BROMMA, SW	
Latitude = 59.35 N	Station ID = ICAO_ESSB
Longitude = 17.94 E	Elevation = 14 Meters
Period of Record = 1988 To 2017	Average Pressure = 1010 mb

Design Criteria Data

	Mean Coincident (Average) Values				
Dry Bulb Temperature (T)	**Design Value (°C)**	**Wet Bulb Temperature (°C)**	**Humidity Ratio (g/kg)**	**Wind Speed (m/s)**	**Prevailing Direction (NSEW)**
Median of Extreme Highs	29	18	9	3.9	W
0.4% Occurrence	27	18	9	3.8	SSW
1.0% Occurrence	25	17	9	3.9	W
2.0% Occurrence	23	16	9	3.9	W
Mean Daily Range	7	-	-	-	W
97.5% Occurrence	-8	-8	2	2.5	W
99.0% Occurrence	-12	-13	1	1.9	WNW
99.6% Occurrence	-15	-15	1	1.3	W
Median of Extreme Lows	-18	-18	1	1.2	W

Wet Bulb Temperature (T_{wb})	**Design Value (°C)**	**Dry Bulb Temperature (°C)**	**Humidity Ratio (g/kg)**	**Wind Speed (m/s)**	**Prevailing Direction (NSEW)**
Median of Extreme Highs	24	28	16	4	VRB
0.4% Occurrence	21	25	13	3.4	ESE
1.0% Occurrence	20	23	12	3.3	SE
2.0% Occurrence	19	23	11	3.4	SE

Humidity Ratio (HR)	**Design Value (g/kg)**	**Dry Bulb Temperature (°C)**	**Vapor Pressure (kPa)**	**Wind Speed (m/s)**	**Prevailing Direction (NSEW)**
Median of Extreme Highs	14	22	73.87	2.7	VRB
0.4% Occurrence	13	21	67.62	3	SE
1.0% Occurrence	12	20	66.86	2.9	SE
2.0% Occurrence	11	20	61.65	3	SE

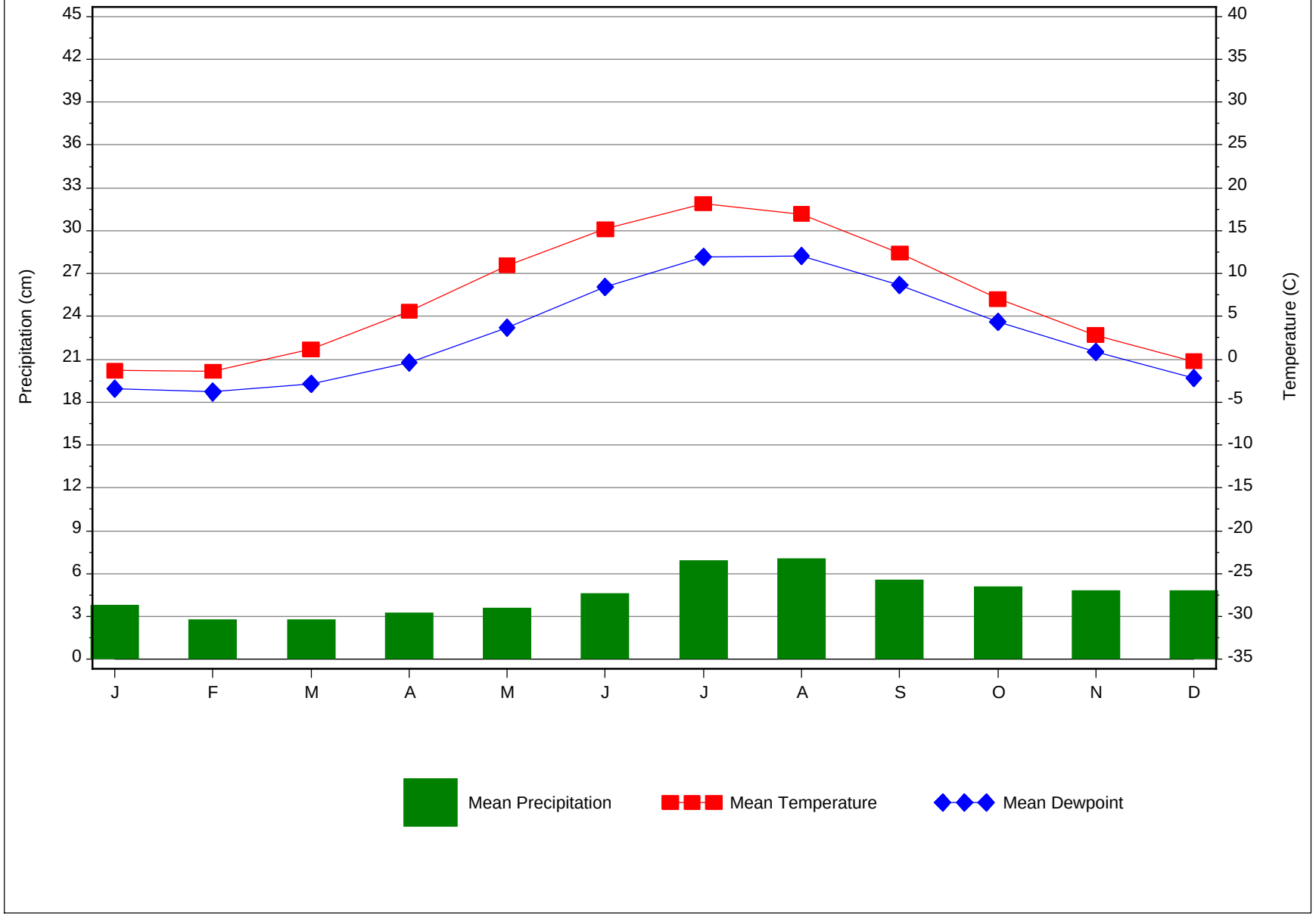
Air Conditioning/ Humid Area Criteria	**Threshold**	**T ≥ 33.9 °C**	**T ≥ 26.7 °C**	**Twb≥22.8 °C**	**Twb≥19.4 °C**
	# of Hours	0	44	0	46

Other Site Data

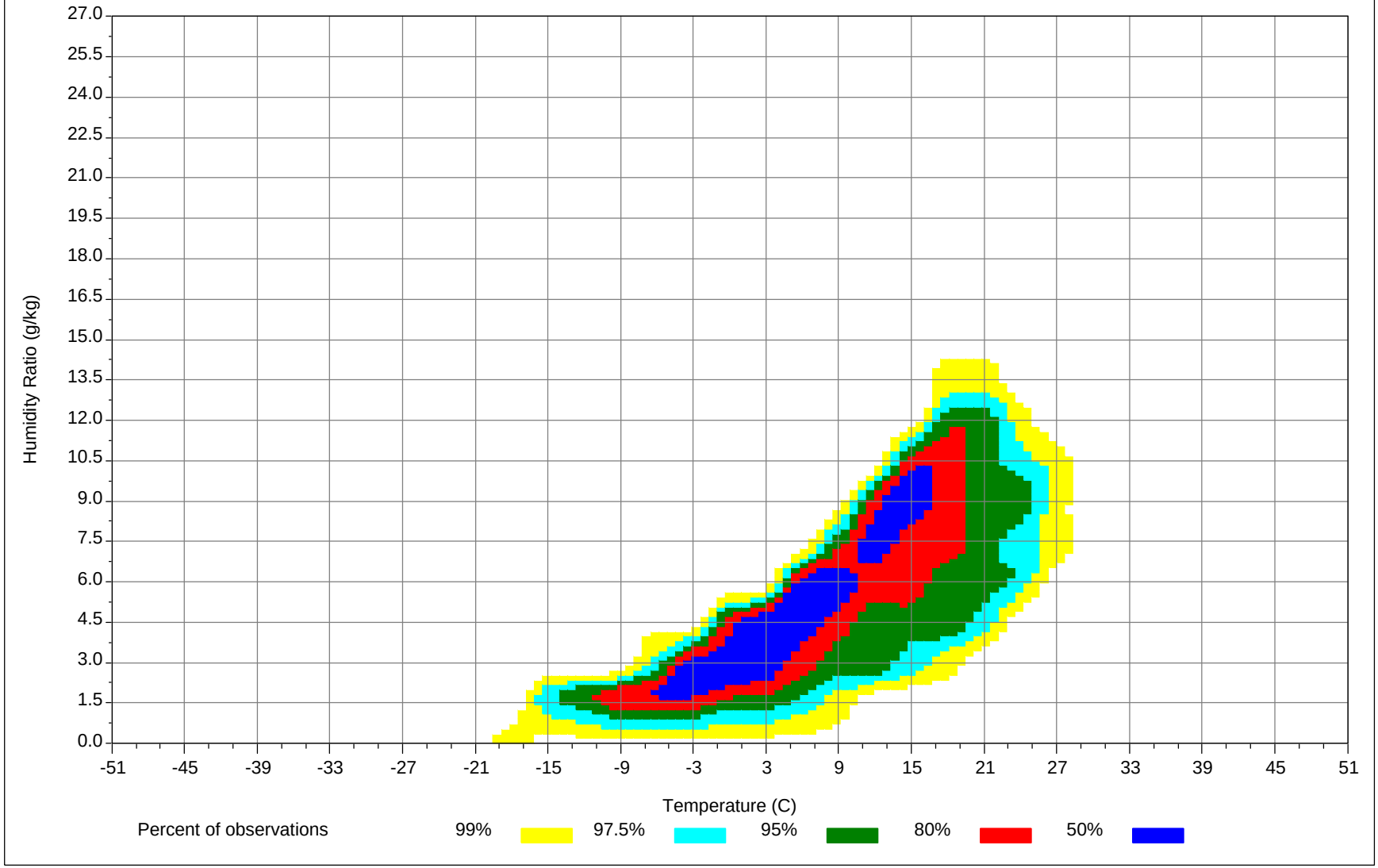
Weather Region	Rain Rate 100 Year Recurrence (cm/hr)	Basic Wind Speed 3 sec gust @ 10 m 50 Year Recurrence (m/s)	Ventilation Cooling Load Index (kWh/l/s/yr) Base 24° C-RH 60% Latent + Sensible
5	N/A	N/A	0.0 + 0.0
Ground Water Temperature (°C) 15 Meter Depth*	Frost Depth 50 Year Recurrence (cm)	Ground Snow Load 50 Year Recurrence (kN/m^2)	Average Annual Freeze-Thaw Cycles (#)
8.7	N/A	N/A	54

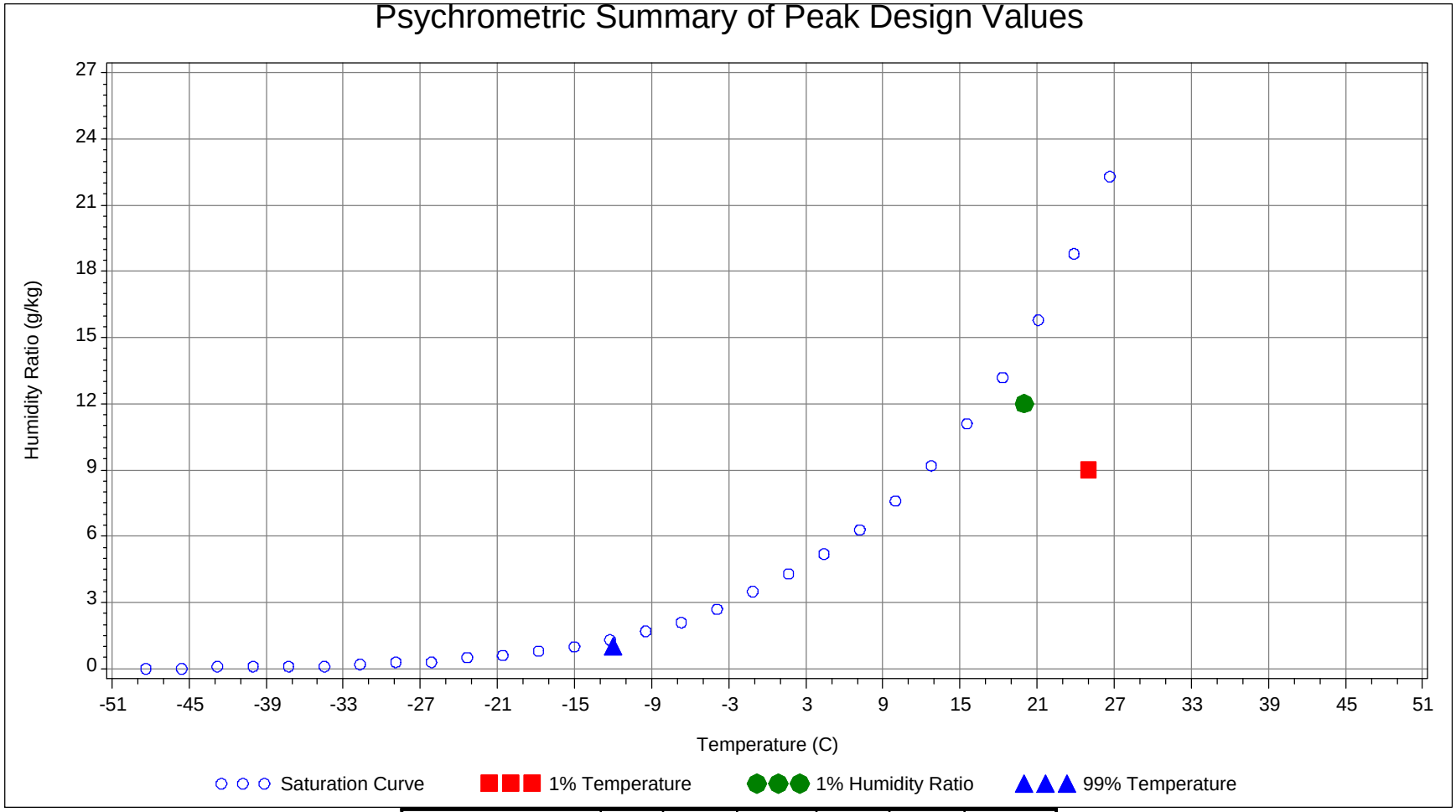
*Note: Temperatures at greater depths can be estimated by adding 0.83°C per 30 meters additional depth.

Average Annual Climate



Long Term Psychrometric Summary





	(°C) / (g/kg)	MCDB (°C)	MCWB (°C)	MCDP (°C)	MCHR (g/kg)	Enthalpy (kJ/kg)
1.0% Dry Bulb	25.0		17		9.0	47.5
99.0% Dry Bulb	-12.0				1.0	-9.6
1.0% Humidity Ratio	12.0	20.0	18.2	17.2		51.8

Dry-Bulb Temperature Hours For An Average Year

	January					February					March				
Temperature Range (°C)	**01 To 08 LST**	**09 To 16 LST**	**17 to 00 LST**	**Total Obs**	**MCWB (°C)**	**01 To 08 LST**	**09 To 16 LST**	**17 to 00 LST**	**Total Obs**	**MCWB (°C)**	**01 To 08 LST**	**09 To 16 LST**	**17 to 00 LST**	**Total Obs**	**MCWB (°C)**
33/ 35															
30/ 32															
27/ 29															
24/ 26															
21/ 23															
18/ 20															
15/ 17												2	0	2	9.3
12/ 14							0	0	0	9.9		5	2	7	7.5
9/ 11	0	0	0	0	7.6	0	1	0	1	8	1	11	4	16	6.1
6/ 8	7	11	8	26	5.2	5	16	8	29	5.2	8	44	26	78	4.3
3/ 5	27	30	28	85	3.3	18	27	24	69	3.2	31	45	37	113	2.7
0/ 2	82	88	87	257	0.6	68	81	76	225	0.5	98	98	103	299	0.2
-3/ -1	53	55	52	160	-2.6	49	47	52	148	-2.7	52	28	46	126	-2.9
-6/ -4	28	27	28	83	-5.1	29	22	25	76	-5.2	26	10	15	51	-5.3
-9/ -7	28	24	27	79	-7.8	27	22	22	71	-8	22	4	11	37	-7.9
-12/-10	10	7	7	24	-10.8	11	4	8	23	-10.8	4	0	2	6	-10.7
-15/-13	7	3	6	16	-13.3	8	3	5	16	-13.4	4	0	1	5	-13.3
-18/-16	4	2	4	10	-16.6	5	1	2	8	-16.4	2		0	2	-16.2
-21/-19	2	0	0	2	-19.5	2	0	0	2	-19.8	0		0	0	-20.3
-24/-22	0	0	0	0	-22.4	0			0	-21.5	0			0	-22
-27/-25	0			0	-24.7										

Caution: This summary reflects the typical distribtion of temperature in a typical year. It does not reflect the typical mositure 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.

Dry-Bulb Temperature Hours For An Average Year

	April					May					June				
Temperature Range (°C)	**01 To 08 LST**	**09 To 16 LST**	**17 to 00 LST**	**Total Obs**	**MCWB (°C)**	**01 To 08 LST**	**09 To 16 LST**	**17 to 00 LST**	**Total Obs**	**MCWB (°C)**	**01 To 08 LST**	**09 To 16 LST**	**17 to 00 LST**	**Total Obs**	**MCWB (°C)**
33/ 35															
30/ 32												0	0	0	16.9
27/ 29		0		0	15		0	0	0	16.1		3	1	4	16.6
24/ 26		0	0	0	14.4		3	0	3	15.6	0	10	2	12	16.4
21/ 23		1	0	1	13	0	21	6	27	13.8	3	47	22	72	14.8
18/ 20		3	1	4	11.6	1	20	8	29	12.4	7	41	25	73	13.6
15/ 17	0	21	6	27	9.7	11	66	34	111	10.5	51	87	79	217	12.3
12/ 14	2	34	14	50	7.7	29	60	52	141	8.9	81	39	65	185	10.7
9/ 11	6	36	22	64	6.3	44	37	49	130	7.6	57	9	32	98	9.1
6/ 8	46	77	71	194	4.6	96	34	70	200	5.6	37	3	14	54	6.8
3/ 5	52	34	50	136	2.7	36	5	21	62	3.2	4	0	1	5	4.2
0/ 2	86	31	59	176	0.3	27	1	8	36	0.9	0			0	2
-3/ -1	36	2	16	54	-2.7	3		0	3	-1.8					
-6/ -4	9		2	11	-5	0			0	-4.4					
-9/ -7	2		0	2	-7.1										
-12/-10															
-15/-13															
-18/-16															
-21/-19															
-24/-22															
-27/-25															

Caution: This summary reflects the typical distribtion of temperature in a typical year. It does not reflect the typical mositure 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.

Dry-Bulb Temperature Hours For An Average Year

	July					August					September				
Temperature Range (°C)	**01 To 08 LST**	**09 To 16 LST**	**17 to 00 LST**	**Total Obs**	**MCWB (°C)**	**01 To 08 LST**	**09 To 16 LST**	**17 to 00 LST**	**Total Obs**	**MCWB (°C)**	**01 To 08 LST**	**09 To 16 LST**	**17 to 00 LST**	**Total Obs**	**MCWB (°C)**
33/ 35		0		0	21.3										
30/ 32		4	1	5	19.2		0		0	19.3					
27/ 29	0	17	5	22	18.2		9	2	11	18.5					
24/ 26	1	25	10	36	17.3	0	16	5	21	18.1		1	0	1	17.4
21/ 23	13	77	44	134	16.2	7	67	30	104	16.5	0	13	3	16	15.9
18/ 20	26	55	49	130	15.3	18	61	43	122	15.6	1	21	6	28	14.7
15/ 17	107	63	100	270	14.1	96	79	103	278	14.2	23	93	50	166	13.1
12/ 14	75	8	35	118	12.1	80	13	49	142	12	67	73	77	217	11.2
9/ 11	21	0	5	26	9.9	32	1	14	47	9.8	59	27	51	137	9.2
6/ 8	4		1	5	7.8	14	0	4	18	7.6	63	12	40	115	6.9
3/ 5						2		0	2	4.5	17	0	9	26	3.9
0/ 2						0			0	3	9		3	12	1.5
-3/ -1											1		0	1	-1.6
-6/ -4															
-9/ -7															
-12/-10															
-15/-13															
-18/-16															
-21/-19															
-24/-22															
-27/-25															

Caution: This summary reflects the typical distribtion of temperature in a typical year. It does not reflect the typical mositure 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.

Dry-Bulb Temperature Hours For An Average Year

	October					November					December				
Temperature Range (°C)	**01 To 08 LST**	**09 To 16 LST**	**17 to 00 LST**	**Total Obs**	**MCWB (°C)**	**01 To 08 LST**	**09 To 16 LST**	**17 to 00 LST**	**Total Obs**	**MCWB (°C)**	**01 To 08 LST**	**09 To 16 LST**	**17 to 00 LST**	**Total Obs**	**MCWB (°C)**
33/ 35															
30/ 32															
27/ 29															
24/ 26															
21/ 23															
18/ 20		0	0	0	15.4										
15/ 17	1	12	1	14	12.9										
12/ 14	15	44	24	83	11	0	2	1	3	10.5	0	0	0	0	9.9
9/ 11	35	54	43	132	9	6	10	6	22	9	2	1	1	4	8.4
6/ 8	88	92	91	271	6.3	52	69	59	180	6.3	19	23	20	62	5.6
3/ 5	41	28	40	109	3.4	41	41	44	126	3.6	35	37	37	109	3.6
0/ 2	44	16	37	97	0.8	84	82	82	248	0.7	83	92	82	257	0.7
-3/ -1	18	3	10	31	-2.3	34	25	32	91	-2.3	50	50	51	151	-2.5
-6/ -4	5	0	2	7	-4.7	12	6	10	28	-4.9	24	16	24	64	-5
-9/ -7	2		0	2	-7.4	7	4	6	17	-7.6	20	18	19	57	-7.7
-12/-10	0		0	0	-10.3	2	0	1	3	-10.7	6	5	6	17	-10.8
-15/-13						1	0	0	1	-13	4	3	5	12	-13.3
-18/-16						0	0	0	0	-15.3	3	2	2	7	-16.3
-21/-19											1	0	1	2	-19.6
-24/-22											1	0	1	2	-22.5
-27/-25											0			0	-24.8

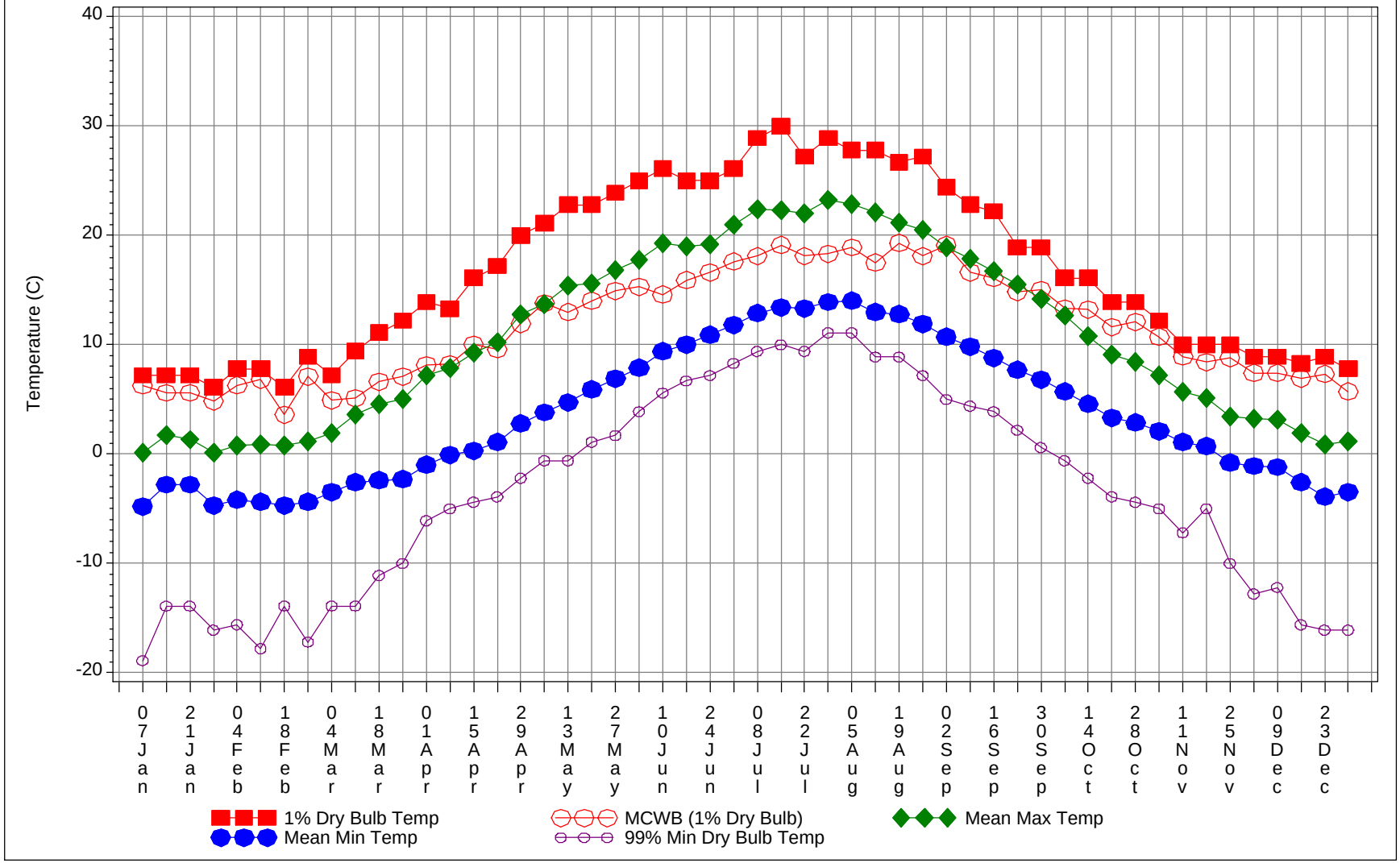
Caution: This summary reflects the typical distribtion of temperature in a typical year. It does not reflect the typical mositure distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary and the ventilation and infiltration load pages in this manual.

Dry-Bulb Temperature Hours For An Average Year

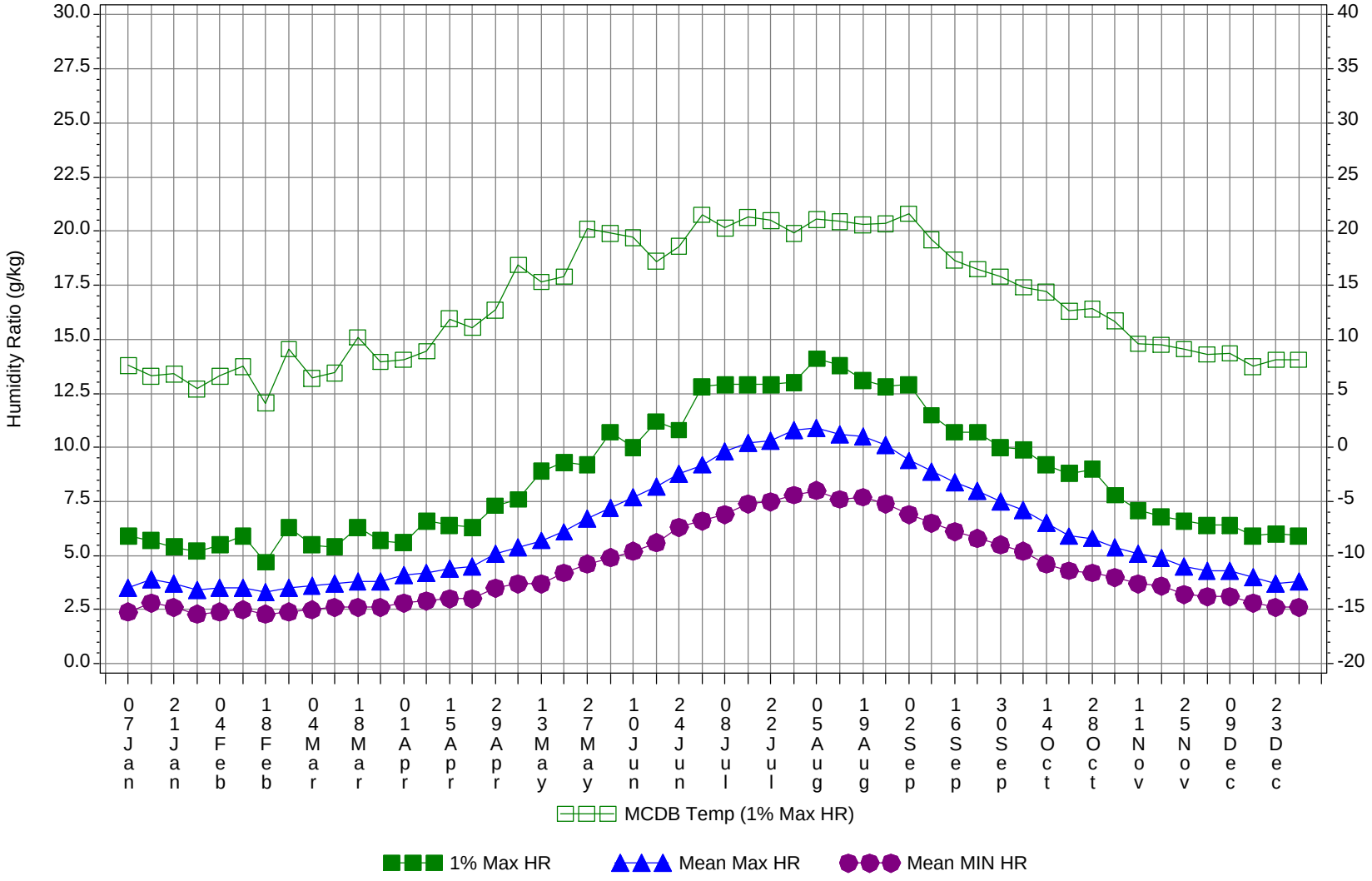
	Annual				
Temperature Range (°C)	**01 To 08 LST**	**09 To 16 LST**	**17 to 00 LST**	**Total Obs**	**MCWB (°C)**
33/ 35		0		0	21.3
30/ 32		4	1	5	19.1
27/ 29	0	29	7	36	18.2
24/ 26	1	56	17	74	17.3
21/ 23	23	227	104	354	15.8
18/ 20	54	201	132	387	14.8
15/ 17	288	422	374	1084	13.1
12/ 14	350	279	317	946	10.8
9/ 11	261	188	228	677	8.6
6/ 8	437	381	411	1229	5.8
3/ 5	304	247	290	841	3.2
0/ 2	583	490	537	1610	0.5
-3/ -1	297	210	259	766	-2.6
-6/ -4	135	81	106	322	-5.1
-9/ -7	109	73	85	267	-7.8
-12/-10	33	17	24	74	-10.8
-15/-13	24	9	18	51	-13.3
-18/-16	14	5	9	28	-16.4
-21/-19	4	1	1	6	-19.6
-24/-22	2	0	1	3	-22.3
-27/-25	0			0	-24.7

Caution: This summary reflects the typical distribtion of temperature in a typical year. It does not reflect the typical mositure 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



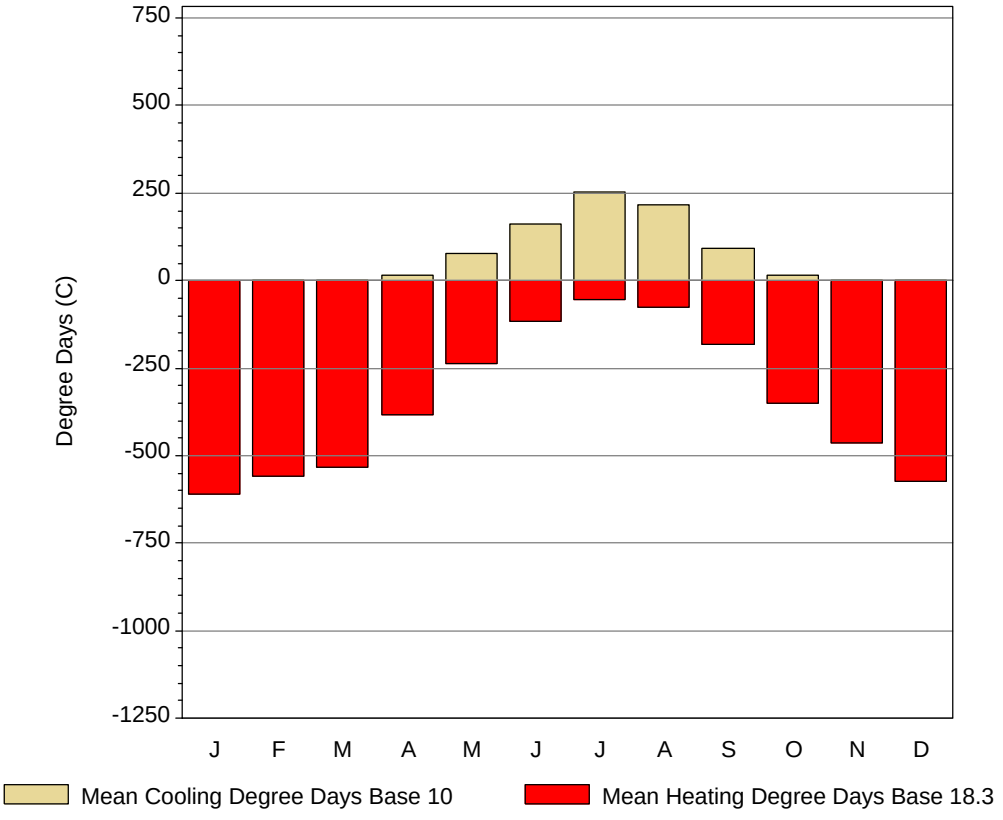
Long Term Humidity and Dry Bulb Temperature Summary



Long Term Humidity and Dry Bulb Temperature Summary

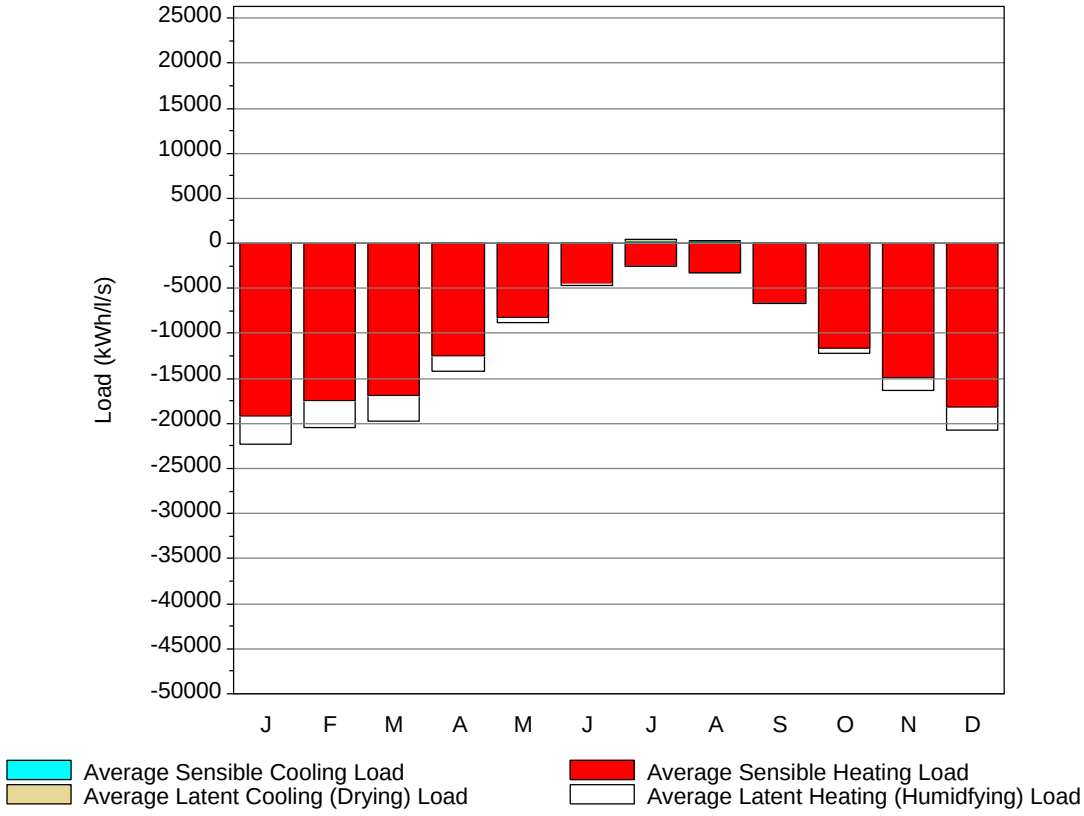
Week Ending	1.0% Temp (°C)	MCWB@ 1% Temp (°C)	Mean Max Temp (°C)	Mean Min Temp (°C)	99% Temp (°C)	1.0% HR (g/kg)	MCDB@ 1% HR (°C)	Mean Max HR (g/kg)	Mean Min HR (g/kg)
7-Jan	7.2	6.3	0.1	-4.8	-18.9	5.9	7.6	3.5	2.4
14-Jan	7.2	5.6	1.7	-2.8	-13.9	5.7	6.6	3.9	2.8
21-Jan	7.2	5.6	1.3	-2.8	-13.9	5.4	6.8	3.7	2.6
28-Jan	6.1	4.8	0.1	-4.7	-16.1	5.2	5.4	3.4	2.3
4-Feb	7.8	6.3	0.8	-4.2	-15.6	5.5	6.6	3.5	2.4
11-Feb	7.8	6.8	0.9	-4.4	-17.8	5.9	7.5	3.5	2.5
18-Feb	6.1	3.6	0.8	-4.7	-13.9	4.7	4.1	3.3	2.3
25-Feb	8.9	7.1	1.2	-4.4	-17.2	6.3	9.1	3.5	2.4
4-Mar	7.2	4.9	1.9	-3.5	-13.9	5.5	6.4	3.6	2.5
11-Mar	9.4	5.1	3.6	-2.6	-13.9	5.4	6.9	3.7	2.6
18-Mar	11.1	6.6	4.6	-2.4	-11.1	6.3	10.2	3.8	2.6
25-Mar	12.2	7.1	5	-2.3	-10	5.7	7.9	3.8	2.6
1-Apr	13.9	8.1	7.2	-1	-6.1	5.6	8.1	4.1	2.8
8-Apr	13.3	8.2	7.9	-0.1	-5	6.6	8.9	4.2	2.9
15-Apr	16.1	10	9.3	0.3	-4.4	6.4	11.9	4.4	3
22-Apr	17.2	9.6	10.2	1.1	-3.9	6.3	11.1	4.5	3
29-Apr	20	11.9	12.8	2.8	-2.2	7.3	12.7	5.1	3.5
6-May	21.1	13.8	13.7	3.8	-0.6	7.6	16.9	5.4	3.7
13-May	22.8	13	15.4	4.7	-0.6	8.9	15.3	5.7	3.7
20-May	22.8	14	15.6	5.9	1.1	9.3	15.8	6.1	4.2
27-May	23.9	14.9	16.8	6.9	1.7	9.2	20.2	6.7	4.6
4-Jun	25	15.3	17.8	7.9	3.9	10.7	19.8	7.2	4.9
10-Jun	26.1	14.6	19.3	9.4	5.6	10	19.4	7.7	5.2
17-Jun	25	15.9	19	10	6.7	11.2	17.2	8.2	5.6
24-Jun	25	16.6	19.2	10.9	7.2	10.8	18.6	8.8	6.3
1-Jul	26.1	17.6	21	11.8	8.3	12.8	21.5	9.2	6.6
8-Jul	28.9	18.1	22.4	12.9	9.4	12.9	20.3	9.8	6.9
15-Jul	30	19.1	22.3	13.4	10	12.9	21.3	10.2	7.4
22-Jul	27.2	18.1	22	13.3	9.4	12.9	21	10.3	7.5
29-Jul	28.9	18.3	23.2	13.9	11.1	13	19.8	10.8	7.8
5-Aug	27.8	18.9	22.9	14	11.1	14.1	21.1	10.9	8
12-Aug	27.8	17.5	22.1	13	8.9	13.8	20.9	10.6	7.6
19-Aug	26.7	19.3	21.2	12.8	8.9	13.1	20.6	10.5	7.7
26-Aug	27.2	18.1	20.5	11.9	7.2	12.8	20.7	10.1	7.4
2-Sep	24.4	19.1	18.9	10.7	5	12.9	21.6	9.4	6.9
9-Sep	22.8	16.6	17.9	9.8	4.4	11.5	19.2	8.9	6.5
16-Sep	22.2	16.1	16.7	8.8	3.9	10.7	17.3	8.4	6.1
23-Sep	18.9	14.8	15.5	7.7	2.2	10.7	16.5	8	5.8
30-Sep	18.9	15	14.2	6.8	0.6	10	15.8	7.5	5.5
7-Oct	16.1	13.3	12.7	5.7	-0.6	9.9	14.8	7.1	5.2
14-Oct	16.1	13.2	10.8	4.6	-2.2	9.2	14.4	6.5	4.6
21-Oct	13.9	11.6	9.1	3.3	-3.9	8.8	12.6	5.9	4.3
28-Oct	13.9	12.1	8.4	2.9	-4.4	9	12.8	5.8	4.2
4-Nov	12.2	10.7	7.2	2.1	-5	7.8	11.7	5.4	4
11-Nov	10	8.9	5.7	1.1	-7.2	7.1	9.6	5.1	3.7
18-Nov	10	8.4	5.1	0.7	-5	6.8	9.5	4.9	3.6
25-Nov	10	8.8	3.4	-0.8	-10	6.6	9.1	4.5	3.2
2-Dec	8.9	7.4	3.2	-1.1	-12.8	6.4	8.6	4.3	3.1
9-Dec	8.9	7.4	3.1	-1.2	-12.2	6.4	8.7	4.3	3.1
16-Dec	8.3	6.9	1.9	-2.6	-15.6	5.9	7.5	4	2.8
23-Dec	8.9	7.3	0.9	-3.9	-16.1	6	8.1	3.7	2.6
31-Dec	7.8	5.7	1.2	-3.5	-16.1	5.9	8.1	3.8	2.6

Degree Days, Heating and Cooling
(Base 18.3 C) & Cooling (Base 10 C)



Month	Mean Cooling Degree Days (°C) Base 10	Mean Cooling Degree Days (°C) Base 18.3	Mean Heating Degree Days (°C) Base 18.3
JAN	0	0	611
FEB	0	0	557
MAR	2	0	532
APR	17	1	382
MAY	77	7	235
JUN	160	20	116
JUL	253	49	55
AUG	218	33	75
SEP	93	4	182
OCT	15	0	349
NOV	1	0	465
DEC	0	0	575
ANN	835	113	4133

Average Ventilation and Infiltration Loads
(Outside Air vs 24C, 60% RH summer; 20C, 30% RH winter)



Month	Average Sensible Cooling Load (kWh/l/s)	Average Sensible Heating Load (kWh/l/s)	Average Latent Cooling Load (kWh/l/s)	Average Latent Heating Load (kWh/l/s)
JAN	0	-19179	0	-3103
FEB	0	-17497	0	-2990
MAR	0	-16908	0	-2838
APR	1	-12490	0	-1767
MAY	7	-8211	0	-633
JUN	39	-4536	17	-79
JUL	209	-2534	199	-5
AUG	94	-3233	259	-2
SEP	1	-6652	8	-53
OCT	0	-11603	0	-588
NOV	0	-14909	0	-1405
DEC	0	-18145	0	-2550
ANN	351	-135896	484	-16013

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

Station Information		Shading Geometry in Dimensionless Units	
City, State, WBAN	N/A	N/A	N/A
Lat, Lon, Elev	N/A	N/A	N/A
Press Stn Type	N/A	N/A	N/A

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													
	Std.Dev.													
	Minimum													
	Maximum													
	Diffuse													
Clear Day	Global													
NORTH	Global													
	Diffuse													
Clear Day	Global													
EAST	Global													
	Diffuse													
Clear Day	Global													
SOUTH	Global													
	Diffuse													
Clear Day	Global													
WEST	Global													
	Diffuse													
Clear Day	Global													

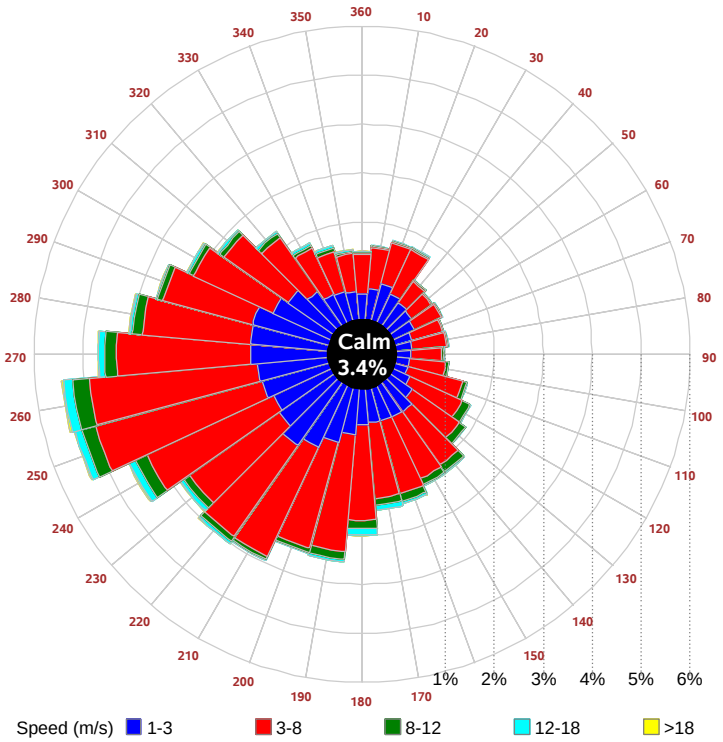
Average Annual Solar Radiation - Nearest Available Site
Source: National Renewable Energy Laboratory, Golden CO, 1995

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													
NORTH	Unshaded													
	Shaded													
EAST	Unshaded													
	Shaded													
SOUTH	Unshaded													
	Shaded													
WEST	Unshaded													
	Shaded													

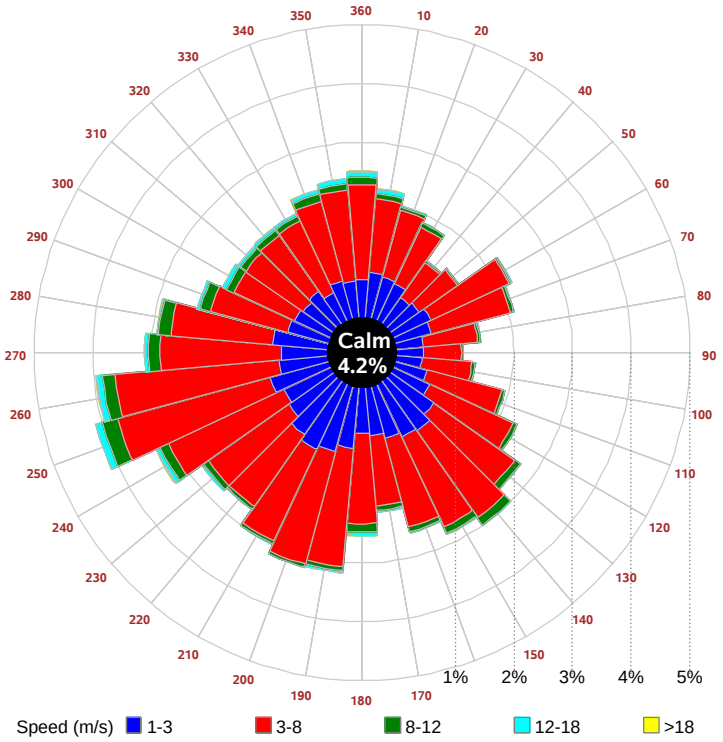
AVERAGE INCIDENT ILLUMINENCE (klux-hr) FOR MOSTLY CLEAR AND MOSTLY CLOUDY CONDITIONS, Percentage Uncertainty = 9											
				March					June		
		9am	11am	1pm	3pm	5pm	9am	11am	1pm	3pm	5pm
HORIZ.	M.Clear										
	M.Cloudy										
NORTH	M.Clear										
	M.Cloudy										
EAST	M.Clear										
	M.Cloudy										
SOUTH	M.Clear										
	M.Cloudy										
WEST	M.Clear										
	M.Cloudy										
M.Clear	(% hrs)										

				Sept					Dec		
		9am	11am	1pm	3pm	5pm	9am	11am	1pm	3pm	5pm
HORIZ.	M.Clear										
	M.Cloudy										
NORTH	M.Clear										
	M.Cloudy										
EAST	M.Clear										
	M.Cloudy										
SOUTH	M.Clear										
	M.Cloudy										
WEST	M.Clear										
	M.Cloudy										
M.Clear	(% hrs)										

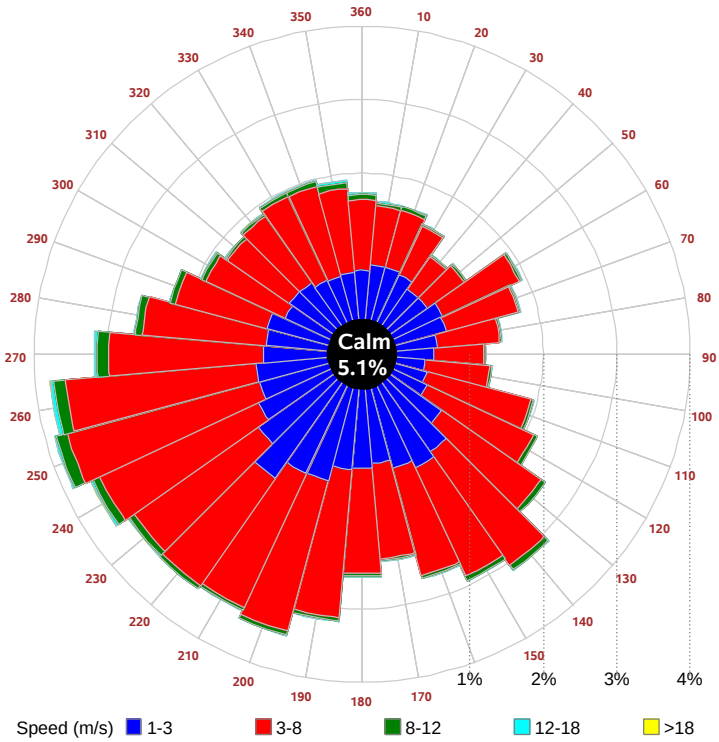
Wind Summary - December, January, and February



Wind Summary - March, April, and May



Wind Summary - June, July, and August



Wind Summary - September, October, and November