

QUITO/MARISCAL SUCRE EQ

Latitude = 0.15 S

WMO No. 840710

Longitude = 78.48 W

Elevation = 9226 feet

Period of Record = 1973 to 1996

Average Pressure = 21.48 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	81	64	57	8.5	SE
0.4% Occurrence	72	54	57	10.3	SSE
1.0% Occurrence	70	54	60	10.1	N
2.0% Occurrence	70	54	60	10.1	N
Mean Daily Range	17	-	-	-	-
97.5% Occurrence	46	43	55	0.7	N
99.0% Occurrence	45	43	55	0.7	N
99.6% Occurrence	45	43	55	0.6	N
Median of Extreme Lows	39	36	39	0.3	MISSING
	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	71	120	9.1	SSW
0.4% Occurrence	58	66	84	9.6	N
1.0% Occurrence	57	65	80	9.3	N
2.0% Occurrence	57	65	80	9.3	N
	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	99	63	0.47	9.1	N
0.4% Occurrence	92	61	0.44	6.2	N
1.0% Occurrence	86	58	0.42	4.9	N
2.0% Occurrence	86	58	0.42	4.9	N
Air Conditioning/ Humid Area Criteria	# of Hours	T ≥ 93°F	T ≥ 80°F	T _{wb} ≥ 73°F	T _{wb} ≥ 67°F
		0	1	1	2

Other Site Data

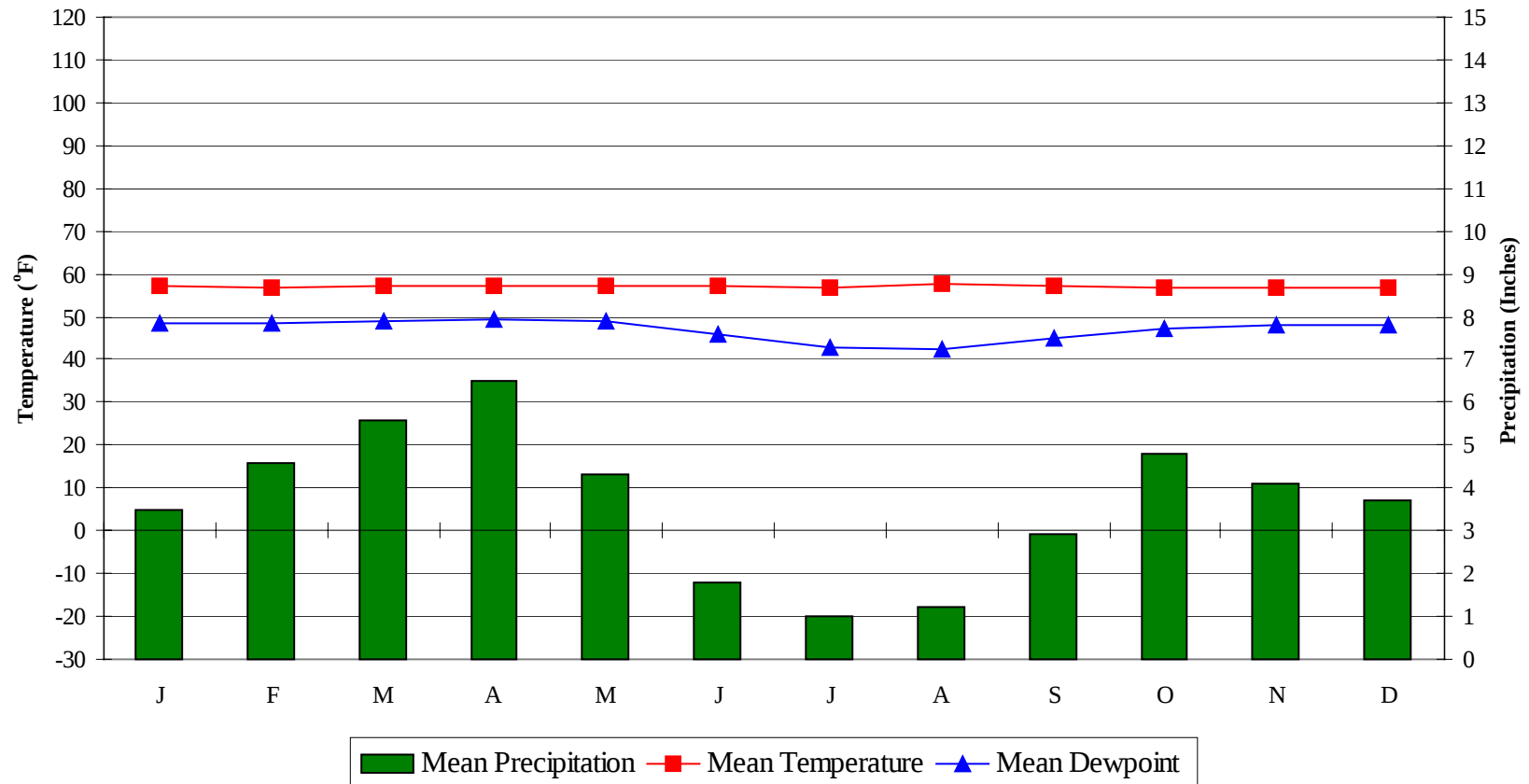
Weather Region	Rain Rate 100 Year Recurrence (in./hr)	Basic Wind Speed 3 sec gust @ 33 ft 50 Year Recurrence (mph)	Ventilation Cooling Load Index (Ton-hr/cfm/yr) Base 75°F-RH 60% Latent + Sensible
8	N/A	N/A	0.0 + 0.0
Ground Water Temperature (°F) 50 Foot Depth *	Frost Depth 50 Year Recurrence (in.)	Ground Snow Load 50 Year Recurrence (lb/ft ²)	Average Annual Freeze-Thaw Cycles (#)
59.5	N/A	N/A	0

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

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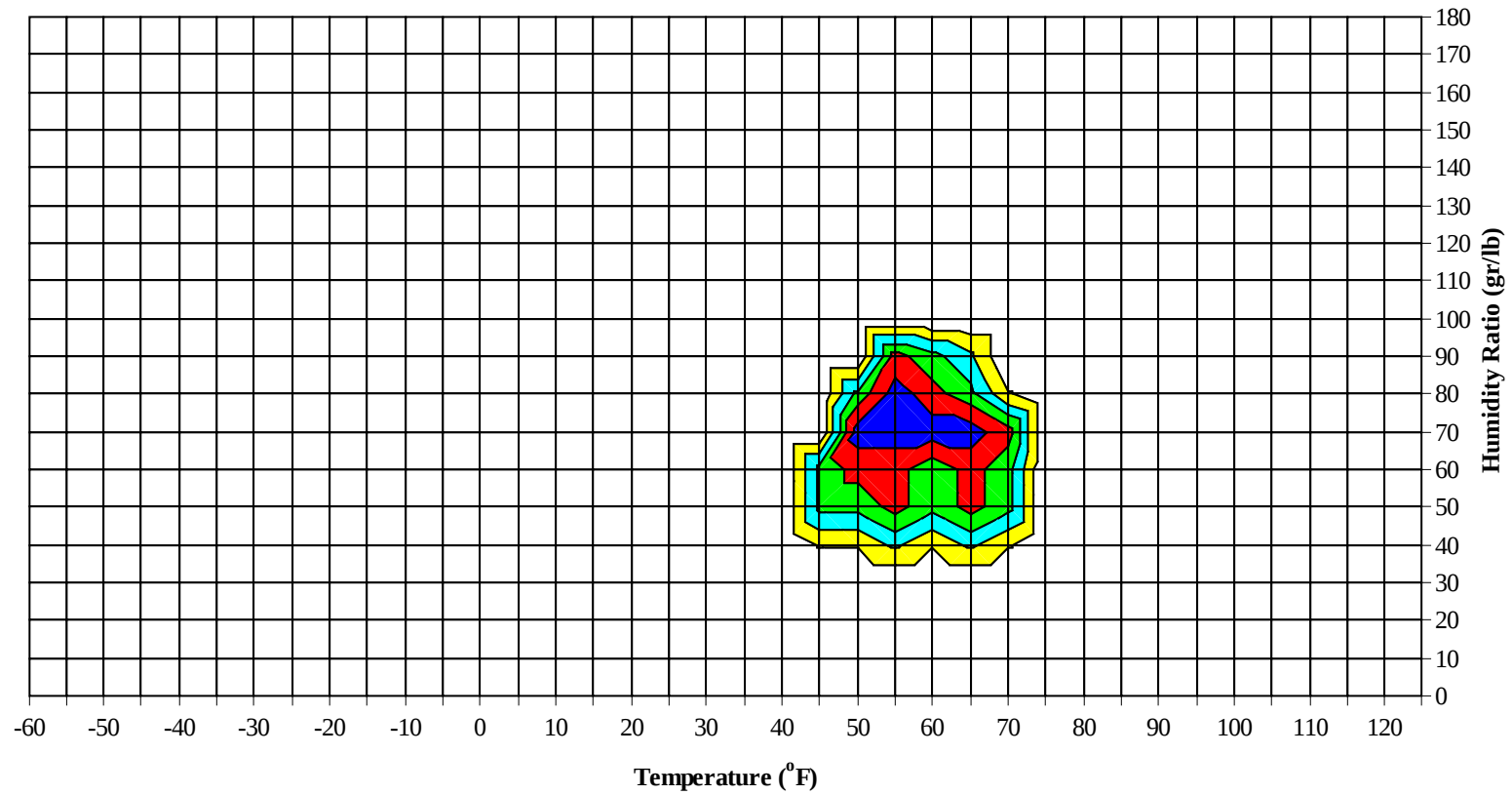
Average Annual Climate



QUITO/MARISCAL SUCRE EQ

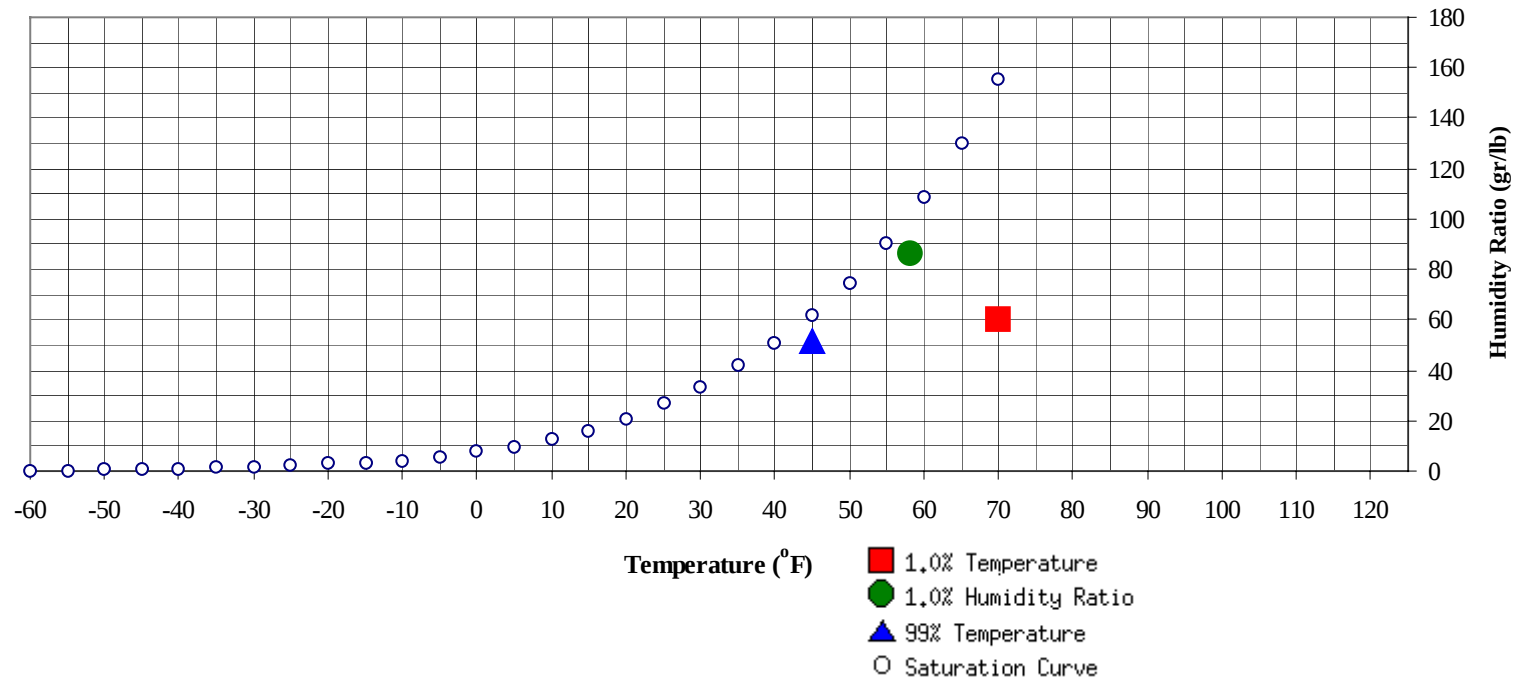
WMO No. 840710

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)
	45	51.9	18.8		86.1	58.2	55.2	53.6	27.3

1.0% Dry Bulb	(°F)	MCHR (gr/lb)	MCWB (°F)	Enthalpy (btu/lb)
	70	60.5	53.9	26.2

QUITO/MARISCAL SUCRE EQ

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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			0	0	72.0								0	0	
80 / 84		0	0	0			0		0	60.0		0	0	0	65.0
75 / 79	0	0	0	0	58.0	0	1	0	1	59.4		0	0	0	65.0
70 / 74	0	21	0	21	54.2	0	15	0	15	54.9		16	0	16	55.1
65 / 69	0	66	4	70	54.5	0	55	4	59	54.5	0	63	4	67	54.9
60 / 64	1	100	37	138	53.6	1	89	31	121	53.7	1	102	36	140	54.0
55 / 59	21	50	115	186	52.3	24	52	104	180	52.4	29	54	122	205	52.6
50 / 54	186	11	89	286	50.2	170	12	83	264	50.3	188	11	84	284	50.3
45 / 49	37	0	2	39	45.5	29		1	30	45.3	29	1	1	31	45.7
40 / 44	3		0	3	40.5	1		0	1	39.9	0		0	0	40.7
35 / 39	0			0		0		0	0	37.3	0		0	0	39.0
30 / 34	0			0		0		0	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.

QUITO/MARISCAL SUCRE EQ

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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								0	0	75.0		0		0	58.0
75 / 79	0		0	0	74.0	0	0	0	0	61.0		0	0	0	62.5
70 / 74	0	14	0	14	55.5	0	16	0	16	55.0	0	18	0	18	53.6
65 / 69	0	63	3	66	55.2	0	69	3	72	54.6	0	79	4	83	52.9
60 / 64	1	102	31	135	54.3	2	110	34	146	54.0	2	104	42	148	52.2
55 / 59	28	53	118	200	52.9	28	46	115	189	52.5	36	33	108	177	50.5
50 / 54	187	8	88	283	50.6	188	7	95	290	50.4	149	6	84	239	49.0
45 / 49	23	0	0	23	46.1	29	0	1	30	45.8	52	0	2	54	44.9
40 / 44						1			1	39.5	1			1	40.0
35 / 39						0			0	35.3	0			0	
30 / 34											0			0	

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QUITO/MARISCAL SUCRE EQ

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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	57.0										
80 / 84	0	0		0	59.7		0		0	58.0					
75 / 79	0	0	0	0	55.5		1		1	51.9	0	0	0	0	61.7
70 / 74	0	13	0	13	52.4	0	22	0	22	52.0	0	25	0	25	52.8
65 / 69	0	78	3	82	51.5	0	83	4	87	51.4	0	80	2	82	52.4
60 / 64	1	116	41	158	50.6	1	110	42	153	50.7	2	99	31	132	51.7
55 / 59	33	36	108	176	48.7	42	29	116	186	48.6	35	32	99	165	49.9
50 / 54	135	5	91	231	47.3	138	4	83	225	47.4	145	5	105	255	48.8
45 / 49	72	0	5	78	44.2	63	0	3	66	44.3	55	0	3	58	44.8
40 / 44	6		0	6	40.1	3			3	39.7	3	0		3	40.9
35 / 39	1			1	35.5	1			1	35.5	0			0	
30 / 34															

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.

QUITO/MARISCAL SUCRE EQ

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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		0		0	54.0										
80 / 84		0		0	55.0		0		0						
75 / 79		0		0	61.0		0		0	63.0		0		0	56.0
70 / 74	0	18	0	18	54.3	0	18	0	18	54.4	0	19	0	19	54.1
65 / 69	0	72	1	73	53.8	0	65	1	66	54.0	0	69	2	71	54.5
60 / 64	1	106	21	129	52.9	1	105	19	125	53.4	1	104	26	131	53.6
55 / 59	23	44	100	167	51.7	20	47	94	160	52.1	21	49	109	179	52.2
50 / 54	171	7	123	301	49.8	171	5	122	298	50.0	183	6	108	298	50.2
45 / 49	50	0	3	53	45.1	42	0	4	46	44.8	41	0	2	43	45.4
40 / 44	3			3	40.4	5		0	5	39.0	2			2	39.9
35 / 39						1			1	35.6	0			0	37.5
30 / 34															

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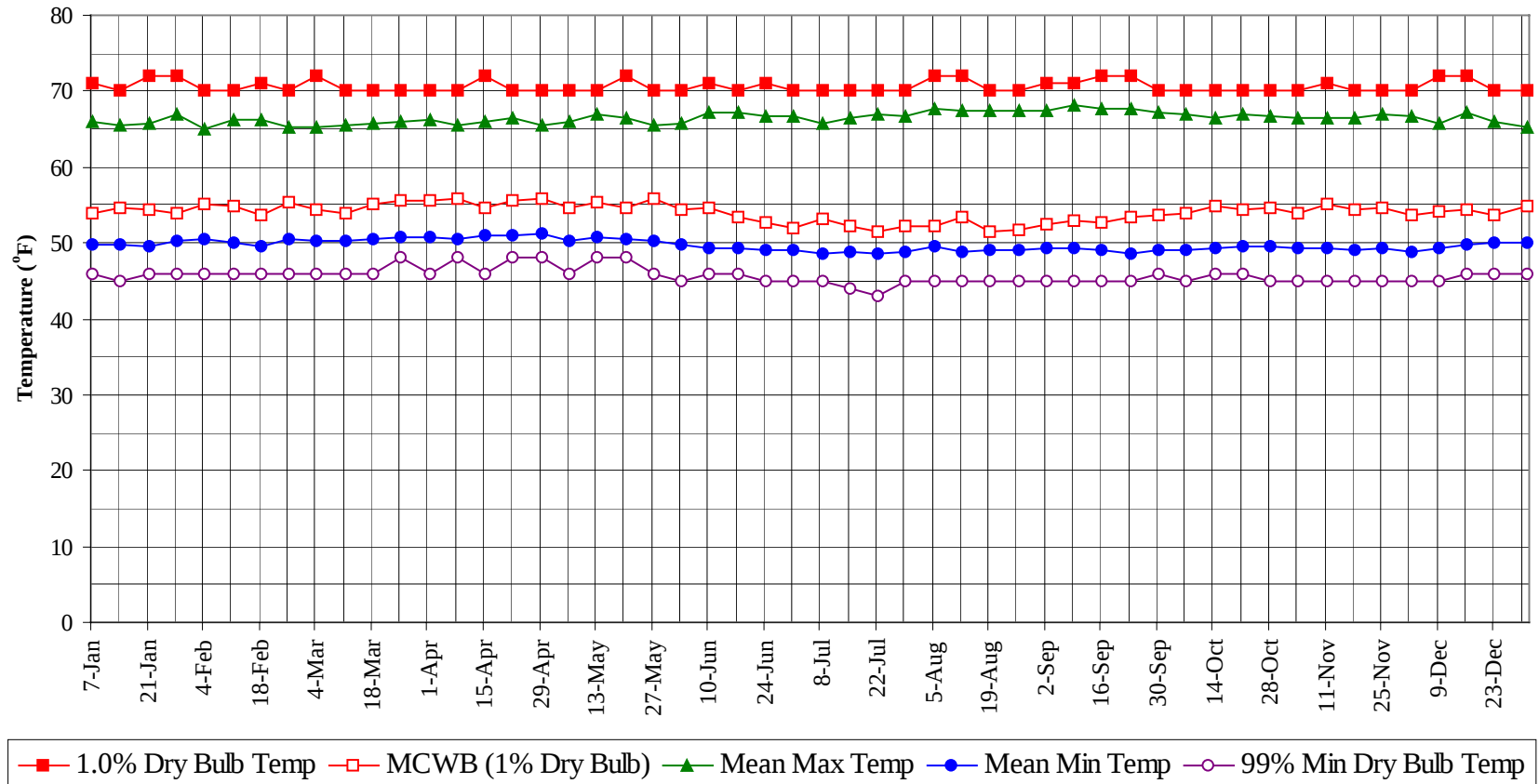
Dry-Bulb Temperature Hours For An Average Year (Sheet 5 of 5)

Period of Record = 1973 to 1996

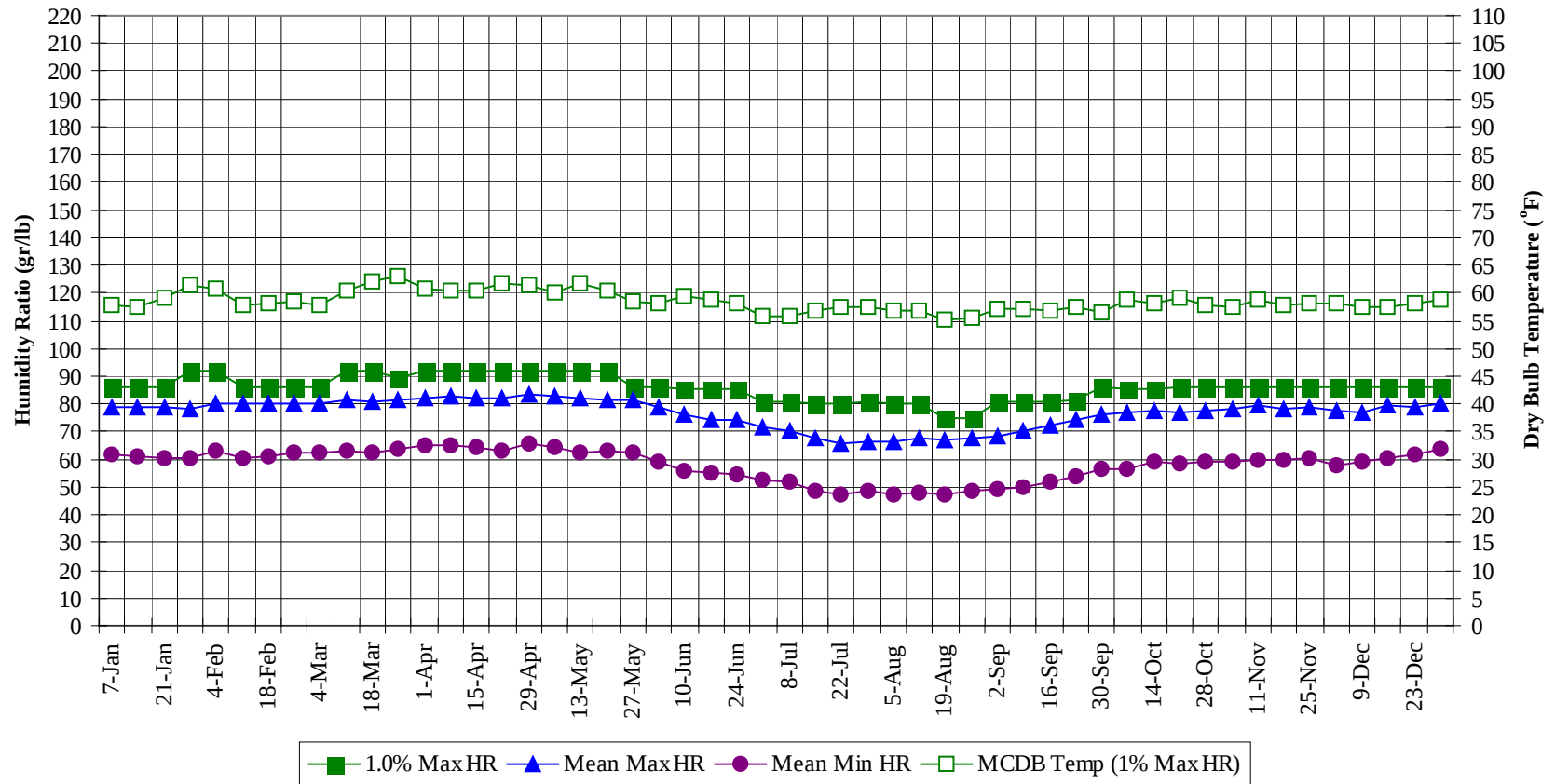
Annual Totals					
Temperature Range (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00		
85 / 89	0	0	0	0	61.0
80 / 84	0	1	0	1	63.2
75 / 79	0	4	1	5	59.7
70 / 74	1	219	2	222	53.9
65 / 69	1	841	33	876	53.5
60 / 64	14	1246	391	1651	52.8
55 / 59	338	522	1306	2165	51.4
50 / 54	2006	85	1159	3249	49.6
45 / 49	526	3	28	557	44.9
40 / 44	30	0	0	30	40.0
35 / 39	4		0	4	35.8
30 / 34	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.

Annual Summary of Temperatures



Long Term Humidity and Dry Bulb Temperature Summary

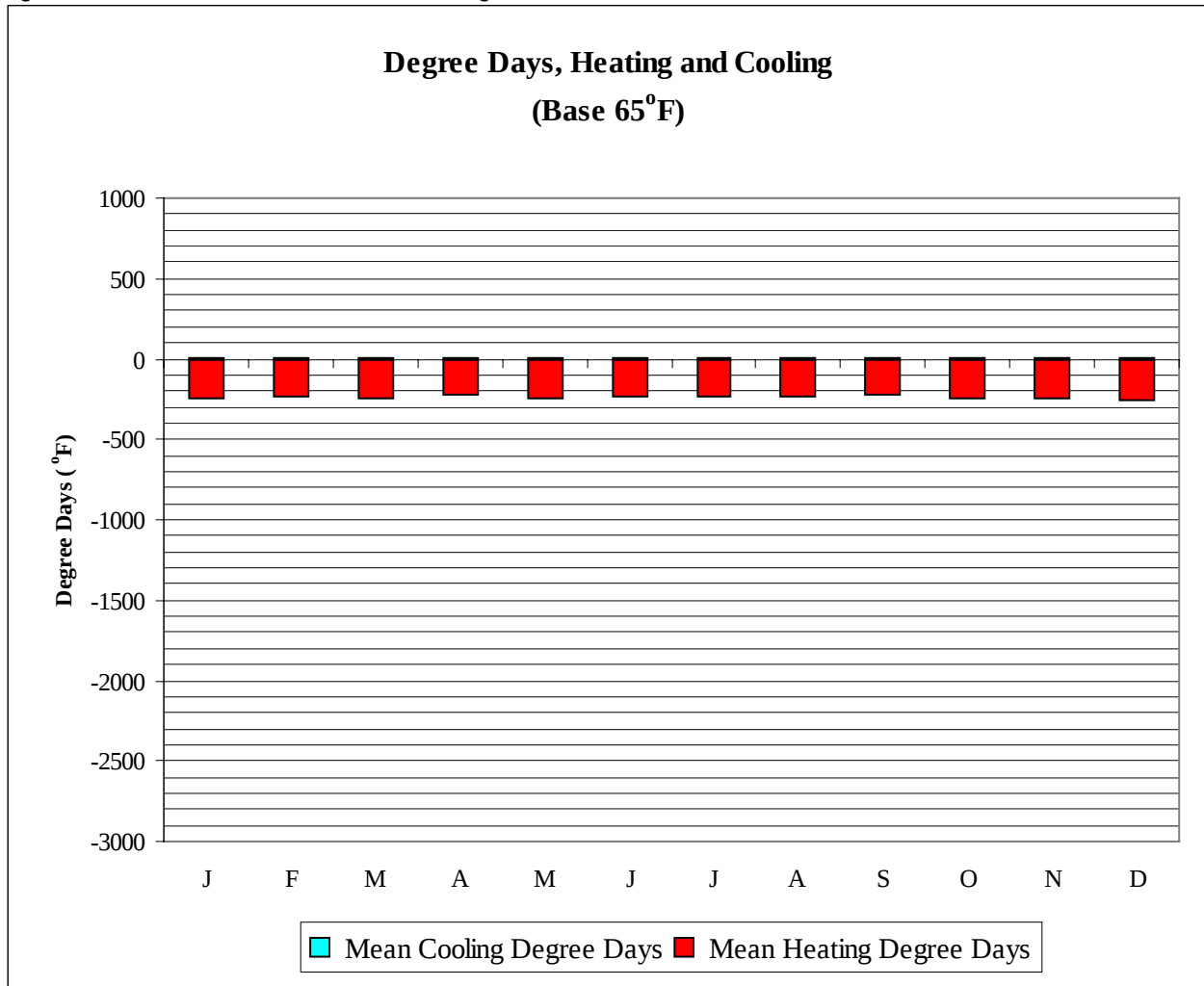


QUITO/MARISCAL SUCRE EQ

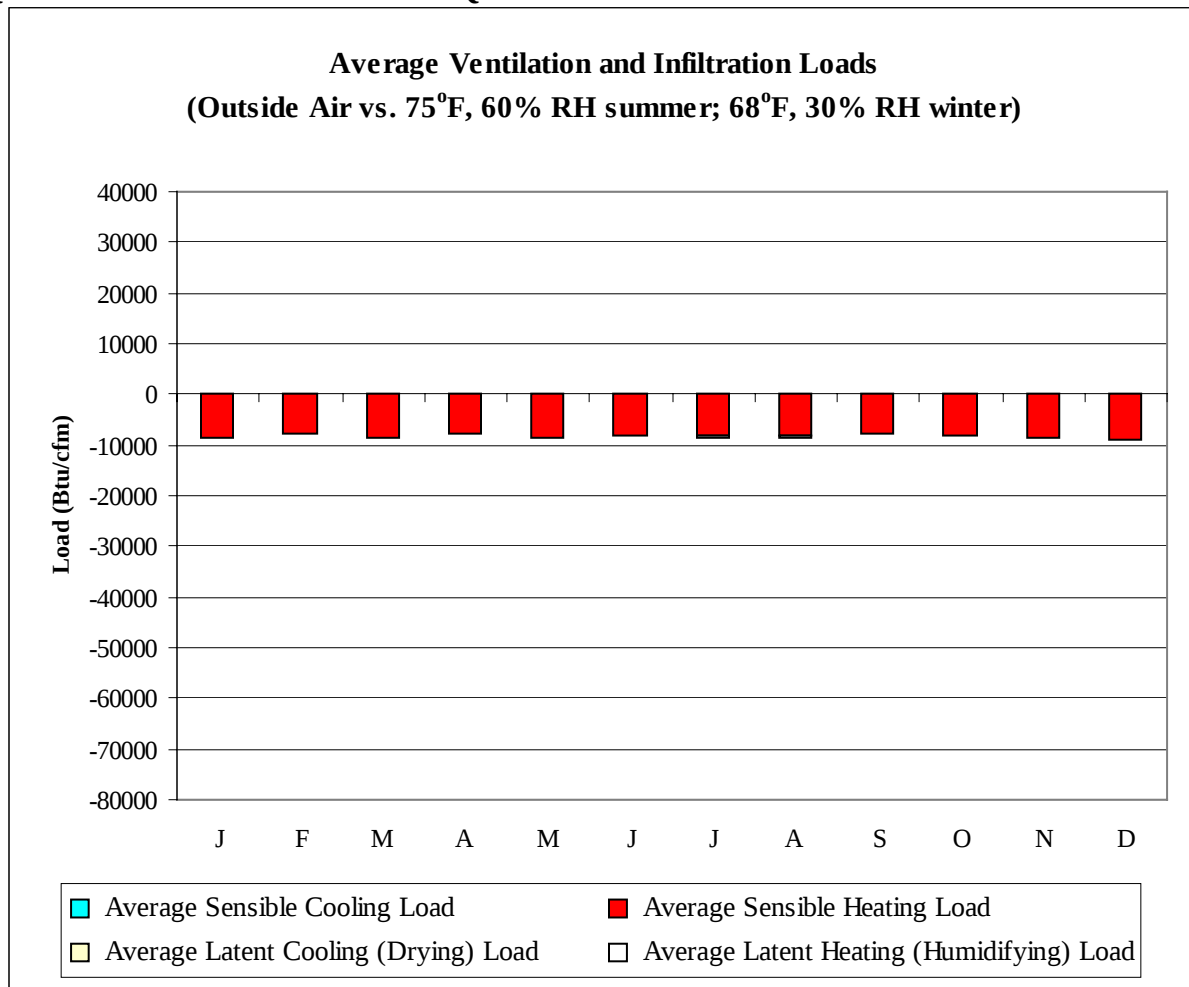
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Long Term Dry Bulb Temperature and Humidity Summary

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	71.0	54.0	65.9	49.9	46.0	86.1	57.9	78.7	61.7
14-Jan	70.0	54.6	65.6	49.8	45.0	86.1	57.4	79.0	61.3
21-Jan	72.0	54.3	65.8	49.6	46.0	86.1	59.1	78.5	60.2
28-Jan	72.0	53.9	66.9	50.3	46.0	91.7	61.4	78.4	60.6
4-Feb	70.0	55.1	65.1	50.5	46.0	91.7	60.6	80.0	62.8
11-Feb	70.0	54.8	66.2	50.0	46.0	86.1	57.8	79.9	60.7
18-Feb	71.0	53.8	66.2	49.5	46.0	86.1	58.0	79.9	60.8
25-Feb	70.0	55.5	65.4	50.6	46.0	86.1	58.3	80.0	62.6
4-Mar	72.0	54.5	65.3	50.2	46.0	86.1	57.8	80.2	62.4
11-Mar	70.0	54.0	65.6	50.2	46.0	91.7	60.4	81.4	63.2
18-Mar	70.0	55.1	65.9	50.4	46.0	91.7	61.9	80.9	62.4
25-Mar	70.0	55.7	66.1	50.9	48.0	89.6	63.0	81.6	63.9
1-Apr	70.0	55.5	66.1	50.7	46.0	91.7	60.6	82.1	64.9
8-Apr	70.0	55.8	65.6	50.5	48.0	91.7	60.3	82.9	65.2
15-Apr	72.0	54.6	66.1	51.0	46.0	91.7	60.5	82.0	64.1
22-Apr	70.0	55.6	66.5	51.0	48.0	91.7	61.6	82.4	63.2
29-Apr	70.0	55.8	65.6	51.2	48.0	91.7	61.4	83.6	65.5
6-May	70.0	54.7	65.9	50.2	46.0	91.7	60.0	82.9	64.2
13-May	70.0	55.3	67.0	50.9	48.0	91.7	61.6	82.3	62.6
20-May	72.0	54.6	66.4	50.6	48.0	91.7	60.5	81.4	63.2
27-May	70.0	55.7	65.4	50.2	46.0	86.1	58.6	81.2	62.7
3-Jun	70.0	54.3	65.8	49.7	45.0	86.1	58.1	78.6	59.1
10-Jun	71.0	54.7	67.2	49.3	46.0	85.4	59.4	76.0	55.8
17-Jun	70.0	53.4	67.3	49.4	46.0	85.4	58.9	74.5	54.9
24-Jun	71.0	52.7	66.8	49.2	45.0	85.4	58.1	74.1	54.2
1-Jul	70.0	52.1	66.6	49.1	45.0	80.5	55.7	71.3	52.4
8-Jul	70.0	53.3	65.8	48.5	45.0	80.5	55.7	70.5	51.9
15-Jul	70.0	52.2	66.5	48.9	44.0	79.8	56.9	67.5	48.9
22-Jul	70.0	51.5	66.9	48.6	43.0	79.8	57.4	65.6	47.3
29-Jul	70.0	52.1	66.6	48.8	45.0	80.5	57.5	66.3	48.7
5-Aug	72.0	52.1	67.8	49.5	45.0	79.8	56.9	66.4	47.2
12-Aug	72.0	53.5	67.4	48.7	45.0	79.8	56.9	67.4	47.6
19-Aug	70.0	51.5	67.4	49.2	45.0	74.9	55.1	66.7	47.3
26-Aug	70.0	51.7	67.3	49.2	45.0	74.9	55.5	67.5	48.3
2-Sep	71.0	52.5	67.4	49.3	45.0	80.5	57.2	68.3	49.1
9-Sep	71.0	53.0	68.1	49.3	45.0	80.5	57.1	70.4	49.9
16-Sep	72.0	52.6	67.6	49.0	45.0	80.5	56.9	72.0	51.6
23-Sep	72.0	53.5	67.8	48.7	45.0	81.2	57.5	74.3	53.6
30-Sep	70.0	53.6	67.2	49.0	46.0	86.1	56.6	76.2	56.4
7-Oct	70.0	53.9	66.9	49.1	45.0	85.4	58.8	76.6	56.6
14-Oct	70.0	55.0	66.6	49.4	46.0	85.4	58.0	77.5	59.1
21-Oct	70.0	54.3	66.9	49.5	46.0	86.1	59.1	77.1	58.6
28-Oct	70.0	54.7	66.6	49.5	45.0	86.1	57.8	77.6	59.1
4-Nov	70.0	54.0	66.4	49.2	45.0	86.1	57.5	78.5	59.2
11-Nov	71.0	55.0	66.5	49.4	45.0	86.1	58.8	79.3	59.7
18-Nov	70.0	54.5	66.4	49.0	45.0	86.1	57.8	78.2	60.0
25-Nov	70.0	54.6	66.9	49.4	45.0	86.1	58.1	79.0	60.3
2-Dec	70.0	53.6	66.7	48.8	45.0	86.1	58.1	77.7	57.7
9-Dec	72.0	54.1	65.6	49.2	45.0	86.1	57.4	76.7	59.3
16-Dec	72.0	54.4	67.1	49.8	46.0	86.1	57.5	79.4	60.6
23-Dec	70.0	53.6	66.0	50.0	46.0	86.1	58.2	78.8	61.9
31-Dec	70.0	55.0	65.3	50.0	46.0	86.1	58.7	80.2	63.8



	Mean Cooling Degree Days (°F)	Mean Heating Degree Days (°F)
JAN	9	243
FEB	7	228
MAR	7	240
APR	7	223
MAY	8	241
JUN	9	229
JUL	8	239
AUG	10	236
SEP	10	225
OCT	9	240
NOV	8	251
DEC	8	257
ANN	98	2852



	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	-8442	1	-5
FEB	1	-7903	0	-9
MAR	3	-8365	2	-3
APR	0	-7836	0	-1
MAY	1	-8406	0	-11
JUN	1	-8046	0	-26
JUL	2	-8268	0	-111
AUG	1	-8247	0	-129
SEP	1	-7792	0	-39
OCT	13	-8229	0	-13
NOV	1	-8605	0	-38
DEC	0	-8837	0	-9
ANN	25	-98976	3	-394

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

No Solar Radiation
Data Available

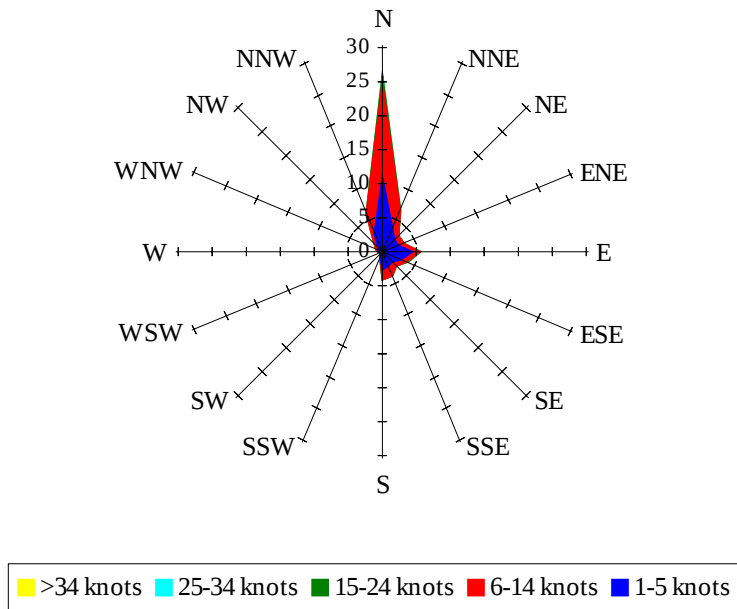


Average Annual Solar Heat and Illumination – Nearest Available Site

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

Wind Summary - December, January, and February

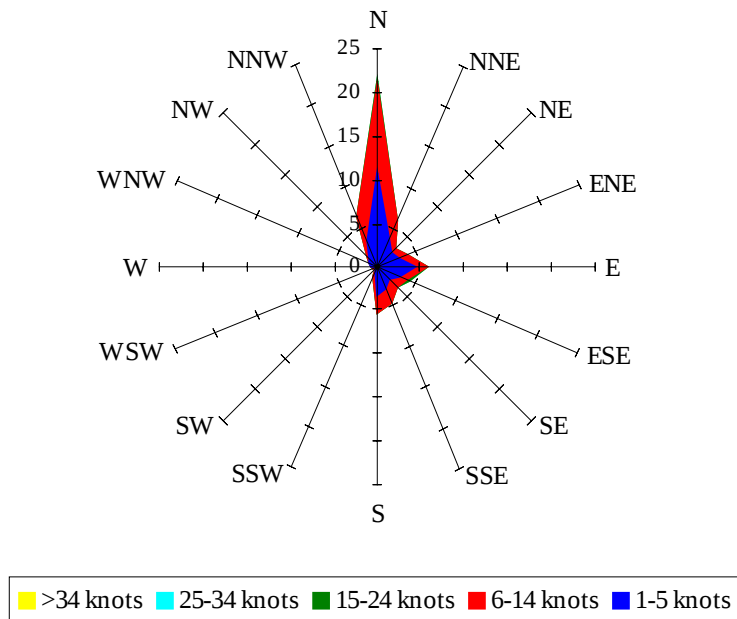
Labels of Percent Frequency on North Axis



Percent Calm = 30.43

Wind Summary - March, April, and May

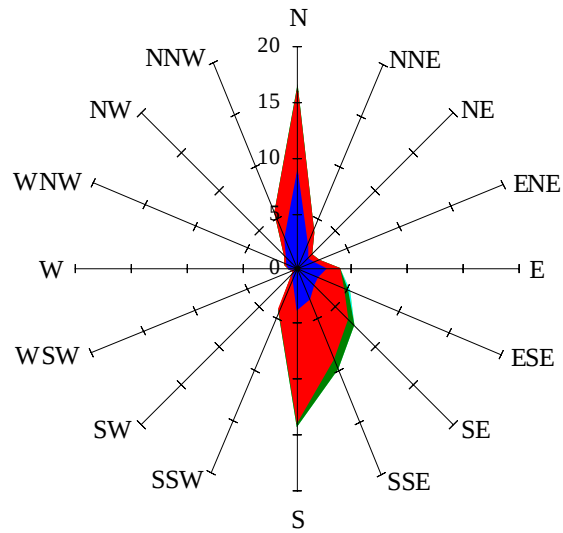
Labels of Percent Frequency on North Axis



Percent Calm = 32.21

Wind Summary - June, July, and August

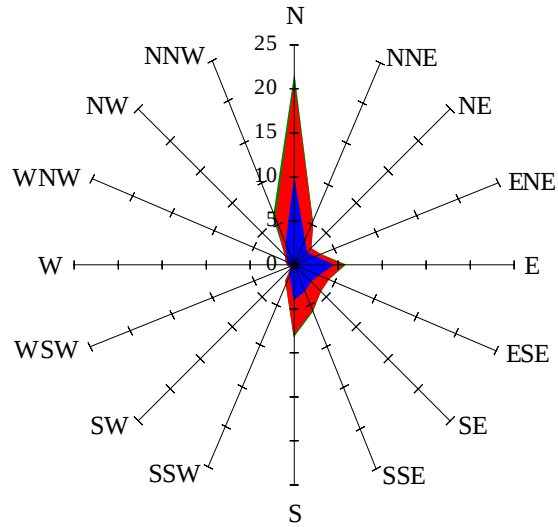
Labels of Percent Frequency on North Axis



Percent Calm = 22.83

Wind Summary - September, October, and November

Labels of Percent Frequency on North Axis



Percent Calm = 28.85