

GANDER CN

Latitude = 48.95 N

Longitude = 54.57 W

Period of Record = 1973 to 1996

WMO No. 718030

Elevation = 495 feet

Average Pressure = 29.30 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	85	69	82	14.3	W
0.4% Occurrence	79	65	74	12.1	W
1.0% Occurrence	75	64	71	12.7	SW
2.0% Occurrence	72	62	69	12.6	SW
Mean Daily Range	15	-	-	-	-
97.5% Occurrence	5	4	5	15.0	W
99.0% Occurrence	0	-1	3	14.4	W
99.6% Occurrence	-4	-5	3	16.1	W
Median of Extreme Lows	-8	-9	2	17.2	W
	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	71	80	97	13.6	WSW
0.4% Occurrence	68	75	91	12.8	SW
1.0% Occurrence	66	72	86	13.1	SW
2.0% Occurrence	64	70	80	12.4	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	101	74	0.66	13.9	SSW
0.4% Occurrence	93	71	0.61	13.2	SW
1.0% Occurrence	88	69	0.57	12.6	SW
2.0% Occurrence	82	67	0.54	12.4	SW
Air Conditioning/ Humid Area Criteria	# of Hours	T ≥ 93°F	T ≥ 80°F	T _{wb} ≥ 73°F	T _{wb} ≥ 67°F
		0	26	1	69

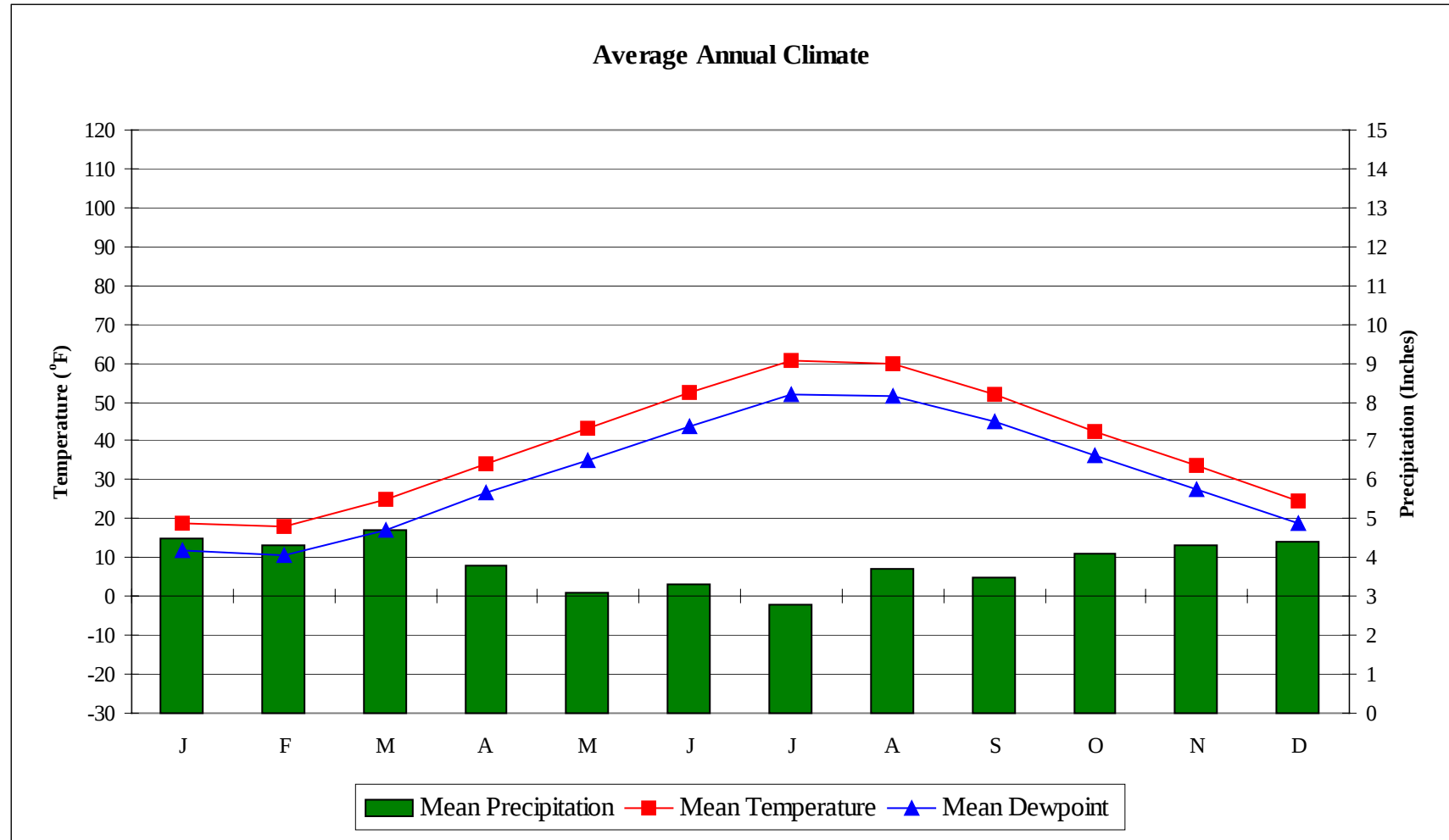
Other Site Data

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	N/A	N/A	0.1 + 0.0
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 (#)
41.3	N/A	N/A	61

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

GANDER CN

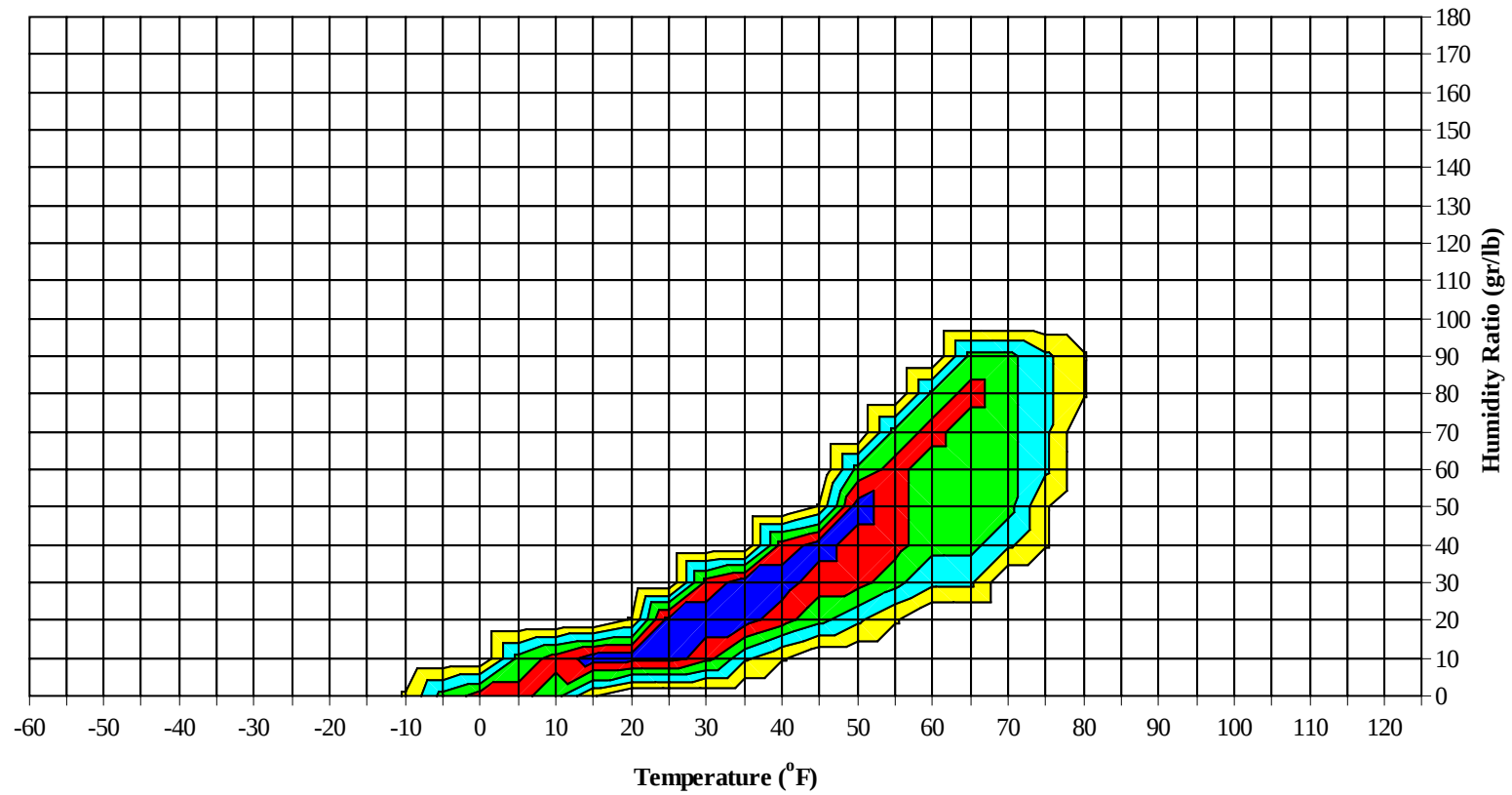
WMO No. 718030



GANDER CN

WMO No. 718030

Long Term Psychrometric Summary

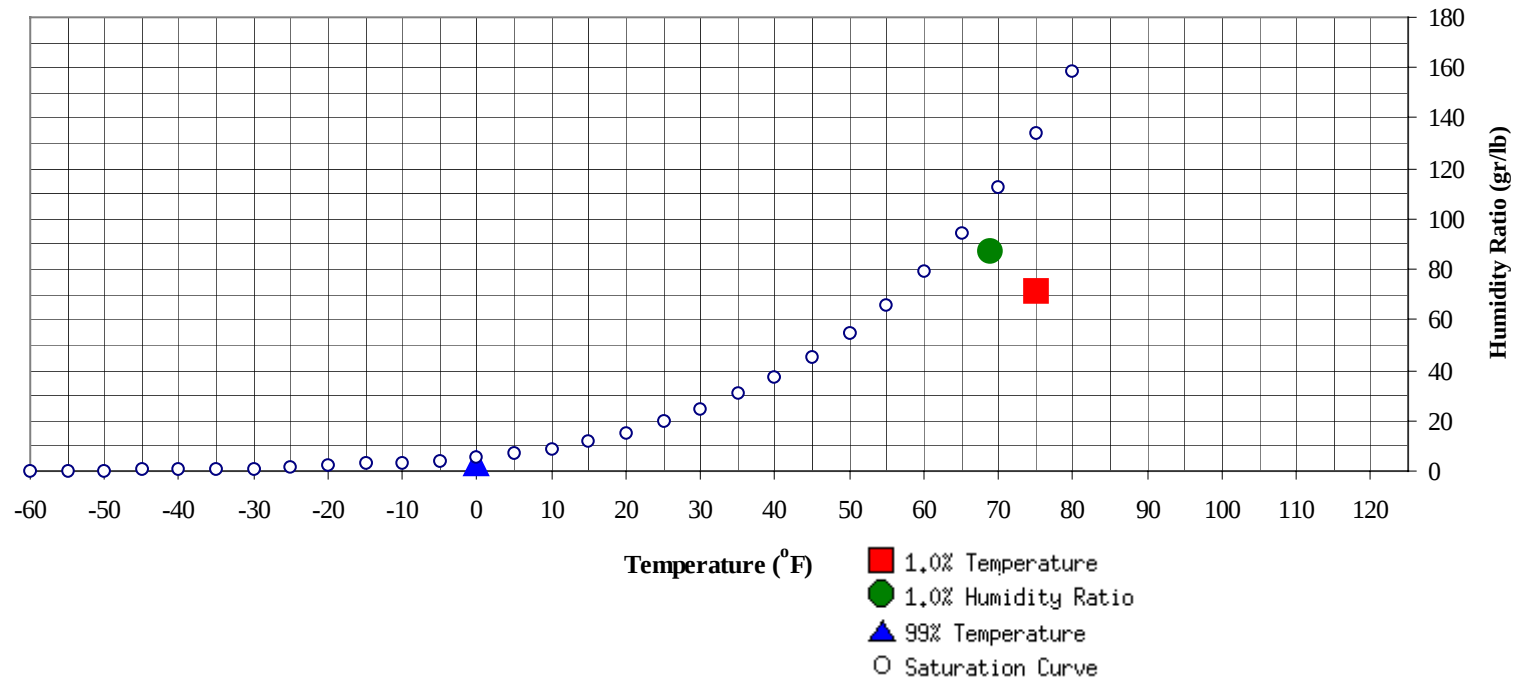


- 50% of all observations
- 80% of all observations
- 95% of all observations
- 97.5% of all observations
- 99% of all observations

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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)
	0	3.3	0.5		87.5	68.9	64.8	62.7	30.2

1.0% Dry Bulb	(°F)	MCHR (gr/lb)	MCWB (°F)	Enthalpy (btu/lb)
	75	71.3	63.7	29.1

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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		
90 / 94															
85 / 89															
80 / 84															
75 / 79															
70 / 74															
65 / 69															
60 / 64															
55 / 59												0	0	0	47.9
50 / 54	1	1	1	3	48.9	0	1	1	2	49.7	0	3	1	4	45.4
45 / 49	3	2	3	8	45.5	2	3	2	7	43.7	3	8	4	15	42.7
40 / 44	3	2	4	9	40.7	3	5	4	12	40.1	6	10	9	25	39.1
35 / 39	9	13	11	33	35.4	8	12	11	31	35.1	17	31	24	72	34.5
30 / 34	25	30	24	79	30.3	21	29	23	73	30.0	45	59	58	162	30.0
25 / 29	33	40	38	111	25.0	30	32	35	97	24.8	46	49	50	145	24.6
20 / 24	26	34	30	90	20.4	23	28	25	76	20.3	28	29	30	87	20.0
15 / 19	41	45	48	134	15.9	31	39	35	105	15.8	33	30	31	94	15.5
10 / 14	40	36	38	114	10.7	33	30	35	98	10.6	35	17	24	76	10.7
5 / 9	33	25	28	86	5.7	31	23	27	81	5.6	21	7	10	38	5.7
0 / 4	23	12	17	52	0.6	23	13	14	50	0.7	10	3	3	16	0.8
-5 / -1	9	5	6	20	-3.8	9	5	6	20	-3.9	4	1	1	6	-3.8
-10 / -6	4	1	1	6	-7.3	8	2	4	14	-8.0	2	0	1	3	-7.5
-15 / -11	0	0		0	-12.3	3	1	1	5	-12.7	0	0		0	-12.2
-20 / -16						1	0	0	1	-16.7	0	0		0	-17.6
-25 / -21						0			0	-21.0					

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		
90 / 94															
85 / 89												1	0	1	68.3
80 / 84												2	1	3	64.9
75 / 79							1	1	2	58.3		9	3	12	62.8
70 / 74		0	0	0	61.4		5	2	7	57.1		0	22	11	33
65 / 69		1	0	1	58.5		8	4	12	54.8		1	24	14	39
60 / 64		2	1	3	54.4	0	20	11	31	52.4	13	41	36	90	55.3
55 / 59	0	6	3	9	51.0	5	29	20	54	49.8	32	41	41	114	52.0
50 / 54	3	11	7	21	45.6	16	35	30	81	46.4	53	39	44	136	48.3
45 / 49	6	25	17	48	42.0	34	43	43	120	42.5	53	28	41	122	44.1
40 / 44	11	31	23	65	38.2	36	36	36	108	39.0	37	19	24	80	40.2
35 / 39	37	61	53	151	34.3	68	52	57	177	35.5	40	12	21	73	36.6
30 / 34	78	69	79	226	30.0	73	17	39	129	31.1	12	2	5	19	32.2
25 / 29	70	26	44	140	25.3	14	1	3	18	26.2	0			0	27.7
20 / 24	21	5	8	34	20.5	1	1	0	2	20.3	0			0	
15 / 19	10	2	4	16	16.2	1		0	1	18.0					
10 / 14	4	1	1	6	10.9										
5 / 9	0	0	0	0	5.6										
0 / 4	0			0	0.0										
-5 / -1															
-10 / -6															
-15 / -11															
-20 / -16															
-25 / -21															

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WMO No. 718030

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		
90 / 94		0	0	0	71.6		0		0	72.0					
85 / 89		1	0	1	70.1		1	0	1	69.1					
80 / 84		9	4	13	67.6		6	2	8	67.3		0		0	68.0
75 / 79	0	28	14	42	64.6		23	11	34	64.8		2	1	3	63.5
70 / 74	3	46	34	83	62.2	2	41	27	70	62.4		9	3	12	61.7
65 / 69	15	41	37	93	60.7	13	39	34	86	60.6	2	16	8	26	59.4
60 / 64	49	52	58	159	57.8	48	55	56	159	57.7	11	43	28	82	56.6
55 / 59	71	36	47	154	53.7	67	41	52	160	53.6	29	59	50	138	52.5
50 / 54	59	21	31	111	49.8	67	32	43	142	49.7	64	58	62	184	48.6
45 / 49	36	10	18	64	45.5	44	10	21	75	45.2	71	39	54	163	44.2
40 / 44	13	2	4	19	41.3	7	0	2	9	40.8	39	11	25	75	40.0
35 / 39	3	1	1	5	37.4	1		0	1	38.1	22	2	10	34	36.1
30 / 34	0			0	33.0						3	0	0	3	31.7
25 / 29											0			0	26.0
20 / 24															
15 / 19															
10 / 14															
5 / 9															
0 / 4															
-5 / -1															
-10 / -6															
-15 / -11															
-20 / -16															
-25 / -21															

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GANDER CN

WMO No. 718030

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		
90 / 94															
85 / 89															
80 / 84															
75 / 79															
70 / 74		0	0	0	59.3										
65 / 69	0	2	0	2	61.2										
60 / 64	3	8	6	17	58.6		1	0	1	57.6					
55 / 59	9	21	13	43	52.9	4	6	6	16	54.3					
50 / 54	18	39	28	85	48.1	7	9	9	25	49.9	1	2	2	5	49.6
45 / 49	39	59	51	149	43.3	12	17	14	43	43.9	5	6	4	15	45.3
40 / 44	43	48	51	142	39.4	14	25	17	56	39.4	6	7	8	21	40.5
35 / 39	74	47	61	182	35.3	43	58	49	150	34.8	18	21	17	56	35.4
30 / 34	49	20	32	101	30.4	75	71	76	221	29.8	47	55	49	151	30.3
25 / 29	12	3	6	21	25.0	54	34	46	134	24.9	53	56	55	164	25.2
20 / 24	1	0	0	1	20.2	18	10	13	41	20.4	28	32	34	94	20.4
15 / 19	0			0	17.3	8	7	8	23	16.2	36	34	38	108	16.1
10 / 14						6	1	3	10	11.6	32	23	26	81	10.9
5 / 9						0	0		0	5.2	16	8	14	38	6.0
0 / 4						0			0	3.0	6	2	1	9	0.8
-5 / -1											1	0	1	2	-4.2
-10 / -6											0	0	0	0	-7.8
-15 / -11															
-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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WMO No. 718030

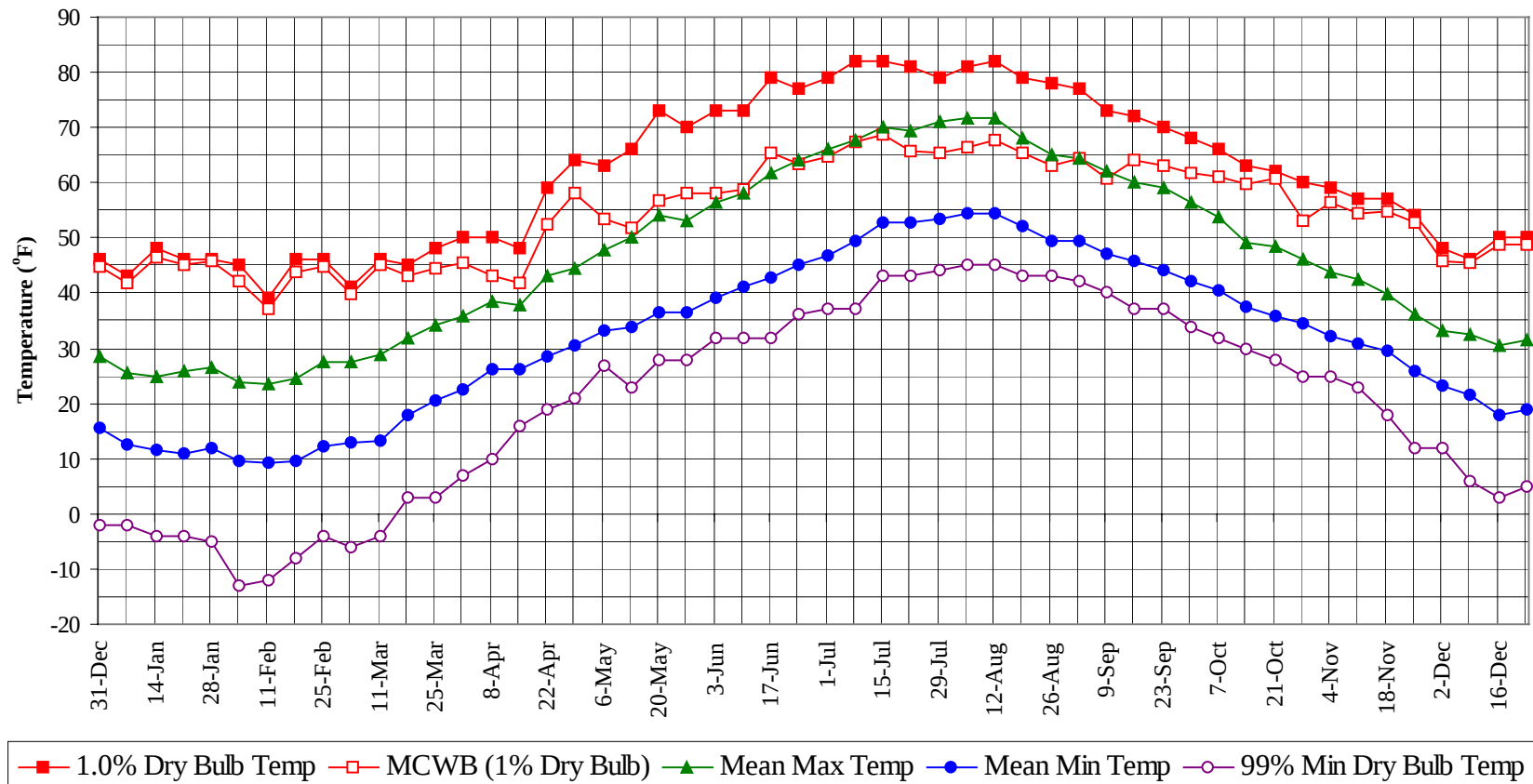
Dry-Bulb Temperature Hours For An Average Year (Sheet 5 of 5)

Period of Record = 1973 to 1996

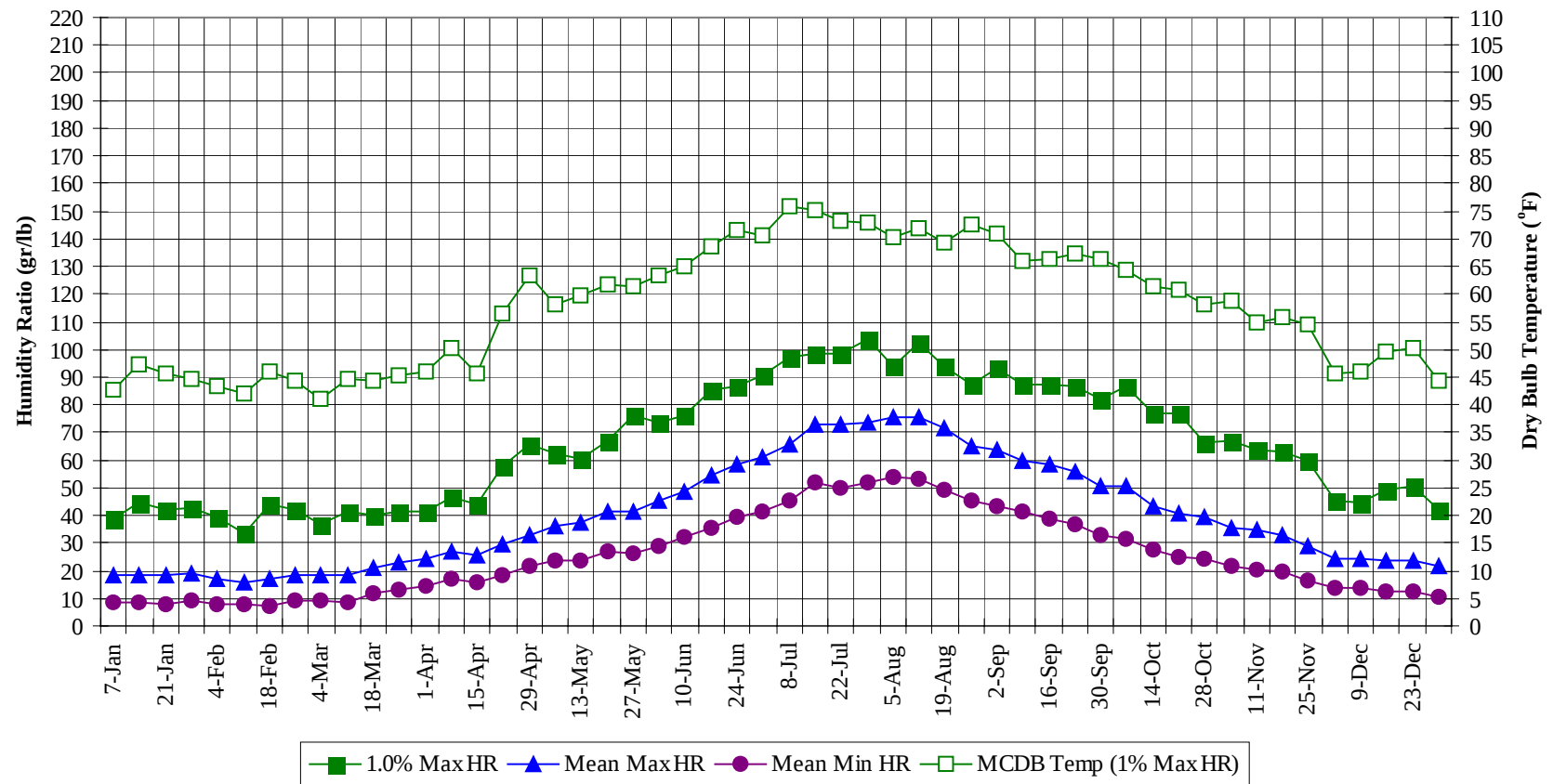
Annual Totals					
Temperature Range (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00		
90 / 94		0	0	0	71.7
85 / 89		2	1	3	69.6
80 / 84		17	6	23	67.2
75 / 79	0	63	29	92	64.3
70 / 74	4	122	76	202	61.7
65 / 69	31	131	98	260	59.8
60 / 64	124	223	197	543	56.9
55 / 59	217	240	232	688	52.8
50 / 54	289	252	258	798	48.6
45 / 49	305	252	272	829	43.8
40 / 44	218	198	207	622	39.5
35 / 39	338	310	316	964	35.2
30 / 34	425	352	385	1162	30.2
25 / 29	311	242	278	831	25.0
20 / 24	146	139	139	424	20.3
15 / 19	159	158	165	482	15.9
10 / 14	150	108	126	384	10.7
5 / 9	101	63	79	243	5.7
0 / 4	62	30	36	128	0.7
-5 / -1	23	11	14	48	-3.9
-10 / -6	14	4	6	24	-7.7
-15 / -11	3	1	1	5	-12.7
-20 / -16	1	1	0	2	-16.8
-25 / -21	0			0	-21.0

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.

Annual Summary of Temperatures

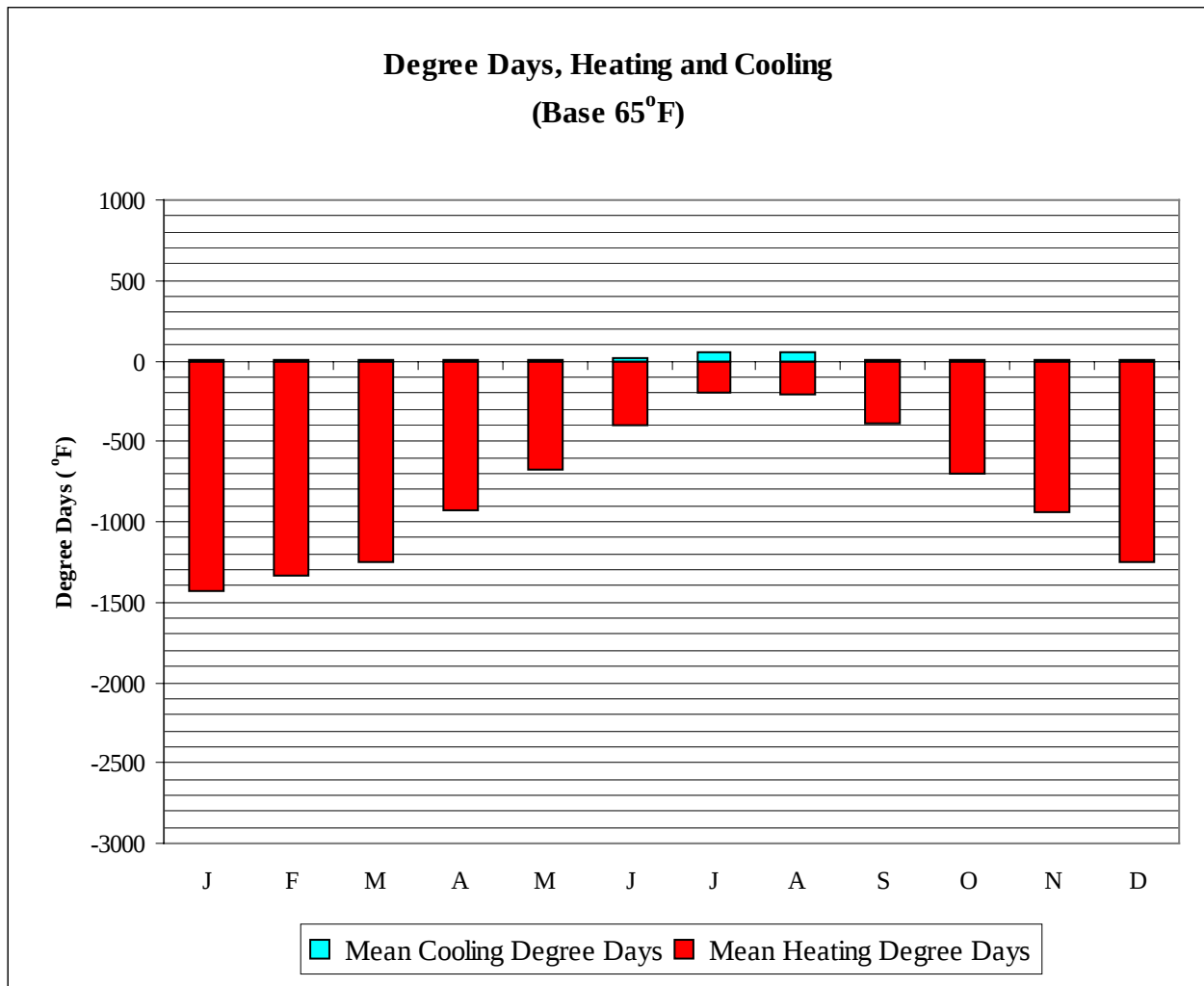


Long Term Humidity and Dry Bulb Temperature Summary



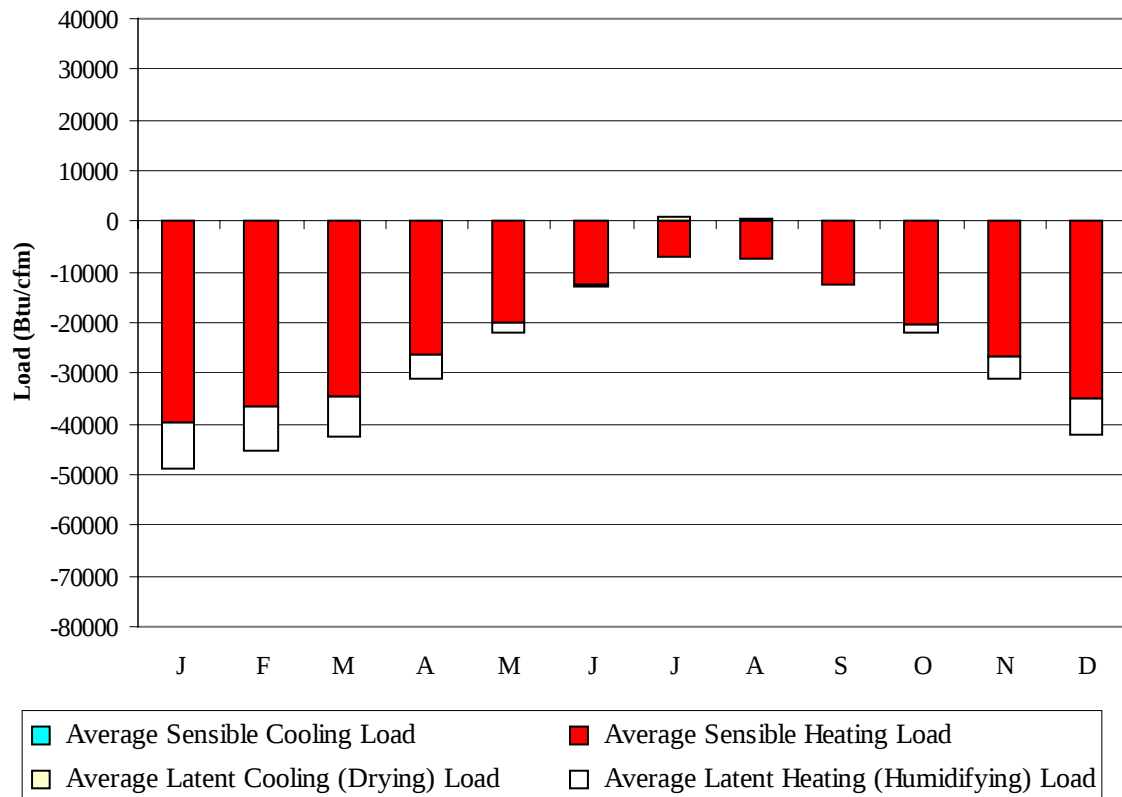
GANDER CN**WMO No. 718030****Long Term Dry Bulb Temperature and Humidity Summary**

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	43.0	41.9	25.5	12.7	-2.0	38.5	42.8	18.1	8.8
14-Jan	48.0	46.4	25.0	11.7	-4.0	44.8	47.2	18.2	8.5
21-Jan	46.0	45.0	25.8	11.0	-4.0	42.0	45.8	18.4	7.9
28-Jan	46.0	45.7	26.5	12.0	-5.0	42.7	44.5	19.1	9.0
4-Feb	45.0	42.2	24.0	9.6	-13.0	39.2	43.4	17.0	7.8
11-Feb	39.0	37.0	23.5	9.4	-12.0	33.6	42.0	15.7	7.8
18-Feb	46.0	43.8	24.6	9.5	-8.0	44.1	45.9	17.1	7.4
25-Feb	46.0	44.7	27.4	12.2	-4.0	42.0	44.3	18.4	9.1
4-Mar	41.0	39.9	27.6	12.9	-6.0	37.1	41.1	18.6	9.3
11-Mar	46.0	45.1	28.7	13.3	-4.0	41.3	44.7	18.4	8.6
18-Mar	45.0	43.2	31.8	17.7	3.0	39.9	44.4	21.2	11.6
25-Mar	48.0	44.4	34.3	20.4	3.0	41.3	45.2	23.2	13.1
1-Apr	50.0	45.4	35.7	22.7	7.0	41.3	46.1	24.0	14.4
8-Apr	50.0	43.2	38.4	26.2	10.0	46.9	50.4	27.1	17.1
15-Apr	48.0	41.9	37.9	26.1	16.0	44.1	45.7	25.3	15.7
22-Apr	59.0	52.4	43.1	28.4	19.0	58.1	56.5	29.5	18.1
29-Apr	64.0	58.1	44.5	30.5	21.0	65.8	63.2	32.5	21.8
6-May	63.0	53.3	47.9	33.3	27.0	62.3	58.3	36.0	23.6
13-May	66.0	51.6	50.1	34.0	23.0	60.2	59.6	37.4	23.8
20-May	73.0	56.9	54.2	36.5	28.0	67.2	61.7	41.1	26.6
27-May	70.0	58.0	53.2	36.4	28.0	76.3	61.4	41.2	26.5
3-Jun	73.0	58.1	56.5	39.0	32.0	73.5	63.5	45.4	29.0
10-Jun	73.0	58.6	58.1	41.1	32.0	76.3	64.9	48.8	31.9
17-Jun	79.0	65.4	61.6	42.9	32.0	85.4	68.7	54.2	35.4
24-Jun	77.0	63.6	64.1	45.3	36.0	86.8	71.6	58.6	39.3
1-Jul	79.0	64.7	66.1	46.9	37.0	90.3	70.5	61.1	41.2
8-Jul	82.0	67.5	67.8	49.4	37.0	97.3	75.9	65.8	45.6
15-Jul	82.0	68.6	69.9	52.8	43.0	98.7	75.1	73.0	51.6
22-Jul	81.0	65.6	69.5	52.7	43.0	98.7	73.2	73.2	50.2
29-Jul	79.0	65.5	71.0	53.6	44.0	103.6	72.9	73.9	51.8
5-Aug	81.0	66.3	71.9	54.4	45.0	93.8	70.2	75.4	54.1
12-Aug	82.0	67.7	71.7	54.4	45.0	102.2	72.0	75.3	53.1
19-Aug	79.0	65.5	68.0	52.2	43.0	93.8	69.3	71.4	49.3
26-Aug	78.0	63.0	65.1	49.6	43.0	87.5	72.6	64.8	45.3
2-Sep	77.0	64.4	64.6	49.4	42.0	93.1	71.1	63.7	43.2
9-Sep	73.0	60.6	62.0	47.3	40.0	87.5	65.9	60.0	41.7
16-Sep	72.0	64.0	60.2	45.7	37.0	87.5	66.2	58.4	38.9
23-Sep	70.0	63.0	59.0	44.3	37.0	86.8	67.2	55.9	37.0
30-Sep	68.0	61.7	56.5	42.1	34.0	81.9	66.2	50.7	32.7
7-Oct	66.0	61.0	53.9	40.4	32.0	86.8	64.3	50.4	31.6
14-Oct	63.0	59.7	49.3	37.4	30.0	77.0	61.5	43.0	27.8
21-Oct	62.0	60.8	48.5	35.9	28.0	77.0	60.9	40.9	25.2
28-Oct	60.0	53.0	46.2	34.5	25.0	66.5	58.1	39.7	24.6
4-Nov	59.0	56.3	43.7	32.2	25.0	67.2	58.6	35.3	21.5
11-Nov	57.0	54.4	42.6	30.9	23.0	63.7	54.8	34.8	20.4
18-Nov	57.0	54.7	39.7	29.4	18.0	63.0	56.0	33.1	20.0
25-Nov	54.0	52.9	36.3	26.0	12.0	59.5	54.5	28.7	16.5
2-Dec	48.0	45.8	33.2	23.0	12.0	45.5	45.6	24.5	14.0
9-Dec	46.0	45.5	32.4	21.5	6.0	44.8	46.1	24.4	13.8
16-Dec	50.0	48.9	30.4	17.7	3.0	49.0	49.5	23.3	12.2
23-Dec	50.0	48.8	31.4	19.0	5.0	50.4	50.3	24.0	12.2
31-Dec	46.0	44.7	28.4	15.6	-2.0	42.0	44.4	21.4	10.7



	Mean Cooling Degree Days (°F)	Mean Heating Degree Days (°F)
JAN	0	1436
FEB	0	1330
MAR	0	1248
APR	0	928
MAY	4	676
JUN	19	400
JUL	59	199
AUG	48	211
SEP	6	395
OCT	0	698
NOV	0	937
DEC	0	1251
ANN	137	9709

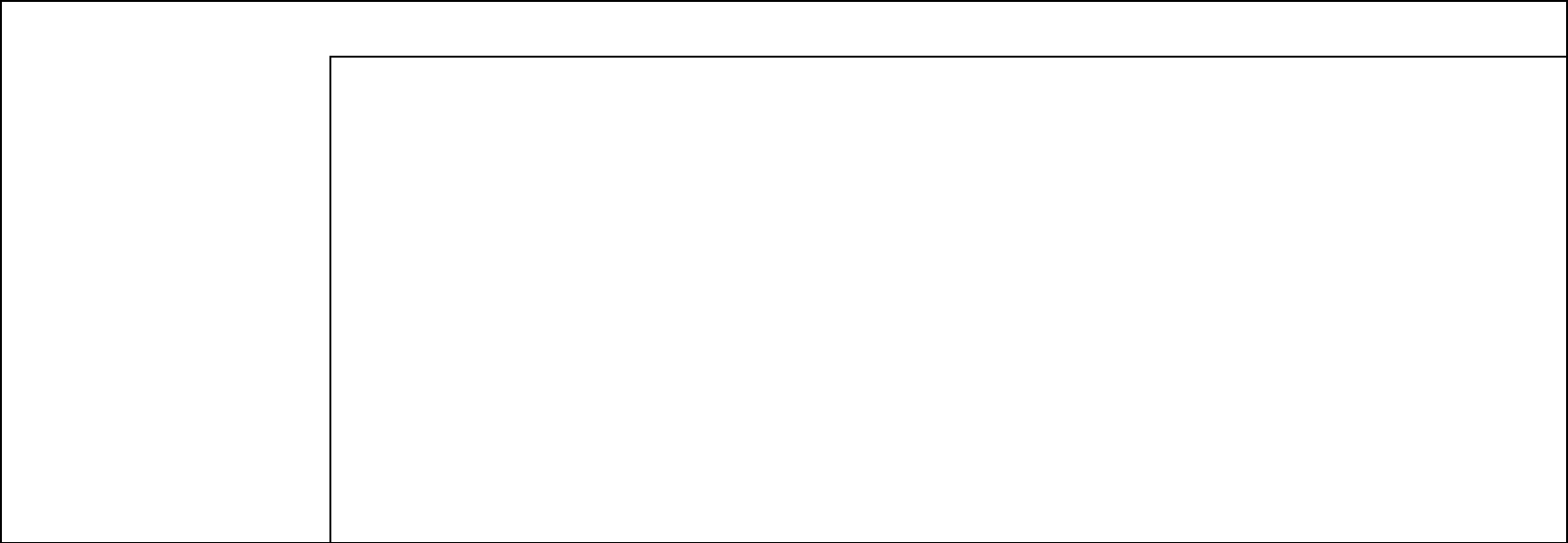
Average Ventilation and Infiltration Loads
(Outside Air vs. 75°F, 60% RH summer; 68°F, 30% RH winter)



	Average Sensible Cooling Load	Average Sensible Heating Load	Average Latent Cooling Load	Average Latent Heating Load
	(Btu/cfm)	(Btu/cfm)	(Btu/cfm)	(Btu/cfm)
JAN	0	-39628	0	-9327
FEB	0	-36676	0	-8684
MAR	0	-34763	0	-7779
APR	0	-26372	0	-4549
MAY	2	-19882	1	-1912
JUN	42	-12466	55	-318
JUL	179	-6926	550	-4
AUG	124	-7344	432	-5
SEP	4	-12476	68	-219
OCT	0	-20492	13	-1679
NOV	0	-26618	0	-4436
DEC	0	-34839	0	-7328
ANN	351	-278482	1119	-46240

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

No Solar Radiation
Data Available

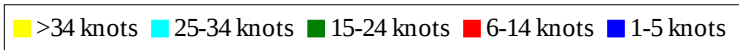
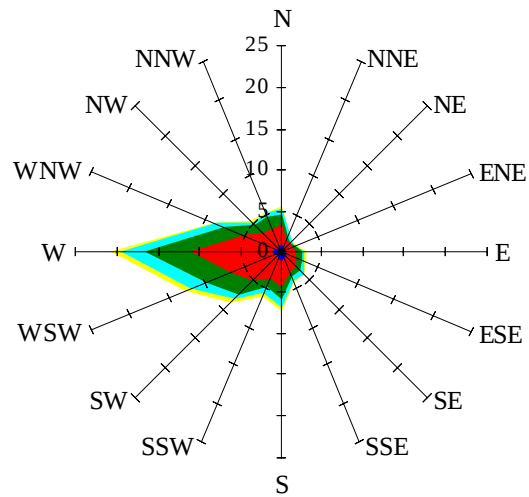


Average Annual Solar Heat and Illumination – Nearest Available Site

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

Wind Summary - December, January, and February

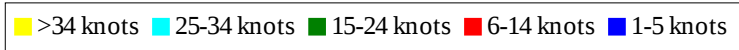
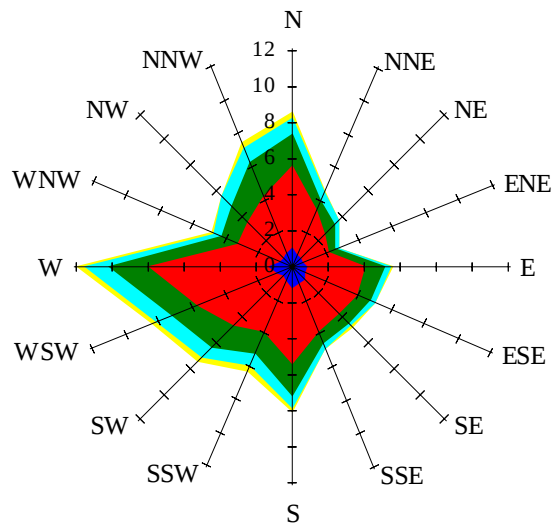
Labels of Percent Frequency on North Axis



Percent Calm = 1.66

Wind Summary - March, April, and May

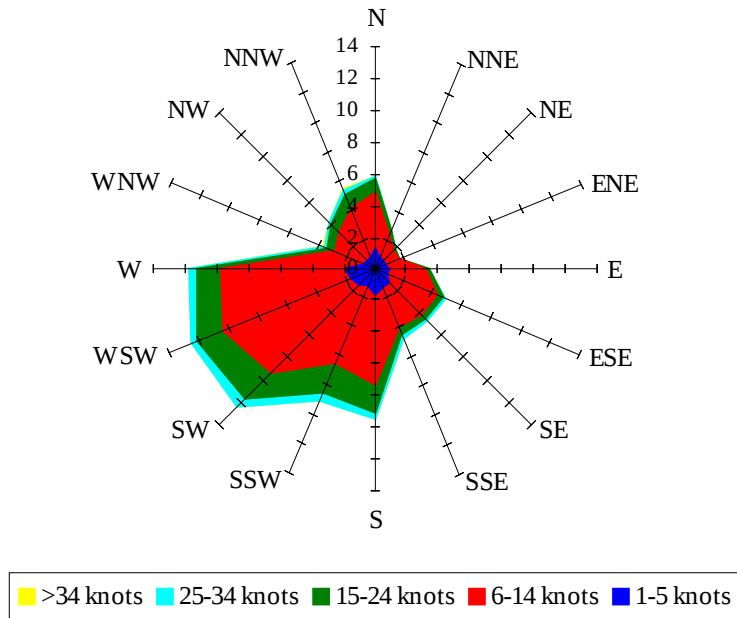
Labels of Percent Frequency on North Axis



Percent Calm = 1.92

Wind Summary - June, July, and August

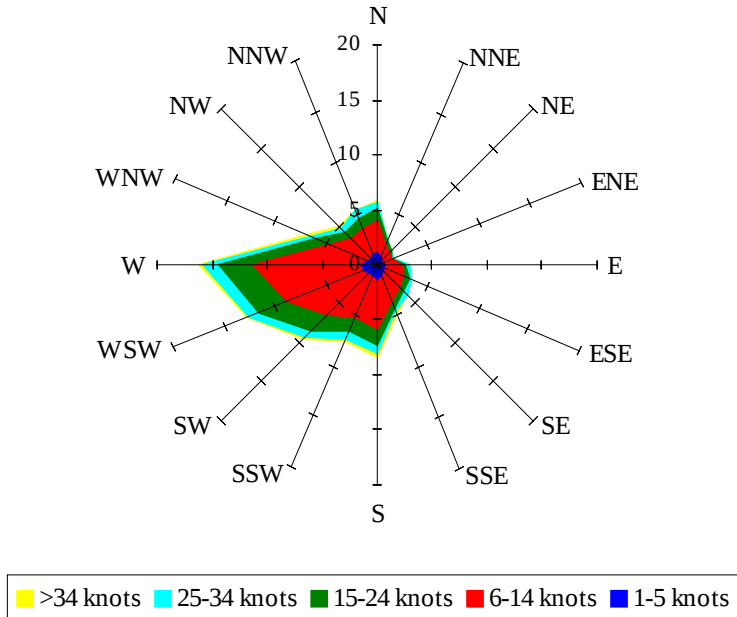
Labels of Percent Frequency on North Axis



Percent Calm = 2.17

Wind Summary - September, October, and November

Labels of Percent Frequency on North Axis



Percent Calm = 2.00