

VANCOUVER CN

Latitude = 49.18 N

Longitude = 123.10 W

Period of Record = 1973 to 1996

WMO No. 718920

Elevation = 7 feet

Average Pressure = 29.99 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	82	67	75	7.2	WNW
0.4% Occurrence	77	65	73	7.5	WNW
1.0% Occurrence	73	63	70	7.7	W
2.0% Occurrence	72	63	70	7.7	W
Mean Daily Range	12	-	-	-	-
97.5% Occurrence	28	26	16	4.1	E
99.0% Occurrence	23	21	12	4.9	E
99.6% Occurrence	19	17	9	5.6	E
Median of Extreme Lows	14	12	6	6.9	E
	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	69	79	86	7.5	W
0.4% Occurrence	66	74	80	7.5	WNW
1.0% Occurrence	65	73	78	7.6	W
2.0% Occurrence	63	70	73	7.4	W
	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	91	74	0.61	7.3	W
0.4% Occurrence	85	72	0.57	7.6	WNW
1.0% Occurrence	80	70	0.54	7.0	WNW
2.0% Occurrence	75	67	0.50	6.9	W
Air Conditioning/ Humid Area Criteria	# of Hours	T ≥ 93°F	T ≥ 80°F	T _{wb} ≥ 73°F	T _{wb} ≥ 67°F
		0	10	0	22

Other Site Data

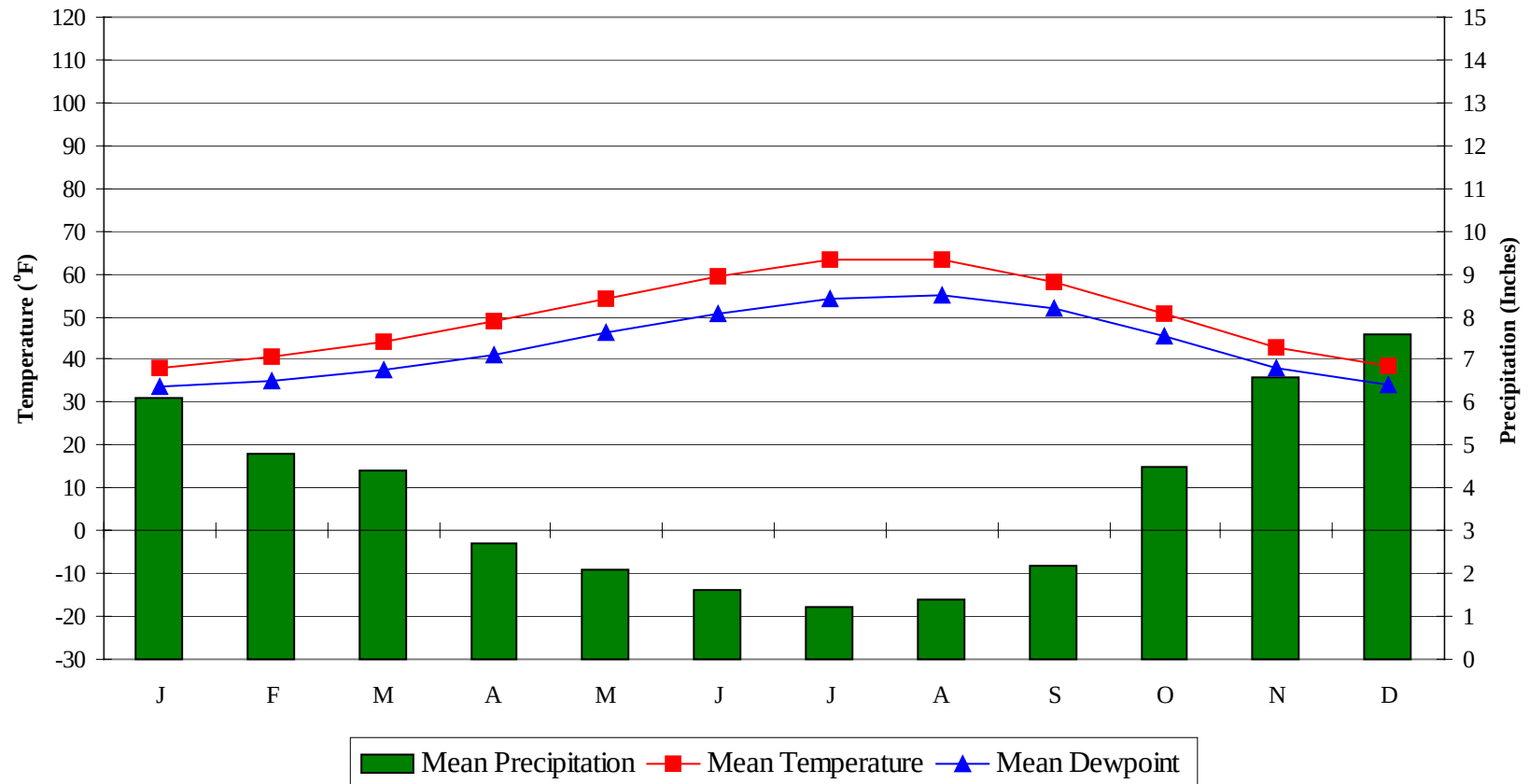
Weather Region	Rain Rate 100 Year Recurrence (in./hr)	Basic Wind Speed 3 sec gust @ 33 ft 50 Year Recurrence (mph)	Ventilation Cooling Load Index (Ton-hr/cfm/yr) Base 75°F-RH 60% Latent + Sensible
6	N/A	N/A	0.0 + 0.0
Ground Water Temperature (°F) 50 Foot Depth *	Frost Depth 50 Year Recurrence (in.)	Ground Snow Load 50 Year Recurrence (lb/ft ²)	Average Annual Freeze-Thaw Cycles (#)
52.7	N/A	N/A	30

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

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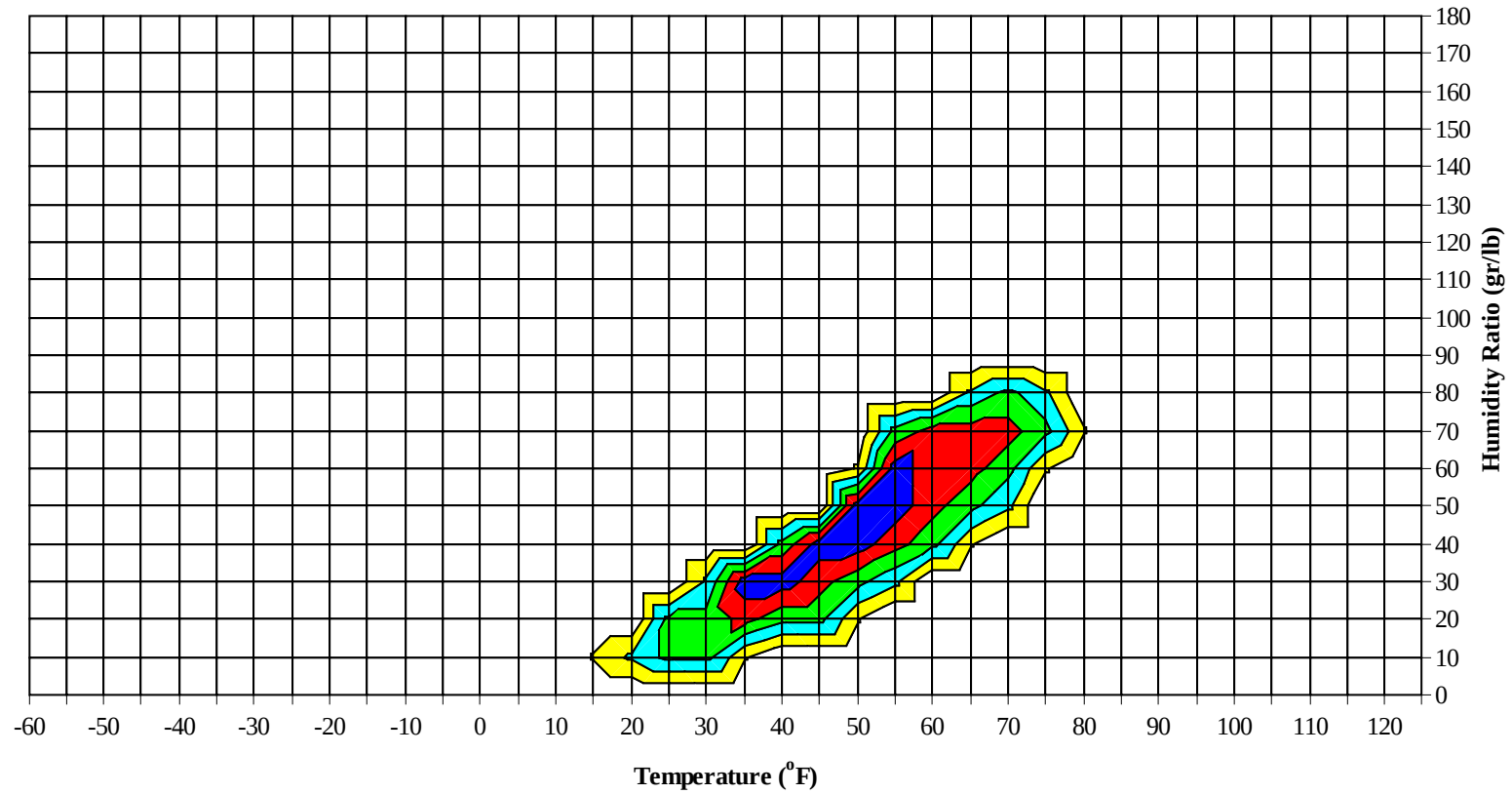
Average Annual Climate



VANCOUVER CN

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Long Term Psychrometric Summary

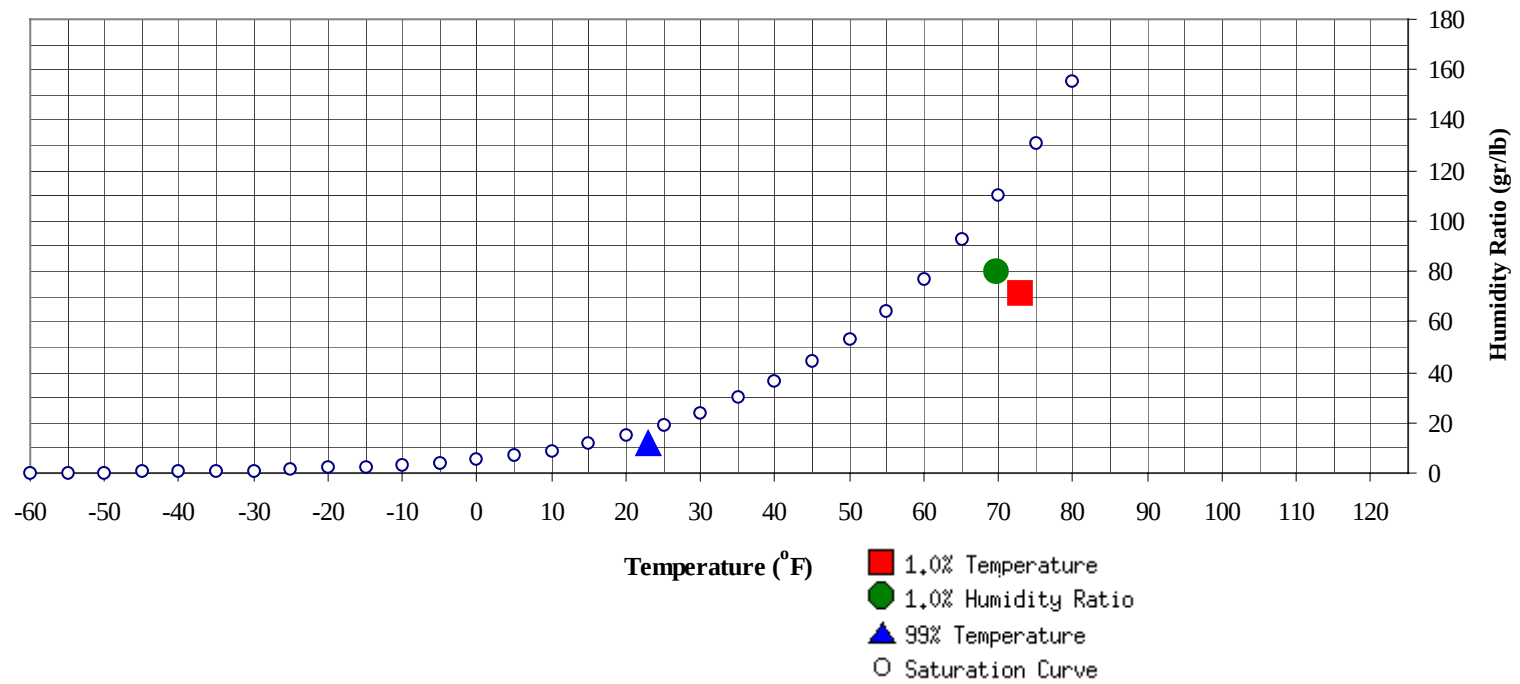


- 50% of all observations
- 80% of all observations
- 95% of all observations
- 97.5% of all observations
- 99% of all observations

VANCOUVER CN

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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)
	23	12.1	7.4		79.8	69.7	64	60.8	29.2

1.0% Dry Bulb	(°F)	MCHR (gr/lb)	MCWB (°F)	Enthalpy (btu/lb)
	73	71.1	63.2	28.6

VANCOUVER CN

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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		
85 / 89															
80 / 84															
75 / 79															
70 / 74															
65 / 69															
60 / 64							0		0	49.5		1		1	49.9
55 / 59	0	1	0	1	51.9	0	3	0	3	50.2	0	12	3	15	49.6
50 / 54	5	16	9	30	48.2	6	28	11	45	47.8	7	67	31	105	47.1
45 / 49	38	64	45	147	44.3	39	80	60	178	43.8	64	119	107	291	43.4
40 / 44	46	56	54	156	40.4	48	55	58	161	39.8	74	37	70	182	39.6
35 / 39	63	60	68	191	35.8	63	37	60	161	35.6	72	8	32	112	35.6
30 / 34	47	33	41	121	30.9	44	16	26	86	30.4	26	2	4	32	30.7
25 / 29	27	12	20	59	25.2	17	3	7	27	24.9	4	1	1	6	25.4
20 / 24	11	4	7	22	20.4	5	0	1	6	19.9	1	0		1	19.8
15 / 19	8	2	3	13	16.2	2	1	1	4	14.8	0			0	18.0
10 / 14	2	0	1	3	11.7	1	0	0	1	10.3					
5 / 9															

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. 718920

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		
85 / 89						0	0	0	66.5						
80 / 84						0	0	0	66.0		1	0	1	66.3	
75 / 79						1	0	1	62.0		0	5	2	7	63.9
70 / 74		0	0	0	55.5	0	7	3	10	60.2	1	22	12	35	61.8
65 / 69		2	1	3	55.8	1	16	7	24	58.1	4	42	25	70	59.2
60 / 64	0	14	4	18	54.3	5	54	34	93	55.4	25	97	76	198	56.2
55 / 59	5	53	28	86	50.8	36	100	82	217	51.8	106	63	90	258	53.3
50 / 54	38	101	81	220	47.3	111	61	91	263	48.6	91	10	34	134	49.9
45 / 49	103	63	94	259	43.7	78	8	30	116	44.7	13	0	2	15	45.5
40 / 44	63	7	29	99	40.0	17	0	2	19	40.8	1		0	1	40.7
35 / 39	30	0	4	34	36.3	1		0	1	37.4	0			0	38.0
30 / 34	2	0	0	2	31.7	0			0	32.0					
25 / 29	0			0	26.0										
20 / 24															
15 / 19															
10 / 14															
5 / 9															

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.

VANCOUVER CN

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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		
85 / 89		0	0	0	68.5		0	0	0	69.5					
80 / 84		3	1	4	67.1		2	1	3	67.6		0	0	0	65.0
75 / 79	0	17	8	25	65.0	0	17	8	25	65.4		3	1	4	63.8
70 / 74	3	63	38	104	62.4	2	65	32	98	62.7	0	20	4	24	61.8
65 / 69	11	72	52	135	60.0	11	74	49	134	60.3	1	43	14	58	60.0
60 / 64	77	70	96	243	57.6	83	73	101	256	58.1	17	95	63	176	57.3
55 / 59	128	21	49	198	54.5	123	18	53	194	54.9	102	69	108	280	54.3
50 / 54	28	1	5	34	51.0	27	0	4	31	51.0	90	9	44	143	50.5
45 / 49	1	0	0	1	46.3	2		0	2	45.5	26		6	32	45.6
40 / 44	0			0							3		0	3	41.1
35 / 39											0			0	37.8
30 / 34															
25 / 29															
20 / 24															
15 / 19															
10 / 14															
5 / 9															

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.

VANCOUVER CN

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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		
85 / 89															
80 / 84															
75 / 79															
70 / 74		1		1	61.7										
65 / 69	0	3	0	3	58.6										
60 / 64	1	20	4	25	56.1		1	0	1	56.6					
55 / 59	20	82	39	140	53.0	3	8	4	15	53.0	0	1	0	1	52.8
50 / 54	82	105	108	295	49.4	23	46	30	98	48.8	8	13	9	30	48.8
45 / 49	84	31	73	188	45.1	62	96	78	235	44.2	43	69	50	162	44.4
40 / 44	38	4	19	61	40.8	58	52	61	171	40.2	47	61	55	163	40.2
35 / 39	20	1	5	26	36.5	49	23	40	113	35.9	64	63	70	197	36.0
30 / 34	2	1	1	4	30.1	26	9	17	52	30.5	48	23	43	114	30.9
25 / 29	1	0	0	1	23.7	13	3	6	22	24.9	26	9	11	46	25.7
20 / 24	0			0	18.0	3	1	2	6	19.3	5	4	4	13	19.9
15 / 19						2	1	2	5	15.3	4	3	5	12	15.6
10 / 14						1	0	1	2	10.4	3	1	2	6	10.4
5 / 9						0	0	0	0	7.0	0	0	0	0	6.8

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.

VANCOUVER CN

WMO No. 718920

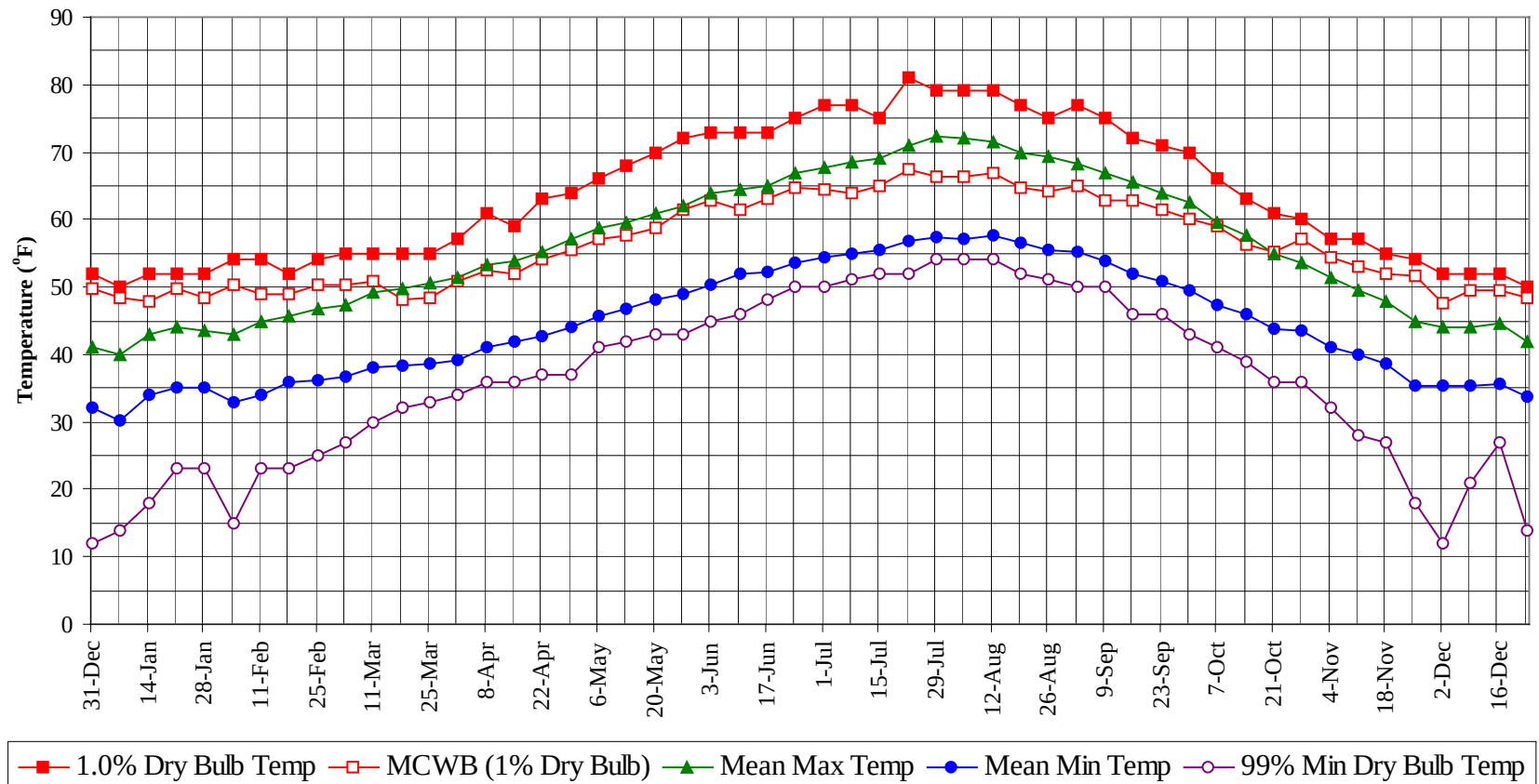
Dry-Bulb Temperature Hours For An Average Year (Sheet 5 of 5)

Period of Record = 1973 to 1996

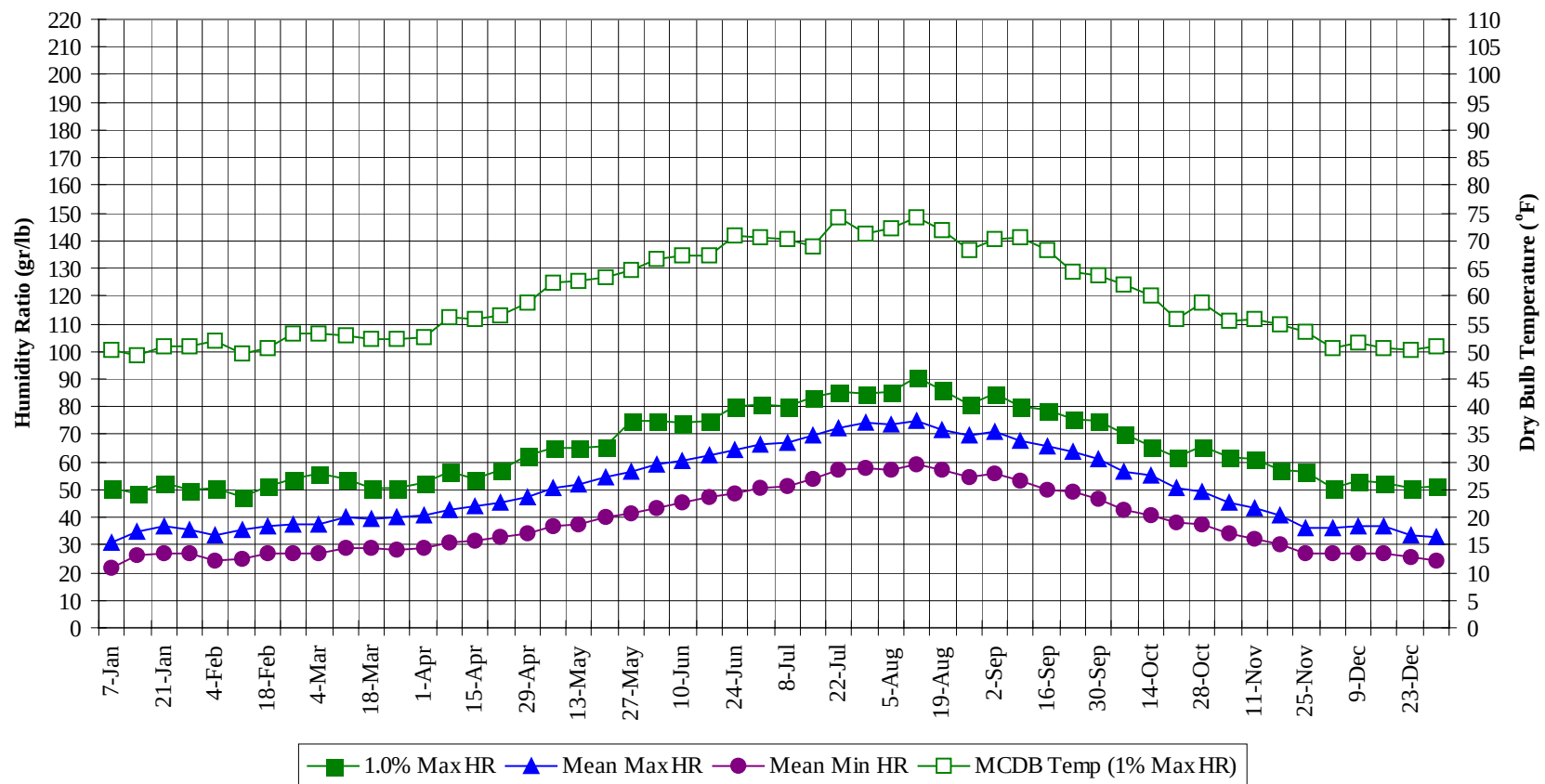
Annual Totals					
Temperature Range (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00		
85 / 89		0	0	0	68.7
80 / 84		7	2	9	67.1
75 / 79	0	44	19	63	64.9
70 / 74	6	177	87	270	62.3
65 / 69	27	252	147	425	59.8
60 / 64	207	426	376	1008	57.1
55 / 59	519	431	455	1405	53.4
50 / 54	515	458	453	1426	48.9
45 / 49	552	530	547	1628	44.1
40 / 44	396	273	348	1017	40.1
35 / 39	364	193	281	838	35.8
30 / 34	197	84	133	413	30.7
25 / 29	88	28	46	162	25.2
20 / 24	26	10	14	50	20.1
15 / 19	17	6	10	33	15.7
10 / 14	7	2	3	12	10.7
5 / 9	1	0	0	1	6.9

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

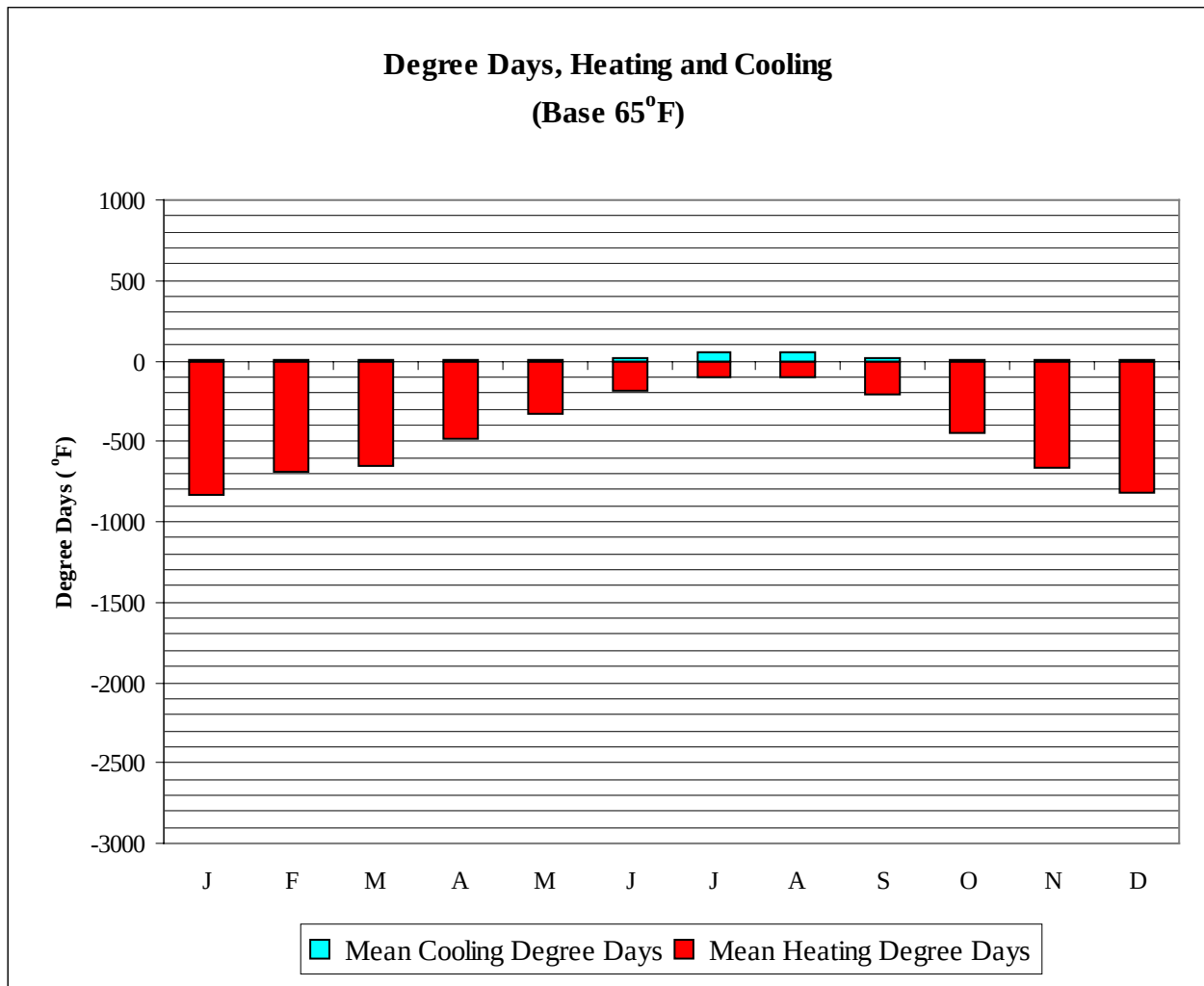


Long Term Humidity and Dry Bulb Temperature Summary



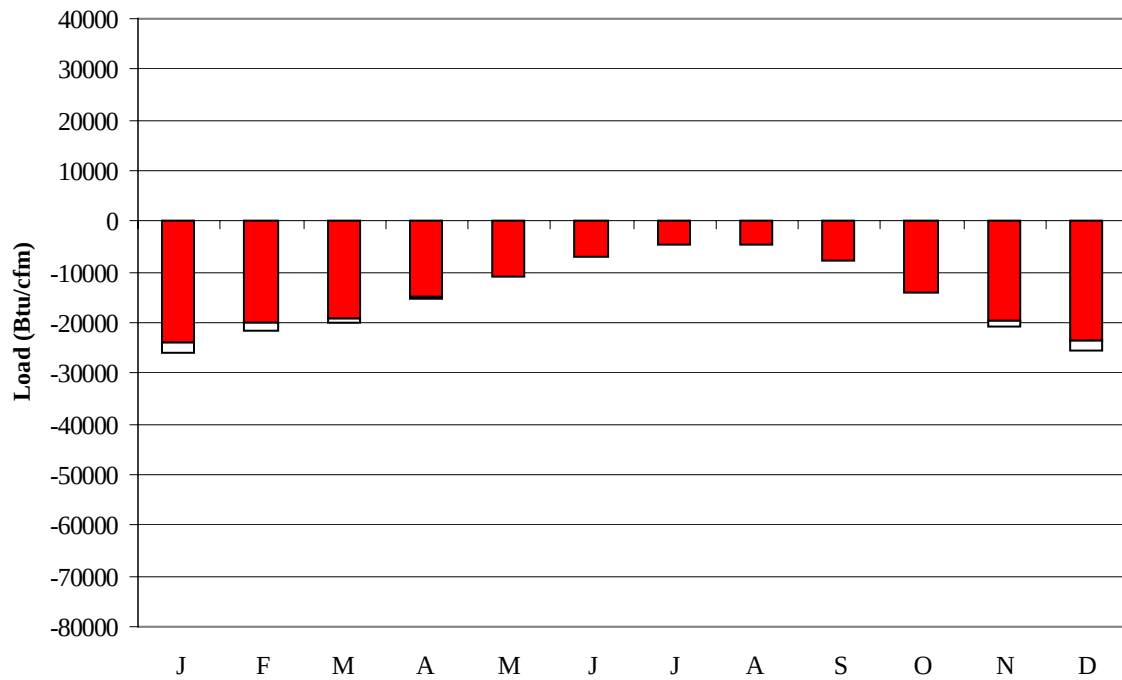
VANCOUVER CN**WMO No. 718920****Long Term Dry Bulb Temperature and Humidity Summary**

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	50.0	48.5	40.0	30.1	14.0	50.4	50.2	30.8	21.9
14-Jan	52.0	47.7	42.9	34.0	18.0	48.3	49.2	35.0	26.1
21-Jan	52.0	49.7	44.2	35.2	23.0	52.5	51.0	36.5	27.1
28-Jan	52.0	48.3	43.5	35.0	23.0	49.7	51.0	35.2	26.6
4-Feb	54.0	50.3	43.1	33.0	15.0	50.4	51.8	33.6	24.3
11-Feb	54.0	48.9	44.9	34.1	23.0	47.6	49.6	35.6	25.3
18-Feb	52.0	48.9	45.8	35.9	23.0	51.1	50.6	36.5	26.7
25-Feb	54.0	50.2	46.8	36.2	25.0	53.9	53.1	37.3	27.2
4-Mar	55.0	50.3	47.4	36.6	27.0	56.0	53.2	37.7	27.1
11-Mar	55.0	50.8	49.2	38.0	30.0	53.9	52.8	39.9	28.7
18-Mar	55.0	48.3	49.7	38.3	32.0	50.4	52.1	39.3	28.6
25-Mar	55.0	48.4	50.6	38.5	33.0	50.4	52.2	39.9	28.5
1-Apr	57.0	50.8	51.3	39.3	34.0	52.5	52.5	40.5	29.0
8-Apr	61.0	52.6	53.2	41.0	36.0	56.7	56.1	42.7	30.8
15-Apr	59.0	52.0	54.0	41.9	36.0	53.9	55.8	44.1	31.6
22-Apr	63.0	54.1	55.2	42.8	37.0	57.4	56.5	45.4	33.0
29-Apr	64.0	55.6	57.0	43.9	37.0	62.3	58.7	47.5	34.0
6-May	66.0	57.0	58.7	45.7	41.0	65.1	62.3	50.3	36.5
13-May	68.0	57.6	59.7	46.8	42.0	65.1	62.7	52.2	37.8
20-May	70.0	58.6	60.9	48.1	43.0	65.8	63.2	54.5	40.0
27-May	72.0	61.4	62.1	48.9	43.0	74.9	64.7	56.4	41.5
3-Jun	73.0	62.9	63.8	50.4	45.0	74.9	66.6	59.0	43.7
10-Jun	73.0	61.5	64.4	51.8	46.0	74.2	67.2	60.5	45.4
17-Jun	73.0	63.0	65.0	52.2	48.0	74.9	67.4	62.1	47.3
24-Jun	75.0	64.6	66.8	53.6	50.0	79.8	70.8	64.6	48.9
1-Jul	77.0	64.4	67.7	54.5	50.0	80.5	70.7	66.5	50.7
8-Jul	77.0	63.8	68.4	54.8	51.0	79.8	70.3	67.0	51.1
15-Jul	75.0	64.9	69.1	55.6	52.0	83.3	68.8	69.7	54.1
22-Jul	81.0	67.4	70.9	56.9	52.0	85.4	74.2	72.5	57.2
29-Jul	79.0	66.3	72.4	57.5	54.0	84.7	71.2	74.0	58.0
5-Aug	79.0	66.5	71.9	57.2	54.0	85.4	72.1	73.5	57.4
12-Aug	79.0	66.9	71.6	57.6	54.0	90.3	74.2	74.9	59.3
19-Aug	77.0	64.8	69.9	56.5	52.0	86.1	72.0	71.5	56.8
26-Aug	75.0	64.2	69.3	55.5	51.0	80.5	68.4	69.6	54.8
2-Sep	77.0	65.0	68.2	55.2	50.0	84.7	70.2	71.0	55.5
9-Sep	75.0	62.7	66.9	53.9	50.0	79.8	70.6	67.9	53.1
16-Sep	72.0	62.9	65.5	51.9	46.0	79.1	68.2	65.6	49.8
23-Sep	71.0	61.6	63.8	50.9	46.0	75.6	64.3	63.6	49.4
30-Sep	70.0	60.2	62.6	49.4	43.0	74.9	63.6	61.2	46.5
7-Oct	66.0	58.9	59.5	47.3	41.0	70.0	62.1	56.8	42.7
14-Oct	63.0	56.3	57.5	46.0	39.0	65.8	60.0	55.0	41.0
21-Oct	61.0	55.1	54.9	43.7	36.0	61.6	55.8	50.8	37.9
28-Oct	60.0	57.0	53.6	43.6	36.0	65.8	58.7	49.5	37.2
4-Nov	57.0	54.3	51.4	41.1	32.0	61.6	55.4	45.6	34.0
11-Nov	57.0	52.9	49.6	39.9	28.0	60.9	55.7	43.5	32.2
18-Nov	55.0	52.0	47.8	38.5	27.0	57.4	54.8	40.7	30.2
25-Nov	54.0	51.7	44.8	35.3	18.0	56.7	53.7	36.2	26.7
2-Dec	52.0	47.5	44.1	35.3	12.0	50.4	50.4	36.4	27.0
9-Dec	52.0	49.4	44.0	35.4	21.0	53.2	51.7	36.6	27.2
16-Dec	52.0	49.5	44.7	35.8	27.0	52.5	50.7	37.1	27.2
23-Dec	50.0	48.3	42.0	33.7	14.0	50.4	50.4	33.8	25.3
31-Dec	52.0	49.7	41.1	32.2	12.0	51.1	50.9	32.8	24.4



	Mean Cooling Degree Days (°F)	Mean Heating Degree Days (°F)
JAN	0	834
FEB	0	692
MAR	0	648
APR	0	489
MAY	5	334
JUN	18	189
JUL	52	105
AUG	50	104
SEP	12	215
OCT	0	451
NOV	0	668
DEC	0	817
ANN	138	5546

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

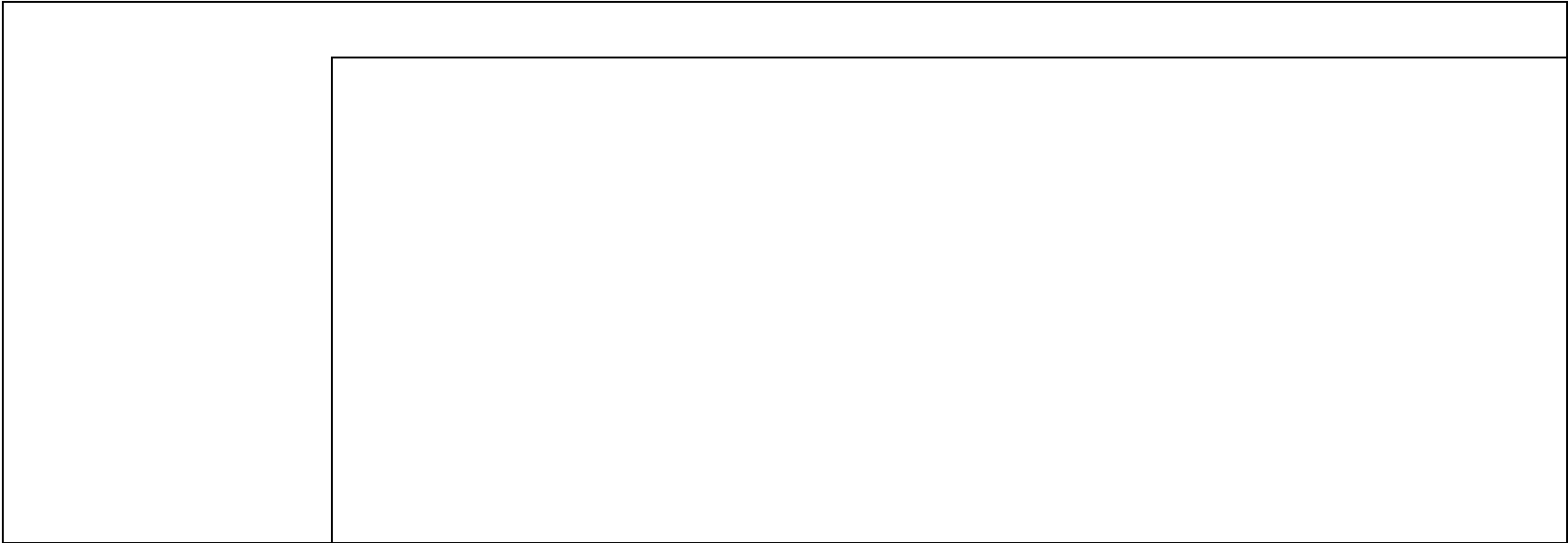


■ Average Sensible Cooling Load ■ Average Sensible Heating Load
■ Average Latent Cooling (Drying) Load ■ Average Latent Heating (Humidifying) Load

	Average Sensible Cooling Load	Average Sensible Heating Load	Average Latent Cooling Load	Average Latent Heating Load
	(Btu/cfm)	(Btu/cfm)	(Btu/cfm)	(Btu/cfm)
JAN	0	-24026	0	-2067
FEB	0	-20140	0	-1515
MAR	0	-19216	0	-880
APR	0	-14990	0	-221
MAY	3	-10996	0	-19
JUN	17	-6956	14	-1
JUL	68	-4437	85	0
AUG	60	-4429	128	0
SEP	9	-7702	9	-3
OCT	0	-14103	0	-109
NOV	0	-19645	0	-1066
DEC	0	-23595	0	-1813
ANN	157	-170235	236	-7694

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

No Solar Radiation
Data Available

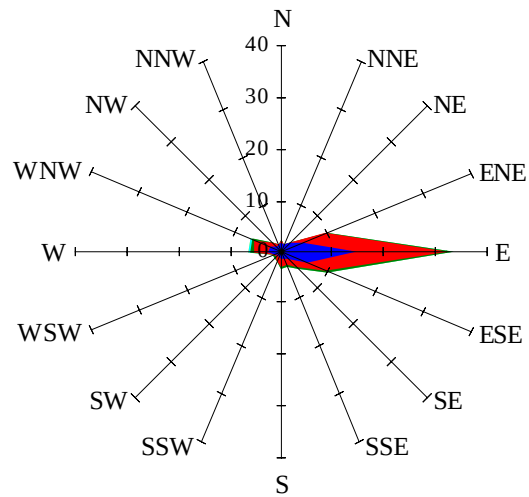


Average Annual Solar Heat and Illumination – Nearest Available Site

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

Wind Summary - December, January, and February

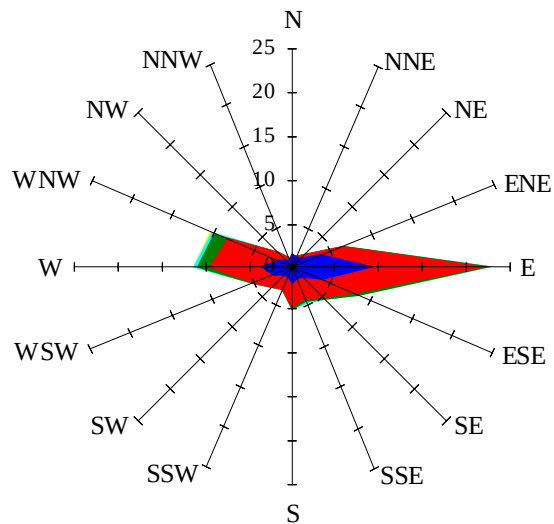
Labels of Percent Frequency on North Axis



Percent Calm = 10.82

Wind Summary - March, April, and May

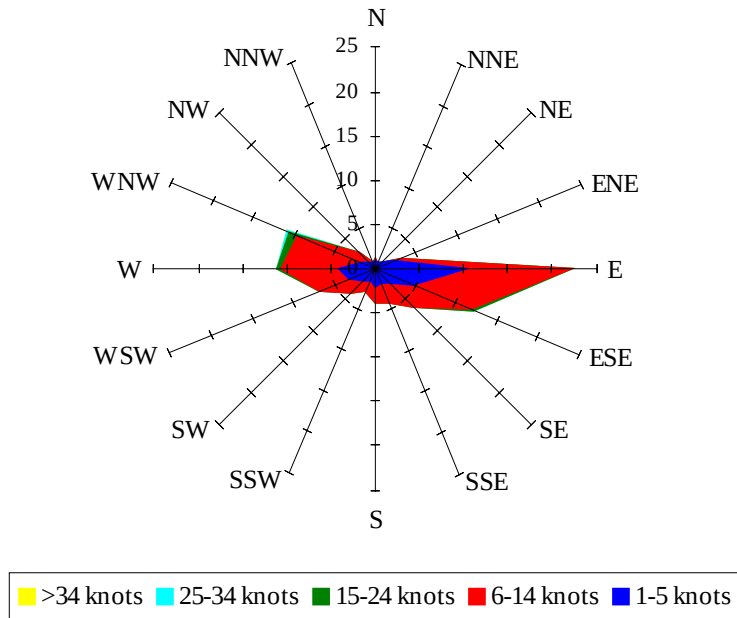
Labels of Percent Frequency on North Axis



Percent Calm = 8.38

Wind Summary - June, July, and August

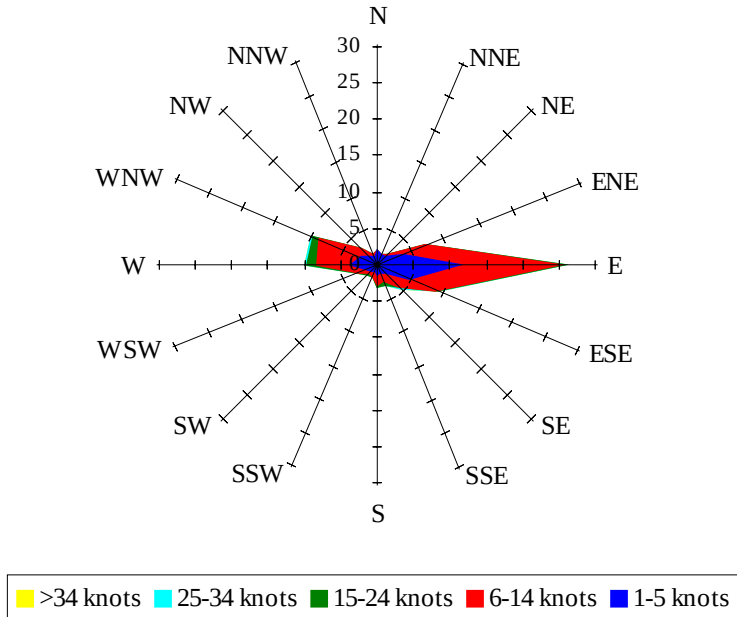
Labels of Percent Frequency on North Axis



Percent Calm = 7.56

Wind Summary - September, October, and November

Labels of Percent Frequency on North Axis



Percent Calm = 11.82