

TOPEKA/FORBES FIELD KS

Latitude = 38.95 N

WMO No. 724565

Longitude = 95.67 W

Elevation = 1079 feet

Period of Record = 1967 to 1996

Average Pressure = 28.85 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	101	75	91	12.9	SSW
0.4% Occurrence	97	75	98	13.9	S
1.0% Occurrence	93	75	104	12.8	S
2.0% Occurrence	91	74	106	12.1	S
Mean Daily Range	19	-	-	-	-
97.5% Occurrence	13	11	7	9.9	N
99.0% Occurrence	7	6	5	9.4	N
99.6% Occurrence	1	0	4	9.4	N
Median of Extreme Lows	-6	-7	2	9.1	N
	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	81	92	148	11.3	S
0.4% Occurrence	79	91	136	12.4	S
1.0% Occurrence	77	88	126	12.8	S
2.0% Occurrence	76	87	121	12.3	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	153	89	0.97	12.8	S
0.4% Occurrence	137	87	0.88	12.3	S
1.0% Occurrence	132	84	0.85	10.3	S
2.0% Occurrence	124	83	0.79	12.8	S
Air Conditioning/ Humid Area Criteria	# of Hours	T ≥ 93°F	T ≥ 80°F	T _{wb} ≥ 73°F	T _{wb} ≥ 67°F
		112	1004	581	1602

Other Site Data

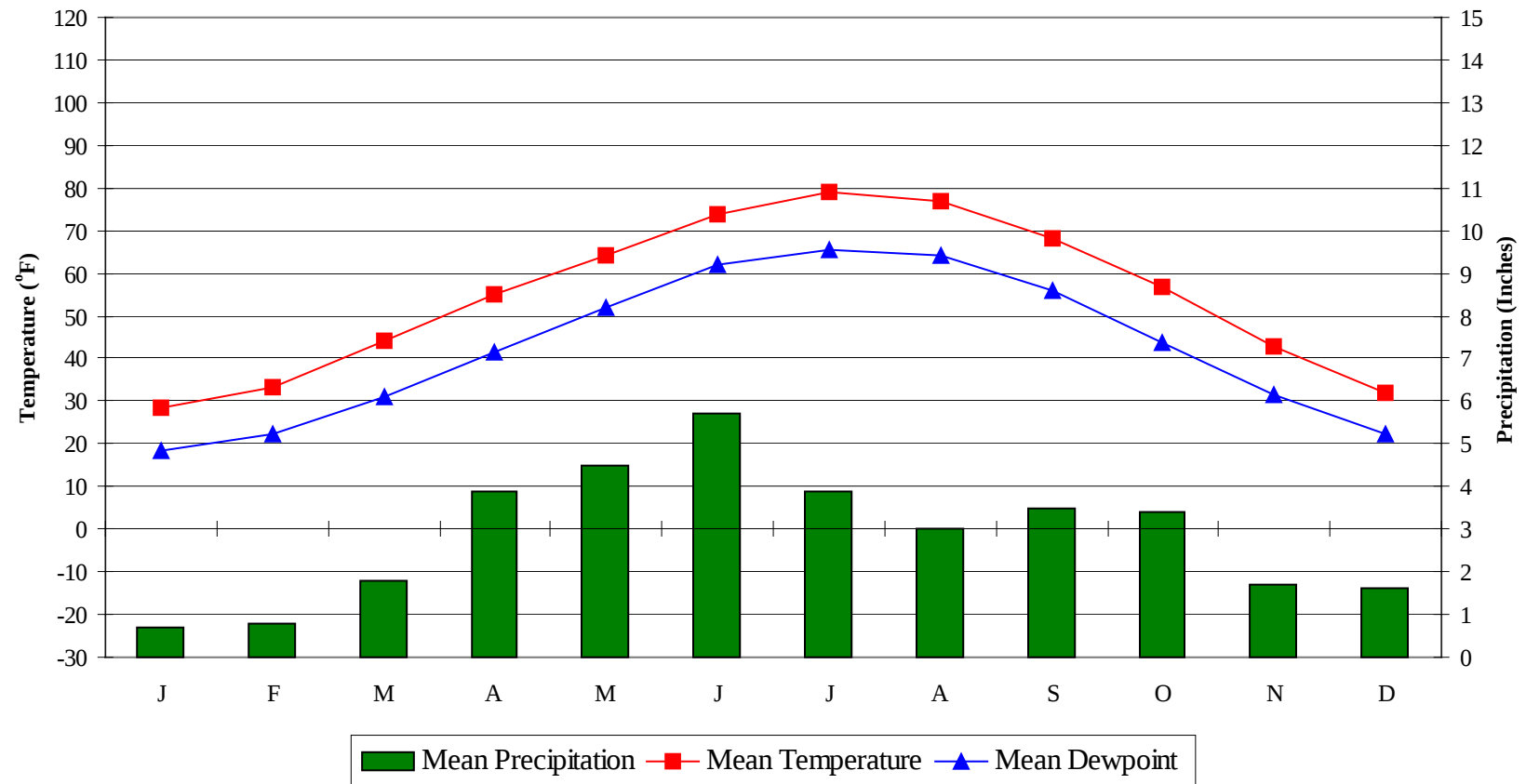
Weather Region	Rain Rate 100 Year Recurrence (in./hr)	Basic Wind Speed 3 sec gust @ 33 ft 50 Year Recurrence (mph)	Ventilation Cooling Load Index (Ton-hr/cfm/yr) Base 75°F-RH 60% Latent + Sensible
7	3.8	90	1.8 + 1.1
Ground Water Temperature (°F) 50 Foot Depth *	Frost Depth 50 Year Recurrence (in.)	Ground Snow Load 50 Year Recurrence (lb/ft ²)	Average Annual Freeze-Thaw Cycles (#)
57.0	52	17	59

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

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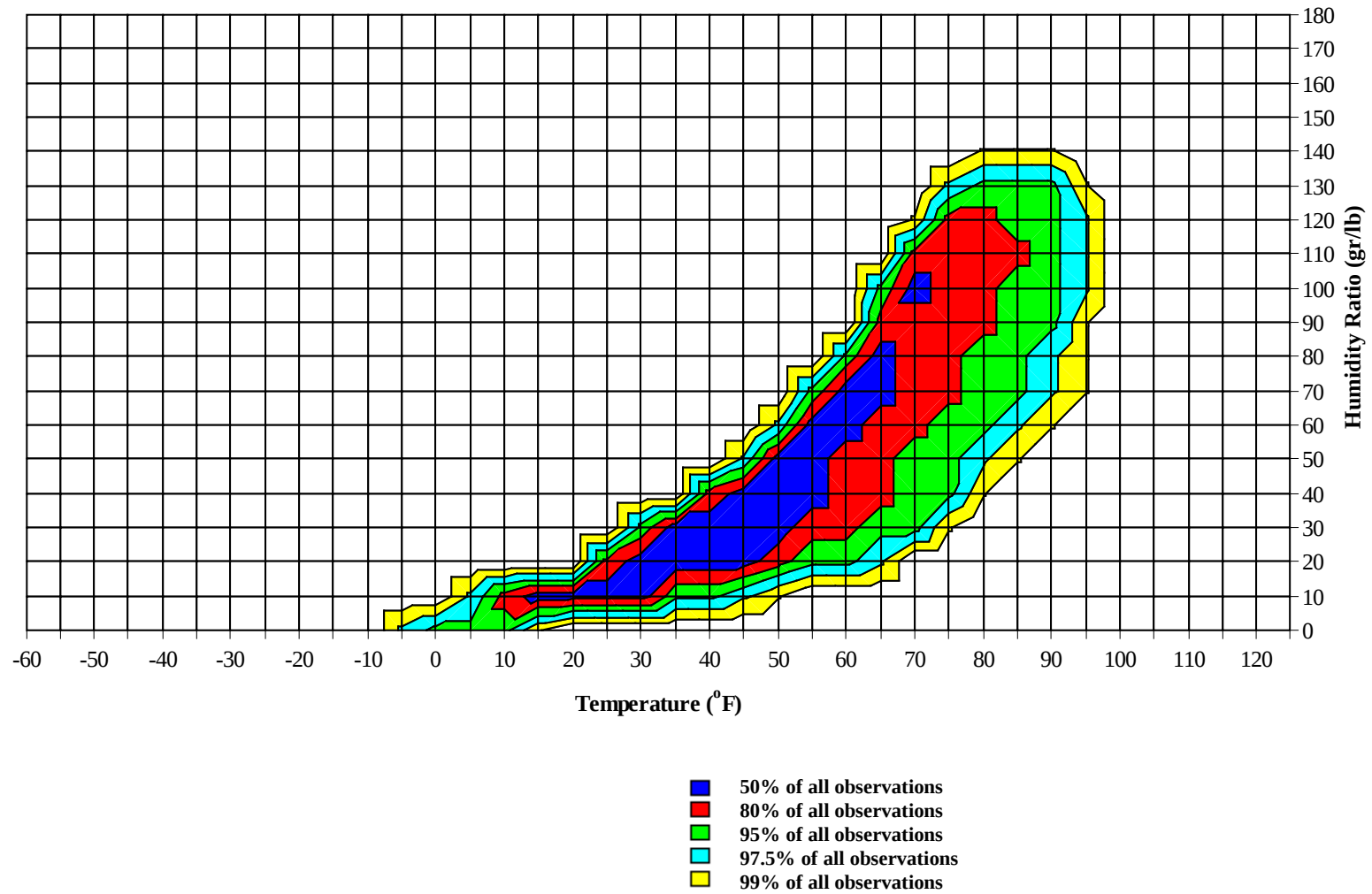
Average Annual Climate



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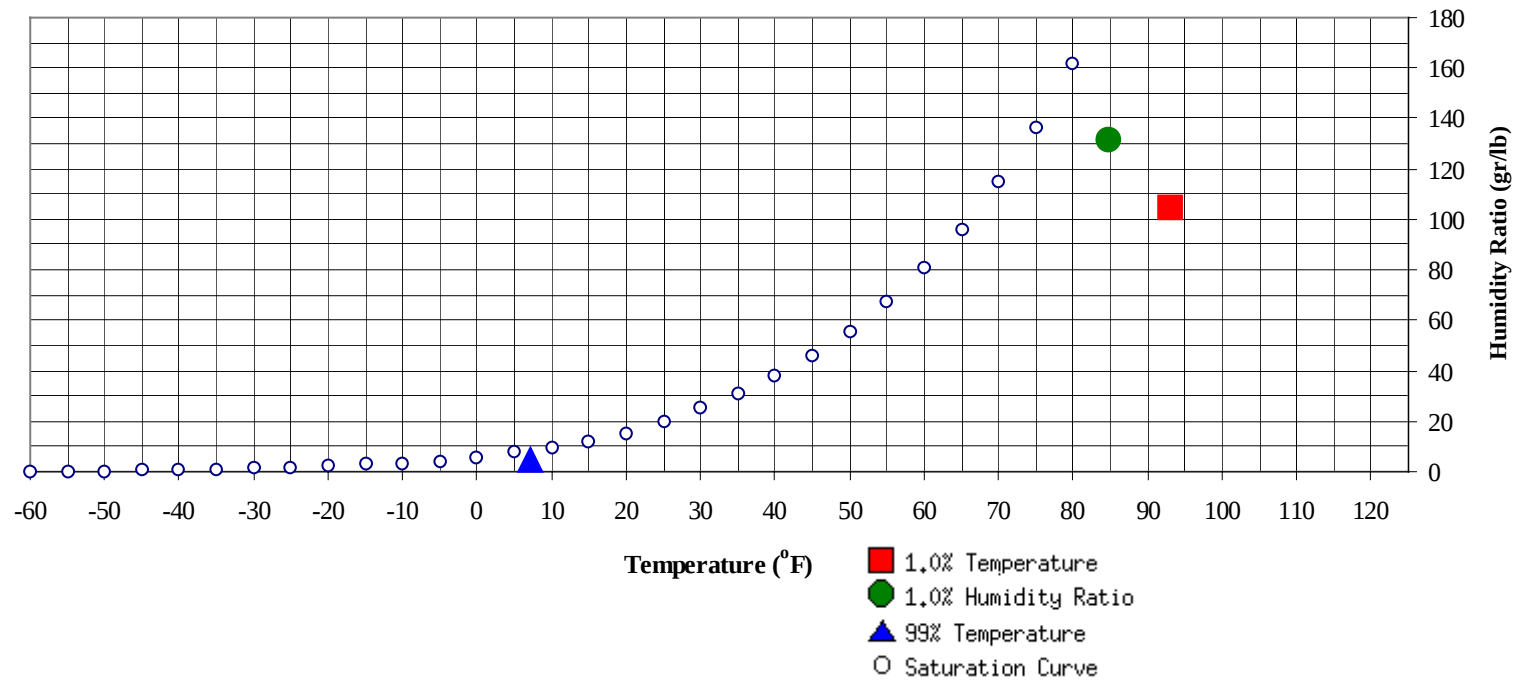
Long Term Psychrometric Summary



TOPEKA/FORBES FIELD KS

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Psychrometric Summary of Peak Design Values



	(°F)	MCHR (gr/lb)	Enthalpy (btu/lb)	1.0% Humidity Ratio	(gr/lb)	MCDB (°F)	MCWB (°F)	MC Dewpt (°F)	Enthalpy (btu/lb)
99% Dry Bulb	7	5	2.4		131.6	84.8	76.8	74	41.0

	(°F)	MCHR (gr/lb)	MCWB (°F)	Enthalpy (btu/lb)
1.0% Dry Bulb	93	104.4	74.9	38.8

TOPEKA/FORBES FIELD KS

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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		
110 / 114															
105 / 109															
100 / 104															
95 / 99															
90 / 94															
85 / 89												0		0	61.4
80 / 84												2	1	3	61.8
75 / 79							0	0	0	57.1		6	2	8	59.2
70 / 74		0		0	52.3		2	1	3	52.5	0	9	5	14	56.8
65 / 69		1	0	1	53.4	0	5	2	7	51.3	1	15	10	26	54.8
60 / 64	0	3	1	4	52.1	0	8	4	12	49.1	5	23	17	45	52.1
55 / 59	1	7	3	11	48.8	1	11	8	20	46.3	13	26	22	61	49.1
50 / 54	2	11	7	20	44.9	3	17	13	33	43.6	17	30	31	78	45.0
45 / 49	4	17	11	32	40.5	6	19	19	44	40.5	31	33	36	100	41.8
40 / 44	13	29	25	67	37.3	20	28	27	75	37.4	37	33	37	107	37.6
35 / 39	28	34	37	99	33.2	33	36	37	106	33.4	39	32	37	108	33.1
30 / 34	44	39	45	128	29.3	48	29	40	117	29.2	47	21	27	94	29.0
25 / 29	45	31	38	114	24.7	38	24	27	89	24.3	31	11	15	58	24.3
20 / 24	29	22	26	77	20.0	26	19	19	63	19.6	14	5	6	25	19.8
15 / 19	26	21	22	68	15.1	17	12	14	43	15.2	8	2	2	11	15.4
10 / 14	23	17	17	56	10.4	14	7	9	30	10.4	2	1	1	4	10.7
5 / 9	16	10	11	37	5.7	8	4	4	15	5.8	1	0	0	1	6.4
0 / 4	10	5	6	20	1.0	6	2	2	10	1.2	1	0	0	1	1.8
-5 / -1	3	2	1	6	-3.1	1	1	0	2	-3.6	0			0	-2.0
-10 / -6	2	1	0	3	-7.3	1	0	0	1	-7.5					
-15 / -11	0	0		0	-12.5	0	0		0	-11.3					
-20 / -16															
-25 / -21															

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		
110 / 114												0	0	0	75.0
105 / 109												0	0	0	75.3
100 / 104												0	0	0	78.1
95 / 99												3	1	4	76.0
90 / 94		0	0	0	62.5		0	0	0	71.4		17	7	25	75.4
85 / 89		3	1	4	63.6		7	2	9	71.2	0	40	21	62	73.4
80 / 84		8	3	11	64.4	0	25	10	35	68.6	4	57	42	103	70.7
75 / 79	0	17	8	25	62.6	2	39	26	67	65.7	26	51	51	128	68.3
70 / 74	3	26	18	47	59.9	12	53	40	104	62.5	55	38	50	143	65.8
65 / 69	11	33	29	73	56.9	31	48	54	132	59.7	67	21	40	128	62.7
60 / 64	19	38	33	90	53.9	61	36	51	148	56.4	52	10	20	82	58.5
55 / 59	30	34	43	108	50.1	57	23	37	117	52.2	26	3	6	35	54.5
50 / 54	42	34	40	116	46.4	50	14	19	83	48.5	9	0	1	10	50.4
45 / 49	46	22	30	99	42.5	22	4	8	34	43.8	1		0	1	44.1
40 / 44	41	14	21	76	38.3	11	0	1	12	39.5	0			0	43.0
35 / 39	27	7	10	44	33.9	2		0	2	35.4					
30 / 34	14	3	4	21	29.8	0			0	31.7					
25 / 29	4	0	0	4	25.3										
20 / 24	1	0	0	1	21.0										
15 / 19	0		0	0	15.5										
10 / 14	0			0	12.3										
5 / 9															
0 / 4															
-5 / -1															
-10 / -6															
-15 / -11															
-20 / -16															
-25 / -21															

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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		
110 / 114															
105 / 109		0	0	0	76.0		1	0	1	75.2					
100 / 104		5	1	6	75.0		4	1	5	75.0		0	0	0	74.0
95 / 99		18	6	25	75.2		14	4	18	74.9		4	1	5	73.3
90 / 94	0	44	22	66	74.7		34	14	49	74.7		10	3	13	72.5
85 / 89	1	61	40	102	73.4	0	48	28	76	73.2		23	8	31	71.1
80 / 84	18	58	58	134	71.5	10	58	49	117	71.2	1	39	22	62	68.9
75 / 79	59	35	58	152	69.8	42	43	59	144	69.6	12	42	35	89	67.0
70 / 74	84	19	42	145	67.3	77	31	51	159	67.2	34	41	46	122	64.8
65 / 69	55	6	16	78	63.5	63	12	27	102	63.4	44	34	42	120	61.1
60 / 64	23	2	4	29	59.3	40	4	12	56	59.1	46	24	36	106	56.9
55 / 59	6	0	1	7	55.0	13	1	2	16	54.9	44	15	26	84	53.0
50 / 54	1		0	1	52.0	2		0	2	49.7	32	6	14	53	48.3
45 / 49						0			0	45.3	16	2	5	23	44.2
40 / 44											8	0	2	10	39.7
35 / 39											2		0	2	35.7
30 / 34											0			0	32.4
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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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		
110 / 114															
105 / 109															
100 / 104															
95 / 99															
90 / 94		1	0	1	62.2										
85 / 89		5	1	6	66.7										
80 / 84		12	3	15	64.8		1		1	59.5					
75 / 79	0	21	8	29	62.6		2	0	2	58.7					
70 / 74	4	29	17	51	60.9		5	1	6	58.0		0		0	64.0
65 / 69	13	39	34	85	58.1	1	12	4	17	56.8		3	1	4	55.3
60 / 64	28	39	38	106	54.6	6	20	11	37	54.1	1	5	1	7	53.2
55 / 59	41	39	44	125	50.8	10	29	18	57	49.5	2	8	5	16	49.1
50 / 54	44	31	42	118	46.7	15	34	31	80	45.7	3	16	7	26	44.6
45 / 49	42	17	32	91	42.6	25	35	38	98	41.8	7	22	18	47	40.8
40 / 44	41	10	20	72	38.6	42	34	46	122	37.8	15	34	28	78	37.1
35 / 39	23	3	6	32	34.3	52	32	39	123	33.7	36	44	49	130	33.4
30 / 34	9	1	2	12	30.1	40	21	28	89	29.0	57	47	55	159	29.3
25 / 29	2	0	0	2	25.6	27	8	14	49	24.5	48	27	37	112	24.5
20 / 24	0		0	0	21.2	13	5	7	26	20.0	31	18	19	67	19.9
15 / 19	0		0	0	16.2	4	2	2	8	15.4	19	9	12	40	15.3
10 / 14			0	0		3	1	1	5	10.6	12	7	7	26	10.6
5 / 9						1	0		1	6.9	7	3	4	13	5.9
0 / 4						0			0	2.0	3	3	3	9	1.1
-5 / -1											2	1	2	5	-3.4
-10 / -6											2	1	1	4	-7.7
-15 / -11											1	0	0	1	-11.8
-20 / -16											0	0	0	0	-17.2
-25 / -21											0		0	0	-21.2

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TOPEKA/FORBES FIELD KS

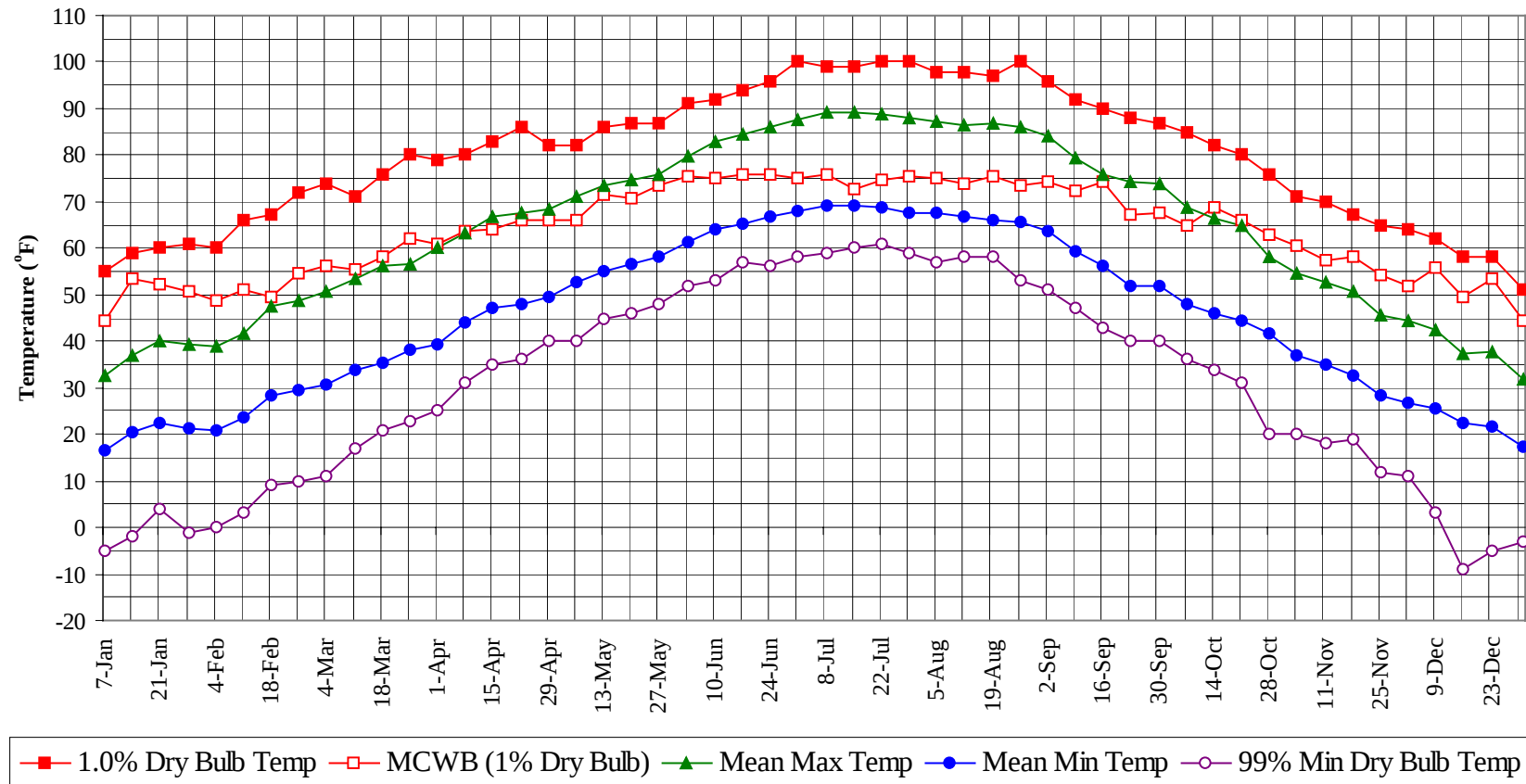
WMO No. 724565

Dry-Bulb Temperature Hours For An Average Year (Sheet 5 of 5)**Period of Record = 1967 to 1996**

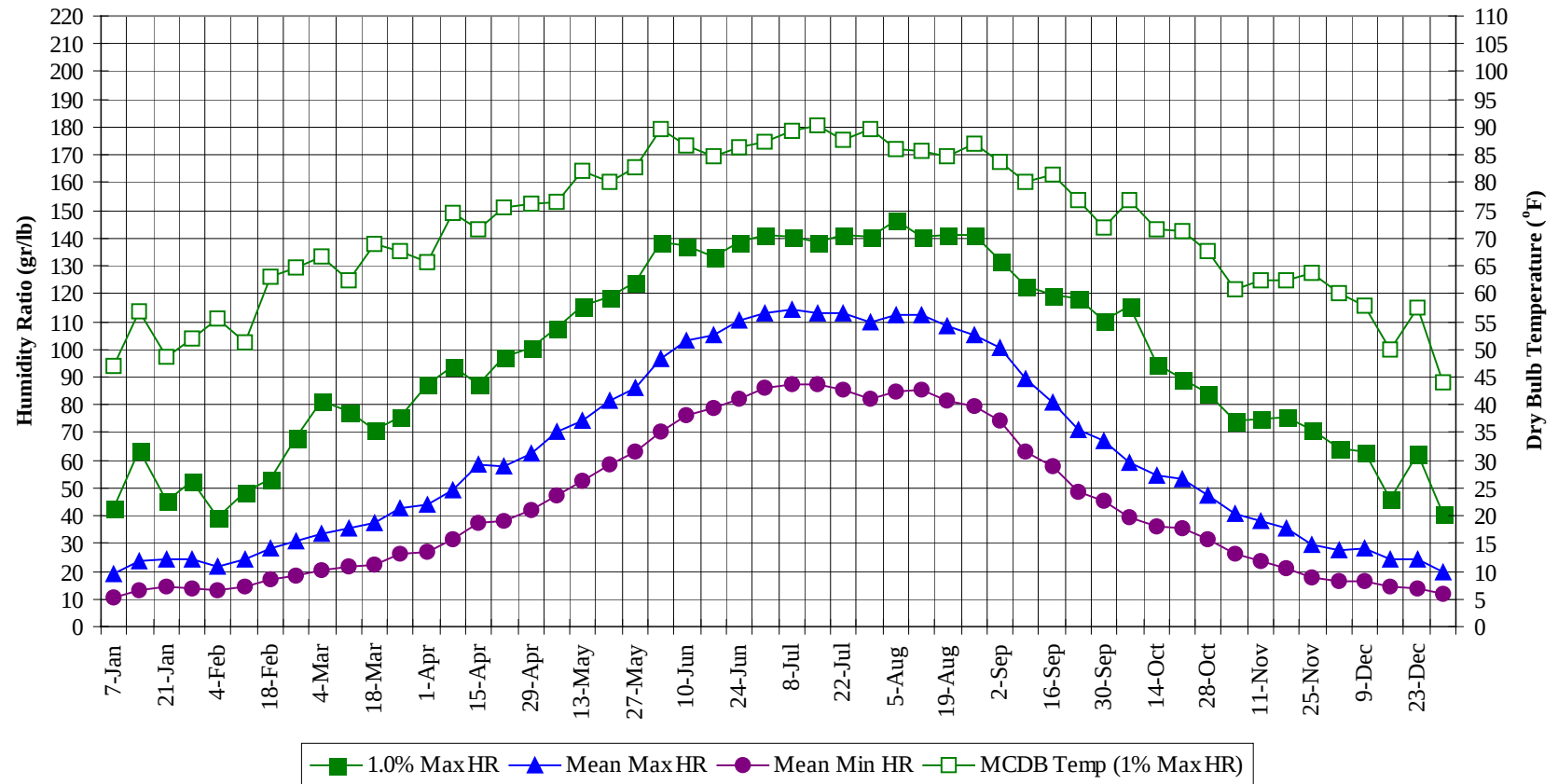
Temperature Range (°F)	Annual Totals				
	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00		
110 / 114		0	0	0	75.0
105 / 109		1	0	1	75.4
100 / 104		9	2	11	75.0
95 / 99		39	12	51	75.0
90 / 94	0	106	44	150	74.5
85 / 89	2	185	98	285	72.8
80 / 84	33	259	183	474	70.2
75 / 79	141	255	240	636	67.8
70 / 74	269	253	267	789	64.7
65 / 69	287	229	254	770	60.4
60 / 64	284	211	230	725	55.8
55 / 59	247	197	215	659	51.0
50 / 54	222	195	206	623	46.4
45 / 49	203	171	198	571	42.0
40 / 44	228	183	211	621	37.8
35 / 39	241	186	217	644	33.4
30 / 34	259	160	205	624	29.2
25 / 29	194	103	134	431	24.5
20 / 24	115	67	79	261	19.9
15 / 19	75	46	52	173	15.2
10 / 14	54	32	36	123	10.5
5 / 9	33	18	20	70	5.8
0 / 4	21	9	11	41	1.1
-5 / -1	8	4	4	15	-3.3
-10 / -6	5	2	1	8	-7.5
-15 / -11	1	0	0	1	-11.9
-20 / -16	0	0	0	0	-17.2
-25 / -21	0		0	0	-21.2

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Annual Summary of Temperatures



Long Term Humidity and Dry Bulb Temperature Summary



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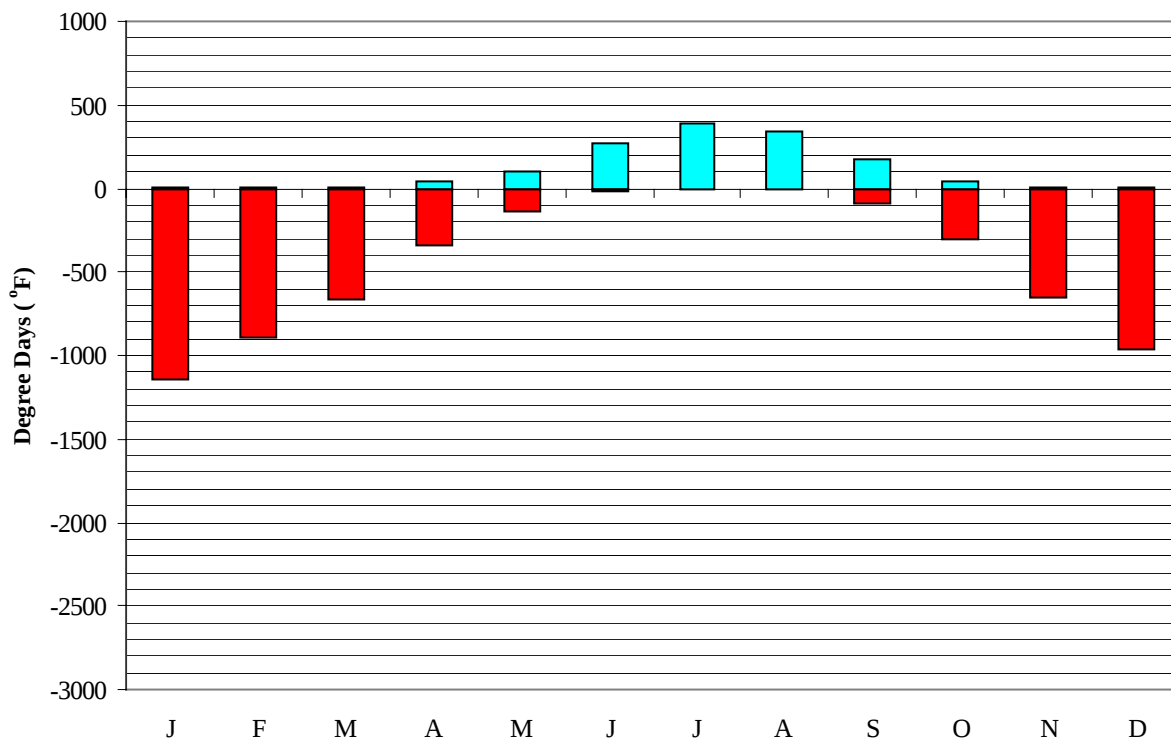
Long Term Dry Bulb Temperature and Humidity Summary

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	55.0	44.3	32.7	16.6	-5.0	42.7	46.8	18.9	10.6
14-Jan	59.0	53.6	37.0	20.4	-2.0	63.7	56.8	23.9	13.4
21-Jan	60.0	52.1	40.2	22.4	4.0	45.5	48.8	24.4	14.2
28-Jan	61.0	50.7	39.2	21.2	-1.0	52.5	51.8	24.3	13.8
4-Feb	60.0	48.7	38.9	20.8	0.0	39.2	55.5	21.7	12.9
11-Feb	66.0	51.1	41.6	23.5	3.0	48.3	51.2	24.5	14.7
18-Feb	67.0	49.6	47.5	28.2	9.0	53.2	63.0	28.4	17.0
25-Feb	72.0	54.5	48.7	29.6	10.0	68.6	64.7	30.7	18.5
4-Mar	74.0	56.3	50.8	30.5	11.0	81.2	66.8	33.3	20.3
11-Mar	71.0	55.4	53.3	33.7	17.0	77.7	62.3	35.7	21.9
18-Mar	76.0	58.2	56.3	35.6	21.0	70.7	69.1	37.6	22.5
25-Mar	80.0	62.0	56.6	38.2	23.0	75.6	67.6	42.5	26.0
1-Apr	79.0	60.7	60.3	39.3	25.0	87.5	65.6	44.0	27.2
8-Apr	80.0	63.6	63.2	43.9	31.0	93.8	74.4	49.5	31.4
15-Apr	83.0	63.9	66.6	47.2	35.0	87.5	71.6	58.3	37.5
22-Apr	86.0	66.0	67.4	47.8	36.0	97.3	75.6	57.5	38.2
29-Apr	82.0	65.9	68.3	49.6	40.0	100.8	76.2	62.2	42.0
6-May	82.0	66.1	71.3	52.6	40.0	107.8	76.5	70.1	47.6
13-May	86.0	71.4	73.4	54.9	45.0	115.5	82.1	74.4	52.3
20-May	87.0	70.8	74.7	56.6	46.0	119.0	80.1	81.4	58.2
27-May	87.0	73.5	75.7	58.1	48.0	123.9	82.6	86.3	62.9
3-Jun	91.0	75.6	79.8	61.4	52.0	138.6	89.8	96.4	70.0
10-Jun	92.0	75.2	82.8	64.0	53.0	137.2	86.6	103.1	75.9
17-Jun	94.0	76.0	84.4	65.4	57.0	133.0	84.8	105.3	78.9
24-Jun	96.0	75.6	86.2	66.9	56.0	138.6	86.2	110.5	82.3
1-Jul	100.0	74.9	87.7	67.9	58.0	141.4	87.3	112.9	85.9
8-Jul	99.0	75.7	89.2	69.2	59.0	140.7	89.5	114.6	87.5
15-Jul	99.0	72.6	89.2	69.2	60.0	138.6	90.4	113.1	87.1
22-Jul	100.0	74.5	88.7	68.6	61.0	141.4	87.7	113.0	85.2
29-Jul	100.0	75.3	88.0	67.5	59.0	140.7	89.6	109.5	82.4
5-Aug	98.0	75.1	87.1	67.4	57.0	146.3	86.0	112.2	84.5
12-Aug	98.0	73.9	86.6	66.7	58.0	140.7	85.8	112.2	85.6
19-Aug	97.0	75.3	86.9	66.1	58.0	141.4	84.7	108.2	81.5
26-Aug	100.0	73.6	86.0	65.5	53.0	141.4	87.1	105.3	79.8
2-Sep	96.0	74.4	84.1	63.7	51.0	132.3	83.7	100.6	74.1
9-Sep	92.0	72.5	79.3	59.4	47.0	122.5	80.0	89.3	63.3
16-Sep	90.0	74.2	76.0	56.2	43.0	119.7	81.4	80.9	57.9
23-Sep	88.0	67.2	74.1	52.0	40.0	118.3	76.8	70.9	48.3
30-Sep	87.0	67.8	74.0	51.8	40.0	110.6	72.0	67.1	45.6
7-Oct	85.0	64.7	68.8	47.8	36.0	115.5	76.7	58.9	39.7
14-Oct	82.0	68.8	66.2	45.9	34.0	94.5	71.5	54.7	35.8
21-Oct	80.0	65.9	64.7	44.6	31.0	89.6	71.3	53.5	35.5
28-Oct	76.0	62.7	58.3	41.8	20.0	84.0	67.7	47.6	31.5
4-Nov	71.0	60.3	54.6	36.9	20.0	74.2	60.8	40.7	26.2
11-Nov	70.0	57.4	52.8	35.0	18.0	74.9	62.5	38.1	23.7
18-Nov	67.0	58.3	50.9	32.7	19.0	75.6	62.4	35.5	20.8
25-Nov	65.0	54.1	45.7	28.3	12.0	70.7	63.7	29.9	17.8
2-Dec	64.0	51.7	44.4	26.7	11.0	64.4	60.0	27.6	16.2
9-Dec	62.0	55.9	42.5	25.5	3.0	63.0	57.9	28.4	16.3
16-Dec	58.0	49.5	37.4	22.3	-9.0	46.2	49.9	24.2	14.5
23-Dec	58.0	53.5	37.7	21.6	-5.0	62.3	57.5	24.3	14.0
31-Dec	51.0	44.5	32.0	17.2	-3.0	40.6	44.2	19.8	11.6

TOPEKA/FORBES FIELD KS

WMO No. 724565

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



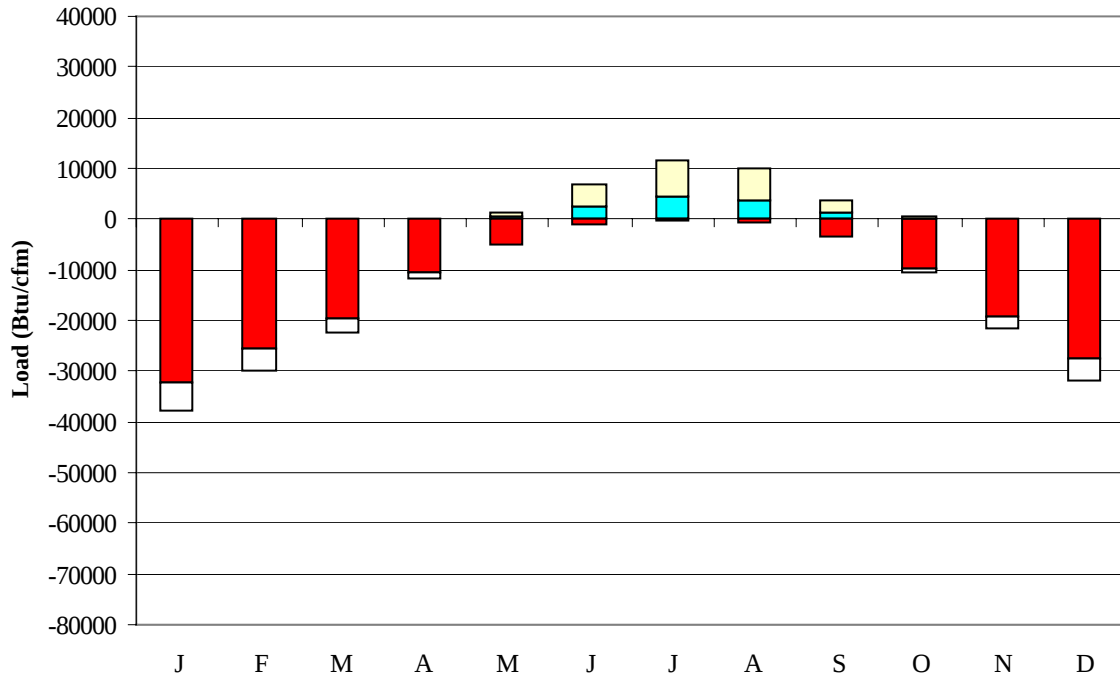
■ Mean Cooling Degree Days ■ Mean Heating Degree Days

	Mean Cooling Degree Days (°F)	Mean Heating Degree Days (°F)
JAN	0	1144
FEB	1	896
MAR	10	662
APR	39	338
MAY	100	133
JUN	267	22
JUL	393	5
AUG	346	10
SEP	172	91
OCT	46	302
NOV	3	650
DEC	0	968
ANN	1378	5221

TOPEKA/FORBES FIELD KS

WMO No. 724565

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	-32061	0	-5809
FEB	0	-25387	0	-4378
MAR	30	-19451	9	-2784
APR	168	-10680	121	-871
MAY	490	-4891	951	-68
JUN	2361	-1085	4470	0
JUL	4452	-286	6992	0
AUG	3597	-556	6329	0
SEP	1369	-3379	2437	-51
OCT	215	-9748	245	-617
NOV	6	-19090	4	-2422
DEC	0	-27385	0	-4342
ANN	12688	-153999	21558	-21342

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	550	510	440	360	320	280	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

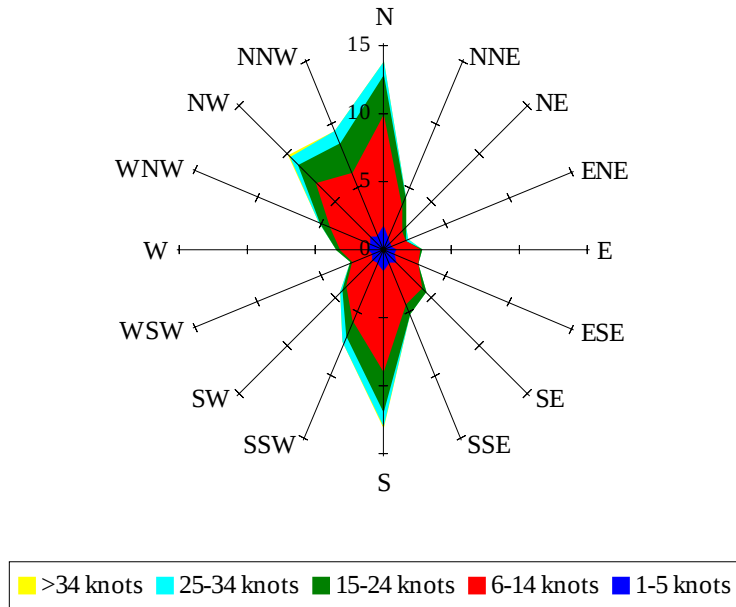
(Source: National Renewable Energy Laboratory, Golden CO, 1995)

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

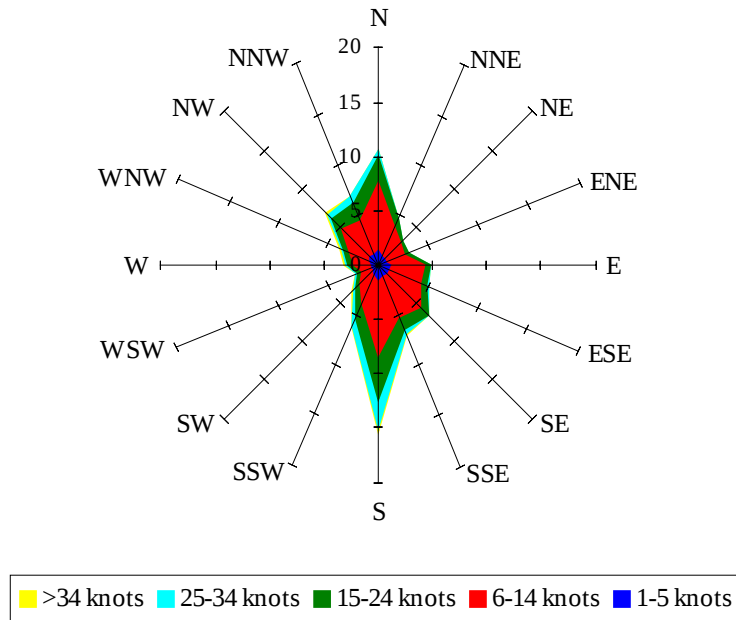
		Sept					Dec				
		9am	11am	1pm	3pm	5pm	9am	11am	1pm	3pm	5pm
HORIZ.	M.Clear	22	63	85	82	54	10	39	49	34	5
	M.Cloudy	13	38	53	55	36	6	23	29	21	4
NORTH	M.Clear	7	13	16	16	13	4	9	11	9	3
	M.Cloudy	6	14	17	17	13	3	9	11	8	2
EAST	M.Clear	58	74	37	16	13	36	45	11	9	3
	M.Cloudy	18	35	26	17	13	9	19	11	8	2
SOUTH	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

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



Percent Calm = 8.94

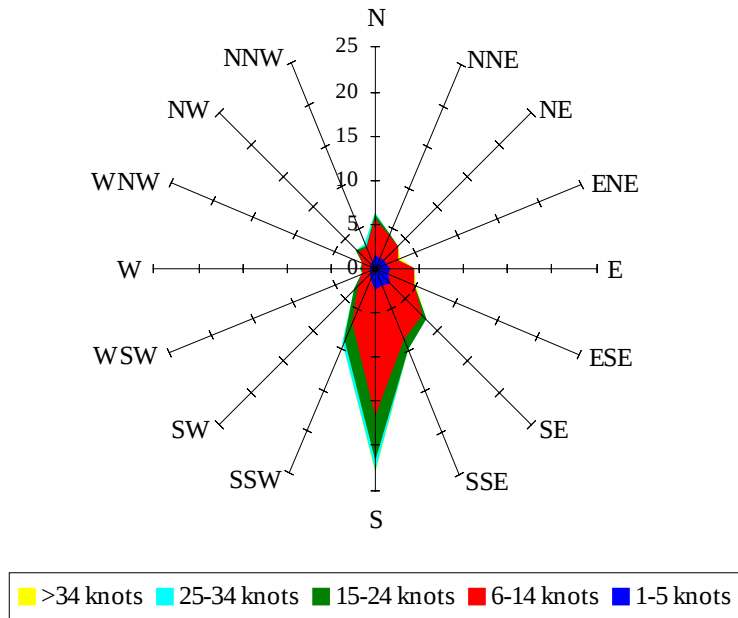
Wind Summary - March, April, and May **Labels of Percent Frequency on North Axis**



Percent Calm = 8.34

Wind Summary - June, July, and August

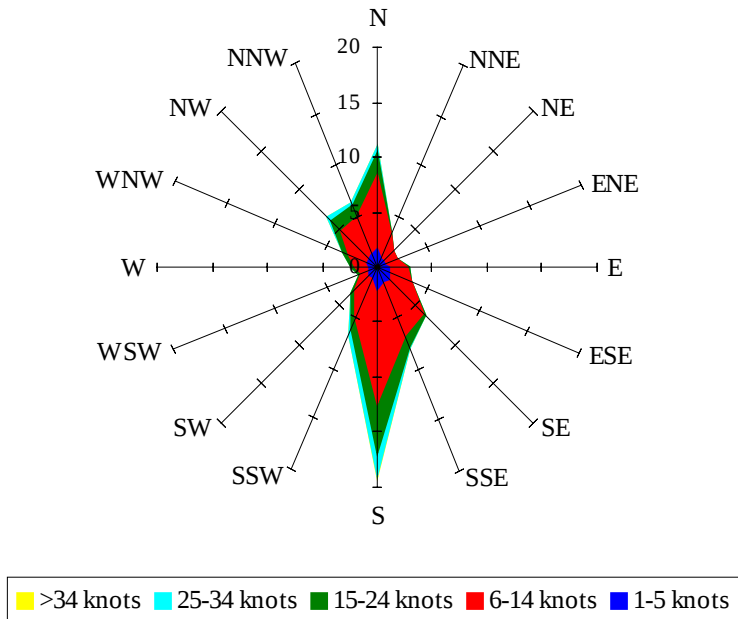
Labels of Percent Frequency on North Axis



Percent Calm = 12.01

Wind Summary - September, October, and November

Labels of Percent Frequency on North Axis



Percent Calm = 11.27