

LARISSA, GREECE

Latitude = 39.63 N

Longitude = 22.42 E

Period of Record = 1973 to 1992

WMO No. 166480

Elevation = 243 feet

Average Pressure = 29.69 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	104	72	66	8.8	E
0.4% Occurrence	98	69	63	7.7	E
1.0% Occurrence	94	68	64	7.5	E
2.0% Occurrence	91	68	64	8.1	E
Mean Daily Range	20	-	-	-	-
97.5% Occurrence	31	30	23	1.8	N
99.0% Occurrence	27	26	18	1.2	N
99.6% Occurrence	23	22	15	1.0	SSW
Median of Extreme Lows	18	18	12	0.4	S
	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	75	96	94	6.1	E
0.4% Occurrence	72	91	86	6.4	E
1.0% Occurrence	71	89	84	6.6	E
2.0% Occurrence	69	85	79	6.3	E
	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	112	81	0.74	2.7	E
0.4% Occurrence	98	75	0.65	3.6	E
1.0% Occurrence	94	74	0.63	3.6	E
2.0% Occurrence	92	75	0.61	3.7	E
Air Conditioning/ Humid Area Criteria	# of Hours	T ≥ 93°F	T ≥ 80°F	T _{wb} ≥ 73°F	T _{wb} ≥ 67°F
		137	1057	22	659

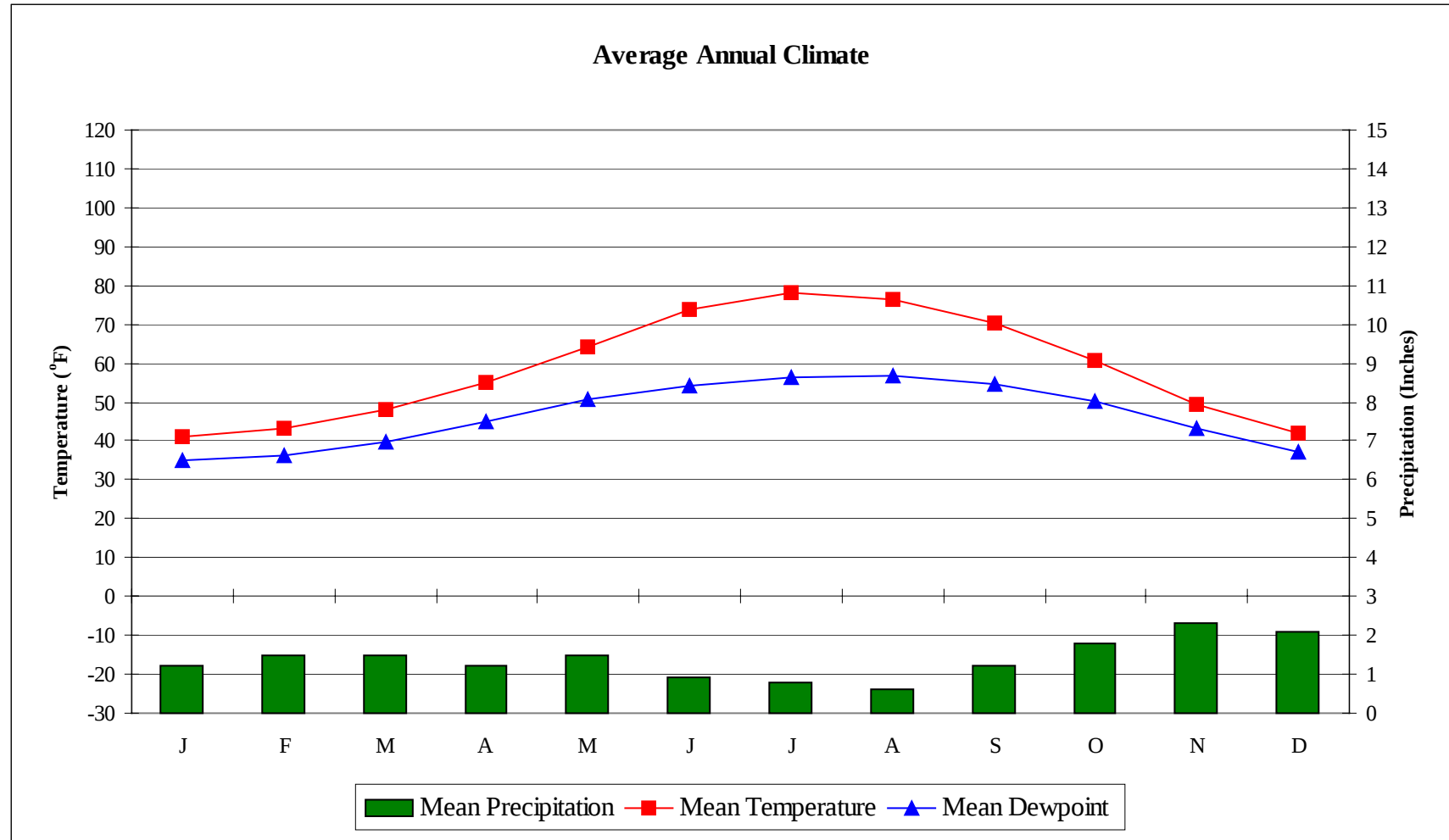
Other Site Data

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
8	N/A	N/A	0.1 + 0.8
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 (#)
61.7	N/A	N/A	33

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

LARISSA, GREECE

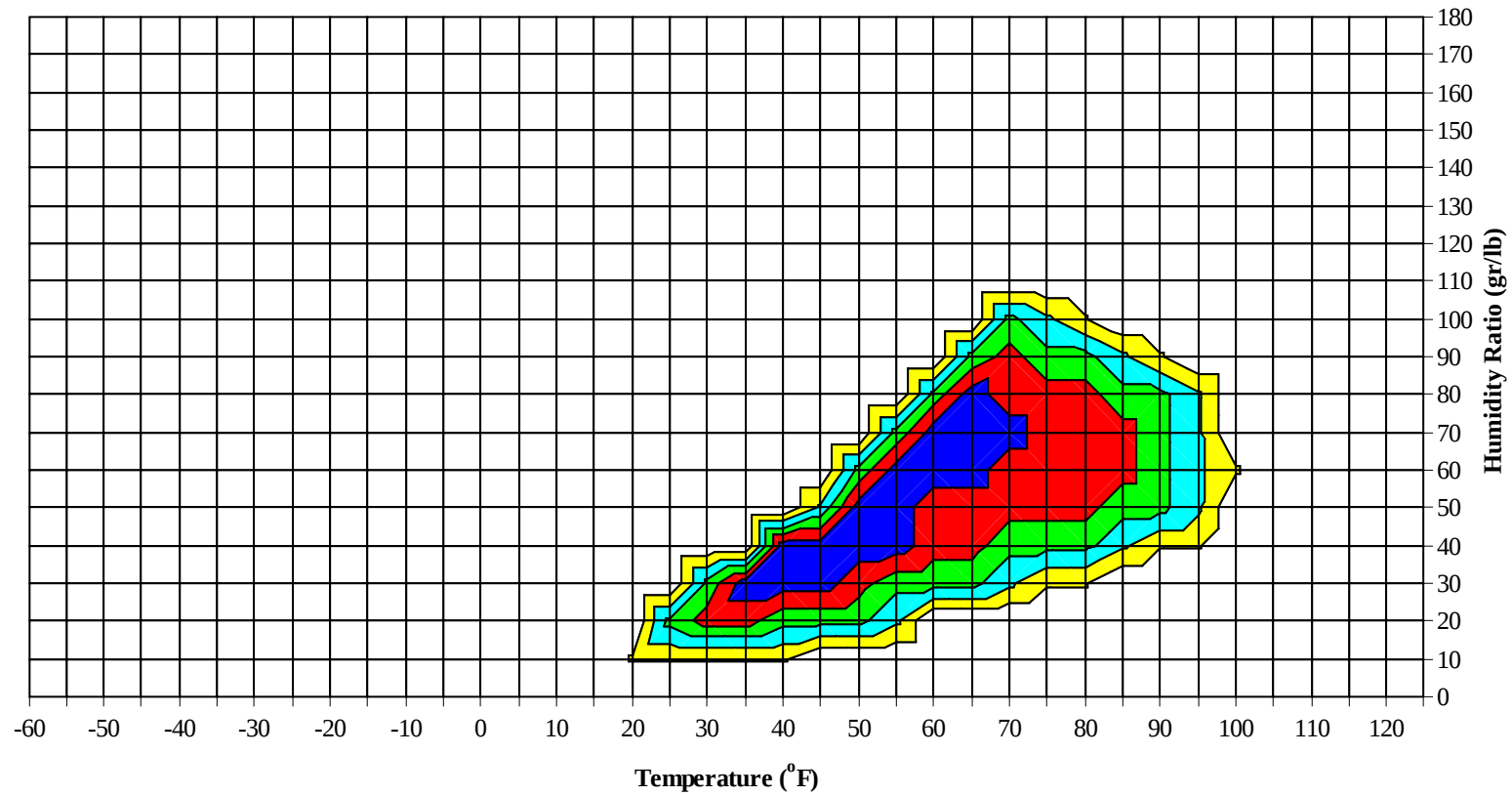
WMO No. 166480



LARISSA, GREECE

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Long Term Psychrometric Summary

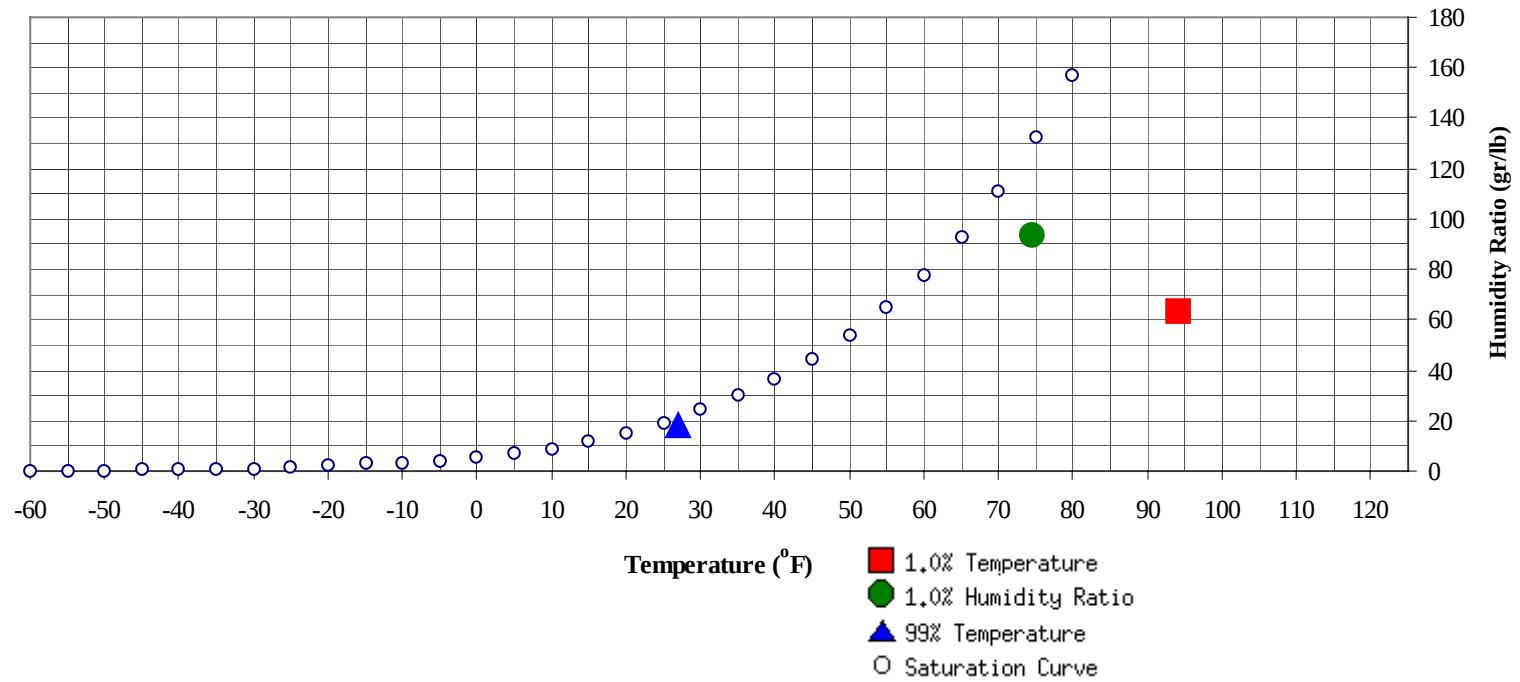


- 50% of all observations
- 80% of all observations
- 95% of all observations
- 97.5% of all observations
- 99% of all observations

LARISSA, GREECE

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Psychrometric Summary of Peak Design Values



	(°F)	MCHR (gr/lb)	Enthalpy (btu/lb)	1.0% Humidity Ratio	(gr/lb)	MCDB (°F)	MCWB (°F)	MC Dewpt (°F)	Enthalpy (btu/lb)
99% Dry Bulb	27	18.1	9.3		93.8	74.5	68.1	65.1	32.5

1.0% Dry Bulb	(°F)	MCHR (gr/lb)	MCWB (°F)	Enthalpy (btu/lb)
	94	63.3	68.3	32.5

LARISSA, GREECE

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

Period of Record = 1973 to 1992

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		
110 / 114															
105 / 109															
100 / 104															
95 / 99															
90 / 94															
85 / 89															
80 / 84															
75 / 79												1	1	2	58.4
70 / 74		1		1	56.4		1	1	2	55.8		7	4	10	56.4
65 / 69		1	0	1	53.4		3	1	4	53.9	0	17	8	24	54.7
60 / 64	0	7	3	9	52.6		9	7	15	51.7	0	34	18	52	52.3
55 / 59	1	14	9	24	49.2	2	28	17	47	49.4	2	48	33	83	50.0
50 / 54	5	39	27	70	46.3	8	50	41	99	46.8	19	58	58	135	47.4
45 / 49	25	63	59	147	43.3	38	58	58	153	43.3	71	47	70	188	44.0
40 / 44	52	60	64	176	39.7	48	38	49	135	39.6	74	21	36	131	40.3
35 / 39	66	44	53	163	35.6	60	27	34	121	35.8	47	7	12	66	36.2
30 / 34	50	14	27	92	31.1	40	8	13	61	31.0	21	7	6	33	31.1
25 / 29	34	3	7	44	26.2	20	2	4	26	25.6	12	1	4	16	25.6
20 / 24	13	1	0	14	21.8	7	0	0	7	21.0	2	0	0	2	21.5
15 / 19	2		0	2	18.3	2	0		2	17.1					
10 / 14						0	0		0	14.0					
5 / 9															
0 / 4															

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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WMO No. 166480

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

Period of Record = 1973 to 1992

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		
110 / 114															
105 / 109												1	0	1	70.6
100 / 104												2	1	3	71.3
95 / 99							0	0	0	66.2		9	5	14	68.5
90 / 94							2	1	3	65.6		32	14	46	67.1
85 / 89			0	0	64.0		9	3	12	64.7	0	42	20	62	65.4
80 / 84		2	2	4	61.3	0	30	12	42	63.4	2	72	39	113	64.3
75 / 79	0	10	6	16	59.5	1	54	25	79	61.5	15	48	48	111	62.8
70 / 74	0	33	13	46	57.6	4	67	40	111	59.7	40	22	50	112	61.8
65 / 69	0	39	19	58	55.6	12	36	39	86	58.4	52	7	36	94	60.5
60 / 64	3	60	36	99	53.4	44	35	60	139	56.9	79	6	23	108	58.6
55 / 59	19	54	56	129	51.6	85	12	51	148	54.0	42	0	5	47	55.0
50 / 54	69	30	70	170	49.1	69	3	16	88	50.3	9		1	10	50.7
45 / 49	84	11	33	129	45.1	26	0	2	28	45.6	1			1	47.2
40 / 44	43	0	5	48	40.9	7		0	7	41.4					
35 / 39	19	0	1	20	37.0	1			1	38.2					
30 / 34	2			2	33.0										
25 / 29															
20 / 24															
15 / 19															
10 / 14															
5 / 9															
0 / 4															

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

Period of Record = 1973 to 1992

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		
110 / 114		0	0	0	71.7										
105 / 109		3	1	4	72.1										
100 / 104		9	4	13	70.6		1	1	2	69.3					
95 / 99		19	8	26	69.4		13	4	17	69.4		2	1	3	67.0
90 / 94	0	54	26	80	68.0		50	20	70	68.0		11	5	16	67.0
85 / 89	1	61	31	94	66.8		58	25	82	66.8	0	28	9	37	66.0
80 / 84	8	64	53	124	65.5	2	71	46	119	65.6	0	66	26	91	64.9
75 / 79	36	29	58	122	64.4	18	37	60	115	64.5	2	67	42	110	63.3
70 / 74	82	9	48	139	63.4	70	13	63	146	63.5	12	41	64	117	62.2
65 / 69	67	1	16	84	61.6	80	3	22	105	61.6	43	17	53	113	61.0
60 / 64	44	0	4	47	58.8	64	1	7	72	59.2	100	7	31	138	58.5
55 / 59	9	0	0	9	55.0	12	0	1	13	55.3	65	2	9	76	54.5
50 / 54	1			1	50.8	1			1	51.3	14	0	1	15	49.4
45 / 49											3			3	45.5
40 / 44															
35 / 39															
30 / 34															
25 / 29															
20 / 24															
15 / 19															
10 / 14															
5 / 9															
0 / 4															

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LARISSA, GREECE

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

Period of Record = 1973 to 1992

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		
110 / 114															
105 / 109															
100 / 104															
95 / 99		0	0	0	65.0										
90 / 94		1	0	1	66.0										
85 / 89		2	1	3	64.6										
80 / 84		16	6	22	63.6		1		1	64.2					
75 / 79	0	30	11	42	62.3		1	0	1	60.3					
70 / 74	1	48	26	75	60.1		2	2	4	59.1		0		0	57.5
65 / 69	6	41	36	83	58.6		12	7	19	57.5		2	0	2	55.7
60 / 64	36	52	65	153	57.0	2	36	17	55	55.7	0	6	3	8	53.9
55 / 59	79	34	58	171	53.8	13	58	45	117	52.4	1	22	10	33	50.4
50 / 54	67	16	30	114	49.5	51	59	68	178	49.0	12	45	36	93	47.8
45 / 49	40	6	12	58	45.4	67	46	56	169	44.7	43	71	70	184	44.1
40 / 44	14	1	2	17	40.8	38	13	29	80	40.5	52	47	54	154	40.1
35 / 39	6	0	0	6	36.9	41	9	14	64	36.5	58	34	44	136	36.1
30 / 34	0			0	32.0	22	1	3	26	31.6	49	16	24	88	31.6
25 / 29						6		0	6	26.6	23	4	7	34	26.5
20 / 24						0			0	21.0	7	1	1	9	21.8
15 / 19											2	0	0	2	17.8
10 / 14											1	0	0	1	12.3
5 / 9											0		0	0	4.0
0 / 4											0			0	2.7

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

Period of Record = 1973 to 1992

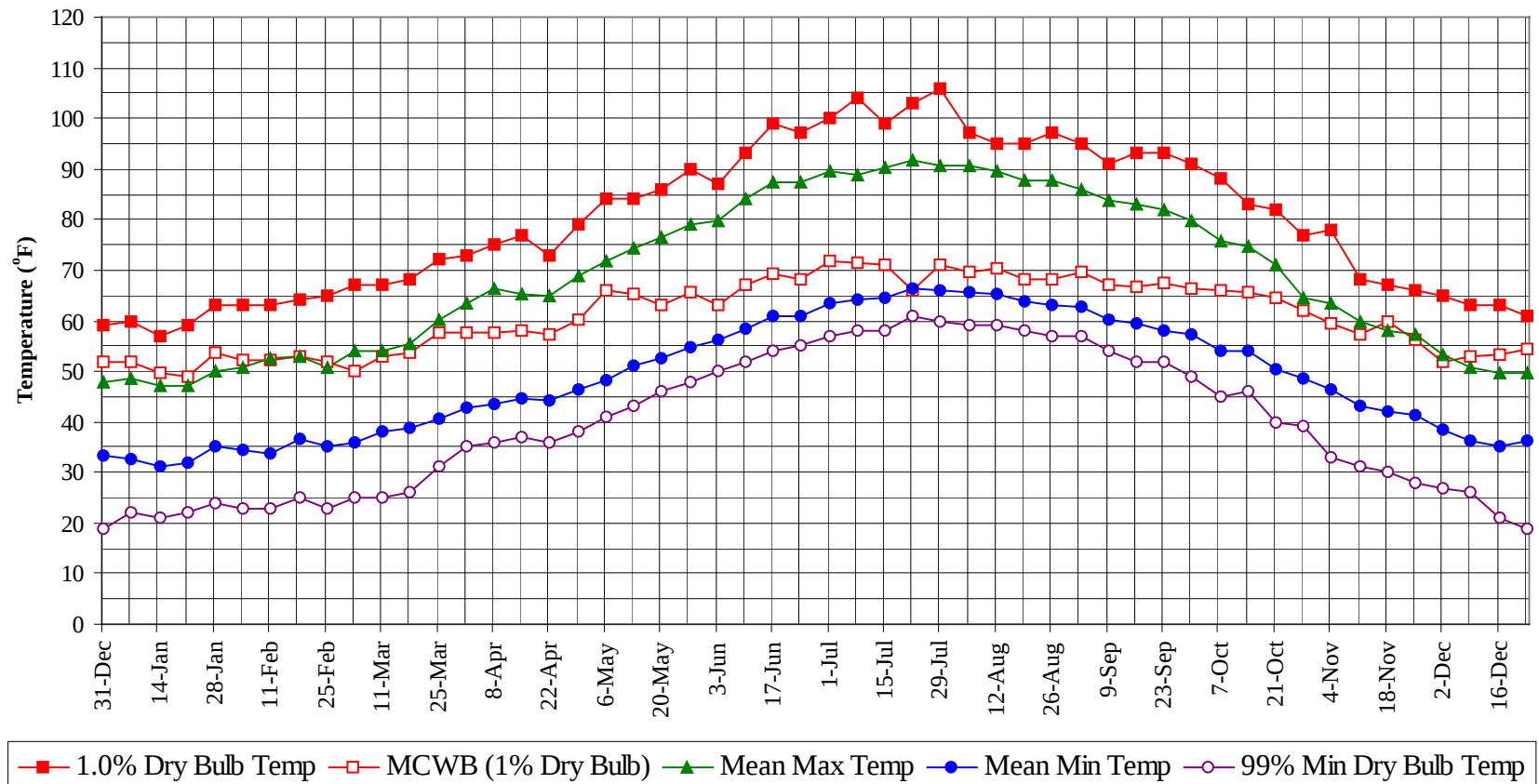
Annual Totals					
Temperature Range (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00		
110 / 114		1	0	1	71.7
105 / 109		4	2	6	71.7
100 / 104		13	6	19	70.7
95 / 99		48	18	66	69.0
90 / 94	0	159	70	229	67.7
85 / 89	1	211	93	306	66.3
80 / 84	13	337	191	541	64.9
75 / 79	77	288	261	625	63.3
70 / 74	225	248	321	794	61.7
65 / 69	277	181	240	698	59.7
60 / 64	388	251	277	916	56.9
55 / 59	338	268	292	898	52.8
50 / 54	322	289	339	950	48.5
45 / 49	384	286	346	1016	44.2
40 / 44	314	169	226	709	40.1
35 / 39	284	112	150	547	36.0
30 / 34	174	42	68	284	31.3
25 / 29	89	11	20	120	26.1
20 / 24	26	2	2	30	21.6
15 / 19	6	0	0	6	17.7
10 / 14	1	0	0	1	12.5
5 / 9	0		0	0	4.0
0 / 4	0			0	2.7

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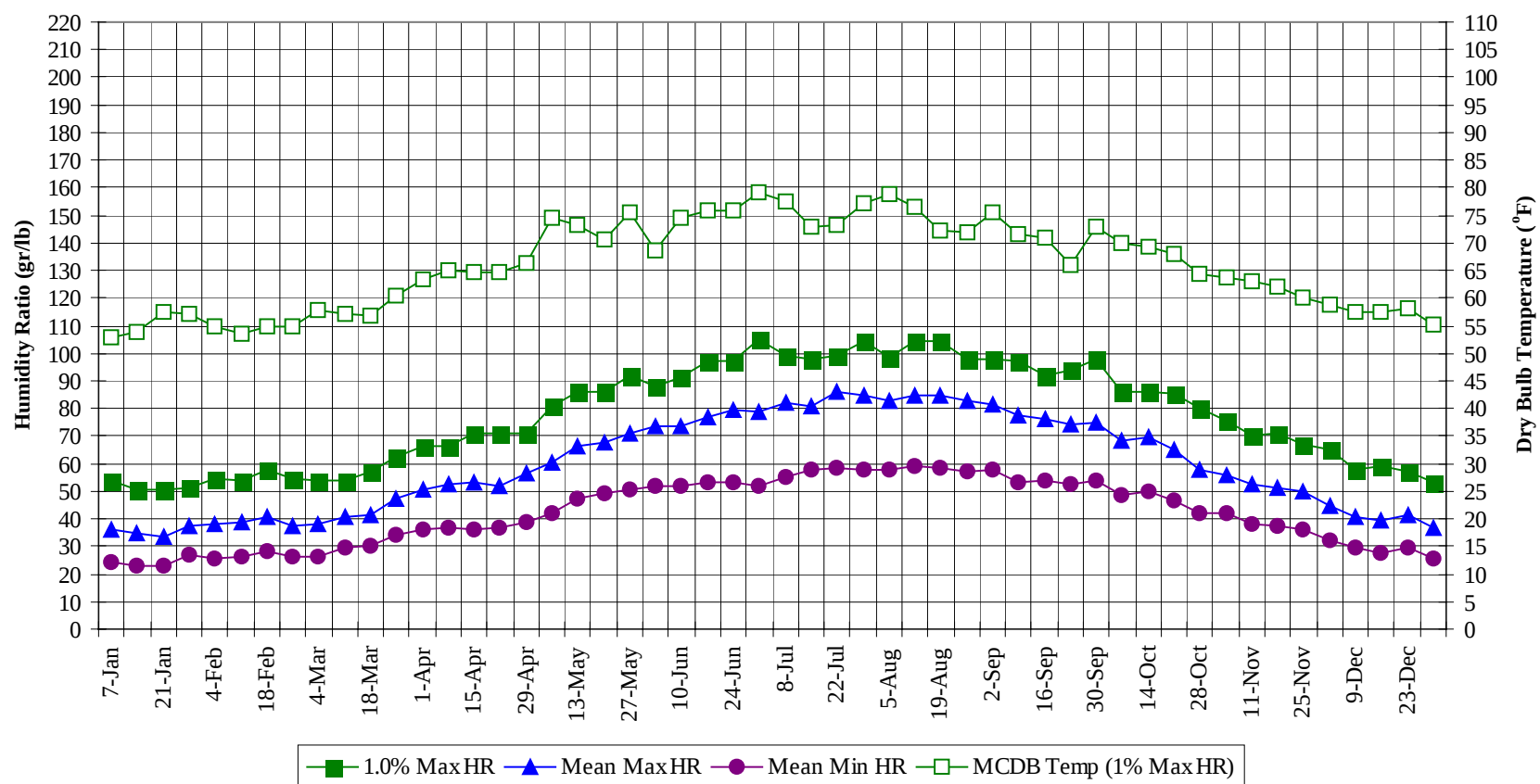
Annual Summary of Temperatures



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Long Term Humidity and Dry Bulb Temperature Summary



LARISSA, GREECE

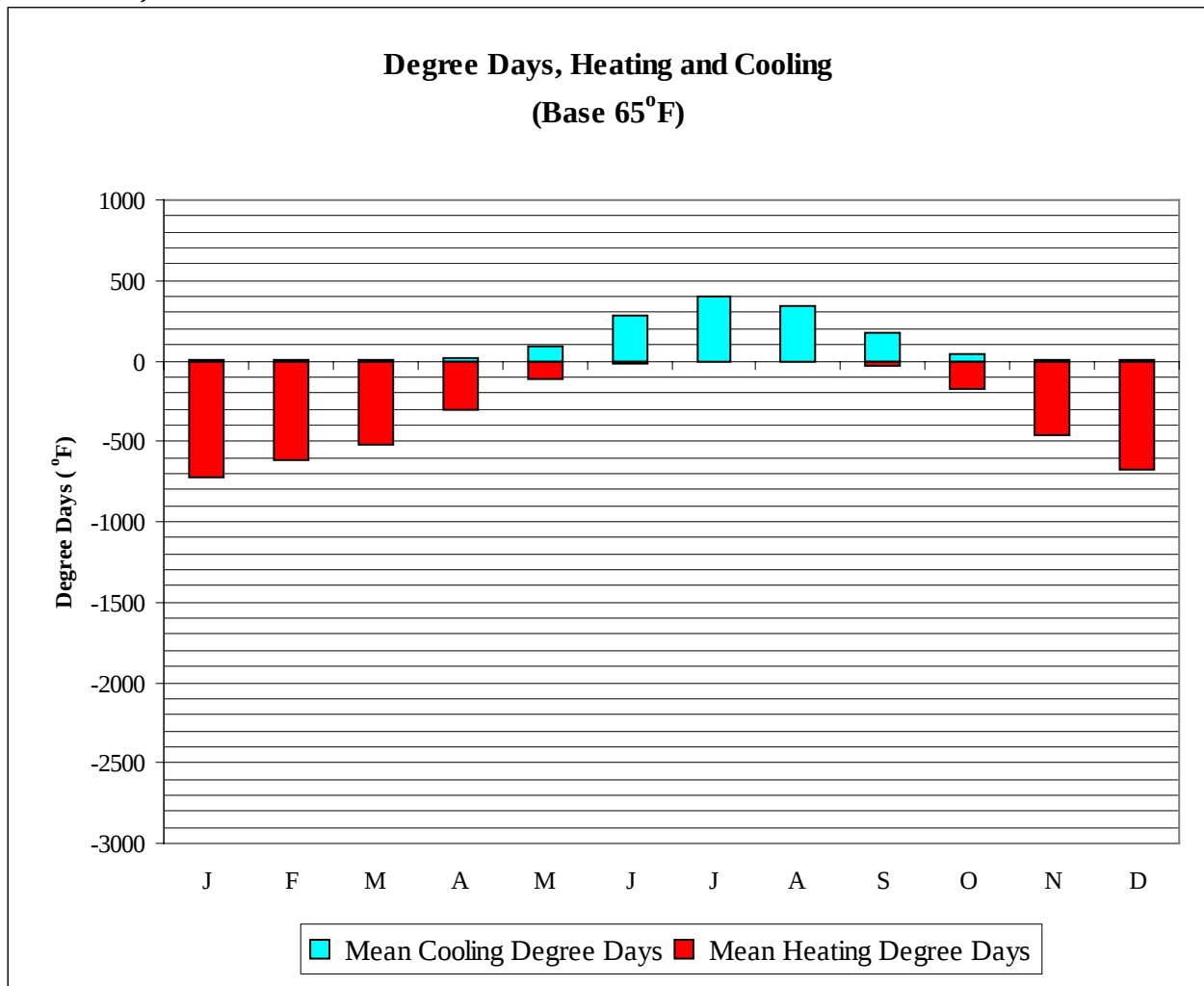
WMO No. 166480

Long Term Dry Bulb Temperature and Humidity Summary

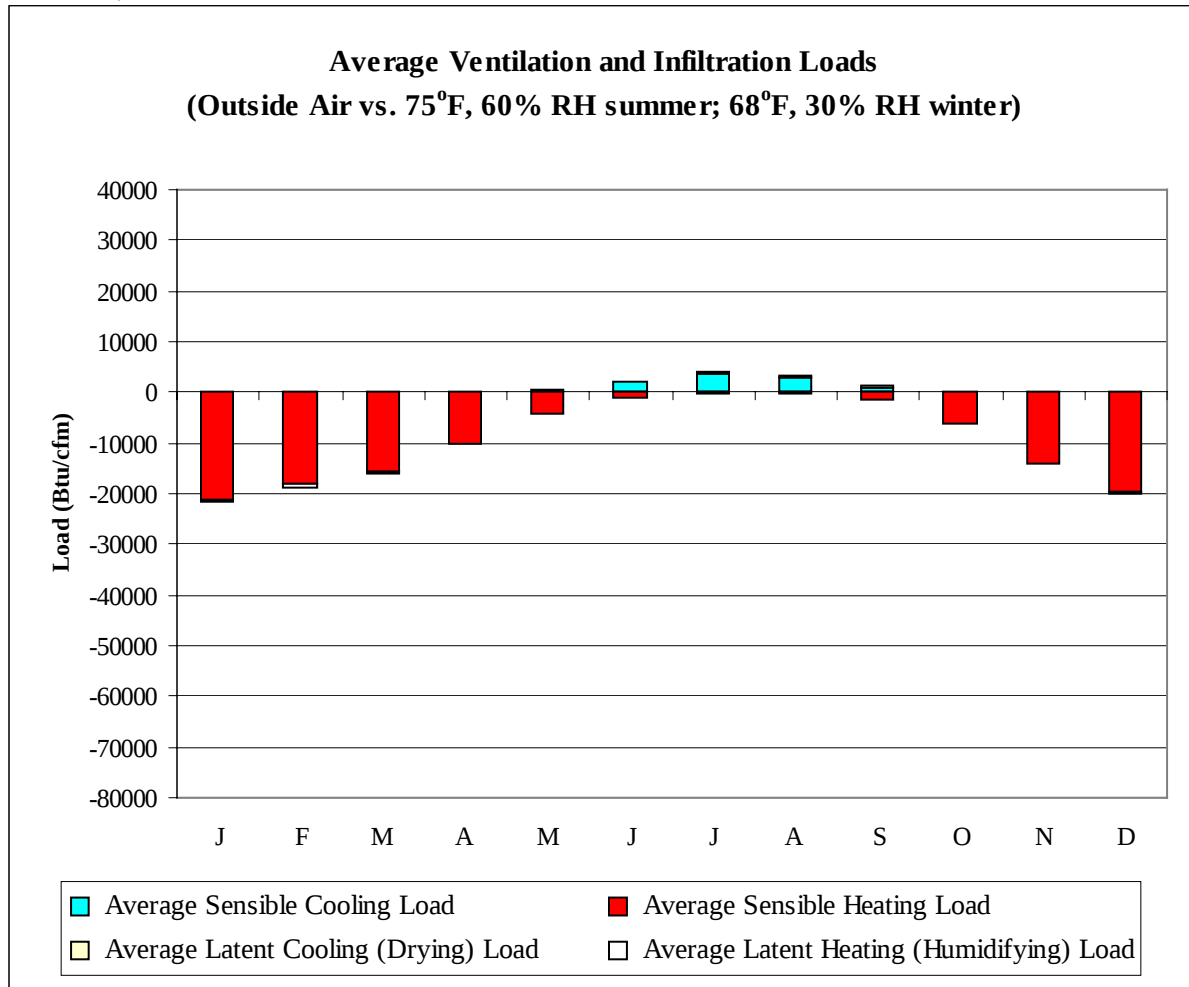
Week Ending	1.0% Temp (°F)	MCWB @ 1% Temp (°F)	Mean Max Temp (°F)	Mean Min Temp (°F)	99% Temp (°F)	1.0% HR (gr/lb)	MCDB @ 1% HR (°F)	Mean Max HR (gr/lb)	Mean Min HR (gr/lb)
7-Jan	60.0	52.0	48.5	32.7	22.0	53.9	52.8	36.0	24.4
14-Jan	57.0	49.7	47.0	31.2	21.0	50.4	53.8	34.9	23.2
21-Jan	59.0	48.8	47.2	31.9	22.0	50.4	57.6	33.7	23.2
28-Jan	63.0	53.7	50.0	35.1	24.0	51.1	57.1	37.5	26.9
4-Feb	63.0	52.3	50.9	34.5	23.0	54.6	54.9	38.2	25.7
11-Feb	63.0	52.1	52.7	33.8	23.0	53.9	53.6	38.5	26.3
18-Feb	64.0	53.1	52.8	36.7	25.0	58.1	55.0	40.6	28.5
25-Feb	65.0	52.0	50.7	35.3	23.0	54.6	54.8	37.6	26.2
4-Mar	67.0	50.0	53.9	35.9	25.0	53.9	57.9	38.1	26.5
11-Mar	67.0	53.0	54.2	38.1	25.0	53.9	57.2	41.0	29.3
18-Mar	68.0	53.7	55.6	38.7	26.0	57.4	56.7	41.2	30.1
25-Mar	72.0	57.7	60.3	40.5	31.0	62.3	60.3	47.2	34.1
1-Apr	73.0	57.8	63.3	42.9	35.0	66.5	63.5	50.6	36.2
8-Apr	75.0	57.6	66.3	43.6	36.0	66.5	64.9	52.7	37.1
15-Apr	77.0	58.2	65.4	44.5	37.0	70.7	64.8	53.0	36.0
22-Apr	73.0	57.4	64.7	44.3	36.0	70.7	64.6	52.1	36.5
29-Apr	79.0	60.2	68.7	46.4	38.0	70.7	66.2	56.2	38.9
6-May	84.0	66.0	71.9	48.4	41.0	80.5	74.6	60.6	42.3
13-May	84.0	65.3	74.3	51.0	43.0	86.1	73.3	66.2	47.2
20-May	86.0	63.1	76.4	52.6	46.0	86.1	70.6	67.9	49.0
27-May	90.0	65.8	78.9	54.6	48.0	91.7	75.4	71.1	50.3
3-Jun	87.0	63.0	79.8	56.1	50.0	88.2	68.6	73.3	52.0
10-Jun	93.0	67.0	84.2	58.3	52.0	91.0	74.5	73.7	52.2
17-Jun	99.0	69.3	87.3	60.9	54.0	97.3	76.0	77.1	53.2
24-Jun	97.0	68.0	87.3	60.8	55.0	97.3	75.8	79.5	53.4
1-Jul	100.0	71.8	89.4	63.4	57.0	105.0	79.0	78.8	52.0
8-Jul	104.0	71.3	88.9	64.3	58.0	99.4	77.6	82.0	54.9
15-Jul	99.0	71.2	90.1	64.6	58.0	98.0	73.0	80.6	57.8
22-Jul	103.0	66.0	91.6	66.2	61.0	99.4	73.1	86.3	58.2
29-Jul	106.0	71.0	90.5	65.9	60.0	104.3	77.3	84.7	57.8
5-Aug	97.0	69.6	90.6	65.5	59.0	98.7	79.0	82.5	57.5
12-Aug	95.0	70.2	89.5	65.4	59.0	104.3	76.5	84.7	59.4
19-Aug	95.0	68.1	87.9	63.8	58.0	104.3	72.3	84.5	58.6
26-Aug	97.0	68.0	87.6	63.1	57.0	98.0	72.0	82.5	57.3
2-Sep	95.0	69.6	85.8	62.6	57.0	98.0	75.5	81.3	57.7
9-Sep	91.0	67.0	83.6	60.4	54.0	97.3	71.7	77.4	53.3
16-Sep	93.0	66.6	82.9	59.3	52.0	91.7	70.9	76.1	53.8
23-Sep	93.0	67.6	82.0	58.1	52.0	93.8	66.0	74.2	52.7
30-Sep	91.0	66.3	79.9	57.3	49.0	98.0	72.8	75.0	54.0
7-Oct	88.0	65.8	75.8	54.0	45.0	86.1	69.9	68.5	48.7
14-Oct	83.0	65.5	74.7	54.0	46.0	86.1	69.4	69.6	49.8
21-Oct	82.0	64.4	70.9	50.3	40.0	85.4	68.1	64.8	46.9
28-Oct	77.0	62.1	64.5	48.4	39.0	79.8	64.3	57.8	42.1
4-Nov	78.0	59.5	63.3	46.5	33.0	75.6	63.6	56.1	42.0
11-Nov	68.0	57.4	59.7	43.1	31.0	70.0	63.0	52.2	38.4
18-Nov	67.0	60.0	57.9	42.1	30.0	70.7	62.2	51.2	37.4
25-Nov	66.0	56.2	57.2	41.3	28.0	67.2	60.2	49.9	36.4
2-Dec	65.0	52.0	53.4	38.3	27.0	65.1	58.8	44.6	32.3
9-Dec	63.0	53.0	50.8	36.2	26.0	58.1	57.6	40.6	29.3
16-Dec	63.0	53.3	49.8	35.3	21.0	58.8	57.4	39.2	27.8
23-Dec	61.0	54.4	49.7	36.4	19.0	57.4	58.2	41.5	29.9
31-Dec	59.0	51.9	48.0	33.2	19.0	53.2	55.3	36.9	25.7

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	Mean Cooling Degree Days (°F)	Mean Heating Degree Days (°F)
JAN	0	728
FEB	0	615
MAR	2	519
APR	13	305
MAY	85	110
JUN	280	17
JUL	404	4
AUG	346	5
SEP	176	30
OCT	43	178
NOV	2	461
DEC	0	678
ANN	1351	3650



	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	-21006	0	-729
FEB	0	-18031	1	-596
MAR	1	-15679	0	-369
APR	20	-9969	2	-62
MAY	329	-4352	50	-8
JUN	1937	-874	212	-3
JUL	3626	-258	524	-1
AUG	2758	-355	463	-1
SEP	934	-1427	237	-2
OCT	147	-6258	32	-23
NOV	4	-14082	1	-183
DEC	0	-19693	0	-503
ANN	9756	-111984	1522	-2480

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

No Solar Radiation
Data Available

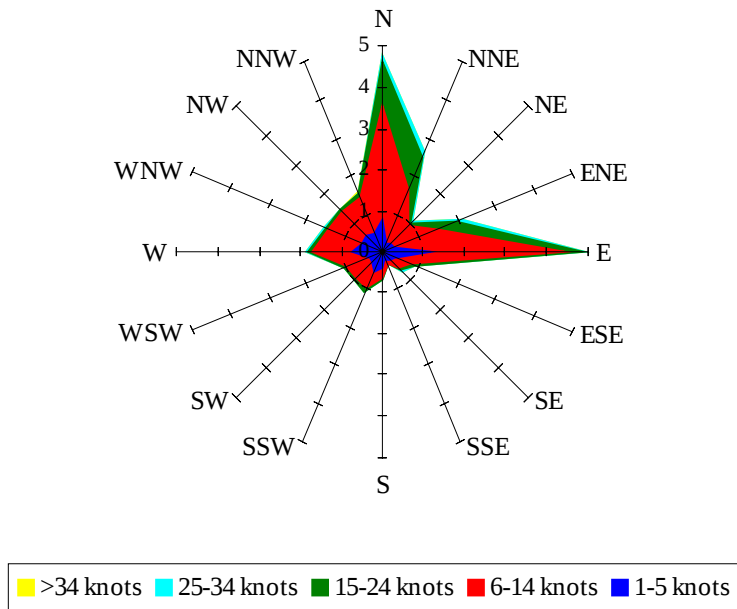


Average Annual Solar Heat and Illumination – Nearest Available Site

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

Wind Summary - December, January, and February

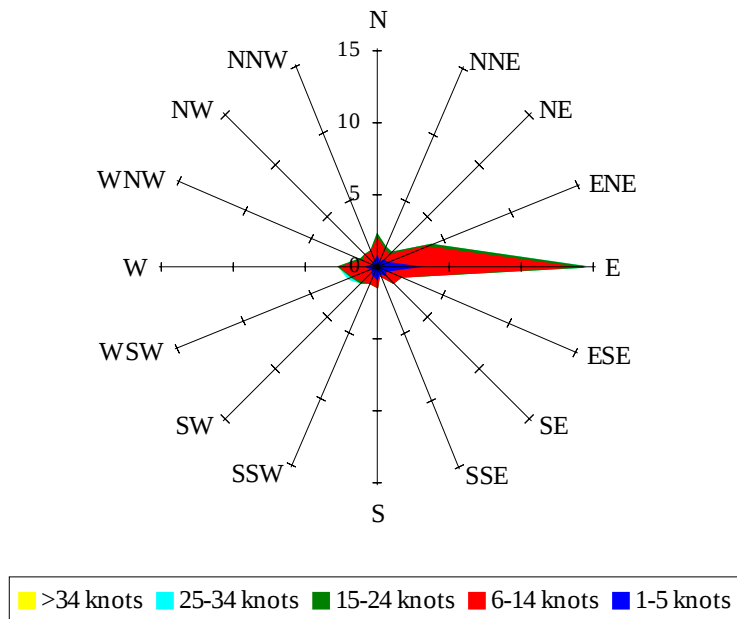
Labels of Percent Frequency on North Axis



Percent Calm = 72.68

Wind Summary - March, April, and May

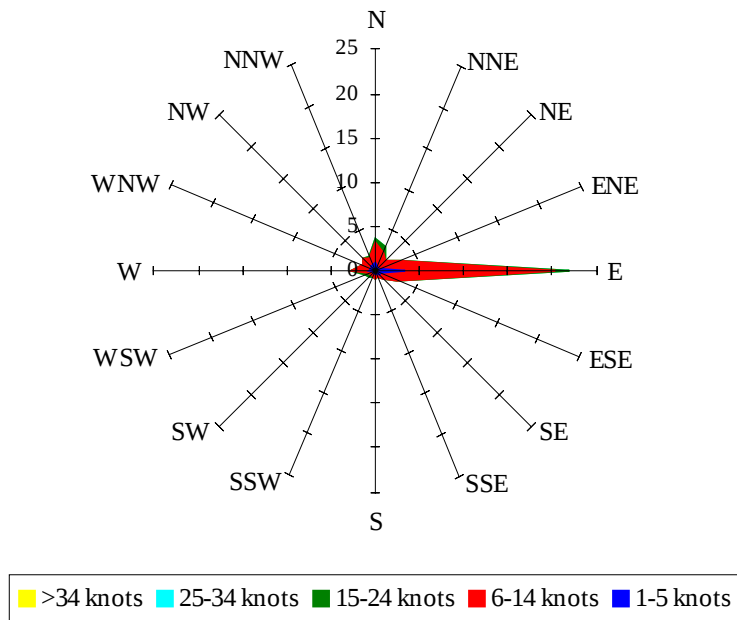
Labels of Percent Frequency on North Axis



Percent Calm = 60.09

Wind Summary - June, July, and August

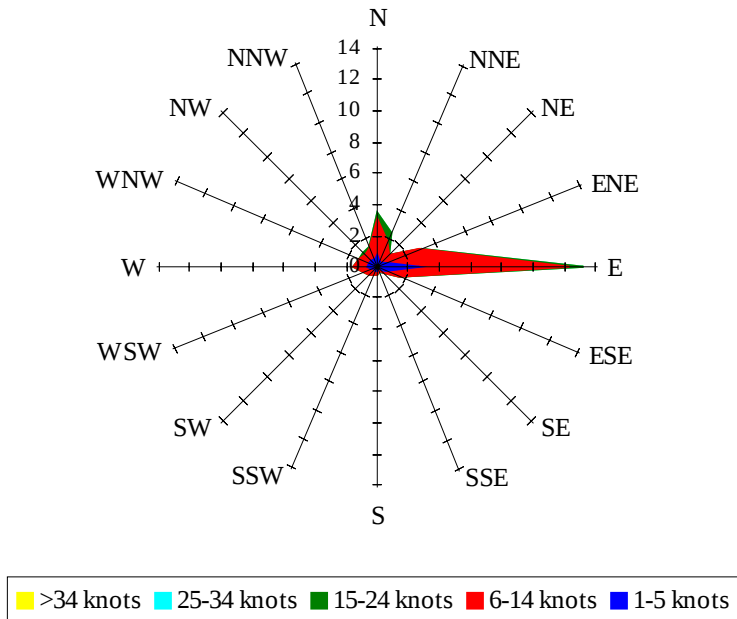
Labels of Percent Frequency on North Axis



Percent Calm = 50.63

Wind Summary - September, October, and November

Labels of Percent Frequency on North Axis



Percent Calm = 66.45