

AKRON-CANTON OH

Latitude = 40.92 N

Longitude = 81.43 W

Period of Record = 1973 to 1996

WMO No. 725210

Elevation = 1237 feet

Average Pressure = 28.70 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	73	98	11.0	W
0.4% Occurrence	88	73	102	10.4	SW
1.0% Occurrence	85	71	98	10.3	SW
2.0% Occurrence	83	70	94	9.9	SW
Mean Daily Range	17	-	-	-	-
97.5% Occurrence	11	10	7	10.4	W
99.0% Occurrence	5	4	5	10.1	WSW
99.6% Occurrence	-1	-2	4	10.6	WSW
Median of Extreme Lows	-5	-5	3	11.2	SW
	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	78	87	131	10.9	SW
0.4% Occurrence	75	84	120	10.2	SW
1.0% Occurrence	74	82	116	9.9	SW
2.0% Occurrence	72	79	110	9.3	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	141	86	0.90	8.8	SW
0.4% Occurrence	125	80	0.79	10.4	SW
1.0% Occurrence	120	79	0.77	9.2	SW
2.0% Occurrence	115	77	0.74	8.5	SW
Air Conditioning/ Humid Area Criteria	# of Hours	T ≥ 93°F	T ≥ 80°F	T _{wb} ≥ 73°F	T _{wb} ≥ 67°F
		5	398	157	935

Other Site Data

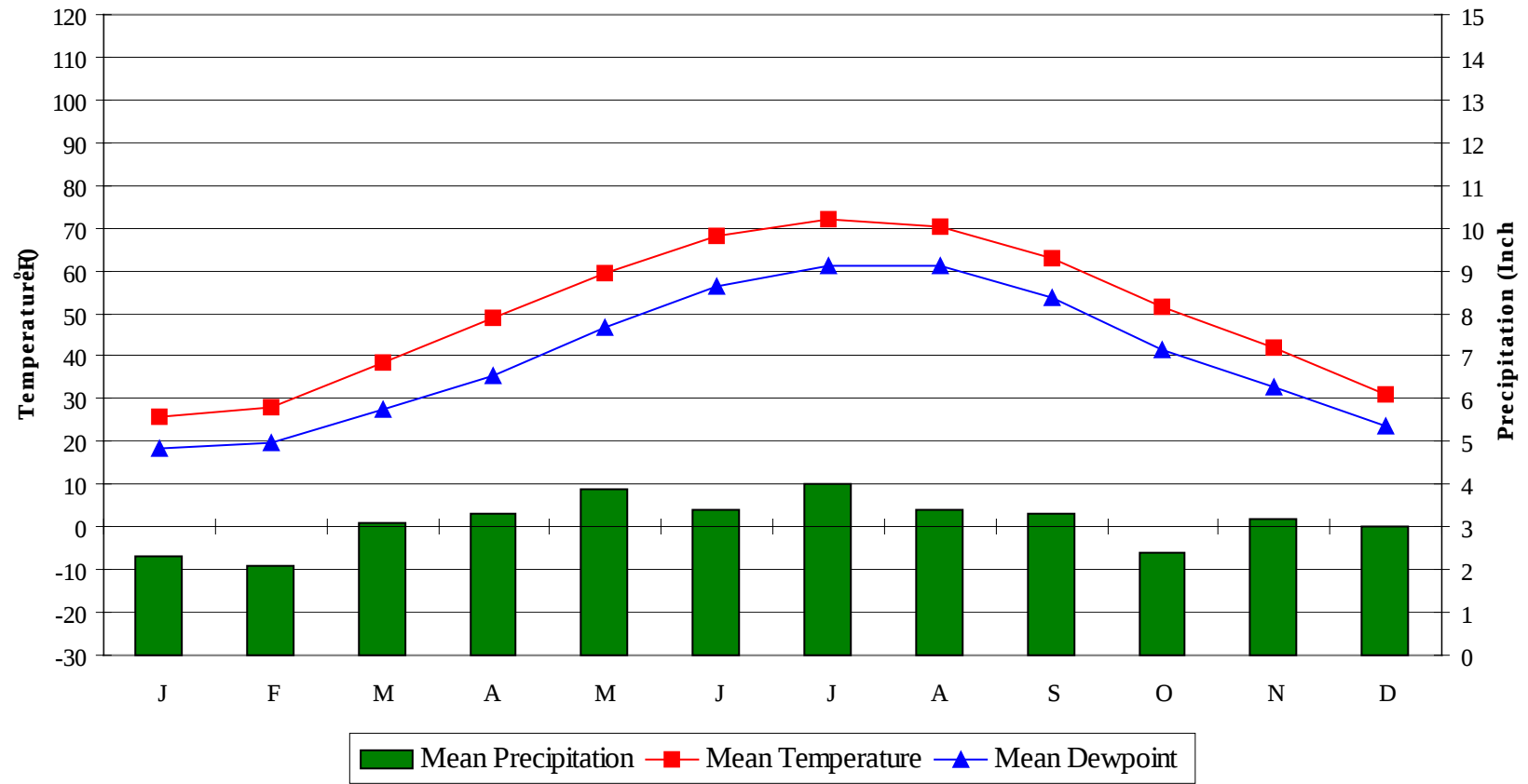
Weather Region	Rain Rate 100 Year Recurrence (in./hr)	Basic Wind Speed 3 sec gust @ 33 ft 50 Year Recurrence (mph)	Ventilation Cooling Load Index (Ton-hr/cfm/yr) Base 75°F-RH 60% Latent + Sensible
6	2.8	90	1.3 + 0.4
Ground Water Temperature (°F) 50 Foot Depth *	Frost Depth 50 Year Recurrence (in.)	Ground Snow Load 50 Year Recurrence (lb/ft ²)	Average Annual Freeze-Thaw Cycles (#)
52.4	52	14	55

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

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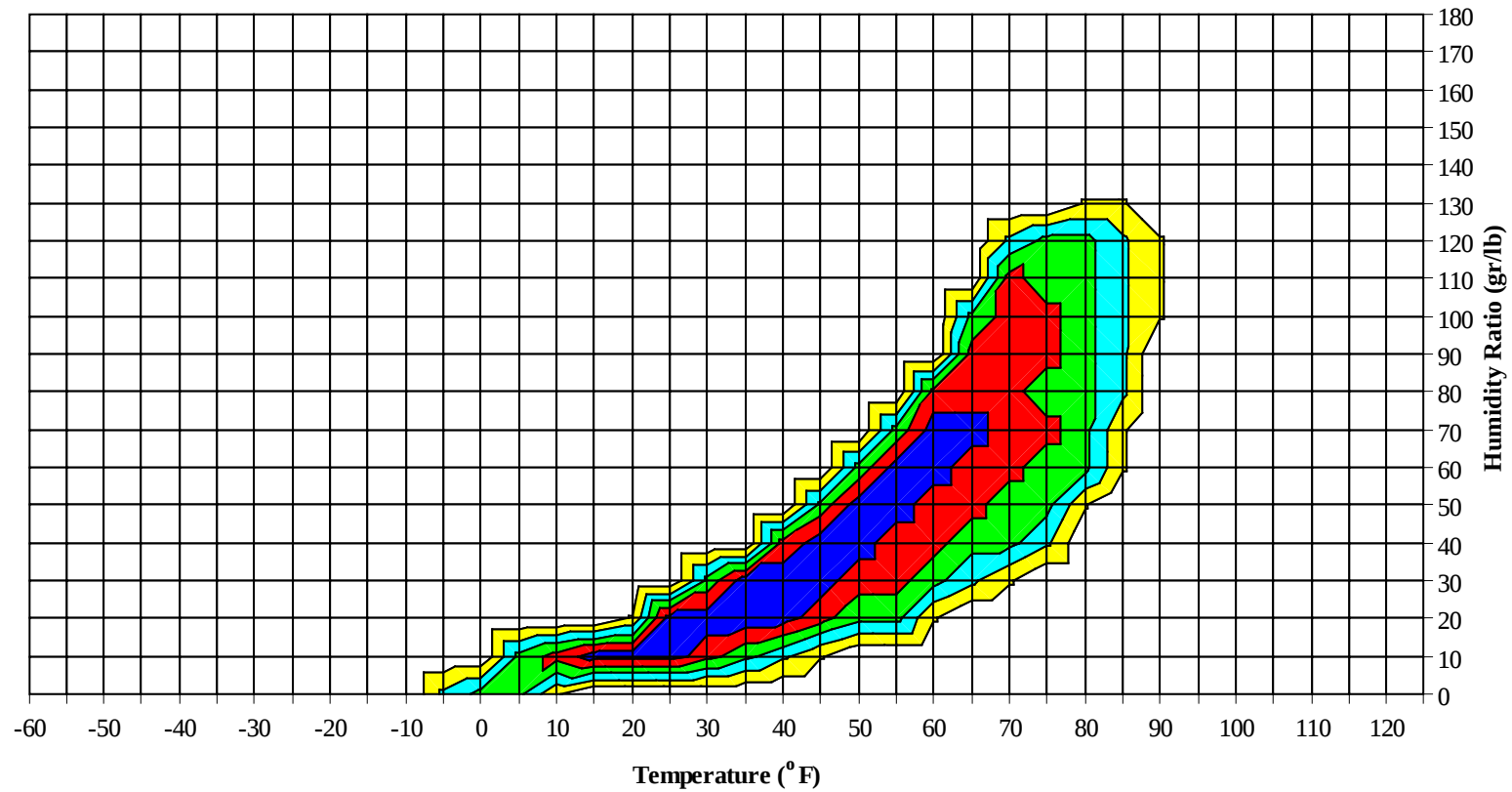
Average Annual Climate



AKRON-CANTON OH

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Long Term Psychrometric Summary

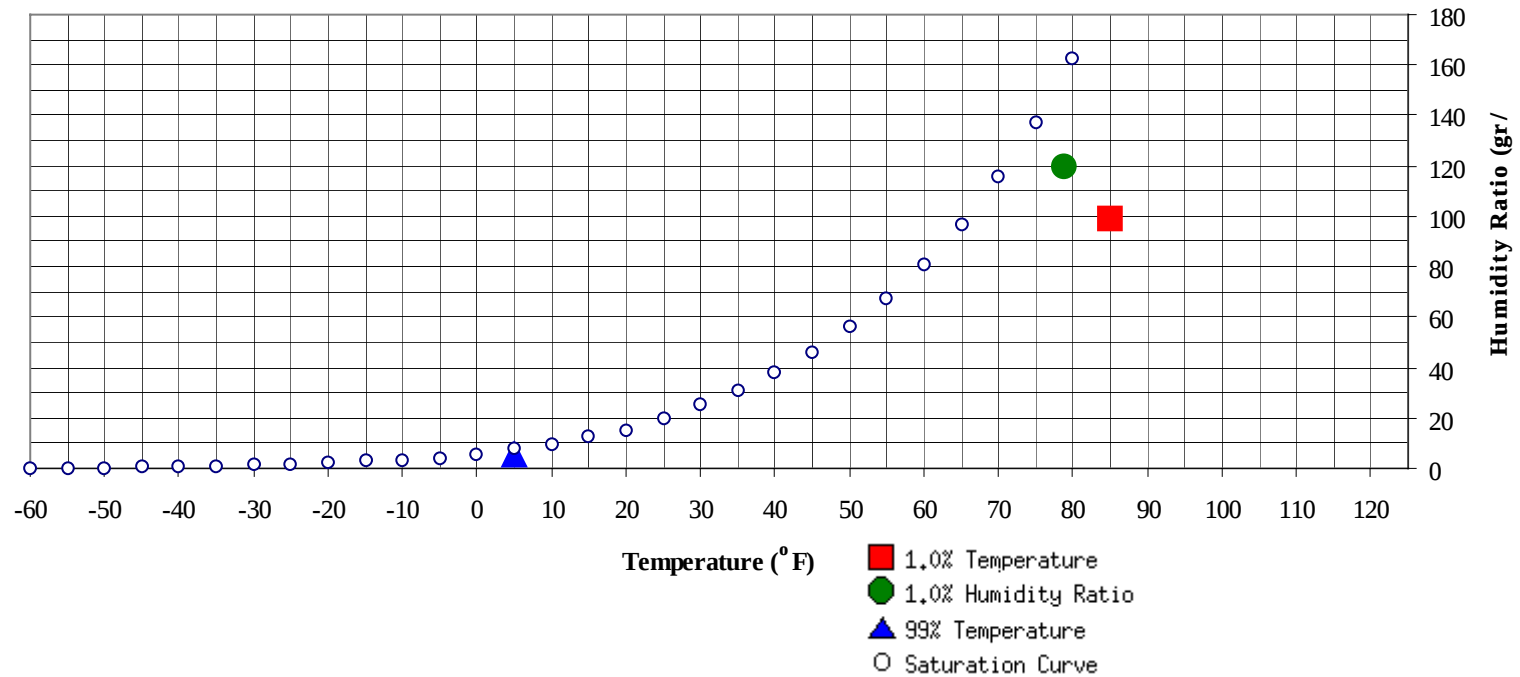


- 50% of all observations
- 80% of all observations
- 95% of all observations
- 97.5% of all observations
- 99% of all observations

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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)
	5	5.2	2.0		119.7	78.9	73.2	71.1	37.7

1.0% Dry Bulb	(°F)	MCHR (gr/lb)	MCWB (°F)	Enthalpy (btu/lb)
	85	99.3	71.5	36.0

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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		
95 / 99															
90 / 94															
85 / 89															
80 / 84												0		0	60.0
75 / 79												2	1	2	58.4
70 / 74							0		0	56.0		5	2	7	56.7
65 / 69		0		0	58.0		0		0	55.0		1	8	5	14
60 / 64		1	0	1	55.5		2	1	3	51.2		4	12	11	27
55 / 59	2	2	2	6	52.3	1	5	4	10	49.9	10	16	15	41	49.8
50 / 54	4	5	4	12	47.5	4	10	9	23	46.8	15	23	22	59	45.7
45 / 49	7	9	7	23	42.8	9	13	12	35	42.2	19	31	26	76	41.5
40 / 44	13	15	15	42	38.3	13	21	19	52	37.8	27	33	32	91	37.3
35 / 39	19	33	29	81	33.6	26	32	33	91	33.4	37	39	41	117	33.1
30 / 34	45	48	51	144	29.6	37	36	33	106	29.4	49	38	41	129	29.0
25 / 29	40	37	39	116	24.9	28	32	33	94	24.3	38	21	28	88	24.6
20 / 24	32	32	31	95	20.1	34	27	28	90	19.9	25	11	14	50	20.1
15 / 19	33	28	29	90	15.5	23	21	23	66	15.4	13	5	6	24	15.5
10 / 14	21	17	20	58	10.8	18	13	15	46	10.8	6	2	3	12	10.9
5 / 9	16	9	10	36	6.2	16	7	8	32	6.1	4	1	1	6	6.7
0 / 4	8	4	6	19	1.3	9	3	4	16	1.5	1	0	0	1	1.9
-5 / -1	5	2	2	9	-3.2	5	1	1	7	-2.8	0			0	-2.0
-10 / -6	3	2	2	7	-7.3	1	0	0	2	-6.3					
-15 / -11	1	1	1	3	-12.2	0			0	-11.0					
-20 / -16	1	0	0	1	-16.7										
-25 / -21	1	0	0	1	-21.9										
-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.

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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		
95 / 99												0	0	0	72.3
90 / 94							0	0	0	72.1		2	0	3	71.4
85 / 89		0	0	0	63.3		3	1	4	68.1		14	4	19	71.2
80 / 84		4	1	5	62.4	0	17	7	24	66.7	0	40	18	58	68.6
75 / 79		10	4	14	61.3	0	28	15	43	64.0	4	58	35	97	66.2
70 / 74	0	14	9	24	58.3	6	36	25	67	61.3	30	55	54	140	64.2
65 / 69	6	20	17	43	55.6	24	41	37	101	58.6	63	37	56	155	61.8
60 / 64	17	27	22	67	52.9	41	43	47	131	55.3	57	21	35	113	57.3
55 / 59	21	33	28	82	49.5	43	32	38	114	51.0	44	8	23	75	53.0
50 / 54	25	35	36	96	45.3	45	25	35	104	47.3	29	3	10	41	48.8
45 / 49	35	34	36	105	41.6	44	15	27	86	43.3	10	1	4	15	44.4
40 / 44	42	29	36	107	37.6	32	5	12	50	38.9	3		1	3	40.8
35 / 39	43	20	27	89	33.4	11	1	3	15	34.7	0			0	38.5
30 / 34	33	11	17	61	29.6	3		0	3	30.6	0			0	33.5
25 / 29	15	3	5	22	25.0	0			0	25.0					
20 / 24	4	1	1	5	20.5										
15 / 19	1		0	1	16.2										
10 / 14															
5 / 9															
0 / 4															
-5 / -1															
-10 / -6															
-15 / -11															
-20 / -16															
-25 / -21															
-30 / -26															

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WMO No. 725210

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		
95 / 99		1	0	2	71.3		0		0	70.0					
90 / 94		8	3	10	73.5		5	1	6	74.5		1	0	1	72.1
85 / 89	0	29	11	40	72.7		20	6	26	72.6		5	1	6	72.1
80 / 84	1	64	32	97	69.7	0	55	22	78	70.0		17	6	23	69.6
75 / 79	16	68	54	137	67.6	8	66	49	123	67.9	1	34	17	53	66.8
70 / 74	61	51	66	178	66.2	49	59	66	173	66.3	17	51	34	102	64.5
65 / 69	75	18	50	143	63.0	78	30	58	165	63.2	39	48	49	137	61.6
60 / 64	60	7	25	92	59.0	65	10	31	107	59.1	43	42	47	132	57.3
55 / 59	27	1	7	35	54.4	34	2	13	48	54.7	50	27	42	119	53.3
50 / 54	8		1	9	49.9	13	0	3	16	49.9	48	11	27	86	49.0
45 / 49	1			1	45.9	2		0	3	44.9	26	3	12	41	44.6
40 / 44	0			0	42.0	0			0	40.5	13	0	4	18	40.3
35 / 39											4		0	4	36.3
30 / 34															
25 / 29															
20 / 24															
15 / 19															
10 / 14															
5 / 9															
0 / 4															
-5 / -1															
-10 / -6															
-15 / -11															
-20 / -16															
-25 / -21															
-30 / -26															

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WMO No. 725210

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		
95 / 99															
90 / 94															
85 / 89															
80 / 84															
75 / 79		6	1	7	63.5		0		0	62.0		0		0	63.0
70 / 74	0	20	6	25	60.7		3	0	3	61.1		0		0	62.7
65 / 69	6	28	17	51	58.3	1	9	4	14	58.0	0	0	0	0	58.4
60 / 64	18	39	30	87	55.5	8	17	13	38	55.3	1	3	1	5	55.8
55 / 59	27	40	42	109	51.3	15	19	20	54	51.7	5	6	8	18	52.7
50 / 54	43	48	48	139	47.2	19	28	26	73	46.9	8	10	7	25	47.3
45 / 49	52	37	46	136	42.9	27	32	27	86	42.2	8	15	11	34	42.7
40 / 44	45	20	35	100	38.9	33	39	37	109	38.1	15	26	20	60	38.4
35 / 39	36	7	19	62	34.7	45	45	46	136	33.6	34	49	43	126	33.8
30 / 34	17	1	5	24	30.9	49	32	42	123	29.5	59	52	61	172	29.5
25 / 29	3		0	4	25.6	30	12	19	60	25.1	44	34	39	118	24.8
20 / 24	0		0	0	21.3	10	3	5	18	20.9	27	22	23	72	20.3
15 / 19						3	1	1	5	16.5	20	14	17	51	15.7
10 / 14						1	0	0	1	11.6	12	10	10	31	10.8
5 / 9							0		0	8.0	8	4	6	19	6.2
0 / 4											3	2	2	7	1.3
-5 / -1											2	1	1	3	-2.7
-10 / -6											1	0	0	2	-7.5
-15 / -11											1	0	0	1	-11.8
-20 / -16											0			0	-15.0
-25 / -21															
-30 / -26															

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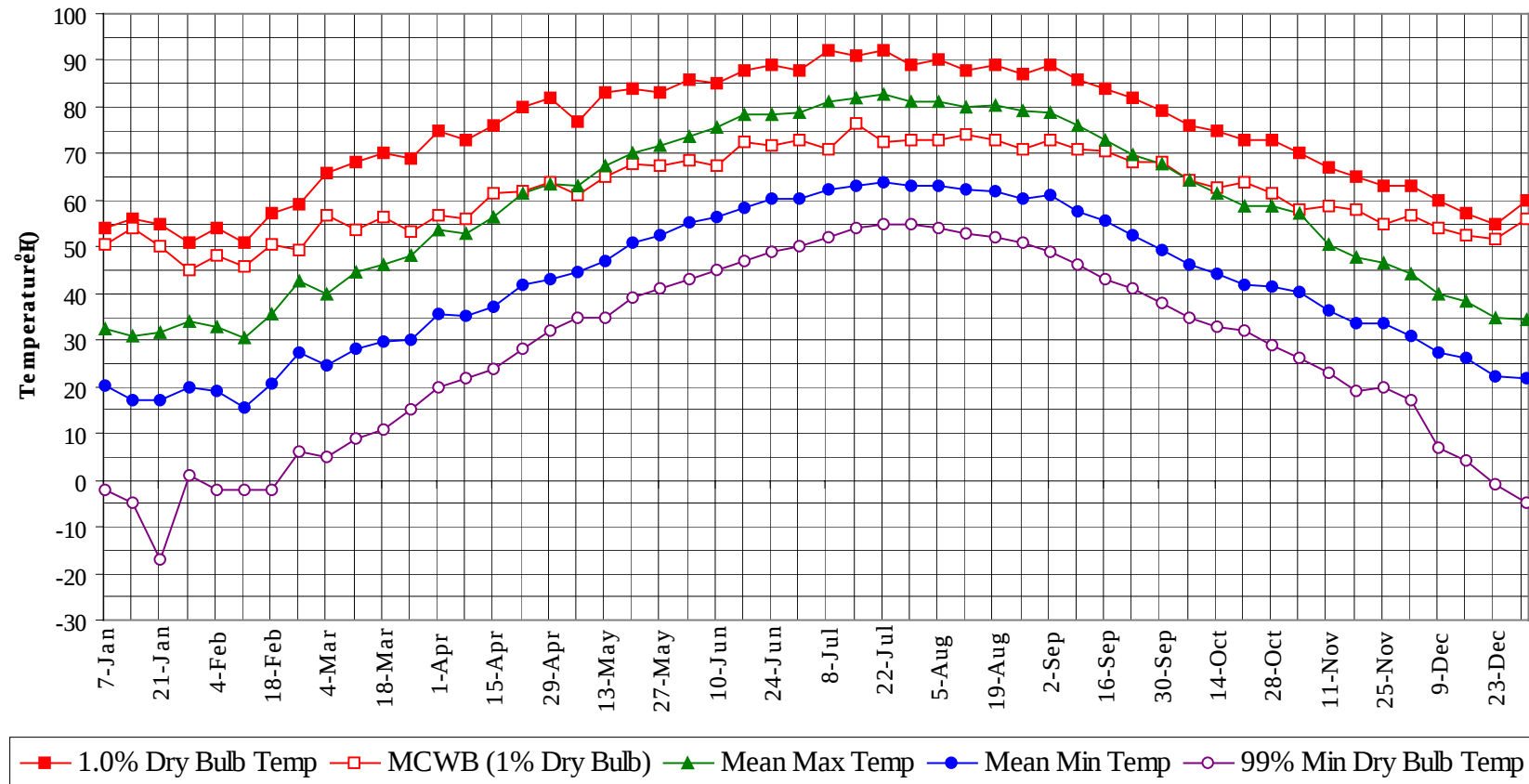
WMO No. 725210

Dry-Bulb Temperature Hours For An Average Year (Sheet 5 of 5)
Period of Record = 1973 to 1996

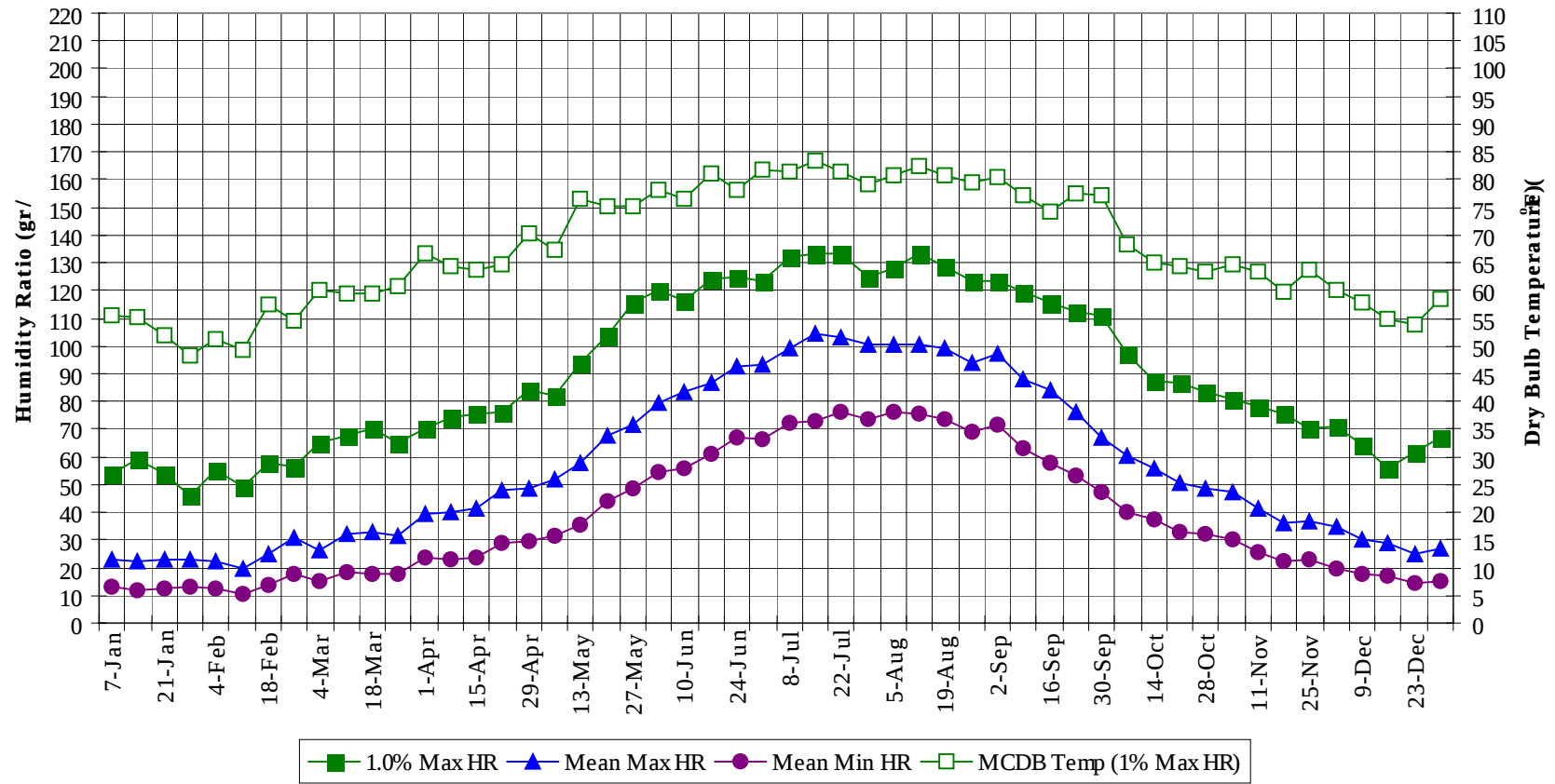
Temperature Range (°F)	Annual Totals				
	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00		
95 / 99		2	1	2	71.4
90 / 94		16	4	20	73.5
85 / 89	0	71	24	95	72.1
80 / 84	2	195	86	283	69.2
75 / 79	29	270	174	473	66.7
70 / 74	162	292	261	715	64.6
65 / 69	289	239	292	819	61.1
60 / 64	312	224	263	799	56.6
55 / 59	278	192	242	711	51.9
50 / 54	260	197	227	684	47.2
45 / 49	240	192	210	642	42.6
40 / 44	236	187	211	635	38.2
35 / 39	255	226	242	723	33.6
30 / 34	293	219	253	765	29.5
25 / 29	200	139	165	503	24.8
20 / 24	132	96	103	331	20.1
15 / 19	94	69	75	238	15.5
10 / 14	58	43	48	149	10.8
5 / 9	45	21	27	93	6.2
0 / 4	22	9	12	43	1.4
-5 / -1	12	3	4	19	-3.0
-10 / -6	5	2	3	10	-7.2
-15 / -11	2	1	1	4	-12.0
-20 / -16	1	0	0	2	-16.6
-25 / -21	1	0	0	1	-21.9
-30 / -26	0			0	-25.0

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Annual Summary of Temperatures



Long Term Humidity and Dry Bulb Temperature Summary



AKRON-CANTON OH

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Long Term Dry Bulb Temperature and Humidity Summary

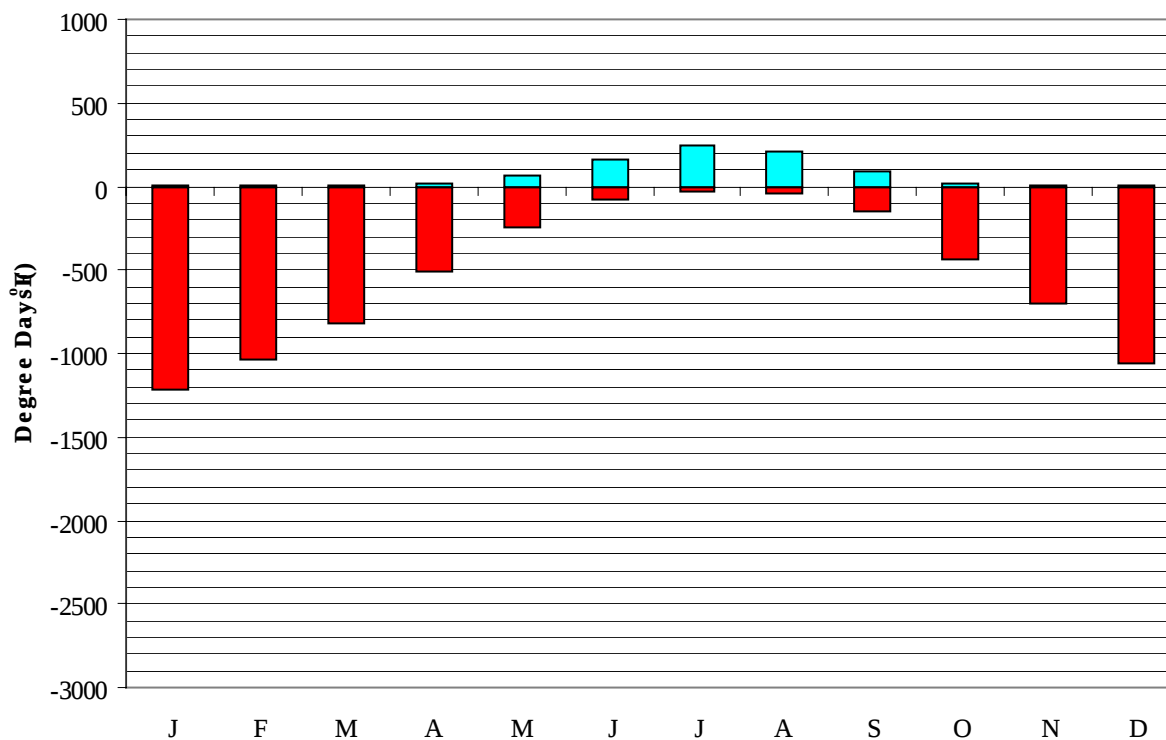
Week Ending	1.0% Temp (°F)	MCWB @ 1% Temp (°F)	Mean Max Temp (°F)	Mean Min Temp (°F)	99% Temp (°F)	1.0% HR (gr/lb)	MCDB @ 1% HR (°F)	Mean Max HR (gr/lb)	Mean Min HR (gr/lb)
7-Jan	54.0	50.4	32.6	20.4	-2.0	53.9	55.5	22.9	13.2
14-Jan	56.0	54.0	30.8	17.0	-5.0	58.8	55.3	22.1	11.8
21-Jan	55.0	50.0	31.7	17.1	-17.0	53.9	51.9	23.2	12.7
28-Jan	51.0	44.9	34.0	20.1	1.0	46.2	48.4	23.2	13.0
4-Feb	54.0	48.0	32.7	18.9	-2.0	55.3	51.2	22.4	12.4
11-Feb	51.0	45.8	30.5	15.7	-2.0	49.0	49.4	19.8	10.8
18-Feb	57.0	50.7	35.7	20.5	-2.0	58.1	57.6	24.6	13.9
25-Feb	59.0	49.4	42.8	27.3	6.0	56.7	54.7	31.1	17.5
4-Mar	66.0	56.9	39.9	24.4	5.0	65.1	60.3	26.3	15.3
11-Mar	68.0	53.6	44.6	28.1	9.0	67.9	59.5	32.0	18.1
18-Mar	70.0	56.4	46.1	29.7	11.0	70.0	59.3	32.9	18.0
25-Mar	69.0	53.2	48.1	30.1	15.0	65.1	60.7	31.6	18.0
1-Apr	75.0	56.9	53.5	35.5	20.0	70.0	66.7	39.4	23.4
8-Apr	73.0	55.9	52.8	35.3	22.0	74.2	64.4	40.1	22.8
15-Apr	76.0	61.5	56.4	37.0	24.0	75.6	63.6	41.2	23.8
22-Apr	80.0	62.1	61.4	41.8	28.0	76.3	64.8	48.1	29.2
29-Apr	82.0	64.0	63.4	42.9	32.0	84.0	70.4	48.7	29.8
6-May	77.0	61.1	63.1	44.6	35.0	81.9	67.5	51.8	31.4
13-May	83.0	65.0	67.5	47.0	35.0	93.8	76.6	58.0	35.5
20-May	84.0	67.8	70.0	50.9	39.0	103.6	75.4	67.5	44.0
27-May	83.0	67.4	71.6	52.5	41.0	115.5	75.2	71.7	48.8
3-Jun	86.0	68.7	73.6	55.1	43.0	120.4	78.3	79.6	54.6
10-Jun	85.0	67.2	75.7	56.5	45.0	116.2	76.4	83.7	55.7
17-Jun	88.0	72.6	78.3	58.5	47.0	123.9	81.2	86.7	61.0
24-Jun	89.0	71.7	78.5	60.3	49.0	124.6	78.3	92.3	66.7
1-Jul	88.0	72.9	78.9	60.1	50.0	123.2	81.9	93.2	66.3
8-Jul	92.0	70.9	81.3	62.2	52.0	132.3	81.5	99.0	72.1
15-Jul	91.0	76.6	82.1	63.2	54.0	133.0	83.5	104.6	72.6
22-Jul	92.0	72.4	82.7	63.9	55.0	133.0	81.5	102.9	76.2
29-Jul	89.0	73.0	81.3	62.9	55.0	124.6	79.1	100.3	73.8
5-Aug	90.0	73.0	81.0	63.0	54.0	128.1	80.9	100.6	76.4
12-Aug	88.0	73.9	79.9	62.2	53.0	133.0	82.3	100.8	75.4
19-Aug	89.0	72.8	80.5	61.8	52.0	128.8	80.8	99.5	73.4
26-Aug	87.0	71.0	79.0	60.4	51.0	123.2	79.5	93.8	68.6
2-Sep	89.0	72.7	78.8	60.9	49.0	123.2	80.5	97.1	71.3
9-Sep	86.0	70.8	76.1	57.8	46.0	119.7	77.2	87.8	63.2
16-Sep	84.0	70.6	73.0	55.6	43.0	115.5	74.1	84.0	57.8
23-Sep	82.0	68.4	69.6	52.6	41.0	112.0	77.4	76.3	53.3
30-Sep	79.0	68.3	67.7	49.2	38.0	111.3	77.3	66.9	47.0
7-Oct	76.0	64.1	64.1	46.2	35.0	97.3	68.4	60.4	40.1
14-Oct	75.0	62.7	61.6	44.4	33.0	87.5	65.1	56.0	37.3
21-Oct	73.0	64.0	58.7	42.1	32.0	86.8	64.3	50.4	32.6
28-Oct	73.0	61.4	58.7	41.4	29.0	83.3	63.4	48.8	32.3
4-Nov	70.0	58.0	57.1	40.2	26.0	80.5	64.6	47.0	30.2
11-Nov	67.0	58.9	50.4	36.6	23.0	78.4	63.4	41.2	25.9
18-Nov	65.0	58.1	47.9	33.4	19.0	75.6	59.7	36.3	22.1
25-Nov	63.0	54.7	46.7	33.5	20.0	70.0	63.8	36.6	22.8
2-Dec	63.0	56.7	44.3	31.1	17.0	70.7	60.0	34.7	19.9
9-Dec	60.0	54.2	40.1	27.5	7.0	64.4	57.6	30.3	17.8
16-Dec	57.0	52.6	38.3	26.1	4.0	56.0	54.7	28.7	17.2
23-Dec	55.0	51.8	34.9	22.3	-1.0	61.6	54.0	25.3	14.5
31-Dec	60.0	55.9	34.6	21.7	-5.0	67.2	58.6	26.7	14.8

AKRON-CANTON

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WMO No. 725210

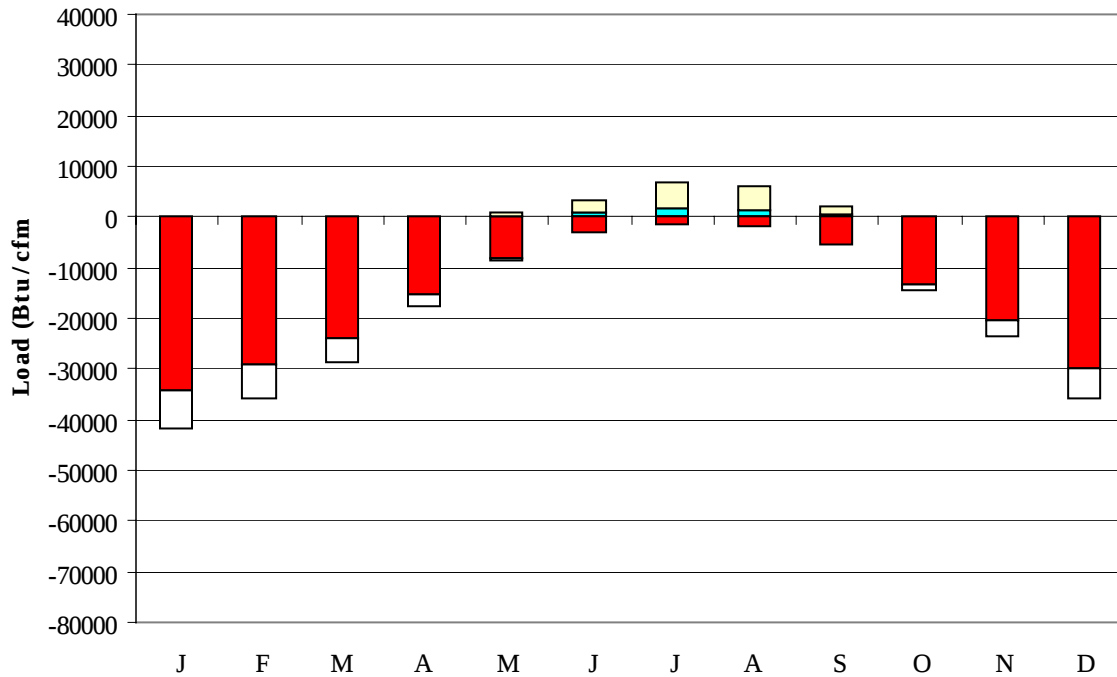
Degree Days, Heating and Cooling
(Base 65°F)



■ Mean Cooling Degree Days ■ Mean Heating Degree Days

	Mean Cooling Degree Days (°F)	Mean Heating Degree Days (°F)
JAN	0	1221
FEB	0	1040
MAR	4	826
APR	19	503
MAY	68	242
JUN	160	73
JUL	248	26
AUG	208	37
SEP	86	152
OCT	13	432
NOV	2	700
DEC	0	1054
ANN	808	6306

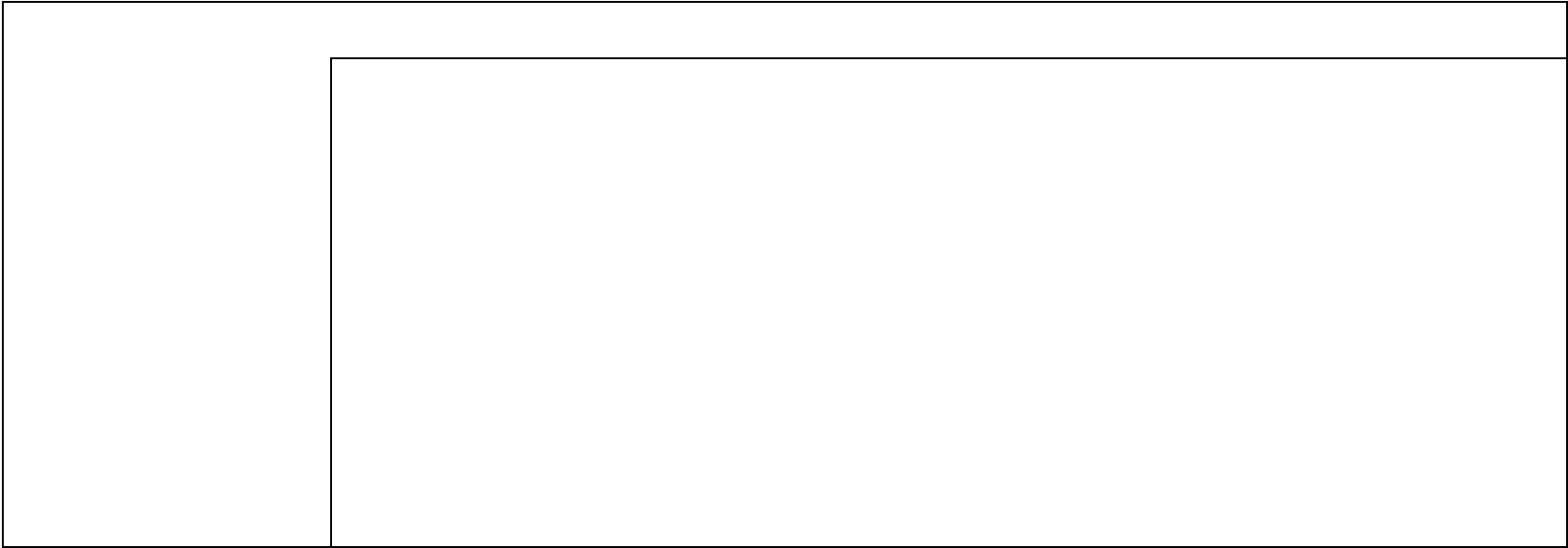
Average Ventilation and Infiltration Loads
(Outside Air vs. 75°F, 60% RH summer; 68°F, 30% RH winter)



■ 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	-34050	0	-7602
FEB	0	-29149	0	-6608
MAR	3	-23765	0	-4823
APR	60	-15177	12	-2352
MAY	301	-8063	624	-461
JUN	869	-2878	2596	-14
JUL	1663	-1284	5318	-5
AUG	1188	-1706	4887	-5
SEP	333	-5427	1834	-31
OCT	8	-13432	93	-873
NOV	0	-20443	4	-3140
DEC	0	-29728	0	-6040
ANN	4425	-185102	15368	-31954

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

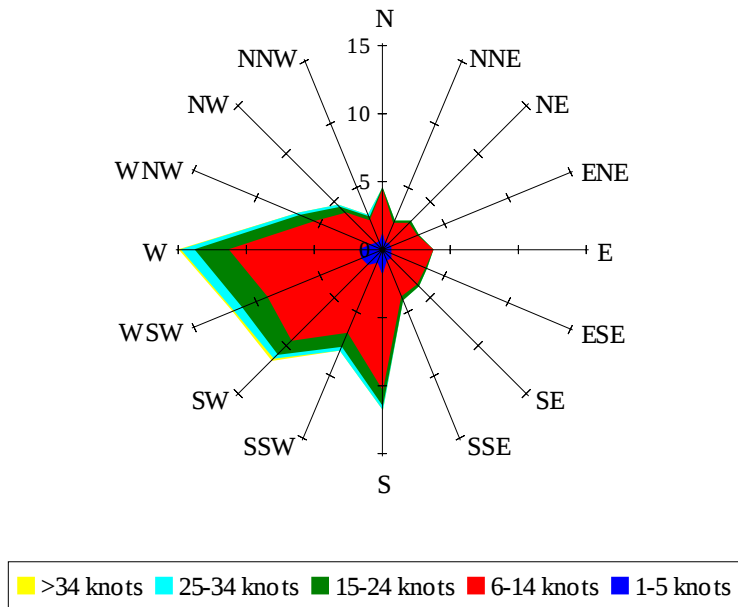


Average Annual Solar Heat and Illumination – Nearest Available Site

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

Wind Summary - December, January, and February

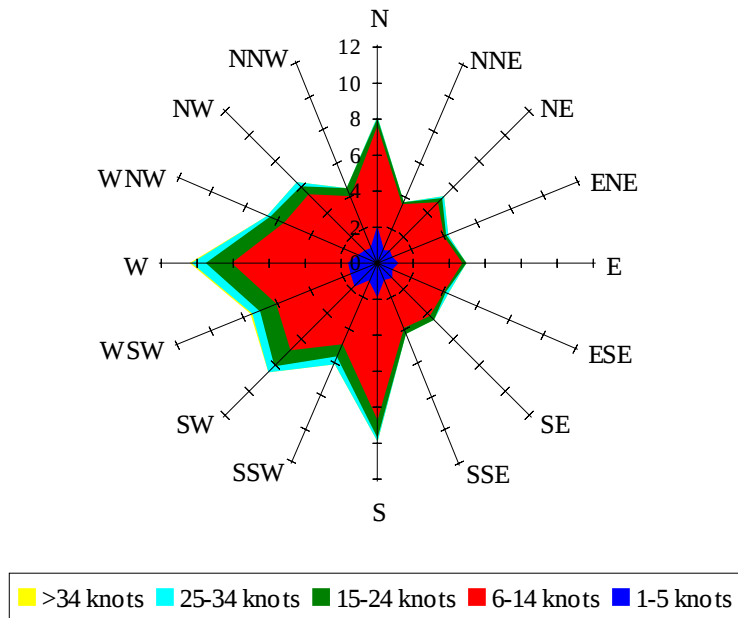
Labels of Percent Frequency on North Axis



Percent Calm = 1.75

Wind Summary - March, April, and May

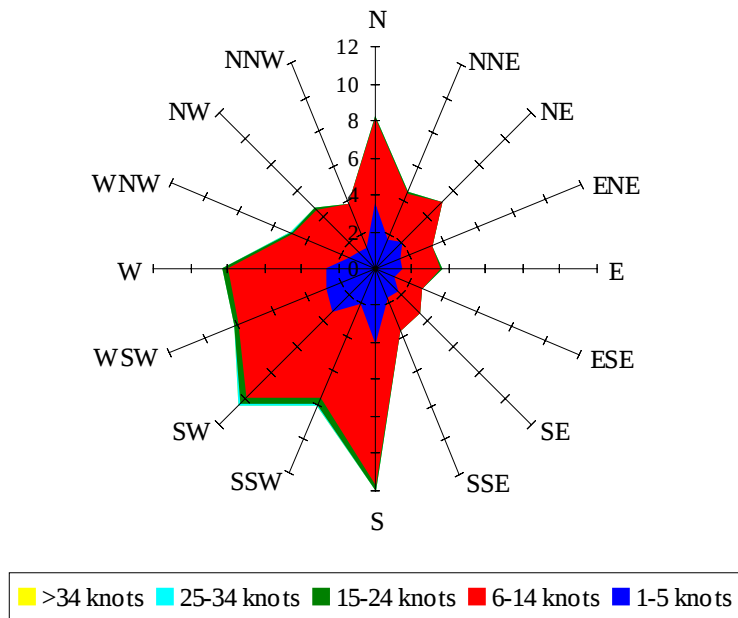
Labels of Percent Frequency on North Axis



Percent Calm = 2.61

Wind Summary - June, July, and August

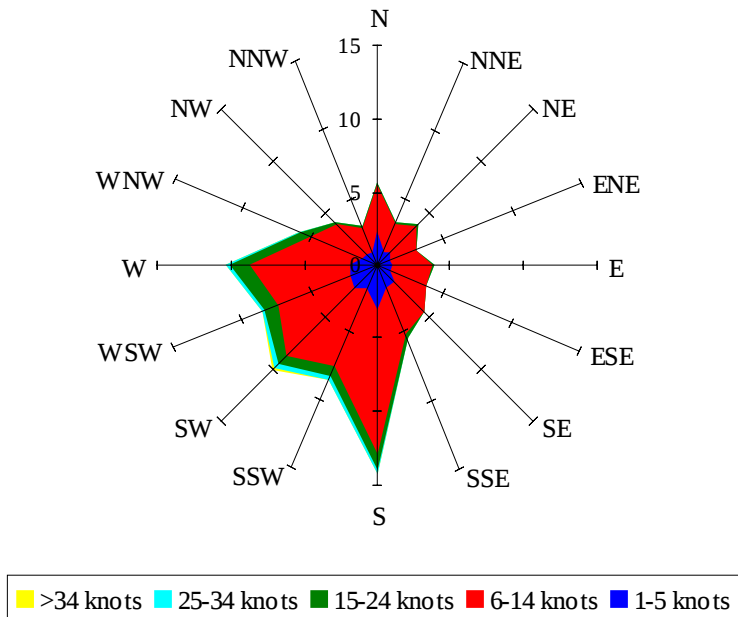
Labels of Percent Frequency on North Axis



Percent Calm = 5.92

Wind Summary - September, October, and November

Labels of Percent Frequency on North Axis



Percent Calm = 4.04