

ARTURO MERINO BENITEZ IN, CI

Latitude = 33.39 S

Longitude = 70.79 W

Period of Record = 1988 To 2017

Station ID = ICAO_SCEL

Elevation = 1555 Feet

Average Pressure = 28.35 inches Hg

Design Criteria Data

Dry Bulb Temperature (T)	Mean Coincident (Average) Values				
	Design Value (°F)	Wet Bulb Temperature (°F)	Humidity Ratio (gr/lb)	Wind Speed (mph)	Prevailing Direction (NSEW)
Median of Extreme Highs	93	64	47	13.4	SSW
0.4% Occurrence	90	63	49	13.7	SSW
1.0% Occurrence	88	63	51	13.6	SSW
2.0% Occurrence	86	63	53	13.6	SSW
Mean Daily Range	26	-	-	-	VRB
97.5% Occurrence	36	36	30	2.2	VRB
99.0% Occurrence	32	31	26	2	VRB
99.6% Occurrence	30	30	23	2	VRB
Median of Extreme Lows	26	26	20	1.7	VRB

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	68	85	76	12.8	SSW
0.4% Occurrence	67	84	73	12.8	SSW
1.0% Occurrence	65	83	67	12.7	SSW
2.0% Occurrence	64	82	64	12.5	SSW

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	85	74	0.54	8.3	SSE
0.4% Occurrence	79	73	0.5	8.6	SSE
1.0% Occurrence	74	71	0.47	8.5	SSE
2.0% Occurrence	74	71	0.47	8.5	SSE

Air Conditioning/ Humid Area Criteria	Threshold	T ≥ 93 °F	T ≥ 80 °F	Twb ≥ 73 °F	Twb ≥ 67 °F
	# of Hours	8	682	1	40

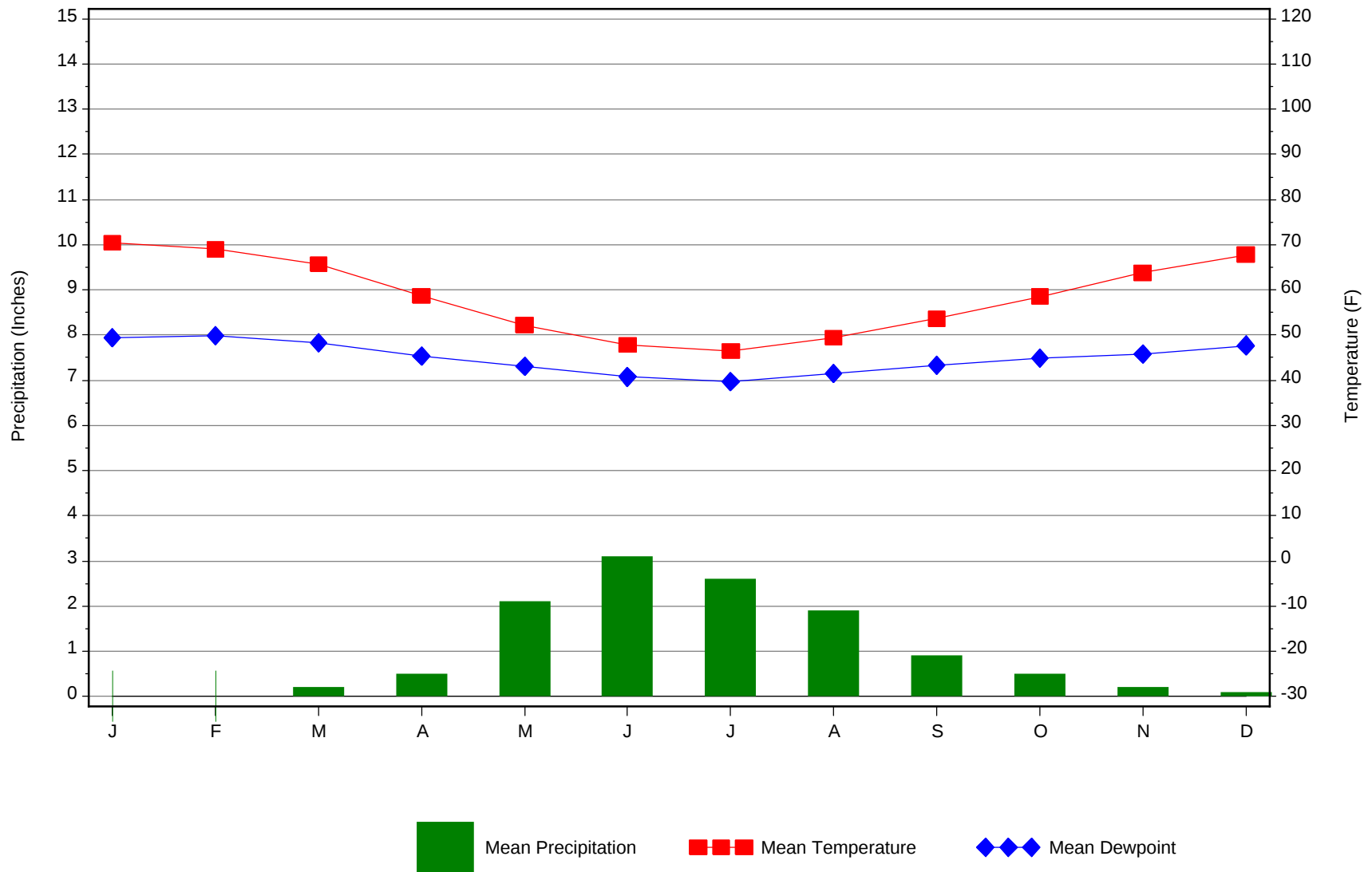
Other Site Data

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	0.0 + 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 (#)
61.1	N/A	N/A	16

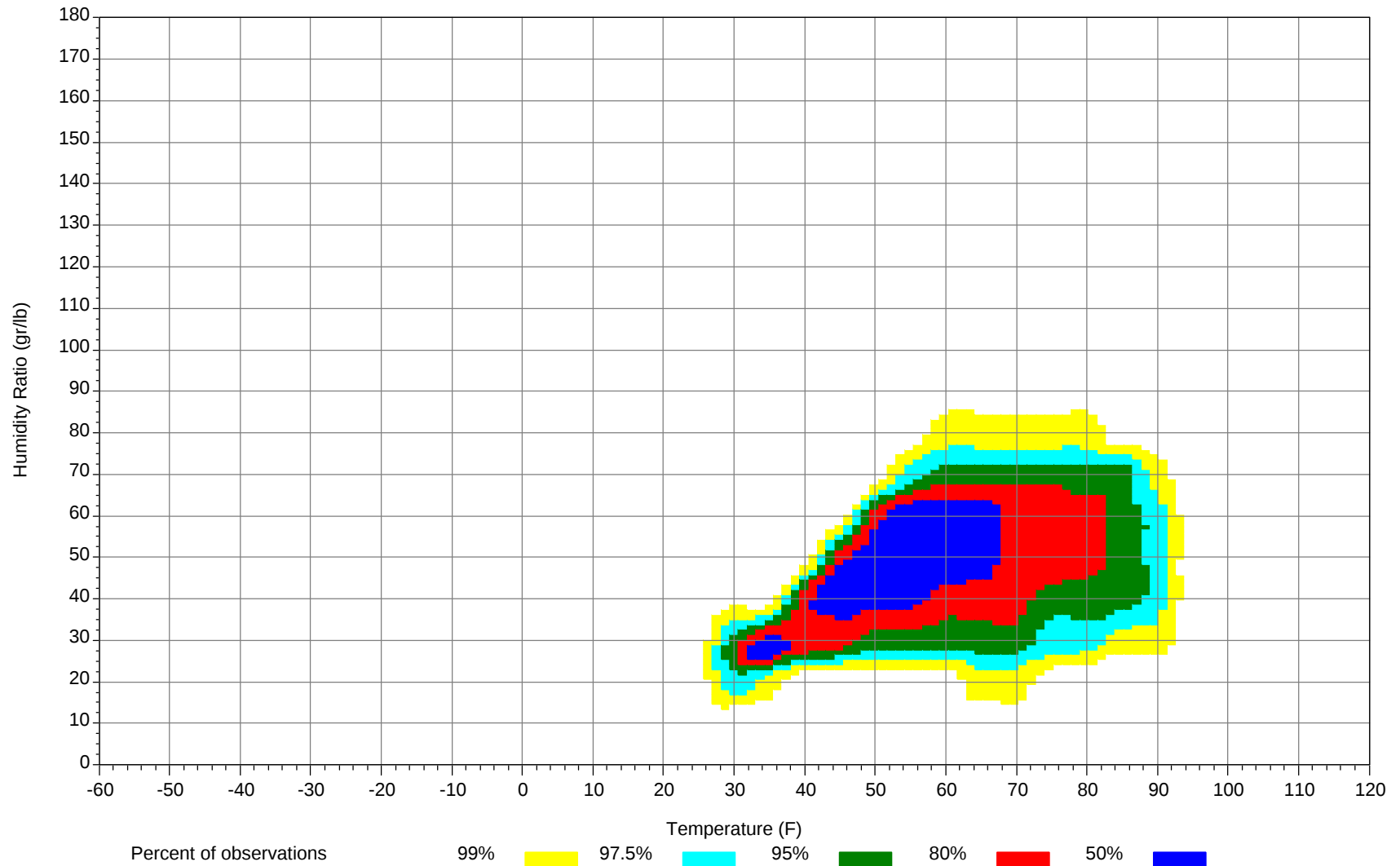
*Note: Temperatures at greater depths can be estimated by adding 1.5°F per 100 feet additional depth.



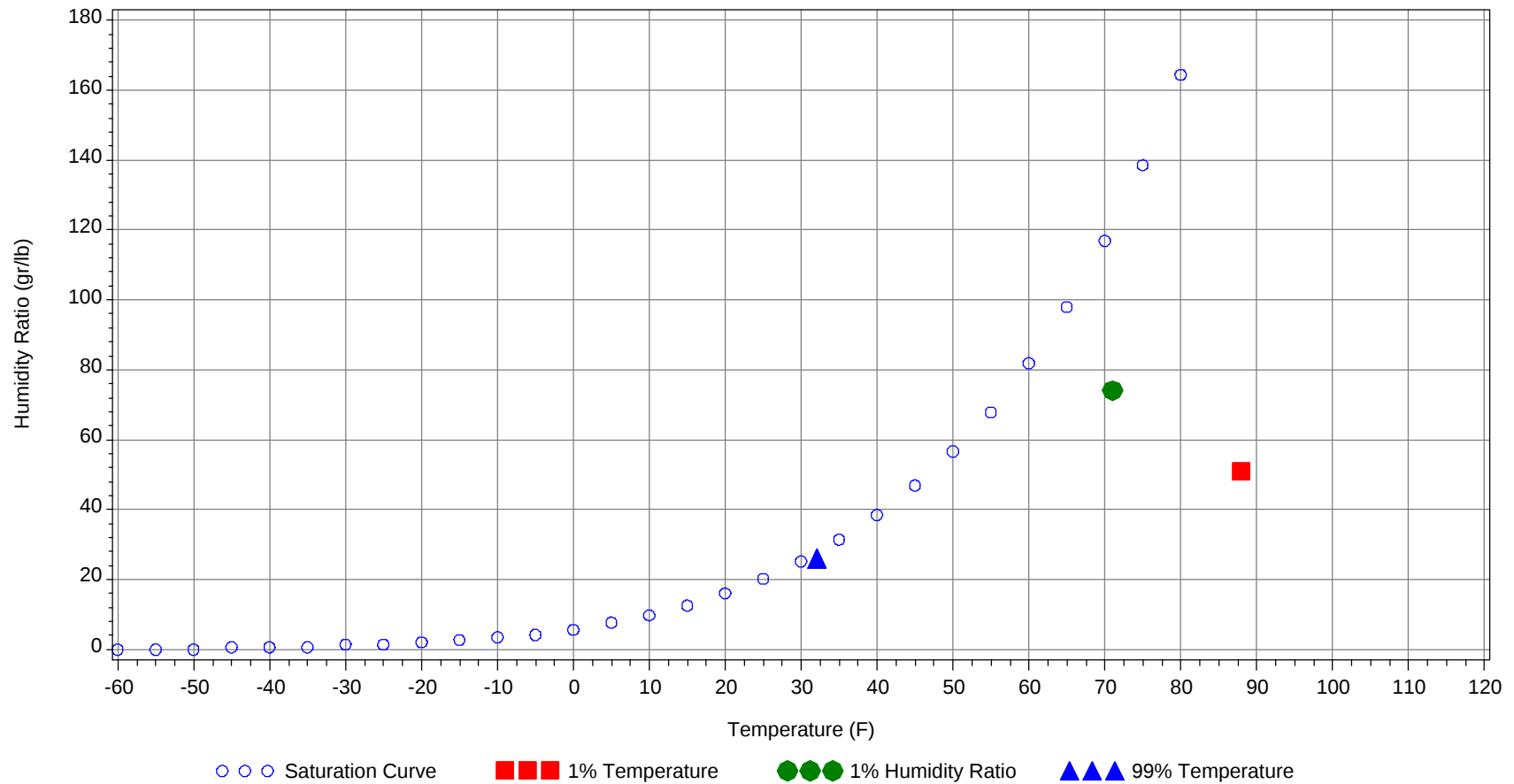
Average Annual Climate



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	88.0		63		51.0	29.1
99.0% Dry Bulb	32.0				26.0	11.7
1.0% Humidity Ratio	74.0	71.0	62.4	57.2		28.7

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)
95/ 99		1	0	1	65.5		0	0	0	64.7		0		0	62.1
90/ 94		14	3	17	64		9	2	11	63.3		5	1	6	62.3
85/ 89		43	16	59	63.5		32	11	43	63.4		18	7	25	62.1
80/ 84		69	40	109	62.7	0	58	32	90	62.7		48	22	70	61.5
75/ 79	0	51	52	103	60.8	0	45	42	87	61.1		52	38	90	60.2
70/ 74	3	40	53	96	58.7	1	37	47	85	59	0	42	48	90	58.4
65/ 69	20	18	45	83	56.9	10	21	42	73	57.4	2	28	45	75	56.8
60/ 64	84	10	34	128	55.1	59	18	42	119	55.5	27	33	58	118	55.1
55/ 59	107	2	5	114	52.7	108	4	7	119	53.1	100	17	26	143	52.6
50/ 54	33		0	33	49.8	42	0	0	42	49.8	91	3	3	97	49.5
45/ 49	2			2	44.4	3	0	0	3	45.5	25	0	0	25	45.4
40/ 44	0			0	40						3			3	41.1
35/ 39											0			0	38
30/ 34															
25/ 29															
20/ 24															

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)
95/ 99															
90/ 94		0		0	59.3										
85/ 89		2	1	3	60.1		0	0	0	57					
80/ 84		15	6	21	58.9		2	0	2	56.3					
75/ 79		29	14	43	58		8	2	10	56		1	0	1	53.8
70/ 74		39	24	63	56.8		20	7	27	55		7	1	8	53.6
65/ 69	0	34	31	65	55.5		24	13	37	54.2		12	5	17	52.5
60/ 64	3	44	58	105	54.1	1	46	33	80	53.1	0	26	13	39	51.4
55/ 59	36	41	67	144	52	8	54	63	125	51.2	1	46	36	83	50.1
50/ 54	83	27	33	143	48.8	49	50	75	174	48.8	26	59	73	158	48.1
45/ 49	77	7	7	91	44.7	72	28	41	141	44.8	57	48	71	176	44.6
40/ 44	30	1	1	32	40.8	56	9	11	76	40.6	50	20	27	97	40.7
35/ 39	10	0	0	10	36.8	45	6	3	54	36.5	64	15	12	91	36.3
30/ 34	1	0		1	32.9	16	1	0	17	31.9	36	5	1	42	31.6
25/ 29						1	0		1	27.2	6	0		6	27.2
20/ 24						0			0	22	0			0	22.3

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

	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)
95/ 99															
90/ 94												0		0	59
85/ 89								0	0	57		0	0	0	58.7
80/ 84		0		0	57		1	0	1	57.6		3	1	4	58.7
75/ 79		1	0	1	56		4	1	5	57.4		11	4	15	57.5
70/ 74		5	2	7	54		12	5	17	55.2		22	11	33	56.3
65/ 69		10	4	14	52.6		14	8	22	54	0	24	14	38	54.7
60/ 64	0	22	11	33	50.8	0	30	20	50	52.2	0	47	35	82	52.8
55/ 59	1	41	30	72	49.2	1	51	43	95	50.1	5	55	57	117	50.8
50/ 54	11	61	67	139	47.4	25	63	79	167	47.9	53	52	77	182	48.4
45/ 49	55	56	78	189	44.3	73	47	65	185	44.6	91	21	35	147	44.7
40/ 44	53	24	37	114	40.6	59	14	20	93	40.7	50	3	6	59	40.8
35/ 39	68	18	16	102	36.5	58	9	6	73	36.6	34	0	1	35	36.6
30/ 34	51	8	2	61	31.7	27	2	1	30	31.9	6			6	32.2
25/ 29	9	1		10	27.4	4	0		4	27.5	0			0	27.8
20/ 24	0			0	24	0			0	21.7					

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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)
95/ 99												0		0	62.8
90/ 94		0	0	0	62.4		2	0	2	62		7	1	8	63.1
85/ 89		3	1	4	61.1		11	3	14	61.4		27	7	34	62.7
80/ 84		14	3	17	59.5		38	12	50	60.5		62	27	89	61.8
75/ 79		32	12	44	58.3		52	27	79	59.1	0	58	44	102	60
70/ 74		42	24	66	56.6	0	50	39	89	57.1	1	47	49	97	57.9
65/ 69	0	35	29	64	55	3	33	38	74	55.4	11	23	44	78	56.1
60/ 64	3	52	52	107	53.2	18	32	59	109	53.4	49	17	52	118	54.2
55/ 59	23	44	66	133	51	69	17	46	132	51.2	109	6	21	136	52
50/ 54	96	23	51	170	48.6	108	4	15	127	48.7	67	1	2	70	49.2
45/ 49	91	3	10	104	44.9	36	0	1	37	44.9	9	0	0	9	45
40/ 44	27	0	1	28	41	6		0	6	40.9	1		0	1	41.2
35/ 39	7		0	7	37.3	1			1	37.7	0		0	0	38.8
30/ 34	0			0	31.9										
25/ 29	0			0	27.7										
20/ 24															

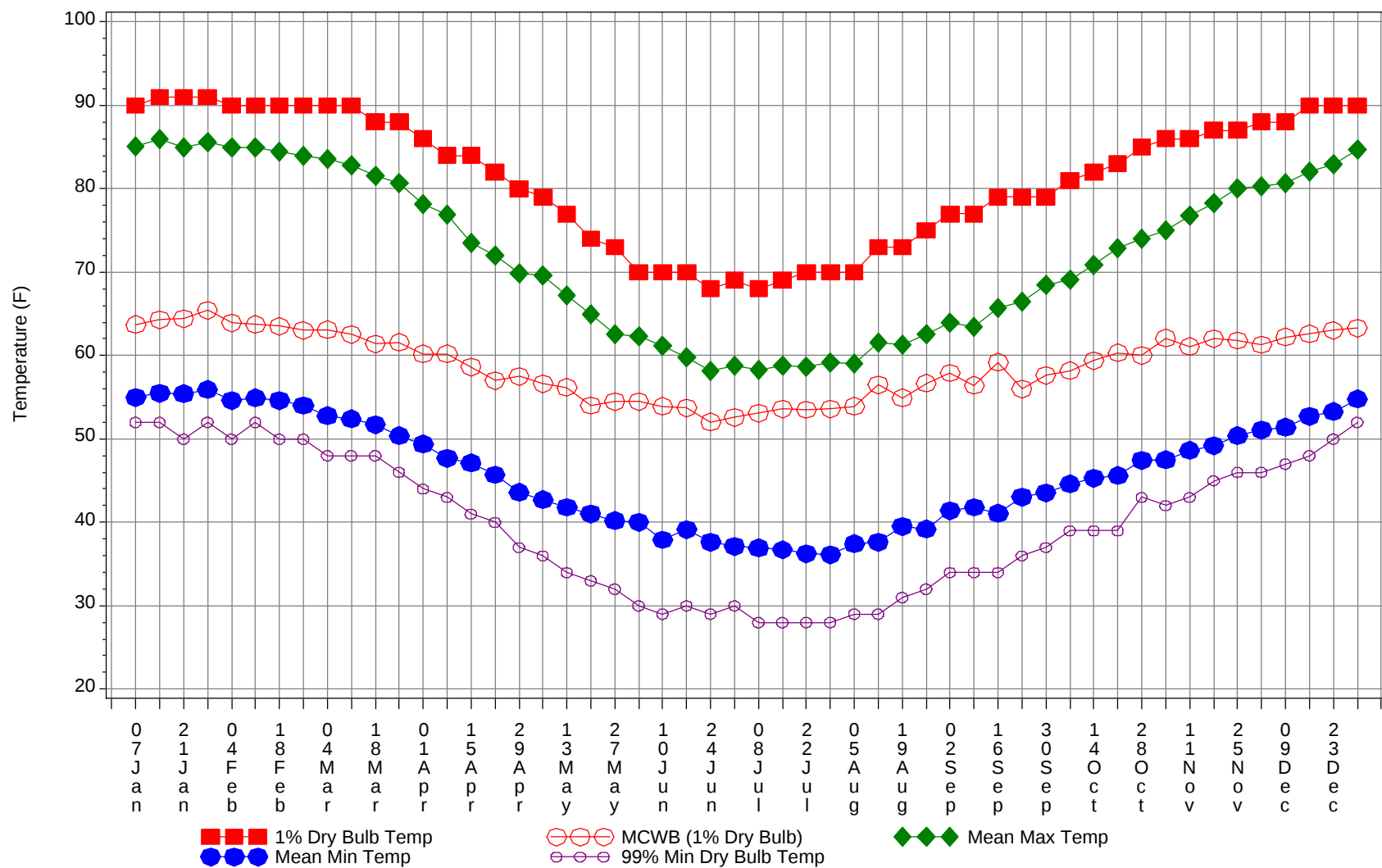
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Dry-Bulb Temperature Hours For An Average Year

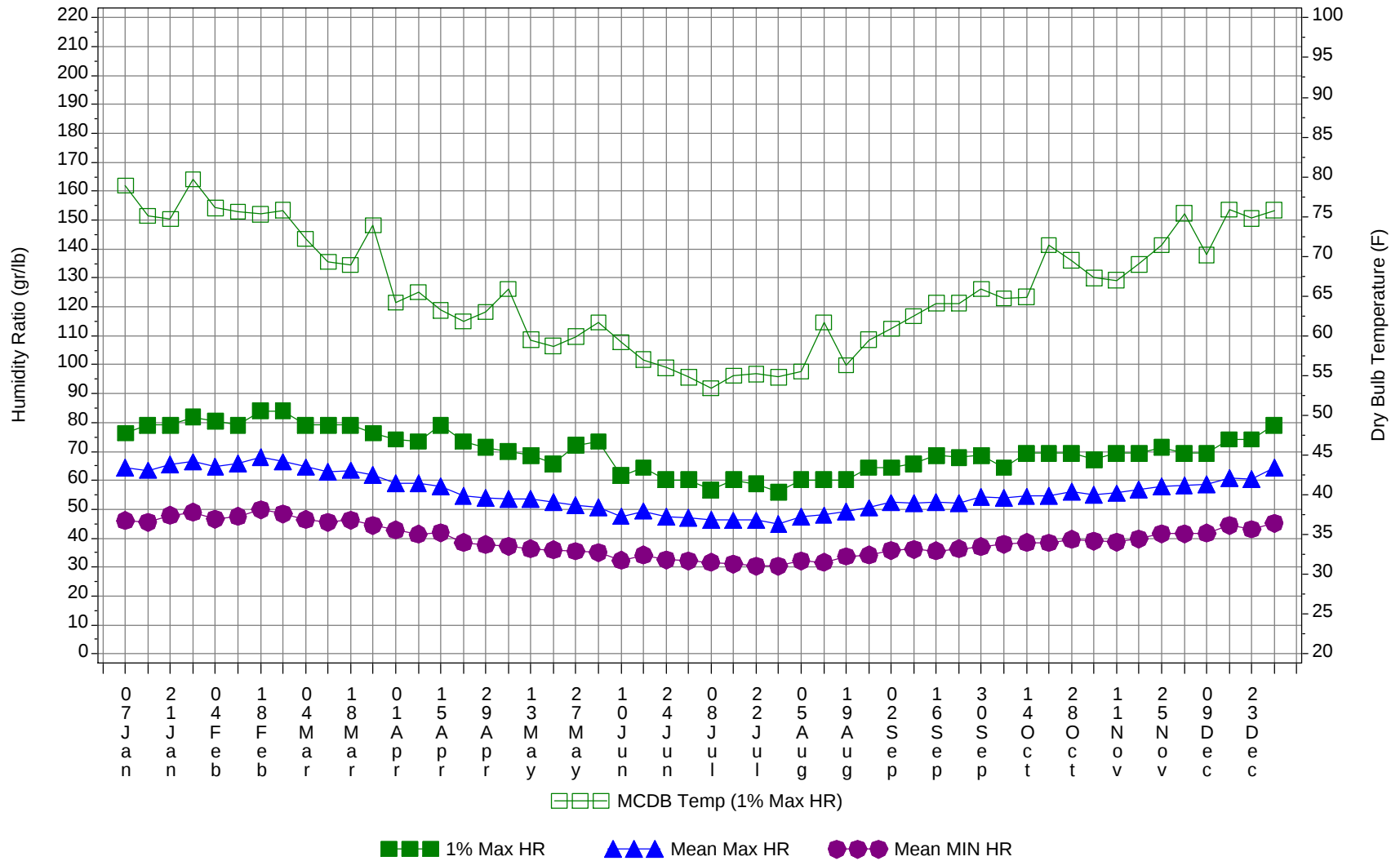
	Annual				
Temperature Range (°F)	01 To 08 LST	09 To 16 LST	17 to 00 LST	Total Obs	M C W B (°F)
95/ 99		2	0	2	64.7
90/ 94		38	7	45	63.3
85/ 89		137	44	181	62.9
80/ 84	0	310	144	454	61.7
75/ 79	0	346	236	582	59.8
70/ 74	5	364	309	678	57.5
65/ 69	46	278	318	642	55.8
60/ 64	244	377	467	1088	53.9
55/ 59	568	378	468	1414	51.5
50/ 54	684	343	475	1502	48.5
45/ 49	591	210	307	1108	44.7
40/ 44	336	71	103	510	40.7
35/ 39	286	49	38	373	36.5
30/ 34	138	17	4	159	31.8
25/ 29	20	2		22	27.4
20/ 24	0			0	22.3

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



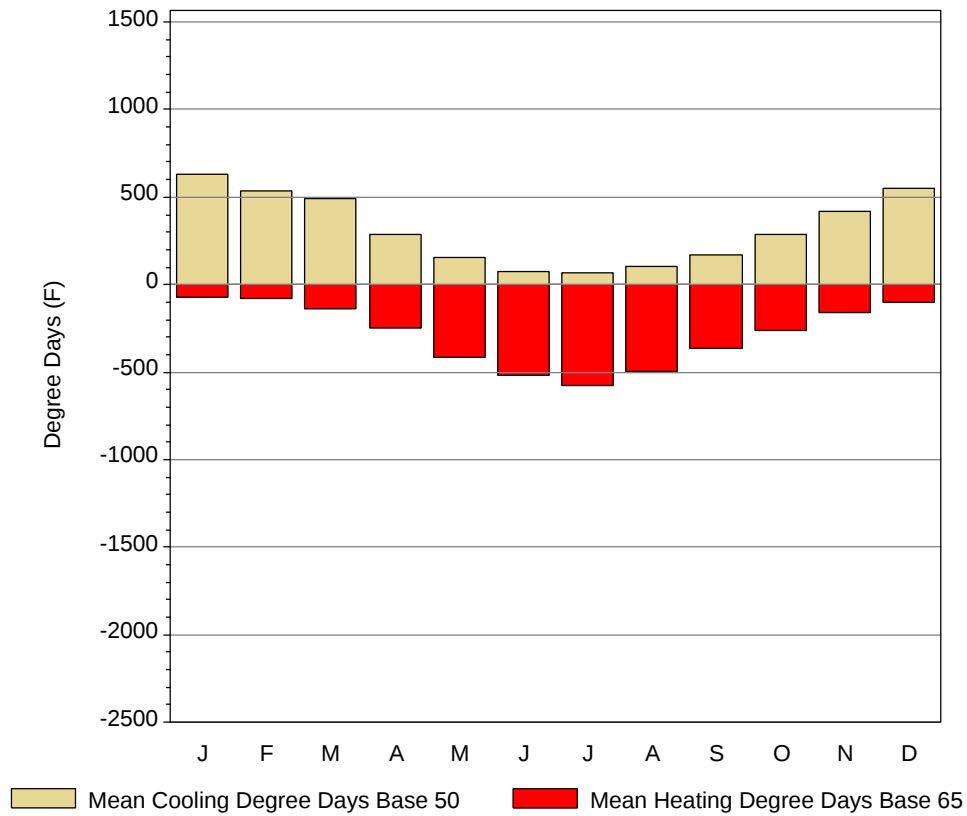
Long Term Humidity and Dry Bulb Temperature Summary



Long Term Humidity and Dry Bulb Temperature Summary

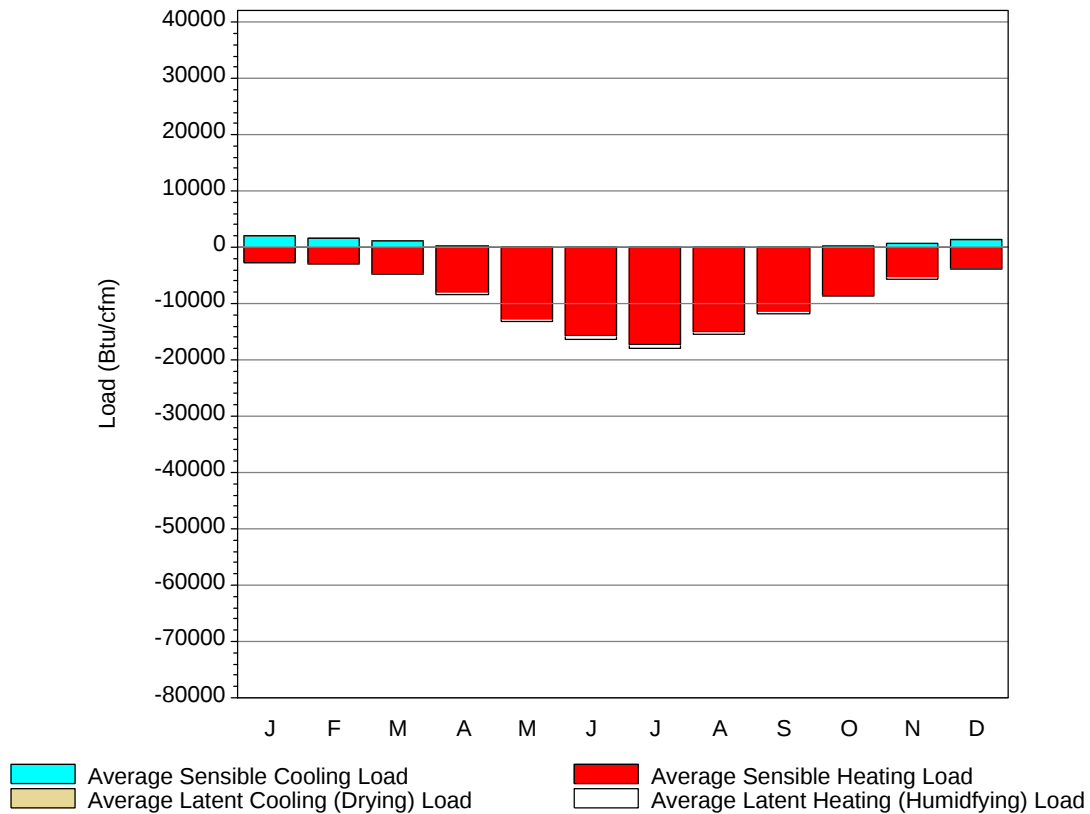
Week Ending	1.0% Temp (° F)	MCWB@ 1% Temp (° F)	Mean Max Temp (° F)	Mean Min Temp (° F)	99% Temp (° F)	1.0% HR (gr/lb)	MCDB@ 1% HR (° F)	Mean Max HR (gr/lb)	Mean Min HR (gr/lb)
7-Jan	90	63.7	85.1	55	52	76.3	78.9	64.5	46.1
14-Jan	91	64.3	85.9	55.5	52	79.1	75.1	63.5	45.6
21-Jan	91	64.4	85	55.4	50	79.1	74.7	65.6	47.9
28-Jan	91	65.4	85.6	55.9	52	81.9	79.7	66.4	49
4-Feb	90	63.9	85	54.6	50	80.5	76.1	64.7	46.6
11-Feb	90	63.7	84.9	54.9	52	79.1	75.6	66	47.5
18-Feb	90	63.5	84.5	54.6	50	84	75.3	67.9	49.8
25-Feb	90	63	84	54	50	84	75.8	66.4	48.5
4-Mar	90	63.1	83.6	52.8	48	79.1	72.2	64.6	46.5
11-Mar	90	62.5	82.8	52.4	48	79.1	69.3	62.9	45.5
18-Mar	88	61.4	81.5	51.7	48	79.1	68.9	63.5	46.2
25-Mar	88	61.6	80.7	50.4	46	76.3	73.9	61.9	44.4
1-Apr	86	60.2	78.2	49.4	44	74.2	64.2	59.1	42.9
8-Apr	84	60.2	76.9	47.7	43	73.5	65.5	59.1	41.4
15-Apr	84	58.6	73.5	47.1	41	79.1	63.2	58	41.9
22-Apr	82	57	72	45.7	40	73.5	61.8	54.8	38.5
29-Apr	80	57.5	69.8	43.6	37	71.4	63	53.9	37.7
6-May	79	56.6	69.6	42.7	36	70	65.9	53.6	37.3
13-May	77	56.2	67.2	41.8	34	68.6	59.5	53.6	36.3
20-May	74	54	65	41	33	65.8	58.7	52.4	36
27-May	73	54.5	62.5	40.2	32	72.1	59.9	51.4	35.5
4-Jun	70	54.5	62.3	40	30	73.5	61.7	50.8	35
10-Jun	70	53.9	61.2	37.9	29	61.6	59.2	47.6	32.4
17-Jun	70	53.7	59.8	39.1	30	64.4	57	49.4	34.1
24-Jun	68	52	58.2	37.6	29	60.2	56	47.3	32.5
1-Jul	69	52.6	58.8	37.1	30	60.2	54.8	47.2	32.2
8-Jul	68	53.1	58.3	36.9	28	56.7	53.4	46.4	31.7
15-Jul	69	53.6	58.8	36.7	28	60.2	55	46.2	31.1
22-Jul	70	53.5	58.7	36.2	28	58.8	55.2	46.2	30.3
29-Jul	70	53.6	59.2	36.1	28	56	54.8	44.9	30.4
5-Aug	70	53.9	59	37.4	29	60.2	55.5	47.5	32.1
12-Aug	73	56.5	61.6	37.6	29	60.2	61.7	48	31.7
19-Aug	73	54.9	61.3	39.5	31	60.2	56.3	49.1	33.7
26-Aug	75	56.7	62.6	39.2	32	64.4	59.5	50.5	34.2
2-Sep	77	57.9	64	41.4	34	64.4	60.9	52.3	35.7
9-Sep	77	56.4	63.4	41.8	34	65.8	62.5	52.2	36.1
16-Sep	79	59.2	65.7	41.1	34	68.6	64.1	52.5	35.6
23-Sep	79	56	66.4	43	36	67.9	64.1	52.2	36.3
30-Sep	79	57.6	68.5	43.5	37	68.6	65.9	54.4	37
7-Oct	81	58.2	69.1	44.6	39	64.4	64.7	53.9	38
14-Oct	82	59.4	70.9	45.3	39	69.3	64.9	54.5	38.5
21-Oct	83	60.3	72.9	45.6	39	69.3	71.4	54.6	38.4
28-Oct	85	60	74	47.4	43	69.3	69.5	56.1	39.5
4-Nov	86	62.1	75	47.5	42	67.2	67.3	54.9	39
11-Nov	86	61.1	76.8	48.6	43	69.3	67	55.6	38.6
18-Nov	87	62	78.3	49.2	45	69.3	69	56.7	39.7
25-Nov	87	61.8	80.1	50.4	46	71.4	71.4	57.9	41.5
2-Dec	88	61.3	80.3	51.1	46	69.3	75.4	58.2	41.5
9-Dec	88	62.2	80.7	51.4	47	69.3	70.2	58.6	41.7
16-Dec	90	62.6	82	52.7	48	74.2	75.9	60.9	44.4
23-Dec	90	63	82.9	53.3	50	74.2	74.8	60.5	43.1
31-Dec	90	63.3	84.7	54.8	52	79.1	75.8	64.4	45.2

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	633.2	236.7	68.7
FEB	536.9	189.6	77
MAR	489.6	154.8	133.9
APR	289.7	61.1	249.1
MAY	153.8	16.3	414
JUN	74.8	4	519.9
JUL	64.1	3.4	577.5
AUG	101.9	9.6	492.9
SEP	168.2	22.6	366.5
OCT	289.3	60.5	262
NOV	418.8	120.6	158.4
DEC	551.9	188.1	102.4
ANN	3772.2	1067.3	3422.3

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	2141	-2772	14	-23
FEB	1627	-3006	11	-24
MAR	1134	-4810	4	-42
APR	275	-8231	2	-142
MAY	33	-12942	2	-273
JUN	1	-15745	0	-530
JUL	2	-17326	0	-592
AUG	15	-15064	0	-339
SEP	64	-11585	0	-222
OCT	251	-8643	0	-72
NOV	748	-5519	0	-95
DEC	1475	-3829	4	-47
ANN	7766	-109472	37	-2401

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													

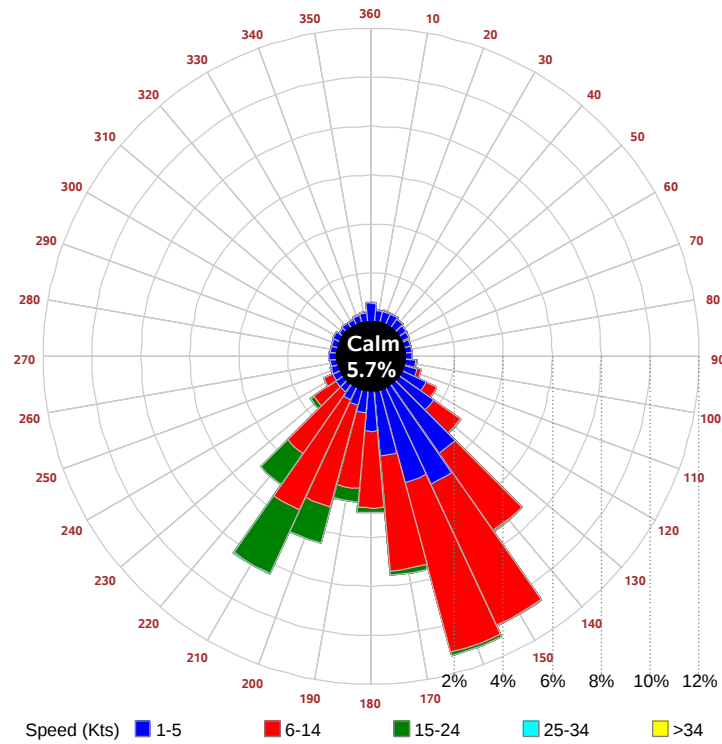
Average Annual Solar Radiation - Nearest Available Site Source: National Renewable Energy Laboratory, Golden CO, 1995

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													

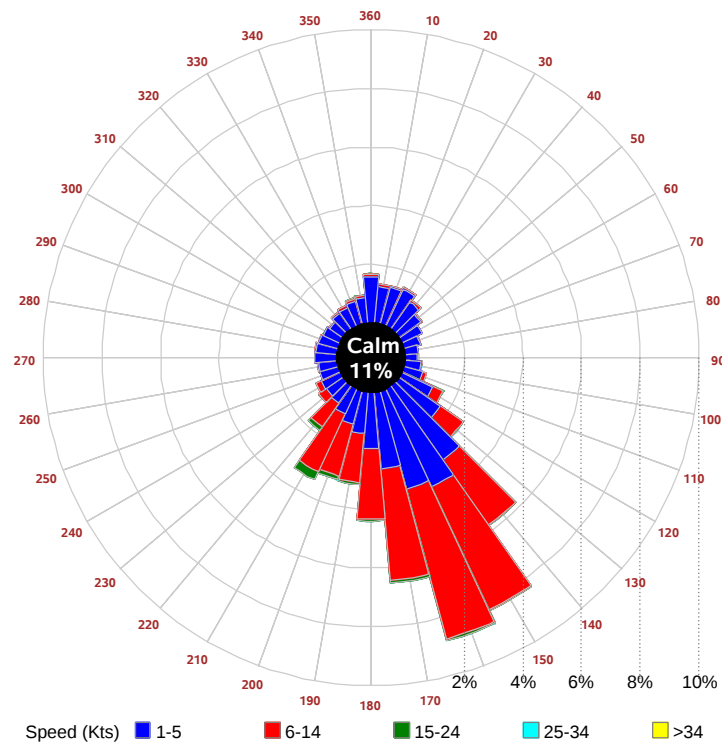
AVERAGE INCIDENT ILLUMINANCE (klux-hr) FOR MOSTLY CLEAR AND MOSTLY CLOUDY CONDITIONS, Percentage Uncertainty = 9												
		March						June				
		9am	11am	1pm	3pm	5pm		9am	11am	1pm	3pm	5pm
HORIZ.	M.Clear											
	M.Cloudy											
NORTH	M.Clear											
	M.Cloudy											
EAST	M.Clear			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

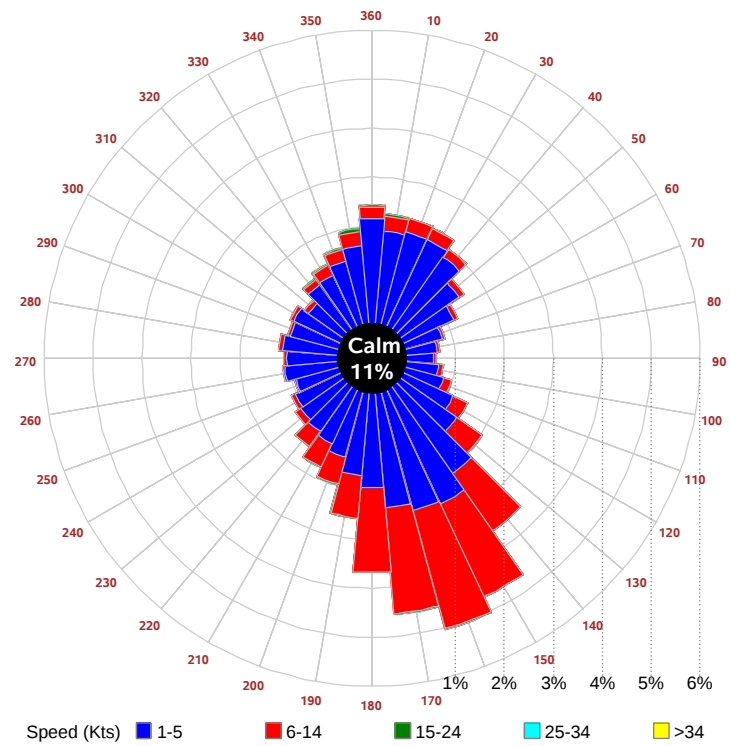
Wind Summary - December, January, and February



Wind Summary - March, April, and May



Wind Summary - June, July, and August



Wind Summary - September, October, and November

