

# LOCAL CLIMATOLOGICAL DATA

## Monthly Summary

### July 2003

Station: Westford  
 Latitude: 44° 37' 39" N Longitude: 73° 02' 29" W Elevation (Ground): 850 feet Time Zone: Eastern

Date	Temperature					Humidity	Deg. Days		Precip Ty 1 fog 2 hvy fog 3 thunder 4 ice plt 5 hail 6 glaze 7 duststm 8 smk, hz 9 blw snw	Snow Cvr	Precip		Pressure			Wind						Sun		
	Maximum	Minimum	Average	Mean	Dew Point		Mean	Heating			Cooling	Water Equivalent	Ice Pellets Snow	Adj. to Sea Level			Avg Speed	Res Speed	Res Dir	Peak			Minute	
														Maximum	Minimum	Mean				Speed	Dir		Speed	Dir
1	2	3	4A	4B	5	6	7	8	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	78.5	56.3	67.4	67.2	55	68	0	2	.....	0	0.00	0.0	30.08	29.92	30.013	2.3	1.5	229	27	W	0	0		
2	80.9	55.4	68.2	68.8	60	74	0	3	.....	0	0.00	0.0	29.97	29.77	29.889	1.1	0.8	198	14	SE	0	0		
3	82.8	63.2	73.0	73.5	65	74	0	8	.....	0	0.00	0.0	29.81	29.70	29.761	3.0	2.9	182	17	S	2	180		
4	87.0	64.0	75.5	74.8	66	74	0	10	.....	0	0.00	0.0	29.76	29.62	29.700	2.4	2.2	202	16	SSW	0	216		
5	86.7	65.0	75.8*	75.8	66	74	0	10	.....	0	0.06	0.0	29.71	29.64	29.678	2.2	1.8	227	20	WNW	0	0		
6	82.0	65.6	73.8	74.0	62	68	0	8	.....	0	0.00	0.0	29.86	29.69	29.775	1.7	1.5	275	16	WNW	0	0		
7	78.8	59.8	69.3	69.8	63	79	0	4	.....	0	0.04	0.0	29.92	29.80	29.864	0.8	0.7	188	12	S	0	0		
8	84.9	64.0	74.5	74.2	66	77	0	9	.....	0	0.00	0.0	29.80	29.65	29.742	3.3	2.6	224	24	W	2	252		
9	75.1	54.2	64.6	66.4	53	63	1	0	.....	0	0.00	0.0	29.99	29.75	29.870	1.3	1.1	303	20	WNW	0	0		
10	77.0	49.9*	63.5	64.0	50	63	2	0	.....	0	0.00	0.0	30.07	29.86	29.976	0.7	0.1	261	13	W	0	0		
11	67.9	53.1	60.5	59.9	55	85	5	0	.....	0	0.68	0.0	29.87	29.65	29.752	3.4	3.1	171	19	S	0	0		
12	72.8	57.0	64.9	64.1	58	82	1	0	.....	0	0.08	0.0	29.83	29.70	29.731	3.0	2.5	192	21	S	3	220		
13	72.7	56.2	64.4	61.6	57	86	1	0	.....	0	0.16	0.0	30.11	29.82	29.964	2.4	2.0	207	19	WNW	0	0		
14	80.5	54.5	67.5	67.8	57	71	0	2	.....	0	0.00	0.0	30.20	30.07	30.130	2.0	1.8	198	13	SSW	0	0		
15	83.6	61.5	72.5	71.6	58	65	0	7	.....	0	0.00	0.0	30.10	29.87	29.995	2.3	2.1	187	14	S	0	0		
16	75.6	63.4	69.5	69.3	63	81	0	4	.....	0	0.10	0.0	29.90	29.77	29.811	3.3	2.7	199	22	S	0	0		
17	79.6	63.1	71.3	69.8	59	70	0	6	.....	0	0.00	0.0	29.99	29.88	29.928	2.2	1.8	257	14	W	0	0		
18	75.3	55.9	65.6	66.0	54	68	0	0	.....	0	0.00	0.0	29.94	29.86	29.902	0.9	0.8	293	17	WNW	0	0		
19	73.5	53.2	63.4	63.2	54	75	2	0	.....	0	0.12	0.0	29.95	29.89	29.917	1.5	1.1	246	18	W	9	260		
20	79.9	52.9	66.4	66.0	56	74	0	1	.....	0	0.06	0.0	29.95	29.84	29.898	1.9	1.5	191	14	WSW	0	0		
21	73.7	59.5	66.6	66.2	62	86	0	1	.....	0	0.31	0.0	29.86	29.64	29.743	3.0	2.9	182	22	S	3	163		
22	75.8	61.6	68.7	66.7	64	92	0	3	.....	0	0.29	0.0	29.76	29.60	29.702	1.3	1.0	204	12	S	0	0		
23	71.1	62.7	66.9	66.1	65	97	0	1	.....	0	0.68	0.0	29.88	29.75	29.796	0.1	0.1	328	8	WNW	0	0		
24	74.9	60.4	67.7	66.7	65	95	0	2	.....	0	0.36	0.0	29.97	29.83	29.876	0.8	0.5	241	13	WNW	0	0		
25	80.7	59.3	70.0	69.5	60	75	0	4	.....	0	0.01	0.0	30.11	29.97	30.056	2.2	1.9	227	14	SSW	0	0		
26	80.3	60.7	70.5	69.8	60	73	0	5	.....	0	0.08	0.0	30.13	29.92	30.035	3.4	3.1	196	20	WNW	0	0		
27	73.0	61.3	67.1	66.6	64	92	0	2	.....	0	0.40	0.0	29.92	29.57	29.698	3.8	2.9	215	21	S	5	293		
28	67.6	51.9	59.8*	61.1	55	80	6	0	.....	0	0.01	0.0	29.83	29.72	29.787	3.1	2.8	280	21	WNW	0	0		
29	78.8	51.1	65.0	65.4	57	76	1	0	.....	0	0.23	0.0	30.02	29.83	29.901	1.3	0.9	191	12	S	0	0		
30	80.7	54.7	67.7	66.6	60	82	0	2	.....	0	0.00	0.0	30.16	30.01	30.103	0.8	0.6	203	12	SSW	0	0		
31	84.7	55.4	70.0	69.6	62	78	0	5	.....	0	0.00	0.0	30.20	30.09	30.142	0.6	0.4	173	11	SSE	0	0		
Sum	Sum	-----	-----	---	----	Ttl	Ttl						For the month:						---					
2416	1807					19	99	Number of Days		3.67	0.0	30.20	29.57	29.875	2.0	1.4	212	27	W	9	260			
Avg	Avg	Avg	Mean	Avg	Avg	----	----	Precip		Season Ttl	Date	Date	-----	----	----	----	----	Date	Date	Avg				
77.9	58.3	68.1	67.8	60	77.3	----	----	>.01 inch	17	20.80	0.0	31	27	-----	----	----	----	1	19					
Number of Days								Season to Date	Snow, Ice >1.0 inch	0	Greatest in 24 Hours and Dates						Greatest Depth on Ground of Snow, Ice Pellets or Ice and Date							
Max Temperature				Min Temperature				19	156	Thunder	1	Precipitation		Snow, Ice Plts										
> 90°F	< 32°F	< 32°F	< 0°F	----	----	Heavy Fog		0	0.83	23-24	0.0	-	0		-									
0	0	0	0	----	----	Clear		4	Partly Cloudy		18	Cloudy		9										

**NOTES:**

Units are: Temperature=°F, Wind=mph, Pressure=inches Hg, Precipitation=inches.  
 Data in column 4A are (MAX+MIN) ÷ 2, whereas columns 4B, 5, 6, 15, 16, 23 are means via continuous observations for 24 hours.  
 Column 5: Dew point is calculated from temperature and humidity and is continuously averaged for 24 hours.  
 Data in columns 9, 10, 12 are entered manually by the station observer.  
 Columns 17-18: Resultant wind is calculated by the vector sum of continuous wind observations.  
 Column 23: Sunshine index is measured in Watts/m<sup>2</sup> and is continuously averaged for 24 hours.  
 Data in columns 4B, 5, 6, 15, 16, 23 are updated continuously, there by achieving a "true" mean.



**OBSERVATIONS AT 3-HOUR INTERVALS**  
**July 2003: Westford**

Hour	JUL 19									JUL 20									JUL 21								
	Sunshine	Pressure	Rainfall rate	Temperature	Dew Point	Humidity	Direction	Speed	Gust	Sunshine	Pressure	Rainfall rate	Temperature	Dew Point	Humidity	Direction	Speed	Gust	Sunshine	Pressure	Rainfall rate	Temperature	Dew Point	Humidity	Direction	Speed	Gust
01	29.90	0.00	58	52	80	00	0	0		29.93	0.00	57	57	98	00	0	0		29.84	0.00	60	60	98	00	0	0	
04	29.90	0.00	57	53	87	00	0	0		29.92	0.00	54	53	96	13	0	2		29.79	0.00	60	59	94	00	0	0	
07	29.94	0.00	55	53	92	00	0	0		29.94	0.00	58	54	88	18	2	6		29.76	0.00	65	58	77	18	2	7	
10	29.94	0.00	67	54	62	29	2	7		29.93	0.00	71	57	61	18	3	13		29.74	0.00	73	62	70	18	7	20	
13	29.92	0.00	72	56	57	24	3	8		29.90	0.00	76	56	49	20	4	10		29.74	0.00	70	64	79	18	5	14	
16	29.90	0.00	70	54	56	18	4	9		29.86	0.00	77	54	46	20	1	5		29.72	0.00	71	65	82	18	8	20	
19	29.90	0.00	69	58	68	24	0	1		29.85	0.00	73	56	56	18	2	7		29.68	0.00	68	65	91	20	0	2	
22	29.93	0.00	59	58	96	00	0	0		29.89	0.01	61	60	95	00	0	0		29.68	0.01	65	64	96	18	2	6	

JUL 22									JUL 23									JUL 24								
01	29.61	0.00	63	63	98	00	0	0		29.75	0.00	64	64	98	00	0	0		29.88	0.00	63	63	99	00	0	0
04	29.65	0.00	62	62	97	20	2	10		29.75	0.00	64	63	98	02	0	1		29.87	0.00	63	63	99	00	0	0
07	29.68	0.01	62	62	98	18	4	8		29.76	0.00	64	64	99	00	0	0		29.87	0.00	64	64	99	00	0	0
10	29.70	0.00	68	67	96	18	1	6		29.78	0.00	66	65	98	00	0	0		29.87	0.00	66	66	99	00	0	2
13	29.72	0.00	74	66	77	24	1	6		29.80	0.00	68	66	95	00	0	2		29.85	0.00	71	67	87	24	0	2
16	29.74	0.00	67	66	94	13	0	1		29.81	0.00	69	67	95	29	0	1		29.84	0.00	73	69	87	24	2	8
19	29.74	0.00	73	66	79	00	0	0		29.82	0.00	70	66	89	00	0	0		29.86	0.00	70	68	93	24	0	2
22	29.75	0.00	66	65	98	00	0	0		29.87	0.00	64	64	98	00	0	0		29.95	0.00	63	63	98	00	0	0

JUL 25									JUL 26									JUL 27								
01	29.98	0.00	61	61	99	18	0	1		30.11	0.00	63	54	72	18	3	5		29.89	0.00	63	62	96	18	1	3
04	30.00	0.00	62	61	96	00	0	0		30.12	0.00	62	55	80	18	2	6		29.81	0.01	63	62	95	18	3	7
07	30.05	0.00	63	62	99	20	1	4		30.10	0.00	64	57	80	18	4	11		29.74	0.00	65	63	93	18	4	7
10	30.08	0.00	71	65	82	20	4	10		30.07	0.00	73	64	74	18	6	13		29.68	0.00	67	63	85	20	7	14
13	30.07	0.00	78	66	65	18	3	7		30.02	0.00	78	66	65	20	4	10		29.61	0.00	71	65	83	20	5	14
16	30.06	0.00	81	63	54	27	3	8		29.97	0.00	79	68	69	18	5	10		29.60	0.00	70	68	92	20	6	17
19	30.06	0.00	77	55	46	27	3	12		29.94	0.00	74	59	61	22	1	3		29.60	0.00	70	65	86	29	6	12
22	30.11	0.00	68	53	59	18	2	6		29.95	0.00	70	62	76	22	2	6		29.68	0.00	64	61	93	29	4	10

JUL 28									JUL 29									JUL 30								
01	29.73	0.00	60	58	91	29	5	9		29.83	0.00	58	53	85	18	3	6		30.02	0.00	58	56	94	06	0	1
04	29.75	0.00	54	51	89	29	1	7		29.84	0.00	53	52	95	20	0	3		30.03	0.00	57	56	98	18	1	5
07	29.78	0.00	55	52	88	22	1	5		29.88	0.00	56	54	95	20	1	5		30.10	0.00	60	59	98	18	1	3
10	29.79	0.00	63	55	74	27	7	14		29.90	0.00	68	58	69	18	4	8		30.14	0.00	64	62	92	20	2	7
13	29.80	0.00	65	55	70	29	6	11		29.91	0.00	76	53	44	27	2	6		30.13	0.00	77	63	61	18	2	8
16	29.81	0.00	67	57	69	29	3	7		29.91	0.00	77	57	51	27	1	5		30.11	0.00	79	61	55	24	0	2
19	29.82	0.00	66	58	73	29	0	2		29.93	0.00	70	63	76	00	0	0		30.11	0.00	77	66	70	00	0	0
22	29.83	0.00	61	55	83	20	0	2		29.99	0.01	63	61	91	02	0	2		30.15	0.00	62	61	96	00	0	0

JUL 31																										
01	30.16	0.00	59	58	98	00	0	0																		
04	30.16	0.00	57	56	98	00	0	0																		
07	30.19	0.00	58	57	98	00	0	0																		
10	30.19	0.00	75	63	67	13	2	7																		
13	30.14	0.00	83	61	47	18	2	7																		
16	30.10	0.00	85	63	49	20	1	6																		
19	30.10	0.00	73	66	78	11	0	1																		
22	30.10	0.00	66	62	88	00	0	0																		

**WEATHER NOTES**

NOTES:  
 Units are: Temperature=°F, Wind=mph, Pressure=inches Hg, Precipitation=inches.  
 Wind Direction: Directions are those from which the wind is blowing, indicated in tens of degrees from true north: i.e., 09 for East, 18 for South, 27 for West, and 00 or 36 for North.  
 Wind Speed: The observed one-minute average speed in miles-per-hour.  
 Wind Gust: The maximum instantaneous wind speed for the 10-minute period preceding the observation.  
 Rainfall Rate: The instantaneous rainfall rate at the time of observation, calculated by timing consecutive 0.01" pulses from the electronic rain gauge and interpolating this rate for one hour.

**SUMMARY BY HOUR**

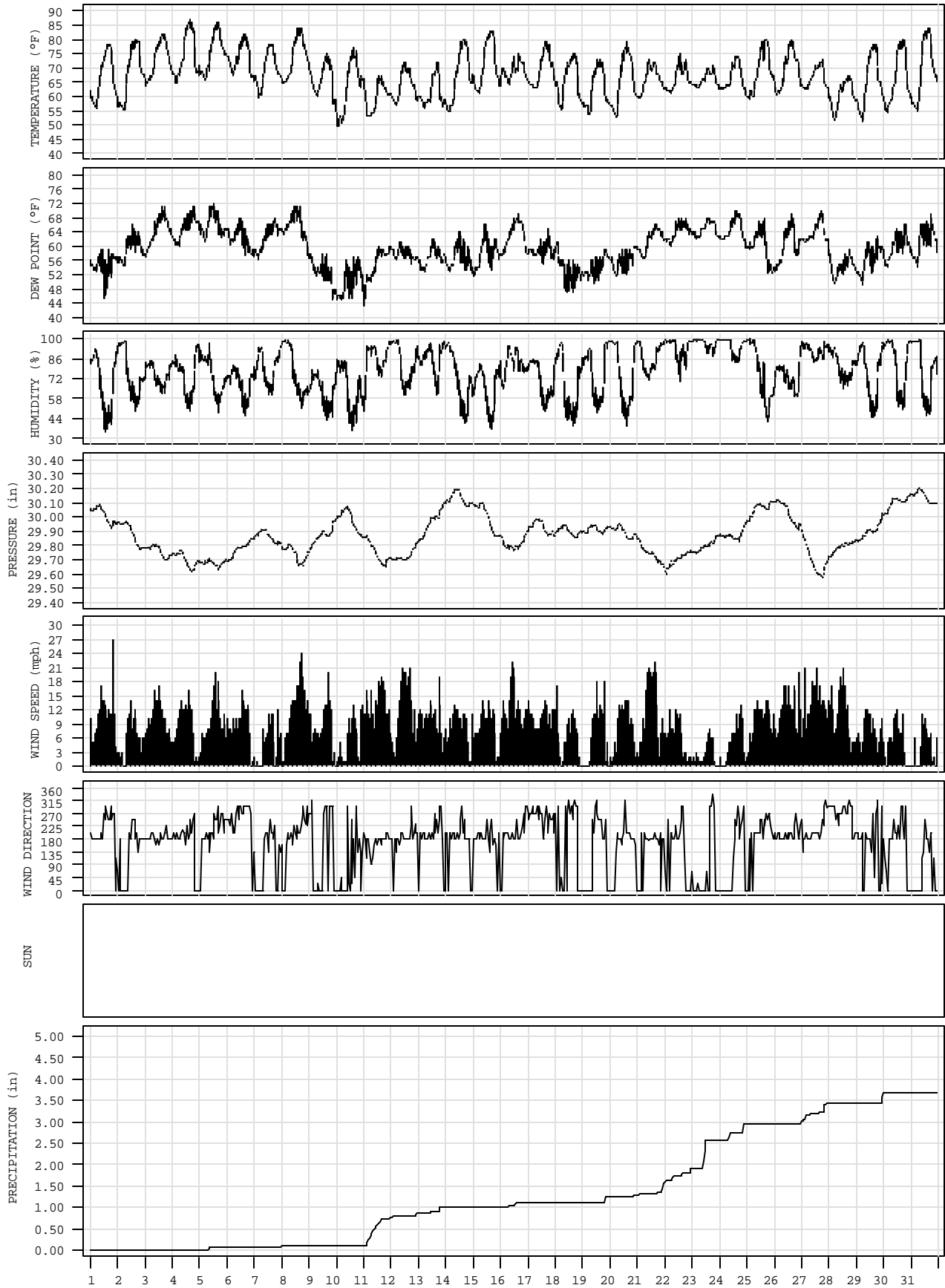
Hour	Averages						Resultant Wind	
	Sunshine	Pressure	Temperature	Dew Point	Humidity	Wind Speed	Direction	Speed
01	29.878	63	58	86	1.0	24	0.7	
04	29.878	60	57	89	0.9	19	0.7	
07	29.897	62	58	89	2.1	19	1.8	
10	29.897	69	61	76	3.4	20	2.6	
13	29.877	75	61	64	3.2	22	2.3	
16	29.849	76	61	62	2.9	21	2.1	
19	29.844	73	61	68	1.1	27	0.8	
22	29.880	65	59	83	0.8	23	0.5	

**HOURLY PRECIPITATION (Water Equivalent)  
July 2003: Westford**

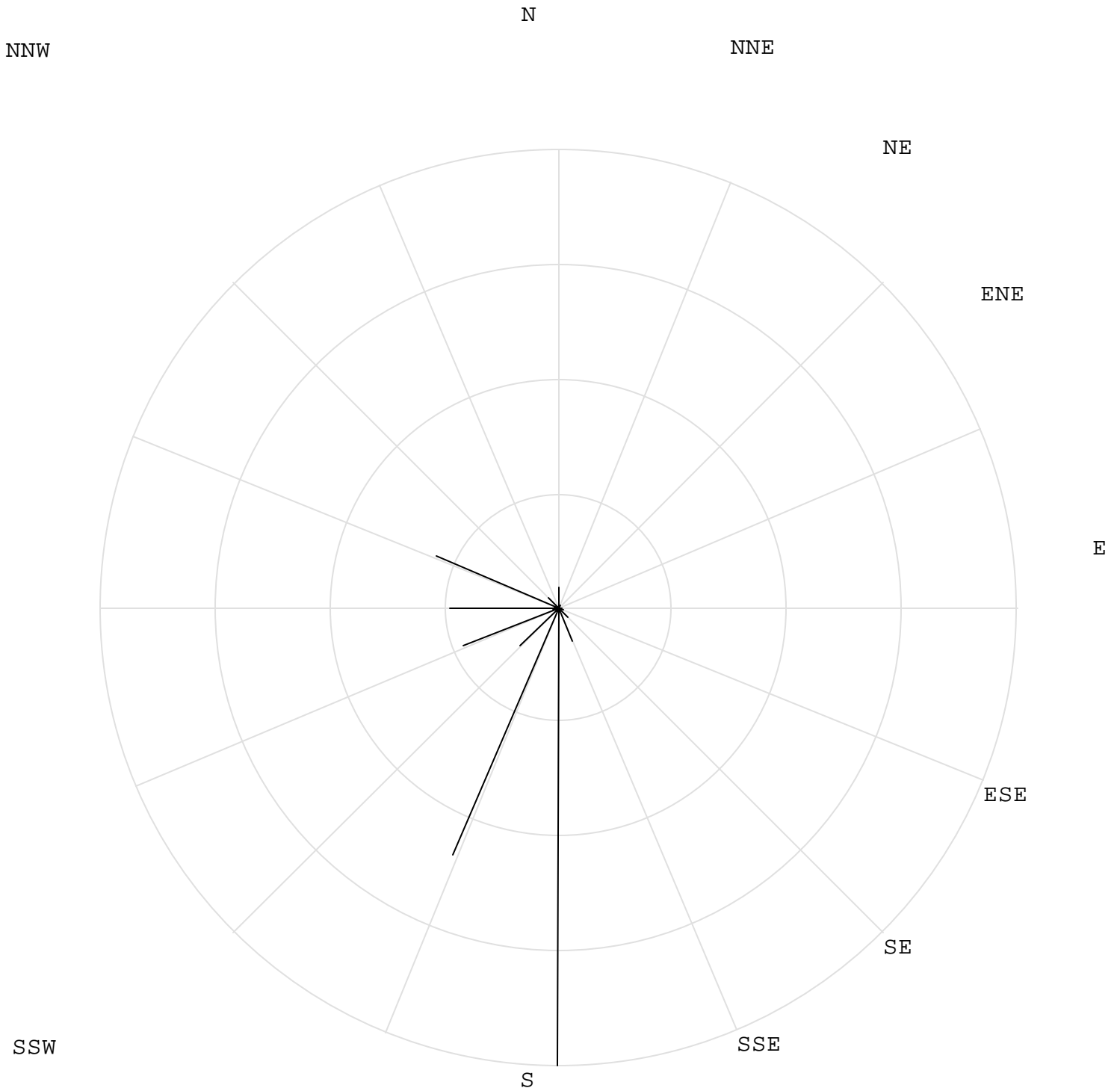
Date	A.M. Hour Ending at												P.M. Hour Ending at												Date	
	01	02	03	04	05	06	07	08	09	10	11	12	01	02	03	04	05	06	07	08	09	10	11	12		
01																								01		
02																									02	
03																									03	
04																									04	
05								0.02	0.04																05	
06																									06	
07																						0.01	0.03		07	
08																									08	
09																									09	
10																									10	
11																									11	
12		0.02	0.06	0.07	0.06	0.06	0.05	0.05	0.04	0.04	0.02	0.03	0.03	0.05	0.06	0.01					0.01	0.03	0.04	0.01	12	
13																							0.02		13	
14																									14	
15																									15	
16								0.03						0.01	0.06										16	
17																									17	
18																									18	
19																									19	
20								0.01													0.12				20	
21																						0.02	0.01	0.02	21	
22	0.01	0.02					0.02	0.06	0.04					0.01	0.01	0.04	0.01	0.01			0.01	0.08	0.15	0.03	22	
23																						0.02	0.08		23	
24																									24	
25																						0.19			25	
26																									26	
27		0.02		0.10	0.02																			0.01	0.07	27
28																									28	
29																									29	
30																							0.01	0.12	0.10	30
31																									31	
Sum	0.01	0.06	0.06	0.17	0.08	0.09	0.14	0.22	0.17	0.23	0.29	0.26	0.04	0.12	0.08	0.09	0.02	0.04	0.09	0.30	0.25	0.17	0.45	0.24	Sum	

During a frozen precipitation event, hourly precipitation totals may not be recorded. In this case, daily amounts are typically entered in the last column (hour ending at 12 A.M.)

HOUR-BY-HOUR DATA  
July 2003: Westford



Wind Rose: July 2003  
Westford



Maximum direction of wind: 546.1 miles from 180°.  
1485.3 total miles of wind.