

MILANO, ITALY

Latitude = 45.43 N

Longitude = 9.28 E

Period of Record = 1973 to 1996

WMO No. 160800

Elevation = 338 feet

Average Pressure = 29.60 inches Hg

Design Criteria Data

	Design Value	Mean Coincident (Average) Values			
		Wet Bulb Temperature (°F)	Humidity Ratio (gr/lb)	Wind Speed (mph)	Prevailing Direction (NSEW)
Dry Bulb Temperature (T)	(°F)				
Median of Extreme Highs	92	75	106	5.0	SW
0.4% Occurrence	90	74	103	4.9	SW
1.0% Occurrence	87	72	97	4.4	SW
2.0% Occurrence	84	71	93	4.3	SW
Mean Daily Range	15	-	-	-	-
97.5% Occurrence	28	27	20	0.7	SW
99.0% Occurrence	25	24	18	0.6	SW
99.6% Occurrence	23	23	16	0.6	SW
Median of Extreme Lows	19	19	13	0.6	E
	Design Value	Mean Coincident (Average) Values			
		Dry Bulb Temperature (°F)	Humidity Ratio (gr/lb)	Wind Speed (mph)	Prevailing Direction (NSEW)
Wet Bulb Temperature (T_{wb})	(°F)				
Median of Extreme Highs	78	88	127	4.1	SW
0.4% Occurrence	76	86	118	3.6	SW
1.0% Occurrence	74	83	111	3.3	SW
2.0% Occurrence	73	82	107	3.2	SW
	Design Value	Mean Coincident (Average) Values			
		Dry Bulb Temperature (°F)	Vapor Pressure (in. Hg)	Wind Speed (mph)	Prevailing Direction (NSEW)
Humidity Ratio (HR)	(gr/lb)				
Median of Extreme Highs	132	81	0.85	2.3	ENE
0.4% Occurrence	125	81	0.83	2.6	SW
1.0% Occurrence	118	81	0.78	2.6	SW
2.0% Occurrence	111	79	0.74	2.6	E
Air Conditioning/ Humid Area Criteria	# of Hours	T ≥ 93°F	T ≥ 80°F	T _{wb} ≥ 73°F	T _{wb} ≥ 67°F
		6	477	184	974

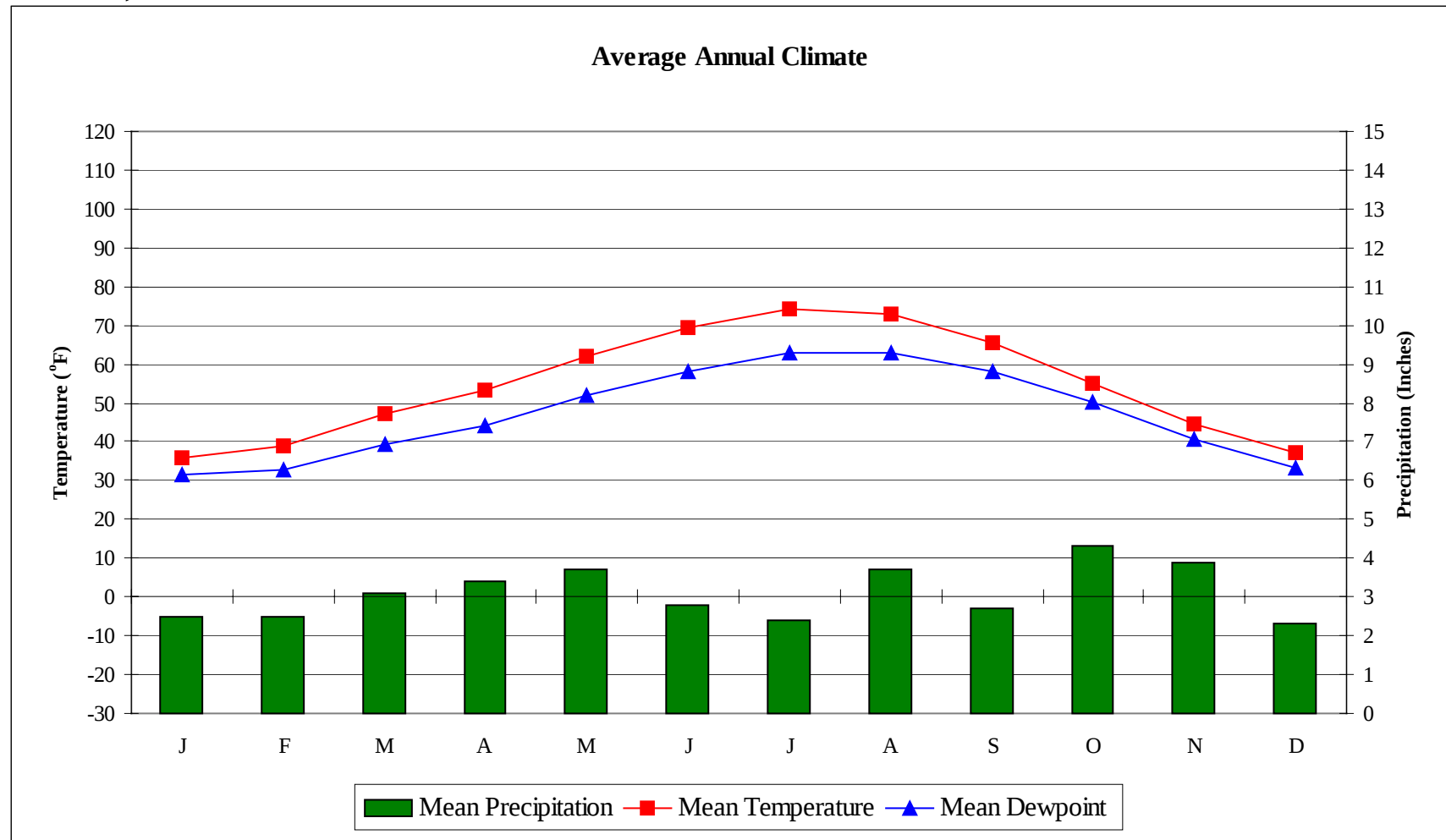
Other Site Data

Weather Region	Rain Rate 100 Year Recurrence (in./hr)	Basic Wind Speed 3 sec gust @ 33 ft 50 Year Recurrence (mph)	Ventilation Cooling Load Index (Ton-hr/cfm/yr) Base 75°F-RH 60% Latent + Sensible
7	N/A	N/A	0.9 + 0.4
Ground Water Temperature (°F) 50 Foot Depth *	Frost Depth 50 Year Recurrence (in.)	Ground Snow Load 50 Year Recurrence (lb/ft ²)	Average Annual Freeze-Thaw Cycles (#)
56.9	N/A	N/A	42

*Note: Temperatures at greater depths can be estimated by adding 1.5°F per 100 feet additional depth.

MILANO, ITALY

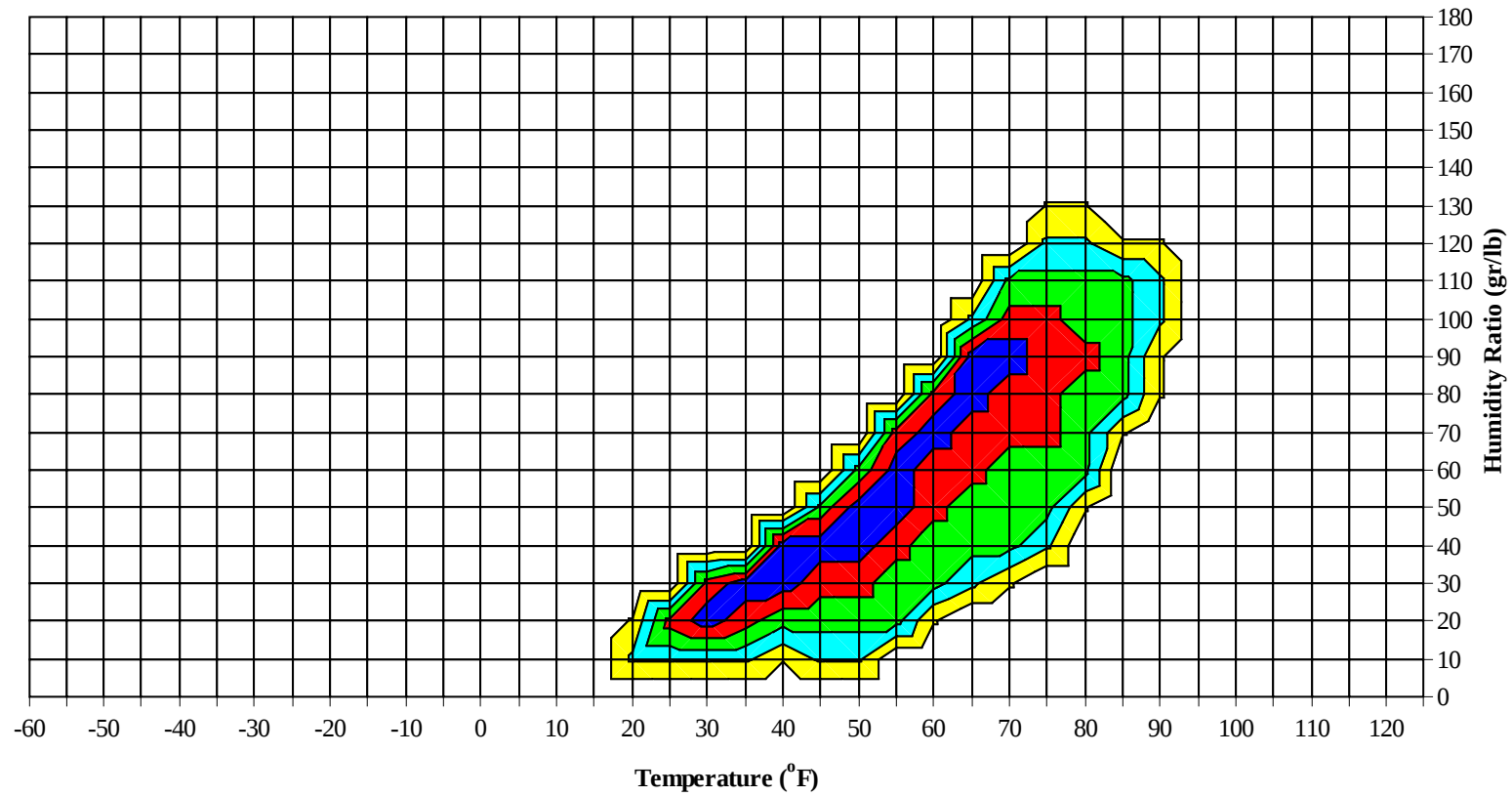
WMO No. 160800



MILANO, ITALY

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Long Term Psychrometric Summary

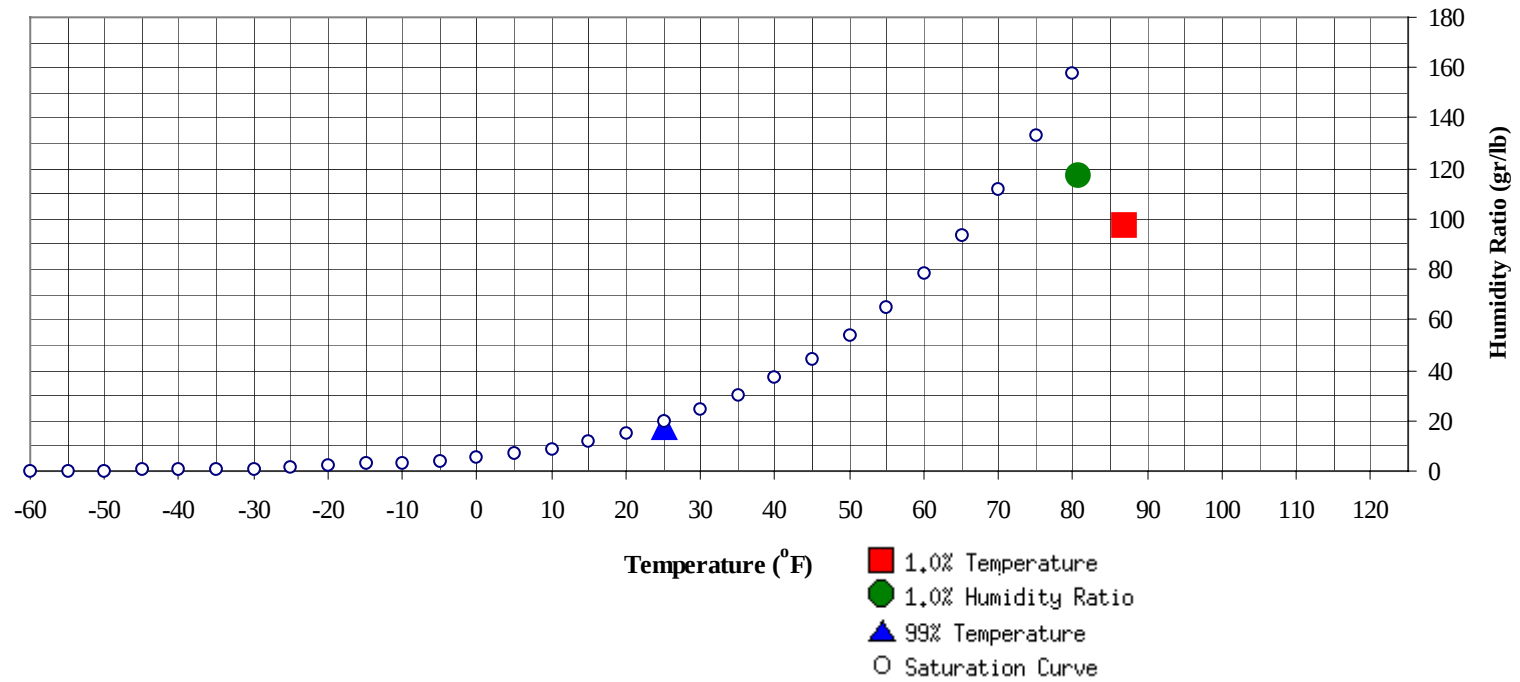


- 50% of all observations
- 80% of all observations
- 95% of all observations
- 97.5% of all observations
- 99% of all observations

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Psychrometric Summary of Peak Design Values



99% Dry Bulb	(°F)	MCHR (gr/lb)	Enthalpy (btu/lb)	1.0% Humidity Ratio	(gr/lb)	MCDB (°F)	MCWB (°F)	MC Dewpt (°F)	Enthalpy (btu/lb)
	25	17.6	8.7		117.6	80.6	74.2	71.6	37.8

1.0% Dry Bulb	(°F)	MCHR (gr/lb)	MCWB (°F)	Enthalpy (btu/lb)
	87	97.5	72.4	36.2

MILANO, ITALY

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Dry-Bulb Temperature Hours For An Average Year (Sheet 1 of 5)

Period of Record = 1973 to 1996

Temperature Range (°F)	January					February					March				
	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00		
95 / 99															
90 / 94															
85 / 89															
80 / 84															
75 / 79							0		0	56.0		0		0	56.0
70 / 74		0		0	53.5		0	0	0	53.5		2	1	3	56.6
65 / 69		0	0	0	52.3		0	0	0	52.8		6	3	9	54.6
60 / 64		1	0	1	49.3	0	1	0	1	50.8	0	26	13	38	52.4
55 / 59	0	3	1	4	45.7	0	9	3	12	47.3	3	49	36	89	49.6
50 / 54	1	11	4	16	43.5	0	25	13	37	44.2	26	66	68	160	47.1
45 / 49	8	30	20	57	42.1	13	47	47	106	42.3	68	58	72	198	43.8
40 / 44	26	44	40	109	39.4	33	50	53	135	39.5	60	25	35	120	39.9
35 / 39	69	76	83	229	35.8	68	56	66	189	35.6	60	13	16	89	35.9
30 / 34	76	59	73	208	31.3	72	30	35	137	31.2	26	3	4	33	31.5
25 / 29	47	20	22	89	26.6	31	6	5	42	26.4	4	0	0	4	26.3
20 / 24	15	4	3	22	22.0	5	2	1	8	21.6	0			0	23.0
15 / 19	5	1	2	8	17.7	2	0	1	3	17.7					
10 / 14	1	0	0	1	12.1	1	0		1	12.6					
5 / 9	0	0		0	8.7										

Caution: This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary and the ventilation and infiltration load pages in this manual.

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Dry-Bulb Temperature Hours For An Average Year (Sheet 2 of 5)

Period of Record = 1973 to 1996

Temperature Range (°F)	April					May					June				
	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00		
95 / 99															
90 / 94															
85 / 89							1	0	1	67.6		2	1	3	73.2
80 / 84															
75 / 79		3	1	4	59.2	0	11	6	17	65.9	0	13	6	19	70.9
70 / 74		12	5	17	57.8	0	30	19	49	63.0	2	44	27	71	68.7
65 / 69		24	12	36	55.9	2	54	35	91	60.7	27	62	45	109	65.7
60 / 64						11	46	37	93	59.1	60	59	60	147	63.9
55 / 59						60	30	39	129	62.2	87	30	39	150	59.4
50 / 54	1	54	37	92	53.4	50	55	63	168	57.3	50	22	41	150	59.4
45 / 49	20	69	64	154	51.1	89	36	57	182	54.1	50	7	17	73	55.3
40 / 44	77	54	71	202	48.5	69	12	26	107	50.3	14	1	3	18	51.3
35 / 39	84	20	38	142	44.5	21	3	4	29	45.6	1		0	1	46.4
30 / 34	36	4	8	48	40.6	4	0	1	5	41.0					
25 / 29	17	1	3	22	36.6	2		0	2	37.2					
20 / 24	4	0	0	4	32.8										
15 / 19	0			0	28.0										
10 / 14															
5 / 9															

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Dry-Bulb Temperature Hours For An Average Year (Sheet 3 of 5)

Period of Record = 1973 to 1996

Temperature Range (°F)	July					August					September				
	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00		
95 / 99		1	1	2	74.0		1	0	1	74.1					
90 / 94	0	14	8	22	75.2		12	5	17	74.1		0		0	73.0
85 / 89	0	40	22	62	72.5	0	33	14	47	72.7		2	0	2	71.6
80 / 84	1	73	50	124	70.3	0	62	42	104	70.5	0	18	5	23	68.9
75 / 79	21	66	68	155	68.1	12	66	64	142	68.4	0	56	27	82	66.1
70 / 74	78	37	55	170	66.4	67	43	61	171	66.6	3	63	53	119	64.2
65 / 69	75	11	26	112	63.7	73	21	34	128	64.2	33	46	57	136	63.0
60 / 64	58	6	16	79	60.4	71	9	25	104	60.5	99	39	65	203	60.1
55 / 59	15	1	1	17	55.8	23	1	3	28	55.8	68	15	27	109	55.5
50 / 54	1			1	52.2	2			2	51.7	29	2	6	37	50.6
45 / 49											8	0	0	8	46.2
40 / 44											0			0	41.6
35 / 39															
30 / 34															
25 / 29															
20 / 24															
15 / 19															
10 / 14															
5 / 9															

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MILANO, ITALY

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Dry-Bulb Temperature Hours For An Average Year (Sheet 4 of 5)

Period of Record = 1973 to 1996

Temperature Range (°F)	October					November					December				
	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00		
95 / 99															
90 / 94															
85 / 89															
80 / 84	0	0	0	0	64.3										
75 / 79	0	3	0	3	65.5										
70 / 74	0	18	4	22	62.1										
65 / 69	0	25	13	38	60.1	0	0		0	55.5					
60 / 64	20	62	46	128	58.3	0	7	1	8	54.6	0	0		0	54.0
55 / 59	64	70	80	213	54.6	6	26	14	46	52.5	0	2	0	2	45.5
50 / 54	70	45	65	180	50.3	30	58	43	130	49.1	1	12	4	17	44.4
45 / 49	51	20	33	103	45.4	58	71	79	208	44.6	18	46	32	96	43.1
40 / 44	26	5	5	37	41.3	49	38	47	134	40.6	32	52	49	133	39.8
35 / 39	15	1	2	18	37.4	53	28	45	126	36.5	65	68	79	212	36.0
30 / 34	3	0		3	32.3	36	11	12	59	31.9	76	51	66	194	31.4
25 / 29	0			0	28.0	8	1	0	9	27.2	44	14	18	75	26.7
20 / 24						0			0	22.3	10	2	1	13	22.2
15 / 19											2	0	0	2	18.1
10 / 14											0			0	14.0
5 / 9															

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Dry-Bulb Temperature Hours For An Average Year (Sheet 5 of 5)

Period of Record = 1973 to 1996

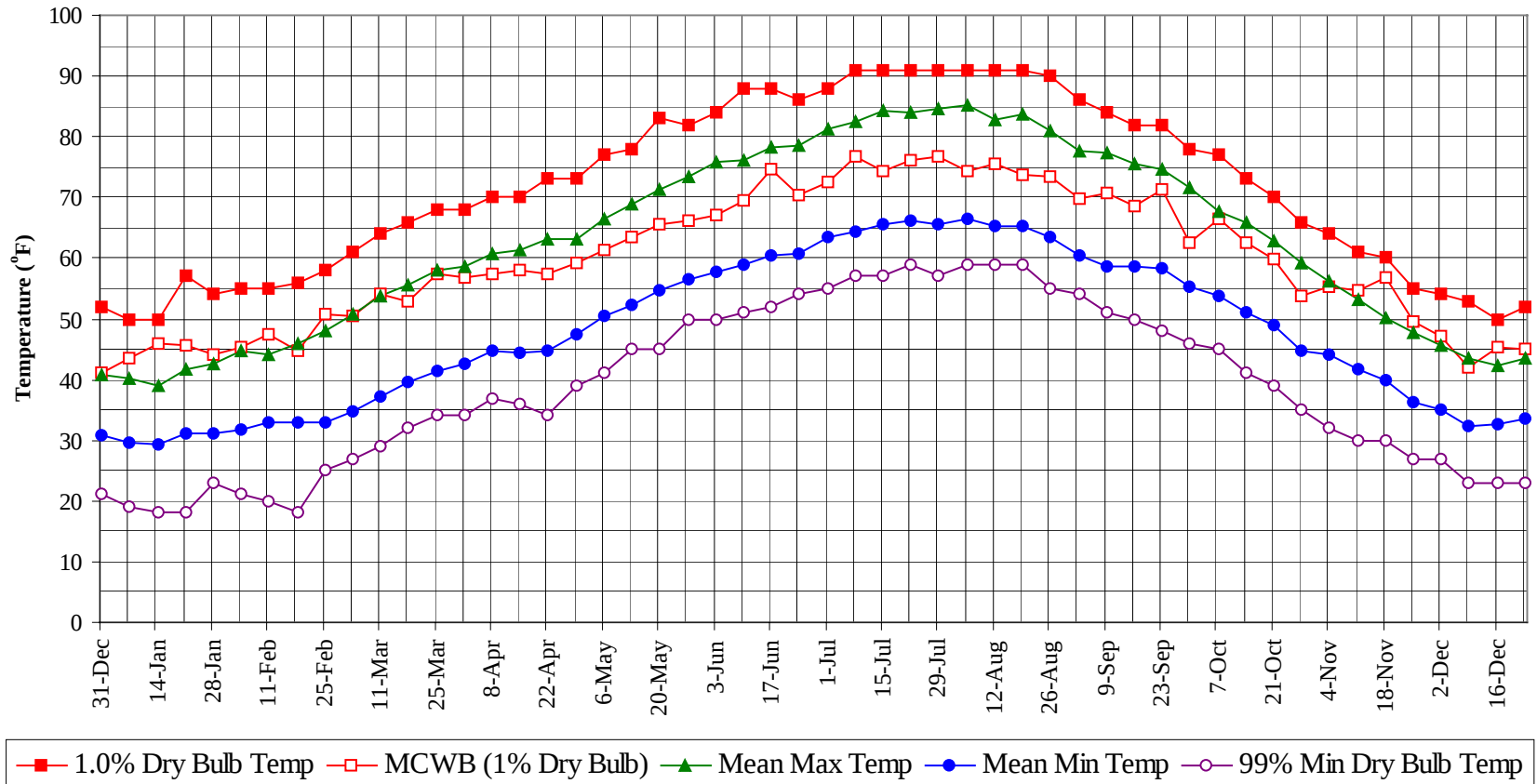
Annual Totals					
Temperature Range (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00		
95 / 99		1	1	2	74.0
90 / 94	0	25	14	39	74.6
85 / 89	0	86	41	127	72.3
80 / 84	2	204	126	331	69.7
75 / 79	33	283	216	532	66.8
70 / 74	171	283	265	719	64.5
65 / 69	245	209	215	668	62.0
60 / 64	377	280	301	957	58.3
55 / 59	334	289	302	924	53.4
50 / 54	321	287	305	913	48.7
45 / 49	333	297	331	960	44.0
40 / 44	268	220	248	737	40.0
35 / 39	357	248	304	909	36.0
30 / 34	299	157	199	654	31.4
25 / 29	139	42	46	227	26.6
20 / 24	30	8	5	43	22.0
15 / 19	9	2	3	14	17.8
10 / 14	3	0	0	3	12.3
5 / 9	0	0		0	8.7

Caution: This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary and the ventilation and infiltration load pages in this manual.

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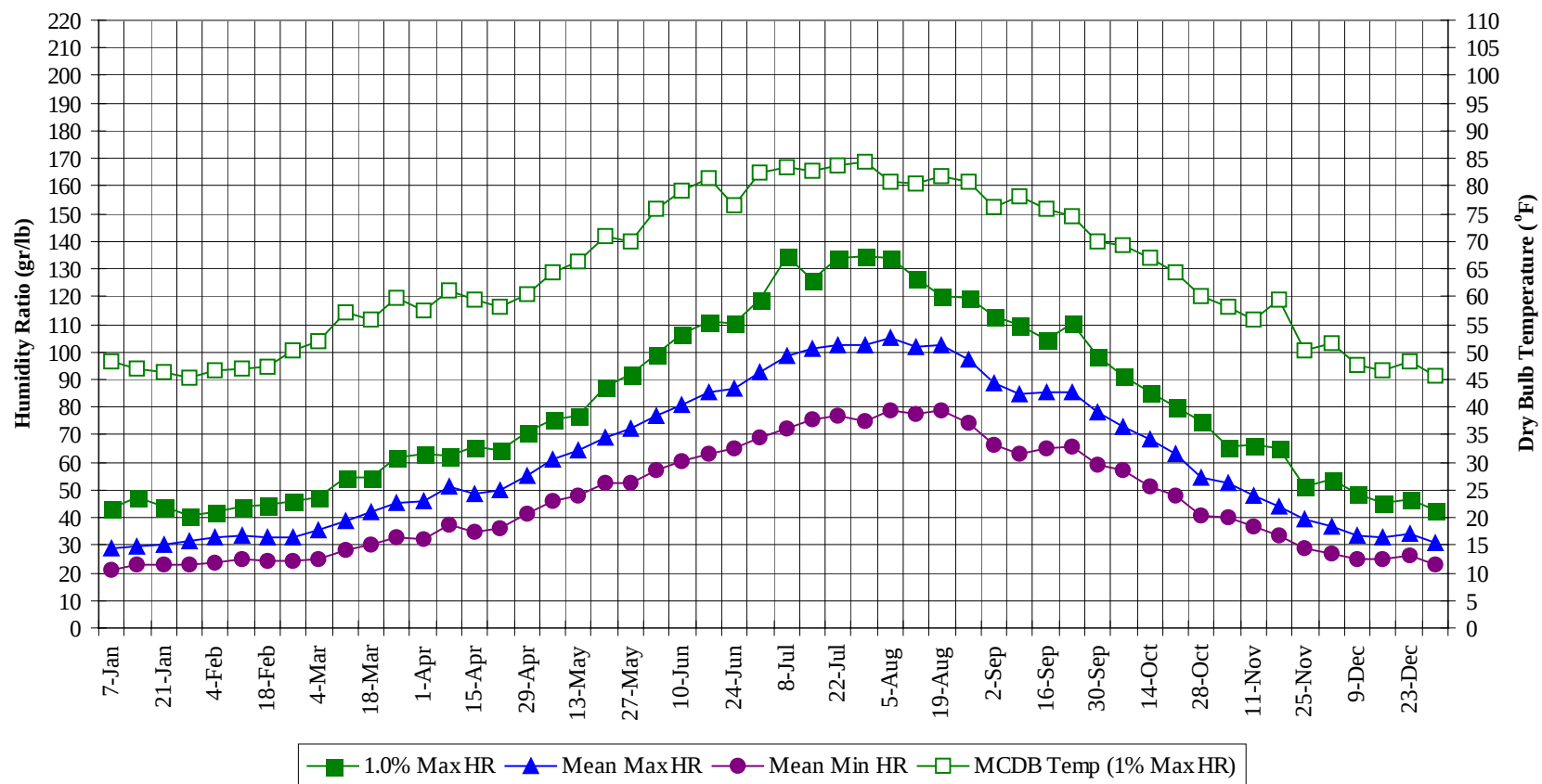
Annual Summary of Temperatures



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Long Term Humidity and Dry Bulb Temperature Summary

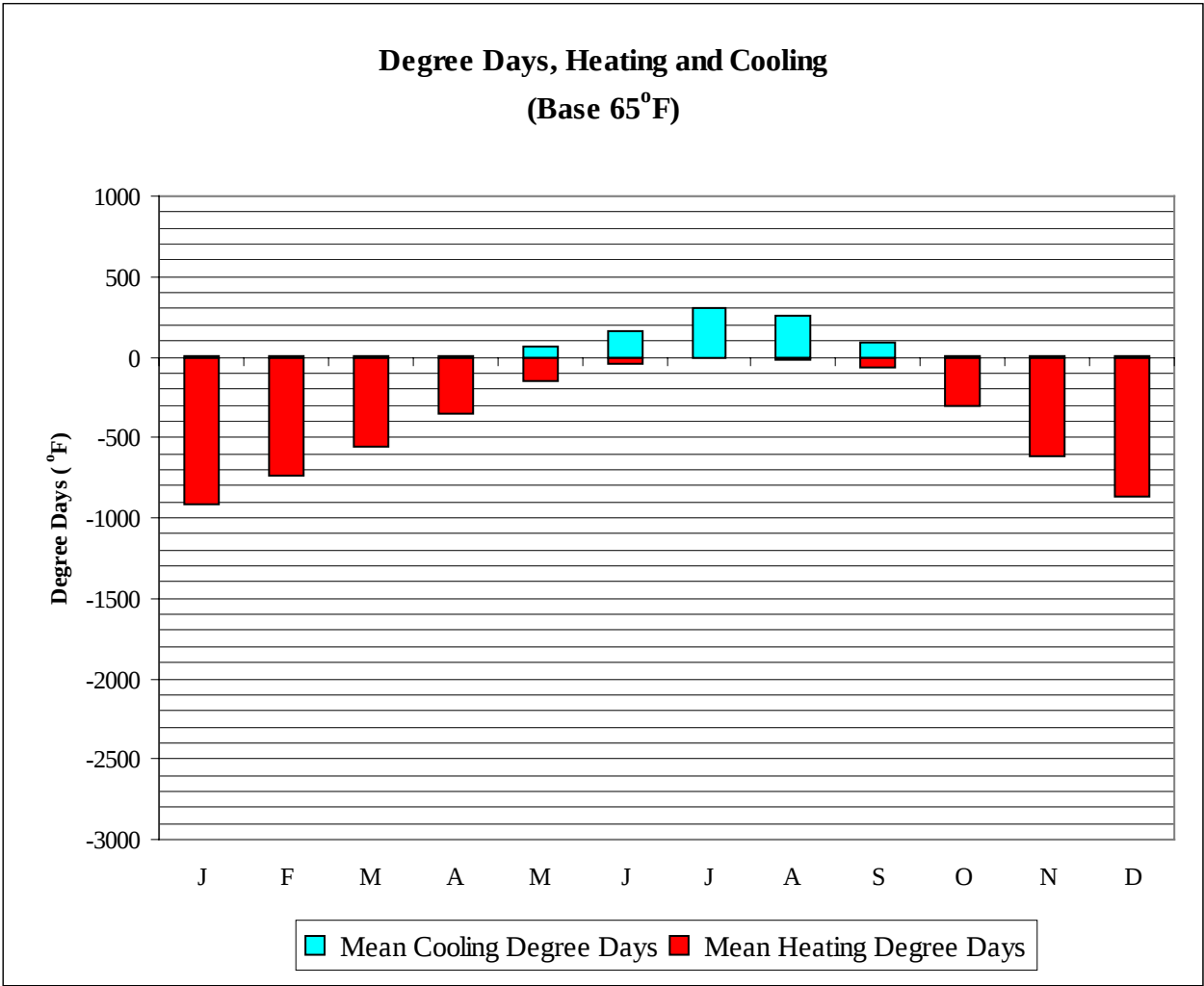


MILANO, ITALY

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Long Term Dry Bulb Temperature and Humidity Summary

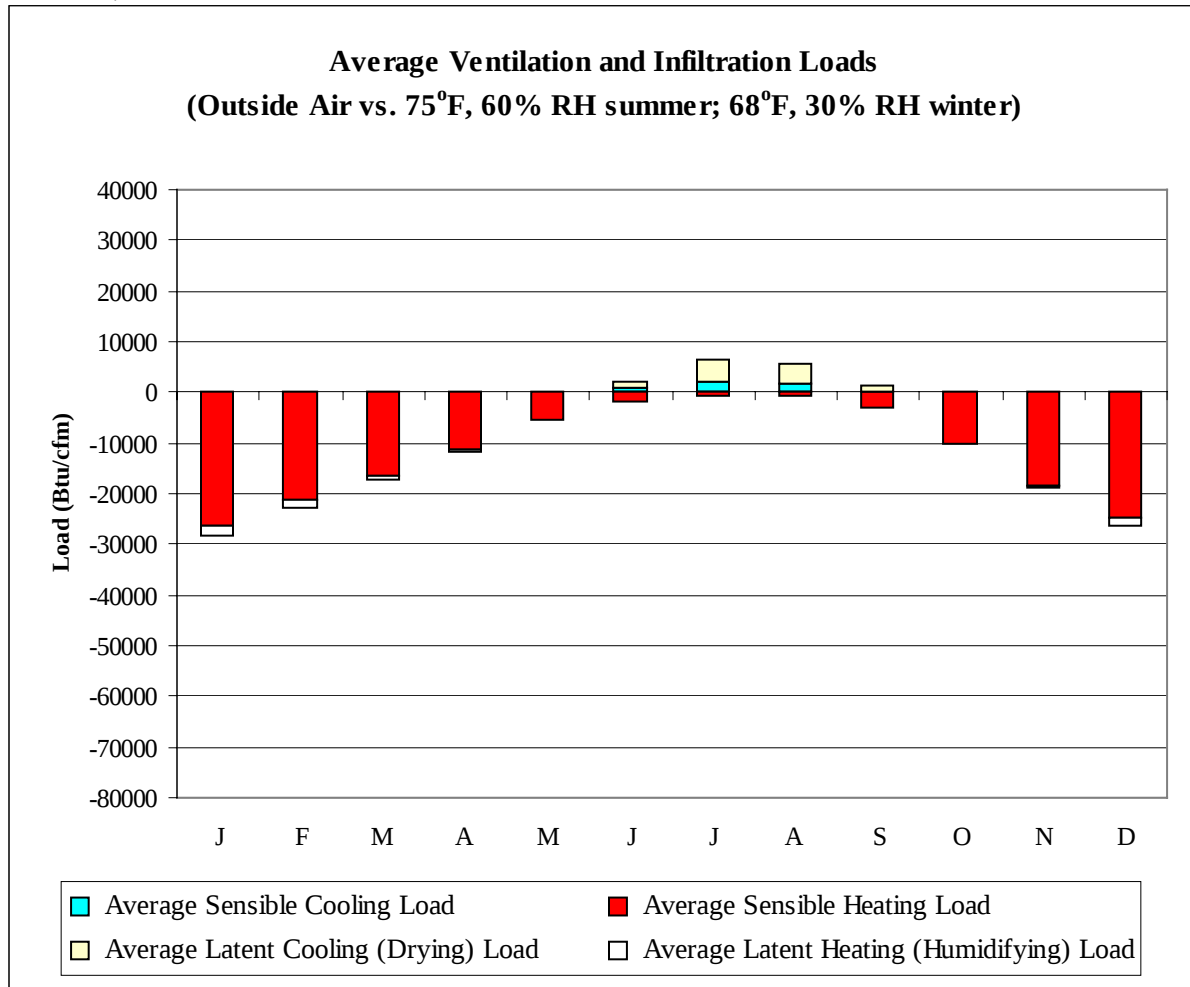
Week Ending	1.0% Temp (°F)	MCWB @ 1% Temp (°F)	Mean Max Temp (°F)	Mean Min Temp (°F)	99% Temp (°F)	1.0% HR (gr/lb)	MCDB @ 1% HR (°F)	Mean Max HR (gr/lb)	Mean Min HR (gr/lb)
7-Jan	50.0	43.4	40.1	29.6	19.0	43.4	48.3	28.9	21.0
14-Jan	50.0	45.9	39.0	29.4	18.0	47.6	47.0	29.8	22.8
21-Jan	57.0	45.5	41.6	31.2	18.0	44.1	46.2	30.5	23.1
28-Jan	54.0	44.1	42.7	31.2	23.0	40.6	45.4	31.6	23.1
4-Feb	55.0	45.3	44.7	31.6	21.0	42.0	46.6	32.8	23.8
11-Feb	55.0	47.3	44.1	32.8	20.0	44.1	47.0	33.4	24.8
18-Feb	56.0	44.7	45.8	32.9	18.0	44.8	47.4	32.7	24.0
25-Feb	58.0	50.7	47.9	33.0	25.0	46.2	50.3	33.0	24.3
4-Mar	61.0	50.5	50.8	34.6	27.0	47.6	51.9	35.7	24.8
11-Mar	64.0	54.1	53.8	37.2	29.0	54.6	57.2	39.0	28.5
18-Mar	66.0	52.8	55.6	39.5	32.0	54.6	55.8	41.8	30.2
25-Mar	68.0	57.4	58.0	41.3	34.0	61.6	59.9	45.3	32.6
1-Apr	68.0	56.7	58.8	42.6	34.0	63.0	57.4	45.9	32.4
8-Apr	70.0	57.3	60.6	44.6	37.0	62.3	60.9	51.0	37.5
15-Apr	70.0	58.1	61.3	44.5	36.0	65.8	59.6	48.7	34.6
22-Apr	73.0	57.5	63.1	44.8	34.0	64.4	58.0	49.6	36.2
29-Apr	73.0	59.3	63.3	47.6	39.0	70.7	60.4	55.1	41.5
6-May	77.0	61.4	66.6	50.3	41.0	75.6	64.4	61.0	46.2
13-May	78.0	63.5	68.8	52.3	45.0	77.0	66.2	64.2	48.1
20-May	83.0	65.7	71.3	54.6	45.0	87.5	71.0	69.0	52.4
27-May	82.0	66.1	73.4	56.4	50.0	91.7	70.1	72.3	52.7
3-Jun	84.0	67.1	75.8	57.8	50.0	99.4	75.9	77.0	56.8
10-Jun	88.0	69.5	76.0	58.9	51.0	106.4	79.2	80.8	60.4
17-Jun	88.0	74.6	78.3	60.5	52.0	111.3	81.5	85.6	63.1
24-Jun	86.0	70.5	78.6	60.9	54.0	110.6	76.7	86.8	65.2
1-Jul	88.0	72.4	81.2	63.3	55.0	119.0	82.3	92.5	69.0
8-Jul	91.0	76.9	82.6	64.4	57.0	134.4	83.3	98.3	72.2
15-Jul	91.0	74.2	84.3	65.6	57.0	126.0	82.8	100.9	75.5
22-Jul	91.0	76.2	83.9	66.3	59.0	133.7	83.8	102.7	76.9
29-Jul	91.0	76.8	84.7	65.5	57.0	134.4	84.5	102.4	75.1
5-Aug	91.0	74.3	85.3	66.5	59.0	133.7	80.9	105.0	78.7
12-Aug	91.0	75.5	82.9	65.1	59.0	126.7	80.3	102.0	77.8
19-Aug	91.0	73.6	83.6	65.2	59.0	120.4	81.7	102.4	79.1
26-Aug	90.0	73.4	81.1	63.5	55.0	119.7	80.6	97.0	74.4
2-Sep	86.0	69.8	77.8	60.6	54.0	112.7	76.3	88.8	66.4
9-Sep	84.0	70.7	77.2	58.6	51.0	109.9	78.1	84.9	63.0
16-Sep	82.0	68.5	75.6	58.5	50.0	104.3	75.9	85.4	64.8
23-Sep	82.0	71.3	74.6	58.2	48.0	110.6	74.7	85.1	65.6
30-Sep	78.0	62.7	71.5	55.4	46.0	98.7	69.9	78.4	59.1
7-Oct	77.0	66.6	67.7	53.9	45.0	91.0	69.3	73.1	57.1
14-Oct	73.0	62.4	65.8	51.0	41.0	85.4	66.8	68.6	51.2
21-Oct	70.0	59.7	62.8	48.9	39.0	79.8	64.5	63.1	48.1
28-Oct	66.0	53.9	59.1	44.7	35.0	74.9	60.0	54.5	40.7
4-Nov	64.0	55.4	56.3	44.0	32.0	65.8	58.0	52.5	40.3
11-Nov	61.0	54.7	53.1	41.7	30.0	66.5	55.8	47.9	36.8
18-Nov	60.0	56.7	50.2	39.9	30.0	65.1	59.5	44.0	33.5
25-Nov	55.0	49.6	47.6	36.3	27.0	51.1	50.3	39.1	29.2
2-Dec	54.0	47.1	45.6	35.1	27.0	53.9	51.4	36.5	27.2
9-Dec	53.0	42.0	43.6	32.4	23.0	48.3	47.5	33.8	25.2
16-Dec	50.0	45.4	42.4	32.6	23.0	45.5	46.6	33.0	24.7
23-Dec	52.0	45.1	43.4	33.7	23.0	46.9	48.2	34.3	26.1
31-Dec	52.0	41.1	40.9	30.9	21.0	42.7	45.8	31.0	22.9



	Mean Cooling Degree Days (°F)	Mean Heating Degree Days (°F)
JAN	0	919
FEB	0	735
MAR	1	551
APR	7	352
MAY	62	150
JUN	166	41
JUL	304	9
AUG	259	14
SEP	94	71
OCT	9	305
NOV	0	622
DEC	0	866
ANN	901	4635

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	Average Sensible Cooling Load	Average Sensible Heating Load	Average Latent Cooling Load	Average Latent Heating Load
	(Btu/cfm)	(Btu/cfm)	(Btu/cfm)	(Btu/cfm)
JAN	0	-26157	0	-2041
FEB	0	-21153	0	-1518
MAR	0	-16625	0	-663
APR	4	-11310	0	-218
MAY	167	-5547	102	-35
JUN	821	-1931	1442	-14
JUL	2160	-575	4360	-1
AUG	1656	-814	4019	-2
SEP	258	-3100	1227	-10
OCT	5	-10044	65	-46
NOV	0	-18376	0	-494
DEC	0	-24781	0	-1621
ANN	5071	-140413	11215	-6663

Average Annual Solar Radiation – Nearest Available Site
(Source: National Renewable Energy Laboratory, Golden CO, 1995)

No Solar Radiation
Data Available

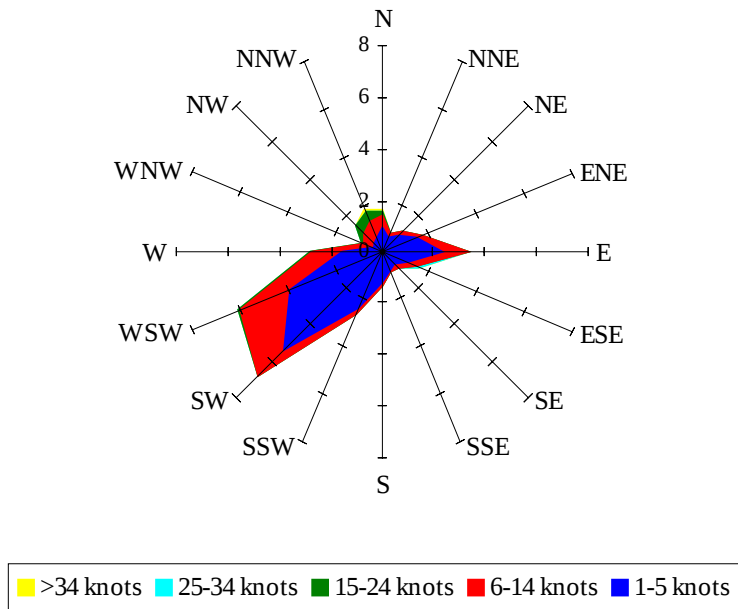


Average Annual Solar Heat and Illumination – Nearest Available Site

(Source: National Renewable Energy Laboratory, Golden CO, 1995)

Wind Summary - December, January, and February

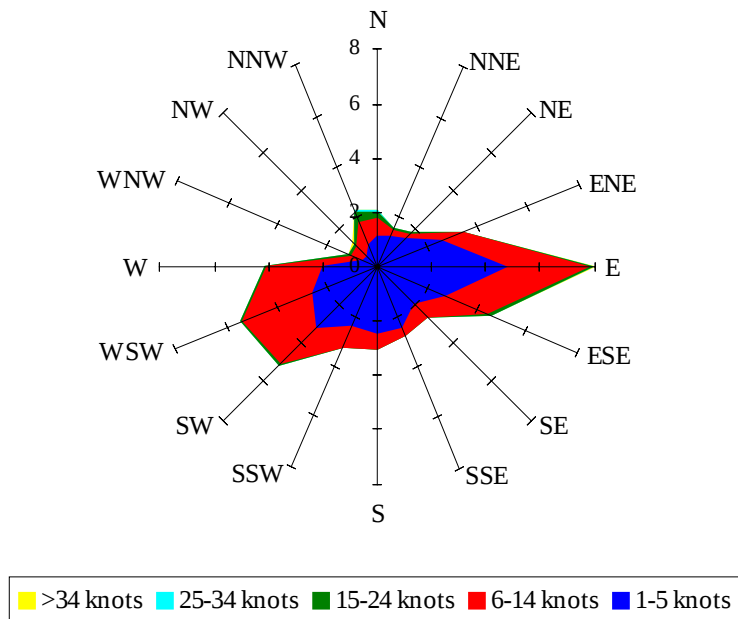
Labels of Percent Frequency on North Axis



Percent Calm = 64.67

Wind Summary - March, April, and May

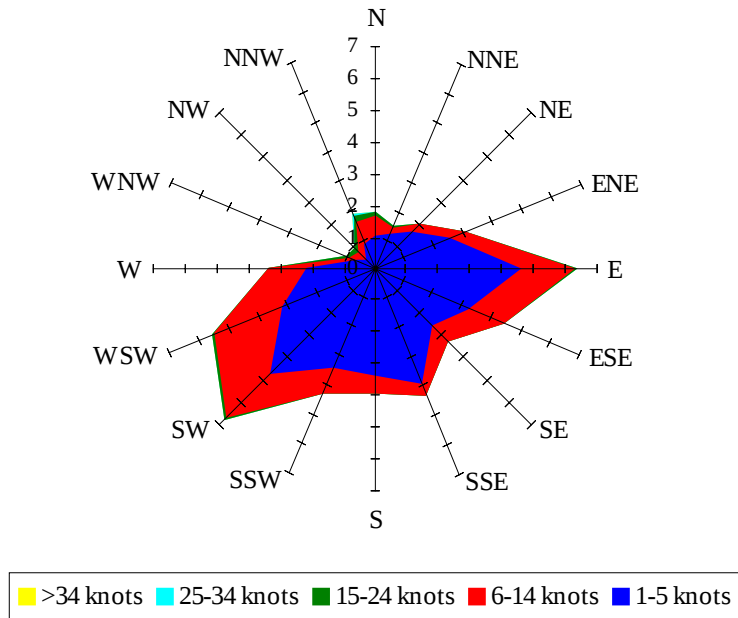
Labels of Percent Frequency on North Axis



Percent Calm = 48.26

Wind Summary - June, July, and August

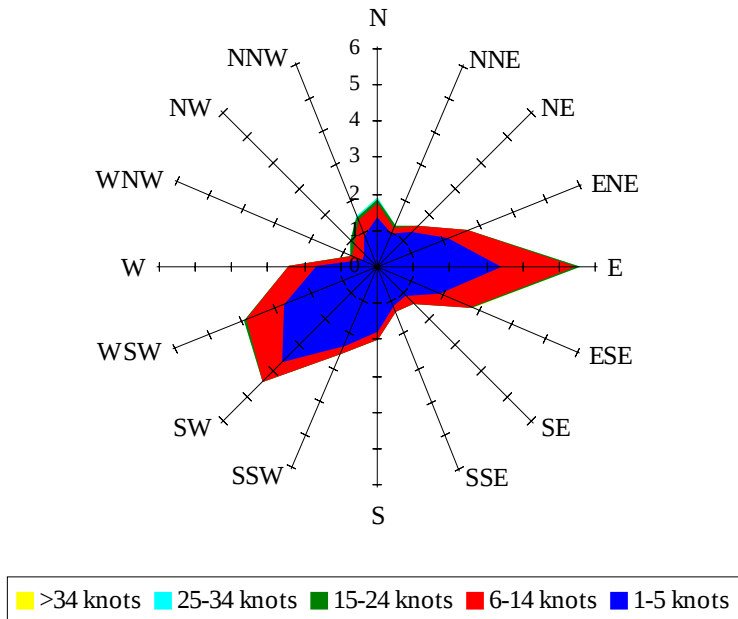
Labels of Percent Frequency on North Axis



Percent Calm = 46.24

Wind Summary - September, October, and November

Labels of Percent Frequency on North Axis



Percent Calm = 63.37