

OSAN (US/KOR-AFB) KO

Latitude = 37.08 N

WMO No. 471220

Longitude = 127.03 E

Elevation = 39 feet

Period of Record = 1967 to 1996

Average Pressure = 29.94 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	93	79	130	6.7	E
0.4% Occurrence	91	79	129	6.7	SW
1.0% Occurrence	88	77	123	6.3	W
2.0% Occurrence	86	75	117	6.3	W
Mean Daily Range	18	-	-	-	-
97.5% Occurrence	16	14	8	3.3	ENE
99.0% Occurrence	10	8	6	2.8	ENE
99.6% Occurrence	5	4	4	2.4	ENE
Median of Extreme Lows	0	0	4	2.6	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	82	89	152	6.0	W
0.4% Occurrence	81	88	147	5.7	SW
1.0% Occurrence	79	86	138	5.6	SW
2.0% Occurrence	78	85	134	5.5	SW
	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	160	86	1.06	5.1	SW
0.4% Occurrence	151	85	0.99	4.5	W
1.0% Occurrence	142	84	0.94	5.1	SW
2.0% Occurrence	134	82	0.88	5.0	SSW
Air Conditioning/ Humid Area Criteria	# of Hours	T ≥ 93°F	T ≥ 80°F	T _{wb} ≥ 73°F	T _{wb} ≥ 67°F
		18	693	836	1754

Other Site Data

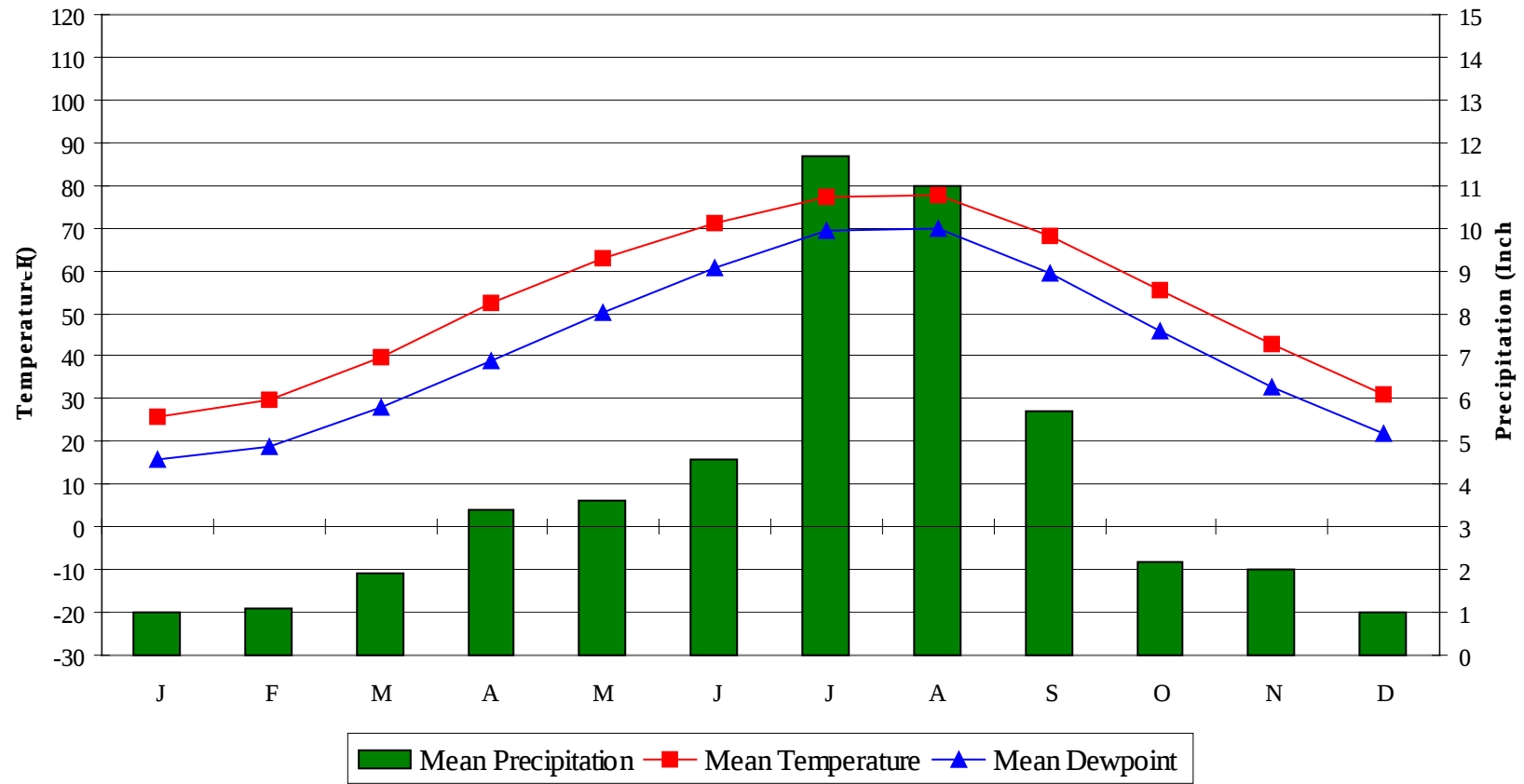
Weather Region	Rain Rate 100 Year Recurrence (in./hr)	Basic Wind Speed 3 sec gust @ 33 ft 50 Year Recurrence (mph)	Ventilation Cooling Load Index (Ton-hr/cfm/yr) Base 75°F-RH 60% Latent + Sensible
7	N/A	N/A	3.0 + 0.7
Ground Water Temperature (°F) 50 Foot Depth *	Frost Depth 50 Year Recurrence (in.)	Ground Snow Load 50 Year Recurrence (lb/ft ²)	Average Annual Freeze-Thaw Cycles (#)
55.4	N/A	N/A	80

*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

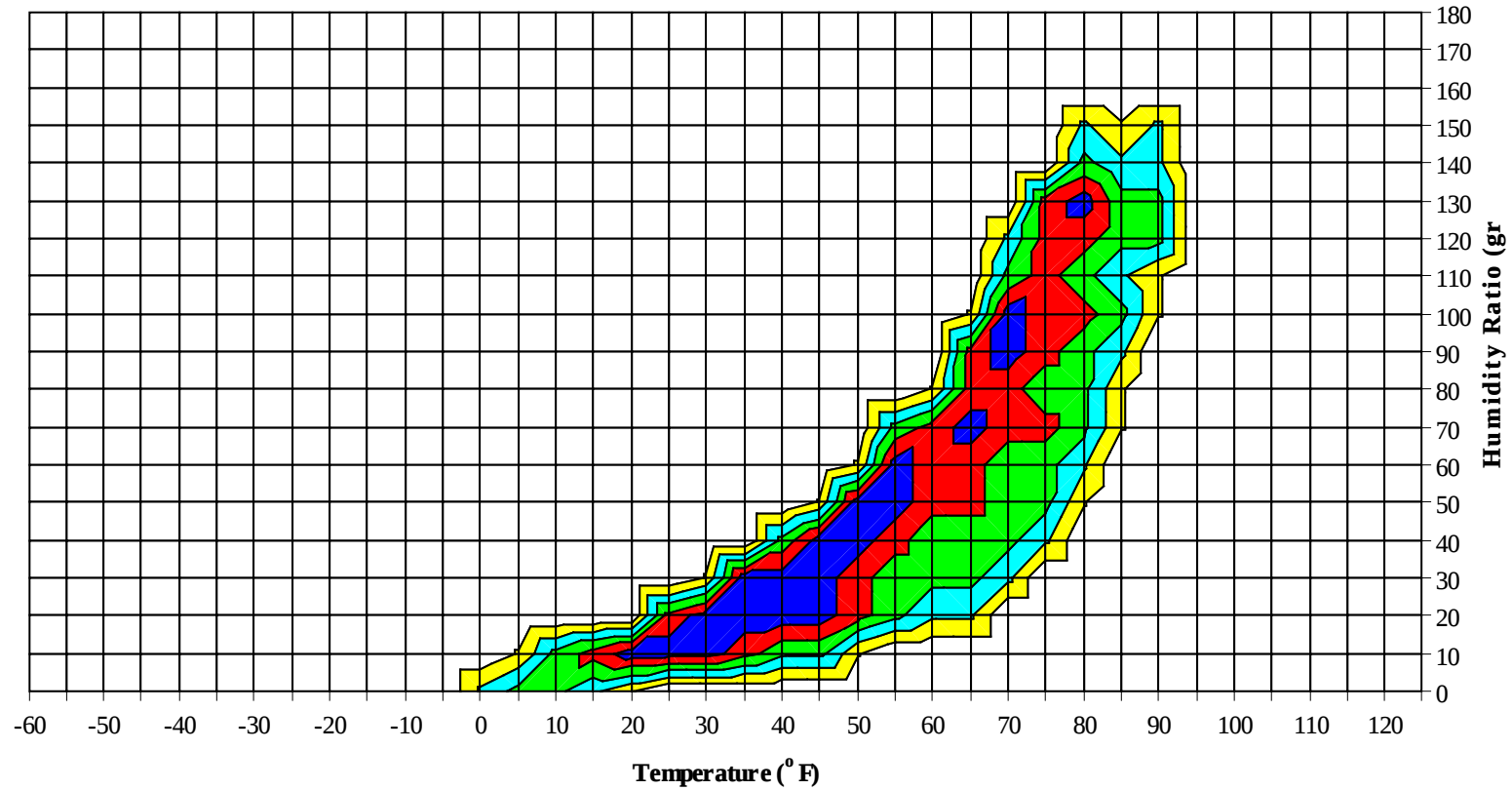


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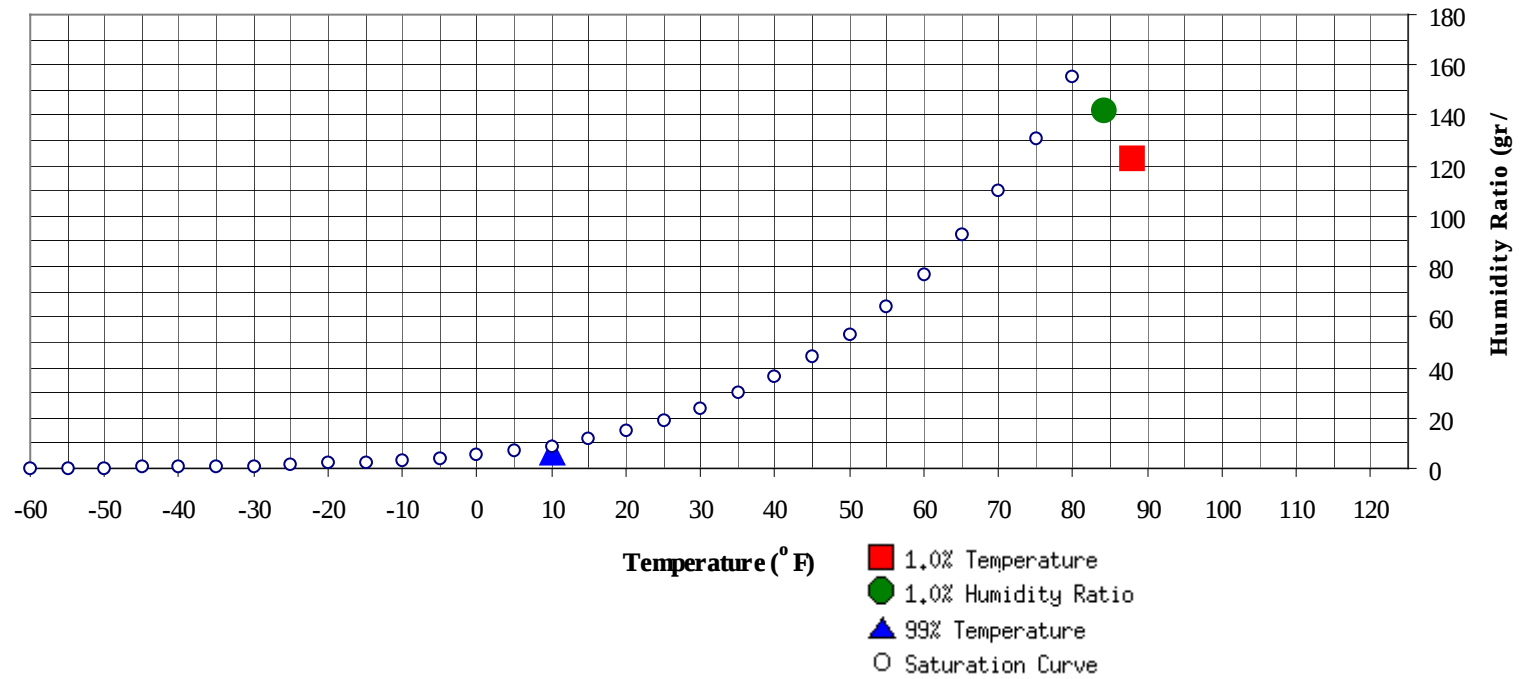
Long Term Psychrometric Summary



- 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)
	10	6.1	3.3		142.1	84.1	78.9	77	42.5

1.0% Dry Bulb	(°F)	MCHR (gr/lb)	MCWB (°F)	Enthalpy (btu/lb)
	88	123.1	76.9	40.5

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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		
95 / 99															
90 / 94															
85 / 89															
80 / 84															
75 / 79															
70 / 74												0	0	0	55.5
65 / 69											1	0	2	14	55.5
60 / 64							1	0	1	52.9	11	3	14	49.7	
55 / 59						0	3	1	3	48.9	0	24	9	33	46.6
50 / 54	0	2	0	3	43.7	1	8	3	12	44.3	3	44	23	69	43.8
45 / 49	1	10	3	15	40.4	3	23	11	38	40.3	14	61	51	125	40.5
40 / 44	2	20	9	31	37.1	4	23	15	42	37.0	21	36	42	99	37.4
35 / 39	16	50	37	103	33.3	22	57	47	126	33.1	60	46	63	168	33.5
30 / 34	29	53	51	133	28.6	36	42	52	131	28.6	75	20	43	138	29.2
25 / 29	46	52	60	158	23.7	47	36	49	132	23.7	58	5	13	76	24.6
20 / 24	34	23	32	89	19.5	31	15	21	67	19.4	12	1	1	14	20.3
15 / 19	52	22	33	108	15.6	39	12	18	69	15.6	5	1	0	6	16.2
10 / 14	34	9	13	56	10.5	25	4	6	34	10.6	0			0	12.5
5 / 9	20	3	5	28	5.9	11	1	1	13	6.0					
0 / 4	10	2	2	14	0.8	4	0	0	4	1.1					
-5 / -1	3	0	0	3	-3.5	0			0	-2.3					
-10 / -6	1	0	0	2	-7.9										
-15 / -11	0			0	-12.4										

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 = 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		
95 / 99															
90 / 94							0	0	0	64.3		1	0	2	71.8
85 / 89							2	0	2	66.1		9	2	11	70.3
80 / 84		1	0	1	60.6		15	5	19	64.7	0	55	23	78	69.4
75 / 79		6	2	8	60.2		42	18	60	62.7	6	78	52	137	67.8
70 / 74	0	23	8	31	57.0	3	68	41	112	60.4	55	66	89	209	65.4
65 / 69	1	24	11	37	54.6	12	40	39	90	58.8	63	21	44	128	62.8
60 / 64	6	59	33	98	52.4	57	54	73	184	56.5	87	9	27	123	59.4
55 / 59	17	51	50	118	49.6	74	24	49	146	52.8	25	1	3	28	54.8
50 / 54	40	44	56	140	46.6	62	4	21	87	49.1	4	0	0	4	50.5
45 / 49	61	25	53	139	42.5	31	0	3	35	44.4					
40 / 44	40	5	18	63	38.7	7		0	7	40.3					
35 / 39	51	2	9	61	34.9	1			1	37.0					
30 / 34	20		1	22	30.4										
25 / 29	2			2	26.7										
20 / 24															
15 / 19															
10 / 14															
5 / 9															
0 / 4															
-5 / -1															
-10 / -6															
-15 / -11															

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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		
95 / 99		2	1	3	80.2		4	1	4	79.5					
90 / 94		23	9	31	79.1		27	9	36	78.8		1	0	1	76.1
85 / 89	0	34	16	50	77.2	0	45	19	63	76.7		5	1	7	74.0
80 / 84	20	81	64	165	75.0	18	89	68	176	74.9	0	38	11	50	70.7
75 / 79	81	71	88	240	72.6	90	57	92	239	72.7	8	73	37	118	68.3
70 / 74	101	33	59	192	68.4	95	23	52	170	68.8	34	75	71	179	65.6
65 / 69	32	3	10	44	64.4	30	3	8	41	64.4	43	27	45	115	63.0
60 / 64	13	1	2	16	60.3	12	0	1	13	60.9	72	17	48	137	59.5
55 / 59	1	0	0	1	55.6	1		0	1	55.5	48	4	20	71	54.7
50 / 54											29	1	5	34	50.1
45 / 49											6	0	1	7	45.7
40 / 44											1			1	41.1
35 / 39											0			0	37.7
30 / 34															
25 / 29															
20 / 24															
15 / 19															
10 / 14															
5 / 9															
0 / 4															
-5 / -1															
-10 / -6															
-15 / -11															

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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		
95 / 99															
90 / 94															
85 / 89															
80 / 84		1	0	2	66.1										
75 / 79		12	2	13	62.8										
70 / 74	0	45	12	57	60.3		2	0	2	58.6					
65 / 69	3	42	17	62	58.3		5	1	6	56.9					
60 / 64	16	67	54	137	56.0	1	24	8	33	54.4		1	0	1	52.2
55 / 59	39	39	61	139	52.7	6	41	21	67	50.5	0	5	2	7	50.4
50 / 54	59	24	49	133	48.6	18	44	36	97	46.6	2	14	6	21	46.0
45 / 49	62	13	34	109	43.9	33	45	51	129	42.2	7	30	17	54	41.3
40 / 44	31	4	11	45	39.9	29	26	33	88	38.2	11	27	19	57	37.9
35 / 39	26	2	7	35	35.3	57	32	46	135	33.8	30	56	49	135	33.4
30 / 34	10	0	1	11	30.4	49	15	31	96	29.2	47	47	58	152	28.9
25 / 29	1		0	1	26.6	35	5	12	53	24.6	56	36	51	143	24.0
20 / 24						8	1	2	11	20.3	28	16	21	65	19.8
15 / 19						3	0	0	4	16.9	39	10	19	68	16.0
10 / 14						0			0	11.0	17	4	6	27	10.9
5 / 9											6	1	2	9	6.1
0 / 4											2	0	1	3	0.9
-5 / -1											1	0	0	1	-3.7
-10 / -6											0	0		0	-7.0
-15 / -11															

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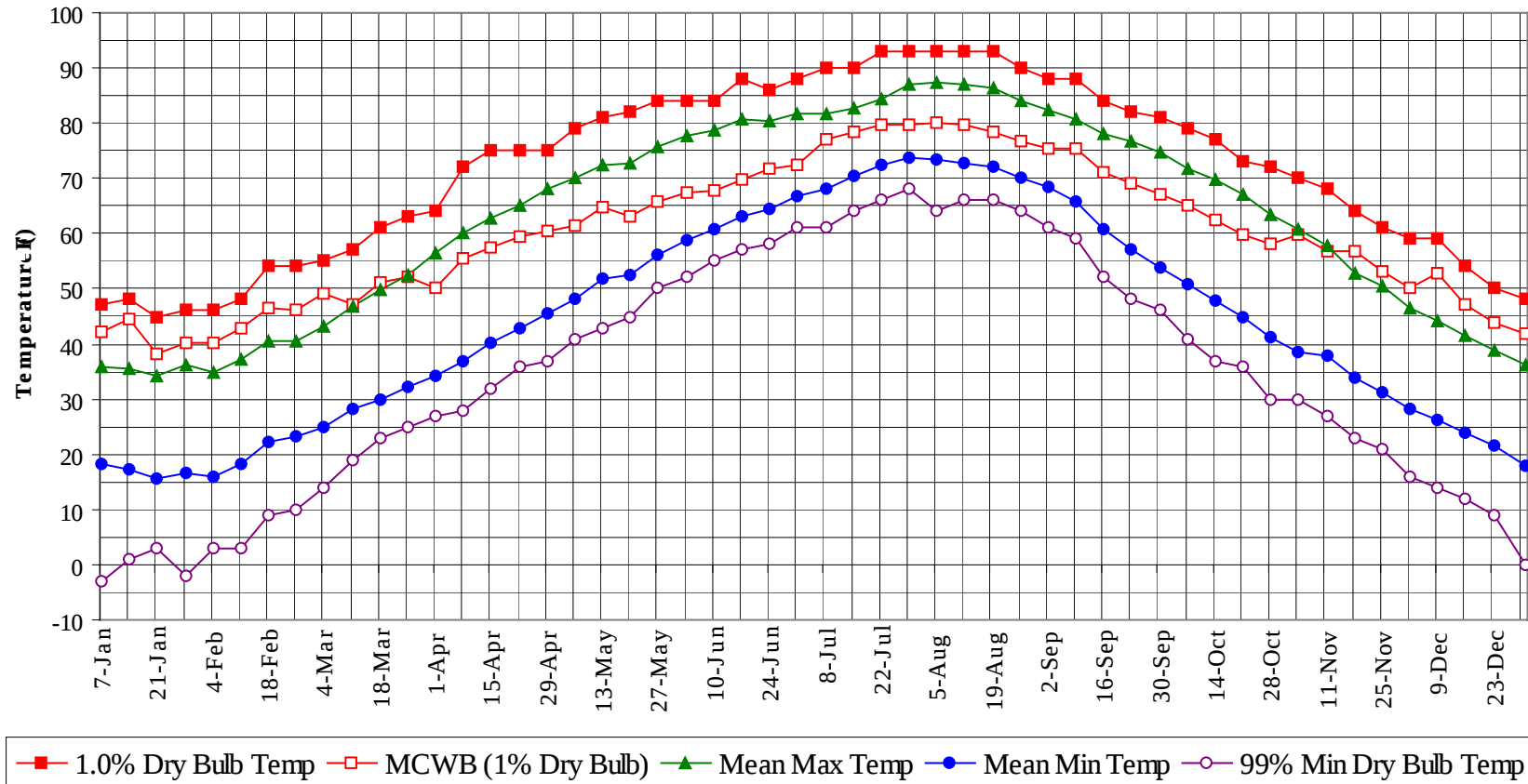
Dry-Bulb Temperature Hours For An Average Year (Sheet 5 of 5)

Period of Record = 1967 to 1996

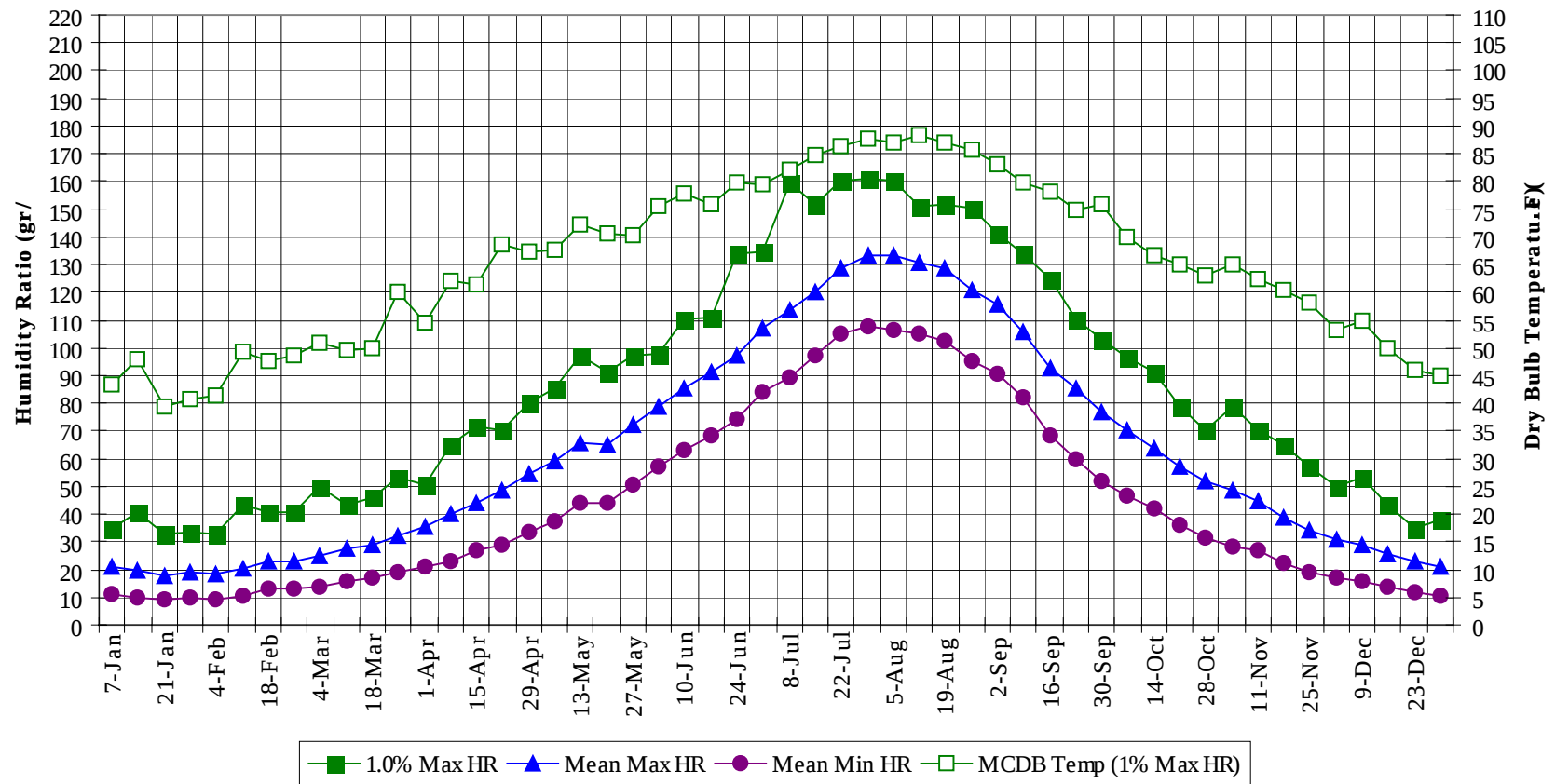
Annual Totals					
Temperature Range (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00		
95 / 99		6	1	7	79.8
90 / 94		51	18	69	78.7
85 / 89	1	93	38	132	76.1
80 / 84	39	278	170	486	73.2
75 / 79	184	338	287	809	70.2
70 / 74	286	334	330	950	65.4
65 / 69	183	166	175	525	61.2
60 / 64	265	244	250	759	56.8
55 / 59	212	191	215	617	51.9
50 / 54	216	186	200	602	47.2
45 / 49	220	207	223	651	42.2
40 / 44	146	140	147	433	38.1
35 / 39	262	245	260	767	33.7
30 / 34	267	179	238	684	29.0
25 / 29	247	134	186	567	24.0
20 / 24	114	55	78	248	19.6
15 / 19	140	45	70	255	15.7
10 / 14	77	16	25	118	10.7
5 / 9	37	6	8	51	6.0
0 / 4	16	2	3	22	0.8
-5 / -1	4	0	0	4	-3.5
-10 / -6	2	0	0	2	-7.7
-15 / -11	0			0	-12.4

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Annual Summary of Temperatures



Long Term Humidity and Dry Bulb Temperature Summary



OSAN (US/KOR-AFB)

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Long Term Dry Bulb Temperature and Humidity Summary

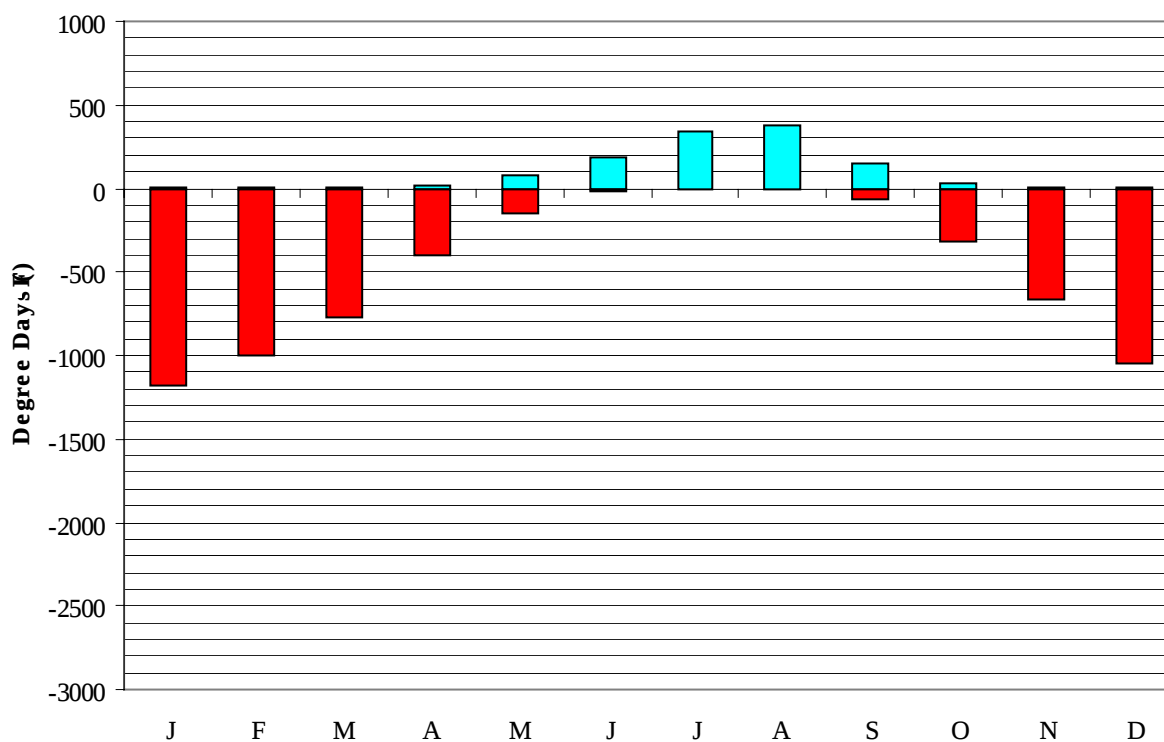
Week Ending	1.0% Temp (°F)	MCWB @ 1% Temp (°F)	Mean Max Temp (°F)	Mean Min Temp (°F)	99% Temp (°F)	1.0% HR (gr/lb)	MCDB @ 1% HR (°F)	Mean Max HR (gr/lb)	Mean Min HR (gr/lb)
7-Jan	47.0	42.3	35.8	18.3	-3.0	35.0	43.3	20.8	10.9
14-Jan	48.0	44.4	35.4	17.2	1.0	40.6	48.1	19.4	10.0
21-Jan	45.0	38.1	34.0	15.5	3.0	32.9	39.4	17.8	9.1
28-Jan	46.0	40.1	36.1	16.5	-2.0	33.6	40.7	18.9	9.9
4-Feb	46.0	40.1	35.0	15.8	3.0	32.9	41.3	18.1	9.1
11-Feb	48.0	42.9	37.1	18.3	3.0	43.4	49.3	20.3	10.3
18-Feb	54.0	46.4	40.6	22.2	9.0	40.6	47.7	23.2	13.0
25-Feb	54.0	46.2	40.5	23.1	10.0	40.6	48.6	23.1	12.9
4-Mar	55.0	49.1	43.2	24.8	14.0	49.7	50.8	24.7	13.7
11-Mar	57.0	47.2	46.8	28.2	19.0	43.4	49.6	27.8	15.8
18-Mar	61.0	51.1	49.7	30.0	23.0	46.2	50.0	29.0	17.1
25-Mar	63.0	52.1	52.5	32.3	25.0	53.2	60.0	32.3	19.0
1-Apr	64.0	50.2	56.5	34.3	27.0	50.4	54.5	35.6	21.3
8-Apr	72.0	55.4	60.2	36.9	28.0	65.1	62.2	40.0	23.2
15-Apr	75.0	57.5	62.8	40.2	32.0	71.4	61.5	44.0	27.0
22-Apr	75.0	59.4	65.2	42.7	36.0	70.0	68.8	48.7	29.1
29-Apr	75.0	60.6	68.1	45.5	37.0	79.8	67.3	54.4	33.5
6-May	79.0	61.4	70.1	48.3	41.0	85.4	67.7	58.8	37.7
13-May	81.0	64.7	72.3	51.7	43.0	97.3	72.3	66.0	44.3
20-May	82.0	63.0	72.8	52.3	45.0	91.0	70.5	64.7	44.1
27-May	84.0	65.6	75.8	56.0	50.0	97.3	70.3	72.5	50.7
3-Jun	84.0	67.6	77.6	58.7	52.0	98.0	75.6	78.8	56.9
10-Jun	84.0	67.8	78.8	60.9	55.0	110.6	77.7	85.1	63.2
17-Jun	88.0	69.8	80.7	63.2	57.0	111.3	76.0	91.6	68.4
24-Jun	86.0	71.6	80.3	64.4	58.0	133.7	79.9	97.0	74.2
1-Jul	88.0	72.5	81.8	66.8	61.0	134.4	79.3	106.8	84.0
8-Jul	90.0	77.0	81.8	68.2	61.0	159.6	82.1	113.3	89.3
15-Jul	90.0	78.3	82.6	70.4	64.0	151.9	84.6	120.3	97.0
22-Jul	93.0	79.9	84.5	72.4	66.0	160.3	86.3	128.7	104.9
29-Jul	93.0	79.6	87.2	73.8	68.0	161.0	87.7	133.4	108.0
5-Aug	93.0	80.1	87.5	73.5	64.0	160.3	87.0	133.0	106.5
12-Aug	93.0	79.7	87.1	72.7	66.0	151.2	88.2	130.9	104.9
19-Aug	93.0	78.5	86.3	72.0	66.0	151.9	87.1	128.9	102.8
26-Aug	90.0	76.8	84.0	70.0	64.0	150.5	85.8	120.9	95.6
2-Sep	88.0	75.5	82.4	68.4	61.0	141.4	83.1	115.5	90.6
9-Sep	88.0	75.5	80.8	65.6	59.0	133.7	79.9	105.9	81.9
16-Sep	84.0	71.0	78.2	60.7	52.0	124.6	78.3	92.7	68.0
23-Sep	82.0	69.1	76.9	57.3	48.0	110.6	75.0	85.4	59.9
30-Sep	81.0	67.3	74.7	53.7	46.0	102.9	75.8	76.9	51.7
7-Oct	79.0	65.0	71.6	50.7	41.0	96.6	69.8	70.2	46.7
14-Oct	77.0	62.5	69.7	47.9	37.0	91.0	66.6	63.9	42.0
21-Oct	73.0	59.7	67.0	44.7	36.0	79.1	65.0	56.9	36.0
28-Oct	72.0	58.3	63.5	41.1	30.0	70.0	62.9	51.9	31.7
4-Nov	70.0	59.9	60.8	38.7	30.0	79.1	65.1	48.4	28.5
11-Nov	68.0	56.8	57.7	37.9	27.0	70.0	62.5	44.9	26.7
18-Nov	64.0	56.7	52.9	33.9	23.0	65.1	60.6	38.5	22.0
25-Nov	61.0	53.1	50.3	31.4	21.0	57.4	58.0	34.0	18.7
2-Dec	59.0	50.2	46.6	28.2	16.0	49.7	53.1	31.0	16.8
9-Dec	59.0	52.8	44.2	26.4	14.0	53.2	54.7	28.8	15.4
16-Dec	54.0	47.2	41.5	24.0	12.0	43.4	50.0	25.3	13.7
23-Dec	50.0	43.7	39.0	21.5	9.0	35.0	45.9	22.8	12.1
31-Dec	48.0	41.7	36.3	18.1	0.0	37.8	44.9	21.1	10.8

OSAN (US/KOR-AFB)

KO

WMO No. 471220

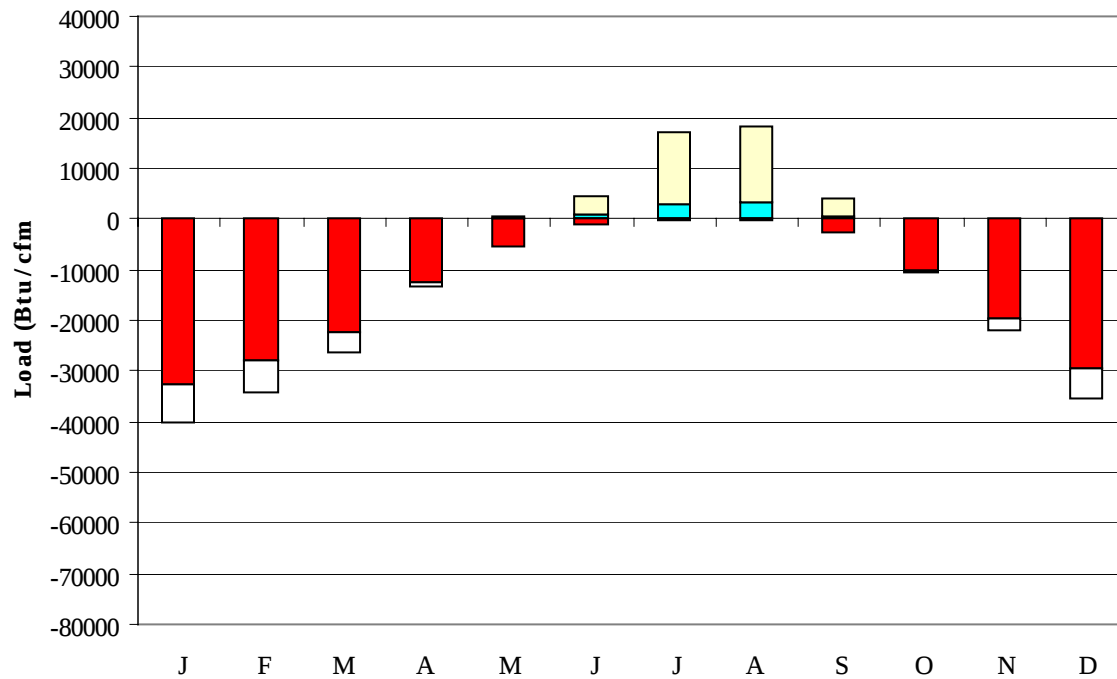
Degree Days, Heating and Cooling
(Base 65°F)



■ Mean Cooling Degree Days ■ Mean Heating Degree Days

	Mean Cooling Degree Days (°F)	Mean Heating Degree Days (°F)
JAN	0	1174
FEB	0	997
MAR	0	776
APR	14	396
MAY	76	148
JUN	189	22
JUL	342	2
AUG	374	1
SEP	147	60
OCT	25	316
NOV	1	660
DEC	0	1047
ANN	1168	5599

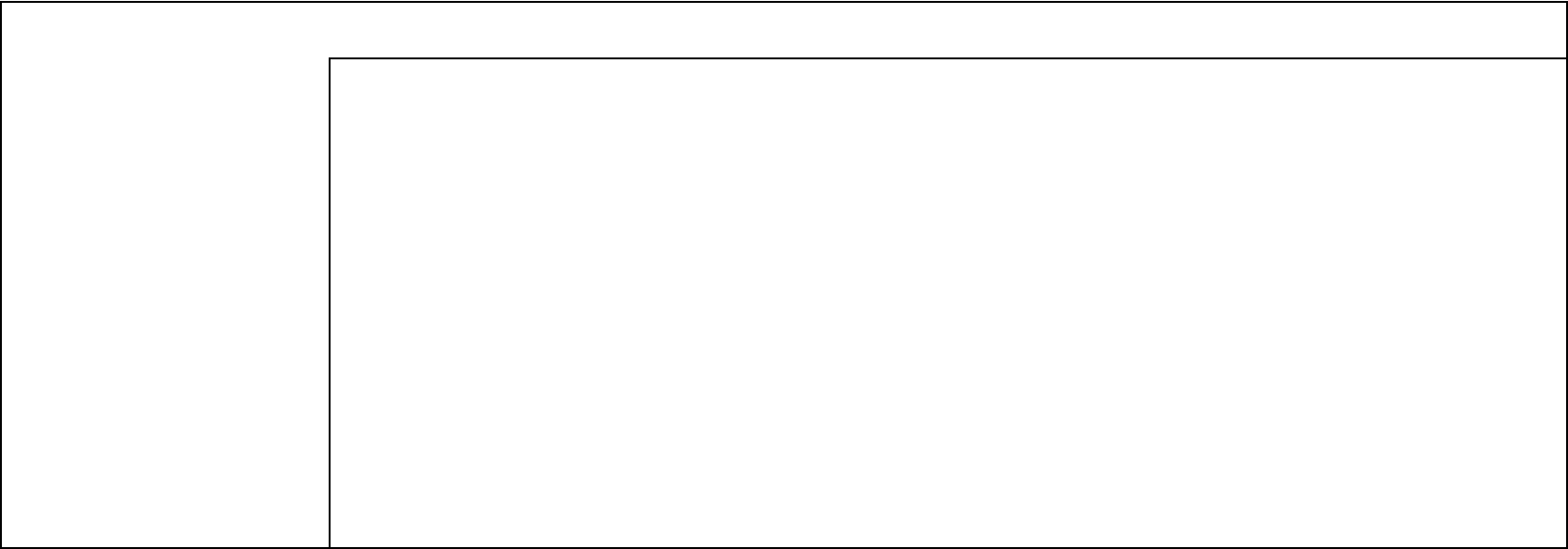
Average Ventilation and Infiltration Loads
(Outside Air vs. 75°F, 60% RH summer; 68°F, 30% RH winter)



	Average Sensible Cooling Load (Btu/cfm)	Average Sensible Heating Load (Btu/cfm)	Average Latent Cooling Load (Btu/cfm)	Average Latent Heating Load (Btu/cfm)
JAN	0	-32768	0	-7233
FEB	0	-28045	0	-5981
MAR	0	-22508	0	-3642
APR	19	-12409	8	-1038
MAY	269	-5433	269	-49
JUN	1022	-1218	3334	0
JUL	2897	-132	14125	0
AUG	3399	-118	14978	0
SEP	679	-2499	3425	-2
OCT	26	-10251	116	-363
NOV	0	-19437	2	-2533
DEC	0	-29558	0	-5811
ANN	8311	-164376	36257	-26652

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

No Solar Radiation
Data Available

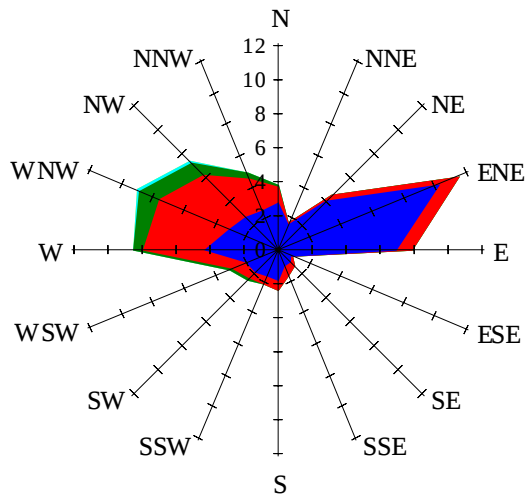


Average Annual Solar Heat and Illumination – Nearest Available Site

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

Wind Summary - December, January, and February

Labels of Percent Frequency on North Axis

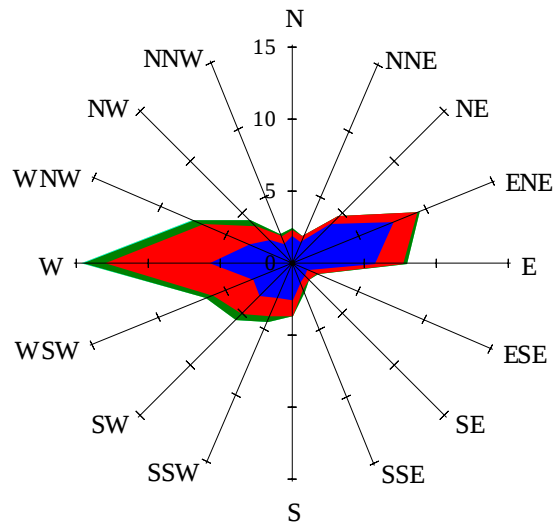


■ >34 knots
 ■ 25-34 knots
 ■ 15-24 knots
 ■ 6-14 knots
 ■ 1-5 knots

Percent Calm = 28.02

Wind Summary - March, April, and May

Labels of Percent Frequency on North Axis

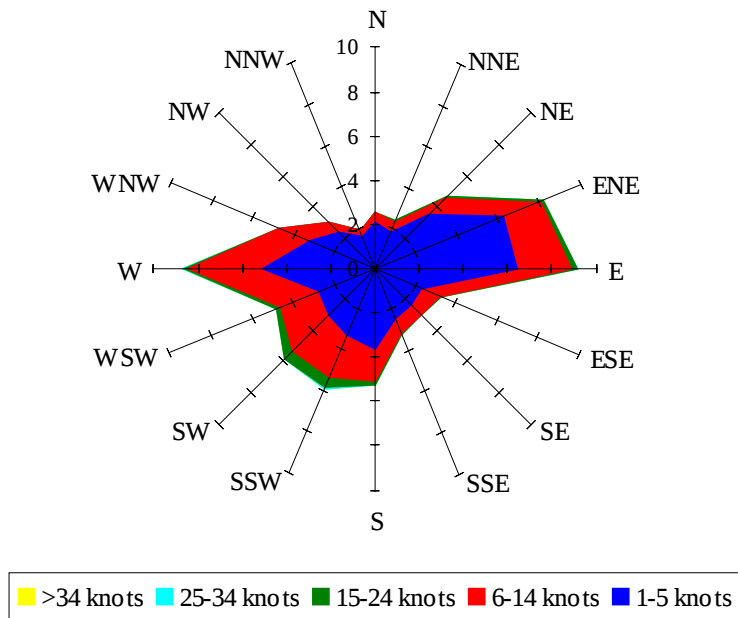


■ >34 knots
 ■ 25-34 knots
 ■ 15-24 knots
 ■ 6-14 knots
 ■ 1-5 knots

Percent Calm = 20.91

Wind Summary - June, July, and August

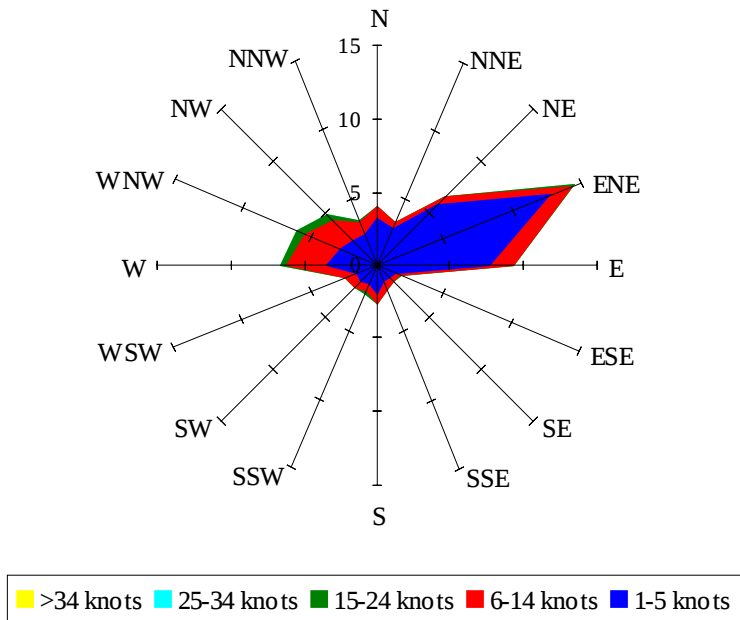
Labels of Percent Frequency on North Axis



Percent Calm = 24.31

Wind Summary - September, October, and November

Labels of Percent Frequency on North Axis



Percent Calm = 27.73