

LEUCHARS RAF, UK

Latitude = 56.38 N

Longitude = 2.87 W

Period of Record = 1973 to 1996

WMO No. 031710

Elevation = 39 feet

Average Pressure = 29.82 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	78	63	63	13.4	WSW
0.4% Occurrence	72	61	63	13.0	WSW
1.0% Occurrence	69	59	61	13.3	WSW
2.0% Occurrence	66	58	59	13.2	WSW
Mean Daily Range	12	-	-	-	-
97.5% Occurrence	30	29	21	6.5	WSW
99.0% Occurrence	27	26	18	6.2	WSW
99.6% Occurrence	23	22	15	4.6	WSW
Median of Extreme Lows	19	18	12	4.9	WSW
	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	74	80	11.8	WSW
0.4% Occurrence	63	69	74	11.1	WSW
1.0% Occurrence	61	66	70	10.9	WSW
2.0% Occurrence	60	65	69	11.0	WSW
	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	85	66	0.57	8.7	SW
0.4% Occurrence	78	65	0.52	8.5	WSW
1.0% Occurrence	74	64	0.50	9.1	WSW
2.0% Occurrence	70	62	0.47	10.0	WSW
Air Conditioning/ Humid Area Criteria	# of Hours	T ≥ 93°F	T ≥ 80°F	T _{wb} ≥ 73°F	T _{wb} ≥ 67°F
		0	2	0	1

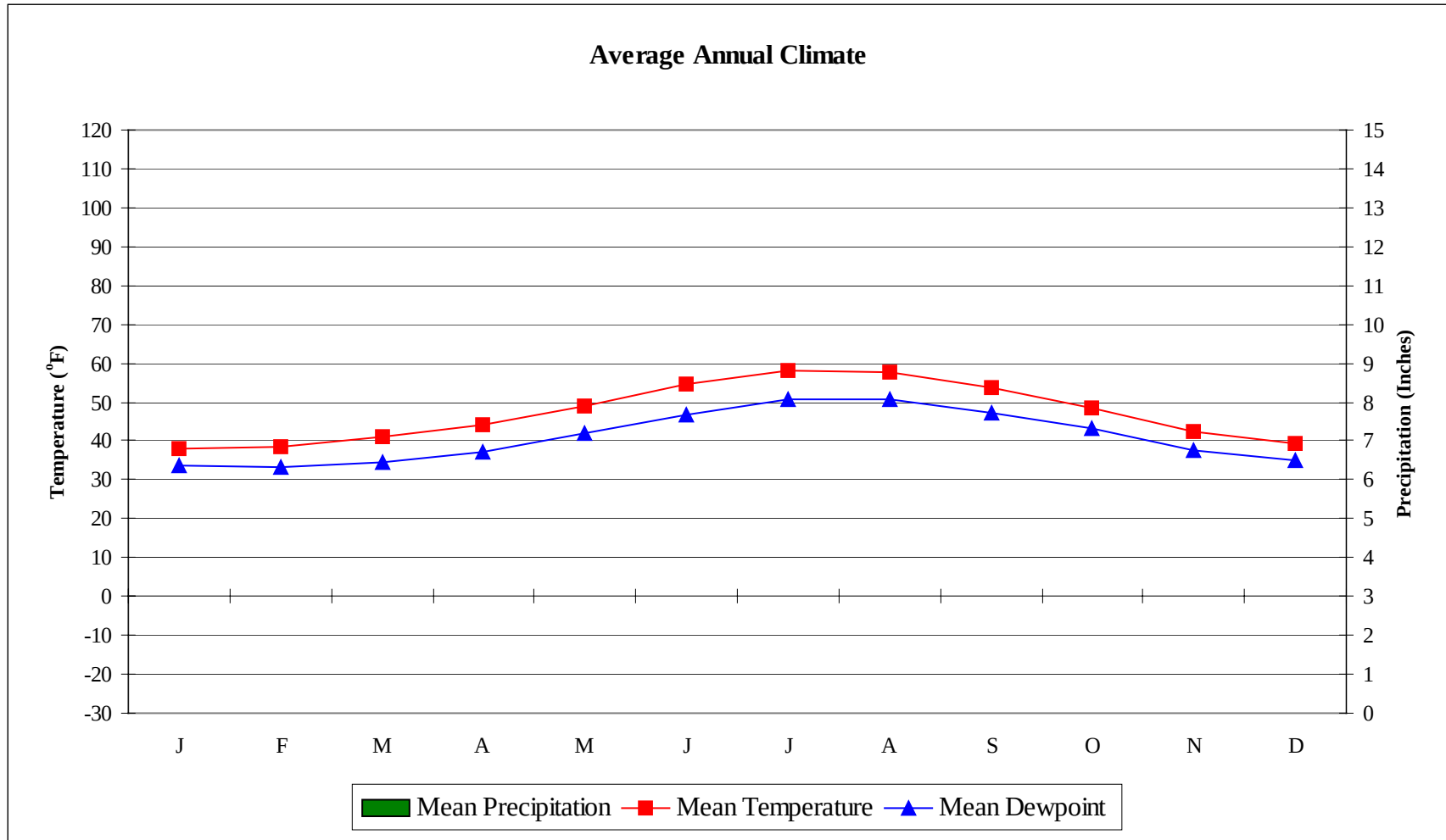
Other Site Data

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
6	N/A	N/A	0.0 + 0.0
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 (#)
49.7	N/A	N/A	39

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

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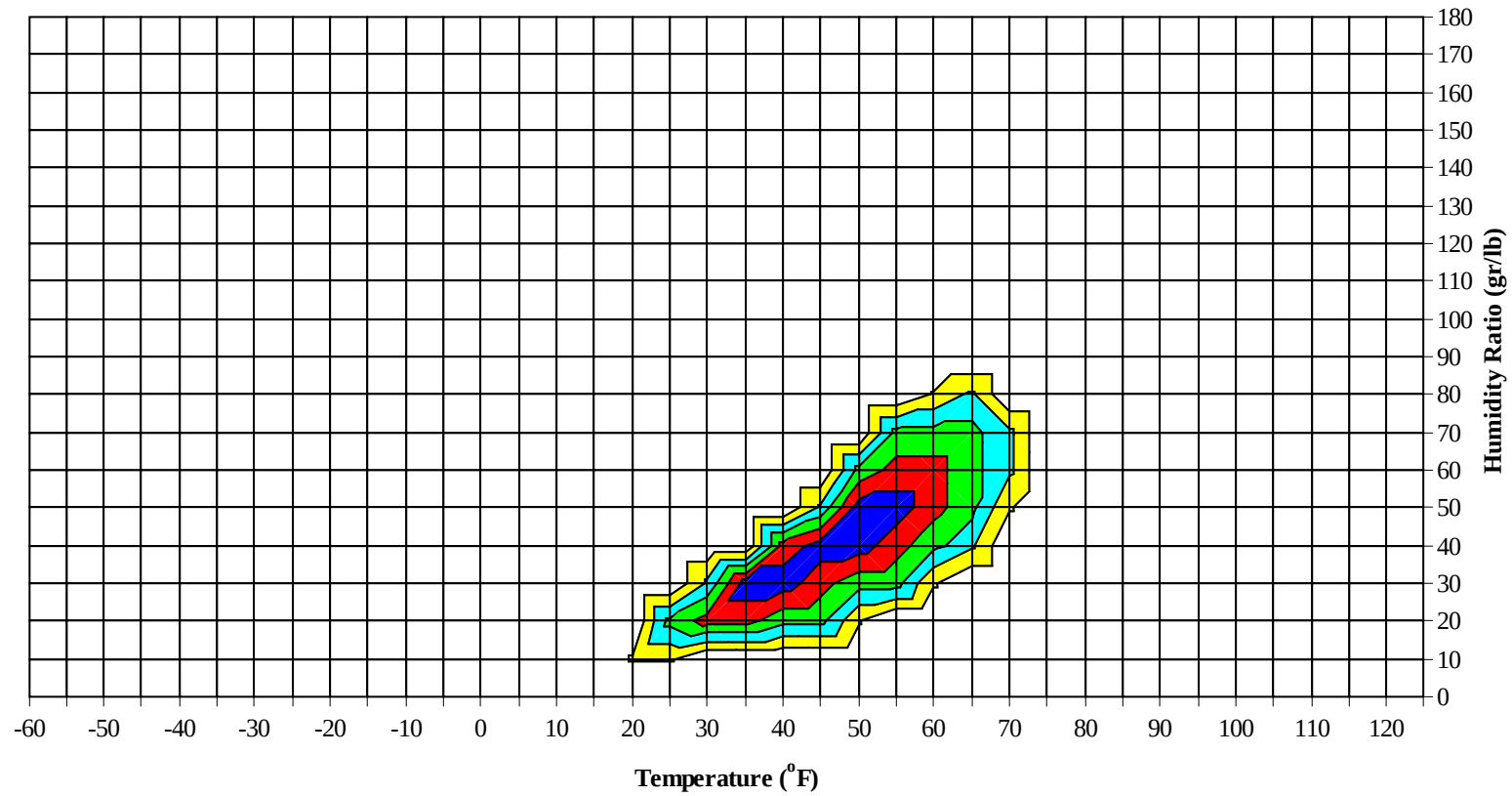


No Precipitation Data Available

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Long Term Psychrometric Summary

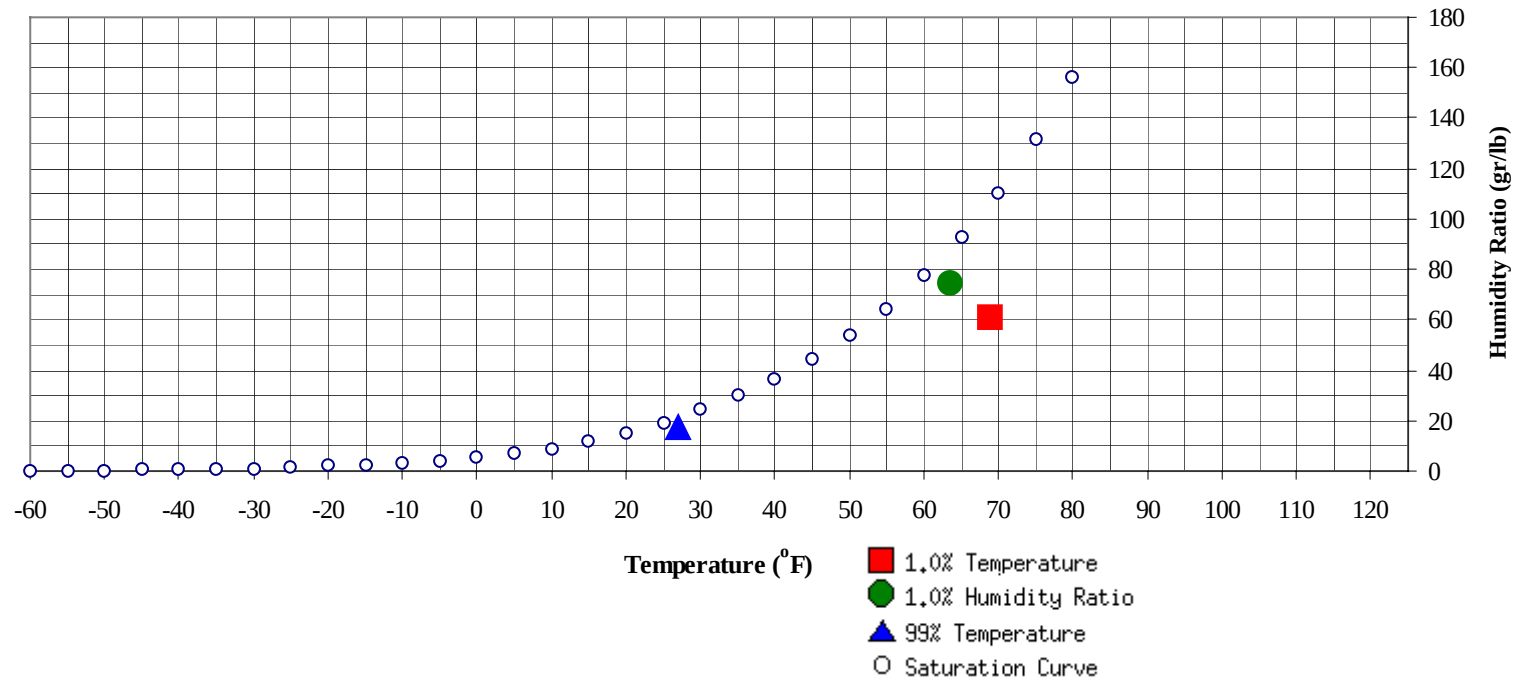


- 50% of all observations
- 80% of all observations
- 95% of all observations
- 97.5% of all observations
- 99% of all observations

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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)
	27	17.5	9.2		74.2	63.5	60.6	58.9	26.8

1.0% Dry Bulb	(°F)	MCHR (gr/lb)	MCWB (°F)	Enthalpy (btu/lb)
	69	61.4	59.7	26.1

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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		
85 / 89															
80 / 84															
75 / 79															
70 / 74															
65 / 69															
60 / 64															
55 / 59	0	1	0	1	50.4		2		2	50.0		0	1	0	52.3
50 / 54	8	13	11	32	47.9	4	14	7	25	47.2	7	36	15	58	46.7
45 / 49	29	39	28	96	43.8	19	42	25	86	43.4	27	76	45	148	42.6
40 / 44	45	61	50	156	39.6	45	66	53	164	39.4	63	79	80	222	39.2
35 / 39	85	86	90	261	35.2	78	71	83	233	34.9	91	42	79	212	35.2
30 / 34	56	36	50	142	31.1	55	24	45	124	30.9	51	6	24	81	31.1
25 / 29	17	8	14	39	25.9	16	4	8	28	26.1	9	0	3	12	26.4
20 / 24	5	2	3	10	21.3	4	1	1	6	21.6	1			1	22.0
15 / 19	2	1	1	4	17.0	2	0	1	3	16.8					
10 / 14	1	0	1	2	12.0	0	0	0	0	11.9					
5 / 9	0			0	8.3										

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.

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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		
85 / 89															
80 / 84													1	1	63.0
75 / 79													2	0	2 62.0
70 / 74		0	0	0	61.7		1	0	1	57.6		11	4	15	60.1
65 / 69		0	0	0	58.6		4	1	5	56.2	1	21	8	30	57.4
60 / 64		6	1	7	53.0	0	22	7	29	53.3	7	57	27	91	54.7
55 / 59	1	25	7	33	49.8	7	58	26	91	50.5	42	87	68	197	52.3
50 / 54	10	59	31	100	46.4	46	85	65	196	47.9	102	54	95	251	49.2
45 / 49	46	85	69	200	42.9	98	69	103	270	44.4	70	7	33	109	45.2
40 / 44	86	53	82	221	39.7	62	7	35	104	40.3	16	1	4	21	41.0
35 / 39	66	11	40	117	35.5	28	1	10	39	36.1	3	0	1	4	37.0
30 / 34	29	1	9	39	31.2	7		1	8	31.7					
25 / 29	2		0	2	27.2	0			0	27.7					
20 / 24															
15 / 19															
10 / 14															
5 / 9															

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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		
85 / 89							0		0	66.3					
80 / 84		0	0	0	64.8		1	0	1	64.6					
75 / 79		3	1	4	62.3		3	1	4	63.6		0	0	0	65.0
70 / 74	0	19	5	24	60.8		17	5	22	61.3		3	0	3	60.8
65 / 69	2	46	16	64	58.4	1	43	13	57	58.8		13	2	15	58.8
60 / 64	19	98	58	175	56.4	21	101	59	181	56.6	5	52	17	74	55.7
55 / 59	101	73	112	286	54.0	88	75	104	267	54.0	48	109	77	234	52.8
50 / 54	94	9	49	152	50.4	94	7	55	156	50.3	89	55	92	236	49.4
45 / 49	29	0	6	35	45.9	39		11	50	46.0	64	7	40	111	45.0
40 / 44	3		0	3	42.1	5		1	6	41.5	24	0	10	34	40.9
35 / 39						0			0	38.0	9	0	2	11	36.6
30 / 34											1			1	32.4
25 / 29															
20 / 24															
15 / 19															
10 / 14															
5 / 9															

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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		
85 / 89															
80 / 84															
75 / 79															
70 / 74		0	0	0	63.1										
65 / 69		1	0	1	59.6										
60 / 64	2	12	3	17	56.2		0	0	0	55.5					
55 / 59	15	56	23	94	52.6	4	10	3	17	52.9	1	2	2	5	52.0
50 / 54	70	105	87	262	49.3	23	44	24	91	48.6	15	20	16	51	48.3
45 / 49	71	55	72	198	44.3	55	77	66	198	44.3	39	48	41	128	44.1
40 / 44	48	15	39	102	40.2	54	58	57	170	39.7	55	69	58	181	39.7
35 / 39	30	3	20	53	36.2	56	36	57	150	35.4	70	68	71	209	35.4
30 / 34	11	0	4	15	31.7	37	13	27	77	31.2	47	32	42	120	31.2
25 / 29	1		0	1	27.3	9	2	4	15	26.5	15	7	14	36	26.0
20 / 24						1	0	1	2	21.8	5	2	4	11	21.5
15 / 19						0	0		0	17.7	1	0	1	2	17.1
10 / 14											1	0	0	1	12.1
5 / 9											0		0	0	9.0

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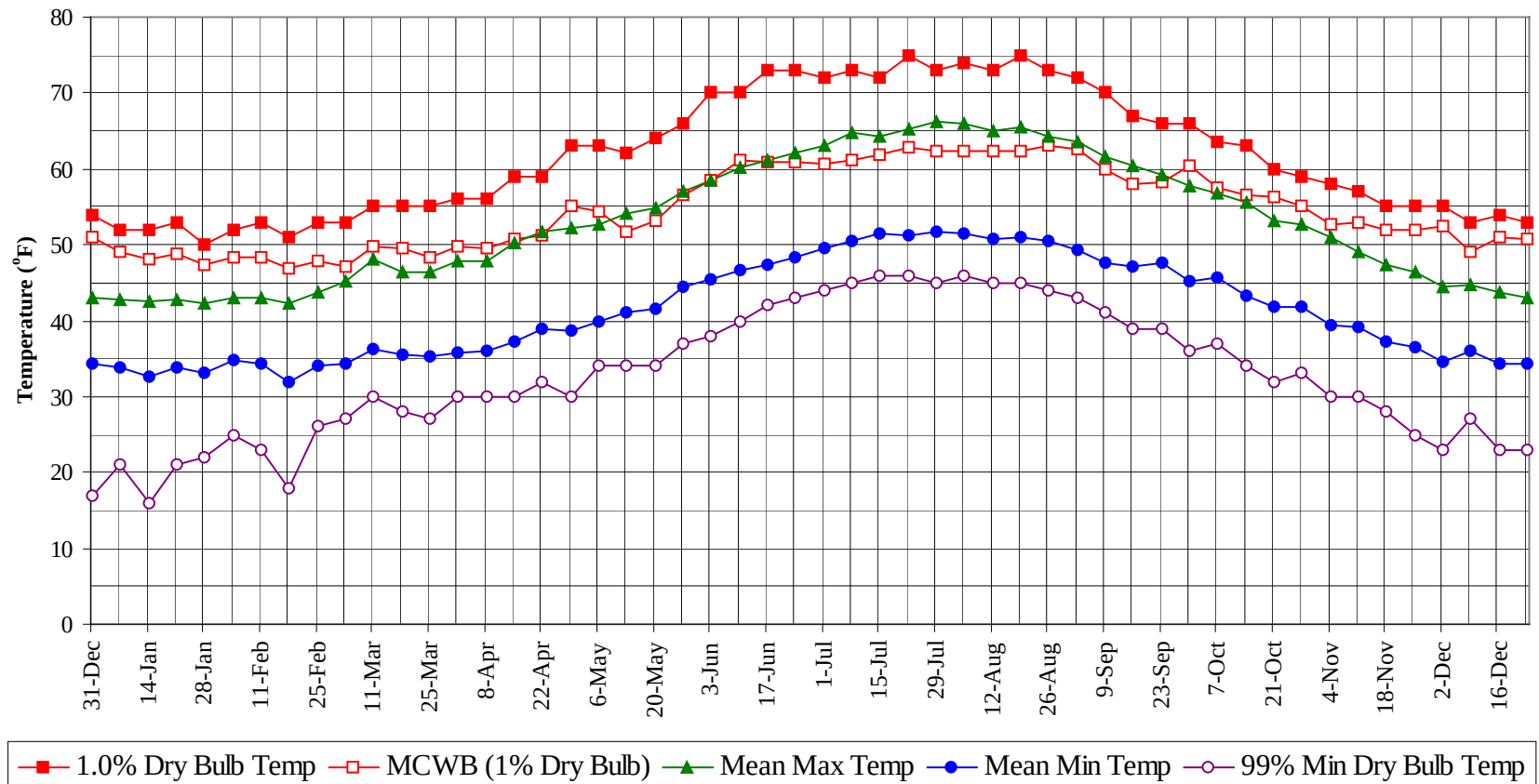
Dry-Bulb Temperature Hours For An Average Year (Sheet 5 of 5)

Period of Record = 1973 to 1996

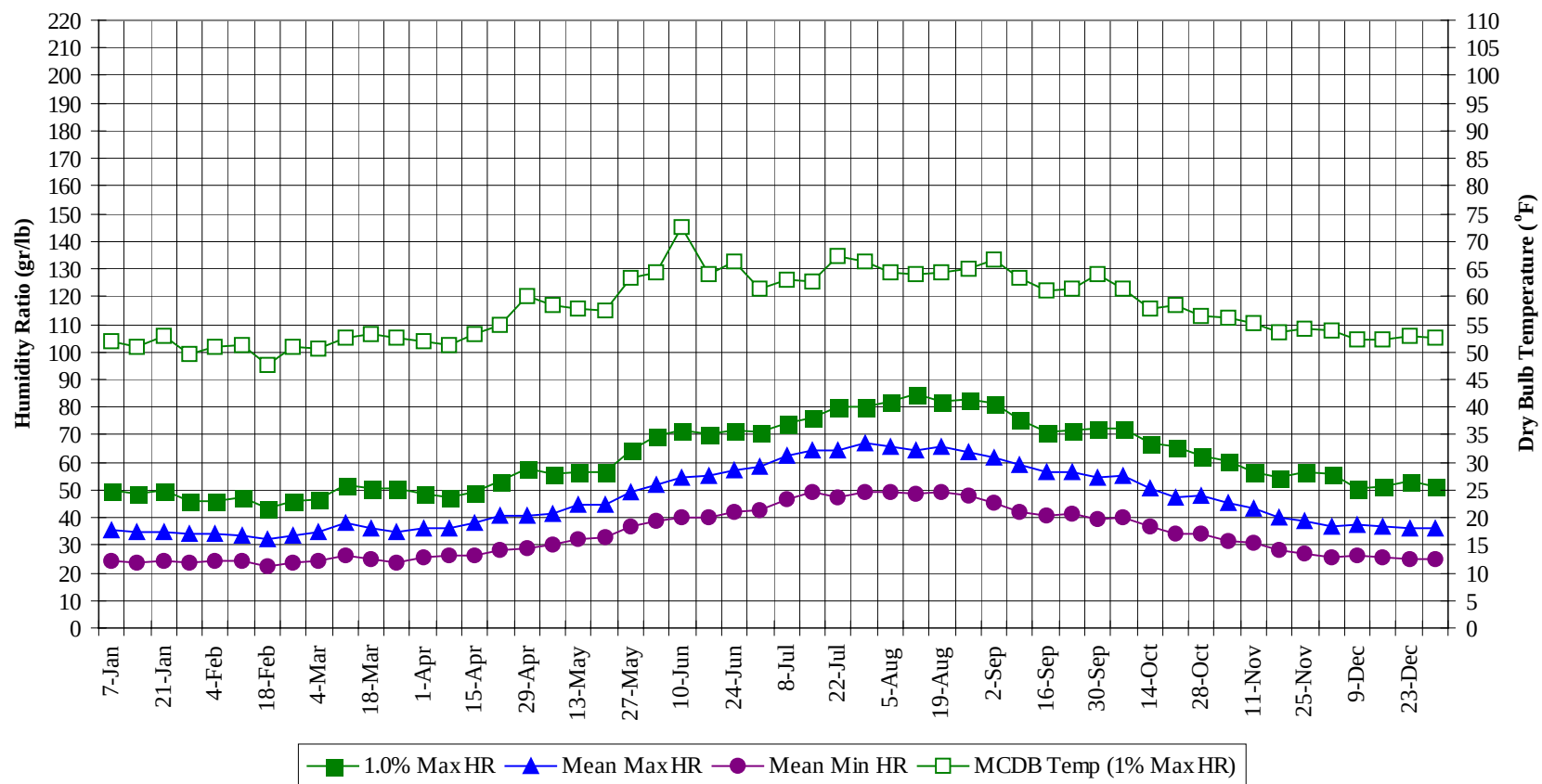
Annual Totals					
Temperature Range (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00		
85 / 89		0		0	66.3
80 / 84		2	0	2	64.1
75 / 79		9	2	11	62.8
70 / 74	0	52	14	66	60.8
65 / 69	3	129	41	173	58.3
60 / 64	53	349	172	574	55.9
55 / 59	307	506	425	1237	53.0
50 / 54	563	500	547	1610	48.9
45 / 49	586	506	539	1631	44.1
40 / 44	506	409	471	1385	39.7
35 / 39	518	319	453	1289	35.3
30 / 34	294	112	202	608	31.1
25 / 29	68	21	42	131	26.1
20 / 24	16	5	9	30	21.5
15 / 19	5	1	3	9	17.0
10 / 14	2	0	1	3	12.0
5 / 9	0		0	0	8.6

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Annual Summary of Temperatures



Long Term Humidity and Dry Bulb Temperature Summary

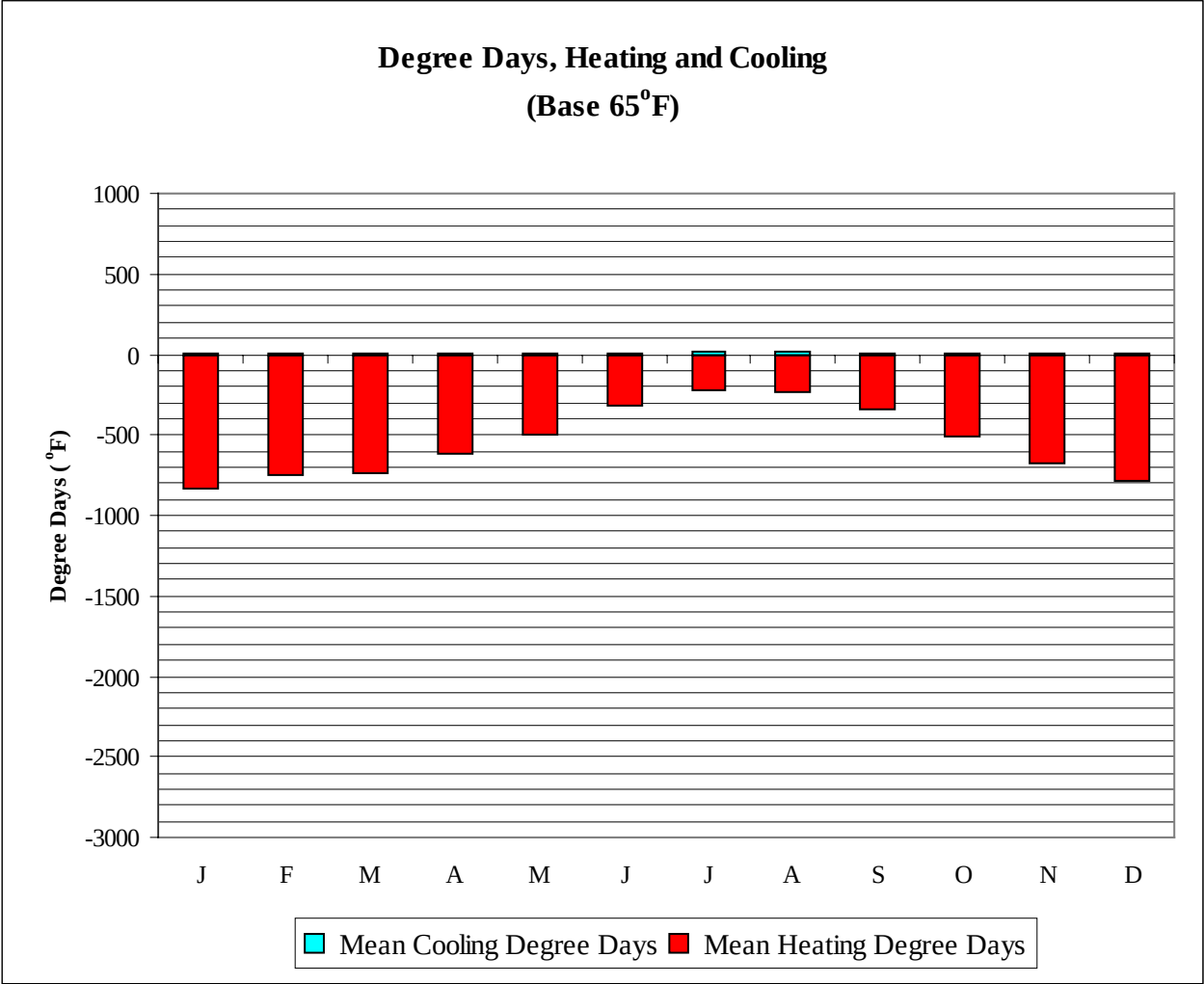


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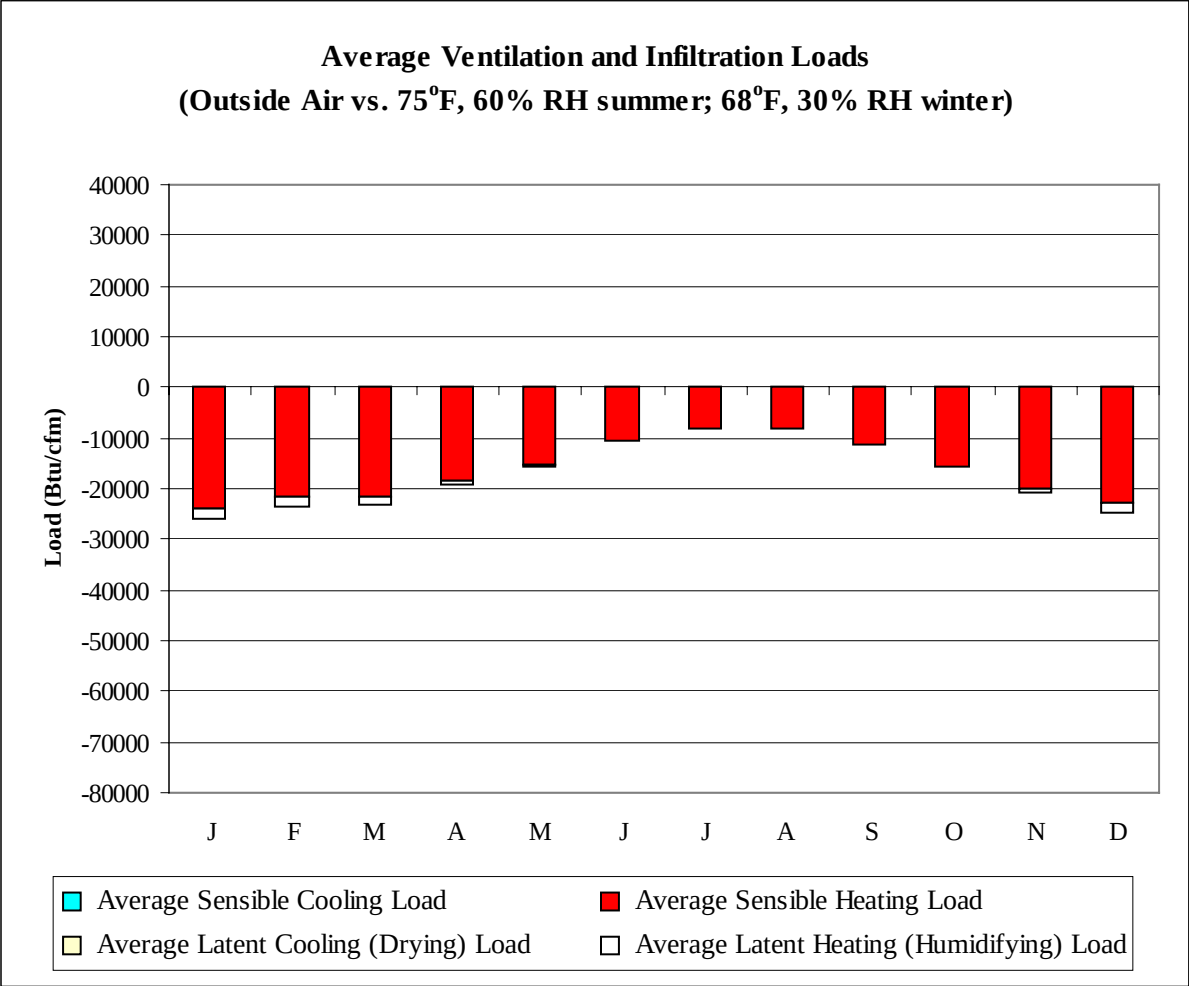
WMO No. 031710

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	52.0	49.1	42.8	33.7	21.0	49.7	51.8	35.4	24.4
14-Jan	52.0	48.1	42.5	32.6	16.0	48.3	50.8	34.7	23.5
21-Jan	53.0	48.9	42.8	33.9	21.0	49.7	52.9	34.9	24.3
28-Jan	50.0	47.3	42.2	33.2	22.0	46.2	49.4	34.0	23.6
4-Feb	52.0	48.3	43.0	34.7	25.0	46.2	50.8	34.5	24.4
11-Feb	53.0	48.4	42.9	34.4	23.0	47.6	51.3	33.8	24.5
18-Feb	51.0	46.8	42.3	31.8	18.0	43.4	47.5	32.3	22.2
25-Feb	53.0	48.0	43.7	34.1	26.0	46.2	51.0	33.4	23.8
4-Mar	53.0	47.3	45.2	34.3	27.0	46.9	50.7	35.0	24.5
11-Mar	55.0	49.8	48.1	36.2	30.0	51.8	52.6	38.0	26.3
18-Mar	55.0	49.6	46.3	35.4	28.0	50.4	53.2	35.9	25.0
25-Mar	55.0	48.4	46.5	35.3	27.0	50.4	52.6	35.0	23.9
1-Apr	56.0	49.9	47.9	35.9	30.0	48.3	52.0	36.3	25.5
8-Apr	56.0	49.4	47.7	36.1	30.0	47.6	51.2	36.2	26.0
15-Apr	59.0	50.8	50.3	37.2	30.0	49.0	53.1	38.0	26.4
22-Apr	59.0	51.3	51.8	38.9	32.0	53.2	54.9	40.5	28.5
29-Apr	63.0	55.0	52.3	38.7	30.0	58.1	60.0	40.6	28.9
6-May	63.0	54.4	52.6	39.9	34.0	56.0	58.4	41.7	30.3
13-May	62.0	51.8	54.1	41.2	34.0	56.7	57.7	44.4	32.3
20-May	64.0	53.1	54.8	41.5	34.0	56.7	57.4	44.9	32.8
27-May	66.0	56.5	57.1	44.4	37.0	64.4	63.2	49.0	36.7
3-Jun	70.0	58.6	58.6	45.5	38.0	69.3	64.3	52.2	38.8
10-Jun	70.0	61.2	60.1	46.6	40.0	71.4	72.5	54.5	40.0
17-Jun	73.0	60.9	61.2	47.4	42.0	70.0	64.1	55.2	39.9
24-Jun	73.0	60.9	62.2	48.4	43.0	71.4	66.5	57.1	42.3
1-Jul	72.0	60.8	63.2	49.5	44.0	70.7	61.3	58.4	42.9
8-Jul	73.0	61.1	64.8	50.6	45.0	74.2	63.0	62.4	46.6
15-Jul	72.0	61.8	64.3	51.6	46.0	76.3	62.9	64.1	49.0
22-Jul	75.0	62.8	65.3	51.2	46.0	79.8	67.3	64.1	47.1
29-Jul	73.0	62.5	66.3	51.7	45.0	79.8	66.2	66.8	49.6
5-Aug	74.0	62.4	66.0	51.5	46.0	81.9	64.5	65.7	49.3
12-Aug	73.0	62.3	65.0	50.8	45.0	84.7	64.1	64.7	48.5
19-Aug	75.0	62.3	65.5	51.0	45.0	81.9	64.5	65.5	49.0
26-Aug	73.0	63.1	64.2	50.5	44.0	82.6	65.0	63.9	47.6
2-Sep	72.0	62.6	63.6	49.4	43.0	81.2	66.7	61.8	45.2
9-Sep	70.0	60.0	61.5	47.7	41.0	75.6	63.3	59.4	42.4
16-Sep	67.0	58.1	60.5	47.2	39.0	70.7	61.0	56.8	40.5
23-Sep	66.0	58.2	59.3	47.5	39.0	71.4	61.3	56.8	41.6
30-Sep	66.0	60.4	57.7	45.1	36.0	72.1	63.9	54.8	39.6
7-Oct	63.5	57.6	56.8	45.6	37.0	72.1	61.5	55.2	39.9
14-Oct	63.0	56.4	55.6	43.2	34.0	67.2	57.7	50.8	36.8
21-Oct	60.0	56.2	53.1	41.8	32.0	65.8	58.4	47.6	34.2
28-Oct	59.0	55.1	52.8	41.9	33.0	62.3	56.5	48.0	34.2
4-Nov	58.0	52.7	51.1	39.4	30.0	60.2	56.2	45.3	31.4
11-Nov	57.0	53.0	49.2	39.1	30.0	56.7	55.3	43.3	31.1
18-Nov	55.0	52.0	47.4	37.2	28.0	54.6	53.7	40.1	28.3
25-Nov	55.0	52.1	46.3	36.4	25.0	56.7	54.0	38.7	26.8
2-Dec	55.0	52.4	44.6	34.5	23.0	56.0	54.0	37.0	25.7
9-Dec	53.0	49.0	44.7	35.9	27.0	50.4	52.2	37.3	26.3
16-Dec	54.0	51.1	43.7	34.4	23.0	51.1	52.3	36.7	25.8
23-Dec	53.0	50.7	43.1	34.3	23.0	53.2	52.8	36.2	25.1
31-Dec	54.0	51.0	43.1	34.3	17.0	51.1	52.7	35.9	25.0



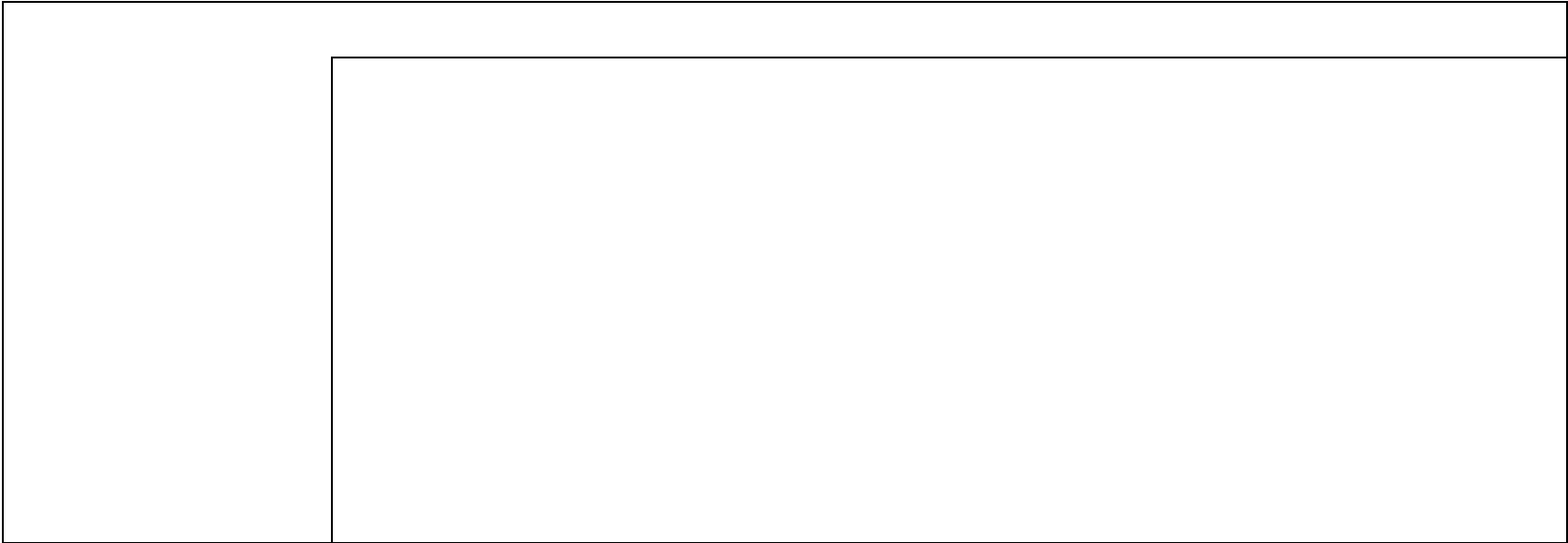
	Mean Cooling Degree Days (°F)	Mean Heating Degree Days (°F)
JAN	0	832
FEB	0	747
MAR	0	737
APR	0	620
MAY	1	501
JUN	7	319
JUL	12	226
AUG	12	236
SEP	2	346
OCT	0	508
NOV	0	676
DEC	0	789
ANN	35	6537



	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	-23975	0	-2062
FEB	0	-21562	0	-1944
MAR	0	-21500	0	-1615
APR	0	-18397	0	-1005
MAY	0	-15370	0	-306
JUN	7	-10484	1	-27
JUL	6	-8068	10	0
AUG	15	-8354	47	0
SEP	1	-11259	2	-37
OCT	0	-15578	0	-256
NOV	0	-19860	0	-1078
DEC	0	-22846	0	-1719
ANN	29	-197253	60	-10049

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

No Solar Radiation
Data Available

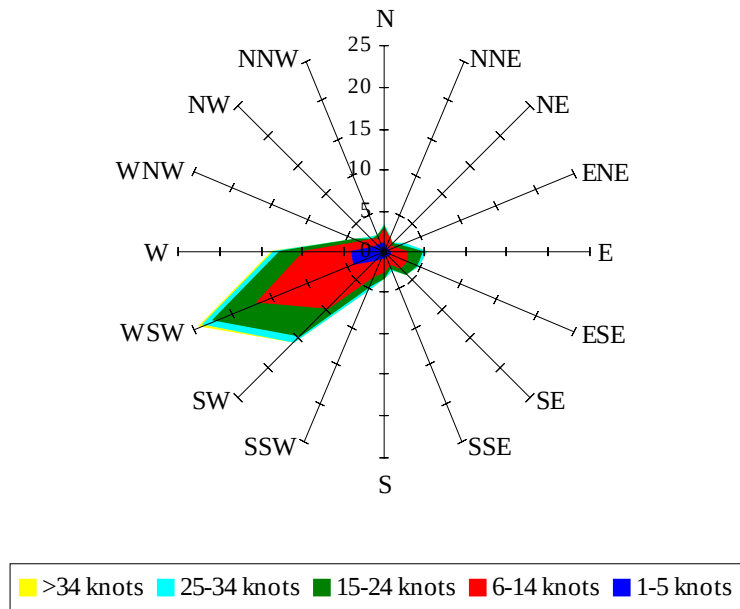


Average Annual Solar Heat and Illumination – Nearest Available Site

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

Wind Summary - December, January, and February

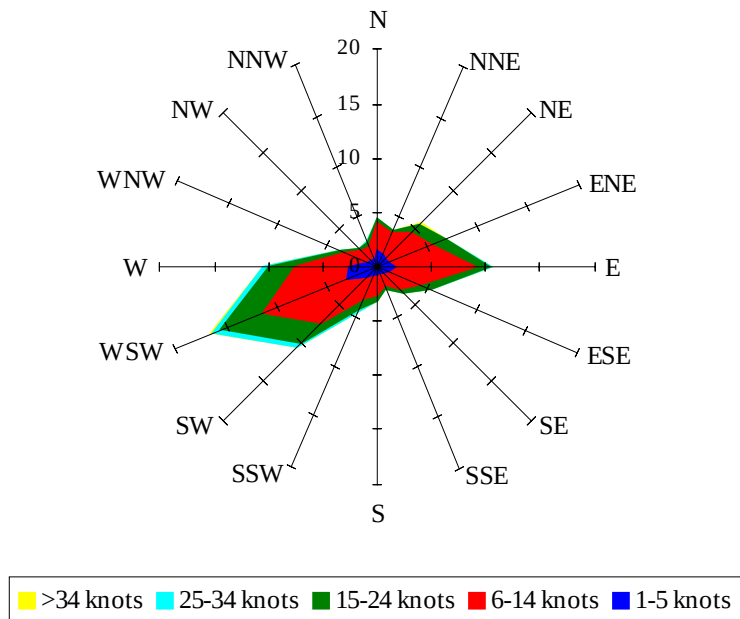
Labels of Percent Frequency on North Axis



Percent Calm = 5.55

Wind Summary - March, April, and May

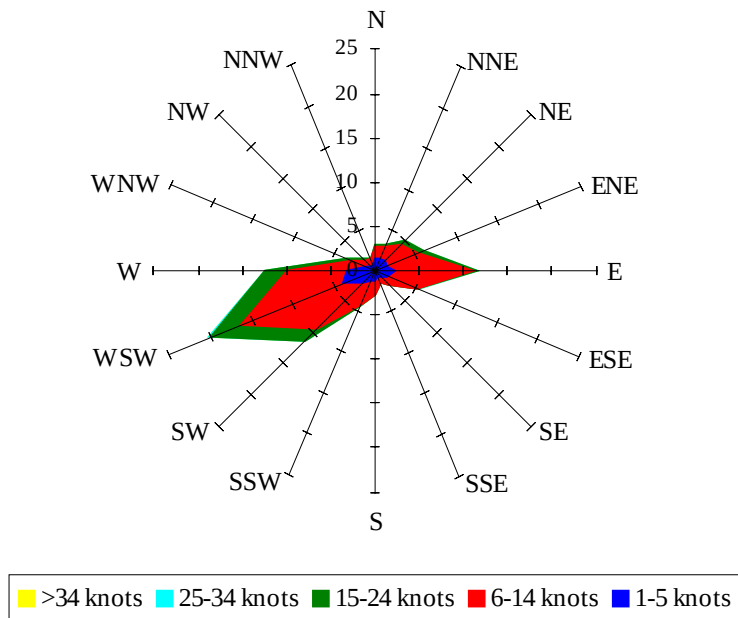
Labels of Percent Frequency on North Axis



Percent Calm = 4.52

Wind Summary - June, July, and August

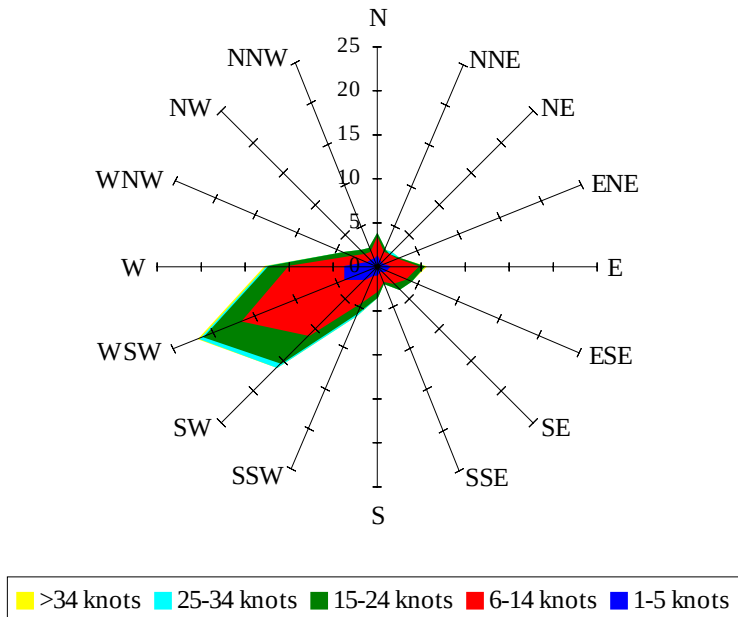
Labels of Percent Frequency on North Axis



Percent Calm = 5.25

Wind Summary - September, October, and November

Labels of Percent Frequency on North Axis



Percent Calm = 5.72