BARCELONA, SP	
Latitude = 41.30 N	Station ID = ICAO_LEBL
Longitude = 2.08 E	Elevation = 12 Feet
Period of Record = 1988 To 2017	Average Pressure = 30.01 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	90	74	103	10.9	SSW
0.4% Occurrence	87	74	107	10.4	SSW
1.0% Occurrence	85	74	109	10.6	SSW
2.0% Occurrence	84	74	107	10.8	SSW
Mean Daily Range	13	-	-	-	N
97.5% Occurrence	40	37	27	10.4	N
99.0% Occurrence	37	34	23	11.3	N
99.6% Occurrence	35	32	21	11.5	N
Median of Extreme Lows	32	28	17	12.2	N

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	79	85	136	10.2	SSW
0.4% Occurrence	78	84	131	10	SW
1.0% Occurrence	76	83	122	9.5	SW
2.0% Occurrence	75	82	118	9.1	SW

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	141	84	0.94	9.3	SW
0.4% Occurrence	132	82	0.88	8.7	SW
1.0% Occurrence	125	81	0.83	8.1	SW
2.0% Occurrence	120	81	0.8	8.9	SW

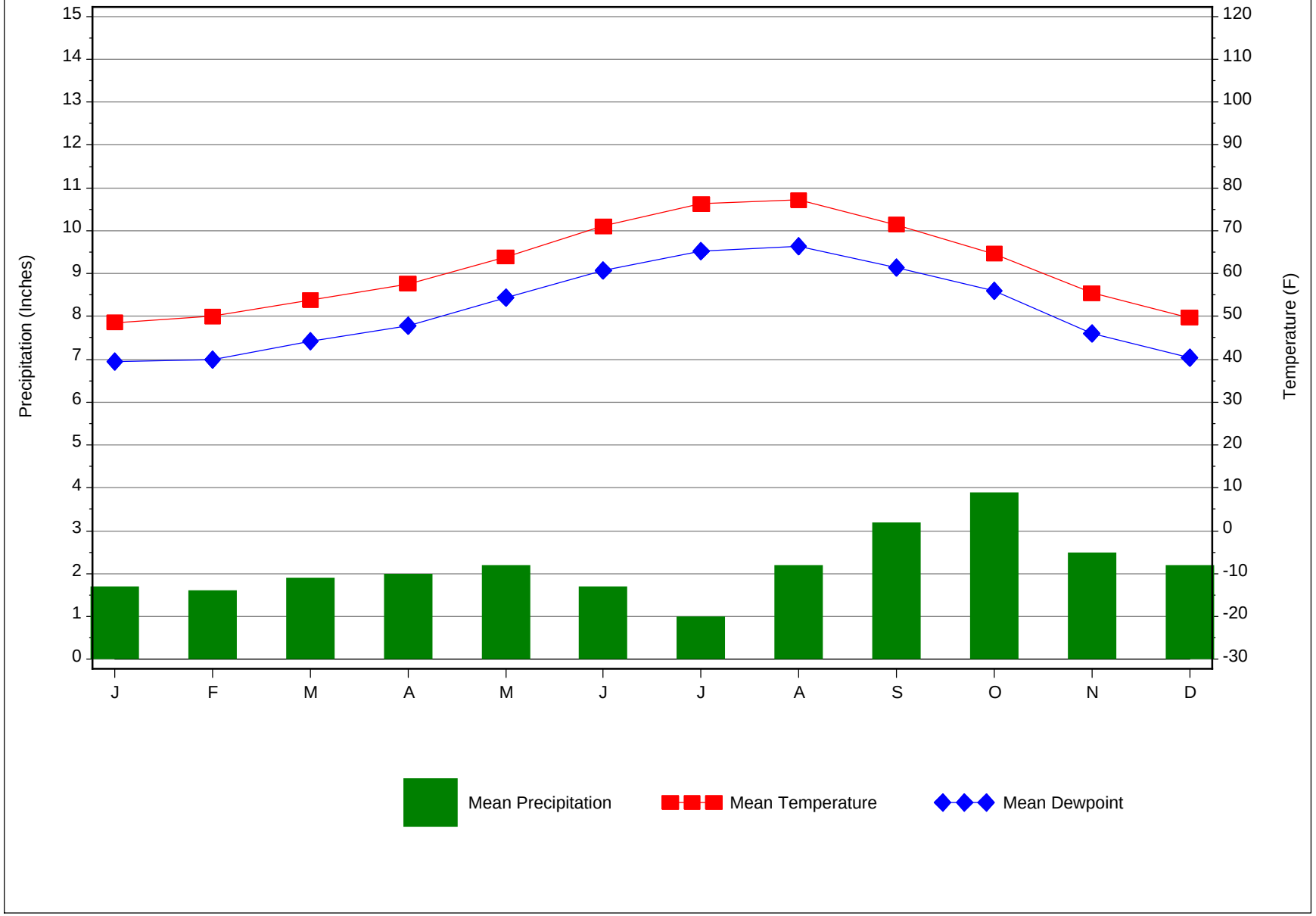
Air Conditioning/ Humid Area Criteria	**Threshold**	**T ≥ 93°F**	**T ≥ 80°F**	**Twb ≥ 73°F**	**Twb ≥ 67°F**
	# of Hours	11	608	488	1740

Other Site Data

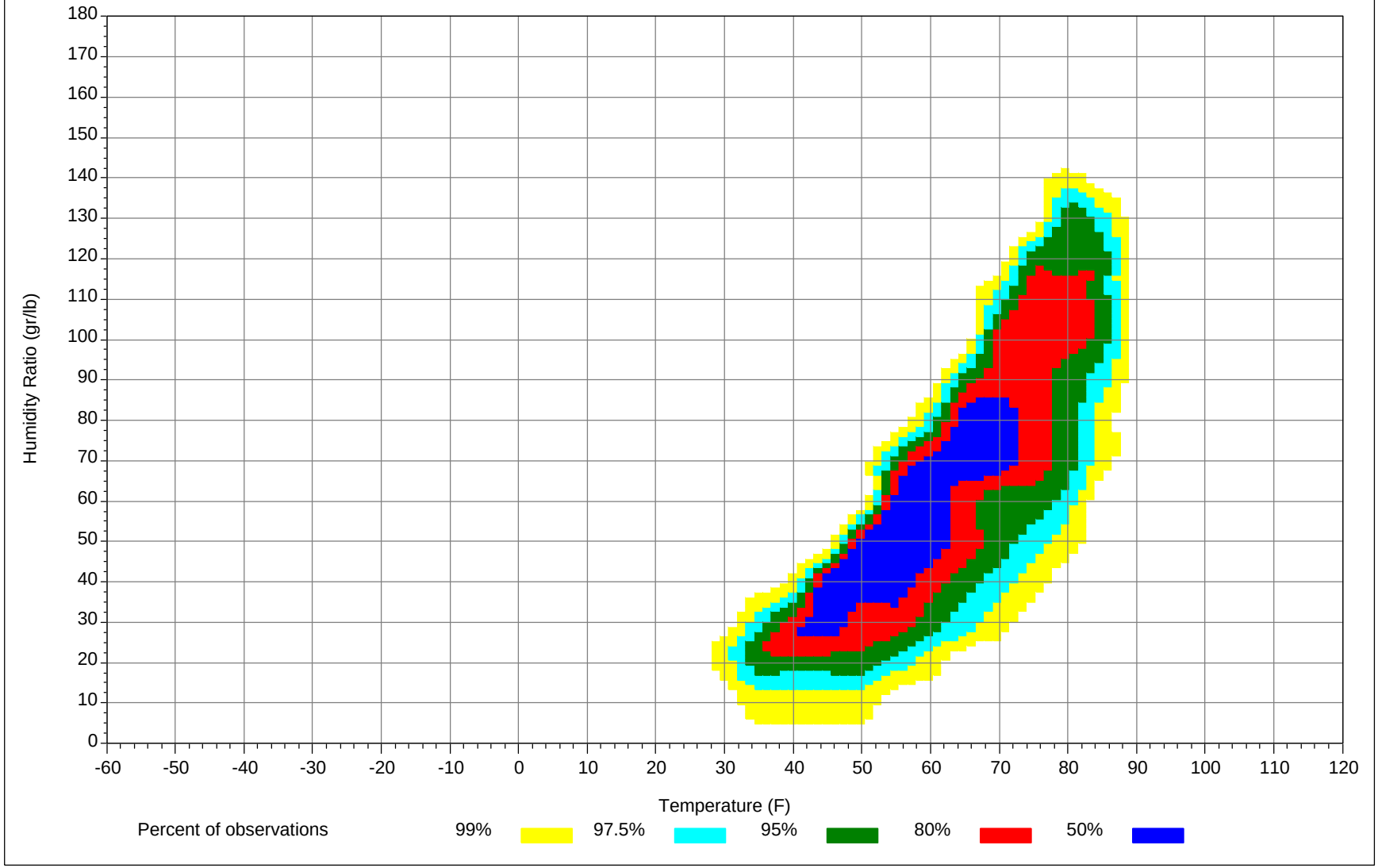
Weather Region	Rain Rate 100 Year Recurrence (in./hr)	Basic Wind Speed 3 sec gust @ 33 ft 50 Year Recurrence (mph)	Ventilation Cooling Load Index (Ton-hr/cfm/yr) Base 75°F-RH 60% Latent + Sensible
8	N/A	N/A	2.6 + 0.6
Ground Water Temperature (°F) 50 Foot Depth*	Frost Depth 50 Year Recurrence (in)	Ground Snow Load 50 Year Recurrence (lb/ft^2)	Average Annual Freeze-Thaw Cycles (#)
64.2	N/A	N/A	2

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

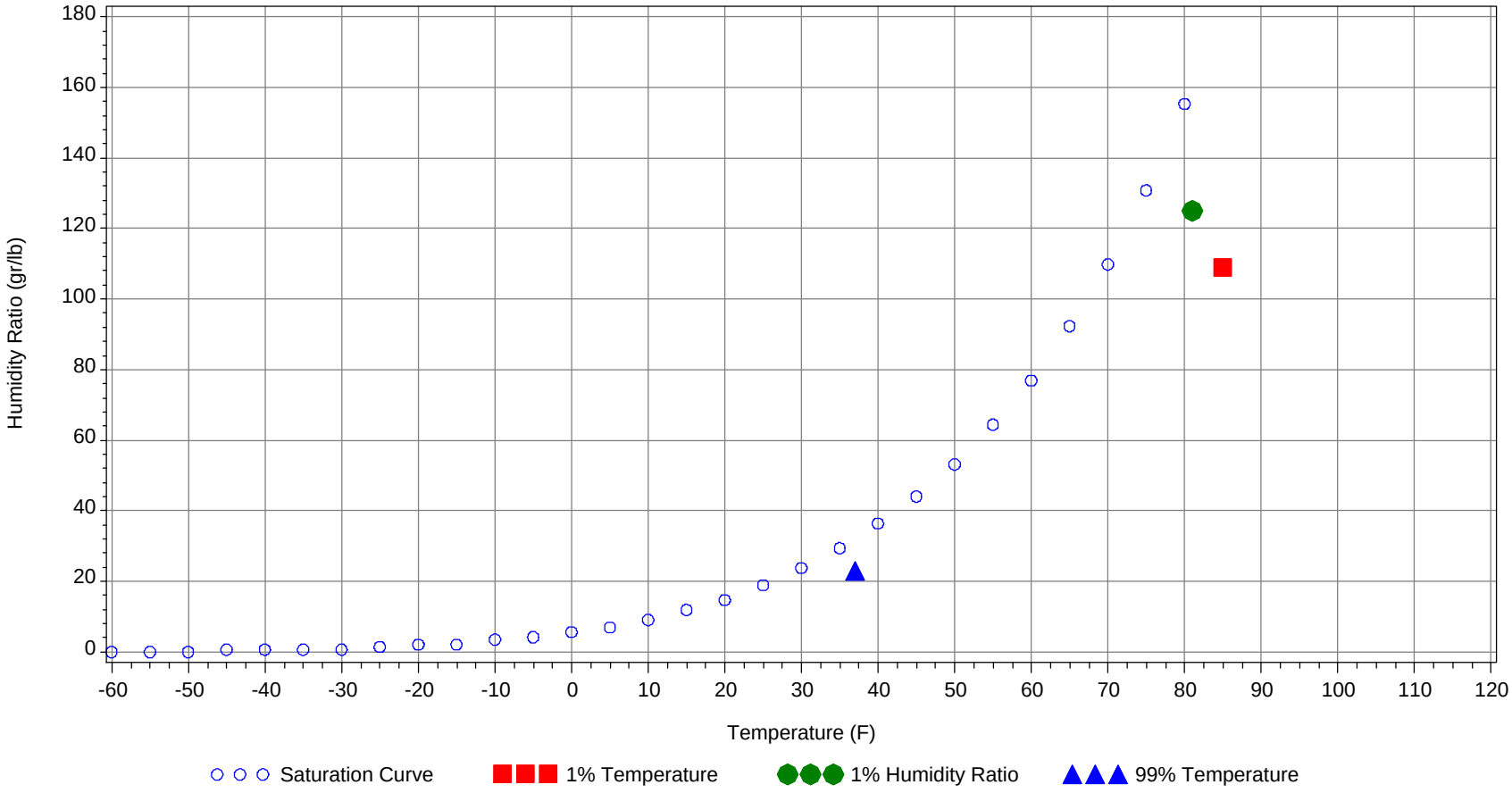
Average Annual Climate



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	85.0		74		109.0	37.2
99.0% Dry Bulb	37.0				23.0	12.5
1.0% Humidity Ratio	125.0	81.0	75.3	73.4		38.9

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**	**MCWB (°F)**	**01 To 08 LST**	**09 To 16 LST**	**17 to 00 LST**	**Total Obs**	**MCWB (°F)**	**01 To 08 LST**	**09 To 16 LST**	**17 to 00 LST**	**Total Obs**	**MCWB (°F)**
95/ 99															
90/ 94															
85/ 89															
80/ 84															
75/ 79							0	0	0	57		0	0	0	58.5
70/ 74		0	0	0	57		1	0	1	56	0	2	1	3	55.7
65/ 69	0	2	1	3	55.9	0	4	2	6	54	0	14	3	17	54.8
60/ 64	2	19	6	27	53	2	24	7	33	52.4	1	72	25	98	54
55/ 59	11	72	40	123	50.8	11	79	51	141	50.6	30	100	110	240	51.9
50/ 54	39	69	88	196	47.3	41	56	89	186	47.5	94	42	82	218	48.3
45/ 49	74	49	74	197	43.2	83	37	55	175	43.2	86	14	23	123	43.8
40/ 44	74	25	30	129	39	58	15	16	89	38.7	27	3	4	34	38.8
35/ 39	40	10	9	59	34.7	23	6	4	33	33.9	9	1	1	11	34.5
30/ 34	7	2	0	9	29.7	6	1	1	8	28.5	1	0	0	1	31.1
25/ 29	0	0		0	24.8	1	0		1	23.2					

Caution: This summary reflects the typical distribtion of temperature in a typical year. It does not reflect the typical mositure 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**	**MCWB (°F)**	**01 To 08 LST**	**09 To 16 LST**	**17 to 00 LST**	**Total Obs**	**MCWB (°F)**	**01 To 08 LST**	**09 To 16 LST**	**17 to 00 LST**	**Total Obs**	**MCWB (°F)**
95/ 99															
90/ 94												1	0	1	70.7
85/ 89							0		0	64	0	8	2	10	72.1
80/ 84							2	0	2	63.5	1	33	13	47	70.3
75/ 79		1		1	57.8	0	18	4	22	63.8	16	89	49	154	68.1
70/ 74		10	2	12	57.8	4	77	29	110	62.7	54	78	90	222	65.2
65/ 69	0	49	14	63	57.6	29	92	80	201	60.5	86	23	58	167	62.2
60/ 64	14	102	73	189	55.5	93	45	94	232	57.9	63	7	23	93	58.9
55/ 59	81	61	103	245	52.6	86	11	33	130	54	18	1	4	23	54.9
50/ 54	95	15	42	152	48.8	30	3	7	40	49.7	1		0	1	51
45/ 49	44	2	6	52	44.2	5	0	1	6	45.2					
40/ 44	5	0	0	5	39.8	1	0	0	1	41.7					
35/ 39	0			0	36.8										
30/ 34															
25/ 29															

Caution: This summary reflects the typical distribtion of temperature in a typical year. It does not reflect the typical mositure 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**	**MCWB (°F)**	**01 To 08 LST**	**09 To 16 LST**	**17 to 00 LST**	**Total Obs**	**MCWB (°F)**	**01 To 08 LST**	**09 To 16 LST**	**17 to 00 LST**	**Total Obs**	**MCWB (°F)**
95/ 99							1	0	1	74.9					
90/ 94		2	0	2	72.4		7	1	8	75.6		0		0	71.7
85/ 89	0	29	6	35	74.4	0	35	9	44	74.5	0	5	0	5	72.4
80/ 84	7	115	60	182	72.4	9	128	71	208	72.9	0	46	13	59	71.8
75/ 79	70	78	108	256	69.6	77	59	114	250	70	14	93	69	176	68.7
70/ 74	103	20	58	181	66.5	115	14	42	171	66.9	61	63	95	219	65.6
65/ 69	52	4	14	70	62.8	38	3	8	49	63.3	91	23	43	157	62.4
60/ 64	15	0	2	17	59.5	9	1	2	12	59.5	56	8	17	81	58.6
55/ 59	1	0	0	1	55	1	0	0	1	54.6	16	2	2	20	53.9
50/ 54											3	0	0	3	49.7
45/ 49															
40/ 44															
35/ 39															
30/ 34															
25/ 29															

Caution: This summary reflects the typical distribtion of temperature in a typical year. It does not reflect the typical mositure 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**	**MCWB (°F)**	**01 To 08 LST**	**09 To 16 LST**	**17 to 00 LST**	**Total Obs**	**MCWB (°F)**	**01 To 08 LST**	**09 To 16 LST**	**17 to 00 LST**	**Total Obs**	**MCWB (°F)**
95/ 99															
90/ 94															
85/ 89		0		0	63										
80/ 84		3	0	3	67.3										
75/ 79	0	32	7	39	68.1		0		0	63.8					
70/ 74	9	78	49	136	64.9	0	9	1	10	62.4		0		0	54.8
65/ 69	45	68	79	192	61.7	3	39	15	57	59.8		4	0	4	56.5
60/ 64	86	43	73	202	58.2	22	70	55	147	56.5	3	34	10	47	54.8
55/ 59	73	18	30	121	53.6	54	61	80	195	52.3	17	73	54	144	51.5
50/ 54	27	5	7	39	48.8	75	38	56	169	47.8	52	63	85	200	47.4
45/ 49	6	1	2	9	43.6	52	16	26	94	43.2	78	43	65	186	43
40/ 44	1	0	0	1	40.2	25	5	6	36	38.7	59	21	26	106	38.6
35/ 39						8	2	2	12	34.3	34	10	8	52	34.2
30/ 34						2	0	0	2	28.3	5	1	1	7	29.5
25/ 29											1	0	0	1	25.1

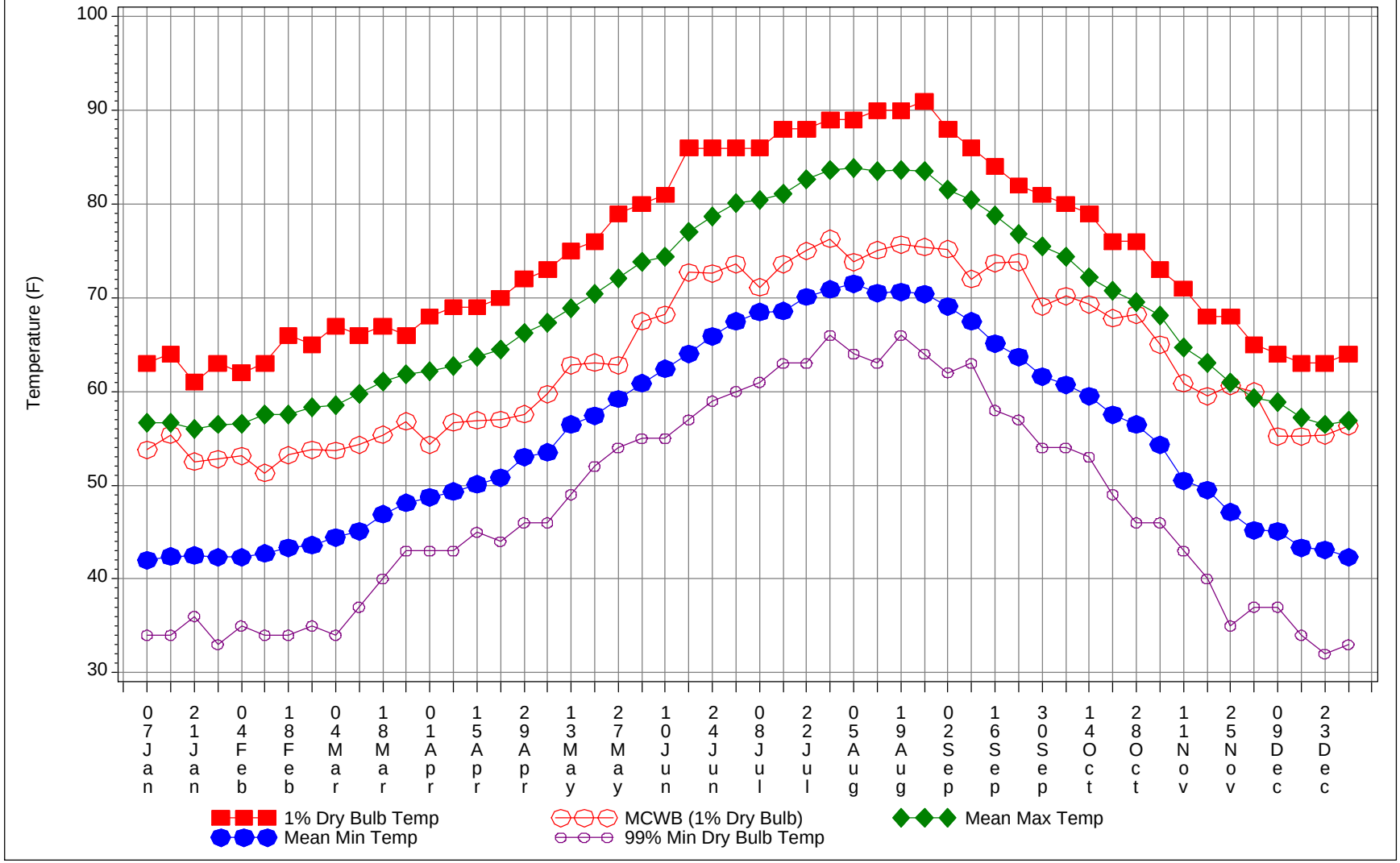
Caution: This summary reflects the typical distribtion of temperature in a typical year. It does not reflect the typical mositure distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary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

Dry-Bulb Temperature Hours For An Average Year

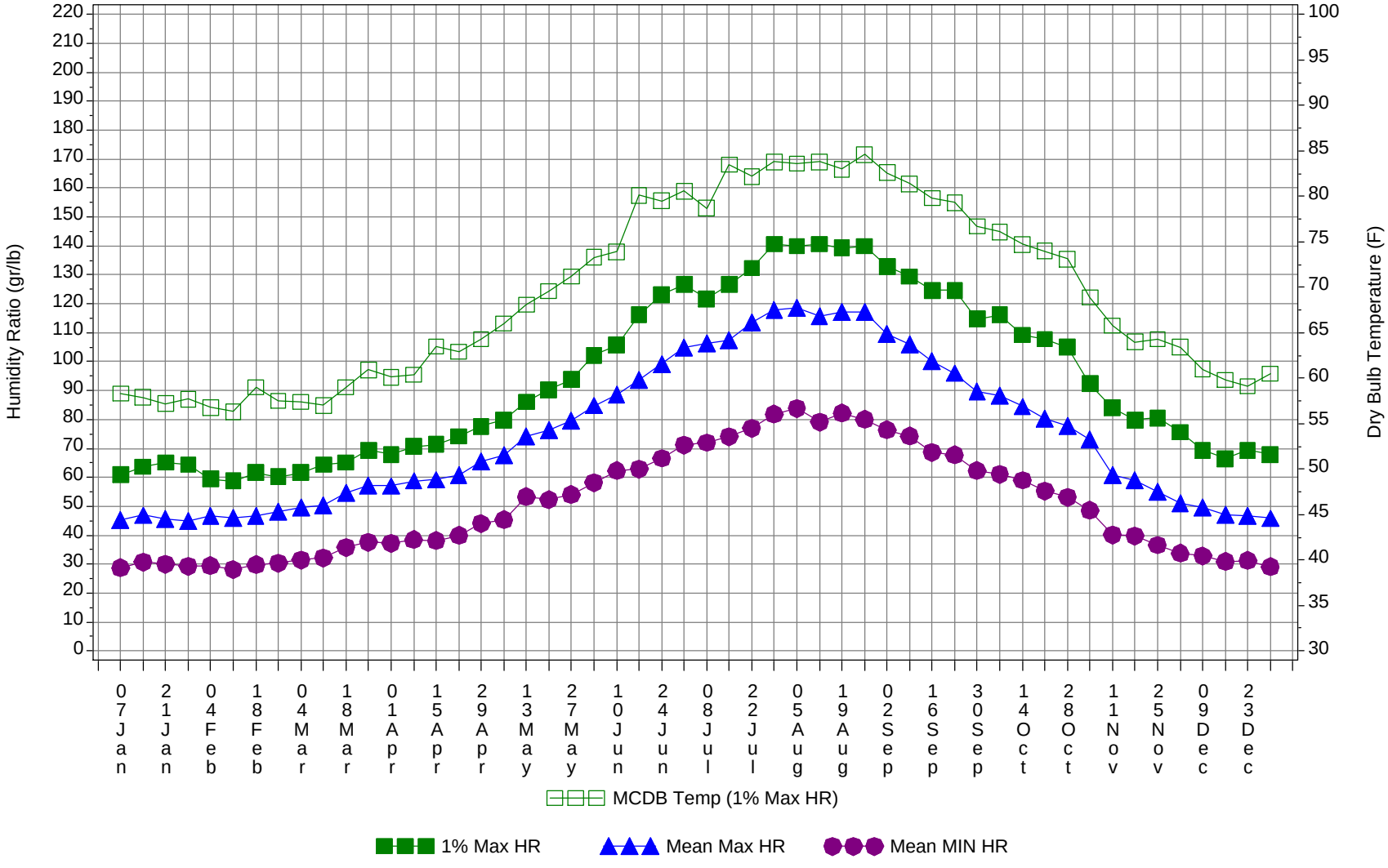
	Annual				
Temperature Range (°F)	**01 To 08 LST**	**09 To 16 LST**	**17 to 00 LST**	**Total Obs**	**MCWB (°F)**
95/ 99		1	0	1	74.9
90/ 94		9	2	11	74.7
85/ 89	0	77	17	94	74.1
80/ 84	17	327	158	502	72.3
75/ 79	177	370	352	899	69.1
70/ 74	345	352	367	1064	65.3
65/ 69	344	325	317	986	61.3
60/ 64	366	425	386	1177	56.8
55/ 59	398	477	507	1382	52.2
50/ 54	456	291	455	1202	47.9
45/ 49	429	163	252	844	43.3
40/ 44	250	69	82	401	38.8
35/ 39	114	29	23	166	34.3
30/ 34	22	4	3	29	29.3
25/ 29	2	0	0	2	24.3

Caution: This summary reflects the typical distribtion of temperature in a typical year. It does not reflect the typical mositure 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



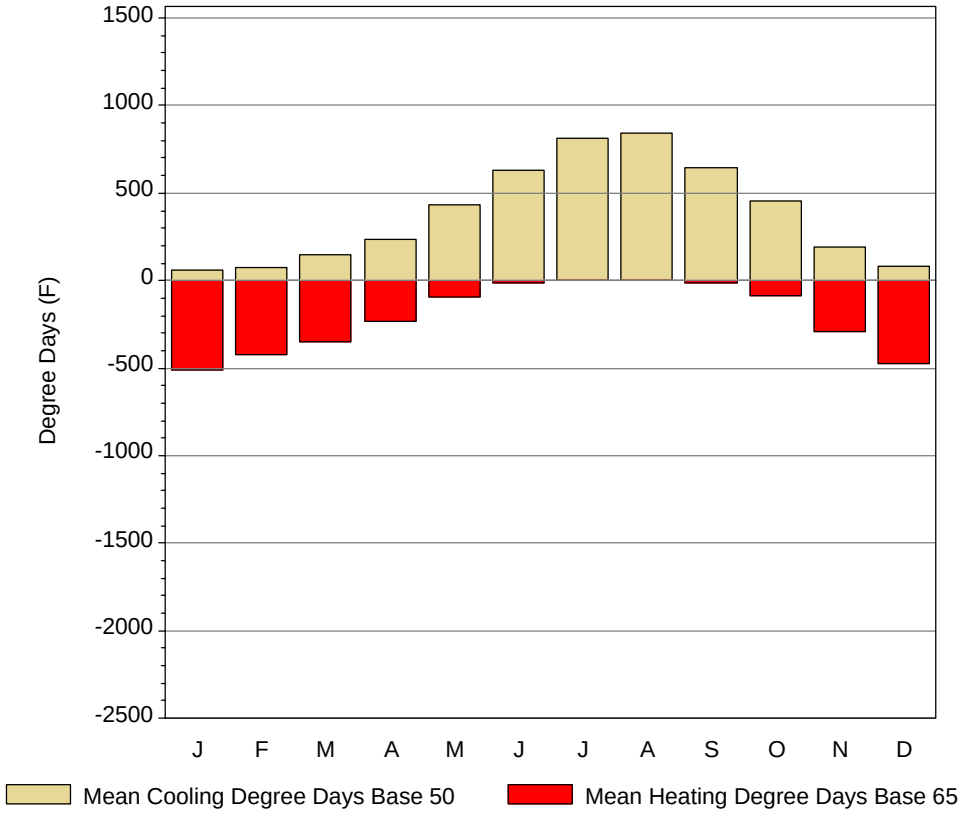
Long Term Humidity and Dry Bulb Temperature Summary



Long Term Humidity and Dry Bulb Temperature Summary

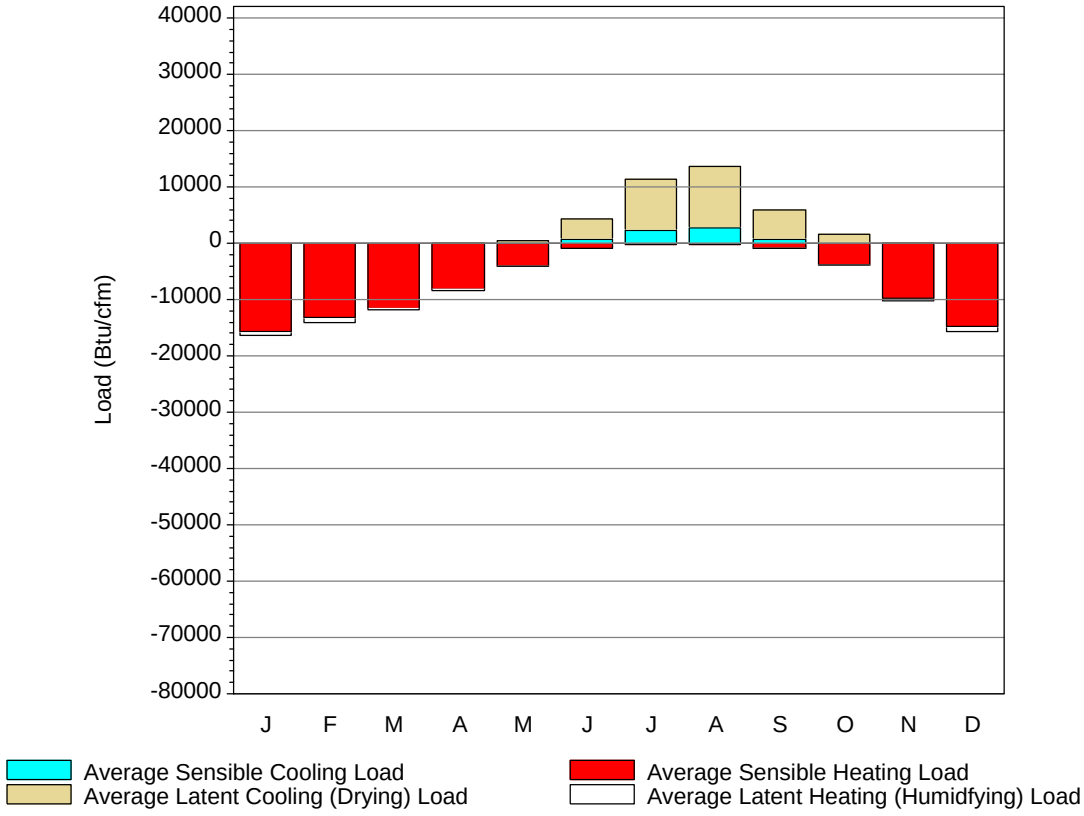
Week Ending	1.0% Temp (°F)	MCWB@ 1% Temp (°F)	Mean Max Temp (°F)	Mean Min Temp (°F)	99% Temp (°F)	1.0% HR (gr/lb)	MCDB@ 1% HR (°F)	Mean Max HR (gr/lb)	Mean Min HR (gr/lb)
7-Jan	63	53.8	56.7	42	34	60.9	58.3	45.4	28.8
14-Jan	64	55.4	56.7	42.4	34	63.7	57.9	46.9	30.7
21-Jan	61	52.5	56	42.5	36	65.1	57.2	45.6	30
28-Jan	63	52.8	56.5	42.3	33	64.4	57.7	45	29.3
4-Feb	62	53.1	56.6	42.3	35	59.5	56.8	46.7	29.5
11-Feb	63	51.3	57.5	42.7	34	58.8	56.3	46.1	28.1
18-Feb	66	53.2	57.6	43.3	34	61.6	59	46.6	29.8
25-Feb	65	53.8	58.3	43.6	35	60.2	57.5	48.2	30.4
4-Mar	67	53.7	58.5	44.4	34	61.6	57.4	49.5	31.4
11-Mar	66	54.3	59.8	45.1	37	64.4	57	50.4	32.1
18-Mar	67	55.4	61.1	46.9	40	65.1	59	54.7	35.7
25-Mar	66	56.8	61.8	48.1	43	69.3	60.9	57.1	37.6
1-Apr	68	54.3	62.2	48.7	43	67.9	60.1	57	37.3
8-Apr	69	56.7	62.7	49.3	43	70.7	60.4	58.8	38.5
15-Apr	69	56.9	63.7	50.1	45	71.4	63.5	59.2	38.1
22-Apr	70	57	64.5	50.8	44	74.2	62.9	60.7	40
29-Apr	72	57.6	66.2	53	46	77.7	64.3	65.6	44
6-May	73	59.7	67.3	53.5	46	79.8	66	67.6	45.3
13-May	75	62.8	68.9	56.5	49	86.1	68.1	74.2	53.3
20-May	76	63.1	70.4	57.4	52	90.3	69.6	76.4	52.3
27-May	79	62.8	72.1	59.2	54	93.8	71.2	79.7	54.1
4-Jun	80	67.5	73.8	60.9	55	102.2	73.3	84.8	58.2
10-Jun	81	68.2	74.4	62.4	55	105.7	73.9	88.6	62.3
17-Jun	86	72.7	77	64	57	116.2	80.1	93.6	62.8
24-Jun	86	72.6	78.7	65.9	59	123.2	79.5	99.2	66.6
1-Jul	86	73.6	80.1	67.5	60	126.7	80.6	104.8	71.2
8-Jul	86	71.1	80.5	68.5	61	121.8	78.7	106.2	72
15-Jul	88	73.6	81.1	68.6	63	126.7	83.5	107.4	74
22-Jul	88	75	82.6	70.1	63	132.3	82.2	113.6	77
29-Jul	89	76.3	83.6	70.9	66	140.7	83.8	118	81.9
5-Aug	89	73.8	83.9	71.5	64	140	83.6	118.6	83.8
12-Aug	90	75.1	83.5	70.5	63	140.7	83.8	115.8	79.2
19-Aug	90	75.7	83.6	70.6	66	139.3	83	117.2	82.2
26-Aug	91	75.4	83.5	70.4	64	140	84.6	117.2	80
2-Sep	88	75.2	81.5	69.1	62	133	82.6	109.6	76.4
9-Sep	86	72	80.4	67.5	63	129.5	81.4	105.9	74.3
16-Sep	84	73.7	78.8	65.1	58	124.6	79.8	100.3	68.6
23-Sep	82	73.8	76.8	63.7	57	124.6	79.3	96	67.7
30-Sep	81	69.1	75.5	61.6	54	114.8	76.7	89.6	62.3
7-Oct	80	70.2	74.4	60.7	54	116.2	76.1	88.2	61.1
14-Oct	79	69.3	72.2	59.5	53	109.2	74.7	84.5	59
21-Oct	76	67.8	70.8	57.5	49	107.8	74	80.3	55.3
28-Oct	76	68.2	69.6	56.5	46	105	73.1	77.7	53.1
4-Nov	73	65	68.1	54.3	46	92.4	68.9	73.2	48.6
11-Nov	71	60.9	64.7	50.5	43	84	65.8	60.8	40.1
18-Nov	68	59.5	63.1	49.5	40	79.8	64	59.1	39.7
25-Nov	68	60.6	61	47.1	35	80.5	64.3	55.1	36.6
2-Dec	65	60	59.3	45.2	37	75.6	63.4	51	33.8
9-Dec	64	55.2	58.9	45.1	37	69.3	61	49.6	32.8
16-Dec	63	55.2	57.2	43.3	34	66.5	59.8	47	30.9
23-Dec	63	55.3	56.5	43.1	32	69.3	59.1	46.8	31.2
31-Dec	64	56.3	56.9	42.3	33	67.9	60.5	45.8	29.1

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



Month	Mean Cooling Degree Days (°F) Base 50	Mean Cooling Degree Days (°F) Base 65	Mean Heating Degree Days (°F) Base 65
JAN	63.1	0.2	508.3
FEB	75.9	0.8	424.7
MAR	148.4	1.7	350.5
APR	234.8	7.2	230.1
MAY	430.4	57.2	92.7
JUN	629.9	196.5	16.6
JUL	811.3	348	1.7
AUG	839.9	376	1.1
SEP	642.7	207.8	15
OCT	452.3	74.1	88.4
NOV	191.8	6.1	294.6
DEC	80.4	0.2	476.6
ANN	4600.9	1275.8	2500.3

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	0	-15581	0	-836
FEB	0	-13194	0	-847
MAR	0	-11461	0	-397
APR	0	-8161	3	-117
MAY	44	-3979	387	-10
JUN	756	-975	3631	0
JUL	2325	-161	9089	0
AUG	2770	-104	10785	0
SEP	802	-890	5030	-5
OCT	75	-3736	1615	-39
NOV	0	-9849	67	-348
DEC	0	-14759	0	-833
ANN	6772	-82850	30607	-3432

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

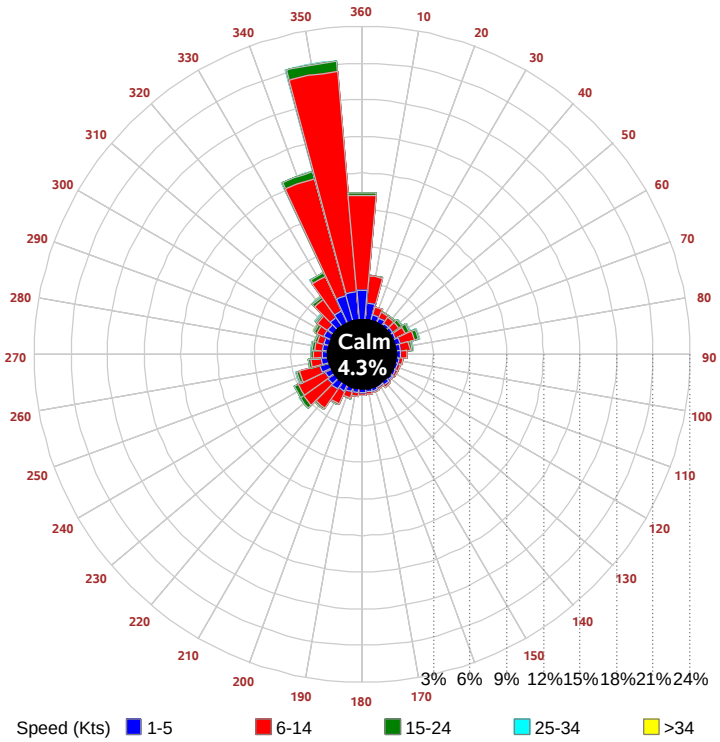
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
HORIZ.	Global													
	Std.Dev.													
	Minimum													
	Maximum													
	Diffuse													
Clear Day	Global													
NORTH	Global													
	Diffuse													
Clear Day	Global													
EAST	Global													
	Diffuse													
Clear Day	Global													
SOUTH	Global													
	Diffuse													
Clear Day	Global													
WEST	Global													
	Diffuse													
Clear Day	Global													

AVERAGE 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													

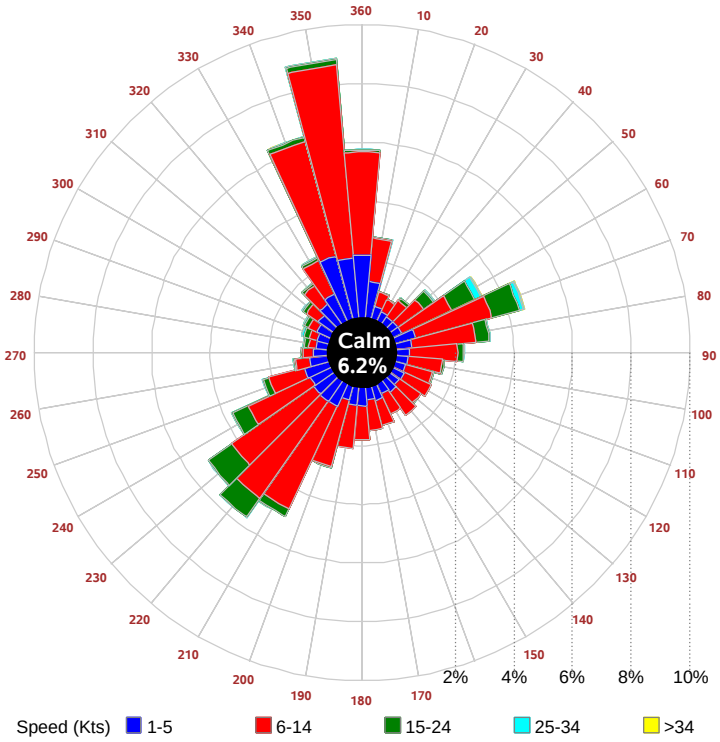
AVERAGE INCIDENT ILLUMINENCE (klux-hr) FOR MOSTLY CLEAR AND MOSTLY CLOUDY CONDITIONS, Percentage Uncertainty = 9											
				March					June		
		9am	11am	1pm	3pm	5pm	9am	11am	1pm	3pm	5pm
HORIZ.	M.Clear										
	M.Cloudy										
NORTH	M.Clear										
	M.Cloudy										
EAST	M.Clear										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

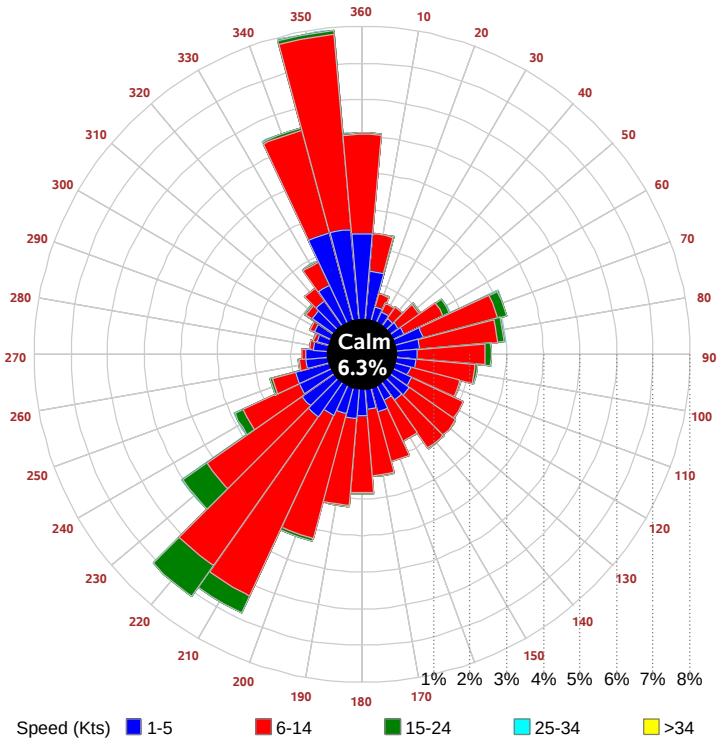
Wind Summary - December, January, and February



Wind Summary - March, April, and May



Wind Summary - June, July, and August



Wind Summary - September, October, and November