TOPEKA/BILLARD KS	
Latitude = 39.07 N	WMO No. 724560
Longitude = 95.62 W	Elevation = 886 feet
Period of Record = 1973 to 1996	Average Pressure = 29.05 inches Hg

Design Criteria Data

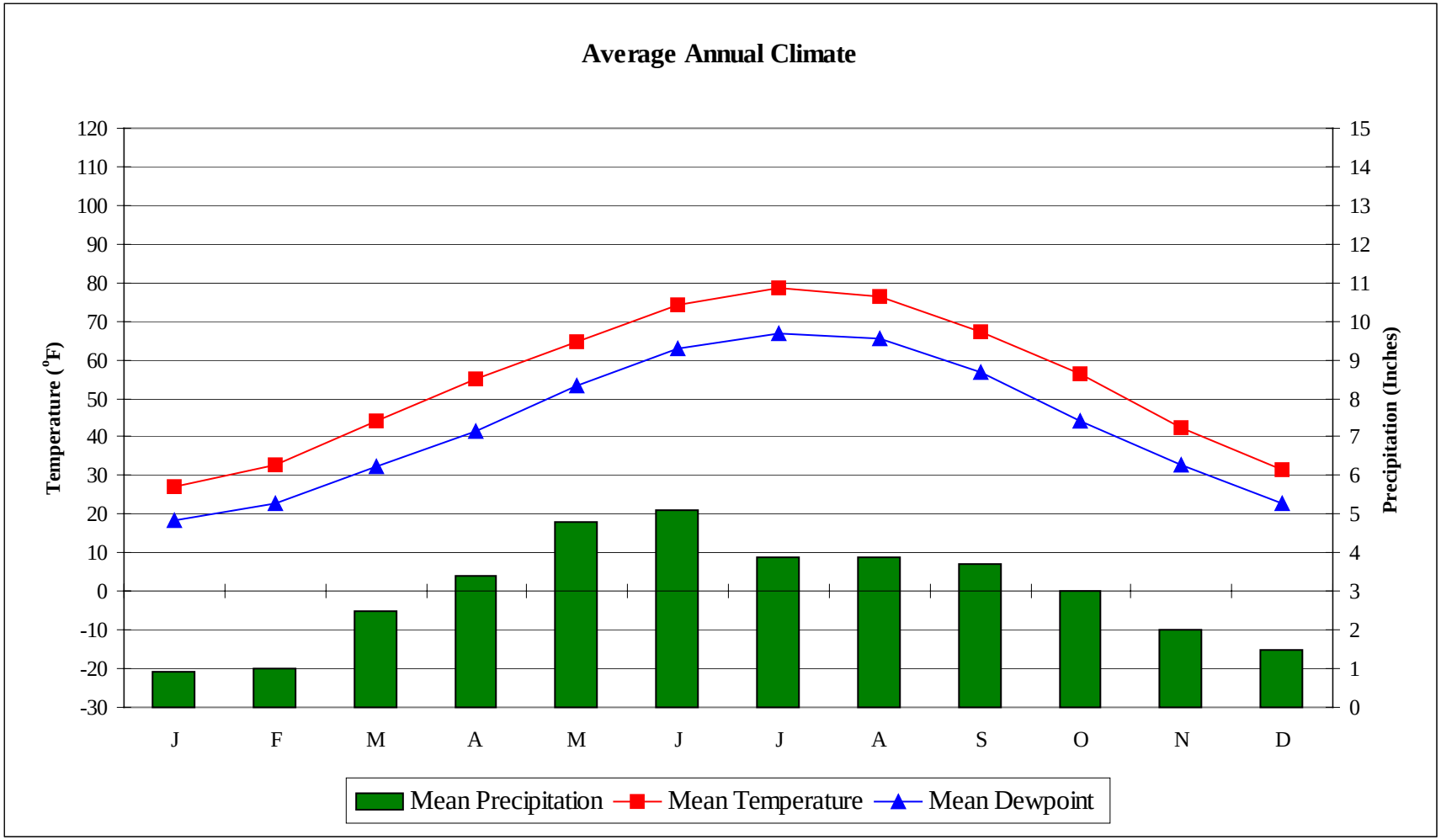
		Mean Coincident (Average) Values			
Dry Bulb Temperature (T)	**Design Value (^oF)**	Wet Bulb Temperature (^oF)	Humidity Ratio (gr/lb)	Wind Speed (mph)	Prevailing Direction (NSEW)
Median of Extreme Highs	100	76	101	11.6	SSW
0.4% Occurrence	96	76	107	11.8	S
1.0% Occurrence	93	76	110	11.5	S
2.0% Occurrence	91	75	110	11.5	S
Mean Daily Range	21	-	-	-	-
97.5% Occurrence	11	10	7	8.8	N
99.0% Occurrence	4	3	5	8.5	N
99.6% Occurrence	-3	-4	3	7.9	N
Median of Extreme Lows	-8	-9	2	8.0	N
		Mean Coincident (Average) Values			
Wet Bulb Temperature (T_{wb})	**Design Value (^oF)**	Dry Bulb Temperature (^oF)	Humidity Ratio (gr/lb)	Wind Speed (mph)	Prevailing Direction (NSEW)
Median of Extreme Highs	81	92	142	10.7	S
0.4% Occurrence	79	90	133	10.8	S
1.0% Occurrence	78	89	129	10.8	S
2.0% Occurrence	77	88	125	10.7	S
		Mean Coincident (Average) Values			
Humidity Ratio (HR)	**Design Value (gr/lb)**	Dry Bulb Temperature (^oF)	Vapor Pressure (in. Hg)	Wind Speed (mph)	Prevailing Direction (NSEW)
Median of Extreme Highs	155	88	1.00	8.6	NE
0.4% Occurrence	140	87	0.90	9.5	S
1.0% Occurrence	132	85	0.85	9.7	S
2.0% Occurrence	127	84	0.82	9.8	S
Air Conditioning/		$T \geq 93^oF$	$T \geq 80^oF$	$T_{wb} \geq 73^oF$	$T_{wb} \geq 67^oF$
Humid Area Criteria	# of Hours	108	1061	731	1855

Other Site Data

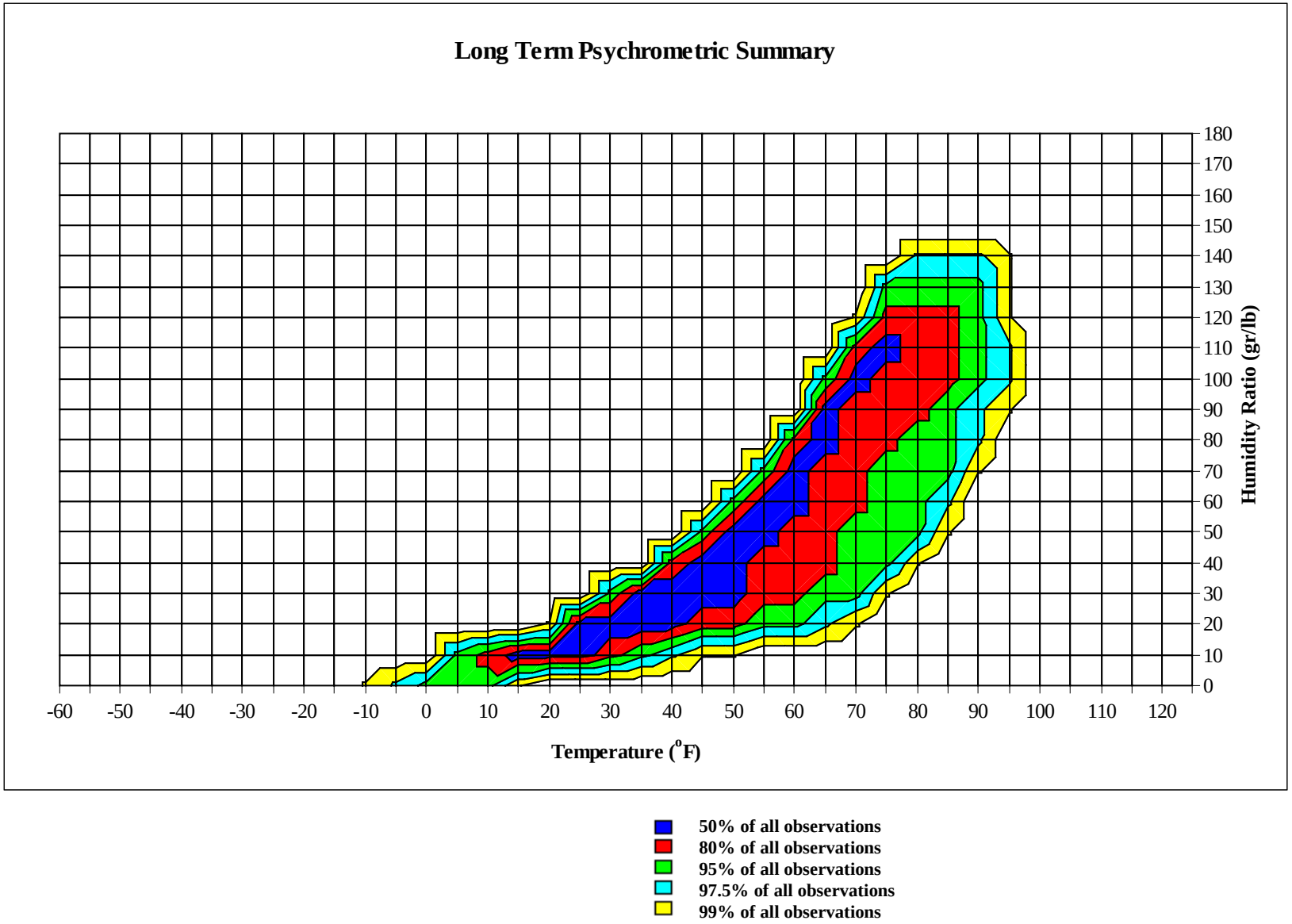
Weather Region	Rain Rate 100 Year Recurrence (in./hr)	Basic Wind Speed 3 sec gust @ 33 ft 50 Year Recurrence (mph)	Ventilation Cooling Load Index (Ton-hr/cfm/yr) Base 75°F-RH 60% Latent + Sensible
7	3.8	90	2.8 + 1.1
Ground Water Temperature (^oF) 50 Foot Depth *	**Frost Depth 50 Year Recurrence (in.)**	**Ground Snow Load 50 Year Recurrence (lb/ft^2)**	**Average Annual Freeze-Thaw Cycles (#)**
56.7	N/A	17	71

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

TOPEKA/BILLARD KS WMO No. 724560

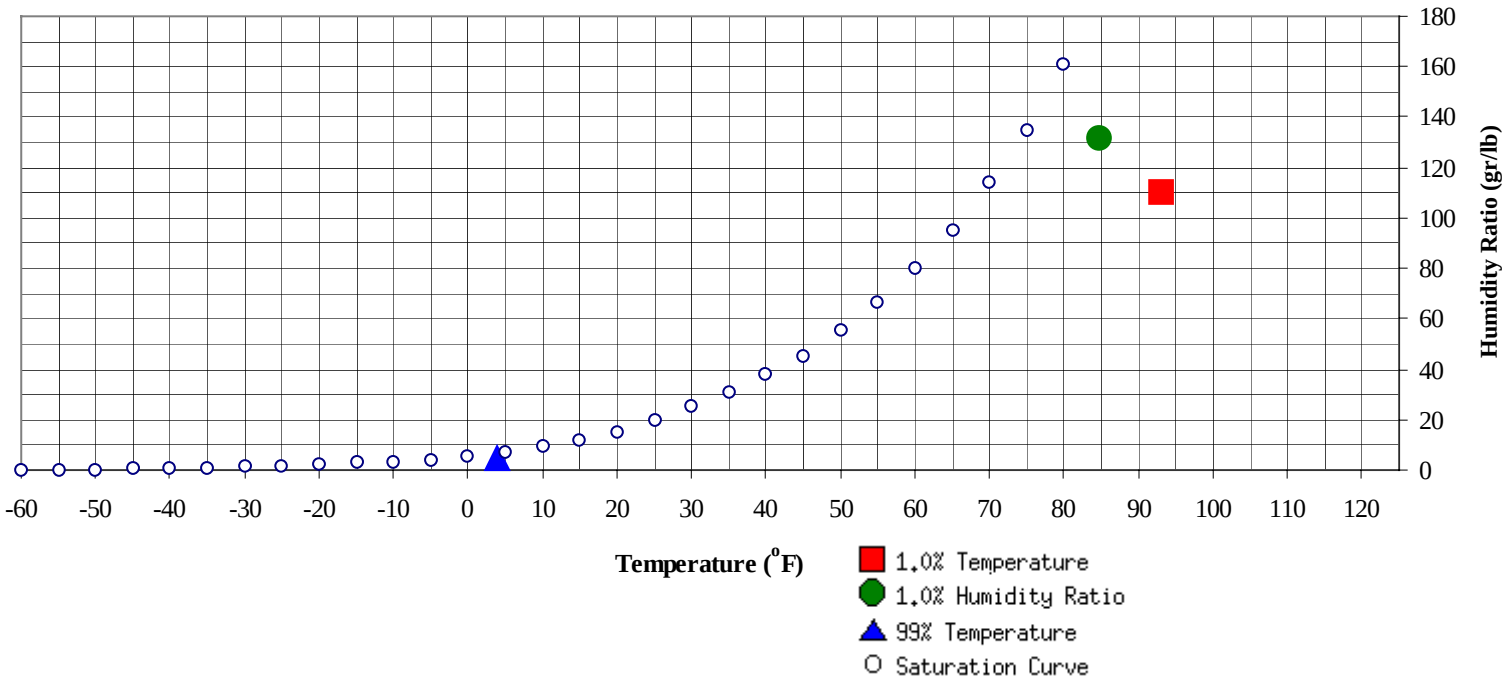


TOPEKA/BILLARD KS WMO No. 724560



TOPEKA/BILLARD KS WMO No. 724560

Psychrometric Summary of Peak Design Values



	(°F)	MCHR (gr/lb)	Enthalpy (btu/lb)
99% Dry Bulb	4	4.8	1.7

	(gr/lb)	MCDB (°F)	MCWB (°F)	MC Dewpt (°F)	Enthalpy (btu/lb)
1.0% Humidity Ratio	131.6	84.6	76.8	74	41.0

	(°F)	MCHR (gr/lb)	MCWB (°F)	Enthalpy (btu/lb)
1.0% Dry Bulb	93	110.3	75.7	39.7

TOPEKA/BILLARD KS WMO No. 724560

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

Period of Record = 1973 to 1996

Temperature Range (°F)	January Hour Group (LST) 01 To 08	January 09 To 16	January 17 To 00	January Total Obs	January MCWB (°F)	February Hour Group (LST) 01 To 08	February 09 To 16	February 17 To 00	February Total Obs	February MCWB (°F)	March Hour Group (LST) 01 To 08	March 09 To 16	March 17 To 00	March Total Obs	March MCWB (°F)
105 / 109															
100 / 104															
95 / 99															
90 / 94															
85 / 89												0	0	0	61.1
80 / 84												2	1	3	60.5
75 / 79							0	0	0	56.8		6	2	8	58.8
70 / 74		0		0	51.5		2	1	3	53.6	0	11	6	17	57.2
65 / 69		1	0	1	52.4	0	6	2	8	51.4	2	17	12	31	55.2
60 / 64	0	2	1	3	51.1	1	10	6	17	49.9	8	24	19	51	52.4
55 / 59	1	7	3	11	47.2	1	13	8	22	46.8	12	28	20	60	49.0
50 / 54	2	11	7	20	44.1	4	17	15	36	43.7	18	29	32	79	45.6
45 / 49	4	17	10	31	40.3	8	18	19	45	41.0	29	35	36	100	42.1
40 / 44	11	30	24	65	37.2	20	29	23	72	37.6	37	33	37	107	38.2
35 / 39	22	34	34	90	33.4	30	33	36	99	33.6	38	27	34	99	33.7
30 / 34	44	39	44	127	29.6	46	27	38	111	29.7	48	19	27	94	29.4
25 / 29	40	30	37	107	25.1	36	22	25	83	24.9	31	9	13	53	24.9
20 / 24	36	22	27	85	20.3	24	19	18	61	20.1	14	4	6	24	20.1
15 / 19	25	19	19	63	15.4	18	12	13	43	15.3	8	1	2	11	15.4
10 / 14	22	18	19	59	10.4	14	8	10	32	10.6	2	1	1	4	10.6
5 / 9	18	9	12	39	5.9	8	4	5	17	6.0	1	0	0	1	6.4
0 / 4	12	5	7	24	1.2	5	2	3	10	1.2	1	0	0	1	1.7
-5 / -1	6	2	2	10	-3.2	4	1	2	7	-3.0	0	0		0	-1.7
-10 / -6	4	1	1	6	-7.3	4	0	1	5	-7.2	0			0	-5.5
-15 / -11	2	0	0	2	-12.1	1	0	0	1	-12.1					
-20 / -16	1	0		1	-15.7	1			1	-16.5					
-25 / -21	0			0	-20.0	0			0	-21.5					
-30 / -26															

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.

TOPEKA/BILLARD KS WMO No. 724560

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

Period of Record = 1973 to 1996

Temperature Range (°F)	April Hour Group (LST) 01 To 08	April 09 To 16	April 17 To 00	April Total Obs	April MCWB (°F)	May Hour Group (LST) 01 To 08	May 09 To 16	May 17 To 00	May Total Obs	May MCWB (°F)	June Hour Group (LST) 01 To 08	June 09 To 16	June 17 To 00	June Total Obs	June MCWB (°F)
105 / 109												0		0	74.7
100 / 104												0	0	0	75.3
95 / 99												4	2	6	75.7
90 / 94		1	0	1	67.4		2	0	2	72.6		21	8	29	75.5
85 / 89		4	2	6	66.0		11	3	14	70.6	0	47	23	70	73.3
80 / 84		11	5	16	64.6	0	29	15	44	67.9	7	59	46	112	70.9
75 / 79	0	18	10	28	62.4	3	41	27	71	65.7	32	50	49	131	68.6
70 / 74	5	27	20	52	59.7	14	55	42	111	62.9	56	33	50	139	66.8
65 / 69	13	31	24	68	57.0	37	43	49	129	60.5	65	18	37	120	63.4
60 / 64	20	36	33	88	53.6	56	33	46	135	57.3	46	6	19	71	59.2
55 / 59	27	35	38	99	50.4	50	21	34	105	53.2	23	1	5	29	55.2
50 / 54	40	33	38	110	46.8	47	10	20	77	49.3	9	0	1	10	50.9
45 / 49	43	22	32	96	43.0	24	3	8	35	44.8	2		0	2	46.1
40 / 44	36	13	22	71	38.7	11	0	3	14	40.6	0			0	43.7
35 / 39	34	7	12	53	34.5	4		0	4	36.2					
30 / 34	16	2	5	23	30.2	1			1	31.9					
25 / 29	6	1	1	8	25.6										
20 / 24	1	0	0	1	21.6										
15 / 19	0			0	15.8										
10 / 14	0			0	11.5										
5 / 9															
0 / 4															
-5 / -1															
-10 / -6															
-15 / -11															
-20 / -16															
-25 / -21															
-30 / -26															

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.

TOPEKA/BILLARD KS WMO No. 724560

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

Period of Record = 1973 to 1996

Temperature Range (°F)	July Hour Group (LST) 01 To 08	July 09 To 16	July 17 To 00	July Total Obs	July MCWB (°F)	August Hour Group (LST) 01 To 08	August 09 To 16	August 17 To 00	August Total Obs	August MCWB (°F)	September Hour Group (LST) 01 To 08	September 09 To 16	September 17 To 00	September Total Obs	September MCWB (°F)
105 / 109		1	0	1	75.1		0	0	0	75.8					
100 / 104		4	1	5	76.5		2	1	3	75.1		0	0	0	72.9
95 / 99		16	6	22	76.5		15	4	19	76.0		5	1	6	73.1
90 / 94	1	48	22	71	75.9	0	37	15	51	75.6	0	12	3	15	73.3
85 / 89	2	66	40	108	74.3	1	49	27	76	74.1	0	26	9	35	71.7
80 / 84	24	59	57	140	72.4	14	60	48	122	72.1	2	42	23	67	69.5
75 / 79	58	32	53	143	70.8	43	46	52	141	70.3	15	39	34	88	67.6
70 / 74	77	16	42	135	68.4	70	27	53	151	68.0	31	39	41	111	65.2
65 / 69	51	4	20	75	64.8	57	9	27	93	64.3	43	31	37	111	61.7
60 / 64	27	1	6	34	60.6	39	3	16	58	60.1	41	22	36	99	57.7
55 / 59	7	0	1	8	56.1	16	0	4	20	55.8	39	13	25	77	53.8
50 / 54	2		0	2	52.4	6		1	7	51.1	32	6	17	55	49.6
45 / 49	0			0	47.5	1		0	1	47.0	21	2	9	32	45.5
40 / 44						0			0	42.3	10	1	4	15	40.8
35 / 39											6	0	1	7	36.4
30 / 34											1		0	1	32.1
25 / 29											0			0	28.7
20 / 24															
15 / 19															
10 / 14															
5 / 9															
0 / 4															
-5 / -1															
-10 / -6															
-15 / -11															
-20 / -16															
-25 / -21															
-30 / -26															

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.

TOPEKA/BILLARD KS WMO No. 724560

Dry-Bulb Temperature Hours For An Average Year (Sheet 4 of 5)

Period of Record = 1973 to 1996

Temperature Range (°F)	October Hour Group (LST) 01 To 08	October 09 To 16	October 17 To 00	October Total Obs	October MCWB (°F)	November Hour Group (LST) 01 To 08	November 09 To 16	November 17 To 00	November Total Obs	November MCWB (°F)	December Hour Group (LST) 01 To 08	December 09 To 16	December 17 To 00	December Total Obs	December MCWB (°F)
105 / 109															
100 / 104															
95 / 99		0		0	64.0										
90 / 94		1	0	1	66.3										
85 / 89		5	1	6	66.4										
80 / 84		13	3	16	64.6		1		1	62.8					
75 / 79	0	21	8	29	62.3		2	0	2	59.8					
70 / 74	6	33	19	58	60.5	0	7	1	8	59.0		0	0	0	63.8
65 / 69	13	39	29	81	58.0	2	14	5	21	57.3	0	2	0	2	56.1
60 / 64	26	40	37	103	55.0	9	22	14	45	54.5	1	5	2	8	52.8
55 / 59	34	40	42	116	51.1	13	29	19	61	50.3	2	10	5	17	48.8
50 / 54	43	26	40	109	47.4	15	31	26	72	46.2	4	15	8	27	44.7
45 / 49	40	16	29	85	43.2	23	32	33	88	42.1	6	23	15	44	40.9
40 / 44	34	8	22	64	39.4	33	31	41	104	38.4	14	31	24	69	37.5
35 / 39	29	3	13	45	35.2	45	32	38	115	34.1	30	45	45	120	33.8
30 / 34	18	2	4	24	31.1	40	22	33	94	29.6	57	48	59	164	29.8
25 / 29	4	0	0	4	25.9	33	9	17	59	25.2	49	24	36	109	25.2
20 / 24	1		0	1	21.2	15	5	8	28	20.5	32	16	19	67	20.4
15 / 19	0			0	18.0	8	3	4	15	16.2	20	10	13	43	15.5
10 / 14						3	1	1	5	11.2	12	8	9	29	10.8
5 / 9						2	0	0	2	6.3	8	4	5	17	6.1
0 / 4						1			1	2.4	6	3	4	13	1.4
-5 / -1											3	1	2	6	-3.2
-10 / -6											2	1	1	4	-7.7
-15 / -11											1	1	1	3	-12.1
-20 / -16											1	0	0	1	-16.9
-25 / -21											0	0		0	-21.5
-30 / -26											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.

TOPEKA/BILLARD KS WMO No. 724560

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

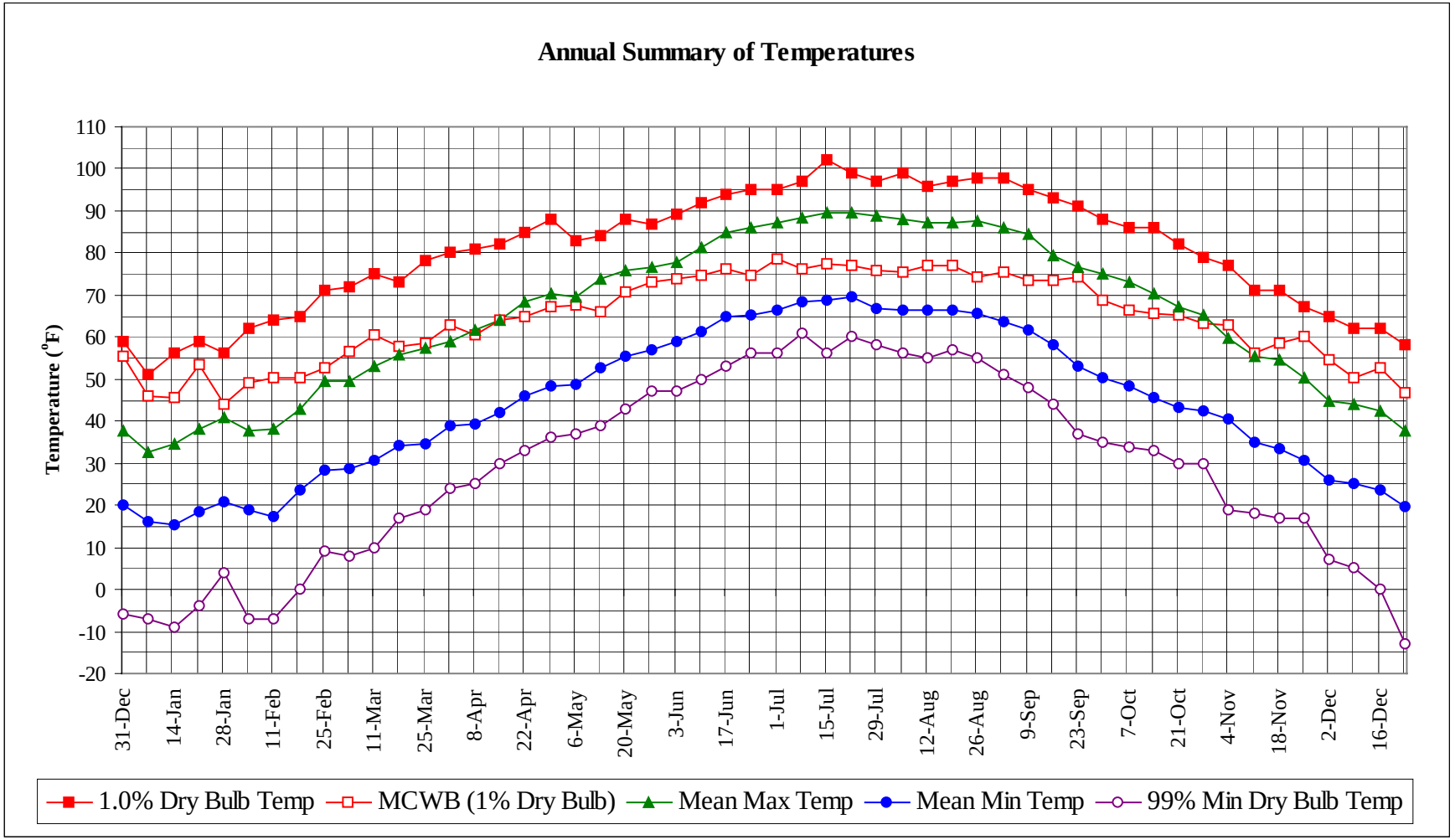
Period of Record = 1973 to 1996

Annual Totals

Temperature Range (°F)	Hour Group (LST) 01 To 08	09 To 16	17 To 00	Total Obs	MCWB (°F)
105 / 109		1	0	1	75.3
100 / 104		7	2	9	75.8
95 / 99		39	12	51	75.9
90 / 94	1	122	48	170	75.3
85 / 89	4	207	105	316	73.3
80 / 84	46	275	196	517	70.7
75 / 79	151	253	234	638	68.2
70 / 74	258	249	275	782	65.3
65 / 69	280	217	241	738	61.0
60 / 64	272	205	236	713	56.4
55 / 59	226	198	204	628	51.5
50 / 54	222	180	205	607	47.0
45 / 49	201	169	192	562	42.5
40 / 44	207	177	201	585	38.3
35 / 39	239	182	214	635	34.0
30 / 34	273	159	210	642	29.7
25 / 29	198	96	128	422	25.1
20 / 24	123	67	78	268	20.3
15 / 19	80	44	51	175	15.5
10 / 14	54	35	40	129	10.6
5 / 9	36	18	23	77	6.0
0 / 4	25	10	15	50	1.3
-5 / -1	12	5	6	23	-3.1
-10 / -6	10	3	3	16	-7.4
-15 / -11	4	1	1	6	-12.1
-20 / -16	2	0	0	2	-16.3
-25 / -21	1	0		1	-21.4
-30 / -26	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.

TOPEKA/BILLARD KS WMO No. 724560



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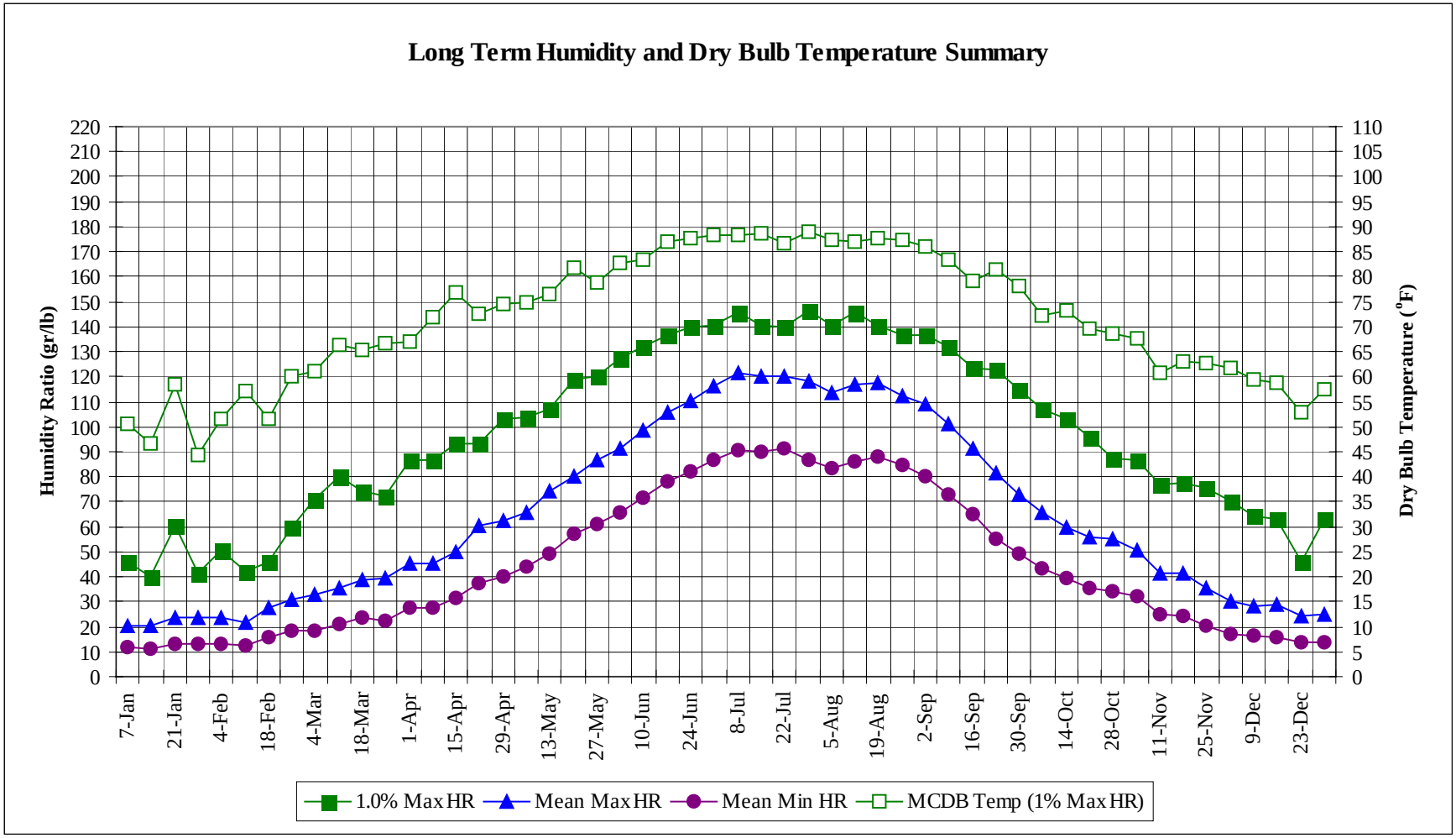
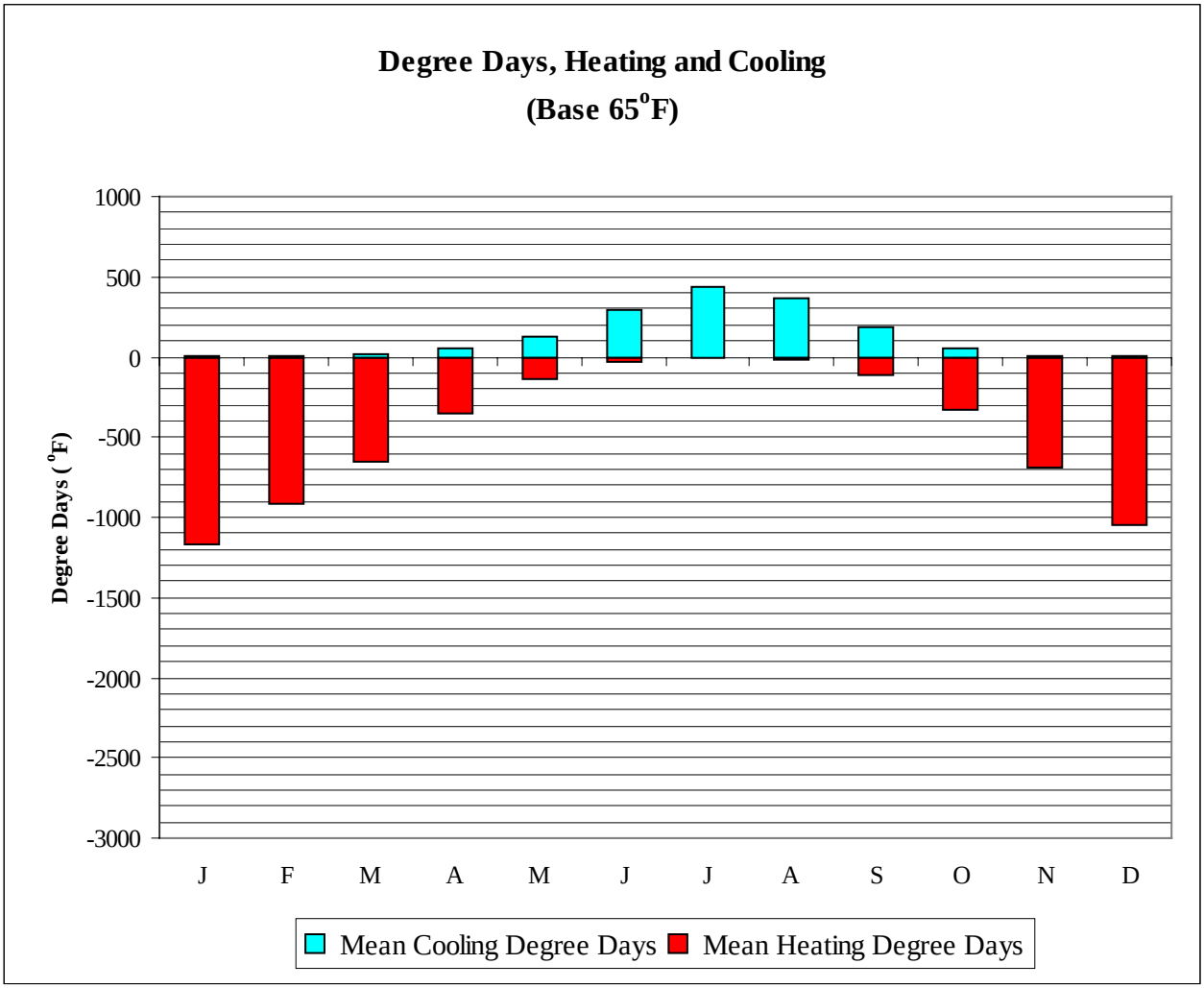


TOPEKA/BILLARD KS WMO No. 724560

Long Term Dry Bulb Temperature and Humidity Summary

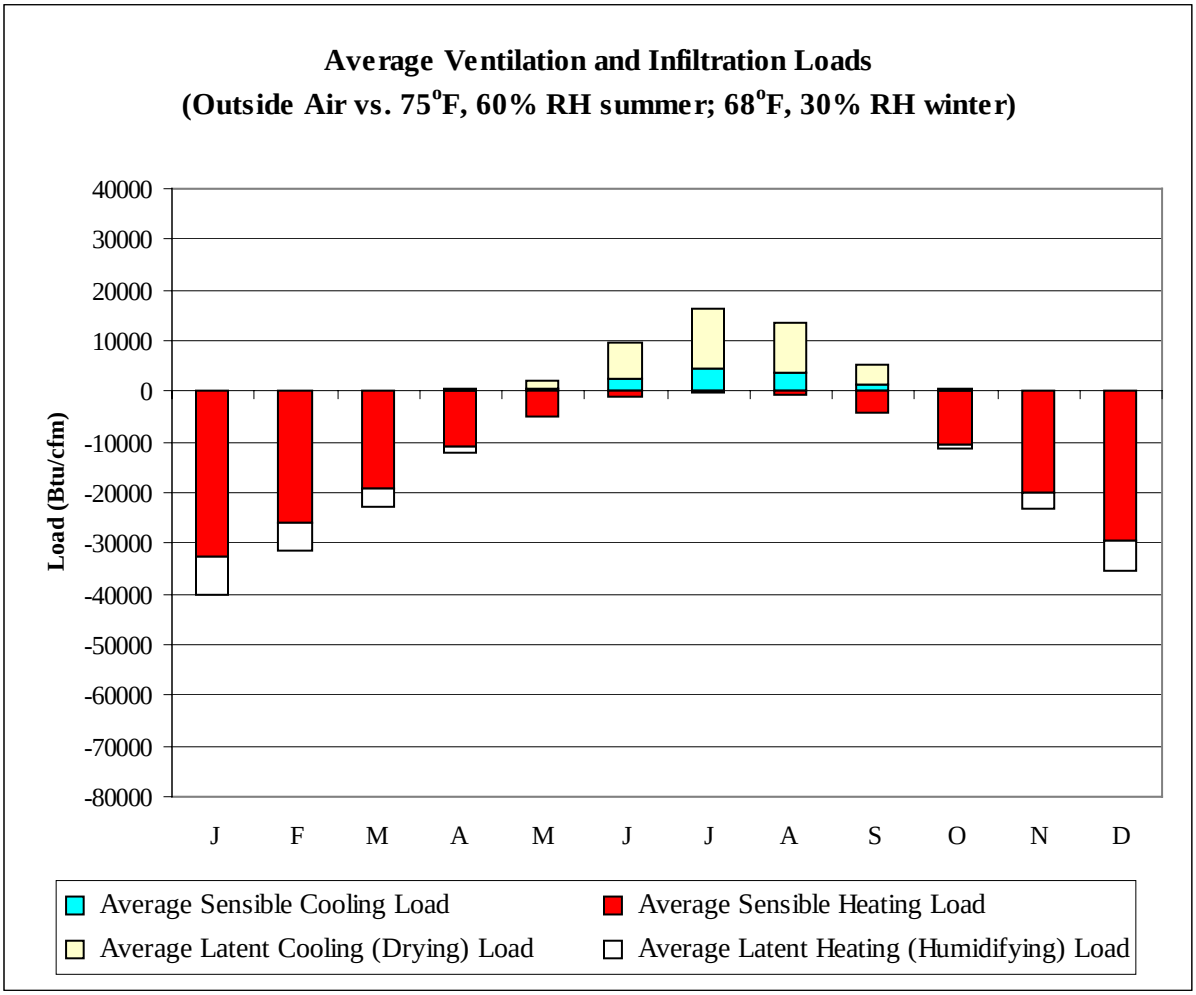
Week Ending	1.0% Temp (°F)	MCWB @ 1% Temp (°F)	Mean Max Temp (°F)	Mean Min Temp (°F)	99% Temp (°F)	1.0% HR (gr/lb)	MCDB @ 1% HR (°F)	Mean Max HR (gr/lb)	Mean Min HR (gr/lb)
7-Jan	51.0	46.1	32.5	16.1	-7.0	46.2	50.7	20.7	11.7
14-Jan	56.0	45.7	34.5	15.4	-9.0	39.9	46.6	20.2	10.9
21-Jan	59.0	53.3	38.0	18.6	-4.0	60.2	58.5	23.9	12.9
28-Jan	56.0	43.9	40.9	20.8	4.0	41.3	44.2	23.8	13.4
4-Feb	62.0	49.0	37.9	18.7	-7.0	50.4	51.5	23.8	13.3
11-Feb	64.0	50.3	38.0	17.2	-7.0	42.0	57.1	21.7	12.2
18-Feb	65.0	50.4	42.9	23.6	0.0	46.2	51.4	27.7	16.0
25-Feb	71.0	52.6	49.4	28.4	9.0	59.5	60.2	30.6	18.1
4-Mar	72.0	56.8	49.4	28.7	8.0	70.7	61.1	32.8	18.7
11-Mar	75.0	60.5	52.9	30.5	10.0	79.8	66.5	35.5	21.1
18-Mar	73.0	57.6	55.8	34.2	17.0	74.2	65.4	38.7	23.4
25-Mar	78.0	58.4	57.4	34.6	19.0	72.1	66.8	39.2	22.7
1-Apr	80.0	62.9	59.1	38.7	24.0	86.8	67.1	45.1	27.6
8-Apr	81.0	60.5	61.6	39.1	25.0	86.8	71.8	45.1	27.7
15-Apr	82.0	63.9	63.9	42.2	30.0	93.1	76.8	49.6	31.6
22-Apr	85.0	64.7	68.2	46.0	33.0	93.1	72.6	60.5	37.7
29-Apr	88.0	67.1	70.4	48.2	36.0	102.9	74.7	62.6	40.2
6-May	83.0	67.6	69.4	48.7	37.0	103.6	74.9	65.7	43.7
13-May	84.0	66.0	73.8	52.5	39.0	107.1	76.6	74.1	49.3
20-May	88.0	70.8	75.7	55.2	43.0	119.0	81.7	80.2	56.8
27-May	87.0	73.1	76.4	57.1	47.0	120.4	78.8	86.9	60.8
3-Jun	89.0	73.8	78.0	58.8	47.0	127.4	82.8	91.2	65.4
10-Jun	92.0	74.8	81.2	61.4	50.0	132.3	83.3	98.6	71.3
17-Jun	94.0	76.2	84.9	64.8	53.0	136.5	86.9	105.5	78.3
24-Jun	95.0	74.8	86.0	65.4	56.0	140.0	87.7	110.5	82.2
1-Jul	95.0	78.7	87.1	66.6	56.0	140.7	88.3	116.0	86.5
8-Jul	97.0	76.4	88.6	68.4	61.0	145.6	88.2	121.4	90.8
15-Jul	102.0	77.6	89.5	68.9	56.0	140.7	88.8	120.3	89.9
22-Jul	99.0	77.2	89.4	69.7	60.0	140.0	86.6	120.3	91.0
29-Jul	97.0	75.9	88.8	66.7	58.0	146.3	89.0	118.3	86.7
5-Aug	99.0	75.4	87.9	66.5	56.0	140.7	87.3	113.7	83.5
12-Aug	96.0	77.1	87.3	66.4	55.0	145.6	86.9	116.8	86.4
19-Aug	97.0	77.1	87.0	66.5	57.0	140.7	87.6	117.7	88.2
26-Aug	98.0	74.1	87.7	65.6	55.0	136.5	87.5	112.6	84.5
2-Sep	98.0	75.3	86.0	63.6	51.0	136.5	85.9	109.1	79.8
9-Sep	95.0	73.4	84.6	61.6	48.0	132.3	83.5	101.4	72.7
16-Sep	93.0	73.7	79.5	58.1	44.0	123.2	79.3	91.5	64.9
23-Sep	91.0	74.2	76.7	53.0	37.0	122.5	81.5	81.7	55.2
30-Sep	88.0	68.7	75.2	50.4	35.0	114.8	78.3	72.7	49.1
7-Oct	86.0	66.4	73.1	48.2	34.0	107.1	72.3	65.7	43.1
14-Oct	86.0	65.6	70.2	45.7	33.0	102.9	73.3	59.5	39.2
21-Oct	82.0	65.3	67.3	43.3	30.0	95.9	69.6	56.0	35.5
28-Oct	79.0	63.1	65.4	42.5	30.0	87.5	68.6	54.9	34.1
4-Nov	77.0	63.0	59.7	40.5	19.0	86.8	67.7	50.6	32.2
11-Nov	71.0	56.3	55.3	35.1	18.0	77.0	60.7	41.6	25.3
18-Nov	71.0	58.6	54.8	33.6	17.0	77.7	62.9	41.3	24.0
25-Nov	67.0	60.2	50.2	30.5	17.0	75.6	62.6	35.5	20.3
2-Dec	65.0	54.6	44.9	25.9	7.0	70.0	61.6	30.3	17.4
9-Dec	62.0	50.3	44.1	25.1	5.0	64.4	59.4	28.5	16.5
16-Dec	62.0	52.8	42.6	23.8	0.0	63.0	58.7	28.6	15.9
23-Dec	58.0	46.9	37.7	19.9	-13.0	46.2	52.8	24.3	13.8
31-Dec	59.0	55.5	37.9	20.2	-6.0	63.0	57.6	24.9	14.0

TOPEKA/BILLARD KS WMO No. 724560



	Mean Cooling Degree Days (°F)	Mean Heating Degree Days (°F)
JAN	0	1173
FEB	1	913
MAR	13	657
APR	49	352
MAY	121	137
JUN	295	24
JUL	432	7
AUG	366	16
SEP	187	114
OCT	54	328
NOV	5	685
DEC	0	1045
ANN	1525	5451

TOPEKA/BILLARD KS WMO No. 724560



	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	-32803	0	-7336
FEB	1	-25845	0	-5457
MAR	41	-19303	15	-3277
APR	250	-11011	199	-1042
MAY	657	-4923	1578	-70
JUN	2583	-1134	6910	0
JUL	4664	-398	11555	0
AUG	3622	-796	9806	0
SEP	1500	-4017	3584	-55
OCT	256	-10414	278	-747
NOV	7	-20028	20	-3079
DEC	0	-29502	2	-6000
ANN	13581	-160174	33947	-27063

Average Annual Solar Radiation – Nearest Available Site

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

City: TOPEKA
State: KS
WBAN No: 13996
Lat(N): 39.07
Long(W): 95.63
Elev(ft): 886

Stn Type: Secondary
SHADING GEOMETRY IN DIMENSIONLESS UNITS
Window: 1
Overhang: 0.507
Vert Gap: 0.316

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	1260	1620	1860	2050	2090	1840	1470	1120	750	610	1360
	Std Dev	61	82	117	110	117	127	140	132	133	113	73	50	41
	Minimum	570	820	960	1380	1600	1840	1800	1540	1060	930	580	540	1300
	Maximum	830	1140	1450	1890	2160	2330	2370	2050	1780	1290	880	710	1480
	Diffuse	310	420	570	680	800	810	770	680	580	420	330	280	550
Clear Day	Global	950	1290	1770	2240	2540	2640	2560	2290	1880	1400	1000	830	1780
NORTH	Global	200	270	350	440	550	630	600	480	380	290	220	180	380
	Diffuse	200	270	350	430	500	530	510	450	380	290	220	180	360
Clear Day	Global	190	250	320	420	580	690	630	470	350	270	200	170	380
EAST	Global	490	620	770	940	1030	1090	1130	1030	870	720	500	410	800
	Diffuse	250	330	430	520	590	620	620	550	470	360	260	220	440
Clear Day	Global	710	910	1140	1350	1450	1470	1440	1340	1180	950	740	640	1110
SOUTH	Global	1190	1190	1110	990	840	780	840	980	1130	1260	1120	1050	1040
	Diffuse	350	420	490	530	560	560	560	550	510	440	360	320	470
Clear Day	Global	1940	1980	1790	1390	1050	900	950	1220	1600	1870	1900	1870	1540
WEST	Global	490	630	770	940	1060	1160	1200	1090	900	730	510	430	830
	Diffuse	250	330	430	530	610	640	630	570	480	360	270	230	440
Clear Day	Global	710	910	1140	1350	1450	1470	1440	1340	1180	950	740	640	1110

Average Annual Solar Heat and Illumination – Nearest Available Site

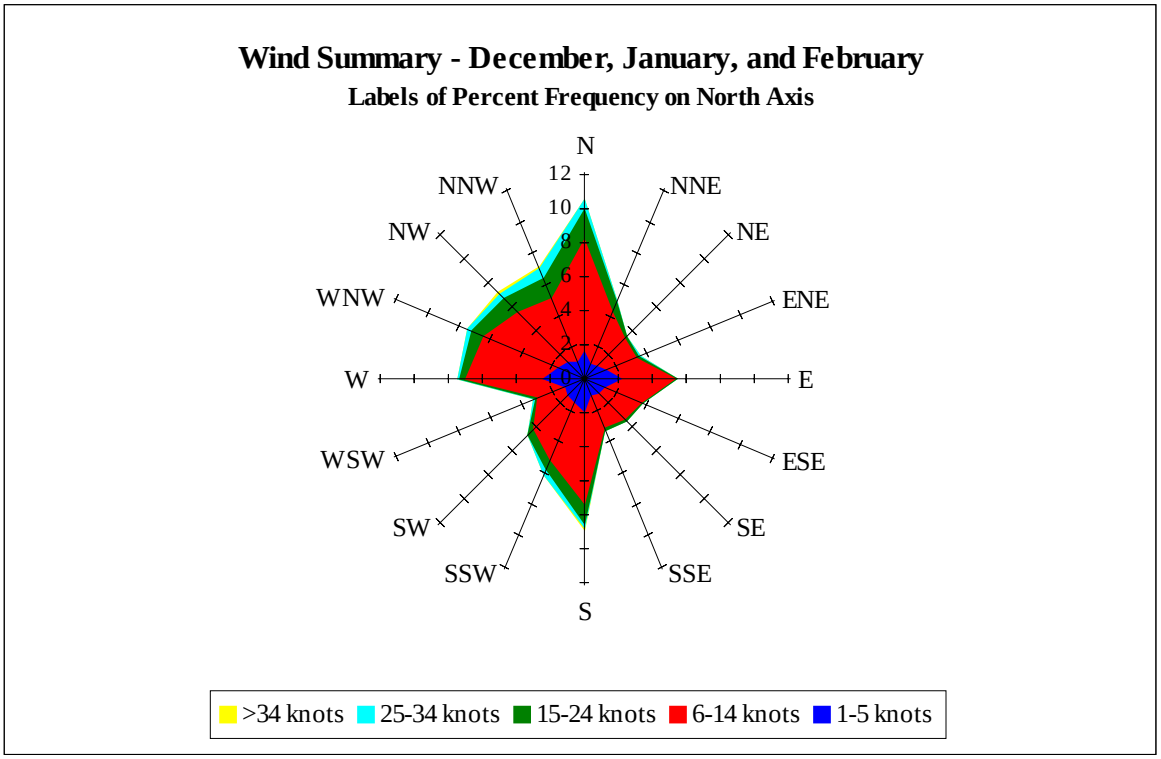
(Source: National Renewable Energy Laboratory, Golden CO, 1995)

AVERAGE TRANSMITTED SOLAR RADIATION (Btu/sq.ft./day) FOR DOUBLE GLAZING, Percentage Uncertainty = 9

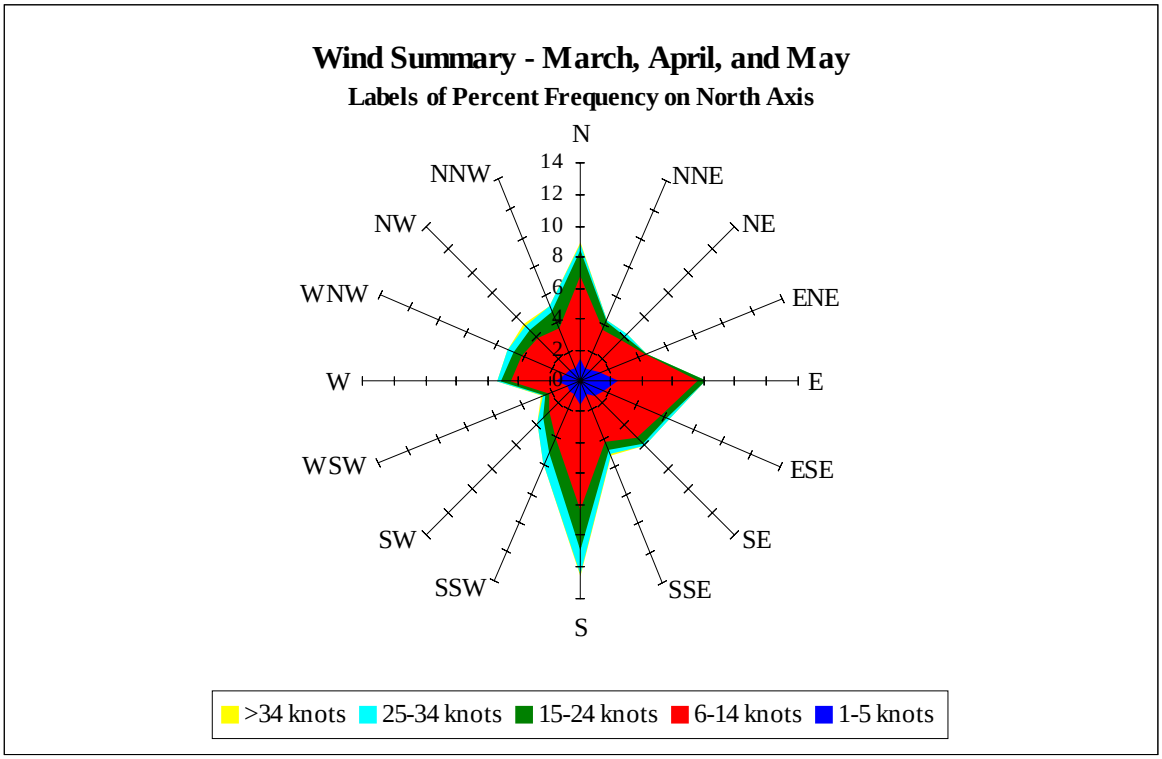
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
HORIZ	Unshaded	460	650	890	1170	1350	1490	1520	1330	1050	780	490	390	970
NORTH	Unshaded	140	190	240	300	360	410	390	320	260	200	150	130	260
	Shaded	130	170	220	270	320	360	350	290	240	180	130	110	230
EAST	Unshaded	340	430	550	670	730	780	800	740	620	500	350	280	570
	Shaded	310	390	480	580	630	670	690	640	550	450	310	260	500
SOUTH	Unshaded	900	870	760	640	520	470	500	610	760	900	830	800	710
	Shaded	870	810	610	430	350	350	350	380	550	790	810	780	590
WEST	Unshaded	340	440	550	670	760	830	860	780	640	510	350	290	590
	Shaded	310	390	480	580	650	710	740	680	560	460	320	270	510

AVERAGE INCIDENT ILLUMINANCE (klux-hr) FOR MOSTLY CLEAR AND MOSTLY CLOUDY CONDITIONS, Percentage Uncertainty = 9

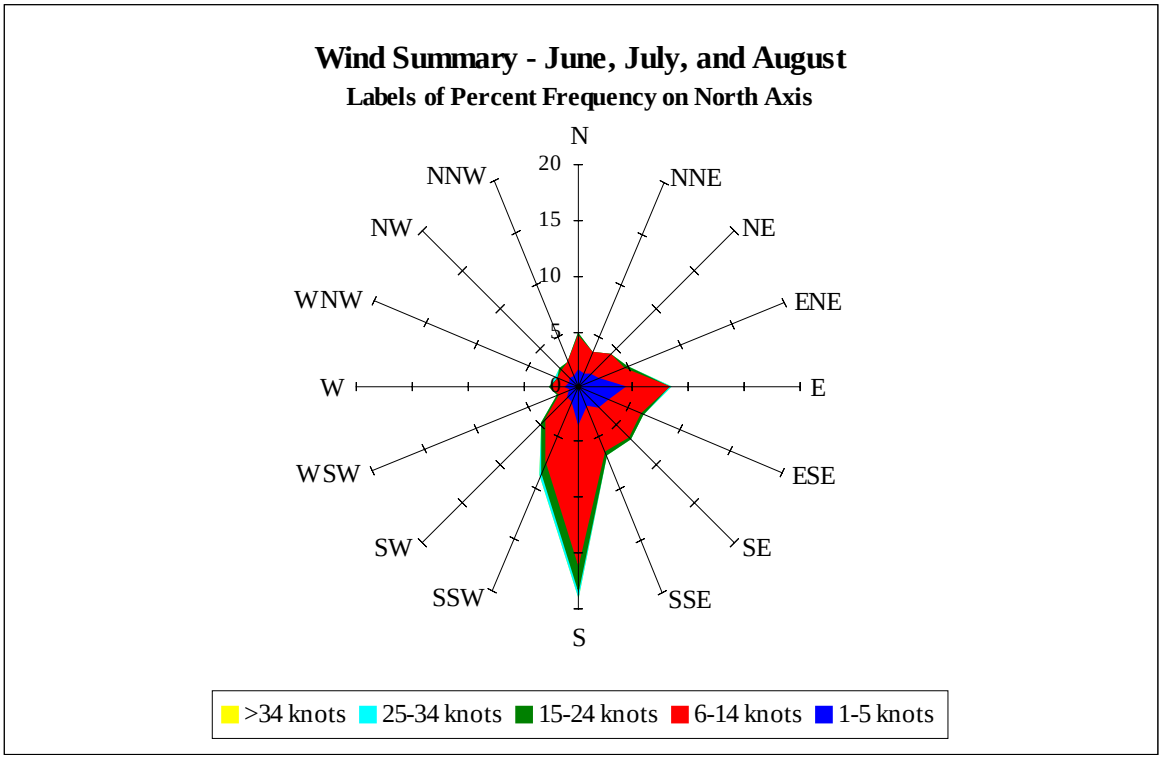
		March					June				
		9am	11am	1pm	3pm	5pm	9am	11am	1pm	3pm	5pm
HORIZ.	M.Clear	33	70	83	70	34	41	80	102	99	75
	M.Cloudy	19	41	52	42	21	26	53	71	73	55
NORTH	M.Clear	9	13	15	13	9	21	16	17	17	16
	M.Cloudy	8	15	17	15	9	14	17	19	19	17
EAST	M.Clear	73	63	16	13	9	75	78	40	17	16
	M.Cloudy	23	31	17	15	9	32	45	31	19	17
SOUTH	M.Clear	34	70	84	70	35	11	27	45	44	24
	M.Cloudy	14	33	43	34	16	10	22	34	35	22
WEST	M.Clear	9	13	15	62	73	11	16	17	45	78
	M.Cloudy	8	15	17	32	28	10	17	19	36	52
M.Clear	(% hrs)	35	32	30	30	32	38	38	36	37	40
		Sept					Dec				
		9am	11am	1pm	3pm	5pm	9am	11am	1pm	3pm	5pm
HORIZ.	M.Clear	22	63	85	82	54	10	39	49	34	5
	M.Cloudy	13	38	53	55	36	6	23	29	21	4
NORTH	M.Clear	7	13	16	16	13	4	9	11	9	3
	M.Cloudy	6	14	17	17	13	3	9	11	8	2
EAST	M.Clear	58	74	37	16	13	36	45	11	9	3
	M.Cloudy	18	35	26	17	13	9	19	11	8	2
SOUTH	M.Clear	15	53	74	71	45	30	79	93	72	15
	M.Cloudy	8	27	40	43	26	8	28	35	25	5
WEST	M.Clear	7	13	16	47	76	4	9	15	49	21
	M.Cloudy	6	14	17	32	39	3	9	12	19	6
M.Clear	(% hrs)	45	45	44	42	44	35	35	36	37	38



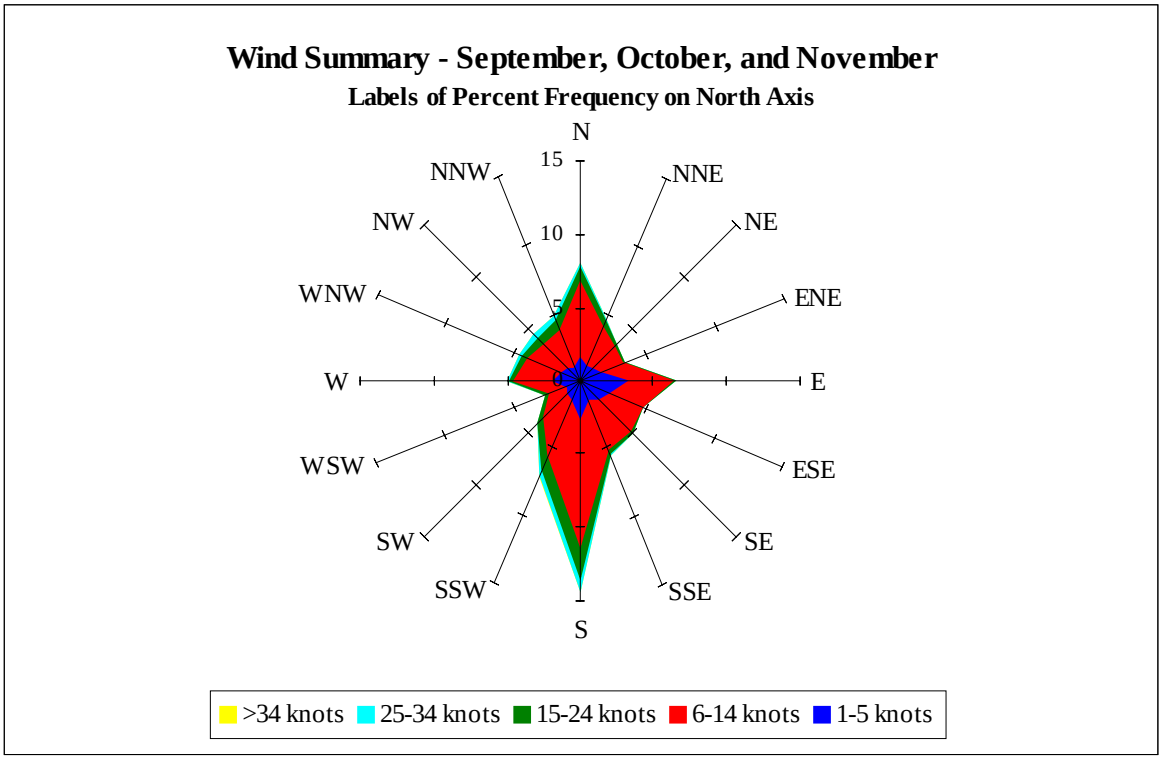
Percent Calm = 10.91



Percent Calm = 8.62



Percent Calm = 11.84



Percent Calm = 13.20