

KNOXVILLE TN

Latitude = 35.82 N

WMO No. 723260

Longitude = 83.98 W

Elevation = 981 feet

Period of Record = 1973 to 1996

Average Pressure = 29.00 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	95	75	103	7.7	W
0.4% Occurrence	93	75	107	7.3	W
1.0% Occurrence	90	75	108	7.3	W
2.0% Occurrence	88	74	107	7.2	W
Mean Daily Range	20	-	-	-	-
97.5% Occurrence	24	22	13	5.9	NE
99.0% Occurrence	18	16	10	6.9	NE
99.6% Occurrence	13	12	8	6.7	NE
Median of Extreme Lows	6	5	5	8.2	WNW
	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	142	6.8	WSW
0.4% Occurrence	77	88	126	7.0	WSW
1.0% Occurrence	76	86	122	6.9	WSW
2.0% Occurrence	75	85	119	6.7	WSW
	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	146	84	0.94	6.9	WSW
0.4% Occurrence	132	83	0.85	6.9	WSW
1.0% Occurrence	127	81	0.82	6.6	WSW
2.0% Occurrence	123	80	0.79	5.8	WSW
Air Conditioning/ Humid Area Criteria	# of Hours	T ≥ 93°F	T ≥ 80°F	T _{wb} ≥ 73°F	T _{wb} ≥ 67°F
		39	939	702	2299

Other Site Data

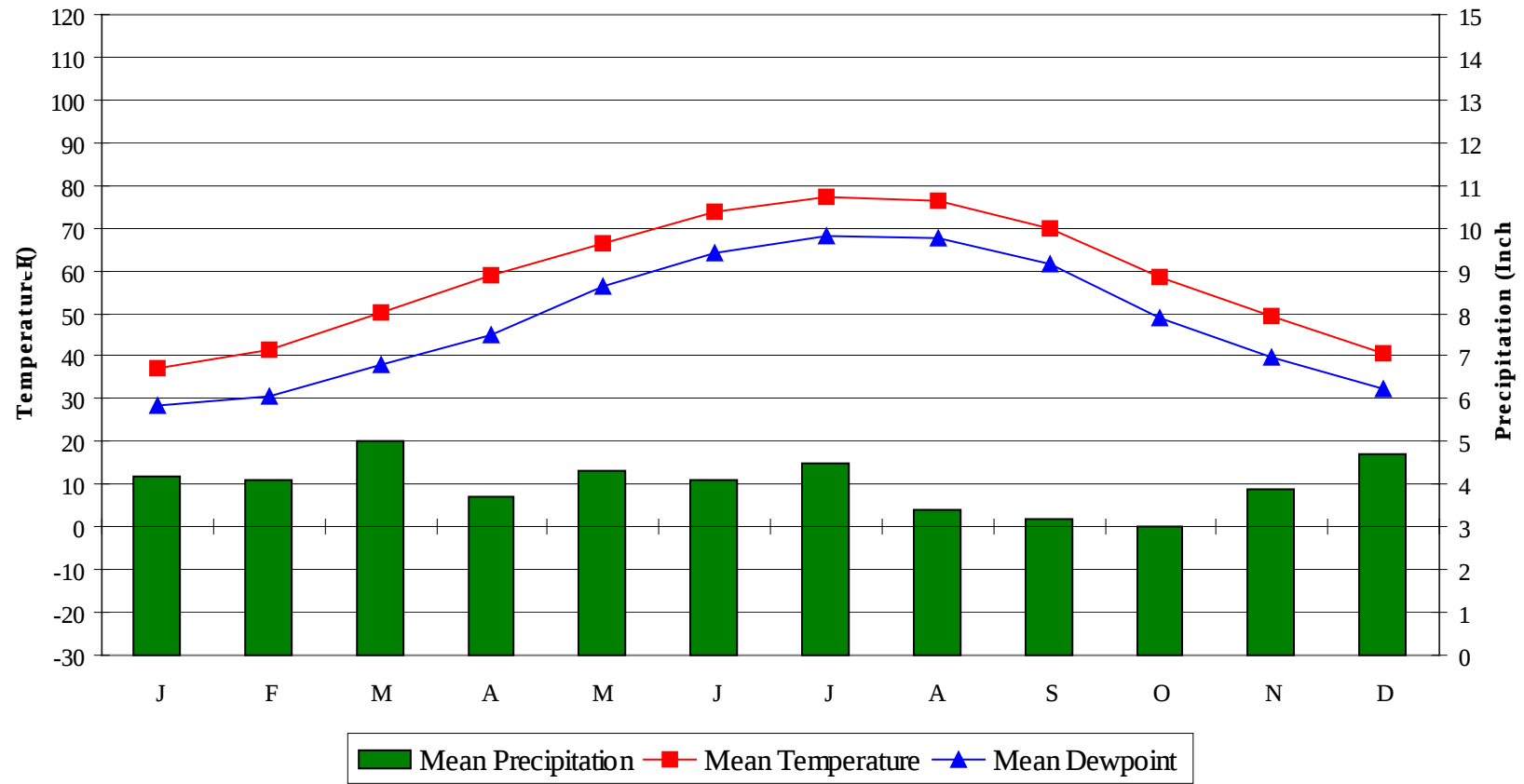
Weather Region	Rain Rate 100 Year Recurrence (in./hr)	Basic Wind Speed 3 sec gust @ 33 ft 50 Year Recurrence (mph)	Ventilation Cooling Load Index (Ton-hr/cfm/yr) Base 75°F-RH 60% Latent + Sensible
8	3.3	90	3.6 + 0.9
Ground Water Temperature (°F) 50 Foot Depth *	Frost Depth 50 Year Recurrence (in.)	Ground Snow Load 50 Year Recurrence (lb/ft ²)	Average Annual Freeze-Thaw Cycles (#)
60.8	N/A	9	50

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

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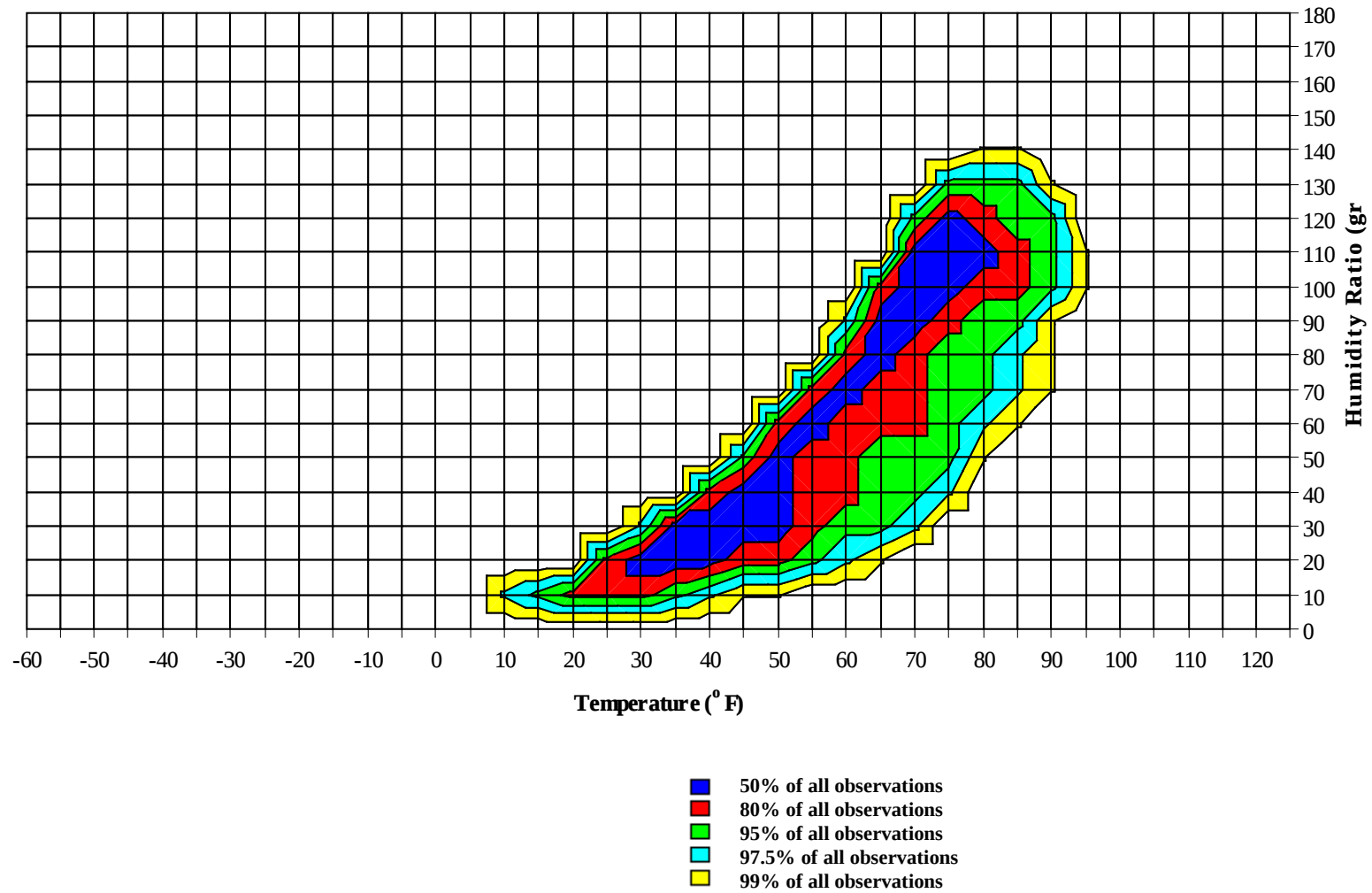
Average Annual Climate



KNOXVILLE TN

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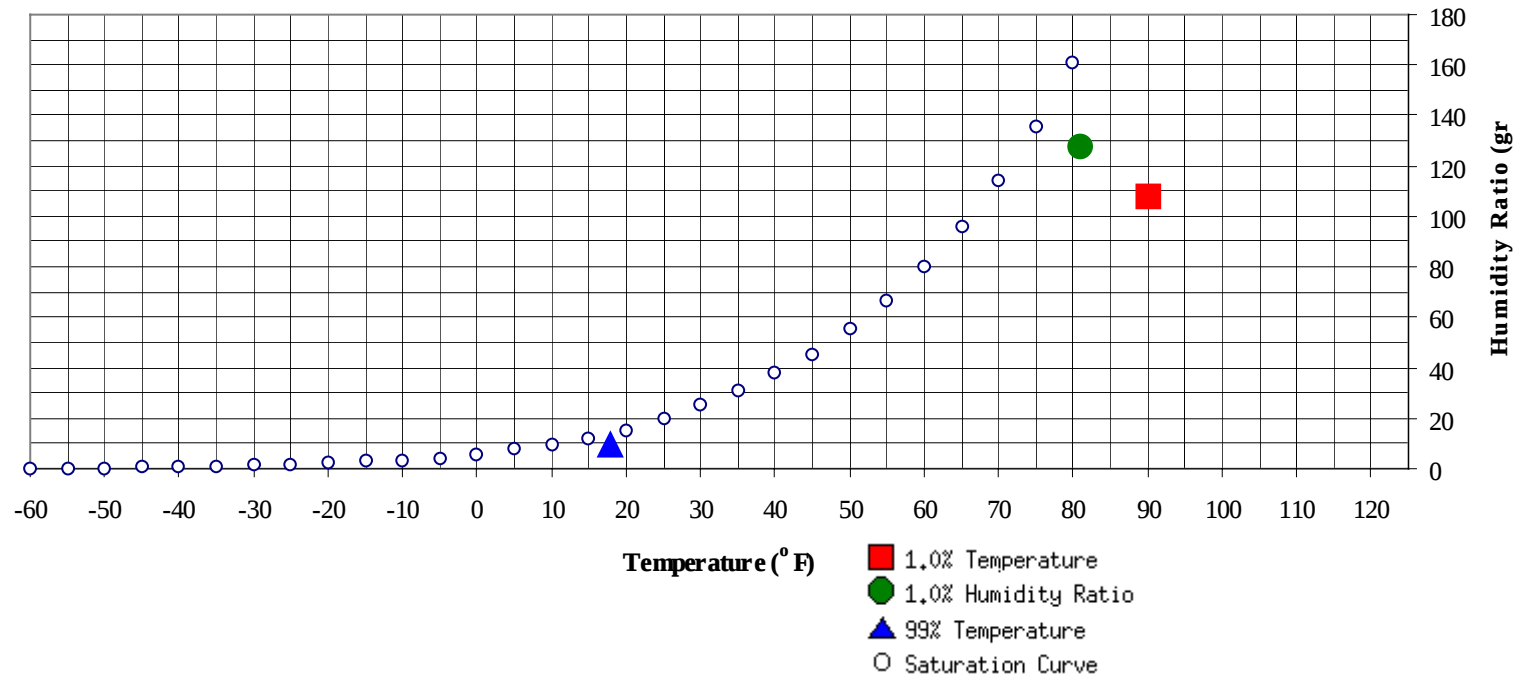
Long Term Psychrometric Summary



KNOXVILLE TN

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Psychrometric Summary of Peak Design Values



	(°F)	MCHR	Enthalpy	1.0% Humidity	(gr/lb)	MCDB	MCWB	MC Dewpt	Enthalpy
		(gr/lb)	(btu/lb)			(°F)	(°F)	(°F)	(btu/lb)
99% Dry Bulb	18	9.7	5.8	Ratio	127.4	81	75.3	73.1	39.4

	(°F)	MCHR	MCWB	Enthalpy
		(gr/lb)	(°F)	(btu/lb)
1.0% Dry Bulb	90	108	74.6	38.6

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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							0	0	0	59.2		2	0	2	63.0
75 / 79							0	0	1	59.6		9	3	13	61.2
70 / 74		0	0	0	59.4	0	4	1	6	58.9	2	20	14	35	58.9
65 / 69	1	4	1	6	57.9	2	9	6	17	56.1	7	28	24	60	56.3
60 / 64	2	6	5	13	54.7	4	16	12	32	53.0	11	31	31	73	53.7
55 / 59	5	13	10	29	51.1	10	22	23	55	50.4	25	36	37	98	50.5
50 / 54	10	26	20	55	46.6	18	30	30	77	46.5	36	38	40	113	46.8
45 / 49	21	36	36	94	43.2	22	28	28	78	42.2	39	32	33	105	42.6
40 / 44	33	40	41	114	38.6	26	35	34	95	37.9	39	25	30	94	38.2
35 / 39	39	45	48	132	33.8	36	33	35	104	33.6	37	17	19	73	33.7
30 / 34	47	35	37	119	29.5	44	22	27	93	29.0	32	6	11	49	29.6
25 / 29	37	20	24	81	24.8	28	13	15	55	24.4	13	2	3	19	25.0
20 / 24	24	11	14	49	20.1	15	7	8	31	19.9	5	1	1	7	20.4
15 / 19	16	6	7	29	15.4	13	3	2	18	15.7	2	1	1	3	15.8
10 / 14	8	3	3	14	10.7	4	1	1	6	11.0	0	0	0	1	10.8
5 / 9	3	1	1	6	6.0	2	0	0	2	6.6	0	0		0	6.8
0 / 4	1	1	1	2	1.3	0	0	0	1	1.9	0			0	2.0
-5 / -1	1	0	0	2	-3.3	0	0		0	-2.0					
-10 / -6	0	0	0	0	-7.4	0			0	-6.5					
-15 / -11	0	0	0	0	-13.5										
-20 / -16	0	0	0	0	-17.3										
-25 / -21	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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WMO No. 723260

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												0	0	0	74.0
95 / 99												1	0	2	74.0
90 / 94		0		0	66.0		0	0	0	72.1		10	3	13	73.3
85 / 89		2	1	3	65.6		10	3	14	71.2		47	20	67	72.9
80 / 84		15	6	21	64.5		41	16	56	69.2	1	72	39	112	71.0
75 / 79	0	28	15	43	62.7	1	55	34	90	66.4	12	56	56	124	69.3
70 / 74	3	38	29	70	59.9	13	53	53	119	64.1	65	36	70	170	67.9
65 / 69	15	43	42	100	57.6	55	42	61	158	62.2	97	14	38	149	64.9
60 / 64	38	34	45	117	55.3	65	26	40	132	58.6	43	2	10	55	59.9
55 / 59	40	29	34	103	51.2	49	13	23	85	53.9	17	0	2	19	55.2
50 / 54	43	24	30	97	47.0	34	5	13	52	49.6	7	0	0	7	50.6
45 / 49	38	16	21	75	42.8	21	1	4	26	45.1	1		0	1	46.3
40 / 44	33	6	11	49	38.8	9	0	0	10	41.4	0			0	43.7
35 / 39	20	3	5	27	34.4	1		0	1	37.4					
30 / 34	8	1	1	10	30.6	0			0	34.0					
25 / 29	2		0	2	26.2										
20 / 24	0			0	22.5										
15 / 19															
10 / 14															
5 / 9															
0 / 4															
-5 / -1															
-10 / -6															
-15 / -11															
-20 / -16															
-25 / -21															

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KNOXVILLE TN

WMO No. 723260

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	0	73.1		0	0	0	76.3					
95 / 99		7	2	9	75.4		4	1	5	75.9		0	0	0	73.8
90 / 94		32	13	45	75.3		22	8	30	75.0		6	1	7	73.2
85 / 89	0	64	35	99	74.0		60	26	85	73.9		27	8	35	72.4
80 / 84	3	71	51	125	72.7	1	74	47	121	72.5		48	23	71	70.7
75 / 79	38	46	69	152	71.5	24	52	76	152	71.2	4	54	46	103	68.8
70 / 74	124	24	63	211	69.7	121	30	71	222	69.5	49	49	66	164	67.3
65 / 69	66	4	14	83	65.9	80	5	17	102	65.8	72	31	47	150	64.1
60 / 64	15	0	1	16	61.3	20	1	2	22	61.0	50	15	28	92	59.4
55 / 59	2		0	2	57.1	4	0	0	4	55.9	33	7	15	55	54.8
50 / 54	0			0	50.3	0	0		0	50.1	21	2	6	28	50.3
45 / 49											9	0	1	10	46.2
40 / 44											2		0	2	42.1
35 / 39											0			0	38.2
30 / 34															
25 / 29															
20 / 24															
15 / 19															
10 / 14															
5 / 9															
0 / 4															
-5 / -1															
-10 / -6															
-15 / -11															
-20 / -16															
-25 / -21															

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KNOXVILLE TN

WMO No. 723260

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		1	0	1	71.7										
80 / 84		10	2	12	68.0		1	0	1	65.8					
75 / 79	1	29	10	39	64.6		4	1	5	63.3		1	0	1	66.3
70 / 74	3	39	23	65	62.1	1	16	5	22	61.3		2	1	3	63.8
65 / 69	16	47	43	105	60.2	6	26	16	48	59.0	2	5	3	9	60.5
60 / 64	32	45	50	126	56.9	13	31	26	70	56.0	6	13	8	27	57.0
55 / 59	45	38	46	129	52.9	24	35	36	94	52.1	10	22	16	48	52.3
50 / 54	44	23	37	104	48.7	31	40	41	112	47.5	15	35	27	77	47.5
45 / 49	43	12	25	81	44.4	36	32	36	105	42.8	22	41	41	104	43.1
40 / 44	35	4	10	49	40.5	35	30	34	100	38.4	35	41	45	122	38.6
35 / 39	23	1	3	27	36.1	40	16	27	84	34.2	43	39	45	126	33.9
30 / 34	5	0	0	6	32.0	32	6	13	51	29.9	45	27	33	105	29.3
25 / 29	1		0	1	27.5	18	2	3	22	25.6	35	12	17	65	24.9
20 / 24						4	0	1	4	21.2	21	6	8	34	20.2
15 / 19						0	0	0	0	16.3	8	2	3	13	15.7
10 / 14											3	1	1	6	10.7
5 / 9											1	1	1	2	5.8
0 / 4											1	0	0	1	1.7
-5 / -1											0	0	0	0	-3.3
-10 / -6											0			0	-6.0
-15 / -11															
-20 / -16															
-25 / -21															

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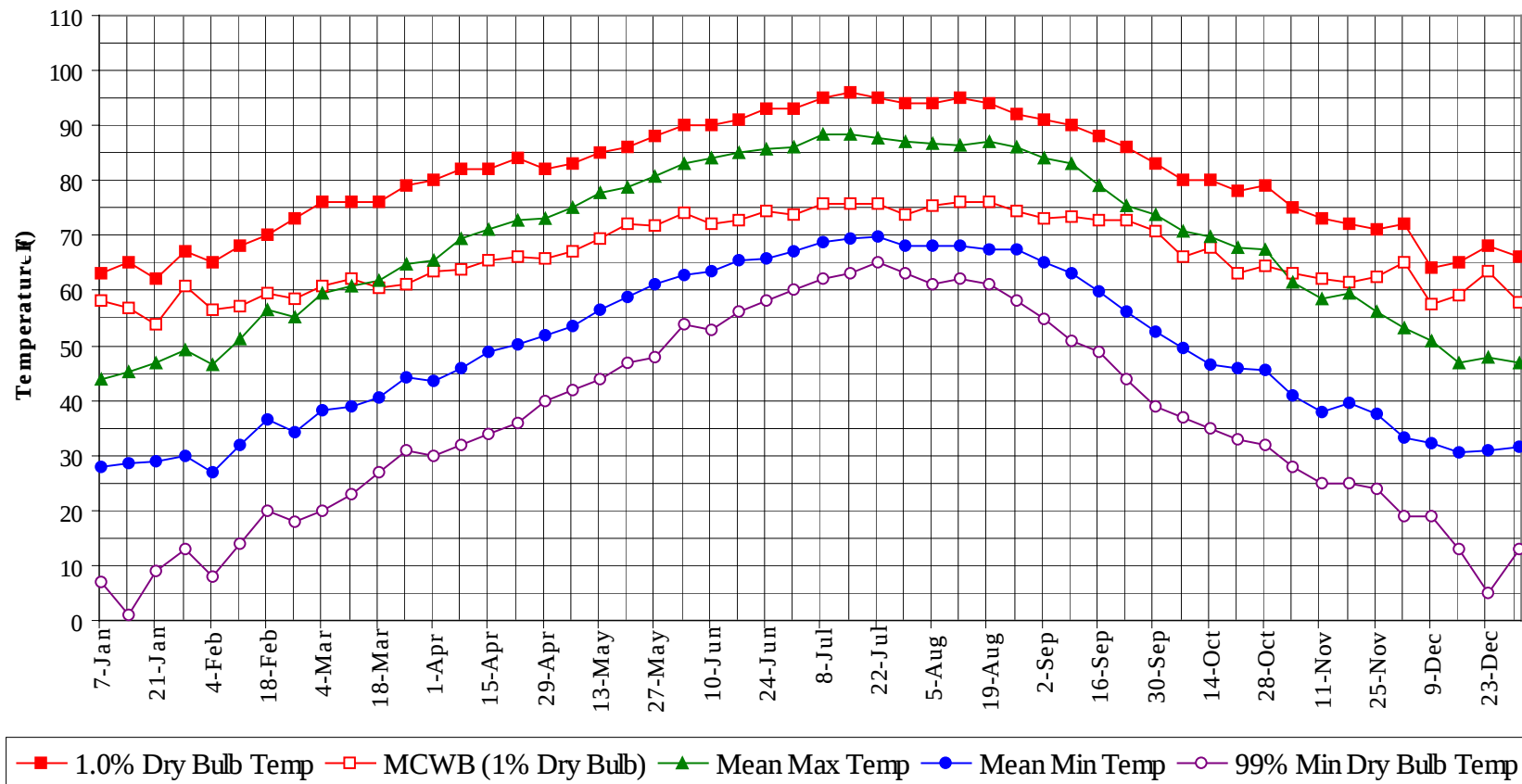
Dry-Bulb Temperature Hours For An Average Year (Sheet 5 of 5)

Period of Record = 1973 to 1996

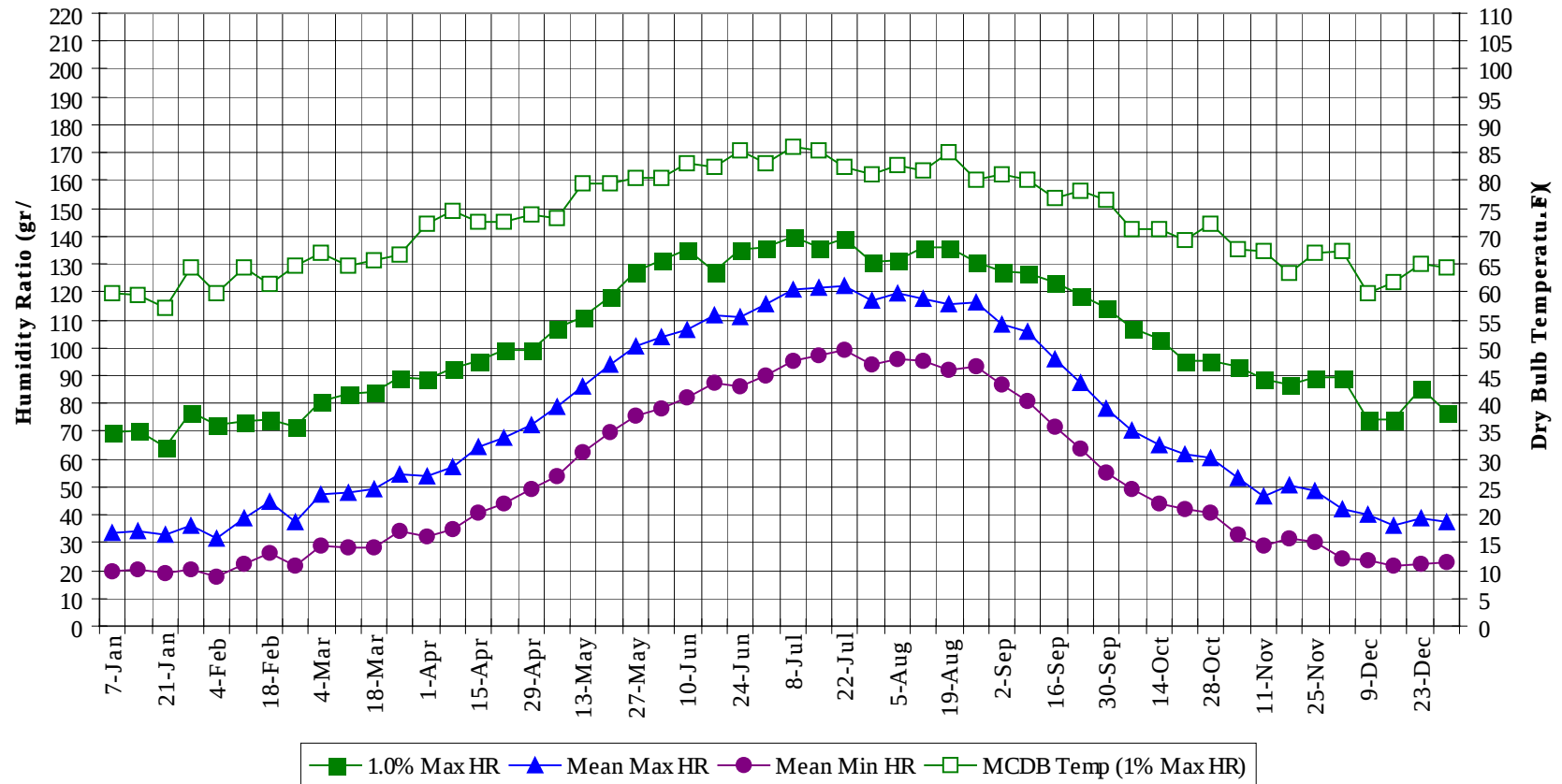
Annual Totals					
Temperature Range (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00		
100 / 104		0	0	1	74.2
95 / 99		13	4	17	75.4
90 / 94		71	26	97	74.8
85 / 89	0	212	93	304	73.3
80 / 84	5	333	184	522	71.2
75 / 79	79	332	310	721	68.9
70 / 74	382	310	394	1086	66.7
65 / 69	417	258	309	985	62.3
60 / 64	294	220	257	771	57.1
55 / 59	262	215	243	720	52.3
50 / 54	257	224	243	724	47.6
45 / 49	253	200	227	680	43.2
40 / 44	249	182	207	638	38.6
35 / 39	241	154	183	579	34.0
30 / 34	215	98	123	436	29.4
25 / 29	136	49	62	247	24.8
20 / 24	70	25	32	126	20.2
15 / 19	39	11	13	63	15.6
10 / 14	16	5	5	26	10.8
5 / 9	6	2	2	10	6.1
0 / 4	3	1	1	4	1.5
-5 / -1	1	1	0	2	-3.2
-10 / -6	0	0	0	1	-6.6
-15 / -11	0	0	0	0	-13.5
-20 / -16	0	0	0	0	-17.3
-25 / -21	0			0	-22.0

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Annual Summary of Temperatures



Long Term Humidity and Dry Bulb Temperature Summary



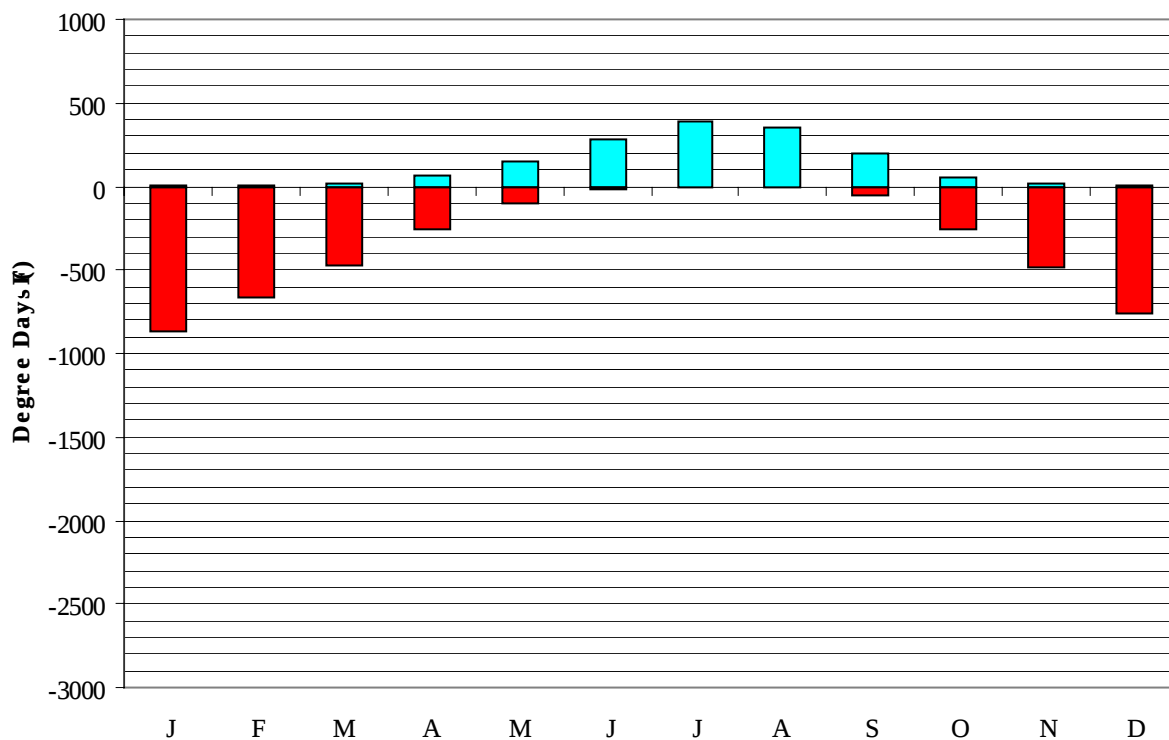
KNOXVILLE TN**WMO No. 723260****Long Term Dry Bulb Temperature and Humidity Summary**

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	63.0	58.1	43.8	28.0	7.0	69.3	59.9	33.7	19.6
14-Jan	65.0	56.7	45.1	28.5	1.0	70.0	59.6	34.0	20.4
21-Jan	62.0	53.7	46.8	29.0	9.0	64.4	57.1	33.0	19.3
28-Jan	67.0	60.9	49.0	30.0	13.0	77.0	64.2	35.9	20.6
4-Feb	65.0	56.4	46.5	27.0	8.0	72.1	59.8	31.5	17.7
11-Feb	68.0	57.3	51.3	32.0	14.0	73.5	64.2	38.6	22.1
18-Feb	70.0	59.5	56.4	36.6	20.0	74.2	61.4	44.9	26.1
25-Feb	73.0	58.6	55.0	34.2	18.0	71.4	64.8	37.4	21.9
4-Mar	76.0	60.9	59.3	38.4	20.0	80.5	66.9	47.3	28.8
11-Mar	76.0	62.1	60.9	38.9	23.0	83.3	64.6	48.0	28.4
18-Mar	76.0	60.5	61.7	40.4	27.0	84.0	65.7	49.5	28.5
25-Mar	79.0	61.0	64.8	44.2	31.0	89.6	66.8	54.8	34.5
1-Apr	80.0	63.6	65.4	43.4	30.0	88.9	72.4	53.8	31.9
8-Apr	82.0	63.9	69.4	46.0	32.0	92.4	74.6	57.4	35.0
15-Apr	82.0	65.5	71.2	48.8	34.0	95.2	72.6	64.1	40.9
22-Apr	84.0	66.2	72.7	50.2	36.0	99.4	72.6	67.5	44.1
29-Apr	82.0	65.7	73.2	51.9	40.0	99.4	73.7	72.1	49.1
6-May	83.0	67.1	75.2	53.4	42.0	107.1	73.4	78.7	53.9
13-May	85.0	69.3	77.6	56.4	44.0	111.3	79.4	86.3	62.2
20-May	86.0	72.0	78.8	58.7	47.0	118.3	79.4	93.9	69.6
27-May	88.0	71.9	80.9	61.0	48.0	127.4	80.3	100.6	75.2
3-Jun	90.0	74.2	82.9	62.9	54.0	131.6	80.5	103.7	78.3
10-Jun	90.0	72.3	83.9	63.6	53.0	135.1	83.1	106.4	81.8
17-Jun	91.0	72.6	85.1	65.6	56.0	127.4	82.5	111.9	87.1
24-Jun	93.0	74.5	85.7	65.9	58.0	135.1	85.5	110.7	85.7
1-Jul	93.0	73.9	86.0	67.1	60.0	135.8	83.1	115.8	90.0
8-Jul	95.0	75.6	88.4	68.8	62.0	140.0	86.2	120.8	95.4
15-Jul	96.0	75.6	88.4	69.4	63.0	135.8	85.5	121.7	97.0
22-Jul	95.0	75.7	87.8	69.7	65.0	139.3	82.6	122.3	99.3
29-Jul	94.0	73.6	87.0	68.2	63.0	130.9	81.2	116.9	93.8
5-Aug	94.0	75.3	86.7	68.3	61.0	131.6	82.9	119.5	95.9
12-Aug	95.0	76.1	86.3	68.0	62.0	135.8	81.7	117.3	95.4
19-Aug	94.0	76.1	87.0	67.6	61.0	135.8	85.1	115.5	91.9
26-Aug	92.0	74.5	86.2	67.5	58.0	130.9	80.3	116.0	93.1
2-Sep	91.0	73.2	84.0	65.3	55.0	127.4	81.2	108.1	86.6
9-Sep	90.0	73.5	83.2	63.2	51.0	126.7	80.1	105.5	80.9
16-Sep	88.0	72.9	79.2	59.7	49.0	123.2	77.0	95.9	71.4
23-Sep	86.0	72.6	75.6	56.3	44.0	119.0	78.2	87.3	63.4
30-Sep	83.0	70.8	73.8	52.4	39.0	114.1	76.7	78.1	55.1
7-Oct	80.0	66.0	71.0	49.5	37.0	107.1	71.4	70.4	49.0
14-Oct	80.0	67.8	69.8	46.5	35.0	102.9	71.3	65.3	43.7
21-Oct	78.0	63.0	67.7	45.7	33.0	95.2	69.1	61.6	41.7
28-Oct	79.0	64.4	67.4	45.6	32.0	95.2	72.2	60.6	40.8
4-Nov	75.0	63.2	61.5	40.9	28.0	93.1	67.7	53.2	32.9
11-Nov	73.0	62.3	58.6	37.9	25.0	88.9	67.2	46.5	29.2
18-Nov	72.0	61.4	59.5	39.6	25.0	86.8	63.4	50.7	31.8
25-Nov	71.0	62.5	56.1	37.5	24.0	89.6	66.8	48.8	29.9
2-Dec	72.0	65.3	53.0	33.1	19.0	89.6	67.3	42.0	24.0
9-Dec	64.0	57.4	50.9	32.4	19.0	74.2	59.9	40.4	23.6
16-Dec	65.0	59.2	47.0	30.5	13.0	74.2	61.6	36.1	21.4
23-Dec	68.0	63.4	48.0	30.9	5.0	85.4	64.9	39.1	22.3
31-Dec	66.0	57.9	46.8	31.5	13.0	77.0	64.3	37.6	23.0

KNOXVILLE TN

WMO No. 723260

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



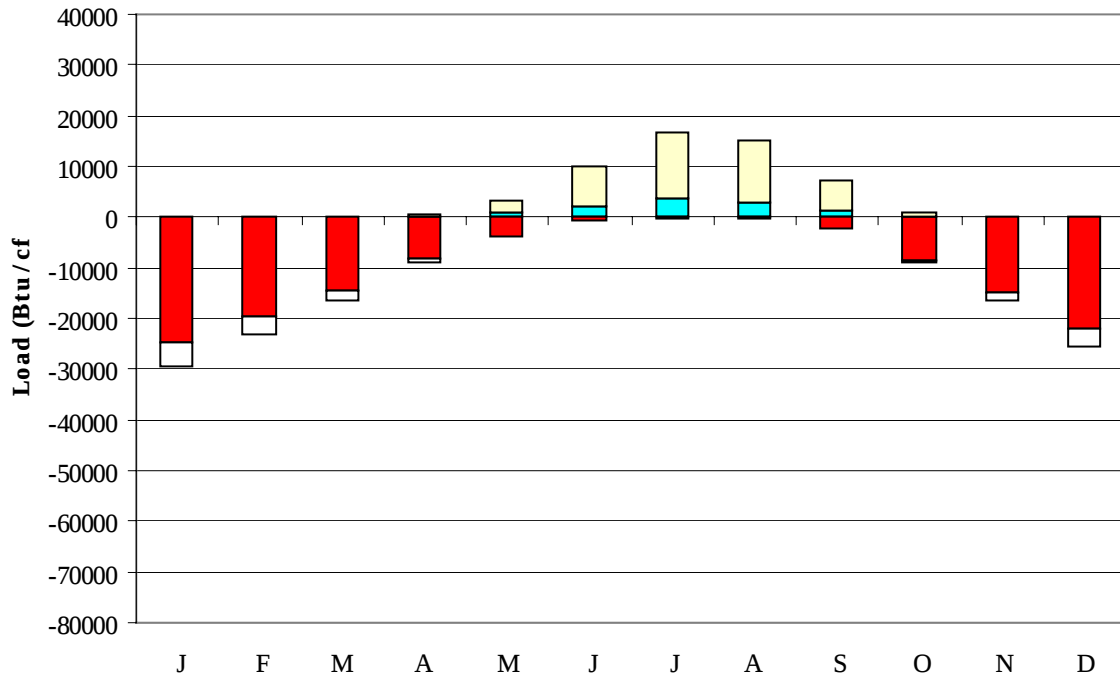
■ Mean Cooling Degree Days ■ Mean Heating Degree Days

	Mean Cooling Degree Days (°F)	Mean Heating Degree Days (°F)
JAN	0	868
FEB	3	669
MAR	21	475
APR	65	254
MAY	144	100
JUN	280	16
JUL	387	2
AUG	354	3
SEP	201	53
OCT	54	261
NOV	13	487
DEC	2	758
ANN	1524	3946

KNOXVILLE TN

WMO No. 723260

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



■ Average Sensible Cooling Load ■ Average Sensible Heating Load
■ Average Latent Cooling (Drying) Load ■ Average Latent Heating (Humidifying) Load

	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	-24897	0	-4515
FEB	2	-19477	0	-3696
MAR	31	-14467	42	-1985
APR	259	-8315	276	-709
MAY	747	-3784	2725	-34
JUN	2182	-817	7998	0
JUL	3536	-183	13292	0
AUG	2964	-259	12348	0
SEP	1300	-2145	6044	-2
OCT	164	-8598	747	-247
NOV	12	-14789	113	-1694
DEC	1	-22041	30	-3549
ANN	11198	-119772	43615	-16431

Average Annual Solar Radiation – Nearest Available Site

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

City: KNOXVILLE
 State: TN
 WBAN No: 13891
 Lat(N): 35.82
 Long(W): 83.98
 Elev(ft): 981

Stn Type: Secondary
 SHADING GEOMETRY IN DIMENSIONLESS UNITS

Window: 1
 Overhang: 0.416
 Vert Gap: 0.293

AVERAGE INCIDENT SOLAR RADIATION (Btu/sq.ft./day), Percentage Uncertainty = 9		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
HORIZ	Global	720	950	1270	1640	1840	1980	1870	1740	1440	1180	790	640	1340
	Std Dev	54	69	96	118	124	135	146	103	109	106	70	49	39
	Minimum	580	850	1100	1390	1670	1700	1570	1520	1240	1020	650	570	1290
	Maximum	830	1150	1470	1910	2160	2340	2130	1920	1660	1470	930	740	1440
	Diffuse	380	470	610	730	840	890	890	800	670	480	390	330	620
Clear Day	Global	1080	1420	1870	2280	2530	2610	2530	2290	1930	1480	1110	960	1840
NORTH	Global	230	290	370	450	550	620	580	490	400	310	240	200	390
	Diffuse	230	290	370	440	500	540	520	470	400	310	240	200	380
Clear Day	Global	210	260	340	430	580	680	630	490	380	300	220	190	390
EAST	Global	460	580	750	920	990	1040	990	940	810	700	490	400	760
	Diffuse	270	350	440	540	600	630	620	580	490	390	290	240	450
Clear Day	Global	780	970	1180	1340	1400	1410	1370	1290	1140	950	770	690	1110
SOUTH	Global	980	1040	1020	930	770	710	730	870	1010	1210	1030	940	940
	Diffuse	370	430	500	540	560	560	570	570	540	470	390	340	490
Clear Day	Global	2000	1970	1720	1280	940	800	850	1110	1490	1790	1890	1920	1480
WEST	Global	480	600	770	930	1000	1050	1000	970	830	730	510	420	780
	Diffuse	280	350	450	540	610	650	630	590	500	390	290	240	460
Clear Day	Global	780	970	1180	1340	1400	1410	1370	1290	1140	950	770	690	1110

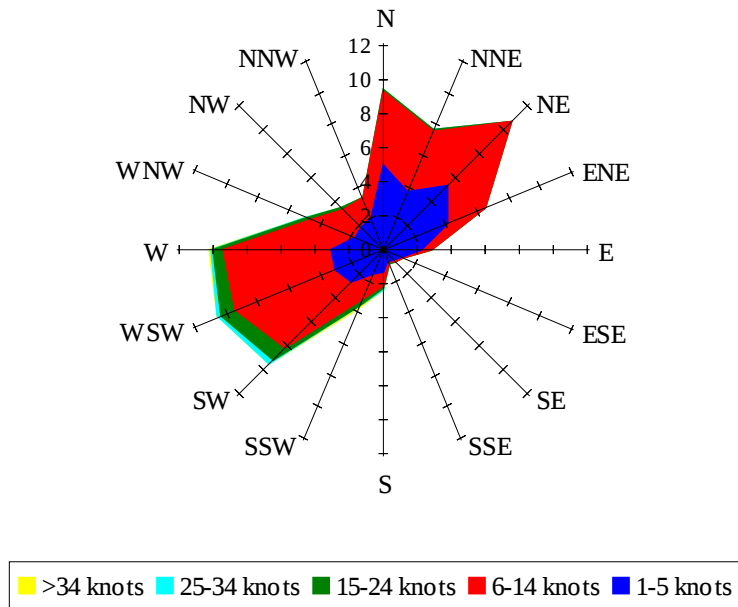
Average Annual Solar Heat and Illumination – Nearest Available Site

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

AVERAGE TRANSMITTED SOLAR RADIATION (Btu/sq.ft./day) FOR DOUBLE GLAZING, Percentage Uncertainty = 9		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
HORIZ	Unshaded	480	660	900	1180	1340	1440	1360	1260	1030	830	540	420	960
NORTH	Unshaded	160	200	250	310	360	400	380	330	280	220	170	140	270
	Shaded	140	180	230	280	330	360	350	300	260	200	150	130	240
EAST	Unshaded	320	410	530	650	700	730	700	660	570	490	340	280	530
	Shaded	290	370	480	580	620	650	620	590	510	450	310	250	480
SOUTH	Unshaded	730	760	700	590	470	430	450	540	670	860	760	700	640
	Shaded	710	710	580	430	350	360	360	390	520	770	740	690	550
WEST	Unshaded	330	420	540	660	710	740	710	690	590	510	360	290	550
	Shaded	300	390	490	590	630	660	630	610	530	470	330	270	490

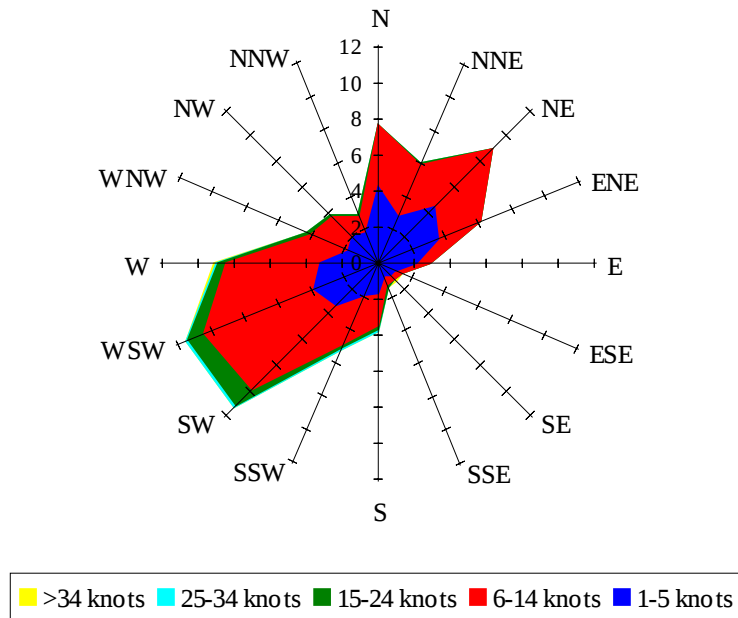
AVERAGE INCIDENT ILLUMINANCE (klux-hr) FOR MOSTLY CLEAR AND MOSTLY CLOUDY CONDITIONS, Percentage Uncertainty = 9		March					June				
		9am	11am	1pm	3pm	5pm	9am	11am	1pm	3pm	5pm
HORIZ.	M.Clear	30	69	86	76	41	33	75	99	100	76
	M.Cloudy	17	41	50	47	24	21	48	70	75	54
NORTH	M.Clear	8	14	15	14	10	22	16	18	17	17
	M.Cloudy	7	15	17	16	10	12	17	20	20	17
EAST	M.Clear	70	67	22	14	10	64	78	45	17	17
	M.Cloudy	20	31	19	16	10	25	42	35	20	17
SOUTH	M.Clear	28	63	79	69	37	10	21	38	39	23
	M.Cloudy	11	30	38	36	17	9	19	31	33	20
WEST	M.Clear	8	14	15	58	75	10	16	18	40	73
	M.Cloudy	7	15	17	32	27	9	17	20	33	46
M.Clear	(% hrs)	31	30	30	30	31	38	42	38	35	37
		Sept					Dec				
		9am	11am	1pm	3pm	5pm	9am	11am	1pm	3pm	5pm
HORIZ.	M.Clear	16	60	85	84	59	10	41	54	42	10
	M.Cloudy	10	34	56	58	37	6	23	29	24	7
NORTH	M.Clear	6	14	17	17	14	4	10	11	10	4
	M.Cloudy	5	13	18	18	14	3	10	12	10	3
EAST	M.Clear	43	74	43	17	14	34	48	12	10	4
	M.Cloudy	13	31	29	18	14	8	18	12	10	3
SOUTH	M.Clear	10	45	68	67	45	26	74	91	75	27
	M.Cloudy	6	22	40	42	25	6	24	29	26	7
WEST	M.Clear	6	14	17	42	72	4	10	12	48	35
	M.Cloudy	5	13	18	30	35	3	10	12	19	9
M.Clear	(% hrs)	35	39	38	37	39	27	29	30	31	33

Wind Summary - December, January, and February **Labels of Percent Frequency on North Axis**



Percent Calm = 12.96

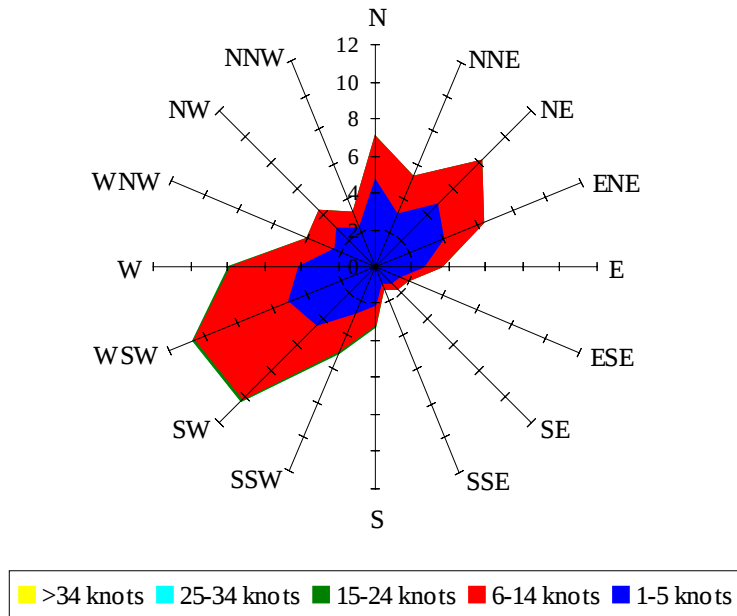
Wind Summary - March, April, and May **Labels of Percent Frequency on North Axis**



Percent Calm = 12.92

Wind Summary - June, July, and August

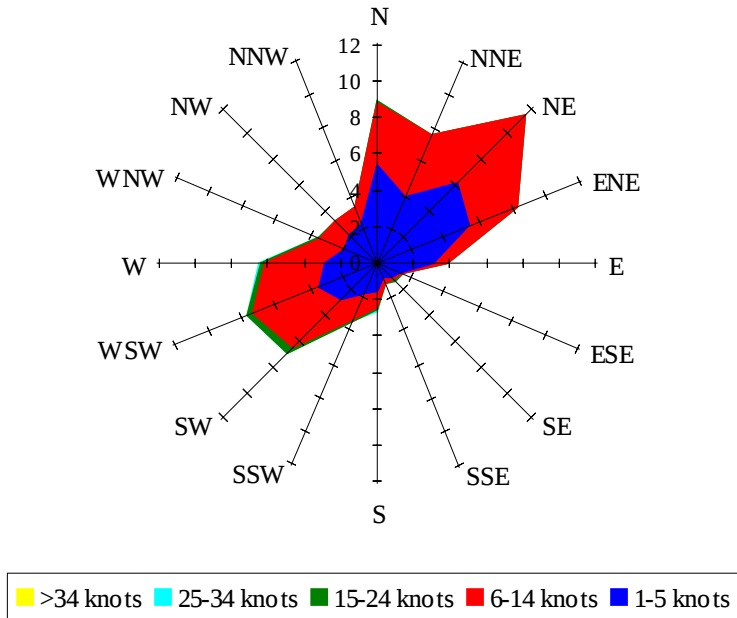
Labels of Percent Frequency on North Axis



Percent Calm = 15.95

Wind Summary - September, October, and November

Labels of Percent Frequency on North Axis



Percent Calm = 18.77