

SANDBURG CA

Latitude = 34.75 N

Longitude = 118.70 W

Period of Record = 1973 to 1995

WMO No. 723830

Elevation = 4524 feet

Average Pressure = 25.38 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	96	63	46	10.8	S
0.4% Occurrence	92	61	44	10.8	S
1.0% Occurrence	89	60	43	11.1	S
2.0% Occurrence	87	59	43	11.4	S
Mean Daily Range	17	-	-	-	-
97.5% Occurrence	29	26	20	16.2	NNW
99.0% Occurrence	25	23	16	15.8	N
99.6% Occurrence	15	12	7	15.3	N
Median of Extreme Lows	22	20	13	16.0	N
	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	66	88	74	10.4	S
0.4% Occurrence	64	86	68	10.8	S
1.0% Occurrence	62	83	62	10.4	S
2.0% Occurrence	61	82	59	10.5	S
	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	86	68	0.48	10.6	S
0.4% Occurrence	79	72	0.45	10.1	S
1.0% Occurrence	71	71	0.41	10.1	S
2.0% Occurrence	67	70	0.38	10.4	S
Air Conditioning/ Humid Area Criteria	# of Hours	T ≥ 93°F	T ≥ 80°F	T _{wb} ≥ 73°F	T _{wb} ≥ 67°F
		28	615	0	4

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
7	1.3	85	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 (#)
58.4	N/A	N/A	32

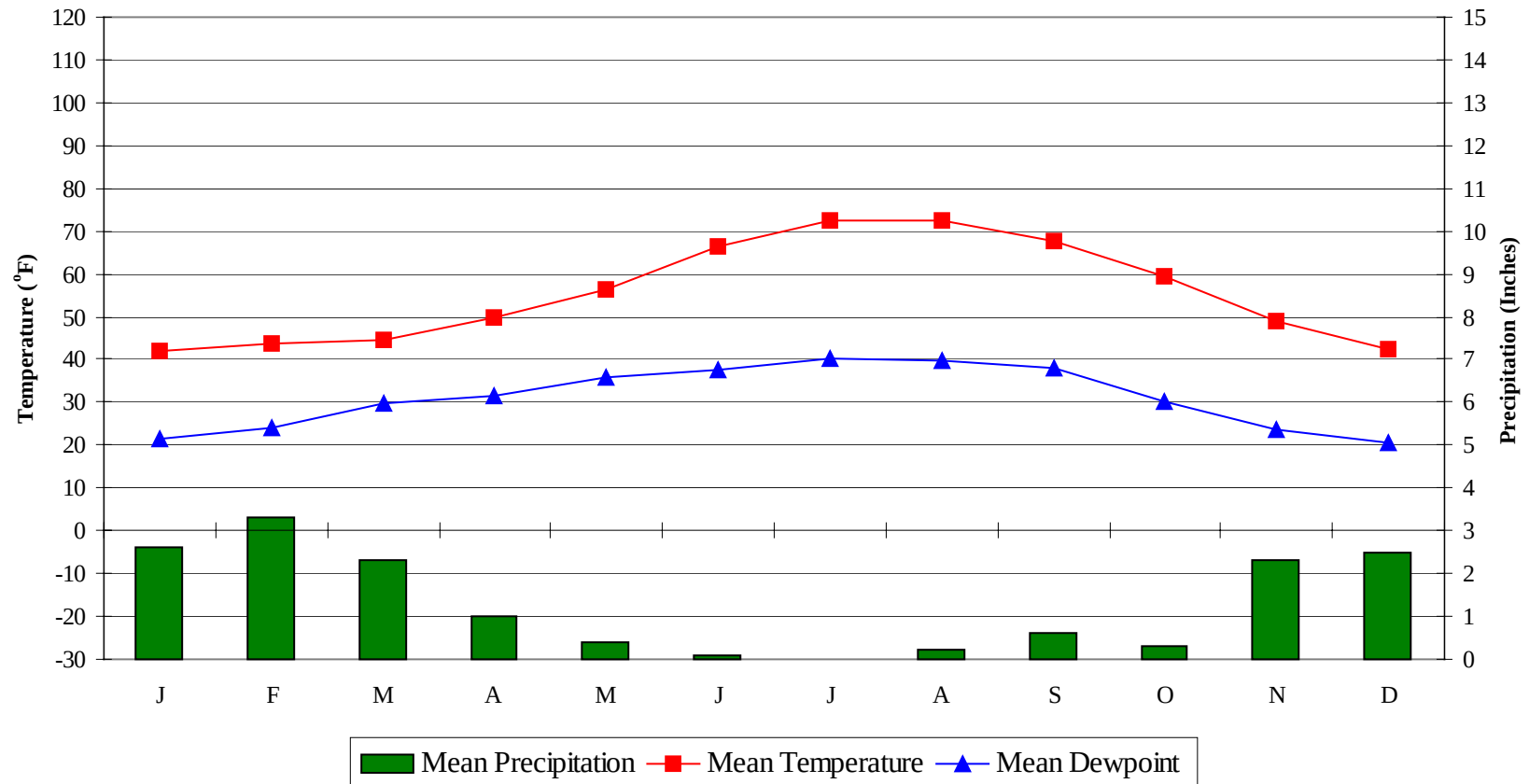
*Note: Temperatures at greater depths can be estimated by adding 1.5°F per 100 feet additional depth.

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Average Annual Climate

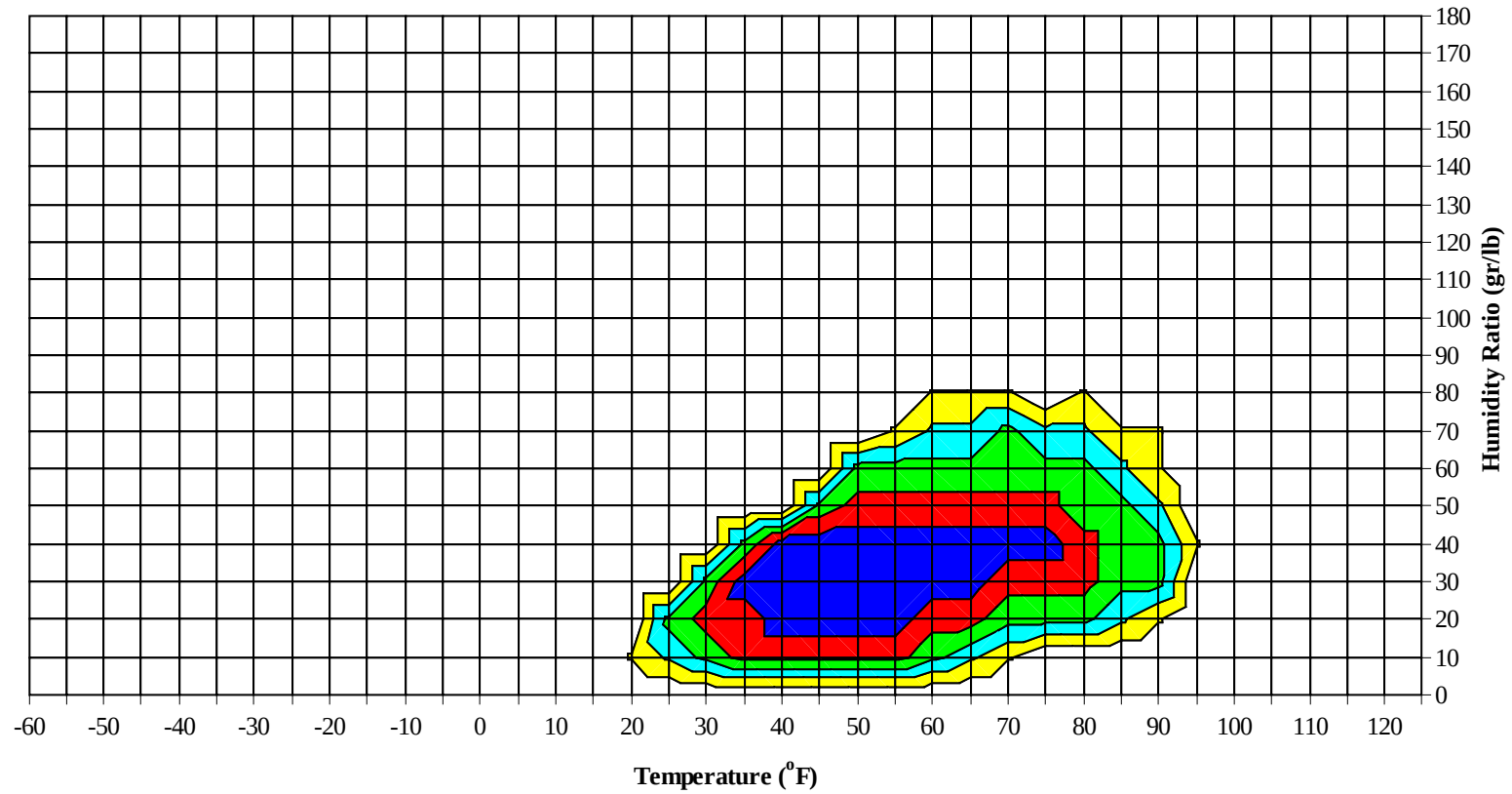


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Long Term Psychrometric Summary



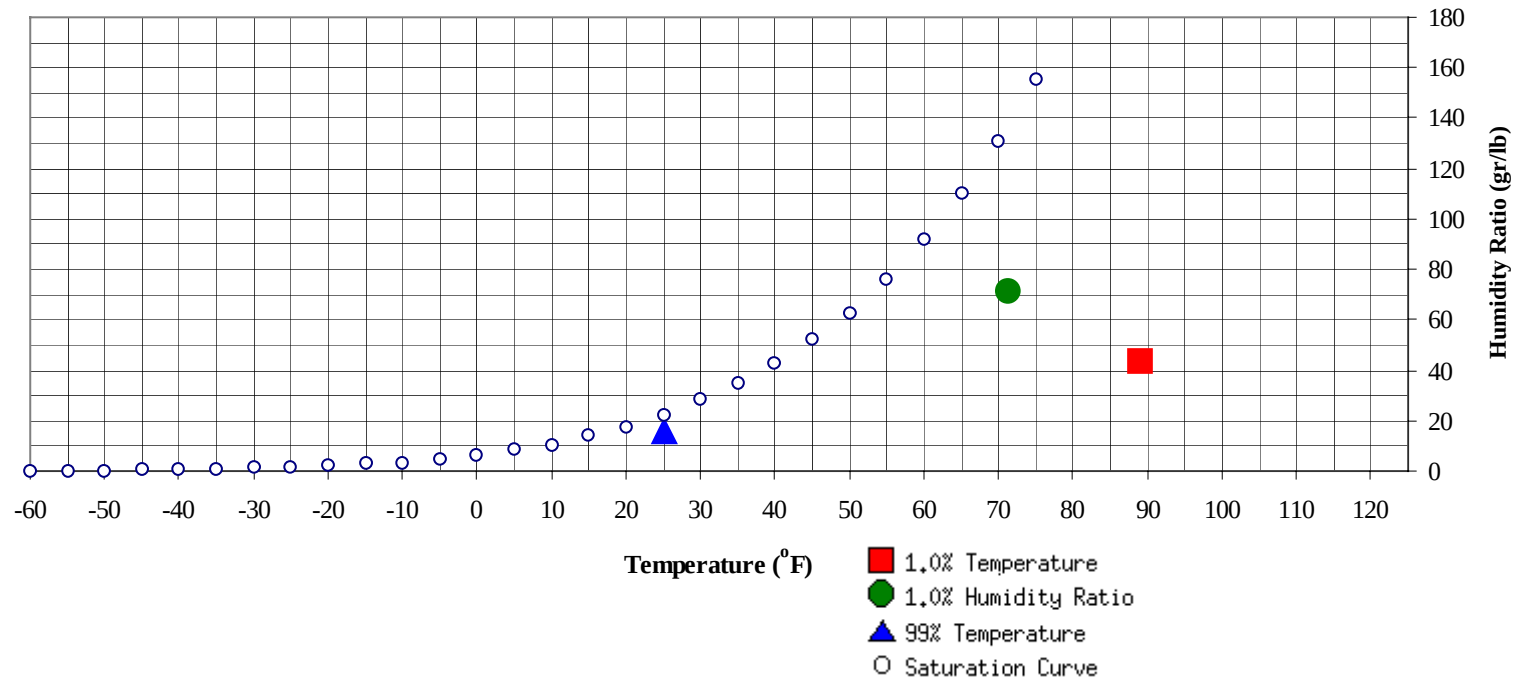
- 50% of all observations
- 80% of all observations
- 95% of all observations
- 97.5% of all observations
- 99% of all observations

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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)
	25	15.5	8.4		71.4	71.2	59.5	53.1	28.2

1.0% Dry Bulb	(°F)	MCHR (gr/lb)	MCWB (°F)	Enthalpy (btu/lb)
	89	43.5	59.8	28.2

SANDBURG CA

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

Period of Record = 1973 to 1995

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															
90 / 94															
85 / 89															
80 / 84															
75 / 79												0		0	50.0
70 / 74							0	0	0	49.7		3	0	3	50.4
65 / 69		1		1	45.2	0	9	0	9	47.5	0	13	1	14	49.2
60 / 64	0	11	1	12	43.6	2	19	5	26	44.5	2	26	6	34	46.5
55 / 59	4	30	9	43	41.1	10	31	16	57	42.0	13	37	19	70	43.9
50 / 54	25	46	32	103	38.7	26	39	34	99	39.4	27	41	36	104	41.8
45 / 49	43	49	46	137	36.7	42	44	42	128	37.6	47	39	50	136	39.7
40 / 44	58	49	59	165	34.2	46	37	49	132	35.7	55	43	51	149	37.2
35 / 39	56	34	54	143	31.7	46	26	37	109	32.6	48	27	46	121	33.8
30 / 34	35	19	27	81	28.5	33	15	28	76	29.2	35	12	29	76	29.9
25 / 29	18	7	13	38	24.6	13	3	8	24	25.1	16	4	7	26	26.1
20 / 24	5	1	4	10	20.6	3	1	2	6	20.0	1	1	1	3	21.6
15 / 19	1	1	0	2	14.9	1	0	0	1	13.6	1	1	1	3	
10 / 14	0	0	1	1		0	0	0	0	10.7	1	1	1	3	
5 / 9	1	1	1	3	5.5	1	1	1	3		1	0	0	1	
0 / 4	2	1	1	4	3.1	1	0	1	2		1	0	1	2	
-5 / -1							0		0						
-10 / -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 1995

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												0		0	64.8
95 / 99												1		1	61.4
90 / 94											0	8	0	8	59.6
85 / 89		0		0	54.3		1	0	1	56.8	1	28	2	31	58.0
80 / 84		2		2	53.5		11	0	11	55.7	3	41	9	53	56.5
75 / 79	0	9	0	9	53.2	1	29	2	32	55.0	11	44	19	74	55.2
70 / 74	1	19	2	22	51.3	5	37	11	53	53.1	26	45	43	114	53.2
65 / 69	4	26	8	38	49.2	15	43	26	84	51.2	44	32	47	122	51.2
60 / 64	13	38	22	73	47.1	32	40	41	113	49.0	47	18	51	115	49.2
55 / 59	27	39	32	97	44.9	41	30	48	120	46.5	46	10	35	90	46.9
50 / 54	36	32	45	112	42.2	44	22	45	112	43.8	29	7	19	55	44.8
45 / 49	46	30	47	123	40.0	41	20	36	97	41.1	19	4	11	34	42.7
40 / 44	46	23	41	110	37.6	35	10	27	72	38.2	12	2	4	18	39.1
35 / 39	39	14	29	82	33.9	22	4	9	35	34.6	2	0	1	3	34.8
30 / 34	19	7	12	38	30.5	8	1	2	11	30.3	0	0	1	1	
25 / 29	5	1	1	7	26.7	1	0	0	1	26.2	0	0	0	0	
20 / 24	2	1	1	4	24.0	1	0	0	1		0		0	0	
15 / 19	1	0	1	2		0		0	0						
10 / 14	0	0	0	0		0			0						
5 / 9	0	0	0	0	2.0										
0 / 4	1	0	0	1	2.0										
-5 / -1															
-10 / -6															

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

Period of Record = 1973 to 1995

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	64.5		0		0	63.2					
95 / 99		5	0	5	62.8		4		4	63.5		1		1	61.1
90 / 94	0	21	1	22	60.7		27	0	27	61.5		9	0	9	59.4
85 / 89	1	56	5	62	59.3	1	54	6	61	59.3	0	32	1	33	58.1
80 / 84	7	68	21	95	57.7	7	65	17	89	57.5	3	53	7	63	56.6
75 / 79	25	52	45	122	56.1	29	51	47	127	55.7	15	50	25	90	54.8
70 / 74	55	28	68	151	54.2	57	28	61	146	53.9	43	34	54	130	52.9
65 / 69	69	12	58	139	52.4	62	12	59	133	52.2	56	25	52	133	51.2
60 / 64	53	4	34	91	50.4	48	5	36	89	50.3	44	17	37	98	50.0
55 / 59	26	1	13	40	48.5	28	2	17	47	48.9	34	13	31	78	48.4
50 / 54	10	0	3	13	46.1	12	1	3	16	47.7	25	6	21	52	46.2
45 / 49	2	0	1	3	43.5	3	0	1	4	45.5	15	2	9	26	42.2
40 / 44	0	0	0	0	41.3	0	0	0	0		4	0	2	6	37.4
35 / 39	0	0	0	0		1	0	0	1		1	0	0	1	34.6
30 / 34	0	0	0	0		0	0	0	0	30.0	0	0	0	0	
25 / 29	0	0	0	0		0	0	0	0		0	0	0	0	
20 / 24		0	0	0		0	0		0		0	0	0	0	
15 / 19						0			0		0	0	0	0	
10 / 14											0	0	0	0	
5 / 9											0	0	0	0	
0 / 4											0	0		0	
-5 / -1												0		0	
-10 / -6															

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

Period of Record = 1973 to 1995

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															
95 / 99															
90 / 94		2		2	56.3										
85 / 89	0	5	0	5	56.3										
80 / 84	1	16	1	18	54.3										
75 / 79	5	32	5	42	52.1		2		2	51.4					
70 / 74	12	40	17	69	50.1	0	12	0	12	48.5		0		0	46.5
65 / 69	32	46	34	111	48.2	3	27	4	34	46.5	0	2		2	45.7
60 / 64	42	35	51	127	46.1	14	36	19	69	44.3	0	12	1	13	43.5
55 / 59	49	30	47	126	44.5	33	33	38	103	41.9	4	34	7	45	40.6
50 / 54	42	23	41	106	43.2	43	39	39	120	40.1	29	52	35	115	38.3
45 / 49	33	12	29	73	40.8	37	41	43	121	37.5	51	46	51	148	36.5
40 / 44	20	5	17	42	36.9	48	25	47	120	35.2	58	43	57	158	34.7
35 / 39	11	2	6	19	33.8	37	15	32	83	32.2	47	31	45	123	31.6
30 / 34	1	0	1	2	28.0	18	9	14	41	29.0	32	18	30	79	27.8
25 / 29	0	0	0	0		7	2	5	14	25.3	15	8	12	35	24.3
20 / 24	0	0	0	0		1	0	0	1	22.3	4	2	5	11	19.0
15 / 19	0	0	0	0			0	0	0		3	0	1	4	15.0
10 / 14	0	0	0	0							1	0	1	2	11.3
5 / 9	0	0	0	0	4.0						0	0	0	0	7.6
0 / 4	1	0	0	1	2.0						3	2	3	8	1.3
-5 / -1	0	0	0	0									0	0	
-10 / -6	0	0	0	0											

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

Period of Record = 1973 to 1995

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		1		1	64.2
95 / 99		11	0	11	62.7
90 / 94	0	69	2	71	60.6
85 / 89	3	183	14	200	58.8
80 / 84	21	263	58	342	57.0
75 / 79	90	276	150	516	55.2
70 / 74	207	250	263	720	53.1
65 / 69	295	248	298	841	50.8
60 / 64	306	260	308	874	48.1
55 / 59	320	286	313	918	45.0
50 / 54	347	300	348	996	41.7
45 / 49	369	278	358	1005	38.8
40 / 44	373	228	346	948	36.0
35 / 39	300	148	251	699	32.7
30 / 34	177	77	138	392	29.0
25 / 29	73	25	46	144	25.0
20 / 24	17	7	12	36	19.9
15 / 19	6	3	4	13	14.6
10 / 14	3	2	3	8	11.2
5 / 9	3	2	2	7	6.1
0 / 4	8	4	7	19	2.0
-5 / -1	0	0	0	0	
-10 / -6	0	0	0	0	

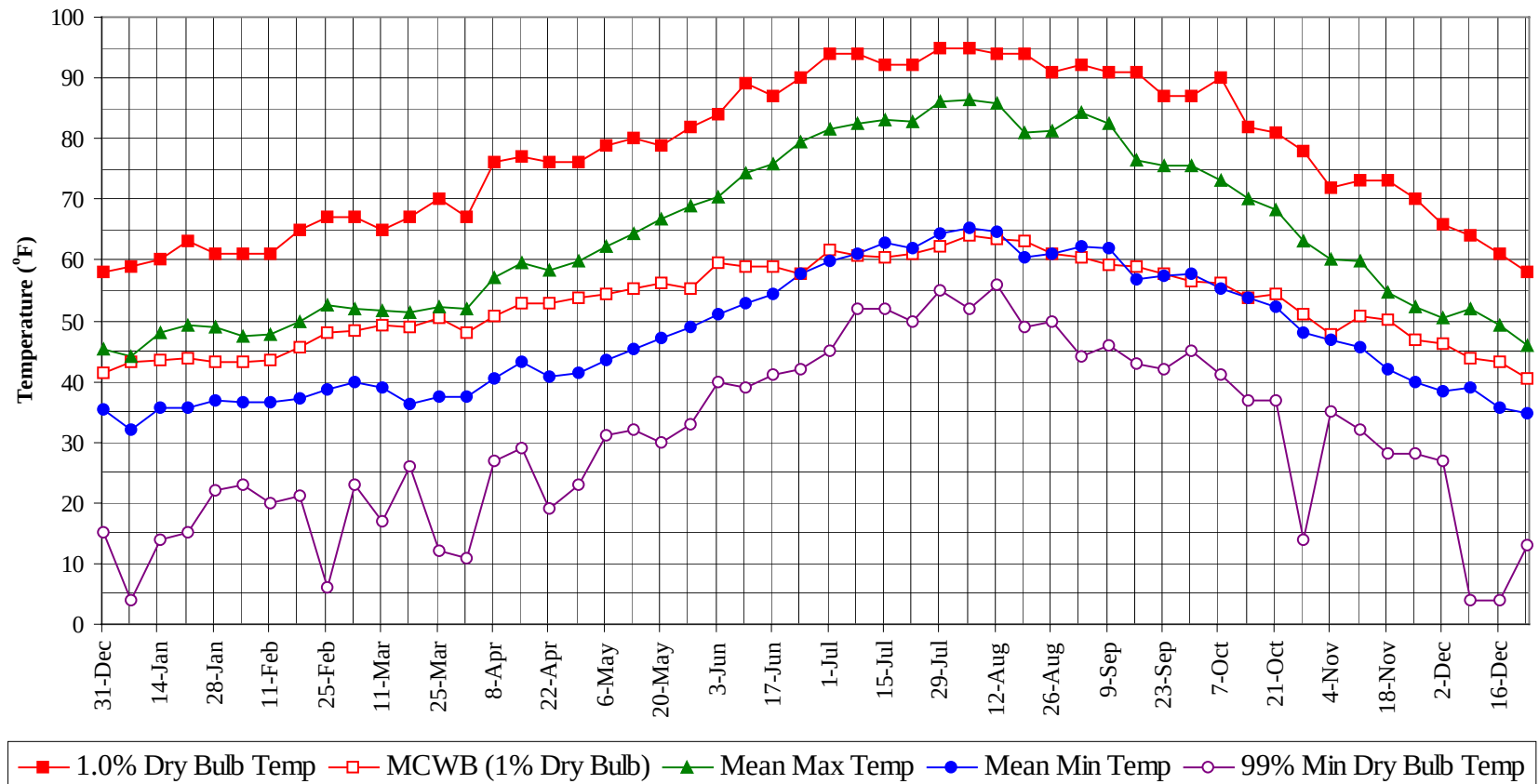
Caution: This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary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

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Annual Summary of Temperatures

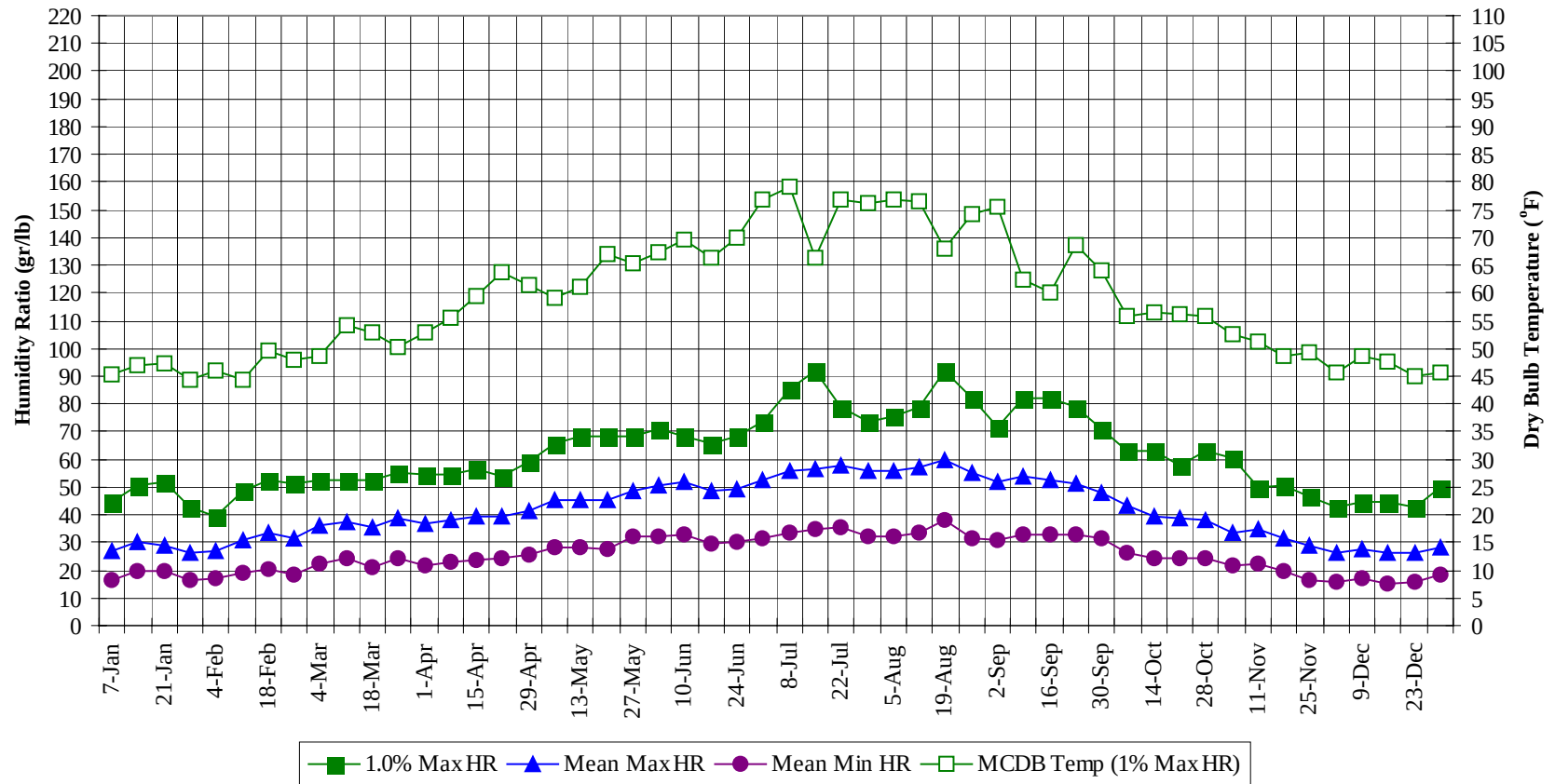


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Long Term Humidity and Dry Bulb Temperature Summary



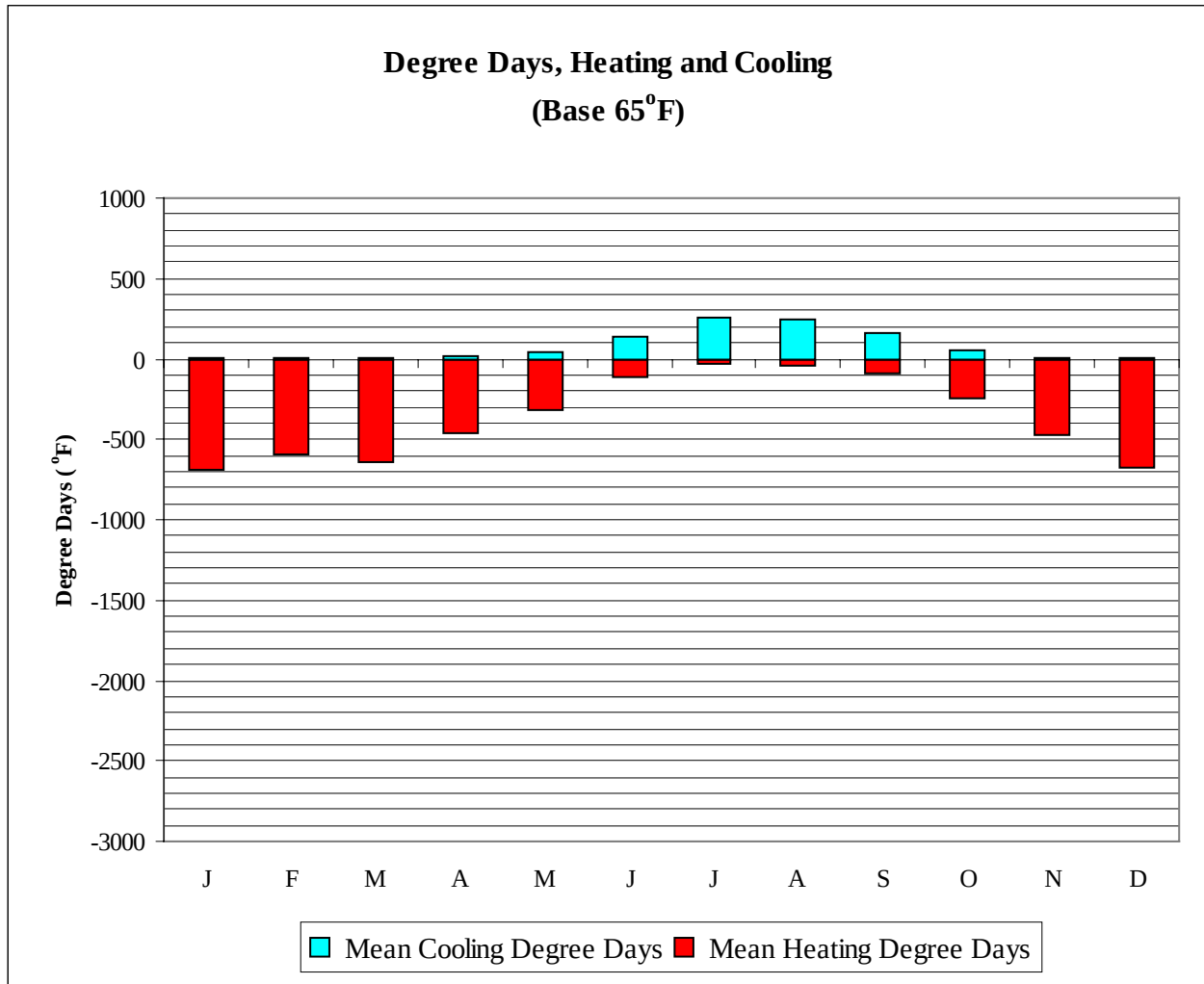
SANDBURG**CA****WMO No. 723830****Long Term Dry Bulb Temperature and Humidity Summary**

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	59.0	43.1	44.0	32.0	4.0	44.8	45.2	26.7	16.3
14-Jan	60.0	43.6	48.0	35.6	14.0	50.4	46.8	30.3	19.8
21-Jan	63.0	43.9	49.4	35.8	15.0	51.8	47.3	29.1	19.9
28-Jan	61.0	43.1	48.9	36.8	22.0	42.7	44.2	26.4	16.3
4-Feb	61.0	43.3	47.5	36.6	23.0	39.2	46.1	27.0	16.8
11-Feb	61.0	43.6	47.8	36.7	20.0	48.3	44.4	30.9	19.2
18-Feb	65.0	45.7	49.8	37.1	21.0	52.5	49.4	33.4	20.4
25-Feb	67.0	48.0	52.6	38.6	6.0	51.1	47.9	31.4	18.4
4-Mar	67.0	48.3	52.0	39.9	23.0	52.5	48.5	36.3	22.6
11-Mar	65.0	49.4	51.6	39.0	17.0	52.5	54.1	37.2	24.3
18-Mar	67.0	48.9	51.5	36.3	26.0	52.5	53.0	35.5	21.3
25-Mar	70.0	50.4	52.2	37.6	12.0	55.3	50.3	38.9	24.2
1-Apr	67.0	48.0	52.1	37.4	11.0	54.6	52.8	36.6	21.9
8-Apr	76.0	50.6	57.2	40.4	27.0	54.6	55.6	38.3	22.8
15-Apr	77.0	52.9	59.5	43.2	29.0	56.7	59.6	39.6	23.7
22-Apr	76.0	52.8	58.3	40.8	19.0	53.9	63.8	39.5	24.2
29-Apr	76.0	53.9	59.8	41.5	23.0	58.8	61.5	41.3	25.8
6-May	79.0	54.3	62.3	43.5	31.0	65.8	59.3	45.5	28.3
13-May	80.0	55.4	64.5	45.4	32.0	68.6	61.0	45.3	28.5
20-May	79.0	56.1	66.9	47.2	30.0	68.6	67.0	45.5	27.5
27-May	82.0	55.4	68.9	49.0	33.0	68.6	65.3	48.7	32.5
3-Jun	84.0	59.4	70.5	51.1	40.0	70.7	67.2	50.6	31.9
10-Jun	89.0	58.9	74.2	52.9	39.0	68.6	69.5	51.8	33.0
17-Jun	87.0	59.1	75.8	54.4	41.0	65.8	66.3	48.7	29.6
24-Jun	90.0	57.7	79.3	57.8	42.0	68.6	70.1	49.4	30.0
1-Jul	94.0	61.8	81.6	59.9	45.0	73.5	76.9	52.3	31.4
8-Jul	94.0	60.7	82.4	61.1	52.0	85.4	79.0	56.0	33.8
15-Jul	92.0	60.4	83.2	62.8	52.0	91.7	66.3	56.6	34.7
22-Jul	92.0	61.1	82.9	61.9	50.0	79.1	76.9	58.0	35.4
29-Jul	95.0	62.3	86.0	64.4	55.0	73.5	76.2	56.1	32.2
5-Aug	95.0	64.1	86.4	65.2	52.0	75.6	76.9	55.7	32.3
12-Aug	94.0	63.4	85.8	64.5	56.0	79.1	76.4	57.5	33.7
19-Aug	94.0	63.1	80.8	60.5	49.0	91.7	67.9	59.7	37.8
26-Aug	91.0	61.0	81.3	61.1	50.0	81.9	74.1	54.9	31.8
2-Sep	92.0	60.5	84.2	62.3	44.0	71.4	75.4	51.9	31.1
9-Sep	91.0	59.2	82.4	62.1	46.0	81.9	62.3	54.2	32.7
16-Sep	91.0	59.0	76.3	56.9	43.0	81.9	60.1	52.6	33.1
23-Sep	87.0	57.8	75.5	57.5	42.0	79.1	68.6	51.4	32.7
30-Sep	87.0	56.4	75.4	57.9	45.0	70.7	64.1	48.2	31.8
7-Oct	90.0	56.2	73.2	55.3	41.0	63.0	55.9	43.2	26.1
14-Oct	82.0	53.9	70.1	53.8	37.0	63.0	56.4	39.2	24.2
21-Oct	81.0	54.3	68.2	52.3	37.0	58.1	56.2	38.7	24.2
28-Oct	78.0	50.9	63.1	47.9	14.0	63.0	55.7	38.3	24.1
4-Nov	72.0	47.8	60.2	46.7	35.0	60.2	52.5	33.8	21.7
11-Nov	73.0	50.9	59.7	45.7	32.0	49.7	51.1	34.7	22.3
18-Nov	73.0	50.1	54.7	41.9	28.0	50.4	48.6	31.8	19.6
25-Nov	70.0	46.8	52.2	39.9	28.0	46.9	49.1	28.6	16.3
2-Dec	66.0	46.2	50.5	38.2	27.0	42.7	45.8	26.1	15.6
9-Dec	64.0	43.8	52.0	38.9	4.0	44.8	48.7	27.3	16.9
16-Dec	61.0	43.2	49.4	35.6	4.0	44.8	47.7	26.6	15.3
23-Dec	58.0	40.6	45.8	34.6	13.0	42.7	45.0	26.1	16.0
31-Dec	58.0	41.5	45.2	35.2	15.0	49.7	45.6	28.2	18.1

SANDBURG

CA

WMO No. 723830



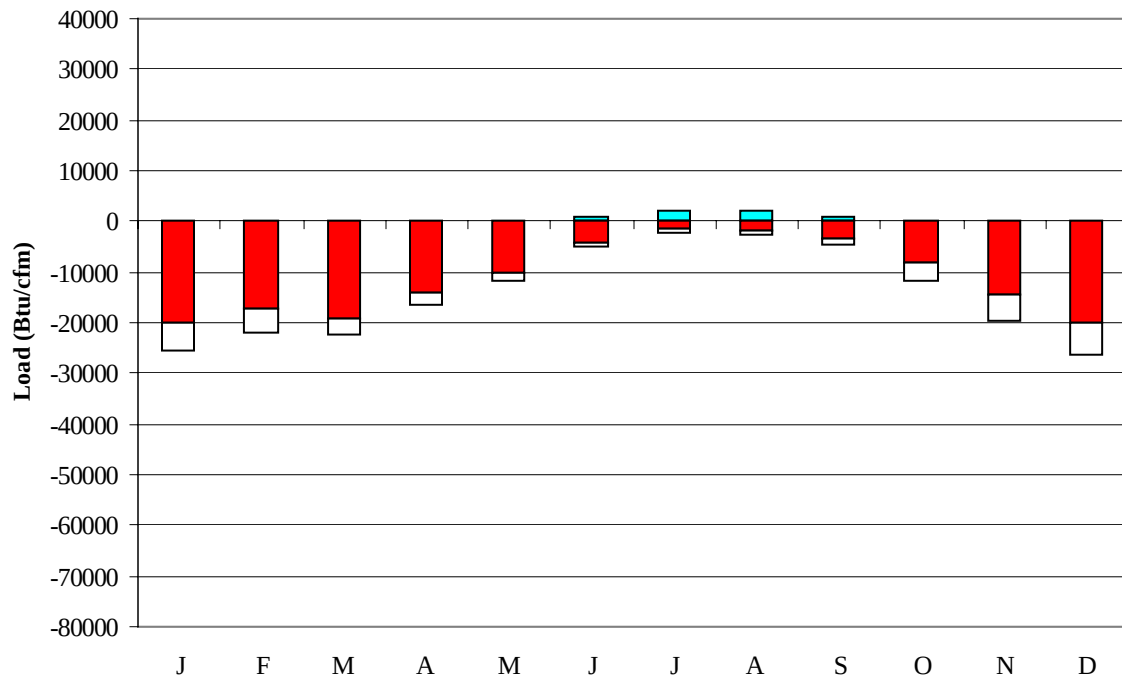
	Mean Cooling Degree Days (°F)	Mean Heating Degree Days (°F)
JAN	0	683
FEB	0	587
MAR	2	646
APR	14	464
MAY	41	312
JUN	141	113
JUL	254	34
AUG	245	39
SEP	159	91
OCT	58	250
NOV	5	476
DEC	0	680
ANN	918	4375

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

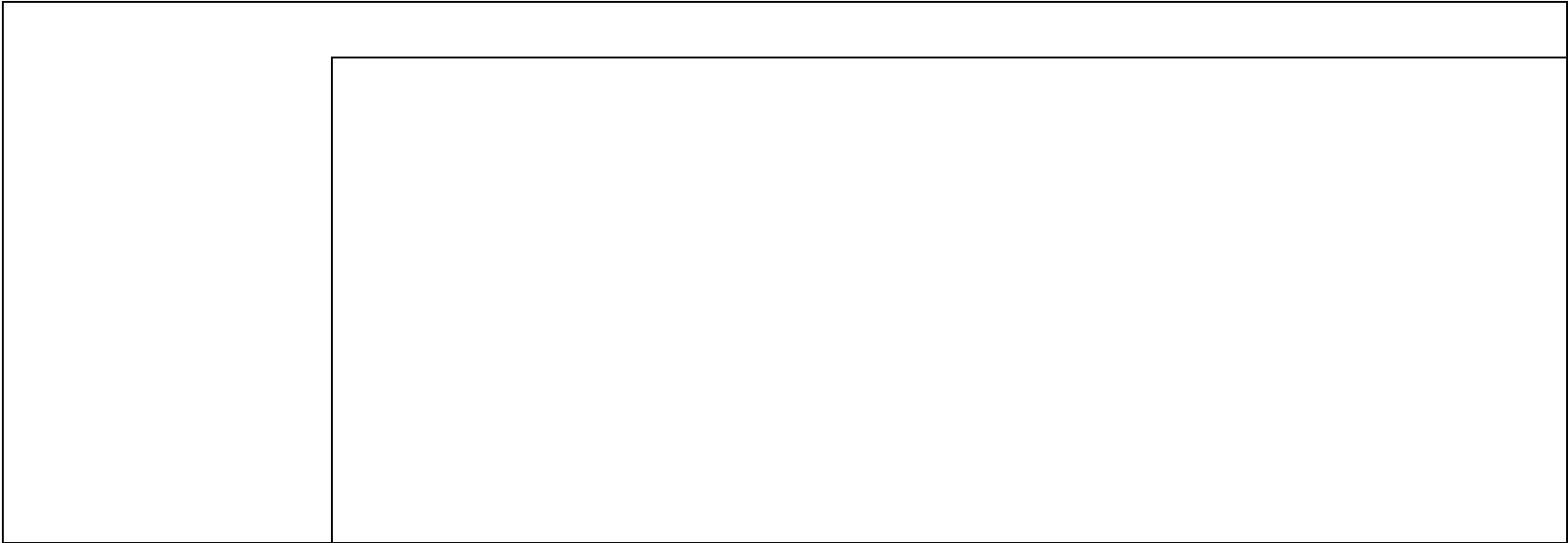


■ Average Sensible Cooling Load	■ Average Sensible Heating Load
■ Average Latent Cooling (Drying) Load	■ Average Latent Heating (Humidifying) Load

	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	-19937	0	-5610
FEB	0	-17322	0	-4749
MAR	0	-19054	0	-3286
APR	33	-14082	0	-2453
MAY	131	-9979	0	-1562
JUN	978	-4034	0	-1107
JUL	2078	-1499	6	-849
AUG	2020	-1695	2	-1004
SEP	1094	-3359	0	-1277
OCT	273	-8183	0	-3450
NOV	1	-14485	0	-5274
DEC	0	-19917	0	-6335
ANN	6608	-133546	8	-36956

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

No Solar Radiation
Data Available

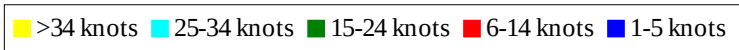
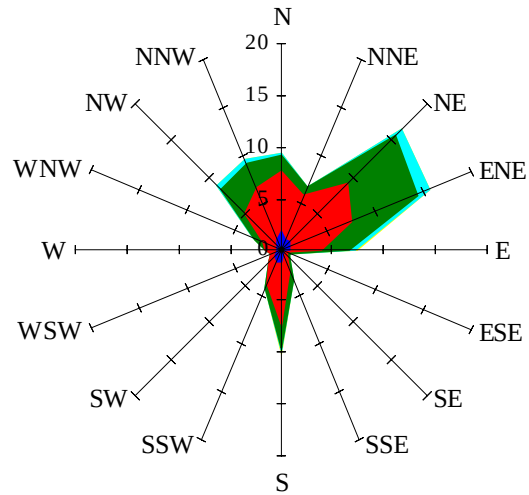


Average Annual Solar Heat and Illumination – Nearest Available Site

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

Wind Summary - December, January, and February

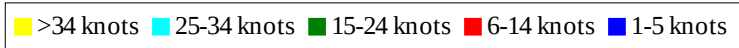
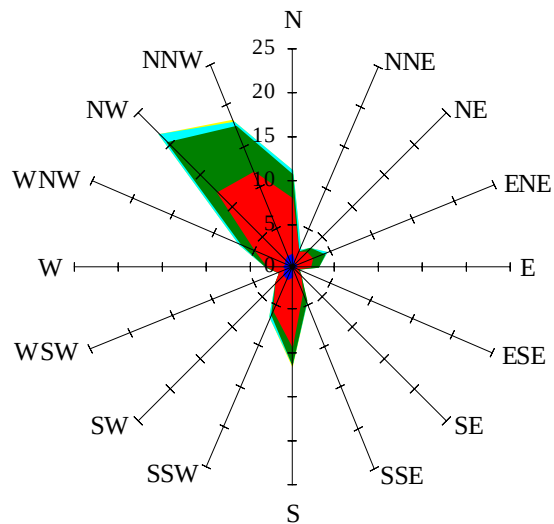
Labels of Percent Frequency on North Axis



Percent Calm = 0.18

Wind Summary - March, April, and May

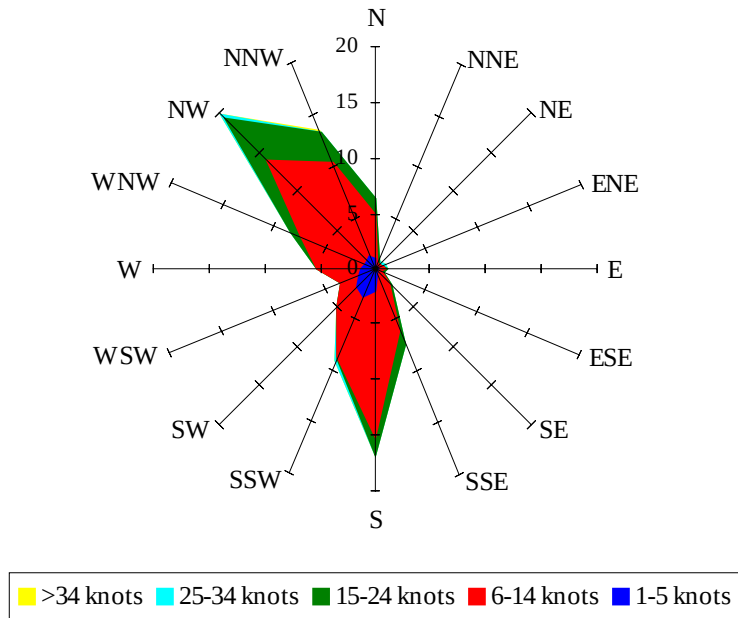
Labels of Percent Frequency on North Axis



Percent Calm = 0.14

Wind Summary - June, July, and August

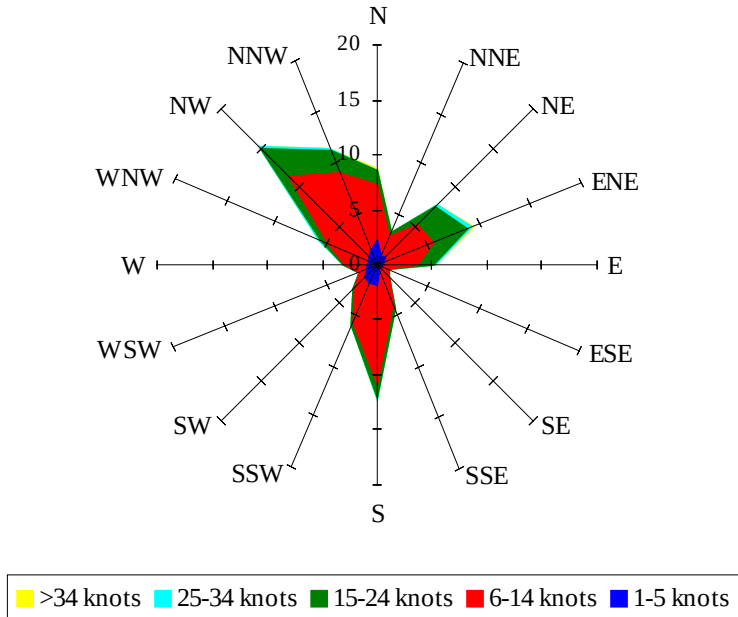
Labels of Percent Frequency on North Axis



Percent Calm = 0.15

Wind Summary - September, October, and November

Labels of Percent Frequency on North Axis



Percent Calm = 0.28