

MINOT AFB	ND	
Latitude = 48.42 N		WMO No. 727675
Longitude = 101.30 W		Elevation = 1667 feet
Period of Record = 1967 to 1996		Average Pressure = 28.16 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	100	71	73	13.4	S
0.4% Occurrence	93	68	71	11.4	S
1.0% Occurrence	89	67	72	11.0	S
2.0% Occurrence	86	66	70	10.7	S
Mean Daily Range	21	-	-	-	-
97.5% Occurrence	-12	-13	2	10.2	NW
99.0% Occurrence	-18	-18	2	9.9	WNW
99.6% Occurrence	-23	-23	1	9.6	NW
Median of Extreme Lows	-28	-27	1	8.5	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	75	90	113	10.8	S
0.4% Occurrence	72	87	100	10.3	S
1.0% Occurrence	70	85	92	10.2	S
2.0% Occurrence	68	82	86	9.9	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	121	82	0.77	9.2	ESE
0.4% Occurrence	106	80	0.67	9.1	SSE
1.0% Occurrence	99	78	0.62	9.1	SE
2.0% Occurrence	90	75	0.56	8.7	S
Air Conditioning/ Humid Area Criteria	# of Hours	T ≥ 93°F	T ≥ 80°F	T _{wb} ≥ 73°F	T _{wb} ≥ 67°F
		43	423	27	242

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
4	2.8	90	0.2 + 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 (#)
43.1	163	35	75

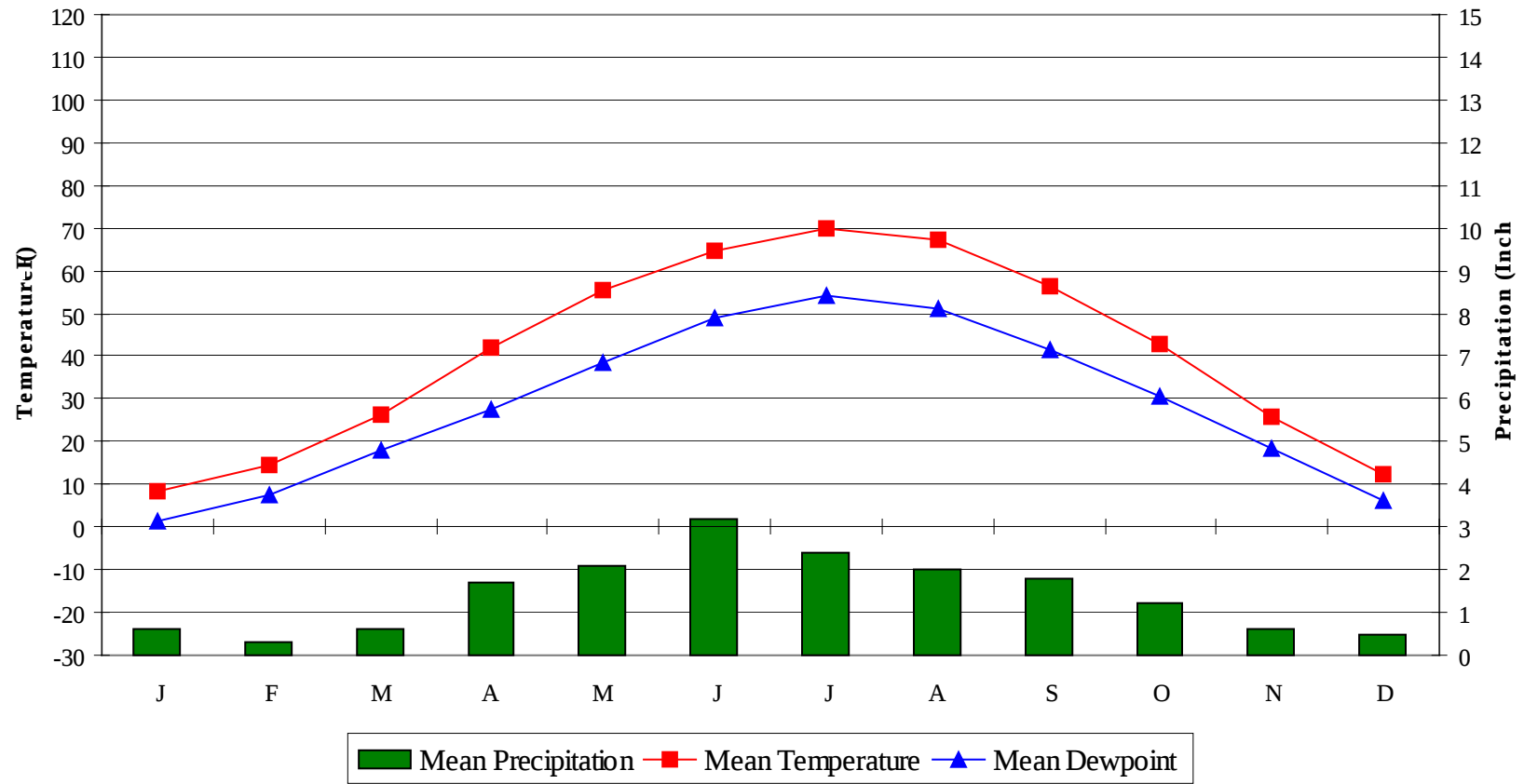
*Note: Temperatures at greater depths can be estimated by adding 1.5°F per 100 feet additional depth.

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Average Annual Climate

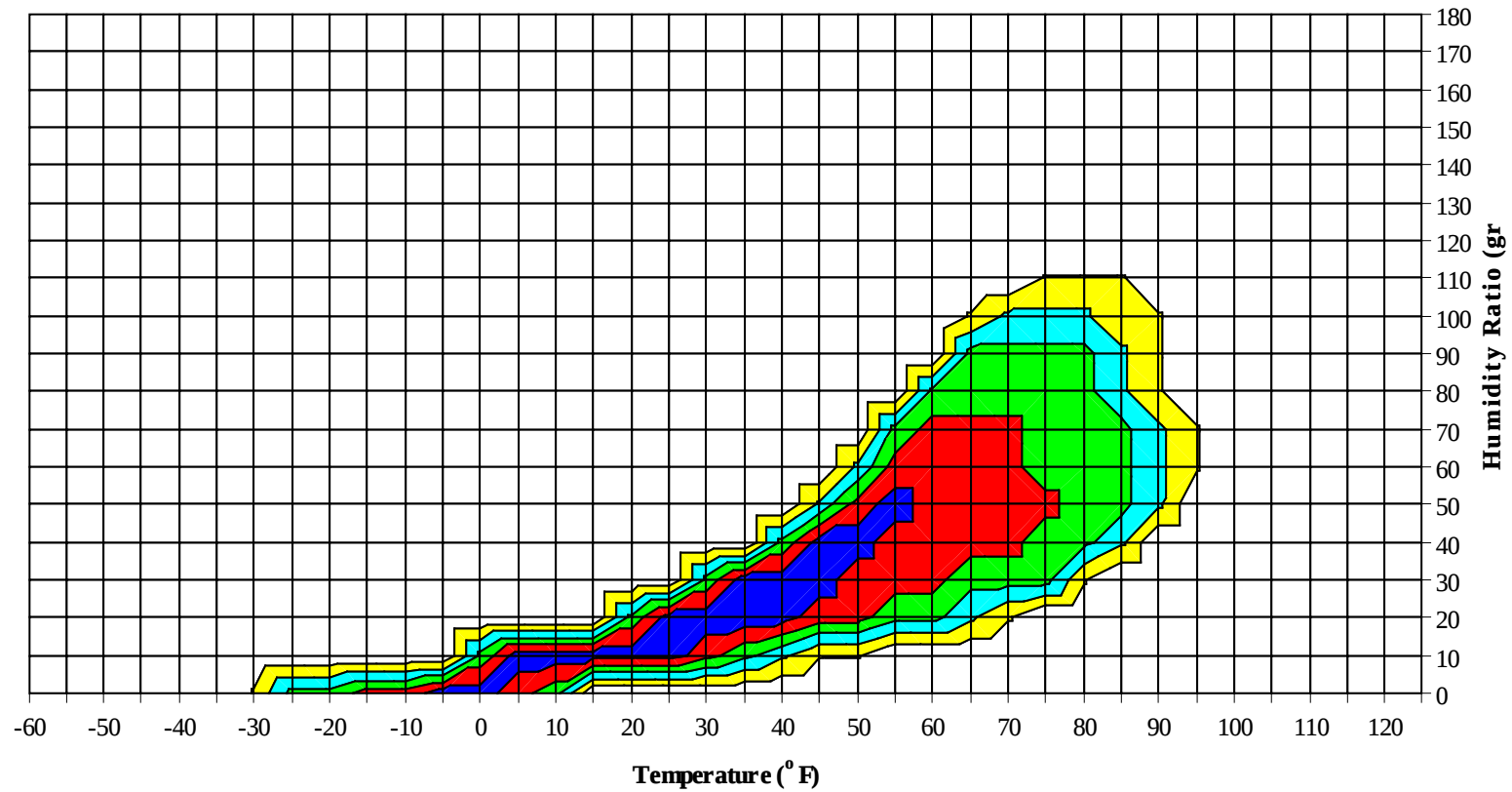


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Long Term Psychrometric Summary

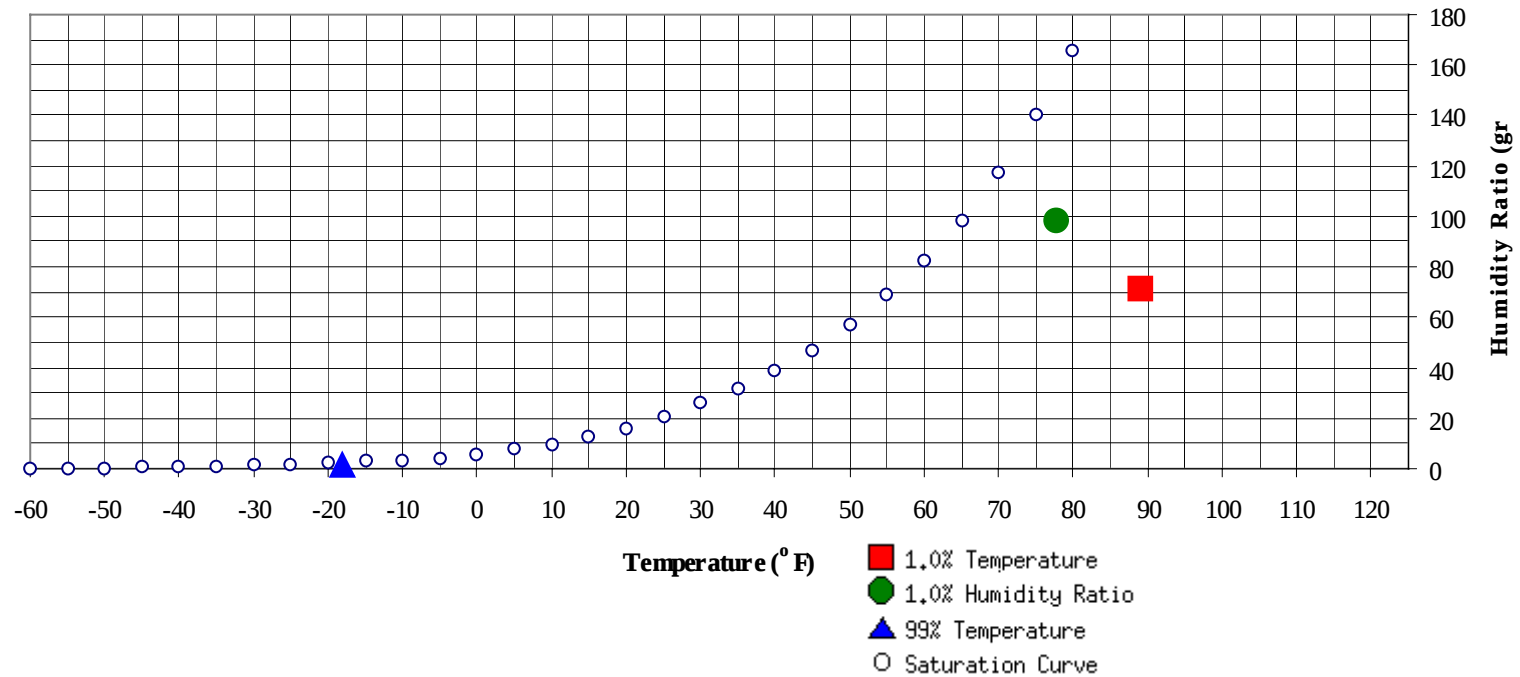


- 50% of all observations
- 80% of all observations
- 95% of all observations
- 97.5% of all observations
- 99% of all observations

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Psychrometric Summary of Peak Design Values

	(°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	-18	1.5	-4.1	98.7	77.7	68.9	65	34.1

1.0% Dry Bulb	(°F)	MCHR (gr/lb)	MCWB (°F)	Enthalpy (btu/lb)
	89	71.2	67	32.6

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WMO No. 727675

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		
105 / 109															
100 / 104															
95 / 99															
90 / 94															
85 / 89															
80 / 84															
75 / 79															
70 / 74												0	0	0	54.0
65 / 69							0		0	56.0		1	0	2	49.6
60 / 64							0	0	0	49.5		2	1	3	48.6
55 / 59							1	0	1	46.4	0	5	2	7	45.2
50 / 54							2	0	2	42.7	1	10	4	15	42.5
45 / 49		1	0	1	39.5		4	1	5	39.5	1	17	9	27	39.5
40 / 44	1	7	3	11	36.6	1	12	5	19	36.7	3	25	17	45	36.5
35 / 39	7	14	11	32	33.3	10	16	17	43	33.2	24	40	42	106	33.5
30 / 34	13	18	17	49	29.2	20	21	25	67	29.5	57	40	51	147	29.7
25 / 29	19	22	22	63	24.7	28	26	27	81	25.1	43	27	33	102	24.9
20 / 24	22	22	22	66	20.3	24	23	24	71	20.6	30	24	25	78	20.0
15 / 19	24	21	23	68	15.7	22	22	21	66	15.7	23	20	21	64	15.4
10 / 14	25	22	22	69	10.9	20	20	22	63	10.9	21	15	17	53	10.8
5 / 9	21	21	23	65	6.1	19	21	20	59	6.0	18	11	12	41	5.9
0 / 4	21	26	24	70	1.1	23	19	20	61	1.1	11	7	7	24	1.3
-5 / -1	21	18	18	56	-3.2	12	11	13	36	-3.1	6	3	4	13	-3.1
-10 / -6	18	19	19	57	-7.6	16	12	13	41	-7.6	6	2	3	10	-7.4
-15 / -11	22	18	20	60	-12.5	13	7	8	27	-12.4	4	1	1	5	-11.9
-20 / -16	17	12	15	44	-17.0	10	4	4	18	-16.9	1	0	0	1	-16.9
-25 / -21	11	5	7	23	-21.7	3	1	2	6	-21.5	0		0	0	-20.9
-30 / -26	5	1	2	8	-26.3	2	1	1	3	-26.7					
-35 / -31	1	0	0	2	-31.3	1	0	0	1	-31.9					
-40 / -36	0		0	0	-35.2	0	0		0	-35.7					

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. 727675

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		
105 / 109															
100 / 104												1	0	1	72.0
95 / 99		0		0	61.0		1	0	1	66.7		3	1	4	69.8
90 / 94		0	0	1	59.3		2	1	3	65.1		6	3	10	68.4
85 / 89		1	0	1	58.7		6	3	9	63.4		14	8	22	66.5
80 / 84		3	1	4	57.2	0	11	6	18	61.0	0	25	15	40	64.2
75 / 79		4	2	7	55.2	0	21	12	33	58.5	3	39	25	67	61.5
70 / 74	0	8	4	12	53.3	2	31	21	54	56.0	10	48	37	96	59.4
65 / 69	0	13	7	20	50.6	6	34	25	65	53.7	24	40	39	103	57.3
60 / 64	1	17	13	31	48.2	17	37	35	88	51.4	47	32	45	124	55.0
55 / 59	4	23	17	44	45.4	31	35	39	105	48.8	63	22	38	122	51.9
50 / 54	10	31	25	66	43.0	51	31	40	122	45.7	53	9	20	81	48.0
45 / 49	19	33	33	85	40.3	46	19	29	94	41.9	27	3	6	36	43.7
40 / 44	35	33	37	106	37.0	41	11	19	71	38.1	10	0	2	11	39.4
35 / 39	49	28	41	119	33.3	28	7	11	46	33.8	2		0	2	35.0
30 / 34	57	26	34	117	29.5	19	3	6	28	29.7	0			0	31.2
25 / 29	34	10	14	59	24.8	6	0	1	7	25.7					
20 / 24	17	5	6	27	20.2	1	0	0	1	20.7					
15 / 19	7	2	3	12	15.7										
10 / 14	3	1	1	6	10.8										
5 / 9	1	0	0	2	6.0										
0 / 4	1	0	0	1	1.1										
-5 / -1	1	0	0	1	-3.7										
-10 / -6	1	0	0	1	-7.0										
-15 / -11	0			0	-11.7										
-20 / -16															
-25 / -21															
-30 / -26															
-35 / -31															
-40 / -36															

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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		
105 / 109		0	0	0	71.6										
100 / 104		1	0	1	72.2		1	0	2	70.8		0		0	68.5
95 / 99		4	1	5	70.8		6	2	8	68.8		1	0	2	66.6
90 / 94		13	7	20	69.0		15	7	22	67.8		3	1	5	65.4
85 / 89	0	26	15	42	67.8	0	24	14	39	66.3		7	3	10	63.3
80 / 84	1	45	28	75	65.3	1	34	21	56	64.3	0	13	6	19	60.9
75 / 79	5	58	41	104	63.3	3	43	30	76	62.4	0	18	9	28	59.2
70 / 74	22	49	45	116	61.7	14	45	41	99	60.3	2	29	16	47	57.2
65 / 69	48	31	45	125	59.9	33	39	43	115	58.6	7	32	23	61	55.0
60 / 64	65	16	37	119	57.0	59	24	40	124	56.0	16	38	31	86	52.8
55 / 59	64	3	21	89	53.4	61	12	29	101	52.6	32	35	42	109	50.2
50 / 54	32	1	5	38	49.3	47	5	15	67	48.6	54	31	45	130	47.1
45 / 49	9		1	10	45.2	20	1	3	24	44.4	51	18	30	99	42.9
40 / 44	2		0	2	41.2	9		1	9	40.0	41	9	19	69	38.9
35 / 39	0			0	37.0	1		0	1	35.1	23	3	9	35	34.7
30 / 34						0			0	28.7	9	1	4	14	30.0
25 / 29											3	0	1	3	25.8
20 / 24											1		0	1	22.0
15 / 19											0			0	18.0
10 / 14															
5 / 9															
0 / 4															
-5 / -1															
-10 / -6															
-15 / -11															
-20 / -16															
-25 / -21															
-30 / -26															
-35 / -31															
-40 / -36															

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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		
105 / 109															
100 / 104															
95 / 99		0		0	59.0										
90 / 94		0	0	0	58.4										
85 / 89		0	0	0	60.0										
80 / 84		2	0	2	57.8										
75 / 79		4	1	5	56.3		0		0	55.0					
70 / 74	0	9	2	11	54.4		0		0	54.5					
65 / 69	0	16	5	21	52.2		1	0	1	49.9					
60 / 64	1	21	10	32	49.3		3	0	3	48.5					
55 / 59	6	29	19	54	47.1	0	5	1	7	45.5		0	0	0	42.9
50 / 54	17	36	30	83	44.2	1	9	4	15	43.0		1	0	1	40.4
45 / 49	27	37	37	101	41.1	4	14	7	25	40.0	0	2	1	3	38.3
40 / 44	48	36	47	131	37.9	10	20	14	44	36.5	1	6	2	10	35.9
35 / 39	50	28	41	119	33.5	19	30	28	77	33.0	7	15	11	33	32.6
30 / 34	50	18	31	99	29.5	41	41	44	126	29.4	16	21	20	57	29.1
25 / 29	25	7	14	46	25.1	45	36	40	121	25.1	25	28	28	81	25.1
20 / 24	14	3	7	23	20.7	38	28	35	101	20.6	32	32	31	94	20.6
15 / 19	7	1	2	11	16.0	29	19	23	70	15.9	28	25	27	80	15.9
10 / 14	2	1	1	4	11.4	19	14	14	47	11.1	28	26	24	78	11.0
5 / 9	1	0	0	1	6.3	13	9	12	34	6.4	25	25	27	77	6.1
0 / 4	0	0	0	1	1.3	10	5	7	23	1.5	27	21	25	73	1.2
-5 / -1	0		0	0	-2.5	6	3	3	12	-3.1	15	13	15	43	-3.2
-10 / -6	0			0	-5.0	3	2	3	8	-7.5	16	12	14	42	-7.6
-15 / -11						2	1	2	4	-12.1	10	10	10	30	-12.4
-20 / -16						1	0	0	2	-16.4	7	6	8	22	-17.1
-25 / -21						0			0	-20.0	7	3	4	14	-21.7
-30 / -26											3	1	1	6	-26.4
-35 / -31											1	0	0	1	-31.0
-40 / -36												0		0	-35.0

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WMO No. 727675

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		
105 / 109		0	0	0	71.6
100 / 104		3	1	4	71.2
95 / 99		15	6	21	69.1
90 / 94		41	21	61	67.9
85 / 89	0	79	44	123	66.3
80 / 84	2	133	78	214	63.8
75 / 79	12	186	121	319	61.6
70 / 74	51	219	166	435	59.2
65 / 69	118	206	188	512	57.0
60 / 64	207	190	213	610	54.1
55 / 59	261	169	208	638	50.4
50 / 54	266	165	189	620	46.2
45 / 49	203	147	157	508	41.7
40 / 44	201	159	166	526	37.6
35 / 39	222	181	210	612	33.4
30 / 34	281	189	232	702	29.5
25 / 29	227	157	179	563	25.0
20 / 24	177	136	150	464	20.4
15 / 19	140	111	121	372	15.7
10 / 14	118	100	102	320	10.9
5 / 9	98	88	95	281	6.1
0 / 4	94	77	83	254	1.2
-5 / -1	60	48	53	161	-3.2
-10 / -6	60	48	52	160	-7.6
-15 / -11	50	36	40	126	-12.4
-20 / -16	36	23	28	87	-17.0
-25 / -21	21	9	13	44	-21.7
-30 / -26	10	3	4	17	-26.4
-35 / -31	2	0	1	4	-31.5
-40 / -36	0	0	0	1	-35.4

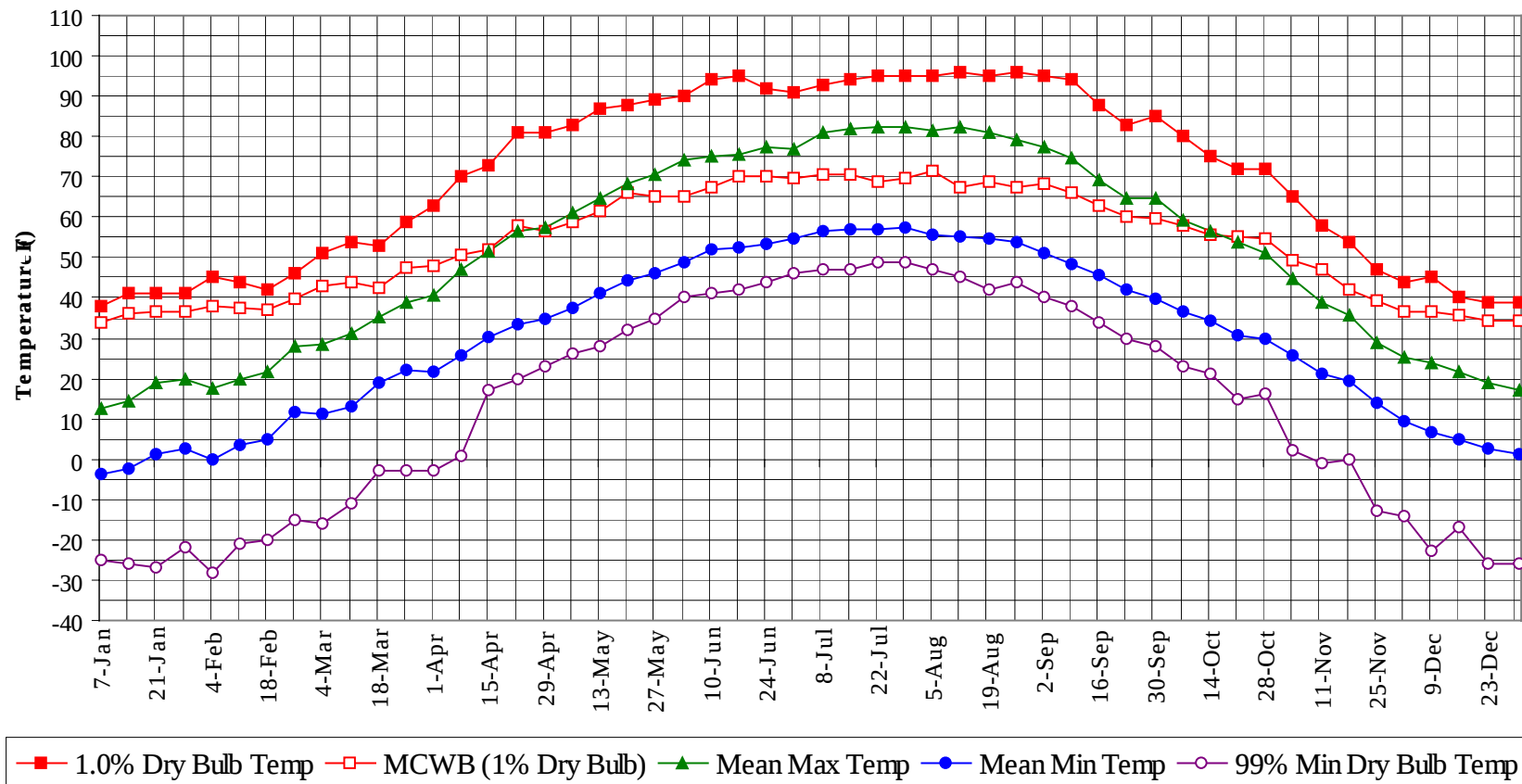
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WMO No. 727675

Annual Summary of Temperatures

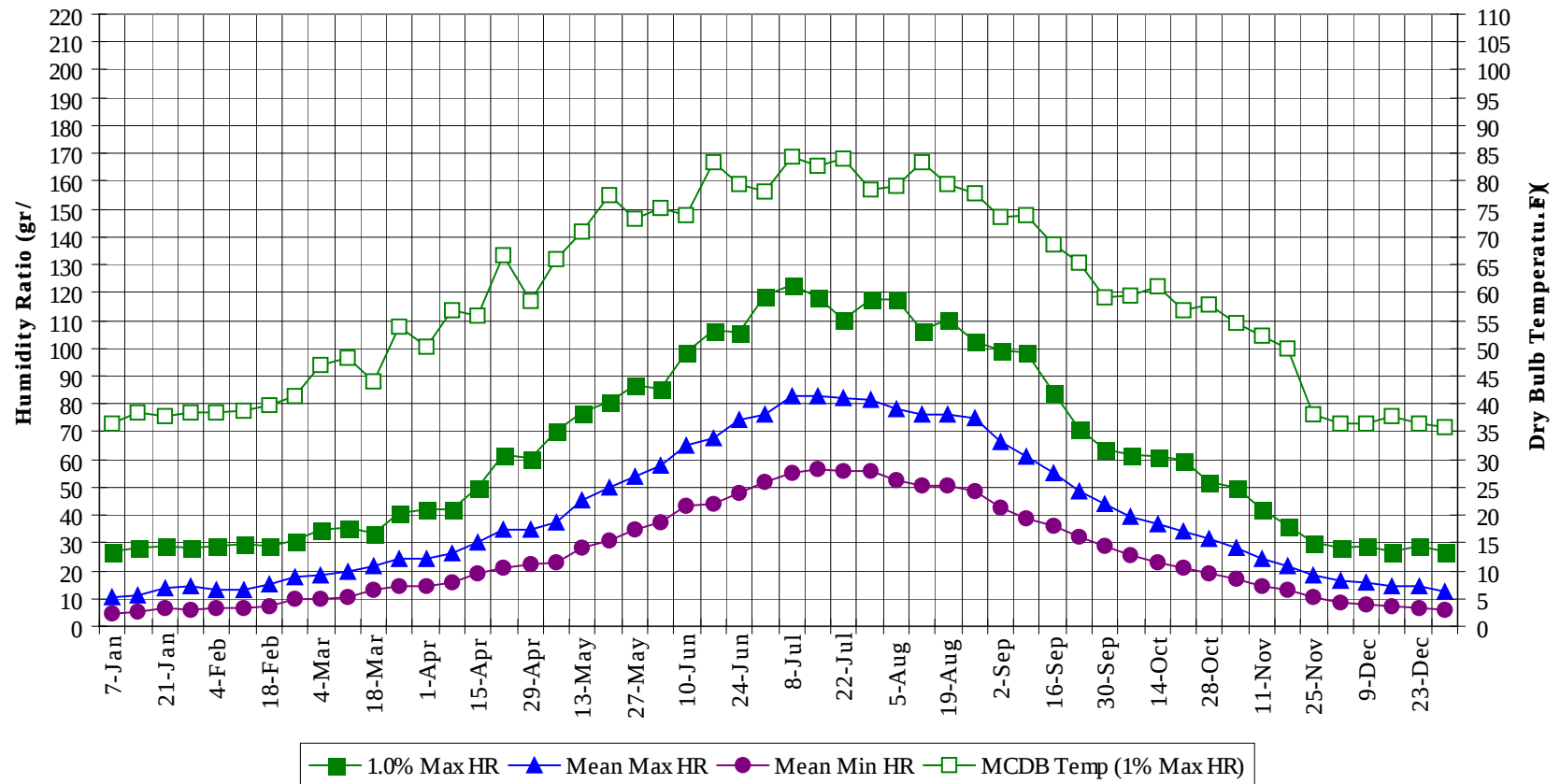


MINOT AFB

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Long Term Humidity and Dry Bulb Temperature Summary



MINOT AFB

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Long Term Dry Bulb Temperature and Humidity Summary

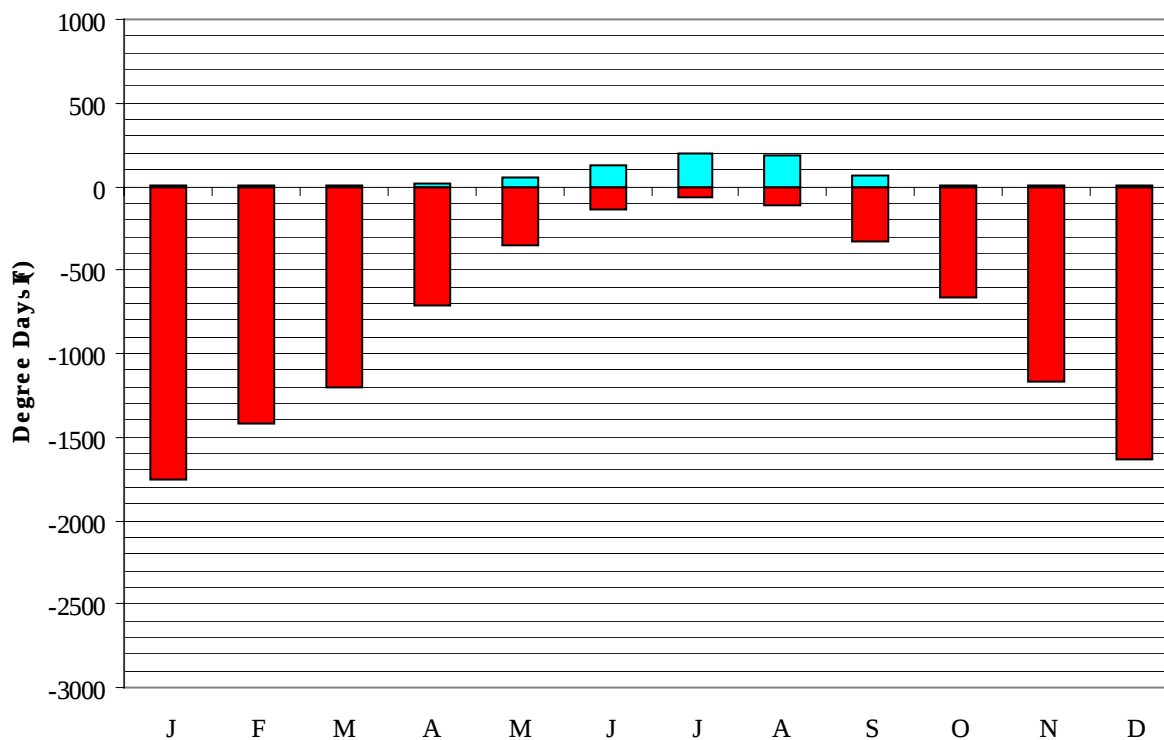
Week Ending	1.0% Temp (°F)	MCWB @ 1% Temp (°F)	Mean Max Temp (°F)	Mean Min Temp (°F)	99% Temp (°F)	1.0% HR (gr/lb)	MCDB @ 1% HR (°F)	Mean Max HR (gr/lb)	Mean Min HR (gr/lb)
7-Jan	38.0	34.0	12.4	-3.8	-25.0	26.6	36.5	10.3	4.8
14-Jan	41.0	36.1	14.2	-2.5	-26.0	28.0	38.6	11.4	5.4
21-Jan	41.0	36.5	18.9	1.3	-27.0	28.7	37.9	13.8	6.4
28-Jan	41.0	36.6	20.0	2.4	-22.0	28.0	38.6	14.2	6.2
4-Feb	45.0	38.1	17.7	0.0	-28.0	28.7	38.5	13.3	6.4
11-Feb	44.0	37.6	19.8	3.4	-21.0	29.4	38.7	13.5	6.9
18-Feb	42.0	37.0	21.8	4.7	-20.0	28.7	39.6	15.1	7.5
25-Feb	46.0	39.8	27.8	11.6	-15.0	30.8	41.3	18.1	9.9
4-Mar	51.0	43.1	28.2	11.2	-16.0	35.0	47.0	18.1	9.7
11-Mar	54.0	43.9	31.2	12.8	-11.0	35.7	48.2	19.8	10.3
18-Mar	53.0	42.4	35.4	18.9	-3.0	33.6	43.9	21.6	12.9
25-Mar	59.0	47.3	38.8	22.0	-3.0	40.6	53.9	24.1	14.6
1-Apr	63.0	47.8	40.5	21.6	-3.0	42.0	50.3	24.5	14.5
8-Apr	70.0	50.7	47.0	25.7	1.0	42.0	56.8	26.2	15.9
15-Apr	73.0	52.0	51.5	30.1	17.0	49.7	56.0	30.3	19.0
22-Apr	81.0	57.9	56.6	33.2	20.0	61.6	66.8	34.7	20.9
29-Apr	81.0	56.6	57.2	34.8	23.0	60.2	58.6	35.1	22.1
6-May	83.0	58.9	61.2	37.3	26.0	70.0	65.9	37.6	23.0
13-May	87.0	61.6	64.7	40.9	28.0	77.0	70.9	45.1	28.2
20-May	88.0	66.1	68.4	44.3	32.0	80.5	77.3	49.7	31.0
27-May	89.0	65.1	70.4	46.0	35.0	86.8	73.1	53.8	34.7
3-Jun	90.0	65.0	74.1	48.9	40.0	85.4	75.2	57.7	37.2
10-Jun	94.0	67.5	74.9	51.8	41.0	98.7	74.0	64.8	43.3
17-Jun	95.0	69.9	75.7	52.7	42.0	106.4	83.4	67.8	44.3
24-Jun	92.0	70.2	77.3	53.4	44.0	105.7	79.3	74.1	48.0
1-Jul	91.0	69.8	77.0	54.8	46.0	119.0	78.1	76.3	51.7
8-Jul	93.0	70.6	81.2	56.7	47.0	122.5	84.3	82.4	55.2
15-Jul	94.0	70.6	81.8	57.1	47.0	118.3	82.7	82.8	56.5
22-Jul	95.0	68.6	82.3	57.2	49.0	110.6	84.0	82.1	55.6
29-Jul	95.0	69.6	82.4	57.2	49.0	117.6	78.6	81.5	55.9
5-Aug	95.0	71.4	81.7	55.5	47.0	117.6	79.2	78.5	52.6
12-Aug	96.0	67.6	82.2	55.2	45.0	106.4	83.3	75.9	50.6
19-Aug	95.0	68.9	81.2	54.9	42.0	110.6	79.6	76.1	50.5
26-Aug	96.0	67.3	79.3	53.9	44.0	102.2	77.7	74.6	48.7
2-Sep	95.0	68.3	77.5	51.0	40.0	99.4	73.6	66.4	42.8
9-Sep	94.0	65.9	74.6	48.4	38.0	98.7	73.9	61.3	38.5
16-Sep	88.0	62.8	69.1	45.4	34.0	84.0	68.8	55.4	36.3
23-Sep	83.0	59.9	64.9	41.9	30.0	70.7	65.4	48.9	32.4
30-Sep	85.0	59.8	64.7	39.7	28.0	63.7	59.2	43.8	28.7
7-Oct	80.0	57.8	59.3	36.7	23.0	61.6	59.3	39.5	25.3
14-Oct	75.0	55.4	56.5	34.2	21.0	60.9	61.2	36.8	22.7
21-Oct	72.0	55.3	53.7	30.9	15.0	59.5	56.9	33.9	21.1
28-Oct	72.0	54.5	51.2	29.7	16.0	51.8	57.7	31.8	18.9
4-Nov	65.0	49.2	44.6	25.6	2.0	49.7	54.4	28.1	16.9
11-Nov	58.0	47.2	39.0	21.2	-1.0	42.0	52.1	24.1	14.4
18-Nov	54.0	41.8	35.8	19.5	0.0	36.4	50.0	21.9	13.1
25-Nov	47.0	39.2	28.9	13.8	-13.0	30.1	38.0	18.4	10.8
2-Dec	44.0	36.6	25.4	9.5	-14.0	28.0	36.3	16.2	8.7
9-Dec	45.0	36.8	23.7	6.6	-23.0	28.7	36.3	15.6	8.0
16-Dec	40.0	35.8	21.8	4.8	-17.0	26.6	37.6	14.6	7.0
23-Dec	39.0	34.2	19.0	2.5	-26.0	28.7	36.6	14.2	6.6
31-Dec	39.0	34.3	17.2	1.2	-26.0	26.6	35.8	12.7	6.2

MINOT AFB

ND

WMO No. 727675

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



Mean Cooling Degree Days Mean Heating Degree Days

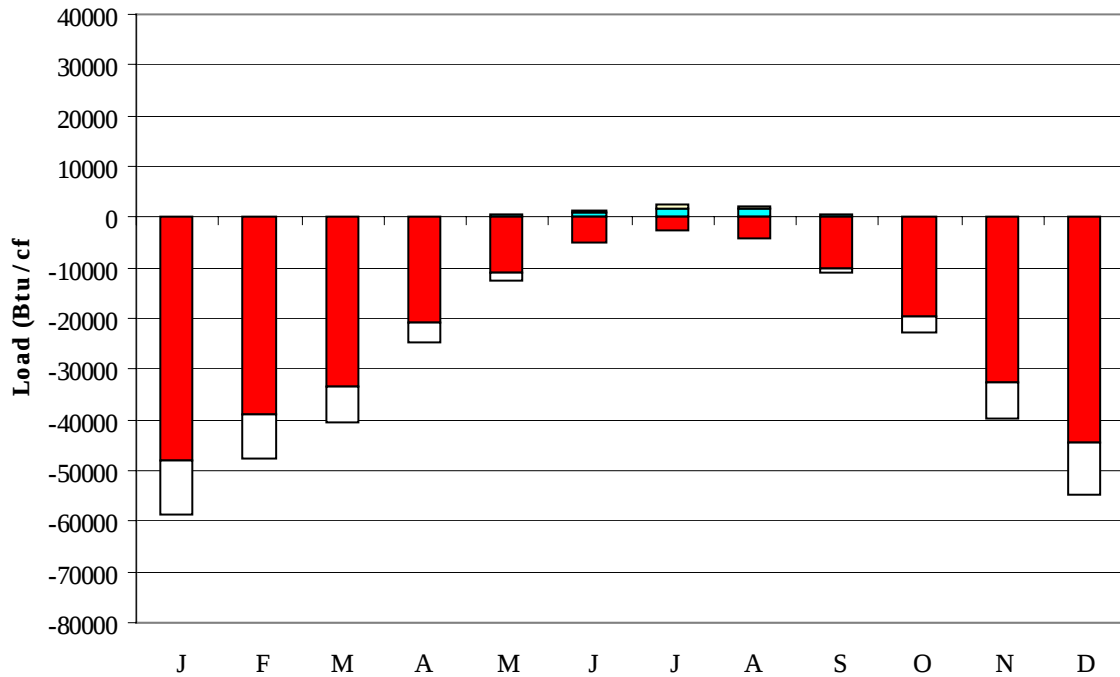
	Mean Cooling Degree Days (°F)	Mean Heating Degree Days (°F)
JAN	0	1758
FEB	0	1424
MAR	0	1199
APR	12	709
MAY	57	354
JUN	124	140
JUL	202	69
AUG	181	112
SEP	60	325
OCT	8	670
NOV	0	1173
DEC	0	1630
ANN	646	9563

MINOT AFB

ND

WMO No. 727675

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	-47985	0	-10752
FEB	0	-39107	0	-8702
MAR	0	-33482	0	-7158
APR	68	-20601	0	-4085
MAY	384	-11087	25	-1275
JUN	978	-4998	370	-104
JUL	1752	-2762	912	-2
AUG	1702	-4132	503	-59
SEP	459	-10276	50	-703
OCT	28	-19609	0	-3169
NOV	0	-32723	0	-7184
DEC	0	-44654	0	-10155
ANN	5371	-271416	1860	-53348

Average Annual Solar Radiation – Nearest Available Site

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

City: MINOT
 State: ND
 WBAN No: 24013
 Lat(N): 48.27
 Long(W): 101.28
 Elev(ft): 1713

Stn Type: Secondary
 SHADING GEOMETRY IN DIMENSIONLESS UNITS

Window: 1
 Overhang: 0.772
 Vert Gap: 0.324

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	470	750	1140	1540	1850	2030	2080	1770	1260	850	500	380	1220
	Std Dev	35	62	88	156	169	168	108	118	119	68	43	25	37
	Minimum	360	570	930	1220	1480	1720	1860	1530	1040	700	410	310	1160
	Maximum	530	840	1310	1850	2150	2330	2230	1960	1480	990	590	430	1310
	Diffuse	250	400	550	670	750	770	690	600	490	350	260	200	500
Clear Day	Global	590	960	1500	2100	2520	2690	2580	2200	1660	1080	650	490	1590
NORTH	Global	150	230	340	440	570	650	620	470	340	240	160	130	360
	Diffuse	150	230	340	420	500	530	500	430	330	240	160	130	330
Clear Day	Global	130	190	280	400	600	740	660	460	300	210	140	110	350
EAST	Global	370	530	770	1000	1140	1210	1250	1120	840	610	370	290	790
	Diffuse	200	300	420	520	590	620	610	530	410	300	200	160	410
Clear Day	Global	560	810	1130	1420	1590	1650	1590	1450	1190	860	580	470	1110
SOUTH	Global	1020	1150	1250	1160	1040	990	1070	1190	1200	1210	950	890	1090
	Diffuse	330	440	520	560	590	590	580	550	470	390	310	280	470
Clear Day	Global	1800	2020	2000	1700	1380	1220	1270	1520	1820	1950	1800	1680	1680
WEST	Global	370	540	770	950	1110	1200	1280	1130	840	600	380	300	790
	Diffuse	200	310	430	530	600	630	620	540	420	300	200	160	410
Clear Day	Global	560	810	1130	1420	1590	1650	1590	1450	1190	860	580	470	1110

Average Annual Solar Heat and Illumination – Nearest Available Site

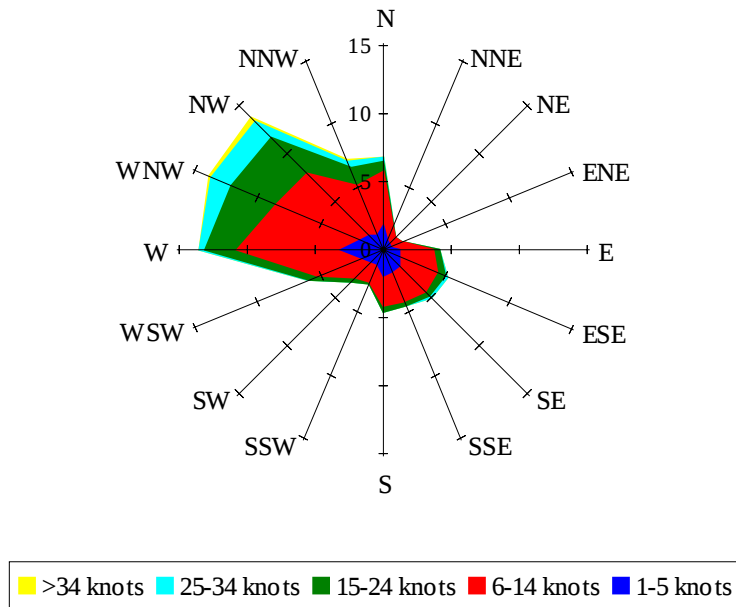
(Source: National Renewable Energy Laboratory, Golden CO, 1995)

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	280	480	790	1090	1330	1470	1500	1270	880	560	310	220	850
NORTH	Unshaded	110	160	230	300	370	430	400	310	230	160	110	87	240
	Shaded	85	130	190	250	310	360	340	270	190	140	89	70	200
EAST	Unshaded	250	370	540	720	820	870	890	800	600	430	250	200	560
	Shaded	210	310	440	570	640	670	690	630	490	360	210	170	450
SOUTH	Unshaded	770	860	890	790	670	620	670	780	840	890	720	680	770
	Shaded	750	770	650	420	330	340	340	360	530	750	690	660	550
WEST	Unshaded	250	380	550	680	800	860	920	810	600	420	260	200	560
	Shaded	210	310	440	540	620	660	710	640	490	350	220	170	450

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	21	54	69	62	35	37	71	92	95	77
	M.Cloudy	14	37	50	45	25	24	48	63	69	56
NORTH	M.Clear	7	11	13	12	9	19	14	16	16	15
	M.Cloudy	6	13	16	15	10	13	15	18	18	16
EAST	M.Clear	63	67	24	12	9	77	80	46	16	15
	M.Cloudy	21	35	21	15	10	34	46	34	18	16
SOUTH	M.Clear	27	70	91	82	45	9	32	56	59	39
	M.Cloudy	12	36	51	44	23	9	24	39	43	30
WEST	M.Clear	7	11	13	52	72	9	14	16	34	73
	M.Cloudy	6	13	16	32	33	9	15	18	29	49
M.Clear	(% hrs)	30	29	28	26	28	41	40	36	31	29

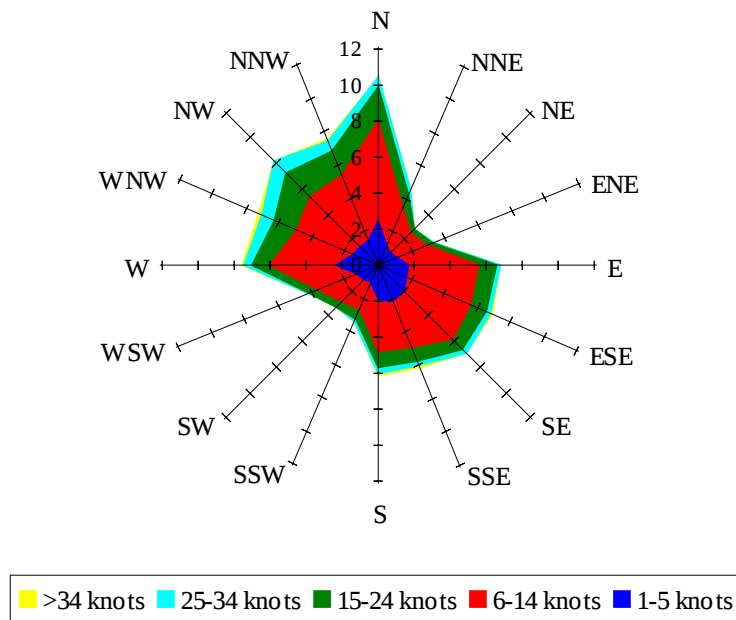
		Sept					Dec				
		9am	11am	1pm	3pm	5pm	9am	11am	1pm	3pm	5pm
HORIZ.	M.Clear	13	48	71	73	54	0	20	32	23	3
	M.Cloudy	8	30	44	46	35	0	14	22	16	3
NORTH	M.Clear	5	11	13	14	11	0	6	8	7	2
	M.Cloudy	4	11	15	15	12	0	6	9	7	1
EAST	M.Clear	48	75	43	14	11	1	38	12	7	2
	M.Cloudy	14	33	26	15	12	0	15	10	7	1
SOUTH	M.Clear	10	51	80	81	57	1	60	85	67	11
	M.Cloudy	5	25	40	43	30	0	21	34	25	4
WEST	M.Clear	5	11	13	35	71	0	6	8	36	13
	M.Cloudy	4	11	15	24	36	0	6	9	16	4
M.Clear	(% hrs)	44	41	39	38	36	33	31	31	32	36

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



Percent Calm = 5.89

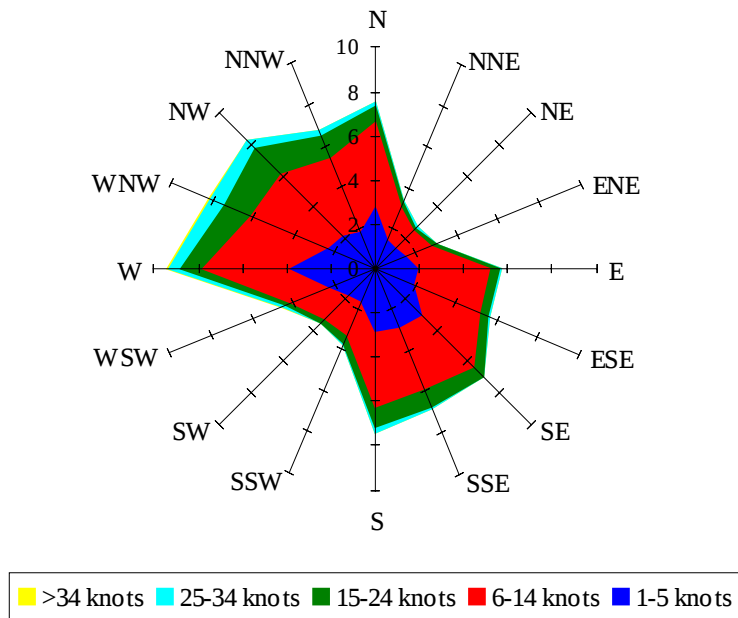
Wind Summary - March, April, and May **Labels of Percent Frequency on North Axis**



Percent Calm = 5.65

Wind Summary - June, July, and August

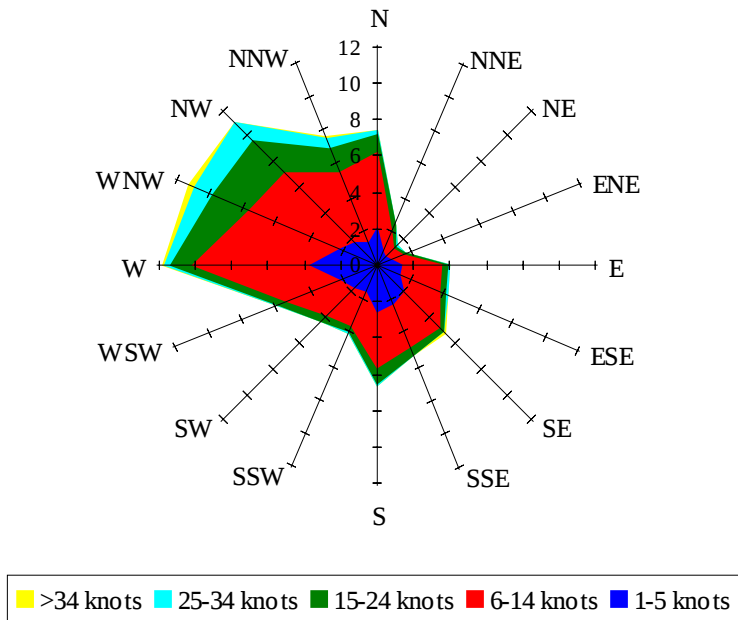
Labels of Percent Frequency on North Axis



Percent Calm = 7.17

Wind Summary - September, October, and November

Labels of Percent Frequency on North Axis



Percent Calm = 6.55