

AUGSBERG, GERMANY

Latitude = 48.43 N

Longitude = 10.93 E

Period of Record = 1973 to 1996

WMO No. 108520

Elevation = 1519 feet

Average Pressure = 28.38 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	90	68	72	5.8	E
0.4% Occurrence	84	66	70	6.4	E
1.0% Occurrence	81	64	70	6.4	E
2.0% Occurrence	77	63	69	6.5	E
Mean Daily Range	15	-	-	-	-
97.5% Occurrence	19	18	13	4.7	E
99.0% Occurrence	13	13	10	3.7	ENE
99.6% Occurrence	8	8	8	3.6	ENE
Median of Extreme Lows	5	5	7	3.9	ENE
	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	71	83	98	5.0	E
0.4% Occurrence	67	78	84	5.4	E
1.0% Occurrence	66	77	82	5.4	E
2.0% Occurrence	65	75	80	5.6	E
	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	107	76	0.68	3.5	NNW
0.4% Occurrence	94	70	0.60	4.3	W
1.0% Occurrence	89	70	0.57	4.5	WSW
2.0% Occurrence	85	68	0.54	4.8	W
Air Conditioning/ Humid Area Criteria	# of Hours	T ≥ 93°F	T ≥ 80°F	T _{wb} ≥ 73°F	T _{wb} ≥ 67°F
		1	113	1	66

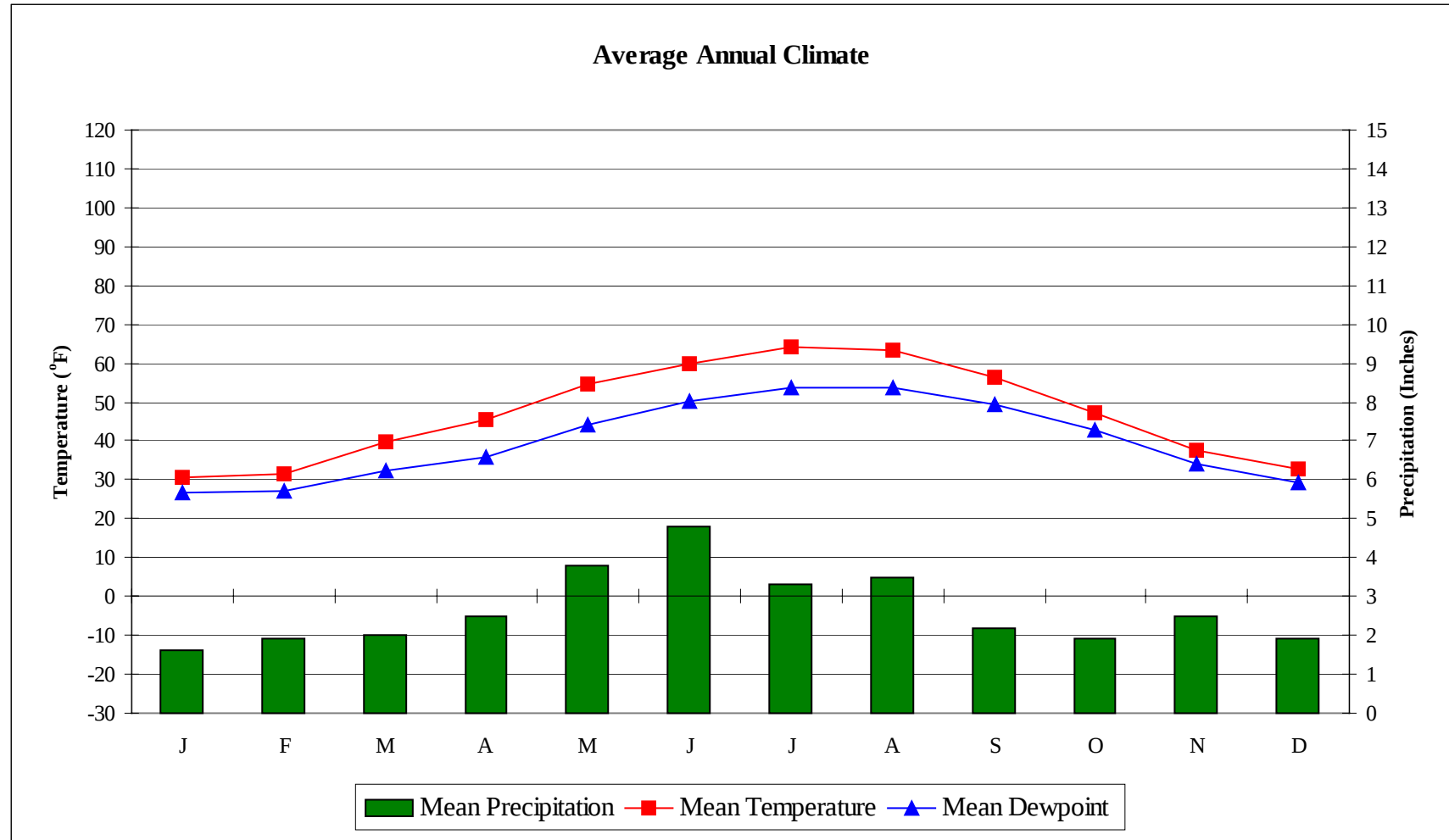
Other Site Data

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	0.1 + 0.1
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 (#)
49.5	N/A	N/A	49

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

AUGSBERG, GERMANY

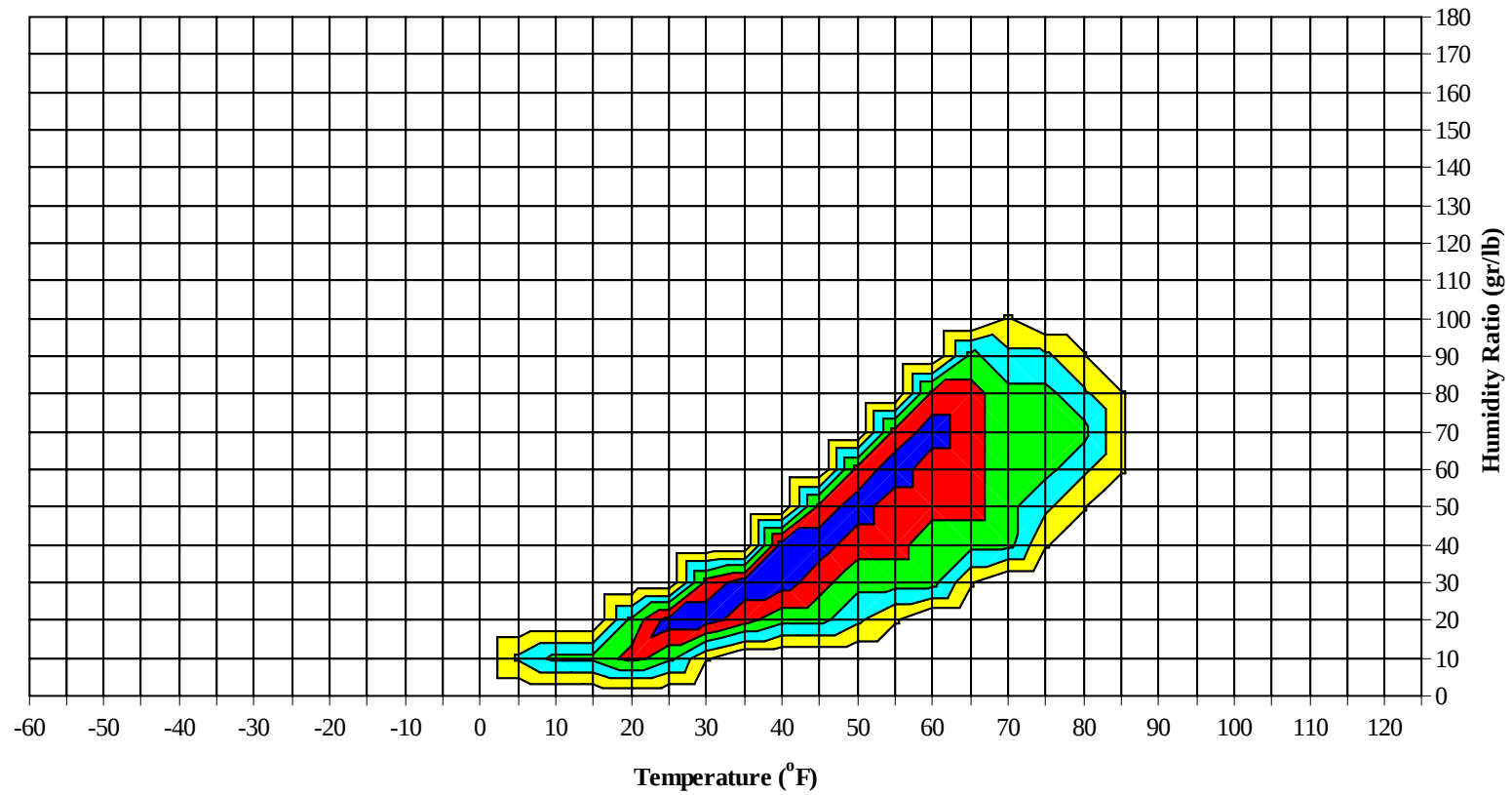
WMO No. 108520



AUGSBURG, GERMANY

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Long Term Psychrometric Summary

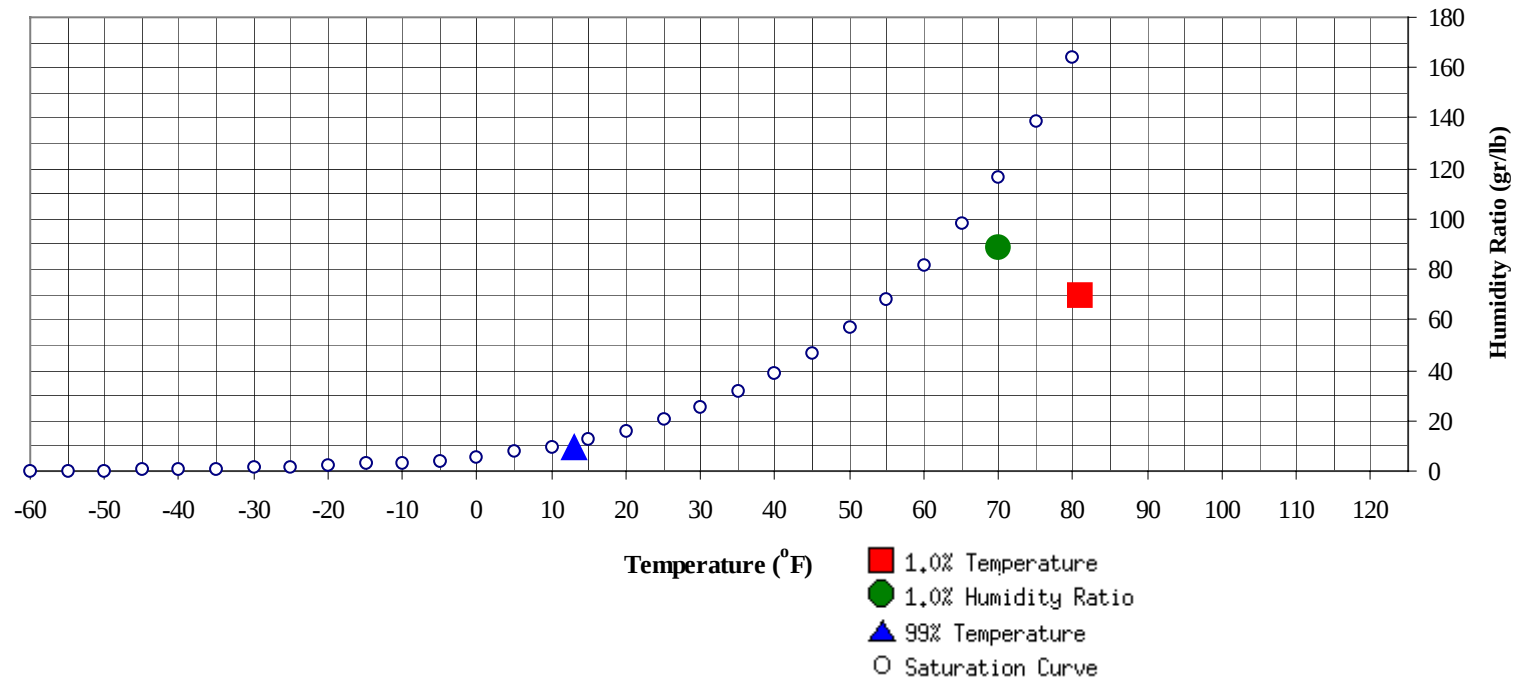


- 50% of all observations
- 80% of all observations
- 95% of all observations
- 97.5% of all observations
- 99% of all observations

AUGSBURG, GERMANY

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Psychrometric Summary of Peak Design Values



	(°F)	MCHR (gr/lb)	Enthalpy (btu/lb)	1.0% Humidity Ratio	(gr/lb)	MCDB (°F)	MCWB (°F)	MC Dewpt (°F)	Enthalpy (btu/lb)
99% Dry Bulb	13	9.6	4.6		88.9	69.9	64.9	62.4	30.6

1.0% Dry Bulb	(°F)	MCHR (gr/lb)	MCWB (°F)	Enthalpy (btu/lb)
	81	69.5	64.3	30.3

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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		
95 / 99															
90 / 94															
85 / 89															
80 / 84															
75 / 79															
70 / 74												1	0	1	54.0
65 / 69							0	0	0	48.8		2	1	3	52.9
60 / 64		0		0	48.3		1	0	1	48.8	0	8	4	12	50.5
55 / 59	0	1	0	1	47.0		2	1	3	46.9	0	19	11	31	47.9
50 / 54	2	5	3	10	45.9	1	8	4	13	45.0	6	29	25	61	45.5
45 / 49	8	19	11	38	42.6	3	17	11	31	42.1	23	47	42	112	42.3
40 / 44	19	26	26	72	39.2	16	30	26	73	38.8	38	42	45	124	38.7
35 / 39	39	47	46	132	35.2	34	43	45	123	35.1	56	53	57	165	34.7
30 / 34	66	65	68	198	30.7	63	58	65	185	30.7	77	33	46	156	30.7
25 / 29	47	40	46	133	26.0	50	35	38	123	25.9	32	11	13	55	25.9
20 / 24	24	19	18	61	21.4	21	17	16	54	20.9	10	3	3	16	21.1
15 / 19	19	15	14	48	16.7	16	8	10	34	16.4	5	1	1	7	16.7
10 / 14	12	7	8	27	11.6	10	3	5	18	11.4	1	0	0	1	12.3
5 / 9	7	3	4	14	6.9	6	2	2	10	6.9	0	0	0	0	7.3
0 / 4	2	1	1	4	1.7	2	1	0	3	2.2	0	0		0	0.9
-5 / -1	0	1	1	2	-2.7	1	0	0	1	-2.4					
-10 / -6	1	0	1	2	-7.7	0	0	0	0	-6.7					
-15 / -11	1	0	0	1	-11.6	0	0		0	-10.0					
-20 / -16	0	0		0	-16.0										

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.

AUGSBERG, GERMANY

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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	09	17			01	09	17			01	09	17		
	To 08	To 16	To 00			To 08	To 16	To 00			To 08	To 16	To 00		
95 / 99															
90 / 94															
85 / 89															
80 / 84															
75 / 79															
70 / 74															
65 / 69															
60 / 64															
55 / 59															
50 / 54															
45 / 49															
40 / 44															
35 / 39															
30 / 34															
25 / 29															
20 / 24															
15 / 19															
10 / 14															
5 / 9															
0 / 4															
-5 / -1															
-10 / -6															
-15 / -11															
-20 / -16															

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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		
95 / 99		0	0	0	68.3		0	0	0	67.0					
90 / 94		1	1	2	68.5		1	1	2	67.6		0		0	69.0
85 / 89		7	4	11	66.5		5	3	8	66.7		0	0	0	65.7
80 / 84		21	13	34	64.8		20	11	31	64.9		3	1	4	65.2
75 / 79	0	37	25	63	63.6		35	20	55	63.3		11	5	16	62.9
70 / 74	2	50	38	90	61.6	1	50	35	85	61.5		26	11	37	61.2
65 / 69	17	44	45	106	60.1	10	46	47	103	60.2	1	32	20	53	58.9
60 / 64	70	45	56	171	58.0	66	49	62	176	58.3	13	54	46	113	56.7
55 / 59	83	32	46	162	54.4	88	32	46	166	54.6	51	59	65	176	53.7
50 / 54	59	9	19	87	50.5	58	10	20	89	50.8	74	40	56	169	49.8
45 / 49	15	1	1	17	46.4	21	1	3	25	46.2	64	15	30	108	45.7
40 / 44	1			1	42.2	4	0	0	4	42.0	27	1	5	33	41.4
35 / 39						0			0	38.1	9	0	0	9	37.2
30 / 34											1			1	33.6
25 / 29															
20 / 24															
15 / 19															
10 / 14															
5 / 9															
0 / 4															
-5 / -1															
-10 / -6															
-15 / -11															
-20 / -16															

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AUGSBERG, GERMANY

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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		
95 / 99															
90 / 94															
85 / 89															
80 / 84		0		0	63.0										
75 / 79		1	0	1	61.4										
70 / 74		4	1	5	59.8										
65 / 69		9	2	11	57.6		0		0	51.0					
60 / 64	0	21	10	31	55.4	0	2	1	3	53.2		0	0	0	51.8
55 / 59	8	43	33	84	52.7	1	8	2	11	50.2	0	2	0	2	49.2
50 / 54	50	57	60	166	49.3	8	22	12	42	47.6	6	10	7	23	46.4
45 / 49	59	57	60	175	44.7	18	37	34	89	44.1	13	23	19	55	43.2
40 / 44	58	35	48	141	40.7	41	47	49	137	40.3	22	28	28	79	39.6
35 / 39	48	17	26	91	36.6	61	60	63	184	35.8	44	50	48	143	35.3
30 / 34	21	5	7	33	31.6	67	41	50	158	31.3	67	66	67	199	31.0
25 / 29	5	1	1	7	27.3	27	17	21	65	26.2	51	41	45	138	26.3
20 / 24	0			0	22.3	11	5	6	22	21.8	19	14	15	48	21.4
15 / 19						4	1	2	7	17.0	12	9	10	31	16.7
10 / 14						1	0	0	1	12.3	7	4	6	17	11.7
5 / 9						0	0		0	7.8	5	2	2	9	6.6
0 / 4											1	0	0	1	1.2
-5 / -1											0	0		0	-1.6
-10 / -6															
-15 / -11															
-20 / -16															

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

Period of Record = 1973 to 1996

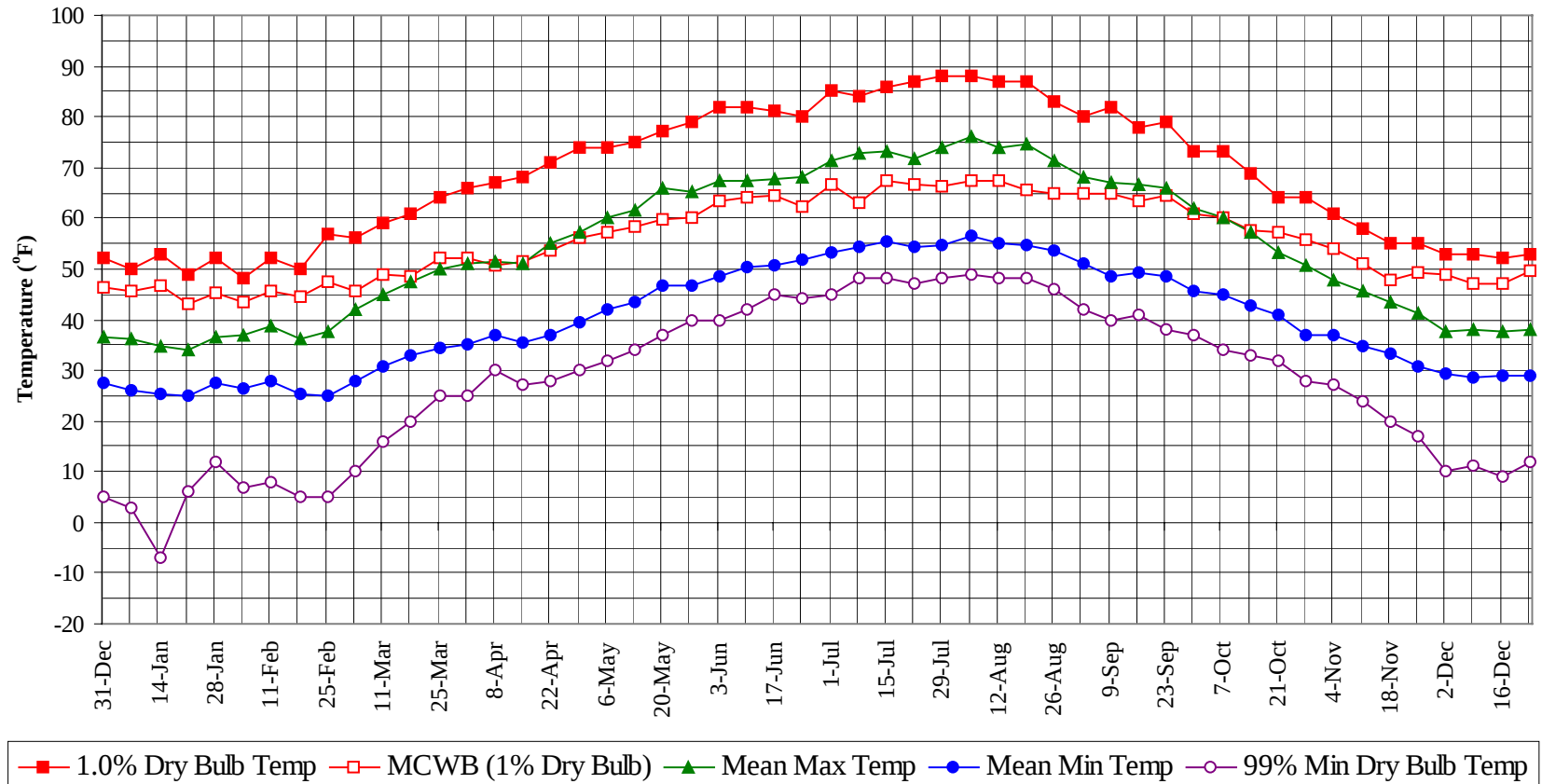
Annual Totals					
Temperature Range (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00		
95 / 99		0	0	0	68.1
90 / 94		2	2	4	68.1
85 / 89		14	8	22	66.5
80 / 84		54	32	86	64.7
75 / 79	0	118	73	192	62.8
70 / 74	3	197	129	329	60.5
65 / 69	34	212	171	418	58.6
60 / 64	188	305	282	775	56.4
55 / 59	336	328	338	1002	52.9
50 / 54	424	299	339	1062	48.8
45 / 49	383	294	315	992	44.1
40 / 44	335	260	287	883	39.8
35 / 39	378	299	331	1008	35.4
30 / 34	417	278	317	1012	30.9
25 / 29	219	146	166	532	26.1
20 / 24	87	58	59	203	21.3
15 / 19	56	33	38	127	16.6
10 / 14	31	14	20	65	11.6
5 / 9	18	7	9	34	6.8
0 / 4	6	2	2	10	1.7
-5 / -1	1	1	1	3	-2.4
-10 / -6	1	0	1	2	-7.6
-15 / -11	1	0	0	1	-11.4
-20 / -16	0	0		0	-16.0
					</

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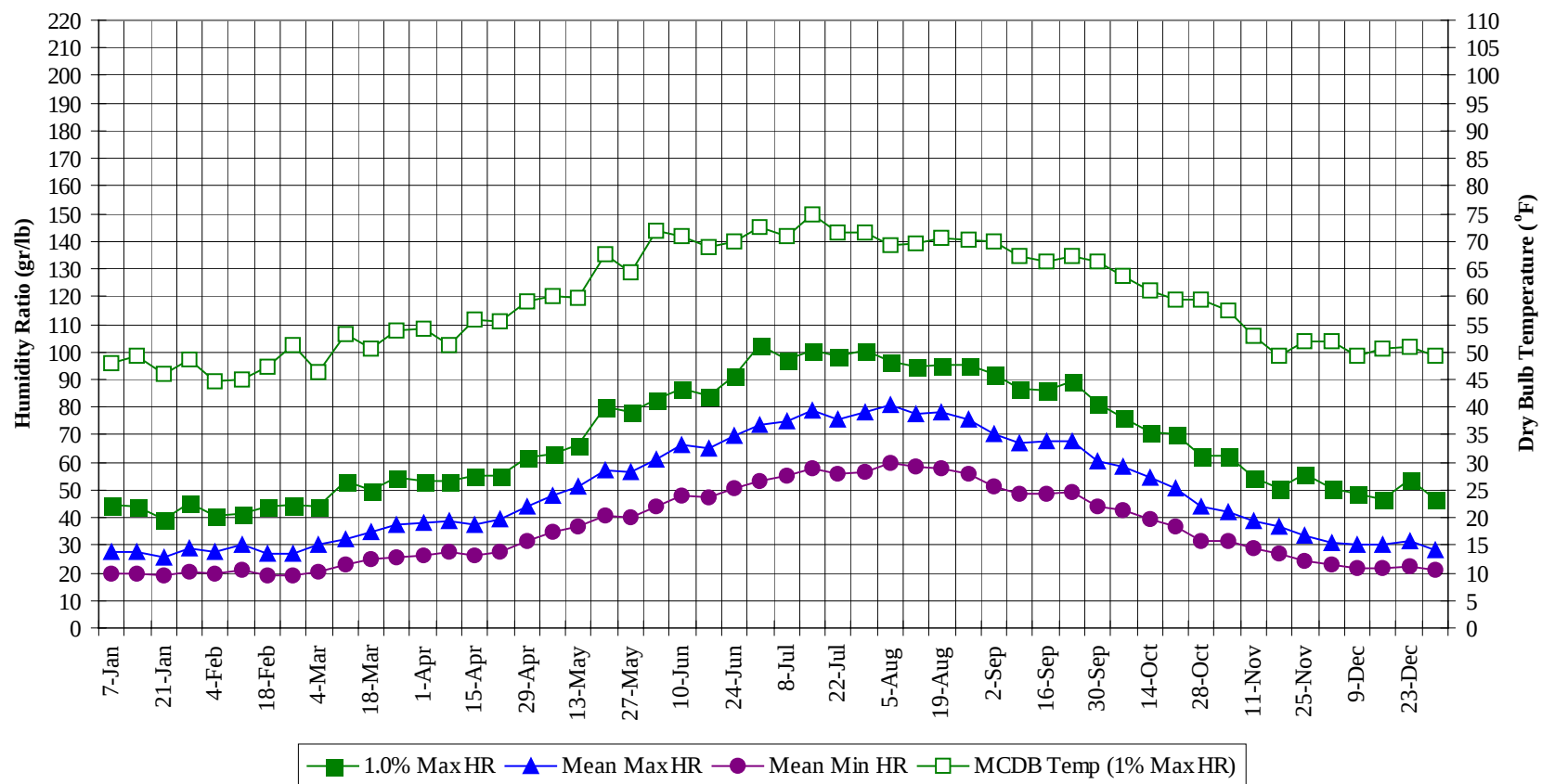
Annual Summary of Temperatures



AUGSBERG, GERMANY

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Long Term Humidity and Dry Bulb Temperature Summary



AUGSBERG, GERMANY

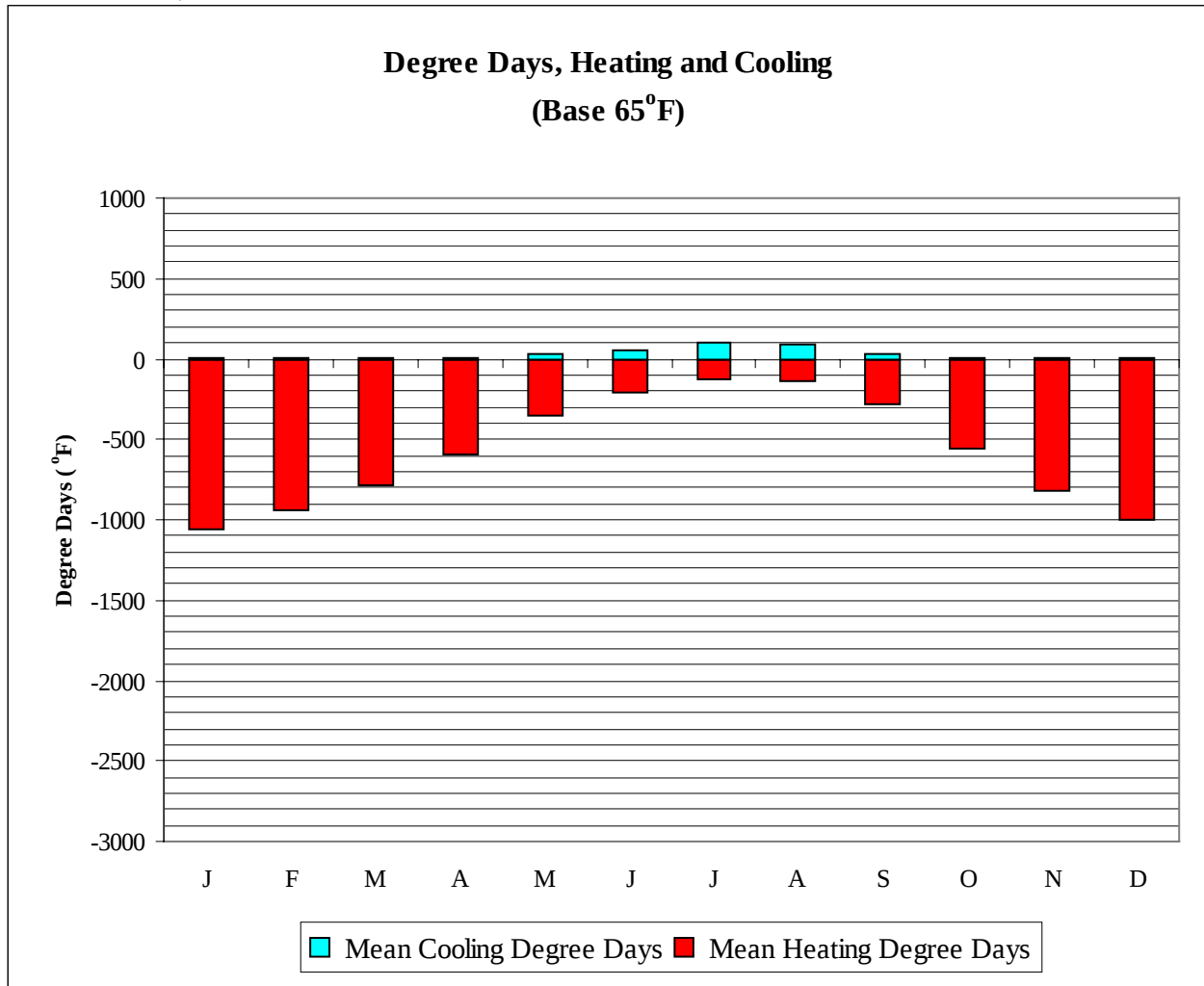
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Long Term Dry Bulb Temperature and Humidity Summary

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	50.0	45.7	36.3	26.0	3.0	44.8	47.9	27.7	19.5
14-Jan	53.0	46.9	34.9	25.2	-7.0	44.1	49.2	27.4	19.8
21-Jan	49.0	43.2	33.9	25.1	6.0	39.2	46.0	25.8	19.0
28-Jan	52.0	45.2	36.7	27.4	12.0	45.5	48.5	28.6	20.4
4-Feb	48.0	43.3	37.0	26.6	7.0	40.6	44.8	27.8	20.0
11-Feb	52.0	45.5	38.8	28.0	8.0	41.3	45.1	29.9	21.3
18-Feb	50.0	44.7	36.2	25.3	5.0	44.1	47.2	27.0	19.0
25-Feb	57.0	47.6	37.8	24.9	5.0	44.8	51.1	26.9	19.0
4-Mar	56.0	45.7	42.0	27.8	10.0	44.1	46.3	29.9	20.6
11-Mar	59.0	48.8	44.8	30.8	16.0	53.2	53.3	32.0	22.7
18-Mar	61.0	48.4	47.5	33.0	20.0	49.7	50.7	34.7	24.8
25-Mar	64.0	52.3	50.0	34.3	25.0	54.6	53.9	37.5	25.9
1-Apr	66.0	52.0	51.0	35.1	25.0	53.2	54.1	37.9	26.4
8-Apr	67.0	50.8	51.6	36.8	30.0	53.2	51.4	38.9	27.4
15-Apr	68.0	51.4	51.1	35.4	27.0	55.3	55.8	37.2	26.4
22-Apr	71.0	53.4	54.9	36.8	28.0	55.3	55.6	39.6	27.4
29-Apr	74.0	56.1	57.1	39.3	30.0	61.6	59.0	43.9	31.2
6-May	74.0	57.3	60.0	42.0	32.0	63.0	60.2	48.2	34.7
13-May	75.0	58.4	61.5	43.6	34.0	66.5	59.8	51.4	36.9
20-May	77.0	59.8	65.9	46.7	37.0	79.8	67.5	56.8	40.8
27-May	79.0	59.9	65.1	46.6	40.0	78.4	64.4	56.7	40.4
3-Jun	82.0	63.2	67.4	48.6	40.0	82.6	71.8	61.1	44.3
10-Jun	82.0	64.2	67.6	50.4	42.0	86.8	71.1	66.1	47.7
17-Jun	81.0	64.5	67.8	50.7	45.0	84.0	69.0	65.3	47.2
24-Jun	80.0	62.2	68.2	51.8	44.0	91.0	70.1	69.3	50.5
1-Jul	85.0	66.6	71.3	53.2	45.0	102.2	72.5	73.8	53.2
8-Jul	84.0	63.0	72.7	54.5	48.0	97.3	70.8	74.6	55.2
15-Jul	86.0	67.3	73.4	55.4	48.0	100.8	74.8	78.8	57.9
22-Jul	87.0	66.6	71.9	54.4	47.0	98.7	71.7	75.2	55.8
29-Jul	88.0	66.1	73.8	54.9	48.0	100.8	71.6	78.1	56.6
5-Aug	88.0	67.2	76.3	56.4	49.0	96.6	69.2	80.8	59.6
12-Aug	87.0	67.3	74.0	55.0	48.0	94.5	69.7	77.7	58.5
19-Aug	87.0	65.5	74.8	54.7	48.0	95.2	70.8	78.4	57.7
26-Aug	83.0	64.9	71.3	53.5	46.0	95.2	70.4	75.4	55.6
2-Sep	80.0	64.8	68.2	51.1	42.0	91.7	70.0	70.4	51.5
9-Sep	82.0	64.7	66.9	48.6	40.0	86.8	67.4	66.9	48.3
16-Sep	78.0	63.3	66.5	49.4	41.0	86.1	66.2	67.5	48.9
23-Sep	79.0	64.4	65.8	48.4	38.0	89.6	67.4	67.4	48.9
30-Sep	73.0	60.9	62.0	45.6	37.0	81.2	66.4	60.4	43.9
7-Oct	73.0	60.2	60.2	44.7	34.0	76.3	63.8	58.6	42.7
14-Oct	69.0	57.4	57.2	42.6	33.0	70.7	61.2	54.4	39.1
21-Oct	64.0	57.1	53.3	40.8	32.0	70.0	59.4	50.4	36.9
28-Oct	64.0	55.9	50.8	37.0	28.0	62.3	59.4	44.1	31.8
4-Nov	61.0	53.8	47.7	36.8	27.0	62.3	57.3	42.3	31.3
11-Nov	58.0	51.0	45.5	34.7	24.0	54.6	53.0	39.1	28.8
18-Nov	55.0	47.8	43.5	33.5	20.0	50.4	49.3	36.5	26.7
25-Nov	55.0	49.3	41.4	30.6	17.0	56.0	51.8	33.6	24.3
2-Dec	53.0	48.9	37.5	29.3	10.0	50.4	51.7	30.7	23.1
9-Dec	53.0	47.2	38.1	28.4	11.0	48.3	49.1	30.4	22.0
16-Dec	52.0	46.9	37.7	28.9	9.0	46.9	50.5	30.1	21.8
23-Dec	53.0	49.5	38.0	28.8	12.0	53.9	51.0	31.2	22.2
31-Dec	52.0	46.5	36.6	27.4	5.0	46.9	49.2	28.6	21.0

AUGSBERG, GERMANY

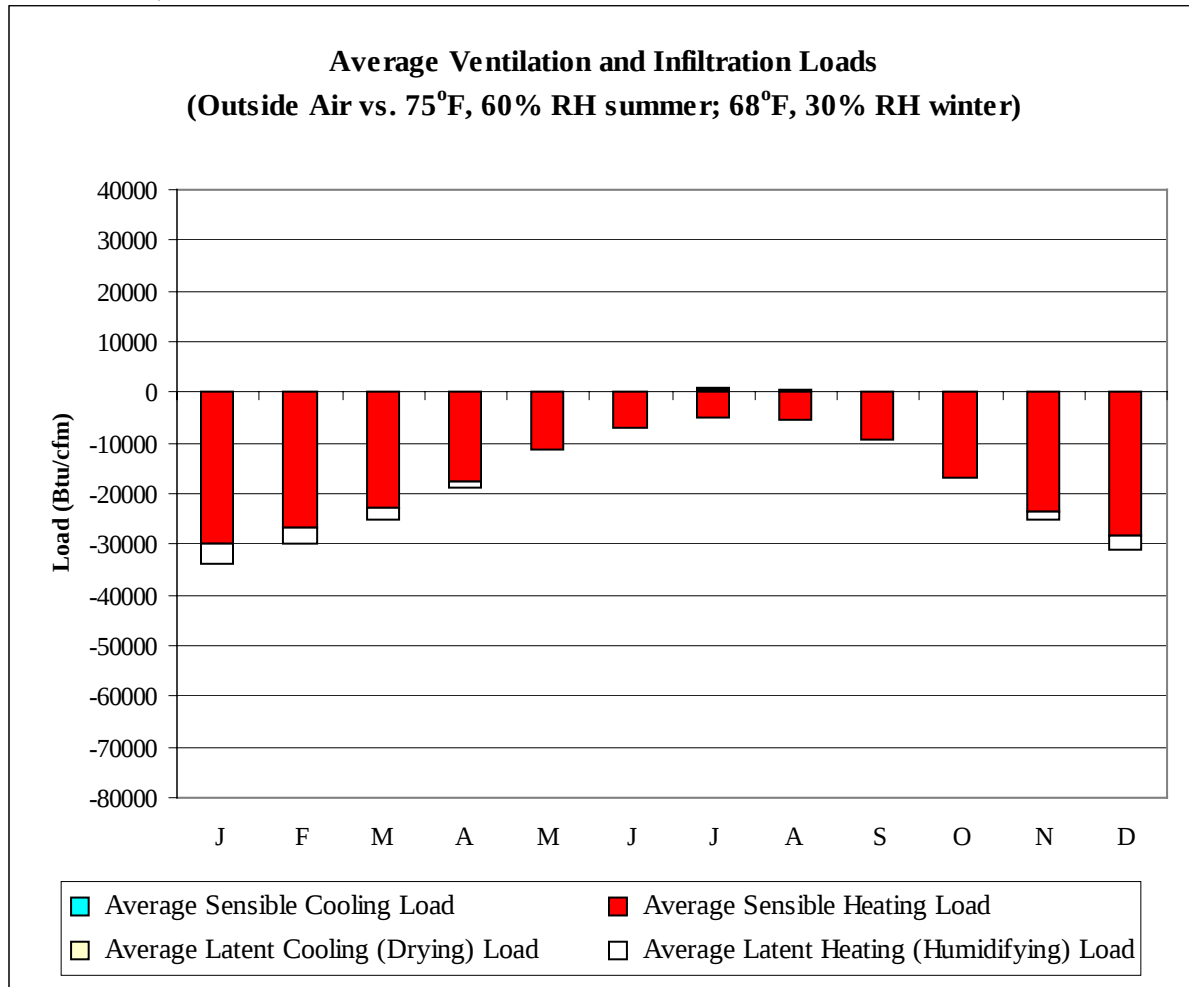
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	Mean Cooling Degree Days (°F)	Mean Heating Degree Days (°F)
JAN	0	1061
FEB	0	939
MAR	0	786
APR	4	592
MAY	24	348
JUN	55	205
JUL	98	128
AUG	89	141
SEP	25	283
OCT	3	552
NOV	0	816
DEC	0	997
ANN	297	6848

AUGSBERG, GERMANY

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	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	-29915	0	-3761
FEB	0	-26524	0	-3503
MAR	0	-22765	0	-2186
APR	2	-17612	0	-1081
MAY	39	-11136	1	-169
JUN	209	-7114	99	-6
JUL	523	-4851	330	0
AUG	445	-5266	203	0
SEP	65	-9384	35	-12
OCT	2	-16673	0	-297
NOV	0	-23478	0	-1581
DEC	0	-28251	0	-2984
ANN	1285	-202969	668	-15580

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

No Solar Radiation
Data Available

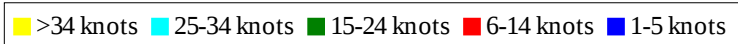
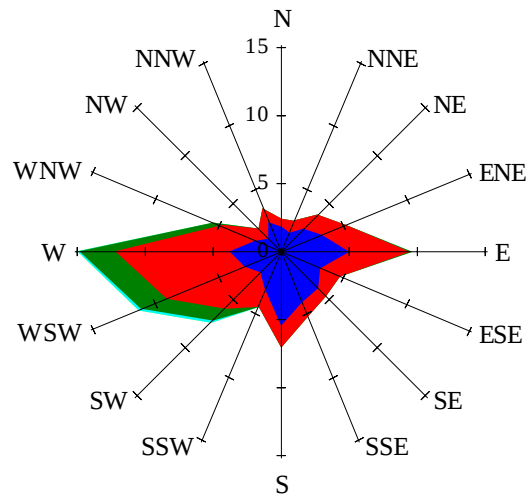


Average Annual Solar Heat and Illumination – Nearest Available Site

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

Wind Summary - December, January, and February

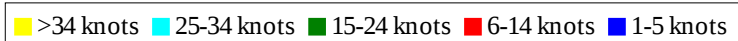
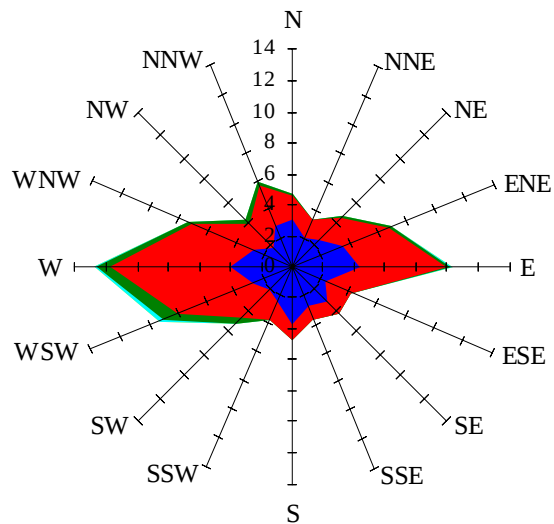
Labels of Percent Frequency on North Axis



Percent Calm = 7.79

Wind Summary - March, April, and May

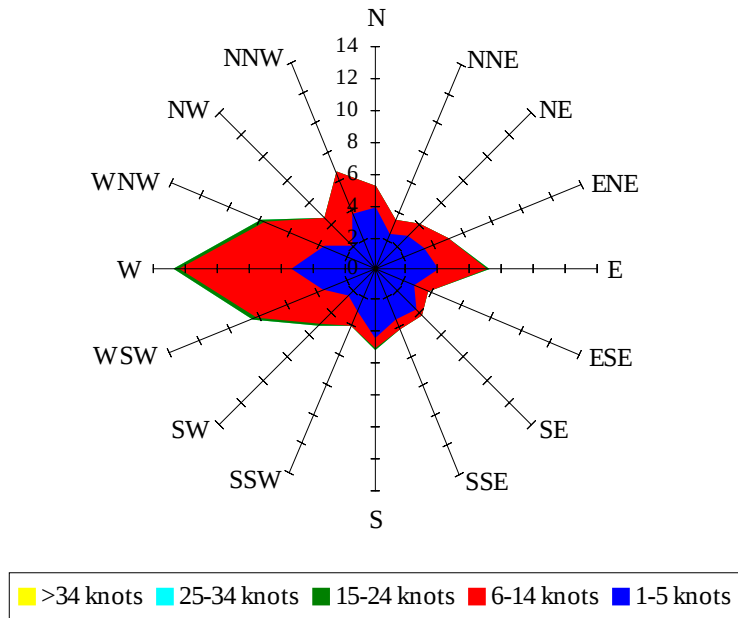
Labels of Percent Frequency on North Axis



Percent Calm = 6.57

Wind Summary - June, July, and August

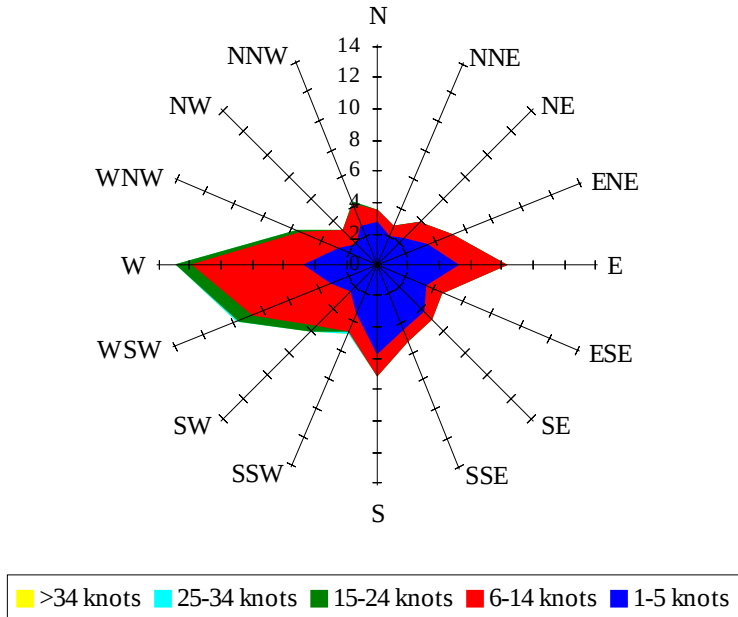
Labels of Percent Frequency on North Axis



Percent Calm = 10.48

Wind Summary - September, October, and November

Labels of Percent Frequency on North Axis



Percent Calm = 9.89