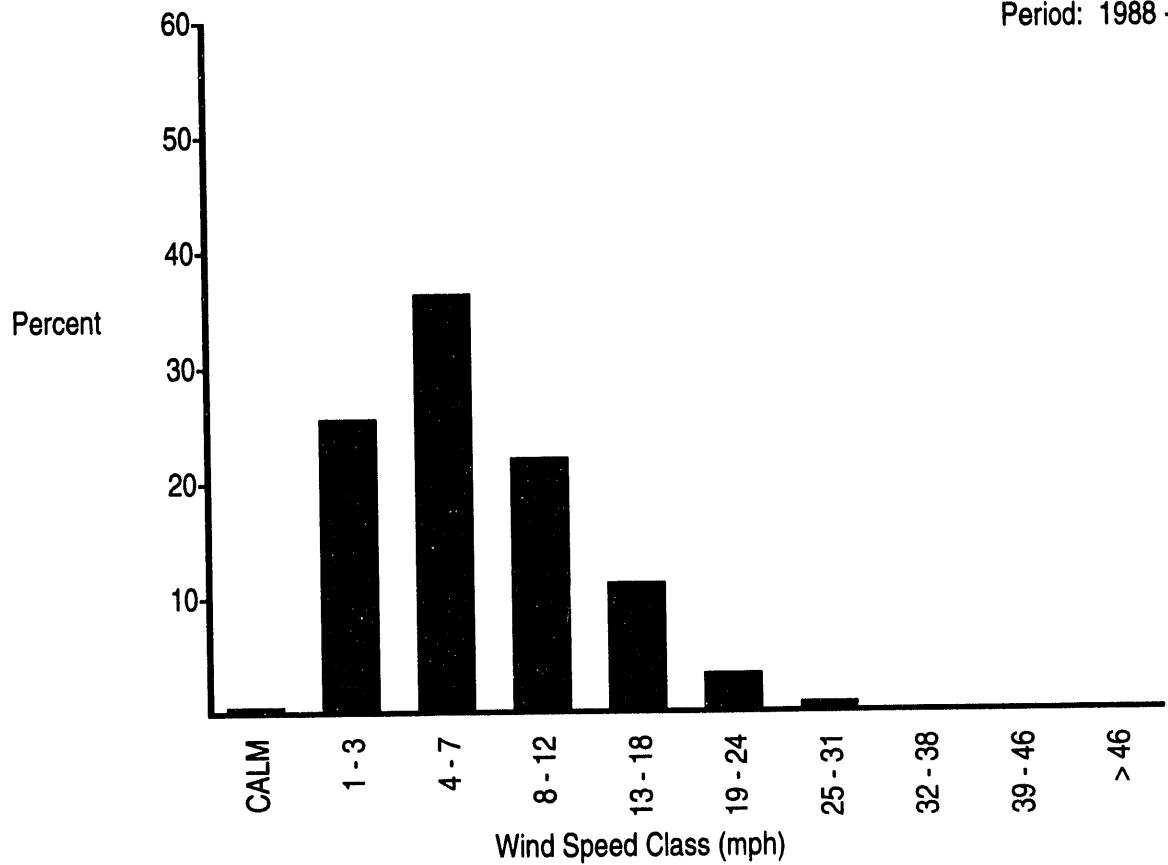
FIGURE B.1. (contd)

N
↑



(a) Wind Rose

July Data
Period: 1988 - 1993



(b) Wind Speed Histogram

FIGURE B.1. (contd)

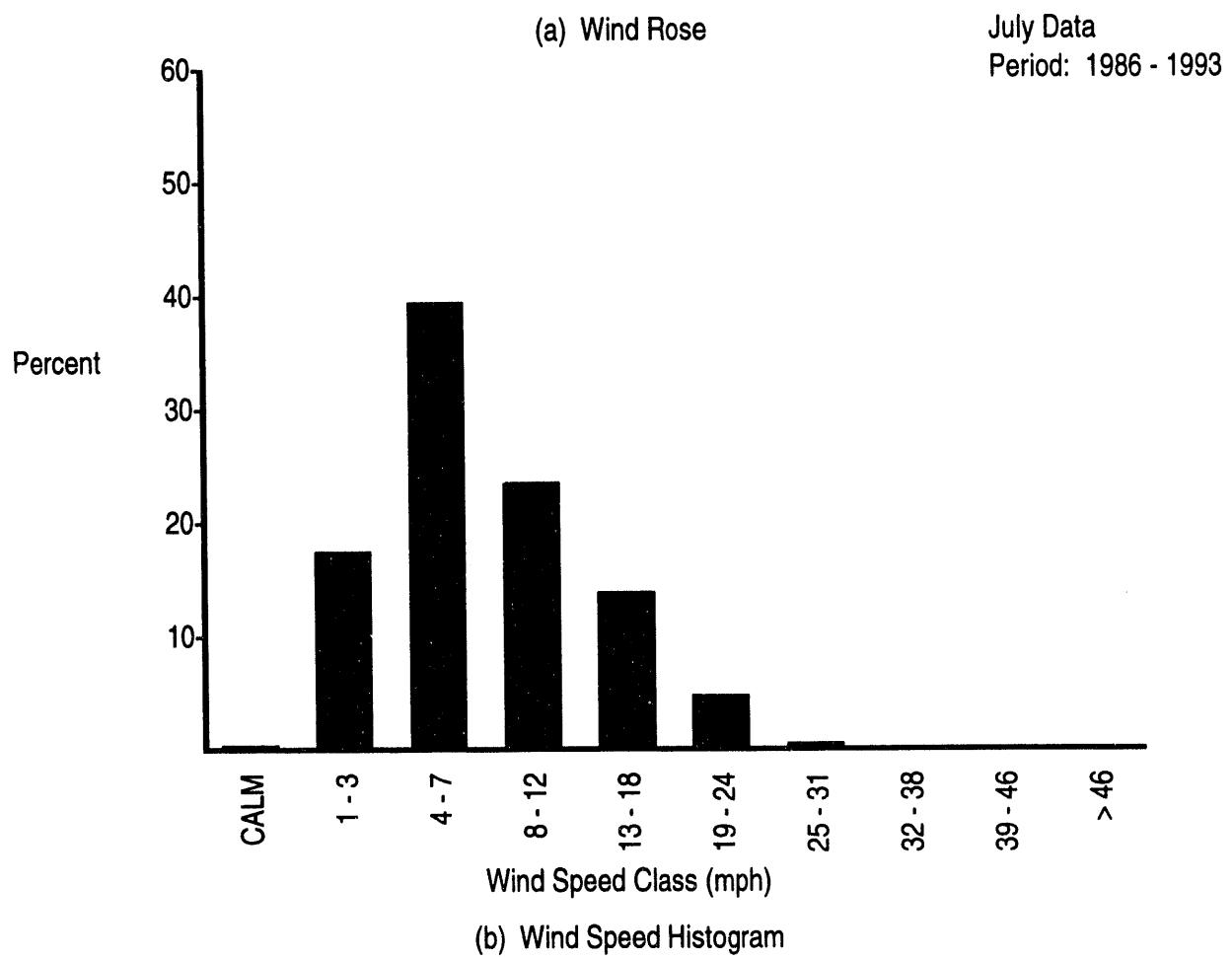
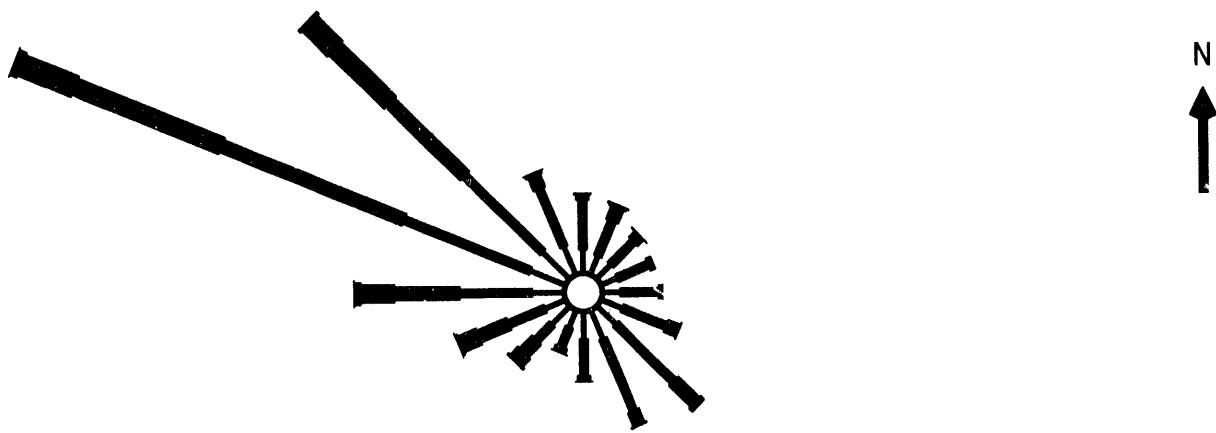
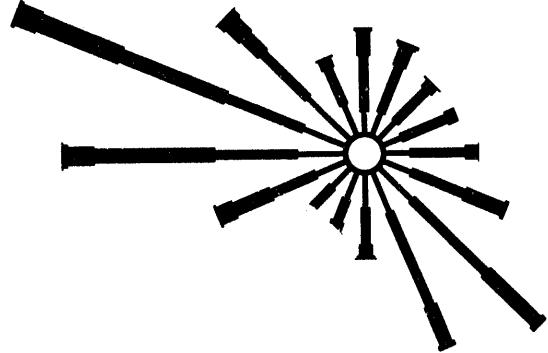


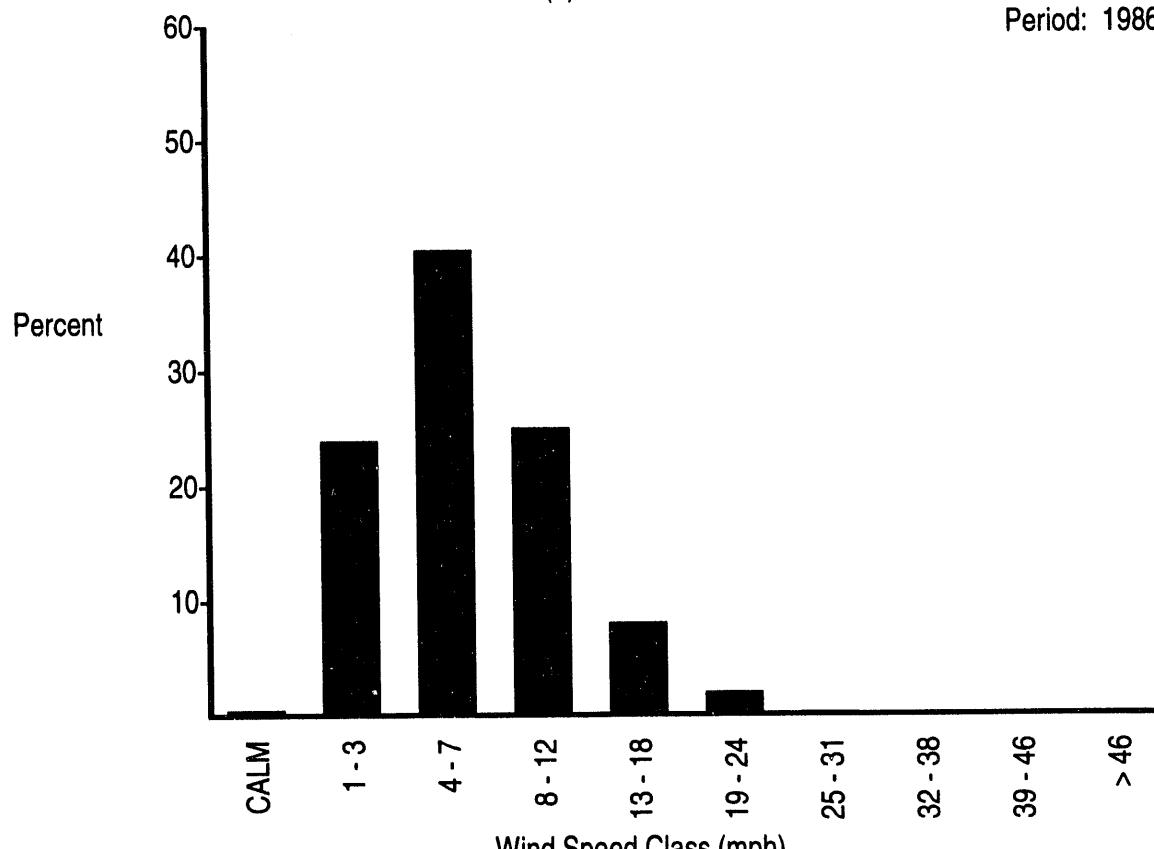
FIGURE B.1. (contd)

N
↑



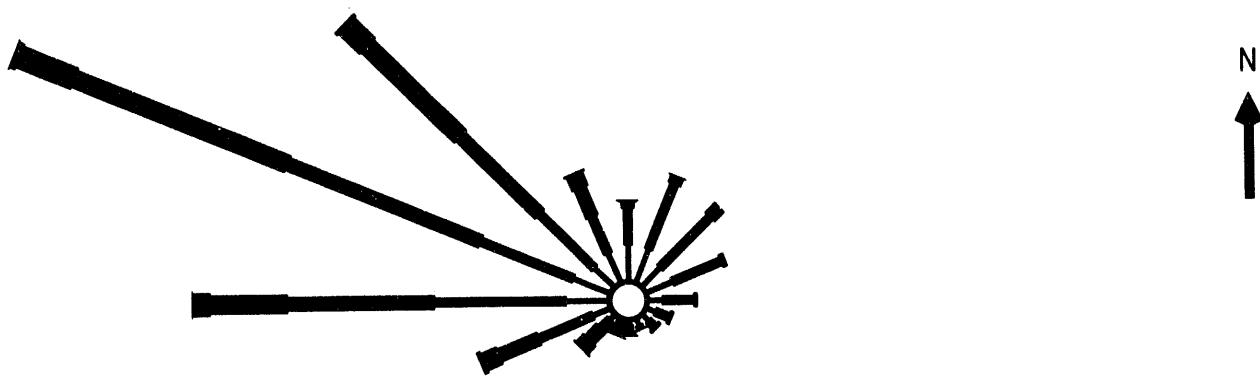
(a) Wind Rose

July Data
Period: 1986 - 1993



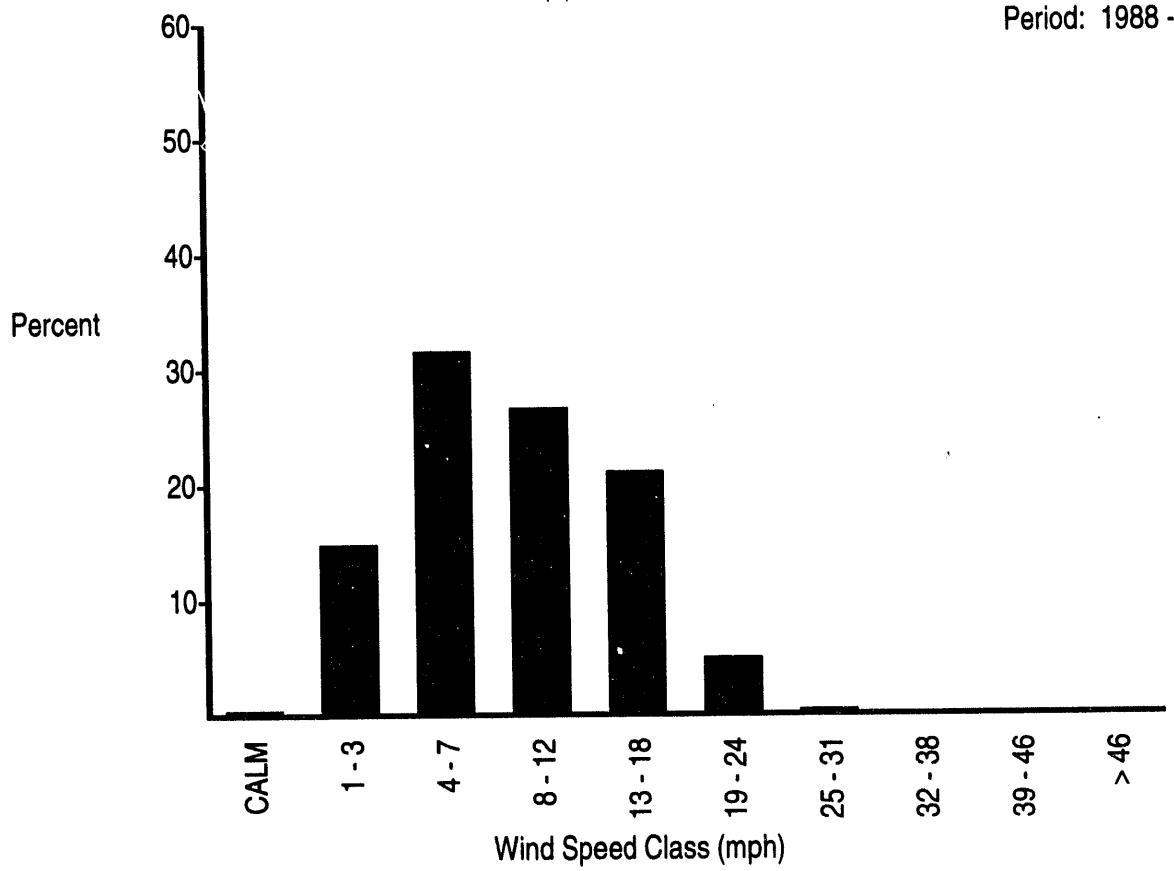
(b) Wind Speed Histogram

FIGURE B.1. (contd)



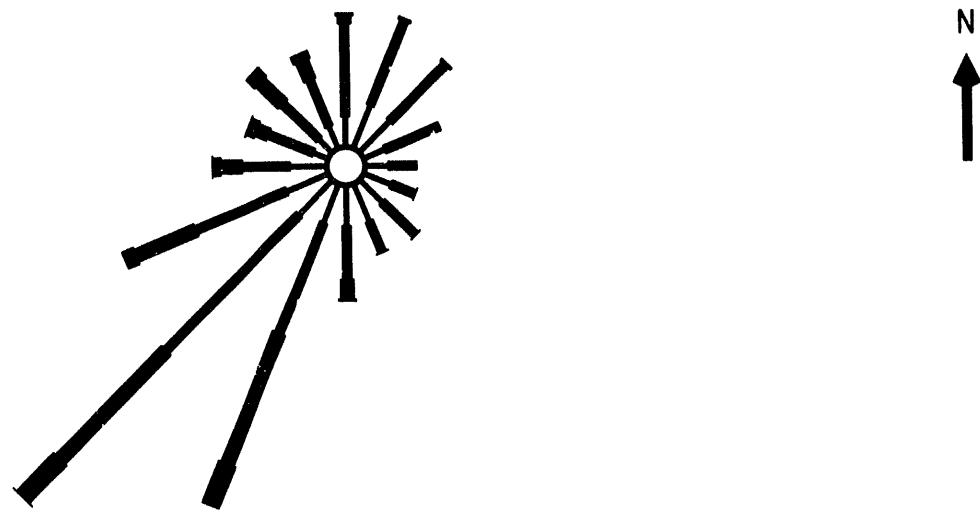
(a) Wind Rose

July Data
Period: 1988 - 1993



(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

July Data
Period: 1991 - 1993

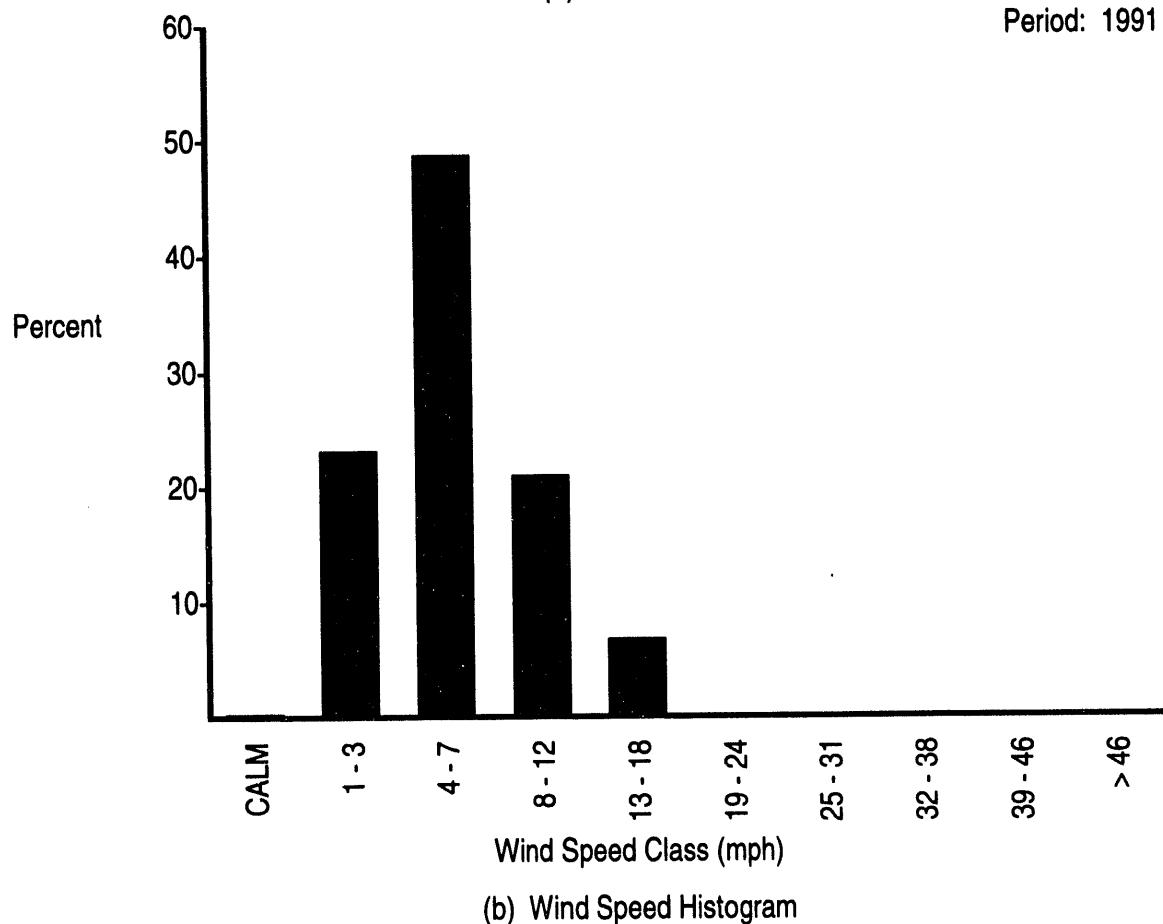
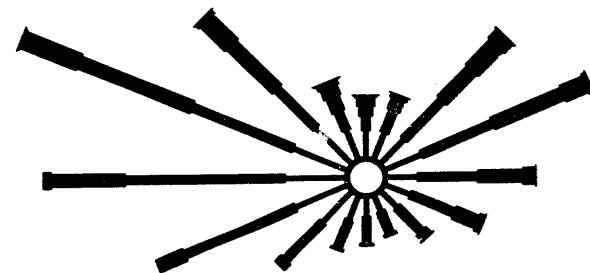
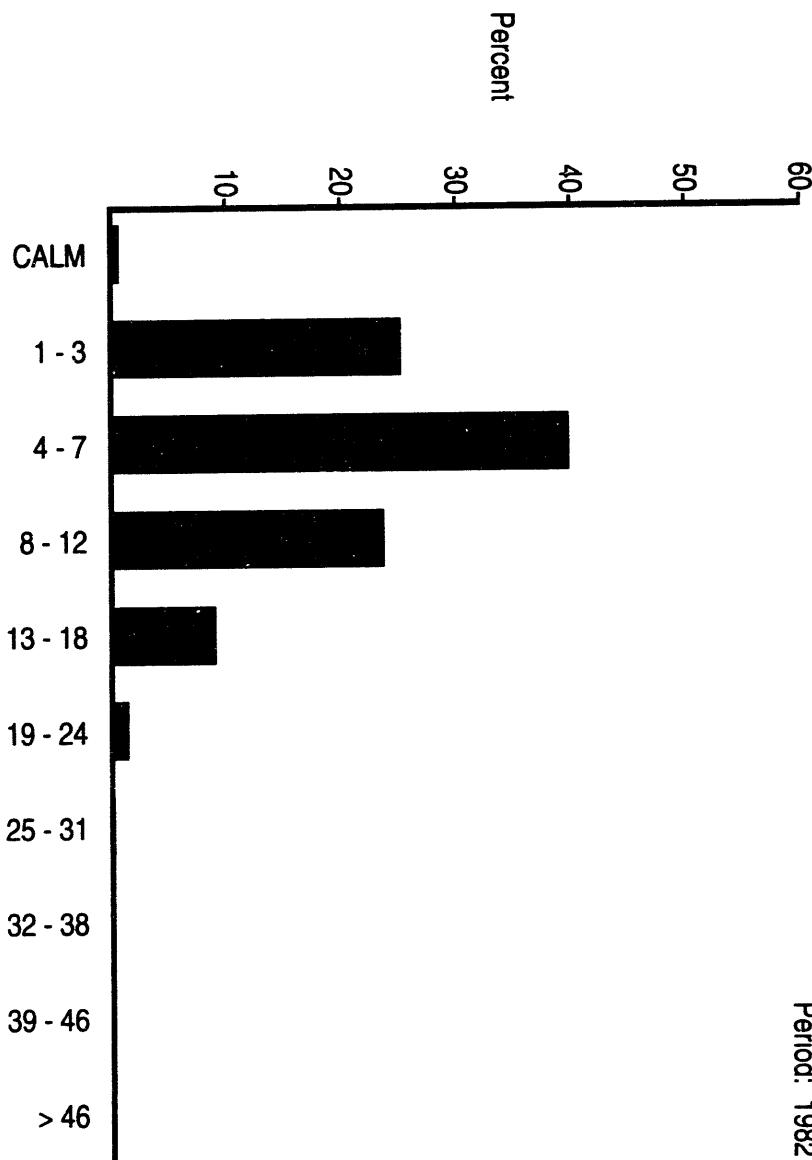


FIGURE B.1. (contd)

August Data
Period: 1982 - 1993



(a) Wind Rose



60

Percent

30

40

50

CALM

1 - 3

4 - 7

8 - 12

13 - 18

19 - 24

25 - 31

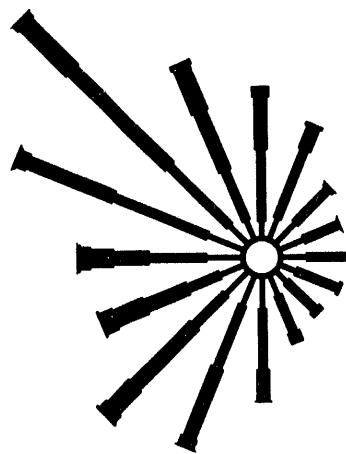
32 - 38

39 - 46

> 46

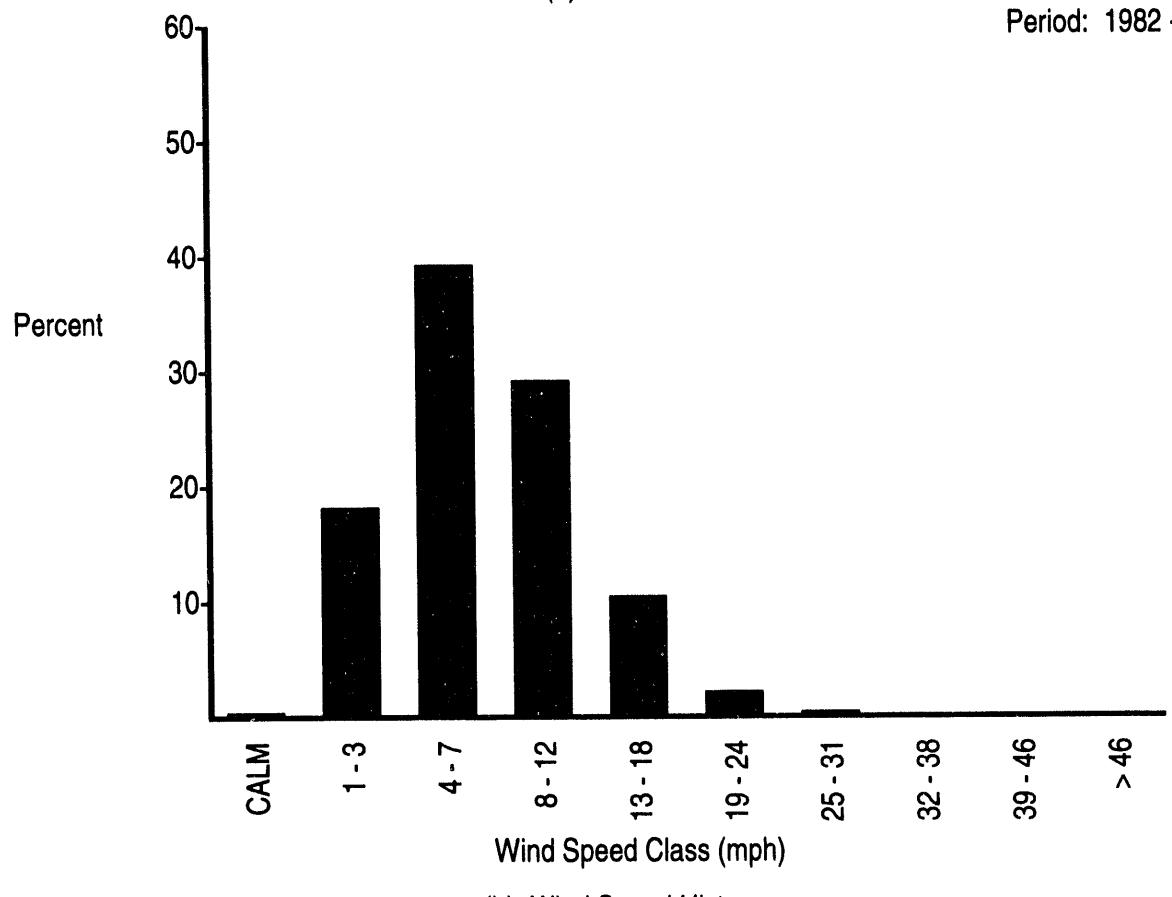
(b) Wind Speed Histogram
FIGURE B.1. (contd)

N
↑



(a) Wind Rose

August Data
Period: 1982 - 1993



(b) Wind Speed Histogram

FIGURE B.1. (contd)

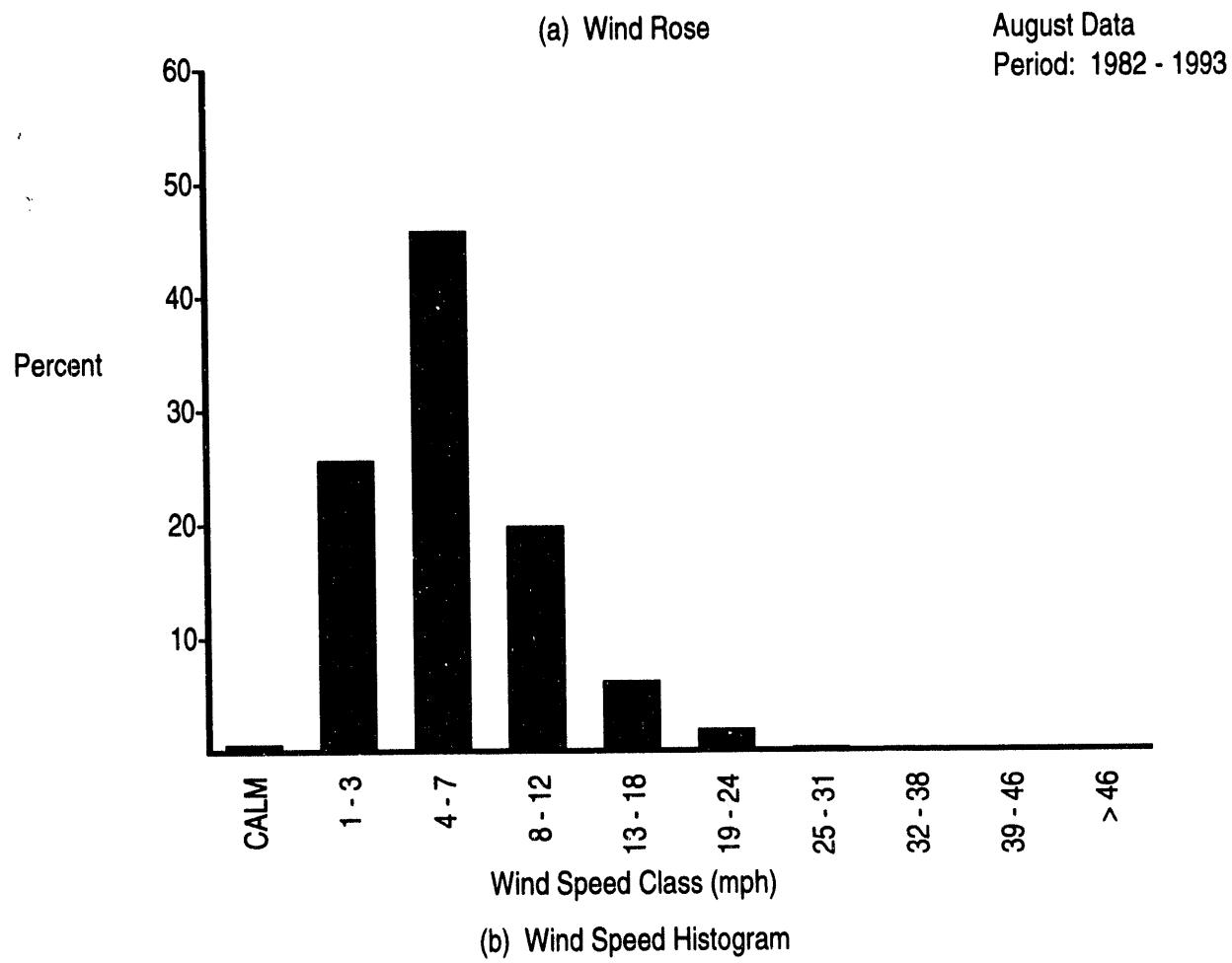
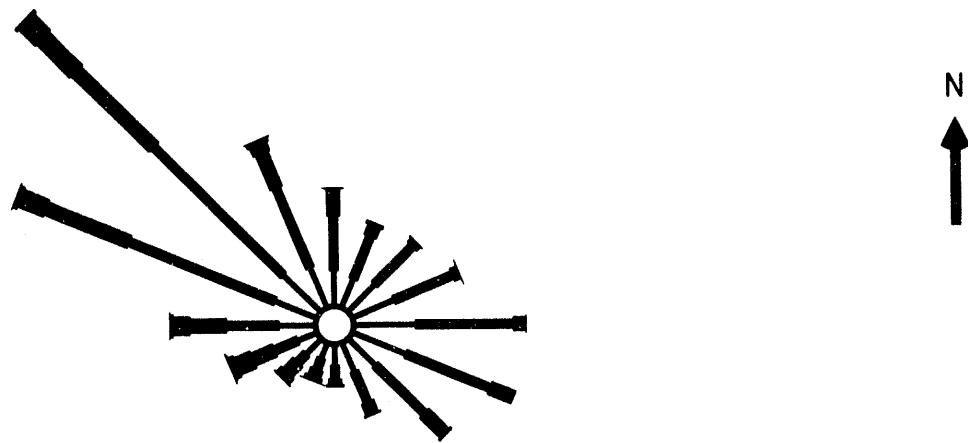
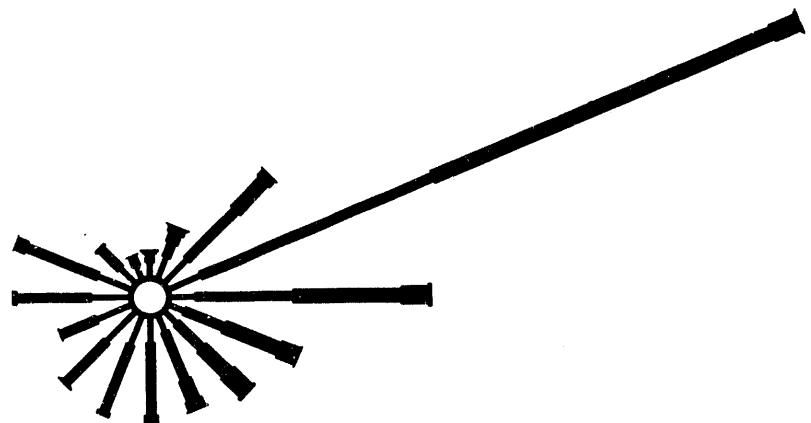


FIGURE B.1. (contd)

(a) Wind Rose
August Data
Period: 1982 - 1993

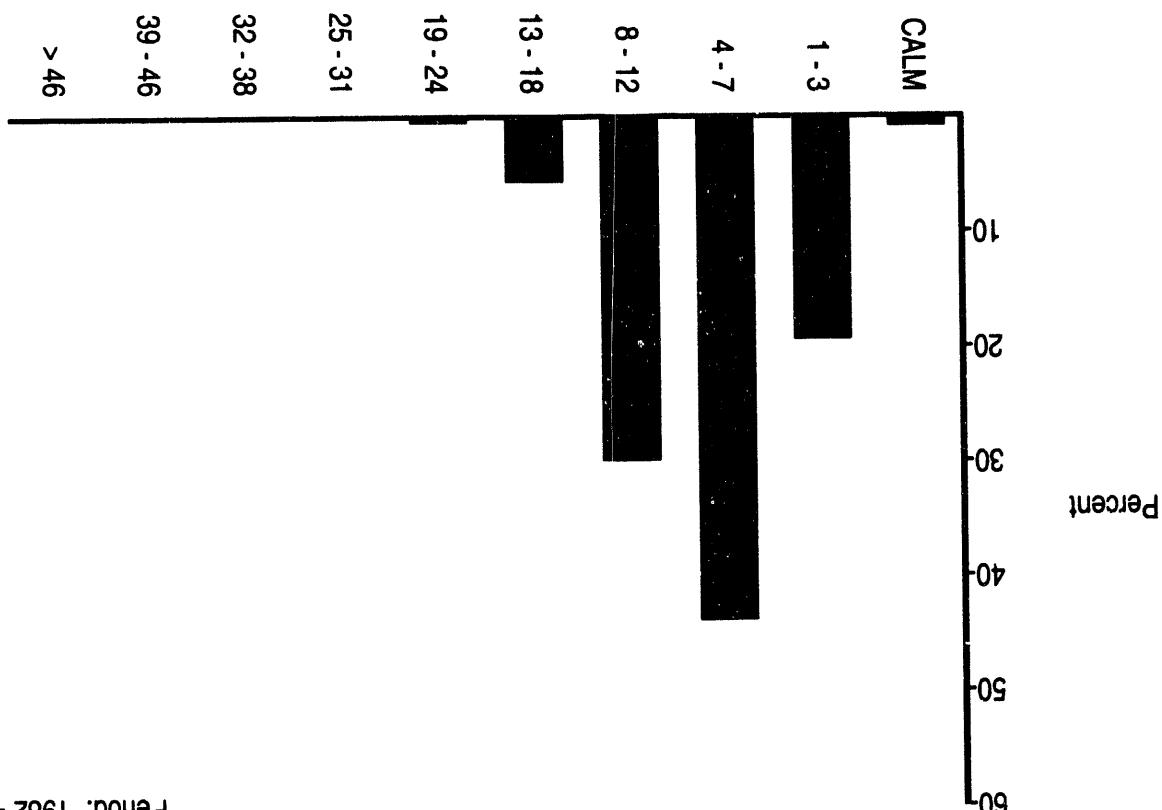


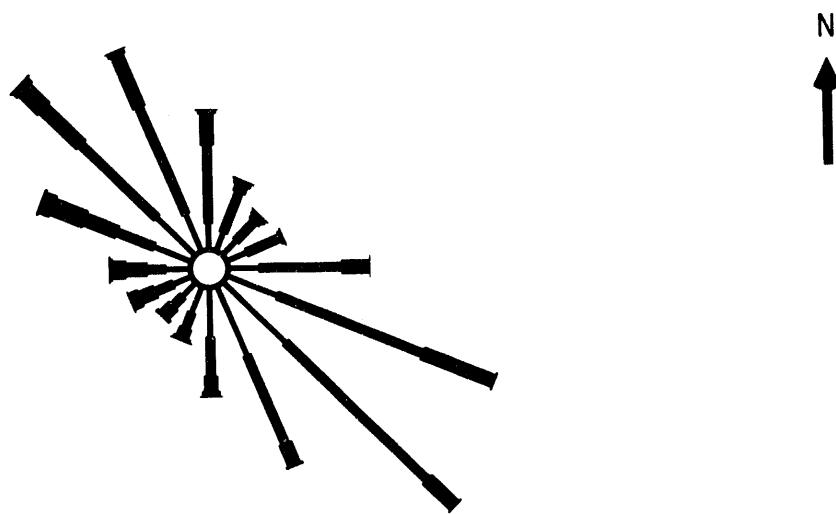
↓
N

FIGURE B.1. (contd)

(b) Wind Speed Histogram

Wind Speed Class (mph)





(a) Wind Rose

August Data
Period: 1982 - 1993

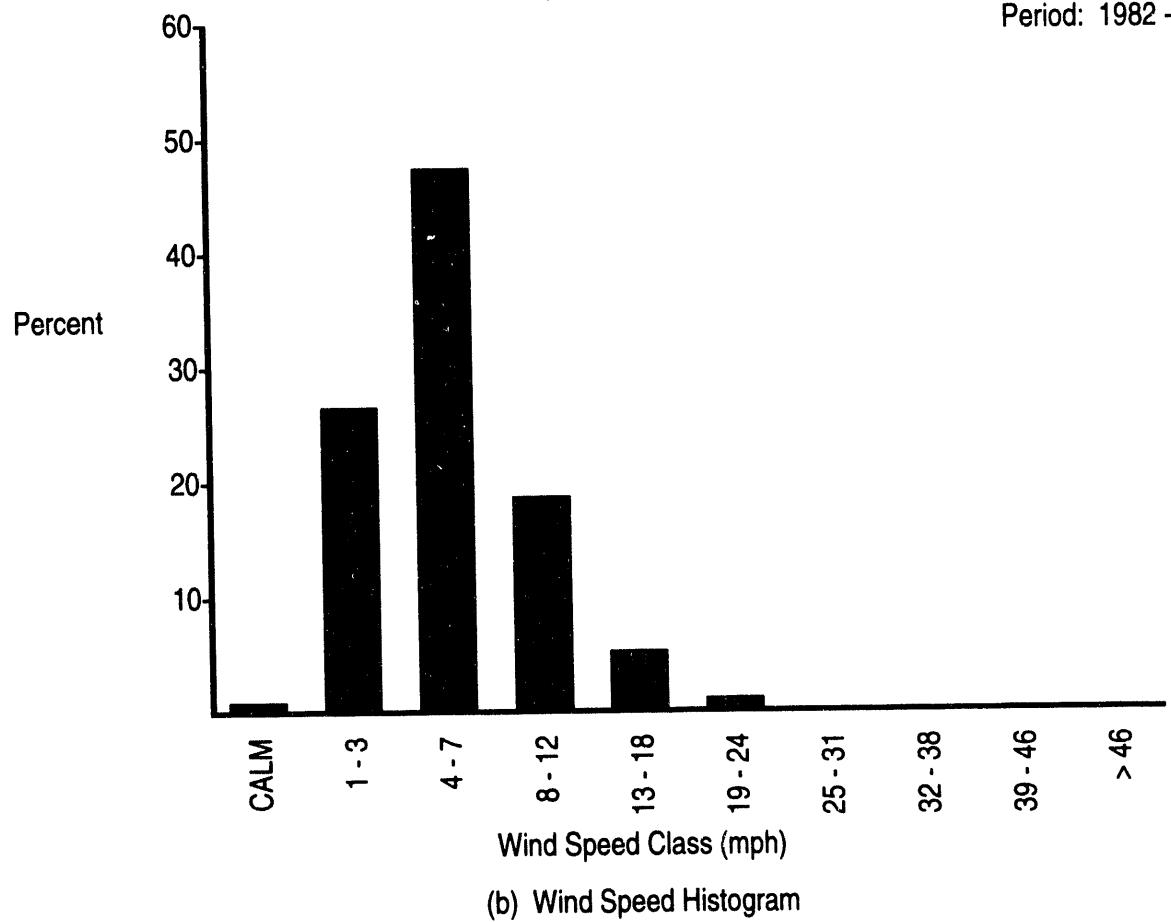


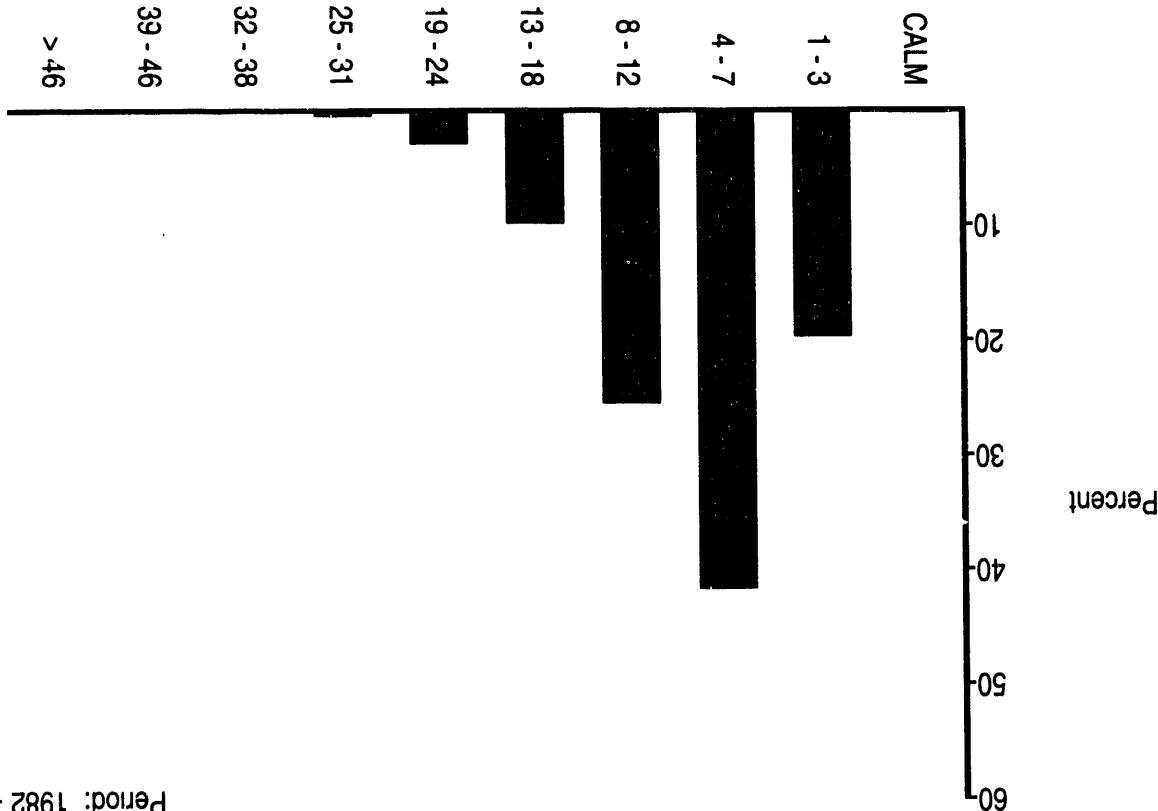
FIGURE B.1. (contd)

B.195

FIGURE B.1. (contd)

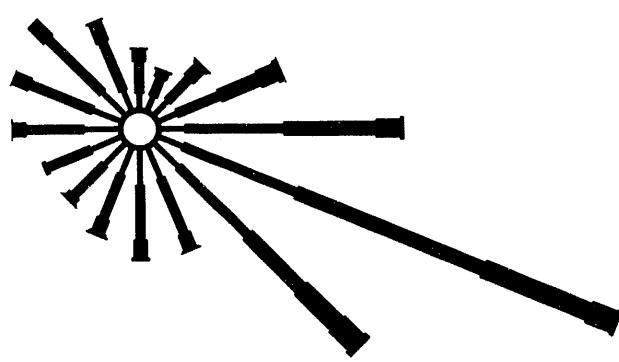
(b) Wind Speed Histogram

Wind Speed Class (mph)

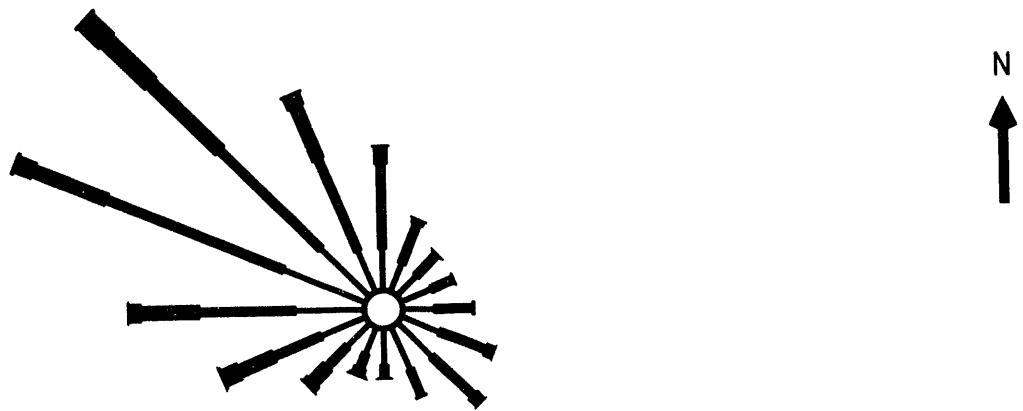


(a) Wind Rose

August Data
Period: 1982 - 1993

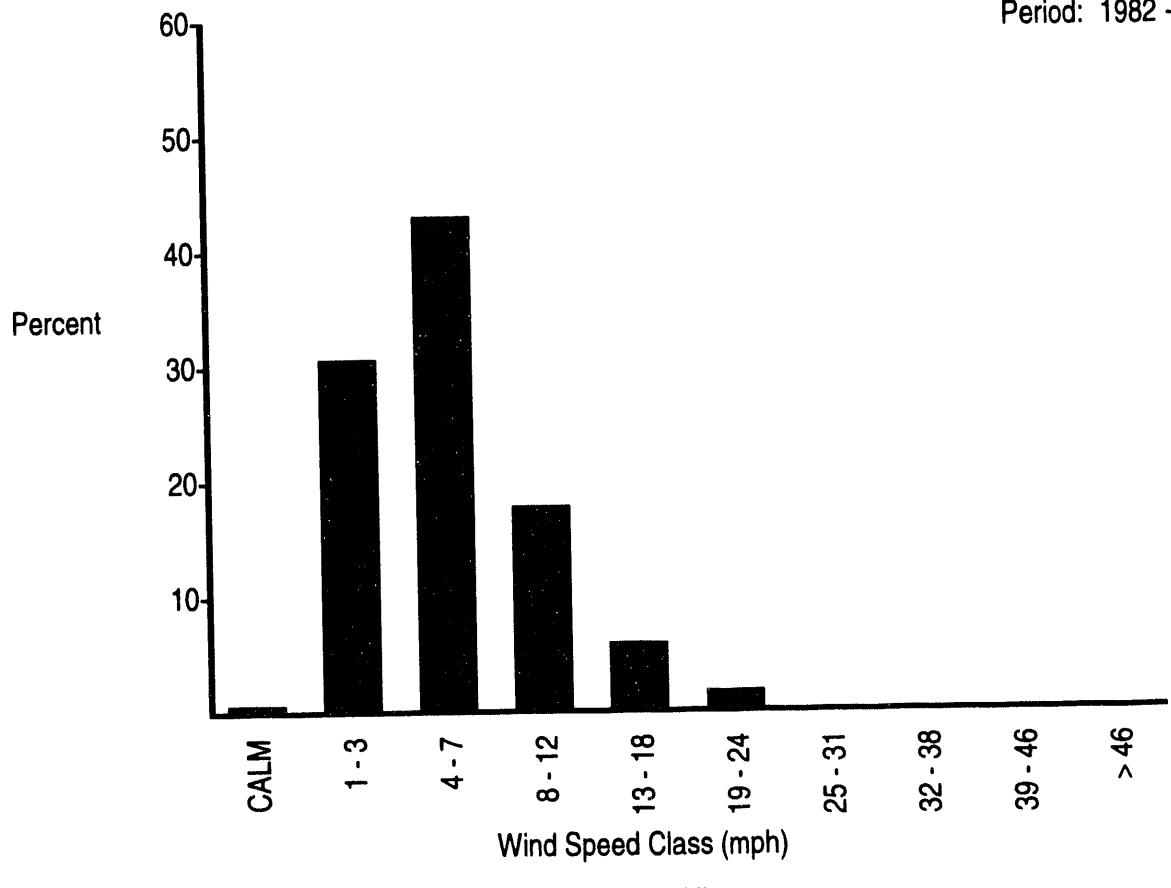


N



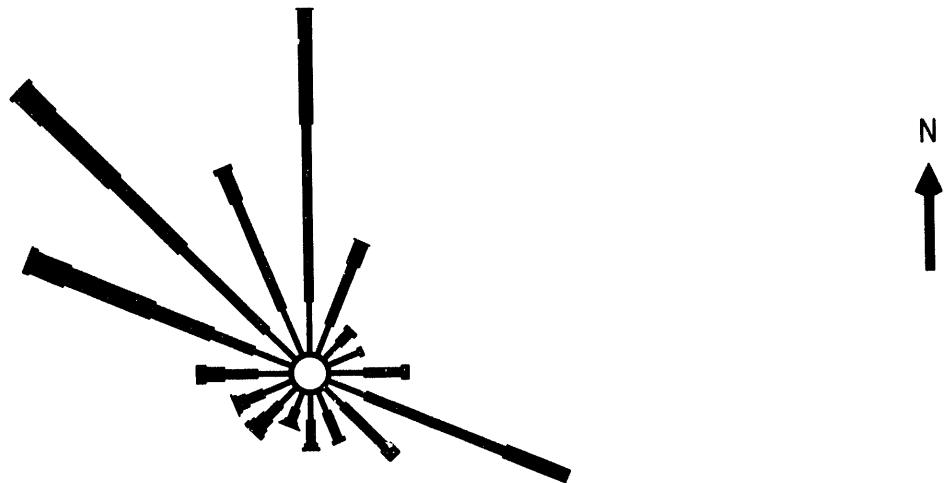
(a) Wind Rose

August Data
Period: 1982 - 1993



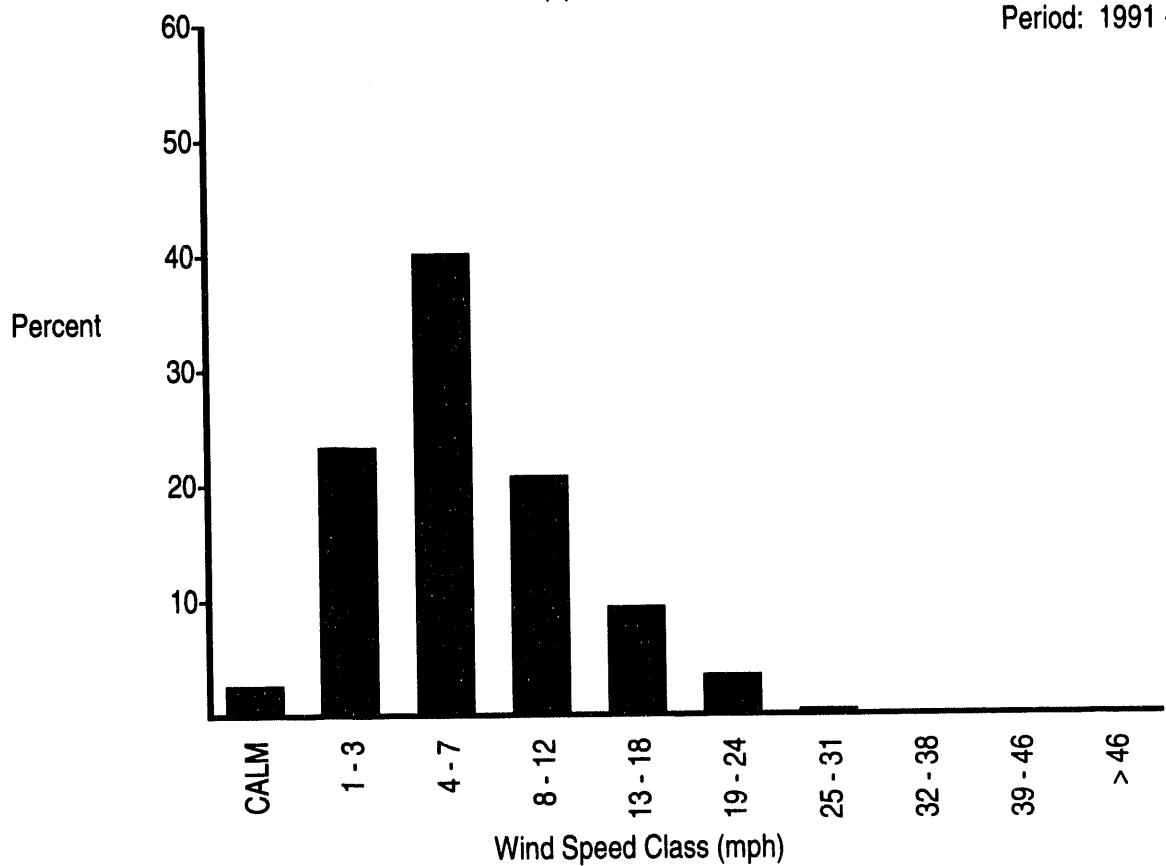
(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

August Data
Period: 1991 - 1993



(b) Wind Speed Histogram

FIGURE B.1. (contd)

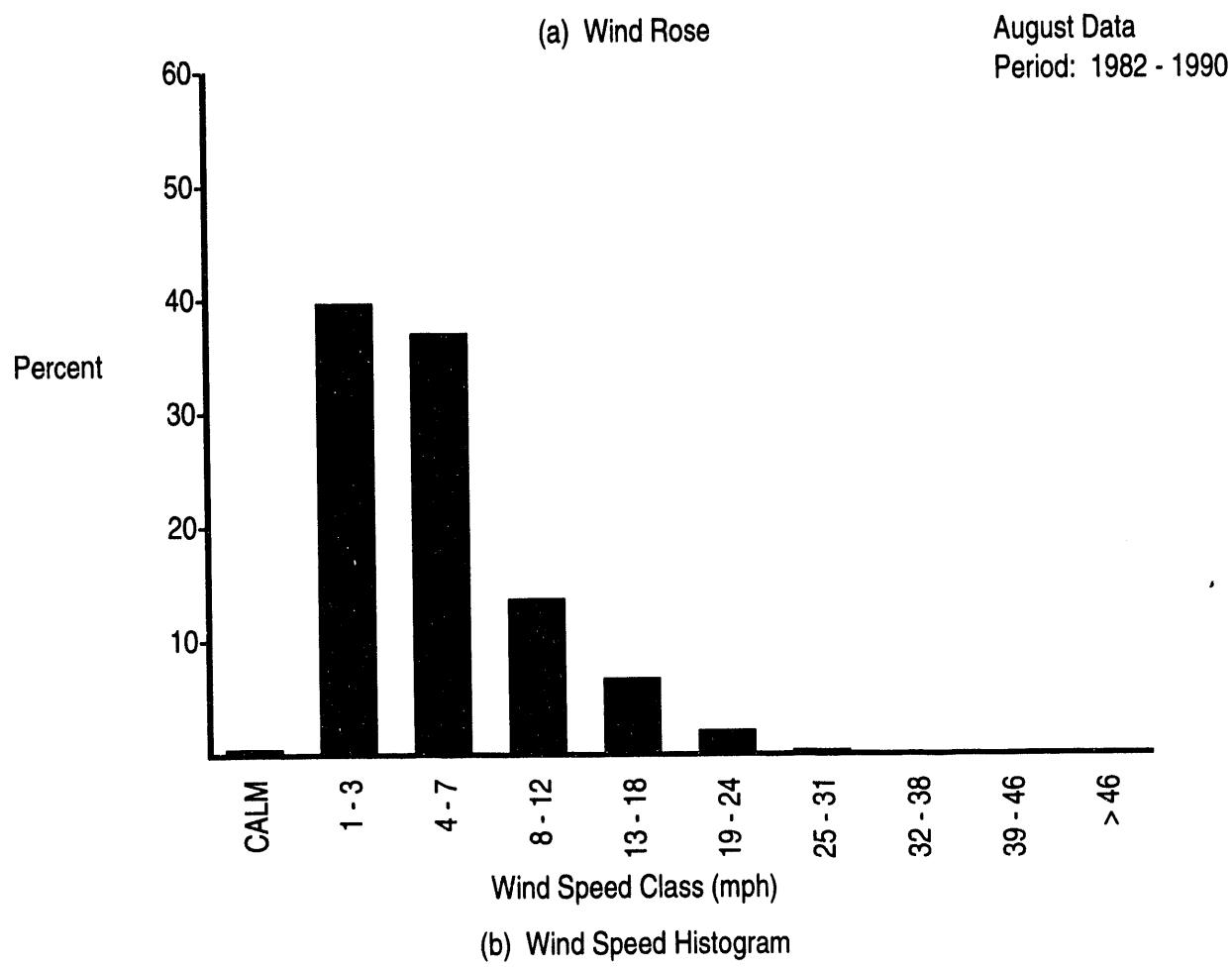
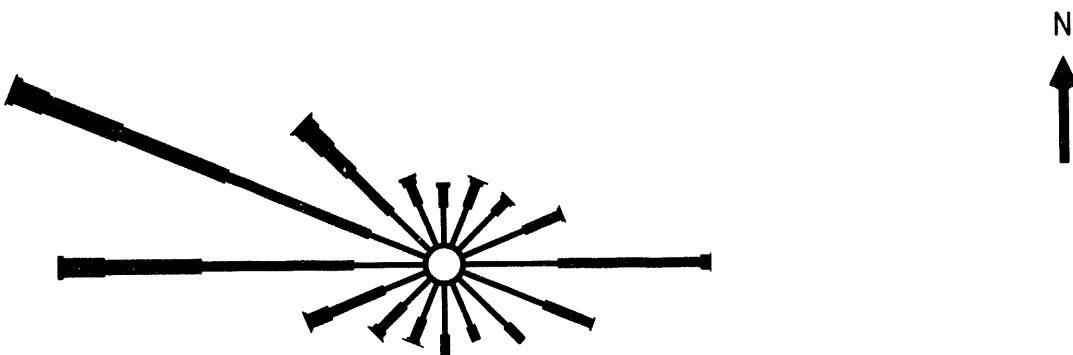
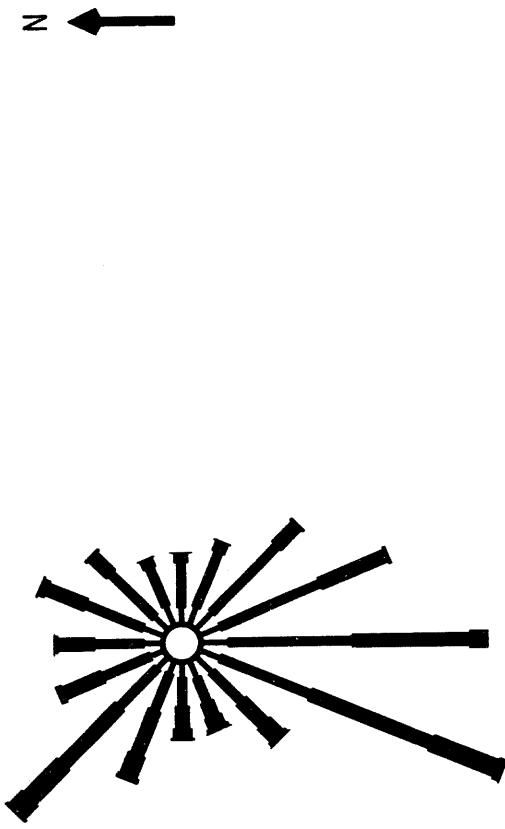


FIGURE B.1. (contd)



August Data
Period: 1982 - 1993
(a) Wind Rose

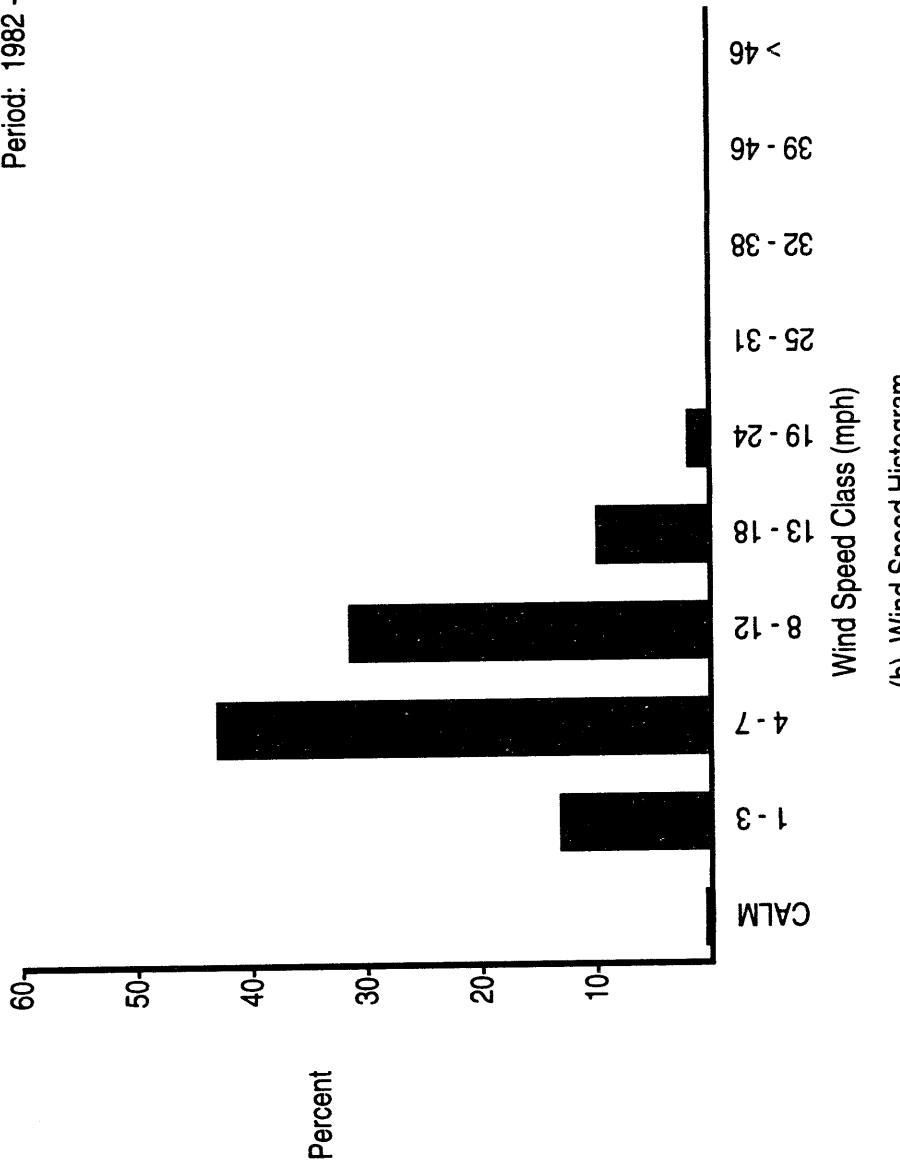
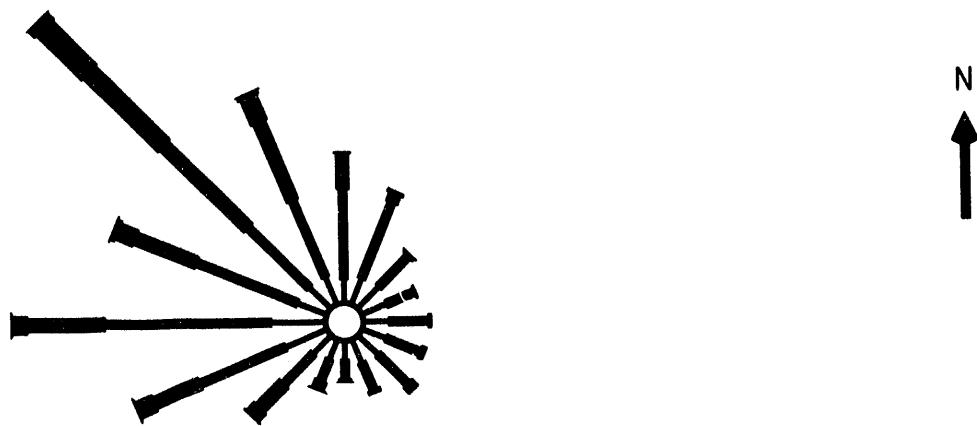
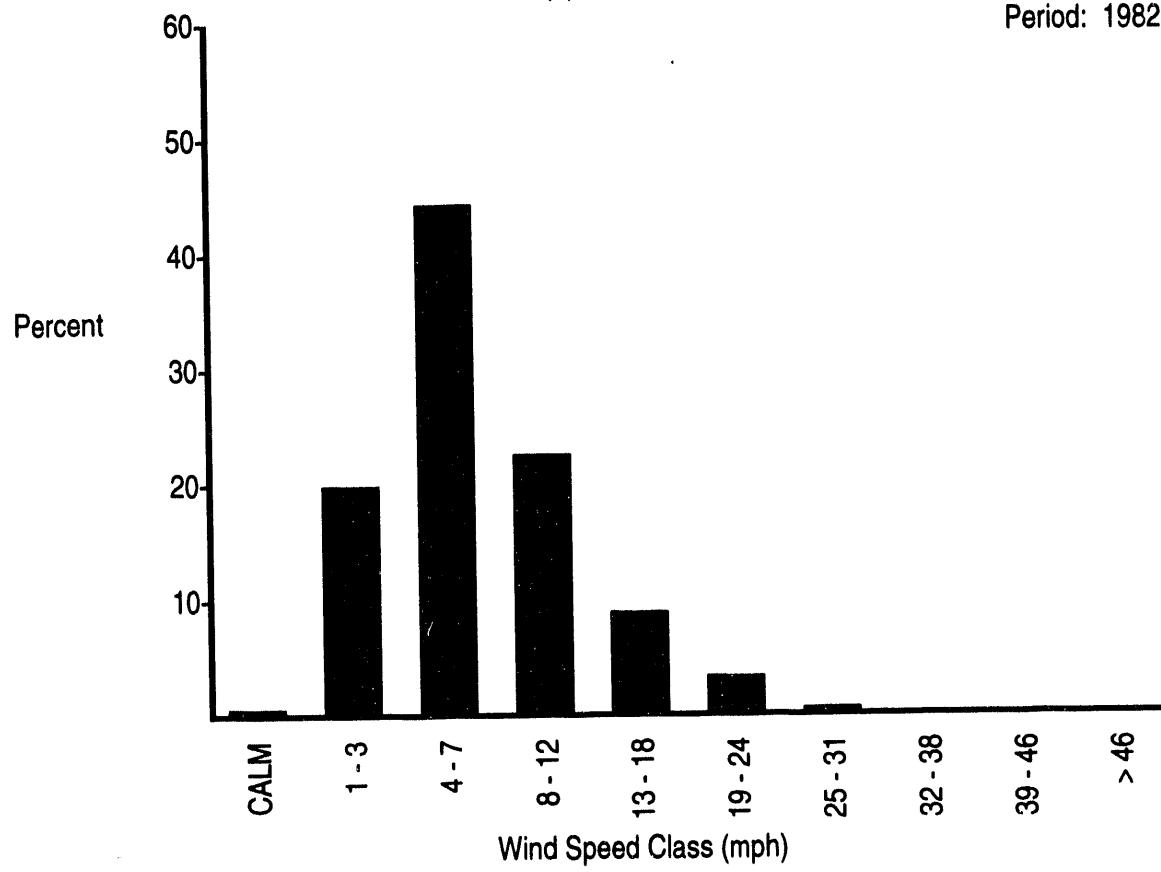


FIGURE B.1. (contd)



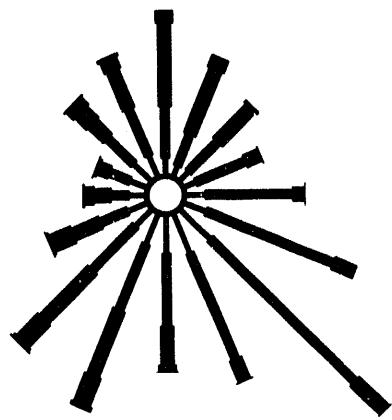
(a) Wind Rose

August Data
Period: 1982 - 1993

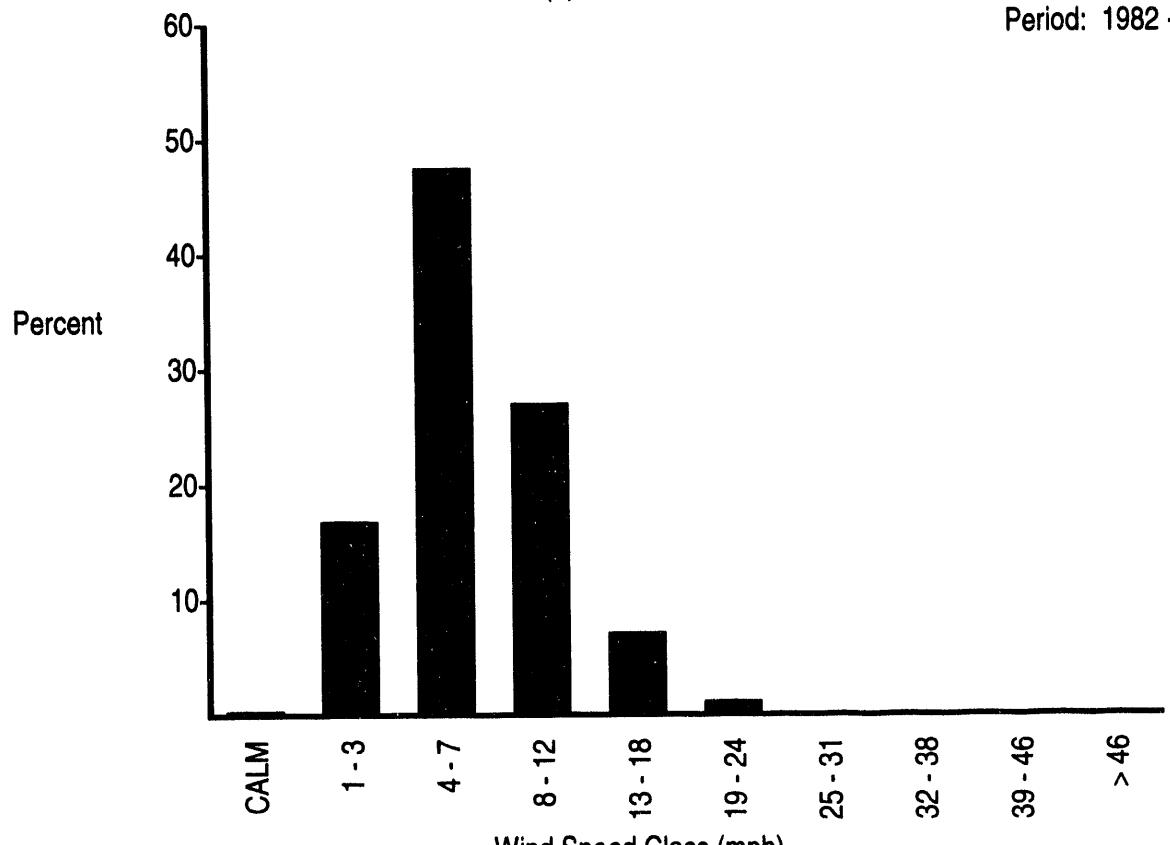


(b) Wind Speed Histogram

FIGURE B.1. (contd)

N
↑

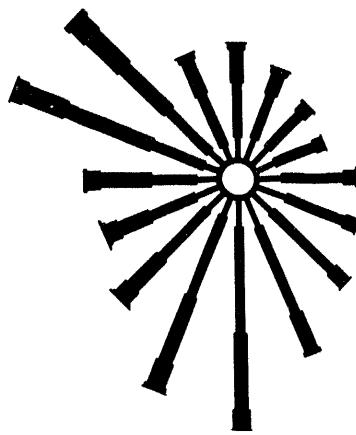
(a) Wind Rose

August Data
Period: 1982 - 1993

(b) Wind Speed Histogram

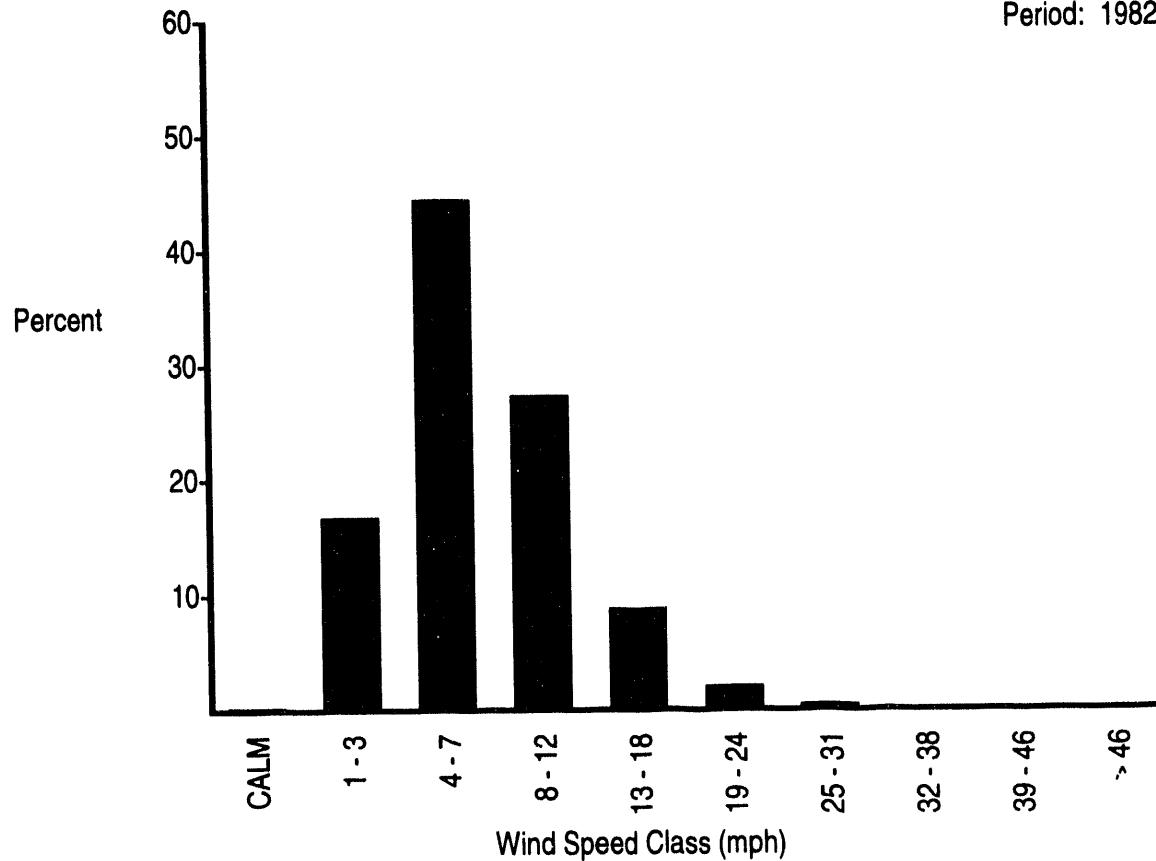
FIGURE B.1. (contd)

N
↑



(a) Wind Rose

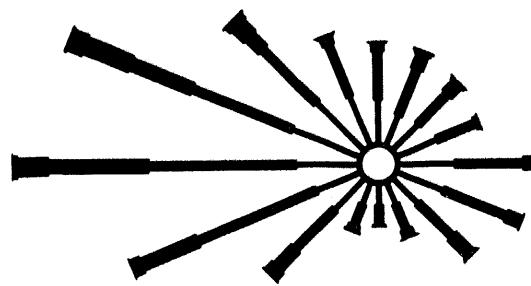
August Data
Period: 1982 - 1993



(b) Wind Speed Histogram

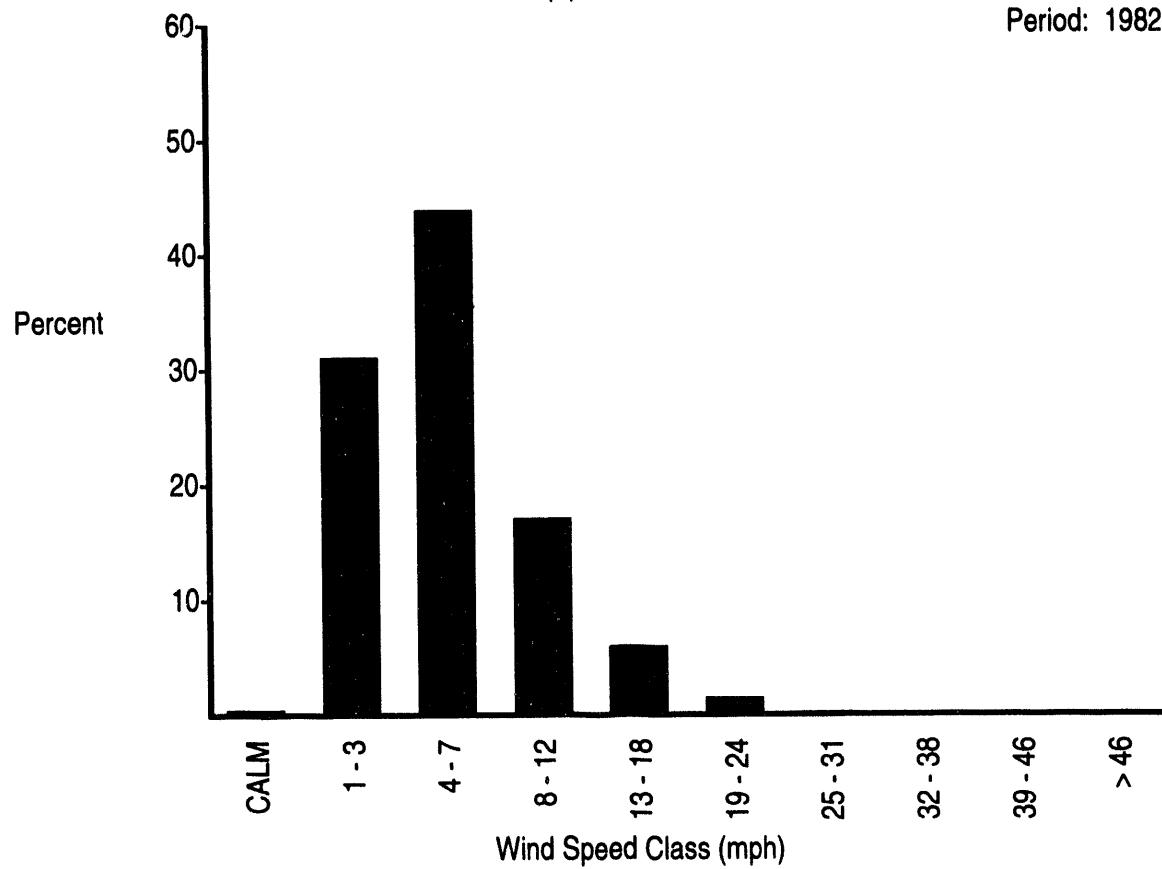
FIGURE B.1. (contd)

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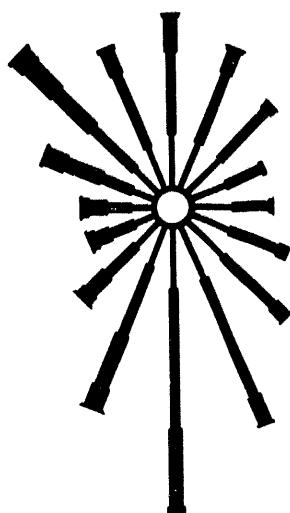
(a) Wind Rose

August Data
Period: 1982 - 1993

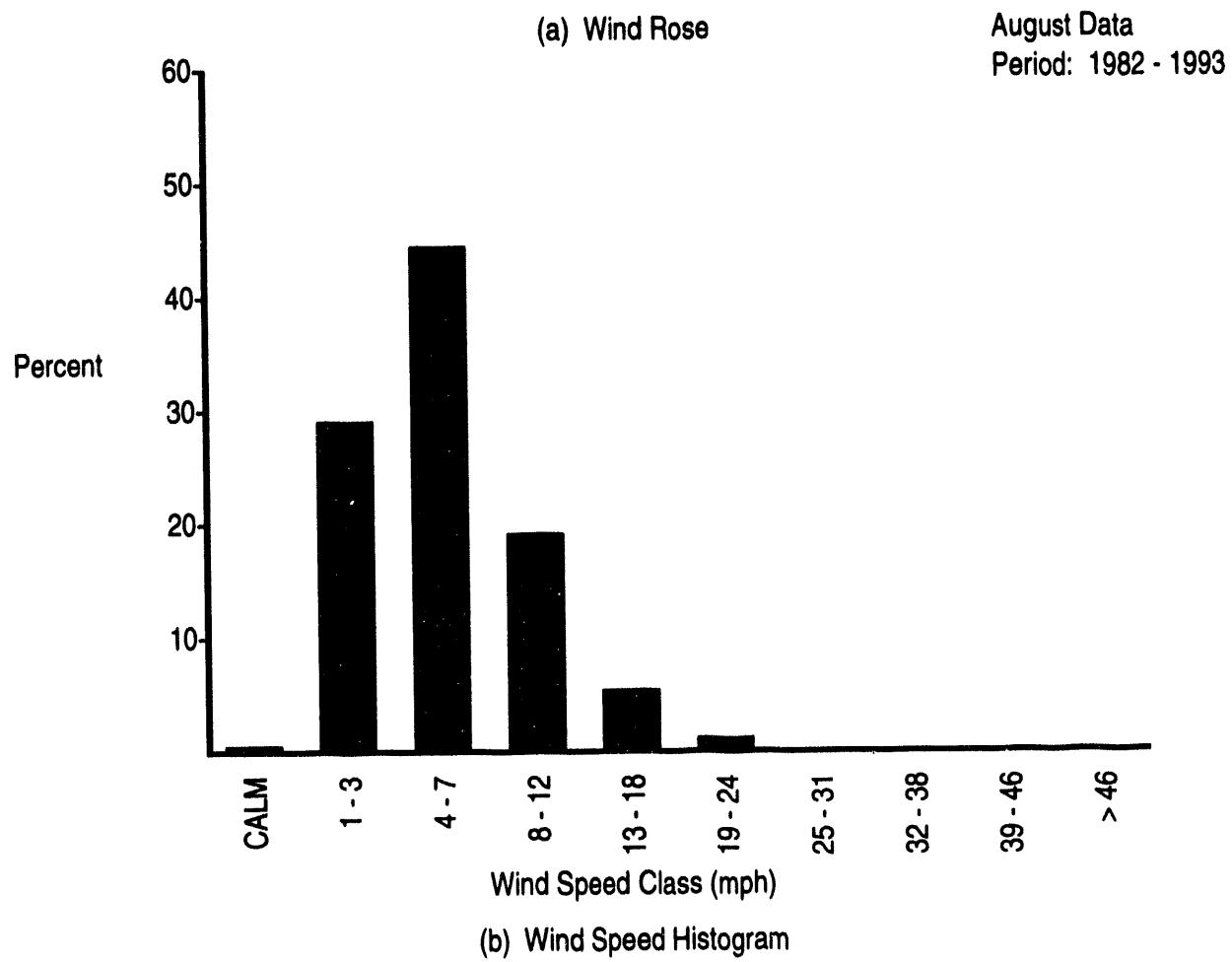


(b) Wind Speed Histogram

FIGURE B.1. (contd)



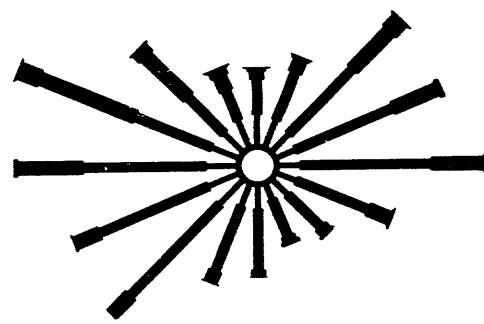
N



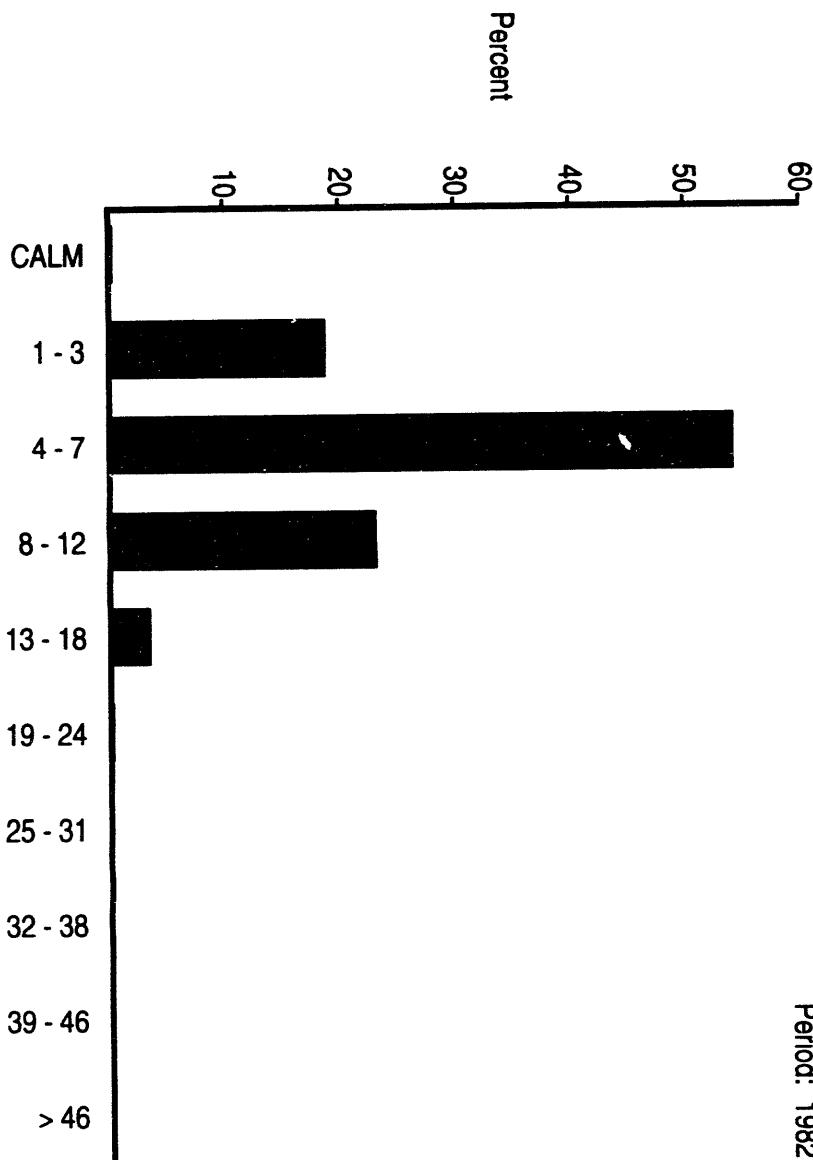
(b) Wind Speed Histogram

FIGURE B.1. (contd)

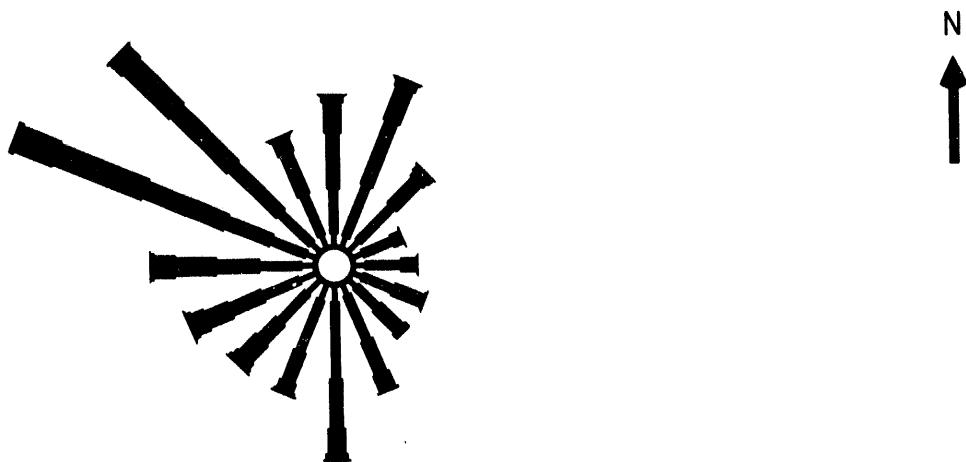
(a) Wind Rose
August Data
Period: 1982 - 1993



→ N

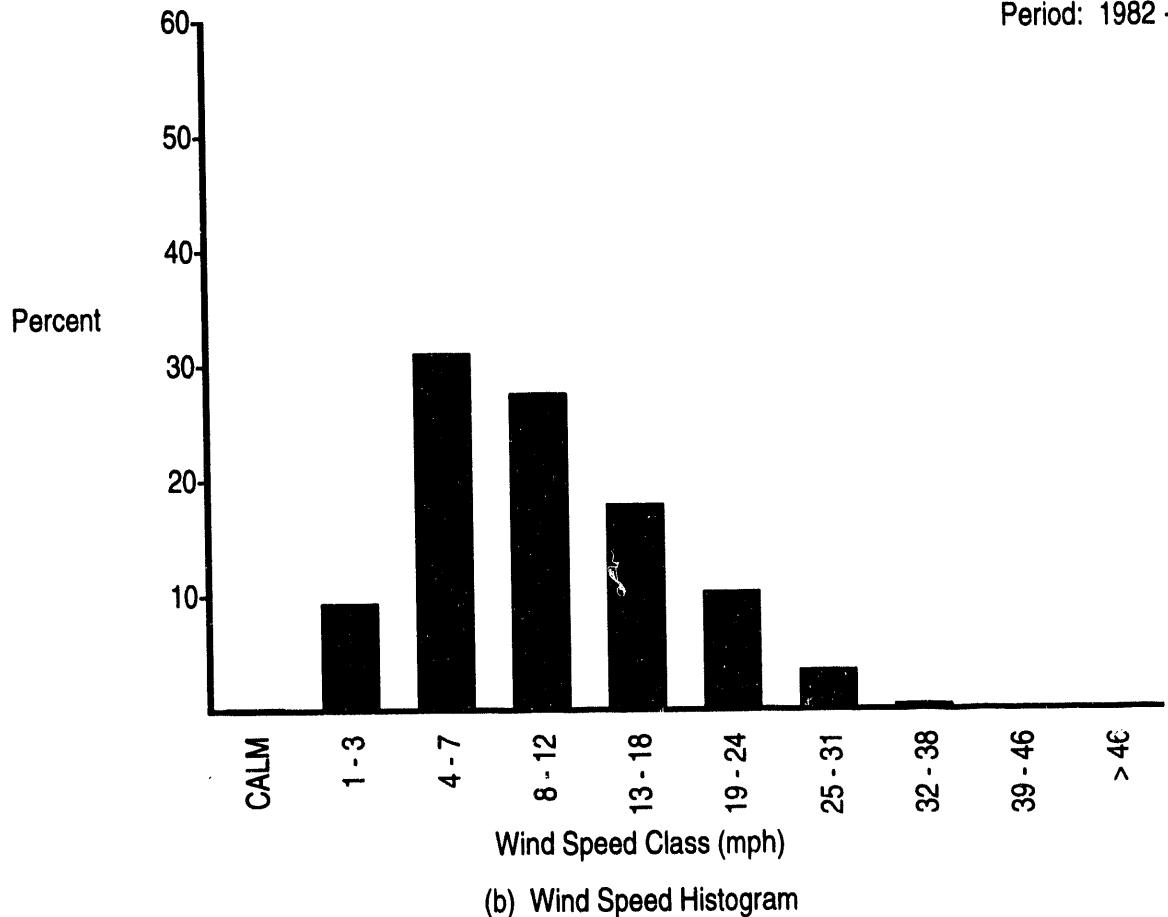


(b) Wind Speed Histogram
FIGURE B.1. (contd)



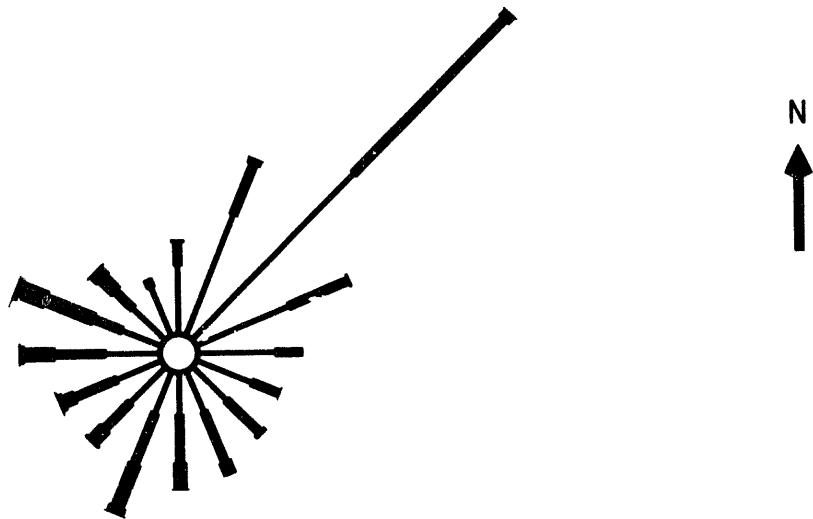
(a) Wind Rose

August Data
Period: 1982 - 1993



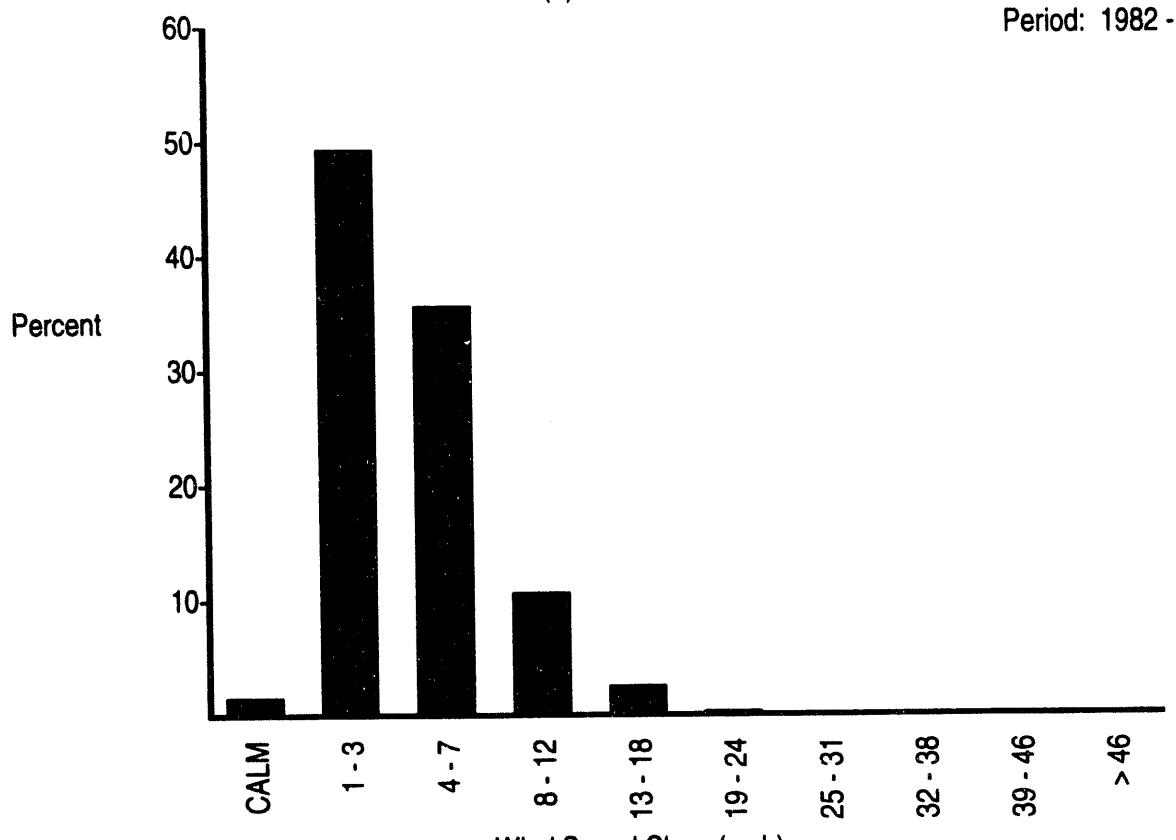
(b) Wind Speed Histogram

FIGURE B.1. (contd)



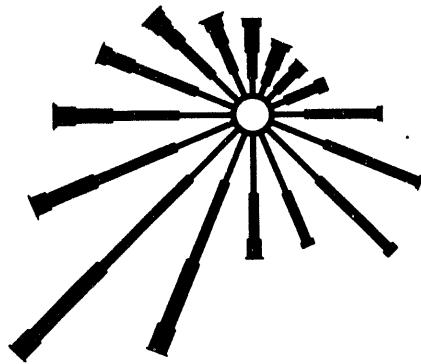
(a) Wind Rose

August Data
Period: 1982 - 1993

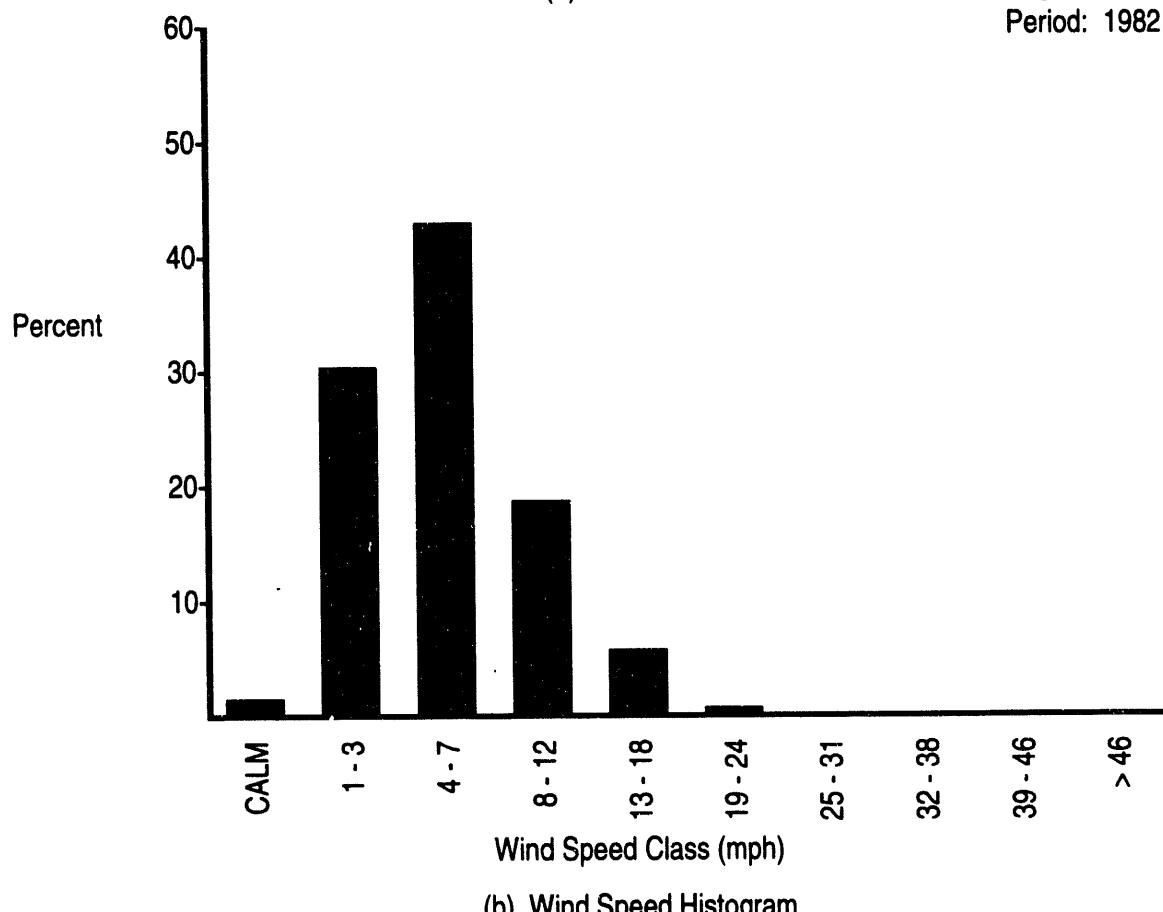


(b) Wind Speed Histogram

FIGURE B.1. (contd)

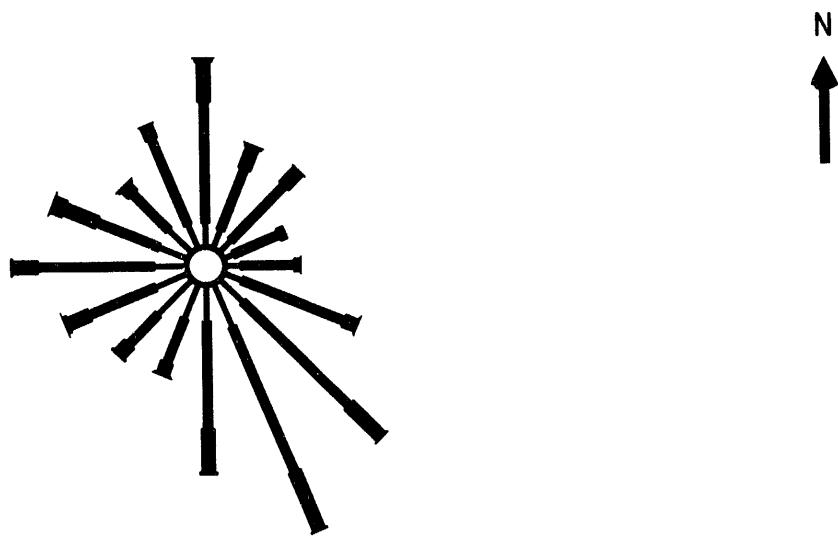
N
↑

(a) Wind Rose

August Data
Period: 1982 - 1993

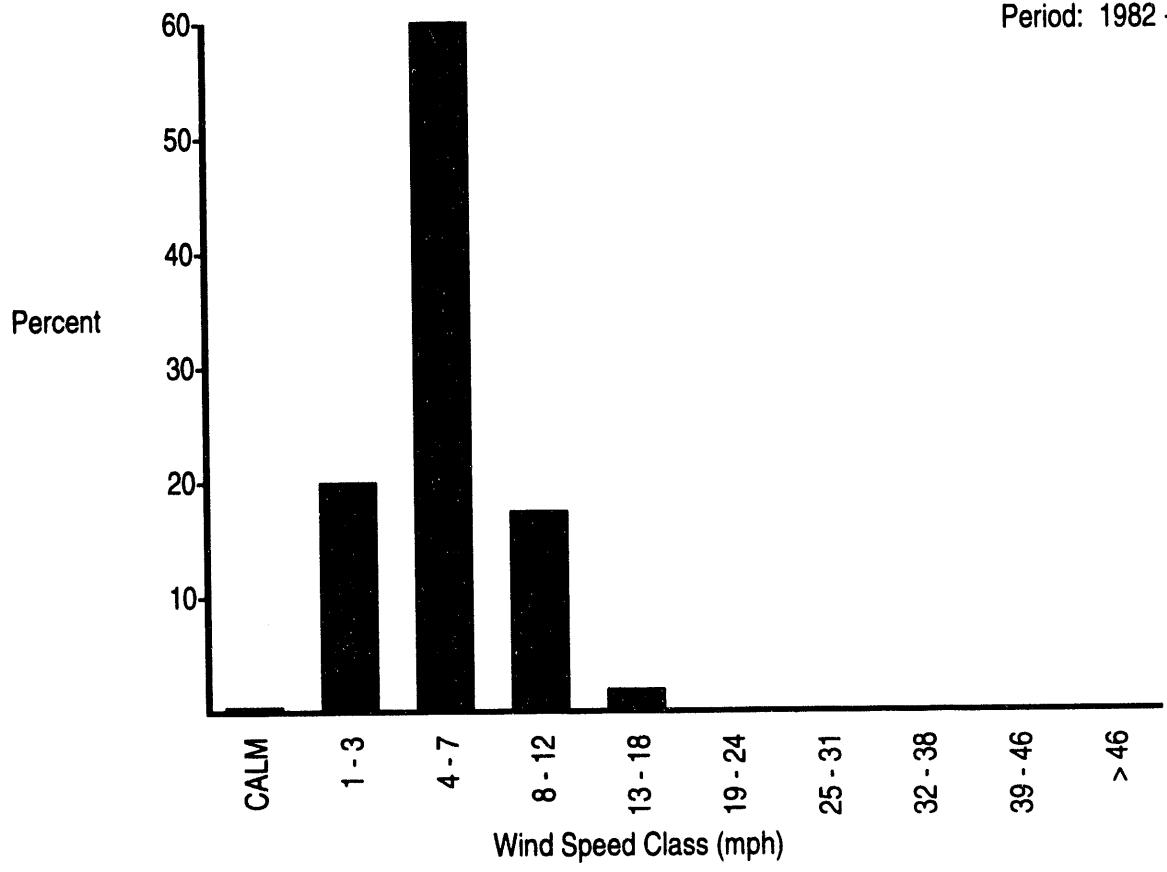
(b) Wind Speed Histogram

FIGURE B.1. (contd)



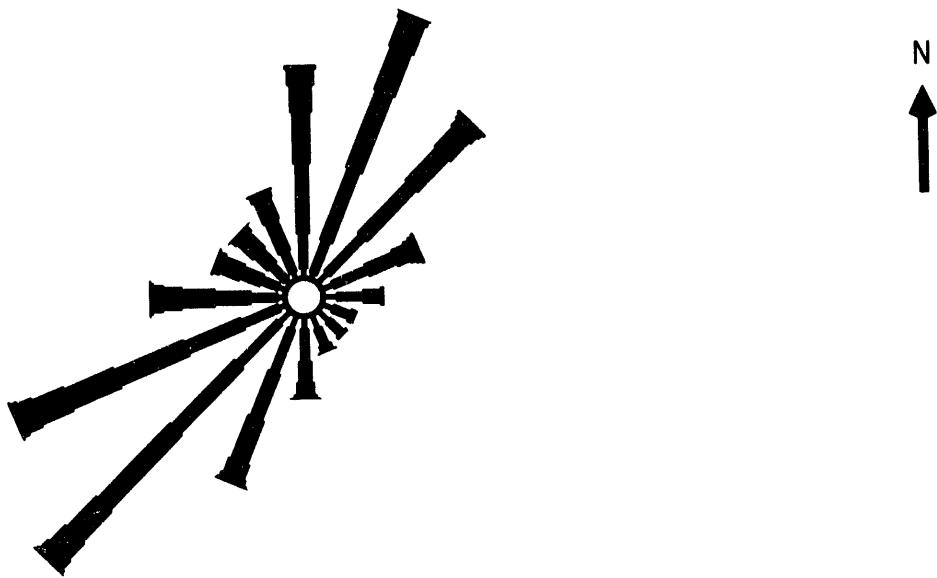
(a) Wind Rose

August Data
Period: 1982 - 1992



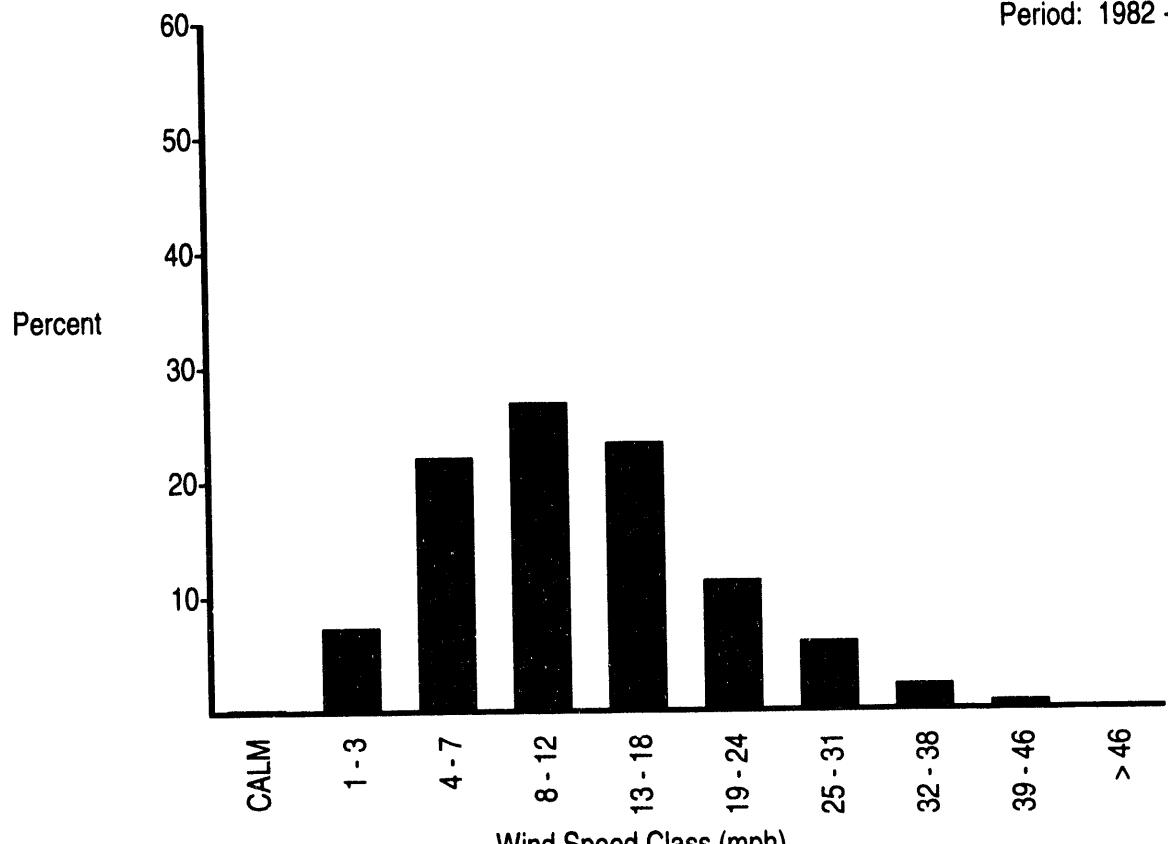
(b) Wind Speed Histogram

FIGURE B.1. (contd)



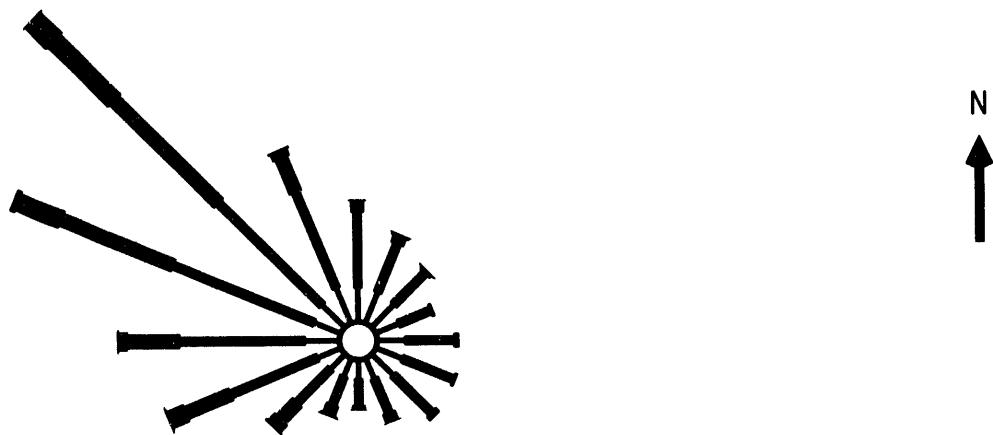
(a) Wind Rose

August Data
Period: 1982 - 1993



(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

August Data
Period: 1982 - 1993

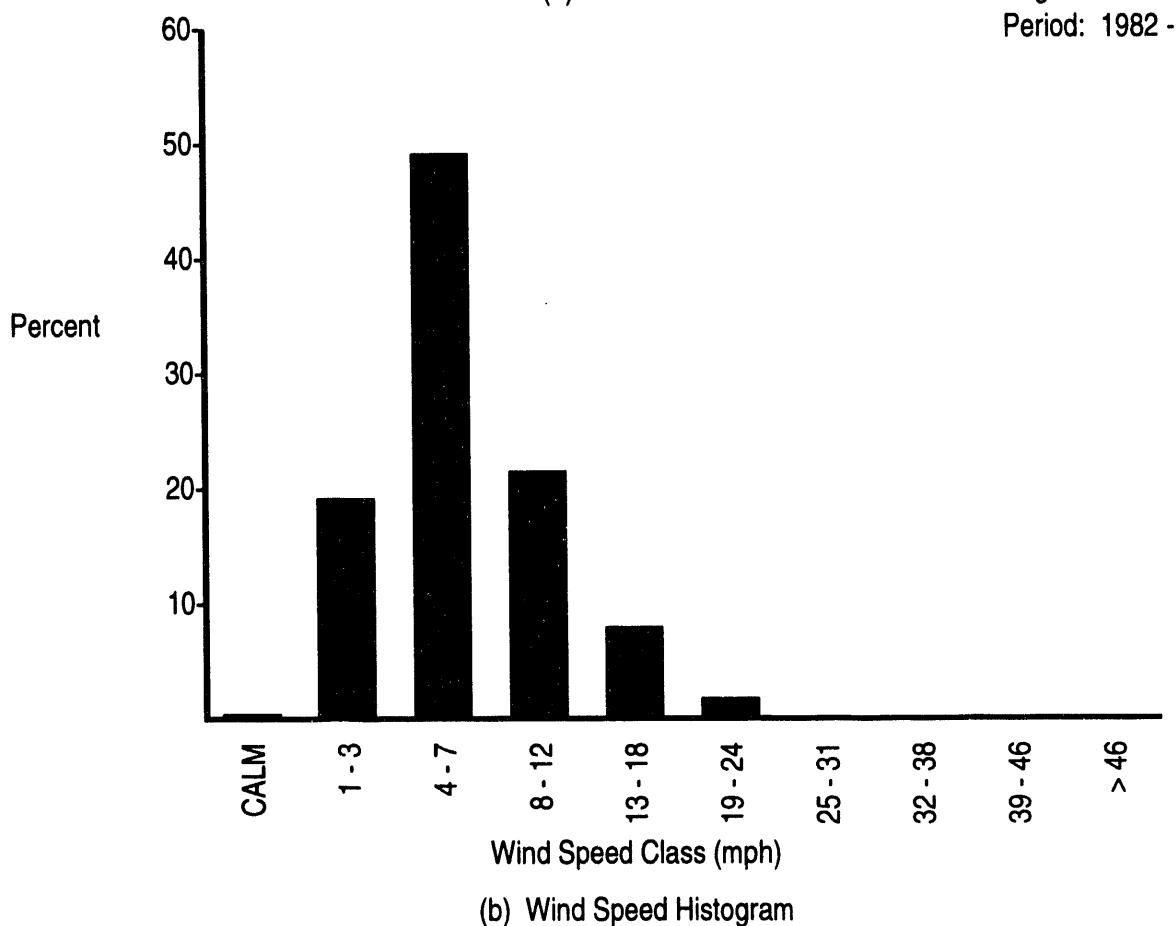
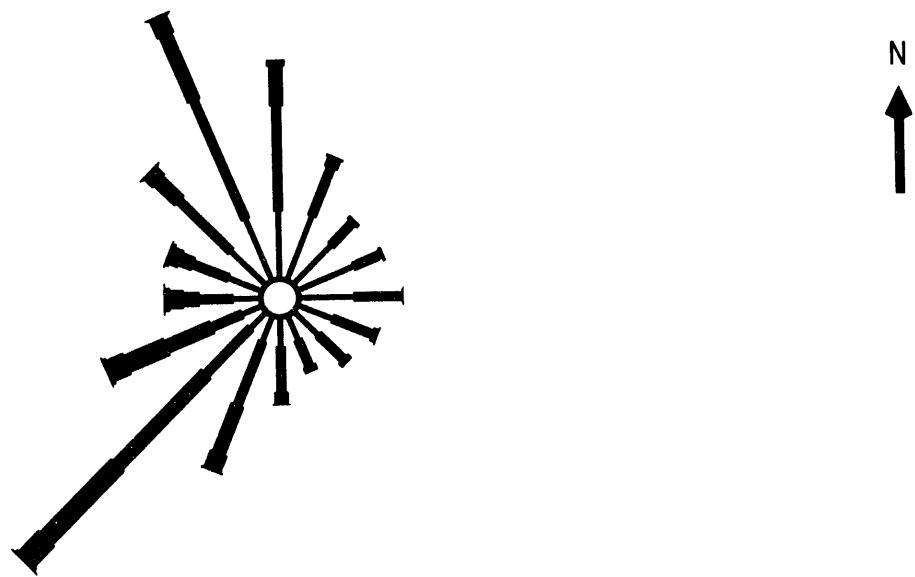
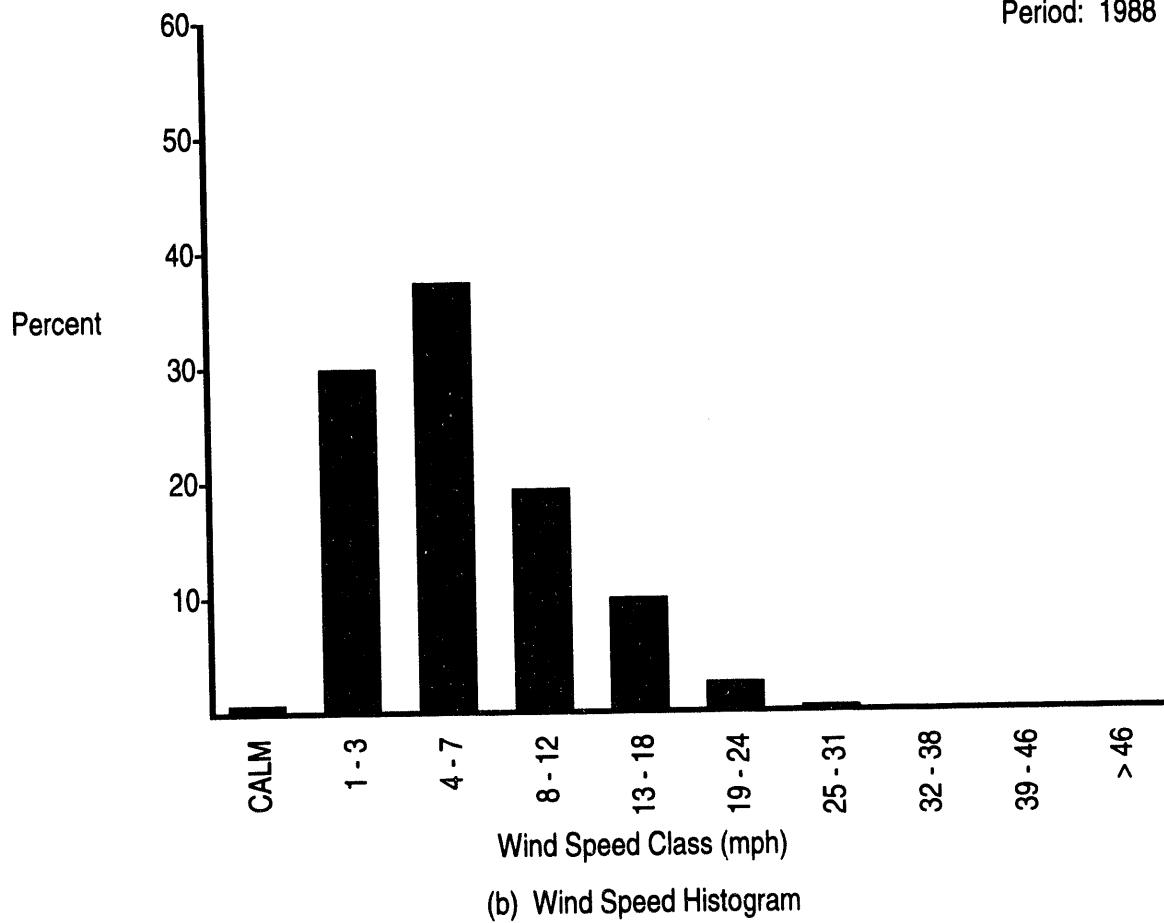


FIGURE B.1. (contd)



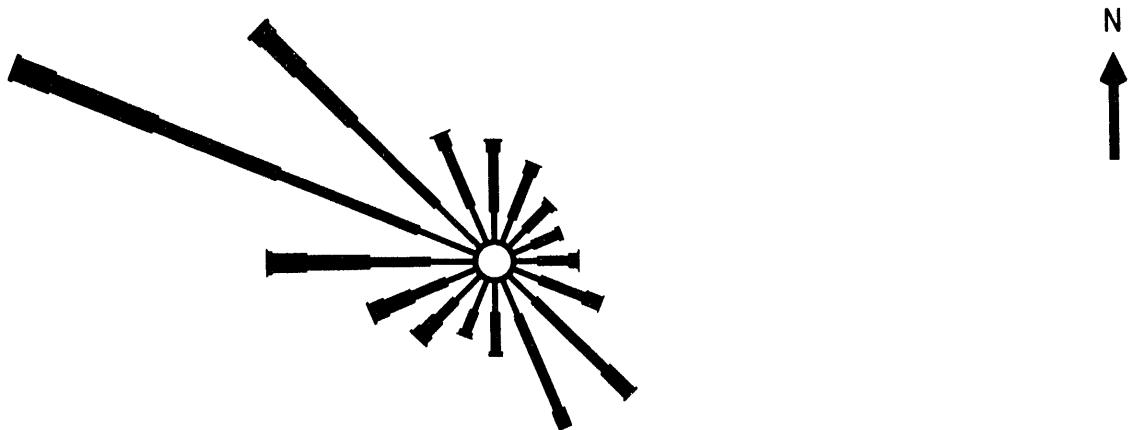
(a) Wind Rose

August Data
Period: 1988 - 1993



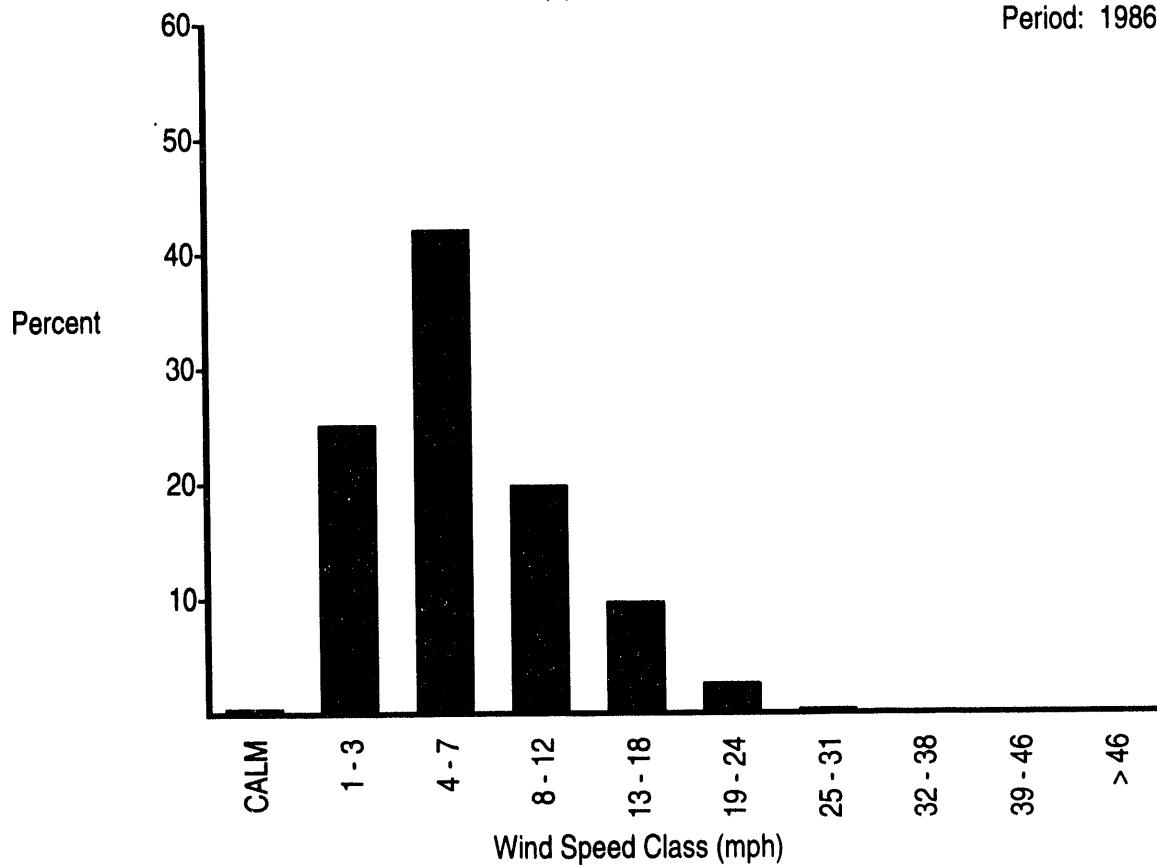
(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

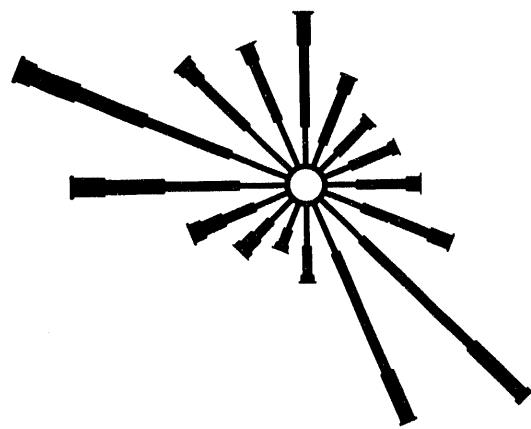
August Data
Period: 1986 - 1993



(b) Wind Speed Histogram

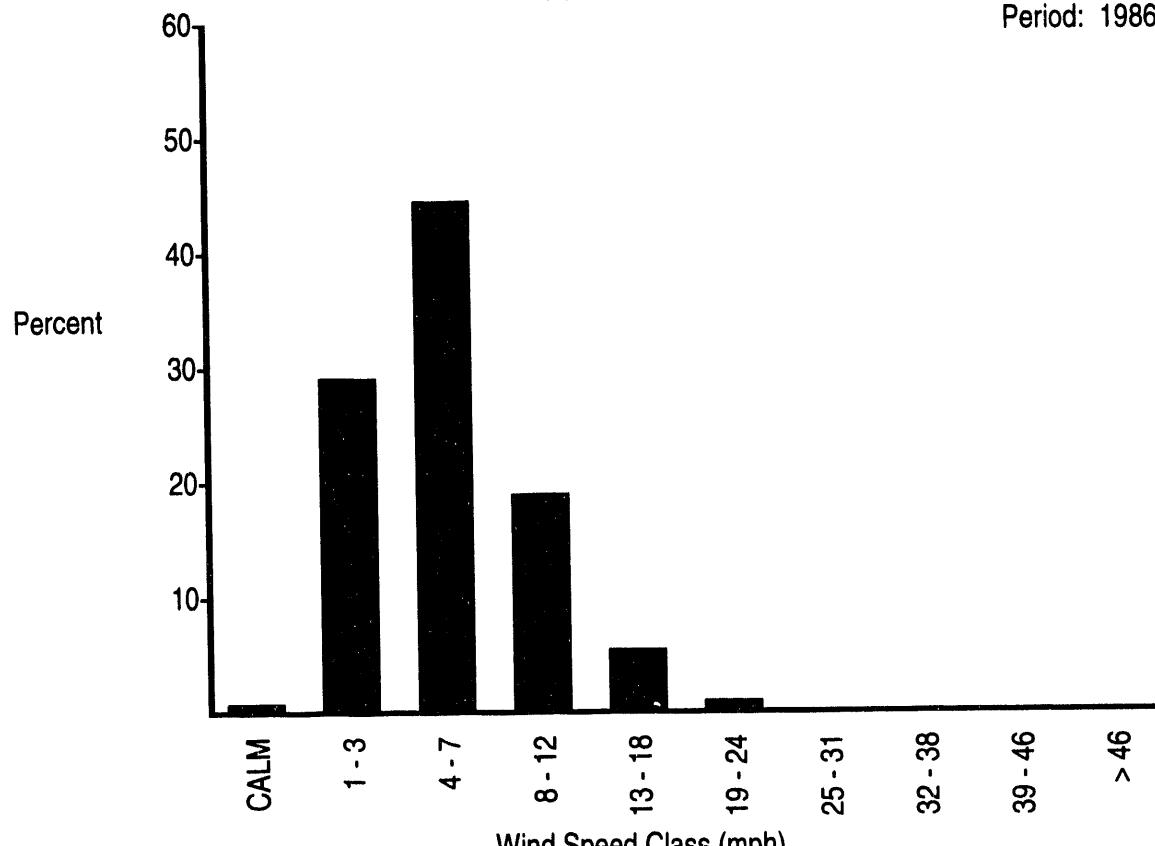
FIGURE B.1. (contd)

N
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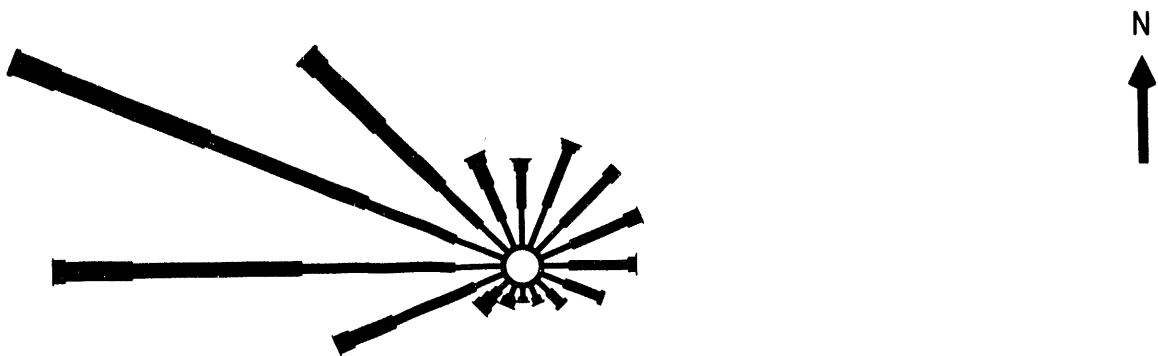
(a) Wind Rose

August Data
Period: 1986 - 1993



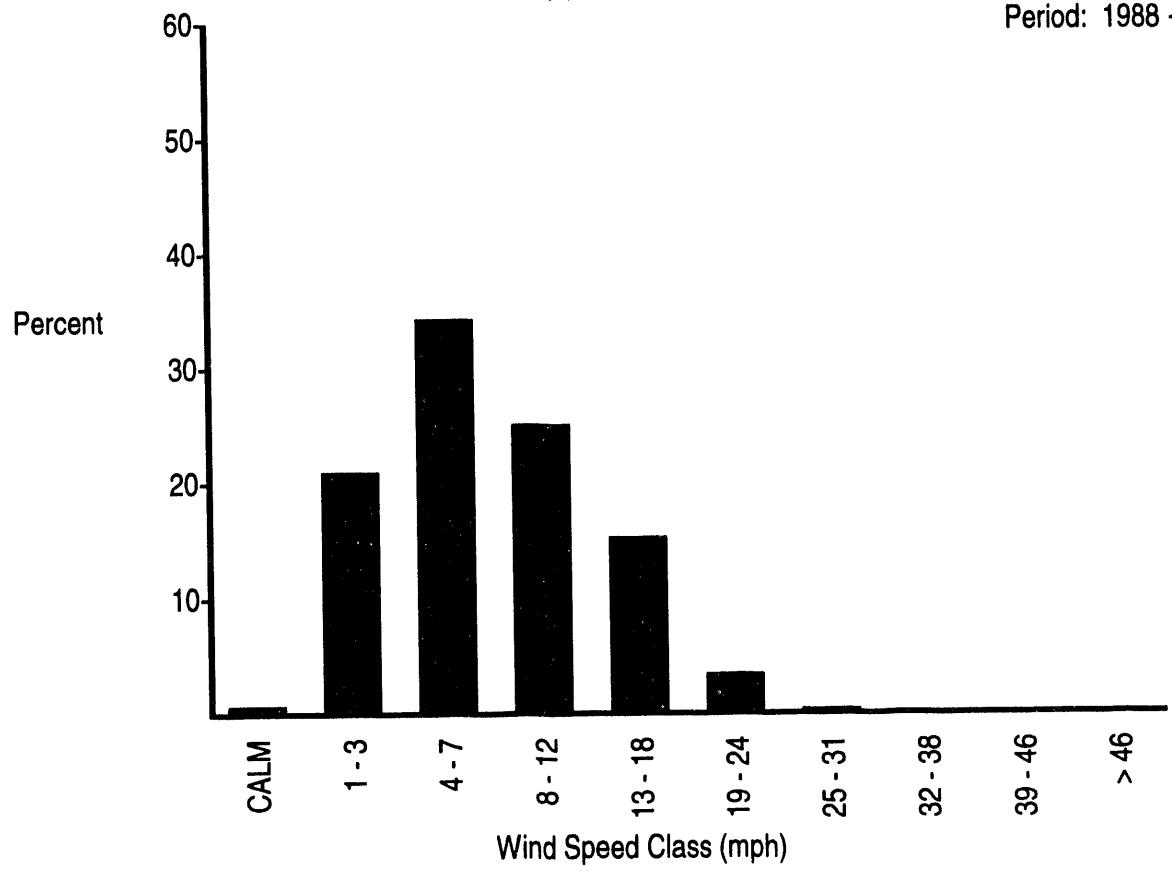
(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

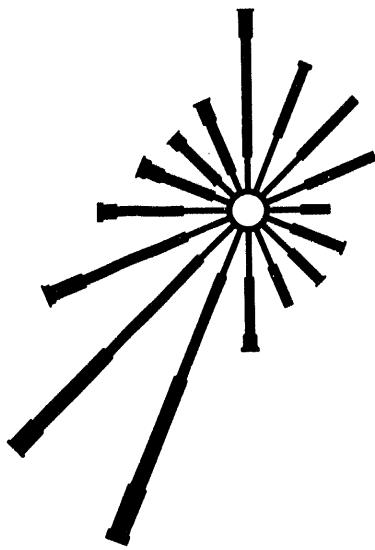
August Data
Period: 1988 - 1993



(b) Wind Speed Histogram

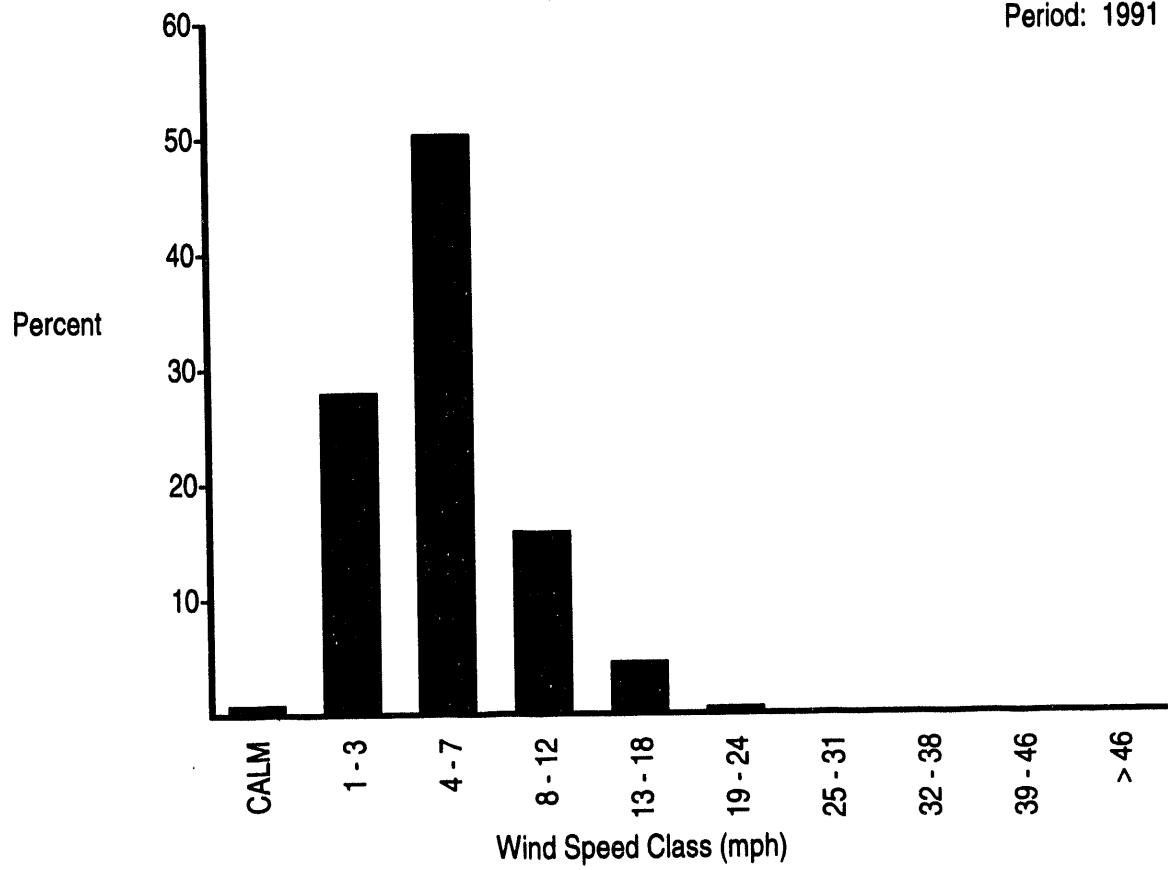
FIGURE B.1. (contd)

N
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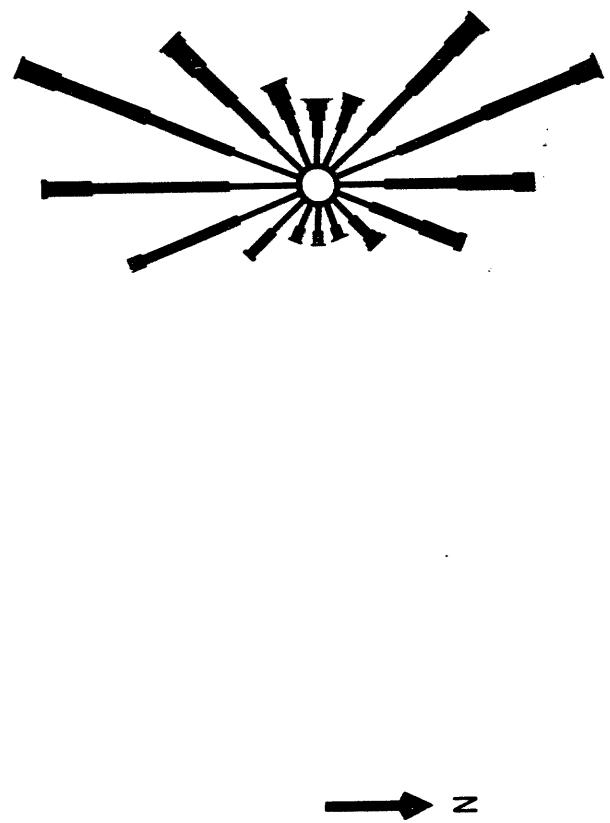
(a) Wind Rose

August Data
Period: 1991 - 1993

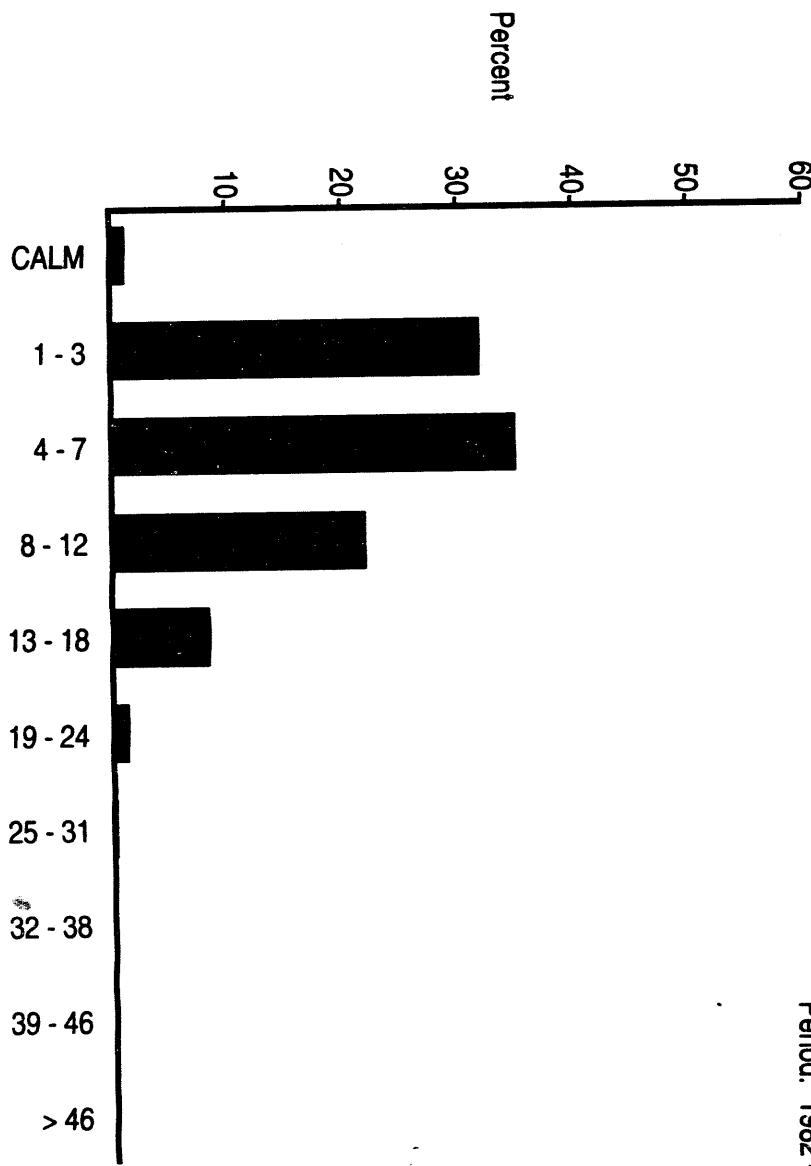


(b) Wind Speed Histogram

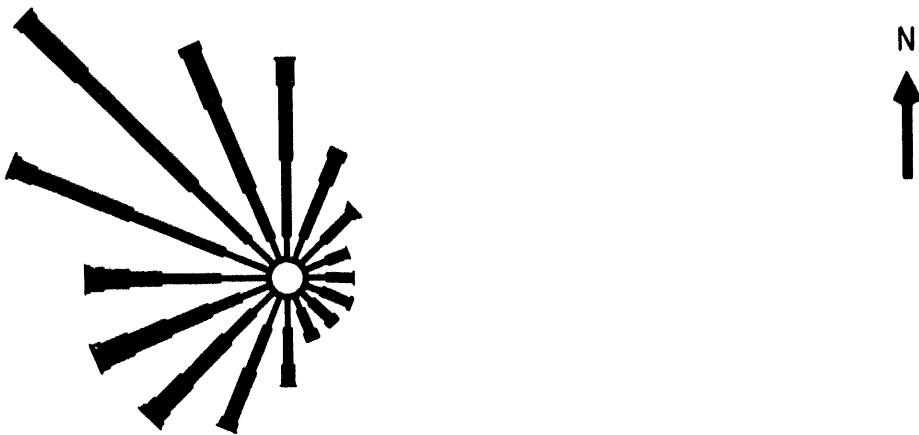
FIGURE B.1. (contd)



(a) Wind Rose
September Data
Period: 1982 - 1993

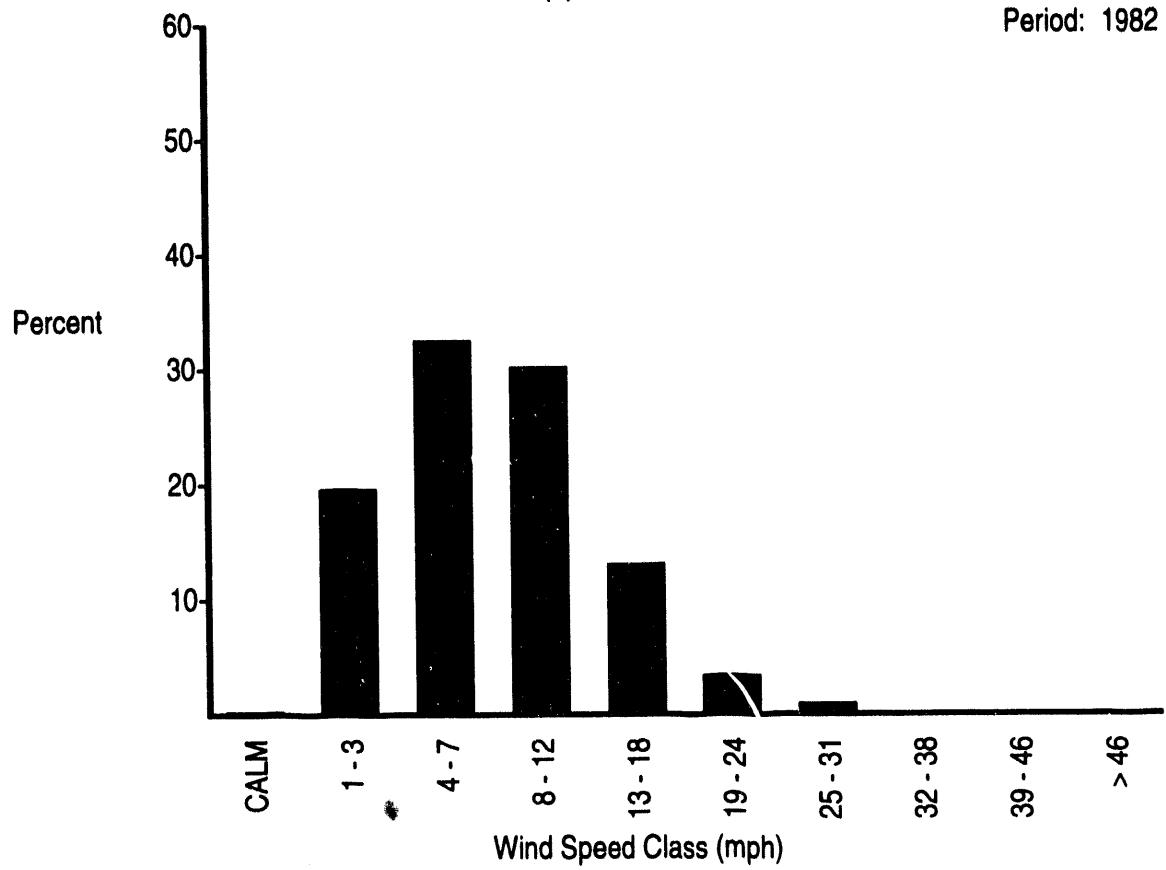


(b) Wind Speed Histogram
FIGURE B.1. (contd)



(a) Wind Rose

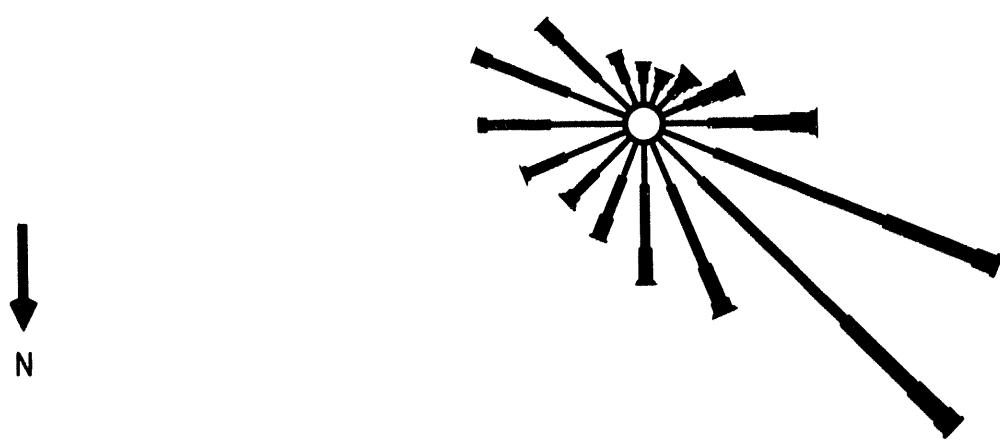
September Data
Period: 1982 - 1993



(b) Wind Speed Histogram

FIGURE B.1. (contd)

(a) Wind Rose
September Data
Period: 1982 - 1993



Station # 3 - ARMY

(b) Wind Speed Histogram

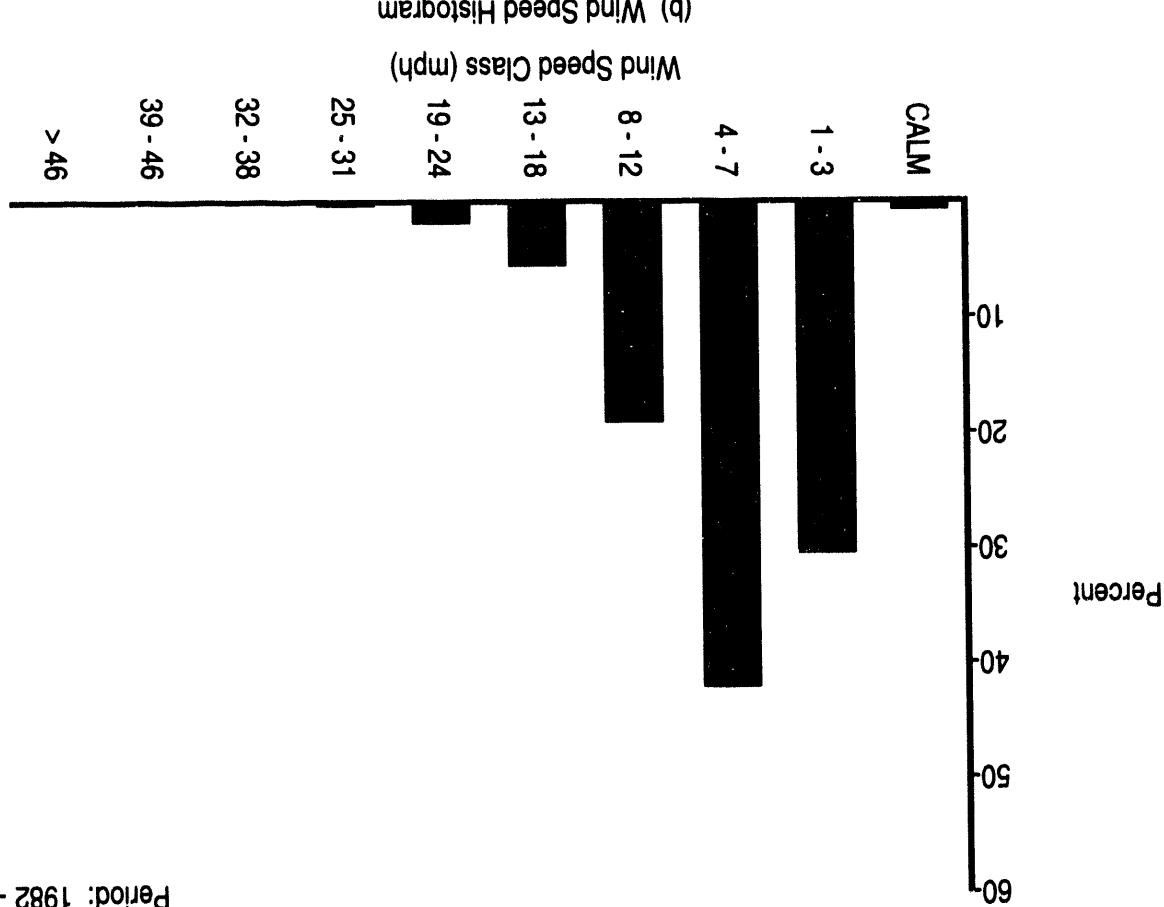


FIGURE B.1. (contd)

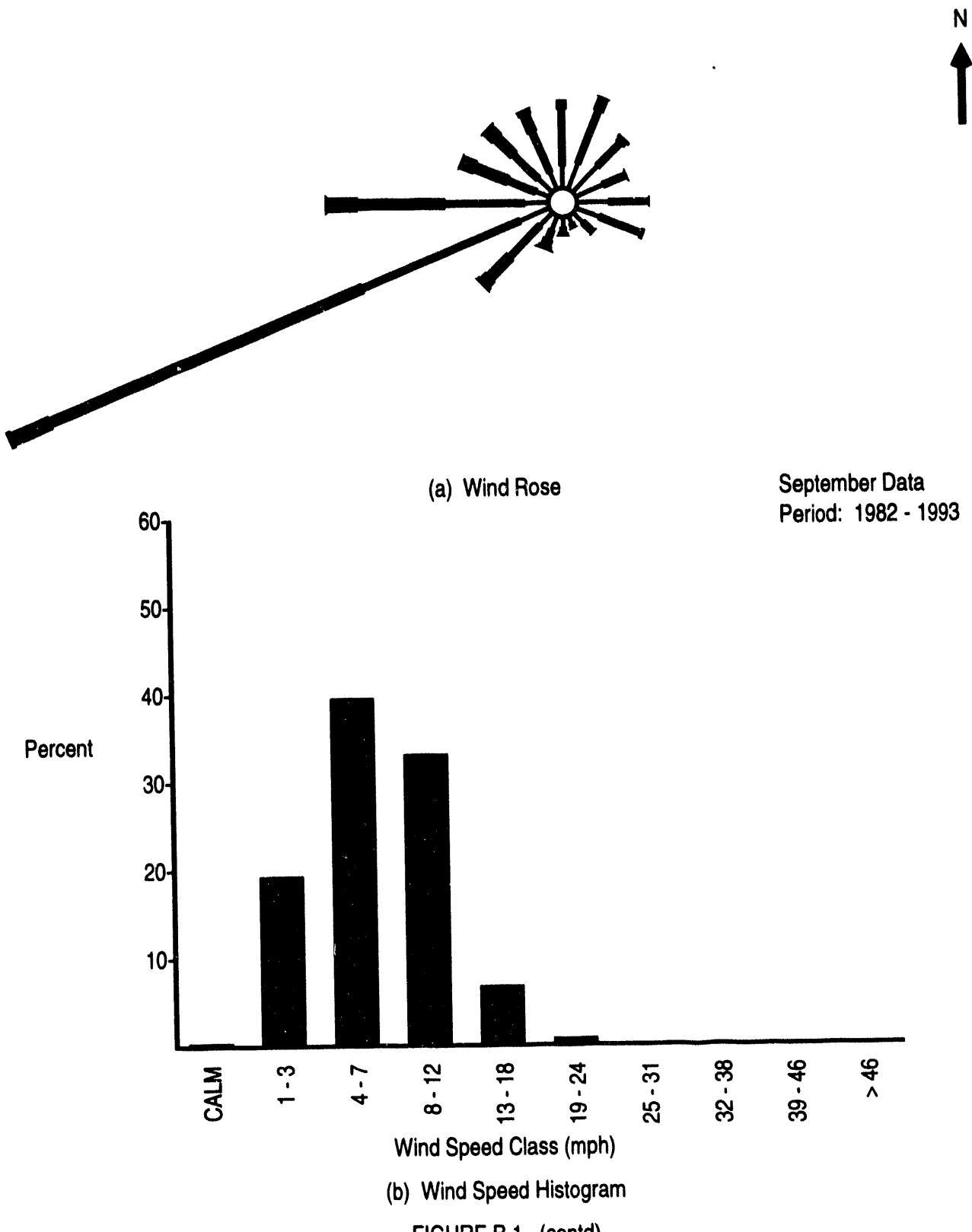
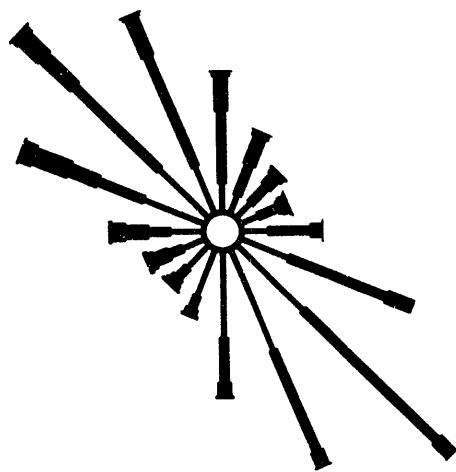


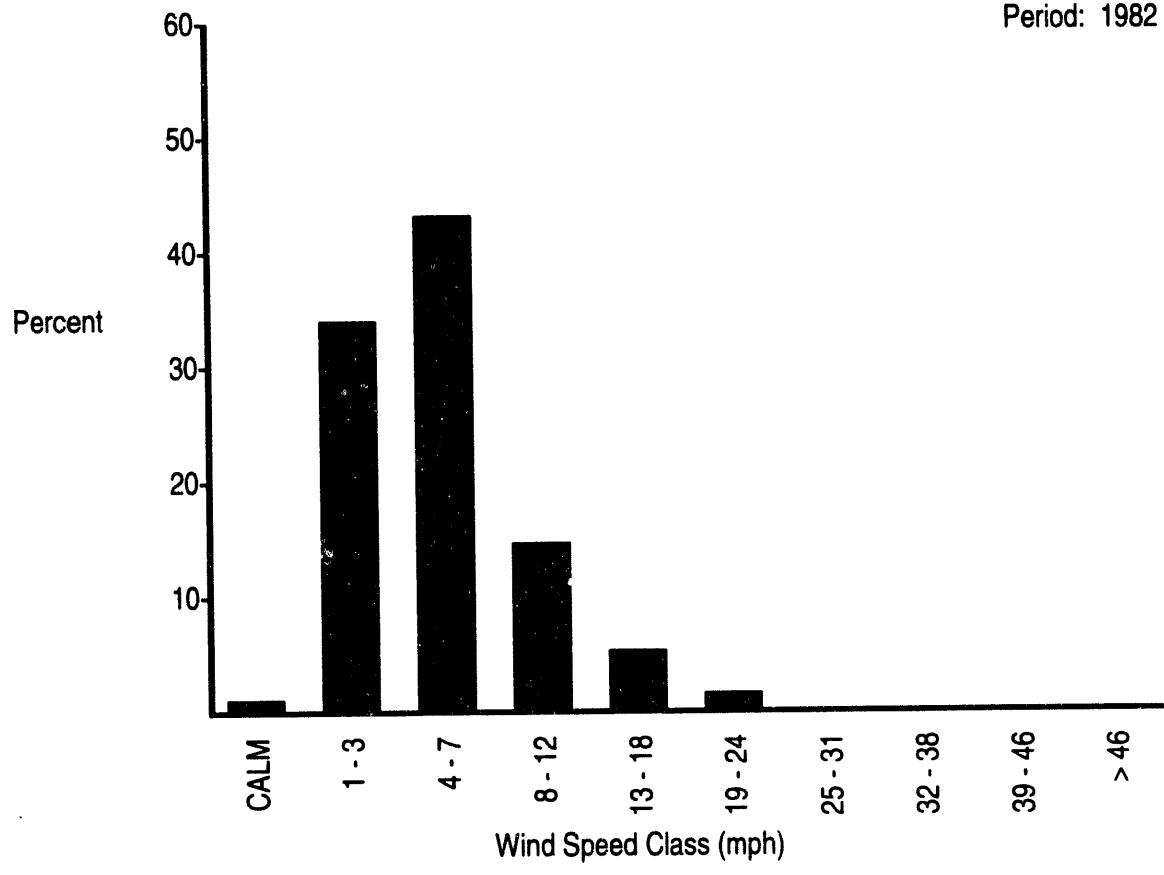
FIGURE B.1. (contd)

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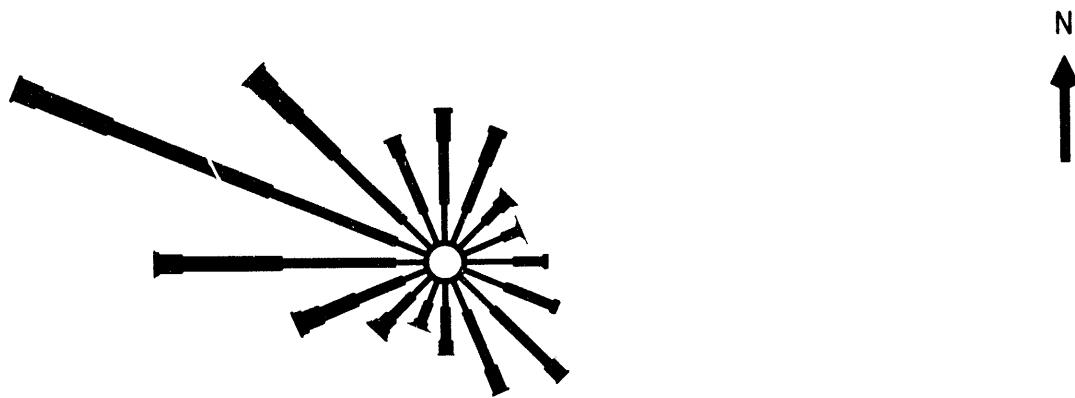
(a) Wind Rose

September Data
Period: 1982 - 1993



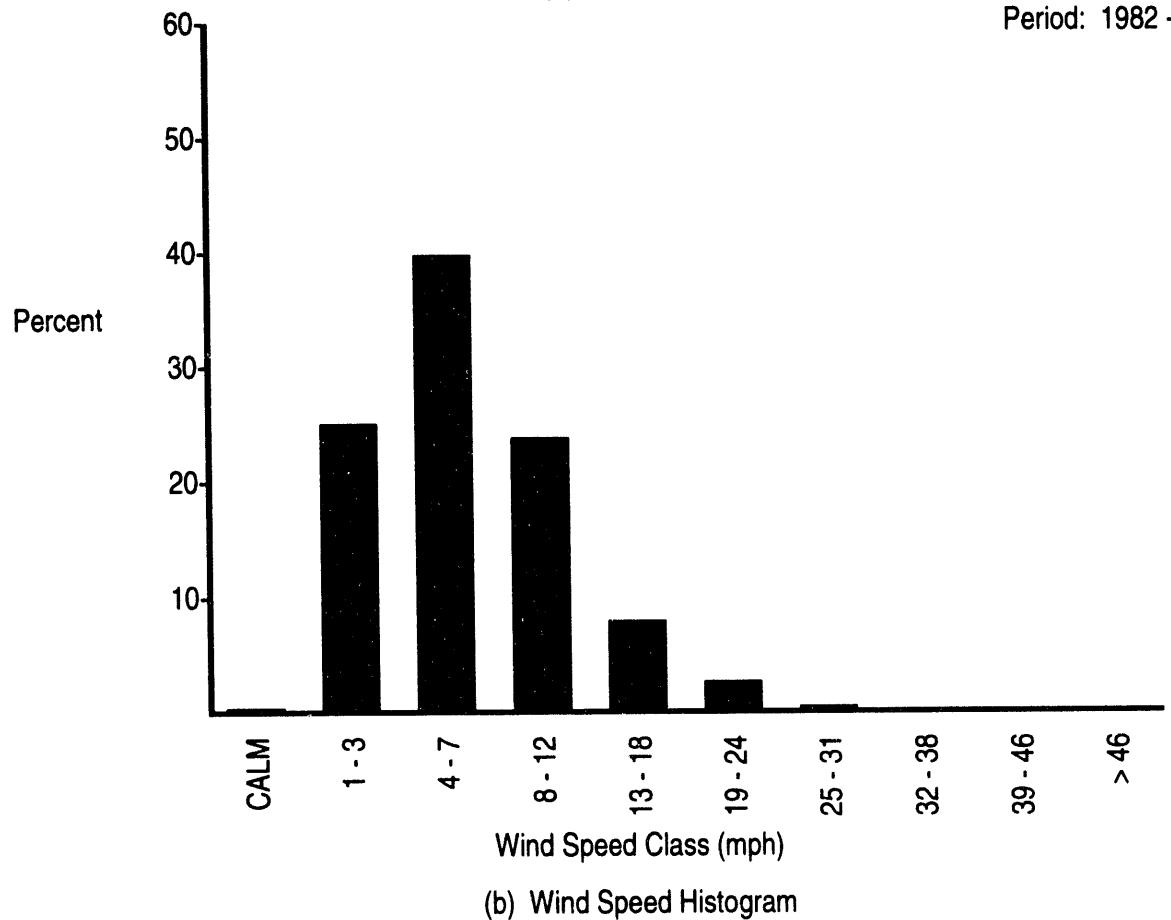
(b) Wind Speed Histogram

FIGURE B.1. (contd)



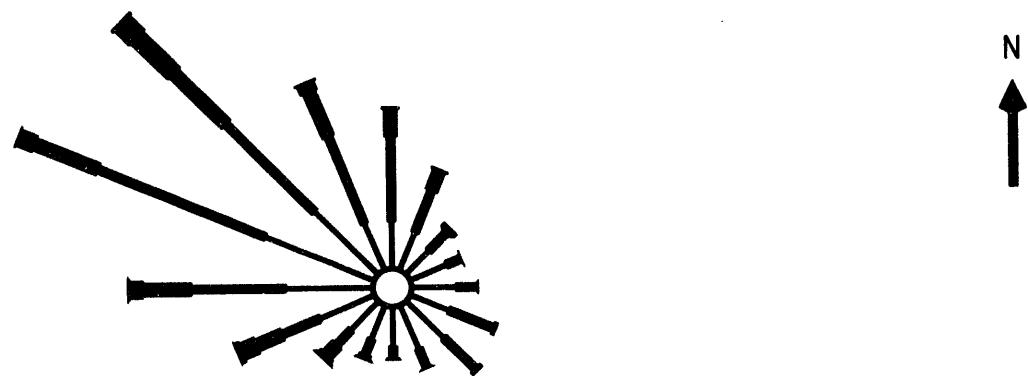
(a) Wind Rose

September Data
Period: 1982 - 1993

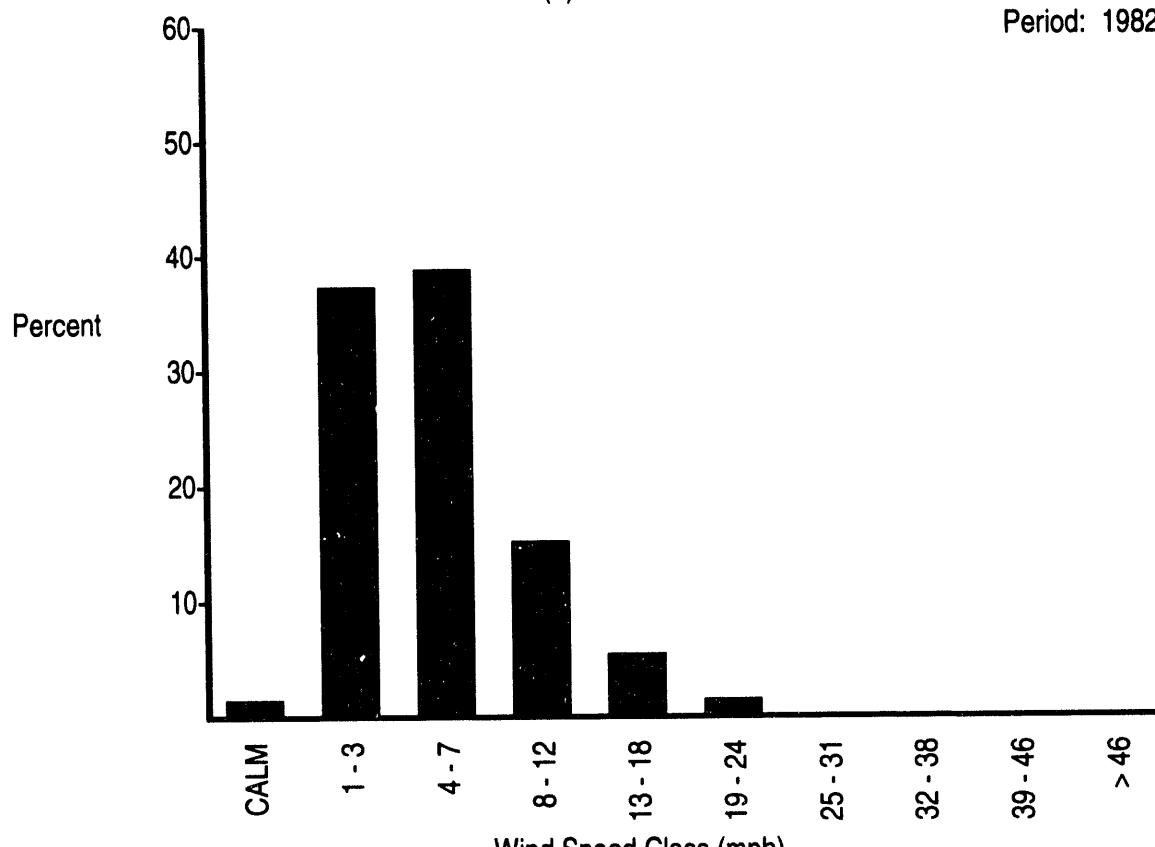


(b) Wind Speed Histogram

FIGURE B.1. (contd)

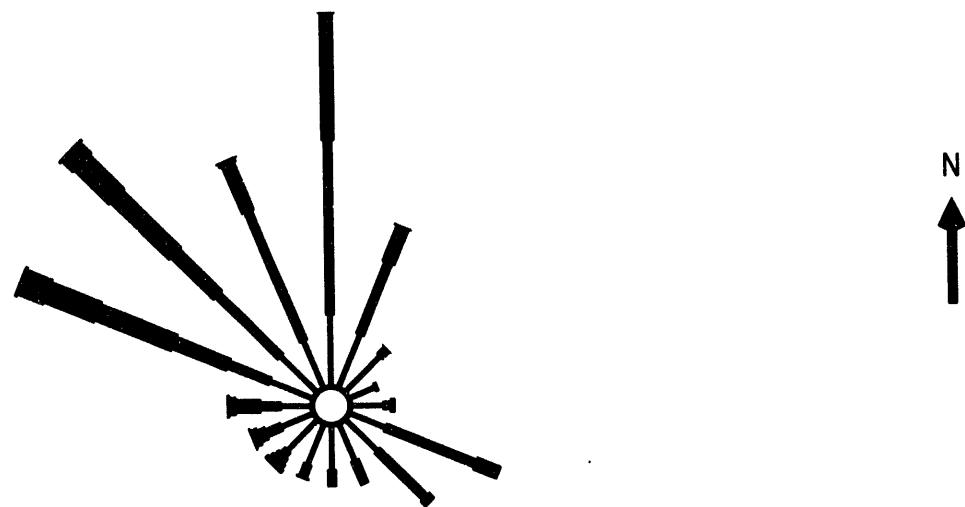


(a) Wind Rose

September Data
Period: 1982 - 1993

(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

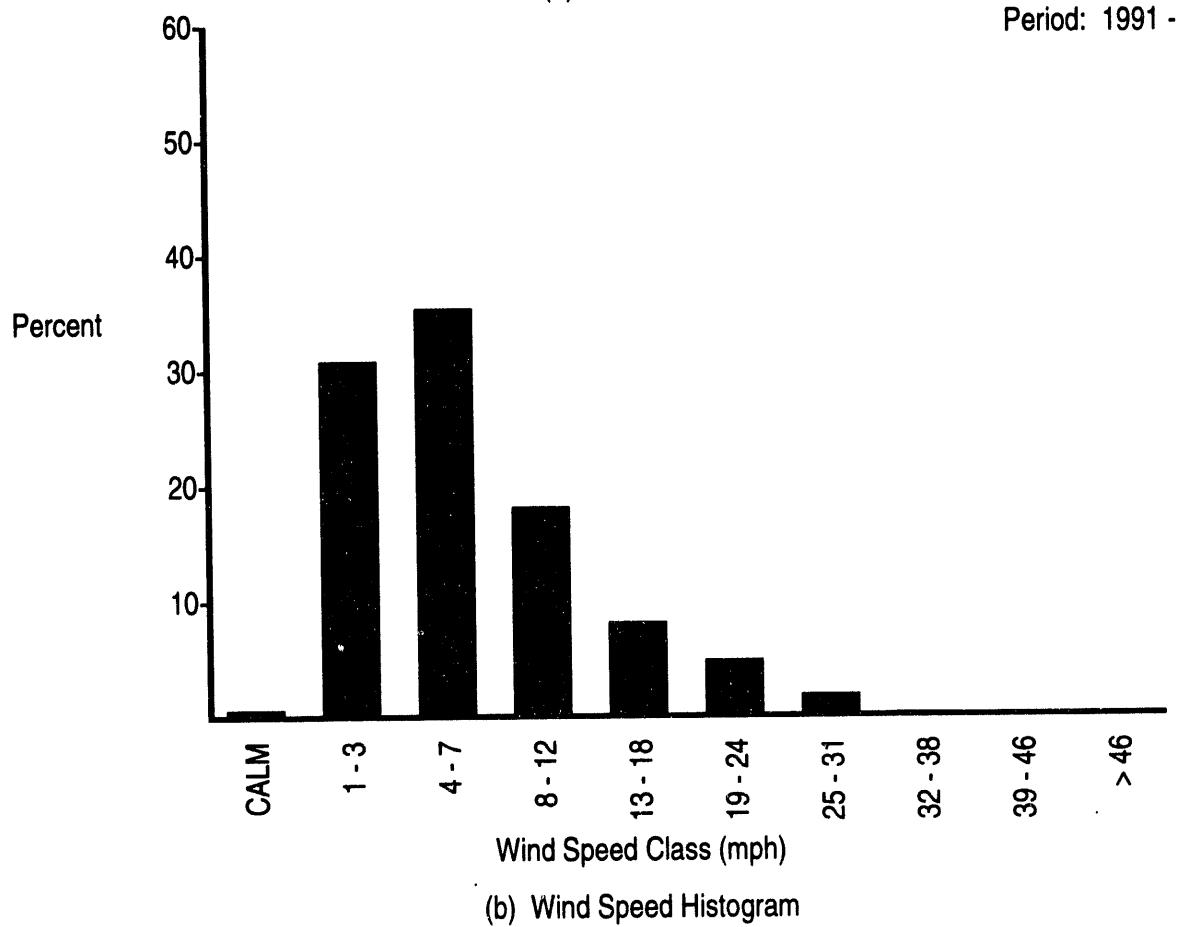
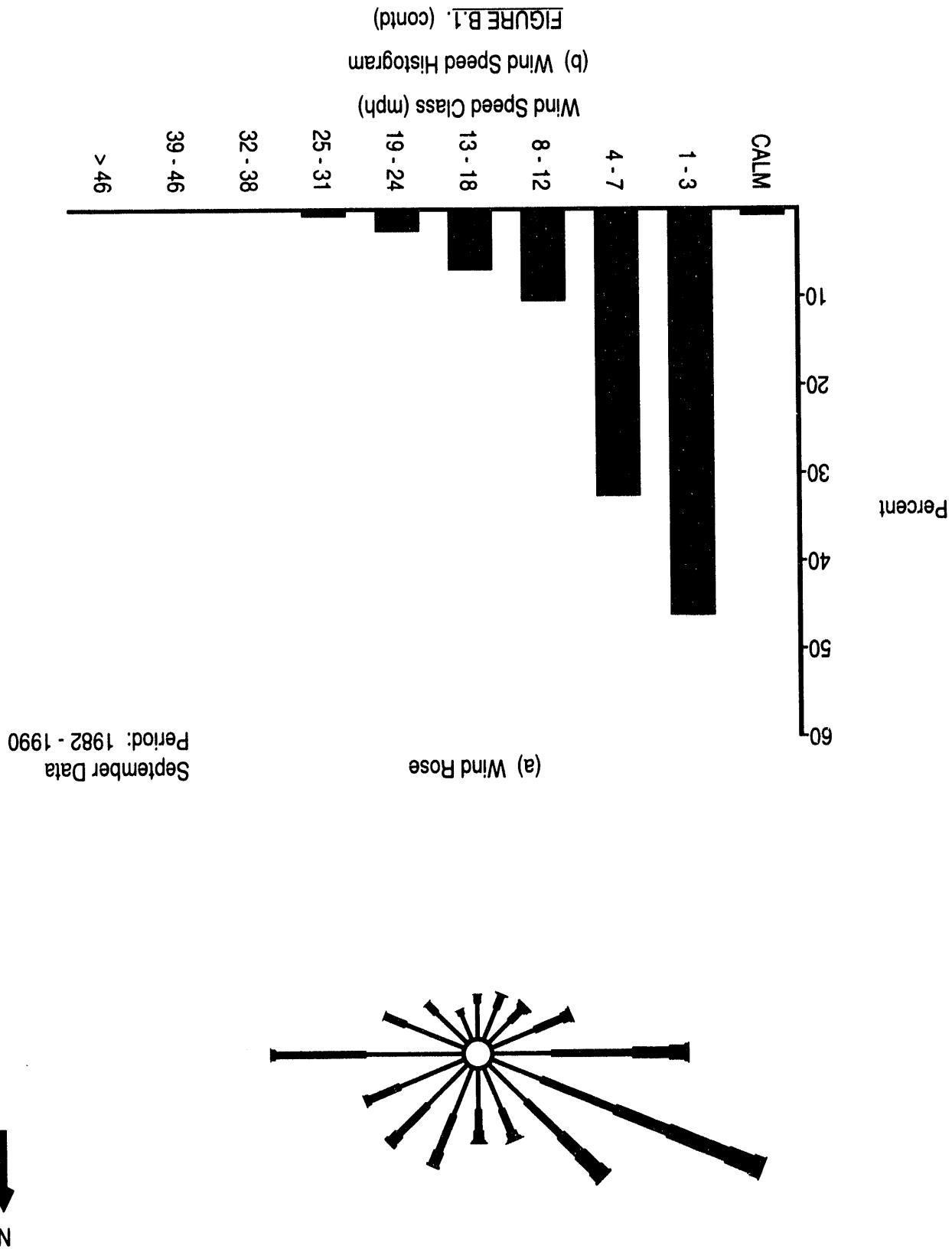
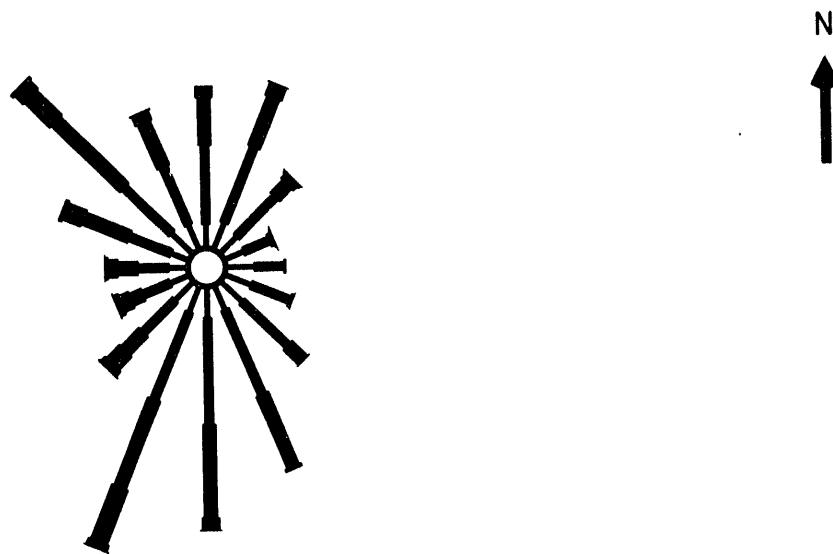
September Data
Period: 1991 - 1993

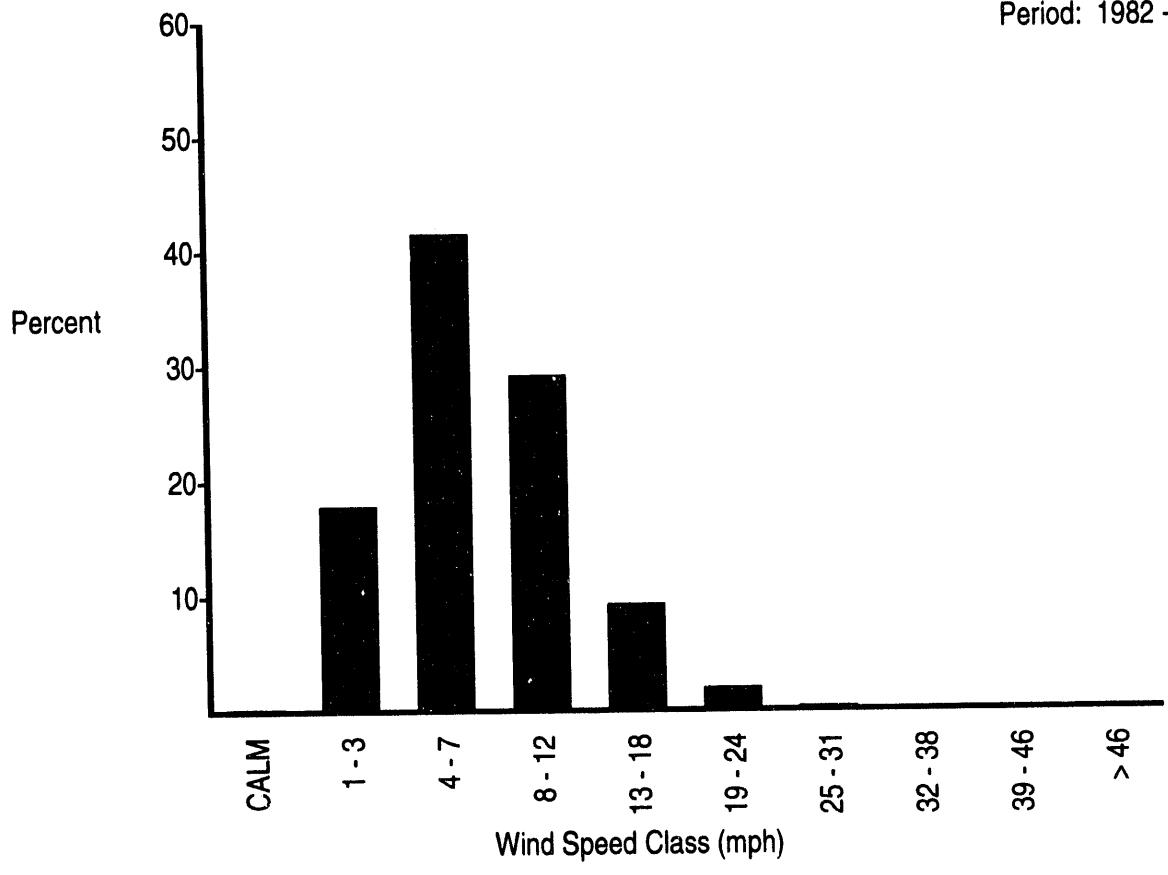
FIGURE B.1. (contd)





(a) Wind Rose

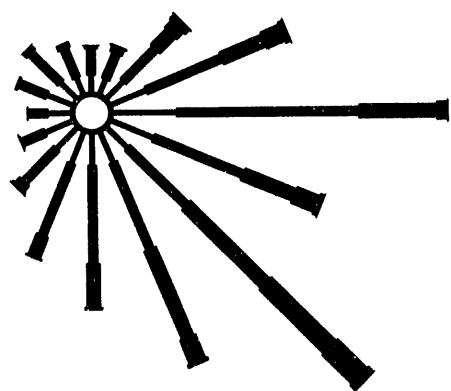
September Data
Period: 1982 - 1993



(b) Wind Speed Histogram

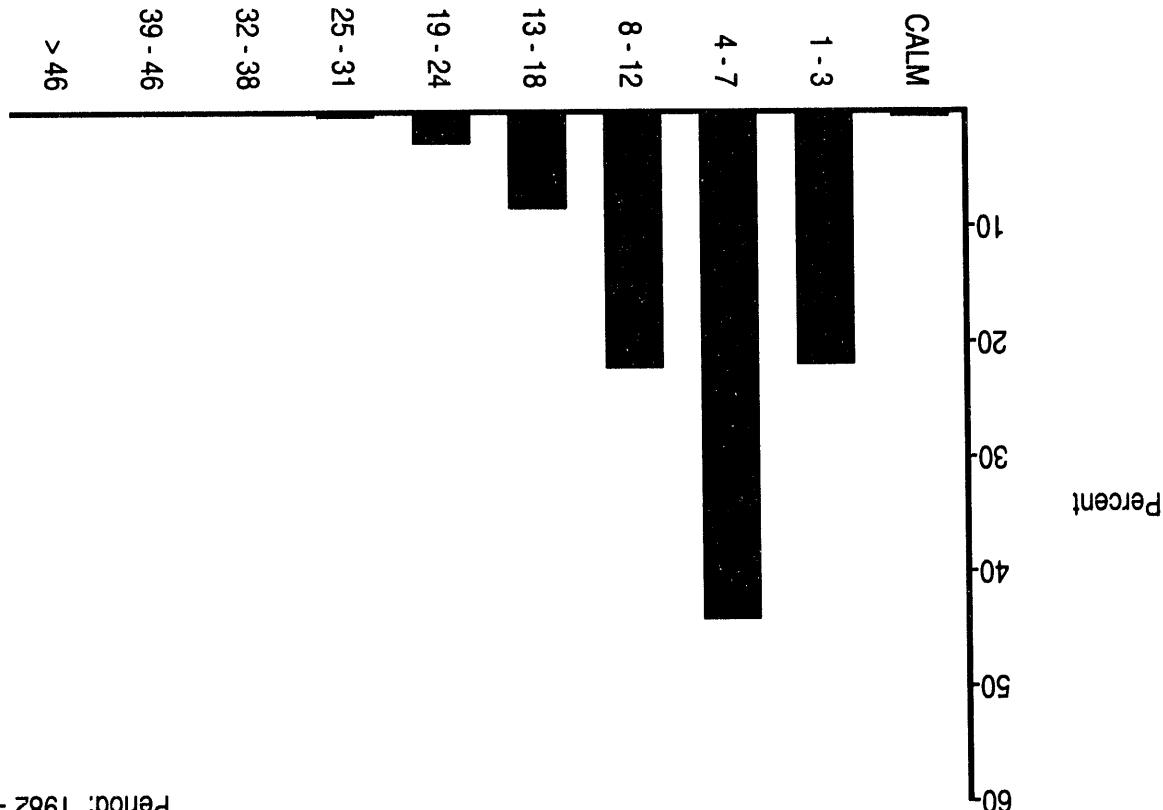
FIGURE B.1. (contd)

(a) Wind Rose
September Data
Period: 1982 - 1993

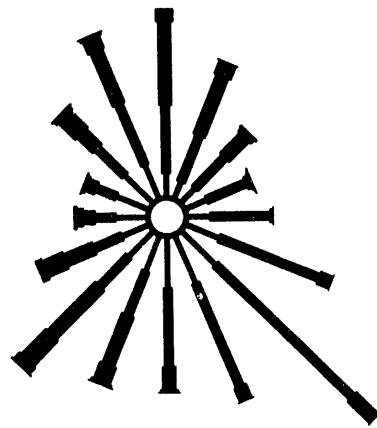


↓
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FIGURE B.1. (contd)
(b) Wind Speed Histogram
Wind Speed Class (mph)

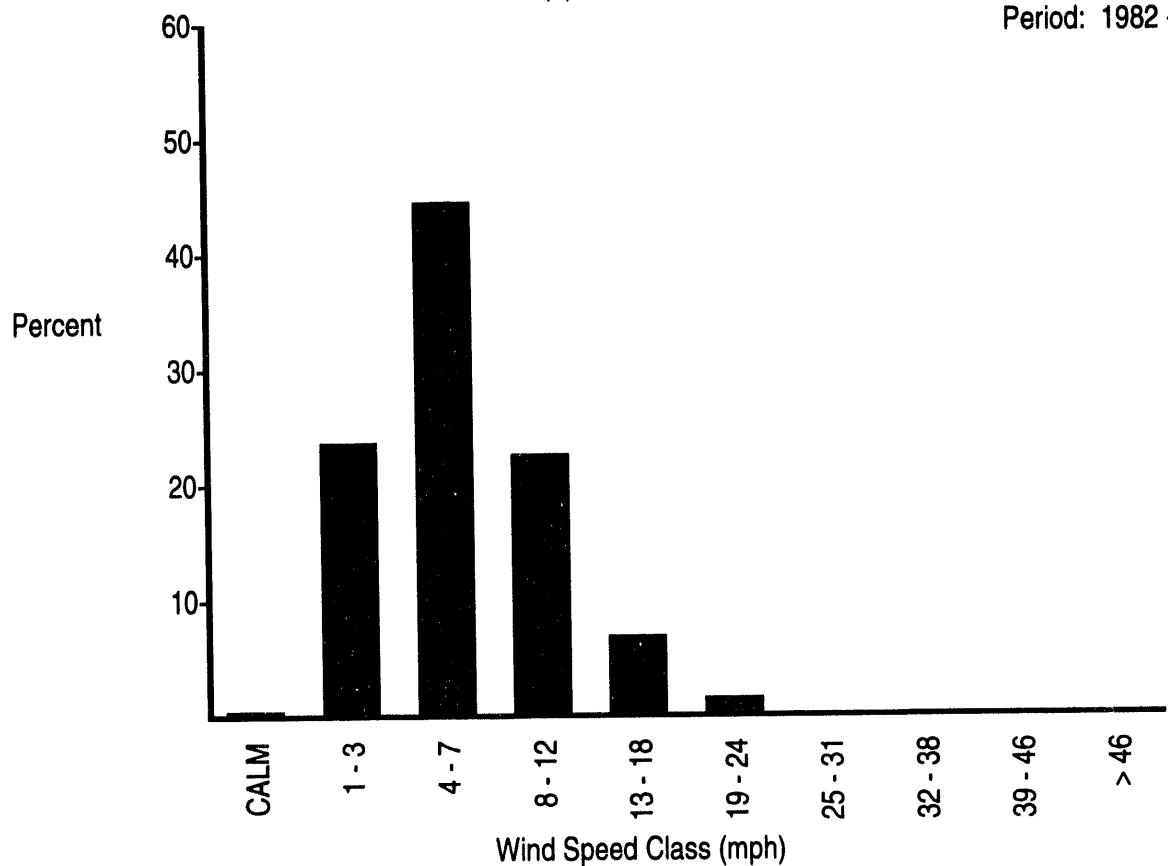


N
↑



(a) Wind Rose

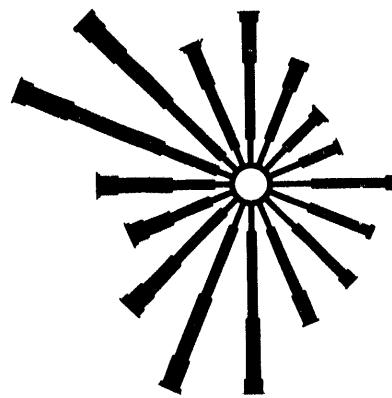
September Data
Period: 1982 - 1993



(b) Wind Speed Histogram

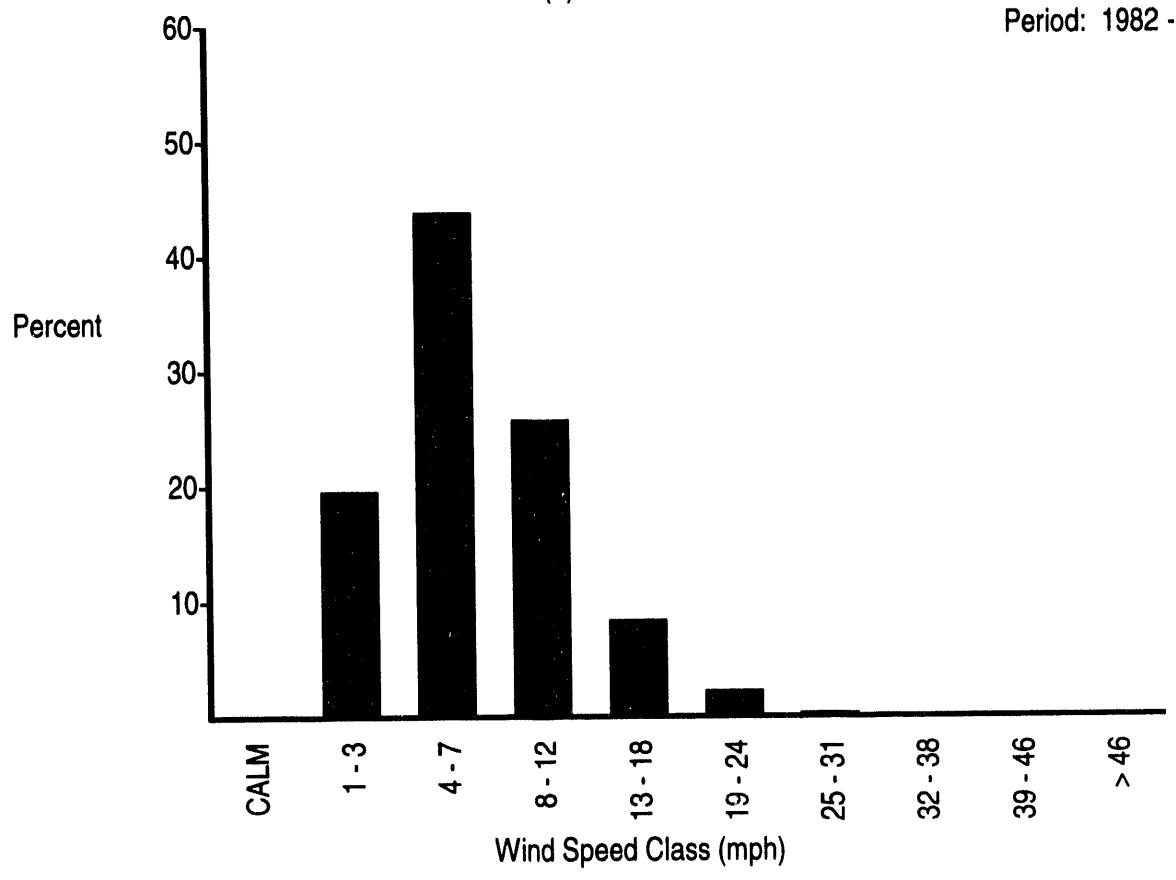
FIGURE B.1. (contd)

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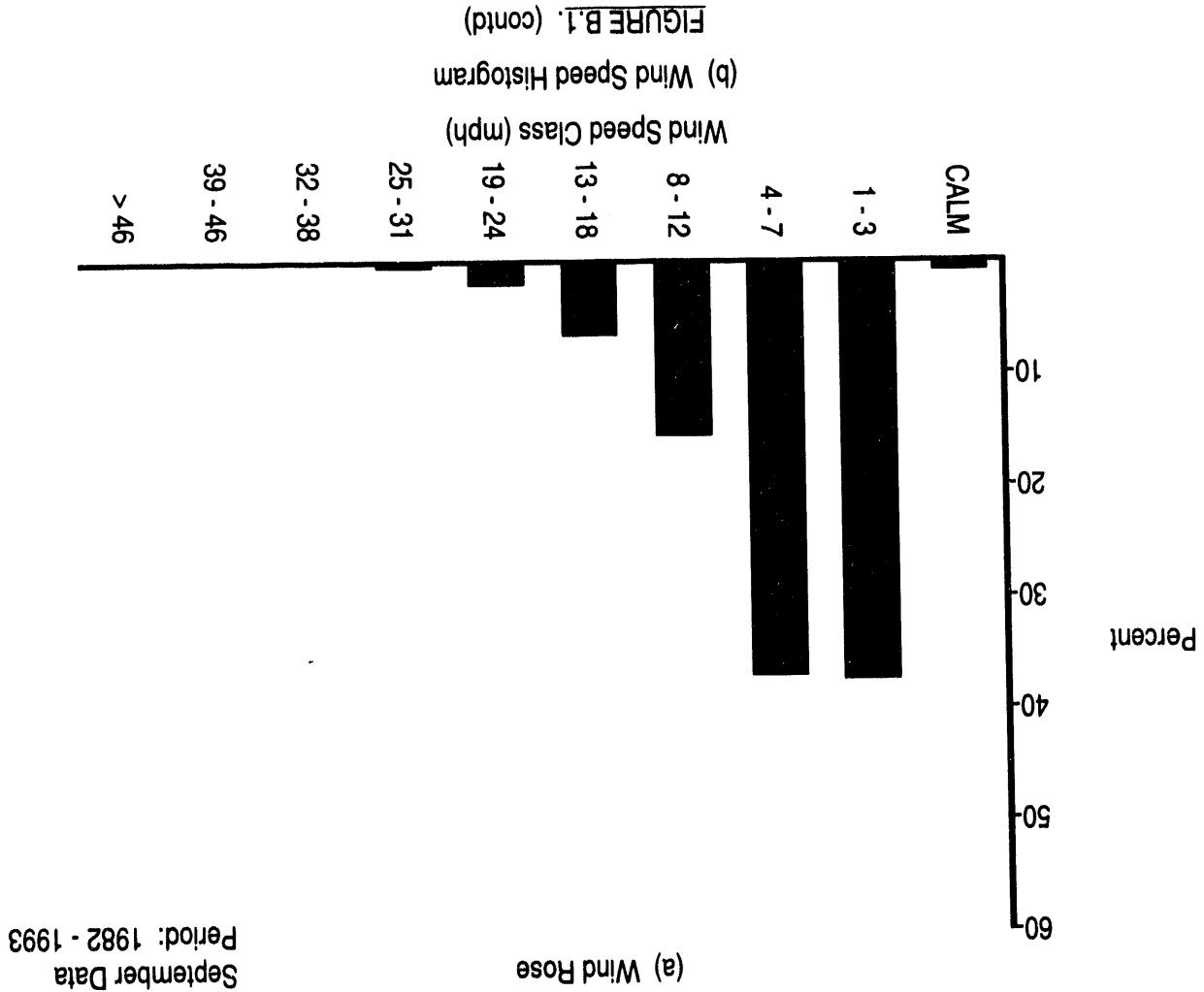
(a) Wind Rose

September Data
Period: 1982 - 1993

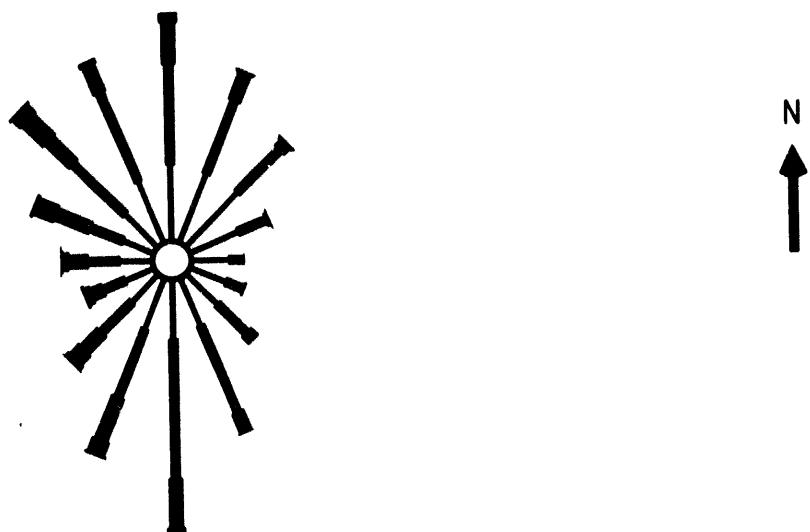


(b) Wind Speed Histogram

FIGURE B.1. (contd)

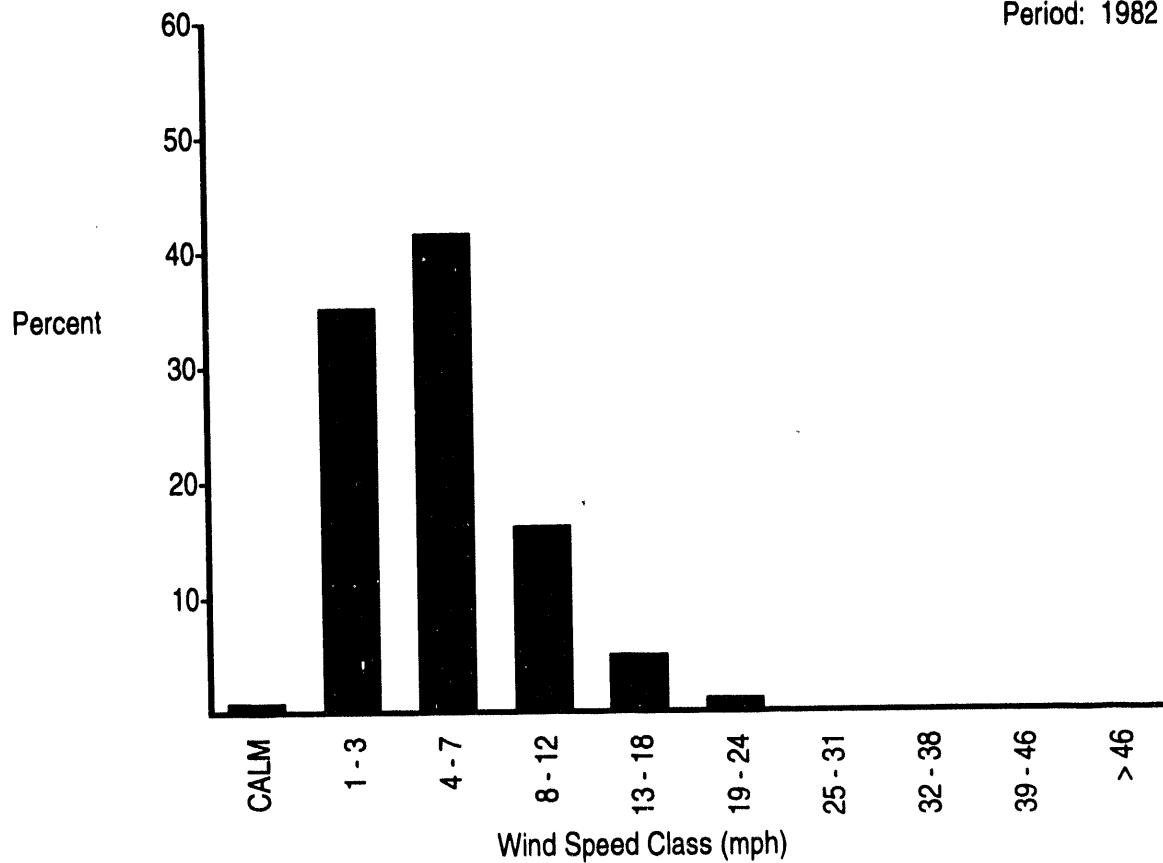


N



(a) Wind Rose

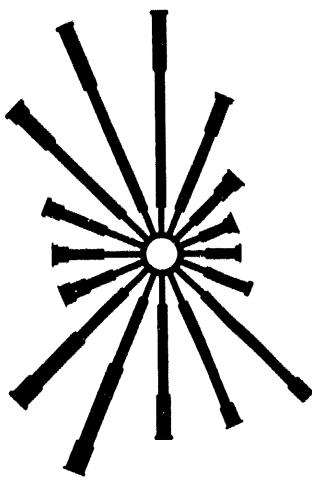
September Data
Period: 1982 - 1993



(b) Wind Speed Histogram

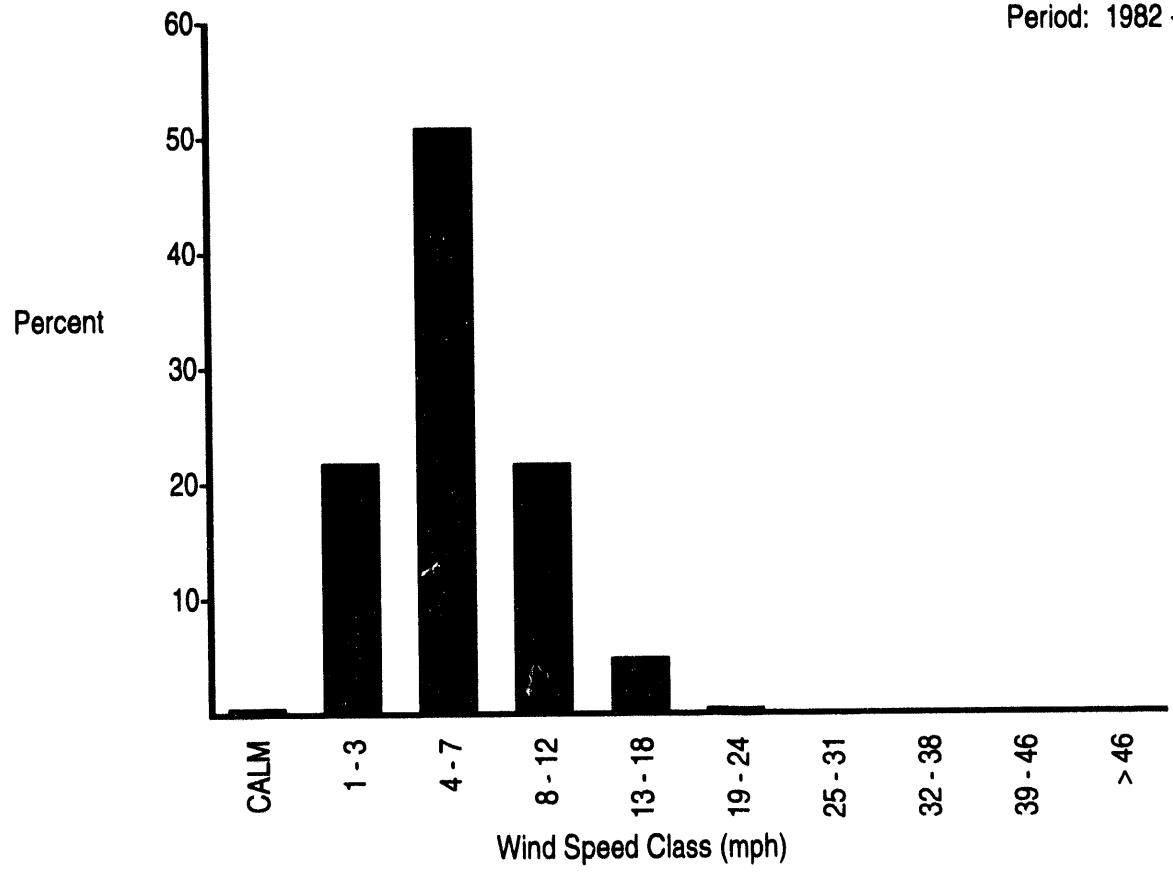
FIGURE B.1. (contd)

N
↑



(a) Wind Rose

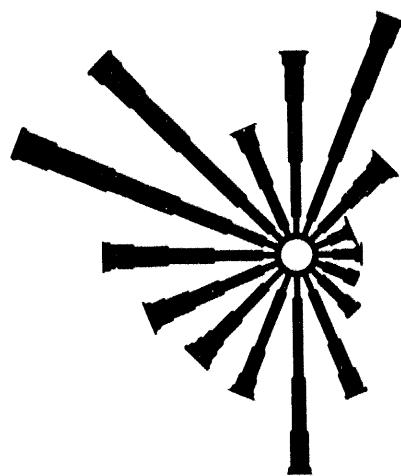
September Data
Period: 1982 - 1993



(b) Wind Speed Histogram

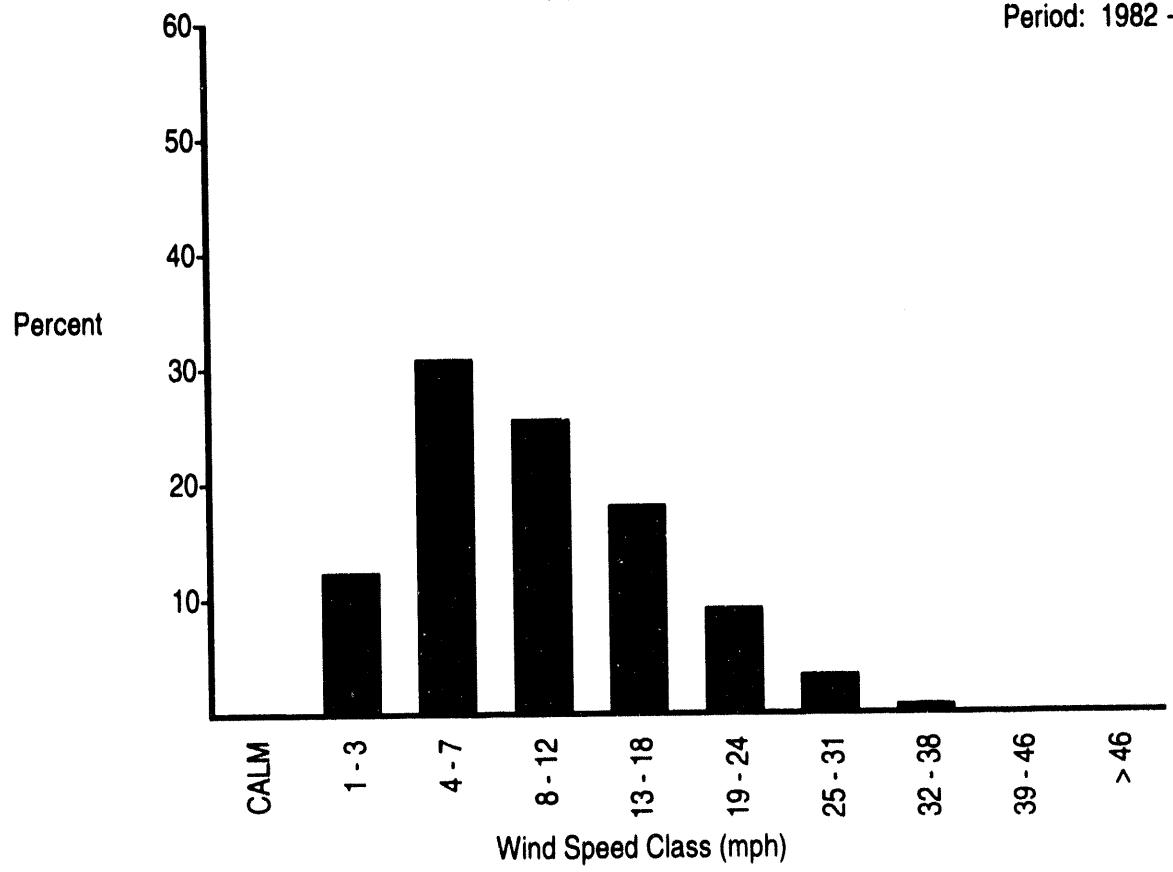
FIGURE B.1. (contd)

N
↑



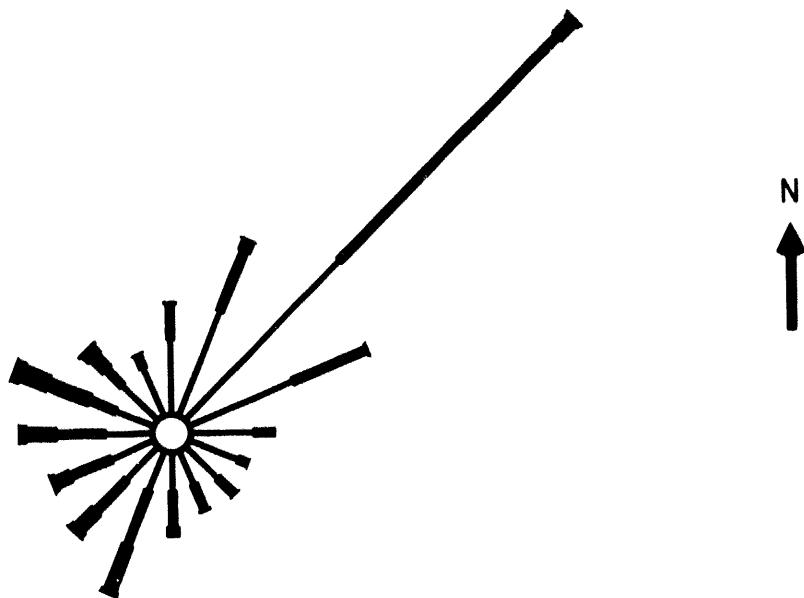
(a) Wind Rose

September Data
Period: 1982 - 1993

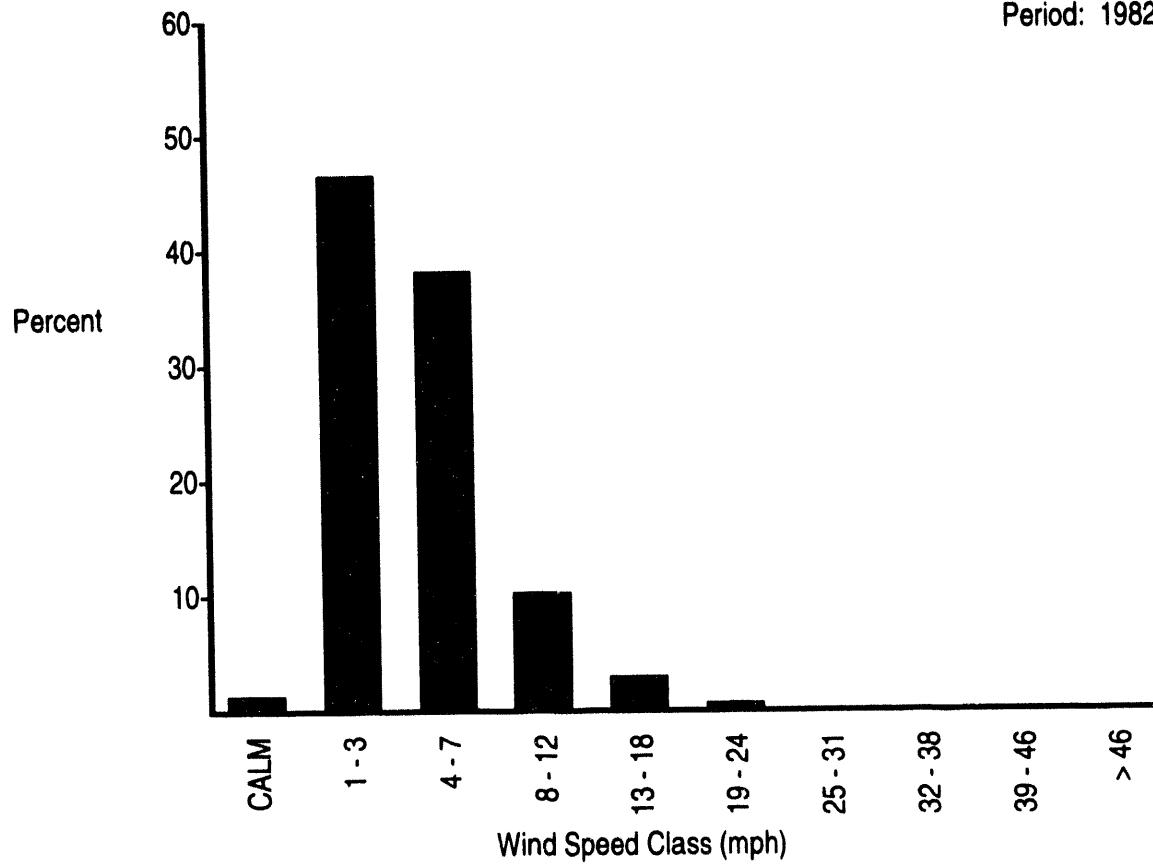


(b) Wind Speed Histogram

FIGURE B.1. (contd)

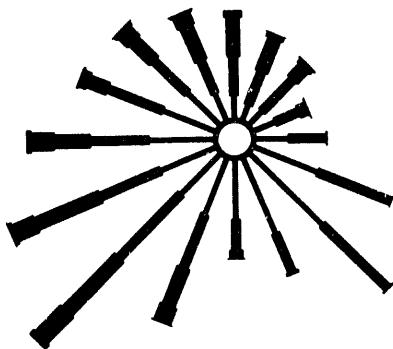


(a) Wind Rose

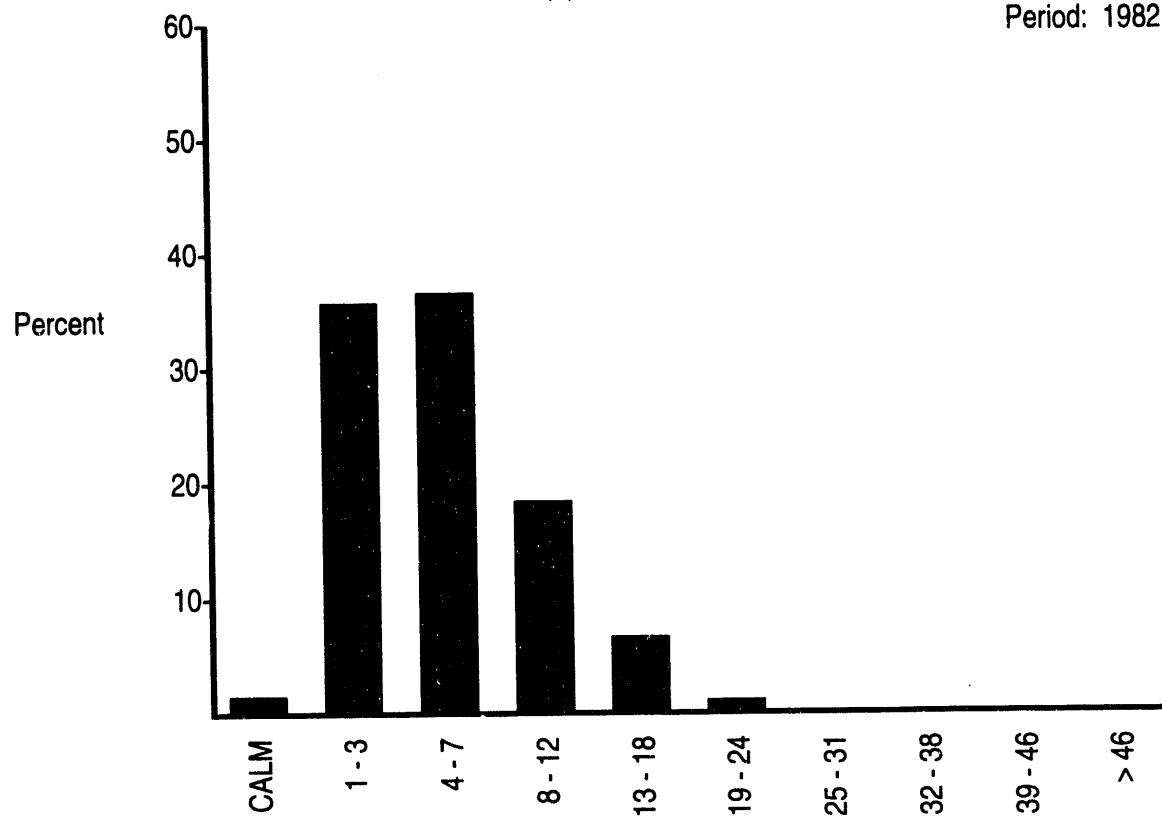
September Data
Period: 1982 - 1993

(b) Wind Speed Histogram

FIGURE B.1. (contd)

N
↑

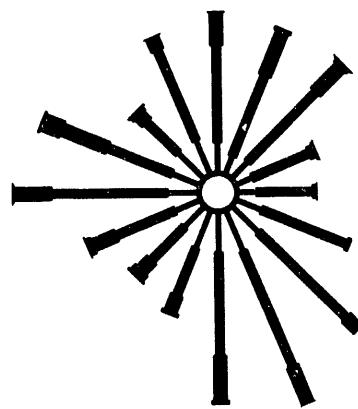
(a) Wind Rose

September Data
Period: 1982 - 1993

(b) Wind Speed Histogram

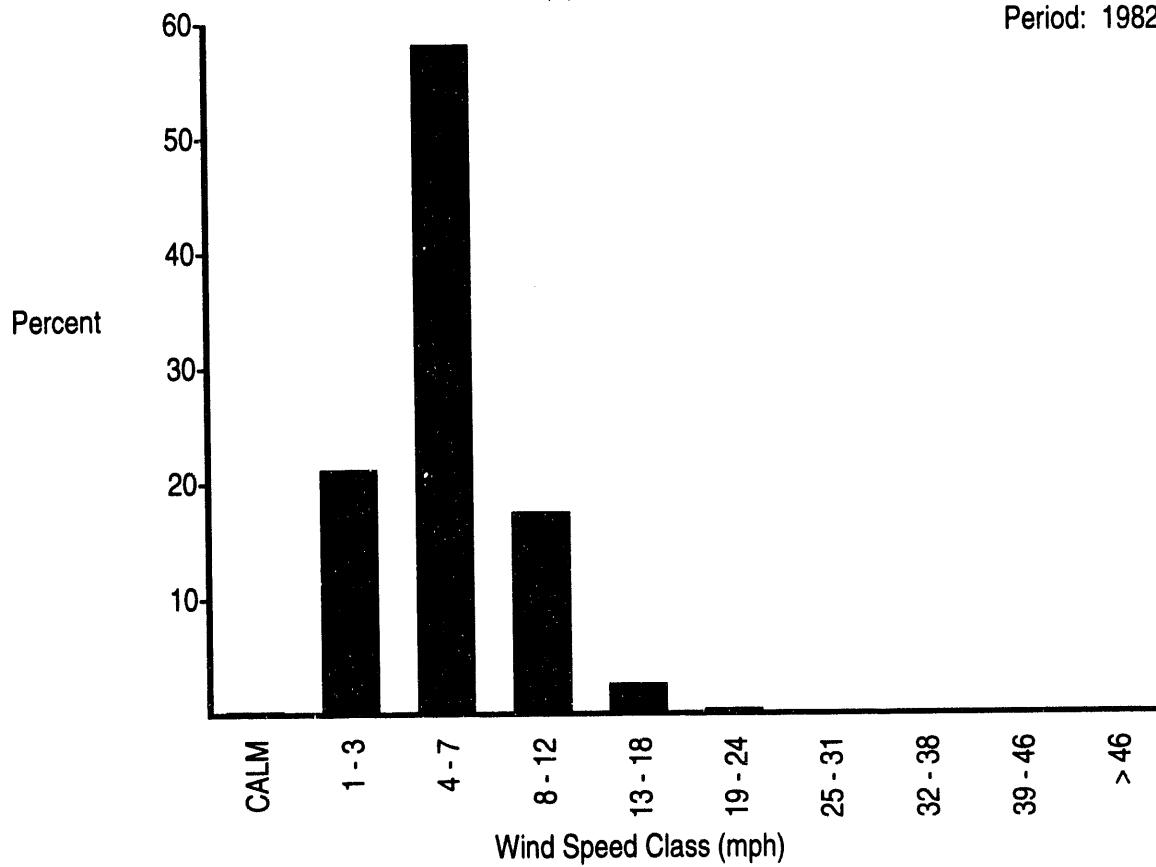
FIGURE B.1. (contd)

N
↑



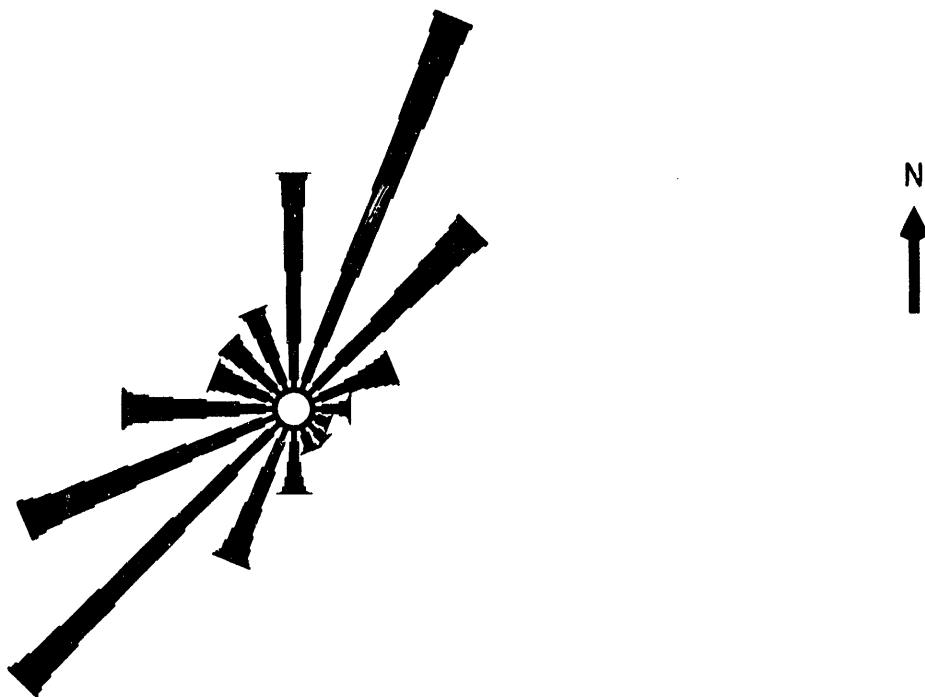
(a) Wind Rose

September Data
Period: 1982 - 1992



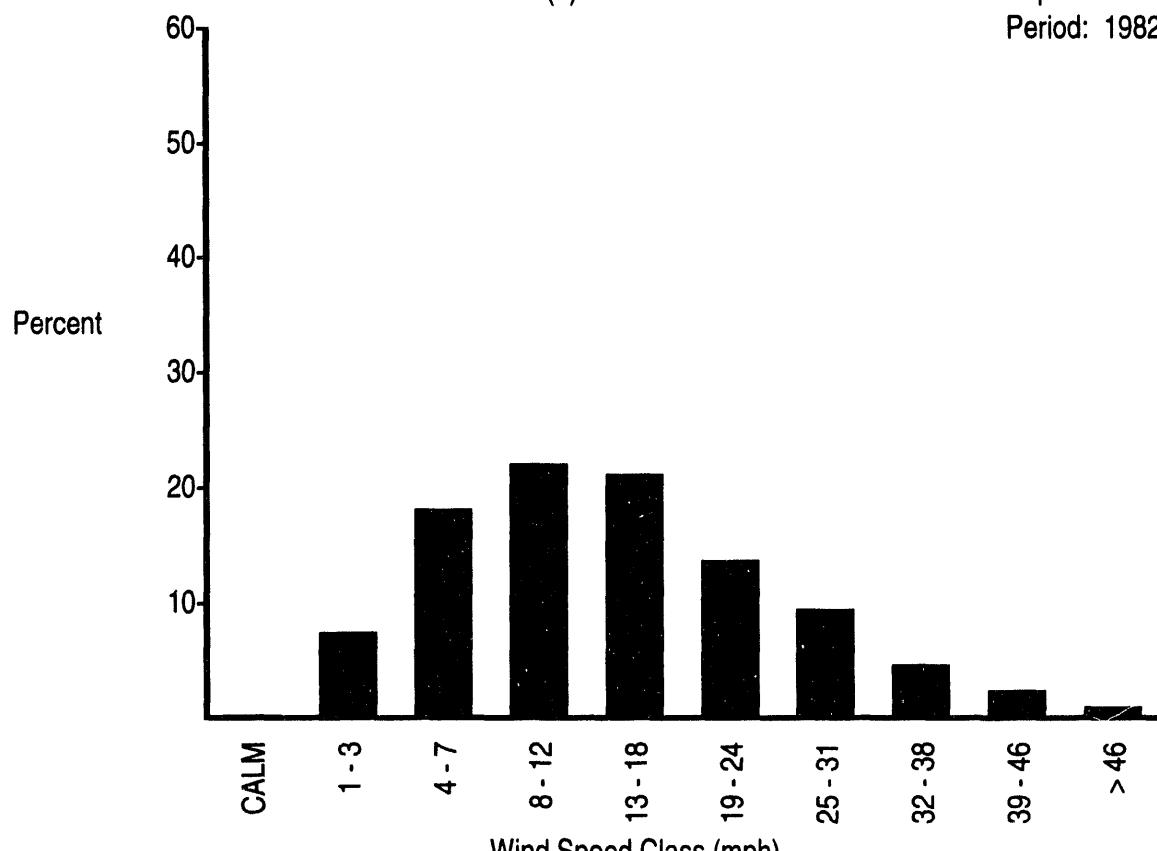
(b) Wind Speed Histogram

FIGURE B.1. (contd)



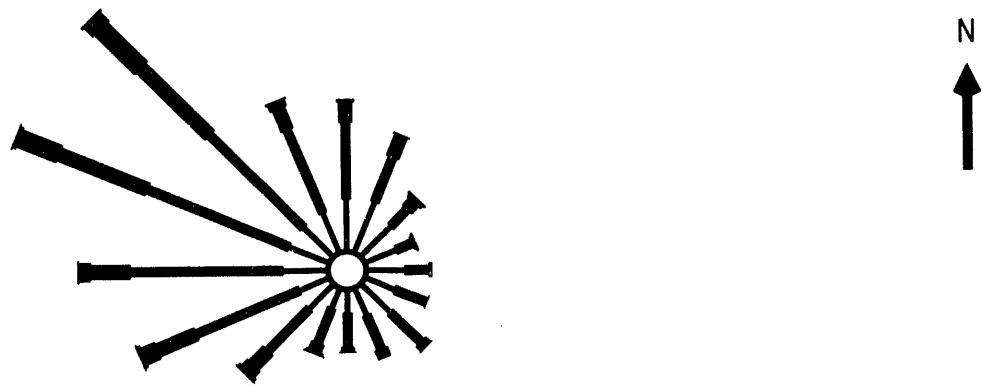
(a) Wind Rose

September Data
Period: 1982 - 1993



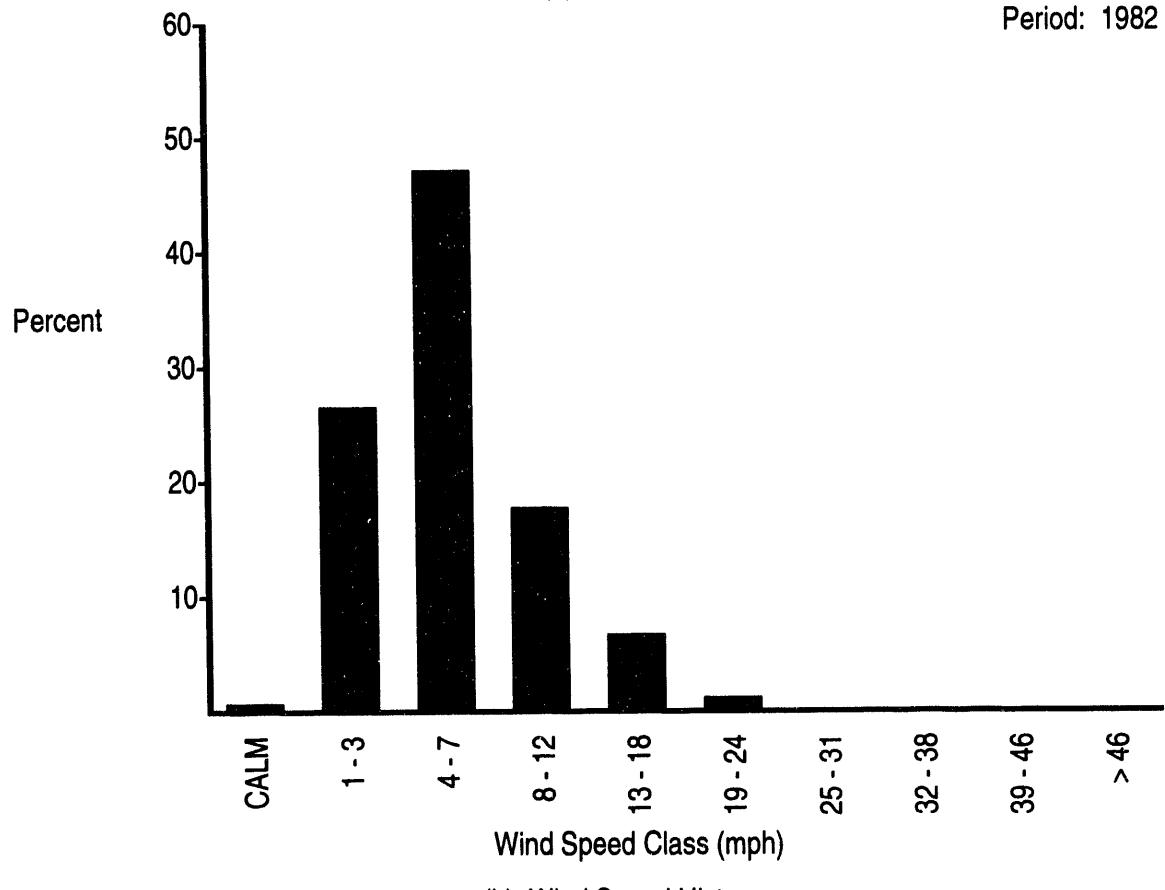
(b) Wind Speed Histogram

FIGURE B.1. (contd)



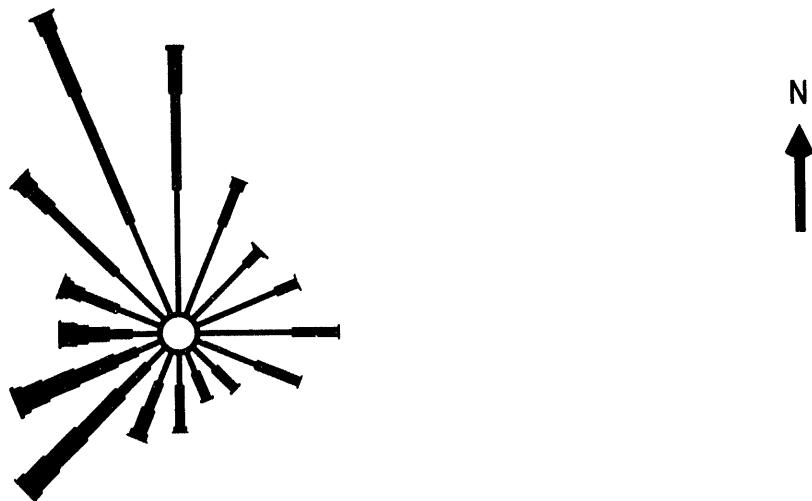
(a) Wind Rose

September Data
Period: 1982 - 1993



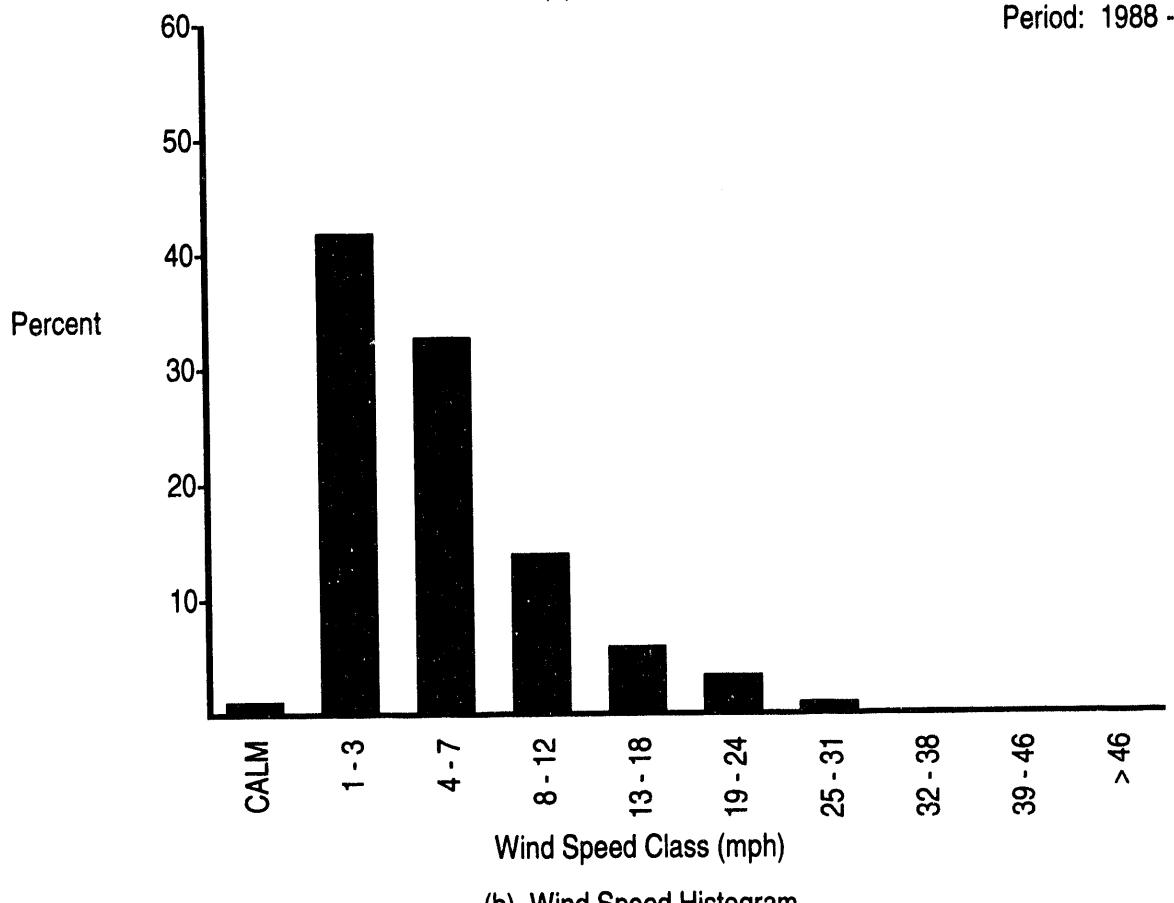
(b) Wind Speed Histogram

FIGURE B.1. (contd)



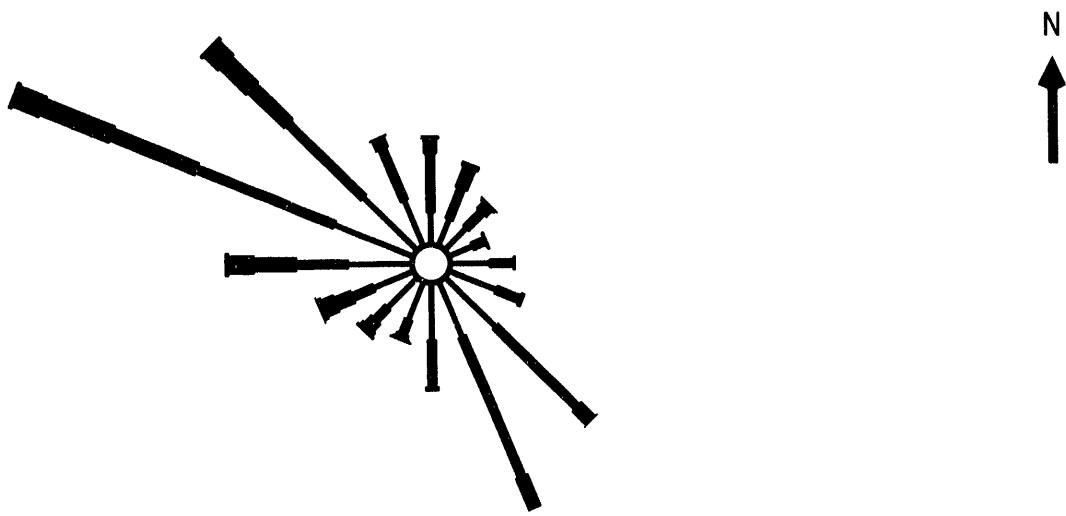
(a) Wind Rose

September Data
Period: 1988 - 1993

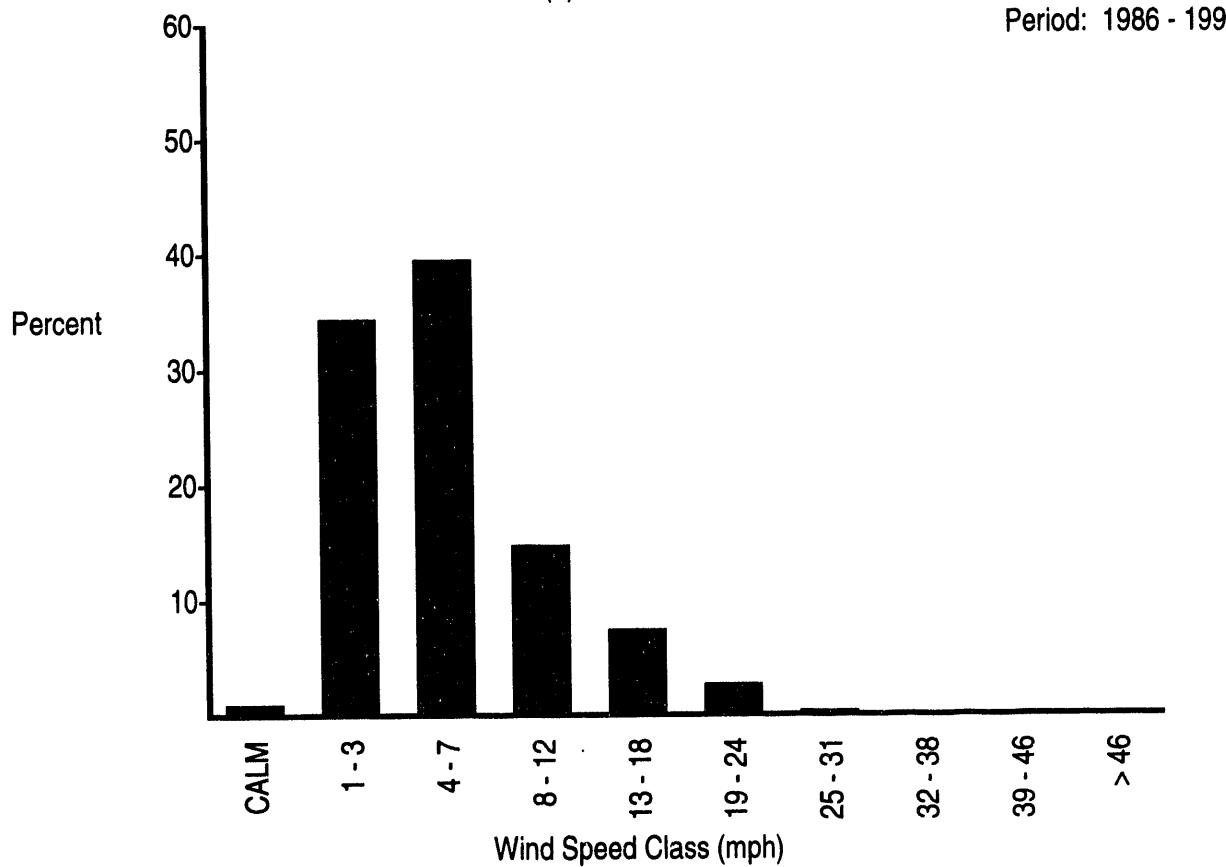


(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

September Data
Period: 1986 - 1993

(b) Wind Speed Histogram

FIGURE B.1. (contd)

B.241

(a) Wind Rose
September Data
Period: 1986 - 1993

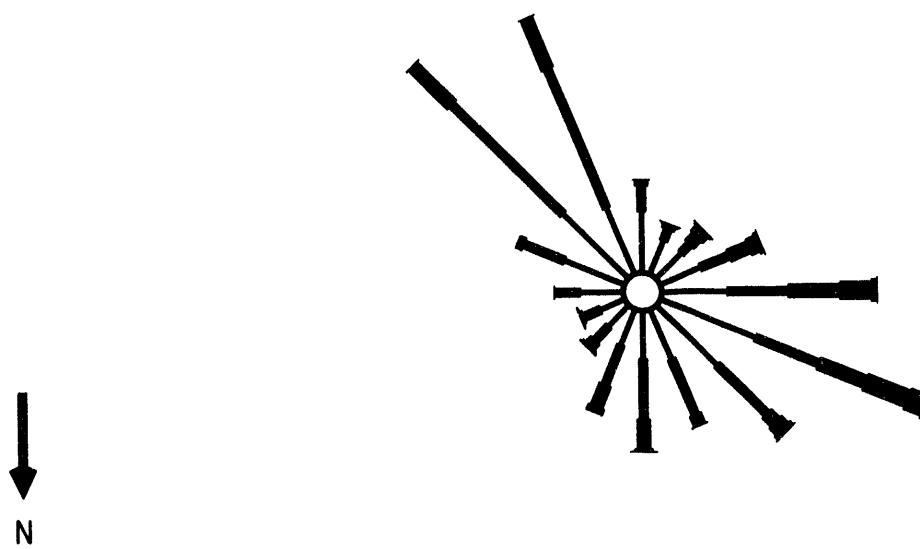
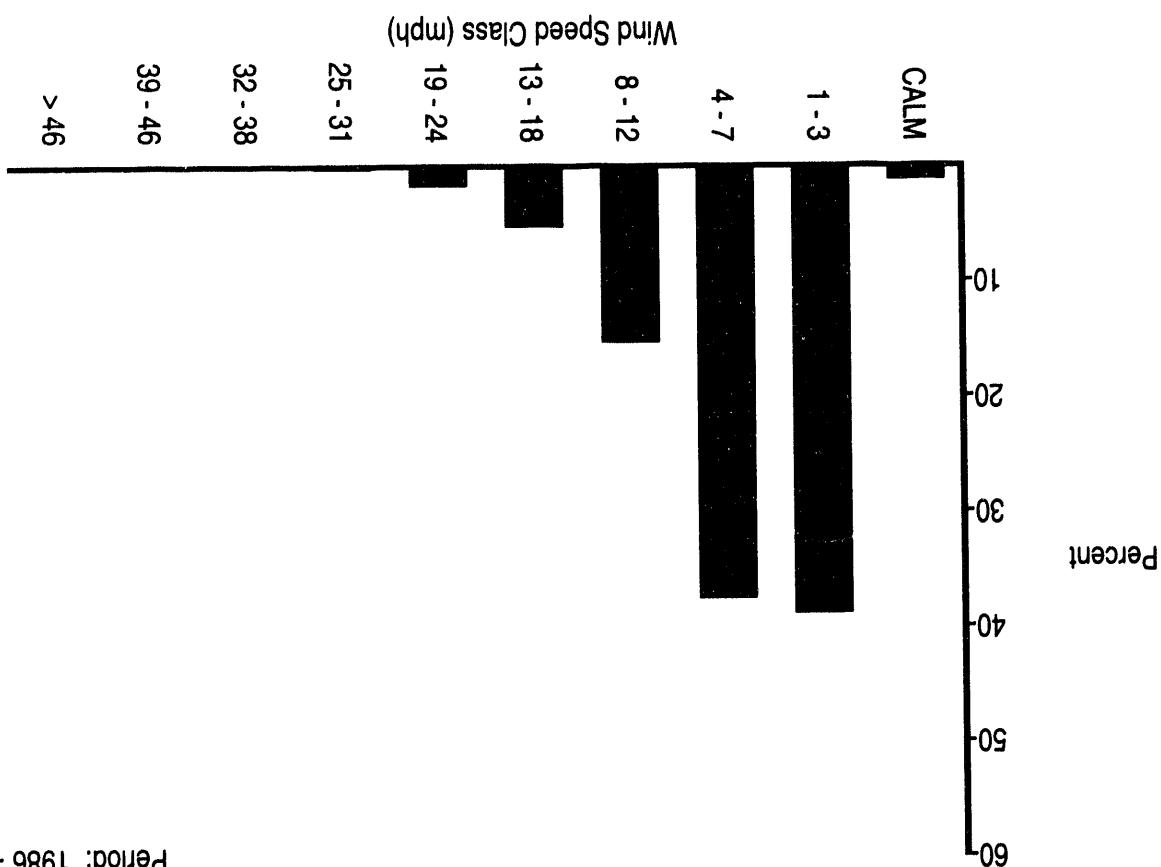
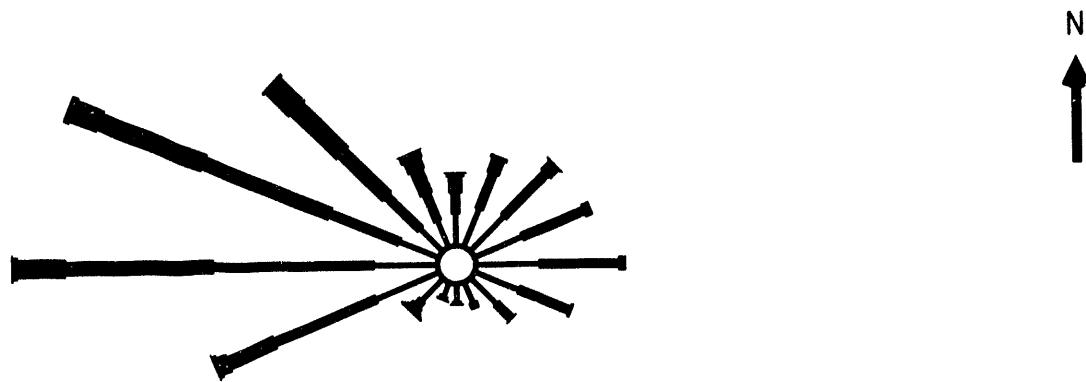


FIGURE B.1. (contd)

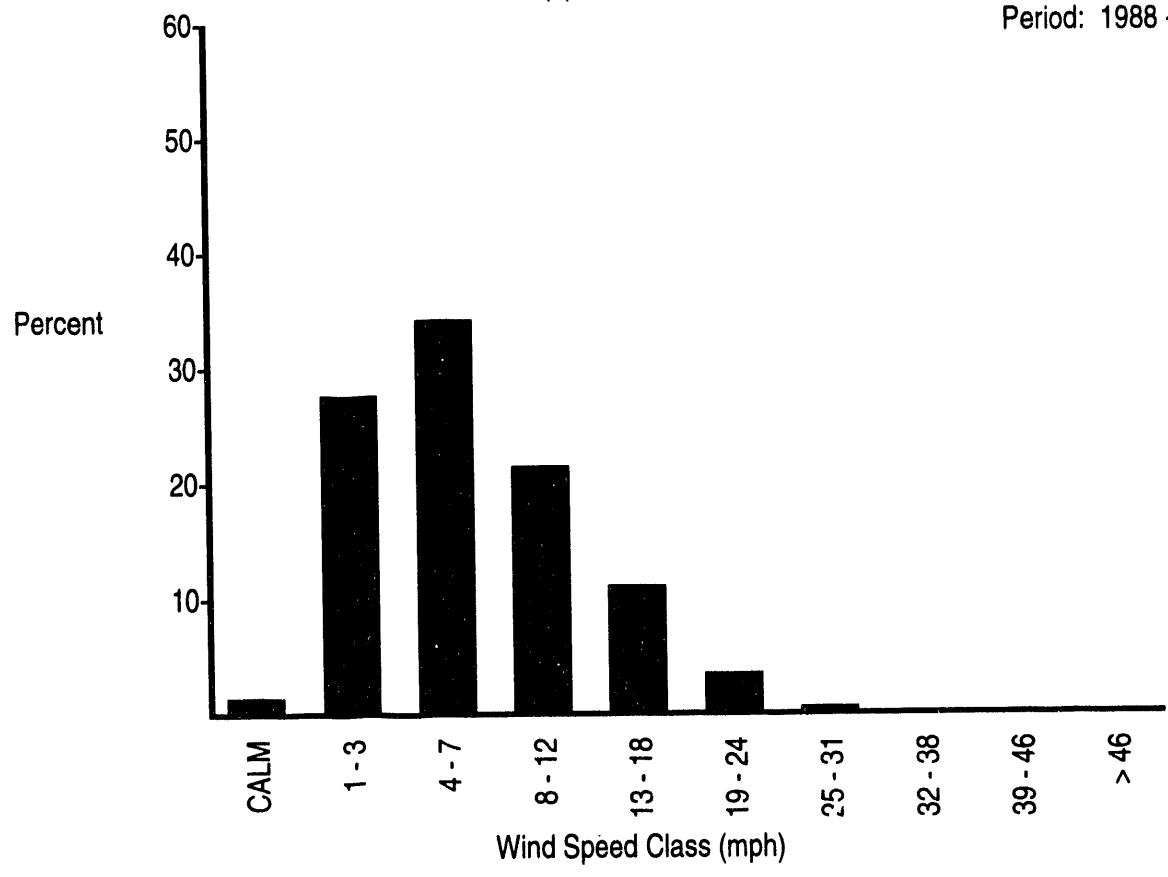
(b) Wind Speed Histogram





(a) Wind Rose

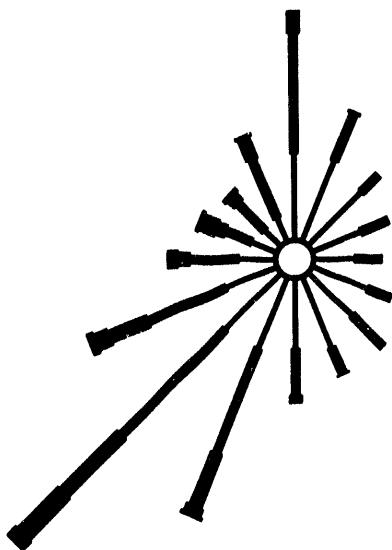
September Data
Period: 1988 - 1993



(b) Wind Speed Histogram

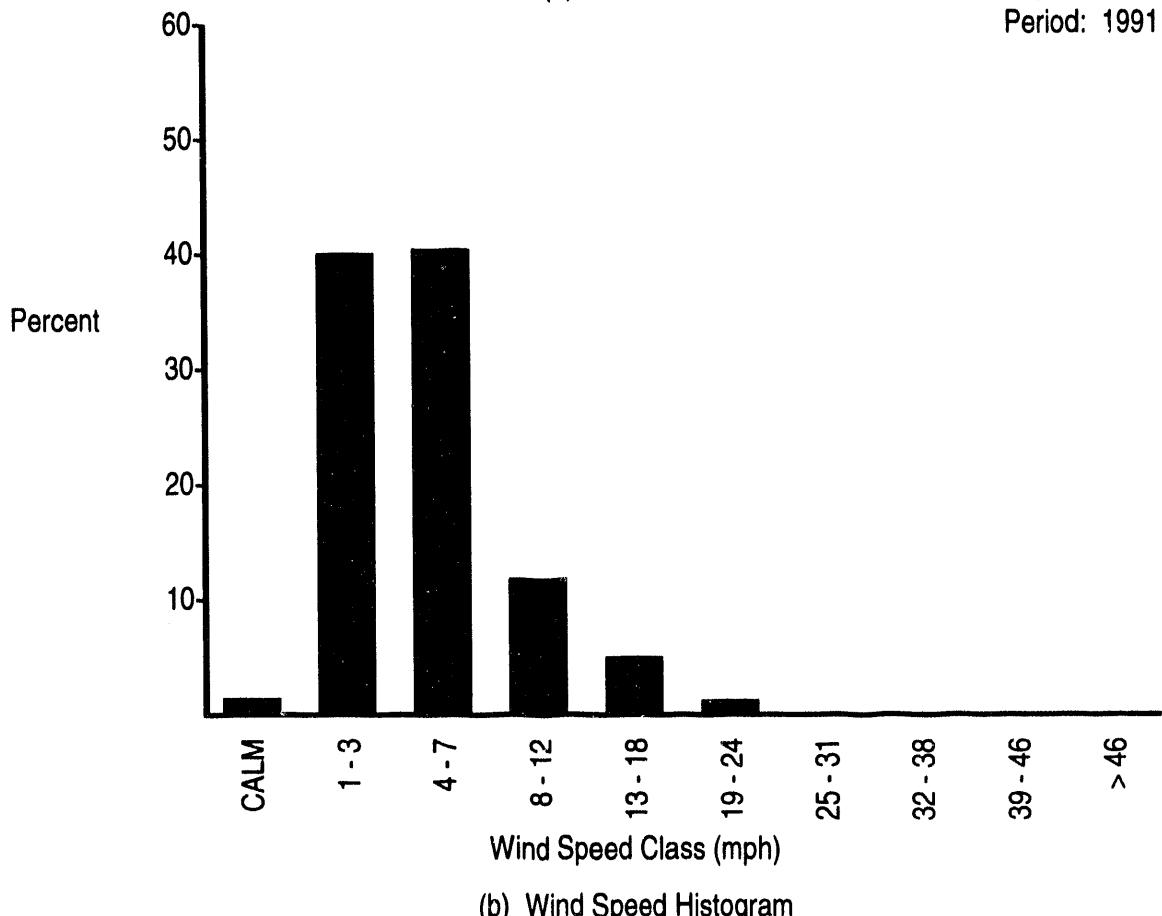
FIGURE B.1. (contd)

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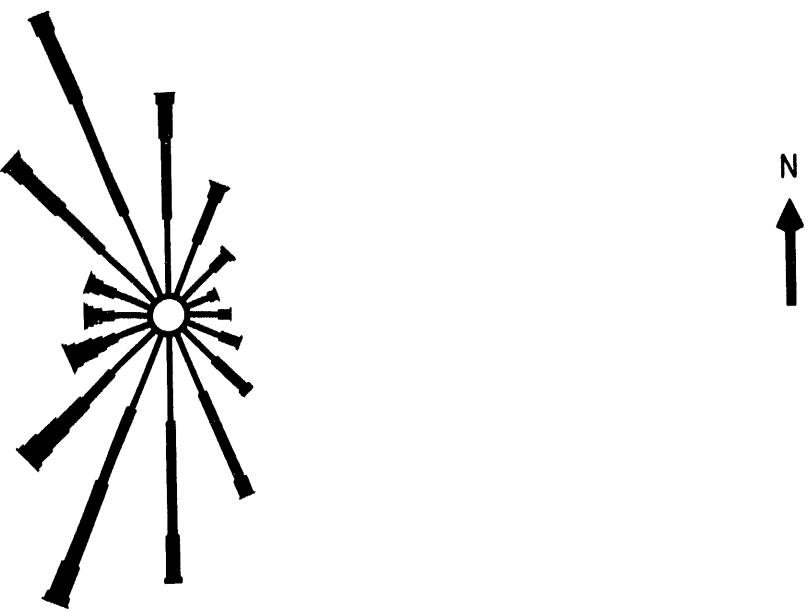
(a) Wind Rose

September Data
Period: 1991 - 1993



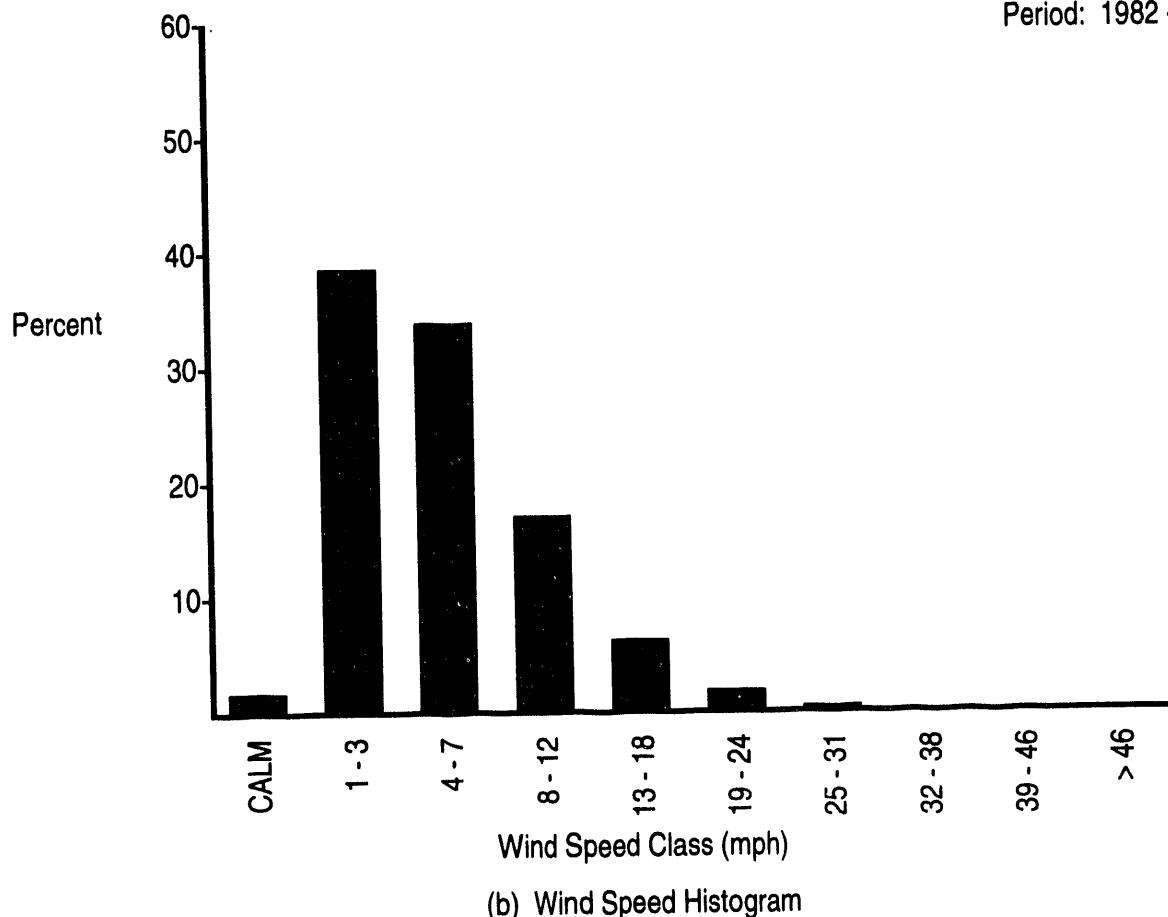
(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

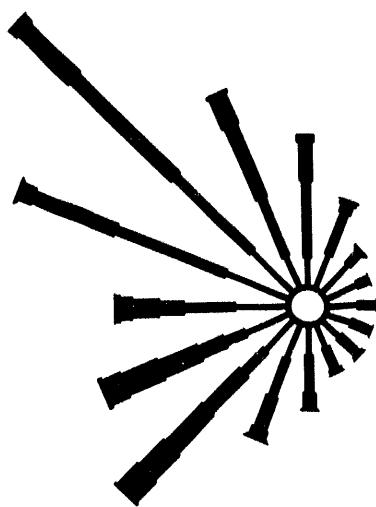
October Data
Period: 1982 - 1993



(b) Wind Speed Histogram

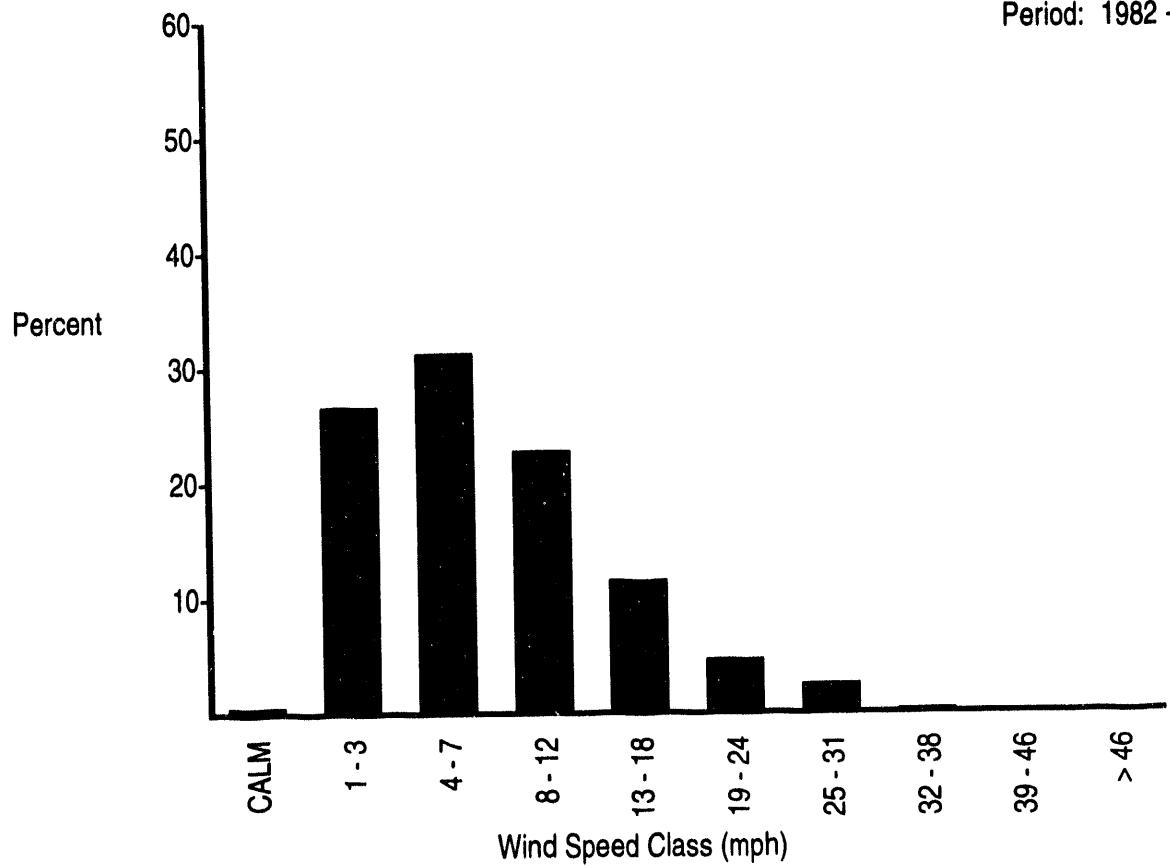
FIGURE B.1. (contd)

N
↑



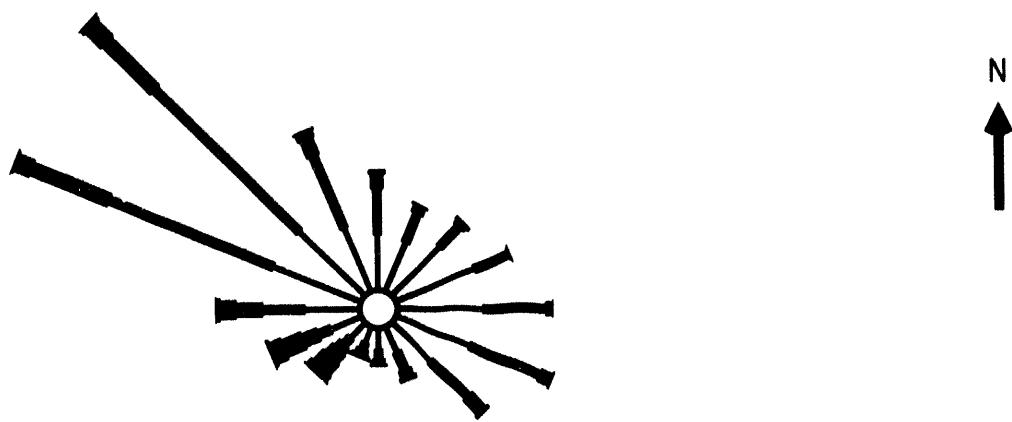
(a) Wind Rose

October Data
Period: 1982 - 1993



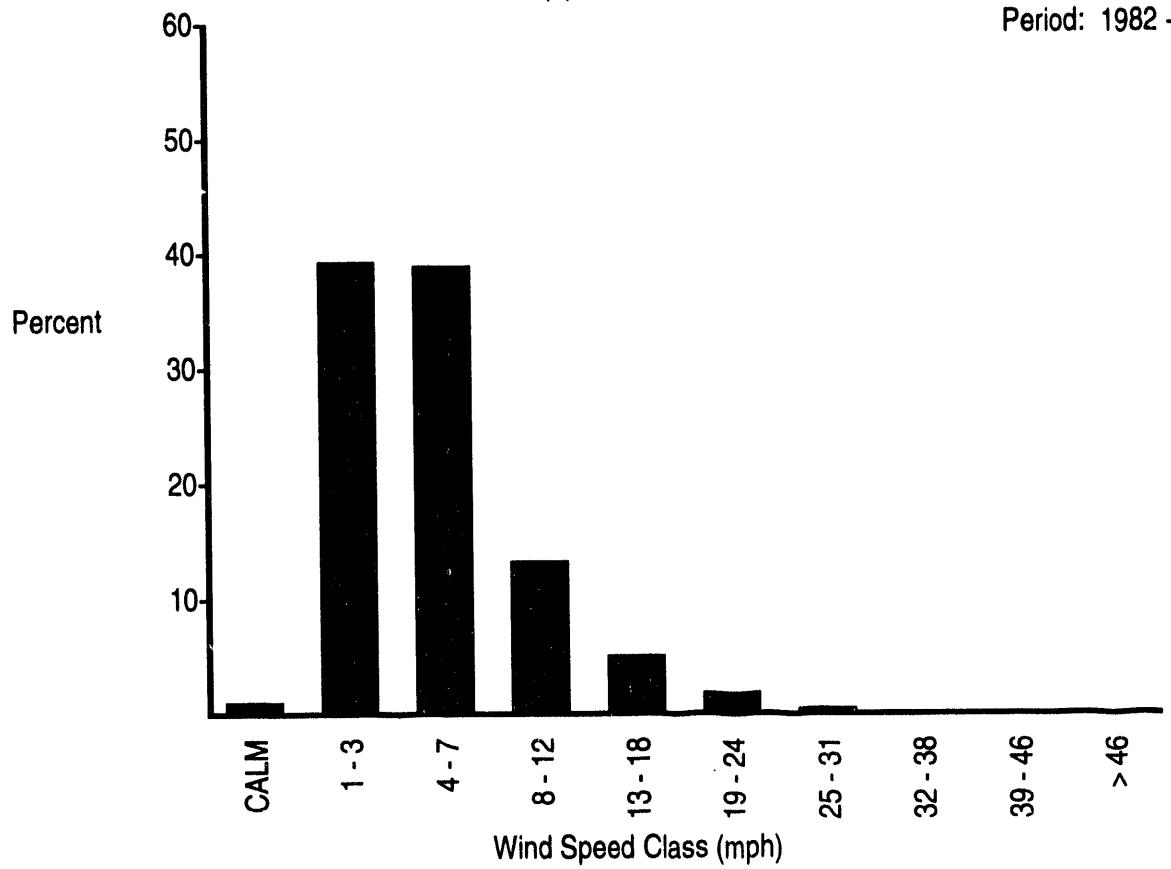
(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

October Data
Period: 1982 - 1993



(b) Wind Speed Histogram

FIGURE B.1. (contd)

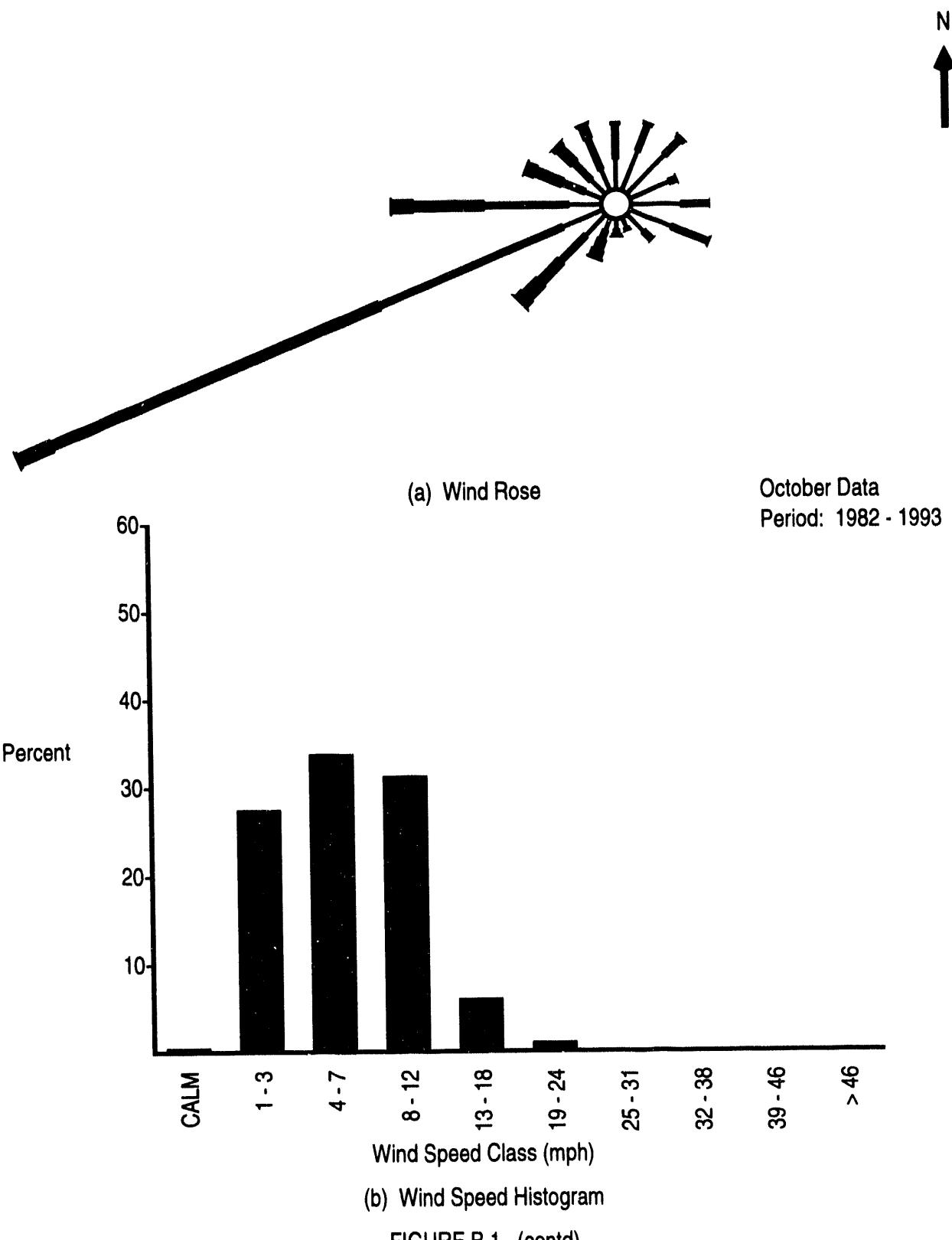
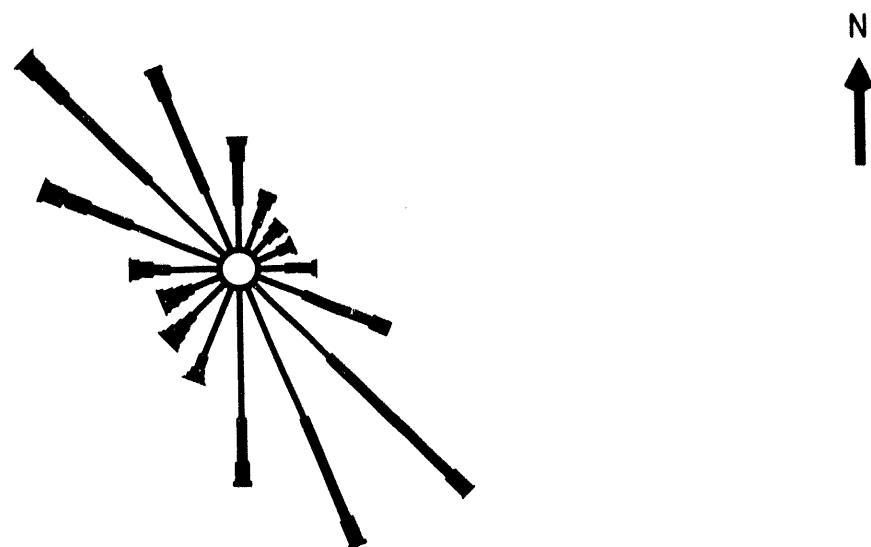
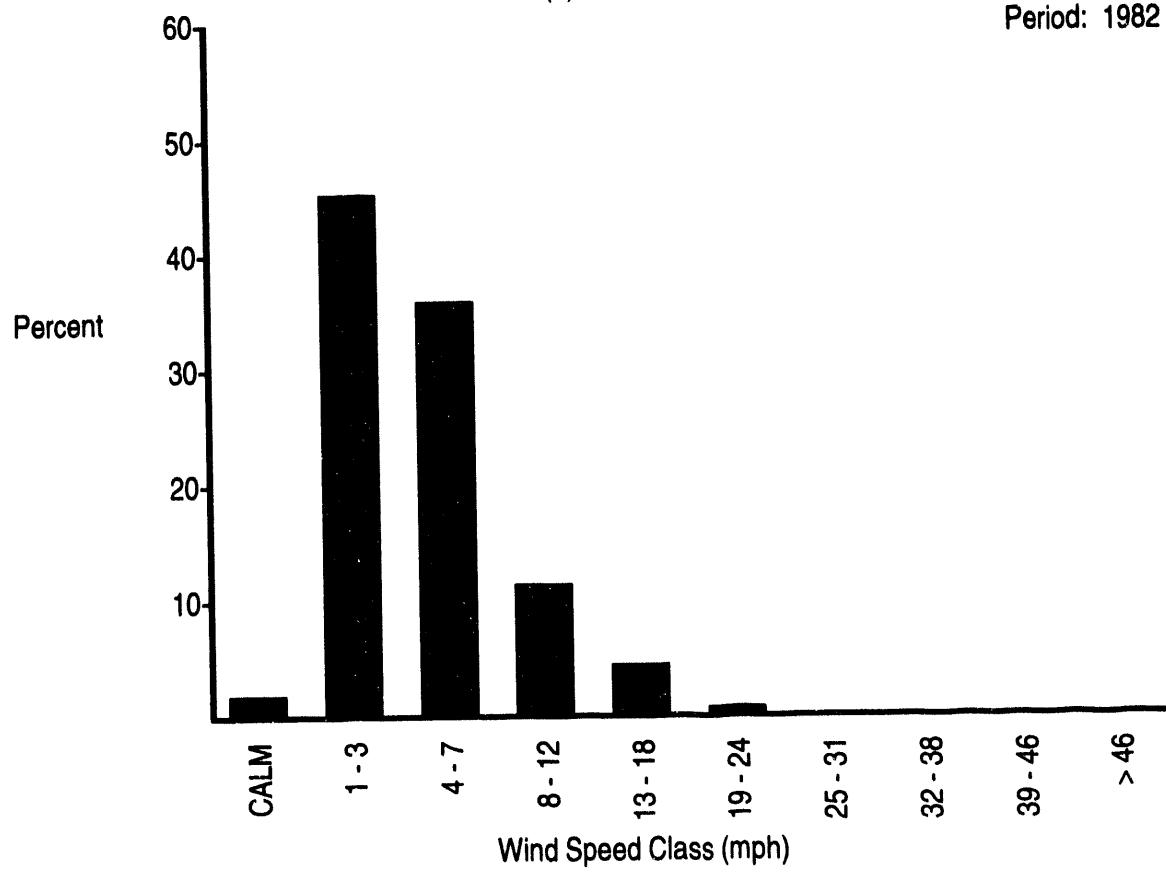


FIGURE B.1. (contd)



(a) Wind Rose

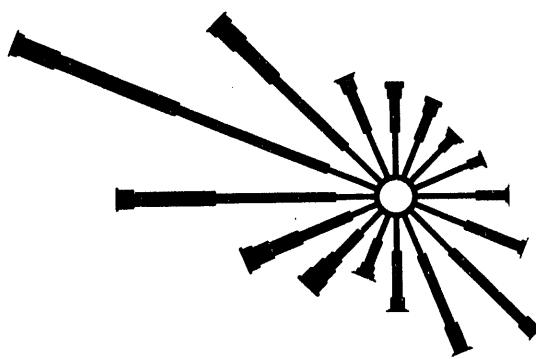
October Data
Period: 1982 - 1993



(b) Wind Speed Histogram

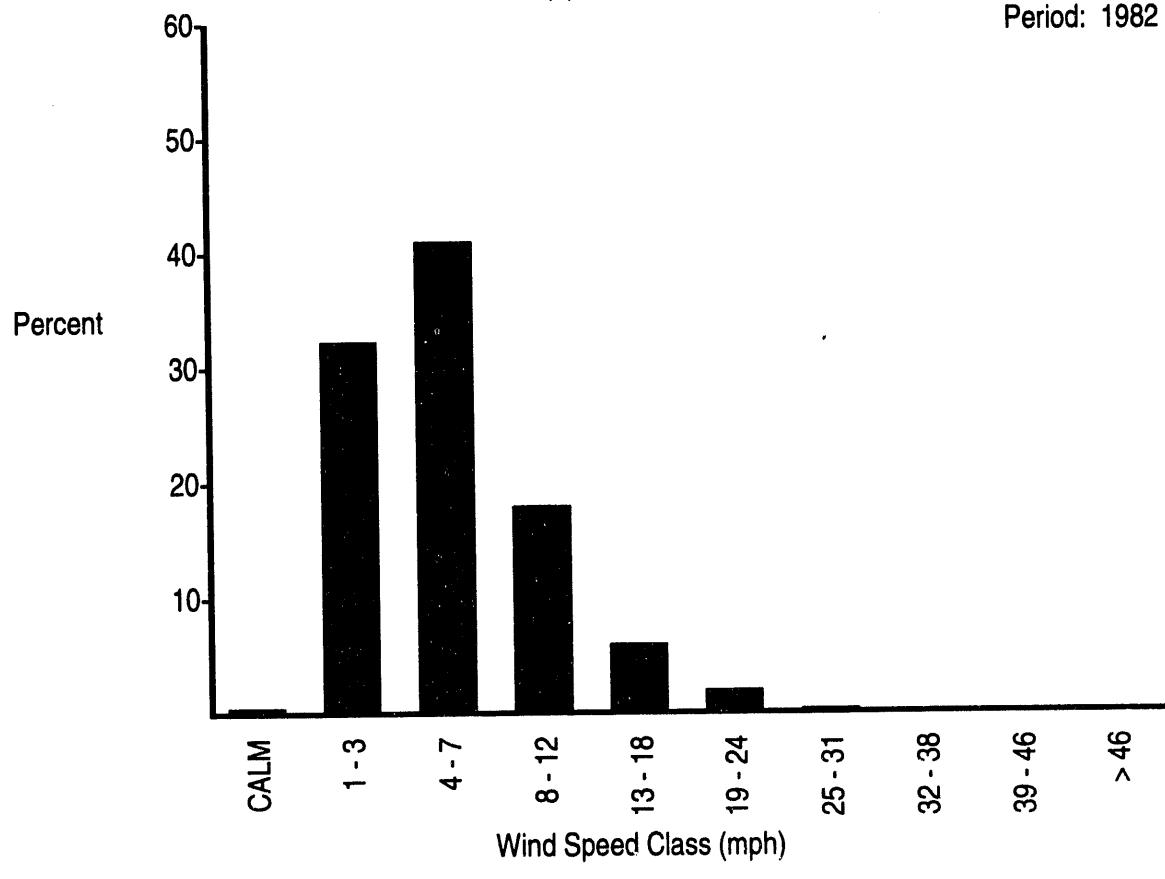
FIGURE B.1. (contd)

N
↑



(a) Wind Rose

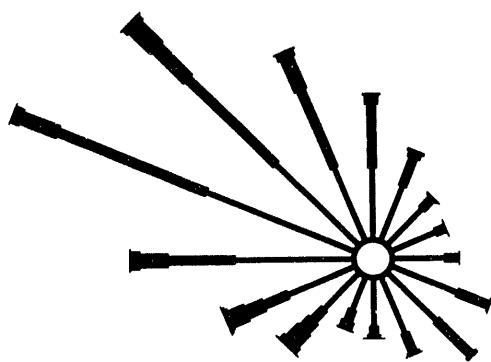
October Data
Period: 1982 - 1993



(b) Wind Speed Histogram

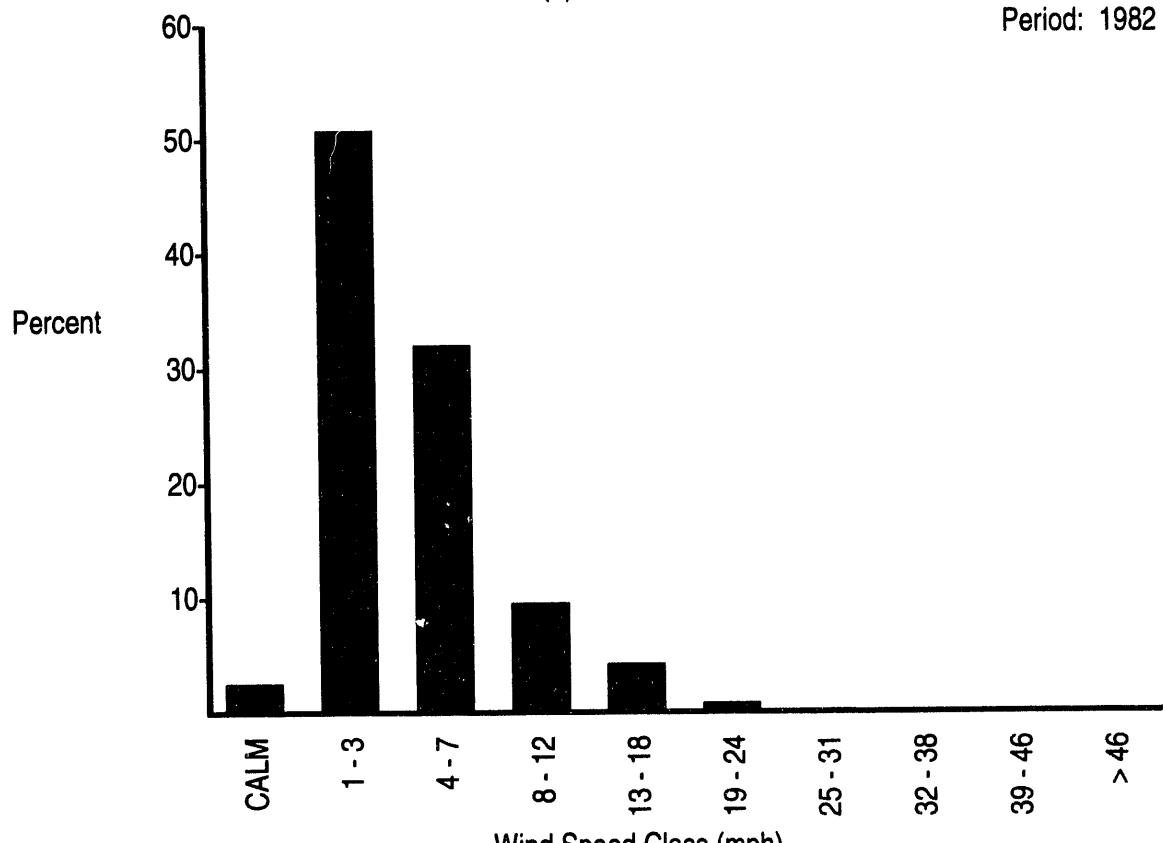
FIGURE B.1. (contd)

N
↑



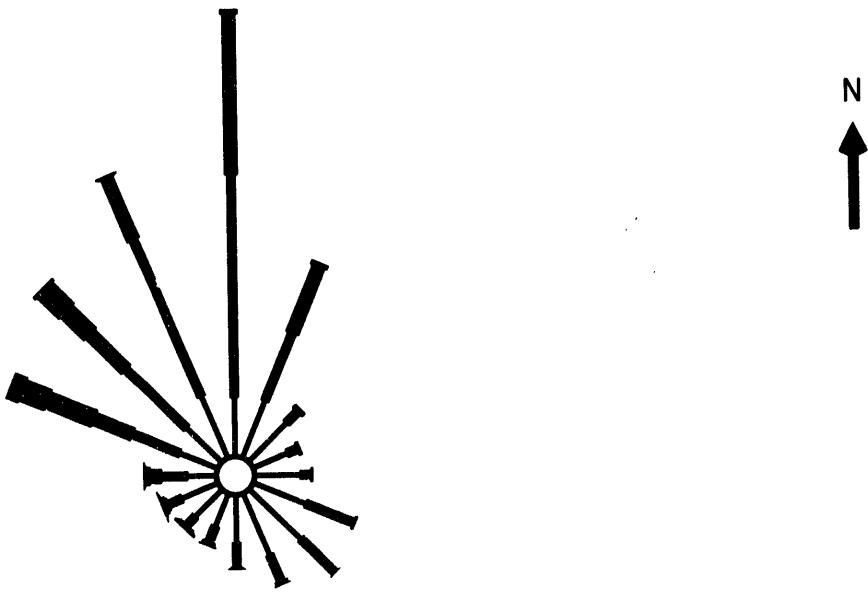
(a) Wind Rose

October Data
Period: 1982 - 1993



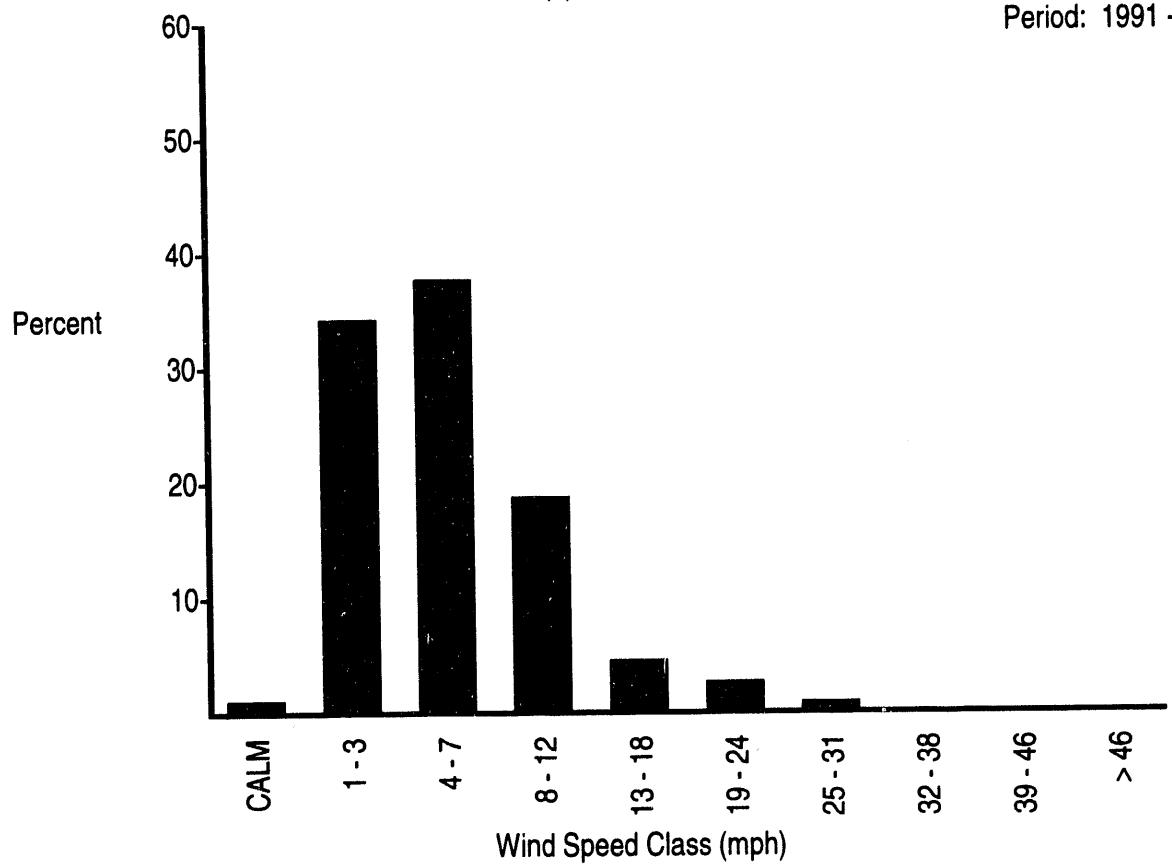
(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

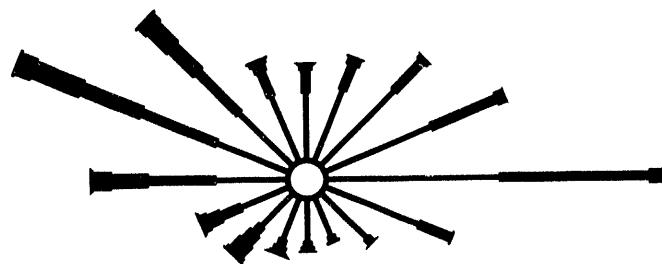
October Data
Period: 1991 - 1993



(b) Wind Speed Histogram

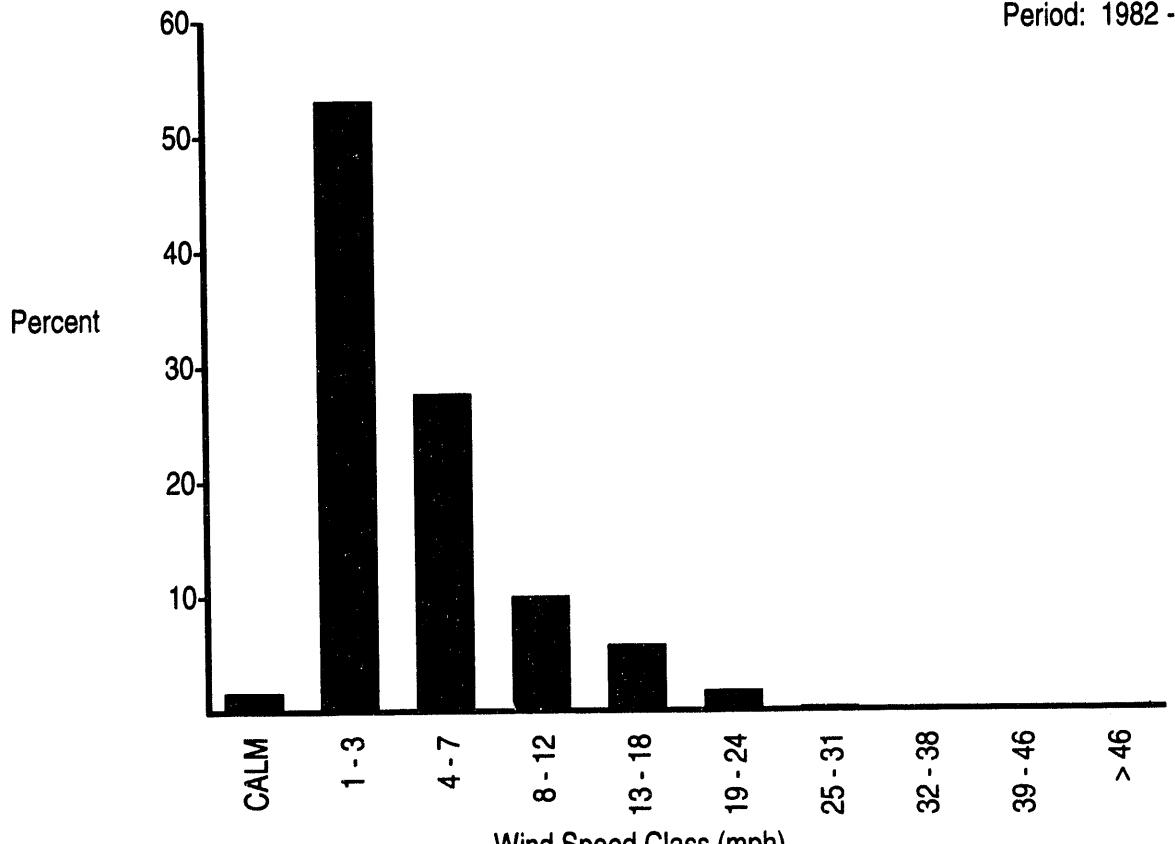
FIGURE B.1. (contd)

N
↑



(a) Wind Rose

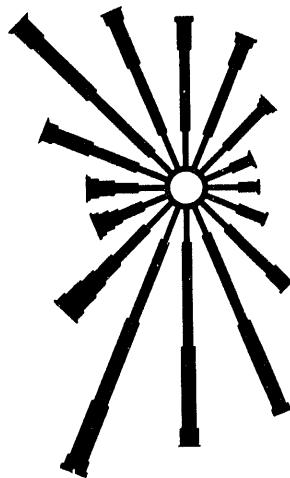
October Data
Period: 1982 - 1990



(b) Wind Speed Histogram

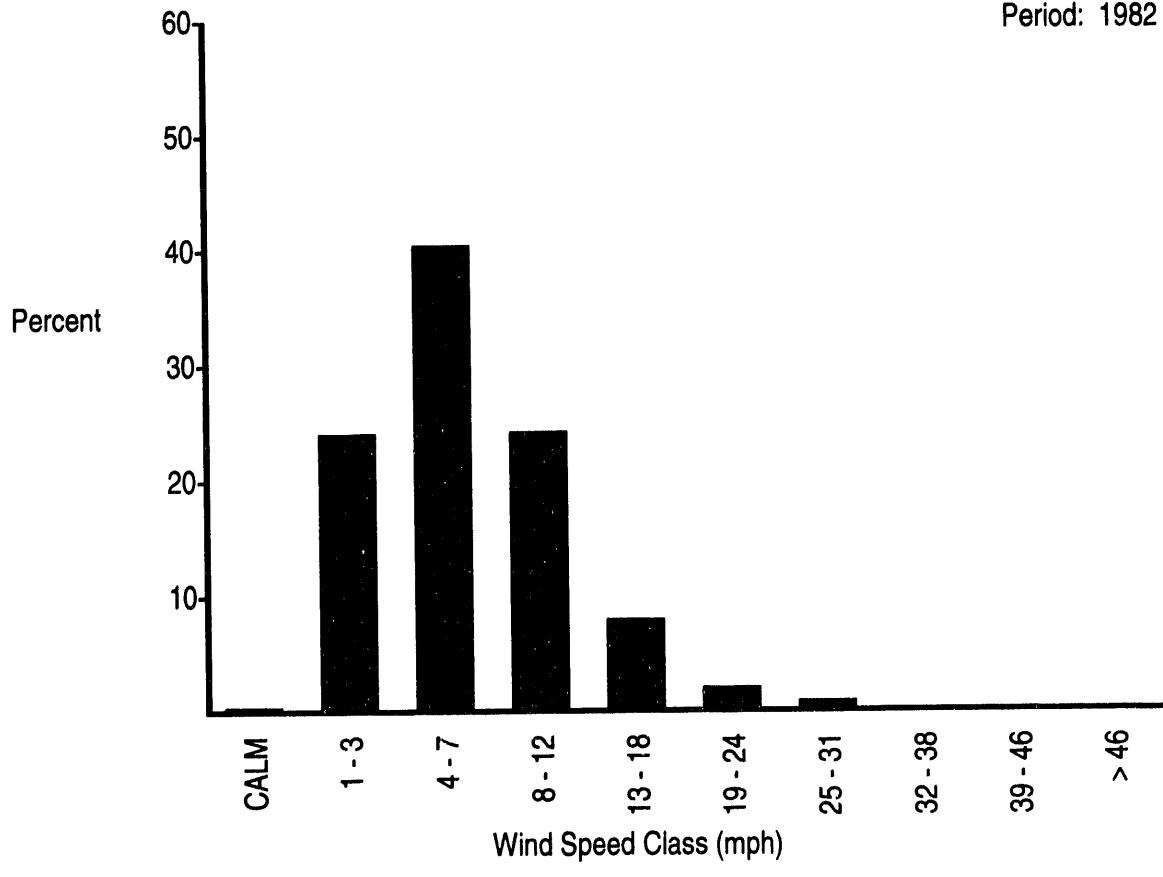
FIGURE B.1. (contd)

N
↑



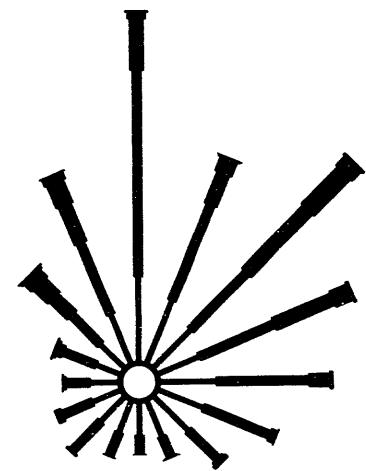
(a) Wind Rose

October Data
Period: 1982 - 1993



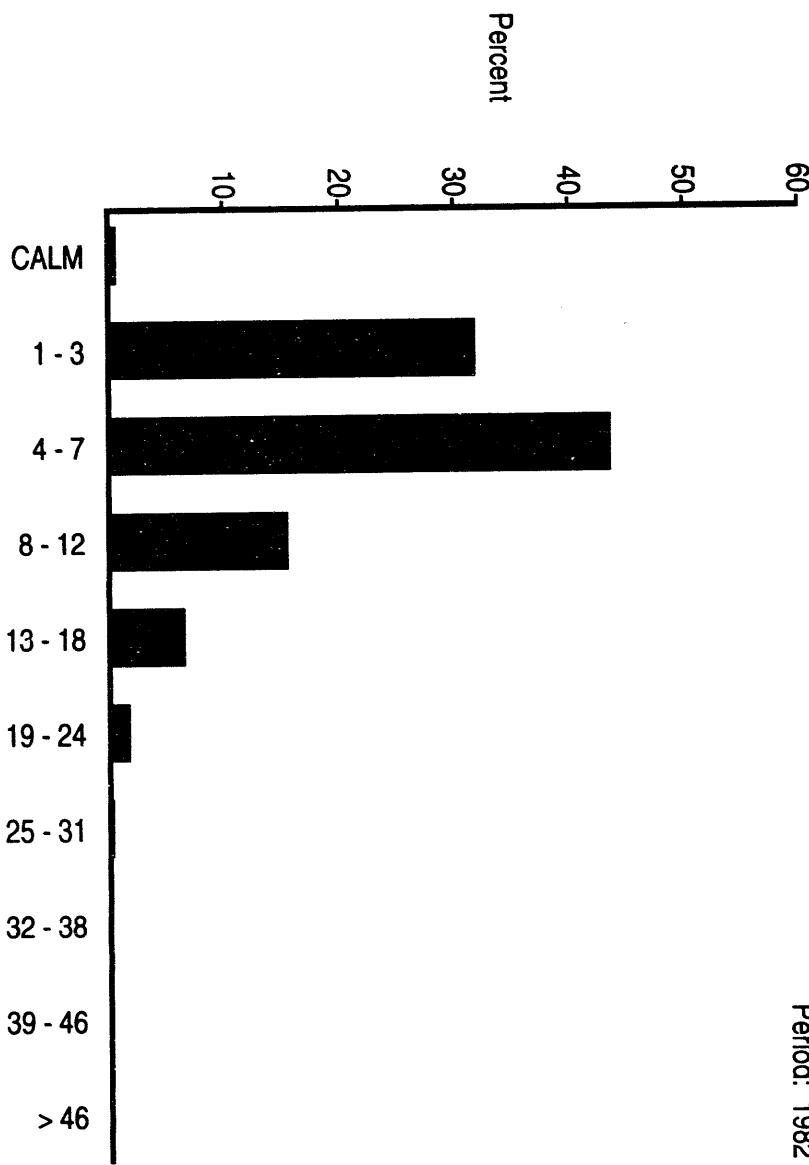
(b) Wind Speed Histogram

FIGURE B.1. (contd)



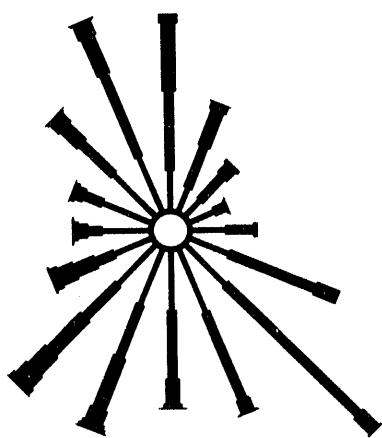
→ N

(a) Wind Rose
October Data
Period: 1982 - 1993



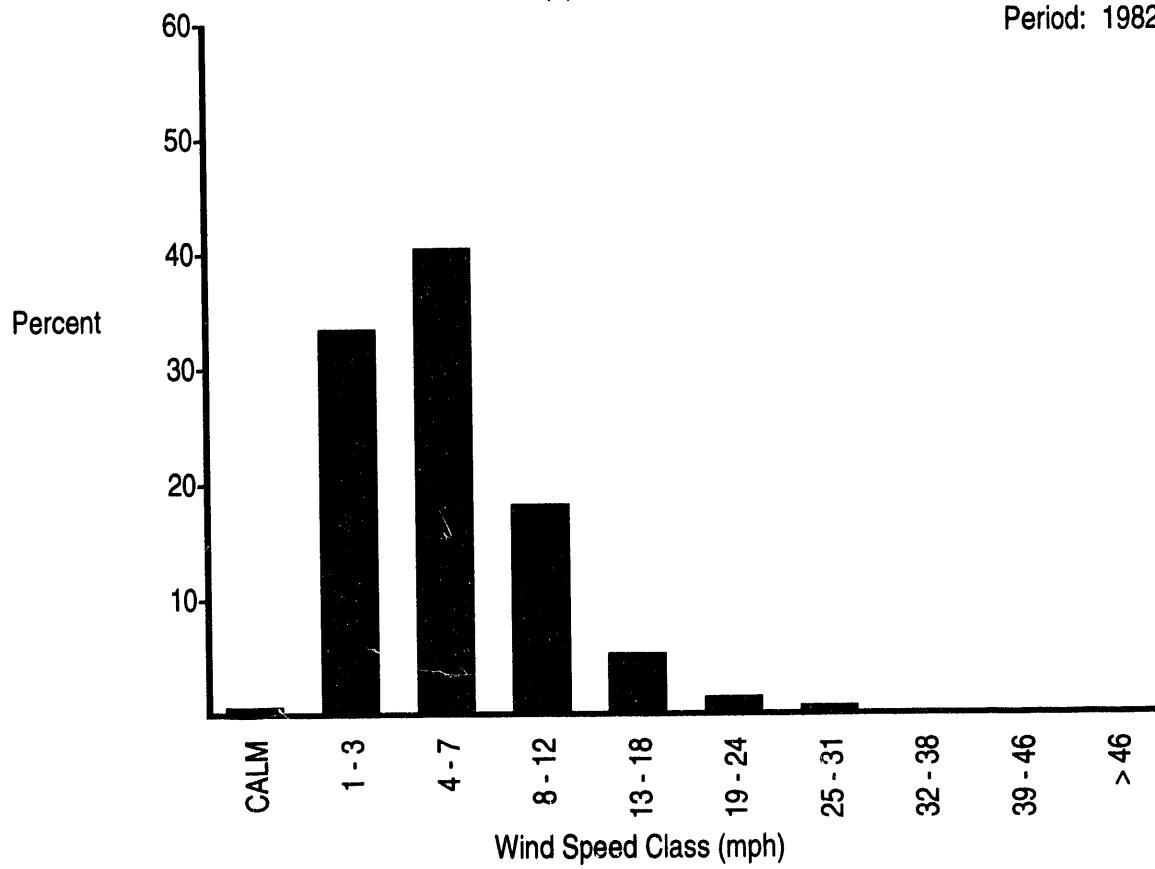
(b) Wind Speed Histogram
FIGURE B.1. (contd)

N
↑



(a) Wind Rose

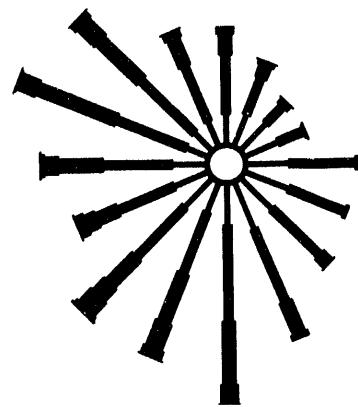
October Data
Period: 1982 - 1993



(b) Wind Speed Histogram

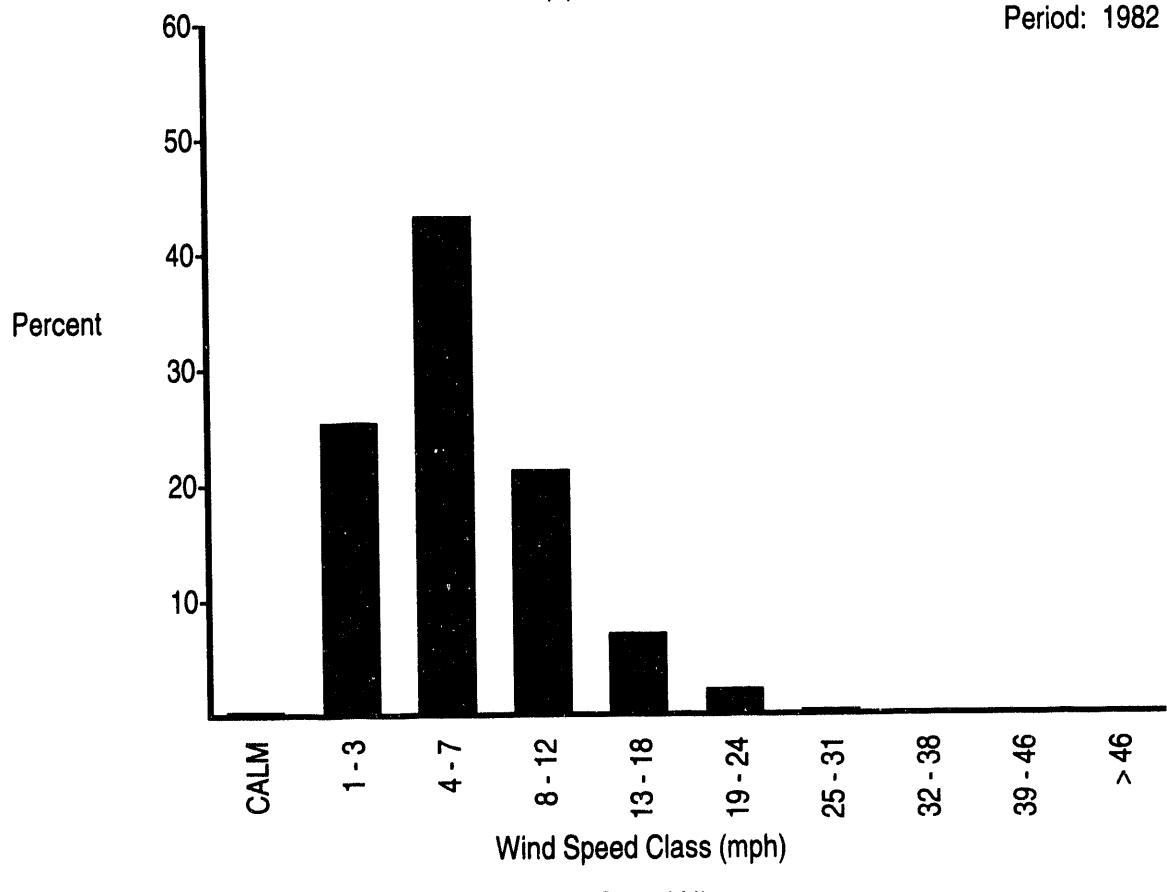
FIGURE B.1. (contd)

N
↑



(a) Wind Rose

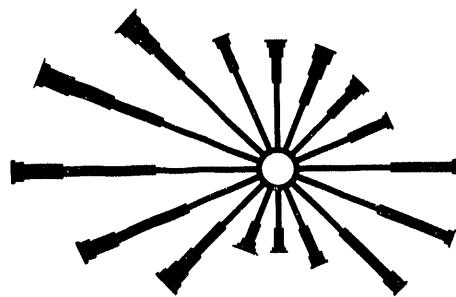
October Data
Period: 1982 - 1993



(b) Wind Speed Histogram

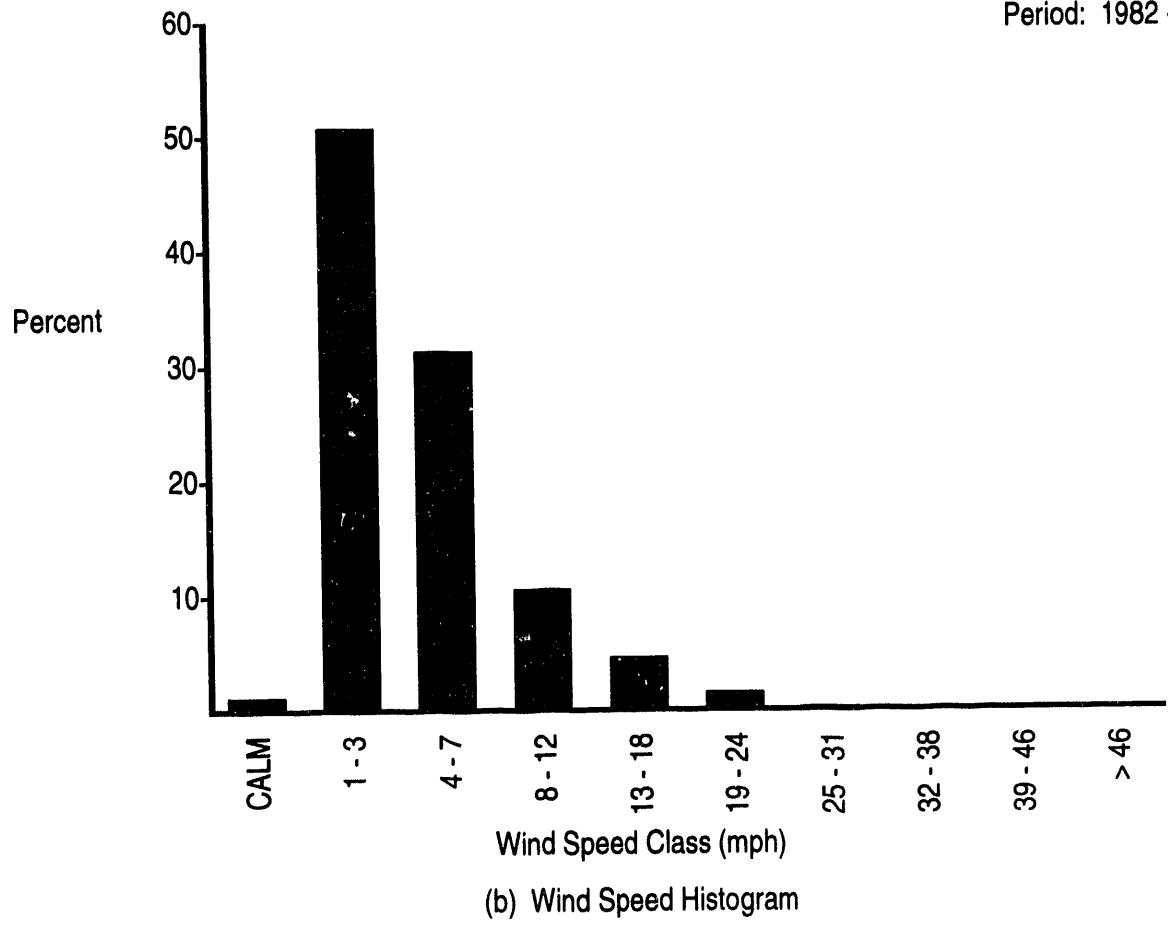
FIGURE B.1. (contd)

N
↑



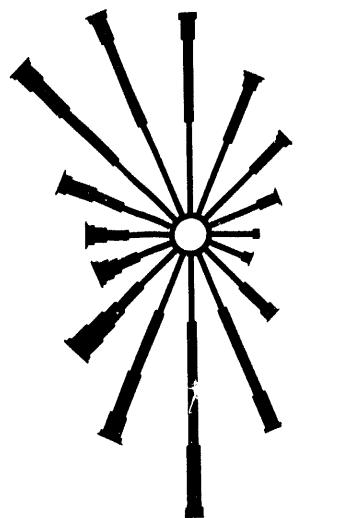
(a) Wind Rose

October Data
Period: 1982 - 1993



(b) Wind Speed Histogram

FIGURE B.1. (contd)



N
↑

(a) Wind Rose

October Data
Period: 1982 - 1993

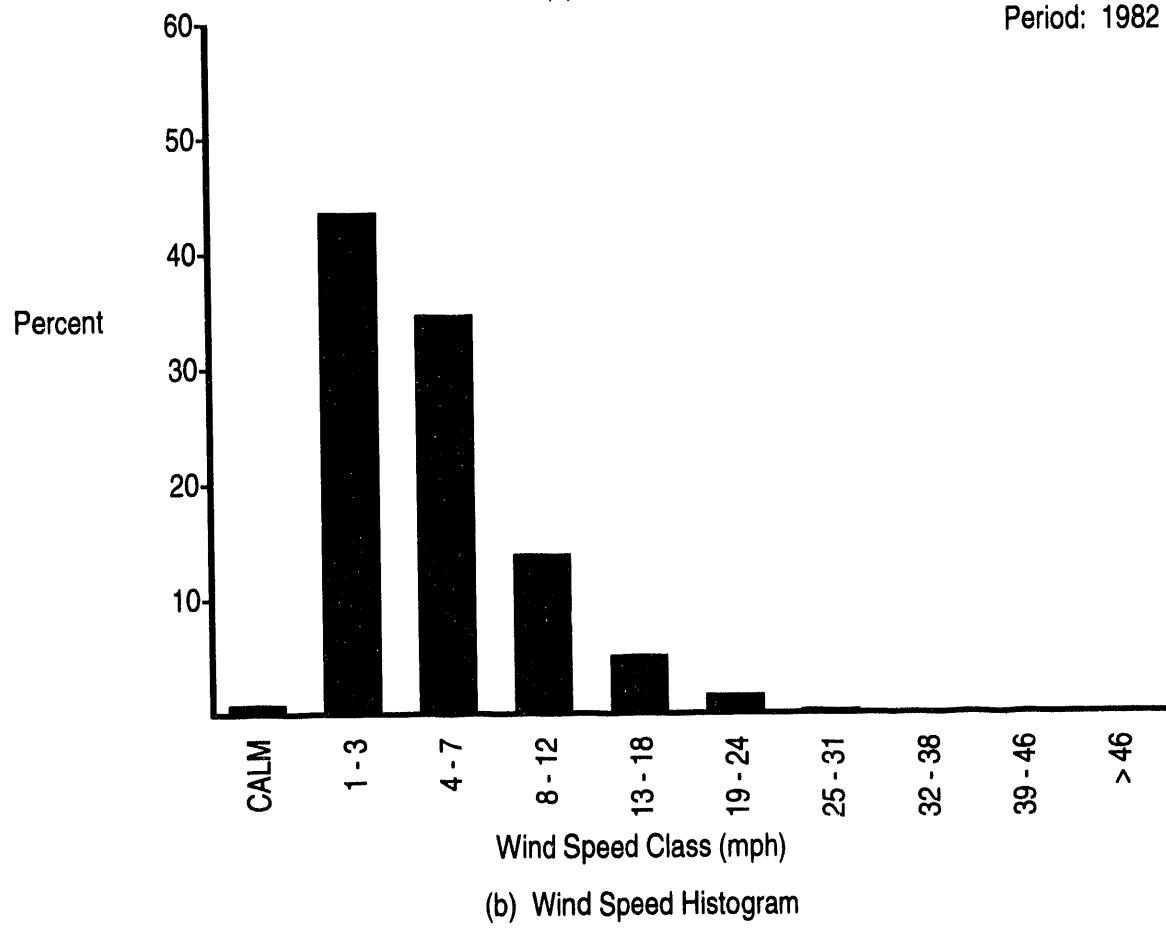
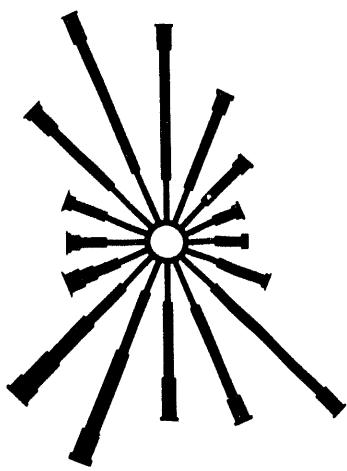


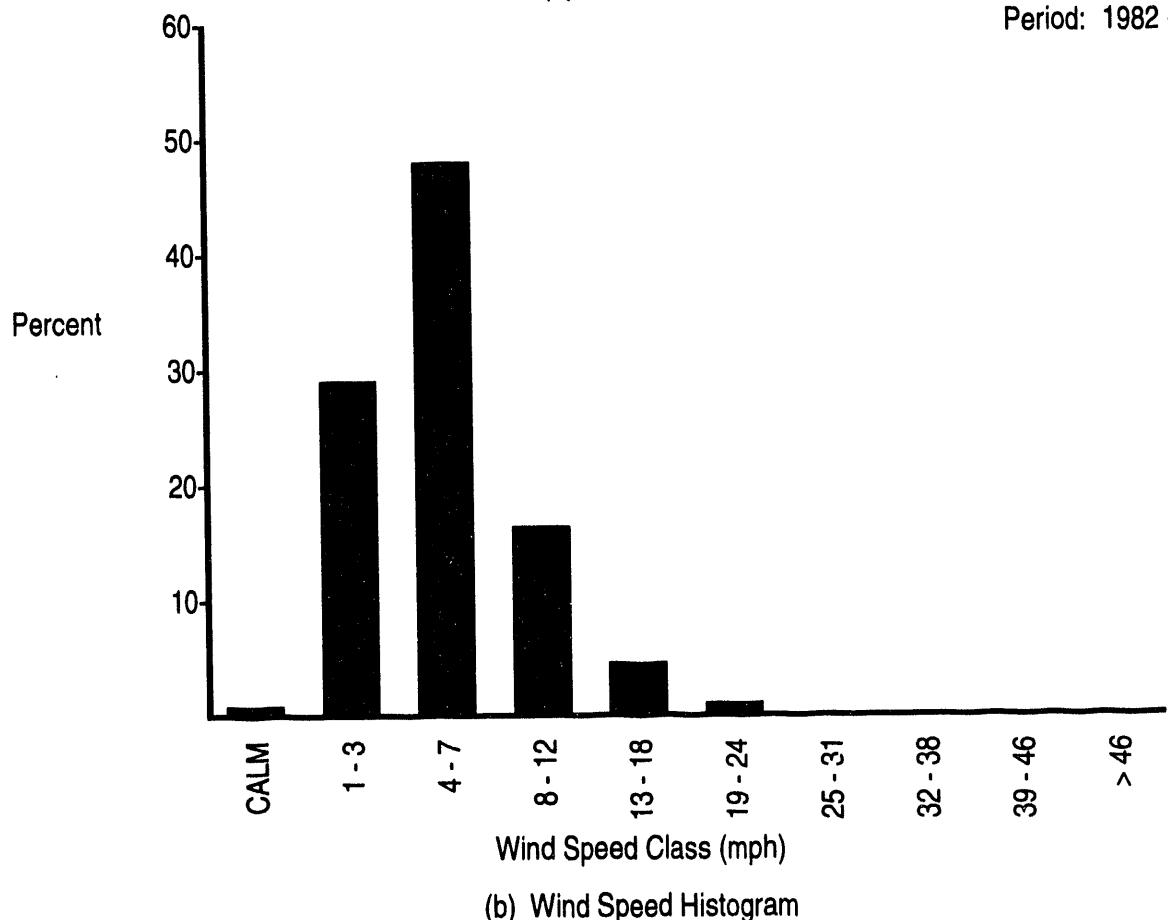
FIGURE B.1. (contd)

N
↑



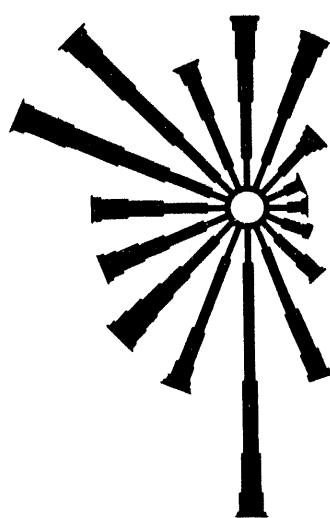
(a) Wind Rose

October Data
Period: 1982 - 1993



(b) Wind Speed Histogram

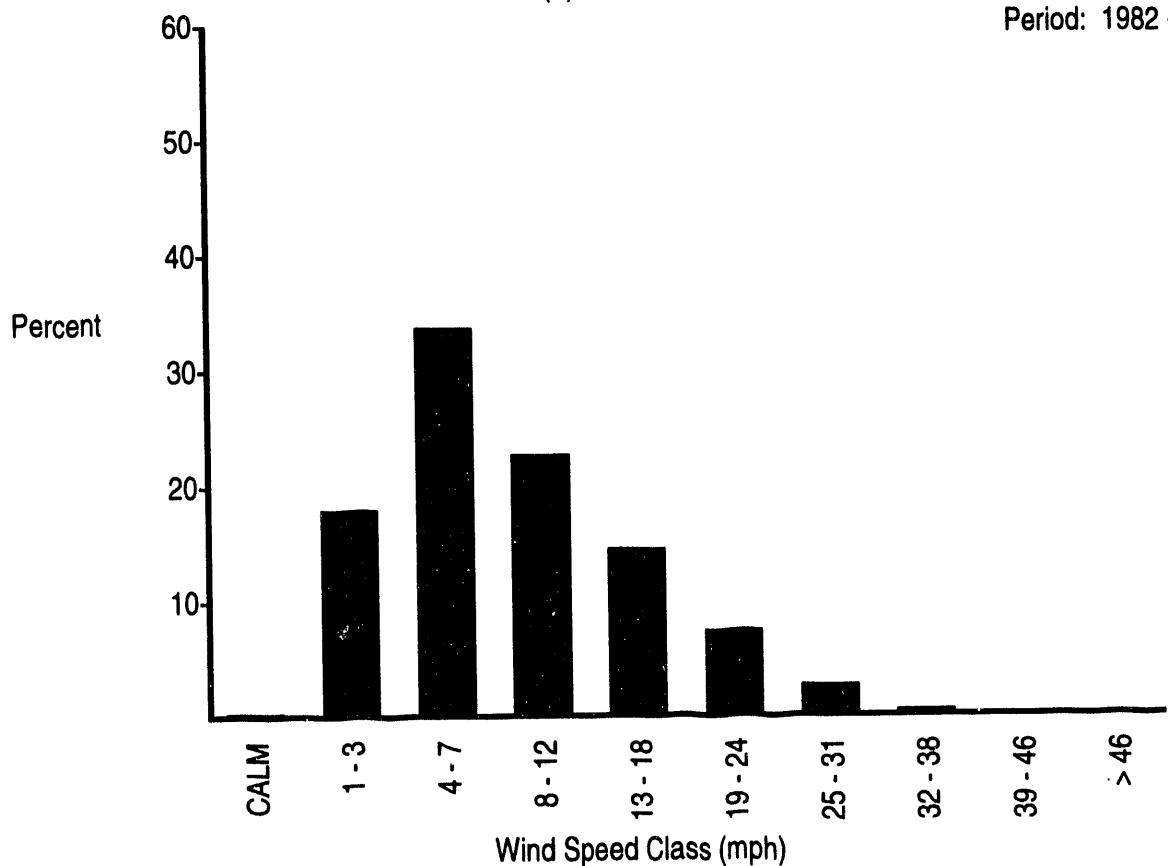
FIGURE B.1. (contd)



N
↑

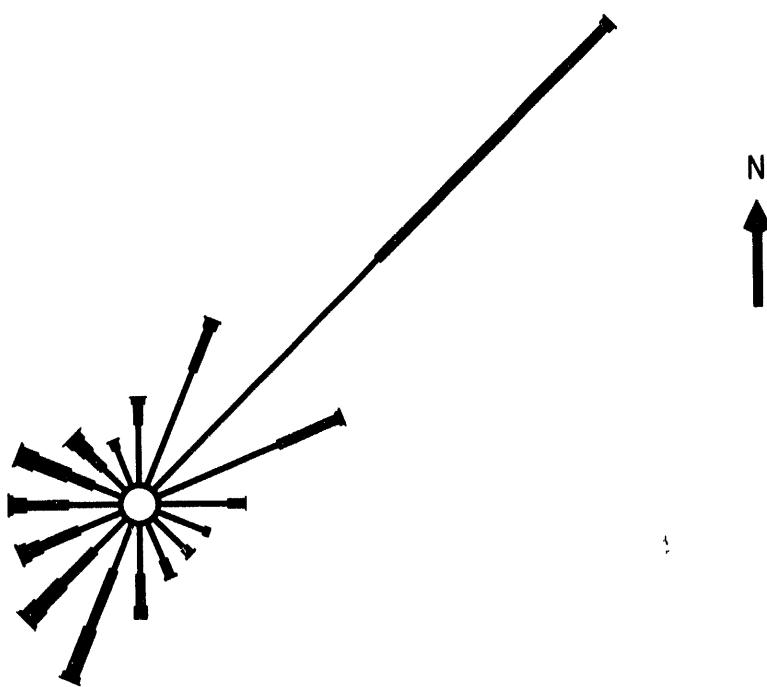
(a) Wind Rose

October Data
Period: 1982 - 1993

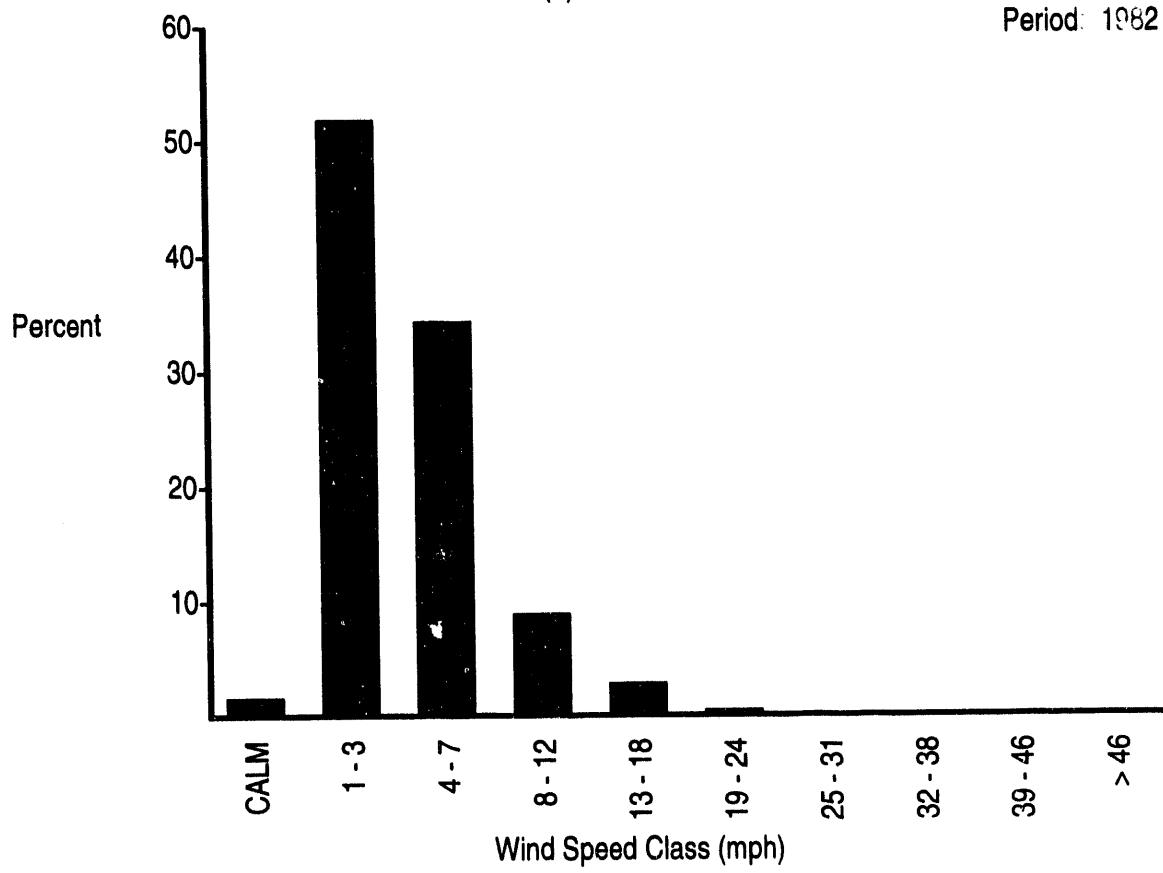


(b) Wind Speed Histogram

FIGURE B.1. (contd)



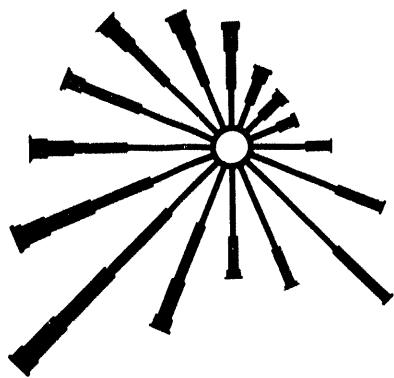
(a) Wind Rose

October Data
Period: 1982 - 1993

(b) Wind Speed Histogram

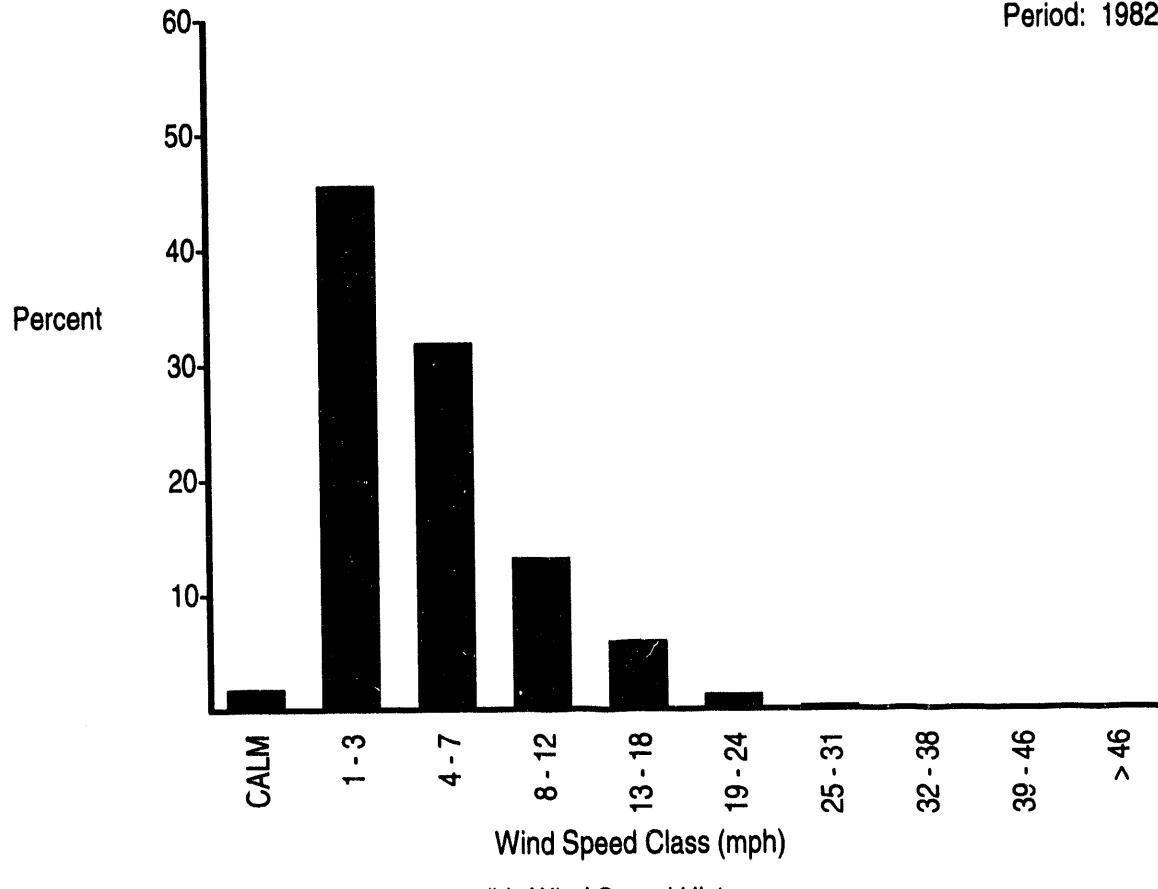
FIGURE B.1. (contd)

N
↑



(a) Wind Rose

October Data
Period: 1982 - 1993



(b) Wind Speed Histogram

FIGURE B.1. (contd)



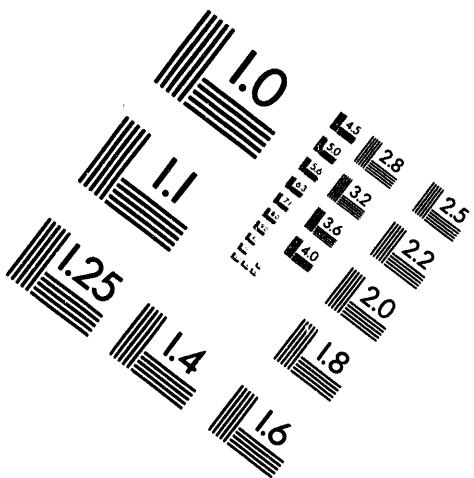
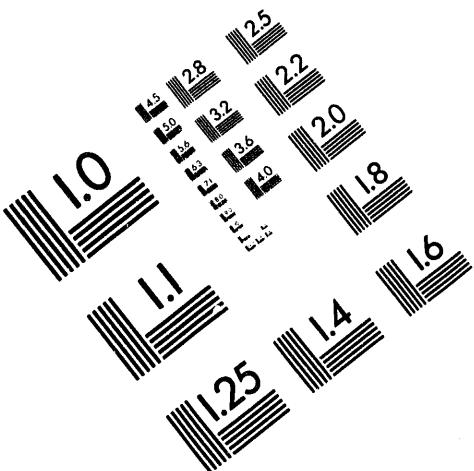
AIIM

Association for Information and Image Management

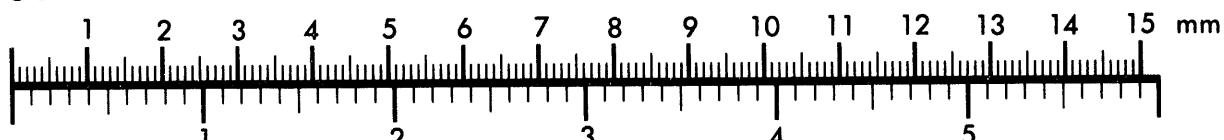
1100 Wayne Avenue, Suite 1100

Silver Spring, Maryland 20910

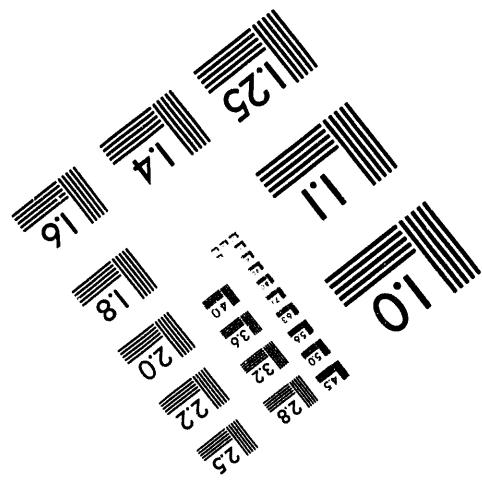
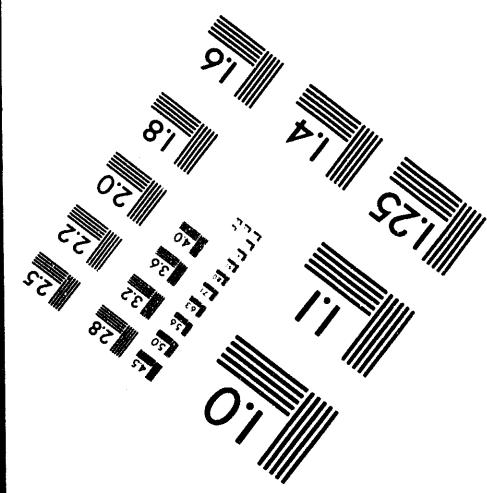
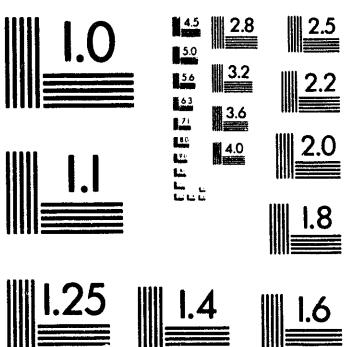
301/587-8202



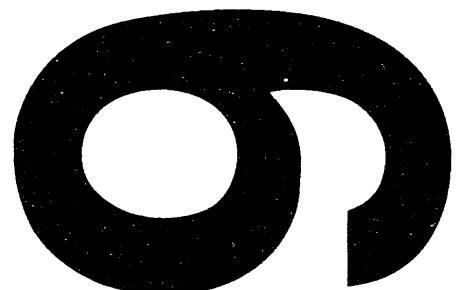
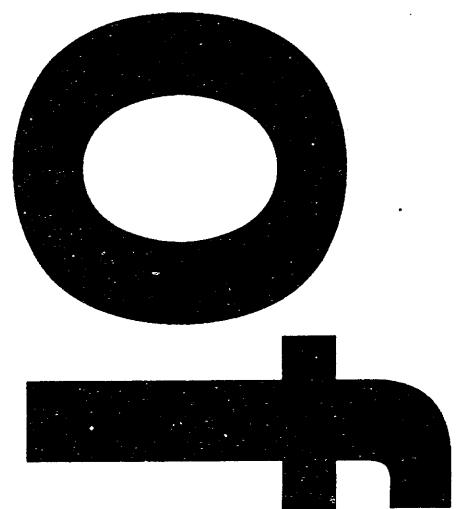
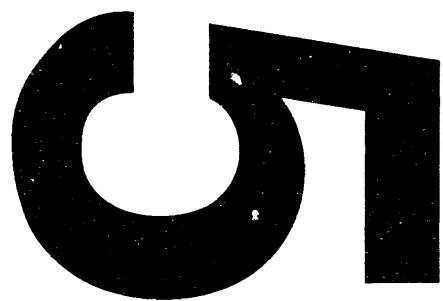
Centimeter



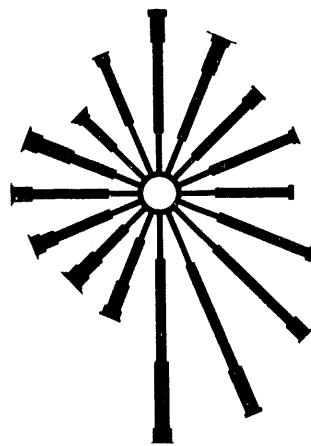
Inches



MANUFACTURED TO AIIM STANDARDS
BY APPLIED IMAGE, INC.

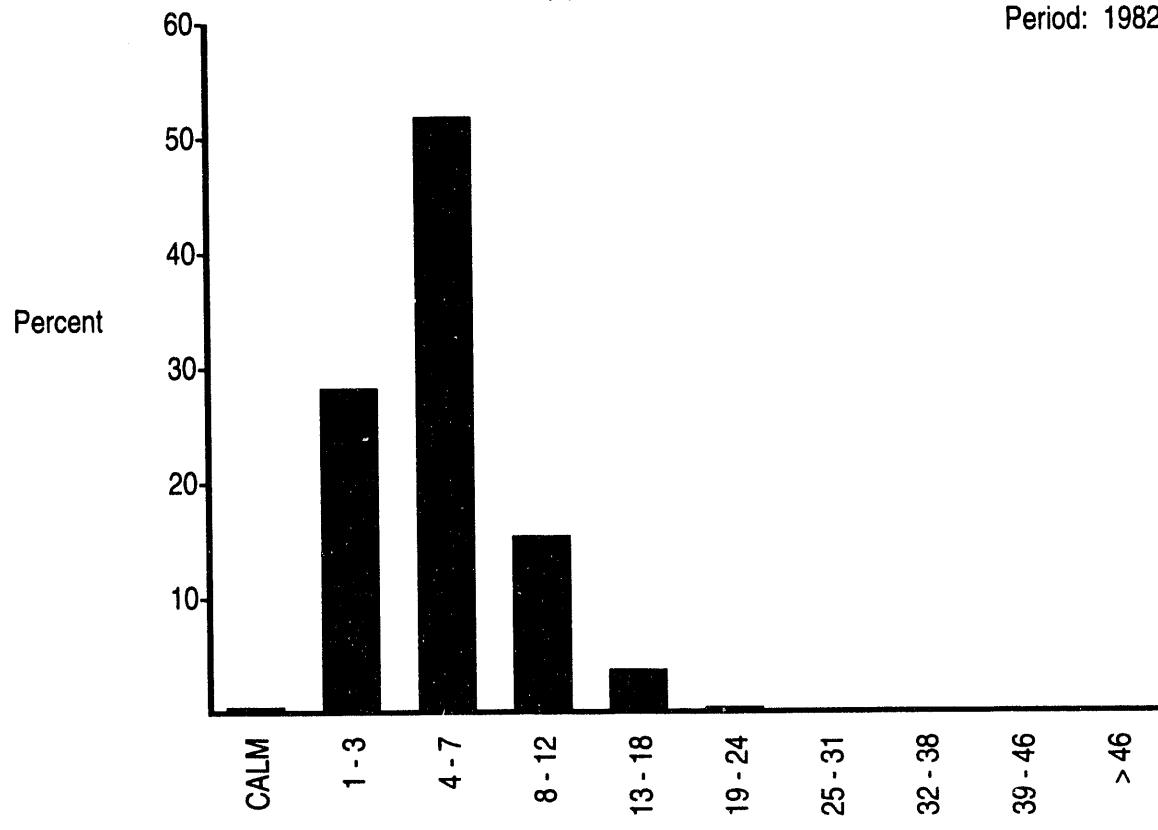


N
↑



(a) Wind Rose

October Data
Period: 1982 - 1992



(b) Wind Speed Histogram

FIGURE B.1. (contd)

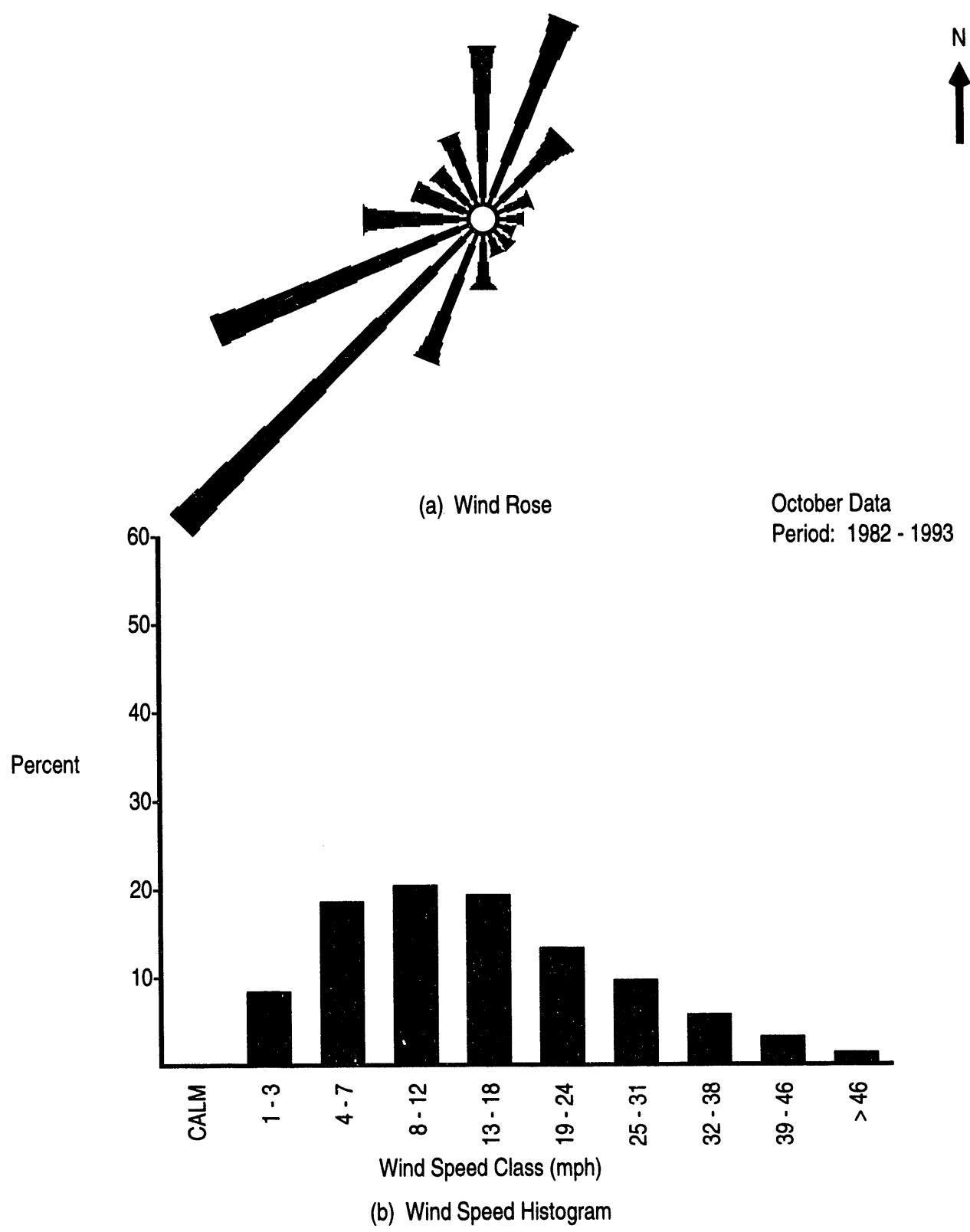
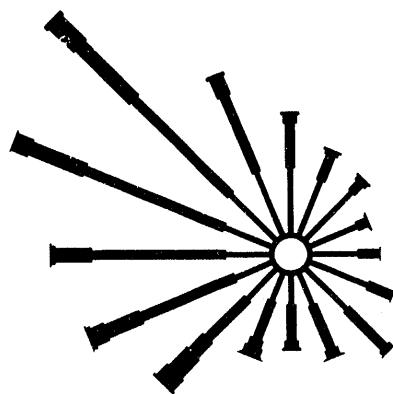


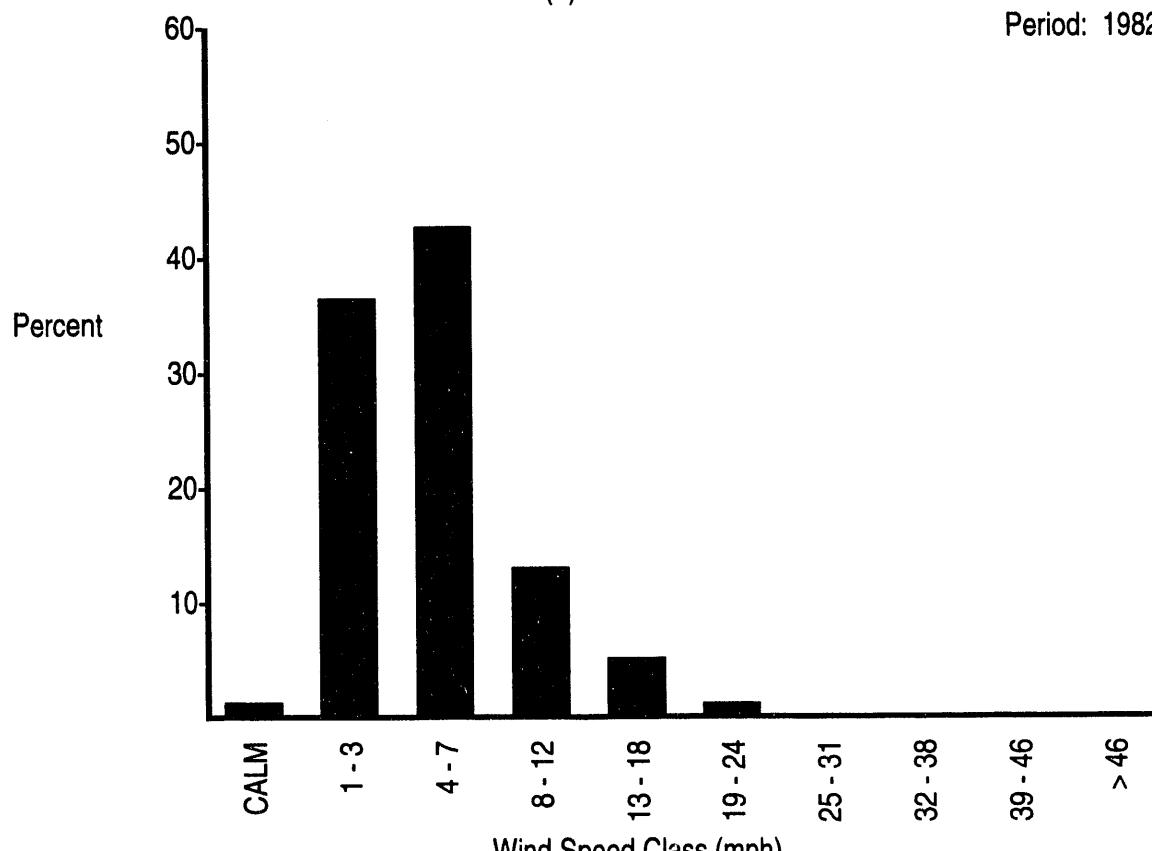
FIGURE B.1. (contd)

N
↑



(a) Wind Rose

October Data
Period: 1982 - 1993



(b) Wind Speed Histogram

FIGURE B.1. (contd)

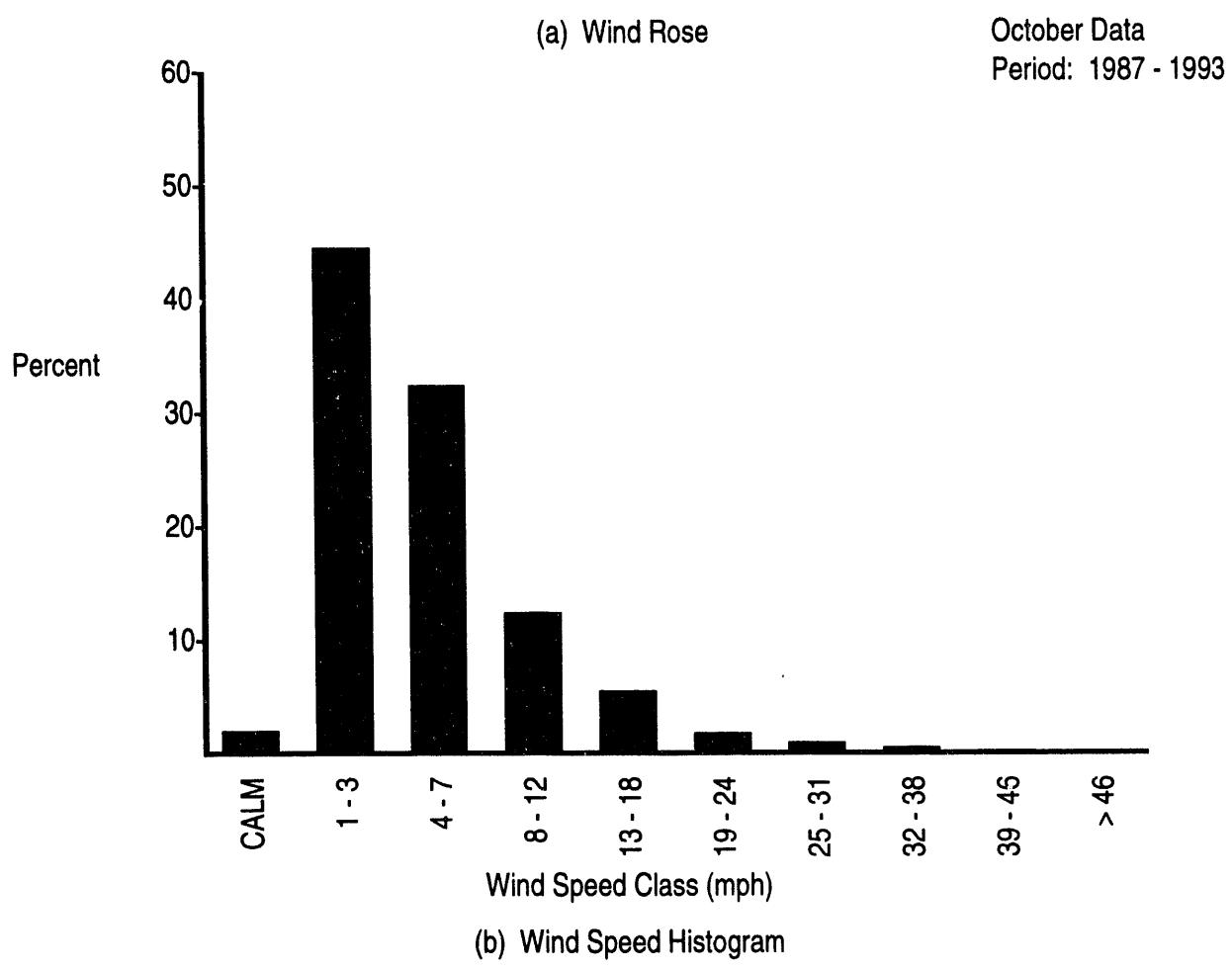
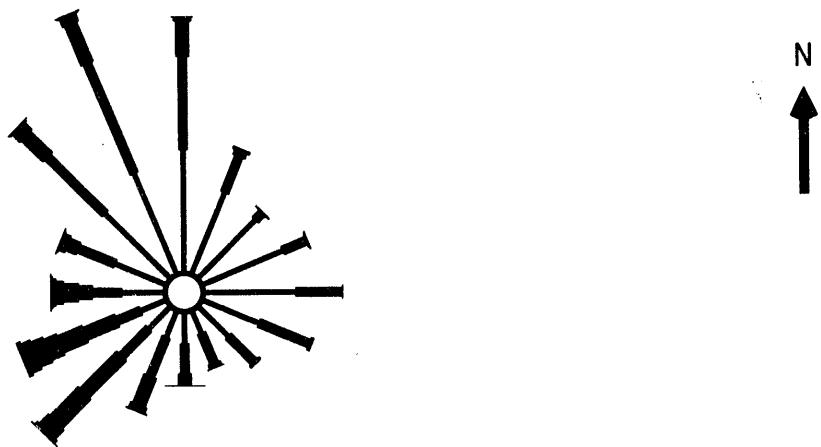
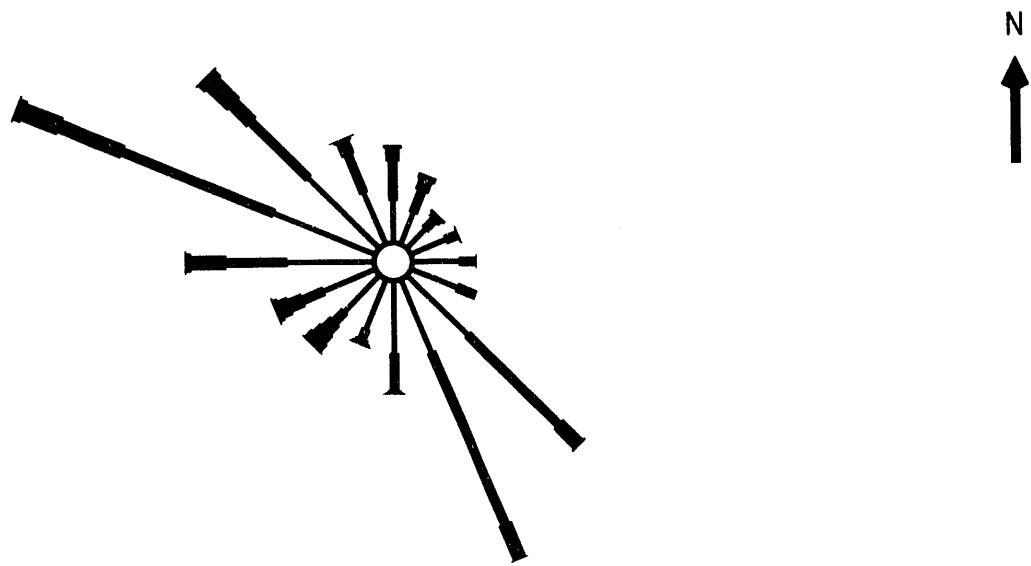
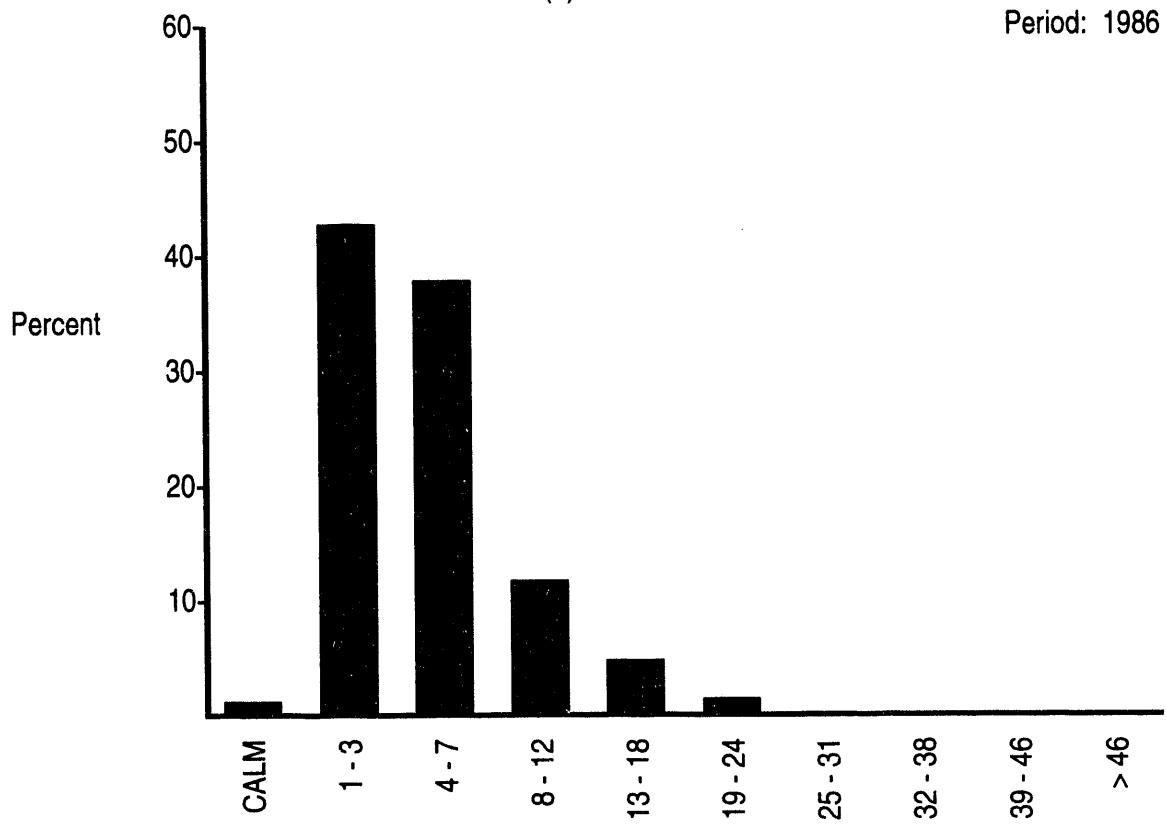


FIGURE B.1. (contd)

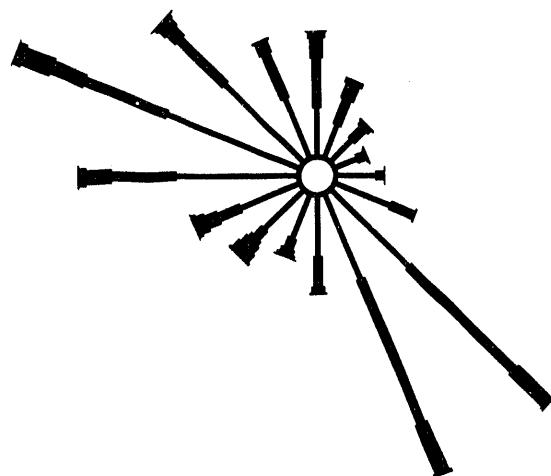


(a) Wind Rose

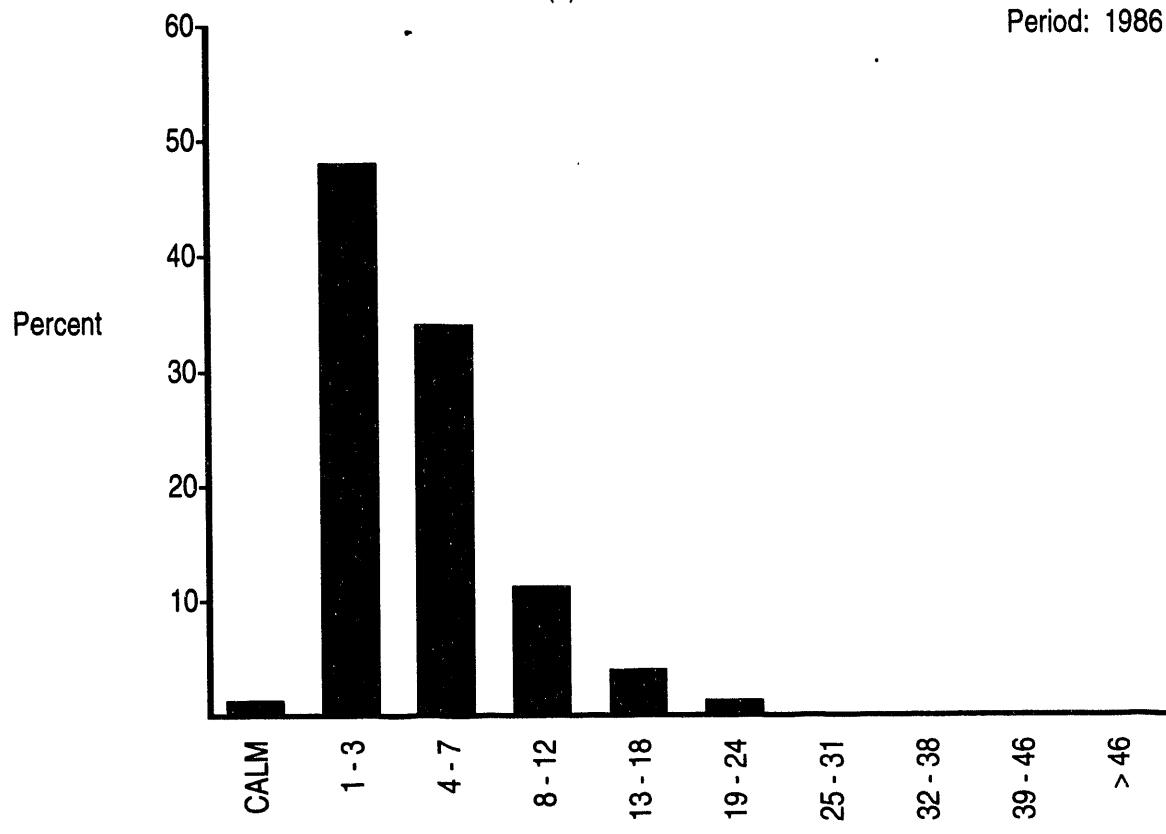
October Data
Period: 1986 - 1993

(b) Wind Speed Histogram

FIGURE B.1. (contd)

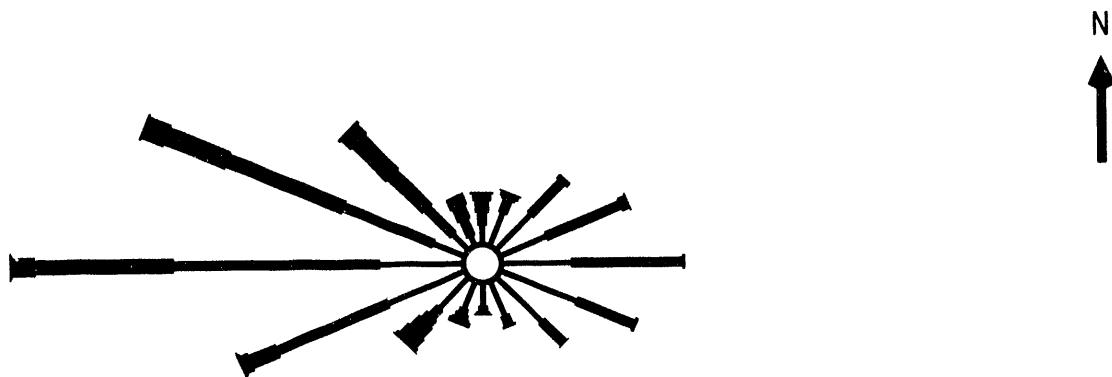
N
↑

(a) Wind Rose

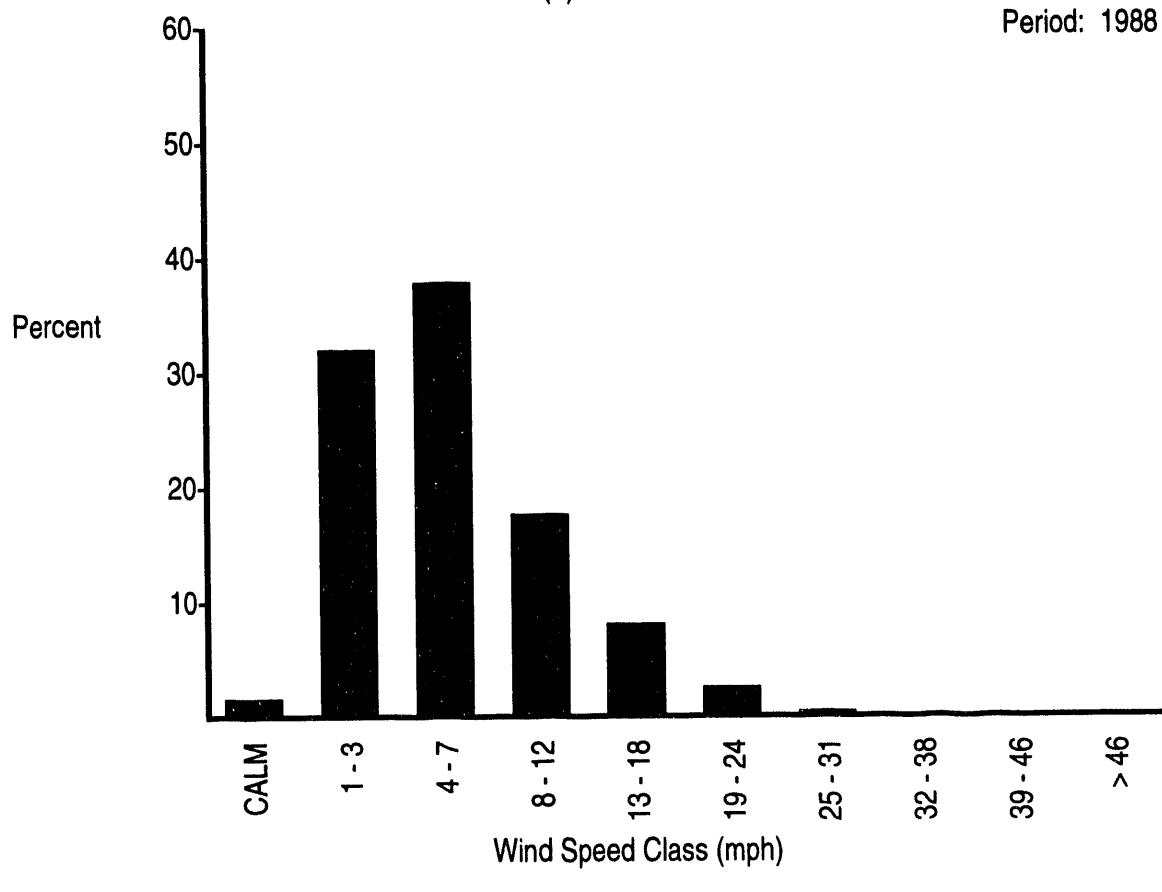
October Data
Period: 1986 - 1993

(b) Wind Speed Histogram

FIGURE B.1. (contd)



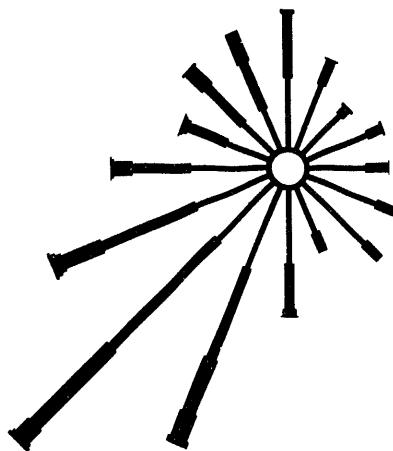
(a) Wind Rose

October Data
Period: 1988 - 1993

(b) Wind Speed Histogram

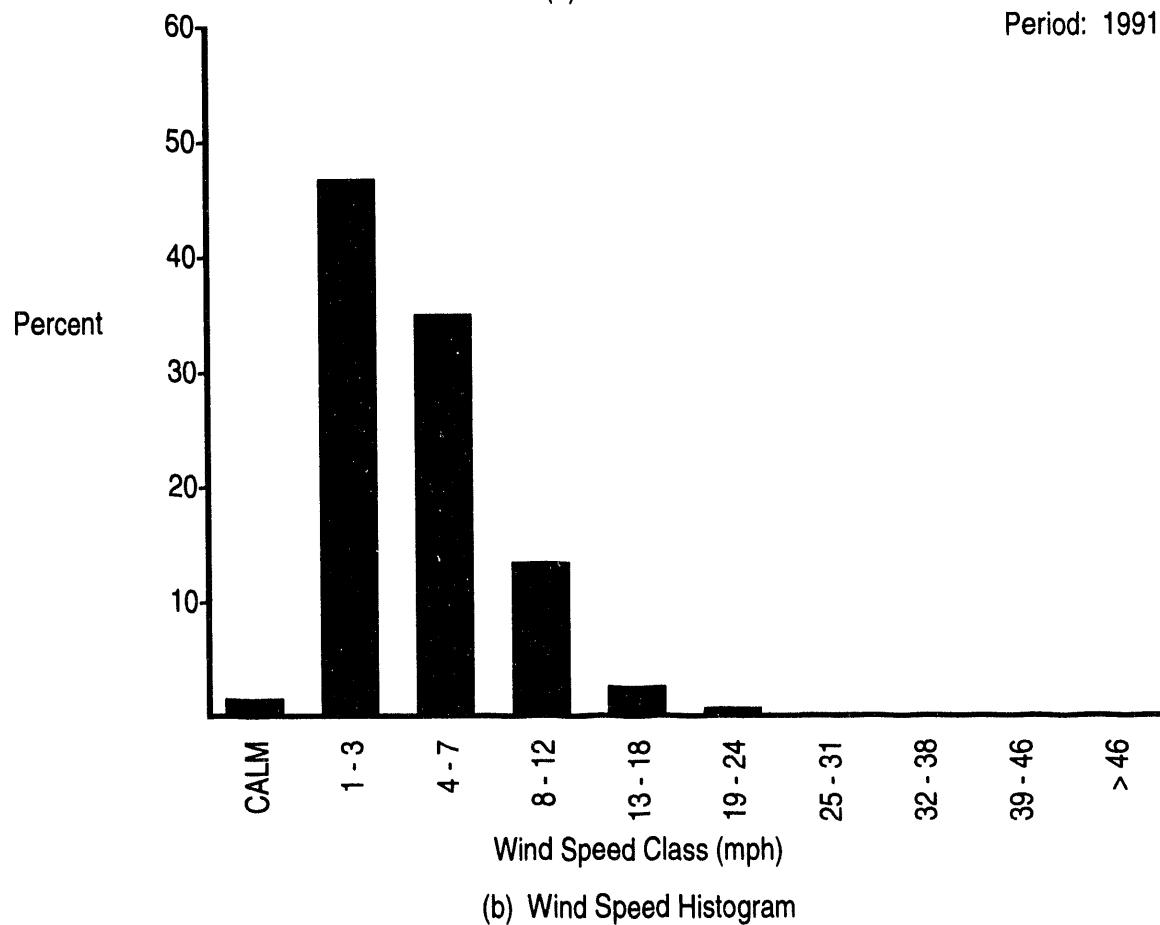
FIGURE B.1. (contd)

N



(a) Wind Rose

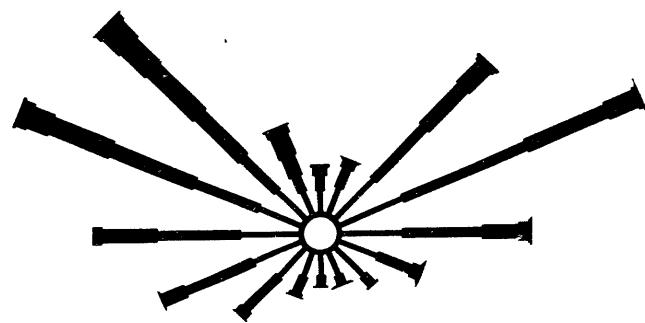
October Data
Period: 1991 - 1993



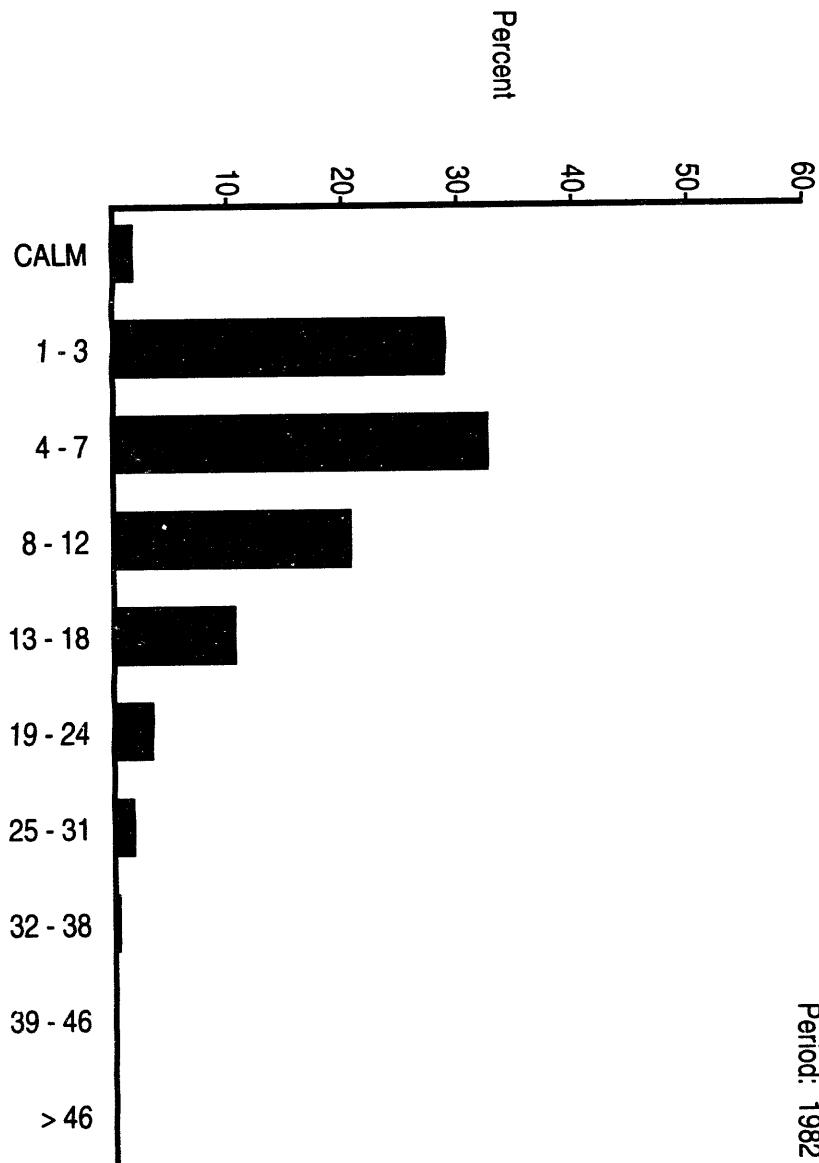
(b) Wind Speed Histogram

FIGURE B.1. (contd)

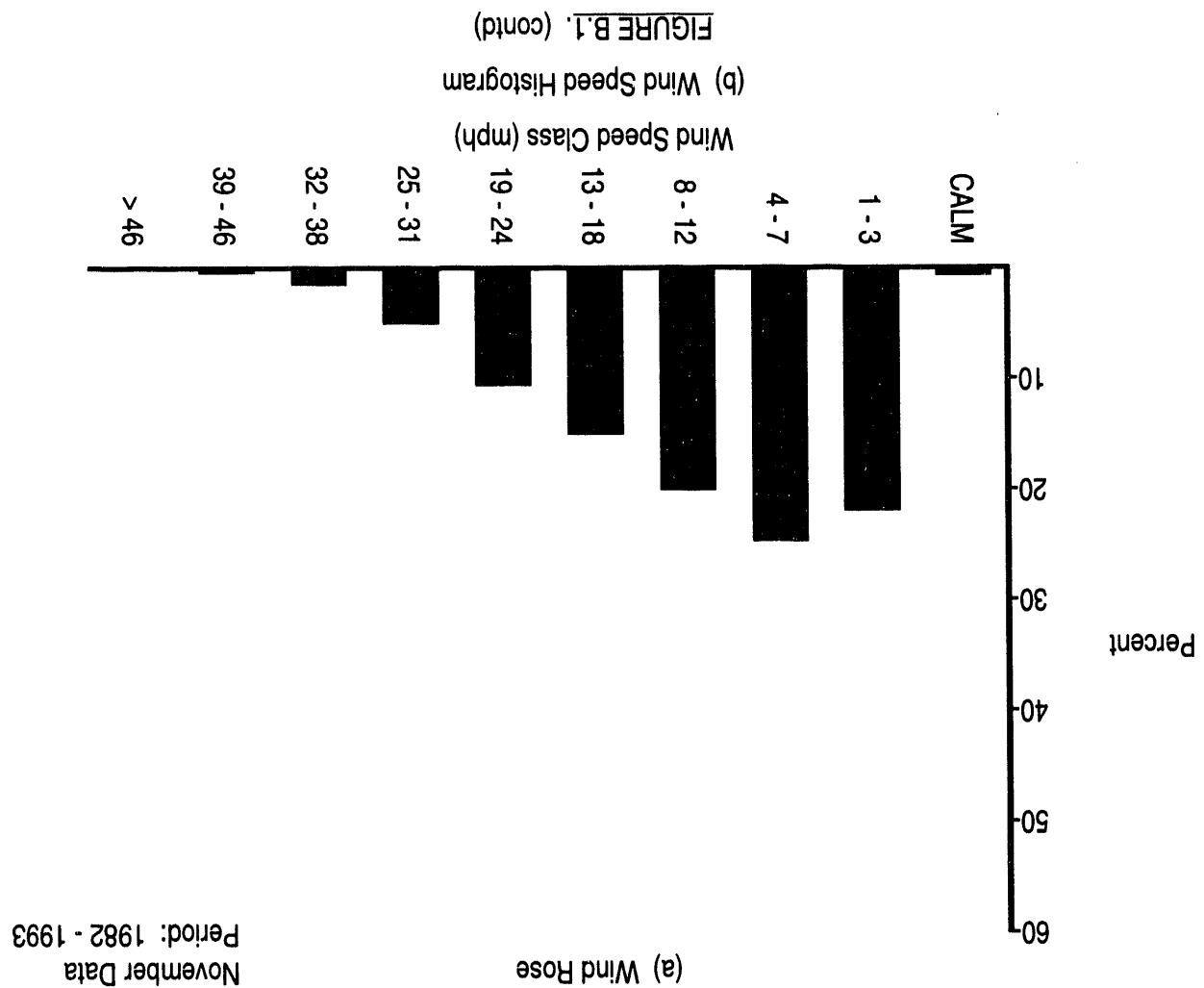
(a) Wind Rose
November Data
Period: 1982 - 1993

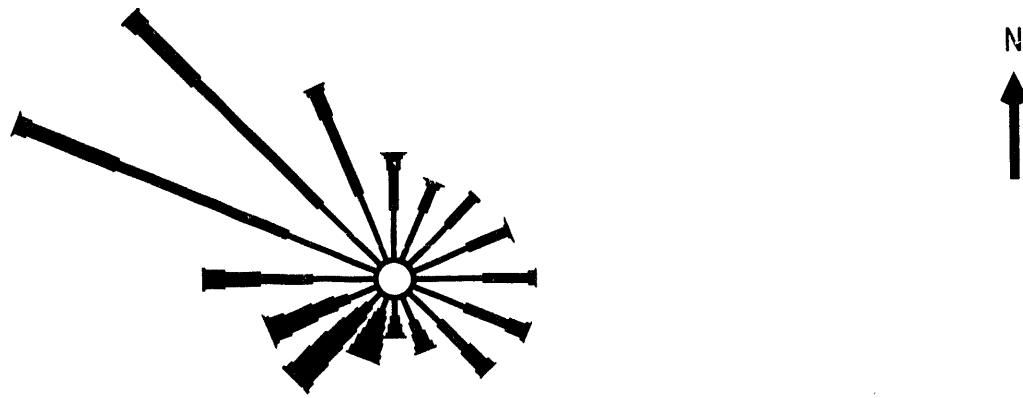


→ N



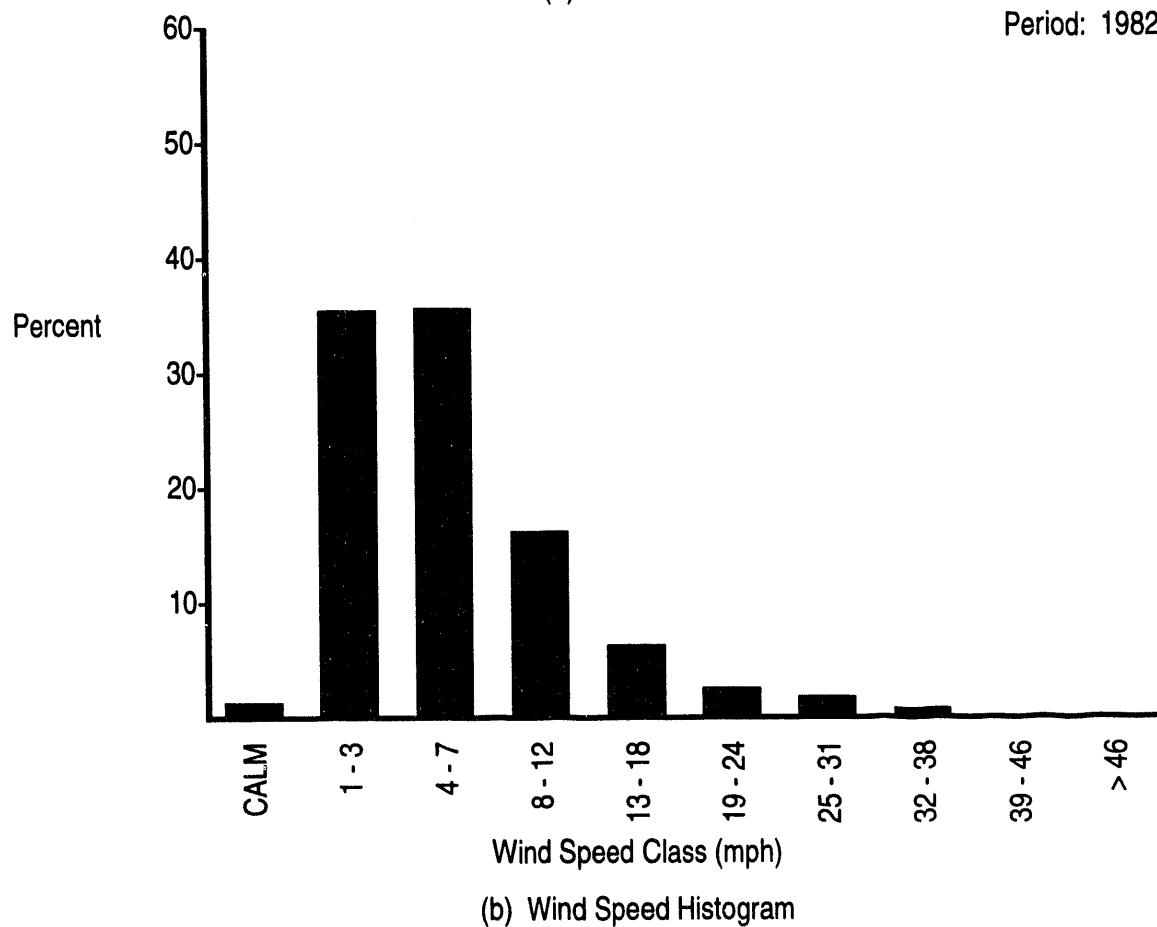
(b) Wind Speed Histogram





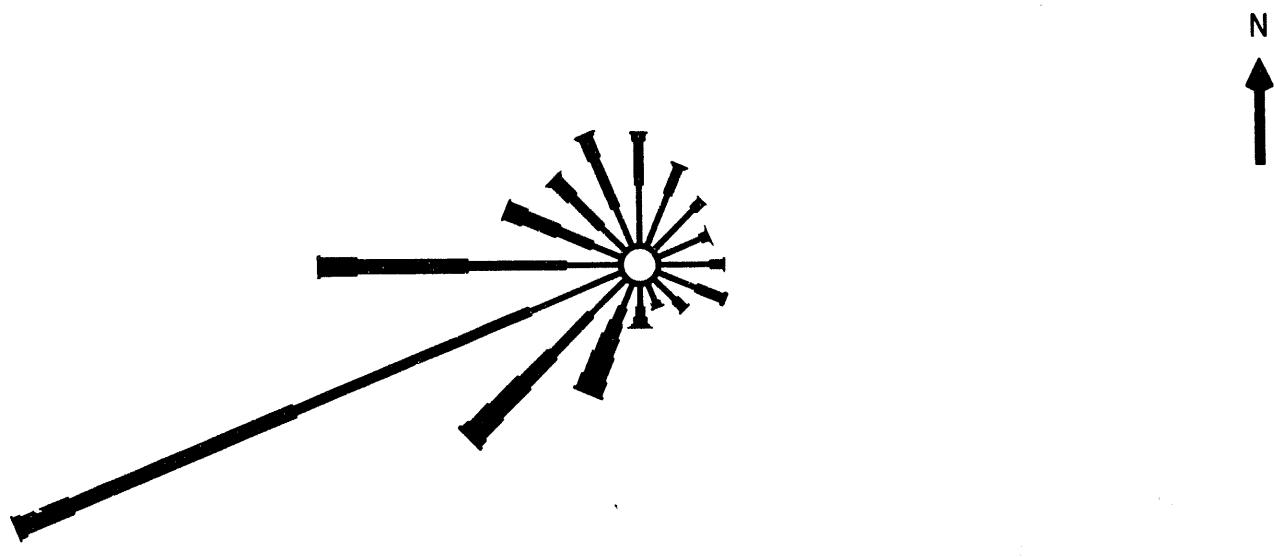
(a) Wind Rose

November Data
Period: 1982 - 1993



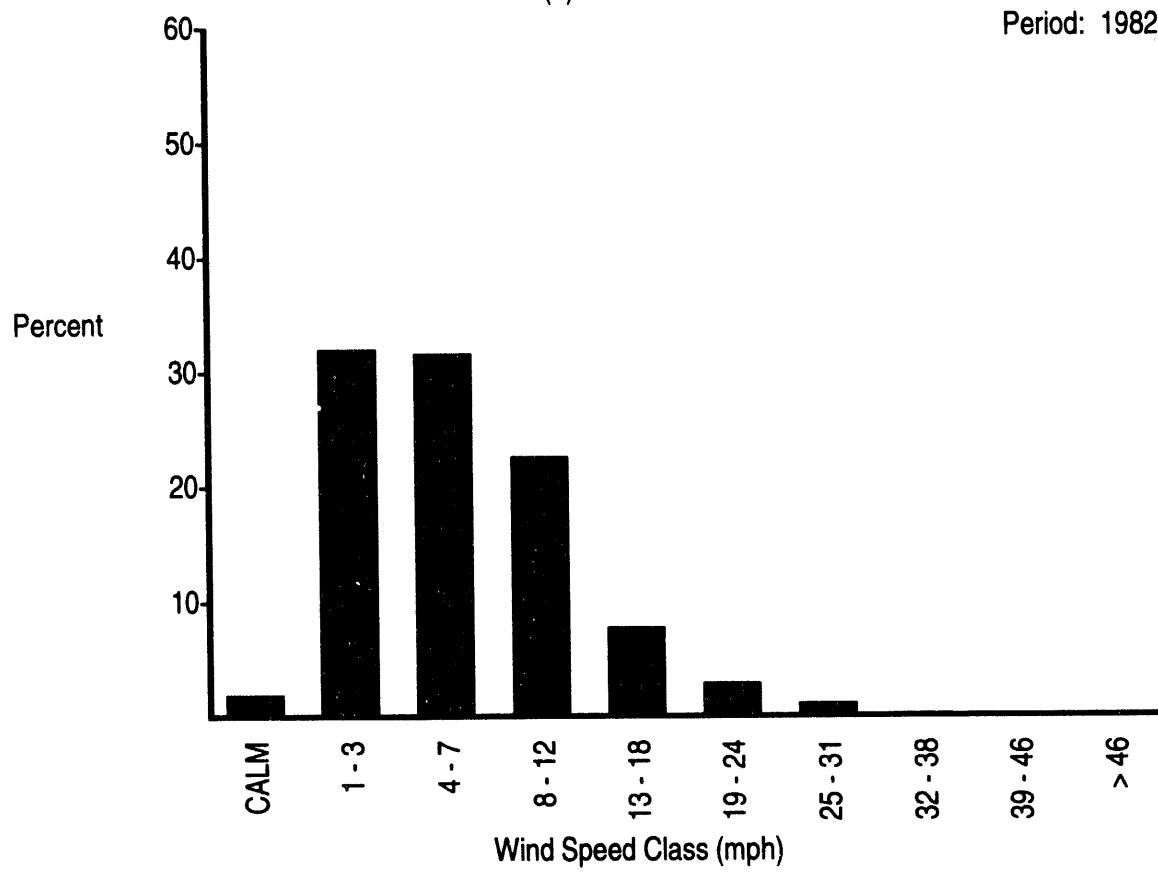
(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

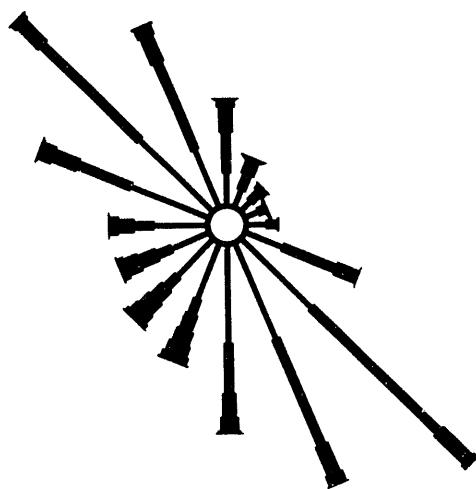
November Data
Period: 1982 - 1993



(b) Wind Speed Histogram

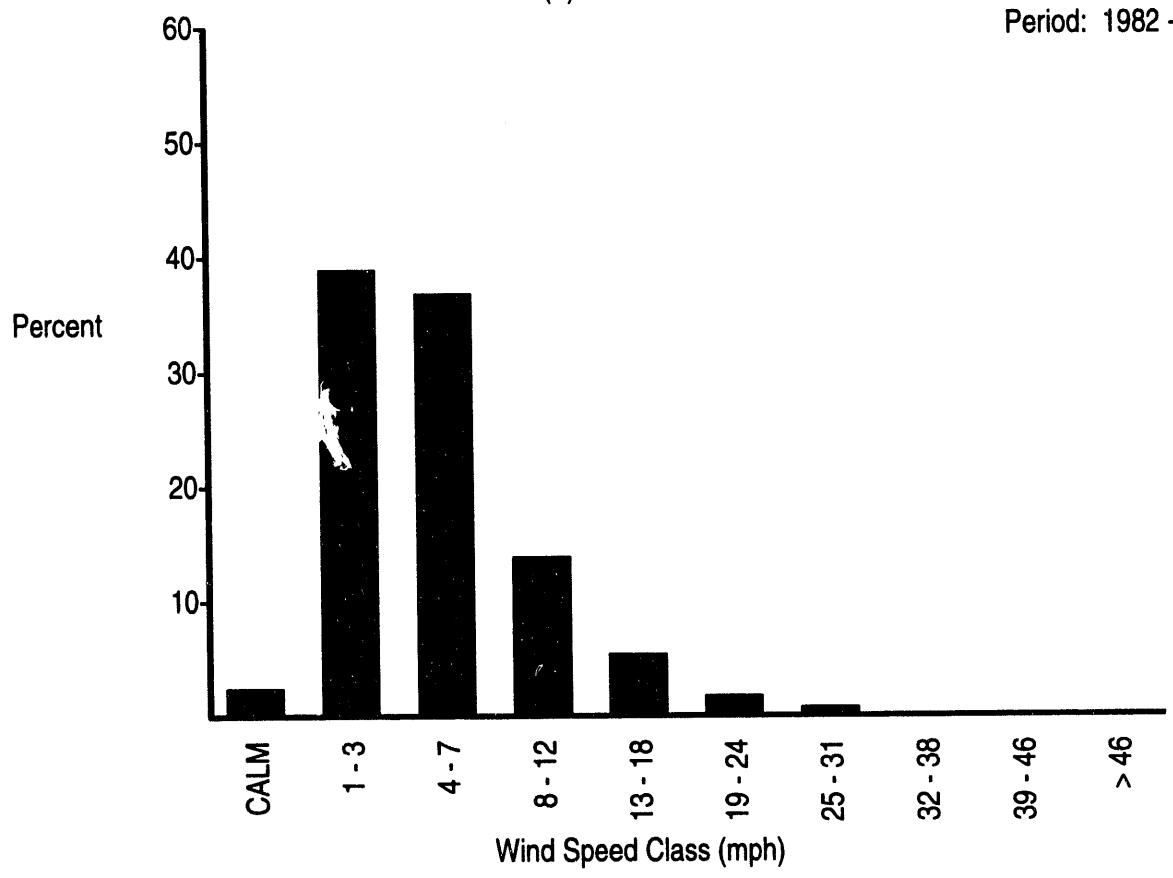
FIGURE B.1. (contd)

N
↑



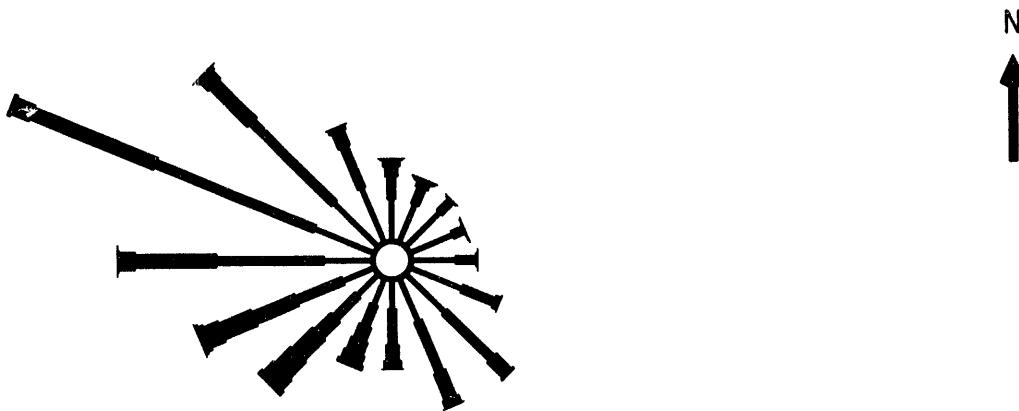
(a) Wind Rose

November Data
Period: 1982 - 1993



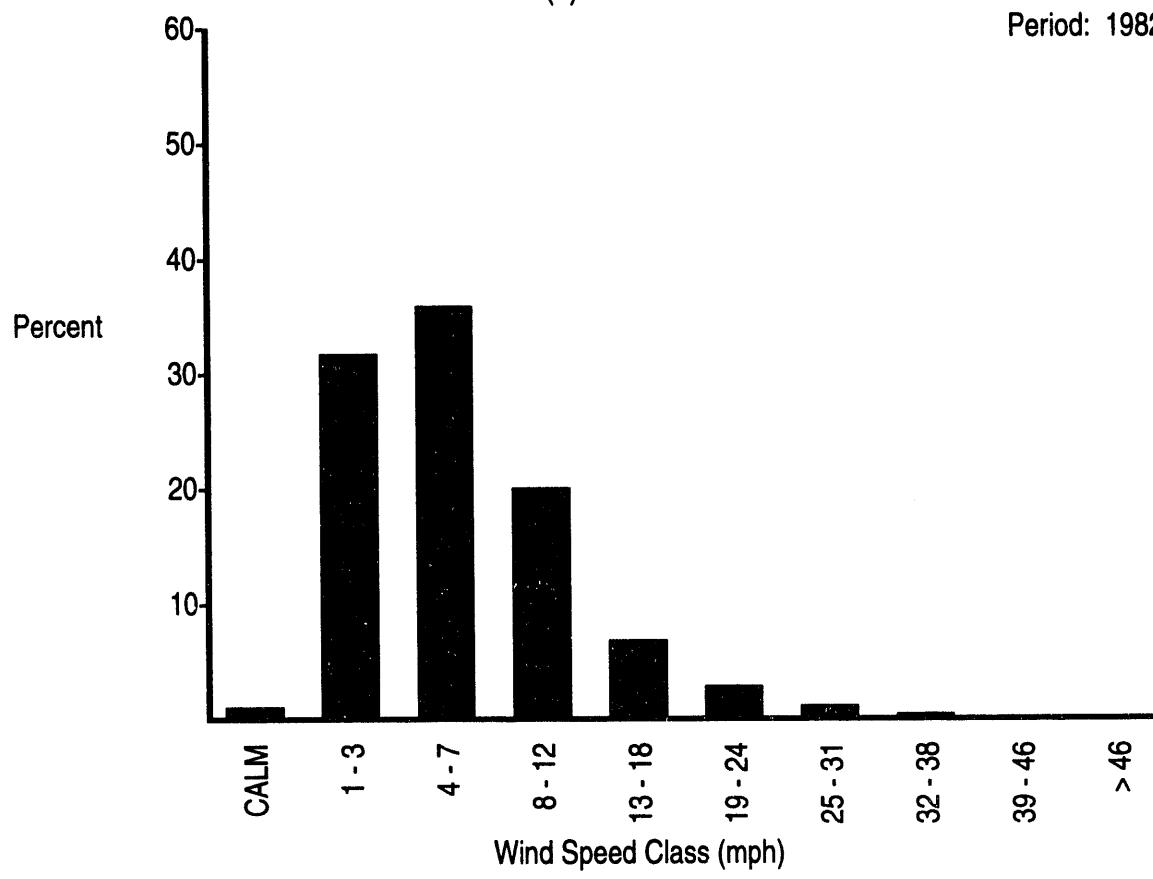
(b) Wind Speed Histogram

FIGURE B.1. (contd)



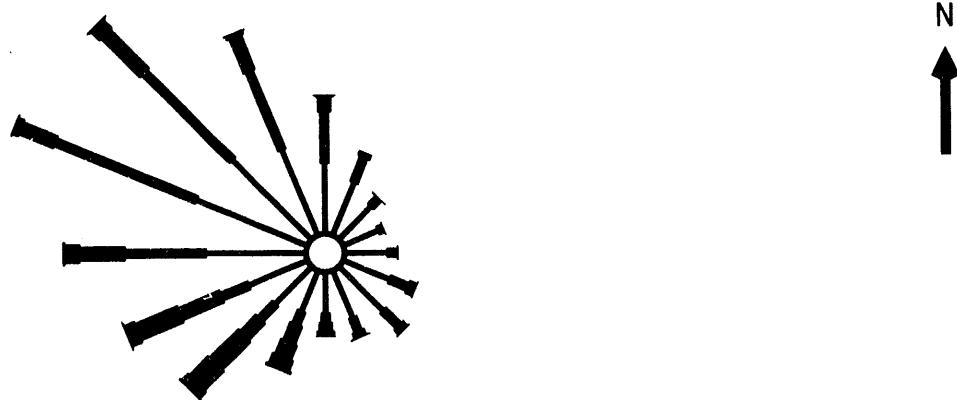
(a) Wind Rose

November Data
Period: 1982 - 1993

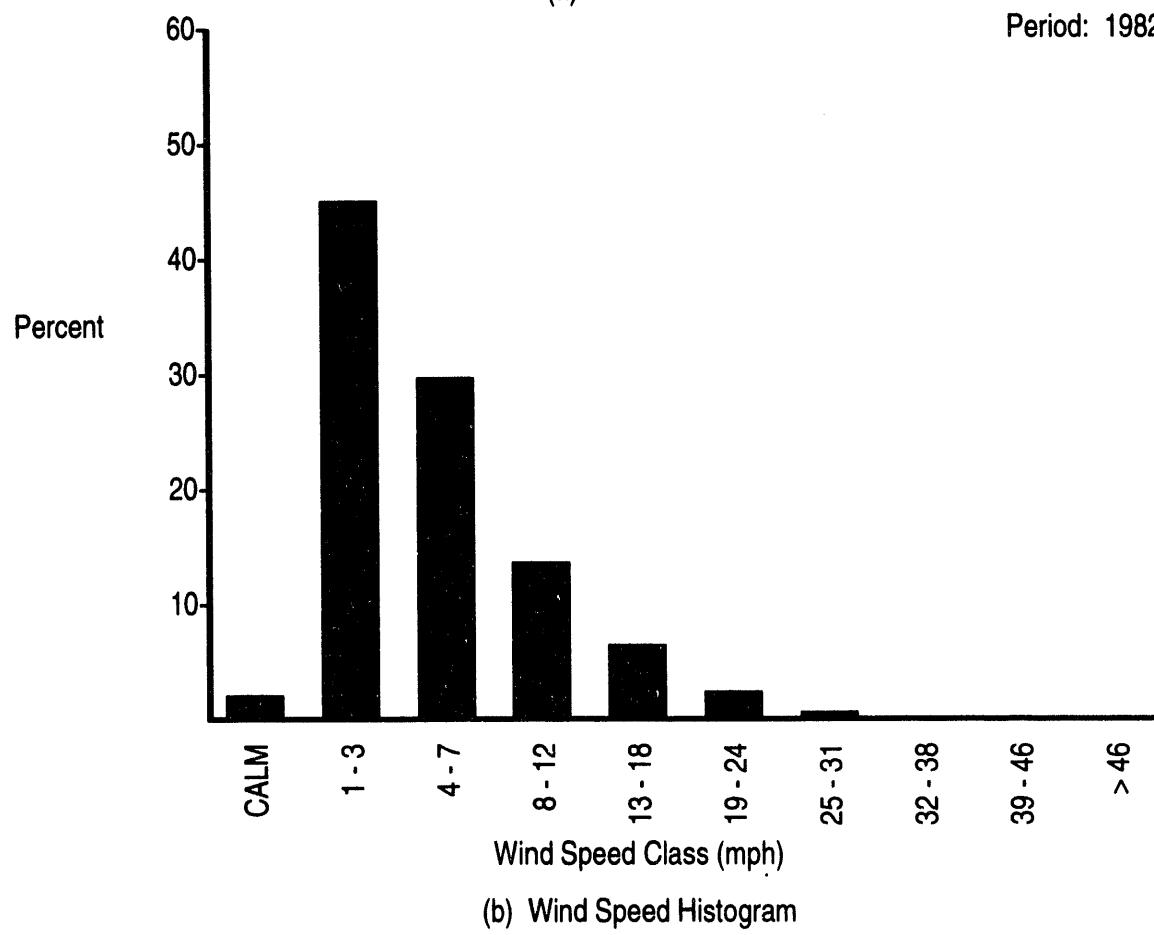


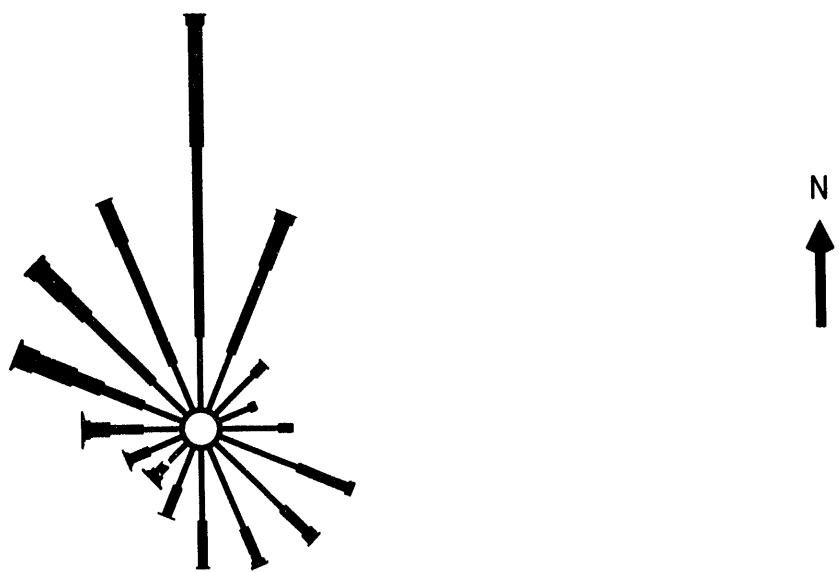
(b) Wind Speed Histogram

FIGURE B.1. (contd)



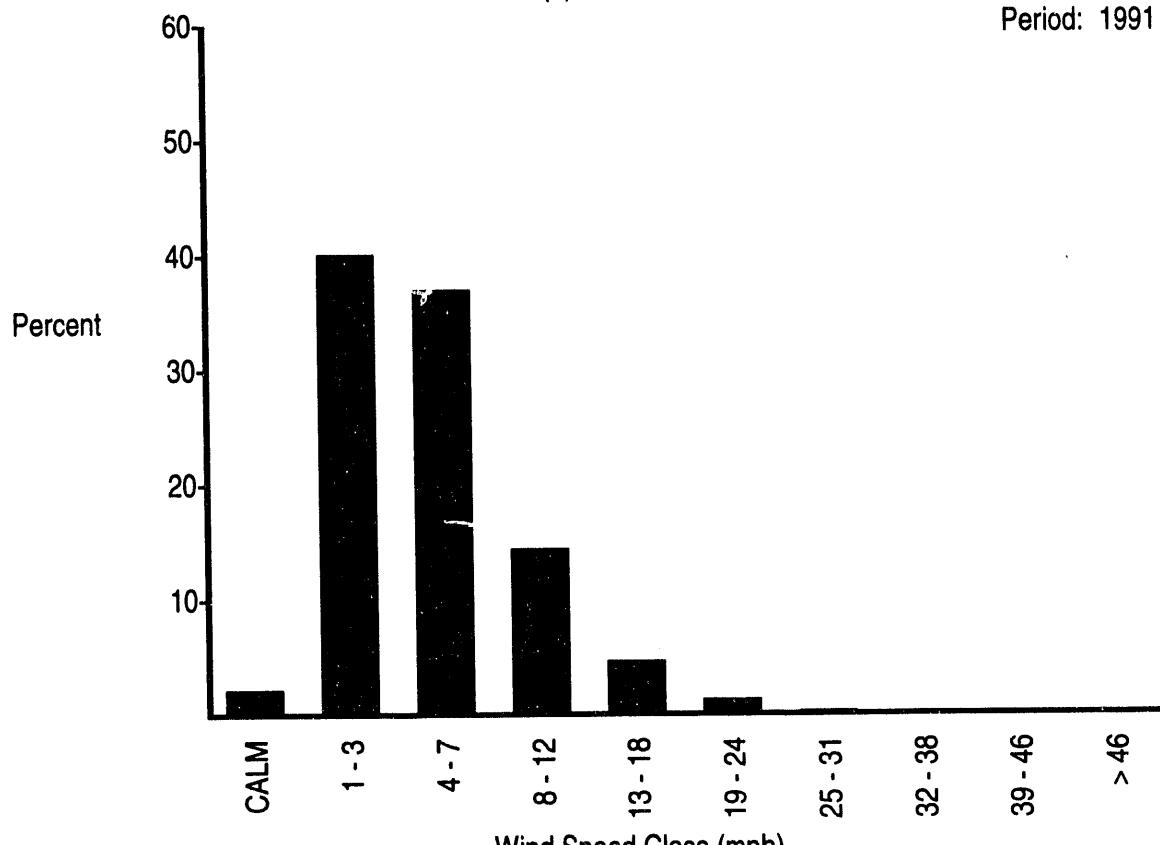
(a) Wind Rose

November Data
Period: 1982 - 1993FIGURE B.1. (contd)



(a) Wind Rose

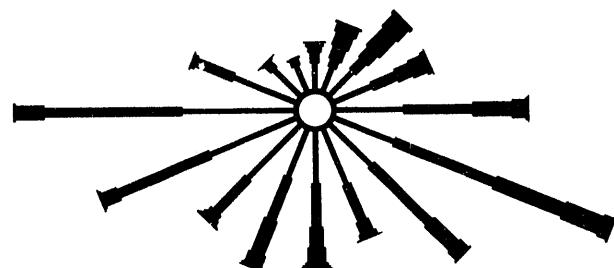
November Data
Period: 1991 - 1993



(b) Wind Speed Histogram

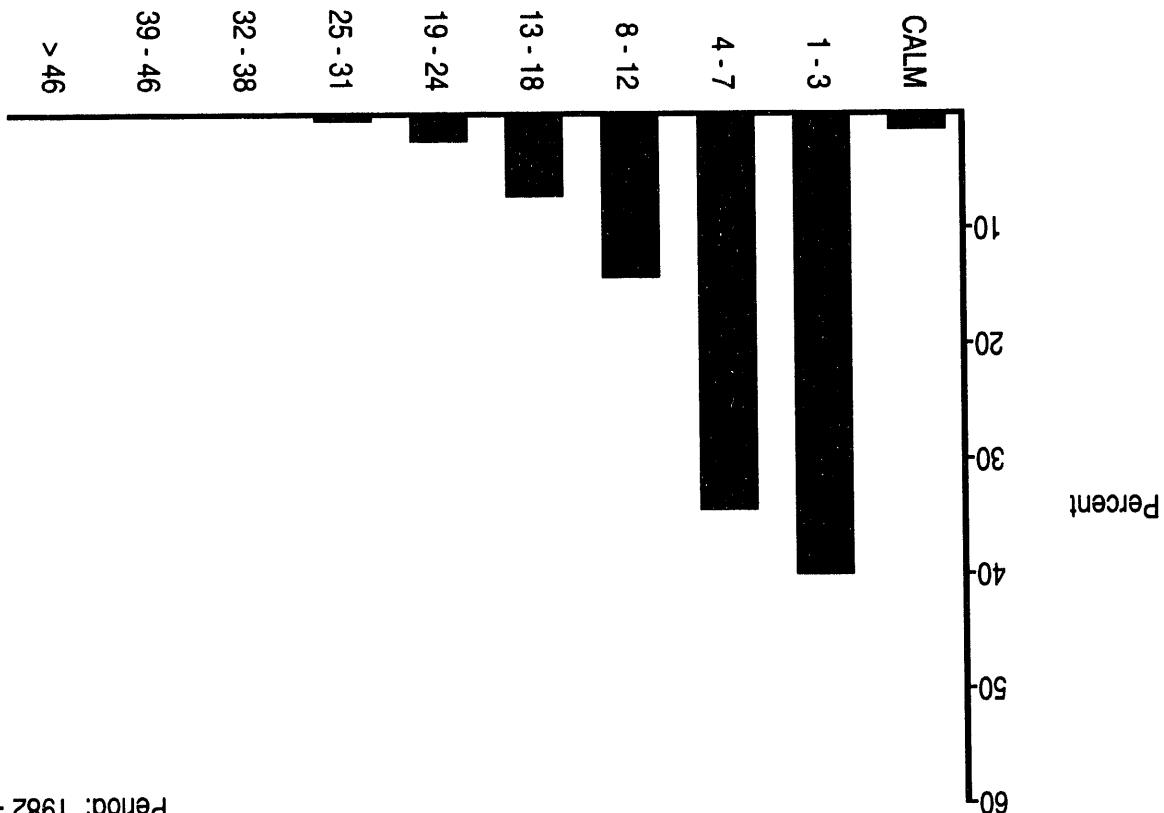
FIGURE B.1. (contd)

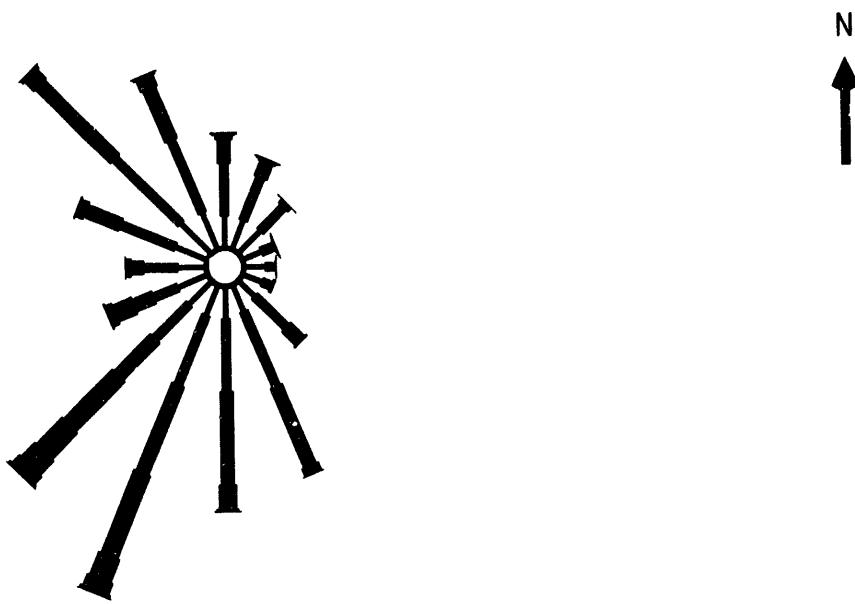
(a) Wind Rose
November Data
Period: 1982 - 1990



↓
N

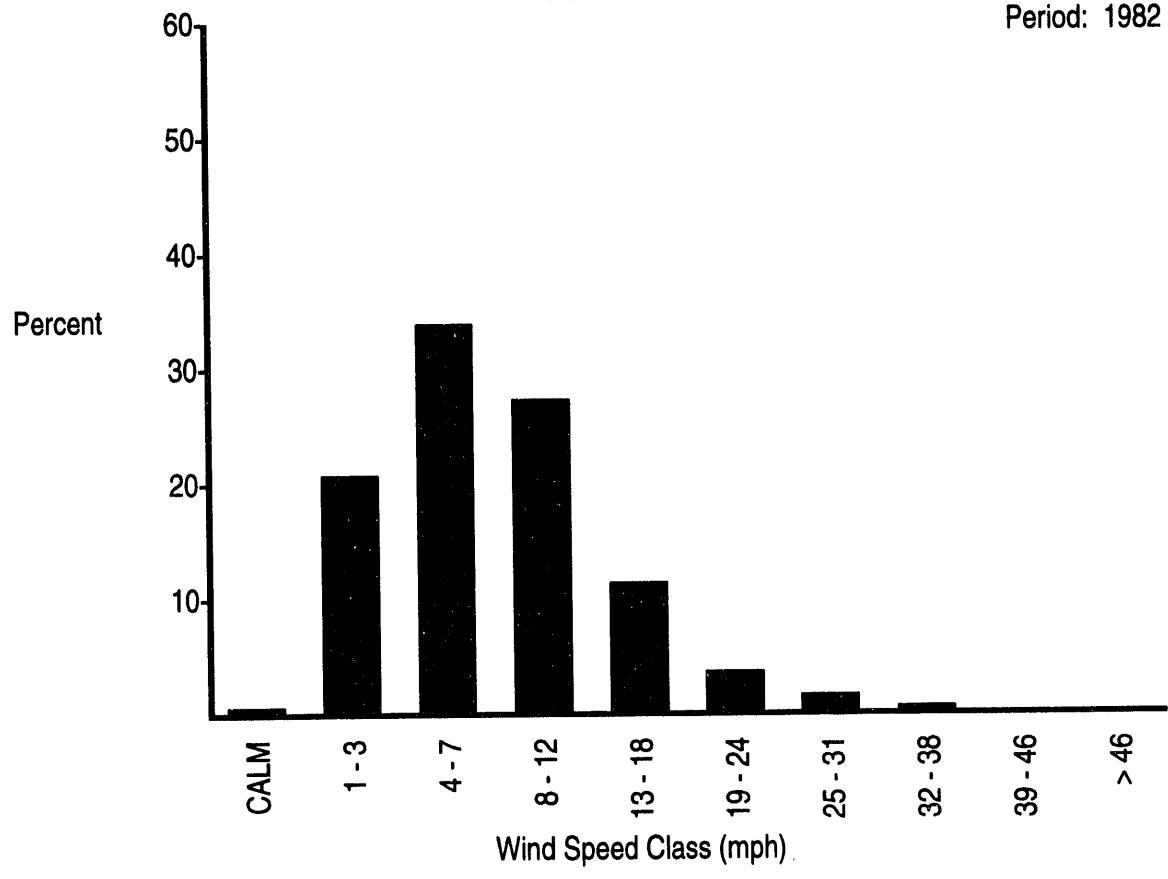
FIGURE B.1. (contd)
(b) Wind Speed Histogram
Wind Speed Class (mph)





(a) Wind Rose

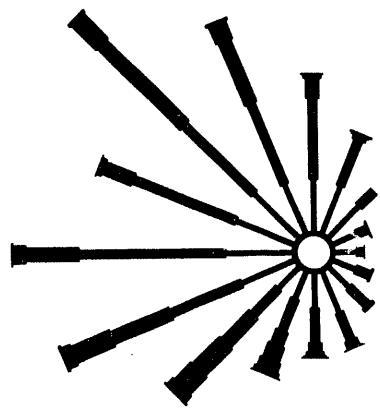
November Data
Period: 1982 - 1993



(b) Wind Speed Histogram

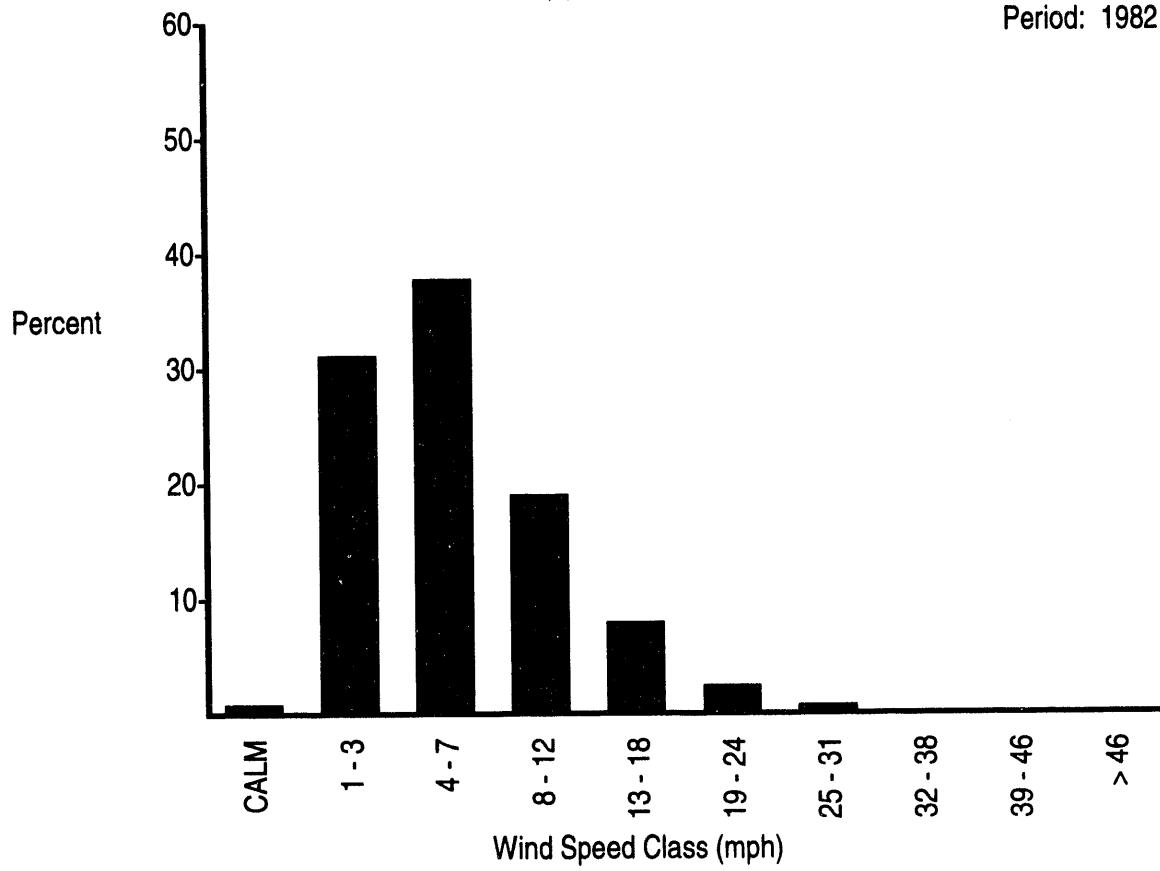
FIGURE B.1. (contd)

N
↑



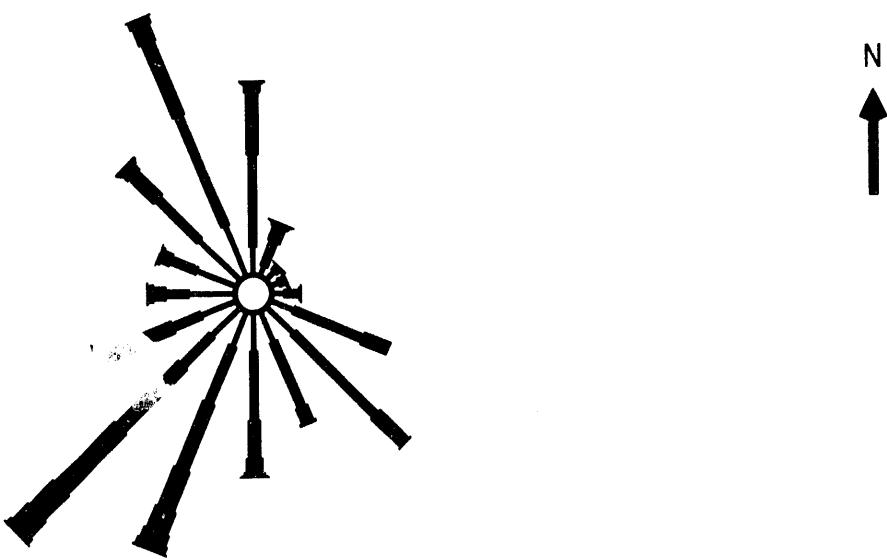
(a) Wind Rose

November Data
Period: 1982 - 1993



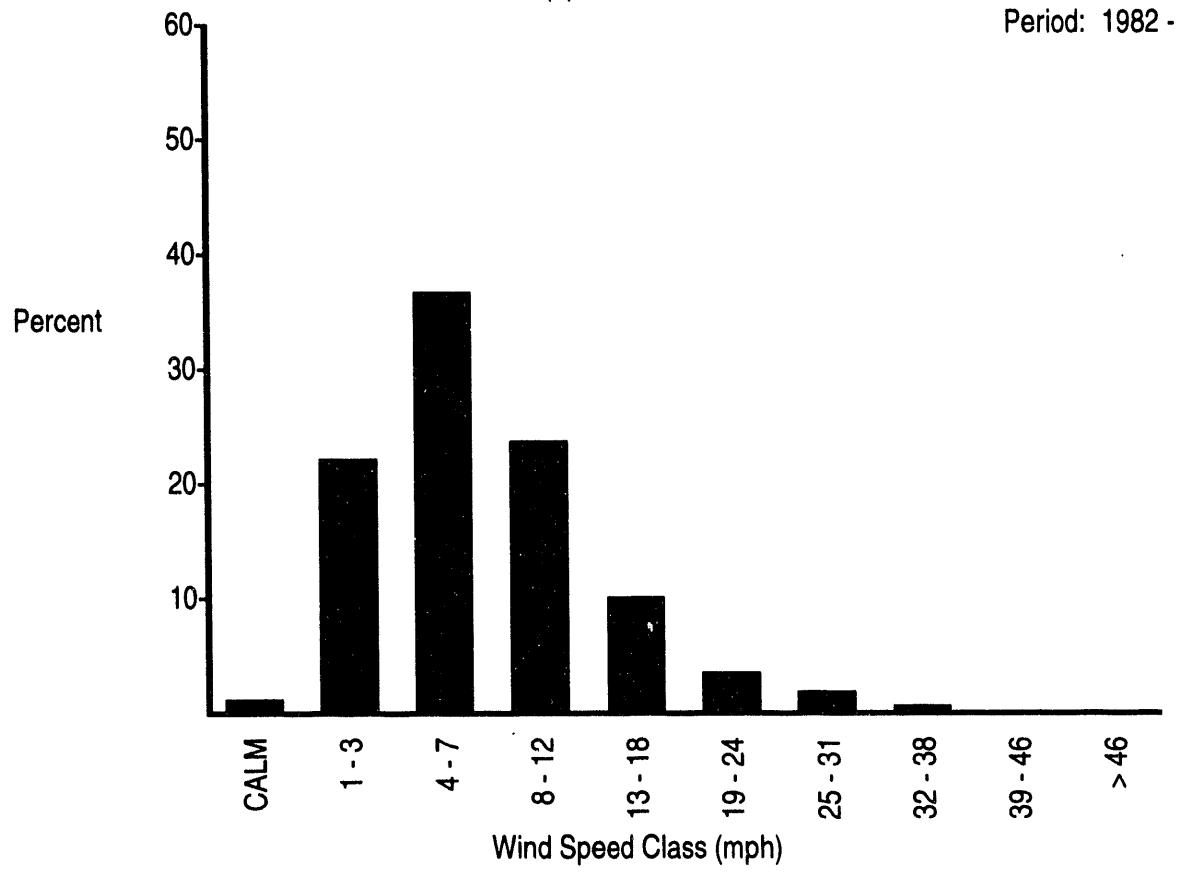
(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

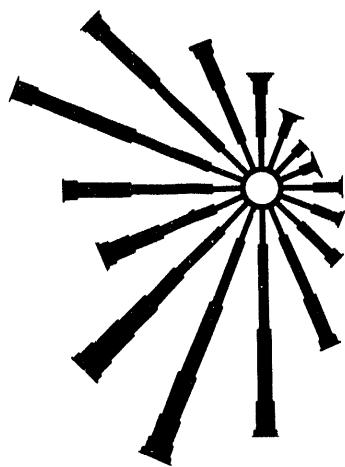
November Data
Period: 1982 - 1993



(b) Wind Speed Histogram

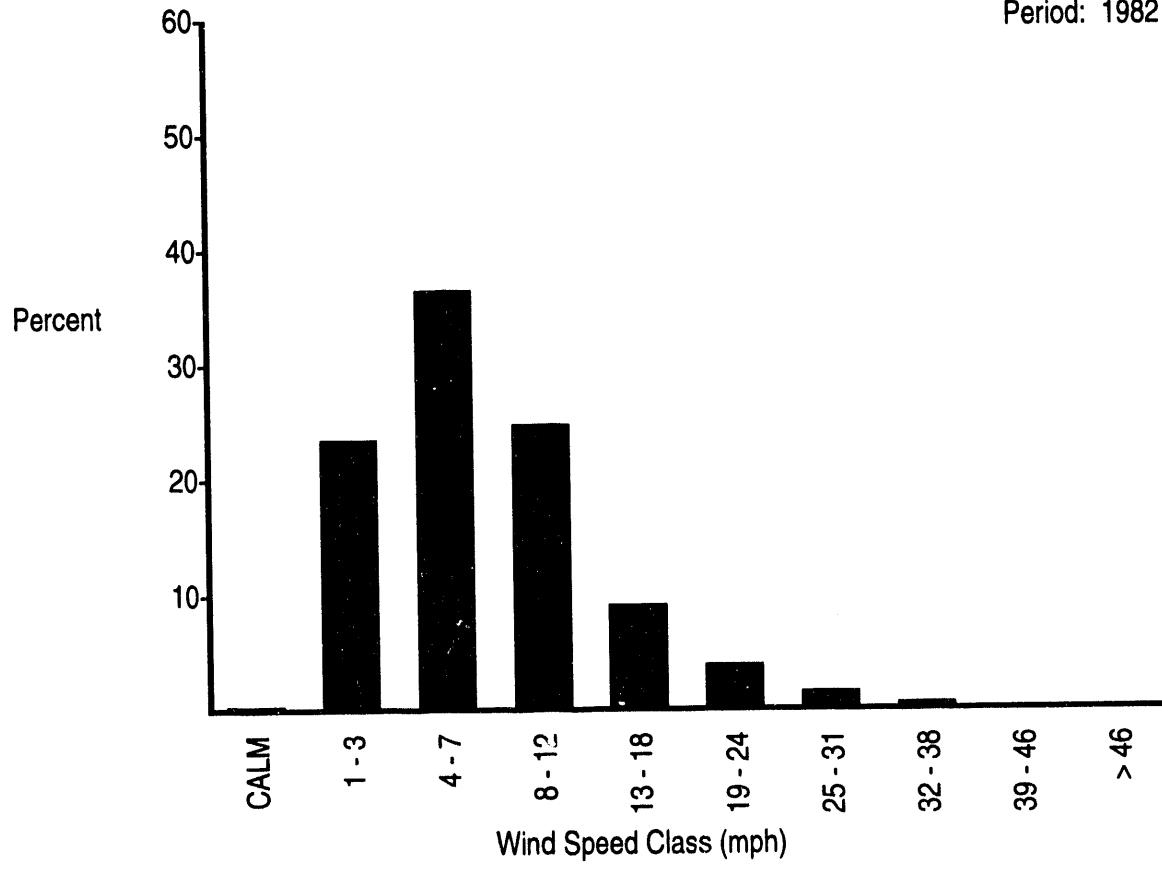
FIGURE B.1. (contd)

N
↑



(a) Wind Rose

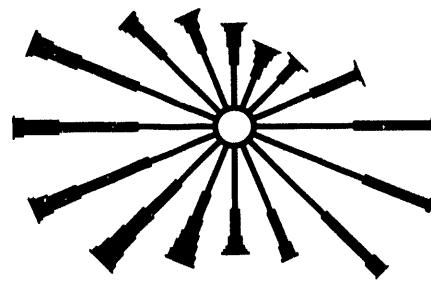
November Data
Period: 1982 - 1993



(b) Wind Speed Histogram

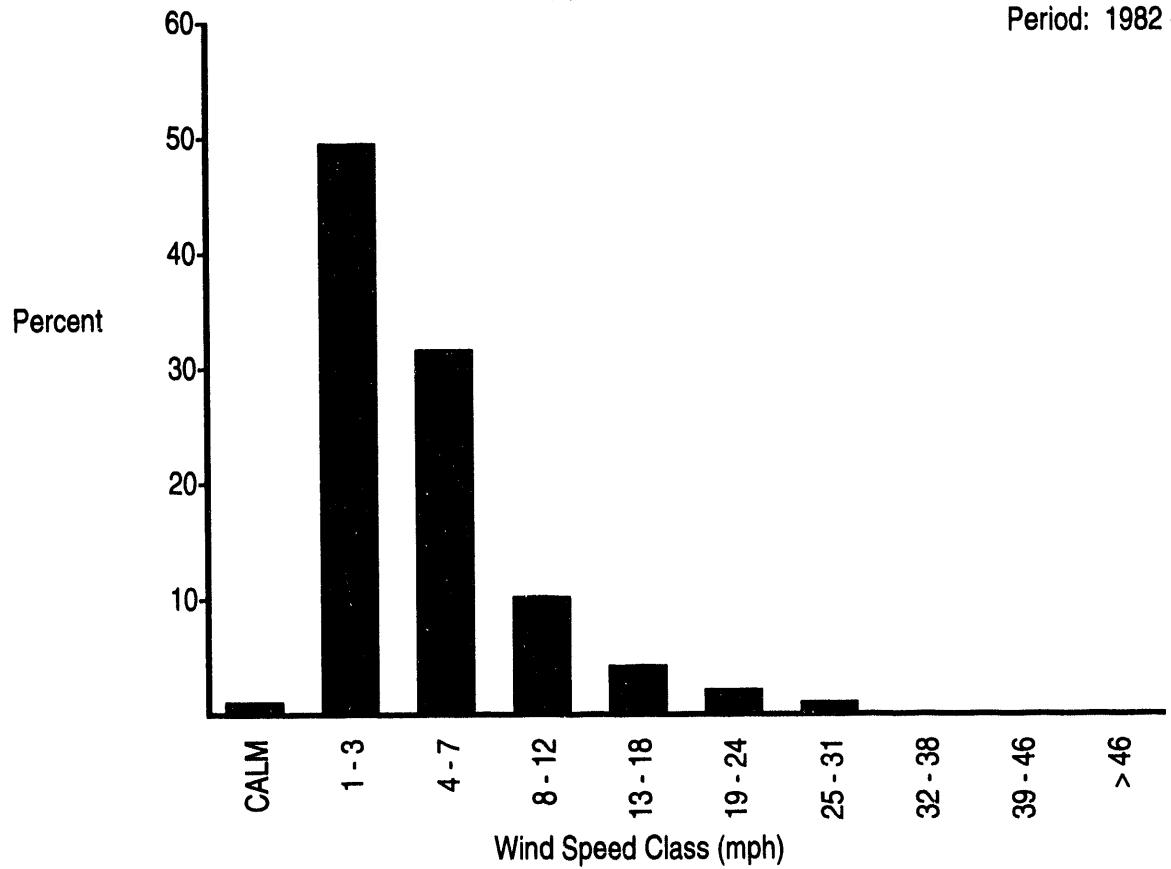
FIGURE B.1. (contd)

N
↑



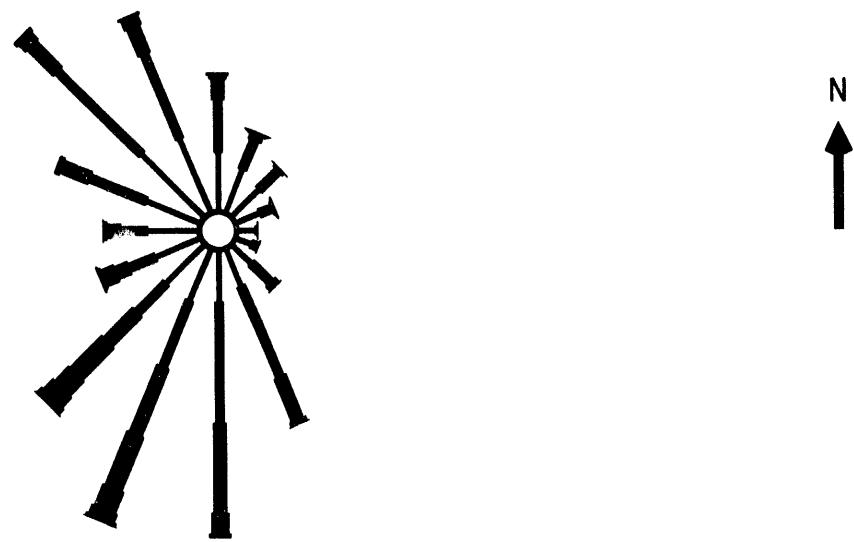
(a) Wind Rose

November Data
Period: 1982 - 1993



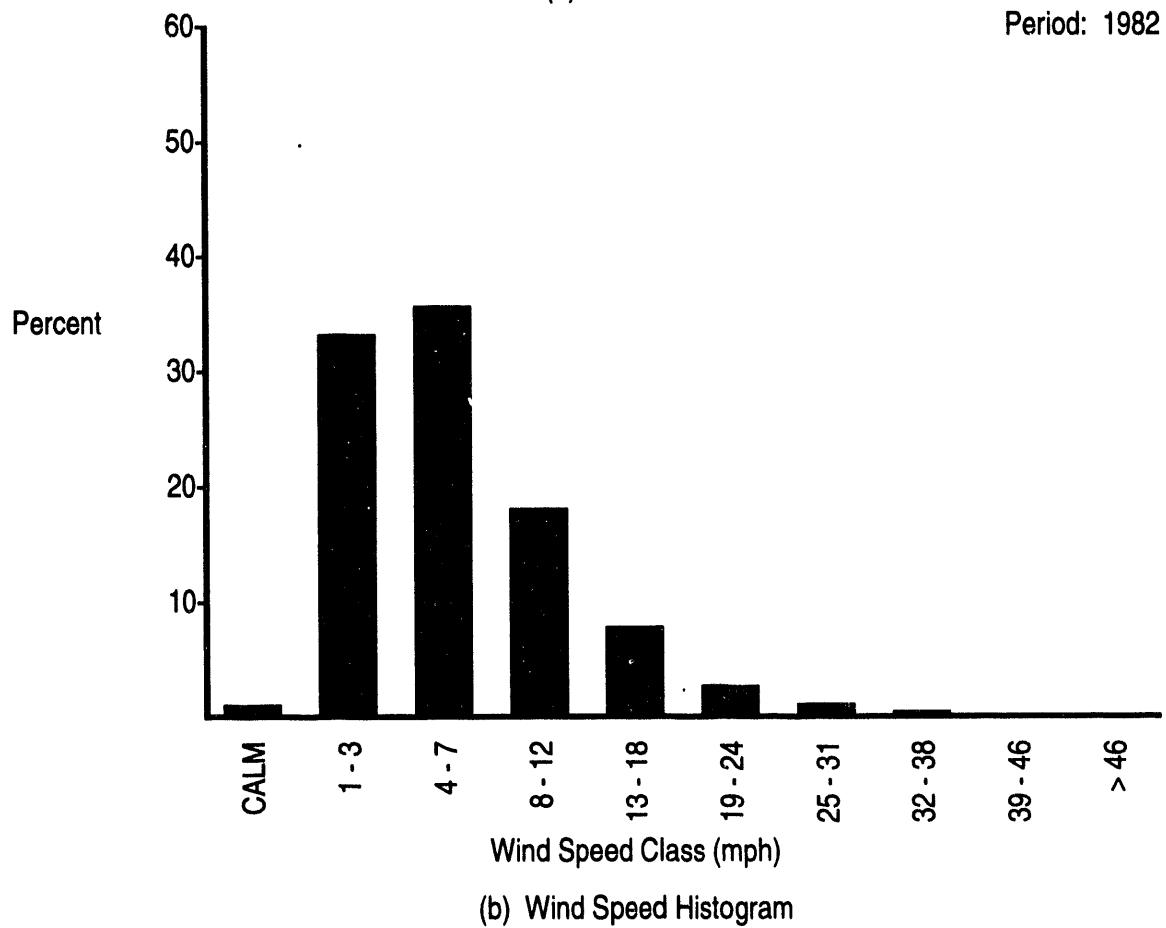
(b) Wind Speed Histogram

FIGURE B.1. (contd)



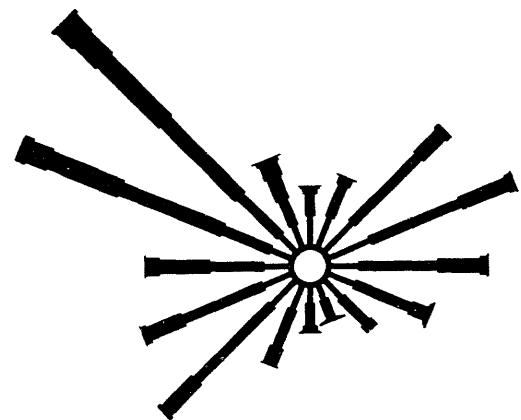
(a) Wind Rose

November Data
Period: 1982 - 1993



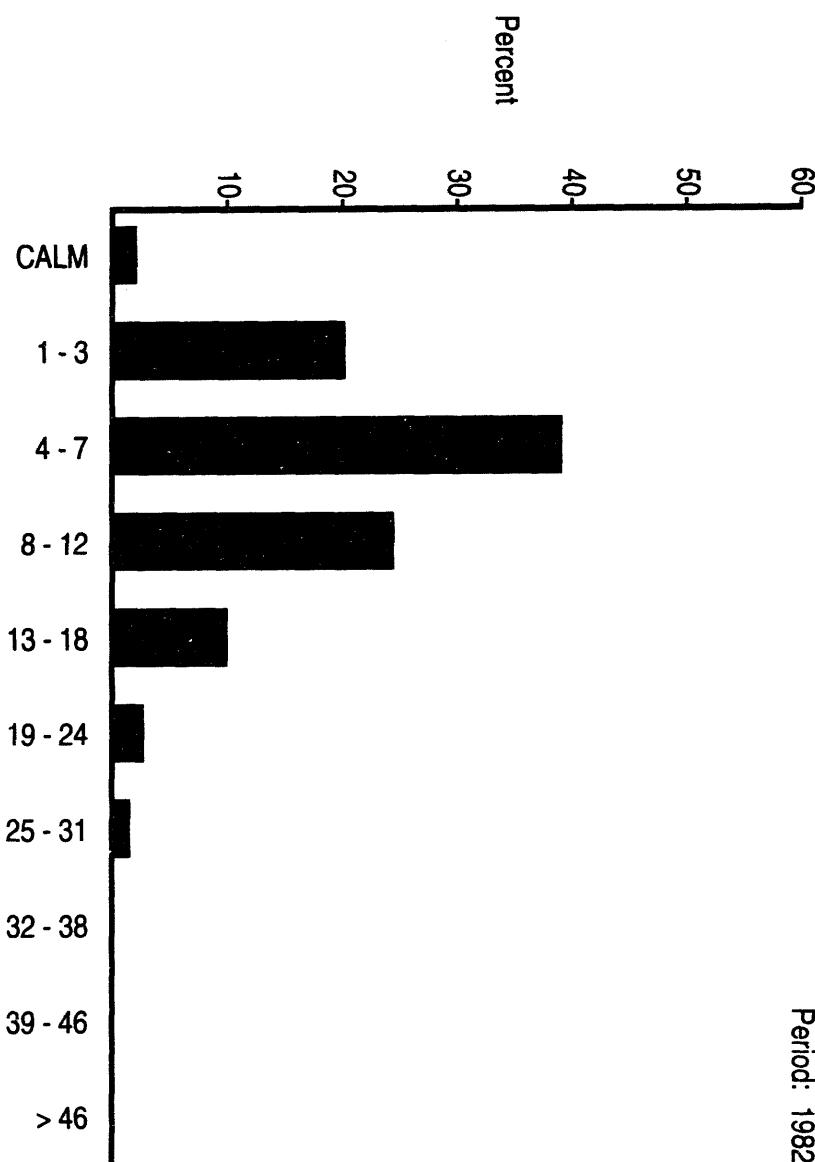
(b) Wind Speed Histogram

FIGURE B.1. (contd)

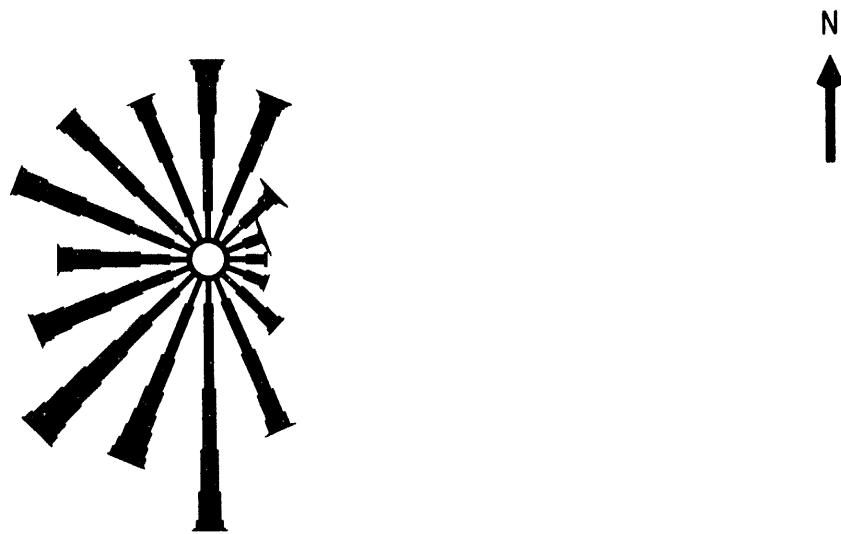


(a) Wind Rose

November Data
Period: 1982 - 1993



(b) Wind Speed Histogram
FIGURE B.1. (contd)



(a) Wind Rose

November Data
Period: 1982 - 1993

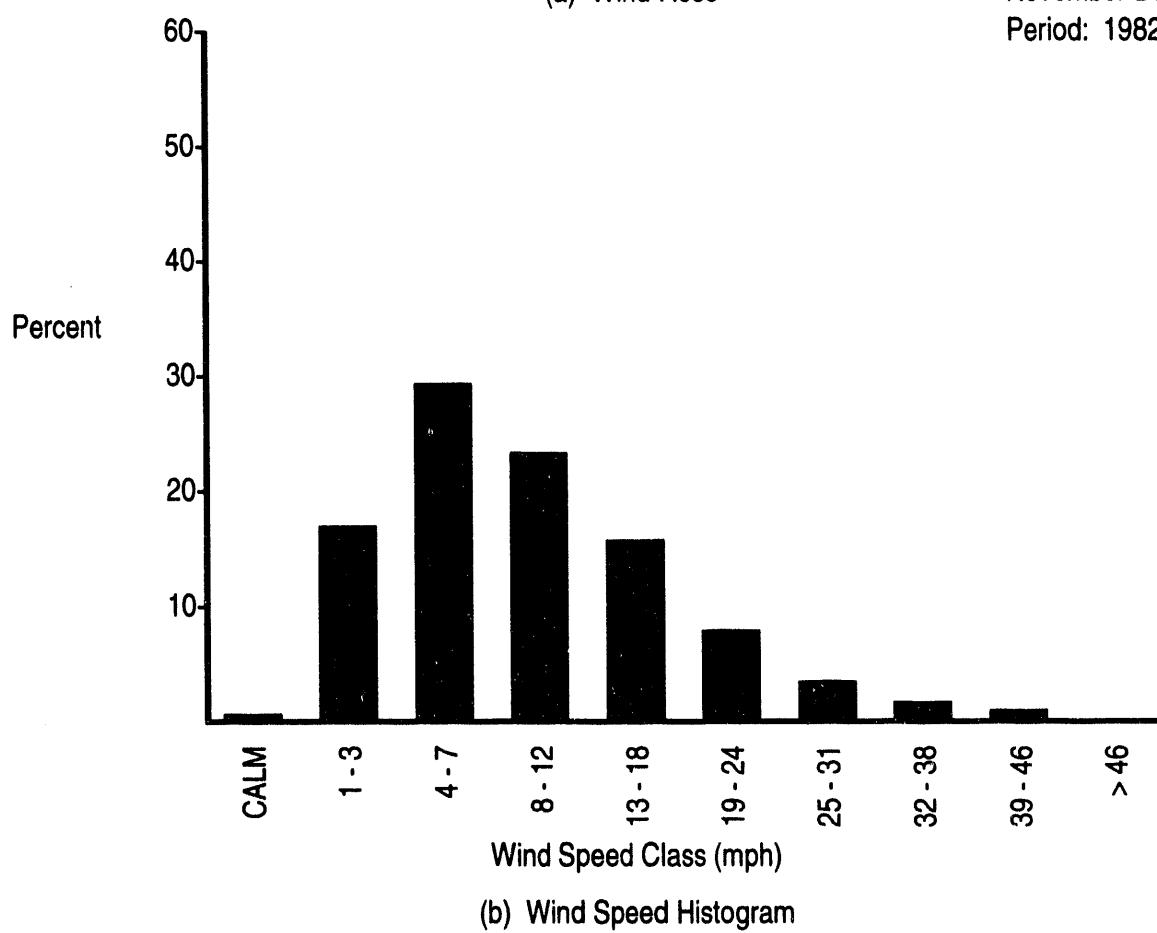
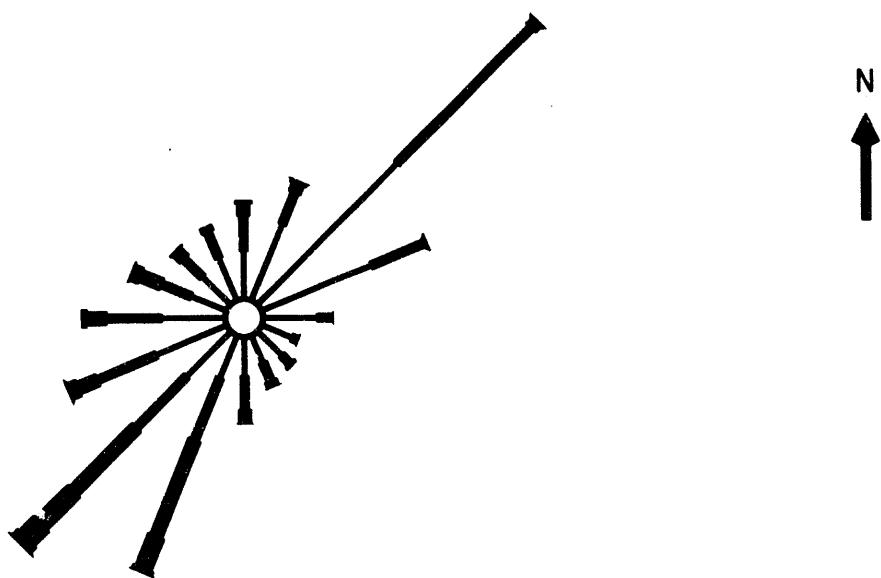
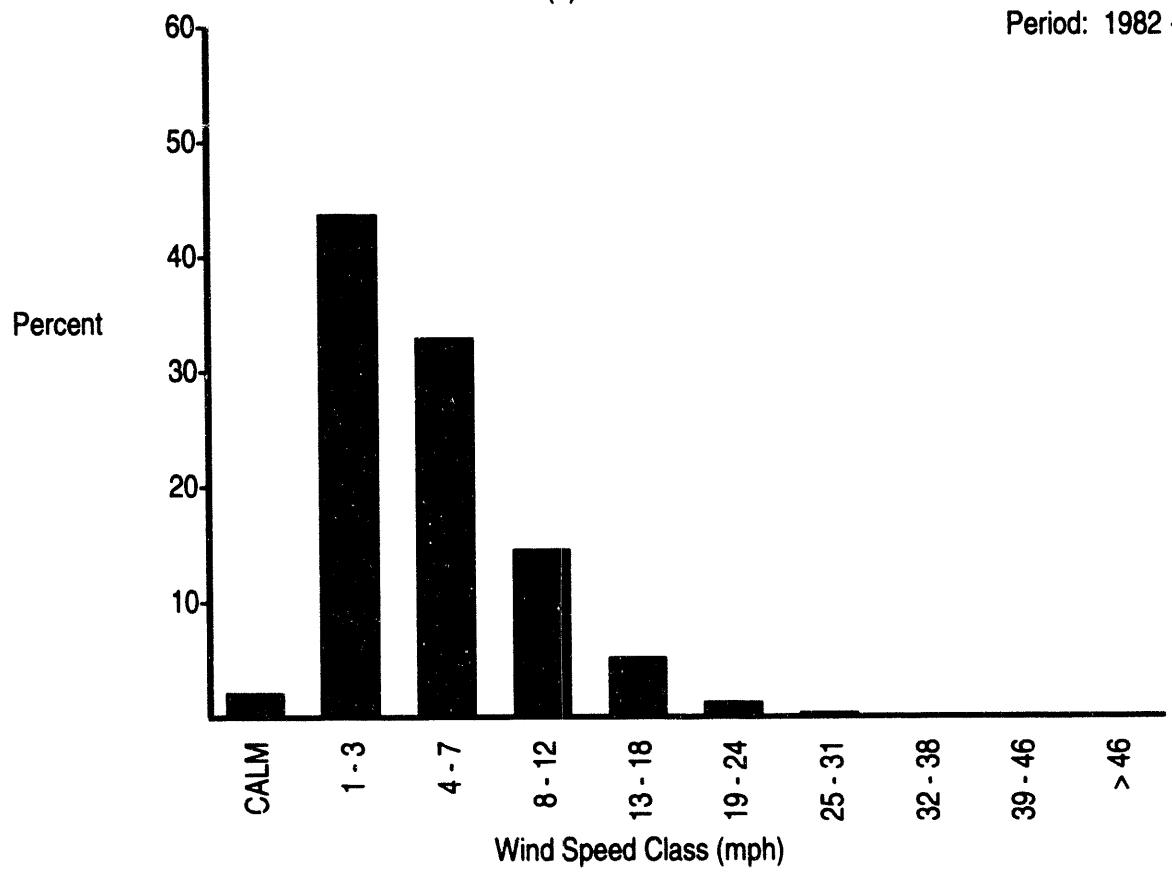


FIGURE B.1. (contd)



(a) Wind Rose

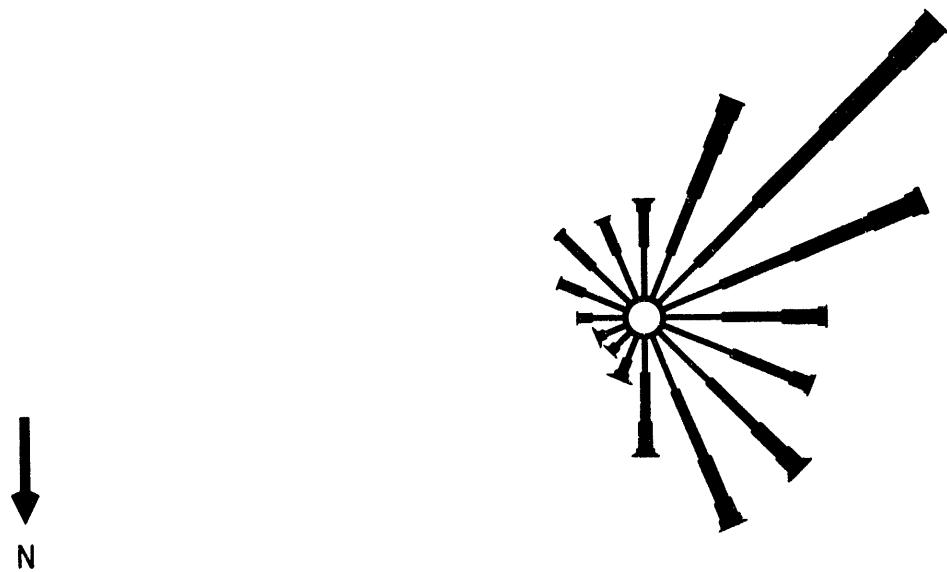
November Data
Period: 1982 - 1993



(b) Wind Speed Histogram

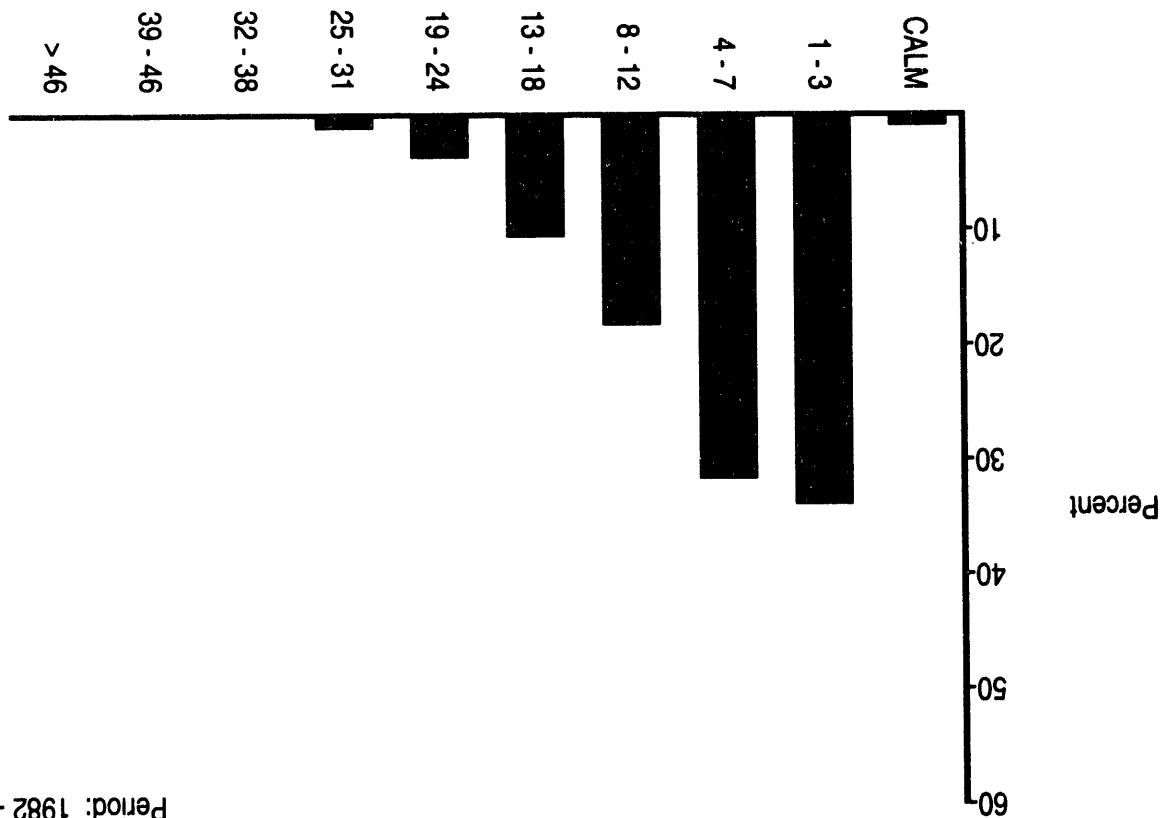
FIGURE B.1. (contd)

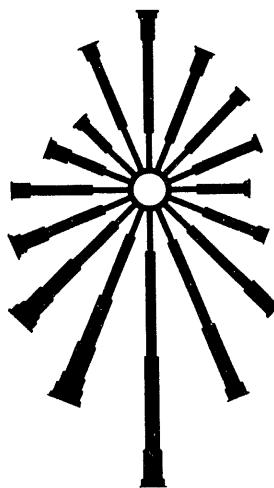
(a) Wind Rose
November Data
Period: 1982 - 1993



Station #18 - RICH

FIGURE B.1. (contd)
(b) Wind Speed Histogram
Wind Speed Class (mph)

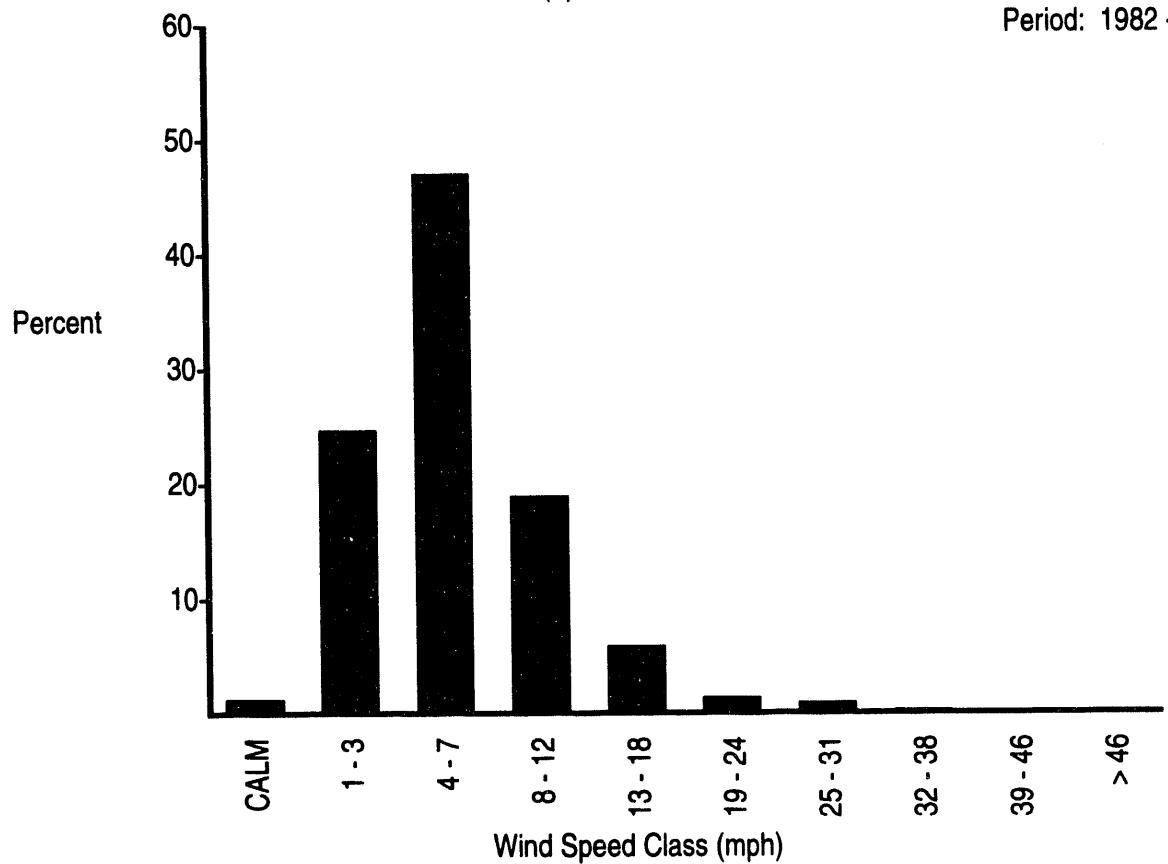




N
↑

(a) Wind Rose

November Data
Period: 1982 - 1992



(b) Wind Speed Histogram

FIGURE B.1. (contd)

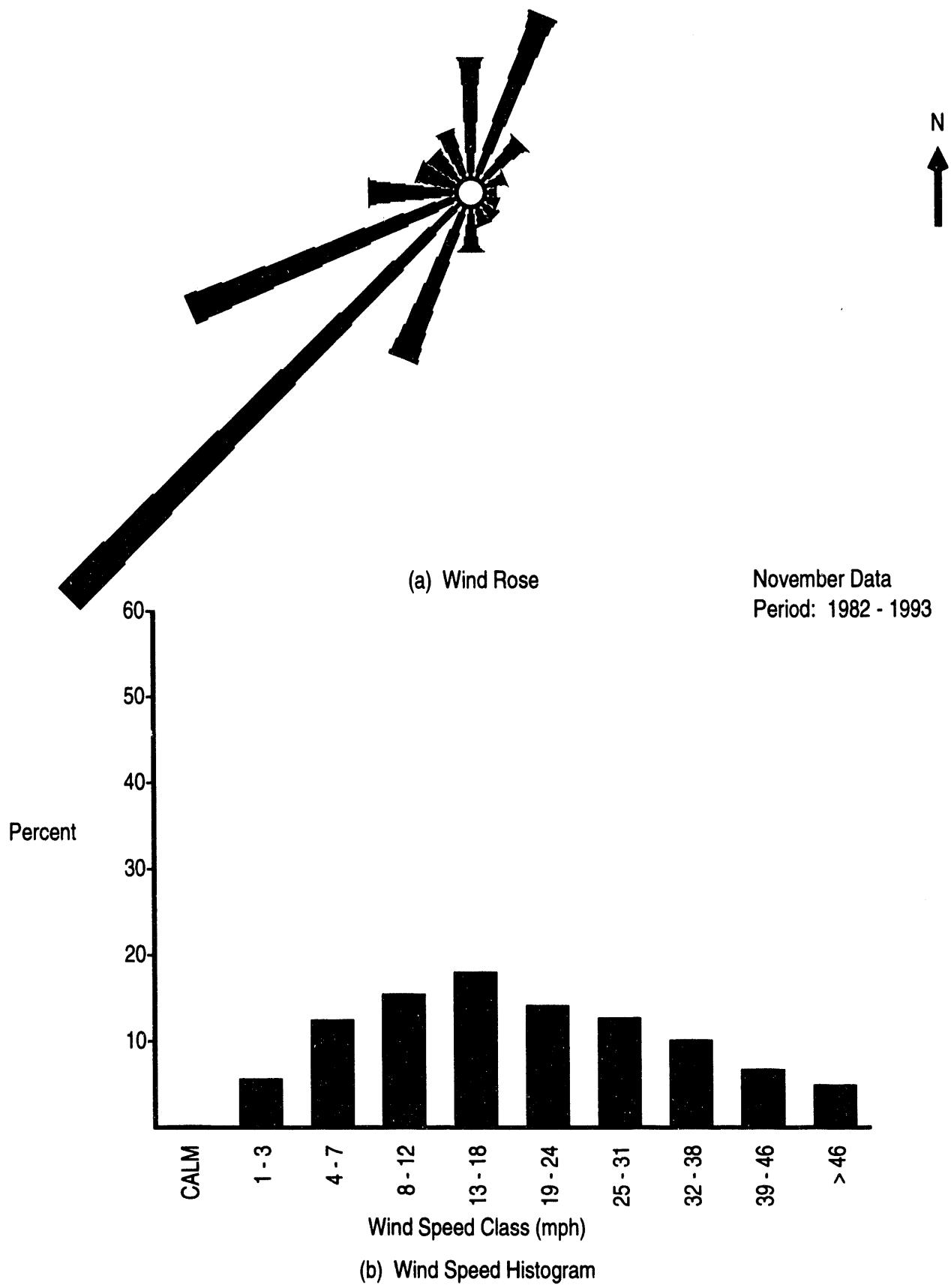
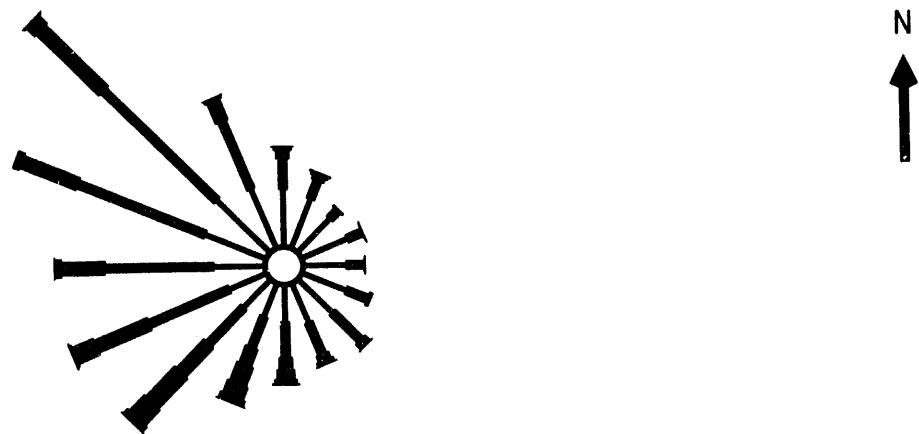
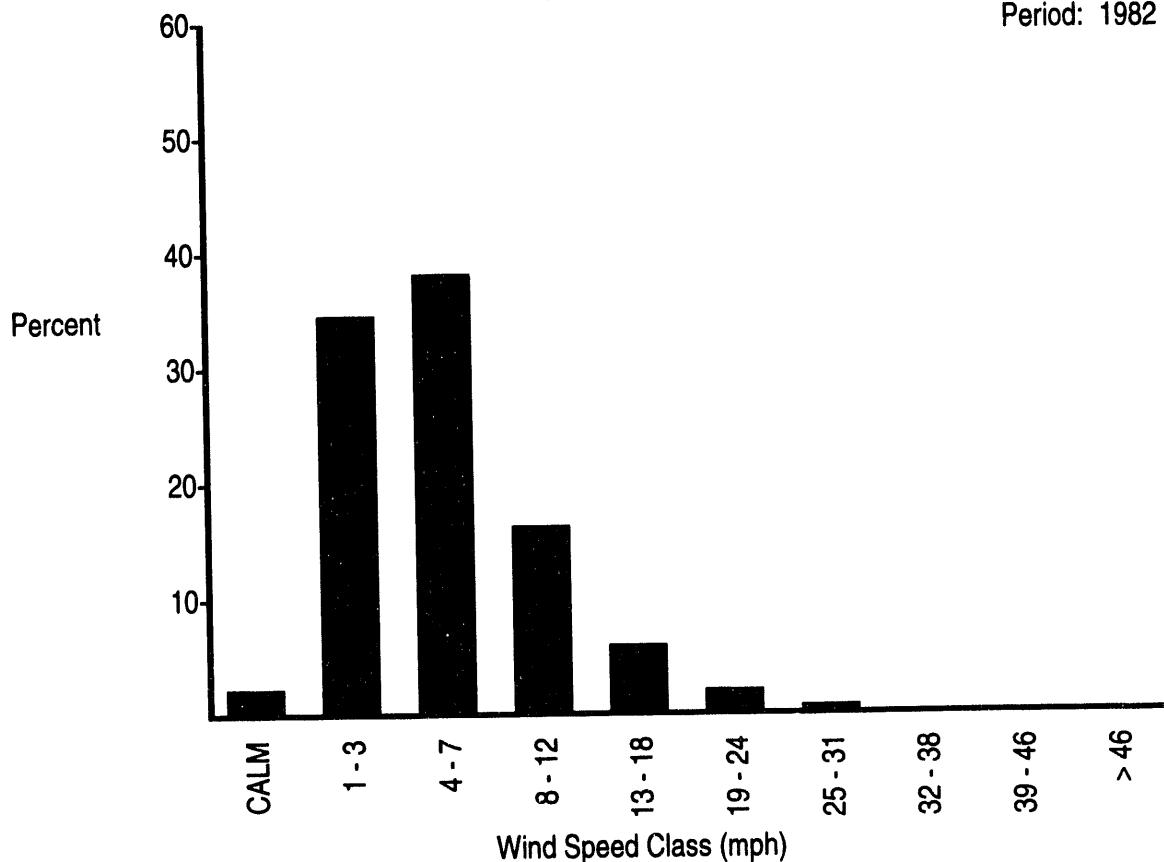


FIGURE B.1. (contd)



(a) Wind Rose

November Data
Period: 1982 - 1993



(b) Wind Speed Histogram

FIGURE B.1. (contd)

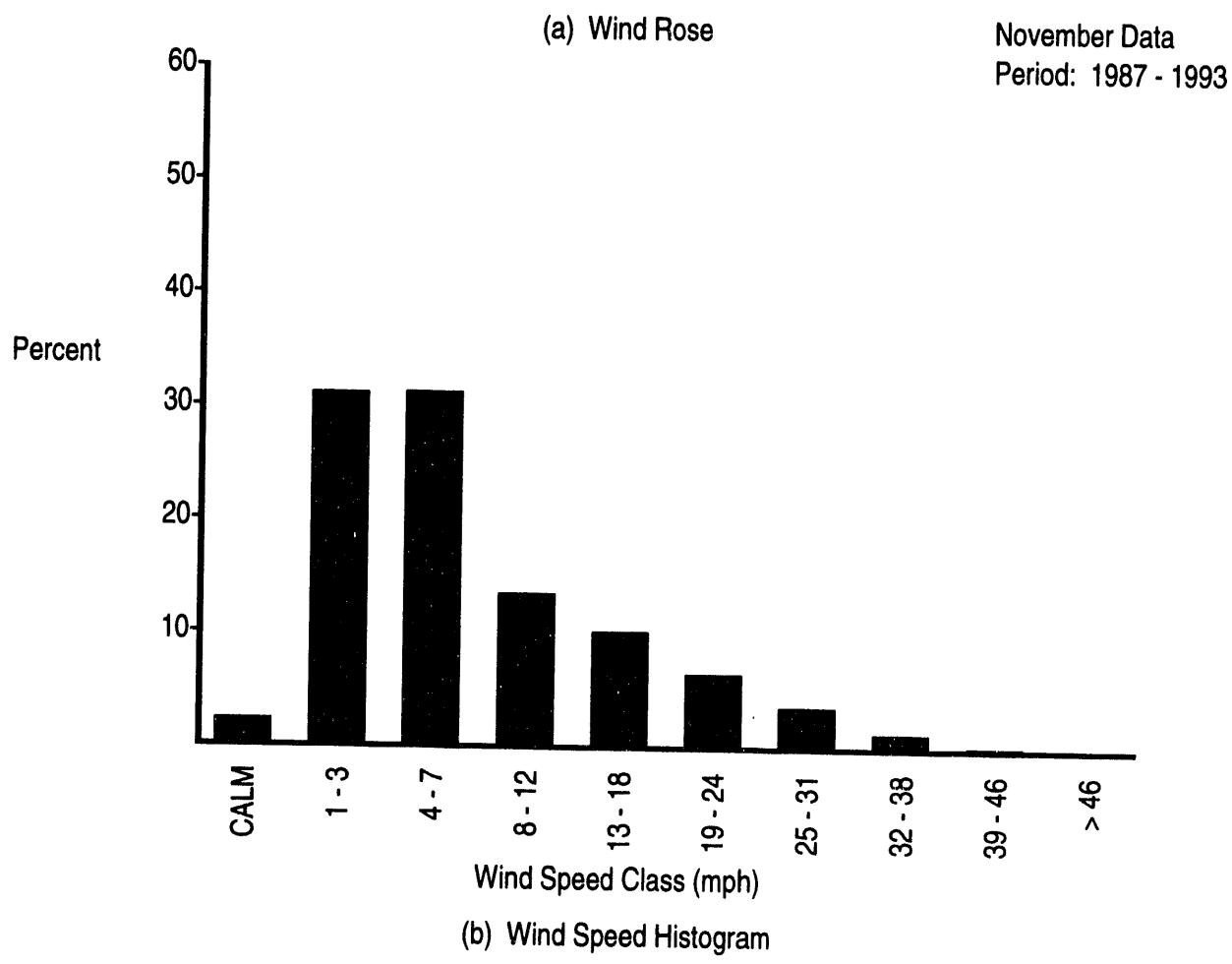
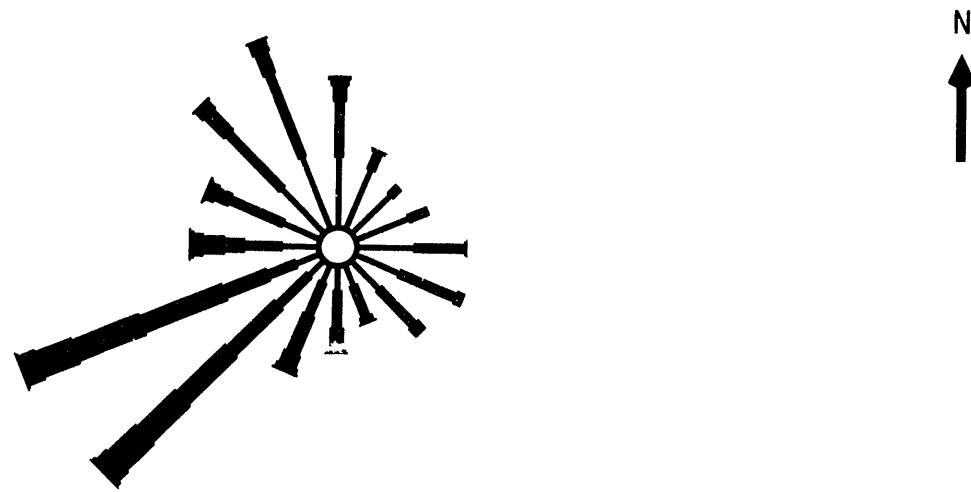
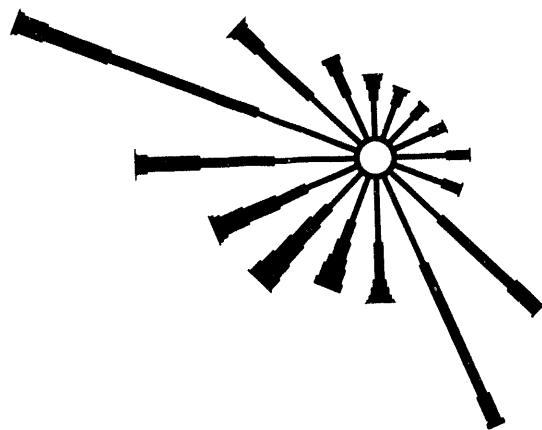


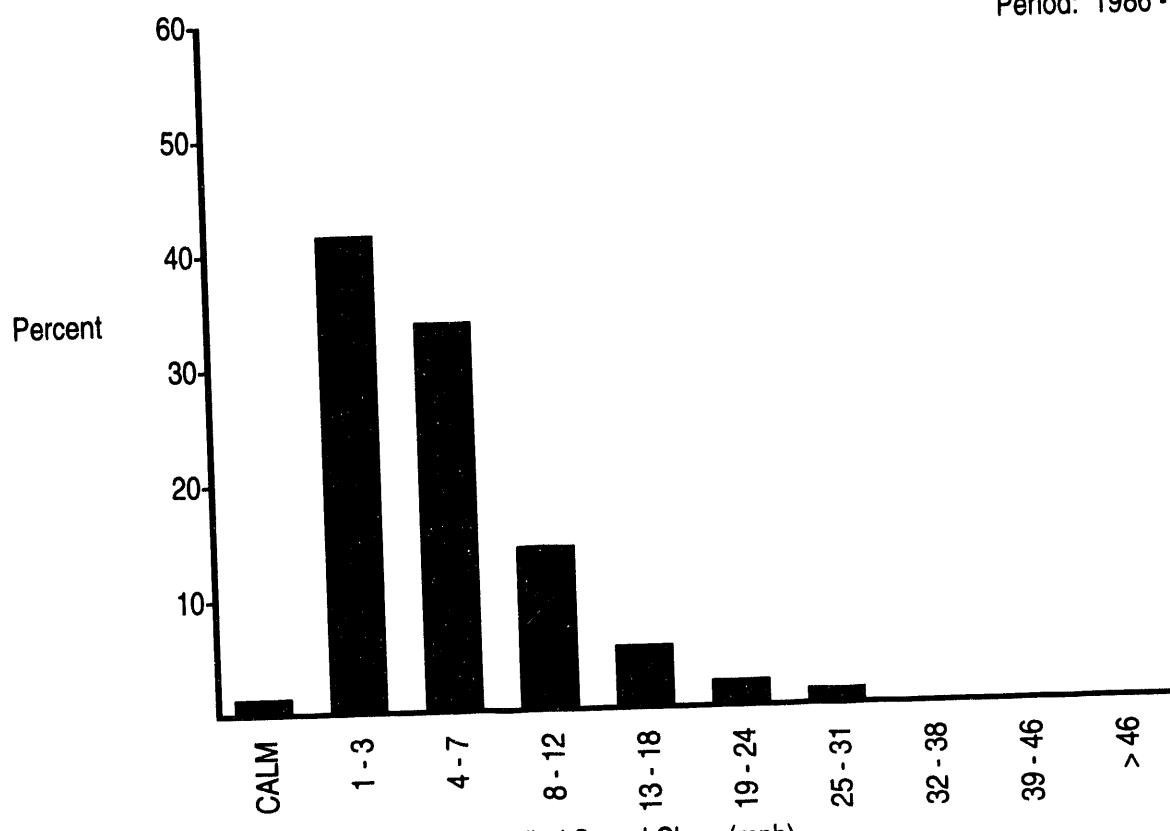
FIGURE B.1. (contd)

N



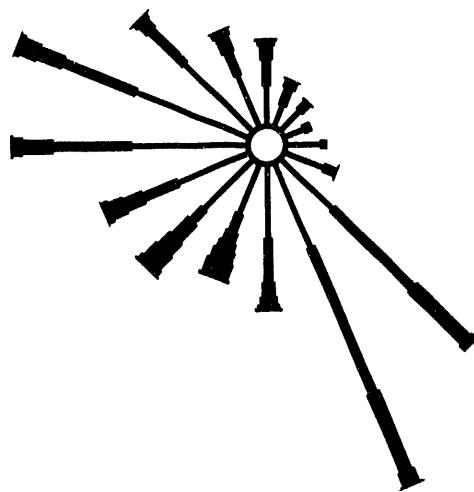
(a) Wind Rose

November Data
Period: 1986 - 1993

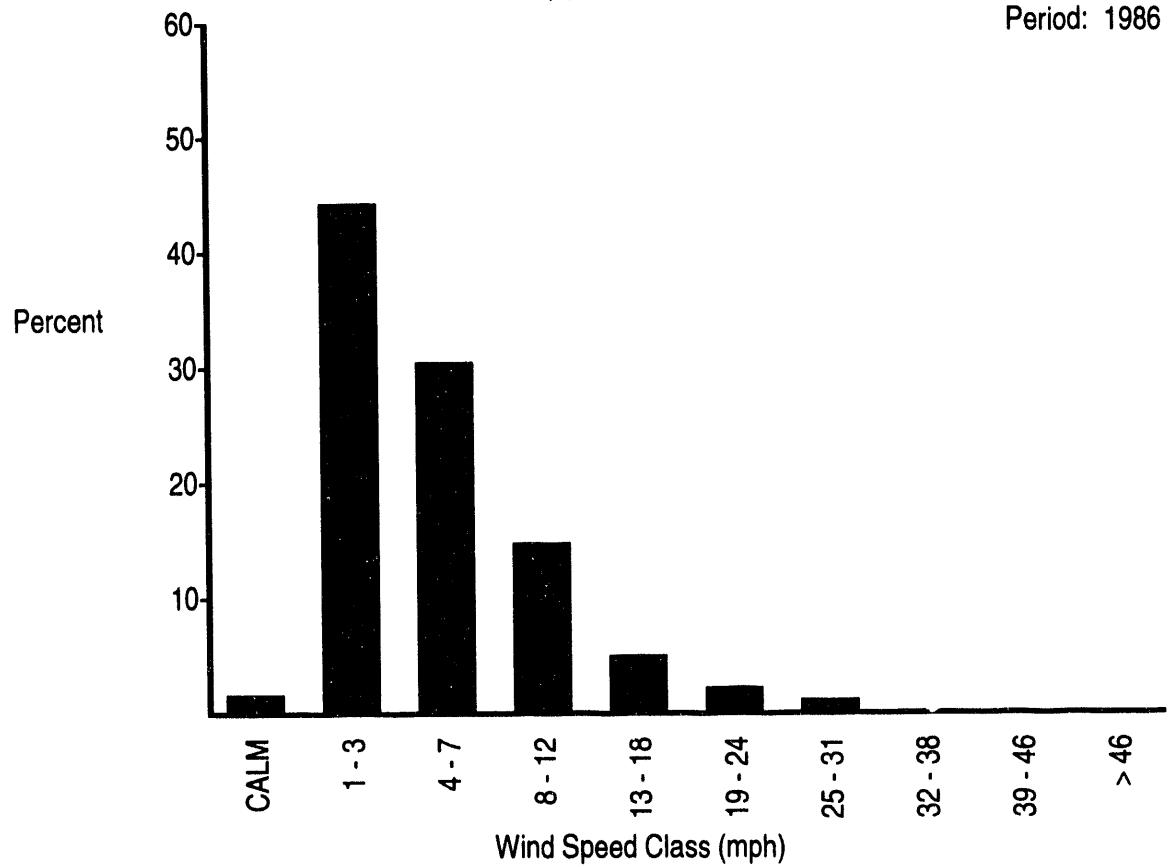


(b) Wind Speed Histogram

FIGURE B.1. (contd)

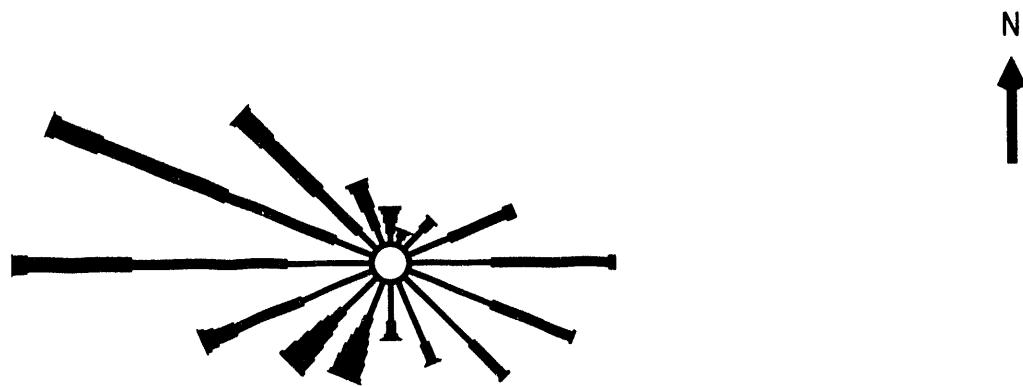
N
↑

(a) Wind Rose

November Data
Period: 1986 - 1993

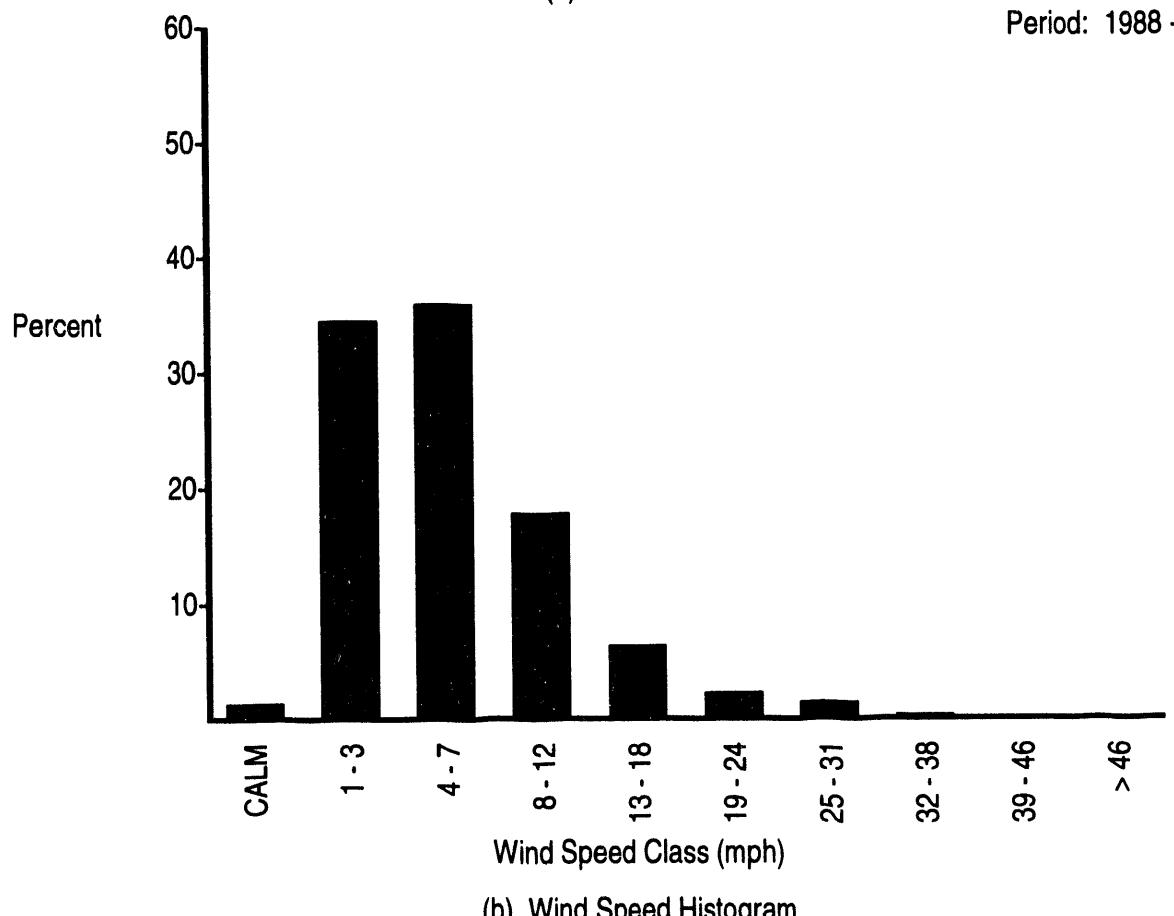
(b) Wind Speed Histogram

FIGURE B.1. (contd)



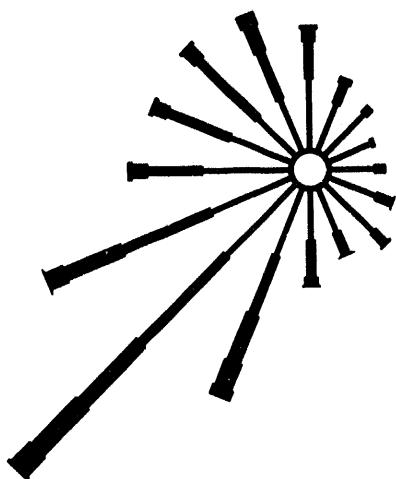
(a) Wind Rose

November Data
Period: 1988 - 1993

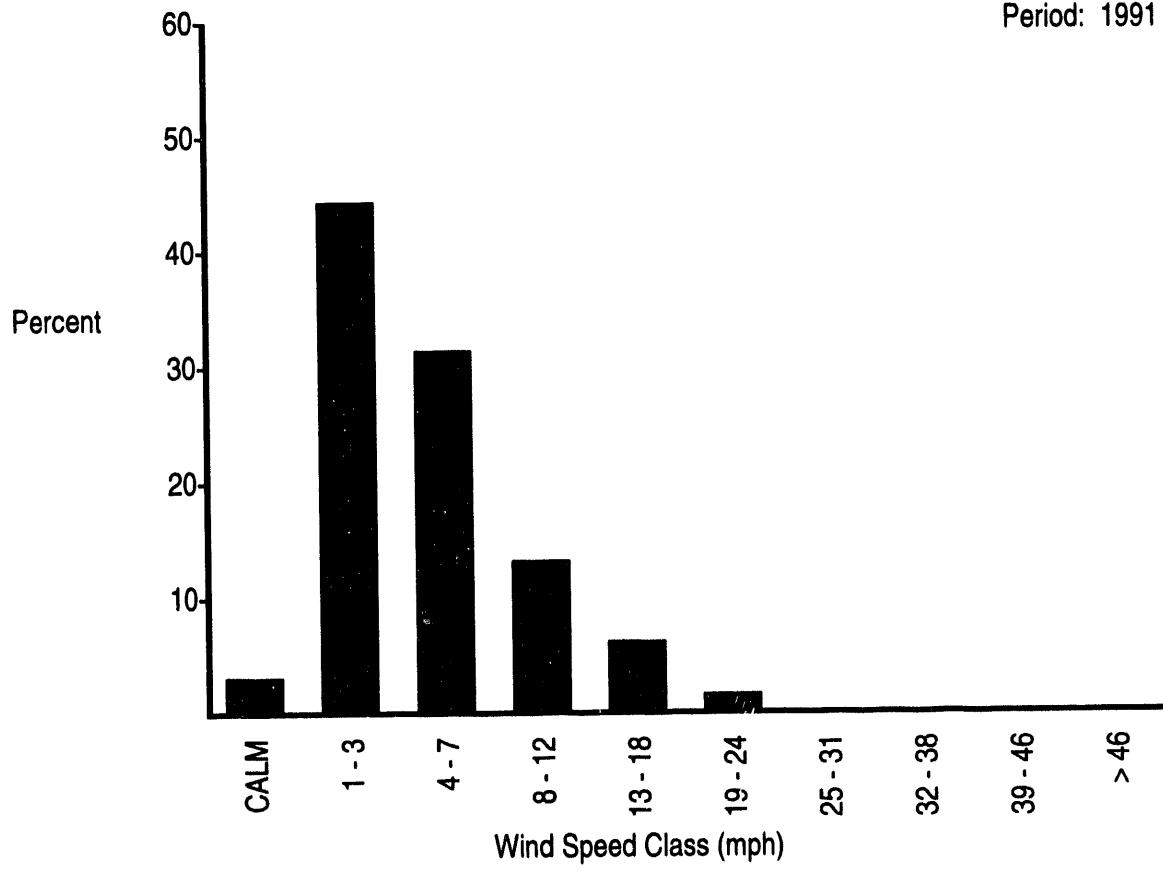


(b) Wind Speed Histogram

FIGURE B.1. (contd)

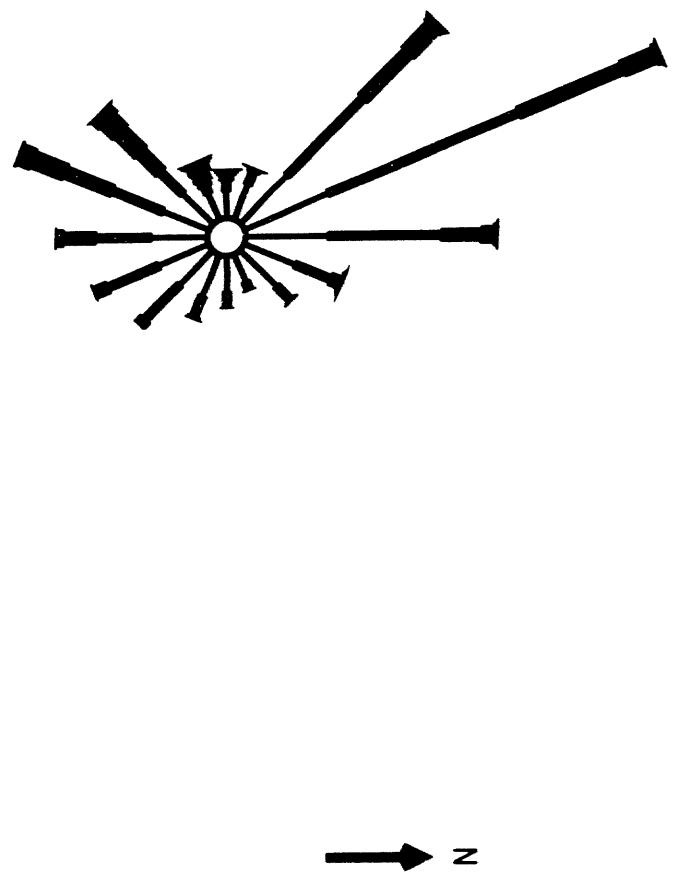
N
↑

(a) Wind Rose

November Data
Period: 1991 - 1993

(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose
December Data
Period: 1982 - 1993

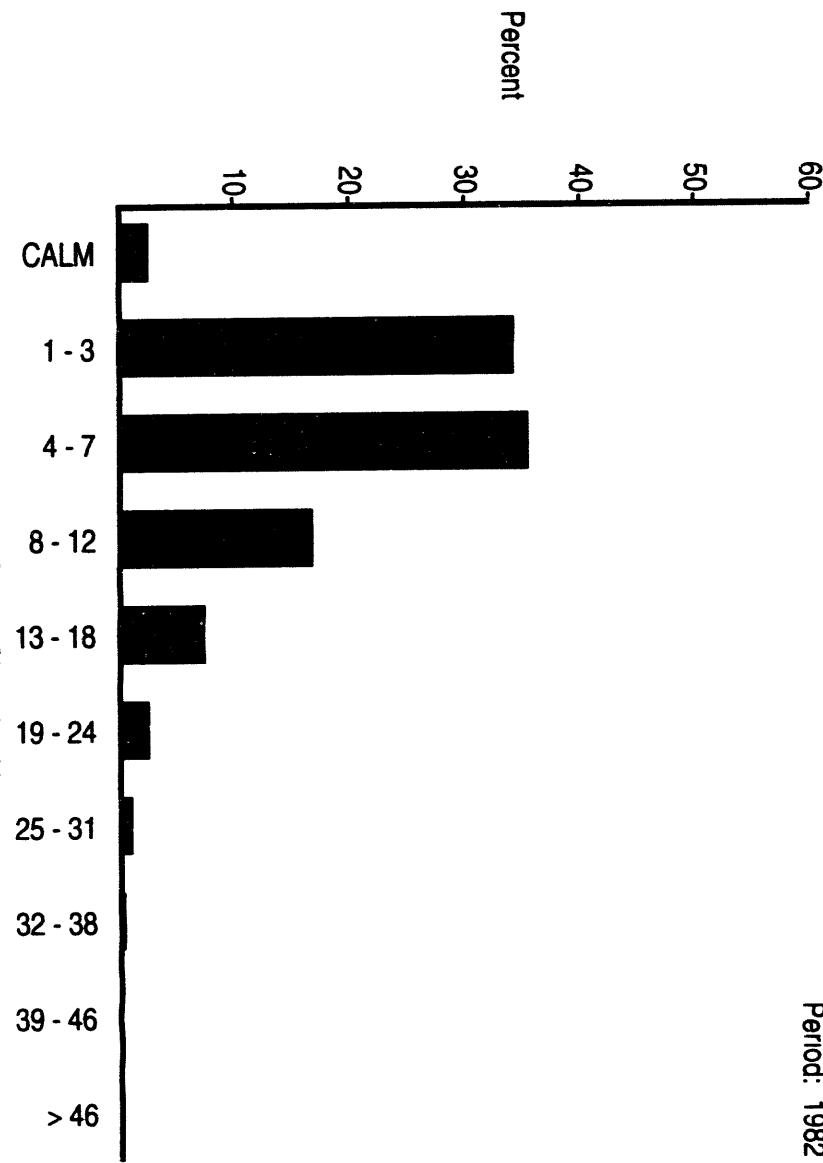
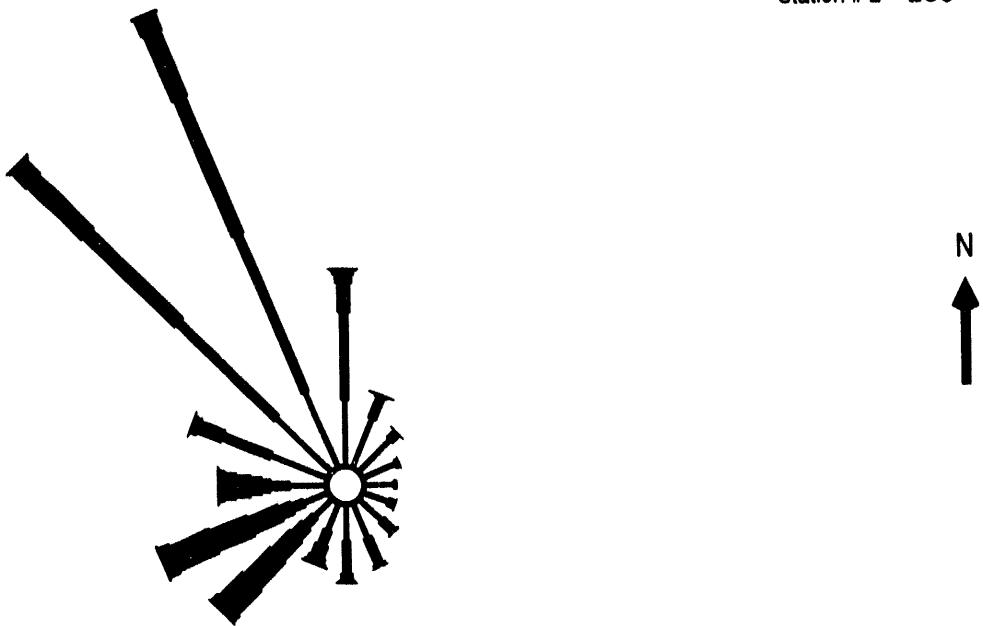
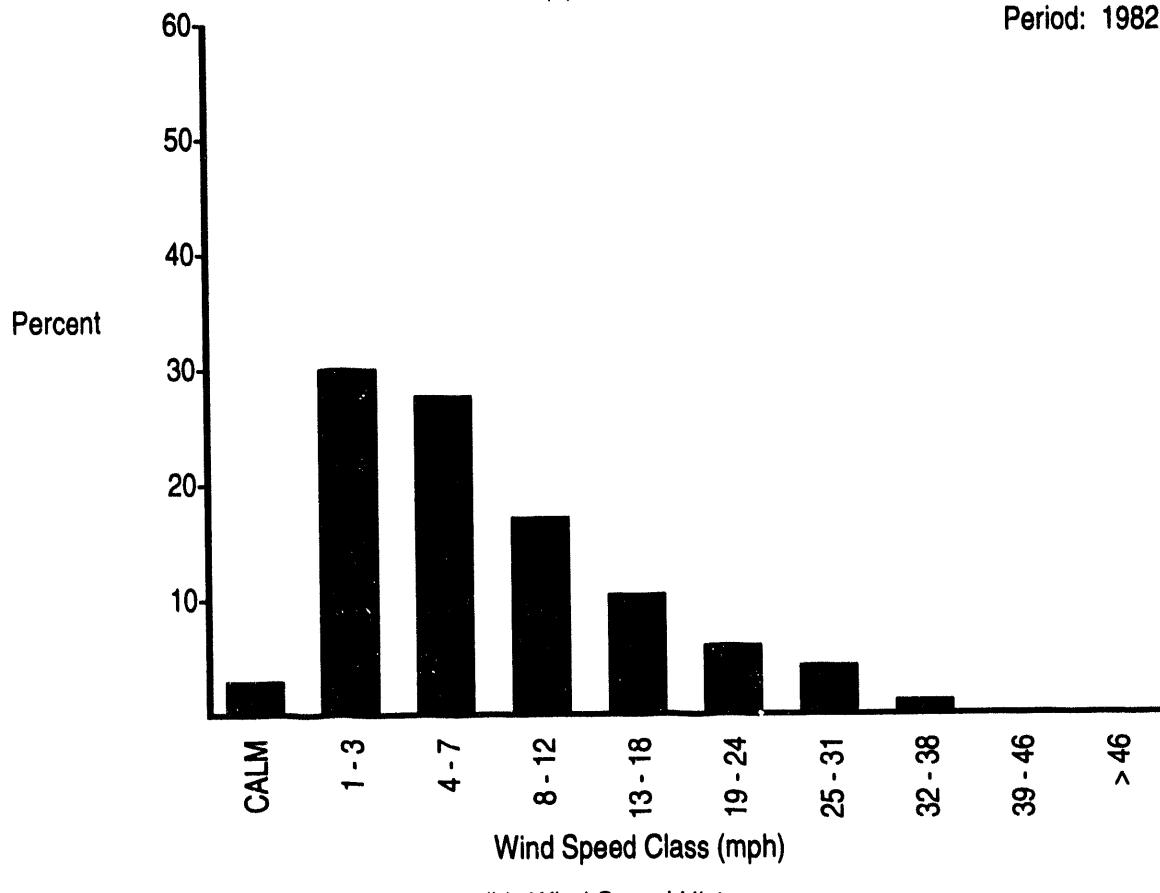


FIGURE B.1. (contd)
(b) Wind Speed Histogram

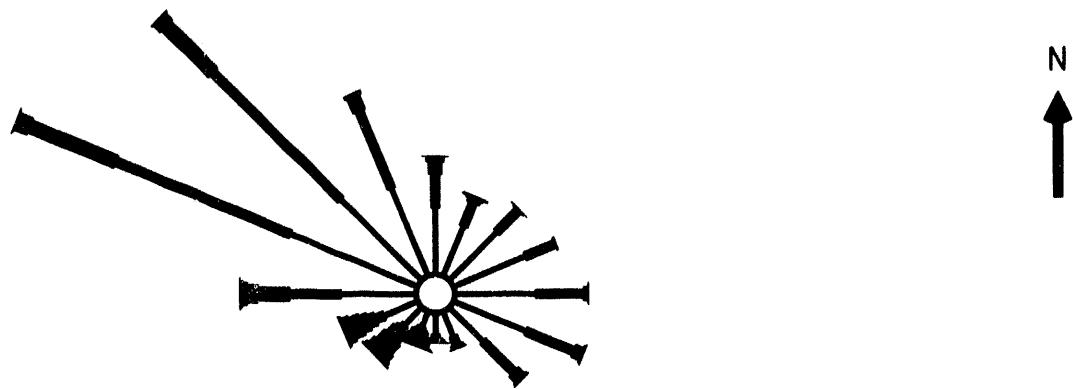


(a) Wind Rose

December Data
Period: 1982 - 1993

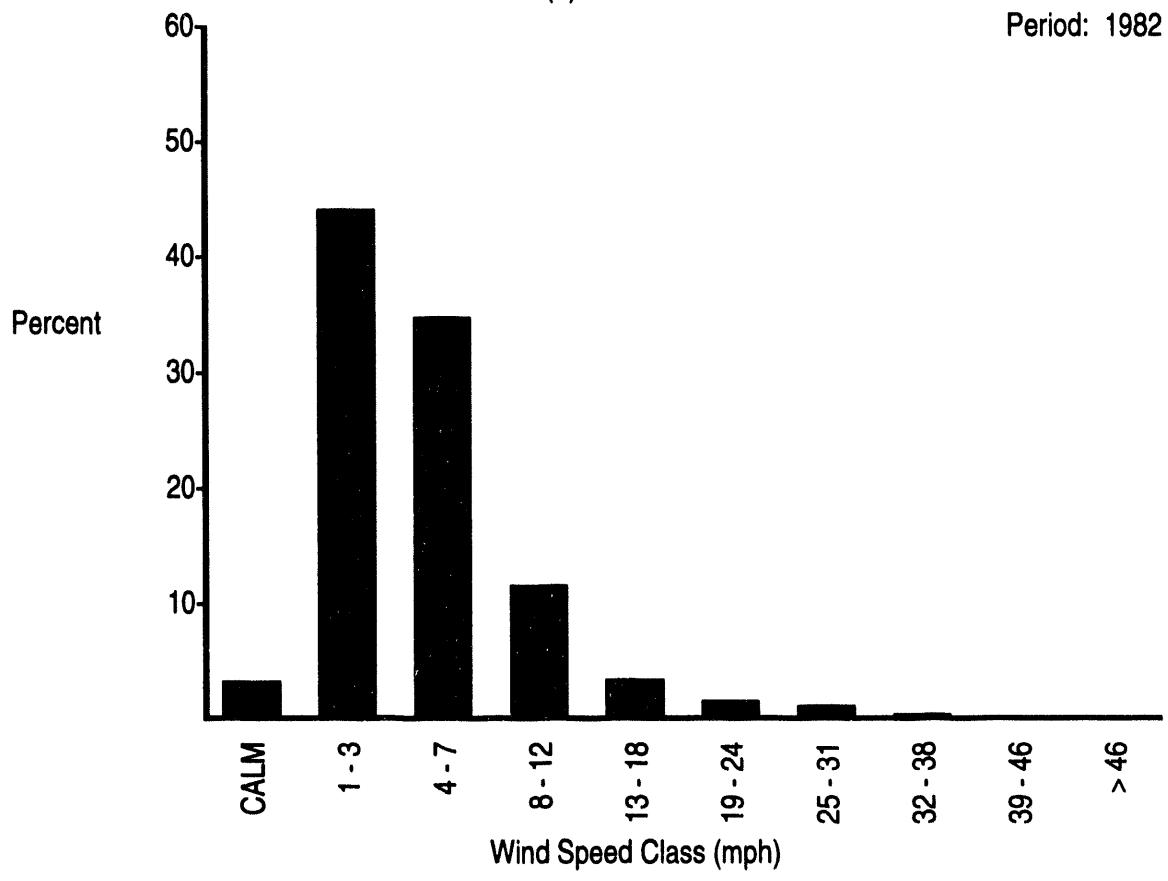
(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

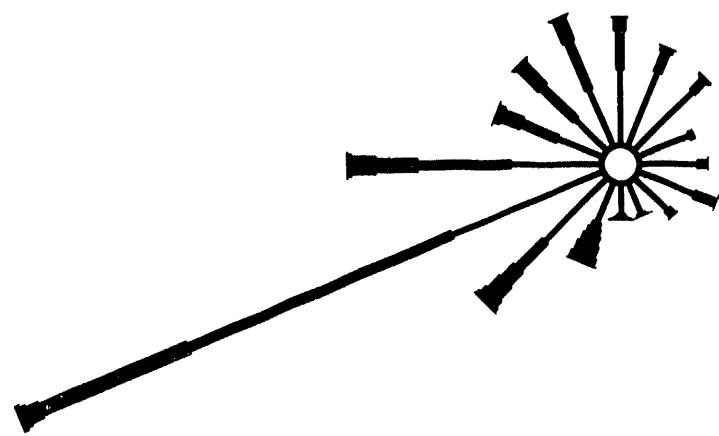
December Data
Period: 1982 - 1993



(b) Wind Speed Histogram

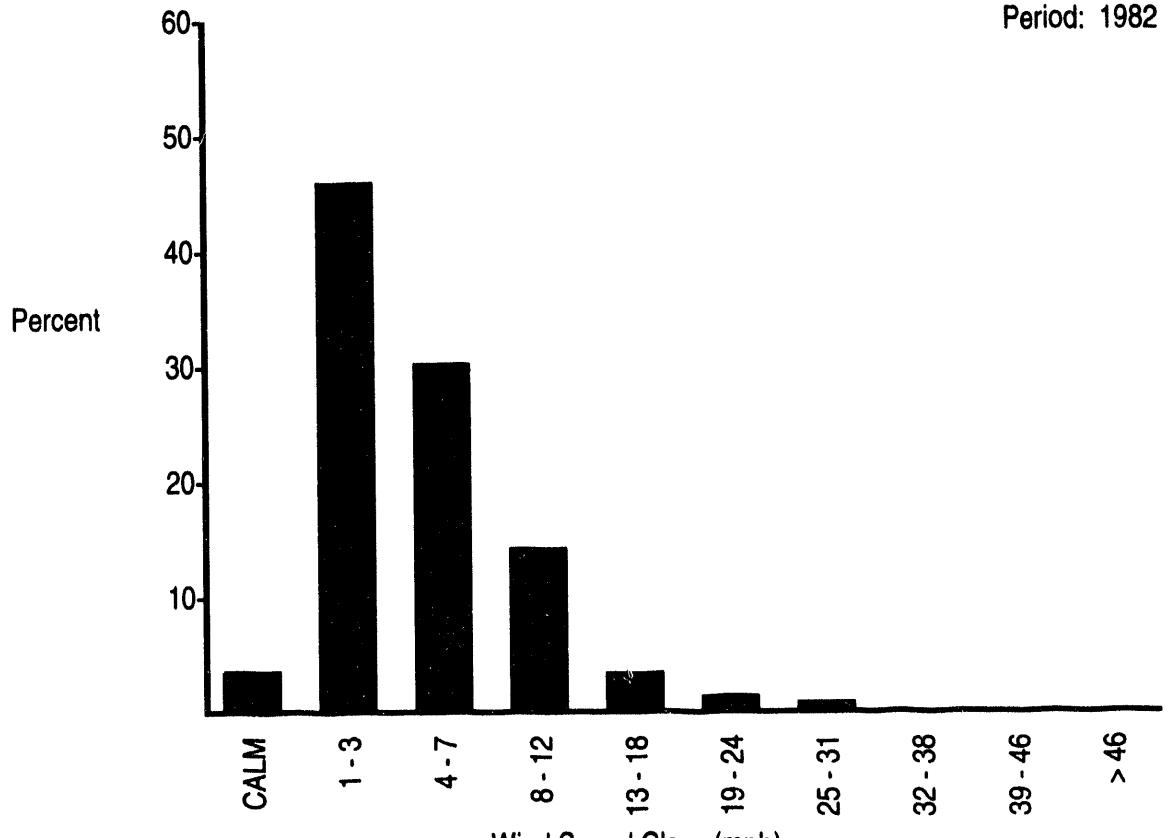
FIGURE B.1. (contd)

N
↑



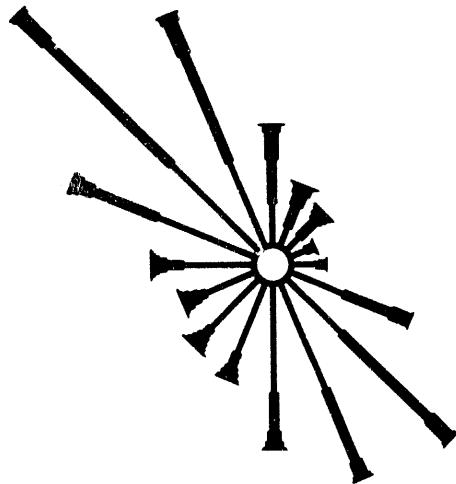
(a) Wind Rose

December Data
Period: 1982 - 1993



(b) Wind Speed Histogram

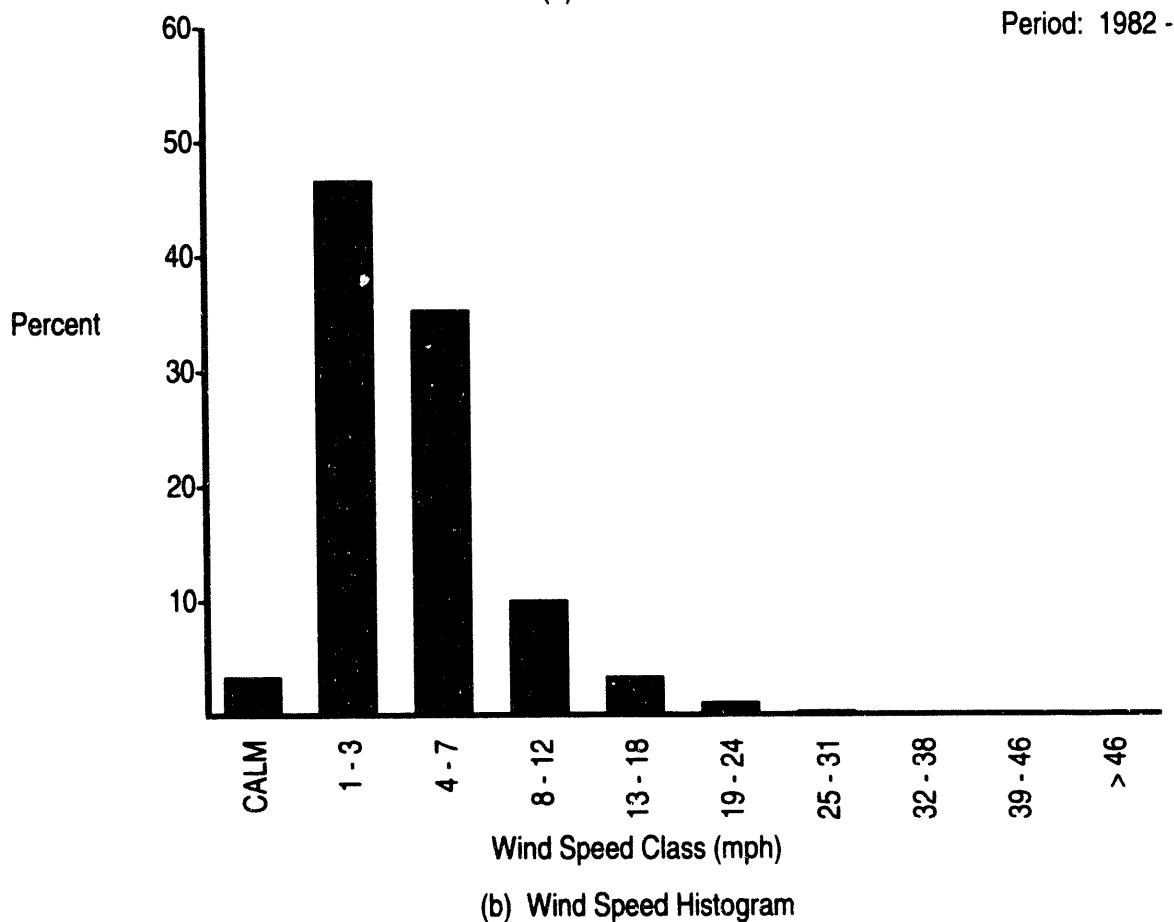
FIGURE B.1. (contd)



N
↑

(a) Wind Rose

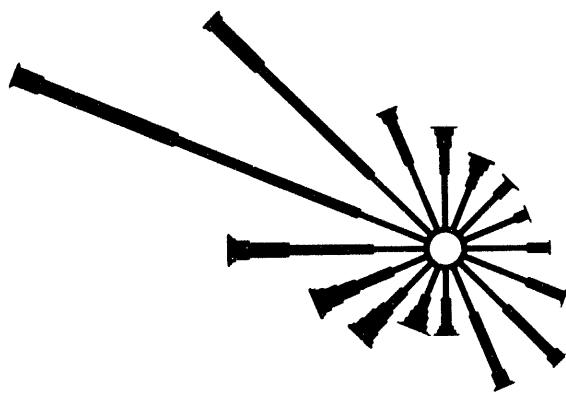
December Data
Period: 1982 - 1993



(b) Wind Speed Histogram

FIGURE B.1. (contd)

N
↑



(a) Wind Rose

December Data
Period: 1982 - 1993

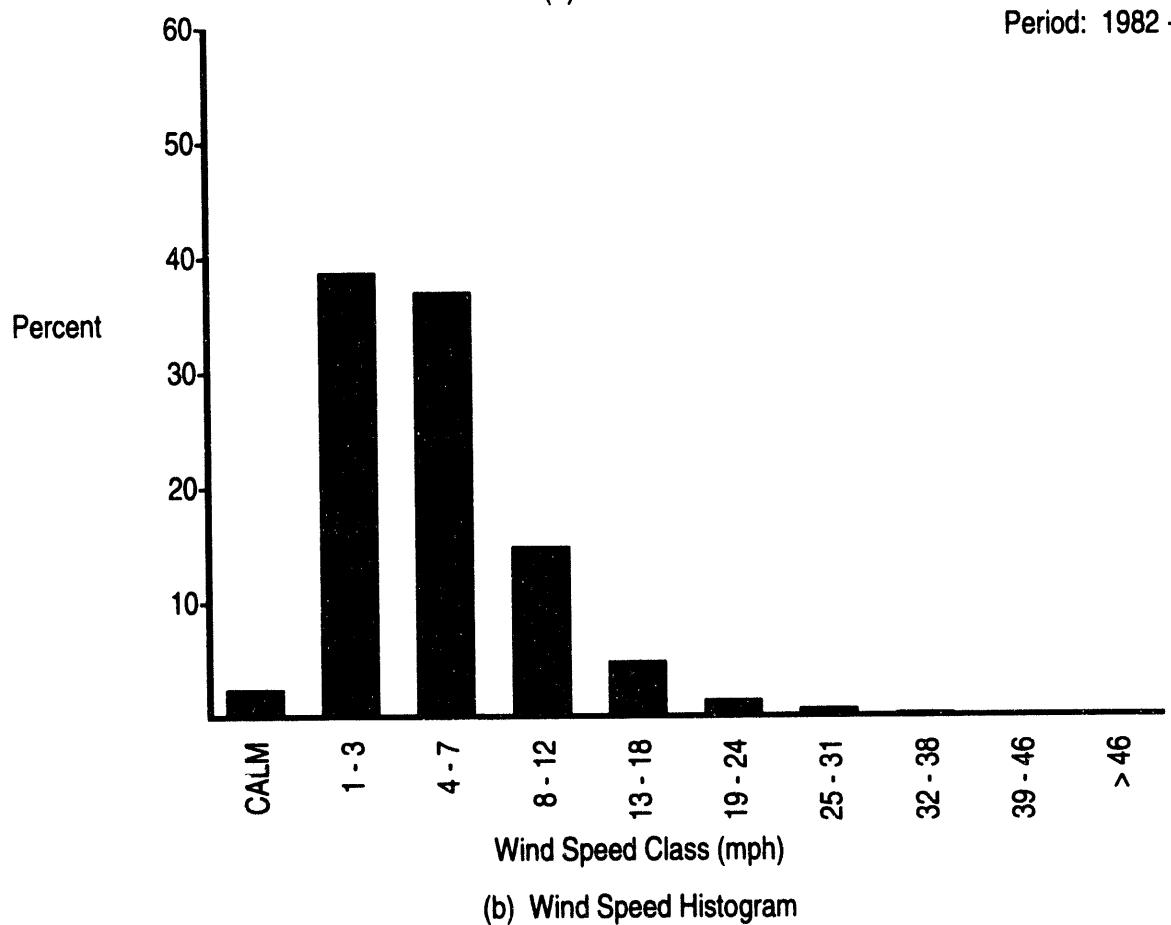
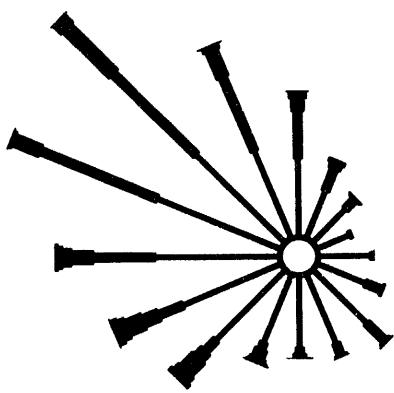
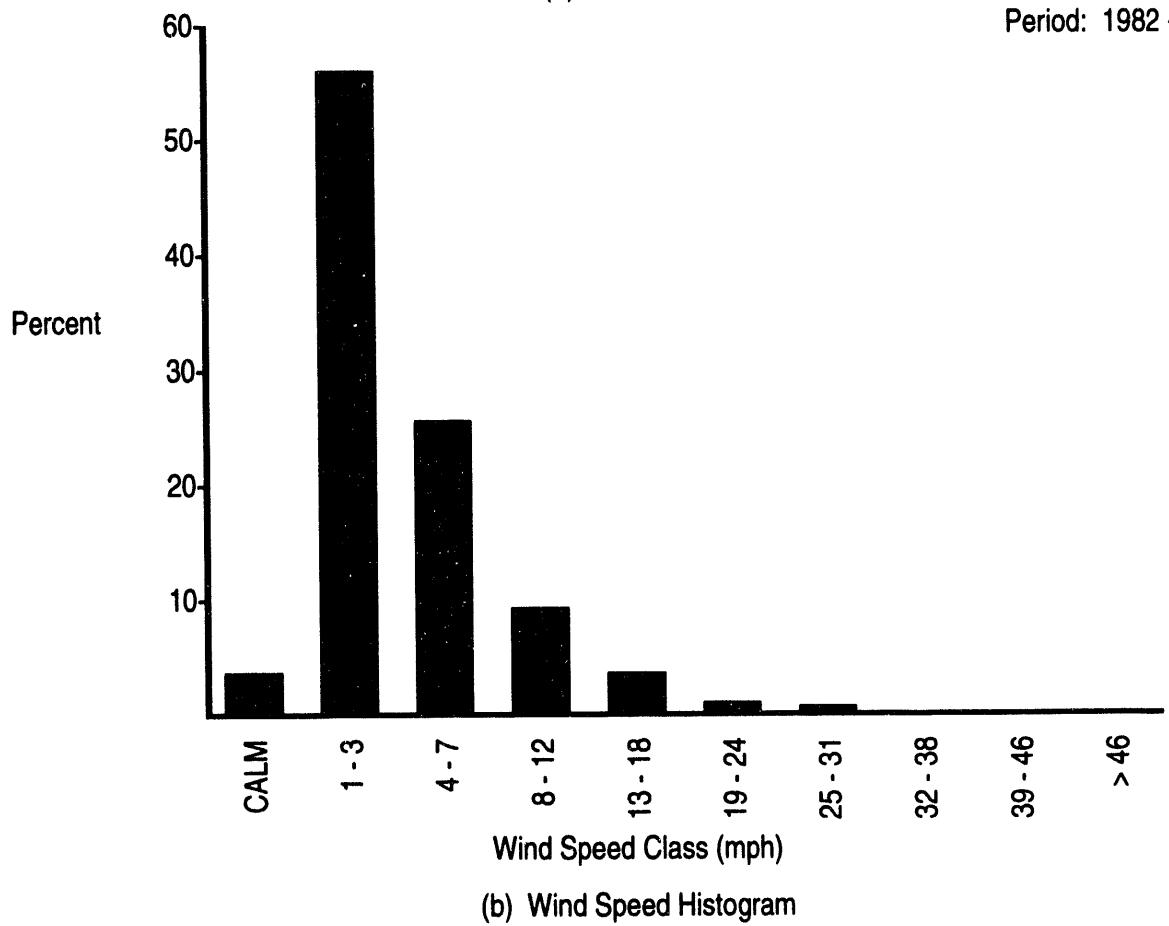


FIGURE B.1. (contd)

N

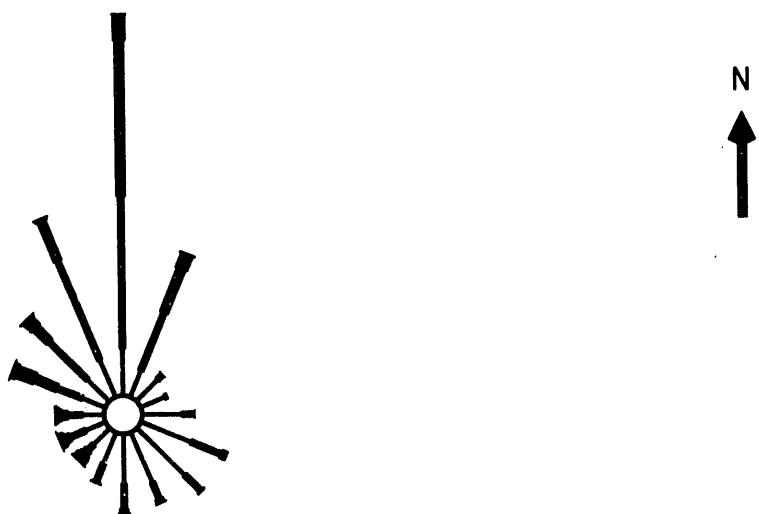


(a) Wind Rose

December Data
Period: 1982 - 1993

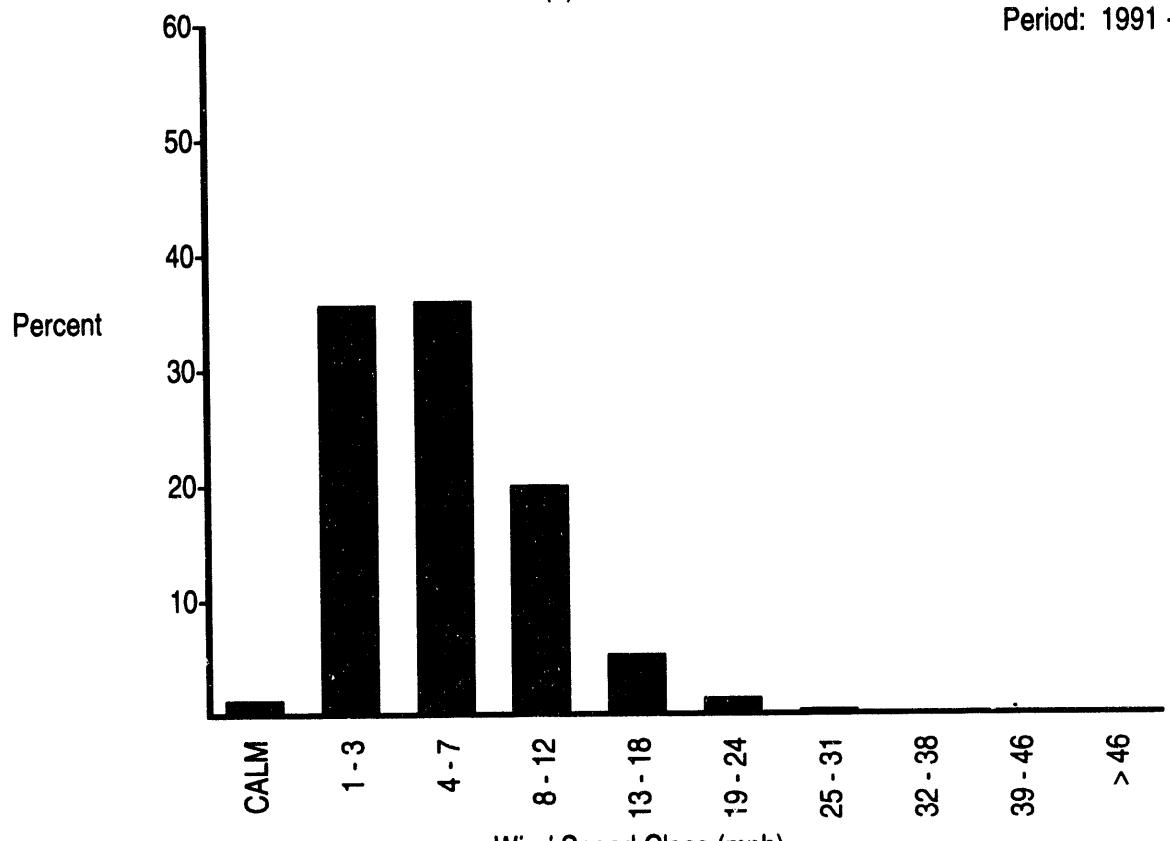
(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

December Data
Period: 1991 - 1993



(b) Wind Speed Histogram

FIGURE B.1. (contd)

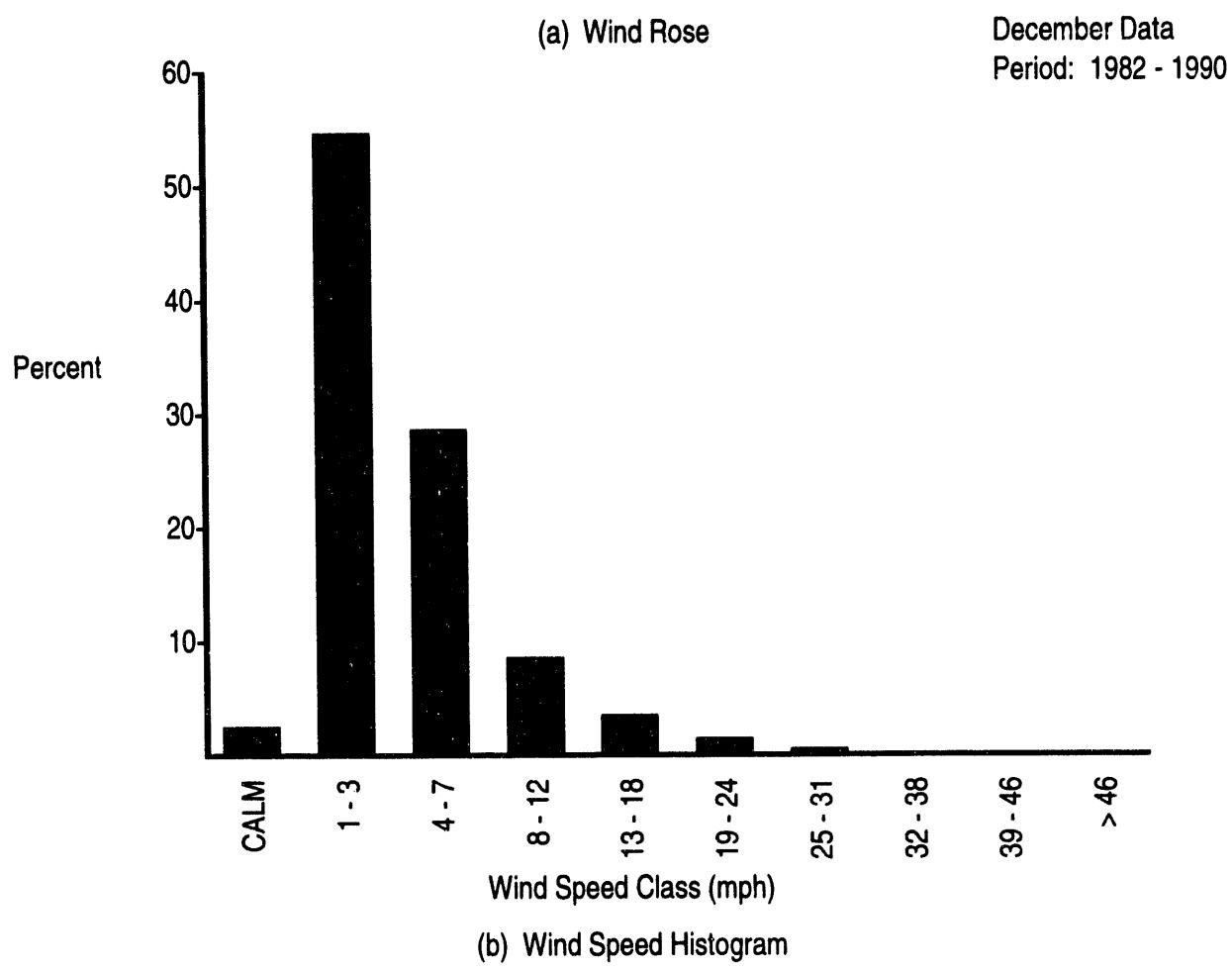
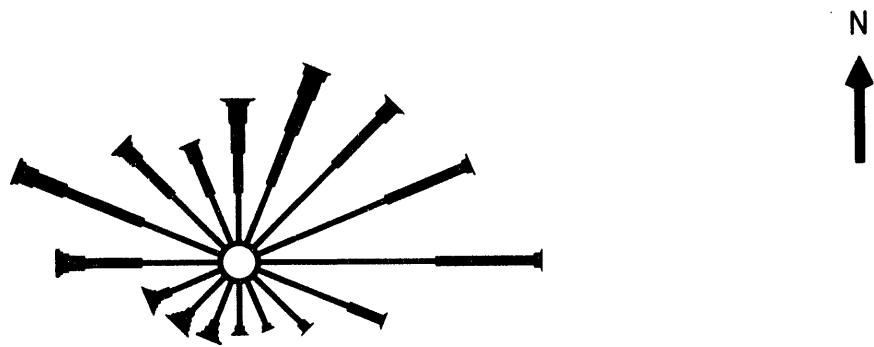
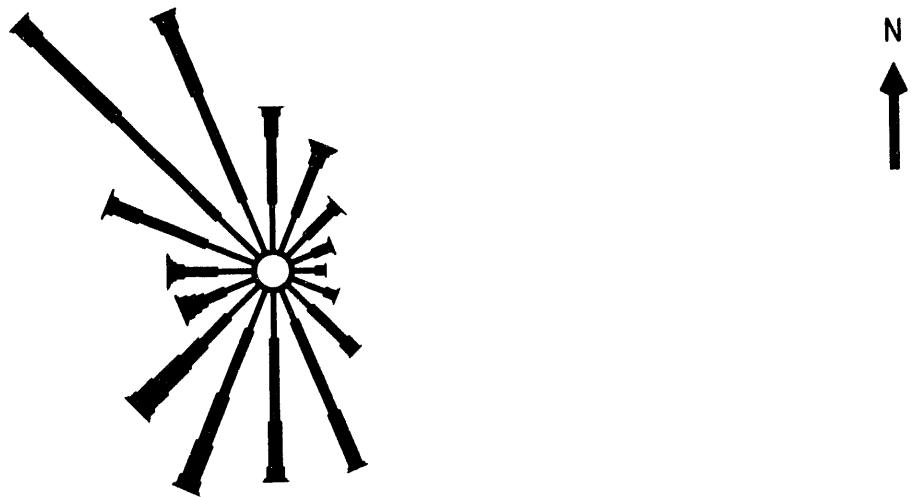
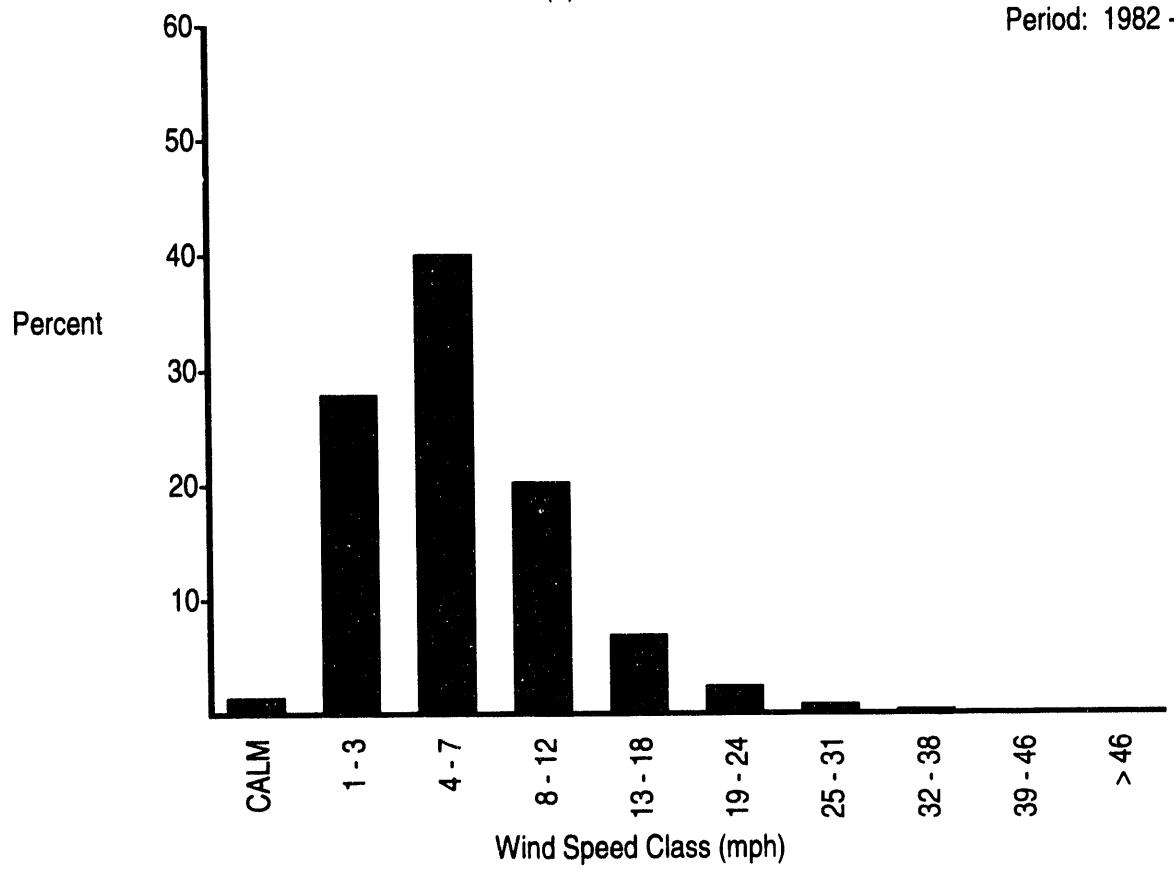


FIGURE B.1. (contd)



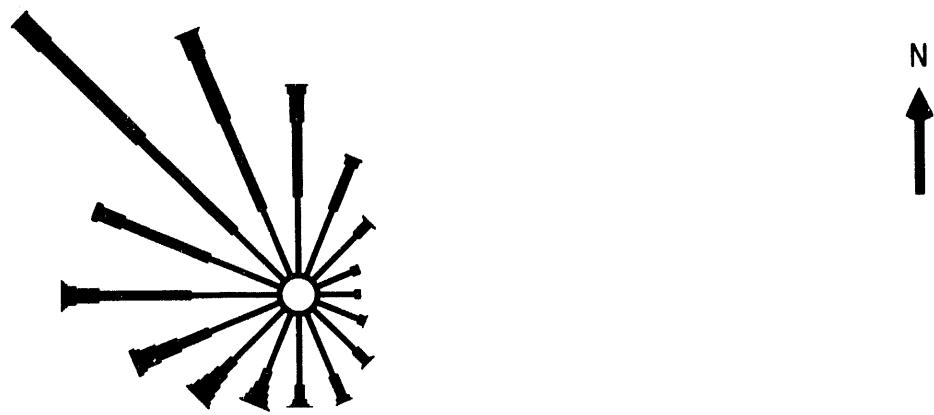
(a) Wind Rose

December Data
Period: 1982 - 1993



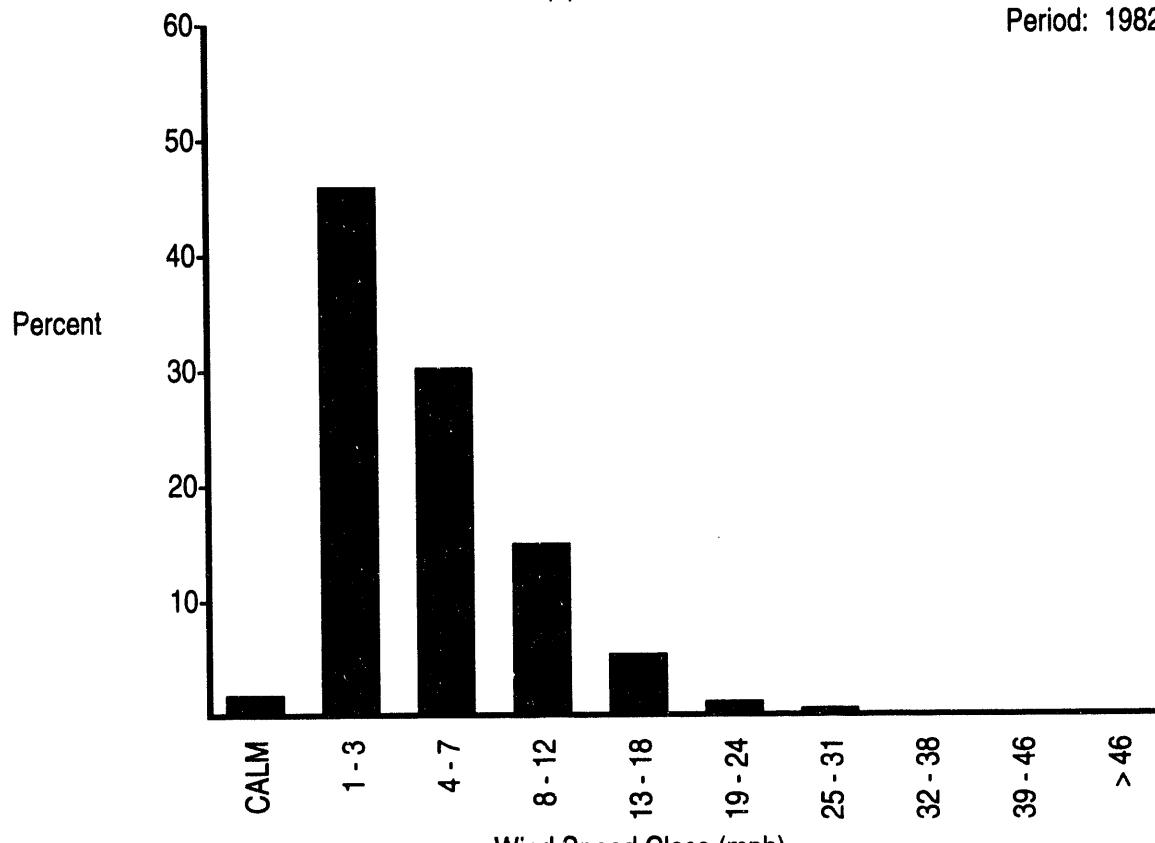
(b) Wind Speed Histogram

FIGURE B.1. (contd)



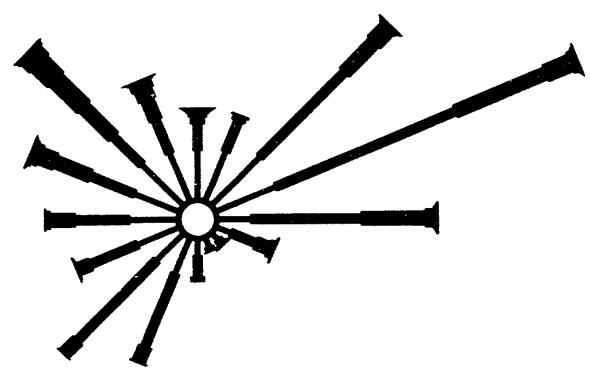
(a) Wind Rose

December Data
Period: 1982 - 1993



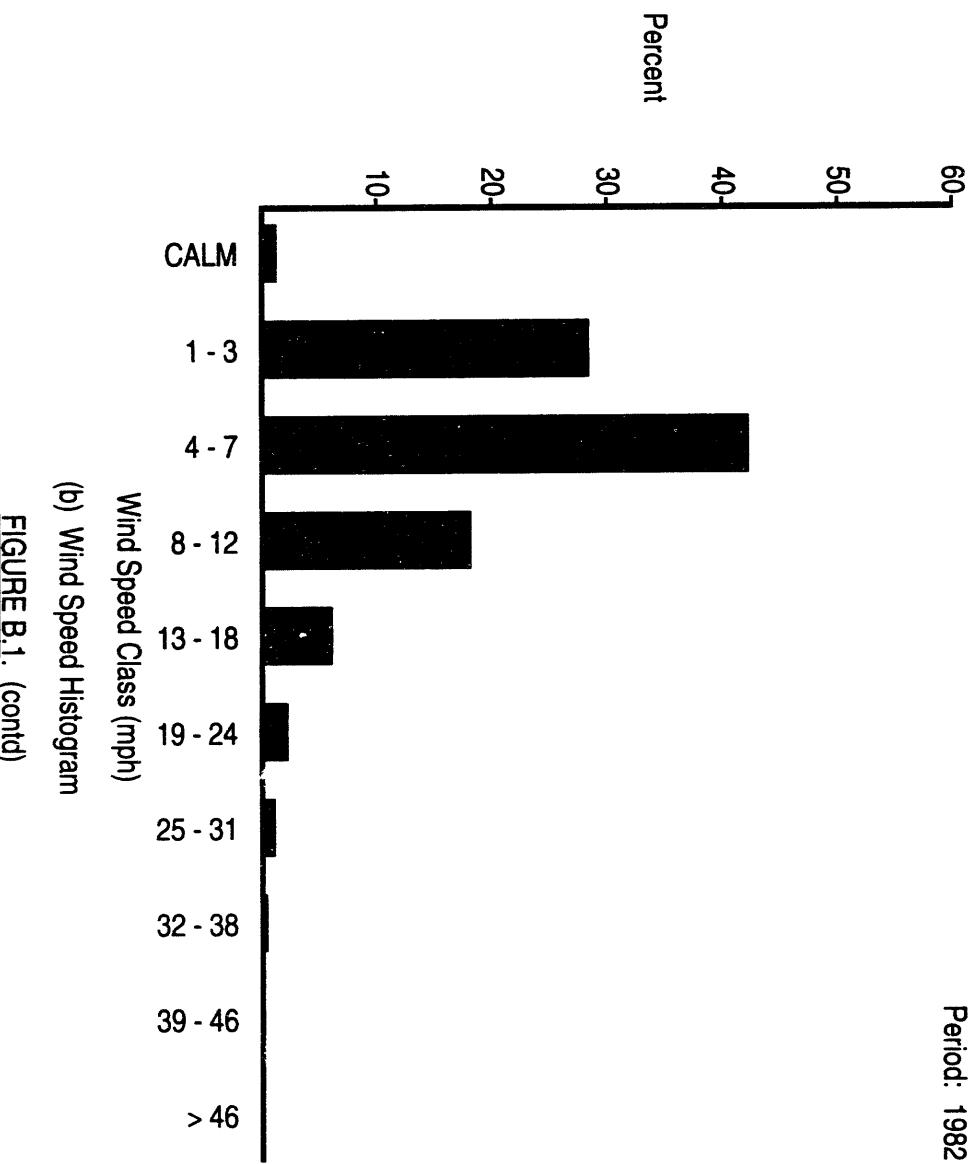
(b) Wind Speed Histogram

FIGURE B.1. (contd)



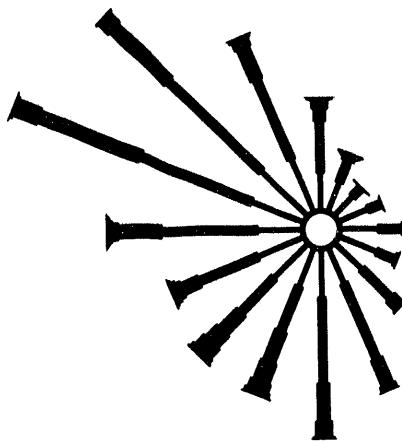
N

(a) Wind Rose
December Data
Period: 1982 - 1993



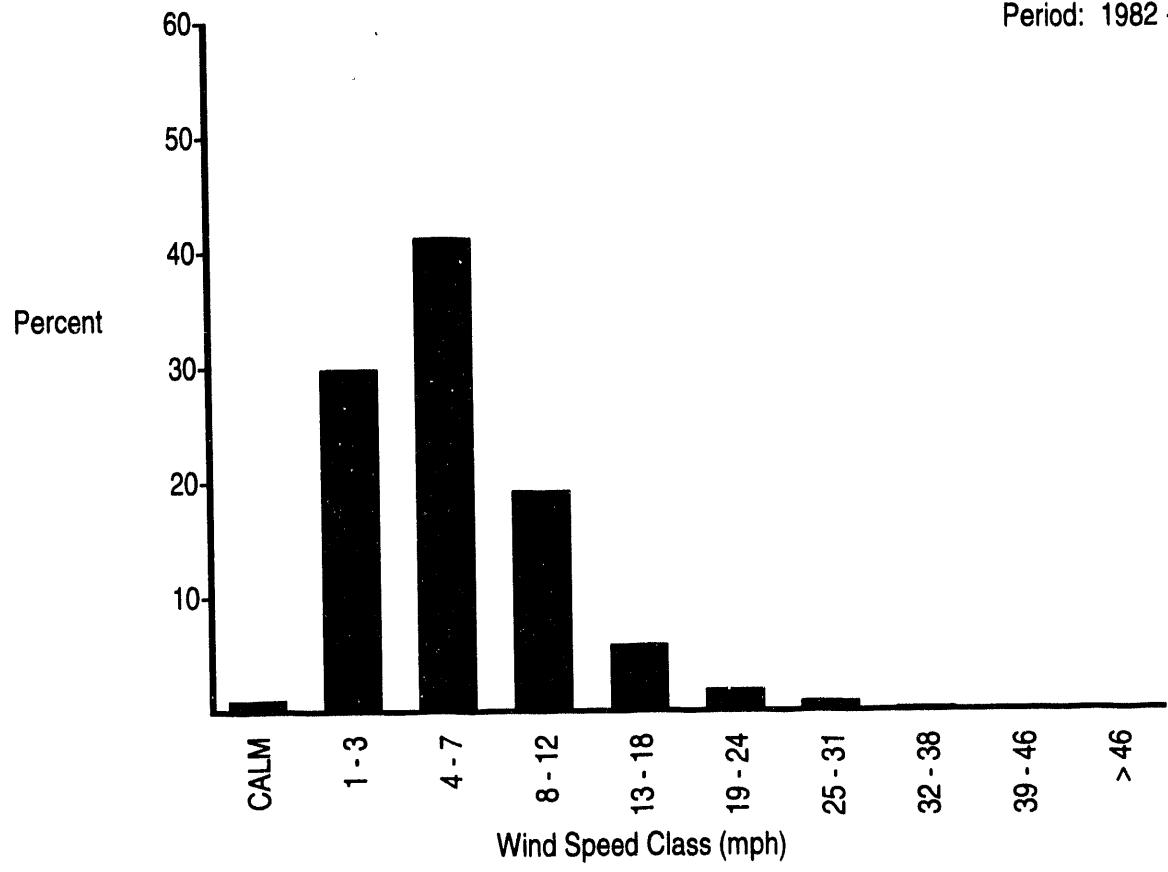
(b) Wind Speed Histogram

N
↑



(a) Wind Rose

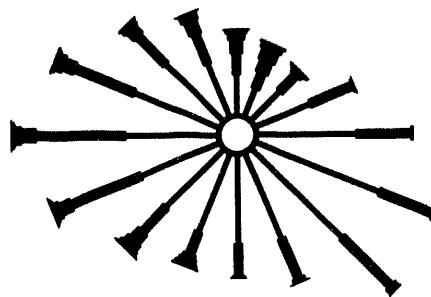
December Data
Period: 1982 - 1993



(b) Wind Speed Histogram

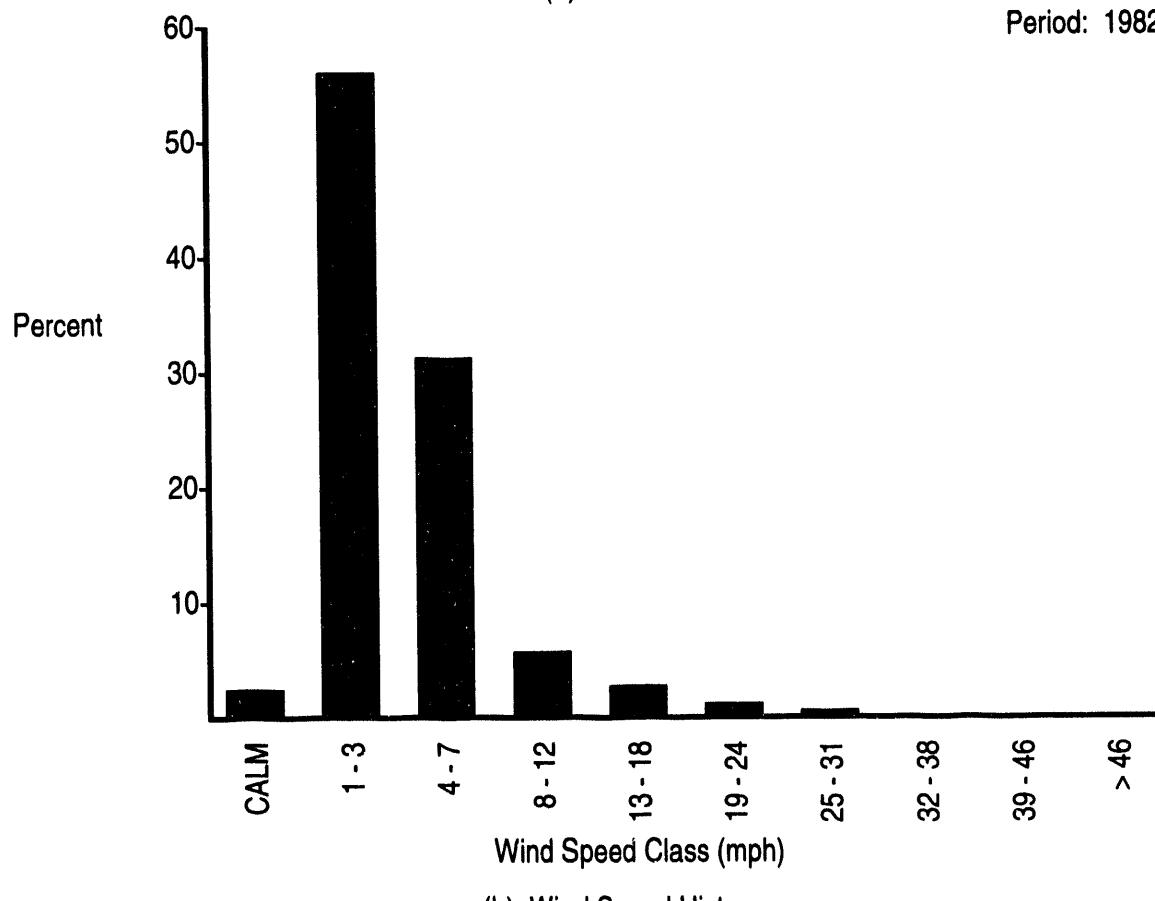
FIGURE B.1. (contd)

N
↑



(a) Wind Rose

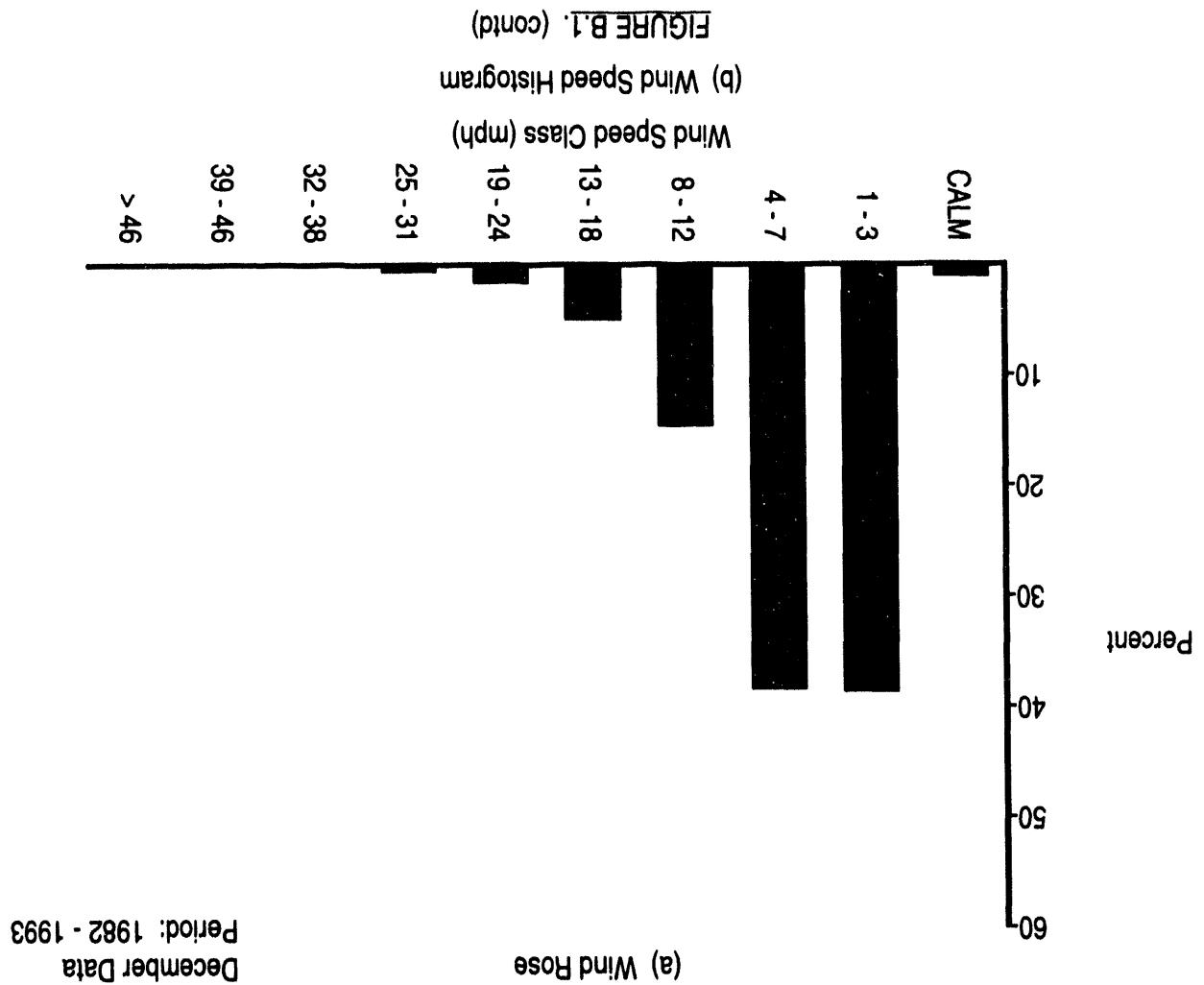
December Data
Period: 1982 - 1993

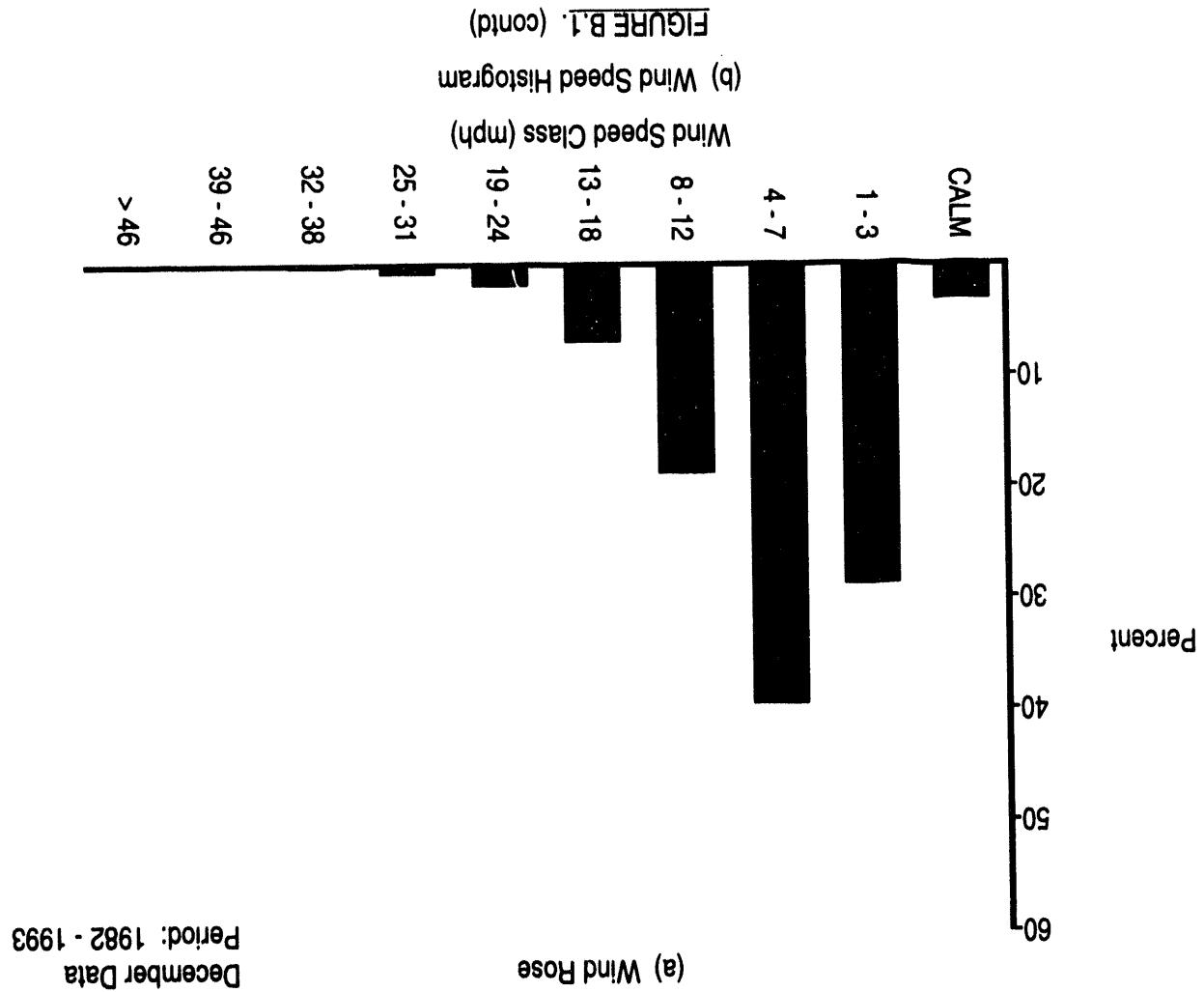


(b) Wind Speed Histogram

FIGURE B.1. (contd)

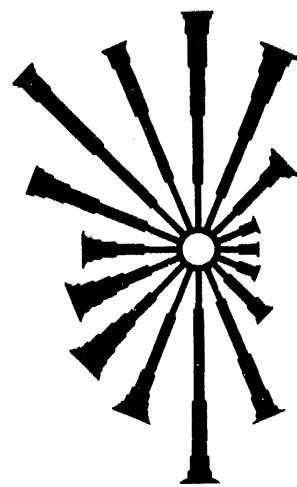
B.312





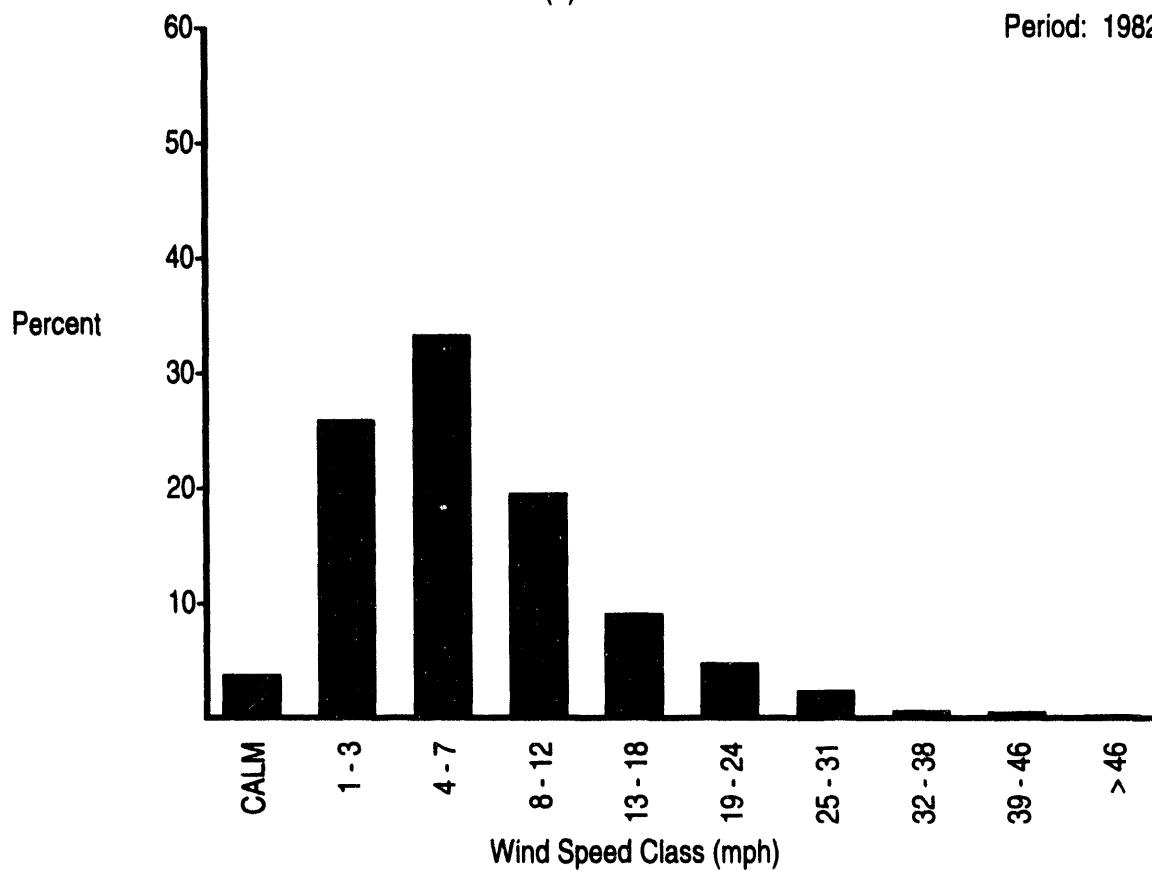
N

N
↑



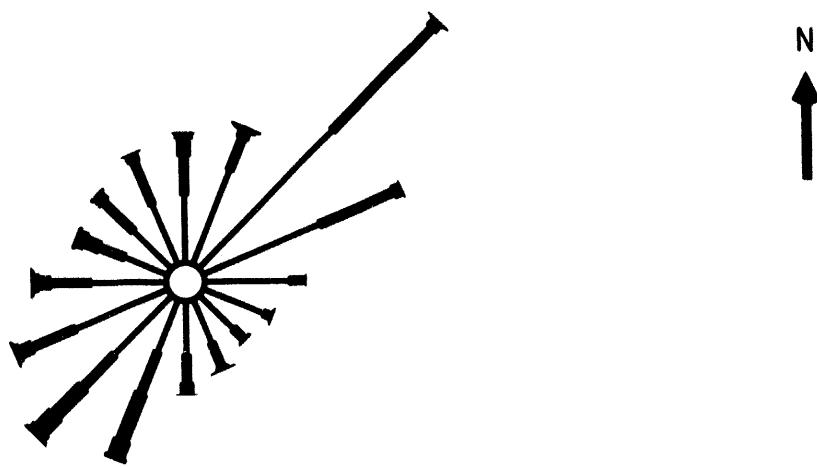
(a) Wind Rose

December Data
Period: 1982 - 1993

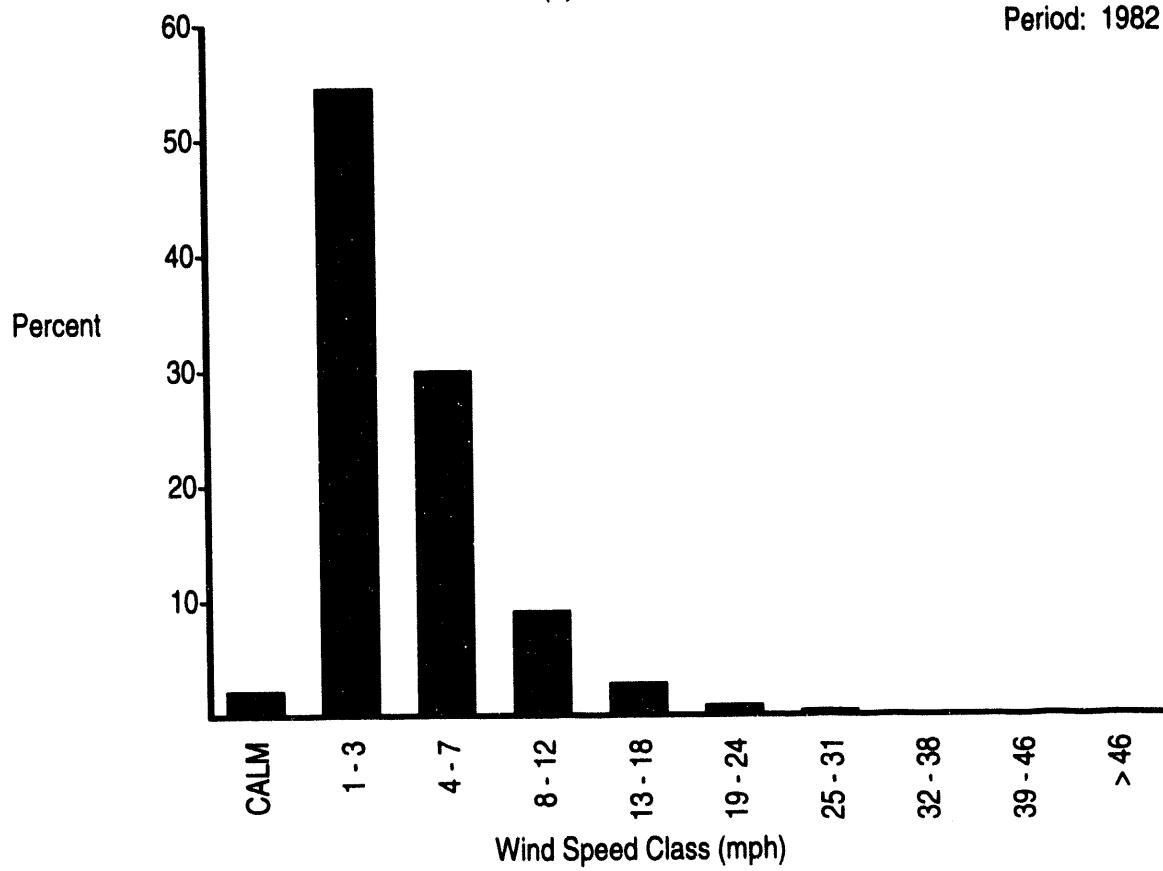


(b) Wind Speed Histogram

FIGURE B.1. (contd)

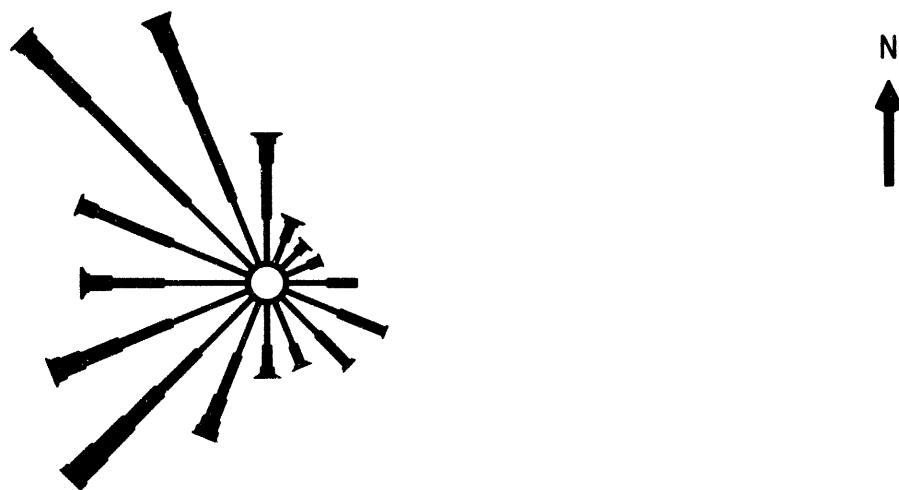


(a) Wind Rose

December Data
Period: 1982 - 1993

(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

December Data
Period: 1982 - 1993

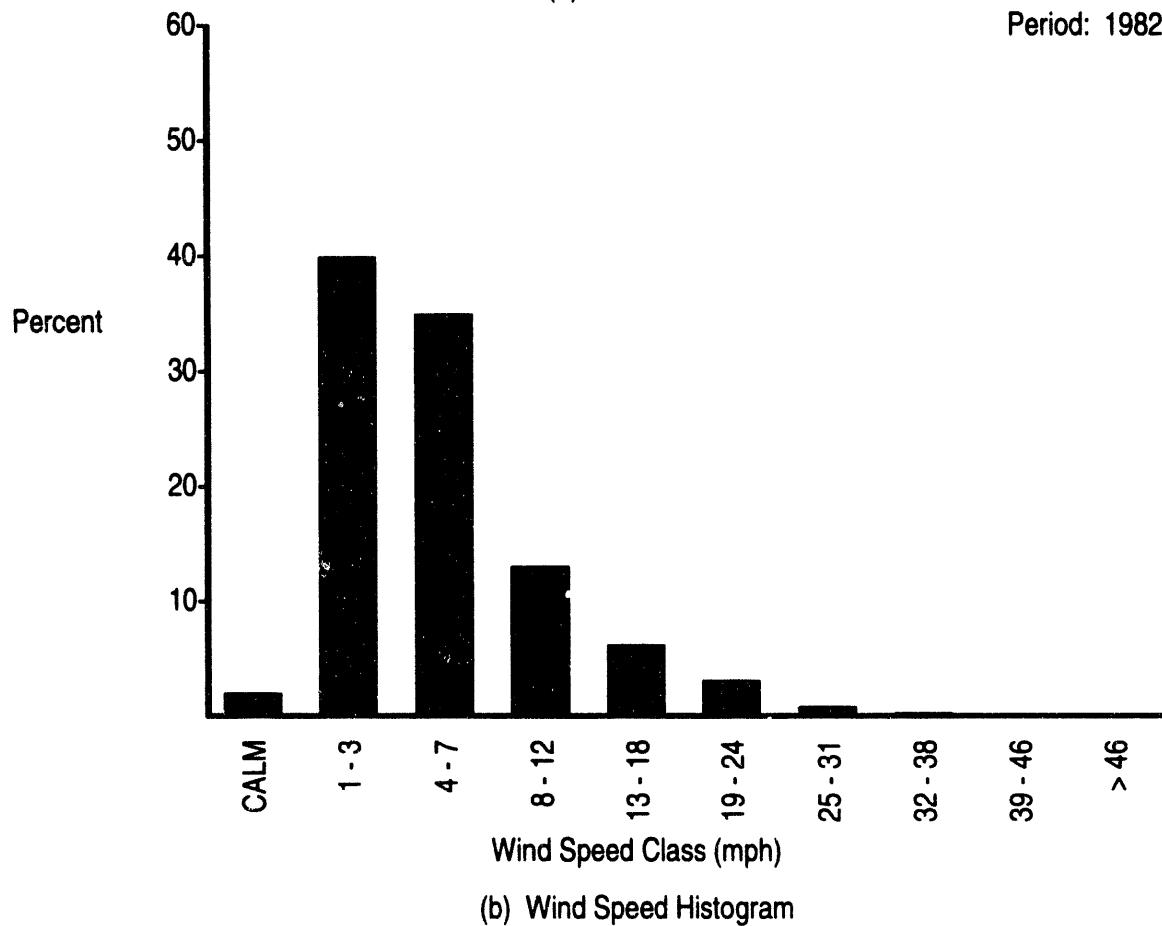
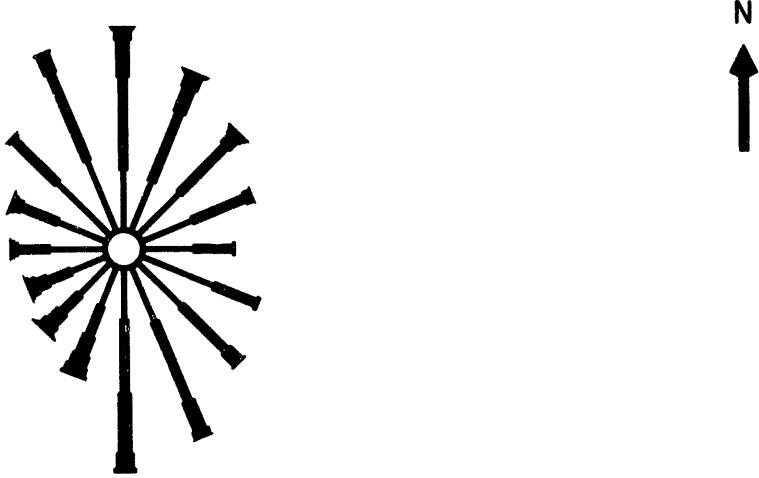
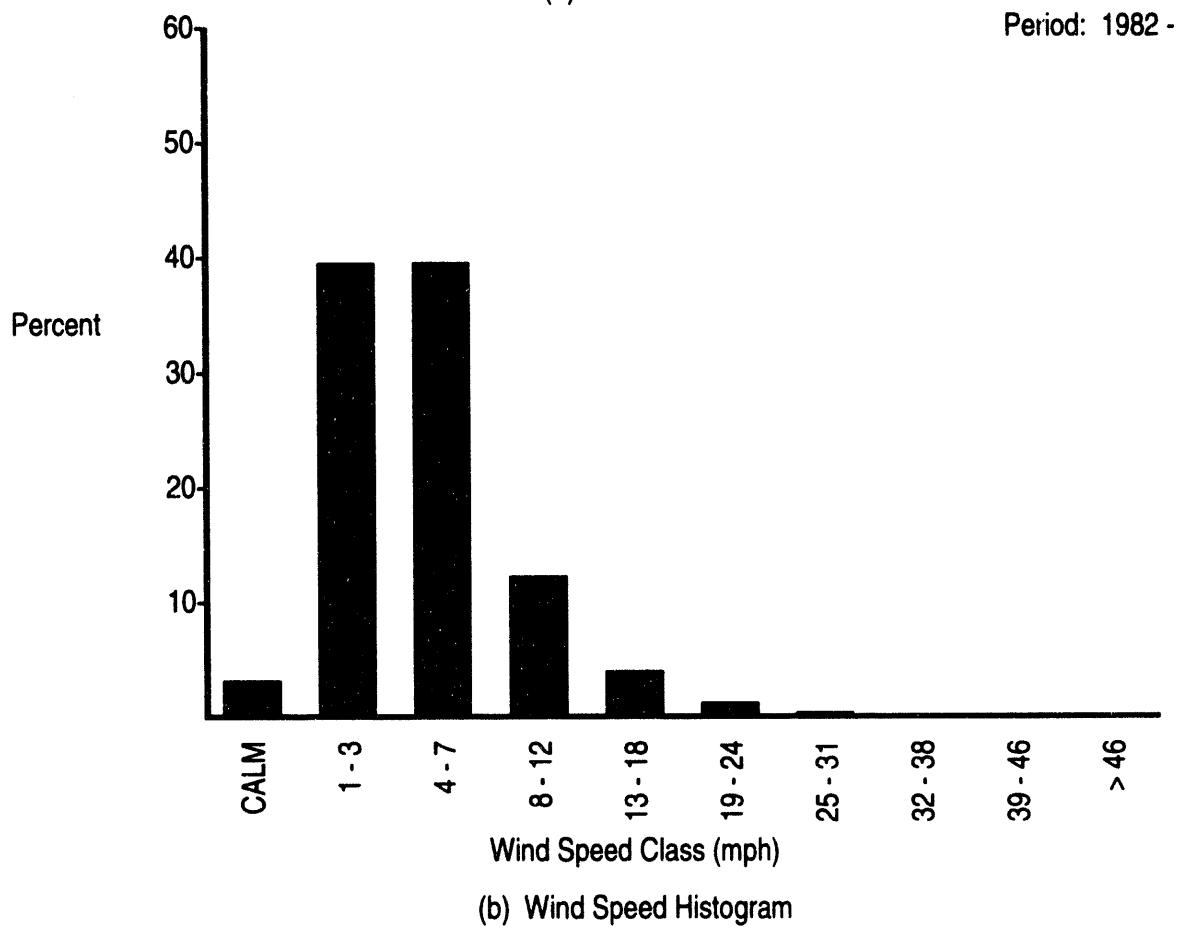


FIGURE B.1. (contd)



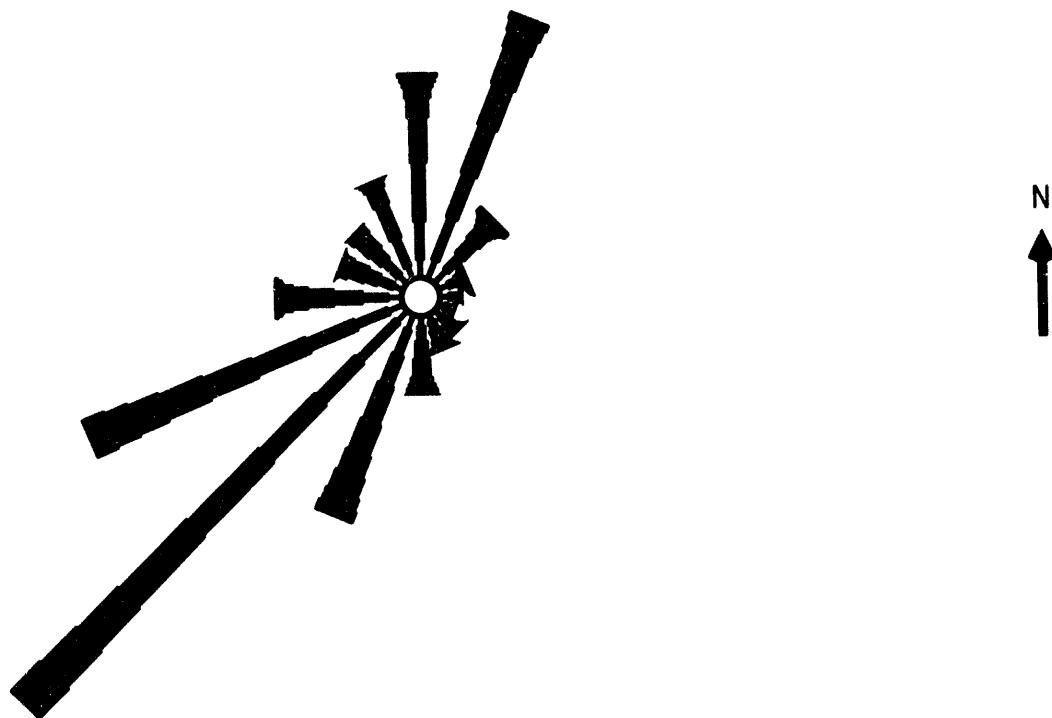
(a) Wind Rose

December Data
Period: 1982 - 1992

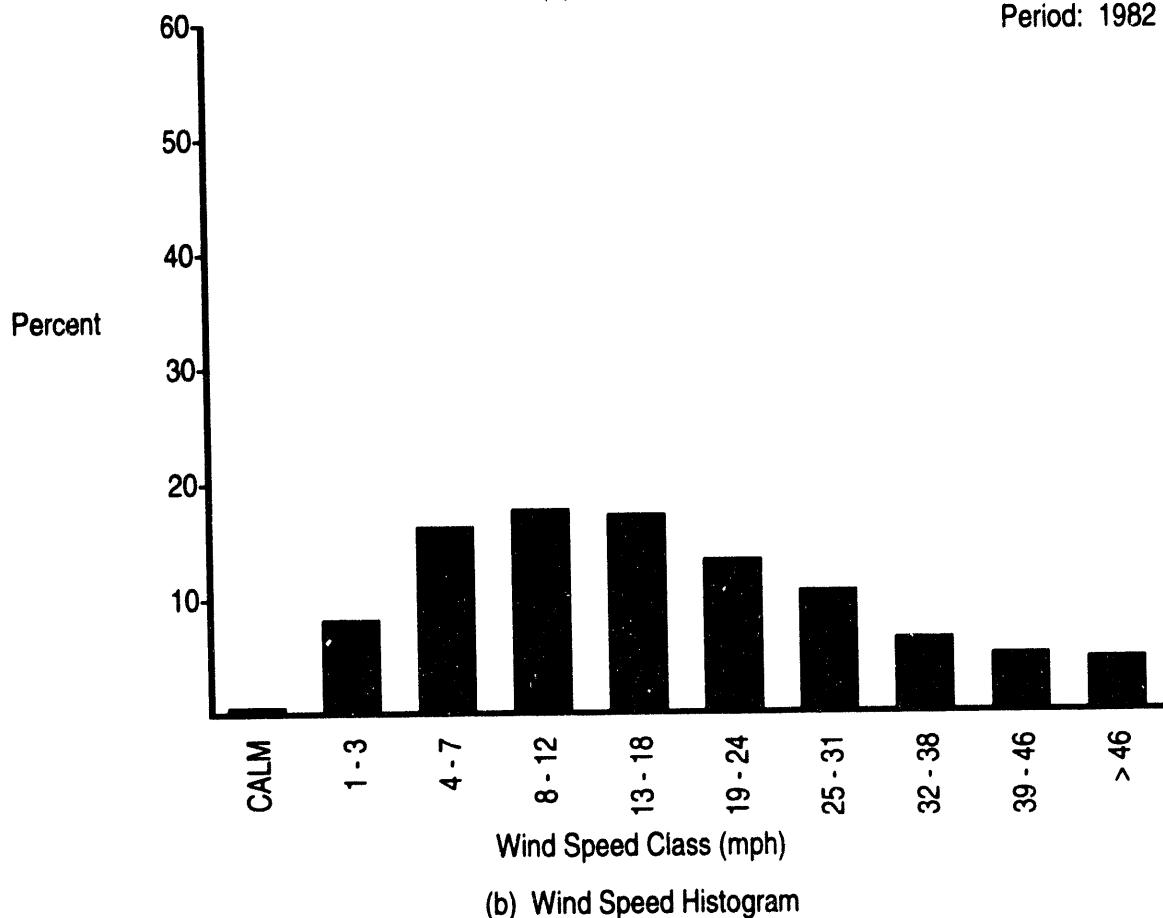


(b) Wind Speed Histogram

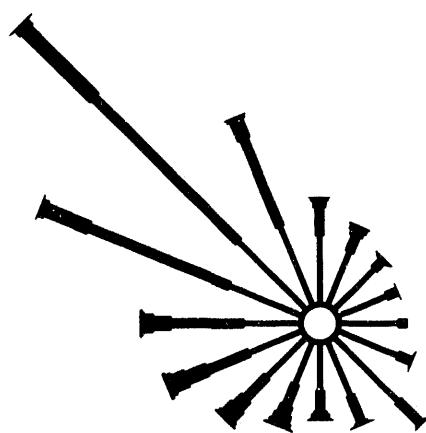
FIGURE B.1. (contd)



(a) Wind Rose

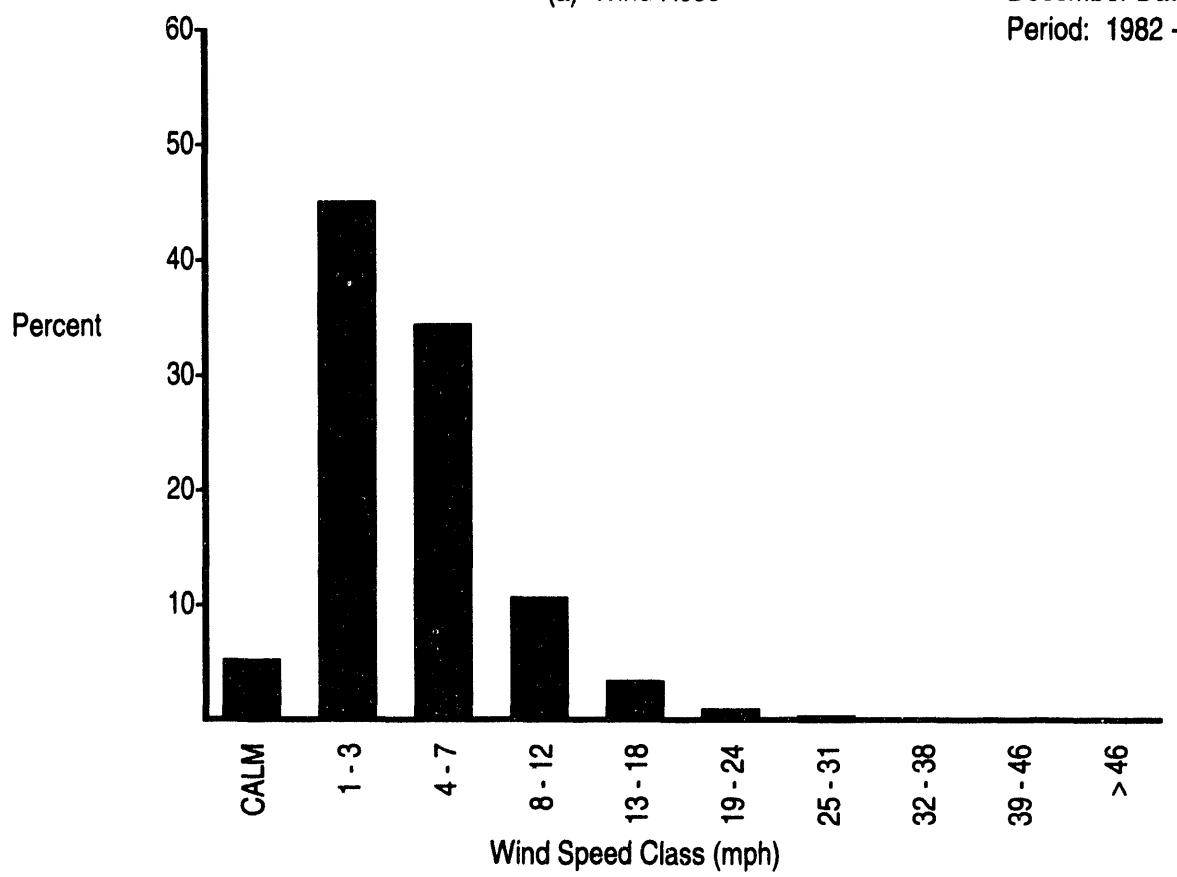
December Data
Period: 1982 - 1993FIGURE B.1. (contd)

N



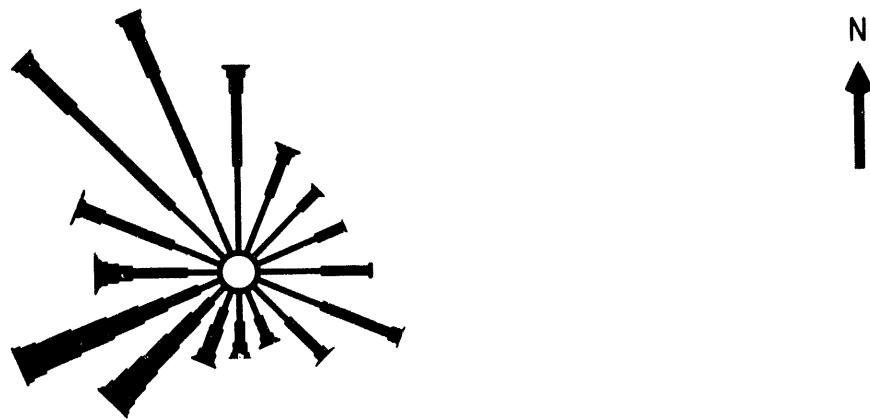
(a) Wind Rose

December Data
Period: 1982 - 1993



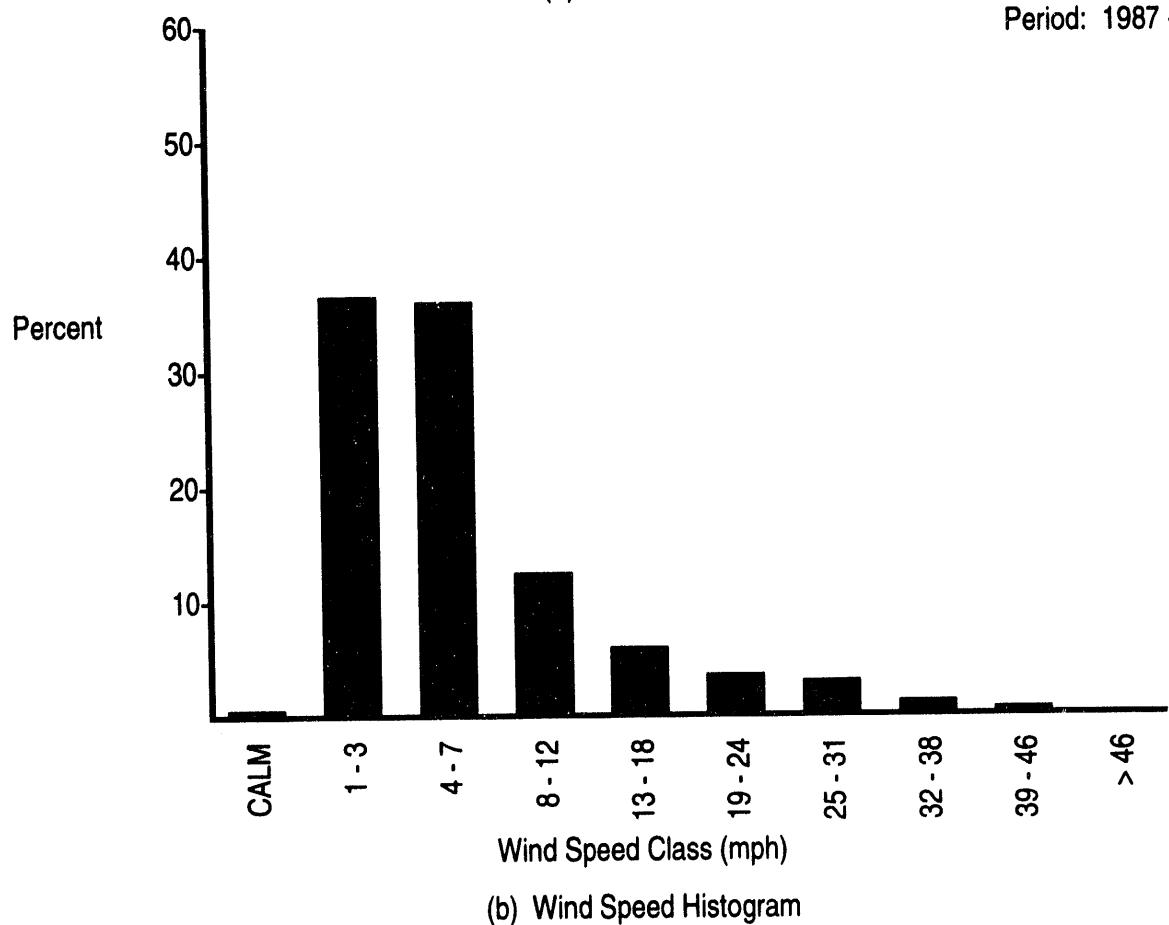
(b) Wind Speed Histogram

FIGURE B.1. (contd)



(a) Wind Rose

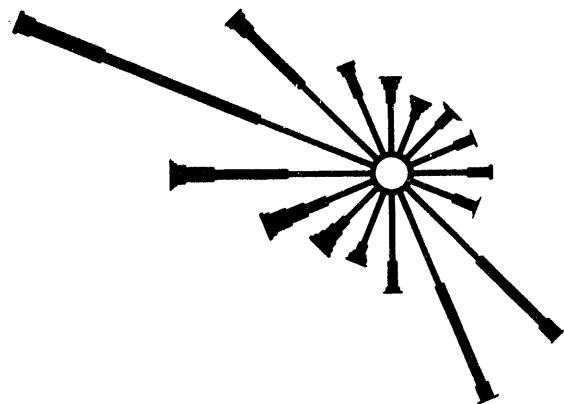
December Data
Period: 1987 - 1993



(b) Wind Speed Histogram

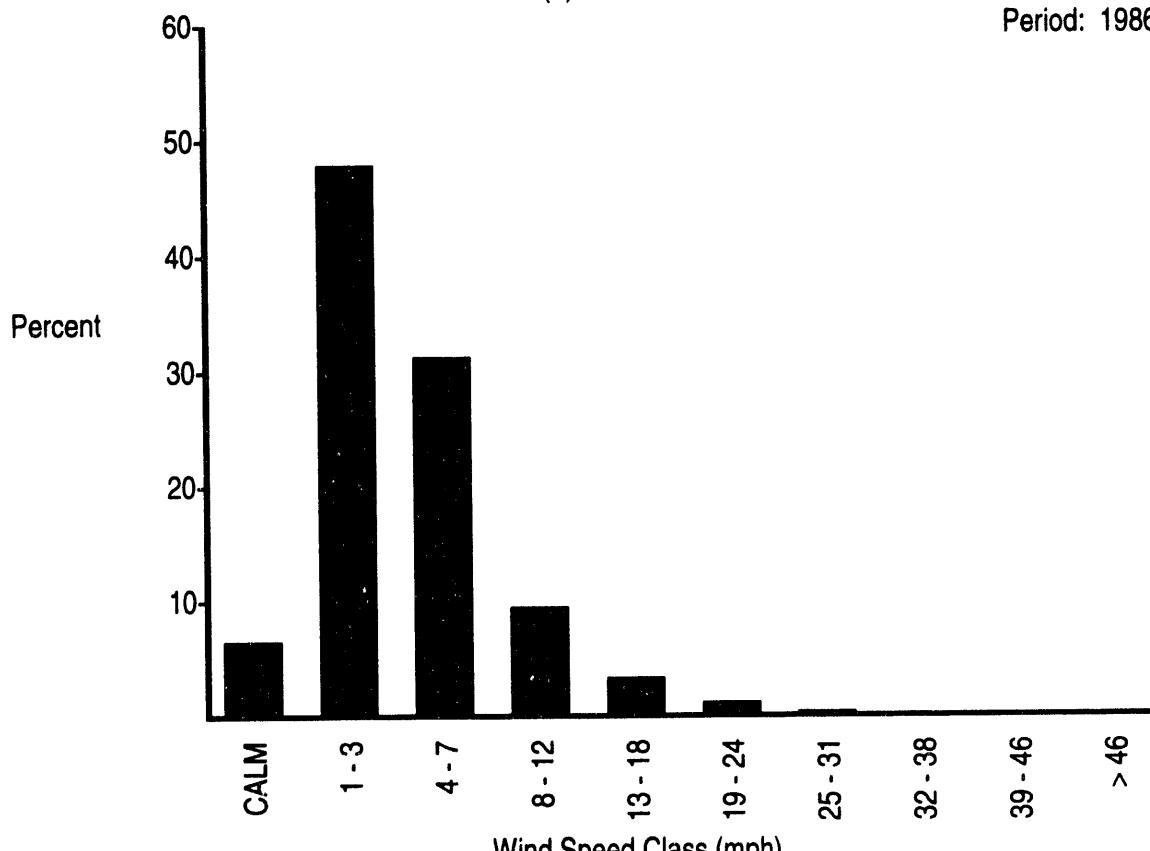
FIGURE B.1. (contd)

N
↑



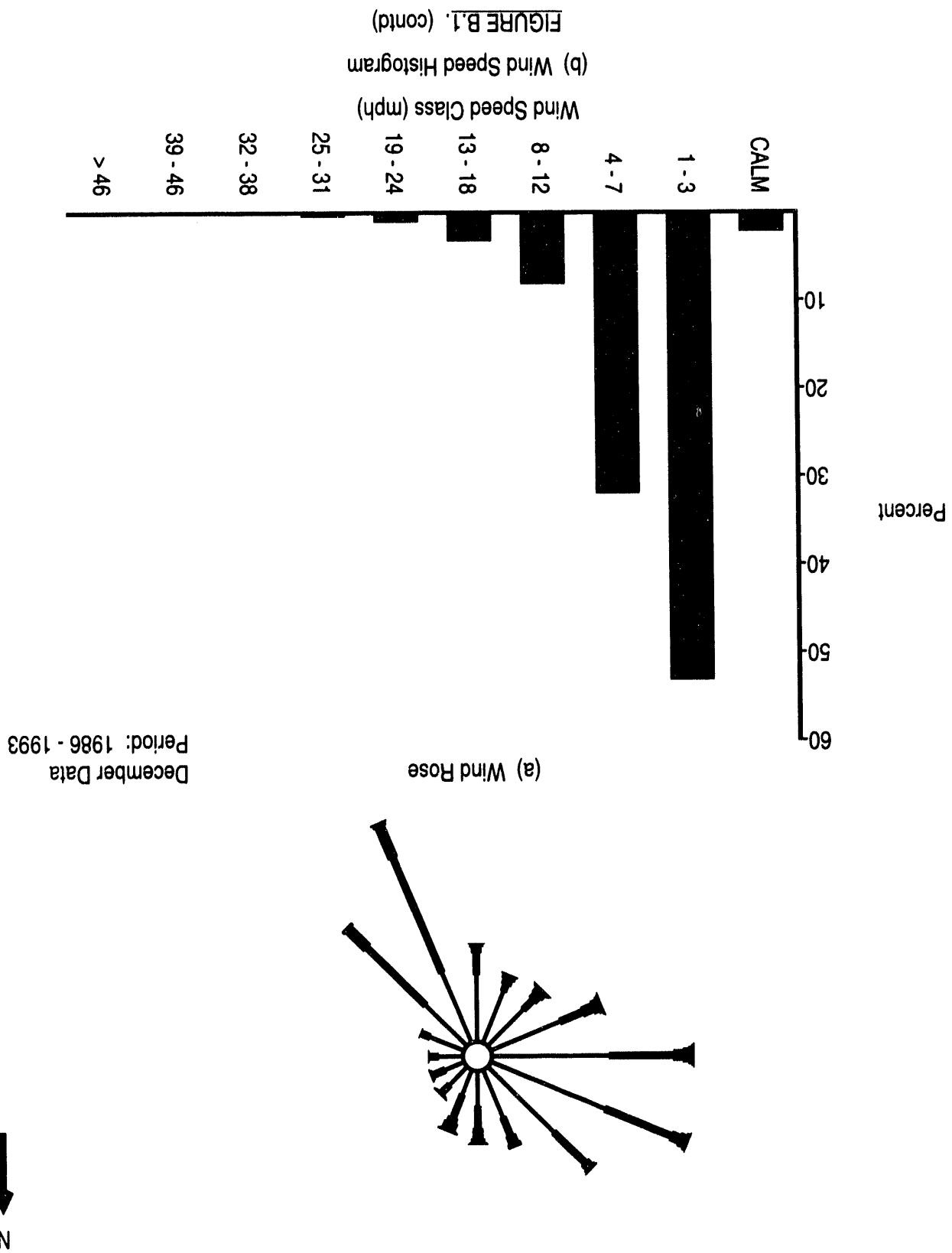
(a) Wind Rose

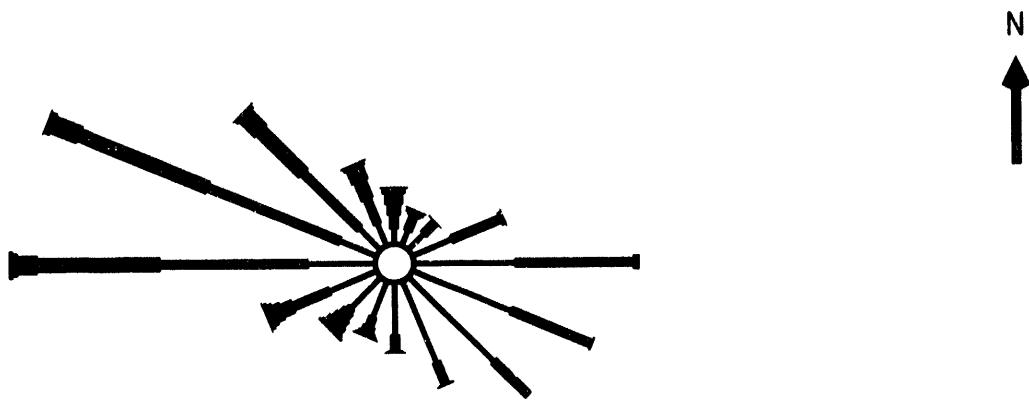
December Data
Period: 1986 - 1993



(b) Wind Speed Histogram

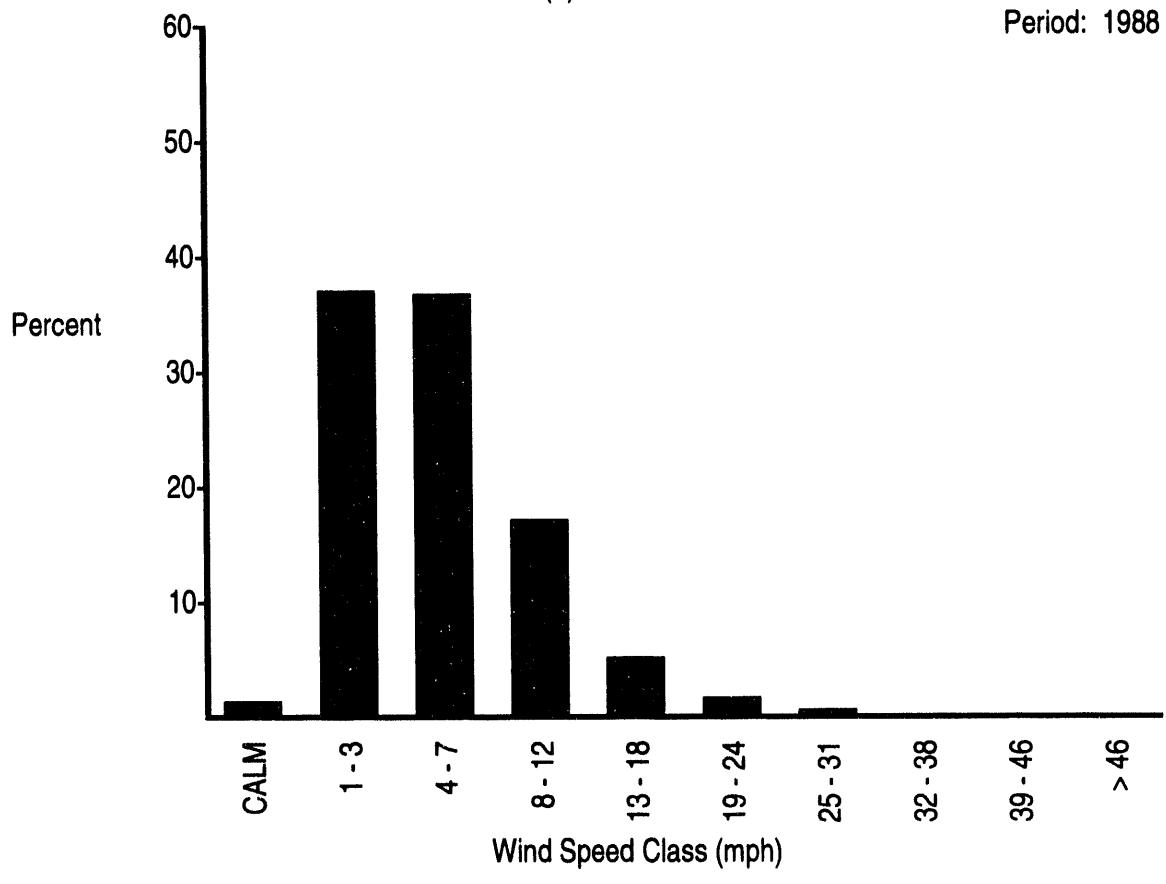
FIGURE B.1. (contd)





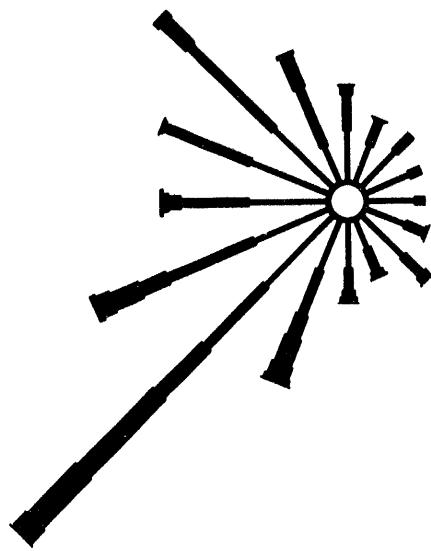
(a) Wind Rose

December Data
Period: 1988 - 1993

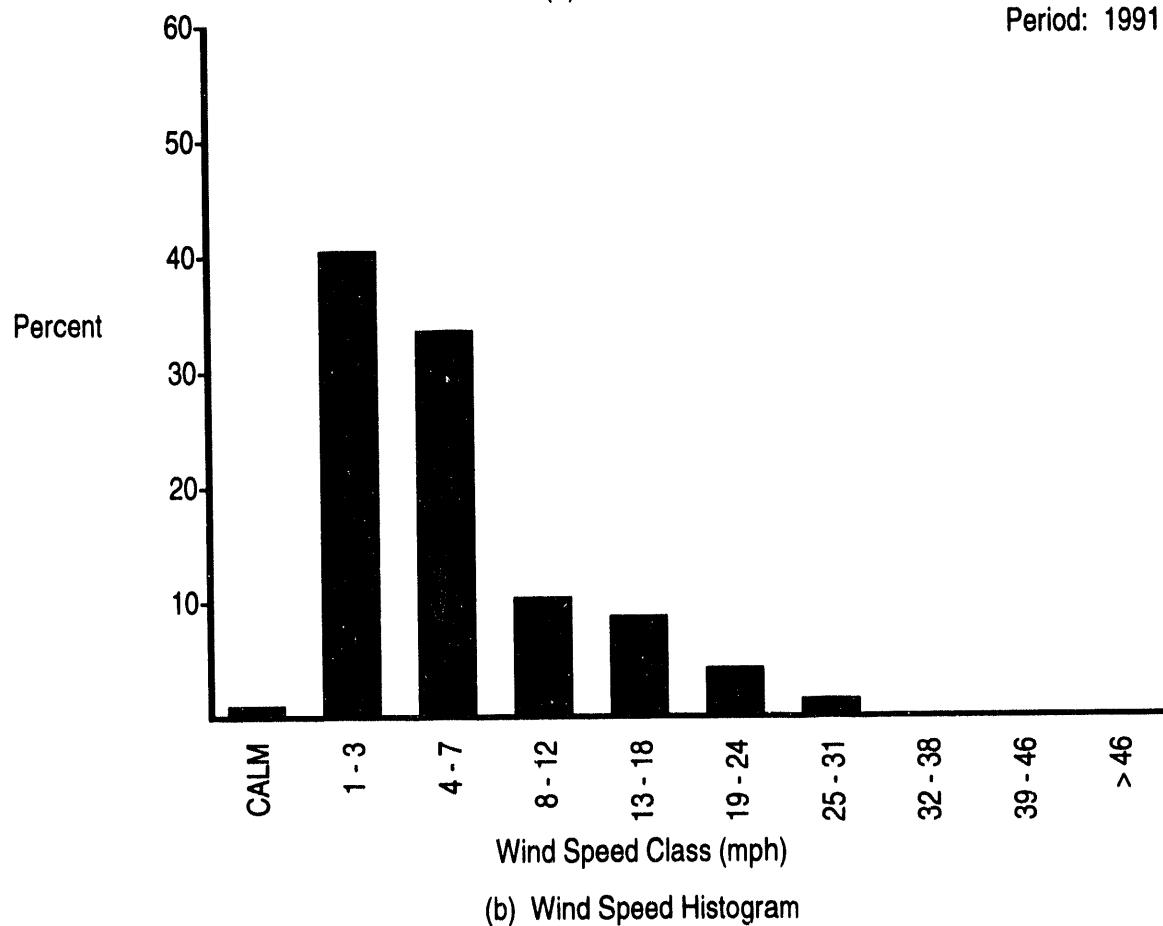


(b) Wind Speed Histogram

FIGURE B.1. (contd)

N
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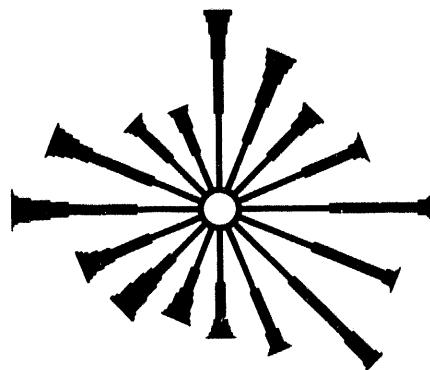
(a) Wind Rose

December Data
Period: 1991 - 1993

(b) Wind Speed Histogram

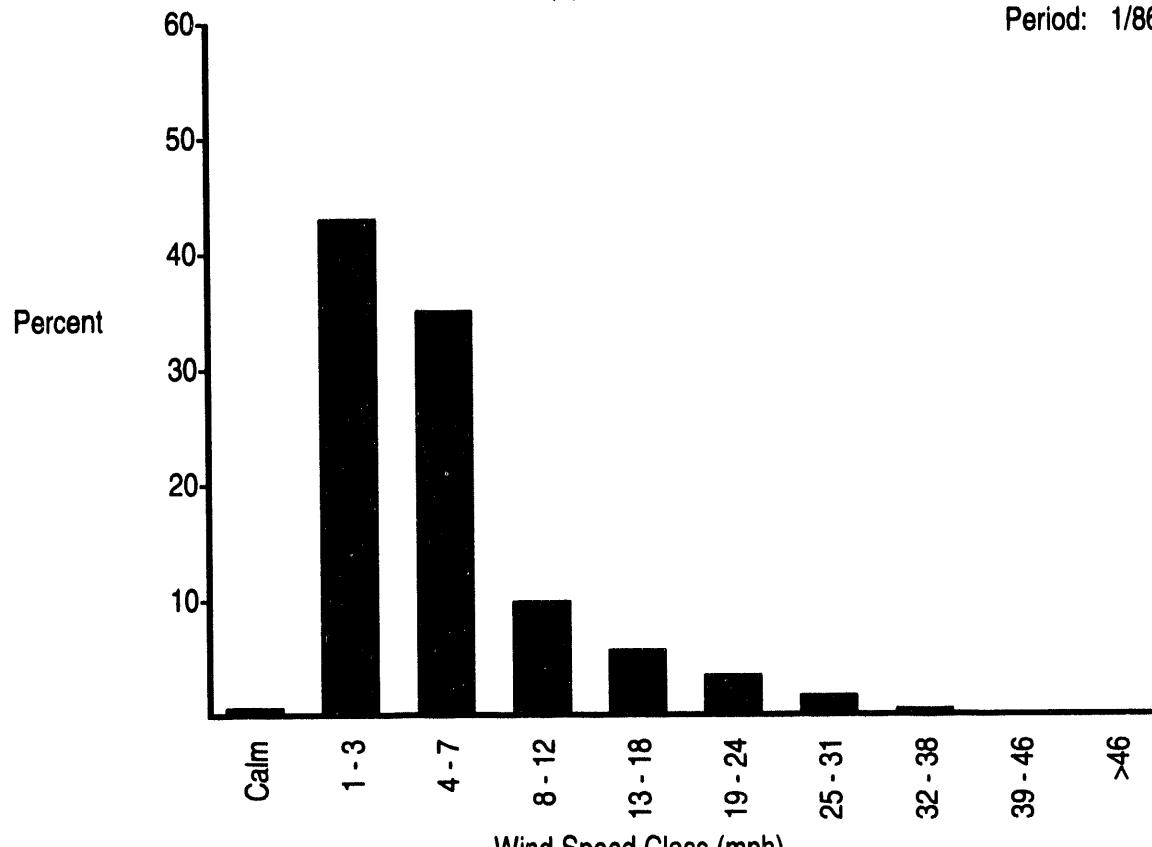
FIGURE B.1. (contd)

N
↑



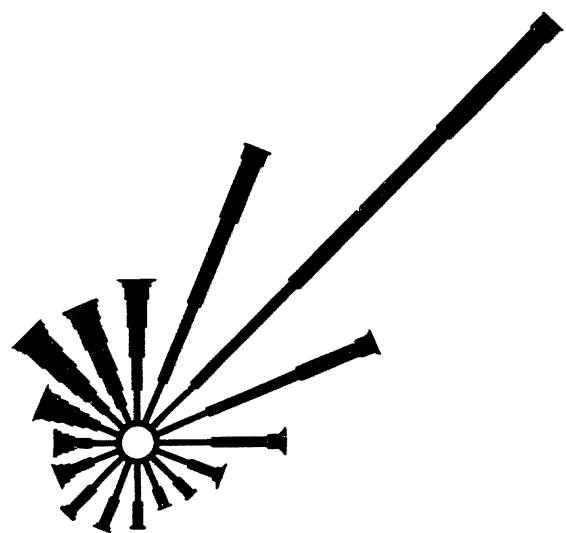
(a) Wind Rose

January Data
Period: 1/86 - 12/93



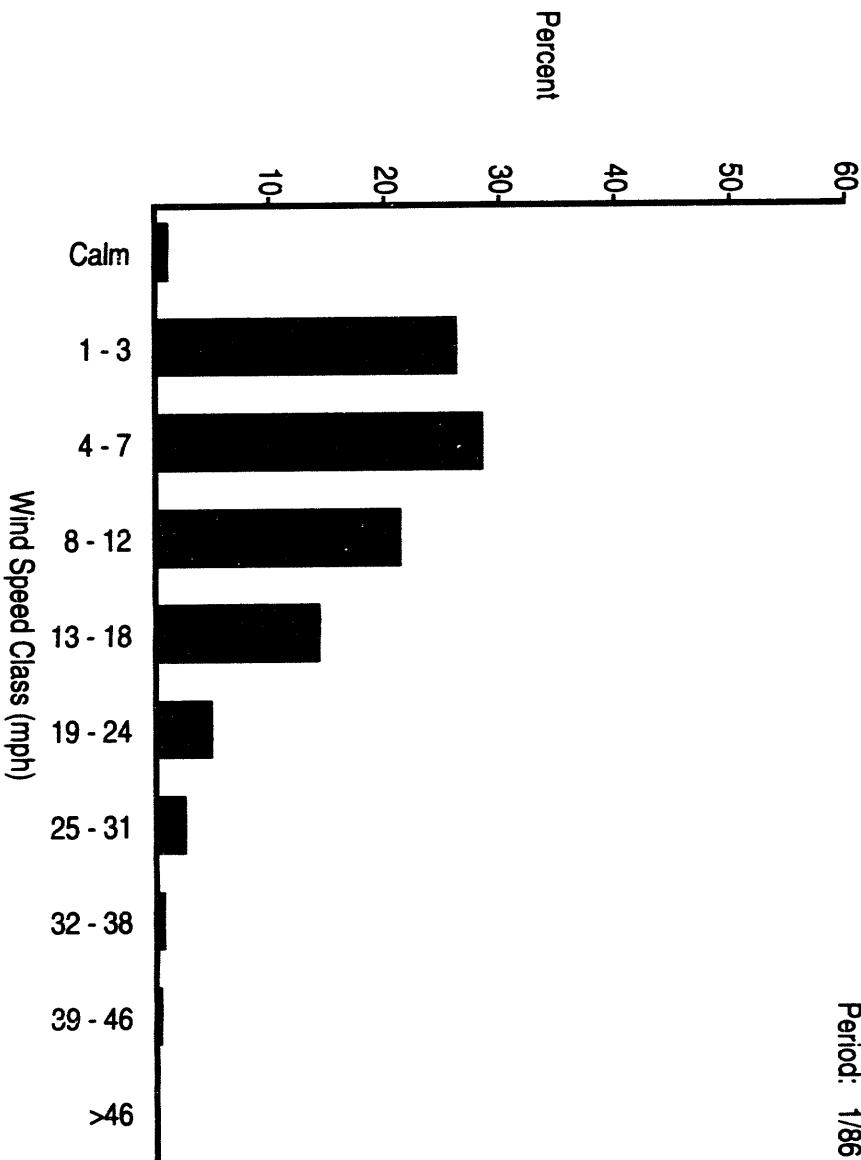
(b) Wind Speed Histogram

FIGURE B.2. Wind Rose and Wind Speed Histogram (60 m)



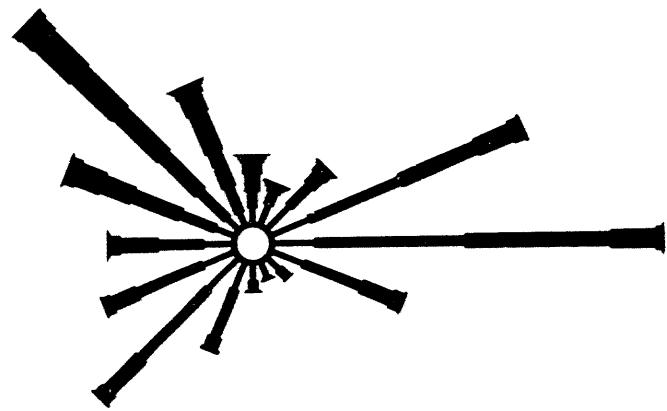
→ N

(a) Wind Rose
January Data
Period: 1/86 - 12/93

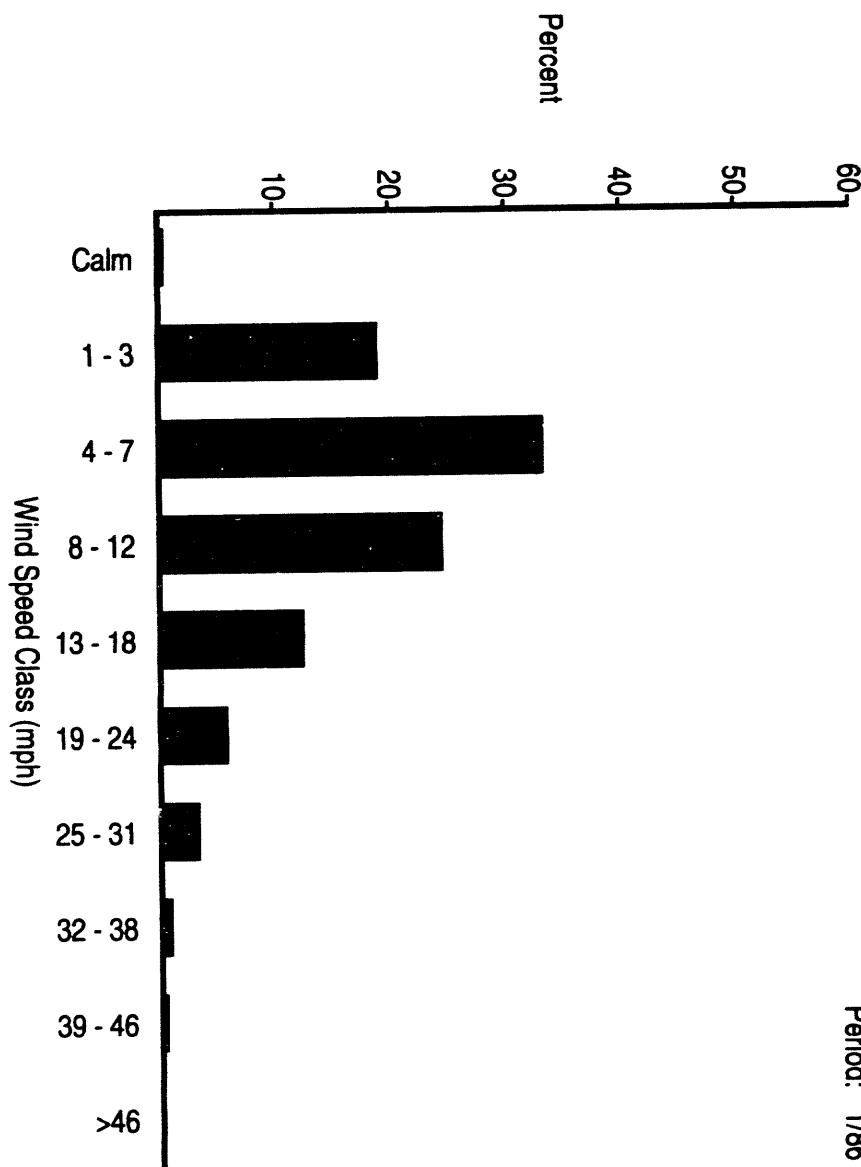


(b) Wind Speed Histogram
FIGURE B.2. (contd)

January Data
Period: 1/86 - 12/93

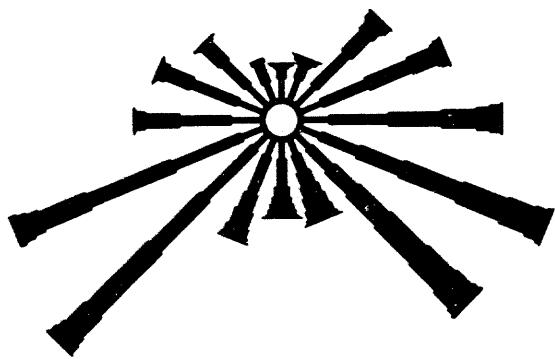


(a) Wind Rose



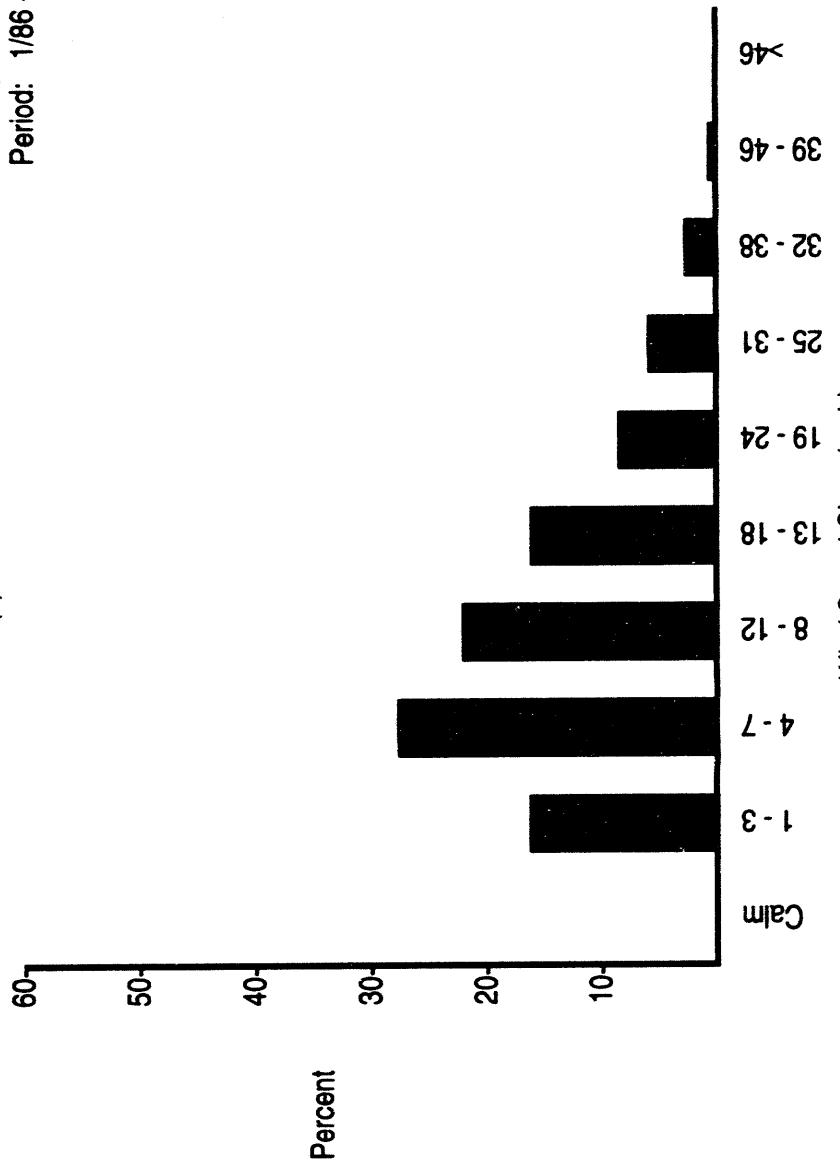
(b) Wind Speed Histogram

N 



(a) Wind Rose

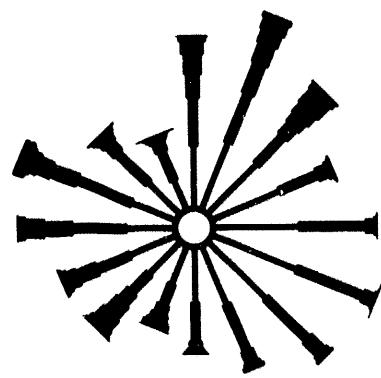
January Data
Period: 1/86 - 12/93



(b) Wind Speed Histogram

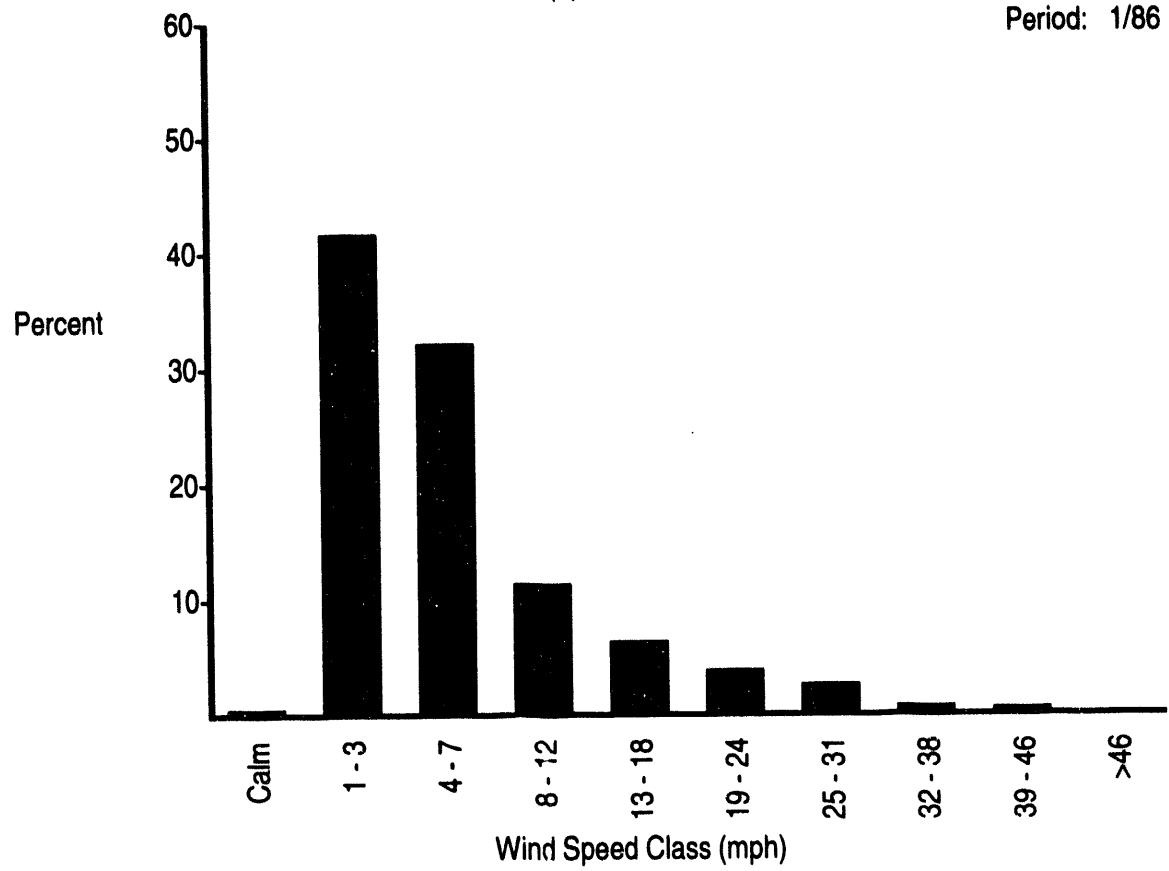
FIGURE B.2. (contd)

N
↑



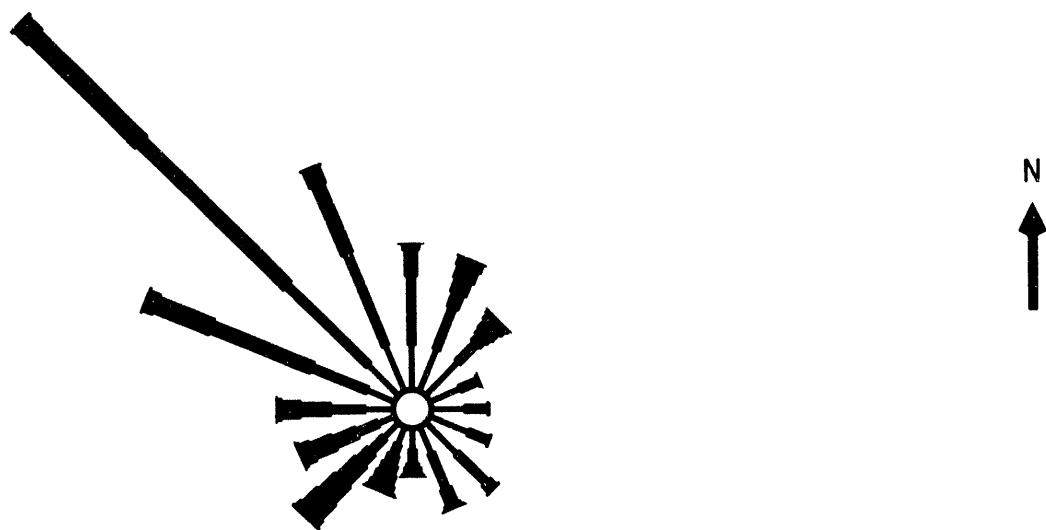
(a) Wind Rose

February Data
Period: 1/86 - 12/93



(b) Wind Speed Histogram

FIGURE B.2. (contd)



(a) Wind Rose

February Data
Period: 1/86 - 12/93

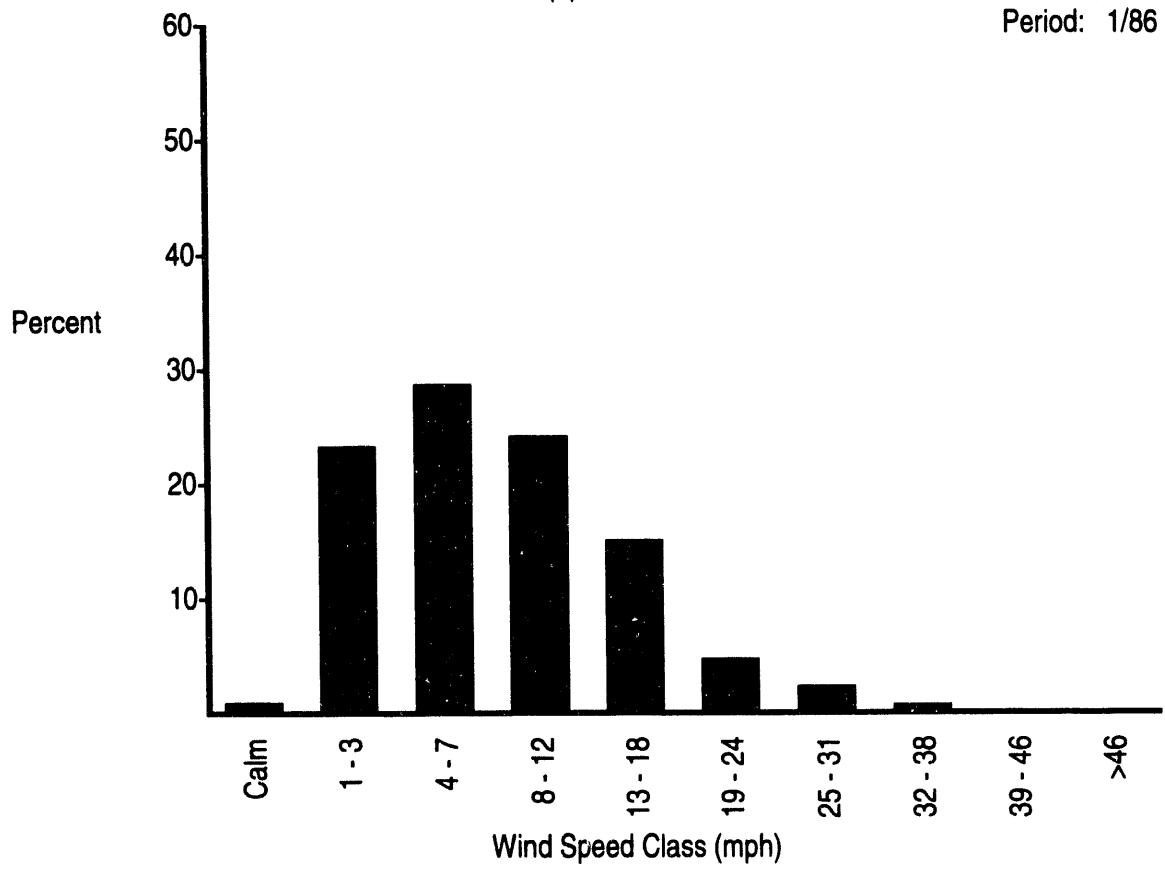
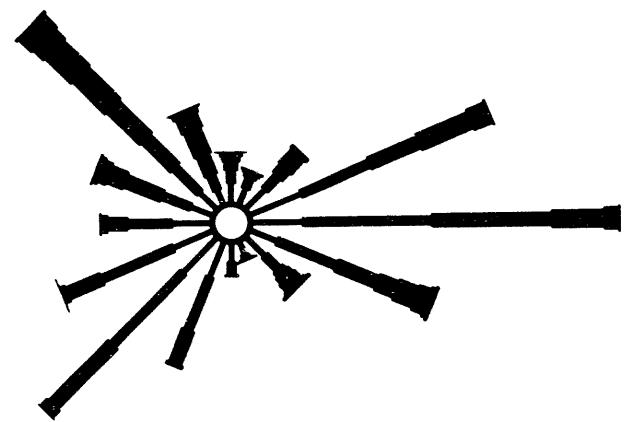
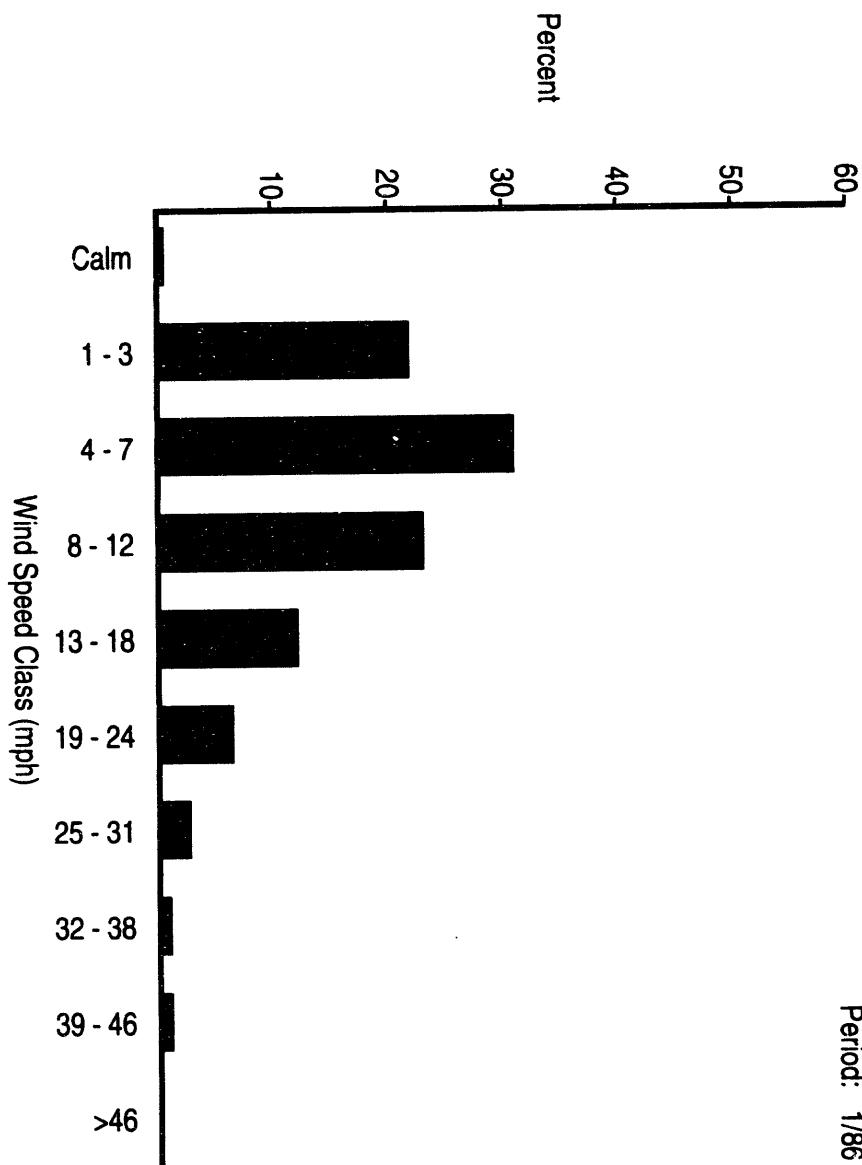


FIGURE B.2. (contd)

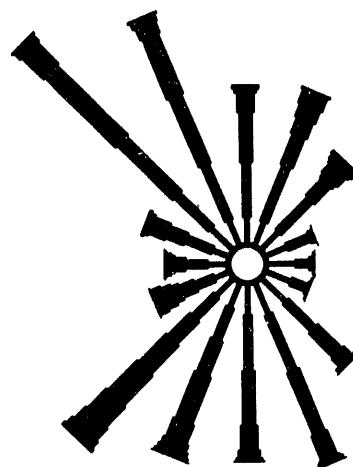


↑ N

(a) Wind Rose
February Data
Period: 1/86 - 12/93

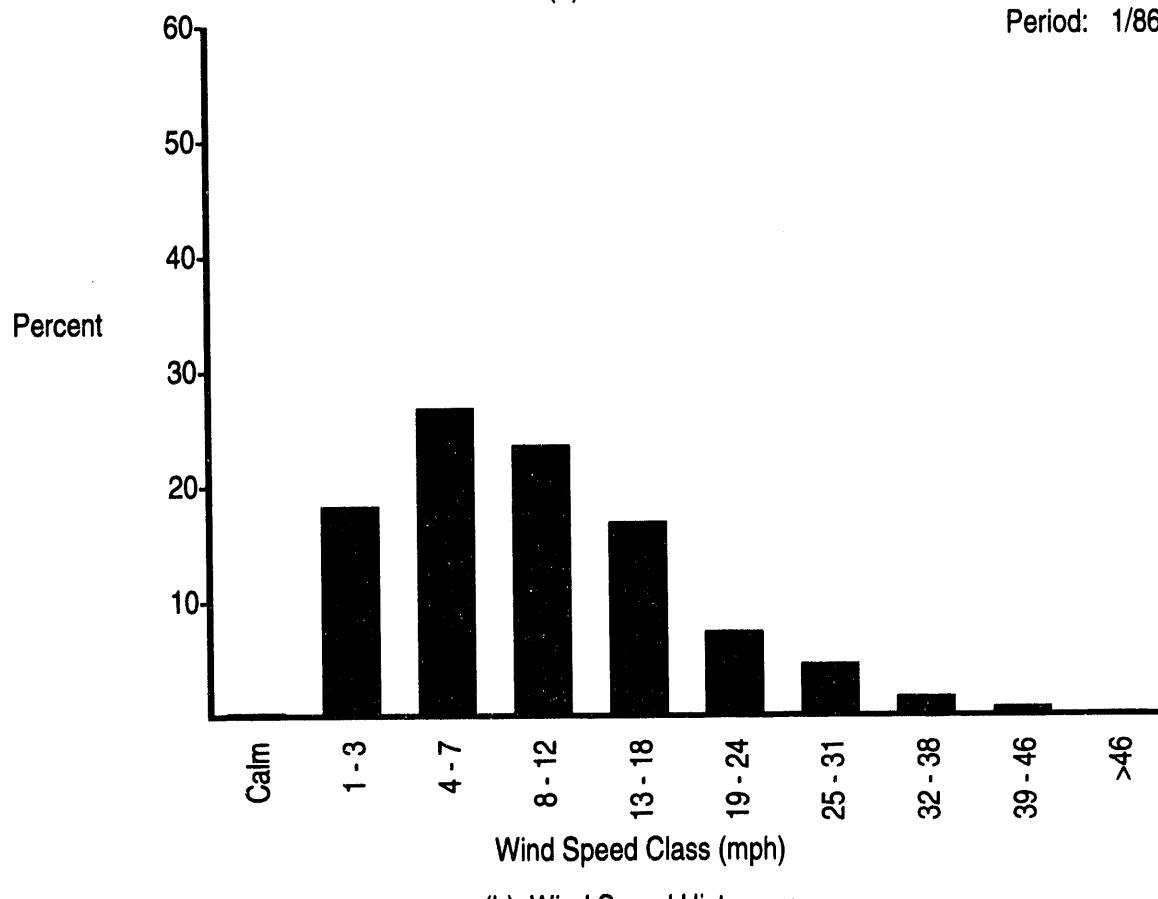


(b) Wind Speed Histogram
FIGURE B.2. (contd)



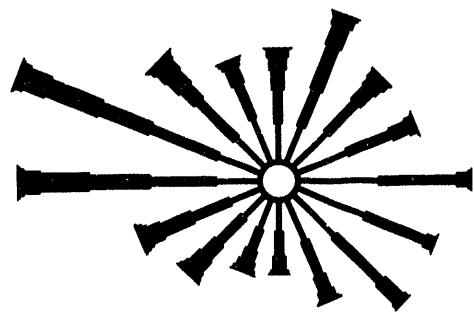
(a) Wind Rose

February Data
Period: 1/86 - 12/93

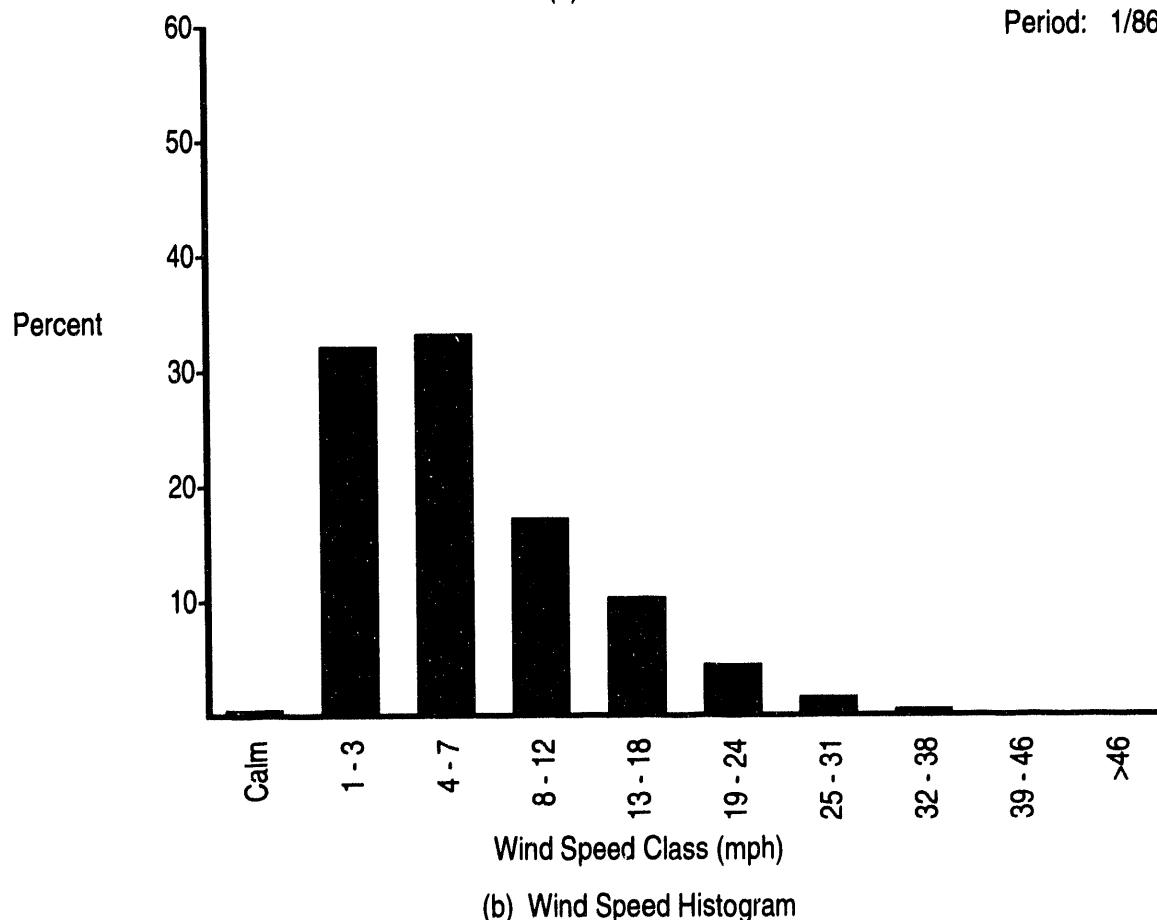


(b) Wind Speed Histogram

FIGURE B.2. (contd)

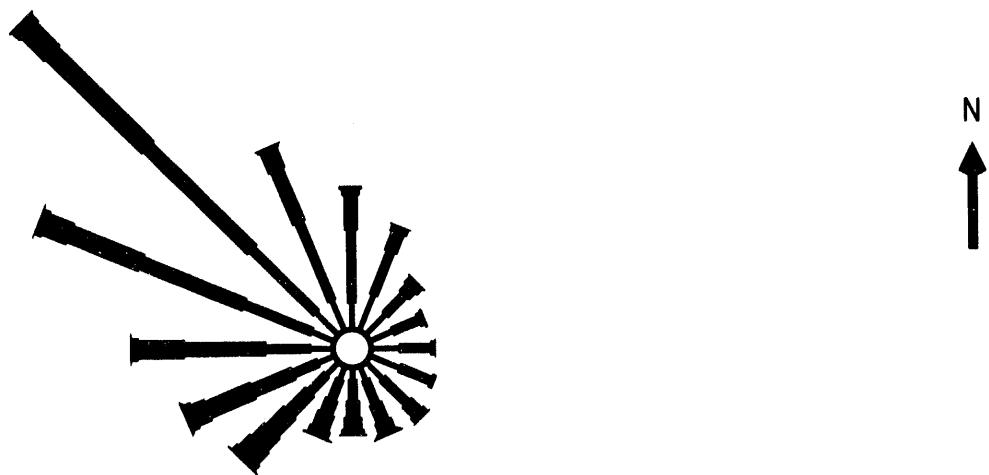
N
↑

(a) Wind Rose

March Data
Period: 1/86 - 12/93

(b) Wind Speed Histogram

FIGURE B.2. (contd)



(a) Wind Rose

March Data
Period: 1/86 - 12/93

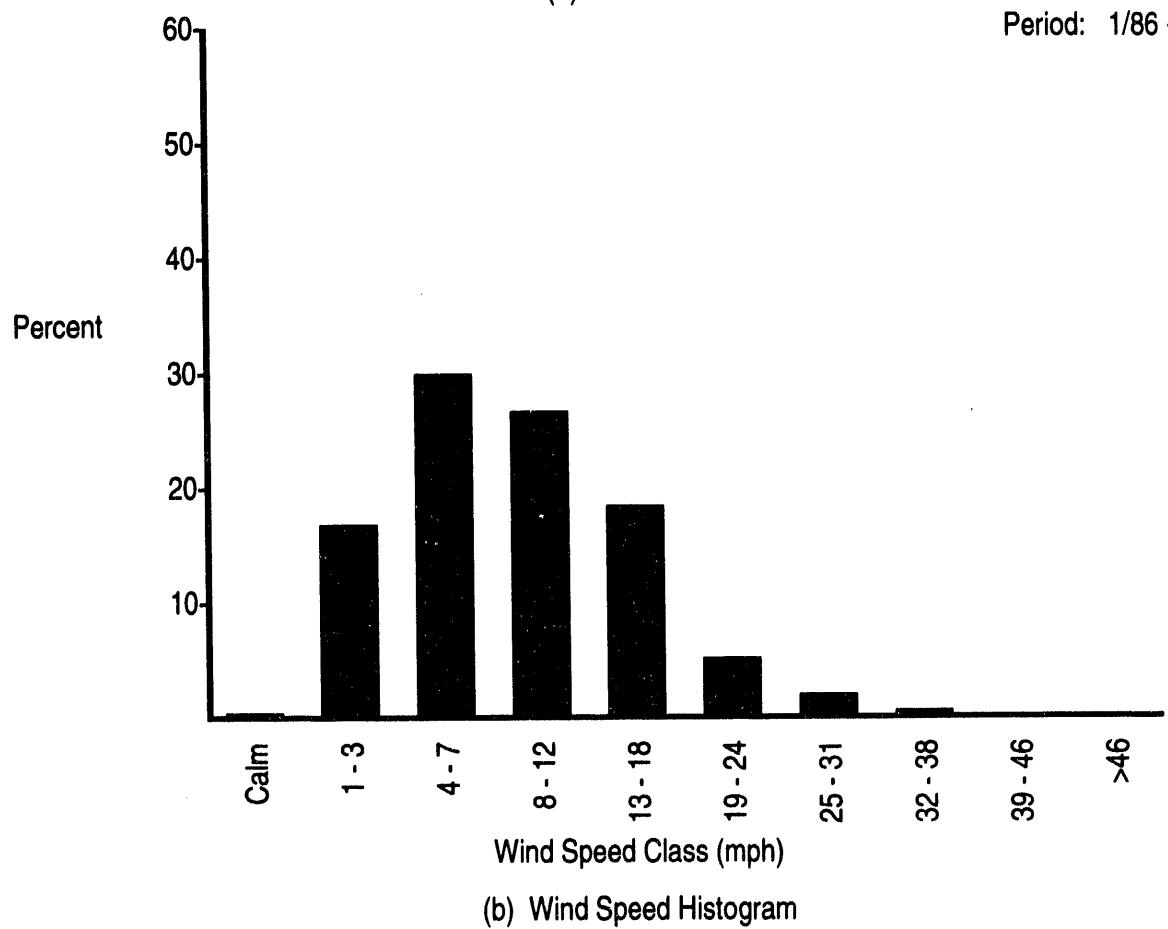
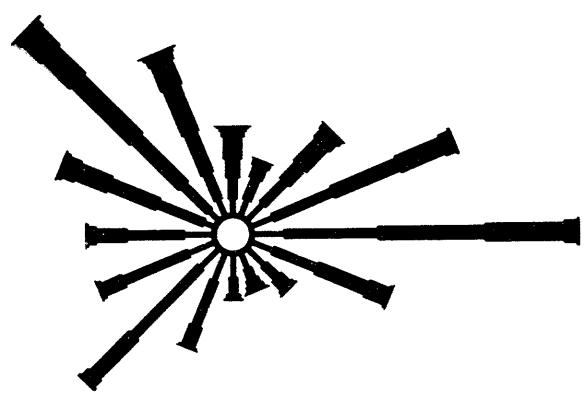
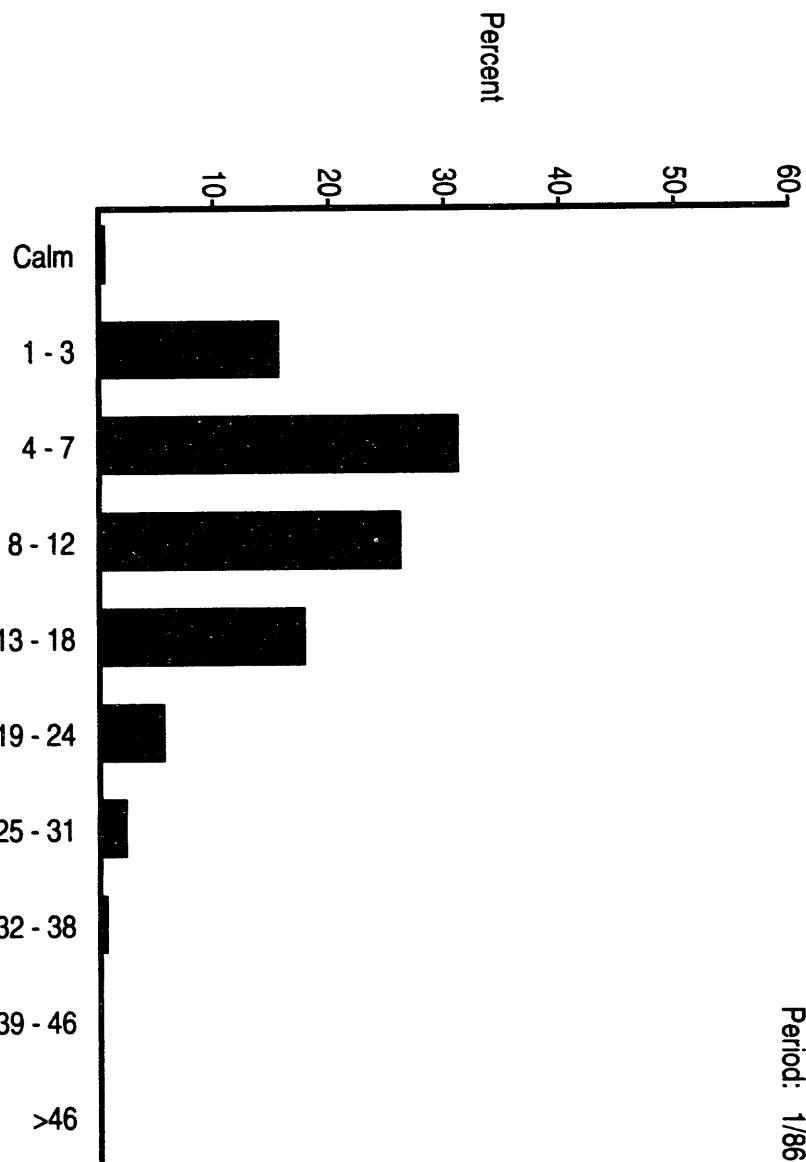


FIGURE B.2. (contd)

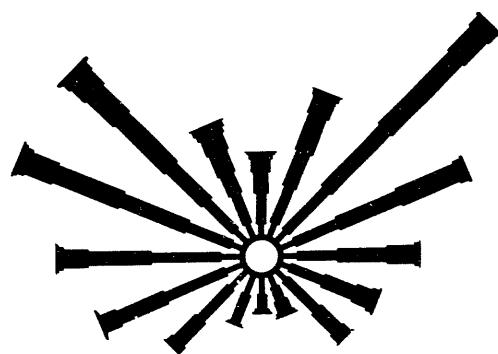


→ N

(a) Wind Rose
March Data
Period: 1/86 - 12/93

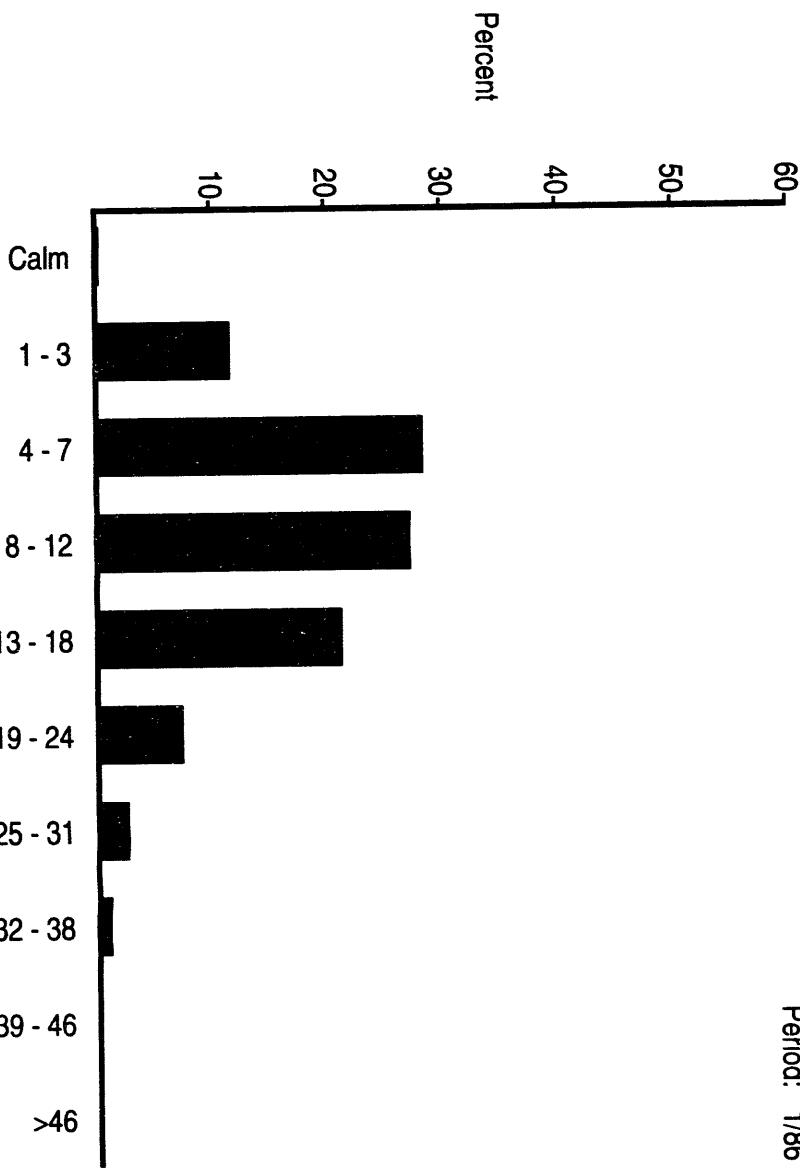


(b) Wind Speed Histogram
FIGURE B.2. (contd)



→ N

(a) Wind Rose
March Data
Period: 1/86 - 12/93

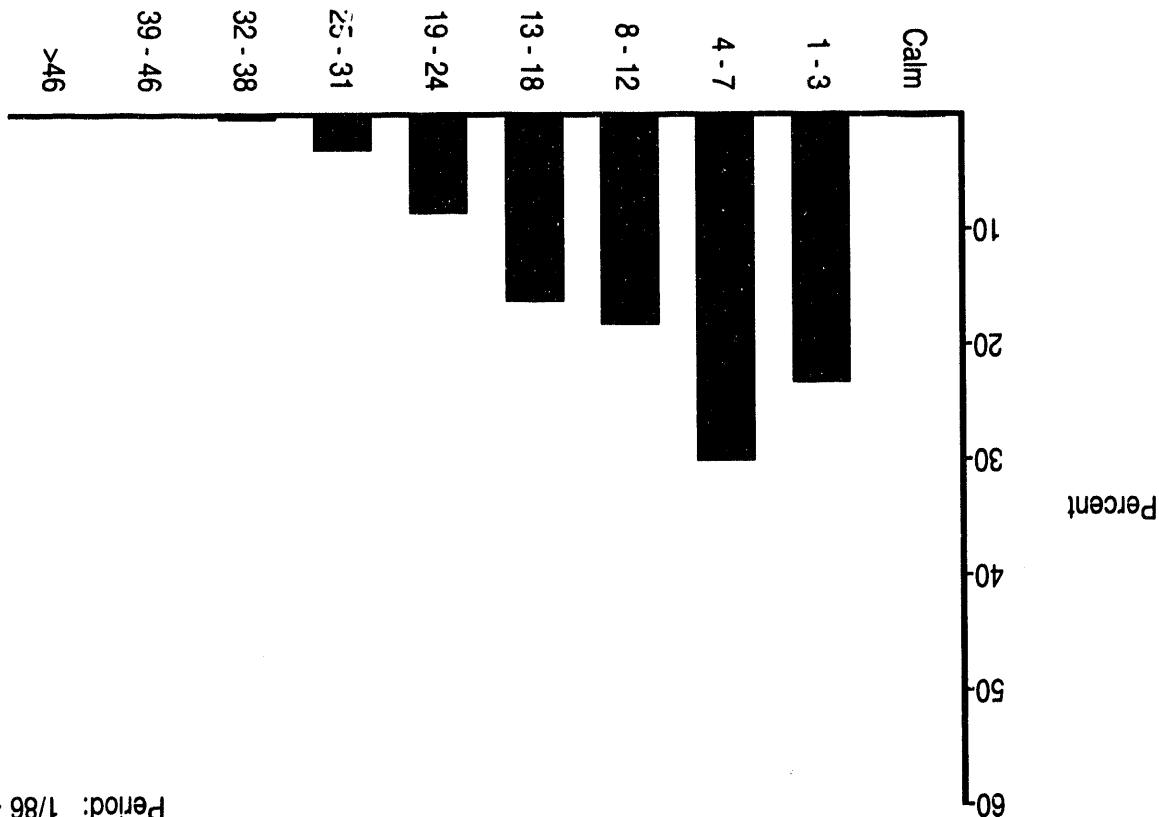


(b) Wind Speed Histogram
FIGURE B.2. (contd)

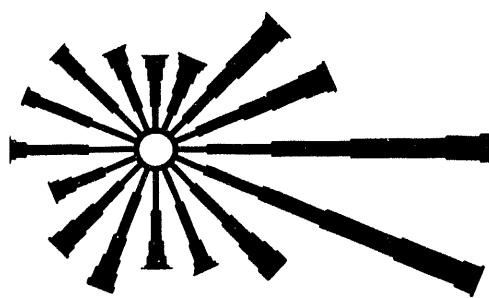
FIGURE B.2. (contd)

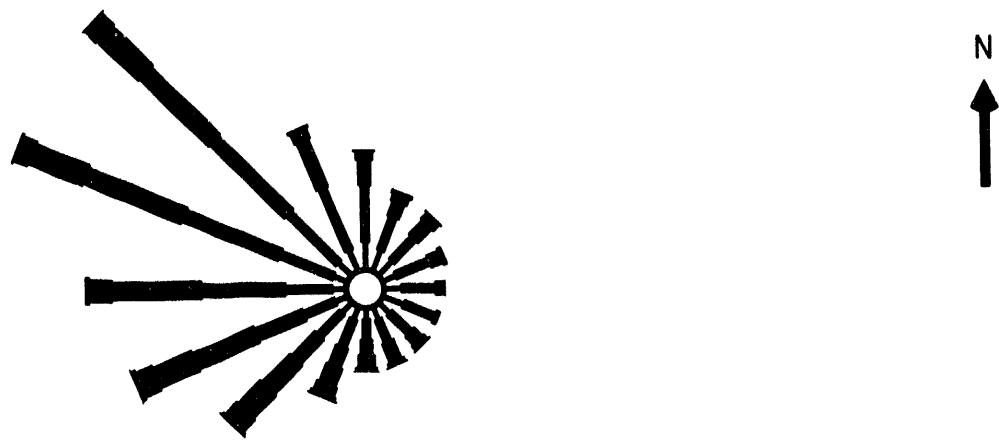
(b) Wind Speed Histogram

Wind Speed Class (mph)



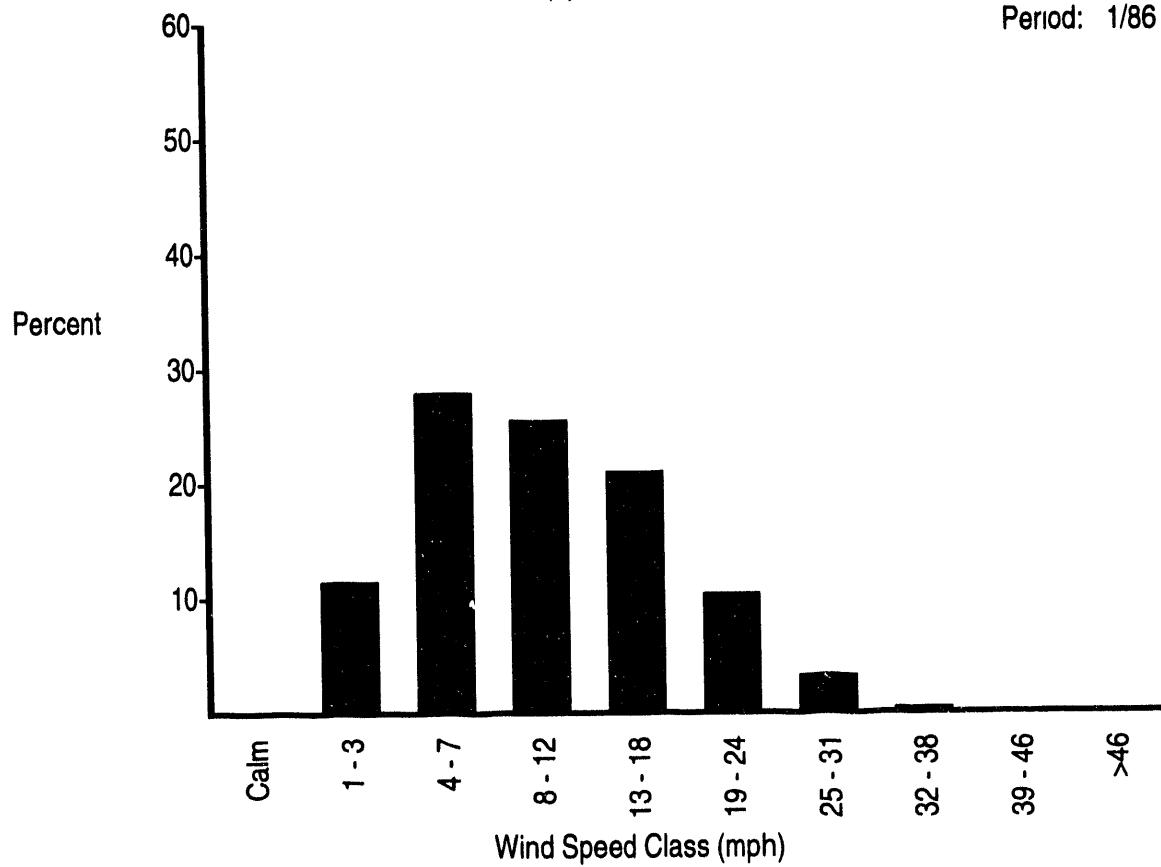
(a) Wind Rose

April Data
Period: 1/86 - 12/93



(a) Wind Rose

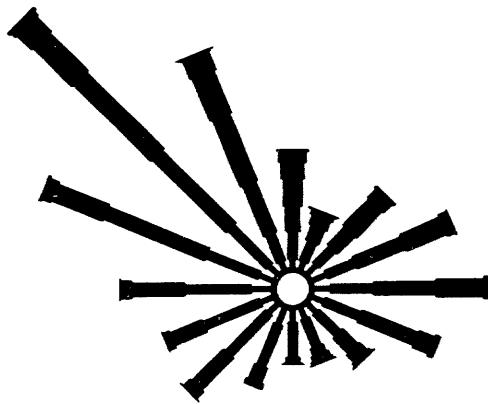
April Data
Period: 1/86 - 12/93



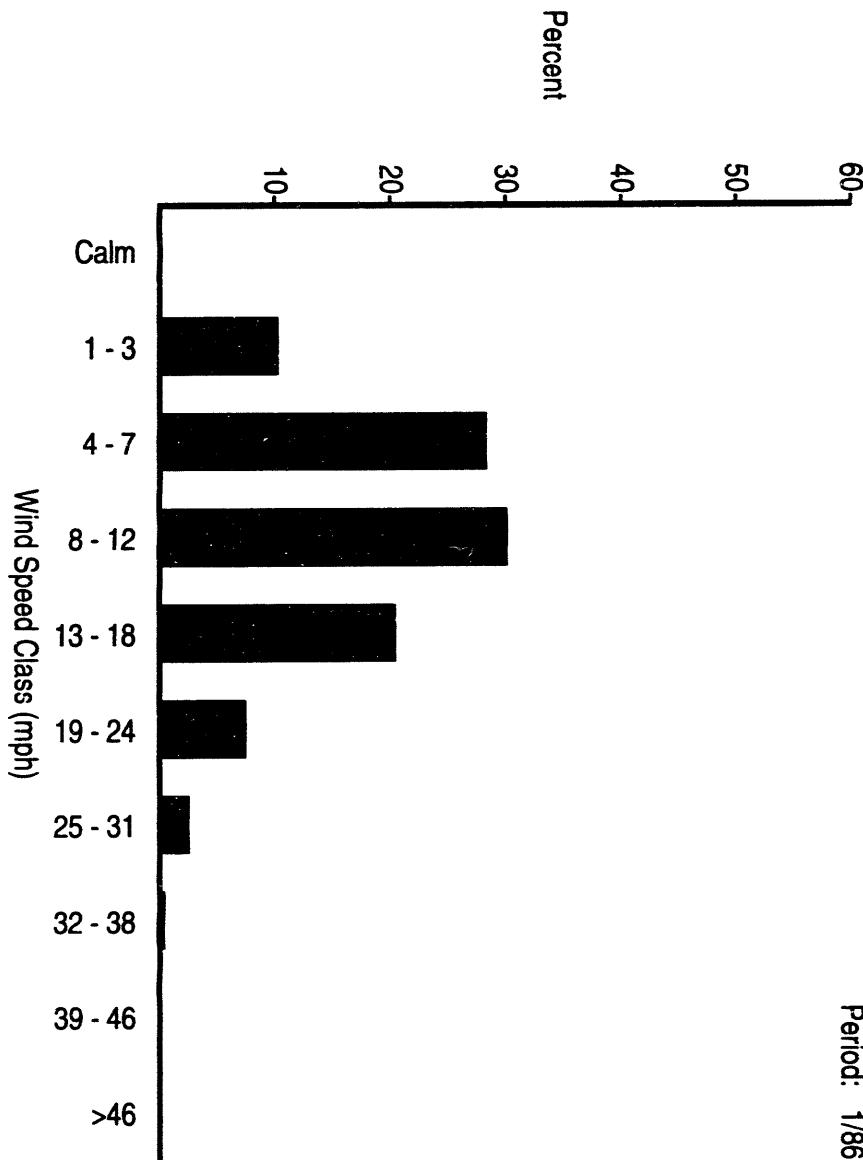
(b) Wind Speed Histogram

FIGURE B.2. (contd)

April Data
Period: 1/86 - 12/93



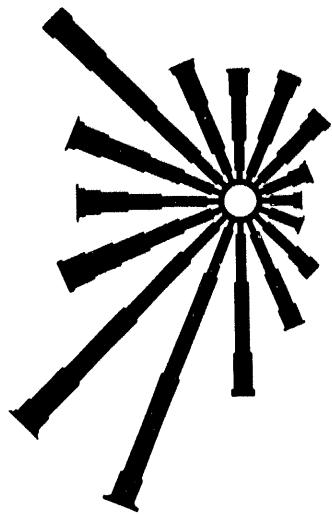
(a) Wind Rose



(b) Wind Speed Histogram

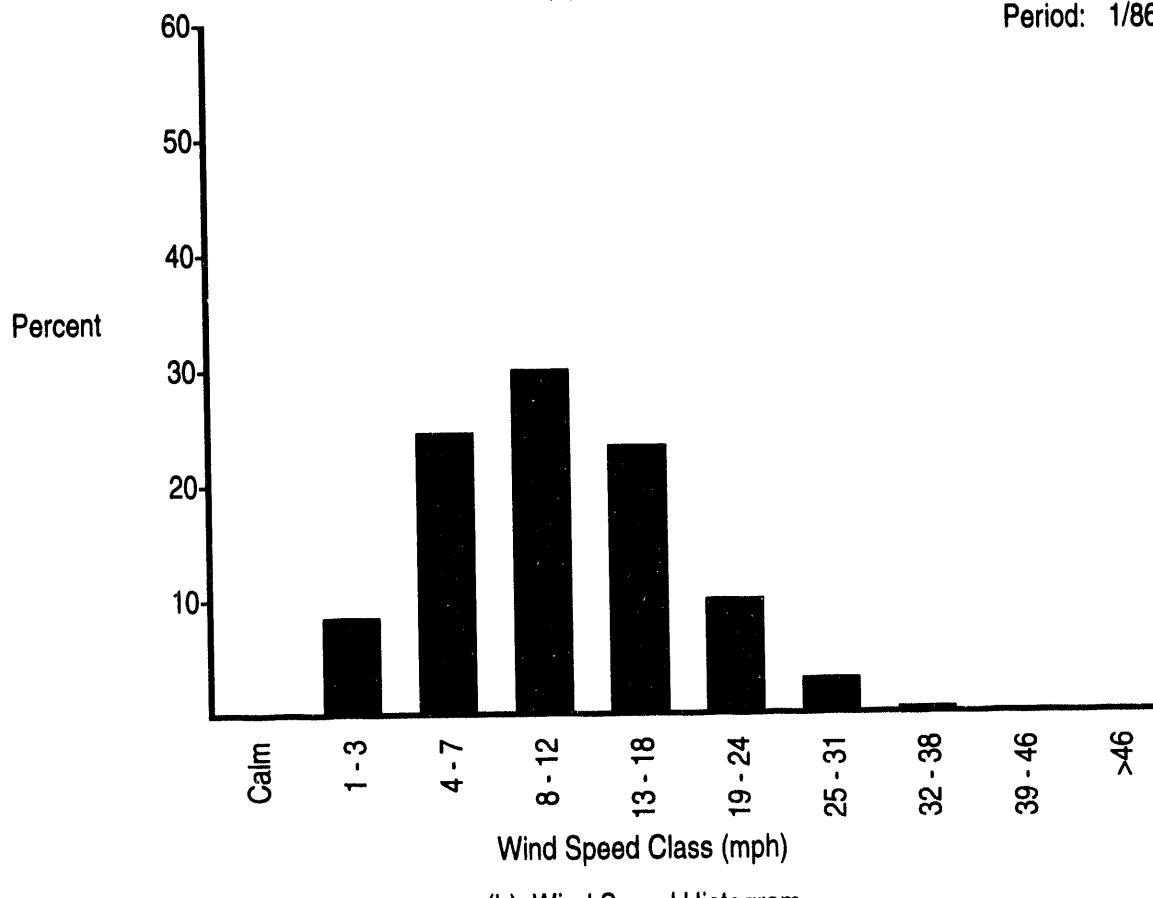
FIGURE B.2. (contd)

N



(a) Wind Rose

April Data
Period: 1/86 - 12/93



(b) Wind Speed Histogram

FIGURE B.2. (contd)

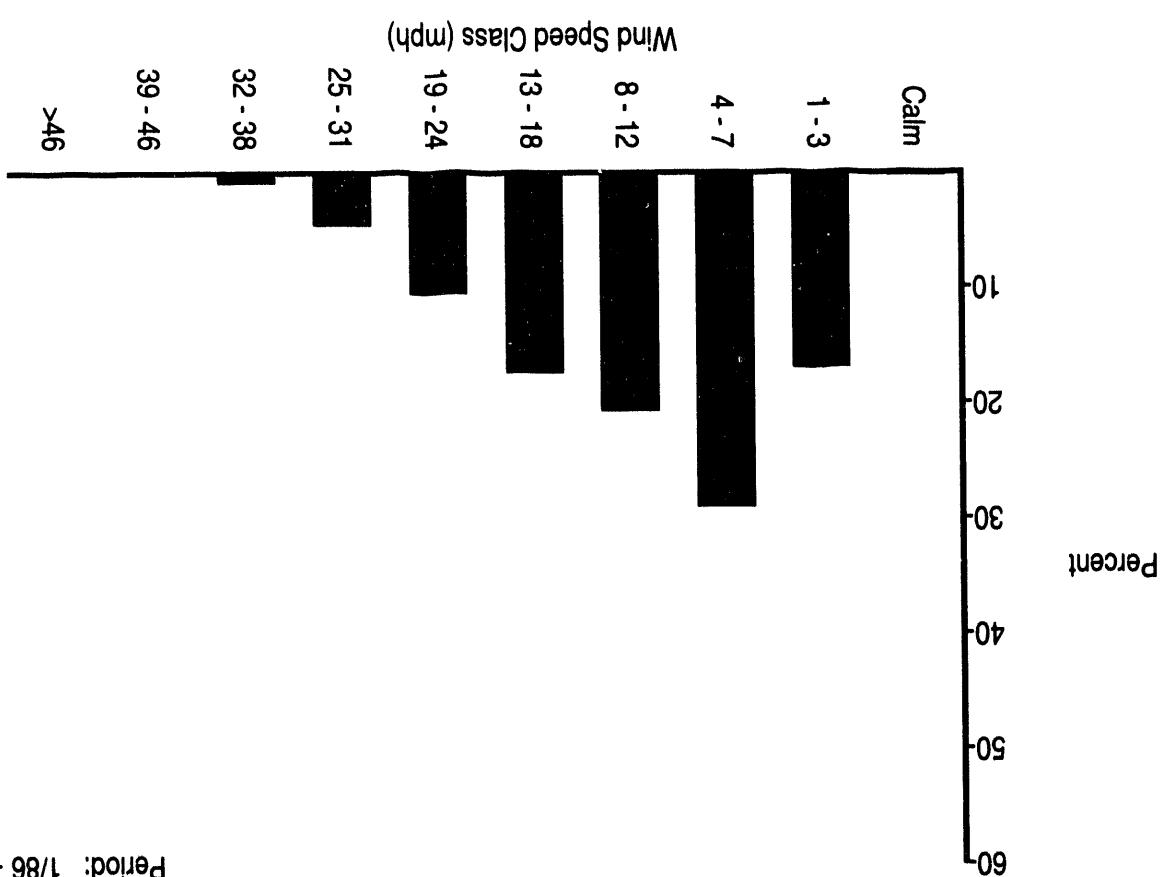


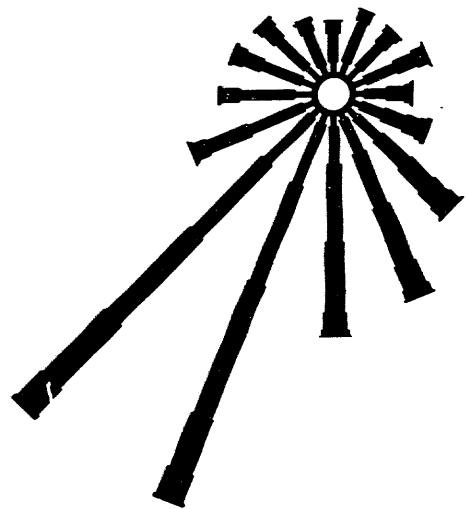
→
N

100 AREA TOWER

FIGURE B.2. (contd)

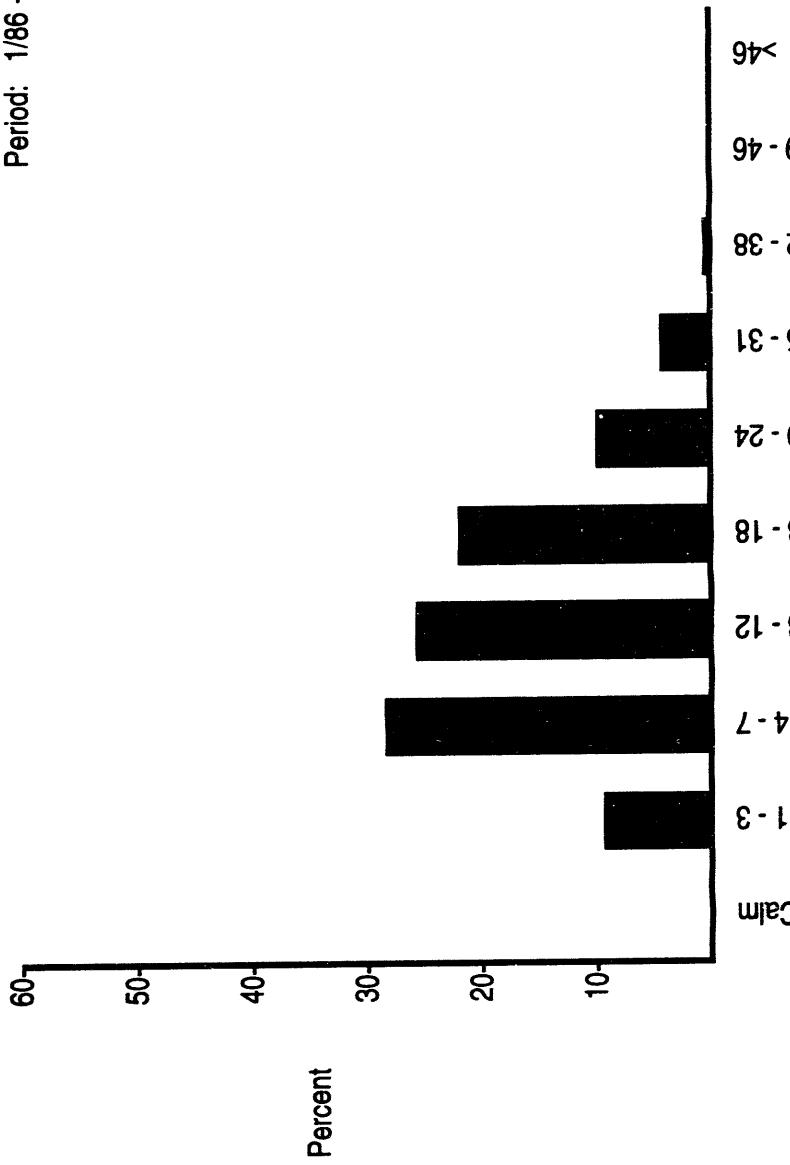
(b) Wind Speed Histogram



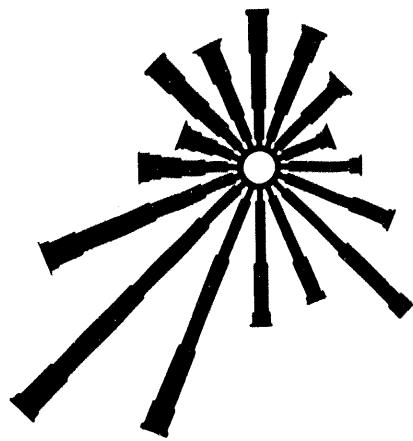


(a) Wind Rose

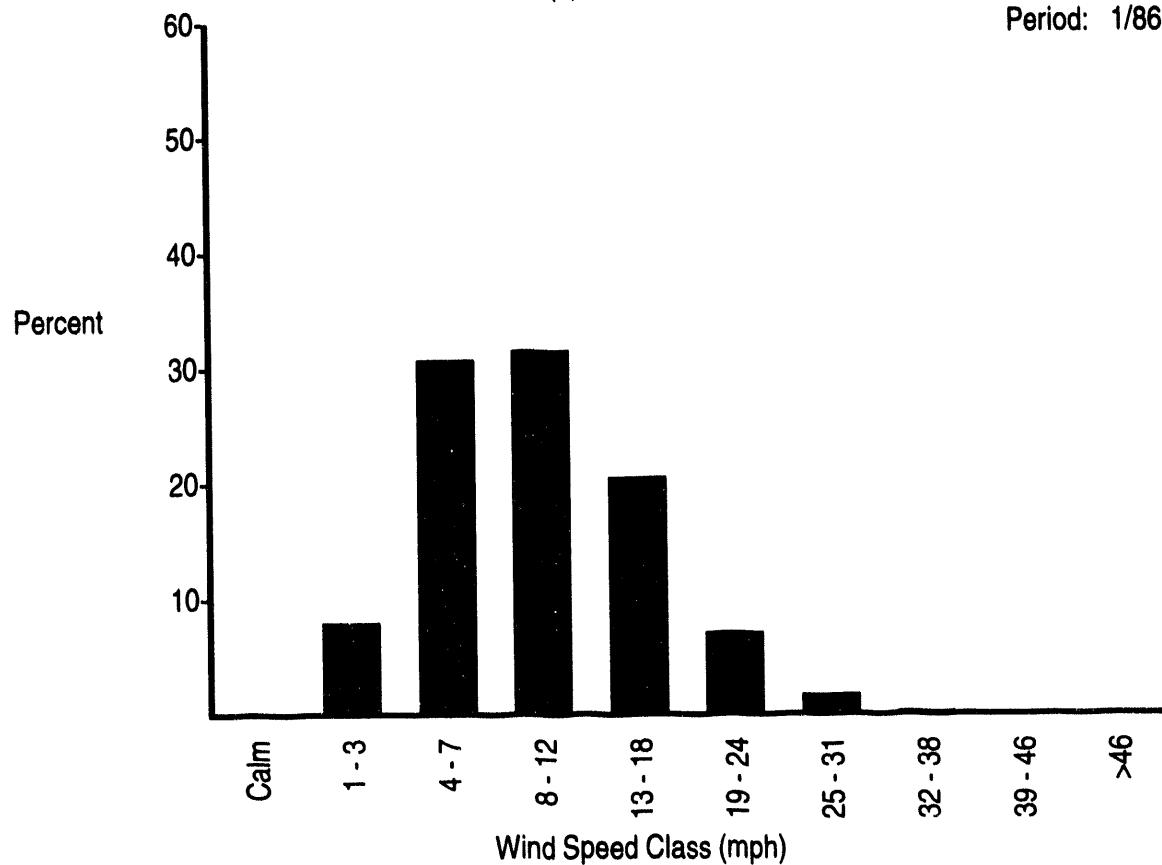
May Data
Period: 1/86 - 12/93



Wind Speed Class (mph)
(b) Wind Speed Histogram
FIGURE B.2. (contd)

N
↑

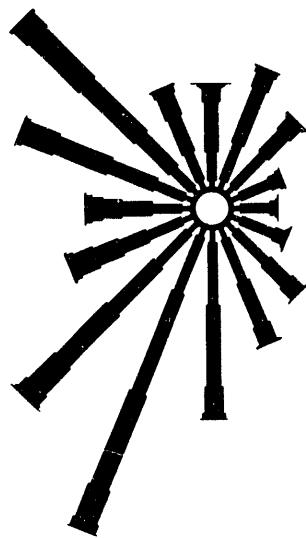
(a) Wind Rose

May Data
Period: 1/86 - 12/93

(b) Wind Speed Histogram

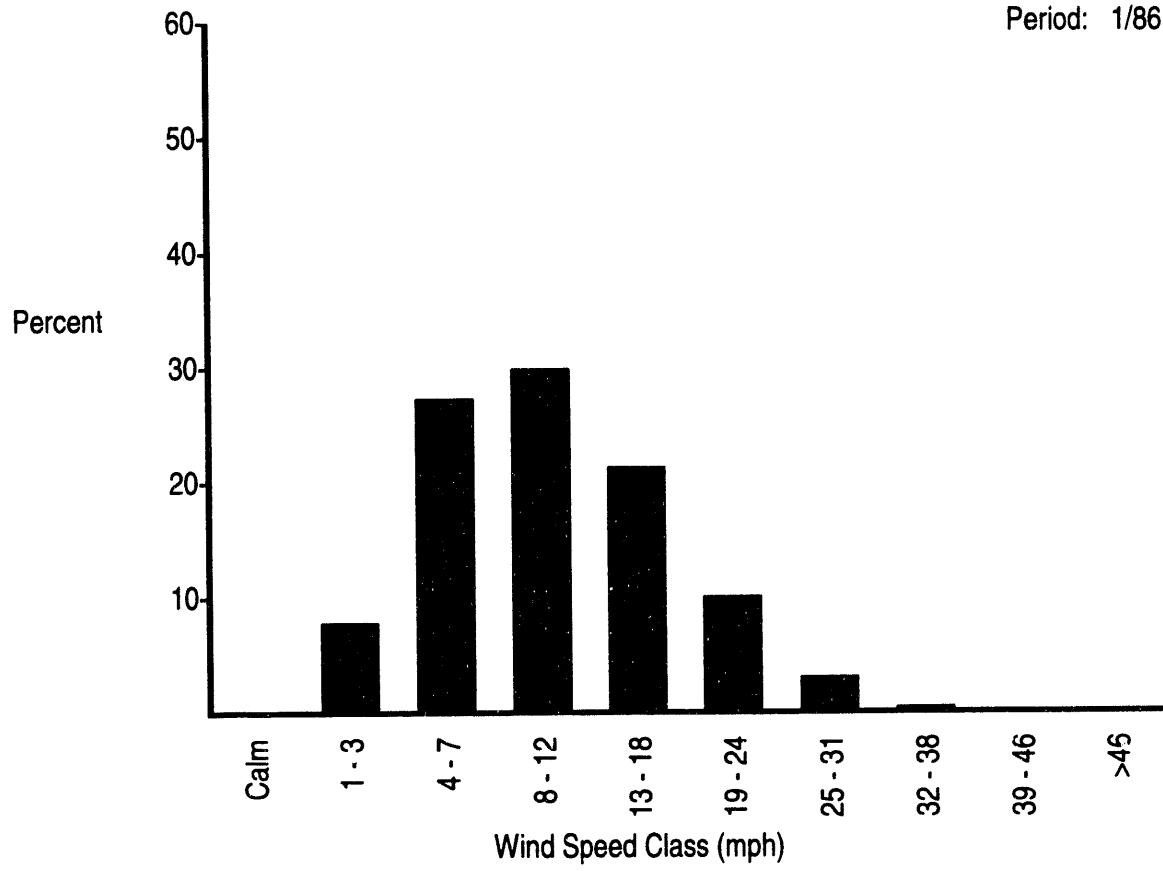
FIGURE B.2. (contd)

N
↑



(a) Wind Rose

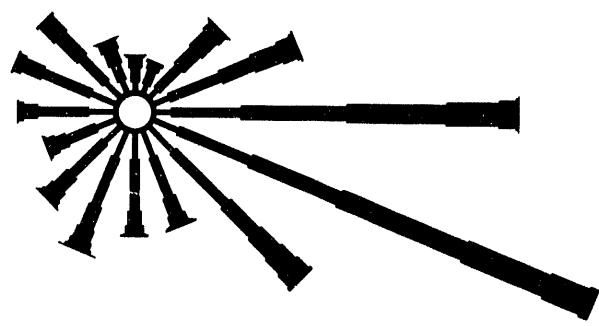
May Data
Period: 1/86 - 12/93



(b) Wind Speed Histogram

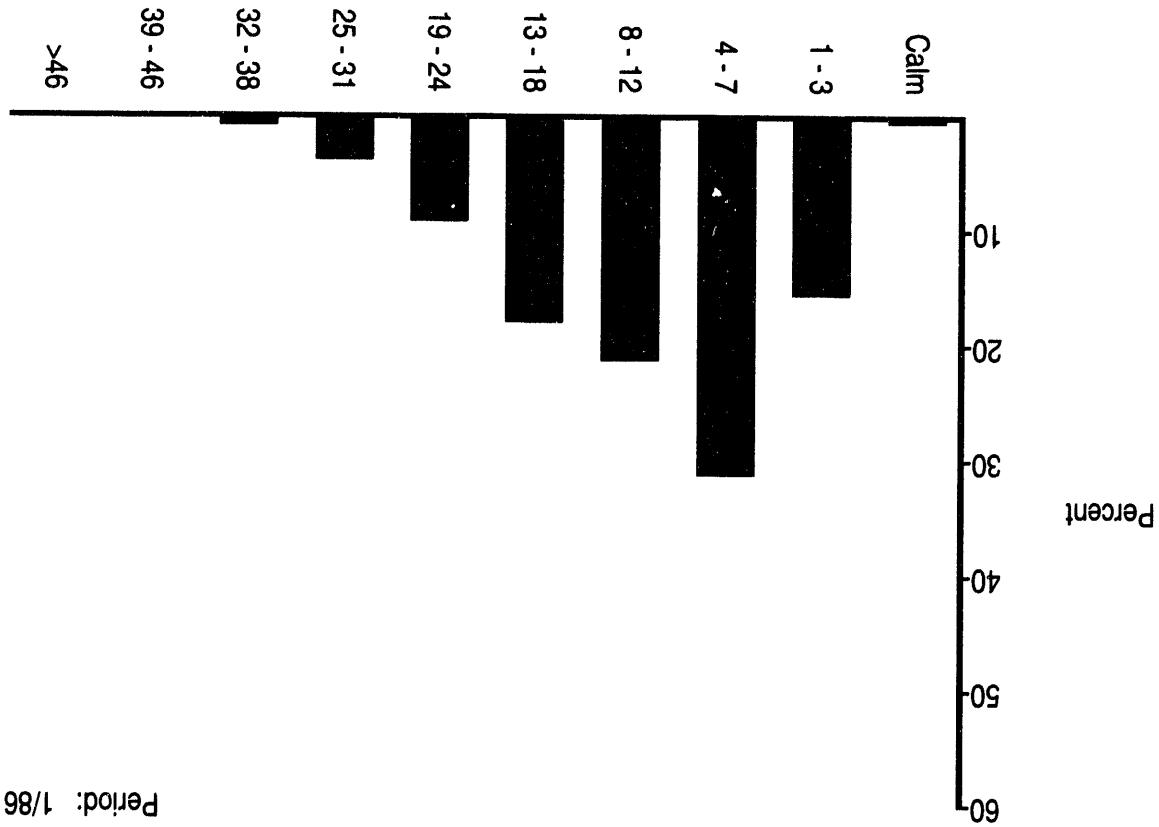
FIGURE B.2. (contd)

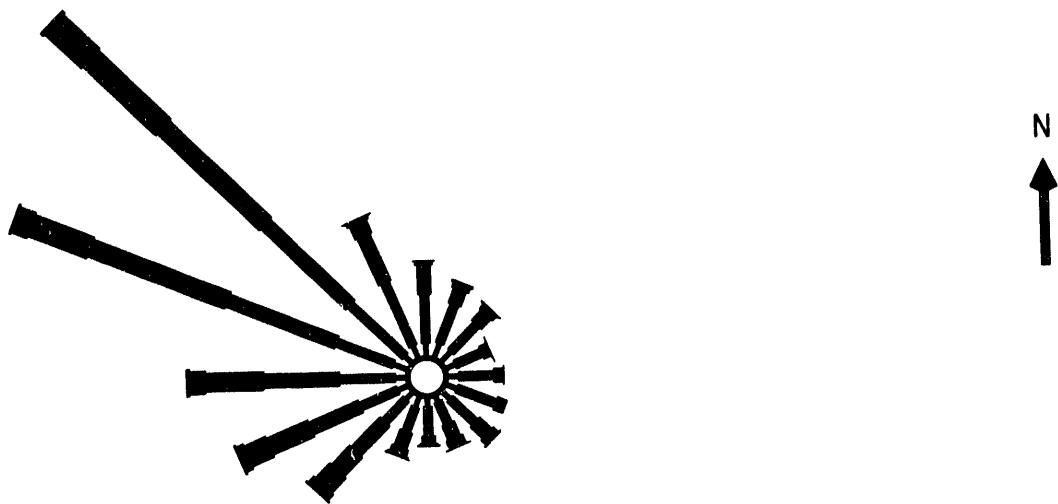
Period: 1/86 - 12/93
 June Data
 (a) Wind Rose



N

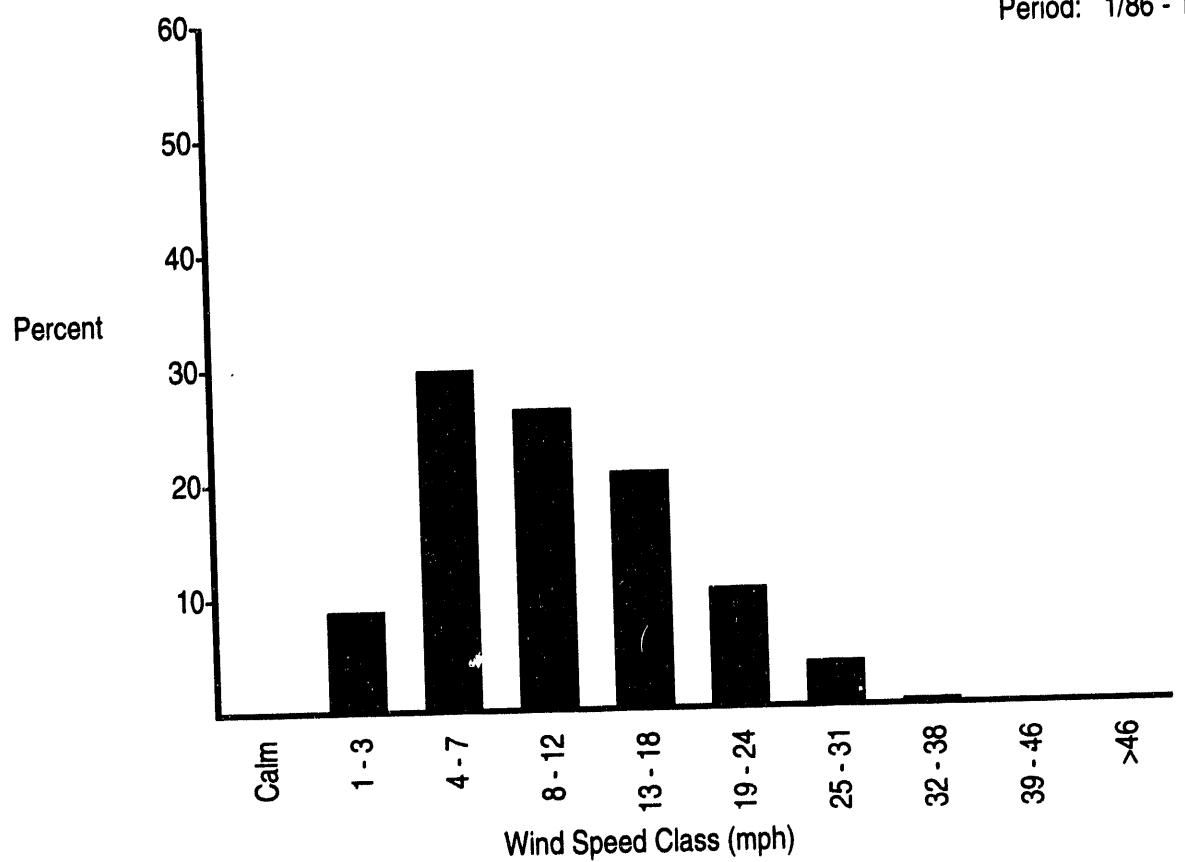
FIGURE B.2. (contd)
 (b) Wind Speed Histogram
 Wind Speed Class (mph)





(a) Wind Rose

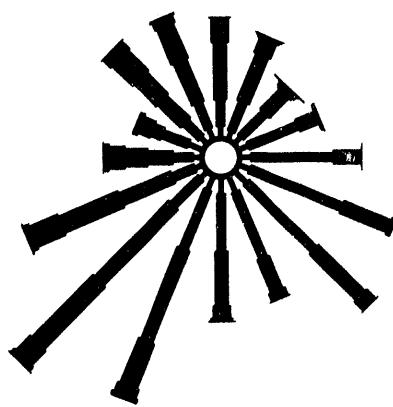
June Data
Period: 1/86 - 12/93



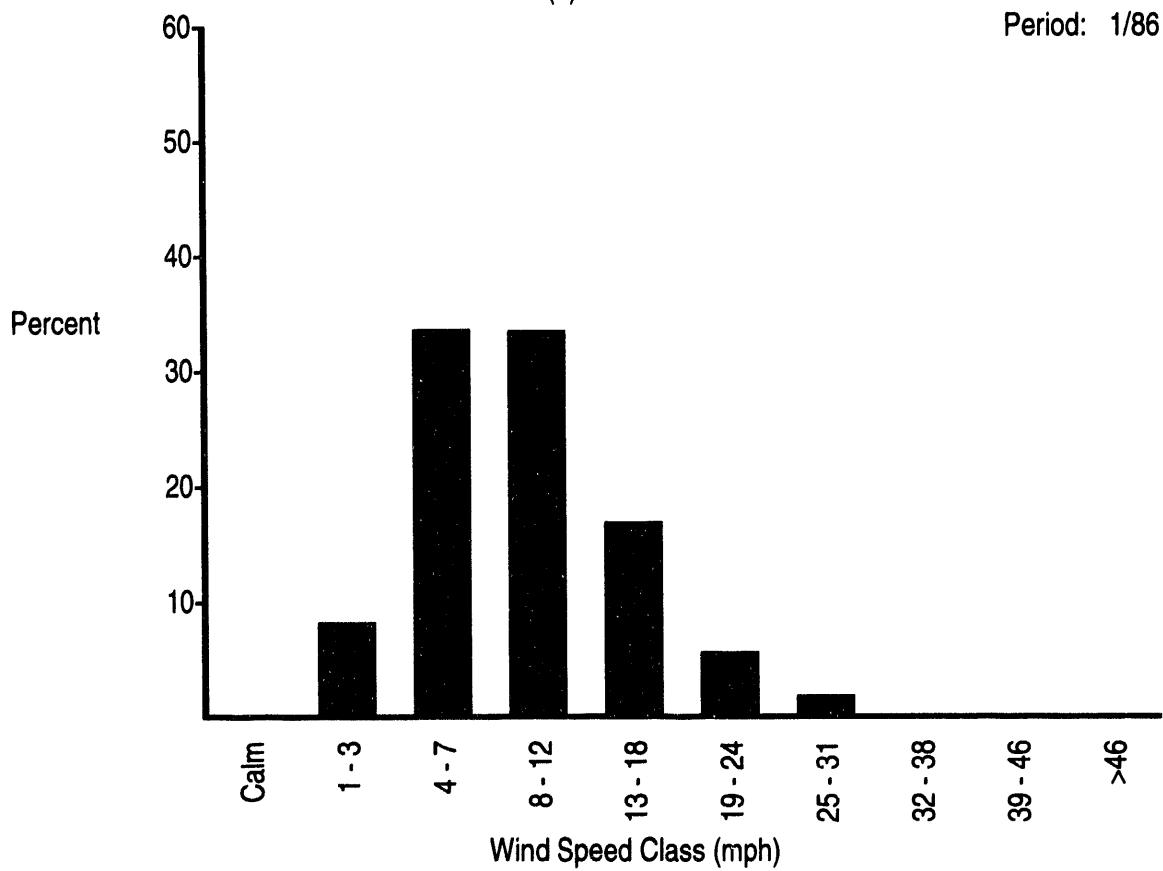
(b) Wind Speed Histogram

FIGURE B.2. (contd)

N

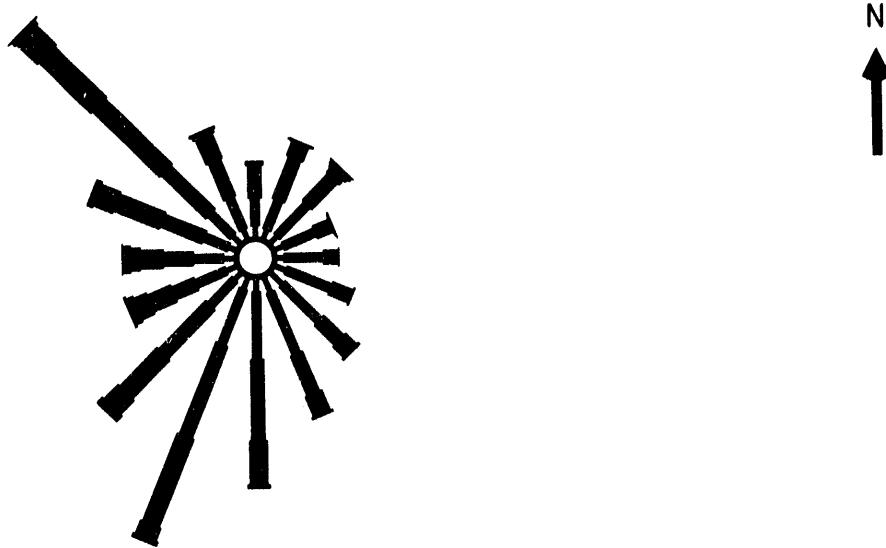


(a) Wind Rose

June Data
Period: 1/86 - 12/93

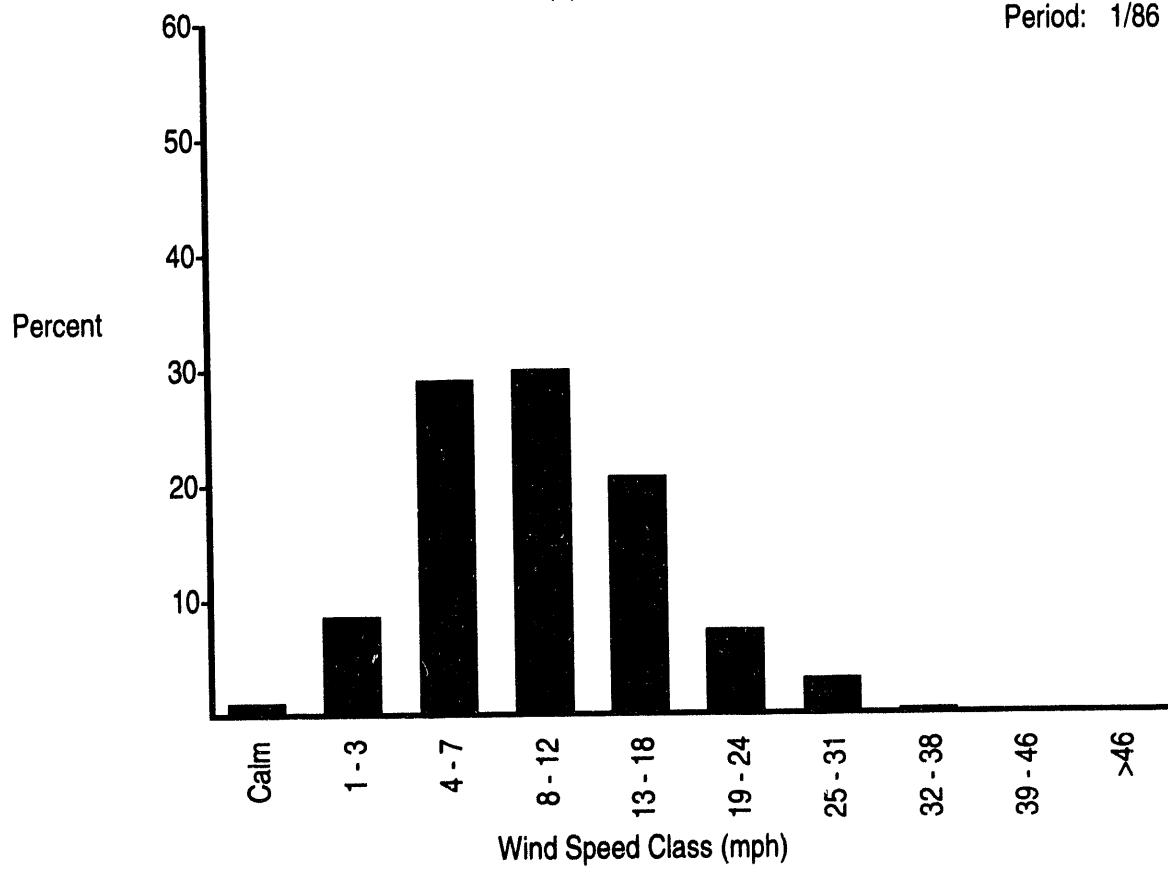
(b) Wind Speed Histogram

FIGURE B.2. (contd)



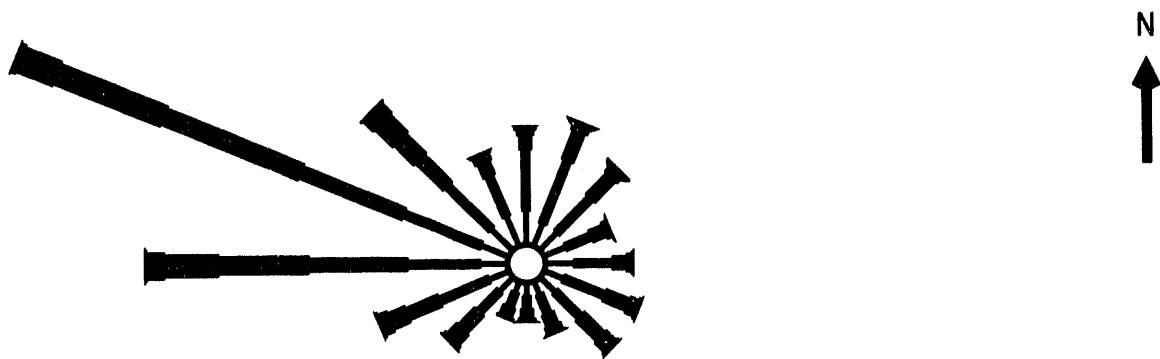
(a) Wind Rose

June Data
Period: 1/86 - 12/93



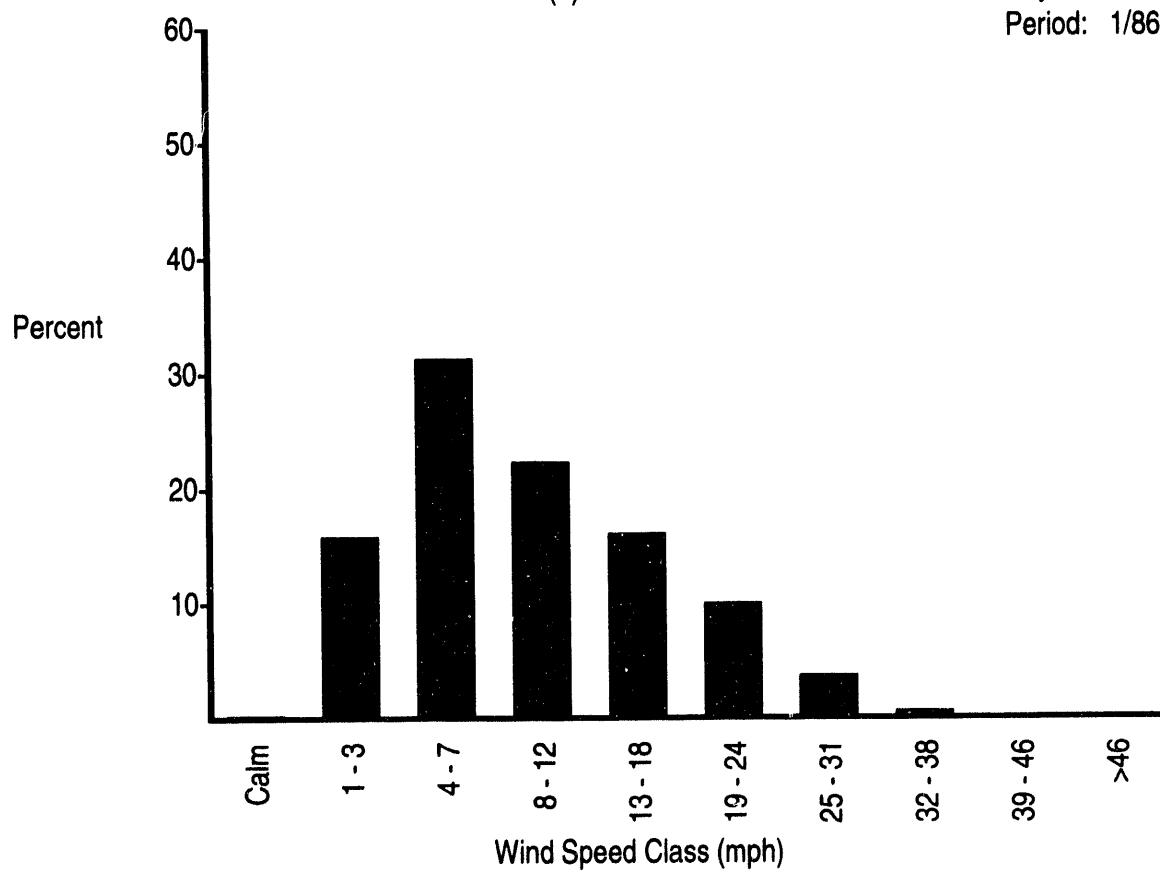
(b) Wind Speed Histogram

FIGURE B.2. (contd)



(a) Wind Rose

July Data
Period: 1/86 - 12/93



(b) Wind Speed Histogram

FIGURE B.2. (contd)

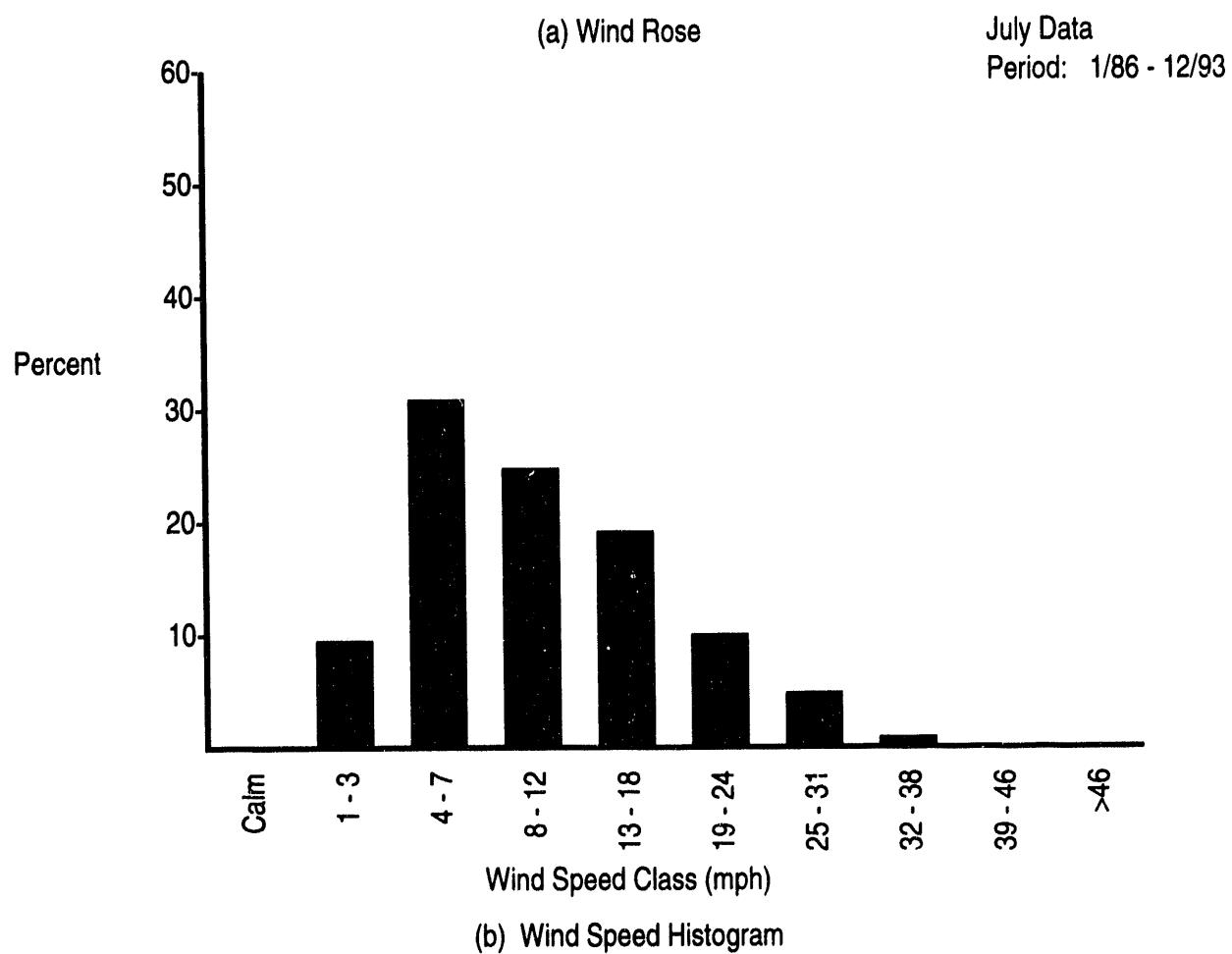
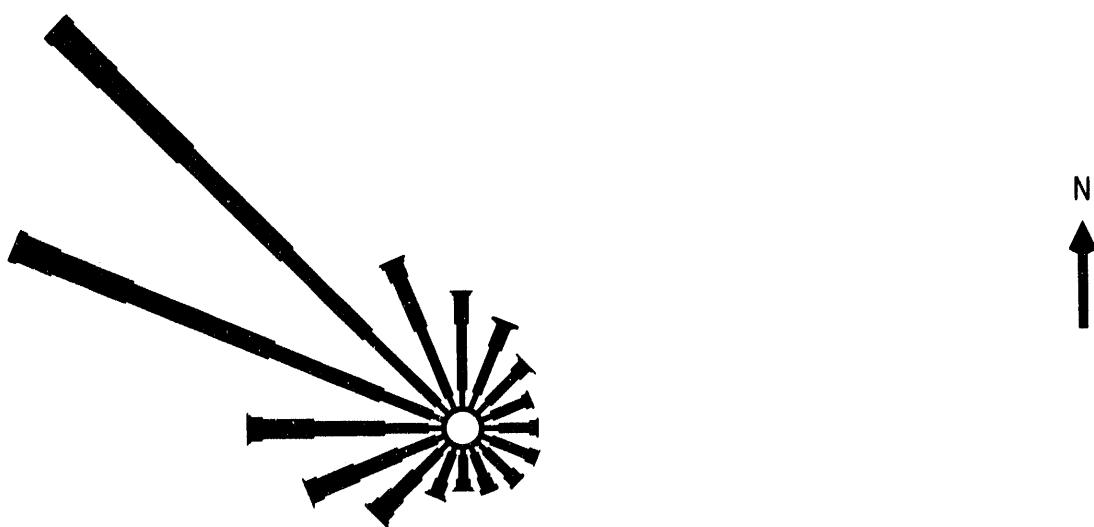
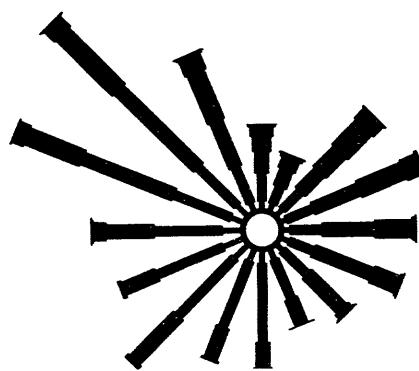


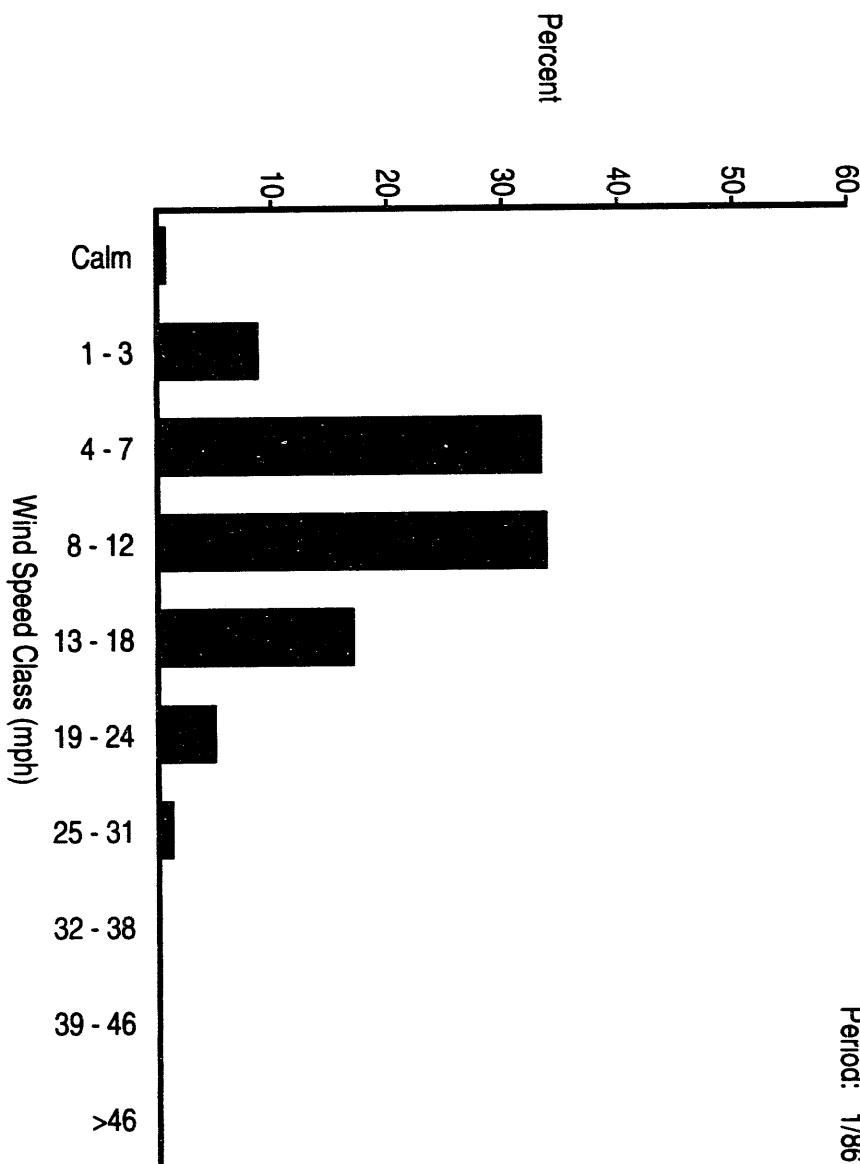
FIGURE B.2. (contd)



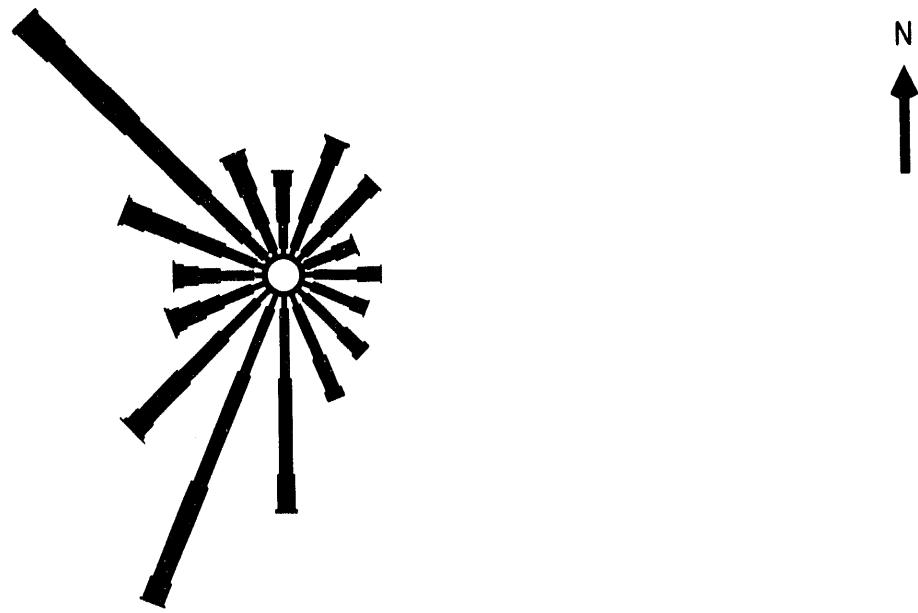
↑ N

(a) Wind Rose

July Data
Period: 1/86 - 12/93

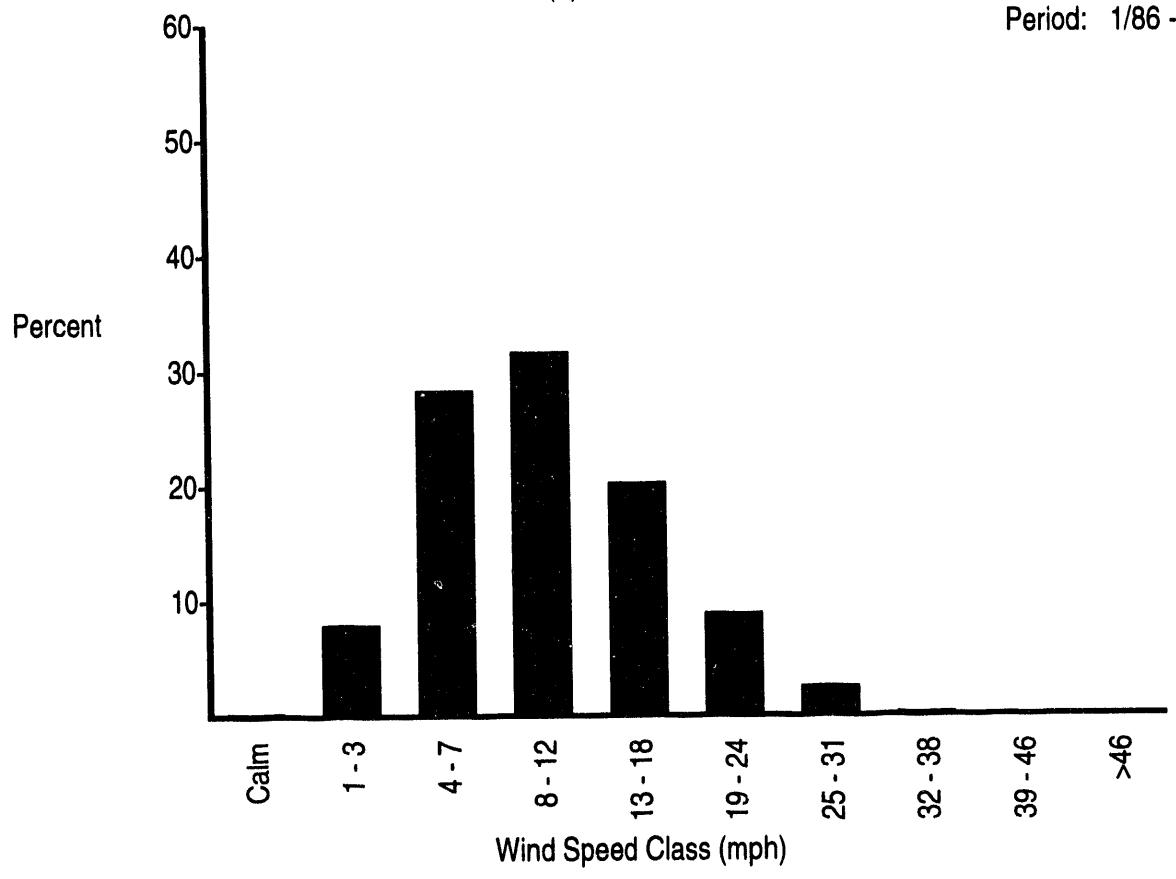


(b) Wind Speed Histogram
FIGURE B.2. (contd)



(a) Wind Rose

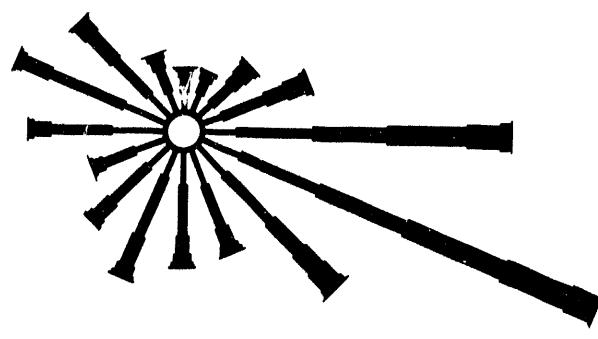
July Data
Period: 1/86 - 12/93



(b) Wind Speed Histogram

FIGURE B.2. (contd)

(a) Wind Rose
August Data
Period: 1/86 - 12/93



N

100 Area Tower

Period: 1/86 - 12/93

>46

39 - 46

32 - 38

25 - 31

19 - 24

13 - 18

8 - 12

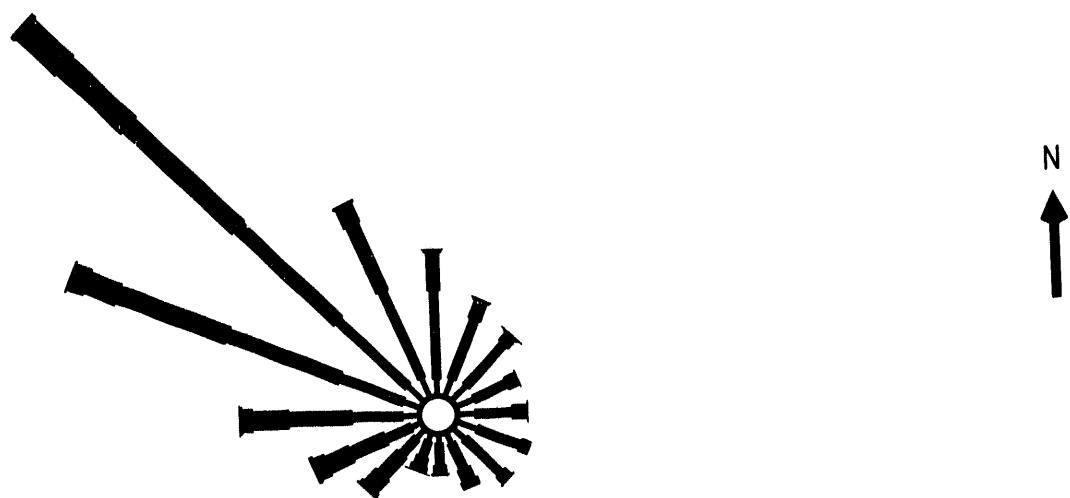
4 - 7

1 - 3

Wind Speed Class (mph)

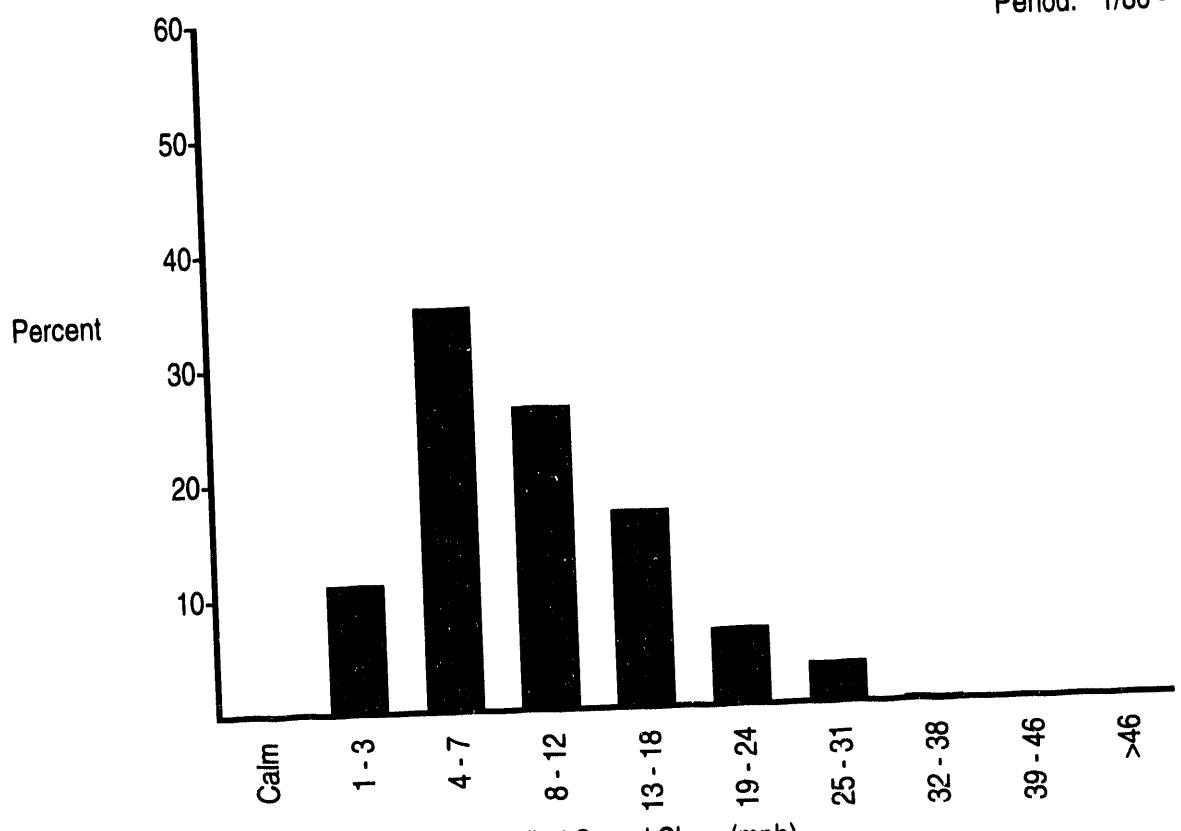
(b) Wind Speed Histogram

FIGURE B.2. (contd)



(a) Wind Rose

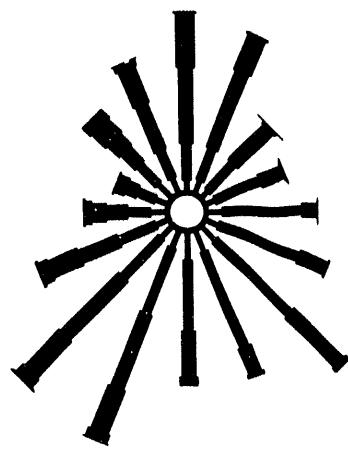
August Data
Period: 1/86 - 12/93



(b) Wind Speed Histogram

FIGURE B.2. (contd)

N
↑



(a) Wind Rose

August Data
Period: 1/86 - 12/93

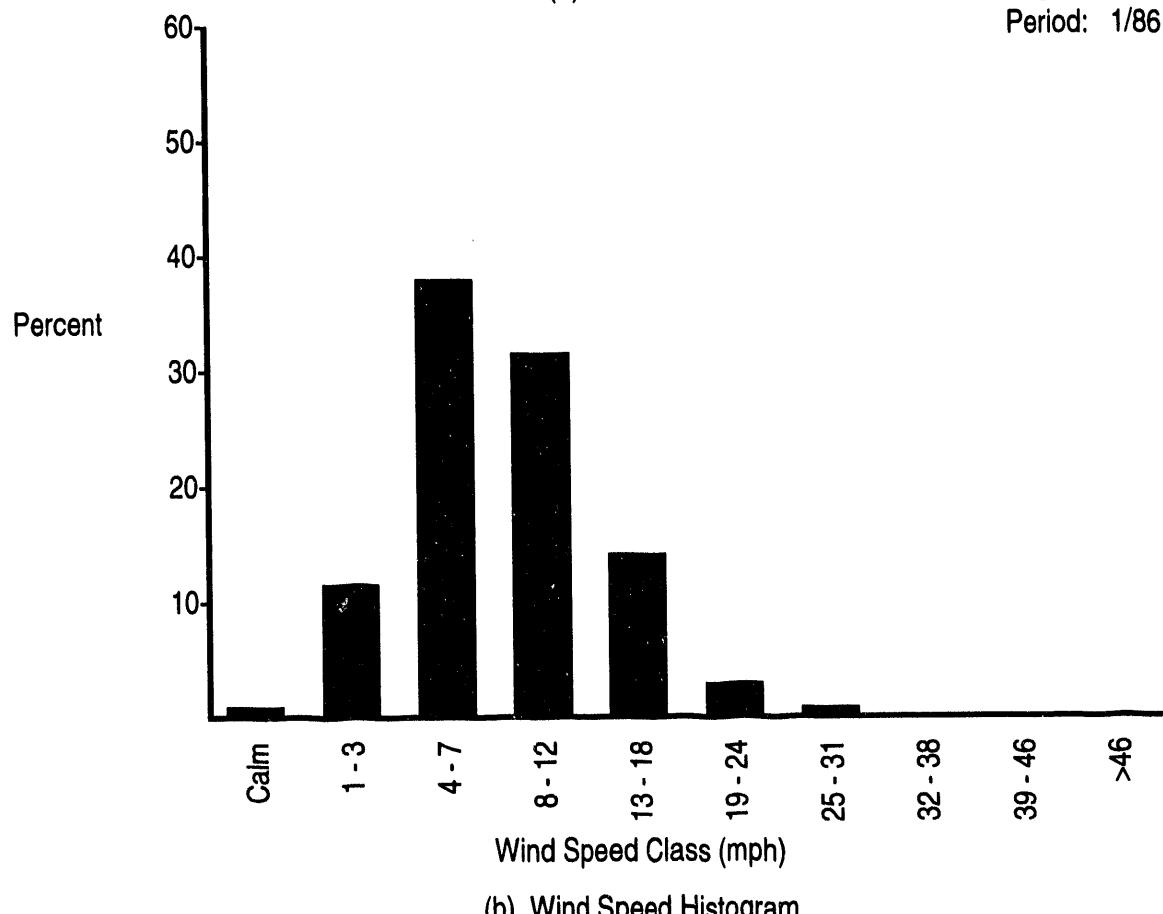
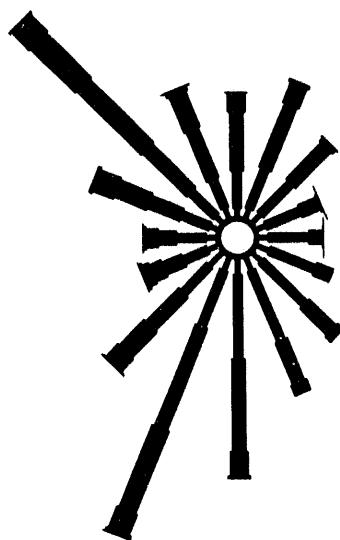
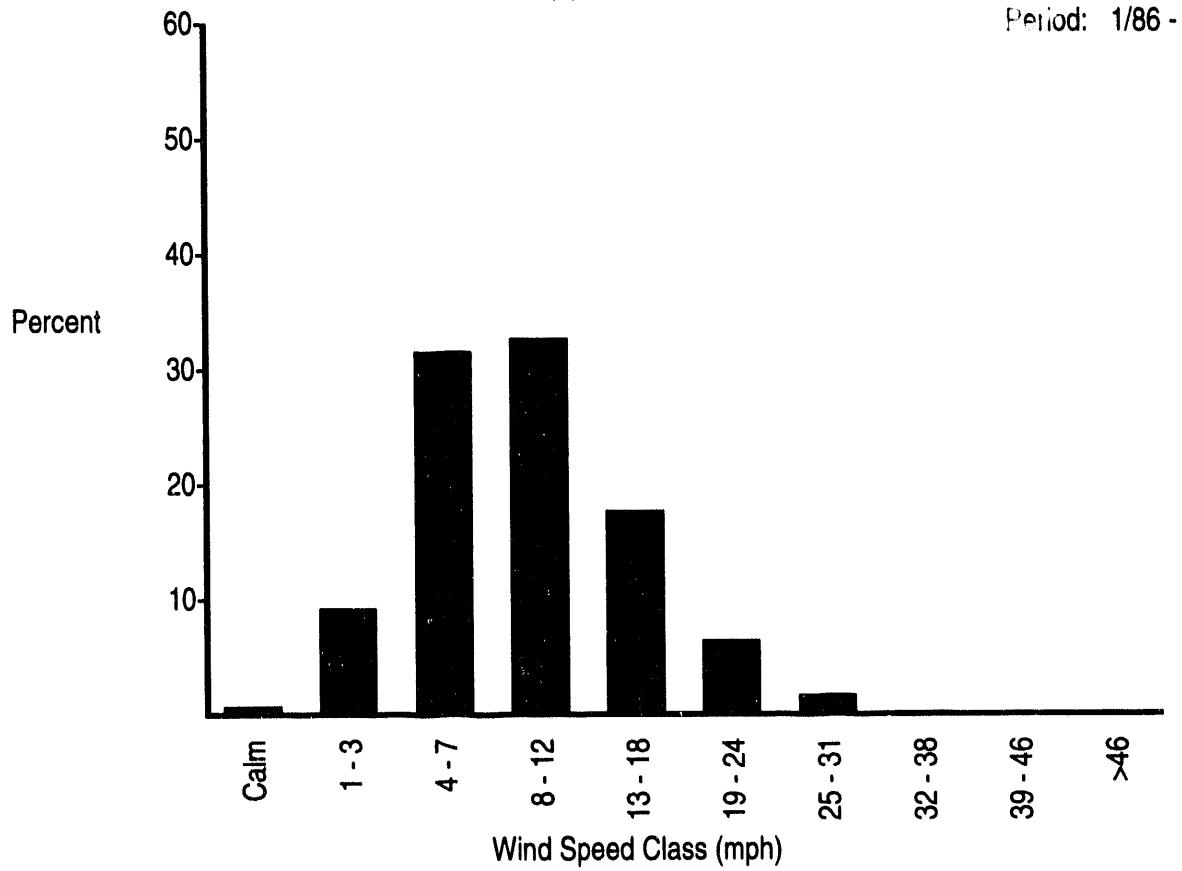


FIGURE B.2. (contd)

N
↑

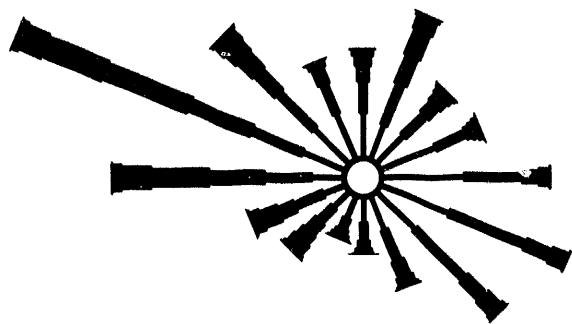
(a) Wind Rose

August Data
Period: 1/86 - 12/93

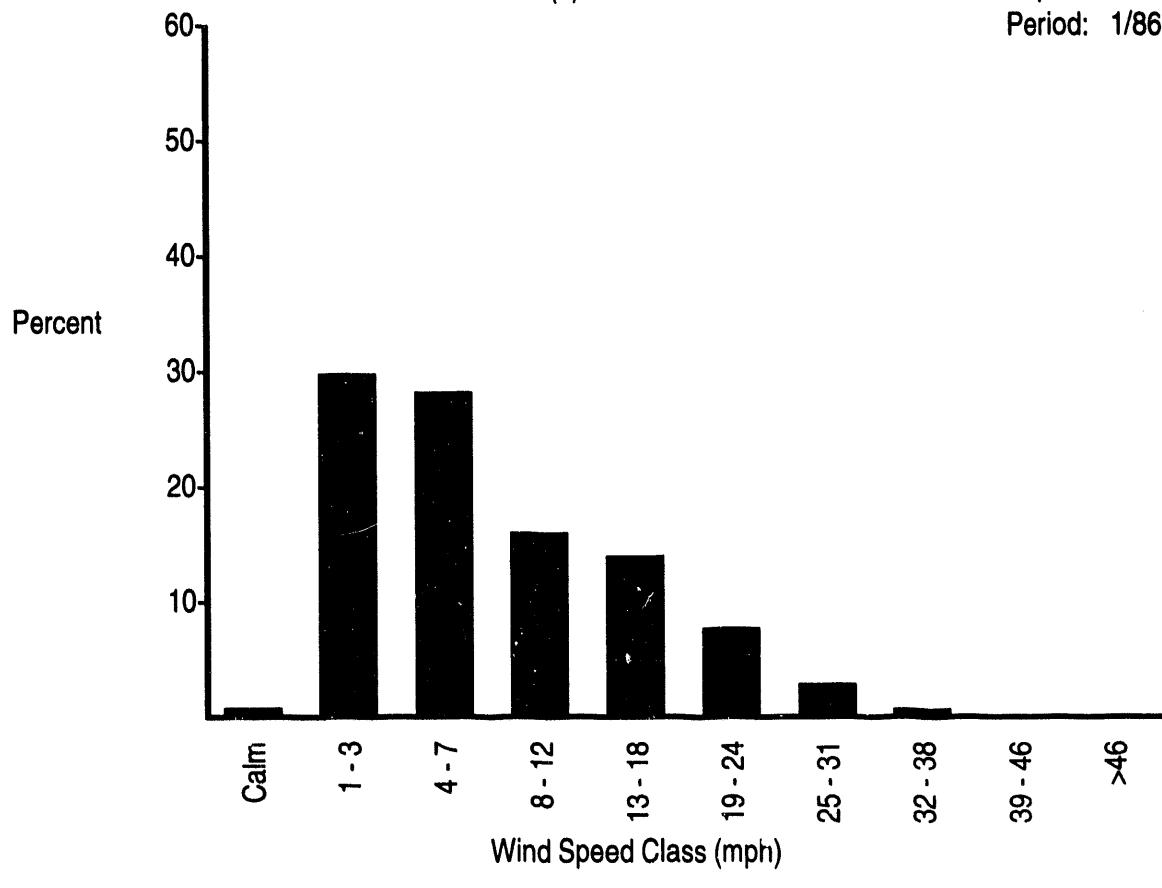
(b) Wind Speed Histogram

FIGURE B.2. (contd)

N



(a) Wind Rose

September Data
Period: 1/86 - 12/93

(b) Wind Speed Histogram

FIGURE B.2. (contd)



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1100 Wayne Avenue, Suite 1100

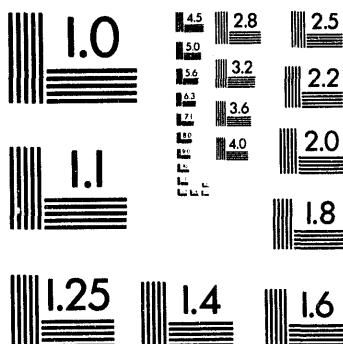
Silver Spring, Maryland 20910

301/587-8202

Centimeter

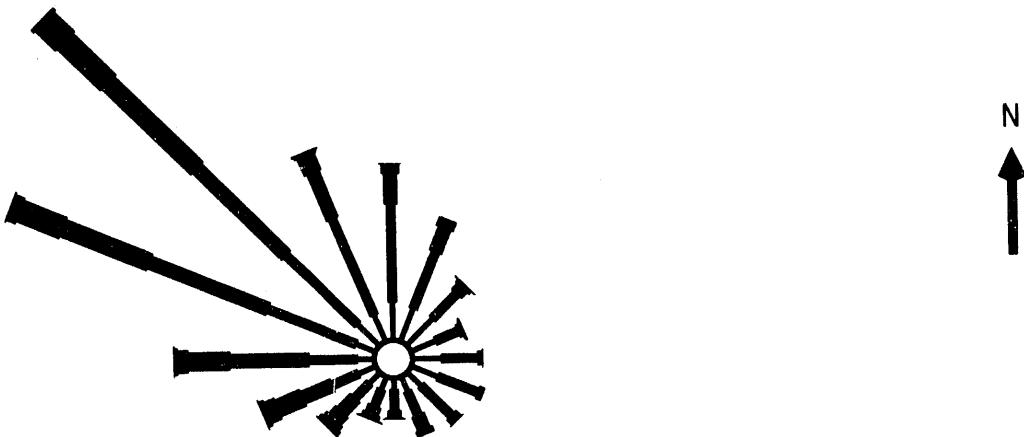


Inches



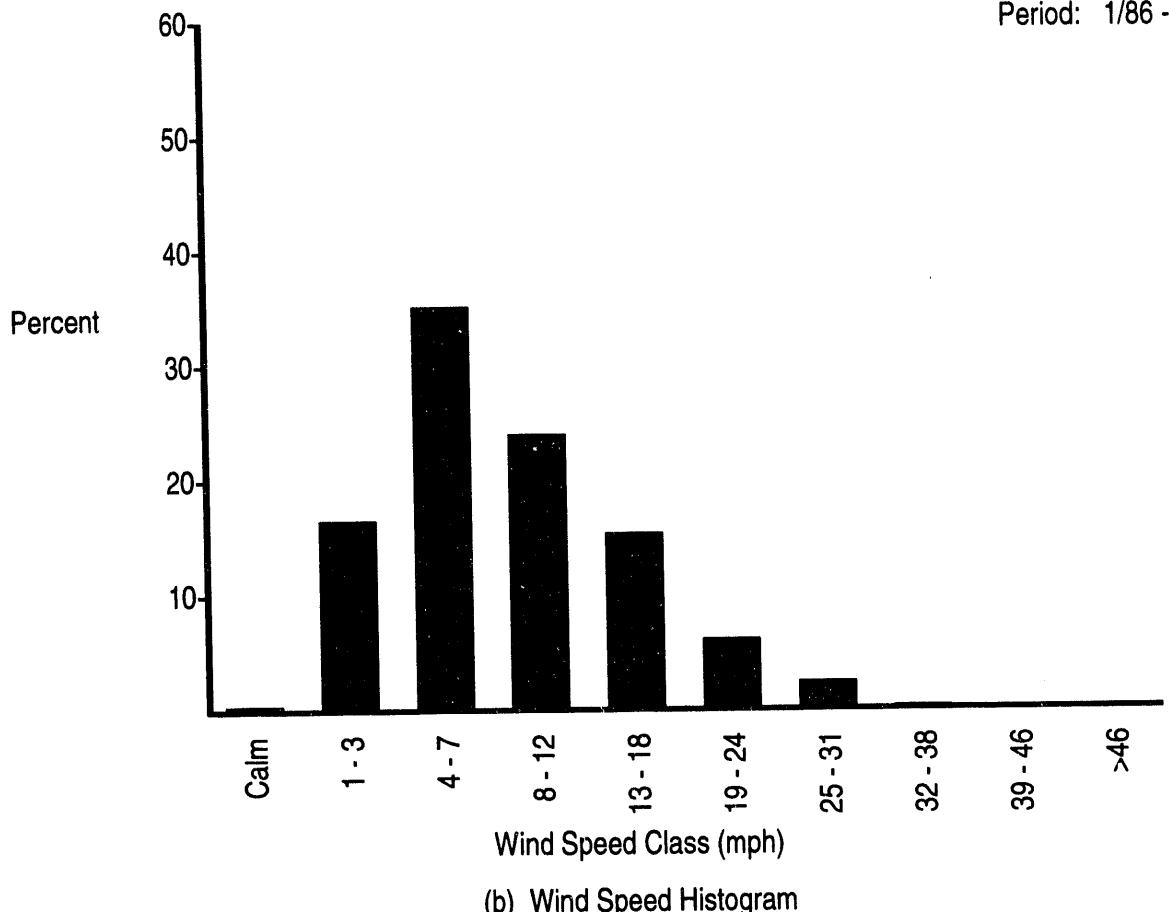
MANUFACTURED TO AIIM STANDARDS
BY APPLIED IMAGE, INC.

6 of 6



(a) Wind Rose

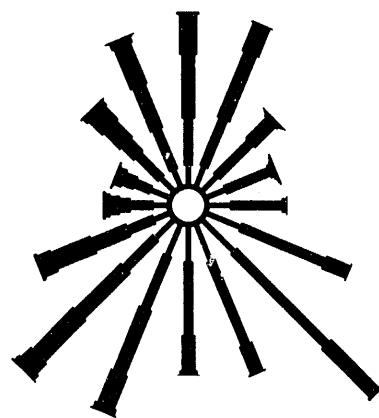
September Data
Period: 1/86 - 12/93



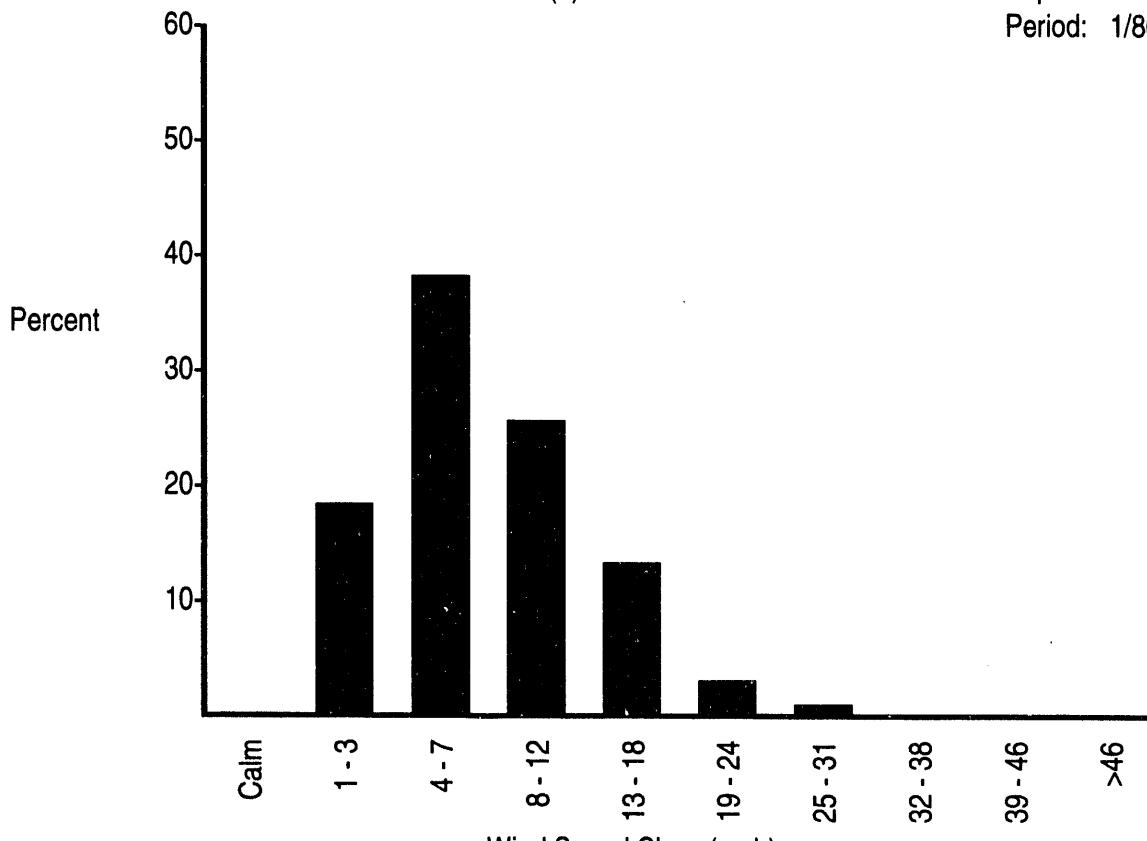
(b) Wind Speed Histogram

FIGURE B.2. (contd)

N

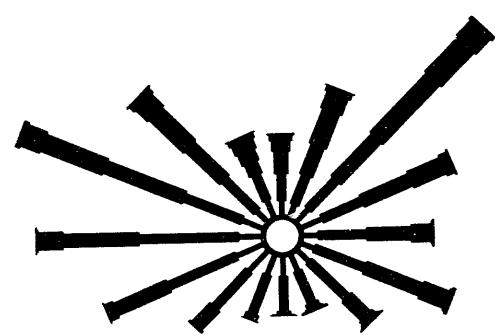


(a) Wind Rose

September Data
Period: 1/86 - 12/93

(b) Wind Speed Histogram

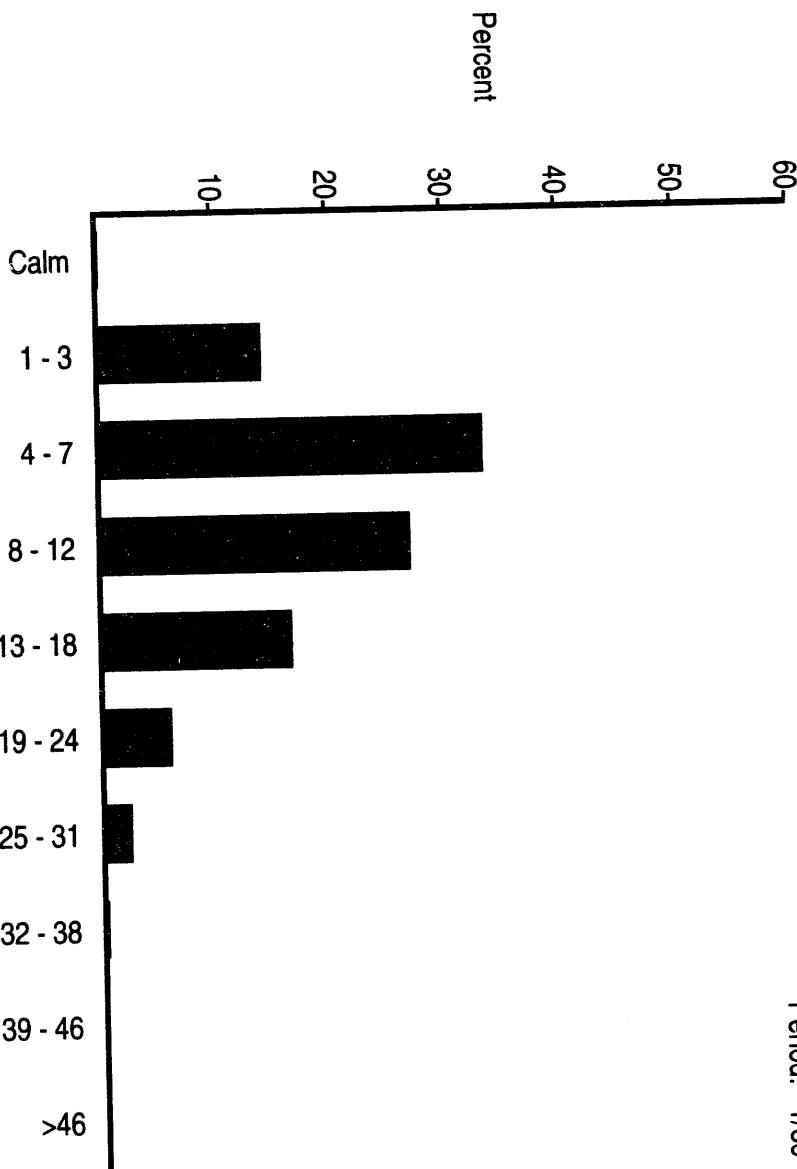
FIGURE B.2. (contd)



→ N

September Data
Period: 1/86 - 12/93

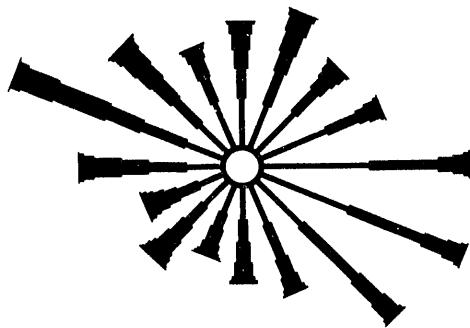
(a) Wind Rose



(b) Wind Speed Histogram

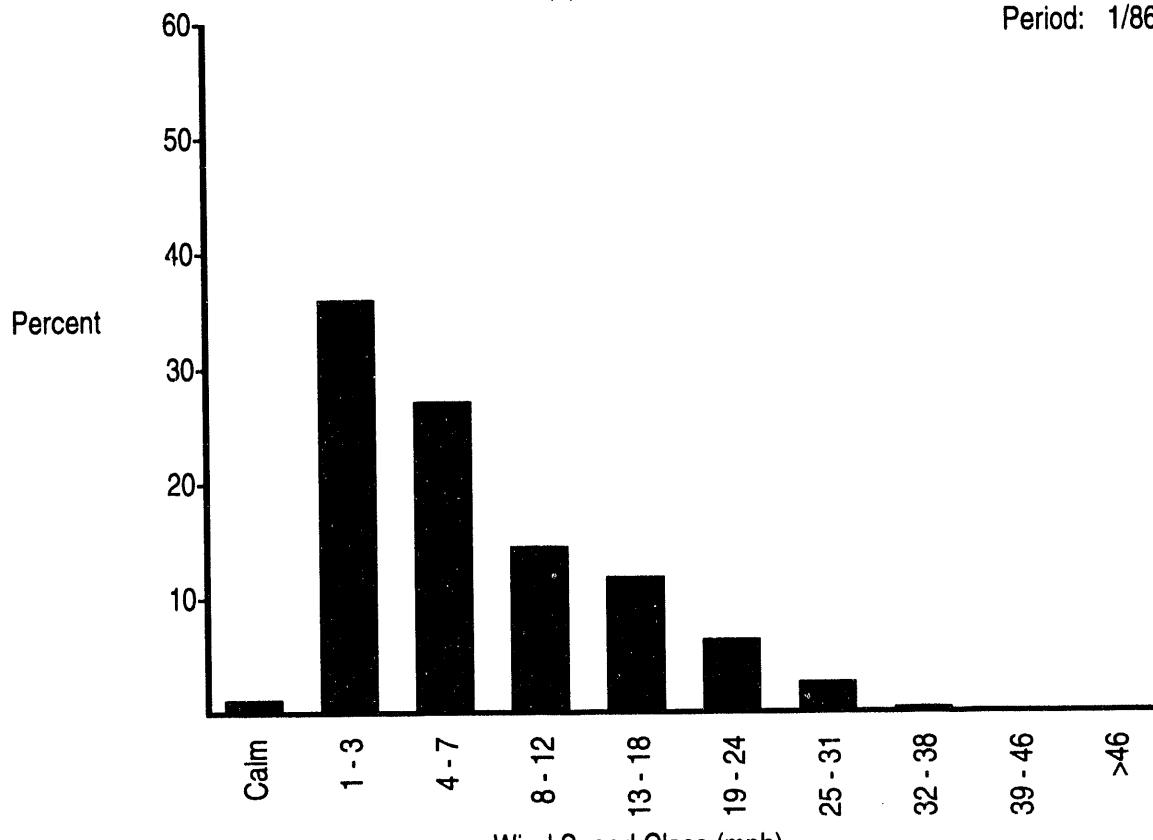
FIGURE B.2. (contd)

N
↑



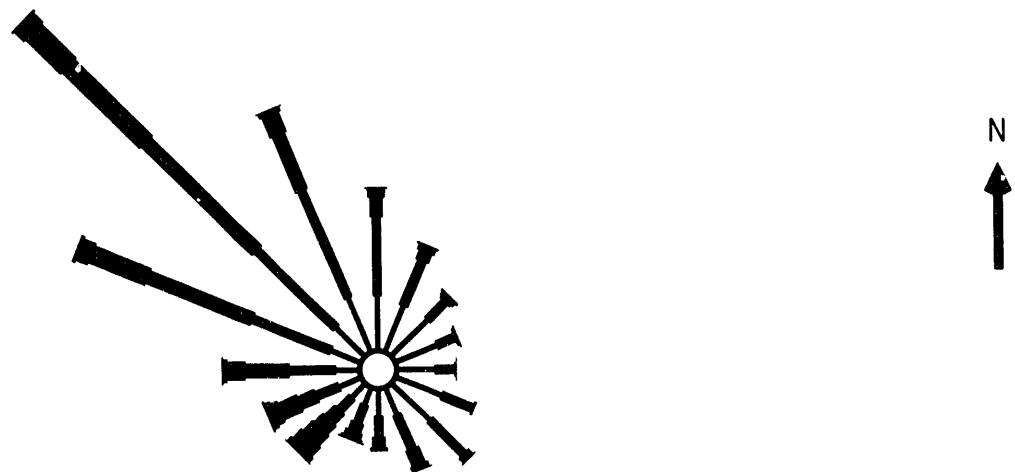
(a) Wind Rose

October Data
Period: 1/86 - 12/93



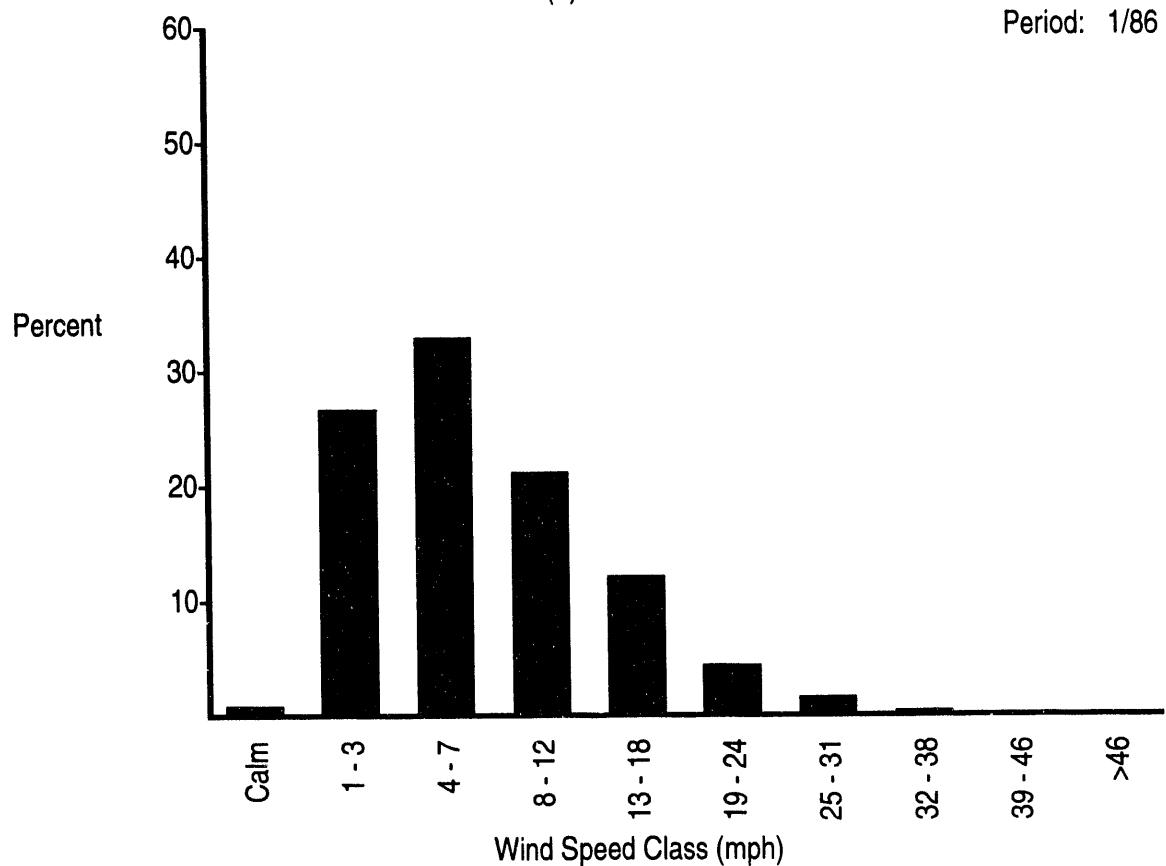
(b) Wind Speed Histogram

FIGURE B.2. (contd)



(a) Wind Rose

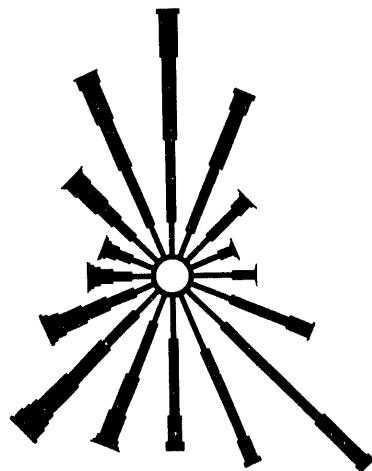
October Data
Period: 1/86 - 12/93



(b) Wind Speed Histogram

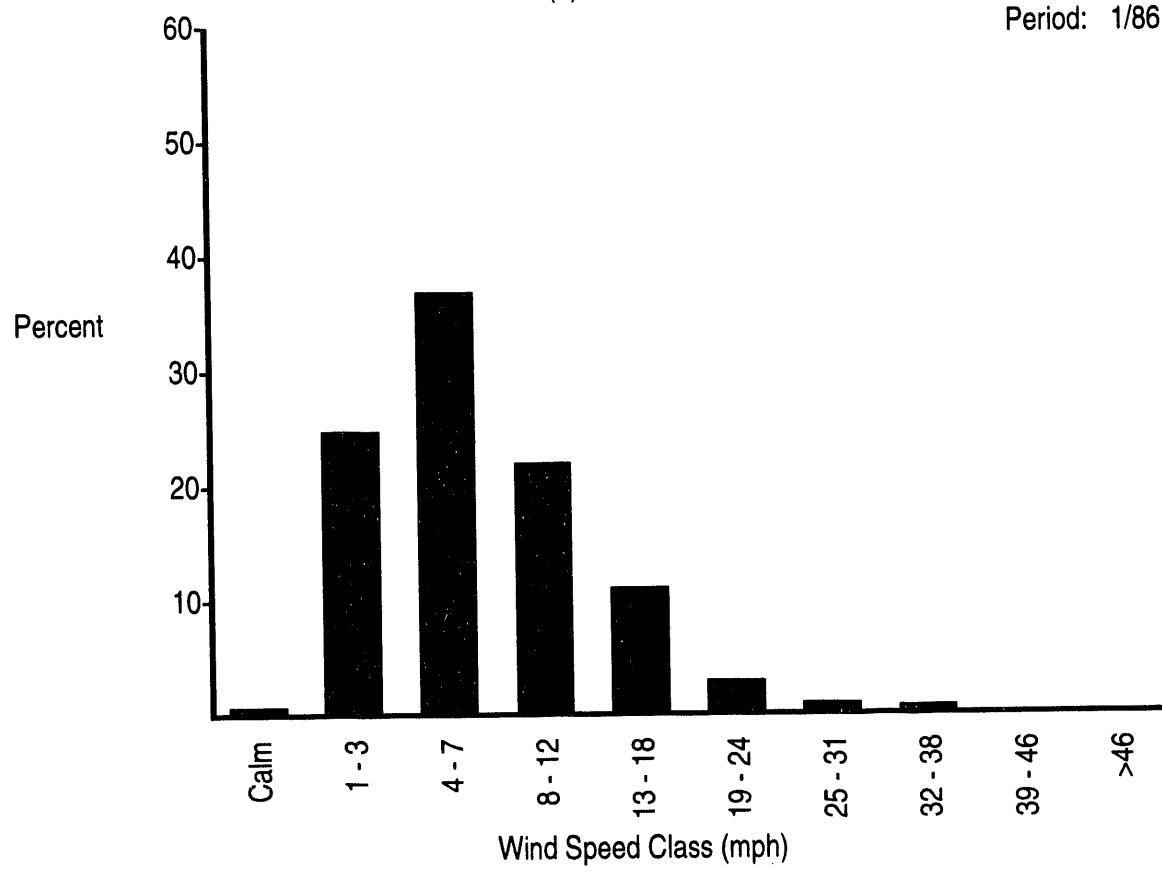
FIGURE B.2. (contd)

N
↑



(a) Wind Rose

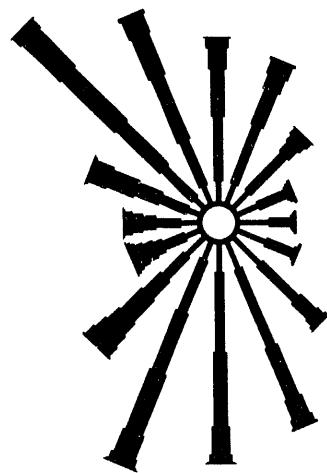
October Data
Period: 1/86 - 12/93



(b) Wind Speed Histogram

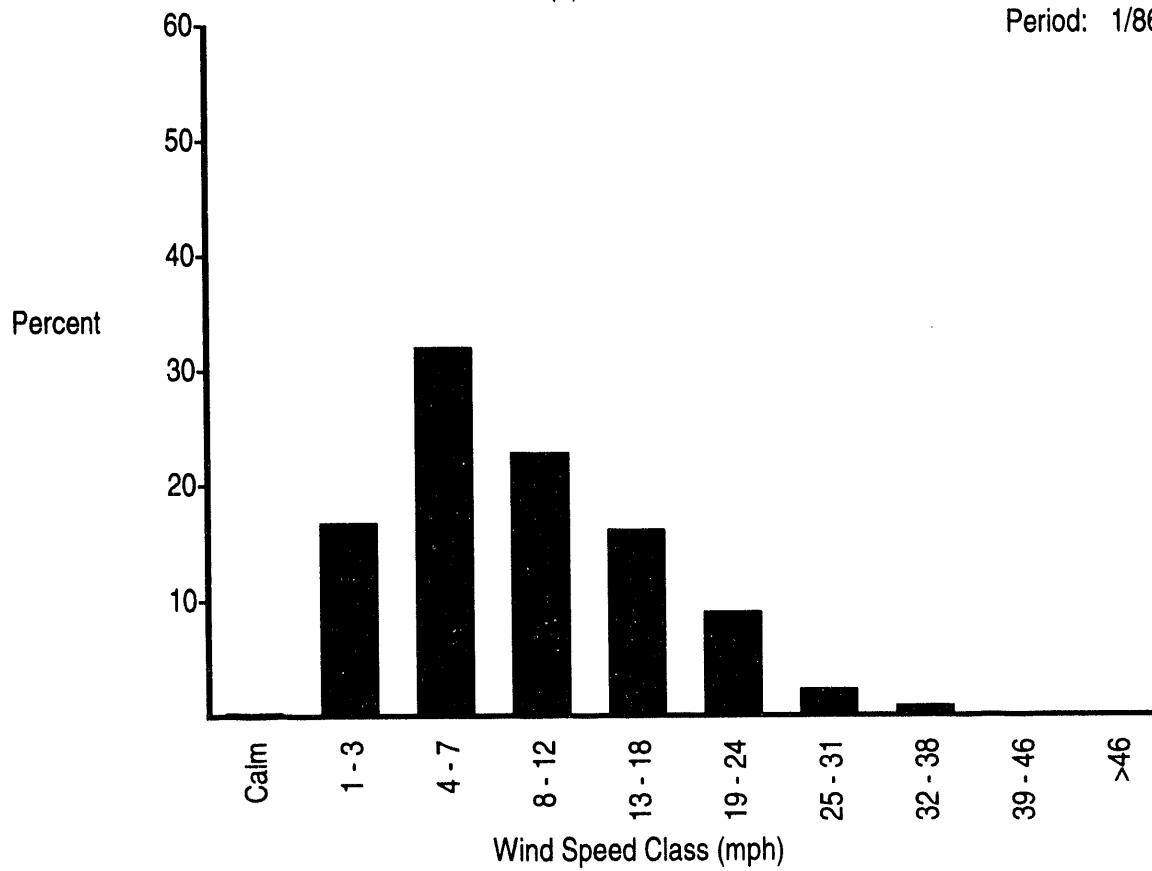
FIGURE B.2. (contd)

N



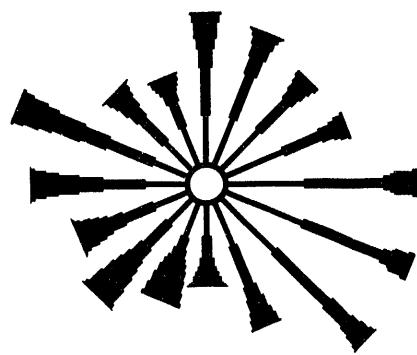
(a) Wind Rose

October Data
Period: 1/86 - 12/93



(b) Wind Speed Histogram

FIGURE B.2. (contd)

N
↑

(a) Wind Rose

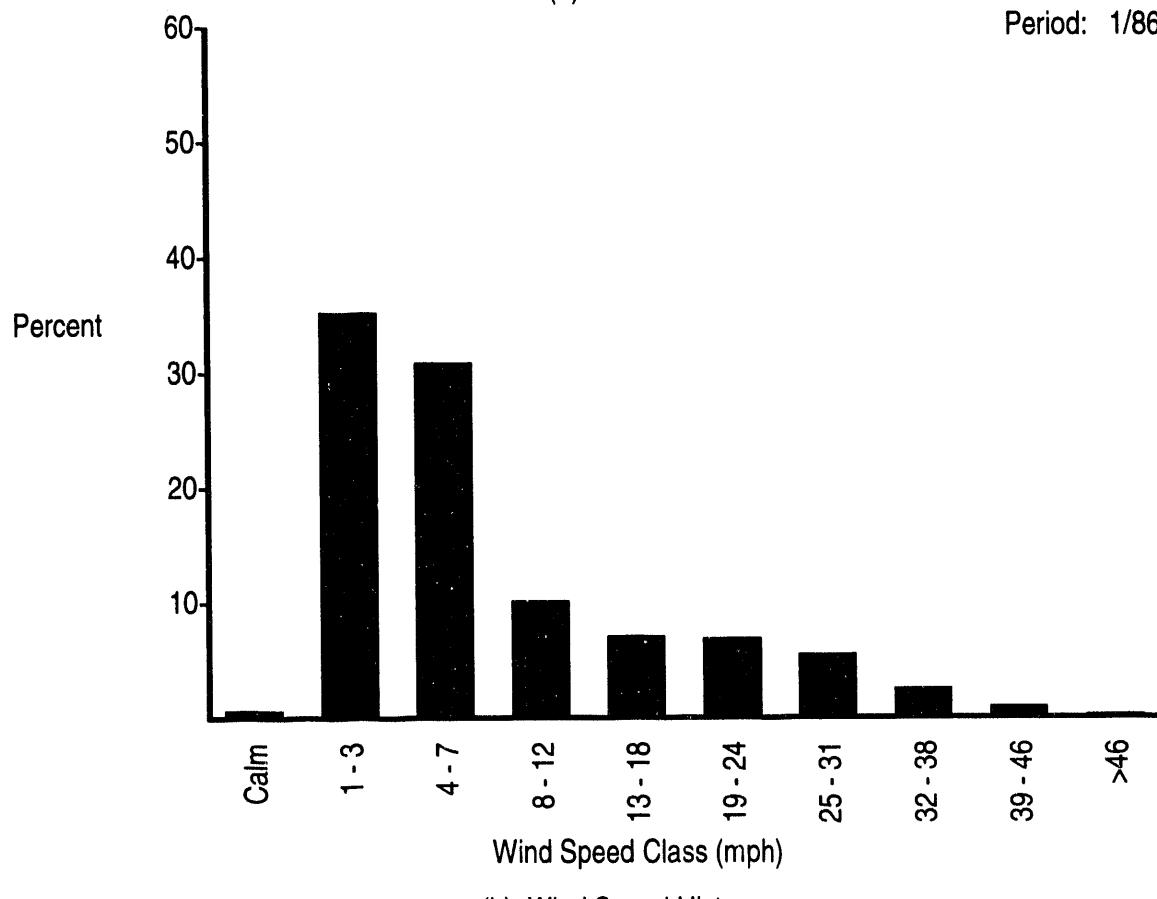
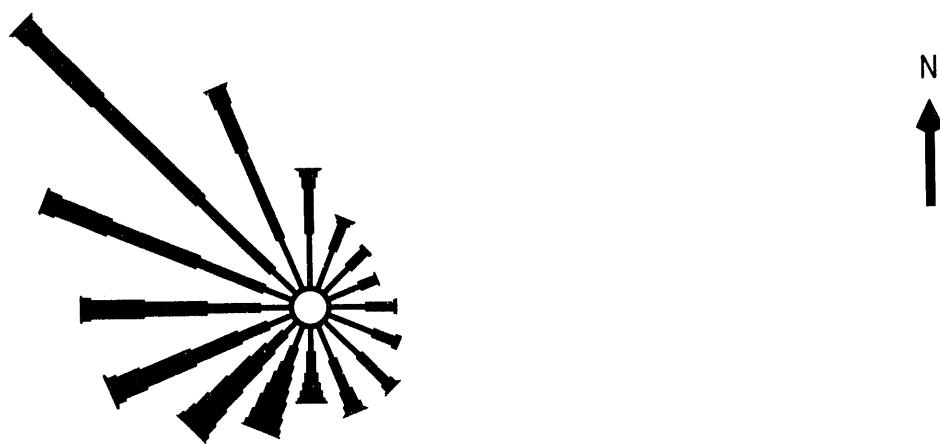
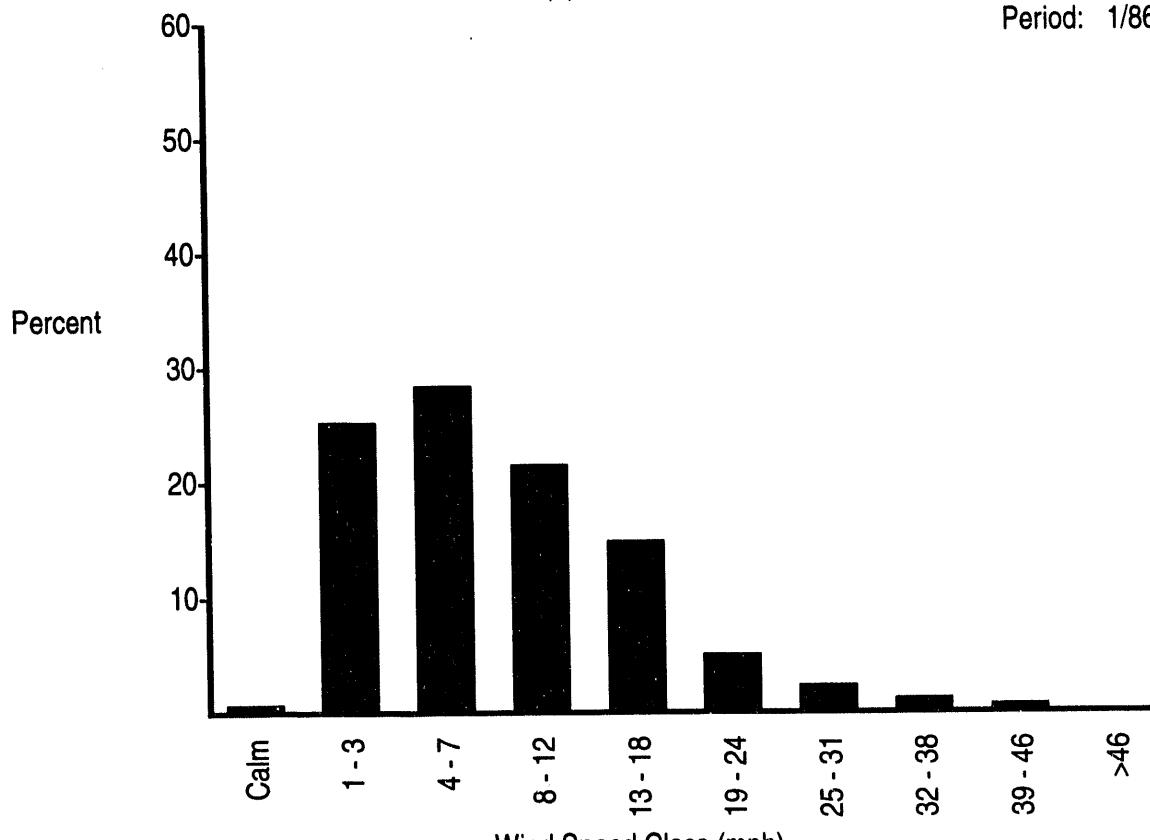
November Data
Period: 1/86 - 12/93

FIGURE B.2. (contd)



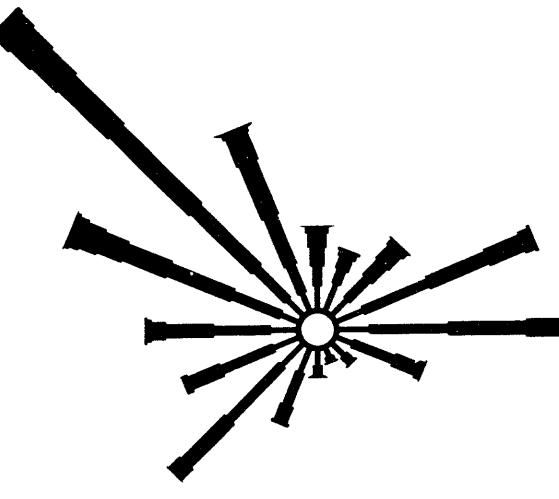
(a) Wind Rose

November Data
Period: 1/86 - 12/93



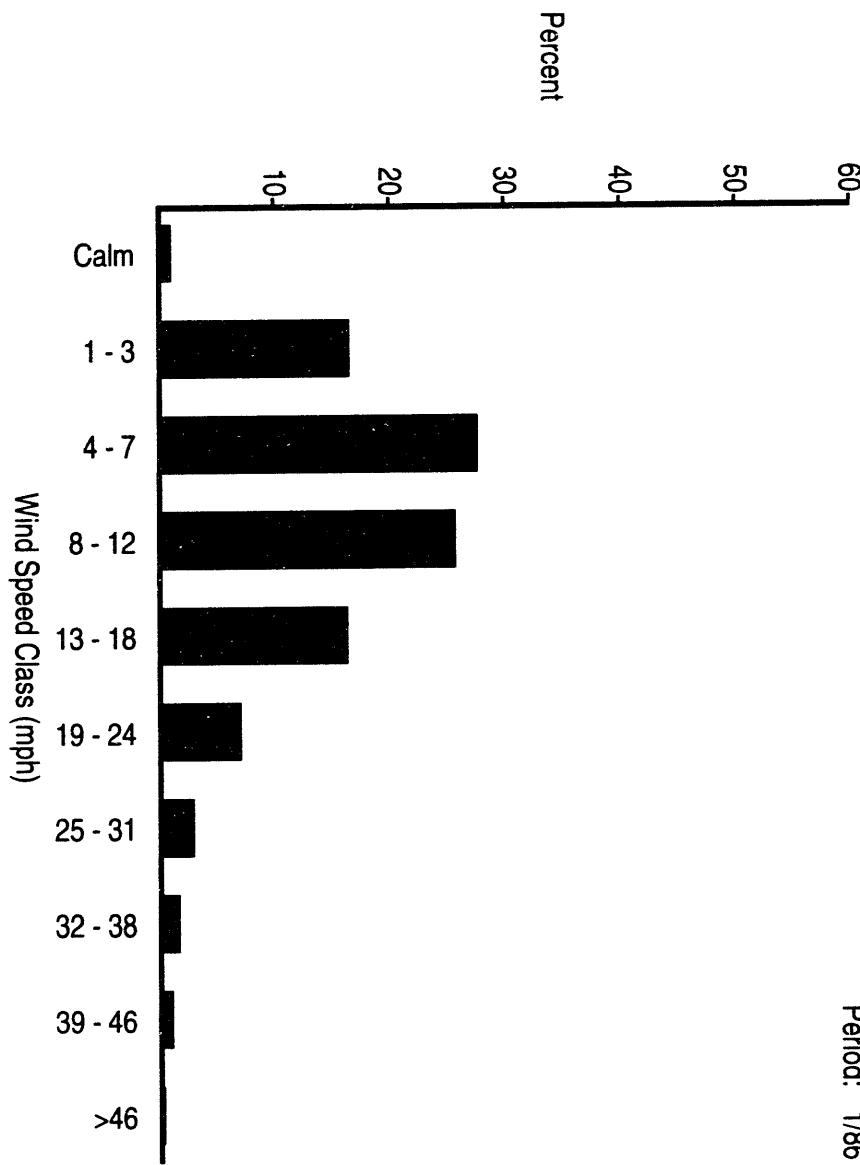
(b) Wind Speed Histogram

FIGURE B.2. (contd)



(a) Wind Rose

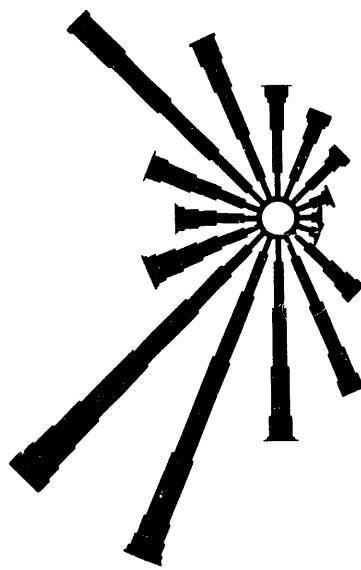
November Data
Period: 1/86 - 12/93



(b) Wind Speed Histogram

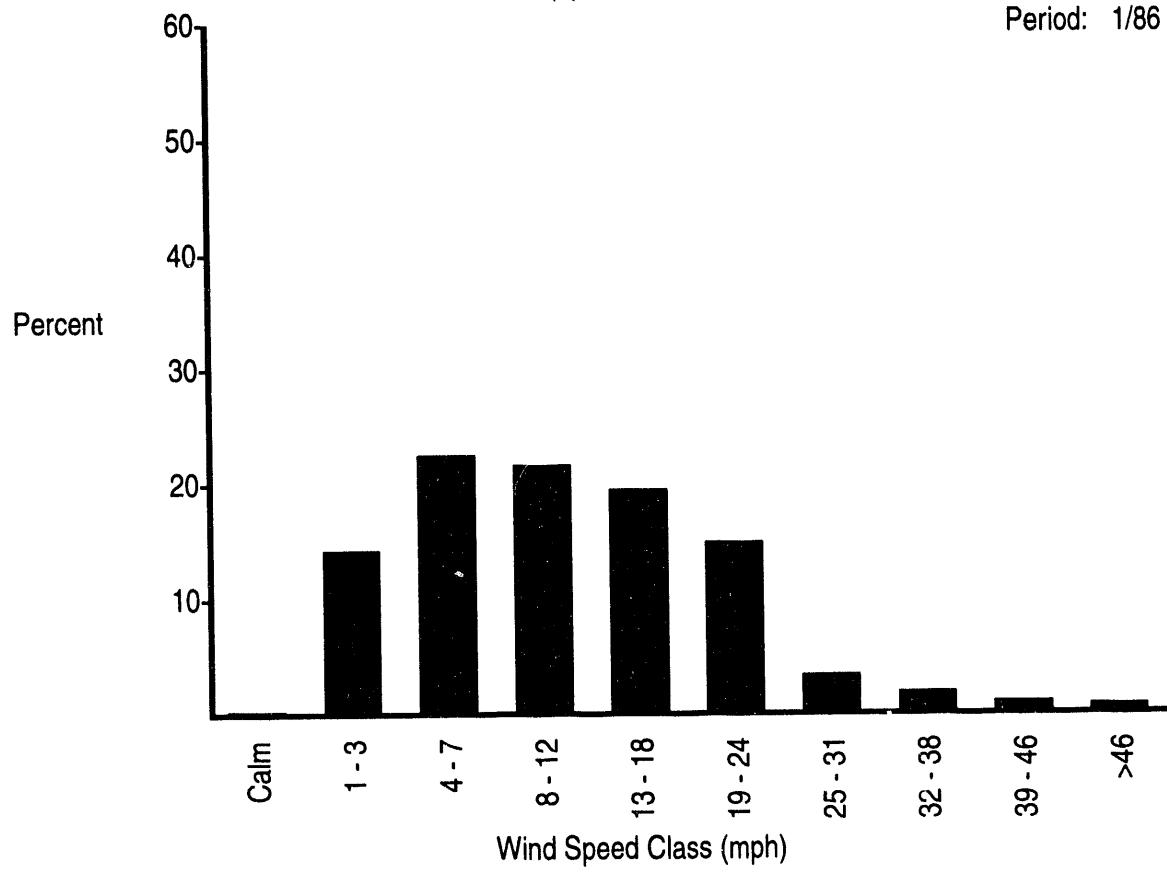
FIGURE B.2. (contd)

N
↑



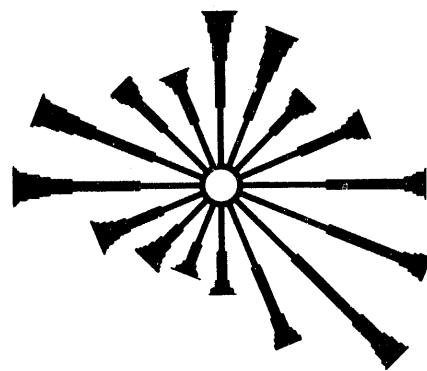
(a) Wind Rose

November Data
Period: 1/86 - 12/93



(b) Wind Speed Histogram

FIGURE B.2. (contd)

N
↑

(a) Wind Rose

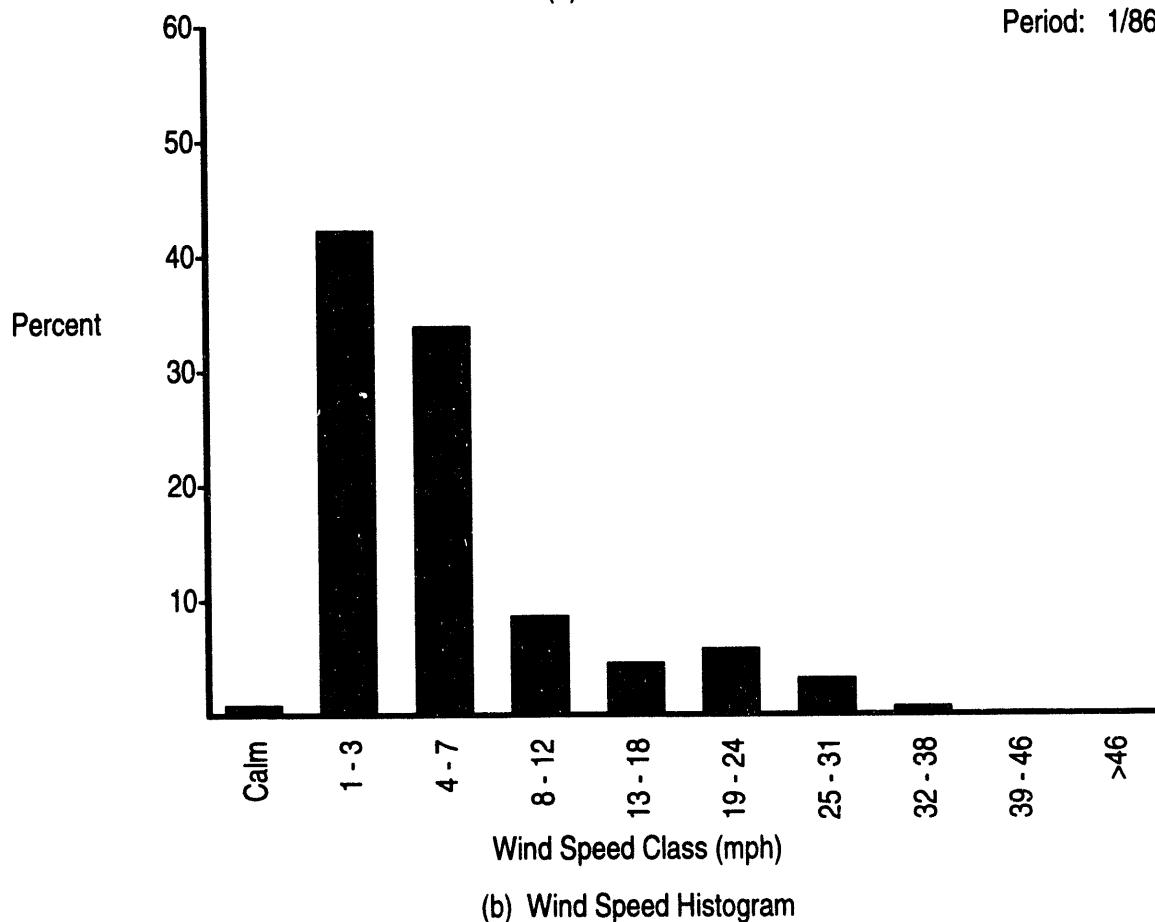
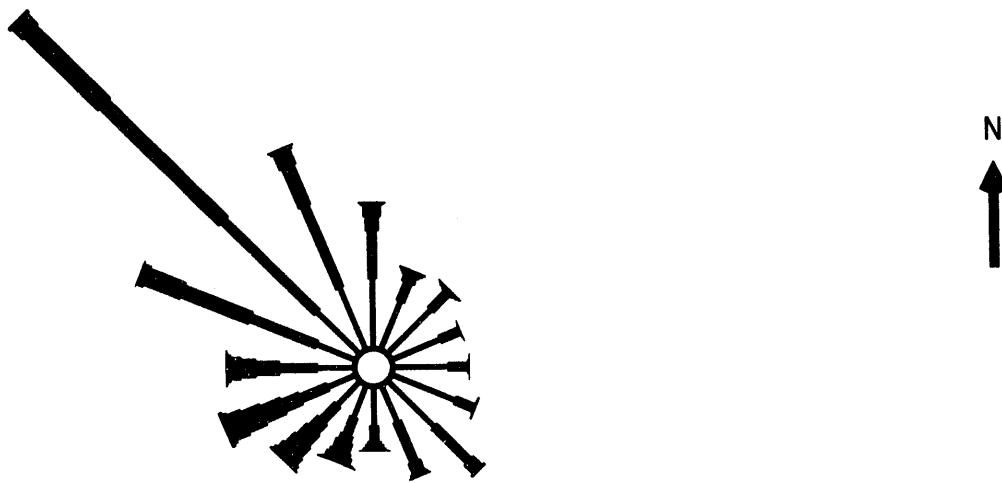
December Data
Period: 1/86 - 12/93

FIGURE B.2. (contd)



(a) Wind Rose

December Data
Period: 1/86 - 12/93

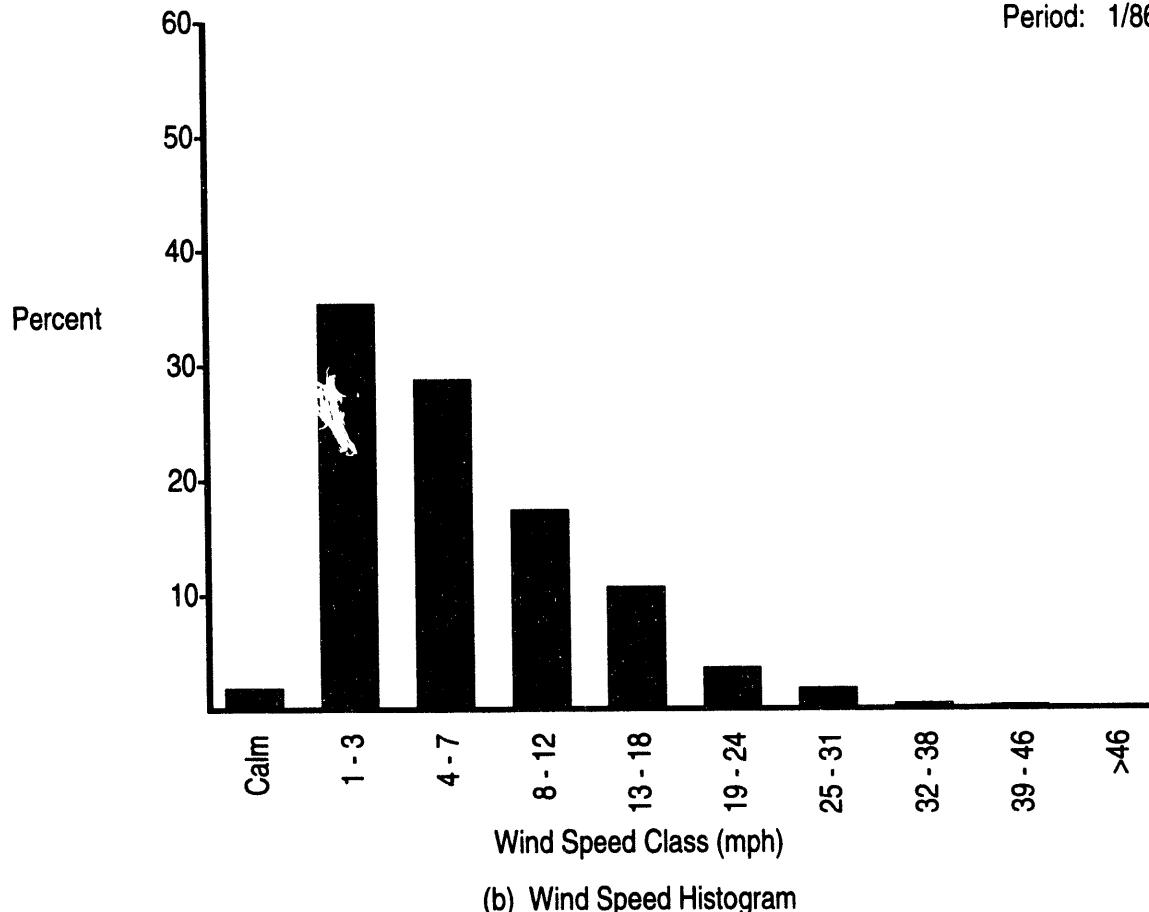
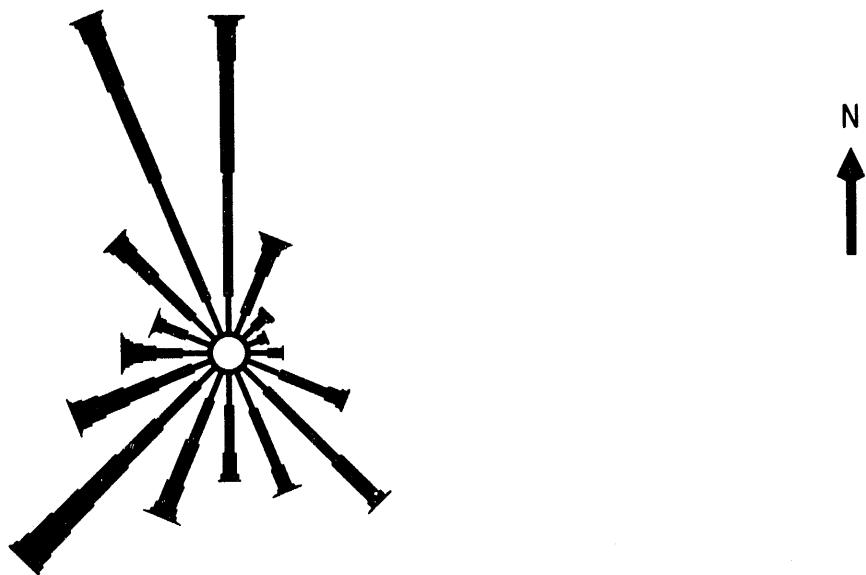


FIGURE B.2. (contd)



(a) Wind Rose

December Data
Period: 1/86 - 12/93

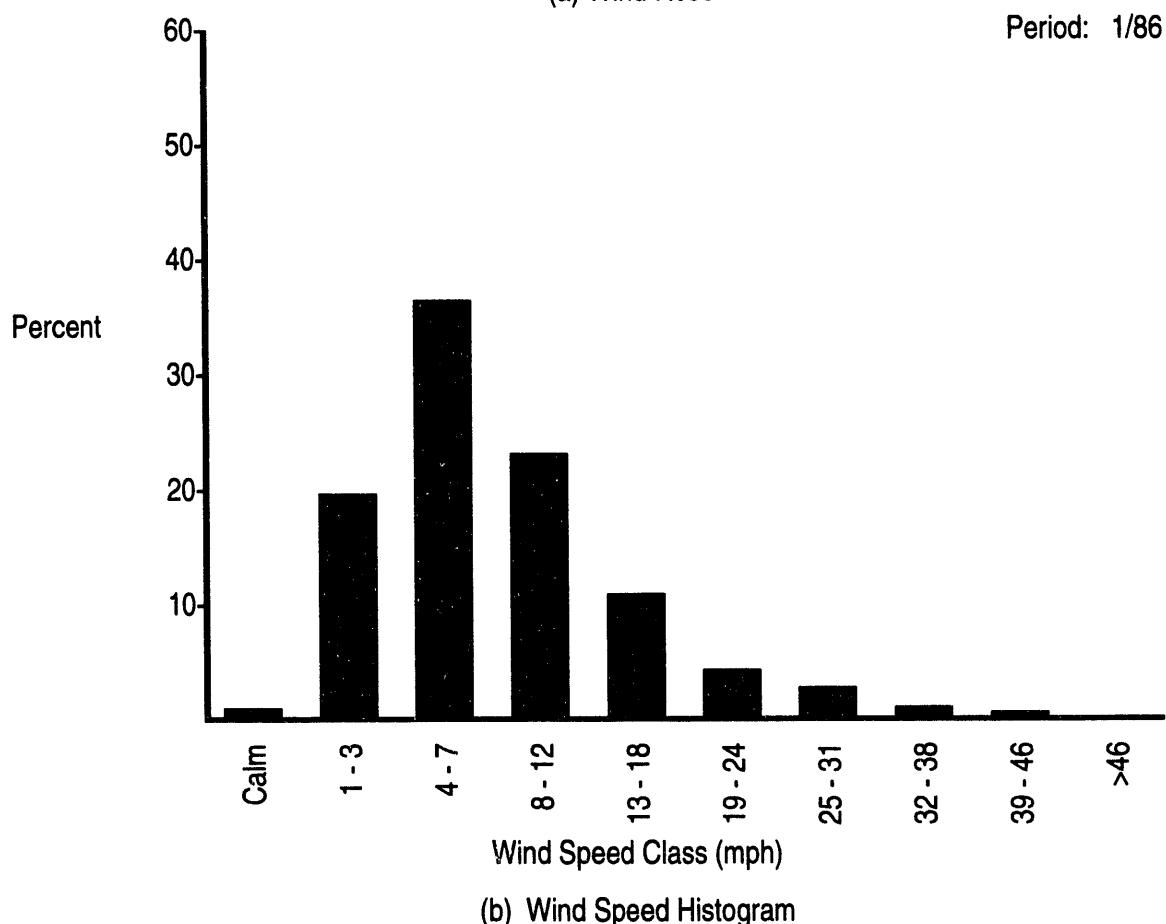
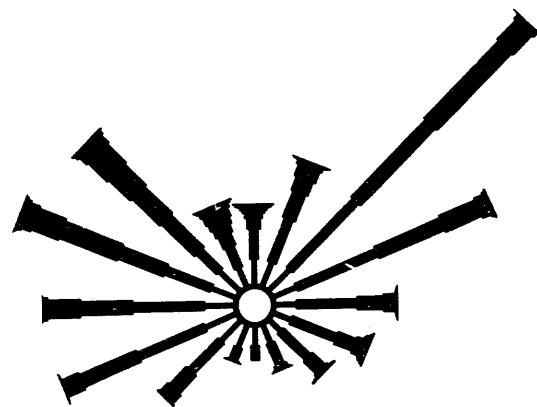
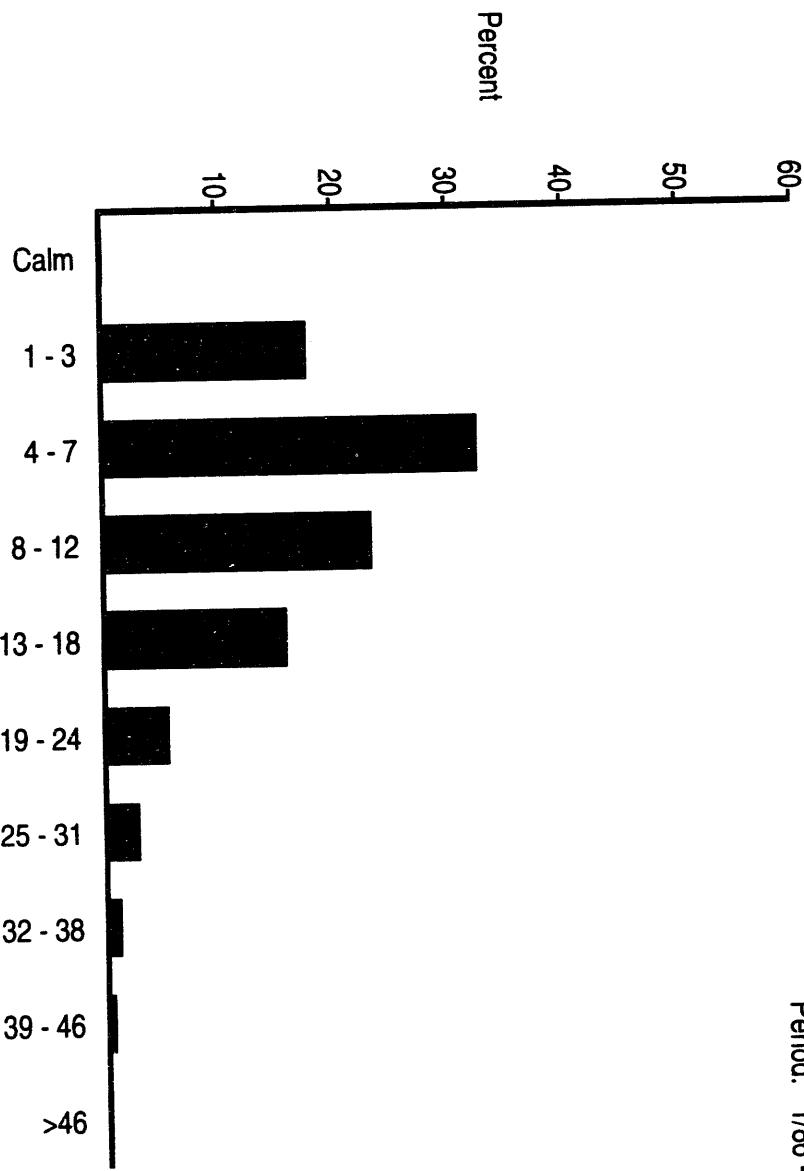


FIGURE B.2. (contd)



→ N

(a) Wind Rose
December Data
Period: 1/86 - 12/93



(b) Wind Speed Histogram
FIGURE B.2. (contd)

TABLE B.1. 1982-1993 Joint Frequency Distributions for Meteorological Monitoring Network Wind Stations

Station: (1) PROS

	DIRECTION																Total Hours:	100901
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM	TOTAL
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.4	1.4
1-3	2.3	1.6	1.4	1.0	1.1	1.3	1.8	2.3	2.6	2.3	1.8	1.2	1.1	1.3	2.1	2.7	.0	27.9
4-7	3.4	2.0	1.0	.7	.8	1.0	2.0	3.8	4.6	3.7	2.1	.8	.7	.9	2.9	5.0	.0	35.4
8-12	1.9	.9	.3	.1	.1	.2	.4	.9	2.2	4.4	2.5	.8	.5	.5	2.5	3.9	.0	22.2
13-18	.6	.2	.1	.0	.0	.0	.0	.0	.3	2.2	2.0	.9	.4	.2	1.5	1.2	.0	9.7
19-24	.1	.1	.0	.0	.0	.0	.0	.0	.0	.4	.7	.4	.1	.0	.4	.2	.0	2.4
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.3	.1	.0	.0	.1	.0	.0	.7
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0	.0	.1
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TOTAL	8.3	4.8	2.8	1.8	2.0	2.6	4.2	7.0	9.8	13.1	9.5	4.2	2.8	3.0	9.4	13.1	1.5	100.0

Station: (2) EOC

	DIRECTION																Total Hours:	101797
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM	TOTAL
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.0	1.0
1-3	1.5	1.3	1.4	1.1	1.0	.9	.8	.9	1.2	1.2	1.2	1.2	1.6	1.9	1.9	1.6	.0	20.7
4-7	3.0	1.9	1.2	.8	1.0	1.0	1.1	1.3	1.9	2.0	1.4	1.2	1.9	3.5	4.2	3.5	.0	30.8
8-12	1.8	.5	.2	.1	.0	.1	.2	.4	.9	2.1	2.5	1.8	1.3	3.1	6.0	4.1	.0	25.2
13-18	.6	.2	.1	.0	.0	.0	.0	.0	.1	.6	2.1	2.2	1.3	.7	3.1	2.4	.0	13.3
19-24	.1	.1	.0	.0	.0	.0	.0	.0	.0	.1	1.5	1.9	.8	.2	.6	.4	.0	5.8
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.0	1.0	.3	.1	.1	.0	.0	2.5
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.3	.2	.1	.0	.0	.0	.0	.6
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0	.0	.1
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TOTAL	7.1	4.0	2.8	2.0	2.0	2.2	2.5	4.1	6.1	10.0	9.5	7.3	9.4	15.8	12.1	1.0	100.0	

Station: (3) ARMY

	DIRECTION																Total Hours:	101661
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM	TOTAL
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.1	1.1
1-3	1.9	1.7	2.1	2.4	2.7	2.5	1.9	1.2	.9	.8	.9	1.2	2.1	3.2	3.1	2.4	.0	31.1
4-7	2.1	1.5	1.6	1.9	2.6	2.8	2.2	1.0	.6	.5	.6	.9	2.4	7.1	7.6	3.5	.0	38.7
8-12	.8	.5	.3	.2	.4	.7	.9	.5	.4	.4	.6	1.1	1.8	4.5	4.0	1.4	.0	18.5
13-18	.2	.1	.1	.0	.0	.1	.2	.1	.2	.2	.6	1.1	1.0	1.1	1.6	.4	.0	7.0
19-24	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.5	.6	.3	.2	.6	.1	.0	2.5
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.3	.2	.1	.0	.1	.0	.0	.9
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0	.0	.2
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TOTAL	5.1	3.9	4.1	4.5	5.7	6.1	5.2	2.9	2.1	2.2	3.6	5.0	7.6	16.0	17.0	7.9	1.1	100.0

Station: (4) RSPG

	DIRECTION																Total Hours:	101623	
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM	TOTAL	
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.2	1.2	
1-3	1.8	2.0	2.2	1.8	1.9	1.9	1.2	.8	.8	1.1	2.0	3.0	1.9	1.1	1.2	1.3	.0	26.2	
4-7	2.5	2.1	1.5	.9	1.6	2.0	.8	.4	.5	.8	2.6	10.3	4.3	1.8	1.8	2.2	.0	36.1	
8-12	.5	.4	.2	.1	.1	.3	.1	.1	.2	.6	1.8	13.3	4.6	2.2	1.5	1.1	.0	27.0	
13-18	.0	.1	.1	.0	.0	.0	.0	.0	.0	.1	5.0	1.0	1.8	1.7	.8	.8	.4	.0	7.4
19-24	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.3	.5	.4	.2	.1	.1	.0	1.7	
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.1	.0	.0	.0	.0	.0	.4	
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
TOTAL	4.8	4.6	4.0	2.8	3.6	4.2	2.2	1.3	1.7	3.5	8.0	29.0	12.8	6.1	5.3	5.1	1.2	100.0	

TABLE B.1. (contd)

Station: (5) EDNA

	Begin: 1/82										End: 12/93										Total Hours:	
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM	TOTAL				
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.5	1.5			
1-3	1.5	.9	.8	.9	1.3	2.3	3.8	4.0	3.1	1.9	1.4	1.2	1.6	2.8	3.5	2.6	.0	33.7				
4-7	2.6	1.2	.9	1.0	1.9	4.3	6.9	3.7	1.6	.8	.7	.8	1.0	2.2	5.5	5.0	.0	40.2				
8-12	1.2	.6	.4	.2	.5	1.5	1.4	1.1	.9	.6	.6	.8	1.1	1.6	2.1	1.7	.0	16.3				
13-18	.2	.2	.2	.1	.0	.1	.1	.2	.4	.4	.4	.6	.6	1.3	1.1	.3	.0	6.2				
19-24	.0	.1	.1	.0	.0	.0	.0	.0	.1	.1	.2	.2	.1	.4	.3	.0	.0	1.8				
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0	.3				
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0				
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0				
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0				
TOTAL	5.6	3.0	2.5	2.2	3.8	8.2	12.2	9.0	6.1	3.8	3.4	3.7	4.5	8.4	12.4	9.6	1.5	100.0				

Station: (6) 200E

	Begin: 1/82										End: 12/93										Total Hours:	
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM	TOTAL				
CALM	.0	.0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.7	.7			
1-3	1.6	1.5	1.6	1.7	1.8	1.8	1.7	1.3	1.1	1.0	1.0	1.1	1.5	1.9	2.1	1.8	.0	24.5				
4-7	1.7	1.5	1.1	1.1	1.5	2.1	3.0	2.4	1.5	1.0	1.4	2.1	4.1	6.2	4.7	2.3	.0	37.6				
8-12	.7	.7	.3	.1	.2	.3	.8	1.1	.7	.4	.9	1.9	4.0	7.6	3.0	.7	.0	23.3				
13-18	.2	.2	.1	.0	.0	.0	.1	.2	.2	.3	.7	1.2	1.2	3.4	1.6	.1	.0	9.6				
19-24	.0	.1	.0	.0	.0	.0	.0	.0	.0	.1	.4	.6	.2	.9	.8	.0	.0	3.3				
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.2	.2	.1	.2	.0	.0	.0	.8				
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1				
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0				
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0				
TOTAL	4.3	3.9	3.2	2.9	3.6	4.3	5.5	5.0	3.4	2.9	4.8	7.2	11.0	20.2	12.3	4.9	.7	100.0				

Station: (7) 200W

	Begin: 1/82										End: 12/93										Total Hours:	
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM	TOTAL				
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.5	1.5			
1-3	2.2	1.7	1.5	1.3	1.5	1.7	2.2	2.0	1.8	1.8	2.2	2.8	3.8	4.5	3.6	2.6	.0	37.3				
4-7	2.9	1.5	.9	.6	.8	1.3	1.7	1.0	.7	.8	1.3	2.0	4.2	7.1	5.2	3.5	.0	35.4				
8-12	.7	.5	.2	.1	.1	.2	.4	.2	.2	.5	1.0	1.7	2.5	2.8	3.3	1.8	.0	16.1				
13-18	.1	.2	.1	.0	.0	.0	.0	.0	.1	.3	.9	1.3	.7	.7	2.1	.4	.0	7.0				
19-24	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.4	.4	.2	.1	.8	.1	.0	2.2				
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.1	.0	.0	.1	.0	.0	.4				
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0				
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0				
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0				
TOTAL	5.9	3.9	2.6	2.0	2.4	3.2	4.2	3.2	2.8	3.5	5.9	8.4	11.4	15.2	15.1	8.4	1.6	100.0				

Station: (8B) BVLY

	Begin: 8/91										End: 12/93										Total Hours:	
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM	TOTAL				
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.6	1.6			
1-3	2.8	2.2	1.6	1.2	1.5	1.9	2.2	2.0	1.9	1.5	1.3	1.3	1.3	1.5	1.9	2.3	.0	28.4				
4-7	8.7	3.4	.5	.3	.8	3.2	1.9	1.3	1.2	1.0	.7	.8	1.2	1.9	4.0	6.2	.0	37.1				
8-12	7.3	2.4	.2	.0	.2	1.1	.3	.2	.2	.2	.4	.3	.8	2.3	2.8	2.3	.0	20.9				
13-18	.5	.4	.0	.0	.0	.0	.0	.0	.1	.1	.3	.2	.3	2.9	2.7	.1	.0	7.8				
19-24	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.1	.1	.0	1.4	1.4	.1	.0	3.2				
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0	.0	.5	.3	.0	.0	.9				
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0	.1				
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0				
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0				
TOTAL	19.3	8.4	2.3	1.5	2.5	6.3	4.4	3.5	3.3	2.7	2.9	2.6	3.6	10.8	13.1	11.0	1.6	100.0				

TABLE B.1. (contd)

Station: (8W) WAHL

	DIRECTION														Total Hours:			79579
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM	TOTAL
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.3	1.3
1-3	1.9	2.0	2.9	3.4	4.6	3.1	2.2	1.6	1.7	1.7	1.8	2.1	2.8	2.7	2.4	2.1	.0	39.2
4-7	1.3	1.7	1.8	2.8	5.2	1.9	.8	.5	.6	.8	.9	1.8	4.7	5.3	2.7	1.2	.0	33.8
8-12	.6	.9	.5	.5	.8	.1	.1	.1	.2	.3	.5	.7	2.9	4.4	1.5	.5	.0	14.5
13-18	.3	.3	.2	.1	.1	.0	.0	.0	.1	.2	.5	.4	1.2	3.3	1.2	.2	.0	7.8
19-24	.1	.1	.0	.0	.0	.0	.0	.0	.0	.1	.2	.1	.2	1.2	.5	.1	.0	2.6
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0	.0	.3	.1	.0	.0	.6
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TOTAL	4.0	5.0	5.3	6.7	10.7	5.2	3.1	2.2	2.5	3.0	4.0	5.2	11.9	17.2	8.4	4.1	1.3	100.0

Station: (9) FFTF

	DIRECTION														Total Hours:			101168
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM	TOTAL
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.4	.4
1-3	1.2	1.1	1.0	.9	.9	1.0	1.1	1.1	1.3	1.3	1.2	1.0	1.0	1.1	1.3	1.3	.0	17.6
4-7	2.7	2.5	2.0	1.1	1.1	1.4	2.6	3.8	4.1	3.6	2.0	1.2	1.5	2.2	3.4	3.1	.0	38.4
8-12	1.4	1.3	.7	.2	.2	.2	1.0	3.1	3.8	4.5	1.8	.8	1.0	2.1	4.0	2.4	.0	28.6
13-18	.2	.3	.2	.0	.0	.0	.1	.3	.8	3.0	1.8	.7	.5	.9	1.5	.5	.0	11.0
19-24	.0	.1	.0	.0	.0	.0	.0	.0	.1	.5	.8	.4	.2	.2	.5	.1	.0	2.9
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.4	.1	.0	.0	.1	.0	.0	.8
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0	.0	.2
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TOTAL	5.6	5.4	3.9	2.3	2.1	2.7	4.8	8.3	10.1	13.0	8.1	4.2	4.2	6.6	10.8	7.3	.5	100.0

Station: (10) YAKB

	DIRECTION														Total Hours:			101819
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM	TOTAL
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.6	.6
1-3	1.9	1.7	1.6	1.2	1.0	1.1	1.2	1.3	1.3	1.3	1.5	2.1	2.8	2.2	1.8	1.8	.0	25.8
4-7	3.6	2.7	1.5	.9	.8	.9	1.4	1.2	1.0	1.1	1.7	3.3	6.7	4.5	4.0	3.6	.0	38.8
8-12	1.2	.5	.2	.1	.1	.2	.3	.2	.3	.6	1.5	2.4	2.8	2.3	5.4	3.3	.0	21.2
13-18	.1	.2	.1	.0	.0	.0	.0	.0	.1	.3	1.1	1.4	.6	.8	3.6	1.1	.0	9.4
19-24	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.5	.4	.1	.2	1.7	.2	.0	3.3
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.2	.1	.0	.0	.3	.0	.0	.7
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TOTAL	6.8	5.1	3.4	2.1	1.9	2.2	2.9	2.8	2.8	3.4	6.5	9.7	13.0	10.0	16.8	10.0	.7	100.0

Station: (11) 300A

	DIRECTION														Total Hours:			88577
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM	TOTAL
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.5	.5
1-3	1.2	.7	.6	.6	.8	1.3	1.8	1.9	1.8	1.5	1.5	1.3	1.3	1.4	1.8	1.8	.0	21.1
4-7	3.5	1.7	1.1	1.1	1.8	4.2	6.6	3.7	3.0	2.5	2.0	1.3	.9	1.1	2.2	4.0	.0	40.7
8-12	3.4	1.9	.8	.3	.4	1.2	1.6	.8	1.5	3.0	3.3	1.7	.6	.4	1.2	2.6	.0	24.8
13-18	.6	.4	.1	.1	.0	.0	.1	.1	.3	1.4	2.4	1.3	.4	.2	.8	.8	.0	9.1
19-24	.1	.1	.0	.0	.0	.0	.0	.0	.1	.4	.8	.4	.2	.0	.3	.2	.0	2.6
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.4	.1	.1	.0	.1	.0	.0	.9
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0	.0	.2
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TOTAL	8.7	4.8	2.7	2.0	3.0	6.7	10.0	6.5	6.7	9.0	10.6	6.1	3.5	3.1	6.4	9.5	.6	100.0

TABLE B.1. (contd)

Station: (12) WYEB

	DIRECTION															Total Hours:		
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM	TOTAL
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.4	.4
1-3	1.2	1.1	1.1	1.1	1.3	1.5	1.4	1.4	1.5	1.3	1.4	1.3	1.2	1.2	1.3	1.3	.0	20.5
4-7	2.3	1.5	1.2	1.1	1.9	1.8	2.4	3.1	3.9	3.1	2.7	2.5	2.9	3.3	3.7	2.8	.0	40.3
8-12	1.1	.6	.3	.2	.3	.3	.7	1.6	2.8	2.8	1.9	1.5	2.3	4.3	3.2	1.5	.0	25.2
13-18	.3	.2	.1	.0	.0	.0	.1	.2	.8	1.5	1.1	.8	.9	1.7	1.4	.4	.0	9.6
19-24	.0	.1	.0	.0	.0	.0	.0	.0	.1	.4	.6	.4	.2	.4	.6	.1	.0	3.0
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.3	.1	.1	.1	.2	.0	.0	.9
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0	.0	.1
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TOTAL	4.9	3.5	2.7	2.5	3.4	3.6	4.5	6.4	9.1	9.3	8.1	6.5	7.6	10.9	10.3	6.1	.4	100.0

Station: (13) 100N

	DIRECTION															Total Hours:		
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM	TOTAL
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.8	.8
1-3	2.1	1.7	1.9	2.2	3.0	3.1	2.6	1.9	1.8	1.8	2.4	2.9	3.2	3.2	3.1	2.5	.0	39.5
4-7	1.4	1.6	1.6	1.8	2.6	2.6	2.3	1.3	1.0	1.1	2.4	4.6	4.7	3.1	2.0	1.6	.0	35.7
8-12	.5	.8	.6	.2	.3	.4	.8	.4	.3	.5	1.2	2.2	3.0	2.3	.8	.4	.0	14.6
13-18	.2	.4	.2	.1	.0	.0	.1	.1	.1	.2	.7	.6	1.2	1.8	.7	.1	.0	6.7
19-24	.1	.1	.1	.0	.0	.0	.0	.0	.0	.1	.3	.2	.2	.6	.4	.0	.0	2.2
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0	.0	.1	.0	.0	.0	.6
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TOTAL	4.2	4.5	4.4	4.4	5.9	6.2	5.8	3.8	3.2	3.8	7.2	10.4	12.4	11.2	7.0	4.7	.8	100.0

Station: (14) WPPS

	DIRECTION															Total Hours:		
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM	TOTAL
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.8	.8
1-3	2.6	2.2	2.0	1.4	1.2	1.2	1.6	2.1	2.5	2.2	1.9	1.6	1.7	2.0	2.9	3.0	.0	32.1
4-7	3.3	2.2	2.0	1.1	.7	.9	1.8	4.1	5.2	3.1	1.7	1.2	1.3	2.0	3.8	4.2	.0	38.7
8-12	1.2	.7	.4	.2	.1	.2	.6	1.6	3.0	2.6	1.5	.8	.9	1.7	2.2	1.3	.0	18.7
13-18	.3	.2	.1	.0	.0	.0	.0	.2	.6	1.5	1.1	.5	.4	.8	1.3	.3	.0	7.1
19-24	.0	.1	.0	.0	.0	.0	.0	.0	.4	.5	.2	.1	.1	.5	.1	.0	.0	2.0
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.1	.2	.1	.0	.0	.1	.0	.0	.0	.5
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TOTAL	7.4	5.3	4.5	2.7	2.0	2.3	4.0	8.0	11.3	9.9	6.9	4.3	4.5	6.6	10.6	8.8	.8	100.0

Station: (15) FRNK

	DIRECTION															Total Hours:		
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM	TOTAL
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.8	.8
1-3	1.2	1.0	1.0	.8	.9	1.1	1.5	1.6	1.3	1.1	1.2	1.2	1.4	1.4	1.6	1.4	.0	19.9
4-7	4.1	2.7	1.7	1.1	1.4	2.2	4.6	4.1	3.5	2.9	2.5	1.4	1.4	2.0	4.4	5.1	.0	45.1
8-12	1.8	1.0	.6	.3	.3	.6	1.5	1.4	2.3	4.5	3.6	1.0	.5	.6	2.2	2.7	.0	24.9
13-18	.2	.2	.2	.1	.0	.0	.1	.1	.4	1.9	2.1	.7	.3	.2	.5	.2	.0	7.2
19-24	.0	.1	.0	.0	.0	.0	.0	.0	.3	.6	.2	.1	.0	.1	.0	.0	.0	1.5
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.1	.3	.1	.0	.0	.0	.0	.0	.0	.5
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TOTAL	7.3	5.0	3.5	2.4	2.7	3.9	7.7	7.1	7.5	10.9	10.3	4.6	3.6	4.3	8.9	9.5	.9	100.0

TABLE B.1. (contd)

Station: (16) GABL

	DIRECTION															Total Hours:			
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM	TOTAL	
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.6	.6	
1-3	1.0	1.0	.9	.7	.7	.6	.7	.8	1.1	1.1	1.0	.9	.8	.8	.9	1.0	.0	14.0	
4-7	2.3	2.4	1.6	.9	.9	.9	1.3	2.1	3.2	2.5	1.8	1.6	1.6	1.7	2.2	2.2	.0	29.3	
8-12	2.1	2.2	1.0	.3	.3	.5	.8	1.5	2.4	1.5	1.4	1.5	1.5	1.7	2.2	2.8	1.9	.0	24.2
13-18	1.3	1.4	.5	.1	.0	.1	.3	.9	1.4	.9	1.3	1.5	1.7	2.8	2.5	.7	.0	17.3	
19-24	.4	.5	.3	.0	.0	.0	.0	.3	.6	.4	.8	.8	.9	2.7	1.6	.2	.0	9.6	
25-31	.1	.2	.2	.0	.0	.0	.0	.0	.2	.3	.6	.4	.2	1.2	.5	.0	.0	3.9	
32-38	.0	.0	.1	.0	.0	.0	.0	.0	.0	.1	.3	.1	.0	.2	.0	.0	.0	.9	
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.1	.0	.0	.0	.0	.0	.0	.3	
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
TOTAL	7.3	7.6	4.6	2.0	1.9	2.1	3.0	5.7	8.9	6.8	7.3	6.9	7.0	11.6	10.6	6.0	.7	100.0	

Station: (17) RING

	DIRECTION															Total Hours:		
	DIR	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.3	1.3
1-3	2.4	4.0	8.2	4.2	2.5	1.9	1.6	1.5	1.7	1.9	2.4	2.7	2.4	1.6	1.7	1.9	.0	42.8
4-7	1.5	2.0	8.9	2.9	1.0	.8	1.0	1.4	1.9	3.0	2.6	2.6	2.3	1.5	1.3	1.0	.0	35.7
8-12	.4	.5	.7	.3	.0	.1	.2	.4	.9	3.1	2.1	1.1	1.4	1.6	.9	.1	.0	14.0
13-18	.1	.1	.2	.0	.0	.0	.0	.0	.1	.8	.9	.4	.5	1.3	.4	.0	.0	4.9
19-24	.0	.0	.1	.0	.0	.0	.0	.0	.0	.1	.3	.1	.1	.3	.1	.0	.0	1.1
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0	.0	.2
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TOTAL	4.3	6.6	18.1	7.4	3.6	2.8	2.8	3.4	4.6	8.9	8.3	7.1	6.7	6.7	4.3	3.1	1.3	100.0

Station: (18) RICH

	DIRECTION															Total Hours:		
	DIR	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.3	1.3
1-3	1.3	.8	.9	1.0	1.6	2.6	3.0	2.4	2.1	2.1	2.5	2.8	2.7	2.6	2.5	1.9	.0	32.8
4-7	1.8	1.0	.9	.9	1.7	2.6	2.9	1.7	1.6	2.8	4.2	3.4	2.6	2.9	3.0	2.5	.0	36.2
8-12	1.3	.7	.4	.3	.2	.1	.3	.2	.5	2.5	4.0	3.0	1.6	.9	1.4	1.5	.0	18.8
13-18	.3	.2	.1	.0	.0	.0	.0	.0	.1	1.1	2.3	1.3	.9	.4	.8	.7	.0	8.3
19-24	.1	.0	.0	.0	.0	.0	.0	.0	.0	.2	.7	.3	.2	.1	.3	.2	.0	2.1
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.2	.1	.0	.0	.1	.0	.0	.5
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TOTAL	4.8	2.7	2.3	2.2	3.4	5.3	6.2	4.3	4.3	8.8	13.9	10.9	8.0	6.9	8.0	6.8	1.3	100.0

Station: (19) SAGE

	DIRECTION															Total Hours:		
	DIR	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	CALM
CALM	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.7	.7
1-3	1.3	1.1	1.2	1.0	1.1	1.4	1.7	1.9	1.8	1.1	1.7	1.5	1.5	1.3	1.6	1.6	.0	23.3
4-7	3.6	2.9	3.3	2.5	2.1	3.2	4.2	4.9	4.3	2.4	2.2	3.4	4.4	2.5	1.9	3.4	.0	51.2
8-12	1.4	1.3	.9	.4	.4	.5	1.3	2.3	2.7	1.3	1.1	1.3	1.5	1.8	.4	.6	.0	19.1
13-18	.2	.3	.1	.0	.0	.1	.3	.7	.6	.5	.5	.2	.8	.2	.1	.0	.0	4.5
19-24	.0	.0	.1	.0	.0	.0	.0	.0	.1	.2	.2	.1	.0	.1	.0	.0	.0	.9
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.1	.0	.0	.0	.0	.0	.0	.2
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TOTAL	6.6	5.7	5.6	3.9	3.6	5.2	7.2	9.3	9.6	6.1	5.9	6.8	7.5	6.5	4.1	5.7	.7	100.0

TABLE B.1. (contd)

TABLE B.1. (contd)

Station: (24) 100F

	Begin:	3/86	DIRECTION	End:	12/93	Total Hours:	66262										
CALM	N	NNE	NE	ENE	ESE	SE	SSE	S	SSW	SW	WSW	W	NNW	NW	NNW	CALM	TOTAL
1-3	1.8	1.4	1.2	1.1	1.5	2.0	3.0	2.9	2.3	1.8	1.9	2.4	3.6	4.2	3.6	2.4	1.2
4-7	2.0	1.4	1.1	1.2	1.2	1.7	5.6	5.8	1.5	.8	.9	1.6	3.3	3.6	2.6	1.9	37.0
8-12	1.0	.7	.3	.2	.2	.5	2.5	2.3	.5	.5	.7	1.2	2.5	2.5	.6	.5	36.3
13-18	.2	.3	.1	.0	.0	.0	.3	.2	.2	.2	.5	.8	1.0	1.8	.4	.1	16.8
19-24	.0	.1	.0	.0	.0	.0	.0	.0	.0	.1	.1	.3	.2	.6	.2	.0	6.3
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.1	.1	.1	.1	.1	.1	.0	.0	2.0
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.4
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TOTAL	5.0	3.9	2.8	2.6	2.9	4.2	11.3	11.3	4.6	3.5	4.4	6.3	10.7	12.9	7.4	4.9	1.2
																	100.0

Station: (25) VERN

Begin: 2/88

End: 12/93

Total Hours: 50342

	DIRECTION																	
CALM	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	NNW	NW	NNW	CALM	TOTAL
1-3	1.0	1.0	0	0	0	0	0	0	0	0	0	0	0	1.3	1.0	0	1.3	1.3
4-7	1.1	1.2	1.5	1.9	2.4	2.2	1.9	1.3	.9	1.3	2.5	2.9	1.7	1.2	1.0	0	25.9	
8-12	.8	1.3	2.0	2.8	3.3	2.0	.9	.4	.4	4.5	4.0	7.2	4.0	2.1	1.1	0	33.3	
13-18	.5	.3	.4	.5	.3	.2	.1	.1	.2	4.6	2.0	7.1	6.8	2.8	.8	0	22.9	
19-24	.3	.2	.1	.0	.0	.0	.0	.0	.0	1.1	2.4	6.7	2.1	5.0	2.5	.3	12.3	
25-31	.1	.0	.0	.0	.0	.0	.0	.0	.0	1.2	4.2	4.4	1.3	.8	.1	0	3.5	
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.1	2.1	1.0	1.1	.0	0	.0	.7	
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.1	
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTAL	2.8	3.2	4.0	5.1	6.0	4.4	3.0	1.9	1.5	2.1	3.6	9.5	19.8	18.9	9.4	3.2	1.3	100.0

Station: (27) VSTA

Begin: 2/91

End: 12/93

Total Hours: 24833

	DIRECTION																	
CALM	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	NNW	NW	NNW	CALM	TOTAL
1-3	2.2	2.3	2.2	1.9	1.8	2.0	2.2	1.8	2.1	2.4	2.8	2.6	2.4	1.9	1.8	1.6	0	34.1
4-7	3.1	2.0	1.6	1.5	.8	1.2	1.4	1.2	1.8	3.8	5.9	4.2	2.8	2.5	3.0	2.9	0	39.7
8-12	.6	.2	.1	.0	.0	.1	.1	.1	.1	3.5	5.2	2.5	2.8	2.5	1.0	1.3	0	16.5
13-18	.1	.0	.0	.0	.0	.0	.0	.0	.0	1.5	3.1	1.0	.4	.2	.0	.0	0	6.9
19-24	.0	.0	.0	.0	.0	.0	.0	.0	.0	.3	.9	.3	.0	.0	.0	.0	0	1.6
25-31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.2	.1	.0	.0	.0	.0	0	.2
32-38	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0	.0
39-46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0	.0
> 46	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0	.0
TOTAL	6.1	4.5	4.0	3.4	2.7	3.2	3.7	3.1	4.5	11.6	18.1	10.7	6.4	5.1	6.0	6.0	1.0	100.0

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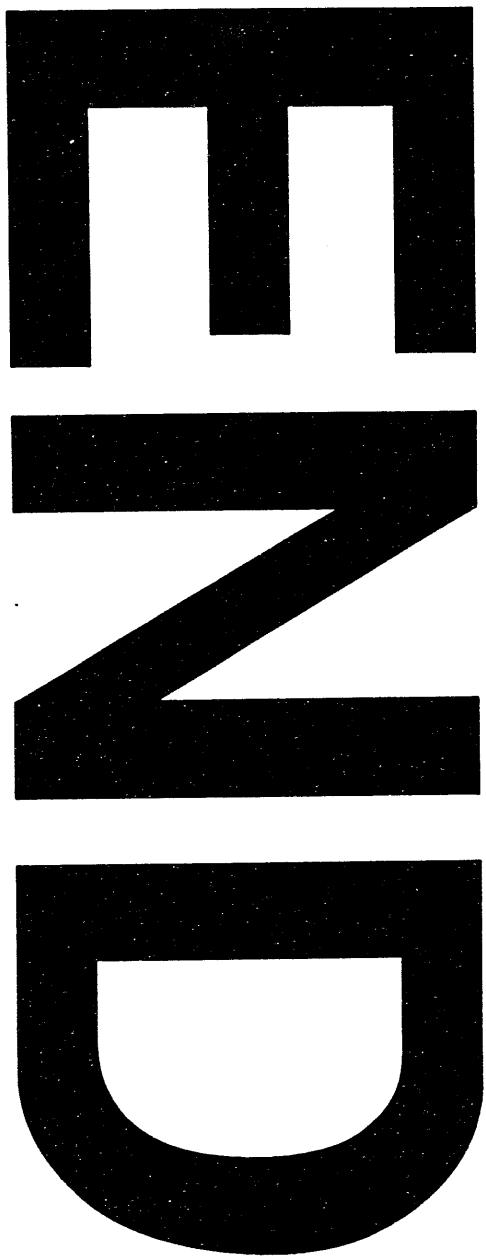
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