

OLONGAPO	PH	
Latitude = 14.80 N		WMO No. 984260
Longitude = 120.27 E		Elevation = 56 feet
Period of Record = 1973 to 1996		Average Pressure = 29.72 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	100	78	109	10.7	E
0.4% Occurrence	97	77	111	10.9	E
1.0% Occurrence	96	77	113	10.7	E
2.0% Occurrence	95	78	115	10.8	E
Mean Daily Range	13	-	-	-	-
97.5% Occurrence	73	68	97	5.3	E
99.0% Occurrence	72	68	96	5.3	E
99.6% Occurrence	70	66	89	4.1	E
Median of Extreme Lows	68	65	85	3.9	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	84	91	161	9.9	SW
0.4% Occurrence	82	89	150	9.4	SW
1.0% Occurrence	82	89	150	9.4	SW
2.0% Occurrence	81	89	145	9.2	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	172	87	1.12	11.2	SSW
0.4% Occurrence	160	87	1.06	9.3	SW
1.0% Occurrence	152	85	1.00	10.5	SW
2.0% Occurrence	151	85	0.99	8.8	SW
Air Conditioning/ Humid Area Criteria	# of Hours	T ≥ 93°F	T ≥ 80°F	T _{wb} ≥ 73°F	T _{wb} ≥ 67°F
		287	4150	4988	6421

Other Site Data

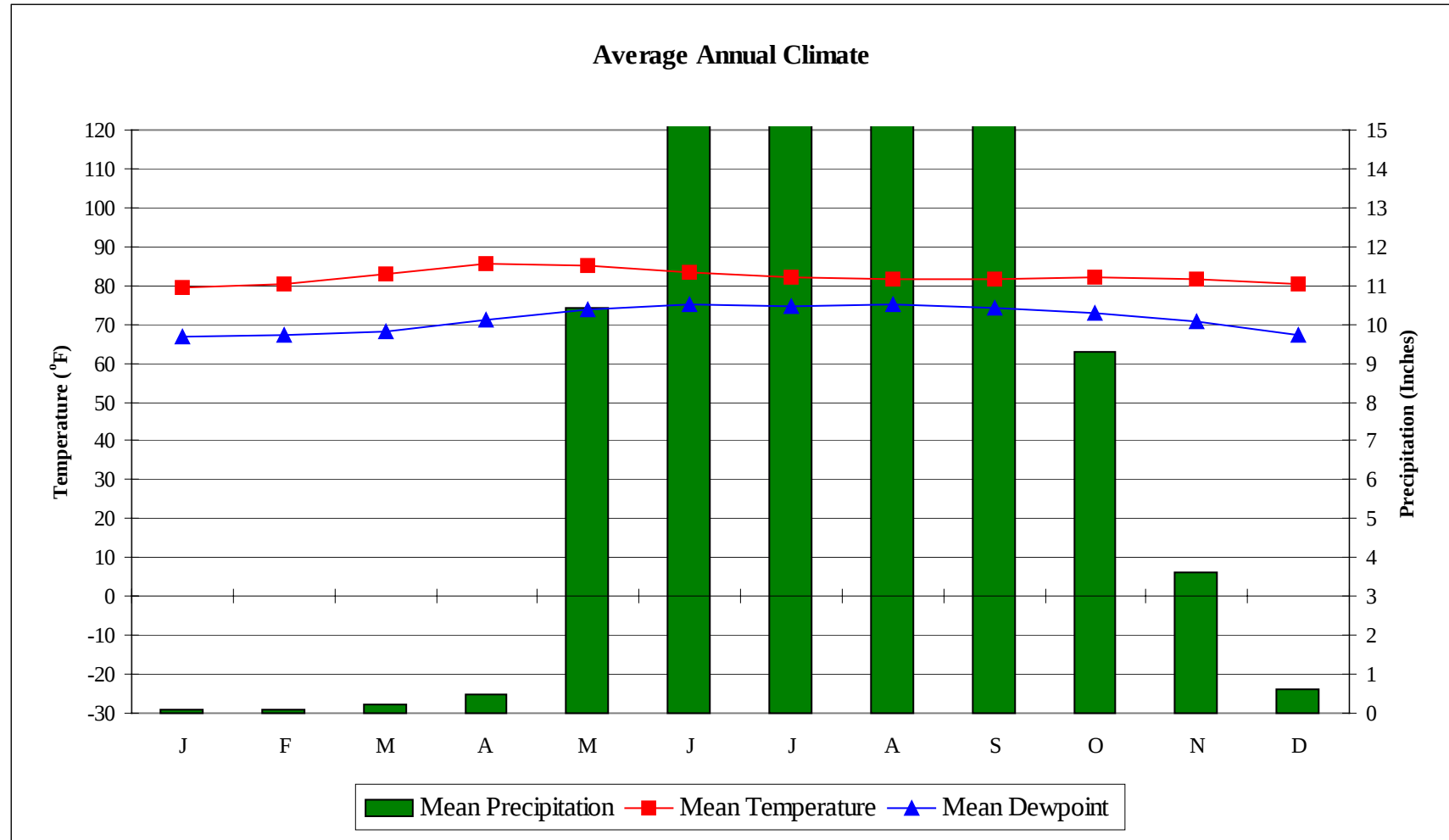
Weather Region	Rain Rate 100 Year Recurrence (in./hr)	Basic Wind Speed 3 sec gust @ 33 ft 50 Year Recurrence (mph)	Ventilation Cooling Load Index (Ton-hr/cfm/yr) Base 75°F-RH 60% Latent + Sensible
10	N/A	N/A	12.4 + 5.5
Ground Water Temperature (°F) 50 Foot Depth *	Frost Depth 50 Year Recurrence (in.)	Ground Snow Load 50 Year Recurrence (lb/ft ²)	Average Annual Freeze-Thaw Cycles (#)
84.7	N/A	N/A	0

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

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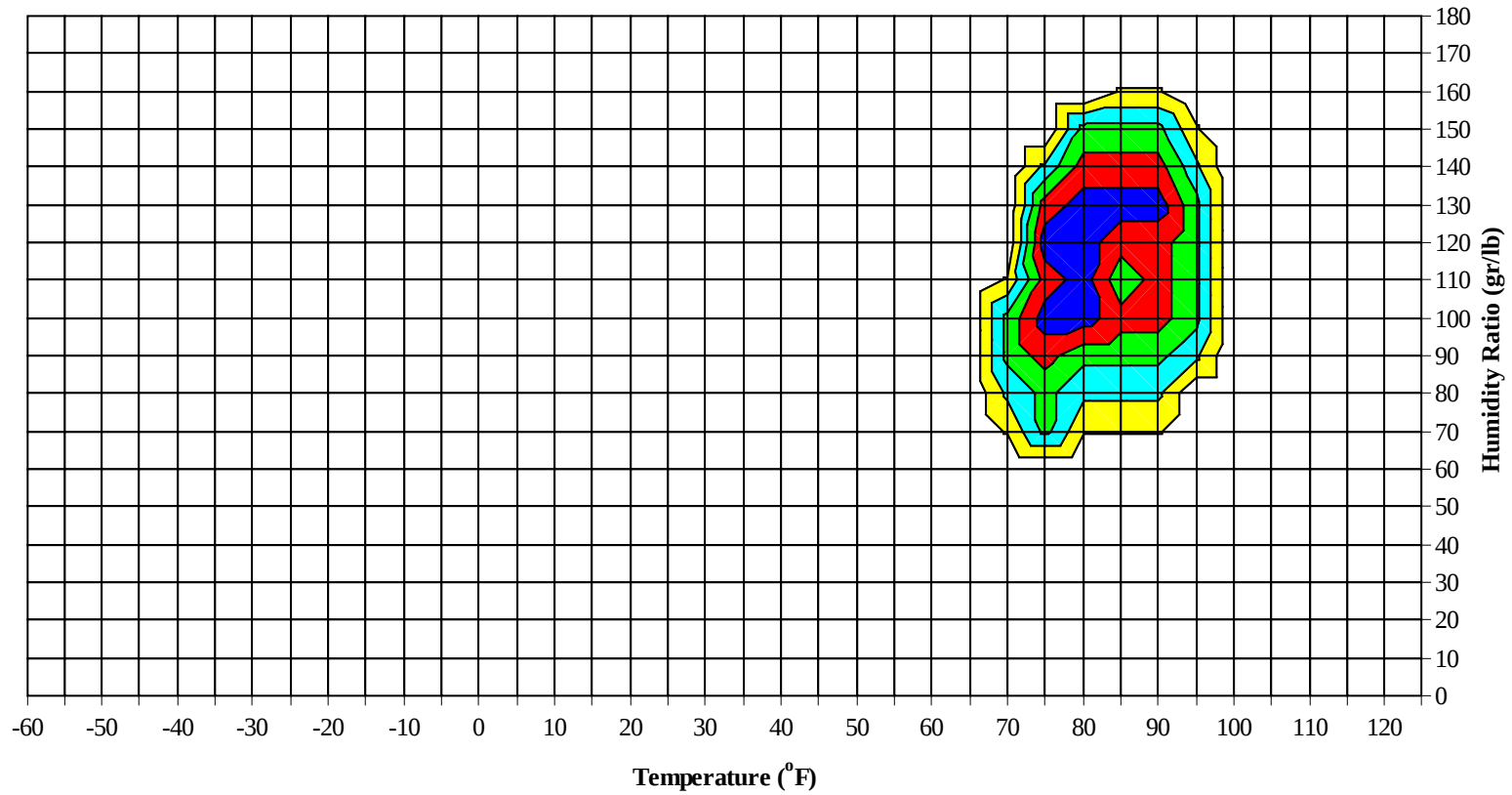


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Long Term Psychrometric Summary



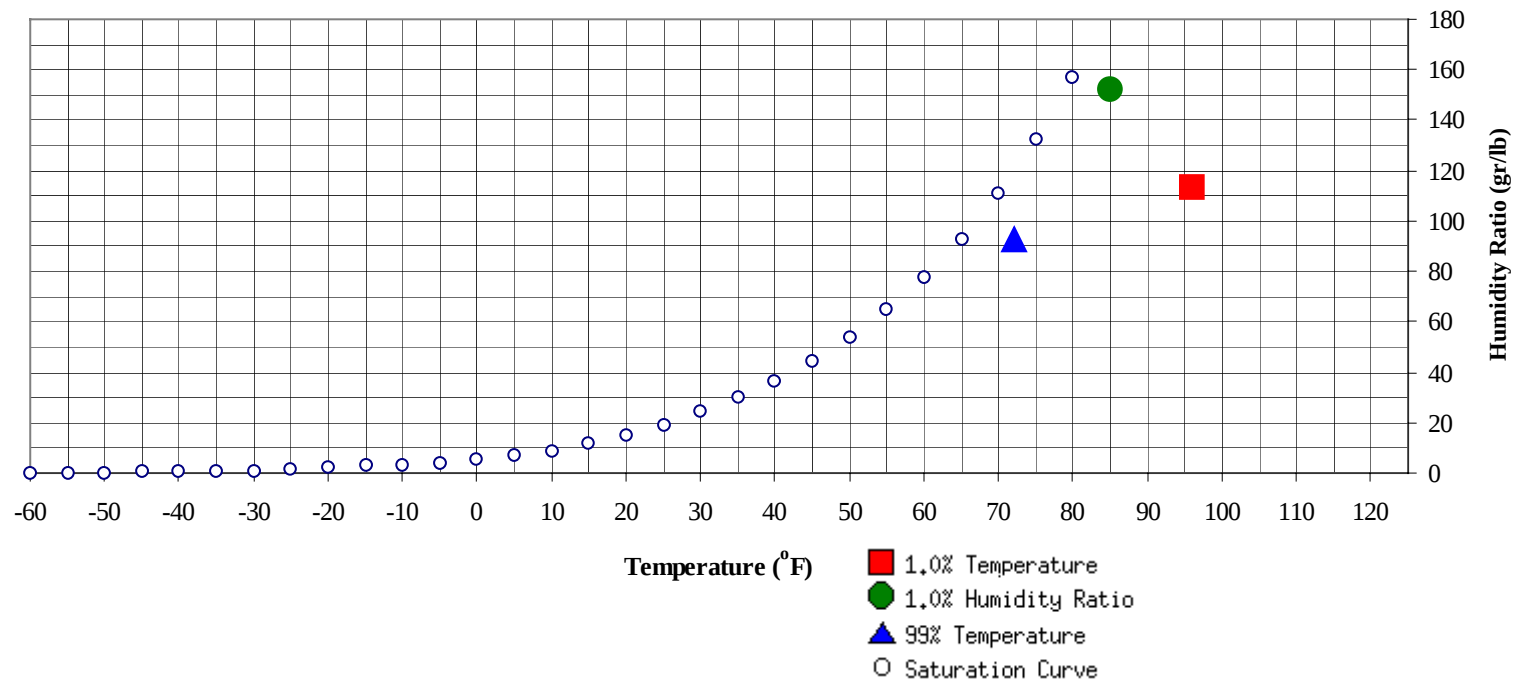
- 50% of all observations
- 80% of all observations
- 95% of all observations
- 97.5% of all observations
- 99% of all observations

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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)
	72	92.7	31.8		151.9	85	80.5	78.8	44.2

1.0% Dry Bulb	(°F)	MCHR (gr/lb)	MCWB (°F)	Enthalpy (btu/lb)
	96	113.6	77.6	41.0

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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		
100 / 104															
95 / 99		1		1	77.4		4	0	4	76.3		30	1	31	75.8
90 / 94		46	1	47	75.0		74	5	79	74.2		119	13	133	74.7
85 / 89	0	100	10	111	73.3	0	82	17	99	73.3	4	68	35	106	74.2
80 / 84	14	87	75	176	72.3	15	58	84	157	72.5	46	27	121	194	73.4
75 / 79	128	13	132	274	70.2	117	5	100	222	70.2	150	2	71	224	71.0
70 / 74	99	0	28	128	67.2	86	0	18	104	67.9	47	0	6	54	67.7
65 / 69	6	0	0	6	64.0	5	0	0	5	65.0	1			1	64.8
60 / 64	0	0	0	0	62.5	0	0		0	63.0					
55 / 59	0	0	0	0		1	1		2	54.0					
50 / 54	1	0	1	2	46.6										

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		
100 / 104		4		4	78.0		5	0	5	79.1		1		1	79.1
95 / 99		61	3	64	76.7		45	3	48	78.5		12	1	13	79.6
90 / 94	2	134	25	161	77.2	4	126	27	157	78.8	1	101	11	113	79.9
85 / 89	19	35	66	120	76.5	30	43	77	151	77.9	17	59	47	123	78.9
80 / 84	109	6	127	241	74.9	132	20	106	259	76.0	120	50	123	293	76.9
75 / 79	107	0	19	126	72.7	79	8	33	121	74.5	100	16	57	174	75.0
70 / 74	4		0	4	69.5	2	0	1	3	72.1	2	0	1	3	72.0
65 / 69												0	0	0	
60 / 64															
55 / 59															
50 / 54															

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 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		
100 / 104												0	0	0	79.0
95 / 99		2		2	80.5		2		2	80.7		3	0	3	80.3
90 / 94	0	76	5	81	79.6	0	40	2	42	80.0		57	2	59	79.1
85 / 89	9	83	30	122	78.7	5	78	17	100	79.2	3	88	15	106	78.4
80 / 84	91	63	126	279	76.9	97	89	136	322	77.4	74	71	135	280	76.9
75 / 79	144	24	85	253	74.7	144	38	91	272	74.9	158	20	86	265	74.7
70 / 74	4	0	2	6	72.1	3	1	2	6	71.7	5	0	2	7	71.8
65 / 69						0	0	0	0	66.0					
60 / 64															
55 / 59															
50 / 54															

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 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		
100 / 104		0		0	81.0										
95 / 99		3		3	79.1		2	0	2	79.1	0	0	0	0	75.8
90 / 94			81	2	83	77.9	75	1	76	77.1	0	44	0	44	75.5
85 / 89	4	93	18	115	77.5	3	102	13	119	75.9	0	108	7	115	73.6
80 / 84	67	55	133	254	75.6	55	52	126	232	74.6	26	86	87	200	72.5
75 / 79	169	16	93	278	73.8	161	9	98	268	72.5	154	9	130	293	70.6
70 / 74	9	0	2	11	71.4	21	0	2	23	69.4	62	1	24	87	67.1
65 / 69						0		0	0	65.0	6	0	0	6	64.0
60 / 64											0			0	62.8
55 / 59															
50 / 54															

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 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		
100 / 104		10	0	10	78.5
95 / 99	0	168	8	176	77.5
90 / 94	7	980	95	1082	77.5
85 / 89	96	939	355	1390	76.5
80 / 84	847	659	1378	2884	75.4
75 / 79	1610	159	992	2760	72.8
70 / 74	341	3	90	434	68.0
65 / 69	17	0	1	18	64.4
60 / 64	1	0	0	1	62.8
55 / 59	1	2	0	3	54.0
50 / 54	1	0	1	2	46.6

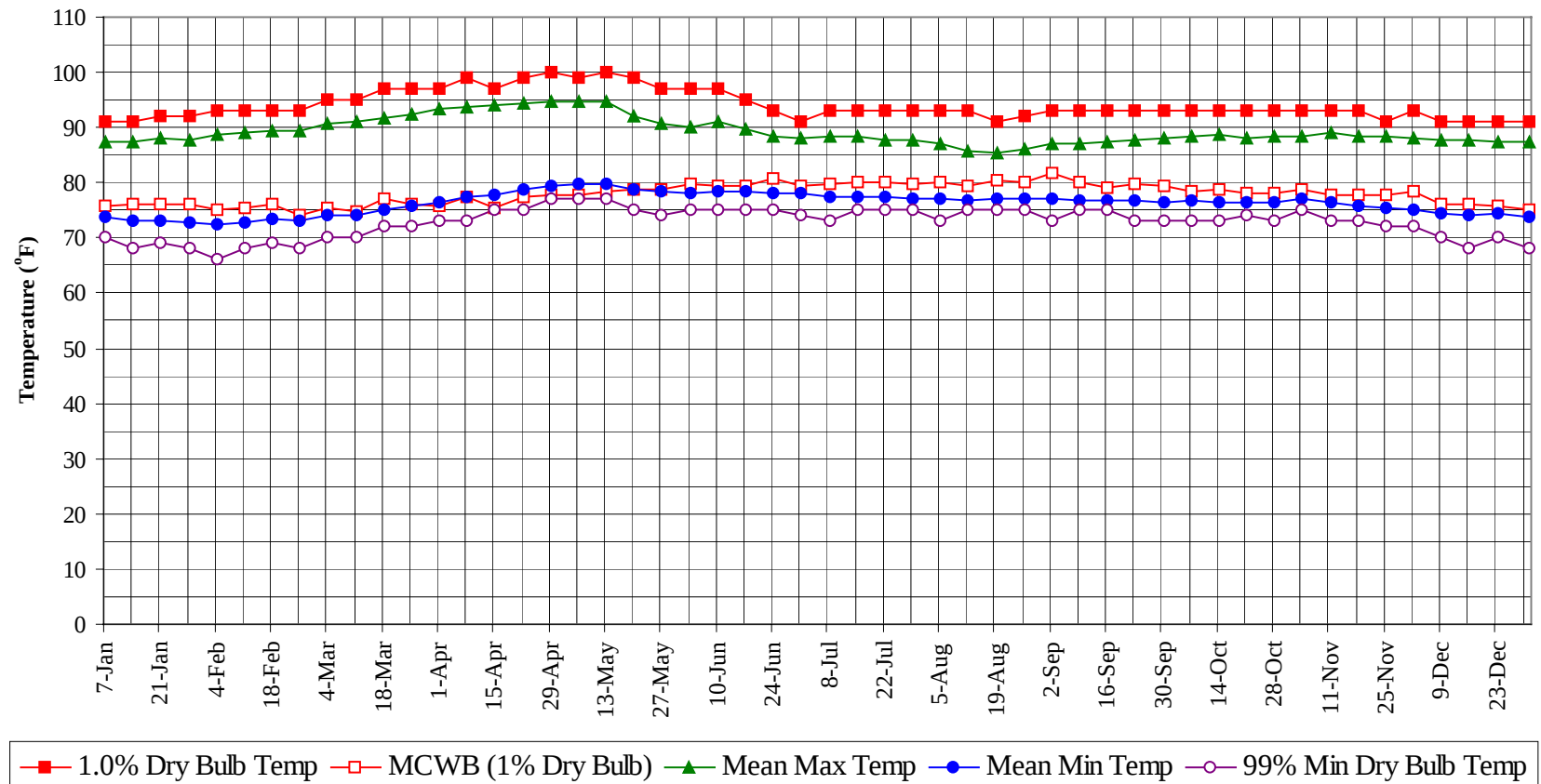
Caution: This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary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

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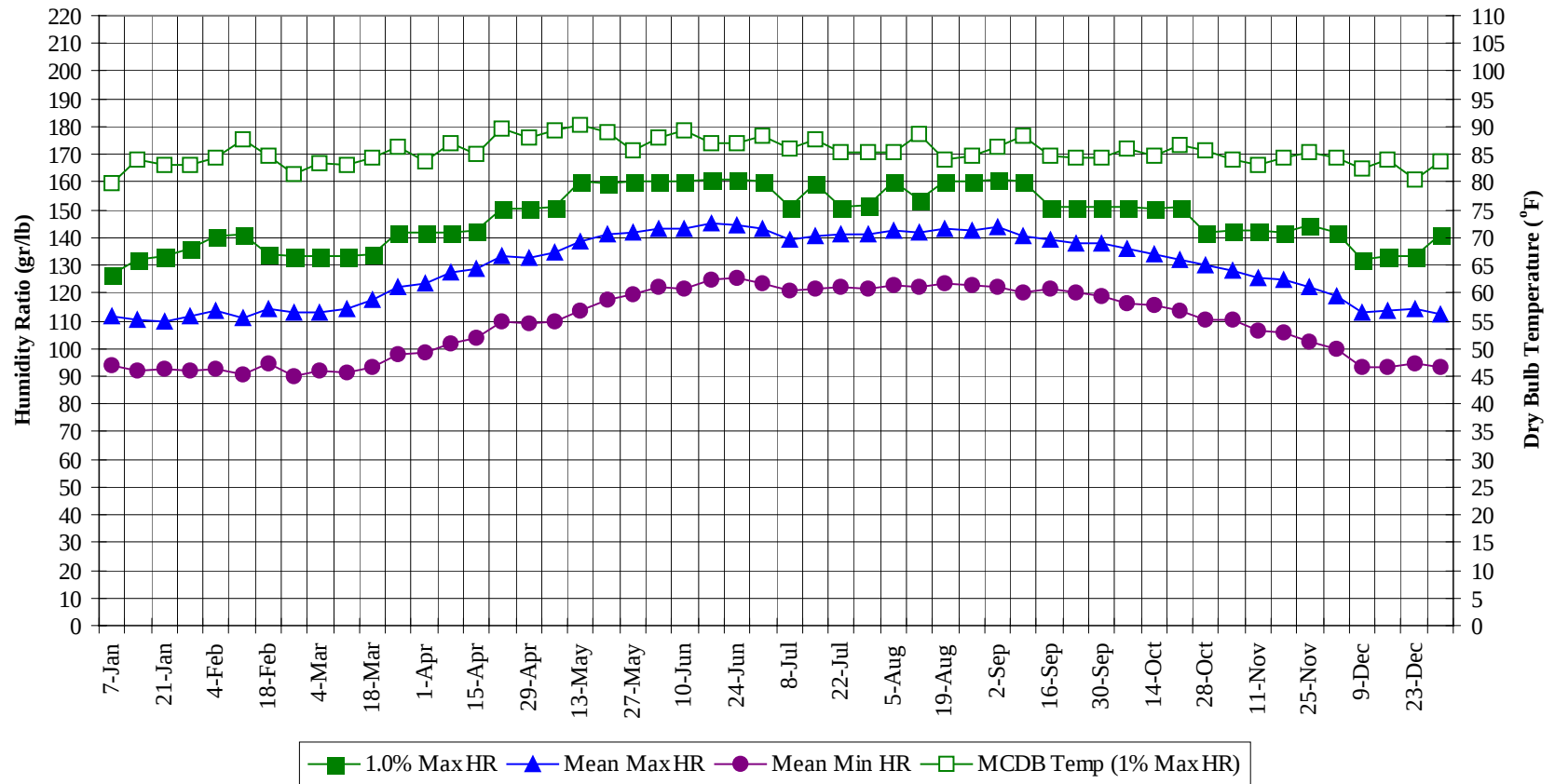
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Annual Summary of Temperatures



Long Term Humidity and Dry Bulb Temperature Summary



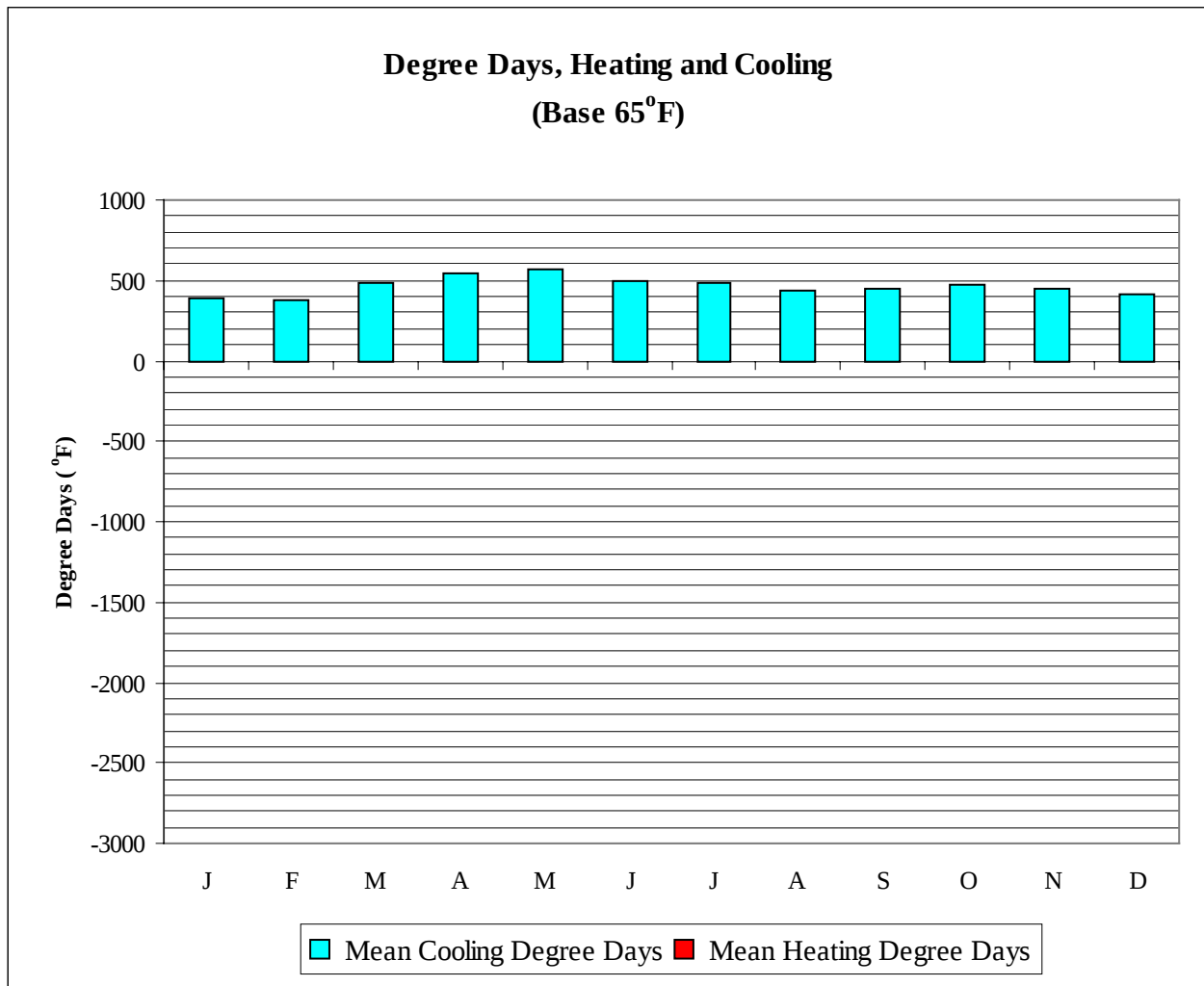
OLONGAPO**PH****WMO No. 984260****Long Term Dry Bulb Temperature and Humidity Summary**

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	91.0	75.7	87.3	73.7	70.0	126.7	79.8	111.6	93.7
14-Jan	91.0	76.2	87.5	73.0	68.0	132.3	84.0	110.3	92.0
21-Jan	92.0	76.1	88.0	73.0	69.0	133.0	83.0	109.9	92.5
28-Jan	92.0	76.2	87.8	72.7	68.0	135.8	83.0	111.8	91.9
4-Feb	93.0	75.1	88.6	72.4	66.0	140.7	84.4	113.6	92.4
11-Feb	93.0	75.4	88.9	72.6	68.0	141.4	87.6	111.1	90.6
18-Feb	93.0	76.0	89.4	73.4	69.0	133.7	84.7	114.6	94.6
25-Feb	93.0	74.1	89.4	73.1	68.0	133.0	81.4	113.0	90.1
4-Mar	95.0	75.4	90.7	74.2	70.0	133.0	83.3	113.1	92.2
11-Mar	95.0	74.7	91.0	74.3	70.0	133.0	83.0	114.0	91.5
18-Mar	97.0	77.0	91.8	75.0	72.0	133.7	84.5	117.8	93.5
25-Mar	97.0	76.1	92.4	75.8	72.0	142.1	86.3	122.4	97.9
1-Apr	97.0	75.8	93.4	76.4	73.0	142.1	83.9	123.5	98.8
8-Apr	99.0	77.3	93.8	77.4	73.0	142.1	87.0	127.2	101.9
15-Apr	97.0	75.6	94.0	77.9	75.0	142.8	85.2	128.8	103.9
22-Apr	99.0	77.4	94.3	78.8	75.0	150.5	89.6	133.6	109.4
29-Apr	100.0	77.7	94.6	79.4	77.0	150.5	87.9	132.8	108.7
6-May	99.0	77.8	94.7	79.7	77.0	151.2	89.2	134.3	109.9
13-May	100.0	78.5	94.6	79.8	77.0	160.3	90.4	138.6	113.5
20-May	99.0	78.9	92.0	78.8	75.0	159.6	89.1	141.3	117.3
27-May	97.0	78.9	90.6	78.3	74.0	160.3	85.8	141.6	119.6
3-Jun	97.0	79.8	89.9	78.3	75.0	160.3	87.9	143.4	122.0
10-Jun	97.0	79.5	91.2	78.5	75.0	160.3	89.2	143.0	121.2
17-Jun	95.0	79.4	89.8	78.3	75.0	161.0	86.9	145.0	124.6
24-Jun	93.0	80.9	88.3	78.3	75.0	161.0	87.2	144.4	125.2
1-Jul	91.0	79.5	88.0	78.0	74.0	160.3	88.3	143.4	123.5
8-Jul	93.0	79.9	88.4	77.5	73.0	151.2	86.1	139.3	120.8
15-Jul	93.0	80.0	88.5	77.3	75.0	159.6	87.6	140.3	121.4
22-Jul	93.0	80.2	87.8	77.5	75.0	151.2	85.5	141.2	122.1
29-Jul	93.0	79.7	87.7	77.2	75.0	151.9	85.2	141.4	121.4
5-Aug	93.0	80.1	87.1	77.2	73.0	160.3	85.3	142.8	122.6
12-Aug	93.0	79.5	85.9	76.8	75.0	154.0	88.5	141.9	122.2
19-Aug	91.0	80.4	85.5	77.0	75.0	160.3	83.9	142.9	123.6
26-Aug	92.0	80.0	85.9	77.3	75.0	160.3	84.7	142.7	123.1
2-Sep	93.0	81.9	87.1	77.2	73.0	161.0	86.4	143.6	122.0
9-Sep	93.0	80.0	87.0	76.8	75.0	160.3	88.5	140.5	120.1
16-Sep	93.0	79.0	87.4	76.8	75.0	151.2	84.6	138.9	121.3
23-Sep	93.0	79.8	87.7	76.9	73.0	151.2	84.5	138.0	120.0
30-Sep	93.0	79.3	88.2	76.6	73.0	151.2	84.5	137.6	118.8
7-Oct	93.0	78.3	88.6	76.7	73.0	151.2	85.9	136.0	116.3
14-Oct	93.0	78.7	88.6	76.6	73.0	150.5	84.8	133.9	115.4
21-Oct	93.0	78.0	88.1	76.5	74.0	151.2	86.6	132.2	113.7
28-Oct	93.0	78.2	88.5	76.5	73.0	142.1	85.8	129.8	110.5
4-Nov	93.0	78.9	88.5	77.1	75.0	142.8	83.9	127.9	110.6
11-Nov	93.0	77.7	89.0	76.5	73.0	142.8	82.9	125.3	106.1
18-Nov	93.0	77.9	88.4	75.7	73.0	142.1	84.3	124.7	106.0
25-Nov	91.0	77.6	88.4	75.4	72.0	144.2	85.5	122.2	102.5
2-Dec	93.0	78.3	88.2	75.3	72.0	142.1	84.5	119.2	99.8
9-Dec	91.0	76.1	87.9	74.4	70.0	132.3	82.6	113.3	93.6
16-Dec	91.0	76.0	87.9	74.1	68.0	133.0	84.2	113.5	93.2
23-Dec	91.0	75.8	87.3	74.3	70.0	133.0	80.4	114.0	94.6
31-Dec	91.0	75.2	87.4	73.7	68.0	141.4	83.9	112.0	93.0

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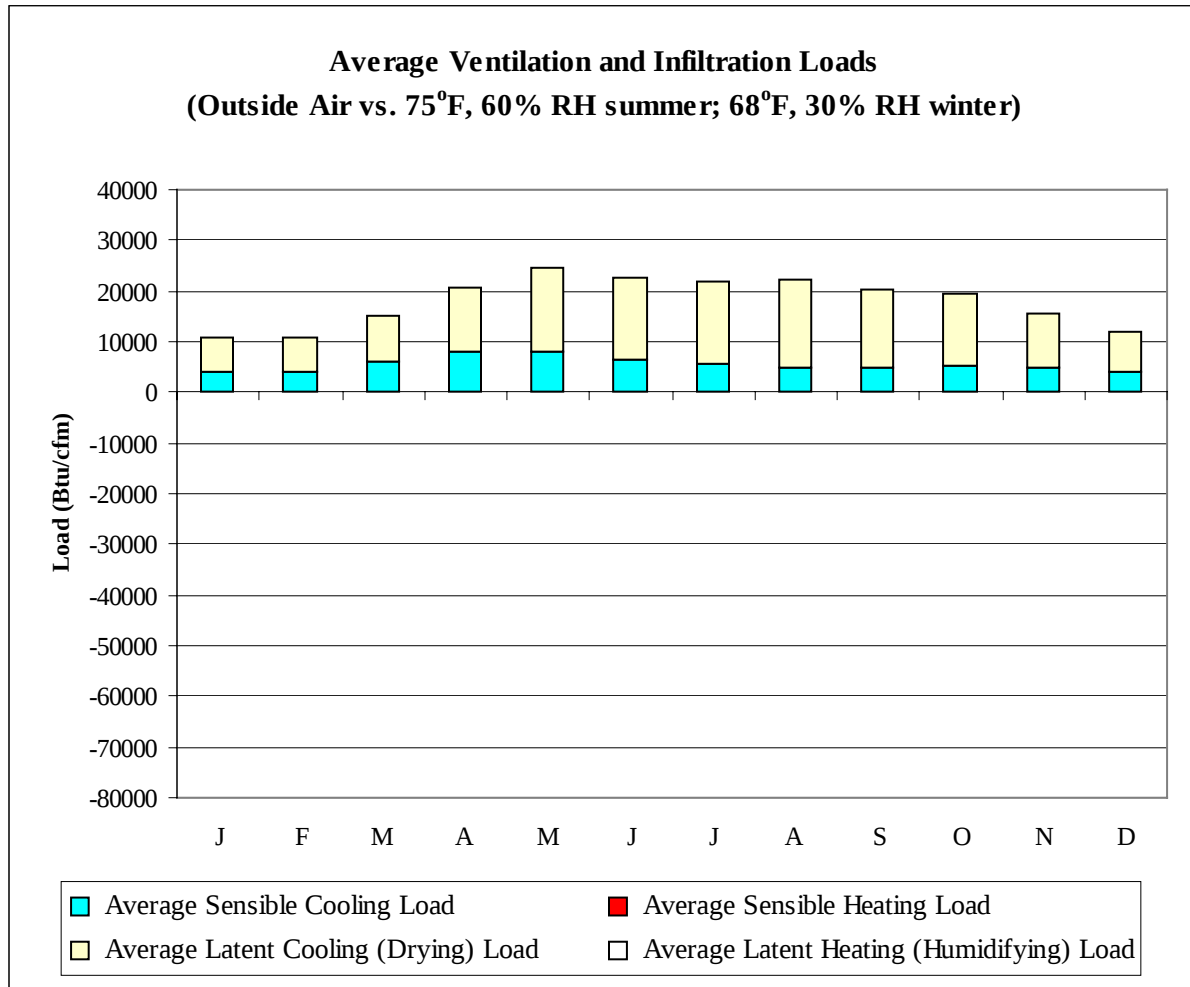


	Mean Cooling Degree Days (°F)	Mean Heating Degree Days (°F)
JAN	389	2
FEB	379	1
MAR	483	0
APR	545	0
MAY	565	0
JUN	502	0
JUL	484	0
AUG	441	0
SEP	451	0
OCT	479	0
NOV	453	0
DEC	408	0
ANN	5578	3

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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	3884	-46	6928	0
FEB	4161	-24	6566	0
MAR	6222	0	8733	0
APR	8050	0	12439	0
MAY	8124	0	16588	0
JUN	6274	0	16338	0
JUL	5603	0	16062	0
AUG	4842	0	17320	0
SEP	4915	0	15369	0
OCT	5366	0	14203	0
NOV	4798	0	10757	0
DEC	4255	-2	7768	0
ANN	66494	-72	149071	0

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

No Solar Radiation
Data Available

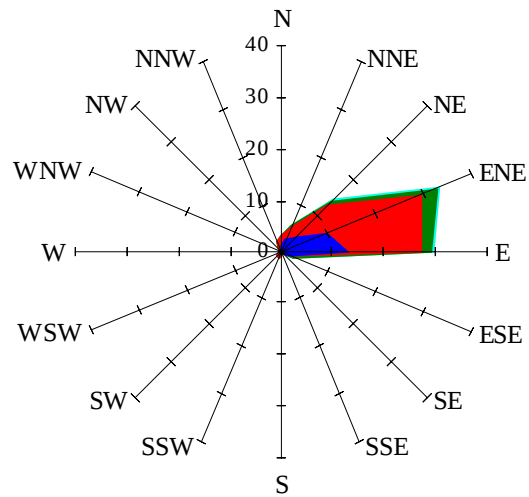


Average Annual Solar Heat and Illumination – Nearest Available Site

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

Wind Summary - December, January, and February

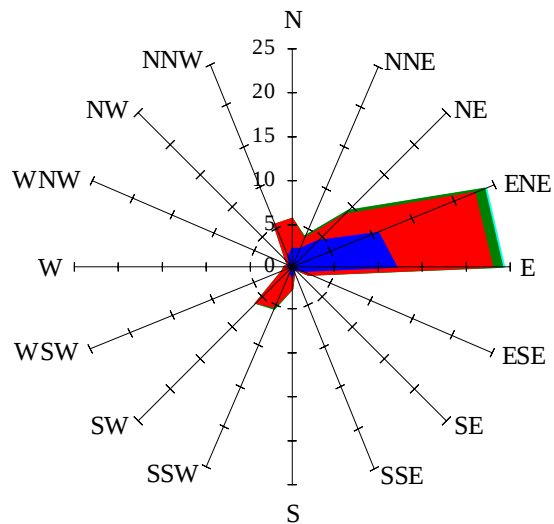
Labels of Percent Frequency on North Axis



Percent Calm = 5.32

Wind Summary - March, April, and May

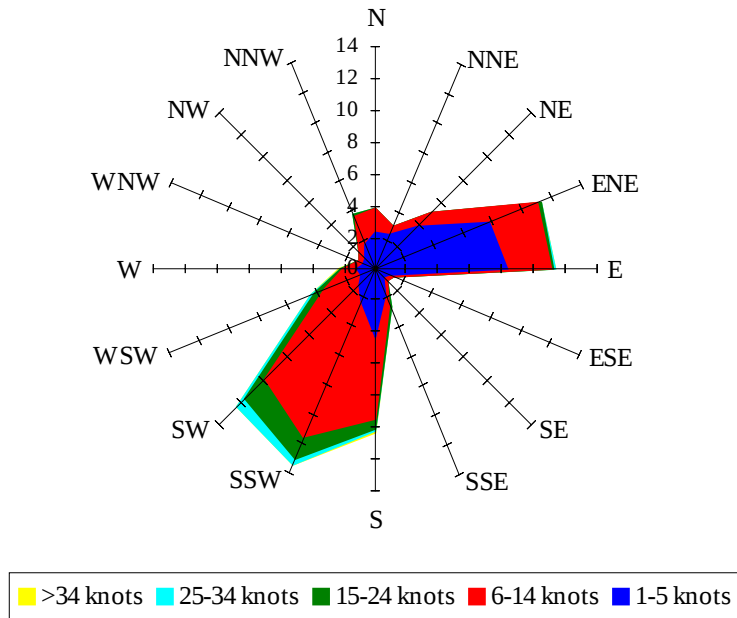
Labels of Percent Frequency on North Axis



Percent Calm = 7.52

Wind Summary - June, July, and August

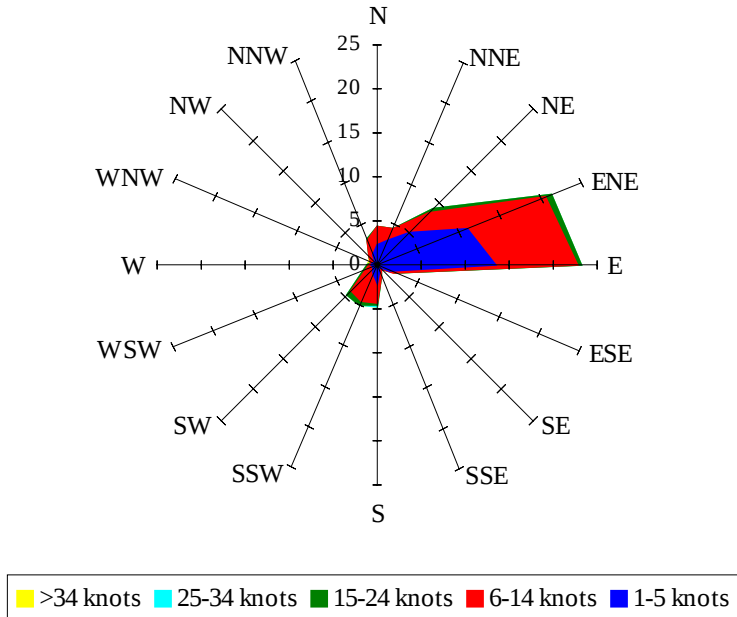
Labels of Percent Frequency on North Axis



Percent Calm = 12.09

Wind Summary - September, October, and November

Labels of Percent Frequency on North Axis



Percent Calm = 10.37