

TOKYO	JP	
Latitude = 35.68 N		WMO No. 476620
Longitude = 139.77 E		Elevation = 118 feet
Period of Record = 1973 to 1996		Average Pressure = 29.81 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	78	120	8.4	S
0.4% Occurrence	92	77	120	8.8	S
1.0% Occurrence	90	77	117	9.0	S
2.0% Occurrence	88	76	116	8.6	S
Mean Daily Range	11	-	-	-	-
97.5% Occurrence	36	31	18	7.4	NNW
99.0% Occurrence	34	29	17	7.7	NNW
99.6% Occurrence	32	28	15	7.0	N
Median of Extreme Lows	30	26	12	5.9	NNW
	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	89	136	7.7	S
0.4% Occurrence	79	88	133	7.9	S
1.0% Occurrence	78	86	130	8.0	S
2.0% Occurrence	77	85	126	8.0	S
	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	148	84	0.97	9.5	S
0.4% Occurrence	138	84	0.91	7.1	S
1.0% Occurrence	134	83	0.88	8.0	S
2.0% Occurrence	130	83	0.86	6.9	S
Air Conditioning/ Humid Area Criteria	# of Hours	T ≥ 93°F	T ≥ 80°F	T _{wb} ≥ 73°F	T _{wb} ≥ 67°F
		23	981	1047	2091

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	2.0 + 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 (#)
63.5	N/A	N/A	5

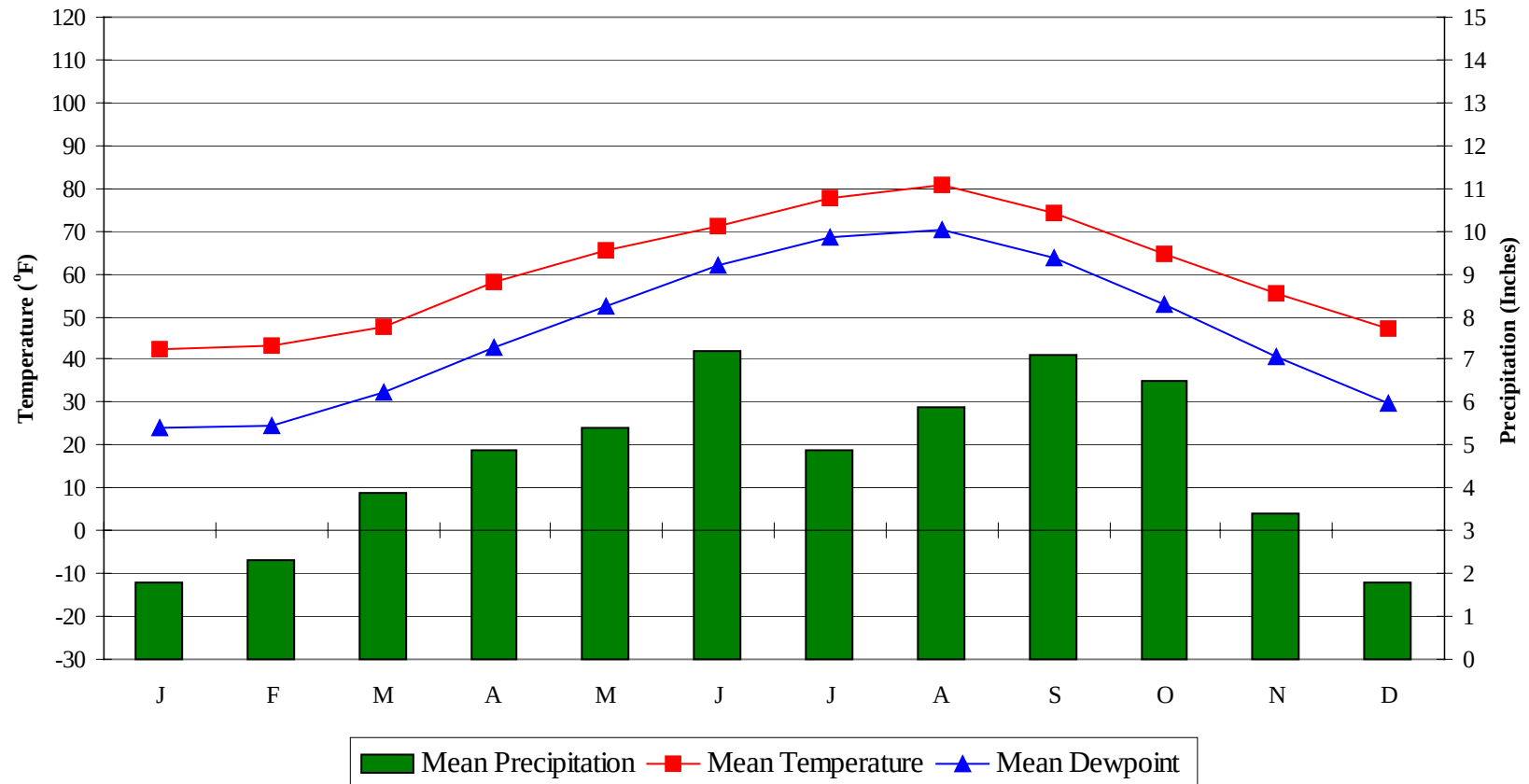
*Note: Temperatures at greater depths can be estimated by adding 1.5°F per 100 feet additional depth.

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Average Annual Climate

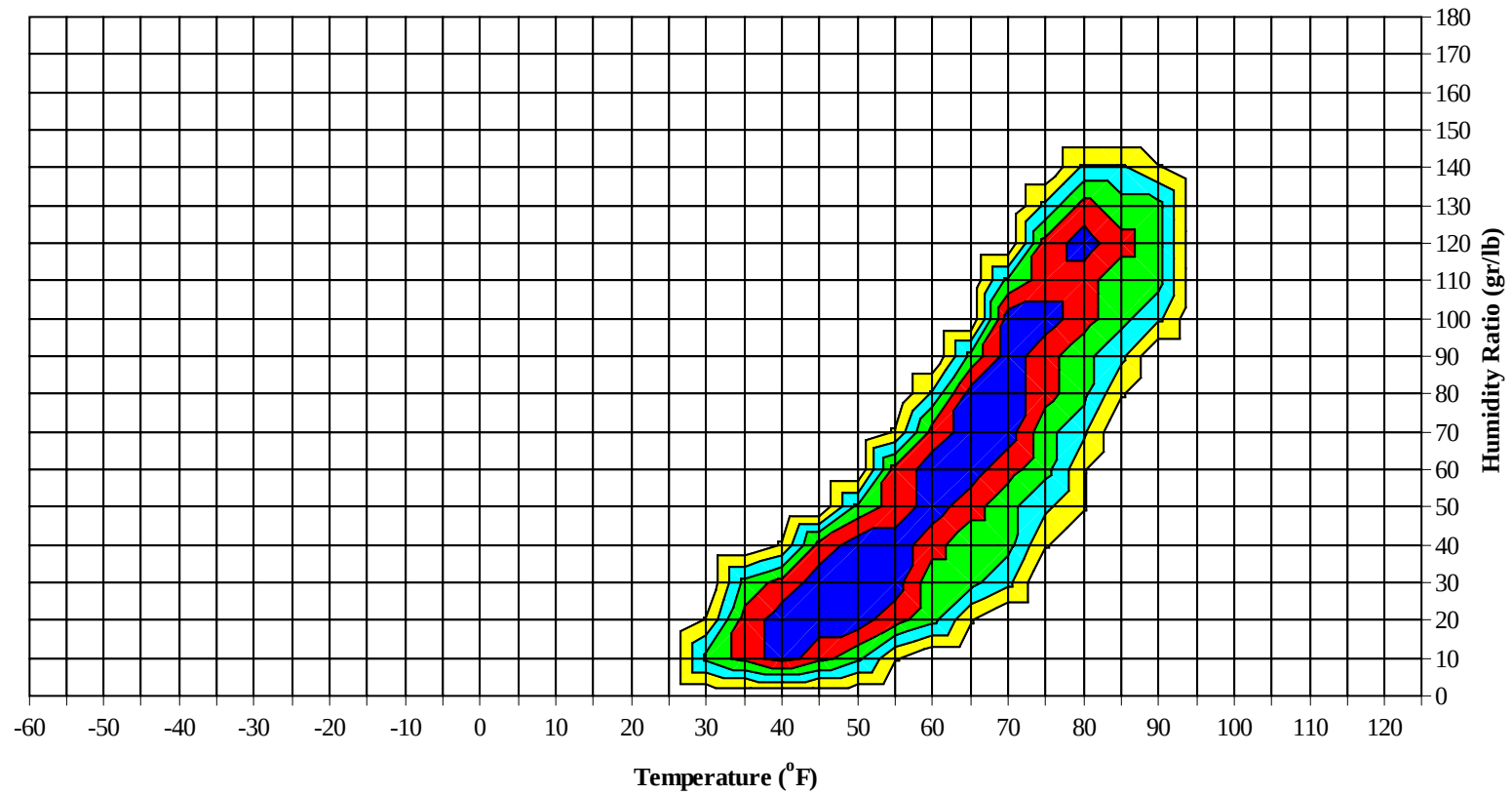


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Long Term Psychrometric Summary



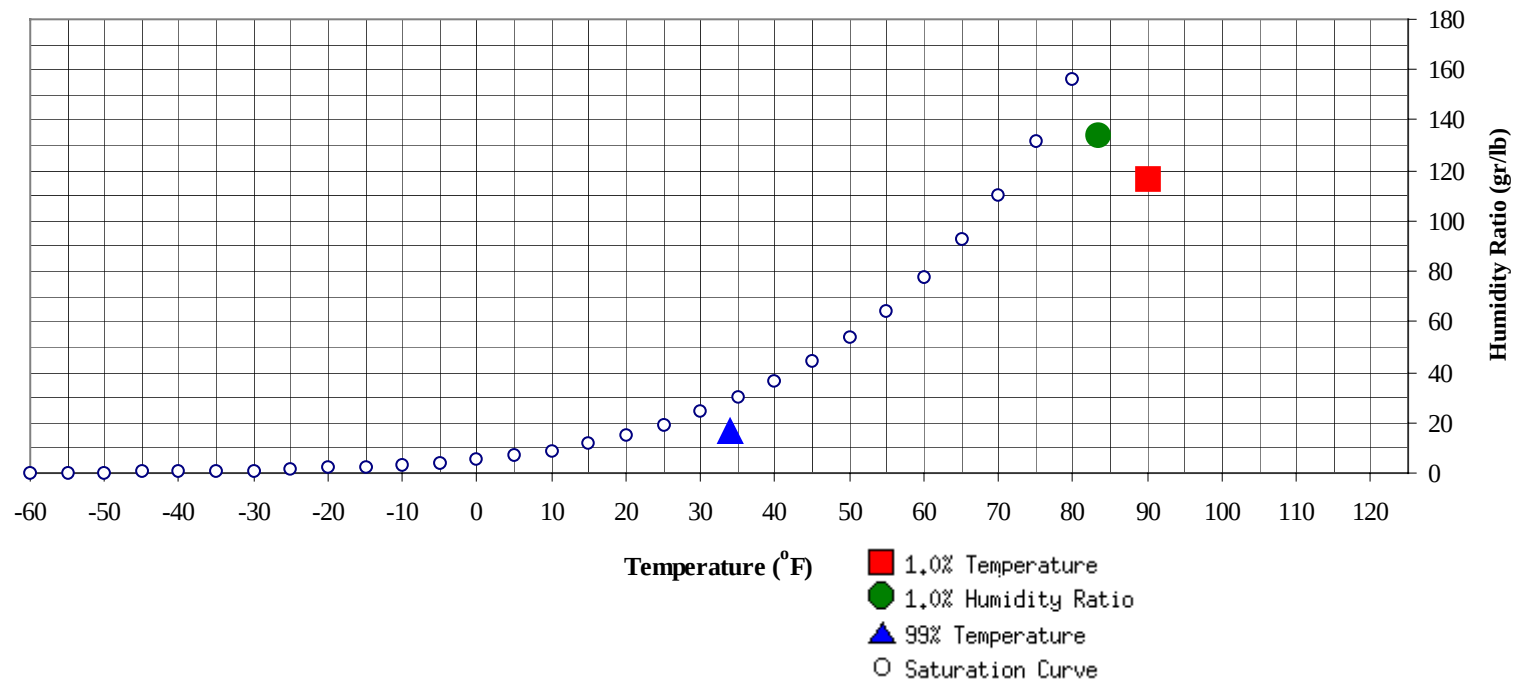
- 50% of all observations
- 80% of all observations
- 95% of all observations
- 97.5% of all observations
- 99% of all observations

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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)
	34	16.6	10.7		133.7	83.5	77.5	75.2	41.0

1.0% Dry Bulb	(°F)	MCHR (gr/lb)	MCWB (°F)	Enthalpy (btu/lb)
	90	116.4	76.5	39.9

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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		
100 / 104															
95 / 99															
90 / 94															
85 / 89															
80 / 84															
75 / 79															
70 / 74							0		0	60.5		1		1	57.6
65 / 69		0		0	58.0		2	0	2	55.0		5	2	7	55.8
60 / 64	0	3	2	5	53.2	2	2	3	7	54.4	1	19	9	30	52.3
55 / 59	1	11	4	16	46.8	1	14	7	22	46.9	6	40	32	78	48.0
50 / 54	2	41	21	64	41.9	5	42	27	74	42.4	32	72	62	165	44.0
45 / 49	17	84	69	170	38.2	20	73	63	157	38.6	65	68	77	210	40.5
40 / 44	64	66	84	214	35.3	62	56	67	185	35.0	86	32	51	169	36.9
35 / 39	109	38	60	207	31.5	93	29	46	169	31.5	53	10	14	77	33.2
30 / 34	52	6	9	66	28.1	38	6	10	54	28.1	6	1	1	8	29.8
25 / 29	2	0		2	24.3	2			2	23.3	0			0	22.0

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.

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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		
100 / 104															
95 / 99															
90 / 94															
85 / 89															
80 / 84		0		0	63.0		1	0	1	68.1			1	0	74.4
75 / 79	0	5	1	6	60.9		9	1	10	65.0			8	2	73.2
70 / 74	1	32	9	42	58.8	1	46	9	57	63.5	1	34	12	48	70.3
65 / 69	8	47	31	86	56.6	14	74	54	142	61.8	17	73	49	139	68.1
60 / 64	36	61	65	162	54.1	54	59	77	190	59.5	81	75	94	250	65.9
55 / 59	71	47	65	183	50.5	86	35	55	176	63.0	86	35	55	176	63.0
50 / 54	61	34	41	136	46.1	95	38	68	201	56.3	49	12	26	87	59.5
45 / 49	41	11	23	75	41.6	58	17	29	105	52.2	6	2	3	10	54.9
40 / 44	20	3	5	28	37.4	22	4	9	34	47.8	0		0	0	52.7
35 / 39	1	0	1	2	35.0	3	0	1	4	44.1					
30 / 34	0			0	34.0										
25 / 29															

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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		
100 / 104						0			0	77.7					
95 / 99		1		1	77.9	4	0	4	77.0			0		0	78.3
90 / 94		29	2	31	77.1	42	3	45	77.4			7	0	7	75.0
85 / 89	3	59	25	87	75.7	6	81	37	124	76.0	0	30	6	36	74.1
80 / 84	44	57	74	175	74.1	73	66	108	248	74.7	16	51	41	108	72.4
75 / 79	84	47	71	202	71.7	109	34	68	211	72.4	58	63	68	188	69.5
70 / 74	70	38	51	159	68.0	46	17	27	90	67.6	73	55	75	204	65.9
65 / 69	33	14	20	68	64.2	13	3	5	21	64.3	66	25	40	130	63.2
60 / 64	12	3	6	21	60.9	1		0	1	62.8	26	8	10	43	59.1
55 / 59	1		0	1	54.9						2	1	1	4	55.7
50 / 54															
45 / 49															
40 / 44															
35 / 39															
30 / 34															
25 / 29															

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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		
100 / 104															
95 / 99															
90 / 94															
85 / 89		0		0	73.3										
80 / 84	0	5	1	6	69.0										
75 / 79	2	26	9	37	66.3										
70 / 74	13	61	42	117	62.7	0	10	2	11	60.1		0		0	61.5
65 / 69	44	73	71	188	59.6	2	27	12	41	57.0	0	3	1	4	56.9
60 / 64	95	61	86	242	56.6	13	63	46	122	53.6	1	14	4	19	52.1
55 / 59	68	21	35	124	52.3	54	72	81	207	50.1	4	42	24	70	47.3
50 / 54	22	2	4	28	46.7	87	50	70	207	45.5	22	75	61	158	43.3
45 / 49	2	0	0	2	43.3	60	15	25	100	41.0	56	68	86	210	39.5
40 / 44						21	2	5	28	37.2	90	35	55	180	36.0
35 / 39						2			2	33.9	67	10	16	92	32.5
30 / 34											8	1	1	10	28.2
25 / 29											0			0	25.0

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.

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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		
100 / 104		0		0	77.7
95 / 99		6	0	6	77.3
90 / 94		81	6	87	77.1
85 / 89	10	181	70	261	75.5
80 / 84	138	224	238	601	73.5
75 / 79	274	298	277	850	69.8
70 / 74	303	367	355	1025	65.0
65 / 69	310	293	317	921	60.7
60 / 64	336	285	325	945	55.9
55 / 59	274	267	282	823	50.2
50 / 54	256	318	293	866	44.5
45 / 49	262	314	340	917	39.7
40 / 44	337	190	261	789	35.8
35 / 39	316	84	135	534	31.9
30 / 34	99	12	20	132	28.2
25 / 29	3	0		3	23.8

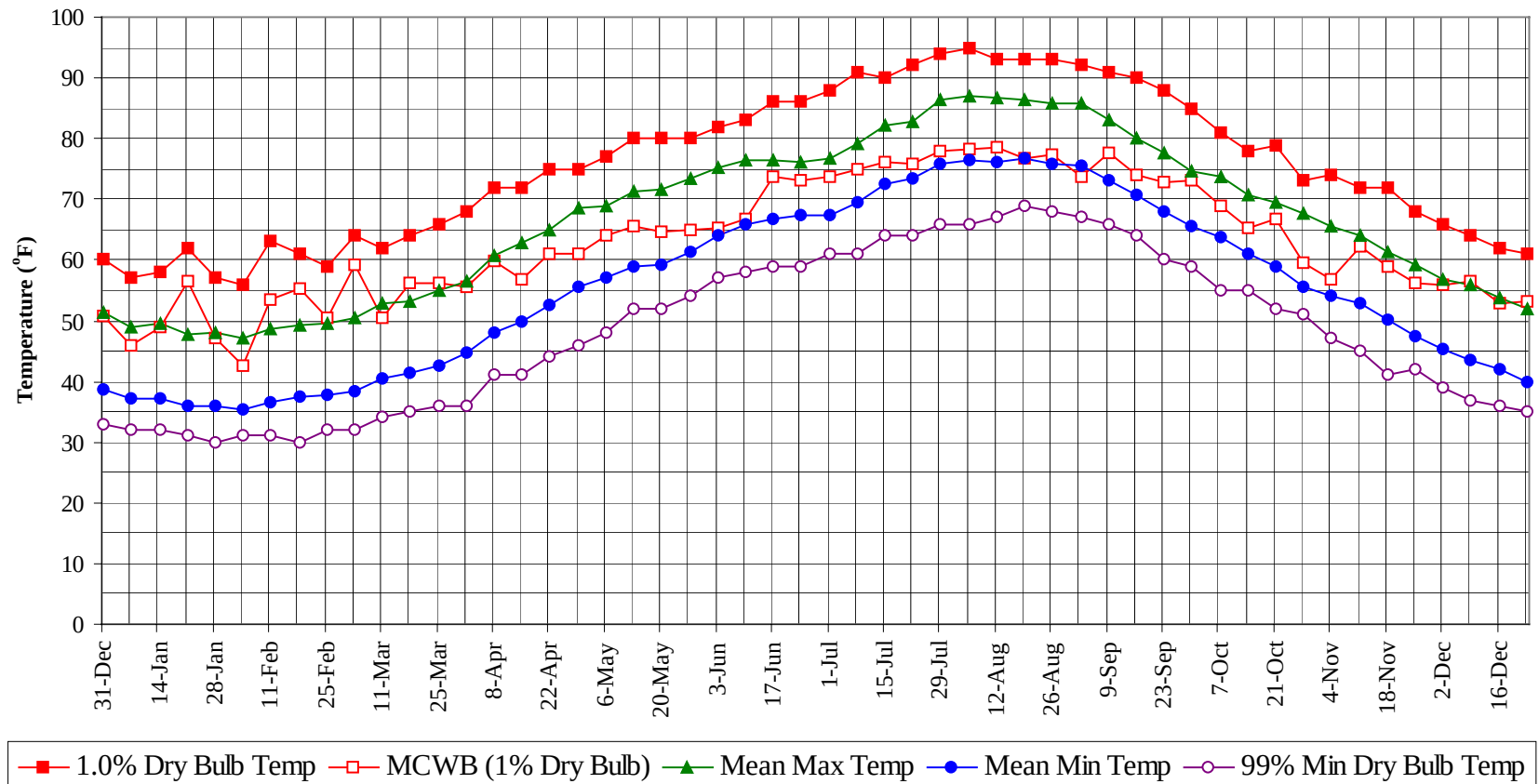
Caution: This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary and the ventilation and infiltration load pages in this manual.

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Annual Summary of Temperatures

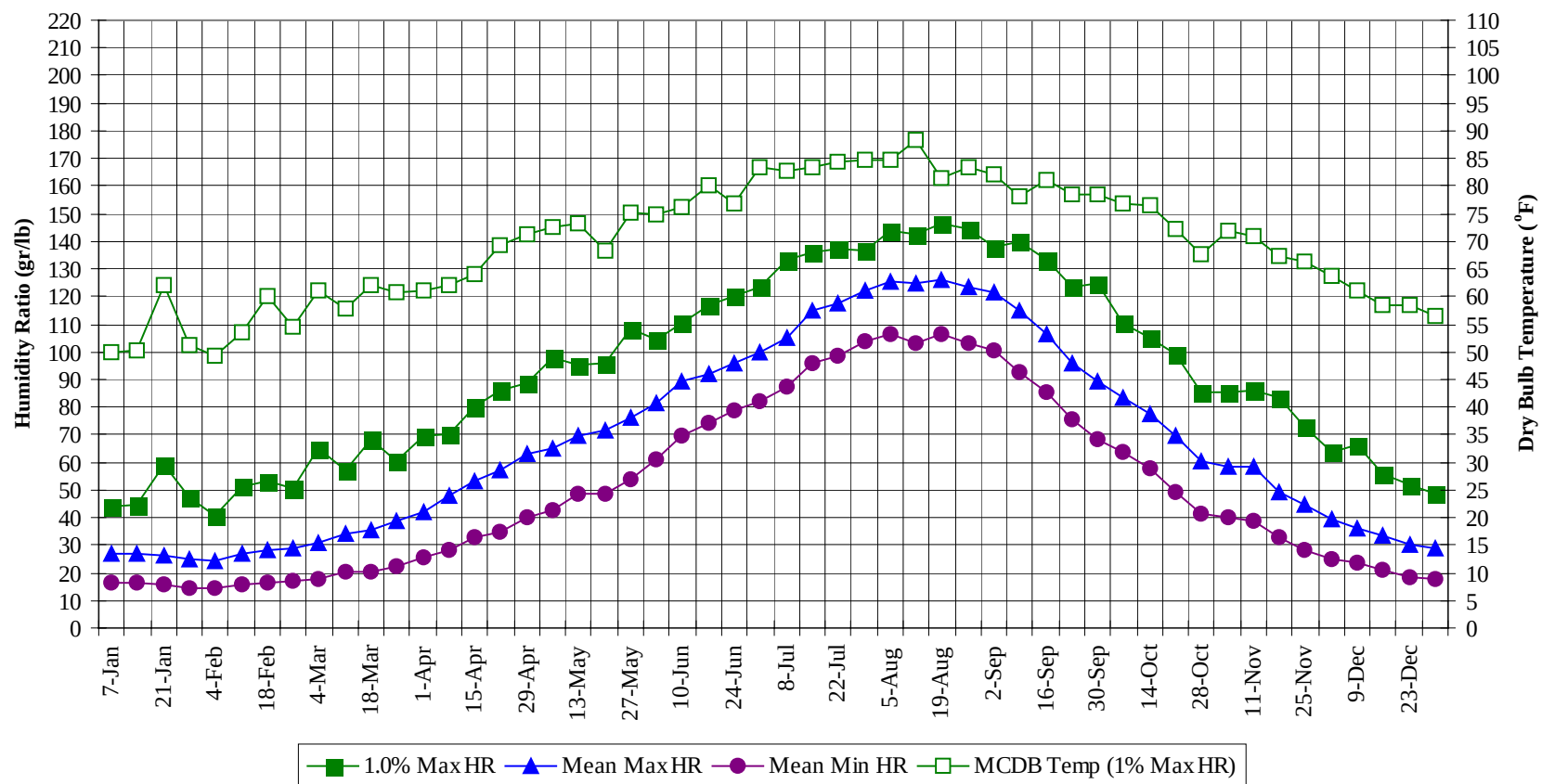


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Long Term Humidity and Dry Bulb Temperature Summary



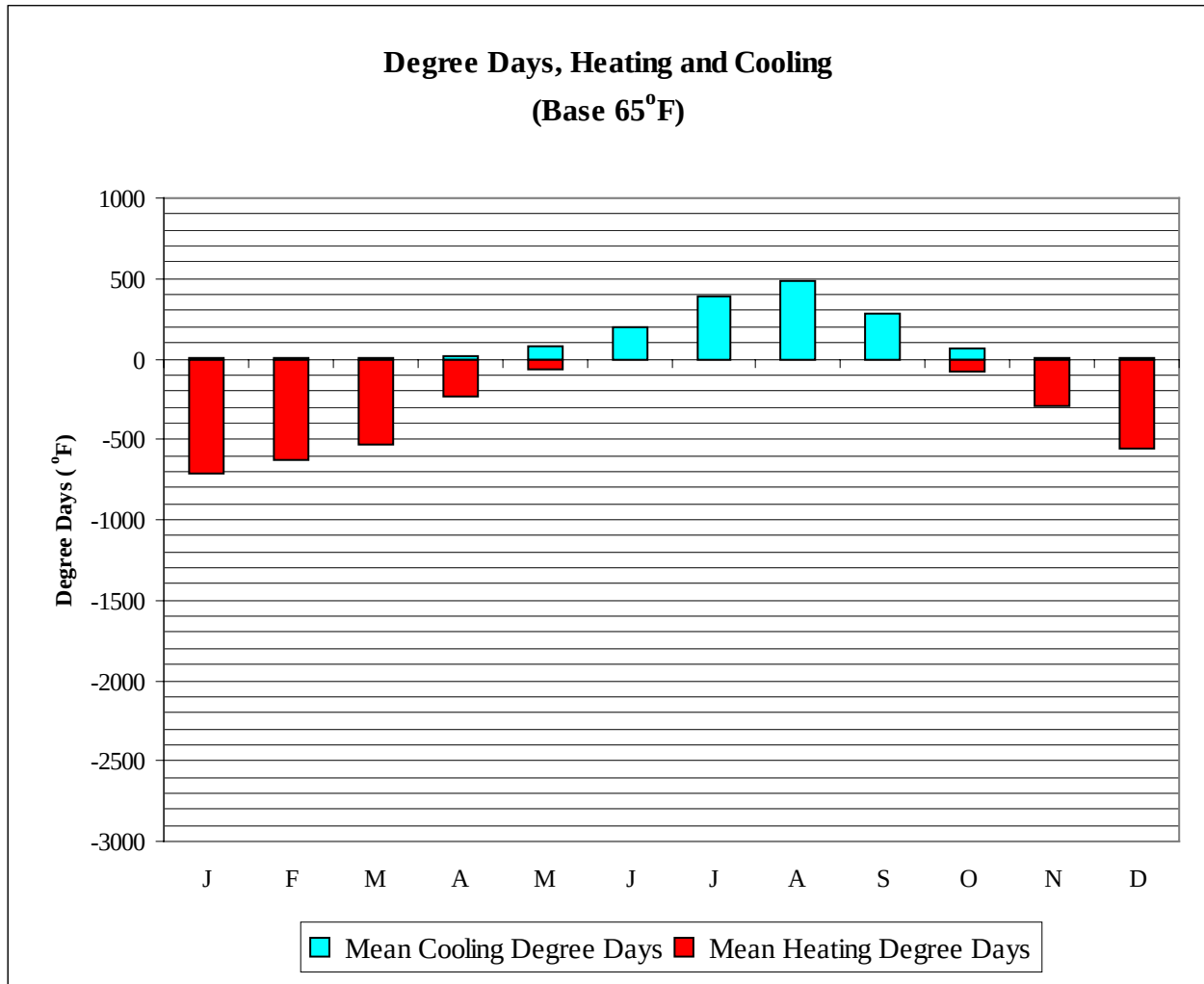
TOKYO**JP****WMO No. 476620****Long Term Dry Bulb Temperature and Humidity Summary**

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	57.0	45.8	49.0	37.2	32.0	44.1	49.9	26.7	16.7
14-Jan	58.0	48.9	49.6	37.2	32.0	44.8	50.1	26.8	16.2
21-Jan	62.0	56.4	47.7	36.0	31.0	58.8	62.1	26.2	15.5
28-Jan	57.0	47.1	48.1	36.1	30.0	47.6	51.2	25.2	14.5
4-Feb	56.0	42.7	47.2	35.4	31.0	40.6	49.4	24.0	14.3
11-Feb	63.0	53.4	48.5	36.7	31.0	51.1	53.5	26.6	15.8
18-Feb	61.0	55.3	49.2	37.5	30.0	53.2	60.0	28.5	16.7
25-Feb	59.0	50.4	49.5	37.7	32.0	50.4	54.4	29.2	17.3
4-Mar	64.0	59.2	50.6	38.4	32.0	65.1	61.0	30.6	17.6
11-Mar	62.0	50.5	52.8	40.4	34.0	57.4	57.9	34.4	20.1
18-Mar	64.0	56.3	53.3	41.5	35.0	68.6	62.0	35.7	20.0
25-Mar	66.0	56.3	55.1	42.5	36.0	60.2	60.6	38.6	22.5
1-Apr	68.0	55.7	56.6	44.7	36.0	69.3	61.0	42.0	25.3
8-Apr	72.0	59.7	60.7	48.0	41.0	70.0	62.1	48.1	28.1
15-Apr	72.0	56.9	62.7	49.9	41.0	79.8	64.1	53.1	33.1
22-Apr	75.0	60.9	65.0	52.6	44.0	86.1	69.4	57.4	34.9
29-Apr	75.0	61.0	68.5	55.5	46.0	88.9	71.3	62.8	40.3
6-May	77.0	64.1	68.9	57.0	48.0	98.0	72.5	65.3	42.9
13-May	80.0	65.4	71.2	58.9	52.0	95.2	73.2	69.9	48.9
20-May	80.0	64.7	71.5	59.3	52.0	95.9	68.4	71.7	48.8
27-May	80.0	65.1	73.4	61.2	54.0	108.5	75.1	75.9	54.1
3-Jun	82.0	65.1	75.1	64.0	57.0	104.3	74.9	81.5	61.4
10-Jun	83.0	66.9	76.5	65.9	58.0	110.6	76.3	89.0	69.5
17-Jun	86.0	73.7	76.4	66.6	59.0	116.9	80.3	91.9	74.3
24-Jun	86.0	73.2	76.1	67.3	59.0	120.4	76.9	96.0	78.8
1-Jul	88.0	73.9	76.9	67.5	61.0	123.2	83.4	100.1	81.9
8-Jul	91.0	74.9	79.2	69.4	61.0	133.0	82.9	105.4	87.6
15-Jul	90.0	76.2	82.3	72.5	64.0	135.8	83.4	115.2	96.1
22-Jul	92.0	75.8	82.9	73.3	64.0	137.2	84.4	117.3	98.7
29-Jul	94.0	77.9	86.4	75.9	66.0	136.5	84.8	121.9	103.9
5-Aug	95.0	78.2	86.9	76.5	66.0	143.5	84.9	125.5	106.7
12-Aug	93.0	78.7	86.6	76.2	67.0	142.8	88.2	125.1	103.1
19-Aug	93.0	76.6	86.5	76.6	69.0	146.3	81.4	126.1	106.2
26-Aug	93.0	77.4	85.7	75.8	68.0	144.2	83.6	123.7	102.9
2-Sep	92.0	73.9	85.7	75.6	67.0	137.9	82.1	121.4	100.6
9-Sep	91.0	77.5	83.0	73.1	66.0	140.0	78.0	114.7	92.4
16-Sep	90.0	74.1	80.2	70.6	64.0	133.0	81.0	106.2	85.1
23-Sep	88.0	72.7	77.6	68.0	60.0	123.2	78.5	95.6	75.8
30-Sep	85.0	73.0	74.7	65.4	59.0	124.6	78.4	89.5	68.4
7-Oct	81.0	68.8	73.9	63.7	55.0	110.6	77.0	83.6	64.0
14-Oct	78.0	65.4	70.8	61.0	55.0	105.0	76.5	77.4	57.5
21-Oct	79.0	66.9	69.4	58.9	52.0	99.4	72.4	69.5	49.3
28-Oct	73.0	59.4	67.8	55.6	51.0	85.4	67.8	60.4	41.1
4-Nov	74.0	56.7	65.6	54.0	47.0	85.4	71.9	58.2	39.9
11-Nov	72.0	62.3	64.1	53.0	45.0	86.1	71.0	58.2	38.7
18-Nov	72.0	58.9	61.3	50.0	41.0	83.3	67.3	49.5	32.8
25-Nov	68.0	56.3	59.3	47.4	42.0	72.8	66.2	44.7	28.4
2-Dec	66.0	56.0	56.9	45.2	39.0	63.7	63.8	39.7	25.1
9-Dec	64.0	56.5	55.9	43.4	37.0	66.5	61.0	36.2	23.4
16-Dec	62.0	52.9	53.8	41.9	36.0	56.0	58.5	33.5	21.2
23-Dec	61.0	53.1	52.1	39.8	35.0	51.8	58.4	30.1	18.7
31-Dec	60.0	50.7	51.4	38.6	33.0	48.3	56.6	28.9	17.8

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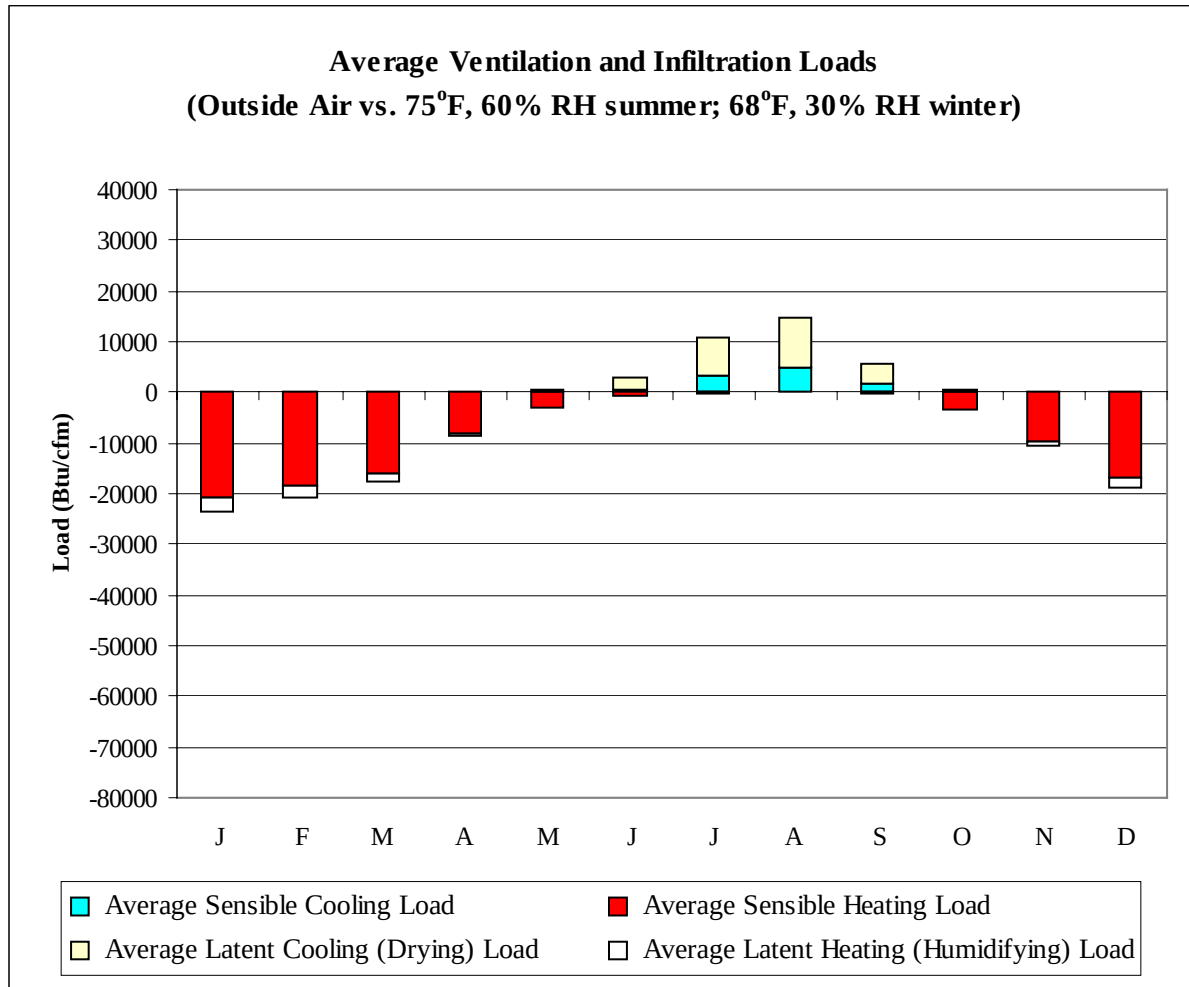


	Mean Cooling Degree Days (°F)	Mean Heating Degree Days (°F)
JAN	0	707
FEB	0	626
MAR	0	536
APR	14	230
MAY	80	64
JUN	197	9
JUL	387	1
AUG	486	0
SEP	279	4
OCT	61	74
NOV	5	294
DEC	0	557
ANN	1510	3102

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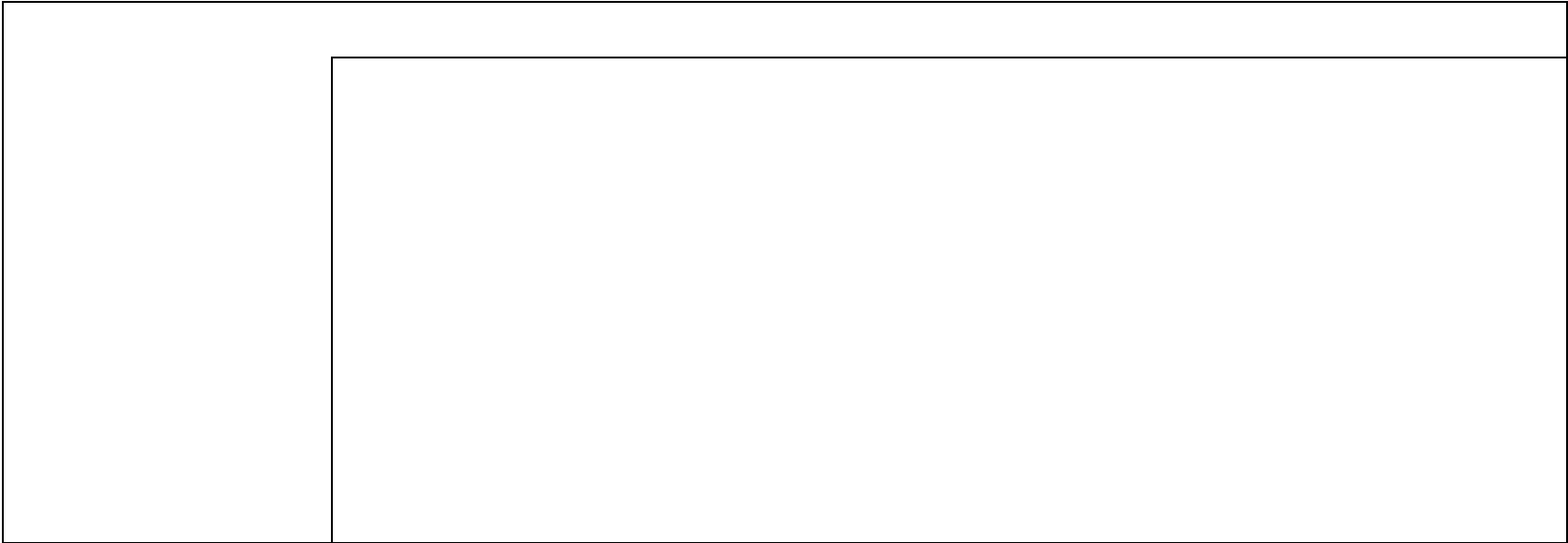
WMO No. 476620



	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	-20602	0	-2973
FEB	0	-18359	0	-2619
MAR	0	-16236	0	-1574
APR	4	-8063	32	-530
MAY	92	-2948	327	-79
JUN	658	-665	2405	0
JUL	3346	-136	7443	0
AUG	5052	-11	9494	0
SEP	1676	-318	4142	0
OCT	69	-3441	428	-34
NOV	1	-9843	21	-532
DEC	0	-16776	0	-2009
ANN	10898	-97398	24292	-10350

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

No Solar Radiation
Data Available

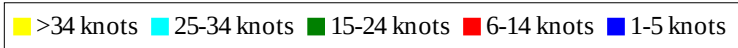
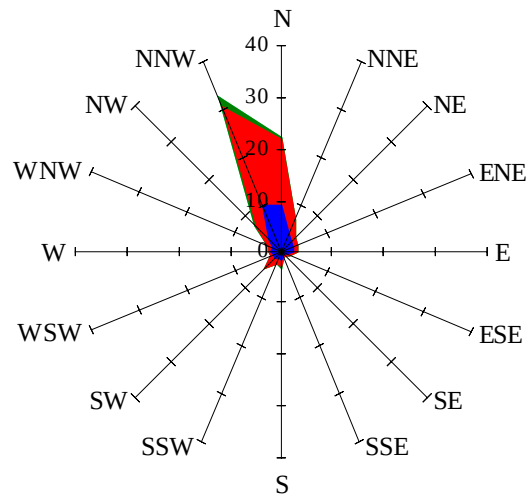


Average Annual Solar Heat and Illumination – Nearest Available Site

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

Wind Summary - December, January, and February

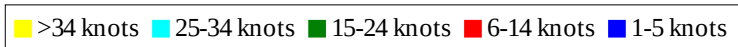
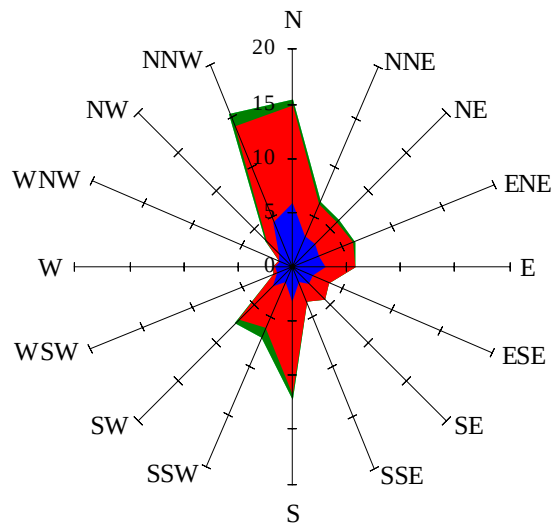
Labels of Percent Frequency on North Axis



Percent Calm = 0.60

Wind Summary - March, April, and May

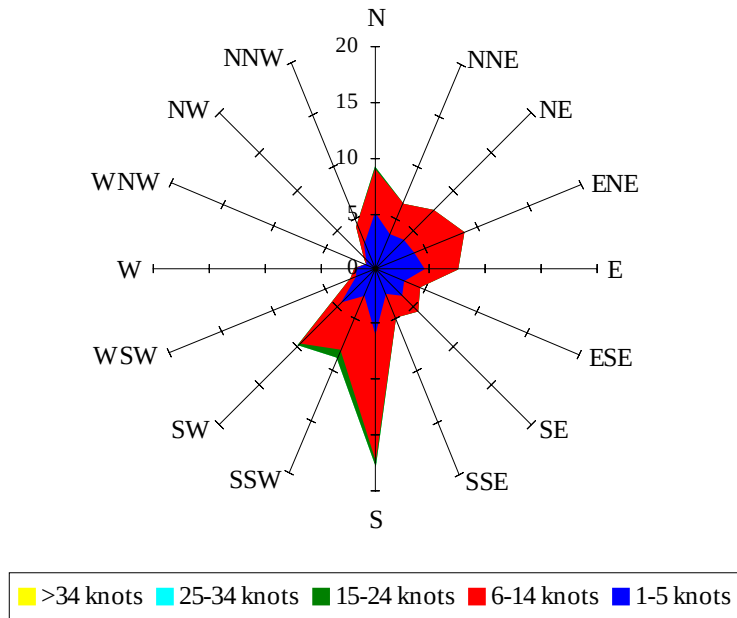
Labels of Percent Frequency on North Axis



Percent Calm = 0.45

Wind Summary - June, July, and August

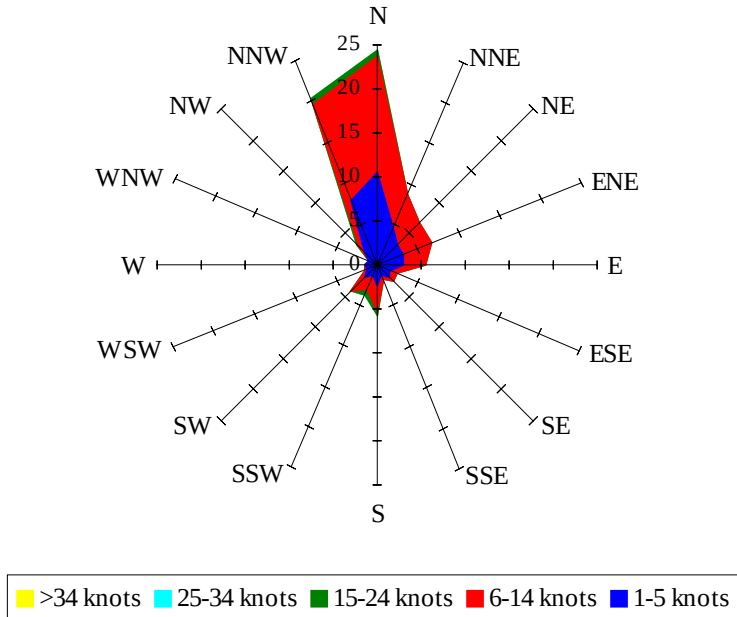
Labels of Percent Frequency on North Axis



Percent Calm = 0.87

Wind Summary - September, October, and November

Labels of Percent Frequency on North Axis



Percent Calm = 0.70