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CDS #2–73
Supplement #4

ATMOSPHERIC ENVIRONMENT SERVICE

A SUMMARY OF SHIP DATA FROM THE AREA OF THE 1976 OLYMPIC SAILING EVENTS

The original CDS #2–73 presented data from the regular climatological network in the Kingston Area. The first two supplements contained observations from a tower located near the sailing courses themselves while the third summarized the weather which occurred during the CORK '74 event.

This document summarizes observations made from commercial and research vessels for the months July and August, during the period 1960–1973 for a 625 km^2 area surrounding the course sites (fig. 1). Averages, extremes, frequencies and distributions were calculated for a number of meteorological variables. These are presented in the following tables, graphs and diagrams.

One must use these summaries as only very rough guides for a number of reasons:

(a) there is a distinct fair-weather bias. Not only do the vessels avoid heavy weather or poor weather if possible, but if they happen to meet it, the weather observation is a low priority item when compared with tasks directly related to safety;

(b) since many vessels cease making weather observations when close to shore, the sample size is very small;

(c) not all vessels are equipped to observe all variables, so the number of observations in some classes is very small.

It must be emphasized that the following summaries are based solely on ship data; no attempt has been made to merge the data from the regular network or from the Bedford tower. In any event, it is hoped that they will prove of some value to competitors because they do help to fill a gap in the overall climatological picture. The detail must continue to come from the tower and other studies which will be undertaken during CORK '75.

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TABLE 1

Climatological Averages and Extremes for the Months of July and August

	Mean	Extreme Maximum and Date	Extreme Minimum and Date	Number of Observations
Air Temperature °C	20.6	31.0 24/8/69	14.5 11/8/68	104
Surface Water Temperature °C	20.1	24.0 18/8/70	9.0 16/6/71	100
Air-Water Temperature Difference °C	0.5	12.0 9/8/67	-7.6 9/8/67	100
Wind Speed Kts	12.4	29.0 15/8/71	Calm	103
Wave Height m	0.5	1.5 16/6/71	Calm	49
Sea Level Pressure mb	1013.9	1027.4 25/8/67	1000.1 2/8/66	77
Sky Cover oktas	4/8	Overcast	Clear	104
Dew Point-Water Temperature Difference °C	-4.7	-0.2 2/8/66	-15.2 11/8/68	33

Notes: (1) Few ships are equipped to measure dewpoint.
(2) Wave observations have not been emphasized, and thus are frequently missing.

TABLE 2

Mean Surface Water Temperature (°C) by Wind Direction. Total Number of Observations 99

	Mean Surface Water Temperature	Number of Observations
N	20.0	14
NE	19.0	9
E	21.2	3
SE	21.1	5
S	20.5	16
SW	20.2	28
W	20.0	13
NW	20.1	11

TABLE 3

Means and Extremes of Surface Water Temperature (°C) by Six-hour Time Periods (LST). Total Number of Observations 100.

Time (LST)	Mean Surface Water Temperature	Number of Observations	Extreme Maximum Water Temperature and Date	Extreme Minimum Water Temperature and Date
00–05	20.4	15	23.0 8/8/1969	18.0 17/7/70
06–11	19.8	32	23.0 6/8/1969	9.0 16/7/71
12–17	20.5	27	23.0 4/7/1966	14.5 5/7/68
18–23	20.2	26	24.0 18/8/1970	16.0 21/7/66

TABLE 4

Mean Sea-Level Pressure (mb) by Six-Hour Time Periods (LST). Total Number of Observations 77.

Time (LST)	Pressure (mb)
00–05	1013.6
06–11	1013.8
12–17	1013.1
18–23	1015.0

TABLE 5

Number of Cloud Height Observations by Wind Direction.
Total Number of Observations 32.

	Height in Feet					Absolute Total and Percentage
	0-100	200-1900	2000-6500	6600-8200	8200 or no clouds	
N		3	2			5 (16)
NE		1		1	1	3 (9)
E			1			1 (3)
SE			1			1 (3)
S			7		5	12 (38)
SW			2		3	5 (16)
W			2			2 (6)
NW		1	1		1	3 (9)
Calm						
Total		5	16	1	10	32 (100)

Notes (1) Unfortunately, very few cloud observations are available. Almost half fall into the 2000-6500 foot range, with a further third in the highest range. Ordinarily, this might suggest a high probability of fair weather, but the bias alluded to in the introduction must be considered. The number from S and SW is just below the probability that the wind is from those directions.

(2) Cloud height is taken as the base of the lowest cloud seen, irrespective of fraction of the sky covered by clouds; as little as 1/8 or as much as 8/8 may have been observed with these heights.

TABLE 6

Number of Observations with Smoke, Mist or Haze and Fog.
Total Number of Weather Observations 102.
Number of Observations with Visibility Greater
than 5.4 naut. miles 84.

	Number of Observations
Smoke, Mist or Haze	10
Fog	2

Notes: (1) An occurrence of smoke, mist or haze has an upper visibility limit of 5.4 naut. miles.

(2) An occurrence of fog is one in which fog has been reported at the time of observation, or has prevailed since the last synoptic weather report, together with visibility less than 5/8 mile.

TABLE 7

Number of Observations with an Occurrence of Precipitation by Wind Direction.
Total Number of Observations 102.

	Number of Observations with Precipitation (Rain)	%	Number of Weather Observations
N	1		13
NE	1		9
E			3
SE			6
S	1		33
SW	3		17
W			9
NW			11
Calm			1
Total	6		102

Notes: When these 6 cases are added to the 12 from Table 6, only 18 of 102 observations of weather showed restrictions to visibility. Two thirds of the observations on this table are associated with S and SW winds, which proves little because of the high probability of those directions occurring

TABLE 8

Number of Observations with an Occurrence of Precipitation by Six-Hour Time Periods (LST).
Total Number of Observations 102.

Time (LST)	Number of Observations with Rain	Number of Weather Observations
00–05	0	15
06–11	1	33
12–17	2	28
18–23	3	26
Total	6	102

TABLE 9

Number of Visibility Observations (yards or nautical miles) by Wind Direction.
Total Number of Observations 102.

	less than 1100 yd	1100 yds to 2.2 n mi	2.2 n mi to 5.4 n mi	>5.4 n mi	TOTAL
N			2	11	13
NE			1	8	9
E				3	3
SE				6	6
S	1	2	8	22	33
SW		2	2	13	17
W			2	7	9
NW				11	11
Calm	1				1
Total	2	4	15	81	102

Notes: (1) Because there are only 102 observations in this sample the number of occurrences is a very close estimate of the percentage.

(2) The low occurrence of low visibility may just reflect the avoidance of the area by ships because of the weather there.

TABLE 10

Number (Percentage) of Observations of Wind Speed Less than 10 Knots by Six-Hour Time Periods (LST).
Total Number of All Wind Observations 103.

	Number of Observations	Number of Winds < 10 Kt (Percentage of all winds <10 Kt by time periods	Percentage of Winds <10 Kt of all Winds for the time period
00–05	15	3 (7)	20
06–11	33	13 (31)	39
12–17	28	13 (31)	46
18–23	27	13 (31)	48
Total	103	42 (100)	

TABLE 11

Number (Percentage) of Significant Wave Heights (m).
Total Number of Observations 49.

0.5m or less	36	(74)
0.6m–1.0m	11	(22)
1.1m–2.0m	2	(4)
Total	49	(100)

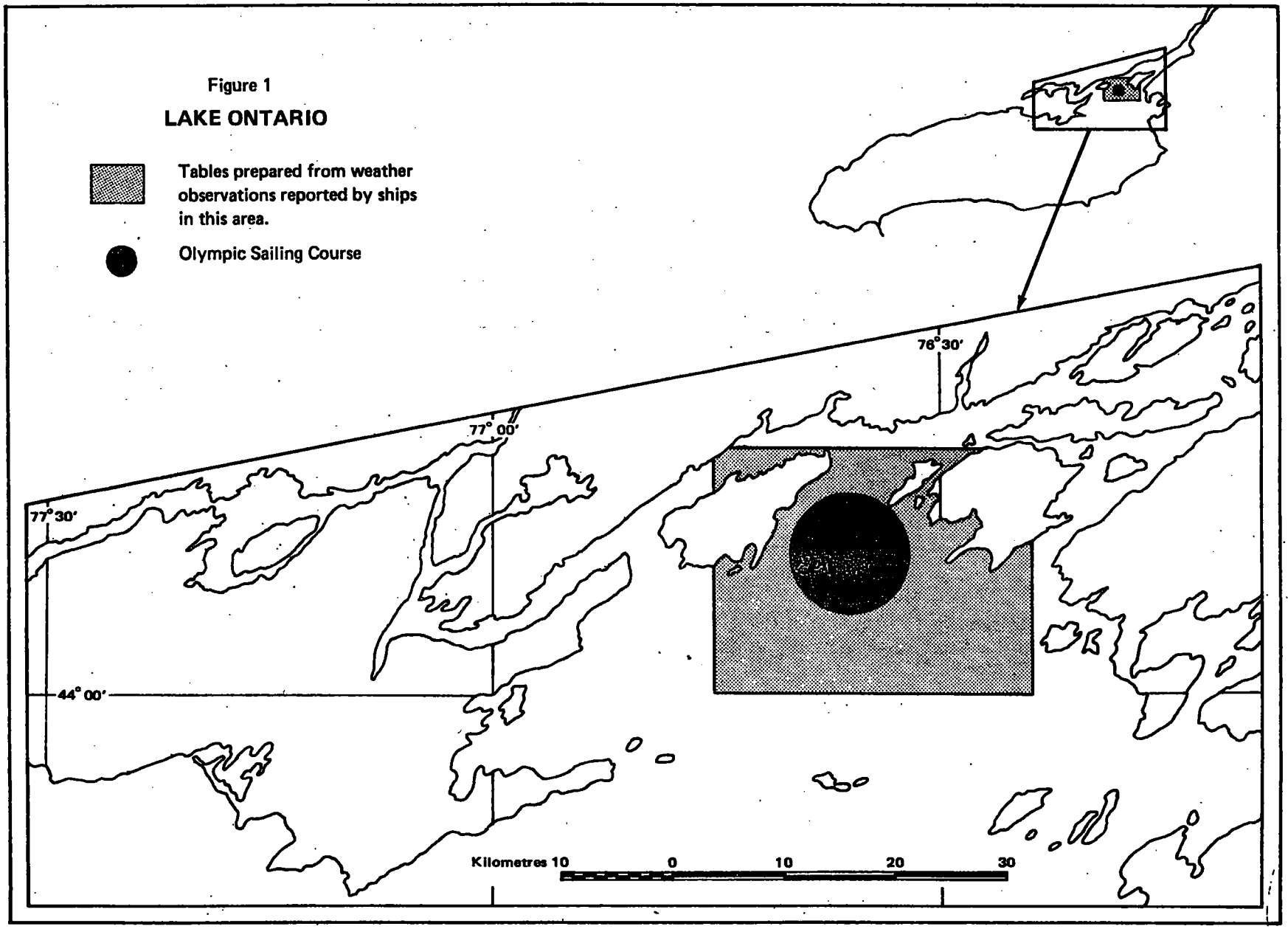
TABLE 12

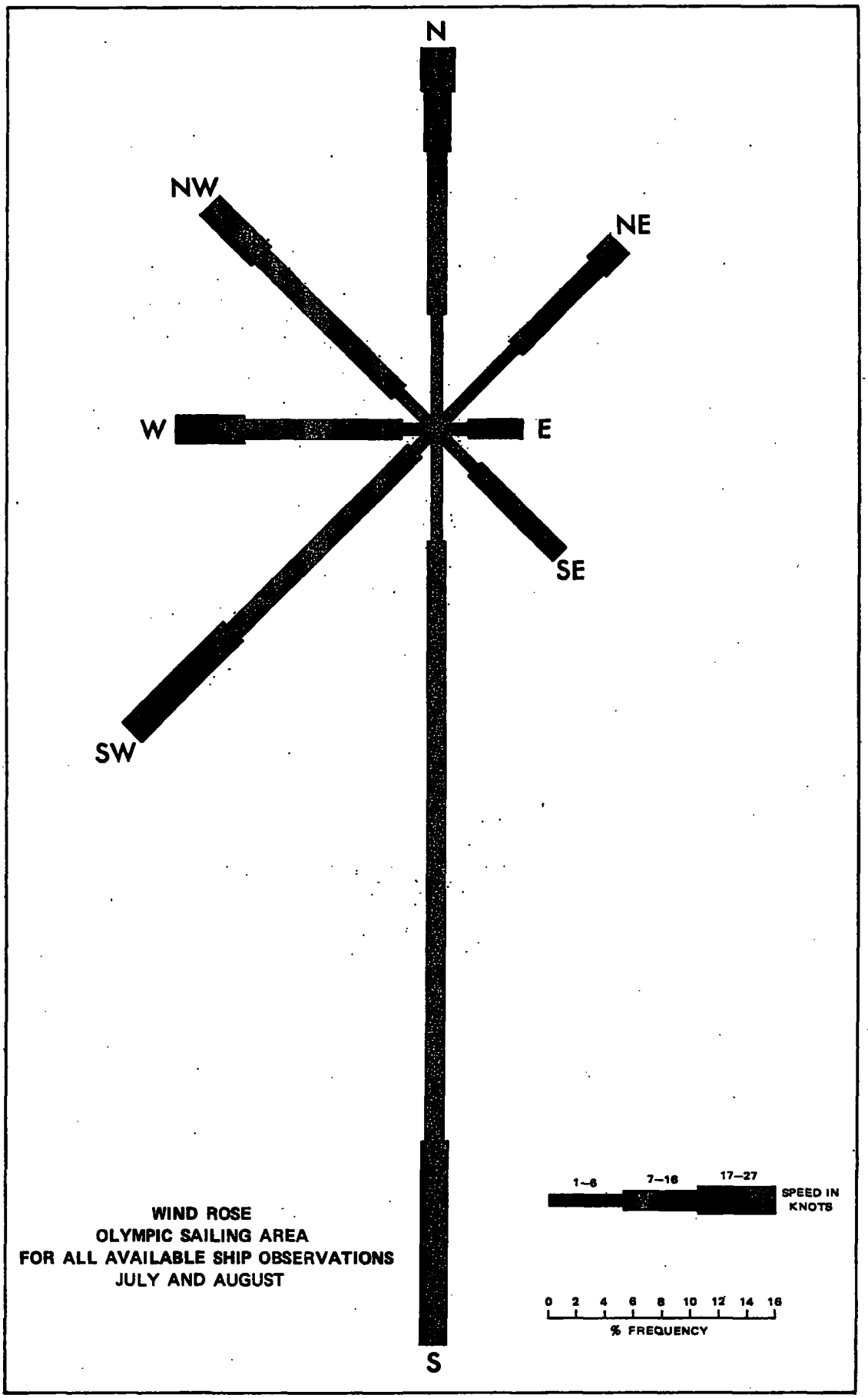
Number of Sky Cover Observations by Wind Direction.
Total Number of Observations 103. Sky Cover (Oktas)

	0/8 (Cloudless)	1/8 to 4/8	5/8 to 7/8	8/8	Obscured Sky	Total
N	1	7	3	3	0	14
NE		5	2	2	0	9
E			1	2	0	3
SE	1	3	1	1	0	6
D	4	13	7	10	0	34
SW	2	8	1	6	0	17
W		6	2	1	0	9
MW	3	7	1			11
Calm						
Total	11	49	18	25	0	103

Figure 1

LAKE ONTARIO





WIND ROSE
OLYMPIC SAILING AREA
FOR ALL AVAILABLE SHIP OBSERVATIONS
JULY AND AUGUST