

SOESTERBERG, NETHERLANDS

Latitude = 52.13 N

Longitude = 5.27 E

Period of Record = 1973 to 1996

WMO No. 062650

Elevation = 43 feet

Average Pressure = 29.90 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	89	69	72	10.7	E
0.4% Occurrence	84	67	70	9.3	E
1.0% Occurrence	79	64	67	9.0	E
2.0% Occurrence	75	63	66	9.0	E
Mean Daily Range	14	-	-	-	-
97.5% Occurrence	25	24	16	6.4	E
99.0% Occurrence	20	19	13	6.0	E
99.6% Occurrence	16	15	10	6.1	E
Median of Extreme Lows	10	9	8	6.7	NE
	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	82	93	8.8	S
0.4% Occurrence	68	79	83	8.5	E
1.0% Occurrence	66	75	79	8.2	E
2.0% Occurrence	64	72	75	8.1	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	103	75	0.69	6.4	N
0.4% Occurrence	91	71	0.61	7.1	SW
1.0% Occurrence	85	69	0.57	7.5	WSW
2.0% Occurrence	80	67	0.54	7.5	SW
Air Conditioning/ Humid Area Criteria	# of Hours	T ≥ 93°F	T ≥ 80°F	T _{wb} ≥ 73°F	T _{wb} ≥ 67°F
		1	84	2	78

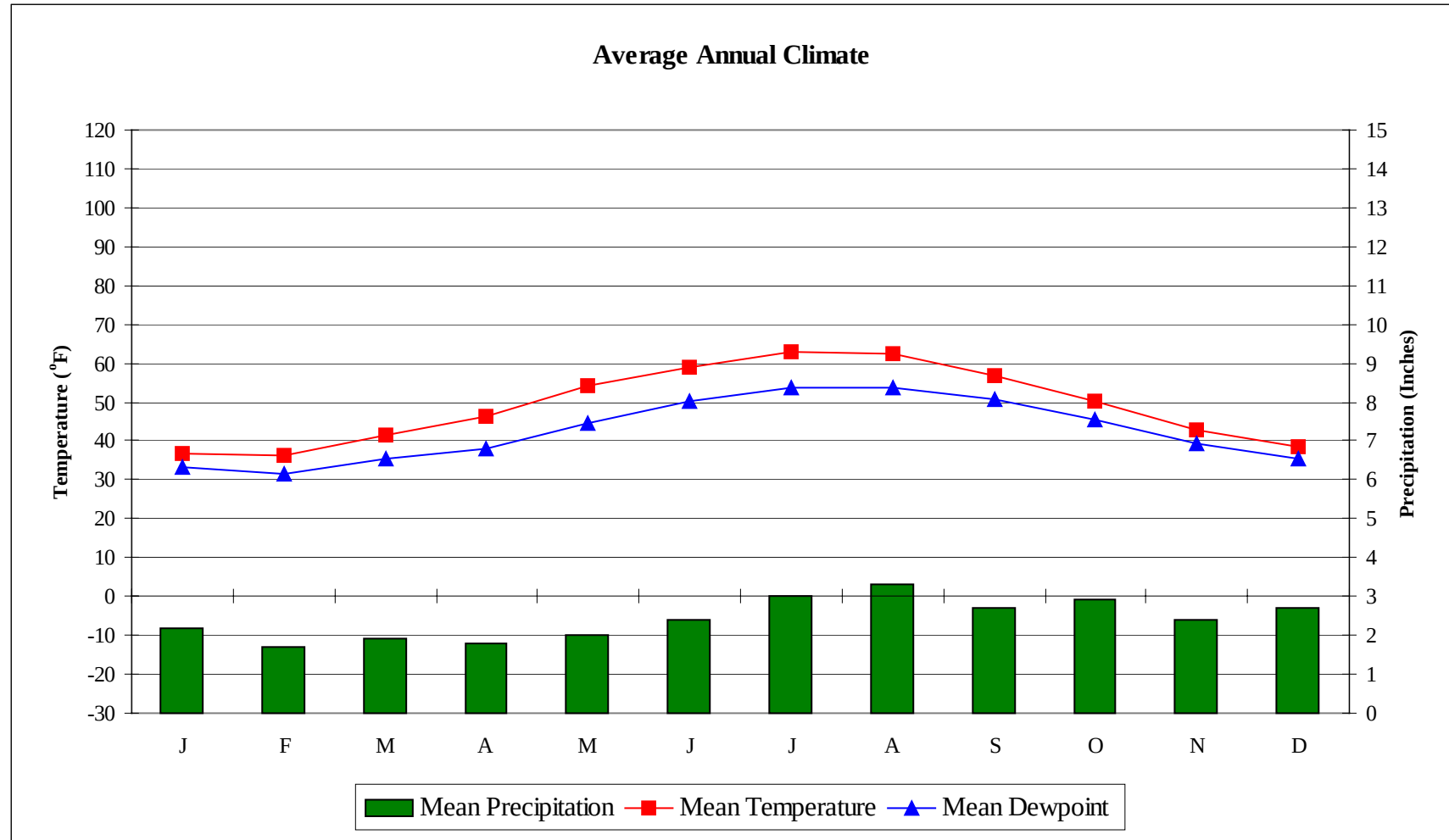
Other Site Data

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 (#)
51.6	N/A	N/A	42

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

SOESTERBERG, NETHERLANDS

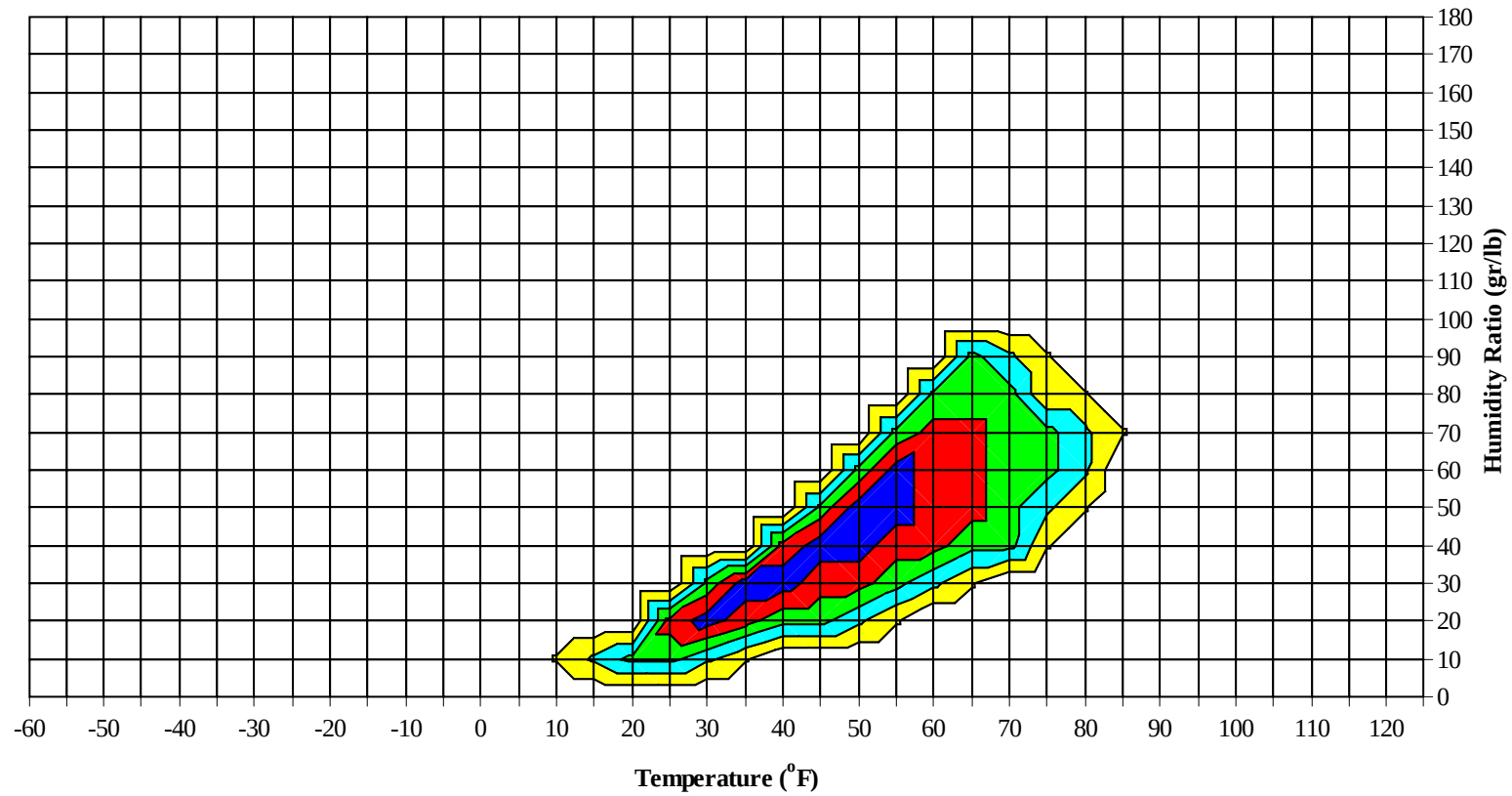
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Long Term Psychrometric Summary

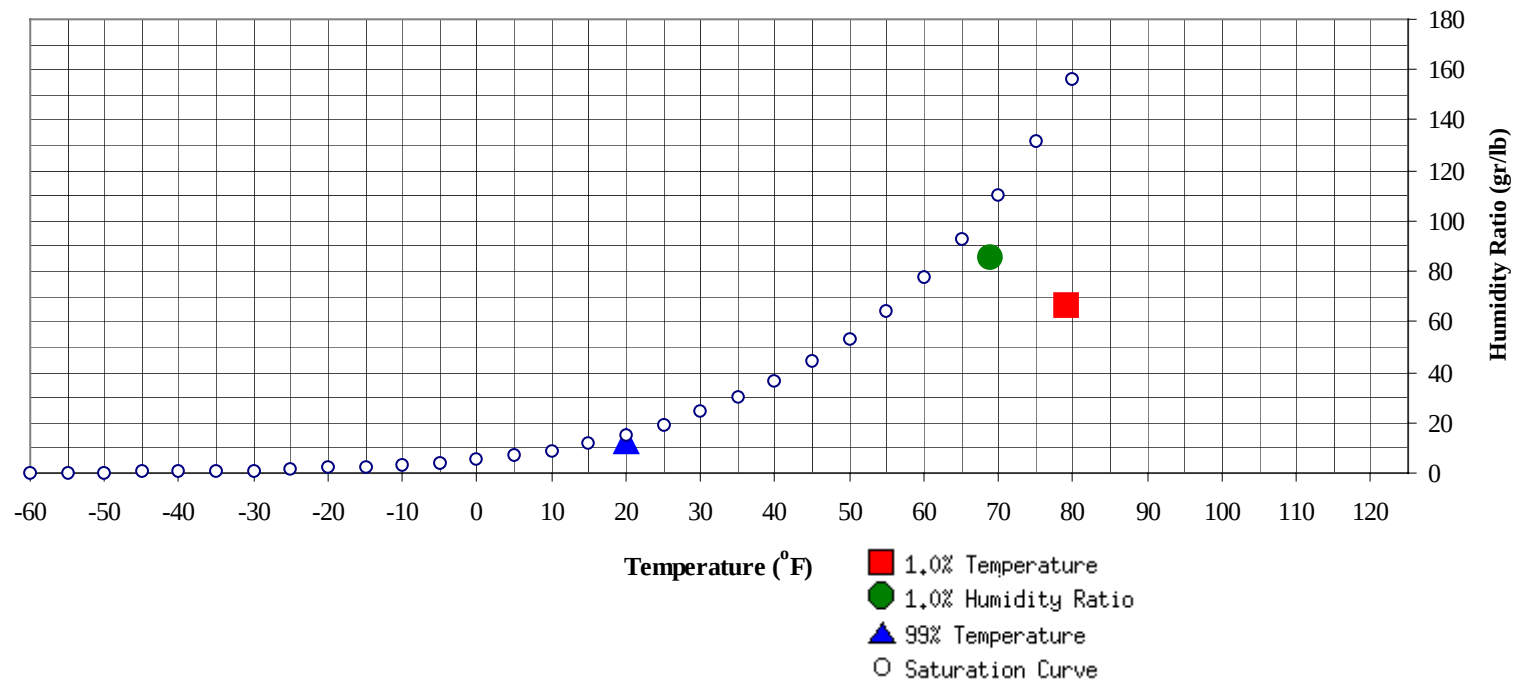


- 50% of all observations
- 80% of all observations
- 95% of all observations
- 97.5% of all observations
- 99% of all observations

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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)
	20	12.4	6.7		85.4	69	64.9	62.6	29.9

1.0% Dry Bulb	(°F)	MCHR (gr/lb)	MCWB (°F)	Enthalpy (btu/lb)
	79	66.3	64.2	29.3

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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												0	0	0	55.9
65 / 69												1	0	1	53.8
60 / 64							0	0	0	53.8	0	5	2	7	51.6
55 / 59	0	0	1	1	49.8	0	3	2	5	50.5	1	13	9	23	49.5
50 / 54	9	13	10	32	48.5	3	14	7	24	47.5	9	41	26	76	46.8
45 / 49	31	46	40	117	44.3	22	41	32	95	43.9	38	72	57	167	43.4
40 / 44	49	57	52	158	40.1	35	44	44	123	39.9	56	62	65	183	39.6
35 / 39	61	58	59	178	36.0	48	52	51	151	35.3	63	37	57	157	35.7
30 / 34	44	37	43	124	31.3	53	41	46	140	30.6	50	13	24	87	31.0
25 / 29	23	17	21	61	26.1	32	19	27	78	25.6	25	3	7	35	26.0
20 / 24	13	9	10	32	21.2	16	6	9	31	20.8	4	0	1	5	21.4
15 / 19	10	6	7	23	16.6	11	3	4	18	16.8	2	0	0	2	17.1
10 / 14	6	3	3	12	11.7	4	1	1	6	11.8	0			0	12.7
5 / 9	2	1	1	4	6.5	1	0	0	1	6.7					
0 / 4	1	0	0	1	1.6	0			0	4.0					
-5 / -1	0		0	0	-2.1										

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		
95 / 99															
90 / 94												1	0	1	68.9
85 / 89							0	0	0	65.3		2	1	3	67.4
80 / 84		0	0	0	56.9		4	2	6	63.4	0	9	3	12	65.7
75 / 79		1	1	2	58.3	0	11	5	16	61.1	1	18	9	28	63.2
70 / 74		4	2	6	56.5	0	18	10	28	58.5	2	27	18	47	60.8
65 / 69	0	10	4	14	54.2	2	27	17	46	56.1	8	33	23	64	58.7
60 / 64	1	17	10	28	51.8	9	43	31	83	53.8	26	61	51	138	56.1
55 / 59	5	39	24	68	49.2	34	62	54	150	51.5	71	67	71	210	53.3
50 / 54	19	59	47	125	46.5	65	57	68	190	48.5	86	19	49	154	50.1
45 / 49	53	65	62	180	43.3	77	23	43	143	44.8	34	2	12	48	46.1
40 / 44	65	34	49	148	39.7	39	2	14	55	40.8	9	0	2	11	41.8
35 / 39	55	10	32	97	36.0	17	0	4	21	36.6	3		0	3	37.3
30 / 34	31	1	9	41	31.4	5		1	6	31.9	0		0	0	32.8
25 / 29	10		1	11	27.1	1			1	28.2					
20 / 24	1		0	1	22.5										
15 / 19	0			0	18.0										
10 / 14															
5 / 9															
0 / 4															
-5 / -1															

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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	69.0		0		0	70.0					
90 / 94		1	1	2	68.6		1	0	1	69.4					
85 / 89		6	3	9	68.7		4	2	6	67.2					
80 / 84		17	8	25	66.6		12	5	17	65.7		1	0	1	66.4
75 / 79	1	25	15	41	64.5	1	25	12	38	63.7		5	1	6	63.3
70 / 74	5	38	29	72	62.3	3	45	27	75	61.7		16	6	22	61.6
65 / 69	19	54	41	114	60.0	13	64	42	119	59.9	1	36	15	52	59.3
60 / 64	59	73	70	202	57.7	60	71	76	207	58.0	22	86	55	163	57.1
55 / 59	100	31	62	193	54.7	97	24	59	180	54.9	70	71	80	222	54.2
50 / 54	50	2	17	69	51.0	55	2	21	78	51.1	82	21	57	160	50.7
45 / 49	13		2	15	46.4	16		3	19	46.5	42	3	20	65	46.1
40 / 44	2		0	2	42.0	3		0	3	42.1	15		5	20	41.7
35 / 39	0			0	37.8	0			0	38.0	7		1	8	37.3
30 / 34											0			0	33.6
25 / 29															
20 / 24															
15 / 19															
10 / 14															
5 / 9															
0 / 4															
-5 / -1															

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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	66.0										
75 / 79		0	0	0	63.0										
70 / 74		3	1	4	61.8										
65 / 69	0	9	3	12	59.4										
60 / 64	4	31	14	49	56.9		2	0	2	54.6		0		0	52.0
55 / 59	33	71	51	155	53.7	7	18	11	36	53.2	1	3	3	7	52.9
50 / 54	65	74	71	210	49.5	30	50	36	116	49.4	16	20	19	55	49.2
45 / 49	59	41	62	162	45.2	51	69	61	181	44.6	41	54	45	140	44.7
40 / 44	44	12	29	85	40.9	55	47	54	156	40.6	48	53	54	155	40.5
35 / 39	29	5	15	49	36.7	49	31	42	122	36.3	49	50	51	150	36.2
30 / 34	11	1	3	15	32.0	28	17	25	70	31.4	48	43	46	137	31.1
25 / 29	3	0	0	3	27.8	15	4	10	29	26.3	26	15	21	62	26.2
20 / 24						4	1	1	6	21.9	10	5	6	21	21.7
15 / 19						1	0	0	1	17.6	5	3	3	11	17.0
10 / 14						0	0		0	13.2	2	1	2	5	11.9
5 / 9											1	0	0	1	7.7
0 / 4															
-5 / -1															

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

Period of Record = 1973 to 1996

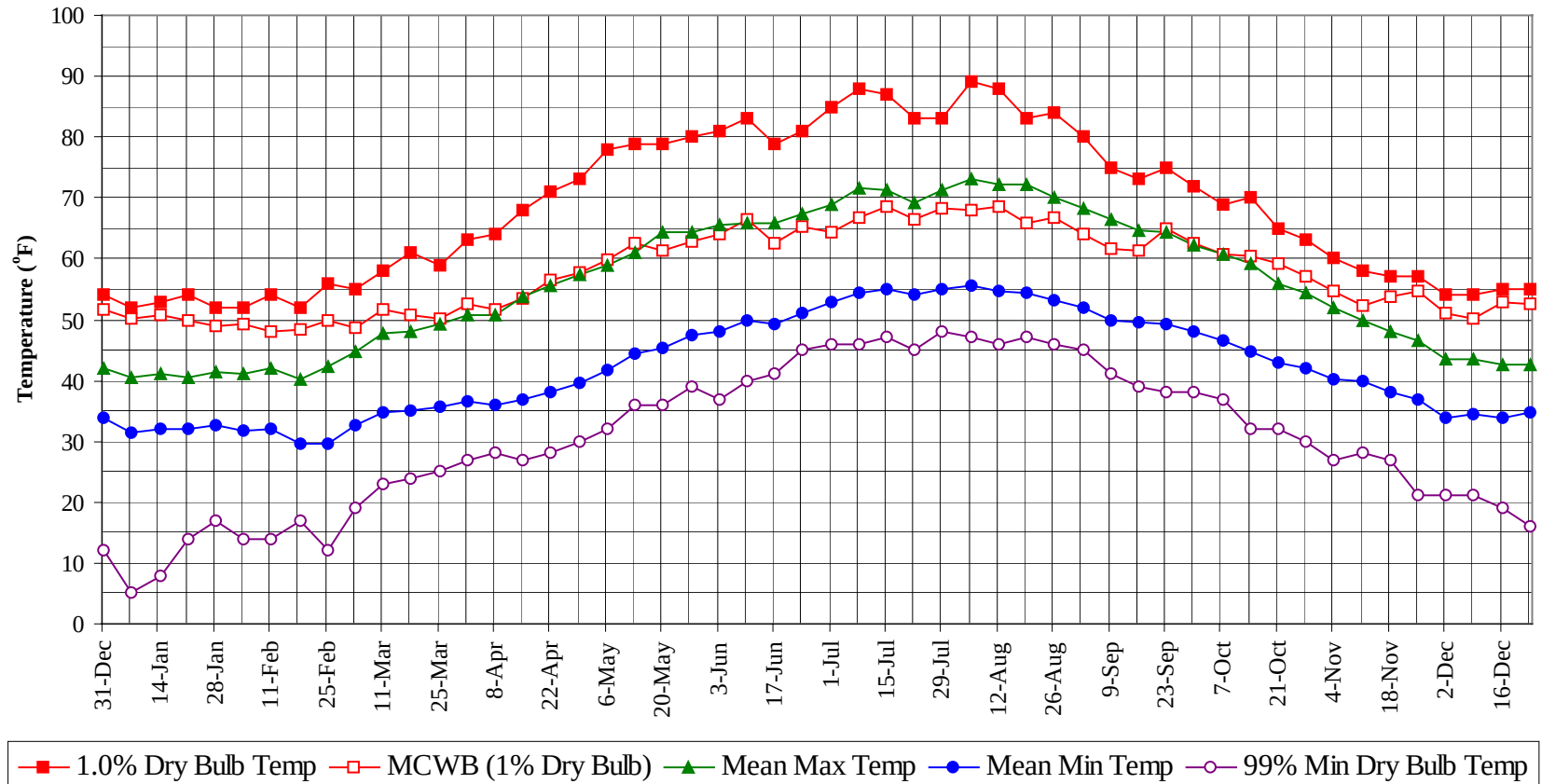
Annual Totals					
Temperature Range (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00		
95 / 99		0		0	69.7
90 / 94		3	1	4	69.0
85 / 89		13	6	19	67.8
80 / 84	0	43	18	61	65.8
75 / 79	2	85	43	130	63.4
70 / 74	10	153	92	254	61.2
65 / 69	43	233	145	421	59.0
60 / 64	180	387	308	876	56.7
55 / 59	418	403	425	1246	53.4
50 / 54	488	375	428	1292	49.2
45 / 49	478	419	440	1337	44.5
40 / 44	419	312	368	1100	40.2
35 / 39	382	244	311	938	36.0
30 / 34	272	154	197	622	31.1
25 / 29	133	57	87	277	26.1
20 / 24	47	22	28	97	21.2
15 / 19	30	12	15	57	16.8
10 / 14	12	4	5	21	11.8
5 / 9	4	1	2	7	6.8
0 / 4	1	0	0	1	1.7
-5 / -1	0		0	0	-2.1

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.

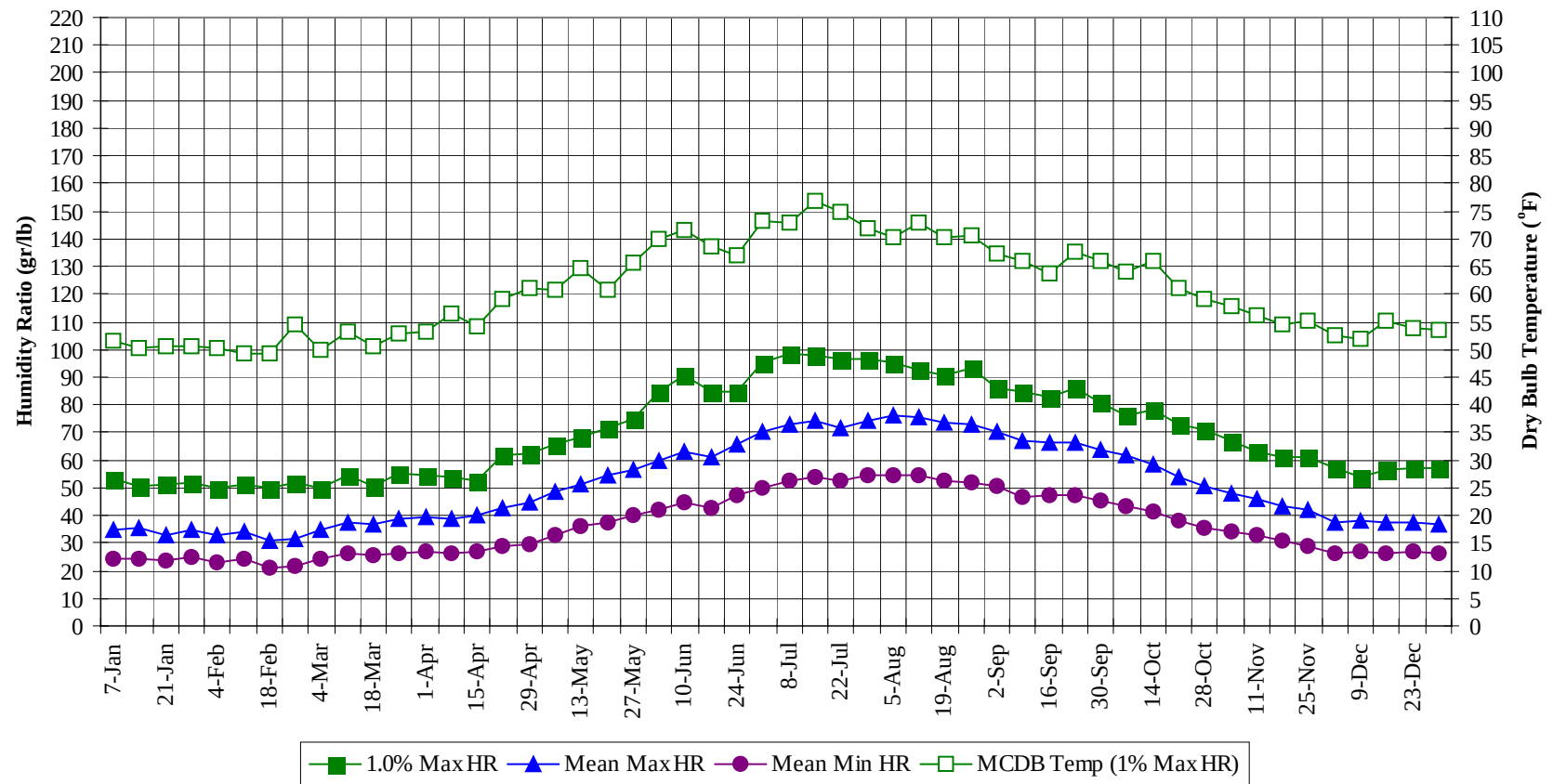
SOESTERBERG, NETHERLANDS

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Annual Summary of Temperatures



Long Term Humidity and Dry Bulb Temperature Summary

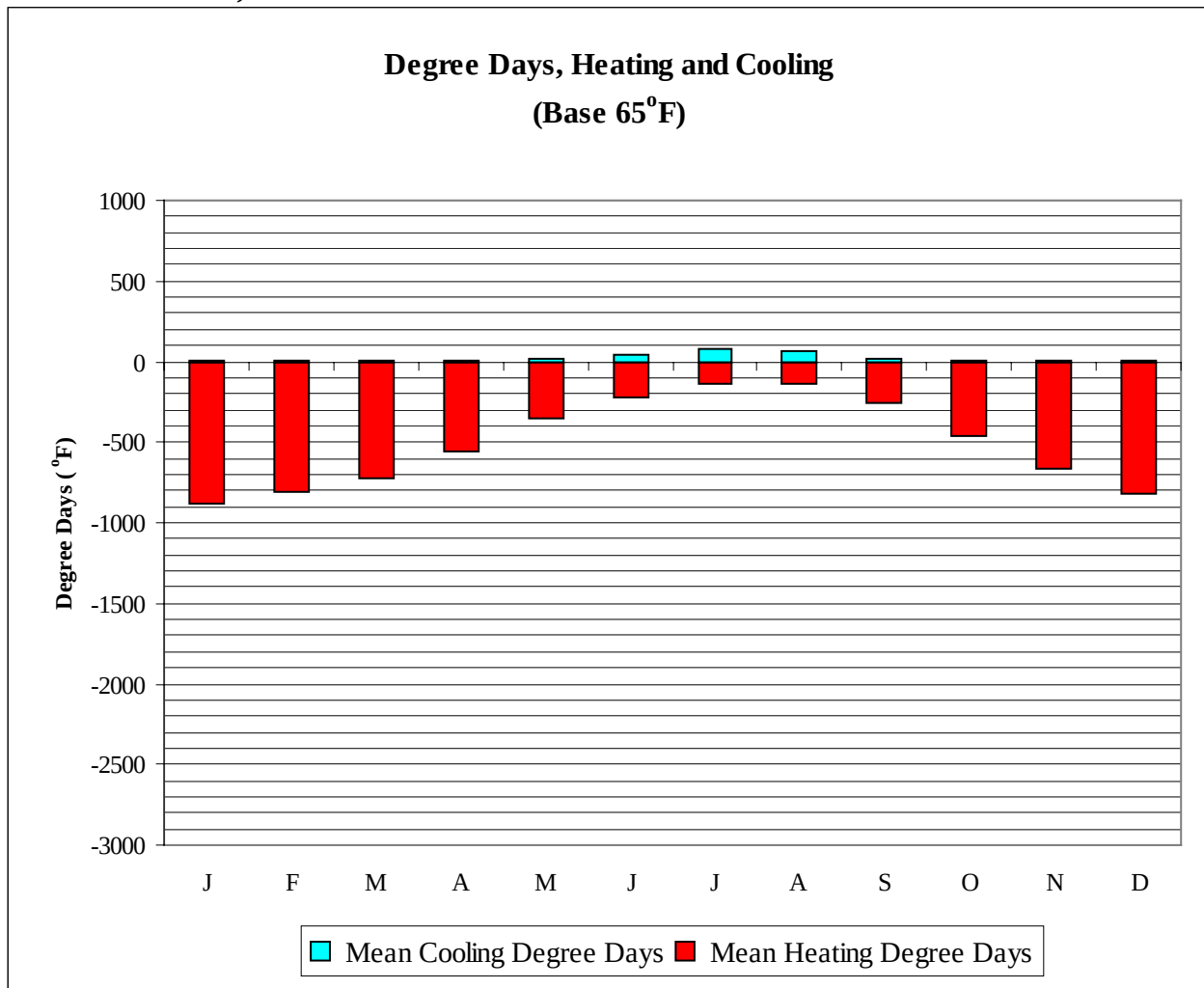


SOESTERBERG, NETHERLANDS

WMO No. 062650

Long Term Dry Bulb Temperature and Humidity Summary

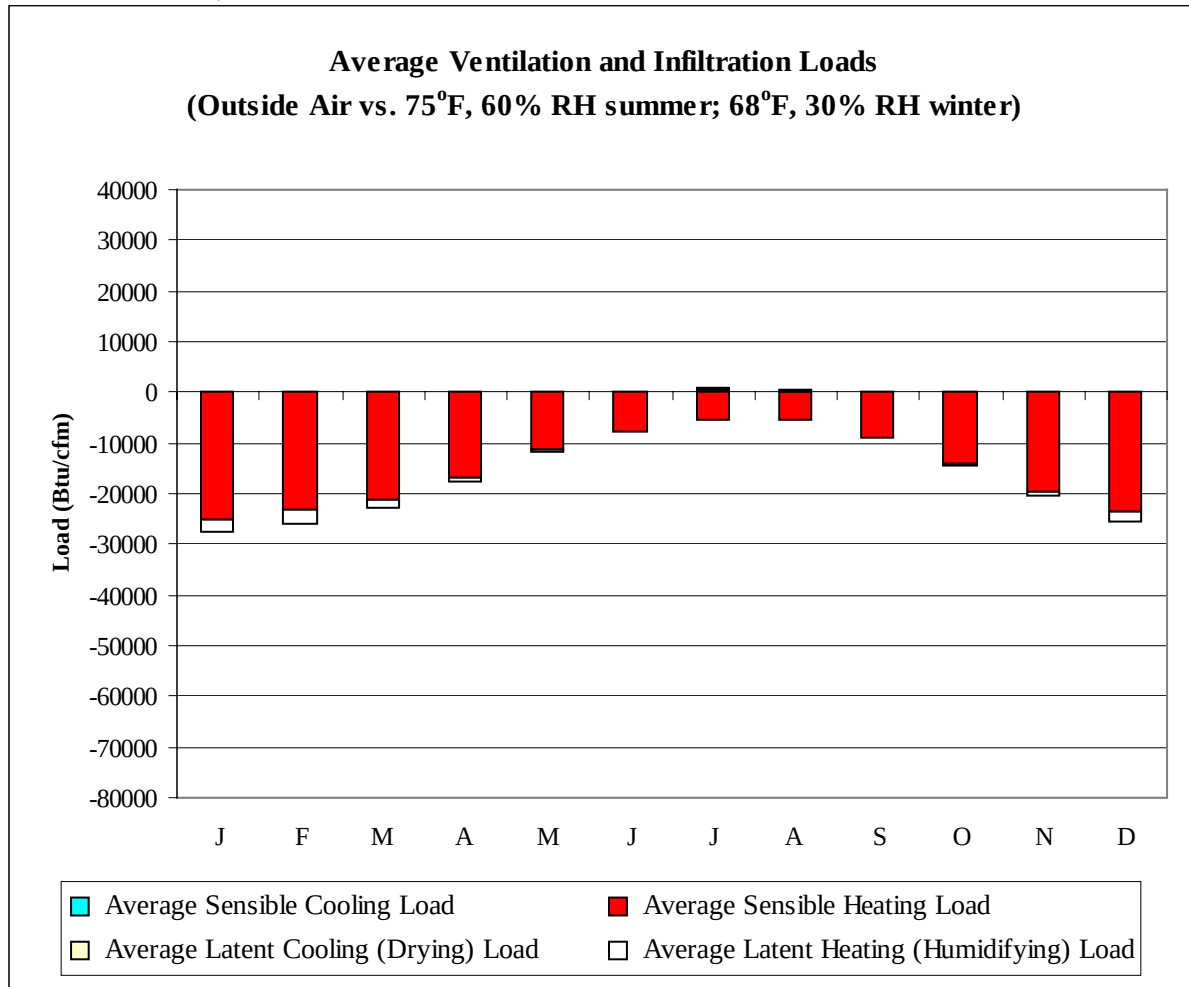
Week Ending	1.0% Temp (°F)	MCWB @ 1% Temp (°F)	Mean Max Temp (°F)	Mean Min Temp (°F)	99% Temp (°F)	1.0% HR (gr/lb)	MCDB @ 1% HR (°F)	Mean Max HR (gr/lb)	Mean Min HR (gr/lb)
7-Jan	52.0	50.2	40.5	31.3	5.0	53.2	51.6	34.8	24.0
14-Jan	53.0	50.7	41.2	32.2	8.0	50.4	50.3	35.2	24.6
21-Jan	54.0	49.9	40.6	32.2	14.0	51.1	50.7	32.9	23.6
28-Jan	52.0	49.1	41.4	32.7	17.0	51.8	50.7	35.0	24.6
4-Feb	52.0	49.2	41.2	31.6	14.0	49.7	50.4	33.1	23.2
11-Feb	54.0	48.1	42.0	32.1	14.0	51.1	49.3	34.2	24.2
18-Feb	52.0	48.3	40.3	29.5	17.0	49.7	49.4	30.6	21.2
25-Feb	56.0	49.9	42.3	29.6	12.0	51.8	54.6	31.3	21.4
4-Mar	55.0	48.7	44.8	32.7	19.0	49.7	50.0	35.1	24.1
11-Mar	58.0	51.7	47.7	34.8	23.0	54.6	53.1	37.2	26.5
18-Mar	61.0	50.8	48.1	34.9	24.0	50.4	50.5	37.1	25.9
25-Mar	59.0	50.1	49.2	35.6	25.0	55.3	52.9	39.1	26.2
1-Apr	63.0	52.5	50.9	36.5	27.0	54.6	53.2	39.7	27.1
8-Apr	64.0	51.7	50.8	36.0	28.0	53.9	56.6	39.0	26.5
15-Apr	68.0	53.4	53.8	36.9	27.0	52.5	54.1	40.1	27.0
22-Apr	71.0	56.4	55.6	38.2	28.0	61.6	59.2	42.4	28.8
29-Apr	73.0	57.6	57.3	39.7	30.0	62.3	61.2	44.5	29.8
6-May	78.0	59.9	58.9	41.6	32.0	65.8	60.6	48.4	32.7
13-May	79.0	62.4	61.2	44.5	36.0	68.6	64.6	51.1	36.0
20-May	79.0	61.3	64.2	45.5	36.0	71.4	60.7	54.3	37.4
27-May	80.0	62.9	64.3	47.3	39.0	74.9	65.7	56.3	40.4
3-Jun	81.0	64.1	65.5	47.9	37.0	84.7	70.1	60.0	41.7
10-Jun	83.0	66.4	66.0	49.9	40.0	90.3	71.5	63.0	44.8
17-Jun	79.0	62.7	65.9	49.4	41.0	84.7	68.5	61.3	42.9
24-Jun	81.0	65.4	67.4	51.2	45.0	84.7	67.0	65.7	47.3
1-Jul	85.0	64.4	68.9	52.8	46.0	95.2	73.1	70.1	49.9
8-Jul	88.0	66.9	71.5	54.4	46.0	98.7	73.0	72.7	52.5
15-Jul	87.0	68.6	71.3	54.9	47.0	98.0	76.7	74.3	53.9
22-Jul	83.0	66.5	69.3	54.1	45.0	96.6	75.0	71.8	52.5
29-Jul	83.0	68.2	71.2	54.9	48.0	96.6	72.0	74.4	54.5
5-Aug	89.0	68.0	73.1	55.5	47.0	95.2	70.2	76.1	54.2
12-Aug	88.0	68.5	72.1	54.8	46.0	92.4	72.8	75.3	54.4
19-Aug	83.0	66.0	72.2	54.3	47.0	90.3	70.4	73.8	52.8
26-Aug	84.0	66.7	70.2	53.3	46.0	93.1	70.6	73.2	52.1
2-Sep	80.0	64.0	68.2	51.9	45.0	86.1	67.2	70.5	50.5
9-Sep	75.0	61.6	66.4	49.9	41.0	84.7	66.0	67.2	46.7
16-Sep	73.0	61.2	64.5	49.7	39.0	82.6	63.8	66.4	47.4
23-Sep	75.0	65.0	64.2	49.4	38.0	86.1	67.5	66.3	47.0
30-Sep	72.0	62.5	62.3	48.1	38.0	80.5	66.0	63.7	45.3
7-Oct	69.0	60.8	60.8	46.7	37.0	76.3	64.0	61.4	43.1
14-Oct	70.0	60.3	59.2	44.9	32.0	78.4	66.2	58.2	41.4
21-Oct	65.0	59.1	56.0	43.0	32.0	72.8	61.0	54.0	37.9
28-Oct	63.0	57.3	54.5	42.0	30.0	70.7	59.0	50.4	35.6
4-Nov	60.0	54.7	51.9	40.1	27.0	67.2	57.7	48.2	34.1
11-Nov	58.0	52.3	49.9	39.7	28.0	63.0	56.1	45.9	33.0
18-Nov	57.0	53.9	48.0	37.9	27.0	60.9	54.7	43.1	30.6
25-Nov	57.0	54.6	46.4	36.9	21.0	60.9	55.1	41.8	28.8
2-Dec	54.0	51.0	43.4	33.9	21.0	57.4	52.7	37.7	26.5
9-Dec	54.0	50.2	43.6	34.5	21.0	53.9	52.0	38.0	26.8
16-Dec	55.0	53.0	42.6	33.8	19.0	56.7	55.1	37.4	26.1
23-Dec	55.0	52.7	42.7	34.6	16.0	57.4	53.7	37.5	26.6
31-Dec	54.0	51.6	42.0	33.8	12.0	57.4	53.5	36.5	26.4



	Mean Cooling Degree Days (°F)	Mean Heating Degree Days (°F)
JAN	0	875
FEB	0	811
MAR	0	724
APR	4	560
MAY	23	356
JUN	44	219
JUL	75	135
AUG	67	141
SEP	13	255
OCT	2	459
NOV	0	662
DEC	0	819
ANN	228	6016

SOESTERBERG, NETHERLANDS

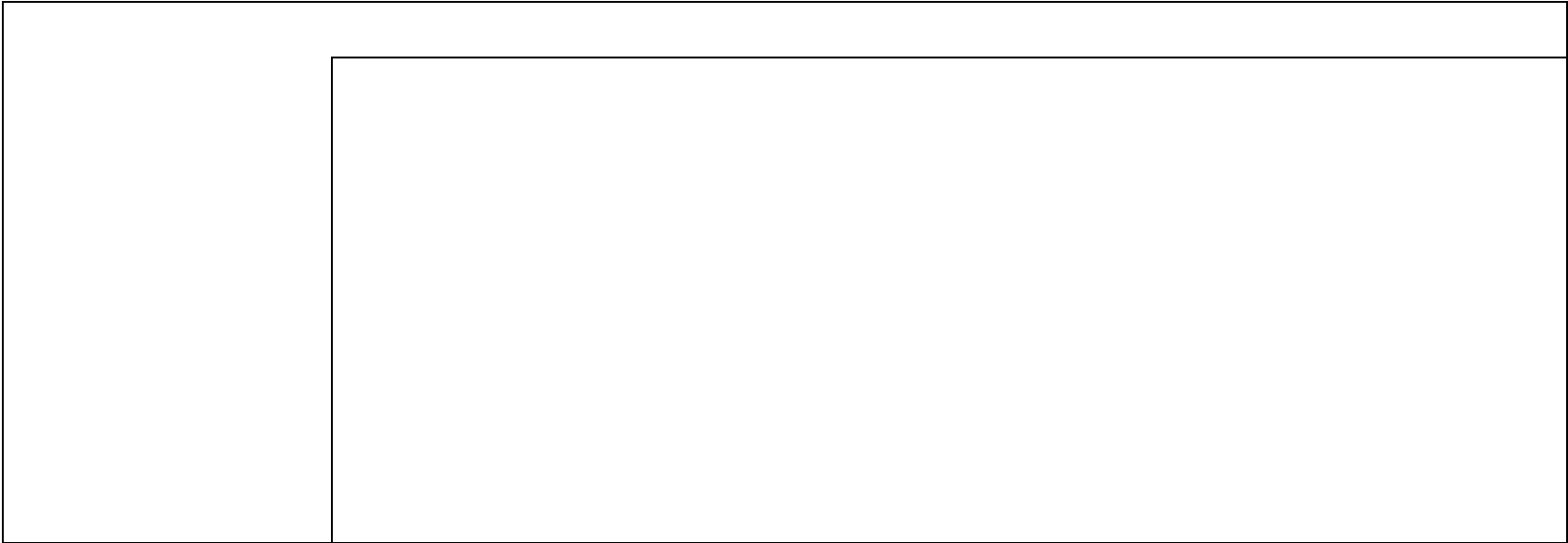
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	Average Sensible Cooling Load	Average Sensible Heating Load	Average Latent Cooling Load	Average Latent Heating Load
	(Btu/cfm)	(Btu/cfm)	(Btu/cfm)	(Btu/cfm)
JAN	0	-25096	0	-2324
FEB	0	-23216	0	-2717
MAR	0	-21177	0	-1591
APR	5	-16807	0	-942
MAY	76	-11382	2	-160
JUN	195	-7596	131	-4
JUL	394	-5198	431	0
AUG	300	-5409	284	0
SEP	18	-8753	63	-4
OCT	1	-14271	4	-168
NOV	0	-19488	0	-852
DEC	0	-23640	0	-1817
ANN	989	-182033	915	-10579

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

No Solar Radiation
Data Available

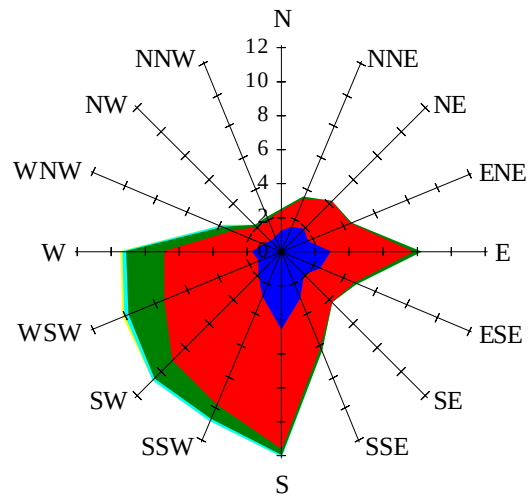


Average Annual Solar Heat and Illumination – Nearest Available Site

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

Wind Summary - December, January, and February

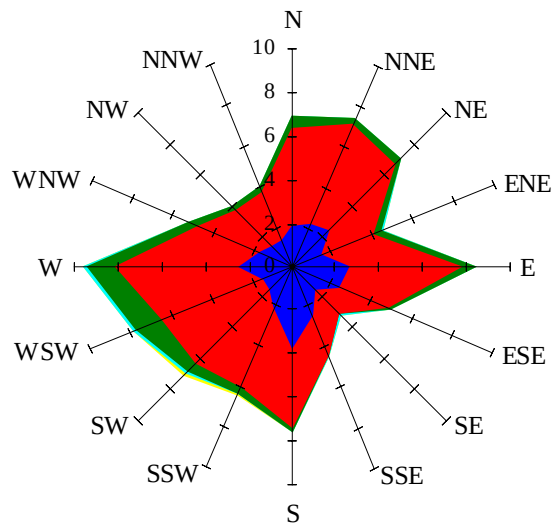
Labels of Percent Frequency on North Axis



Percent Calm = 2.20

Wind Summary - March, April, and May

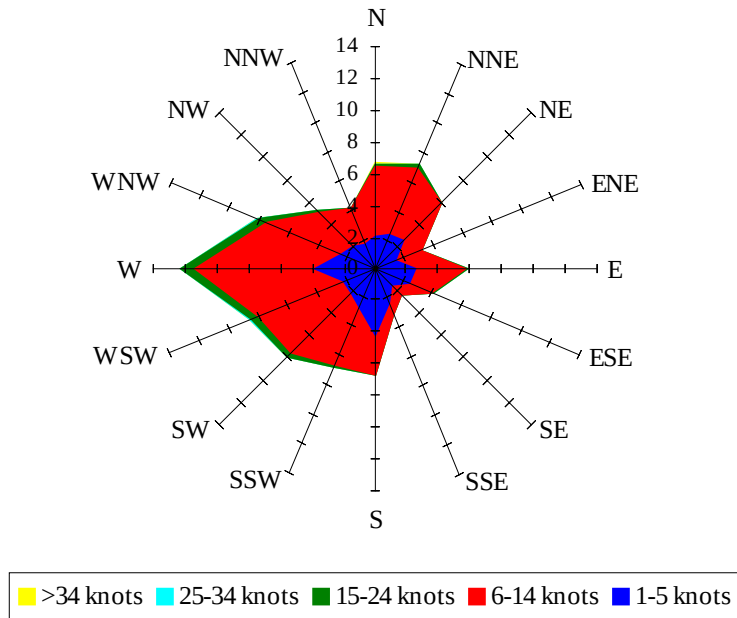
Labels of Percent Frequency on North Axis



Percent Calm = 2.47

Wind Summary - June, July, and August

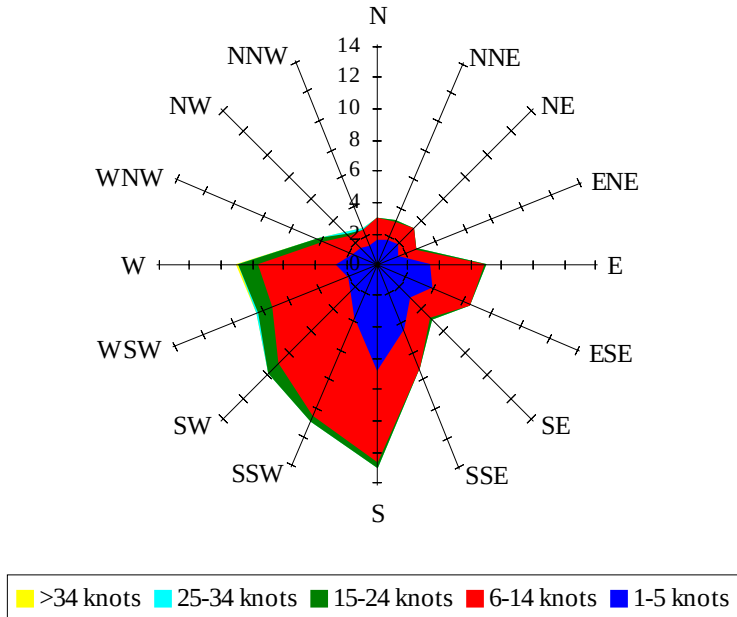
Labels of Percent Frequency on North Axis



Percent Calm = 2.92

Wind Summary - September, October, and November

Labels of Percent Frequency on North Axis



Percent Calm = 3.19