

NINOY AQUINO INTL, RP

Latitude = 14.51 N

Longitude = 121.02 E

Period of Record = 1988 To 2017

Station ID = ICAO_RPLL

Elevation = 75 Feet

Average Pressure = 29.76 inches Hg

Design Criteria Data

	Mean Coincident (Average) Values				
Dry Bulb Temperature (T)	Design Value (°F)	Wet Bulb Temperature (°F)	Humidity Ratio (gr/lb)	Wind Speed (mph)	Prevailing Direction (NSEW)
Median of Extreme Highs	98	79	120	10.8	VRB
0.4% Occurrence	95	79	124	11.3	ESE
1.0% Occurrence	93	79	126	11.7	ESE
2.0% Occurrence	93	79	126	11.7	ESE
Mean Daily Range	12	-	-	-	E
97.5% Occurrence	74	72	110	3.6	E
99.0% Occurrence	73	70	104	3	E
99.6% Occurrence	72	70	103	2.9	E
Median of Extreme Lows	68	66	93	2.3	ENE

Wet Bulb Temperature (T_{wb})	Design Value (°F)	Dry Bulb Temperature (°F)	Humidity Ratio (gr/lb)	Wind Speed (mph)	Prevailing Direction (NSEW)
Median of Extreme Highs	86	90	176	10.6	W
0.4% Occurrence	83	87	159	9.5	W
1.0% Occurrence	83	87	159	9.5	W
2.0% Occurrence	82	86	155	8.7	W

Humidity Ratio (HR)	Design Value (gr/lb)	Dry Bulb Temperature (°F)	Vapor Pressure (in. Hg)	Wind Speed (mph)	Prevailing Direction (NSEW)
Median of Extreme Highs	182	88	1.18	10.6	W
0.4% Occurrence	169	87	1.12	8.2	W
1.0% Occurrence	161	84	1.05	8.3	W
2.0% Occurrence	160	84	1.05	6.7	W

Air Conditioning/ Humid Area Criteria	Threshold	$T \geq 93^{\circ}\text{F}$	$T \geq 80^{\circ}\text{F}$	$T_{wb} \geq 73^{\circ}\text{F}$	$T_{wb} \geq 67^{\circ}\text{F}$
	# of Hours	192	5618	7446	8441

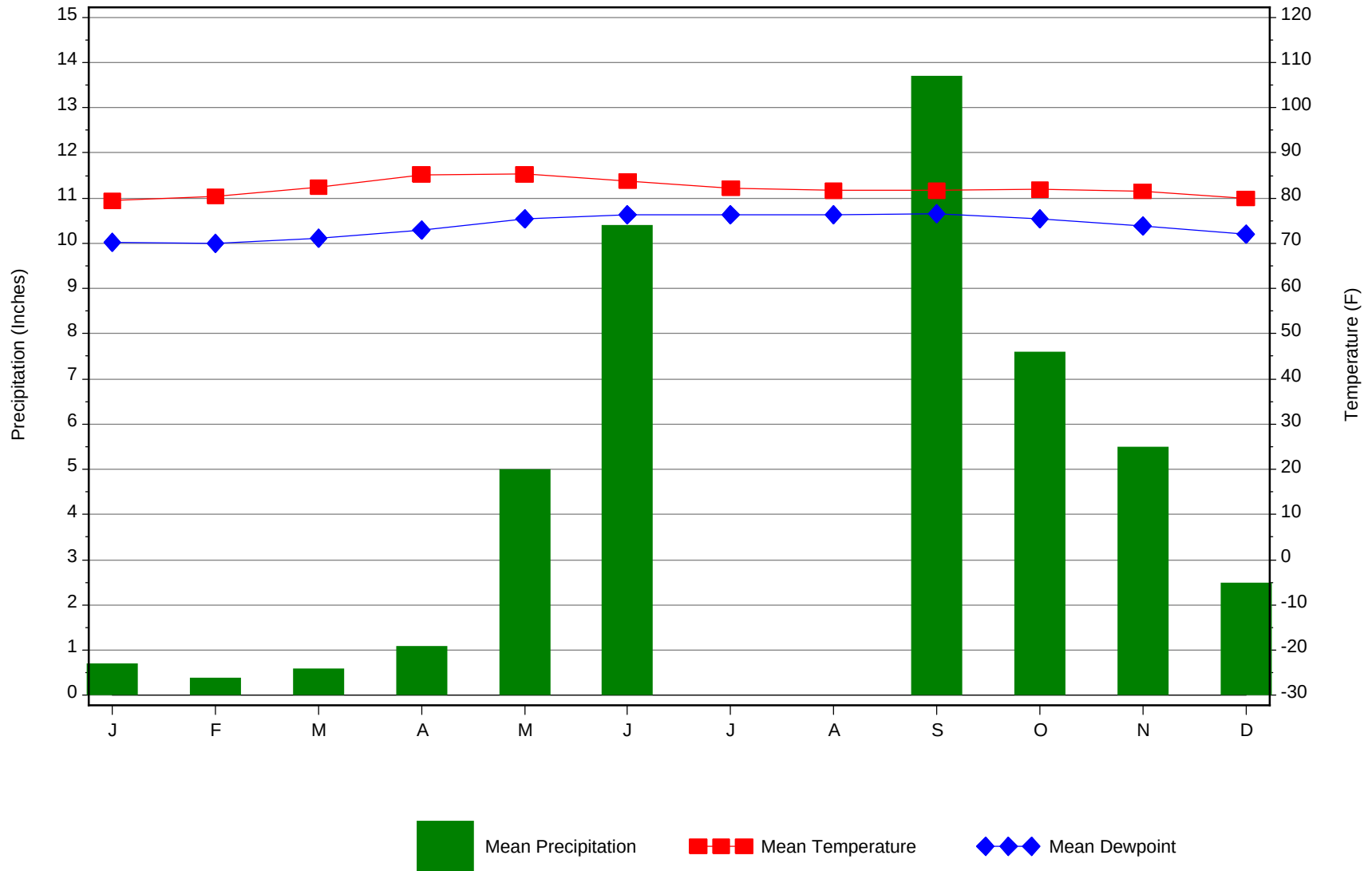
Other Site Data

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	24.3 + 5.7
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 (#)
84.6	N/A	N/A	0

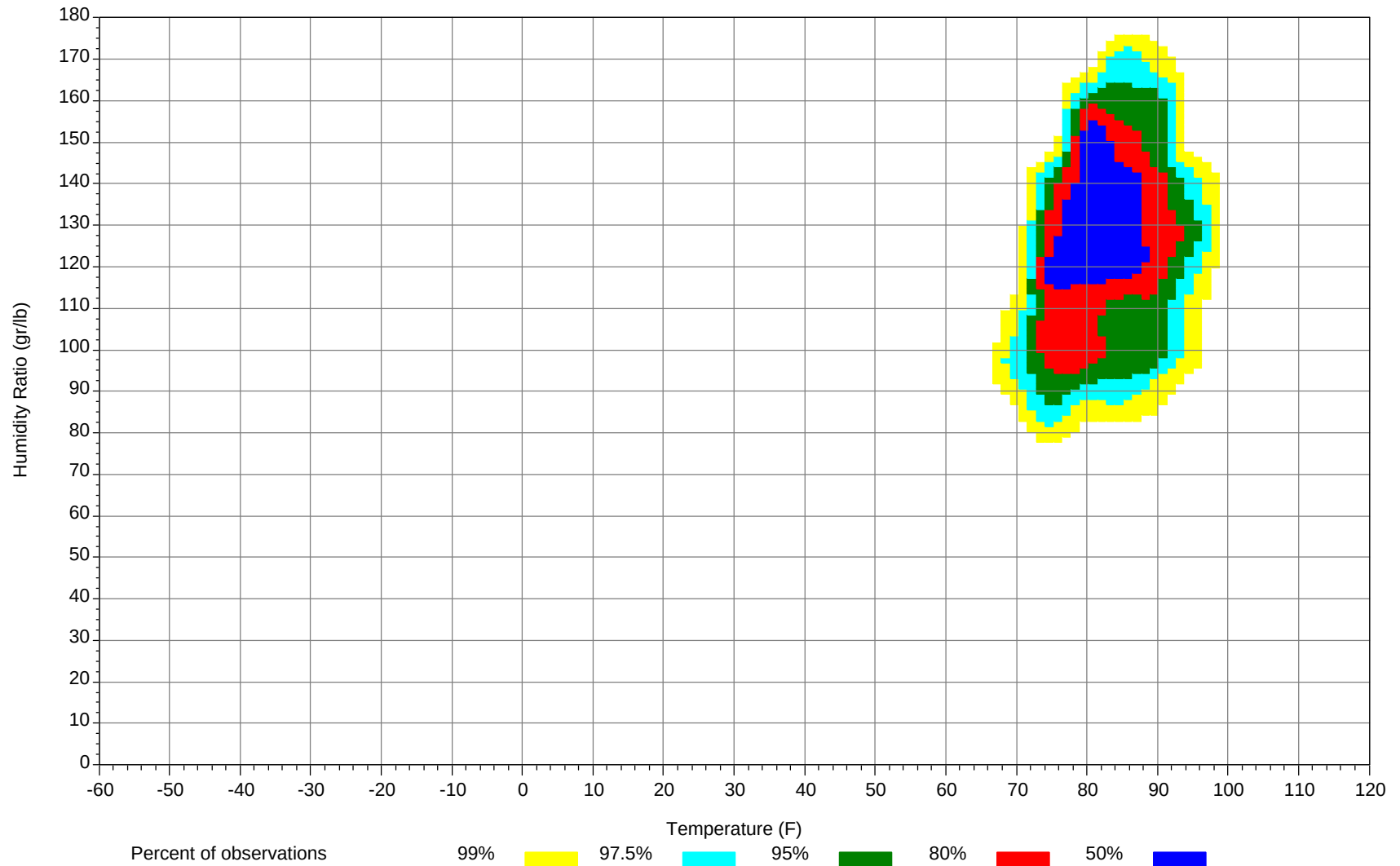
*Note: Temperatures at greater depths can be estimated by adding 1.5°F per 100 feet additional depth.



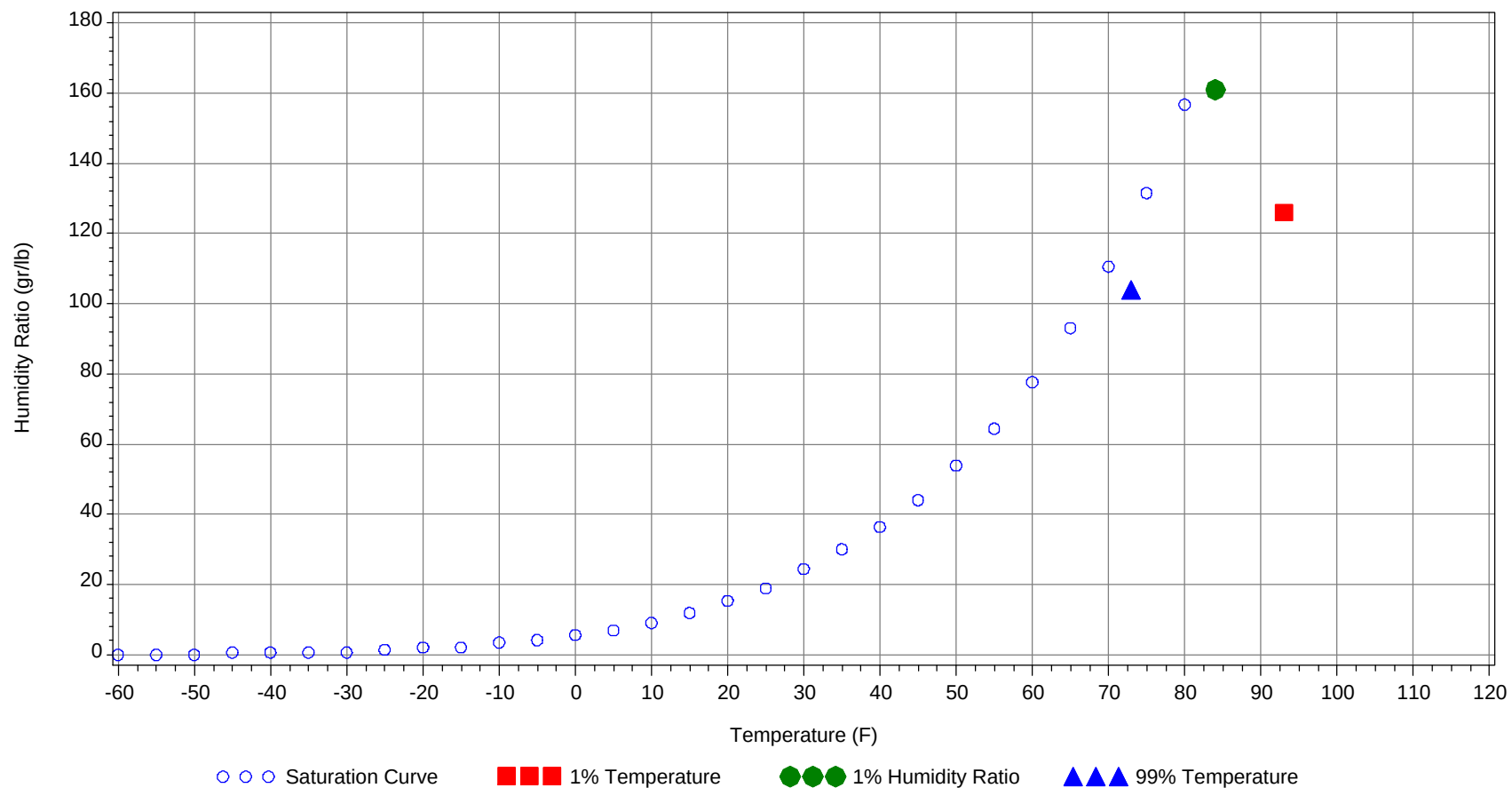
Average Annual Climate



Long Term Psychrometric Summary



Psychrometric Summary of Peak Design Values



	(° F) / (gr/lb)	MCDB (° F)	MCWB (° F)	MCDP (° F)	MCHR (gr/lb)	Enthalpy (btu/lb)
1.0% Dry Bulb	93.0		79		126.0	42.1
99.0% Dry Bulb	73.0				104.0	33.8
1.0% Humidity Ratio	161.0	84.0	81.6	80.6		45.5

Dry-Bulb Temperature Hours For An Average Year

	January					February					March				
Temperature Range (°F)	01 To 08 LST	09 To 16 LST	17 to 00 LST	Total Obs	M C W B (°F)	01 To 08 LST	09 To 16 LST	17 to 00 LST	Total Obs	M C W B (°F)	01 To 08 LST	09 To 16 LST	17 to 00 LST	Total Obs	M C W B (°F)
100/104															
95/ 99		0		0	80		0	0	0	73		1	0	1	77.1
90/ 94		6	0	6	77.1		24	1	25	76.3	0	84	5	89	76.7
85/ 89	0	81	9	90	75.6	0	89	18	107	75.3	2	100	40	142	75.7
80/ 84	9	132	95	236	74.3	16	95	101	212	73.9	64	57	149	270	74.6
75/ 79	163	28	136	327	72.5	156	16	101	273	72.2	165	7	53	225	72.6
70/ 74	73	1	8	82	69.5	50	0	4	54	69.1	17	0	1	18	69.1
65/ 69	4		0	4	66.1	2		0	2	65.9	1			1	66.4
60/ 64															

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.

Dry-Bulb Temperature Hours For An Average Year

	April					May					June				
Temperature Range (°F)	01 To 08 LST	09 To 16 LST	17 to 00 LST	Total Obs	M C W B (°F)	01 To 08 LST	09 To 16 LST	17 to 00 LST	Total Obs	M C W B (°F)	01 To 08 LST	09 To 16 LST	17 to 00 LST	Total Obs	M C W B (°F)
100/104		0		0	77.5		0	0	0	80		0	0	0	84
95/ 99		23	1	24	78.2		32	1	33	79.2		7	0	7	80.5
90/ 94		139	26	165	77.8	0	124	27	151	79.4	0	88	10	98	80.1
85/ 89	17	62	77	156	77.2	28	64	89	181	78.9	16	98	61	175	79.4
80/ 84	143	14	127	284	75.8	159	23	109	291	77.5	134	38	130	302	78.1
75/ 79	78	2	10	90	73.7	60	5	21	86	75.9	90	9	38	137	75.9
70/ 74	2	0	0	2	69.7	1		0	1	72.3	0	0	0	0	72.7
65/ 69						0			0	68					
60/ 64															

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.

Dry-Bulb Temperature Hours For An Average Year

	July					August					September				
Temperature Range (° F)	01 To 08 LST	09 To 16 LST	17 to 00 LST	Total Obs	M C W B (° F)	01 To 08 LST	09 To 16 LST	17 to 00 LST	Total Obs	M C W B (° F)	01 To 08 LST	09 To 16 LST	17 to 00 LST	Total Obs	M C W B (° F)
100/104															
95/ 99		1	0	1	79.6		0		0	80.1		0		0	79.7
90/ 94	0	43	3	46	80		23	1	24	80.4		24	1	25	80.4
85/ 89	6	110	36	152	79.5	4	116	26	146	79.6	3	113	20	136	79.8
80/ 84	99	71	131	301	78.1	92	84	140	316	78.3	78	85	144	307	78.4
75/ 79	142	23	77	242	76.2	150	25	81	256	76.1	158	18	74	250	76.3
70/ 74	1	0	1	2	72.9	2	0	1	3	72.5	1	0	0	1	72.8
65/ 69												0		0	68
60/ 64															

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.

Dry-Bulb Temperature Hours For An Average Year

	October					November					December				
Temperature Range (°F)	01 To 08 LST	09 To 16 LST	17 to 00 LST	Total Obs	M C W B (°F)	01 To 08 LST	09 To 16 LST	17 to 00 LST	Total Obs	M C W B (°F)	01 To 08 LST	09 To 16 LST	17 to 00 LST	Total Obs	M C W B (°F)
100/104															
95/ 99	0	0		0	80.7		0	0	0	83					
90/ 94	0	30	1	31	79.3		37	0	37	78.3		13	0	13	77.3
85/ 89	3	121	23	147	78.7	1	106	19	126	77.6	0	84	9	93	76.6
80/ 84	75	81	165	321	77.7	55	80	147	282	76.5	24	122	114	260	75.4
75/ 79	166	15	58	239	75.8	169	16	72	257	74.9	175	28	116	319	73.7
70/ 74	4	0	1	5	72	15	1	2	18	71	45	1	8	54	69.8
65/ 69		0		0	68	0		0	0	66.5	3	0		3	66.2
60/ 64											0	0		0	63.3

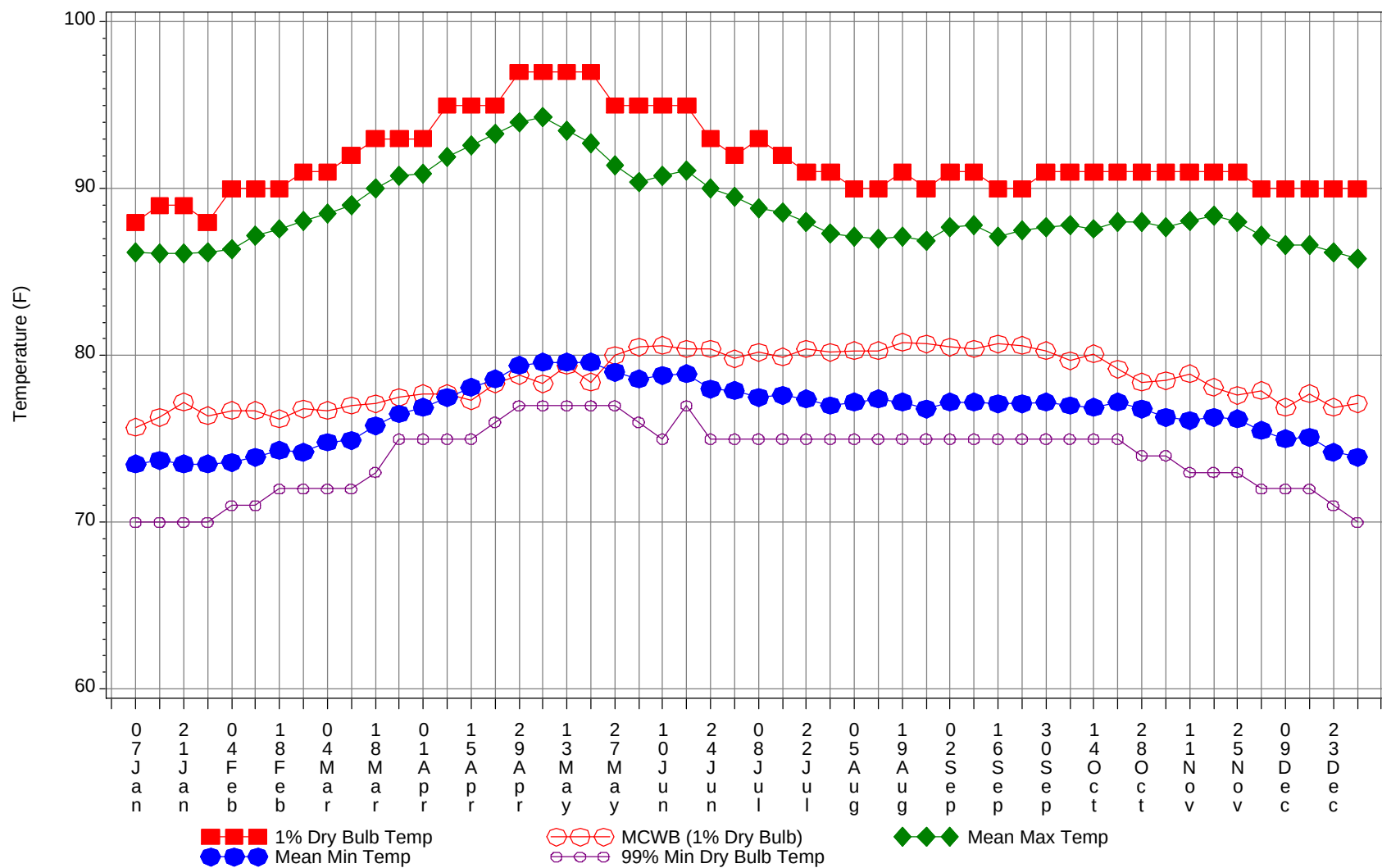
Caution: This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary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

Dry-Bulb Temperature Hours For An Average Year

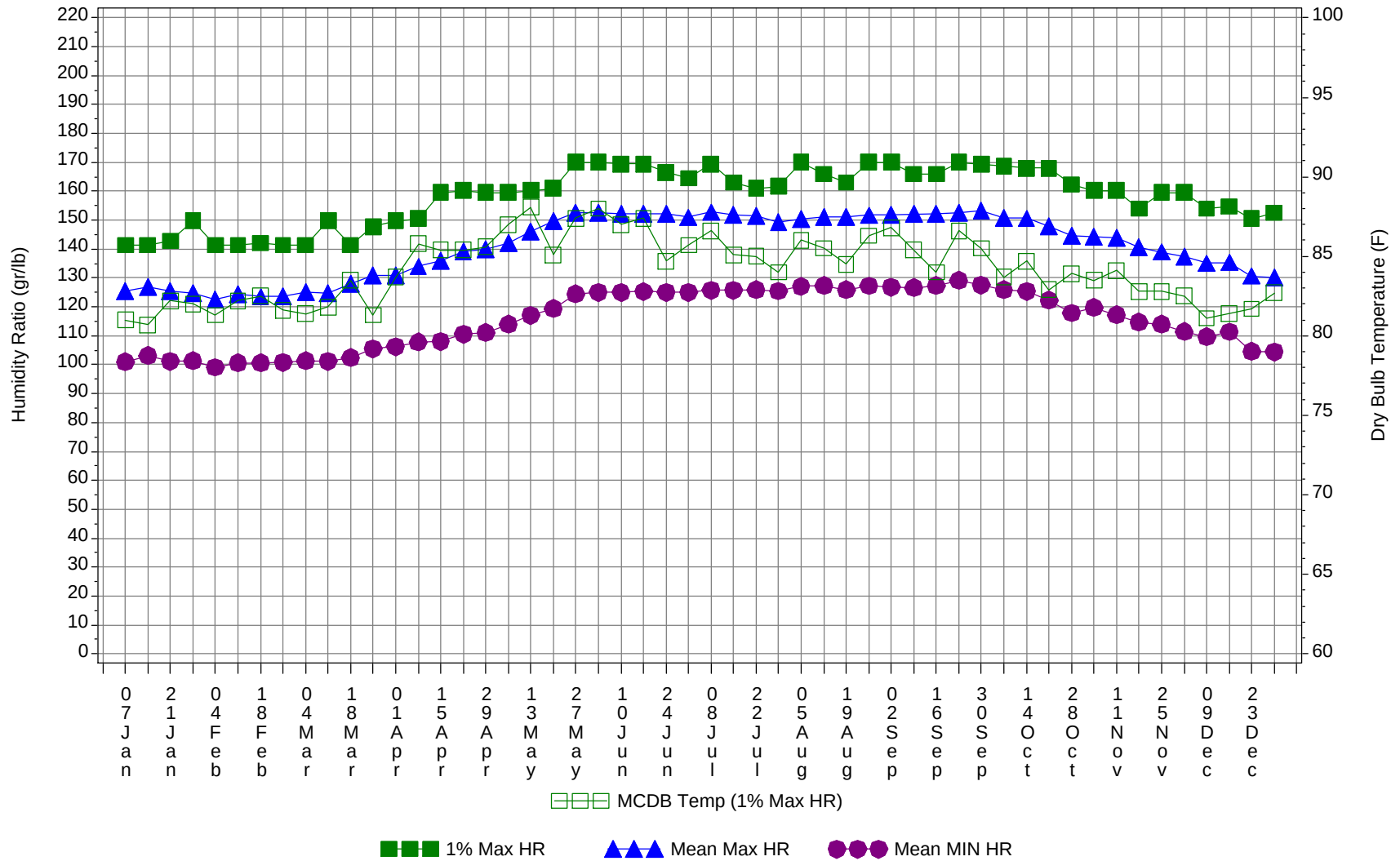
	Annual				
Temperature Range (° F)	01 To 08 LST	09 To 16 LST	17 to 00 LST	Total Obs	M C W B (° F)
100/104		0	0	0	80.4
95/ 99	0	65	2	67	79
90/ 94	0	634	74	708	78.7
85/ 89	79	1144	428	1651	78
80/ 84	948	881	1553	3382	76.7
75/ 79	1671	192	837	2700	74.5
70/ 74	213	4	26	243	69.7
65/ 69	9	0	0	9	66.2
60/ 64	0	0		0	63.3

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.

Annual Summary of Temperatures



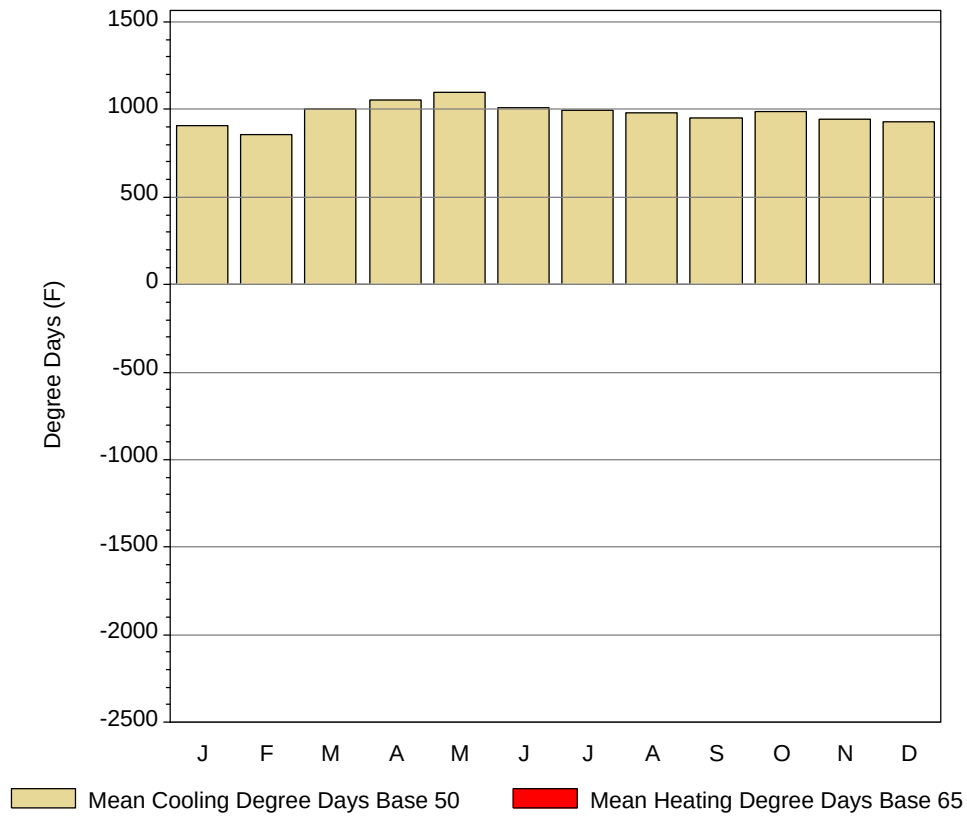
Long Term Humidity and Dry Bulb Temperature Summary



Long Term Humidity and Dry Bulb Temperature Summary

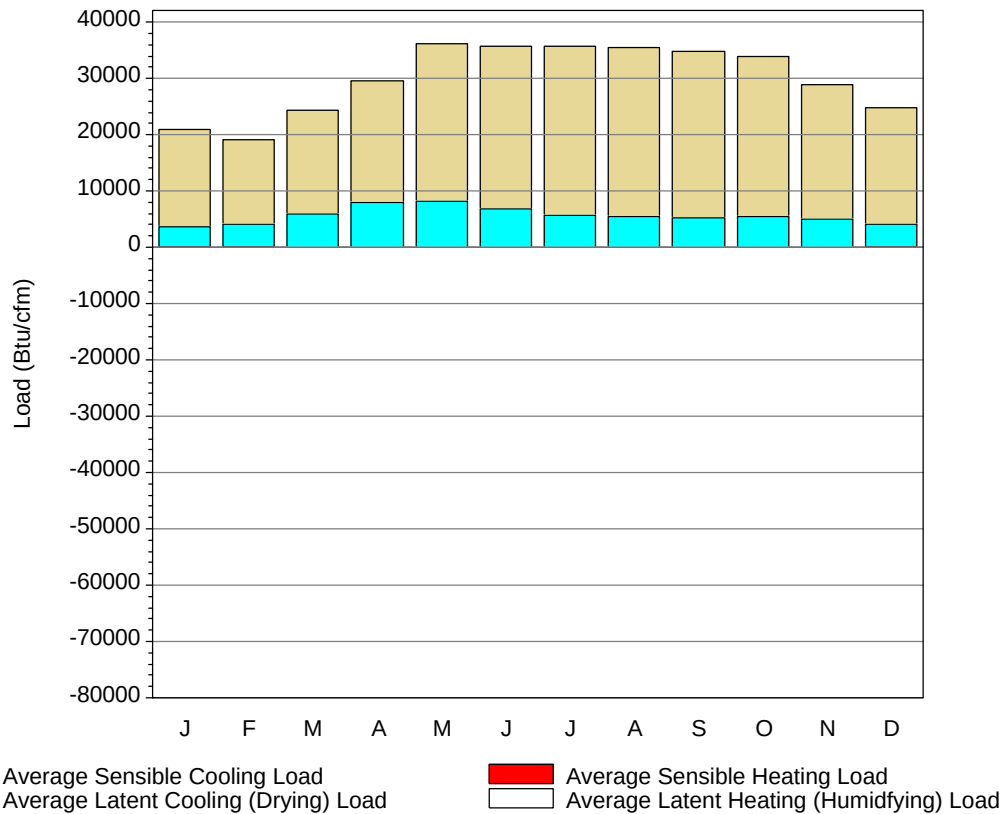
Week Ending	1.0% Temp (° F)	MCWB@ 1% Temp (° F)	Mean Max Temp (° F)	Mean Min Temp (° F)	99% Temp (° F)	1.0% HR (gr/lb)	MCDB@ 1% HR (° F)	Mean Max HR (gr/lb)	Mean Min HR (gr/lb)
7-Jan	88	75.7	86.2	73.5	70	141.4	81	125.4	101
14-Jan	89	76.3	86.1	73.7	70	141.4	80.7	126.9	103.2
21-Jan	89	77.2	86.1	73.5	70	142.8	82.2	125.5	101.1
28-Jan	88	76.4	86.2	73.5	70	149.8	82	124.7	101.4
4-Feb	90	76.7	86.4	73.6	71	141.4	81.3	122.5	99.1
11-Feb	90	76.7	87.2	73.9	71	141.4	82.2	124.3	100.7
18-Feb	90	76.2	87.6	74.3	72	142.1	82.5	123.5	100.6
25-Feb	91	76.8	88.1	74.2	72	141.4	81.6	123.8	100.8
4-Mar	91	76.7	88.5	74.8	72	141.4	81.4	125	101.4
11-Mar	92	77	89	74.9	72	149.8	81.8	124.7	101.1
18-Mar	93	77.1	90	75.8	73	141.4	83.5	127.9	102.5
25-Mar	93	77.5	90.8	76.5	75	147.7	81.3	131	105.5
1-Apr	93	77.7	90.9	76.9	75	149.8	83.7	131	106.3
8-Apr	95	77.7	91.9	77.5	75	150.5	85.8	134	107.9
15-Apr	95	77.3	92.6	78.1	75	159.6	85.4	136	108.1
22-Apr	95	78.3	93.3	78.6	76	160.3	85.4	139.3	110.6
29-Apr	97	78.8	94	79.4	77	159.6	85.6	140	111.1
6-May	97	78.3	94.3	79.6	77	159.6	87	142.1	114
13-May	97	79.4	93.5	79.6	77	160.3	88.1	146.1	117.1
20-May	97	78.4	92.7	79.6	77	161	85.1	149.7	119.4
27-May	95	80	91.4	79	77	170.1	87.4	152.6	124.5
4-Jun	95	80.5	90.4	78.6	76	170.1	88	152.6	125.1
10-Jun	95	80.6	90.8	78.8	75	169.4	87	152.2	125
17-Jun	95	80.4	91.1	78.9	77	169.4	87.4	152.1	125.3
24-Jun	93	80.4	90	78	75	166.6	84.7	152.2	125
1-Jul	92	79.8	89.5	77.9	75	164.5	85.7	151	125.1
8-Jul	93	80.2	88.8	77.5	75	169.4	86.6	152.8	125.8
15-Jul	92	79.9	88.6	77.6	75	163.1	85.1	151.9	125.7
22-Jul	91	80.4	88	77.4	75	161	85	151.6	125.9
29-Jul	91	80.2	87.3	77	75	161.7	84	149.4	125.5
5-Aug	90	80.3	87.1	77.2	75	170.1	86	150.4	127.1
12-Aug	90	80.3	87	77.4	75	165.9	85.5	151.2	127.4
19-Aug	91	80.8	87.1	77.2	75	163.1	84.5	151.1	126
26-Aug	90	80.7	86.9	76.8	75	170.1	86.3	151.7	127.3
2-Sep	91	80.5	87.7	77.2	75	170.1	86.8	152	126.9
9-Sep	91	80.4	87.8	77.2	75	165.9	85.4	152.1	126.7
16-Sep	90	80.7	87.1	77.1	75	165.9	84	152.2	127.4
23-Sep	90	80.6	87.5	77.1	75	170.1	86.6	152.7	129.2
30-Sep	91	80.3	87.7	77.2	75	169.4	85.5	153.3	127.6
7-Oct	91	79.7	87.8	77	75	168.7	83.7	150.7	125.9
14-Oct	91	80.1	87.6	76.9	75	168	84.7	150.6	125.4
21-Oct	91	79.2	88	77.2	75	168	82.9	147.8	122.3
28-Oct	91	78.4	88	76.8	74	162.4	83.9	144.6	117.9
4-Nov	91	78.5	87.7	76.3	74	160.3	83.5	144.3	119.8
11-Nov	91	78.9	88.1	76.1	73	160.3	84.1	144	117.3
18-Nov	91	78.1	88.4	76.3	73	154	82.8	140.8	114.8
25-Nov	91	77.6	88	76.2	73	159.6	82.8	139	114
2-Dec	90	77.9	87.2	75.5	72	159.6	82.5	137.3	111.5
9-Dec	90	76.9	86.6	75	72	154	81.1	135.1	109.7
16-Dec	90	77.7	86.6	75.1	72	154.7	81.4	135.4	111.4
23-Dec	90	76.9	86.2	74.2	71	150.5	81.7	130.7	104.6
31-Dec	90	77.1	85.8	73.9	70	152.6	82.7	130.2	104.5

Degree Days, Heating and Cooling (Base 65 F) & Cooling (Base 50F)



	Mean Cooling Degree Days (°F) Base 50	Mean Cooling Degree Days (°F) Base 65	Mean Heating Degree Days (°F) Base 65
JAN	910.5	445.7	0
FEB	857.5	433.5	0
MAR	1004.1	539.1	0
APR	1055.6	605.6	0
MAY	1095.2	630.2	0
JUN	1012.7	562.7	0
JUL	996.1	531.1	0
AUG	981.8	516.8	0
SEP	951.8	501.8	0
OCT	987.8	522.8	0
NOV	943.9	493.9	0
DEC	927.3	462.3	0
ANN	11724.3	6245.5	0

Average Ventilation and Infiltration Loads (Outside Air vs 75F, 60% RH summer; 68F, 30% RH winter)



Month	Average Sensible Cooling Load (Btu/cfm)	Average Sensible Heating Load (Btu/cfm)	Average Latent Cooling Load (Btu/cfm)	Average Latent Heating Load (Btu/cfm)
JAN	3759	-1	17177	0
FEB	4058	-1	14978	0
MAR	5986	0	18332	0
APR	7927	0	21637	0
MAY	8302	0	27902	0
JUN	6810	0	28990	0
JUL	5735	0	29871	0
AUG	5365	0	30151	0
SEP	5234	0	29641	0
OCT	5526	0	28252	0
NOV	5063	0	23846	0
DEC	4110	-2	20632	0
ANN	67875	-4	291409	0

Station Information		Shading Geometry in Dimensionless Units	
City, State, WBAN	N/A	N/A	N/A
Lat, Lon, Elev	N/A	N/A	N/A
Press Stn Type	N/A	N/A	N/A

AVERAGE INCIDENT SOLAR RADIATION (Btu/sq.ft./day), Percentage Uncertainty = 9														
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
HORIZ.	Global													
	Std.Dev.													
	Minimum													
	Maximum													
	Diffuse													
Clear Day	Global													
NORTH	Global													
	Diffuse													
Clear Day	Global													
EAST	Global													
	Diffuse													
Clear Day	Global													
SOUTH	Global													
	Diffuse													
Clear Day	Global													
WEST	Global													
	Diffuse													
Clear Day	Global													

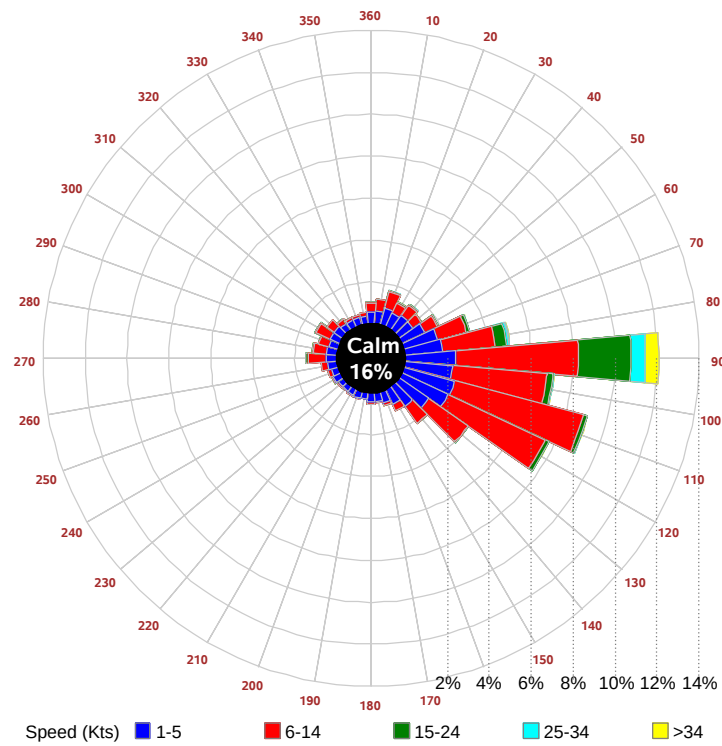
Average Annual Solar Radiation - Nearest Available Site Source: National Renewable Energy Laboratory, Golden CO, 1995

AVERAGE TRANSMITTED SOLAR RADIATION (Btu/sq.ft./day) FOR DOUBLE GLAZING, Percentage Uncertainty = 9														
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
HORIZ.	Unshaded													
NORTH	Unshaded													
	Shaded													
EAST	Unshaded													
	Shaded													
SOUTH	Unshaded													
	Shaded													
WEST	Unshaded													
	Shaded													

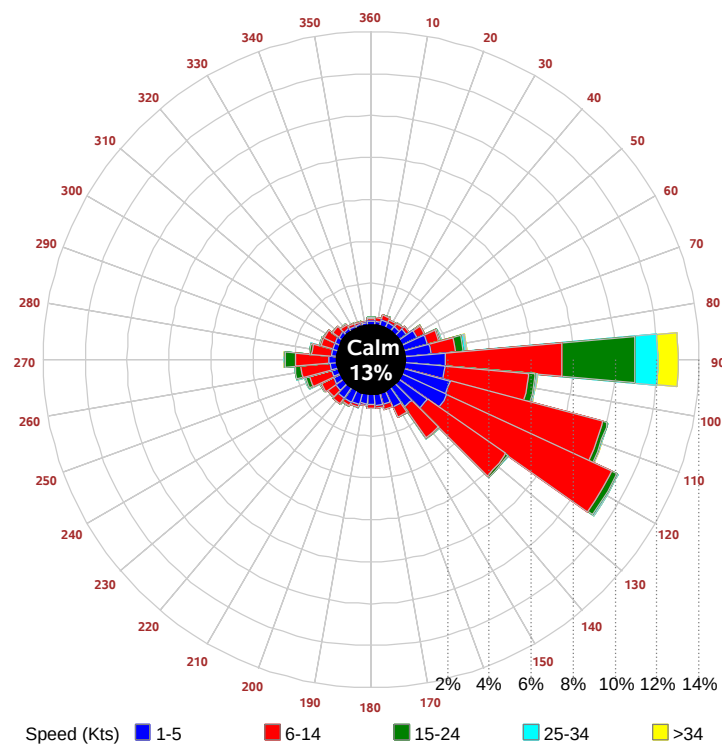
AVERAGE INCIDENT ILLUMINANCE (klux-hr) FOR MOSTLY CLEAR AND MOSTLY CLOUDY CONDITIONS, Percentage Uncertainty = 9												
				March						June		
		9am	11am	1pm	3pm	5pm	9am	11am	1pm	3pm	5pm	
HORIZ.	M.Clear											
	M.Cloudy											
NORTH	M.Clear											
	M.Cloudy											
EAST	M.Clear											
	M.Cloudy											
SOUTH	M.Clear											
	M.Cloudy											
WEST	M.Clear											
	M.Cloudy											
M.Clear	(% hrs)											

				Sept						Dec		
		9am	11am	1pm	3pm	5pm	9am	11am	1pm	3pm	5pm	
HORIZ.	M.Clear											
	M.Cloudy											
NORTH	M.Clear											
	M.Cloudy											
EAST	M.Clear											
	M.Cloudy											
SOUTH	M.Clear											
	M.Cloudy											
WEST	M.Clear											
	M.Cloudy											
M.Clear	(% hrs)											

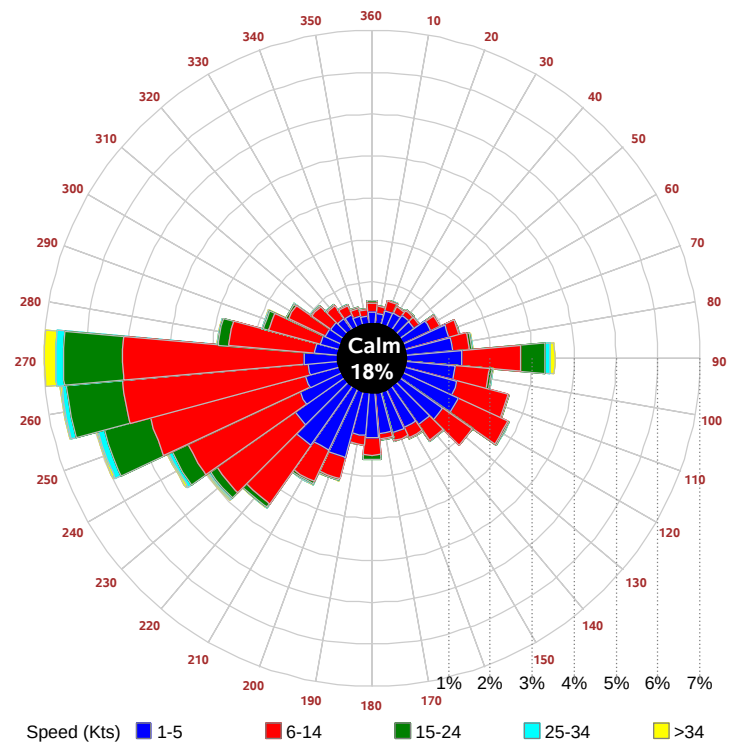
Wind Summary - December, January, and February



Wind Summary - March, April, and May



Wind Summary - June, July, and August



Wind Summary - September, October, and November

