

DAR-EL-BEIDA/HOUARI AL

Latitude = 36.72 N

WMO No. 603900

Longitude = 3.25 E

Elevation = 82 feet

Period of Record = 1967 to 1996

Average Pressure = 29.90 inches Hg

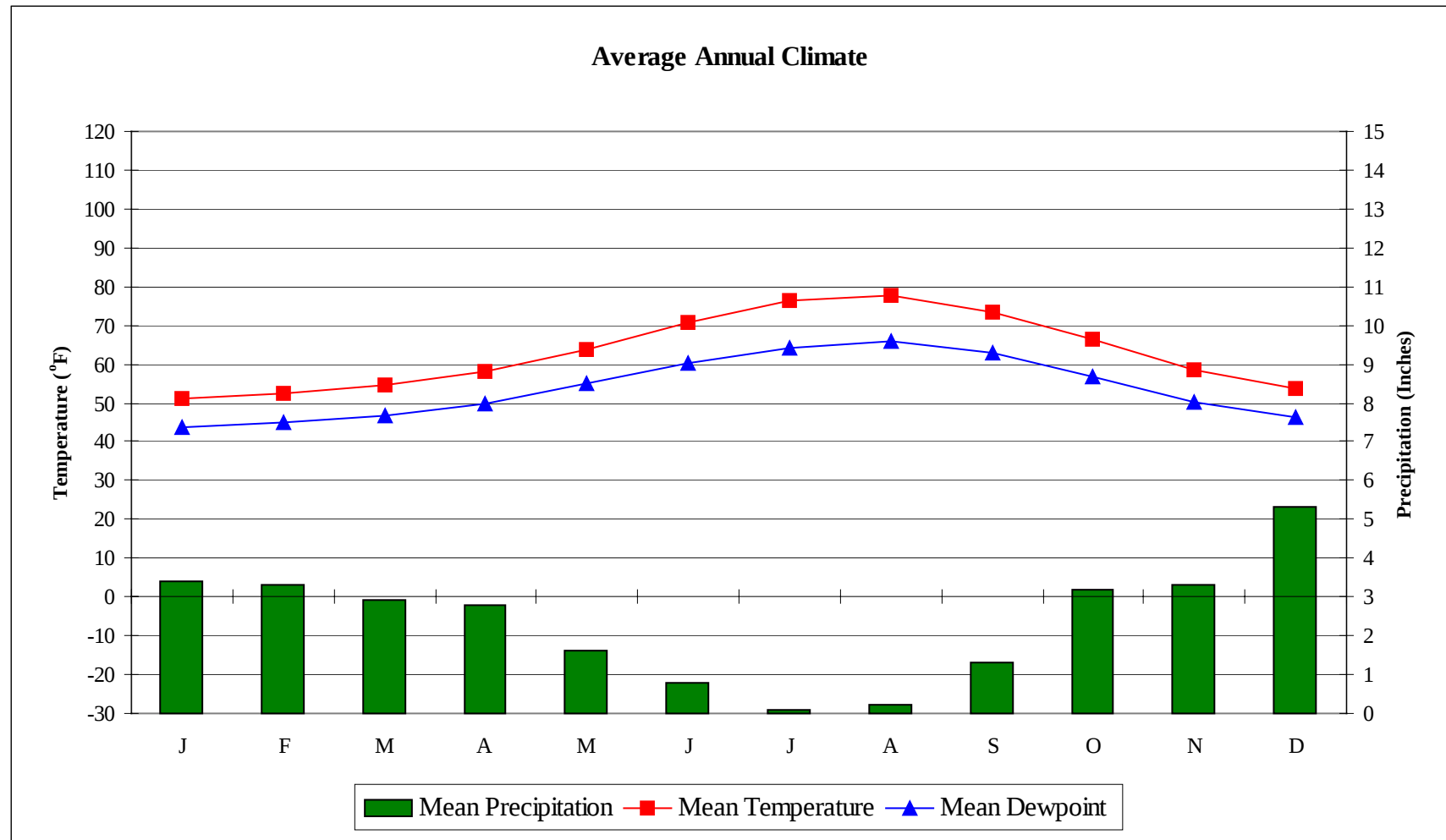
Design Criteria Data

	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	104	73	73	12.0	NNW
0.4% Occurrence	95	72	79	11.5	NE
1.0% Occurrence	91	72	88	11.8	NNW
2.0% Occurrence	88	72	92	11.5	NNW
Mean Daily Range	19	-	-	-	-
97.5% Occurrence	41	40	34	3.0	SW
99.0% Occurrence	37	36	29	2.1	SW
99.6% Occurrence	36	36	29	2.0	SW
Median of Extreme Lows	32	31	24	1.6	SW
	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	80	90	134	10.7	NNW
0.4% Occurrence	77	86	123	9.8	NNW
1.0% Occurrence	76	85	118	9.7	NNW
2.0% Occurrence	74	82	111	8.8	NE
	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	141	84	0.94	8.0	NNW
0.4% Occurrence	127	82	0.85	6.0	NNE
1.0% Occurrence	124	81	0.83	7.0	NNW
2.0% Occurrence	117	79	0.78	6.6	NE
Air Conditioning/ Humid Area Criteria	# of Hours	T ≥ 93°F	T ≥ 80°F	T _{wb} ≥ 73°F	T _{wb} ≥ 67°F
		62	880	421	1786

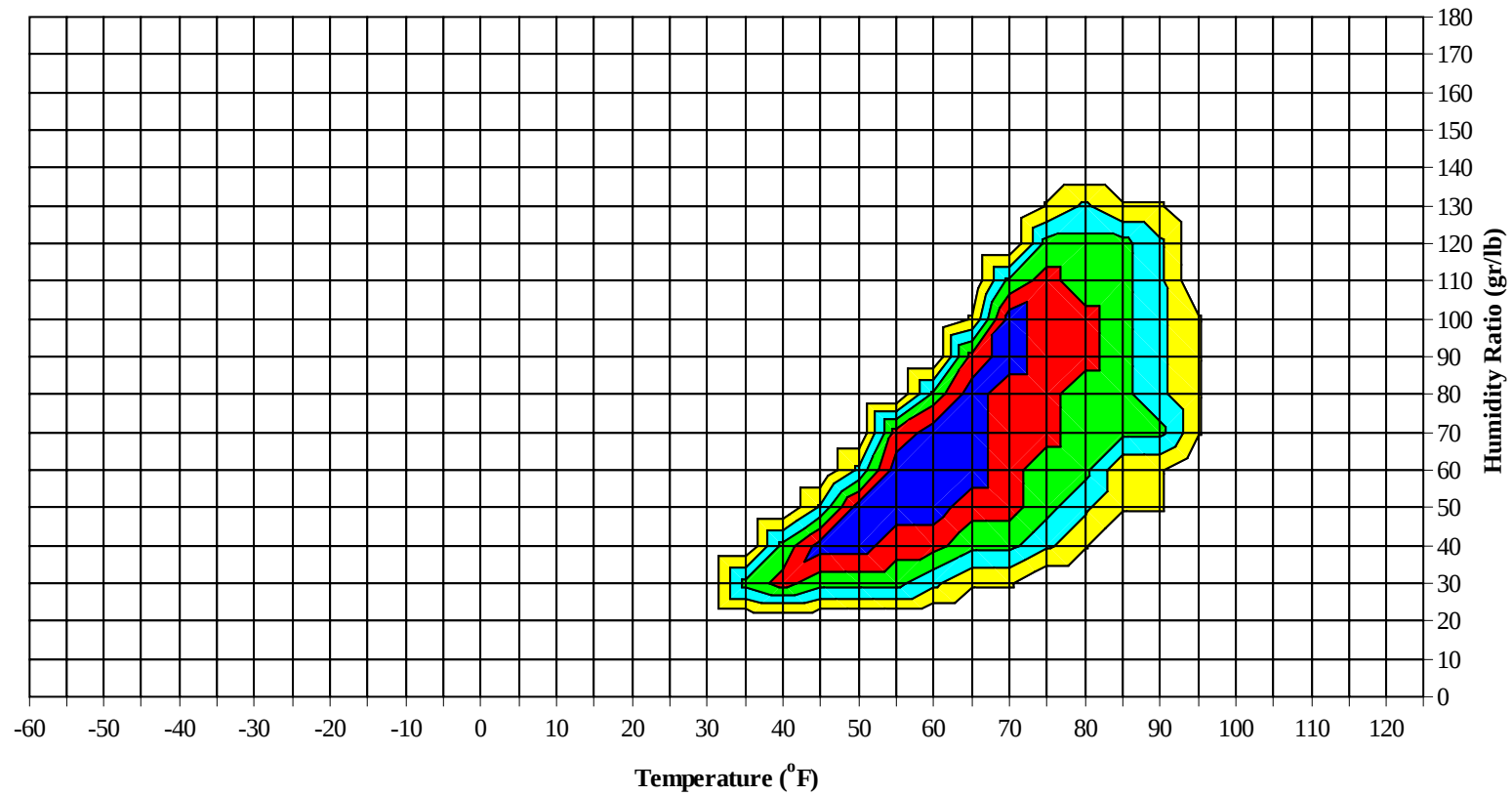
Other Site Data

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	1.9 + 0.9
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 (#)
65.5	N/A	N/A	1

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

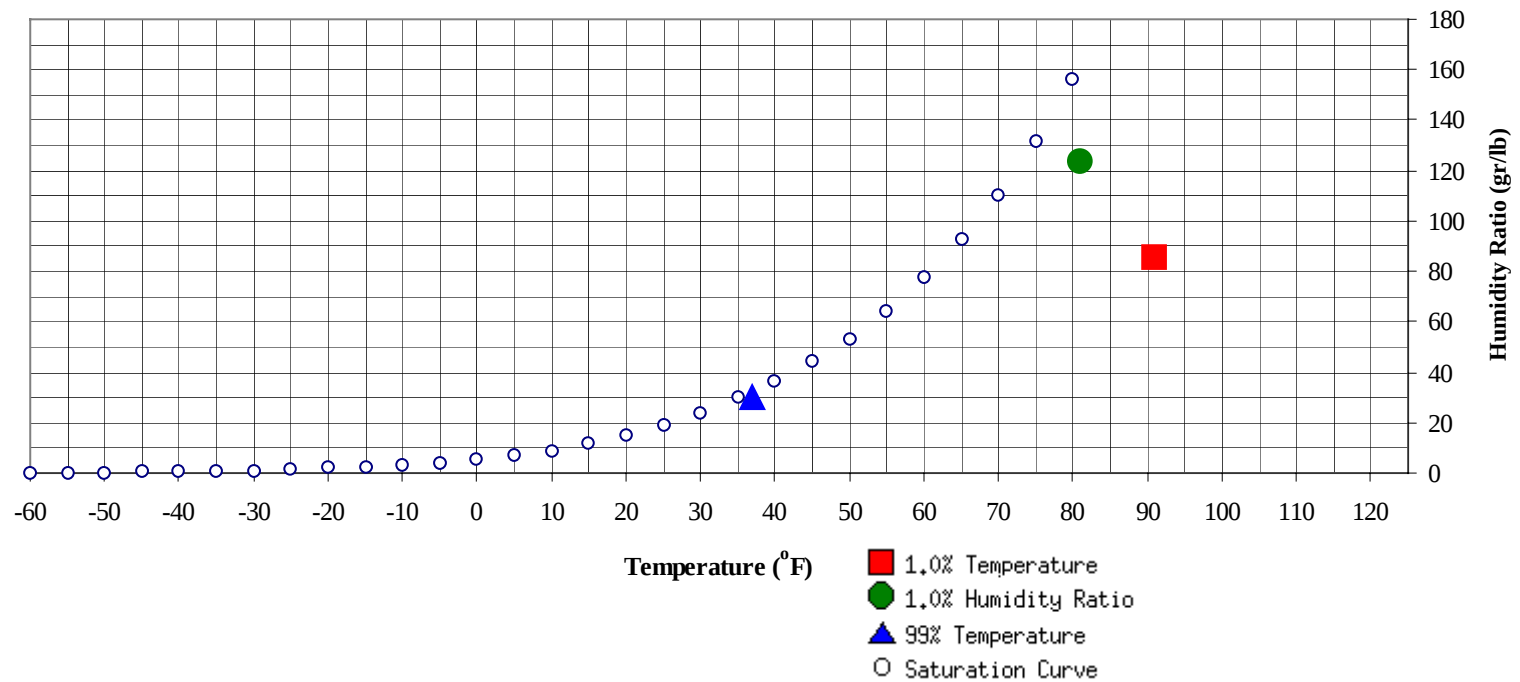


Long Term Psychrometric Summary



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

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)
	37	30	13.5		123.9	80.9	75.3	73.3	38.8

1.0% Dry Bulb	(°F)	MCHR (gr/lb)	MCWB (°F)	Enthalpy (btu/lb)
	91	85.9	71.8	35.4

DAR-EL-BEIDA/HOUARI AL

WMO No. 603900

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

Period of Record = 1967 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		
115 / 119															
110 / 114															
105 / 109															
100 / 104															
95 / 99															
90 / 94															
85 / 89							0		0	61.8		0		0	66.5
80 / 84							0	0	0	61.0		1	0	1	64.3
75 / 79		1	0	1	59.4	0	2	1	3	59.3		6	1	7	61.0
70 / 74		8	1	9	57.6	1	9	2	12	57.9	1	22	3	26	59.2
65 / 69	1	16	3	20	56.1	0	20	4	24	56.8	1	37	9	47	57.7
60 / 64	6	59	19	84	53.8	6	57	23	86	54.8	5	74	37	116	55.6
55 / 59	16	69	54	139	51.5	20	60	60	140	52.1	31	64	84	179	52.8
50 / 54	49	51	84	185	48.8	48	44	67	159	48.9	65	32	70	168	49.3
45 / 49	69	27	61	157	44.8	69	24	51	143	44.9	79	11	37	127	45.1
40 / 44	48	10	20	79	40.7	45	6	13	64	40.8	44	1	6	51	40.9
35 / 39	49	6	6	61	36.7	33	2	3	38	37.0	21	0	1	22	37.1
30 / 34	9	1	0	10	32.5	3	0		3	32.6	1		0	1	33.0
25 / 29	0			0	27.0										

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.

Dry-Bulb Temperature Hours For An Average Year (Sheet 2 of 5)

Period of Record = 1967 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		
115 / 119															
110 / 114															
105 / 109															
100 / 104								0	0	66.0		0	0	0	70.4
95 / 99							0	0	0	69.8		1	0	1	70.1
90 / 94		0		0	67.5		1	0	1	67.6	0	6	1	7	68.8
85 / 89		0		0	66.3	0	2	0	2	67.0	0	13	2	15	68.7
80 / 84		3	0	3	64.4	1	12	2	15	65.9	1	54	11	66	68.2
75 / 79	1	11	2	14	62.1	1	45	8	54	64.7	5	99	42	147	66.7
70 / 74	2	40	9	51	60.4	4	91	36	131	62.6	33	55	88	175	65.3
65 / 69	3	53	18	75	58.5	15	54	56	125	61.0	64	9	62	134	63.8
60 / 64	14	80	63	157	56.4	62	33	88	183	59.1	87	3	31	120	60.4
55 / 59	56	40	85	181	53.7	88	9	45	142	55.1	43		3	46	55.6
50 / 54	72	12	47	131	50.1	54	1	12	67	50.6	8		0	8	51.2
45 / 49	65	1	14	80	45.3	21		1	22	45.8	0			0	46.4
40 / 44	22	0	1	23	41.1	2			2	41.4					
35 / 39	6	0	0	6	37.5	0			0	38.0					
30 / 34	0	0		0	33.5										
25 / 29															

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.

DAR-EL-BEIDA/HOUARI AL

WMO No. 603900

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

Period of Record = 1967 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		
115 / 119						0			0						
110 / 114						0			0	73.0					
105 / 109		0		0	74.2	1	0	1	72.6						
100 / 104	0	4	0	4	72.1	2	0	2	72.7			1	0	1	70.6
95 / 99	1	9	2	12	71.3	0	12	1	13	73.5	0	4	0	4	70.3
90 / 94	1	24	6	32	71.5	1	37	8	46	73.4	0	13	1	14	70.9
85 / 89	1	51	12	64	71.9	1	64	17	82	73.1	1	32	5	38	71.4
80 / 84	4	97	43	145	71.0	5	91	58	154	72.1	4	86	26	116	70.3
75 / 79	23	53	82	157	69.5	45	34	96	175	71.0	14	67	75	156	68.9
70 / 74	93	10	81	183	68.0	95	7	58	160	68.4	57	27	89	172	67.2
65 / 69	70	1	19	90	64.5	60	0	9	70	64.4	63	6	29	98	64.0
60 / 64	46	0	3	49	60.6	35	0	1	36	60.2	70	4	14	88	60.0
55 / 59	9		0	9	55.8	5			5	55.4	29	1	1	31	55.3
50 / 54	0			0	52.0	0			0	49.0	3			3	51.6
45 / 49															
40 / 44															
35 / 39															
30 / 34															
25 / 29															

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 (Sheet 4 of 5)

Period of Record = 1967 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		
115 / 119															
110 / 114															
105 / 109															
100 / 104		0		0	68.3										
95 / 99		1	0	1	64.7										
90 / 94	0	3	1	4	65.1		0		0	64.5					
85 / 89	1	6	1	8	66.1		1	0	1	63.5		0		0	72.0
80 / 84	3	32	5	41	66.8	0	4	1	5	62.3		0		0	63.0
75 / 79	5	64	21	89	66.0	1	16	4	21	61.4		2	0	2	61.4
70 / 74	12	67	59	137	64.0	6	46	10	62	60.4	0	14	2	16	59.4
65 / 69	31	35	59	125	62.2	6	51	23	80	59.3	3	30	7	40	57.2
60 / 64	72	27	62	160	59.2	24	57	61	142	57.3	14	69	33	116	55.2
55 / 59	73	11	32	116	55.1	51	37	69	157	54.0	28	63	66	157	52.6
50 / 54	43	2	9	55	50.7	70	22	52	144	49.9	62	42	80	184	49.5
45 / 49	8	0	0	8	46.0	60	7	17	84	45.5	71	21	49	141	45.1
40 / 44						18	1	1	20	41.2	46	5	10	61	41.0
35 / 39						5	0	0	5	37.8	23	2	1	26	37.3
30 / 34											2	0	0	2	31.5
25 / 29											0			0	28.0

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.

DAR-EL-BEIDA/HOUARI AL

WMO No. 603900

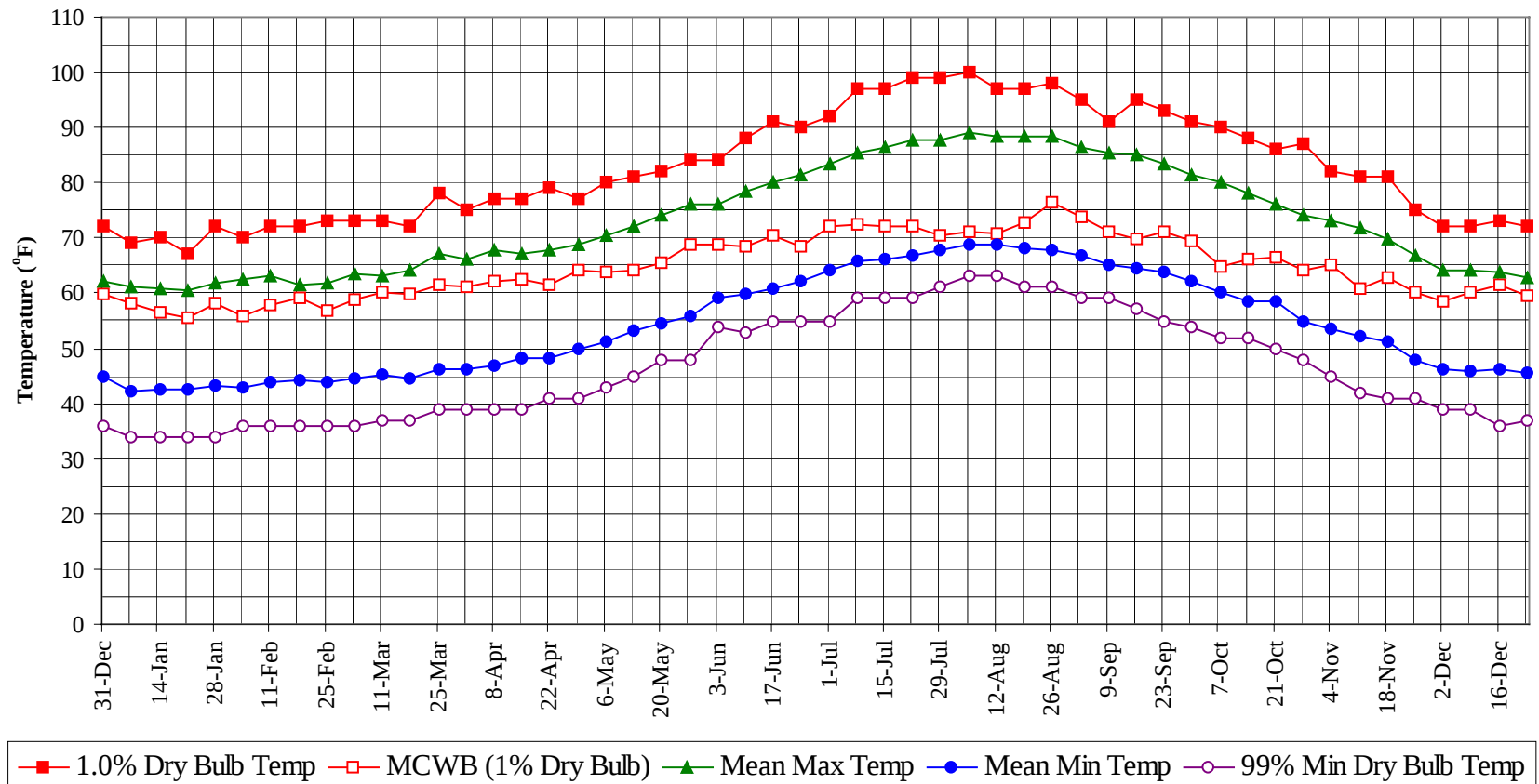
Dry-Bulb Temperature Hours For An Average Year (Sheet 5 of 5)

Period of Record = 1967 to 1996

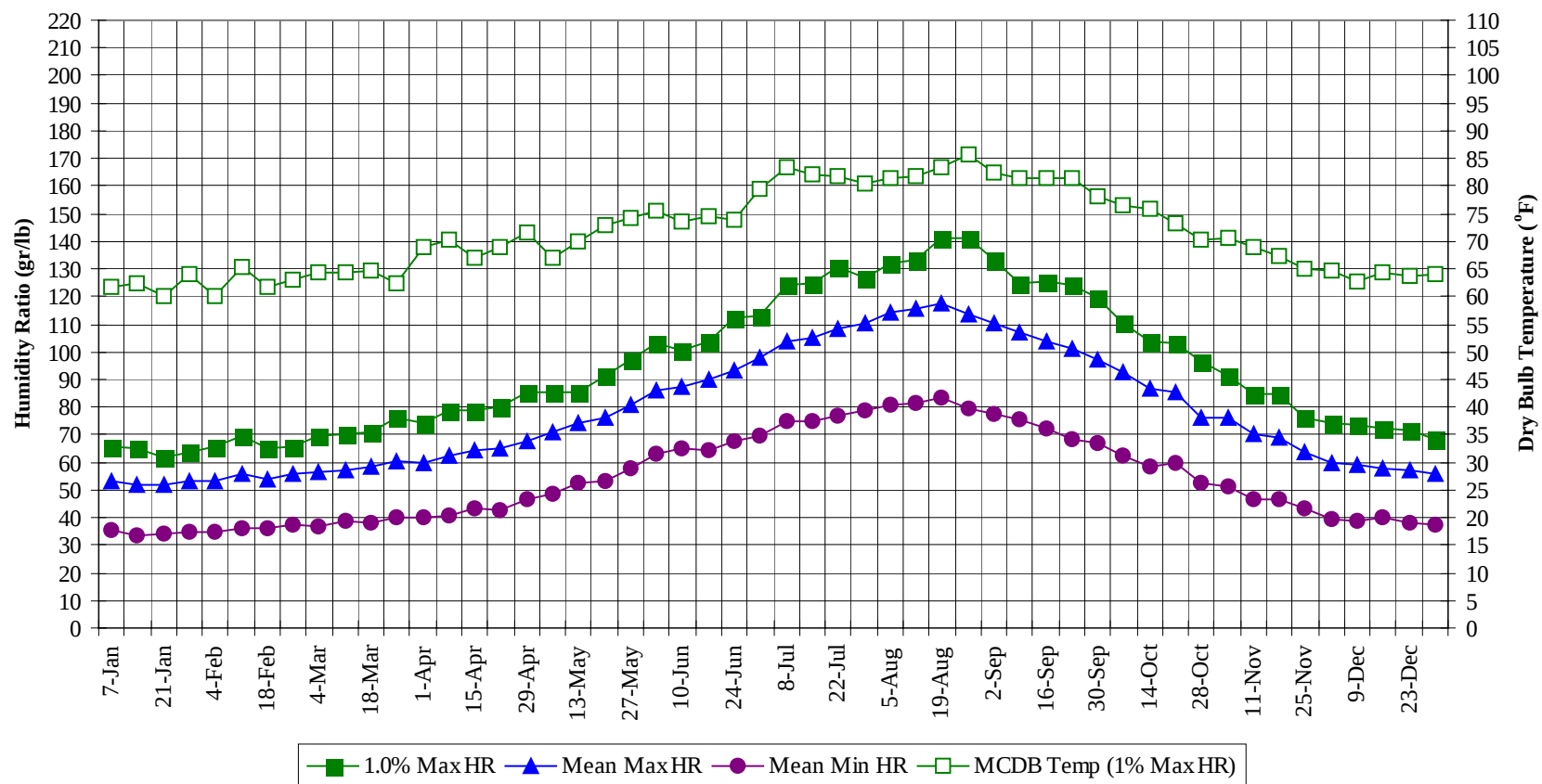
Annual Totals					
Temperature Range (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00		
115 / 119	0			0	
110 / 114	0			0	73.0
105 / 109	1		0	1	73.2
100 / 104	0	7	1	8	71.9
95 / 99	1	25	4	30	71.8
90 / 94	2	84	17	103	71.7
85 / 89	4	167	37	207	71.7
80 / 84	17	377	142	536	70.2
75 / 79	91	397	321	810	68.0
70 / 74	296	394	430	1120	65.1
65 / 69	312	313	297	921	61.5
60 / 64	439	465	438	1342	57.6
55 / 59	448	357	507	1312	53.5
50 / 54	478	209	427	1114	49.5
45 / 49	449	92	233	774	45.1
40 / 44	229	23	54	306	40.9
35 / 39	140	10	11	161	37.0
30 / 34	15	1	0	16	32.4
25 / 29	0			0	27.3
	</				

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

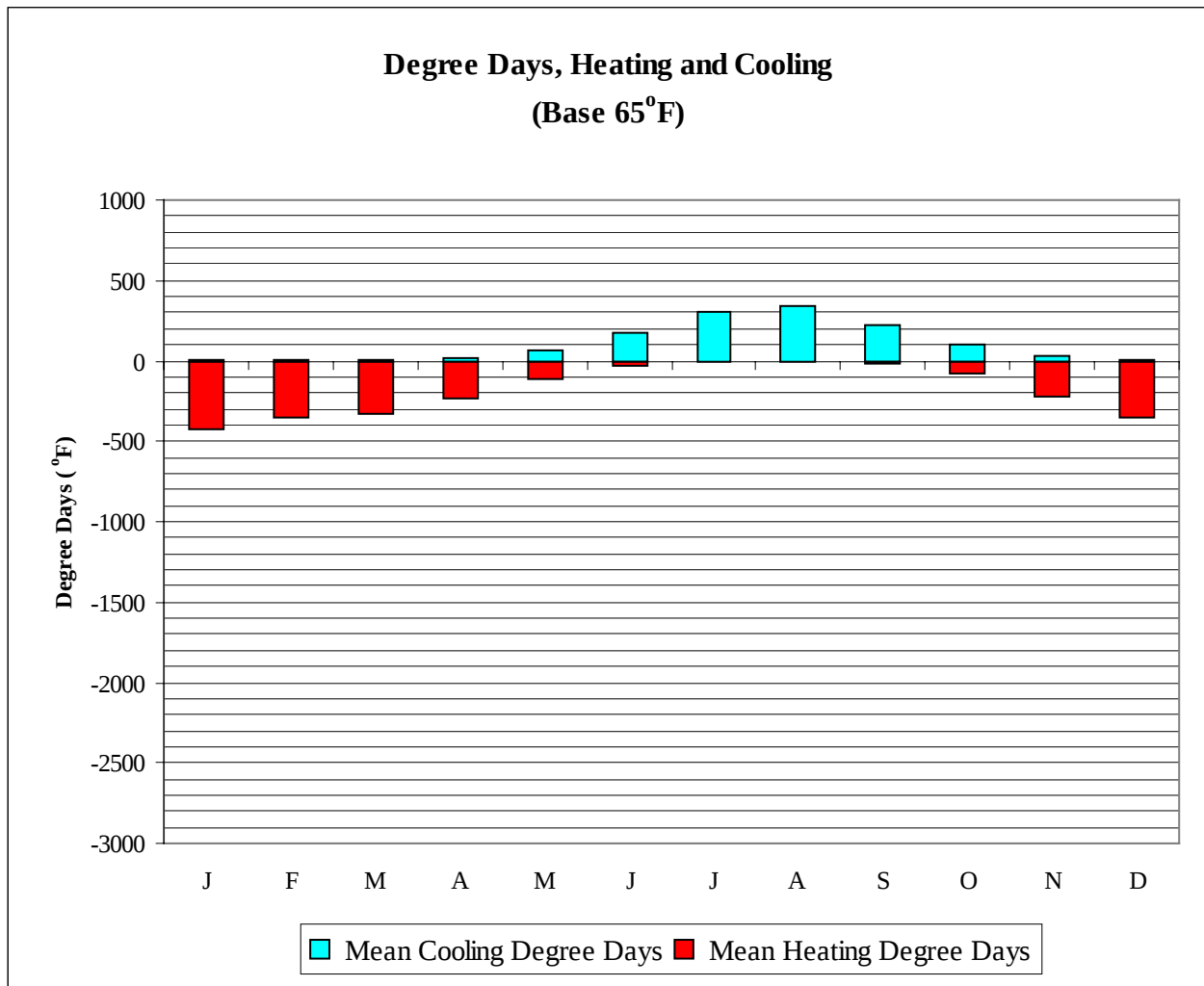


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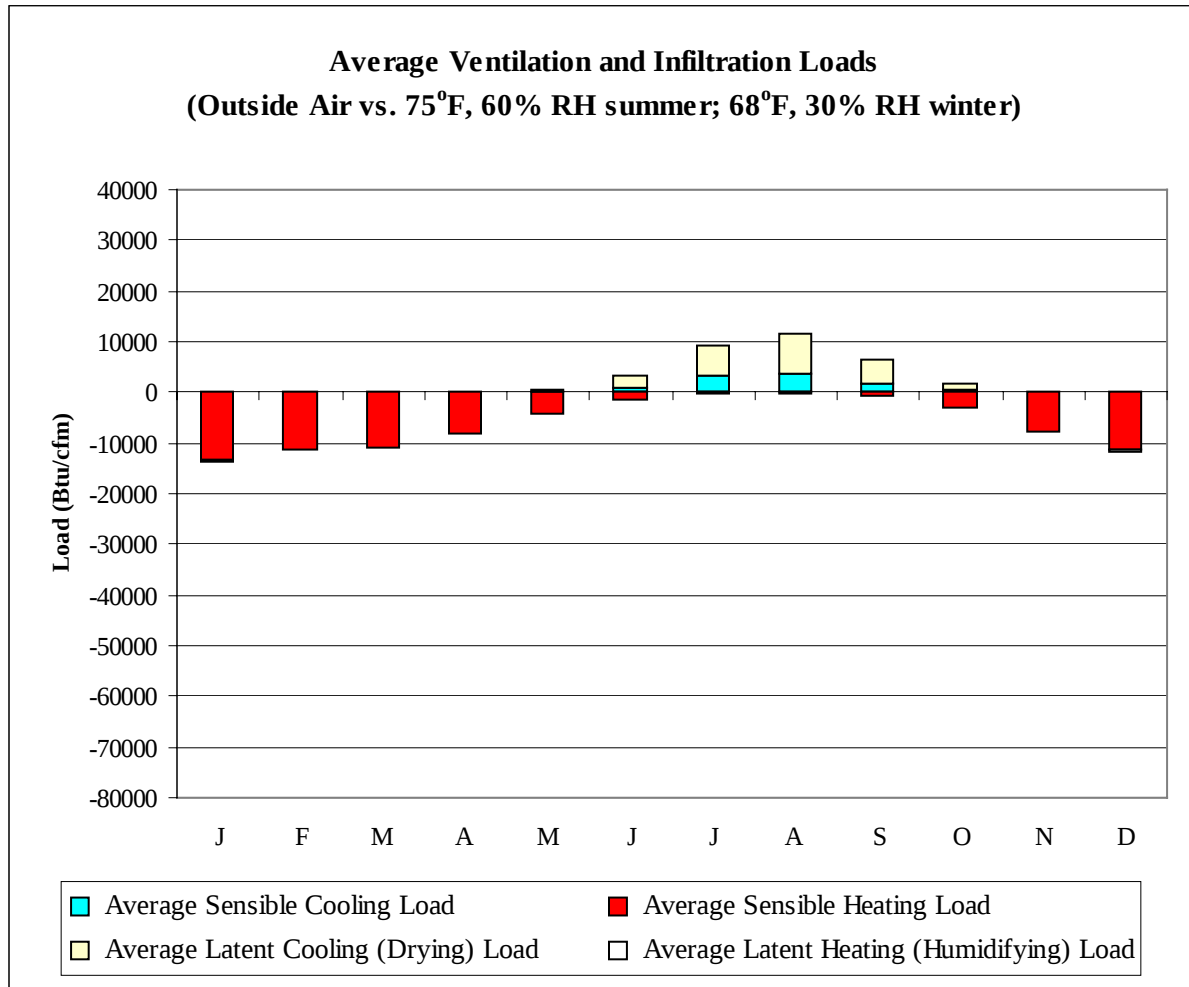
WMO No. 603900

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	69.0	58.3	61.1	42.3	34.0	65.8	61.9	53.5	35.2
14-Jan	70.0	56.4	61.0	42.6	34.0	65.1	62.6	51.6	33.6
21-Jan	67.0	55.5	60.6	42.5	34.0	61.6	59.9	51.9	34.2
28-Jan	72.0	58.0	61.8	43.1	34.0	63.7	64.0	53.1	35.1
4-Feb	70.0	55.9	62.4	42.9	36.0	65.8	60.2	53.2	35.0
11-Feb	72.0	57.8	63.0	43.9	36.0	69.3	65.3	55.6	36.2
18-Feb	72.0	59.1	61.5	44.2	36.0	65.1	61.7	53.6	36.2
25-Feb	73.0	56.9	62.0	43.8	36.0	65.8	63.0	55.6	37.3
4-Mar	73.0	58.8	63.3	44.5	36.0	69.3	64.4	56.7	37.0
11-Mar	73.0	60.0	63.3	45.1	37.0	70.0	64.5	57.2	38.9
18-Mar	72.0	59.7	64.3	44.5	37.0	70.7	64.7	58.2	38.0
25-Mar	78.0	61.6	67.1	46.3	39.0	76.3	62.4	60.6	40.1
1-Apr	75.0	61.0	66.0	46.1	39.0	74.2	68.9	59.7	40.0
8-Apr	77.0	62.3	67.9	46.9	39.0	79.1	70.2	62.7	40.8
15-Apr	77.0	62.5	67.2	48.1	39.0	79.1	66.9	64.5	43.4
22-Apr	79.0	61.5	67.9	48.3	41.0	79.8	68.9	64.7	42.7
29-Apr	77.0	64.2	68.8	49.9	41.0	85.4	71.4	67.9	46.4
6-May	80.0	63.7	70.4	51.1	43.0	85.4	67.1	70.9	48.9
13-May	81.0	64.0	72.0	53.1	45.0	85.4	69.9	73.9	52.5
20-May	82.0	65.4	74.1	54.4	48.0	91.0	72.8	76.4	53.3
27-May	84.0	68.7	76.0	56.0	48.0	97.3	74.1	80.7	57.5
3-Jun	84.0	68.8	76.2	59.3	54.0	102.9	75.6	86.2	62.9
10-Jun	88.0	68.5	78.6	59.8	53.0	100.5	73.5	87.1	64.9
17-Jun	91.0	70.5	80.0	60.9	55.0	103.6	74.5	90.2	64.5
24-Jun	90.0	68.4	81.3	62.2	55.0	112.0	74.0	93.0	67.8
1-Jul	92.0	72.0	83.3	64.1	55.0	112.7	79.4	97.5	69.5
8-Jul	97.0	72.3	85.3	65.9	59.0	123.9	83.5	103.7	75.0
15-Jul	97.0	72.0	86.3	66.1	59.0	124.6	82.0	105.4	74.5
22-Jul	99.0	72.1	87.6	66.9	59.0	130.9	81.8	108.6	76.8
29-Jul	99.0	70.6	87.9	67.8	61.0	126.7	80.4	110.6	79.0
5-Aug	100.0	71.2	89.2	68.7	63.0	132.3	81.6	114.4	80.9
12-Aug	97.0	70.6	88.5	68.7	63.0	133.0	81.7	115.9	81.2
19-Aug	97.0	72.6	88.6	68.1	61.0	141.4	83.5	117.8	83.2
26-Aug	98.0	76.3	88.4	67.8	61.0	141.4	85.8	113.7	79.7
2-Sep	95.0	73.9	86.3	66.9	59.0	133.0	82.4	110.4	77.6
9-Sep	91.0	71.1	85.5	65.1	59.0	124.6	81.4	107.1	75.8
16-Sep	95.0	69.9	85.2	64.4	57.0	125.3	81.3	104.0	72.2
23-Sep	93.0	71.2	83.5	63.7	55.0	123.9	81.5	100.9	68.1
30-Sep	91.0	69.4	81.4	62.0	54.0	119.7	78.2	96.9	67.3
7-Oct	90.0	64.7	80.1	60.1	52.0	110.6	76.4	92.4	62.6
14-Oct	88.0	66.1	78.1	58.4	52.0	103.6	75.7	86.6	58.8
21-Oct	86.0	66.6	76.2	58.5	50.0	102.9	73.1	85.4	59.8
28-Oct	87.0	64.0	74.0	54.8	48.0	96.6	70.2	76.3	52.3
4-Nov	82.0	65.0	73.0	53.5	45.0	91.0	70.6	76.2	51.5
11-Nov	81.0	60.8	71.6	52.0	42.0	84.7	69.0	70.0	46.8
18-Nov	81.0	62.9	69.7	51.3	41.0	84.7	67.3	68.9	46.6
25-Nov	75.0	60.1	66.9	48.0	41.0	76.3	65.2	63.5	43.3
2-Dec	72.0	58.5	64.1	46.1	39.0	74.2	64.7	59.5	39.7
9-Dec	72.0	60.3	64.2	45.8	39.0	73.5	62.9	59.3	39.1
16-Dec	73.0	61.6	63.8	46.3	36.0	72.1	64.4	58.1	40.1
23-Dec	72.0	59.6	62.8	45.5	37.0	71.4	63.9	57.2	38.1
31-Dec	72.0	59.9	62.3	44.8	36.0	68.6	63.9	55.5	37.7



	Mean Cooling Degree Days (°F)	Mean Heating Degree Days (°F)
JAN	3	430
FEB	5	355
MAR	11	329
APR	20	232
MAY	67	108
JUN	168	25
JUL	304	5
AUG	337	3
SEP	226	15
OCT	105	77
NOV	29	220
DEC	6	358
ANN	1280	2157



	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	1	-13463	0	-127
FEB	10	-11297	1	-45
MAR	20	-10754	3	-29
APR	44	-8023	27	-6
MAY	213	-4318	463	-1
JUN	1052	-1298	2331	0
JUL	3102	-356	5970	0
AUG	3737	-245	7896	0
SEP	1878	-813	4530	0
OCT	567	-3202	1136	-3
NOV	68	-7580	60	-8
DEC	7	-11509	3	-40
ANN	10699	-72858	22420	-259

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

No Solar Radiation
Data Available

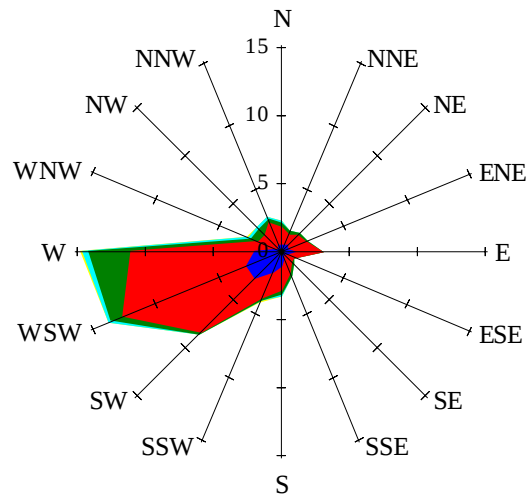


Average Annual Solar Heat and Illumination – Nearest Available Site

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

Wind Summary - December, January, and February

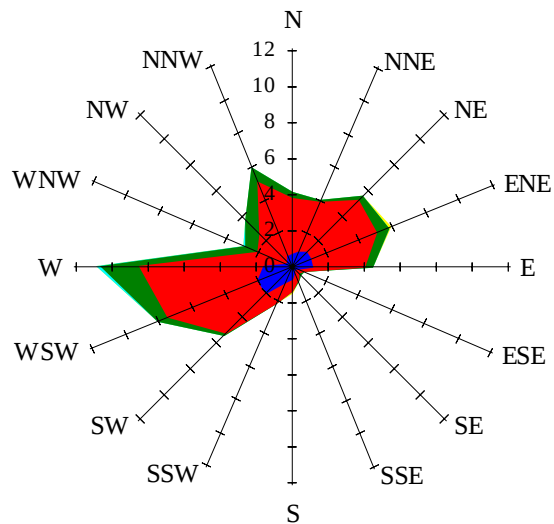
Labels of Percent Frequency on North Axis



Percent Calm = 34.24

Wind Summary - March, April, and May

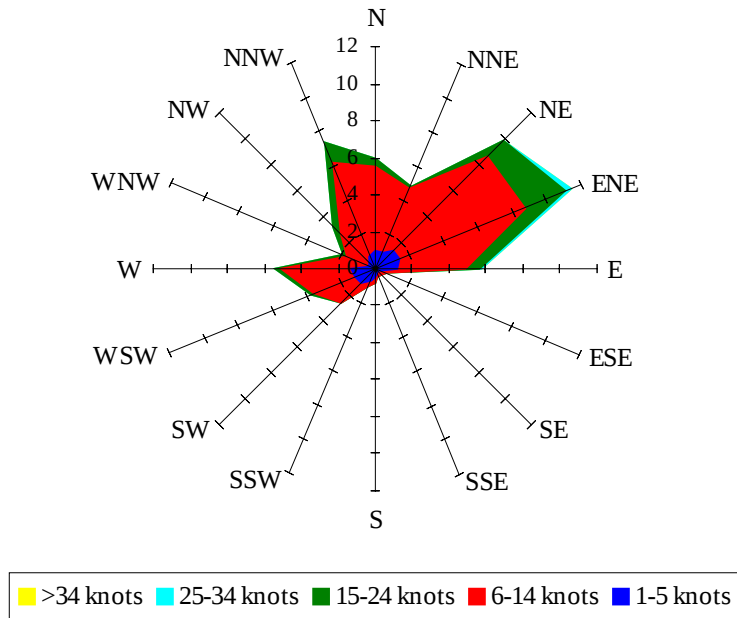
Labels of Percent Frequency on North Axis



Percent Calm = 34.41

Wind Summary - June, July, and August

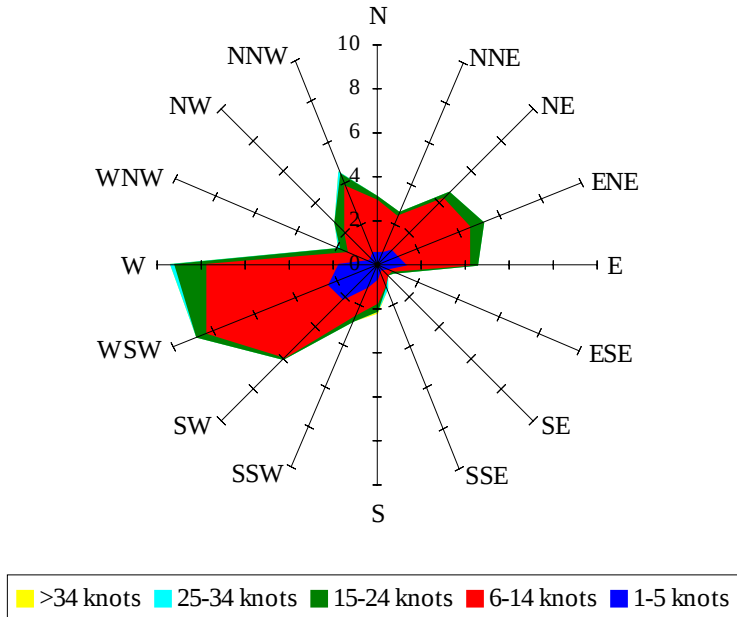
Labels of Percent Frequency on North Axis



Percent Calm = 34.62

Wind Summary - September, October, and November

Labels of Percent Frequency on North Axis



Percent Calm = 39.11