

LONDON/HEATHROW, UK

Latitude = 51.48 N

Longitude = 0.45 W

Period of Record = 1973 to 1996

WMO No. 037720

Elevation = 79 feet

Average Pressure = 29.87 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	86	66	65	10.4	E
0.4% Occurrence	82	65	66	9.5	E
1.0% Occurrence	79	64	65	9.3	E
2.0% Occurrence	75	63	65	9.2	W
Mean Daily Range	13	-	-	-	-
97.5% Occurrence	31	30	22	6.3	W
99.0% Occurrence	28	27	19	6.3	NE
99.6% Occurrence	26	25	17	6.0	NNE
Median of Extreme Lows	23	22	15	4.9	NNE
	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	70	83	85	8.9	E
0.4% Occurrence	67	77	80	8.3	SSW
1.0% Occurrence	66	76	78	8.4	SSW
2.0% Occurrence	64	72	74	8.5	SSW
	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	97	73	0.65	7.9	SSW
0.4% Occurrence	87	69	0.58	7.5	SSW
1.0% Occurrence	83	70	0.56	7.4	SSW
2.0% Occurrence	79	68	0.53	7.8	SSW
Air Conditioning/ Humid Area Criteria	# of Hours	T ≥ 93°F	T ≥ 80°F	T _{wb} ≥ 73°F	T _{wb} ≥ 67°F
		1	69	0	56

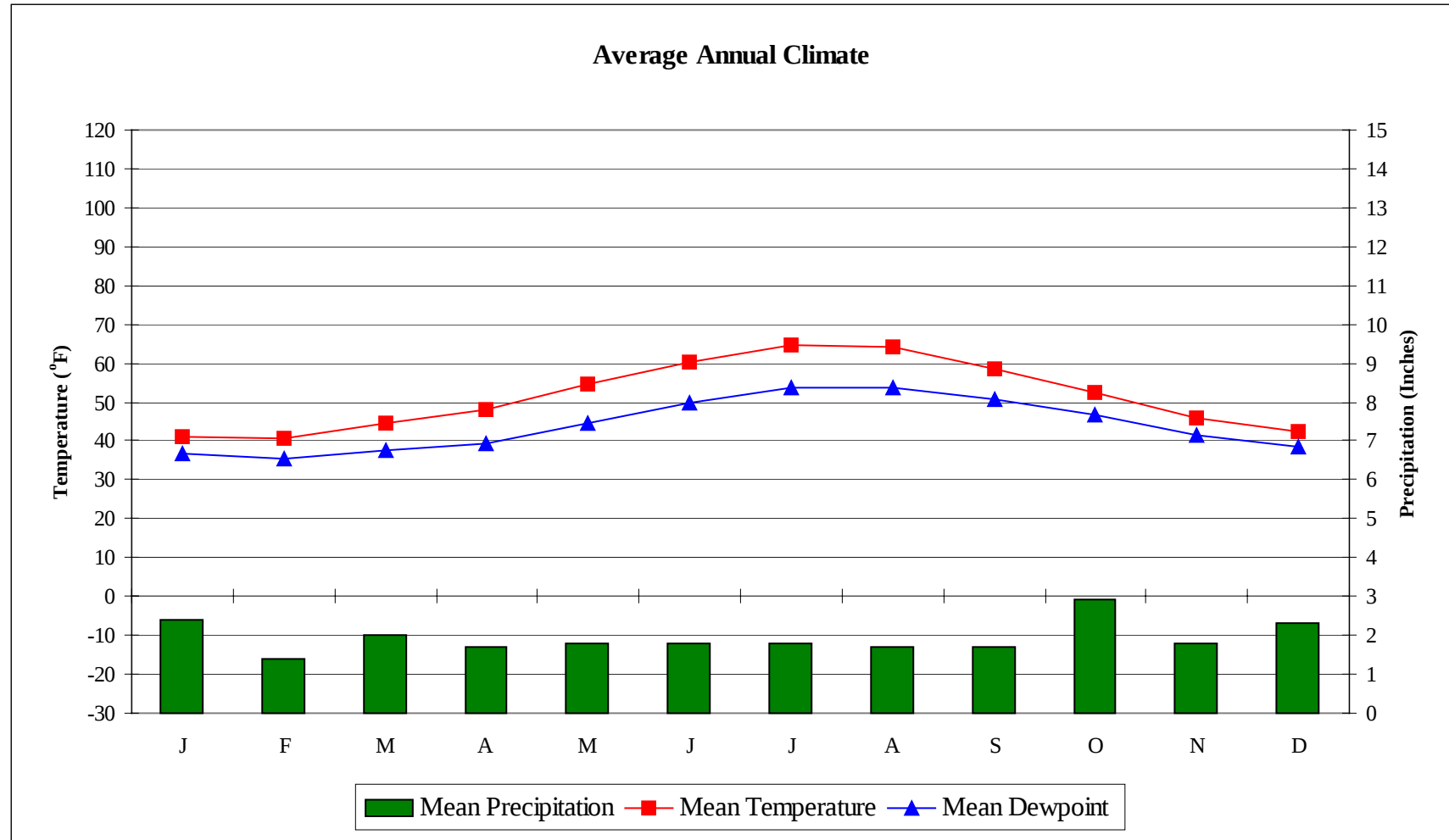
Other Site Data

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
7	N/A	N/A	0.0 + 0.1
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 (#)
54.0	N/A	N/A	23

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

LONDON/HEATHROW, UK

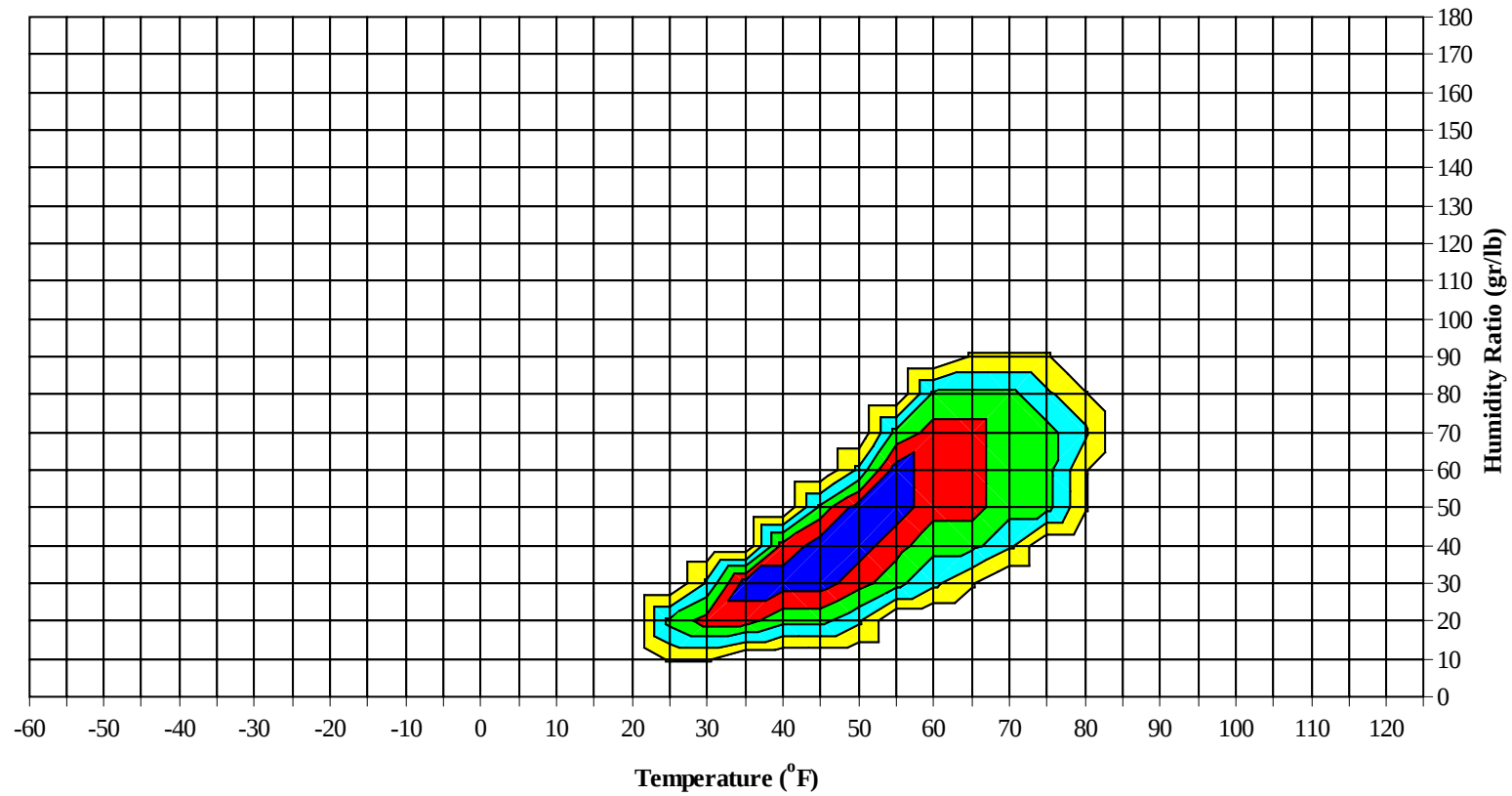
WMO No. 037720



LONDON/HEATHROW, UK

WMO No. 037720

Long Term Psychrometric Summary

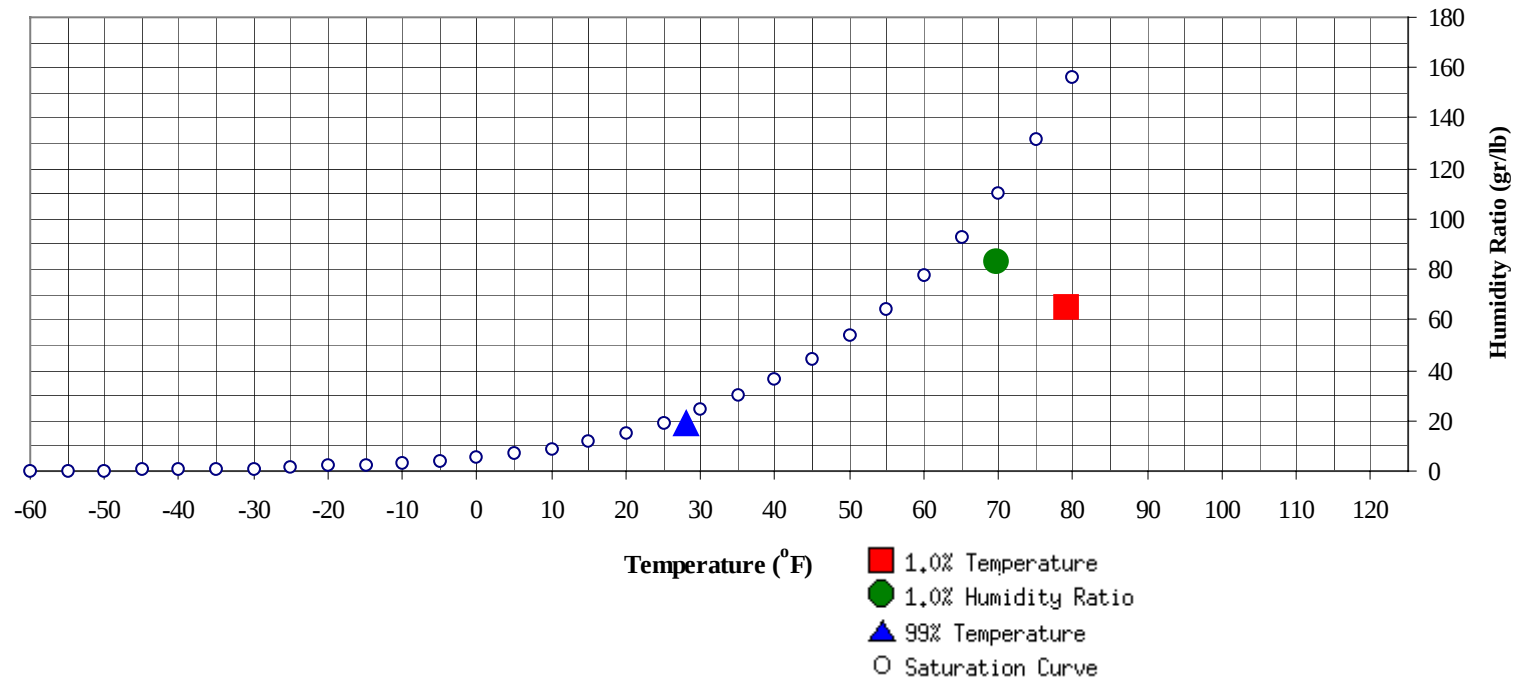


- 50% of all observations
- 80% of all observations
- 95% of all observations
- 97.5% of all observations
- 99% of all observations

LONDON/HEATHROW, UK

WMO No. 037720

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	28	19	9.6		83.3	69.6	64.7	62	29.7

	(°F)	MCHR (gr/lb)	MCWB (°F)	Enthalpy (btu/lb)
1.0% Dry Bulb	79	64.9	63.9	29.1

LONDON/HEATHROW, UK

WMO No. 037720

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															
75 / 79															
70 / 74												0		0	56.0
65 / 69												1	0	1	54.7
60 / 64		0		0			0	0	0	54.7		5	2	7	52.1
55 / 59	1	3	1	5	52.2	0	5	1	6	51.3	0	22	8	30	50.1
50 / 54	18	38	28	84	48.9	9	35	20	64	48.0	21	68	44	133	47.4
45 / 49	53	72	60	185	44.4	41	60	55	156	44.1	48	83	80	211	43.4
40 / 44	51	57	56	164	39.9	39	49	51	139	39.6	69	46	66	181	39.5
35 / 39	59	48	59	167	35.5	63	47	57	167	35.2	71	20	40	131	35.5
30 / 34	43	22	32	97	31.0	50	23	32	105	30.6	34	4	9	47	31.2
25 / 29	17	8	9	34	26.1	17	5	7	29	25.8	4	0	0	4	26.6
20 / 24	4	1	1	6	21.5	4	1	1	6	21.4	0			0	23.0
15 / 19	1	0	0	1	16.9	0	0		0	16.6					
10 / 14															

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.

LONDON/HEATHROW, UK

WMO No. 037720

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															
90 / 94												1	0	1	67.9
85 / 89												2	1	3	65.6
80 / 84							1	0	1	62.7		7	3	10	64.9
75 / 79							8	3	11	61.7					
70 / 74		3	1	4	57.2	0	15	7	22	58.8	0	19	9	28	62.7
65 / 69		8	3	11	55.4	1	26	15	42	56.4	2	34	22	58	60.5
60 / 64	0	22	11	33	52.6	6	51	35	92	53.9	7	43	34	84	58.1
55 / 59	4	48	29	81	49.8	32	75	63	170	51.2	30	69	62	161	55.8
50 / 54	32	73	61	166	46.8	82	55	74	211	48.3	89	55	72	215	53.1
45 / 49	75	61	73	209	43.3	87	16	42	145	44.6	83	10	34	127	49.6
40 / 44	68	20	42	130	39.6	30	1	8	39	40.3	26	1	4	31	45.4
35 / 39	45	4	19	68	35.8	9	0	1	10	36.7	3	0	0	3	41.3
30 / 34	16	0	2	18	31.6	1		0	1	32.8	0			0	37.5
25 / 29															
20 / 24															
15 / 19															
10 / 14															

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.

LONDON/HEATHROW, UK

WMO No. 037720

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							0	0	0	69.0					
90 / 94		1	0	1	68.2		1	0	1	68.0					
85 / 89		6	2	8	67.1		3	1	4	66.5		0		0	63.0
80 / 84		15	7	22	65.6		11	5	16	64.9		1	0	1	65.3
75 / 79	0	33	20	53	63.9	0	30	14	44	63.3		7	1	8	63.8
70 / 74	4	58	42	104	61.7	2	59	35	96	61.4		25	8	33	60.8
65 / 69	24	61	55	140	59.7	17	68	57	143	59.5	2	50	24	76	58.8
60 / 64	78	57	74	209	57.7	78	61	83	222	57.8	31	89	72	192	56.9
55 / 59	103	16	43	162	54.4	101	15	45	162	54.7	87	54	84	225	53.7
50 / 54	35	1	6	42	50.6	43	0	7	50	50.5	77	14	42	133	49.9
45 / 49	3		0	3	46.5	6		0	6	46.6	35	1	8	44	45.8
40 / 44						0			0	42.8	7		1	8	42.0
35 / 39											0			0	38.4
30 / 34															
25 / 29															
20 / 24															
15 / 19															
10 / 14															

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.

LONDON/HEATHROW, UK

WMO No. 037720

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		1		1	62.8										
70 / 74		2	0	2	61.9										
65 / 69	0	12	2	14	59.3		0		0	58.5					
60 / 64	8	49	23	80	57.0	0	7	2	9	57.1			0	0	54.0
55 / 59	47	86	68	202	53.4	20	38	25	83	53.9	6	15	8	29	53.0
50 / 54	69	66	78	214	49.3	43	63	52	158	49.4	32	42	39	113	49.4
45 / 49	70	26	57	153	44.9	50	67	61	178	44.4	48	67	55	170	44.6
40 / 44	33	4	15	52	40.8	51	40	51	142	40.1	52	57	58	167	40.0
35 / 39	18	1	4	23	36.7	45	19	35	99	36.1	60	44	55	159	35.8
30 / 34	3	0	0	3	32.8	24	6	12	42	31.5	32	18	27	77	31.3
25 / 29	0			0	28.0	7	1	1	9	27.2	15	4	6	25	26.3
20 / 24						1	0		1	22.4	2	0	0	2	22.0
15 / 19											0	0	0	0	16.9
10 / 14											0		0	0	13.6

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. 037720

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

Period of Record = 1973 to 1996

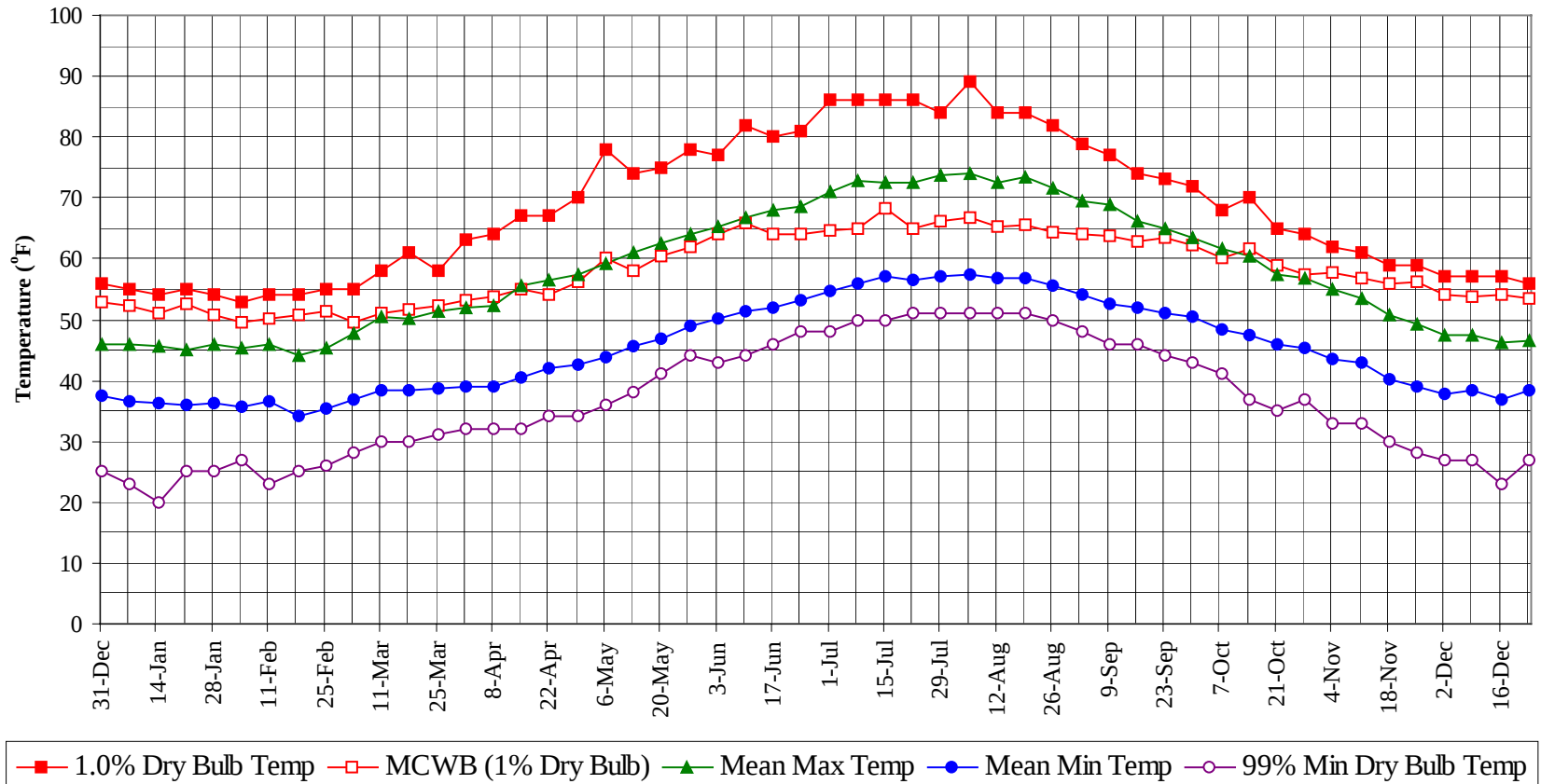
Annual Totals					
Temperature Range (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00		
95 / 99		0	0	0	69.0
90 / 94		3	1	4	68.1
85 / 89		11	4	15	66.6
80 / 84		35	15	50	65.1
75 / 79	1	97	47	145	63.3
70 / 74	9	196	115	320	61.0
65 / 69	50	269	190	509	58.9
60 / 64	231	410	361	1002	56.6
55 / 59	492	430	447	1369	53.1
50 / 54	544	464	485	1493	48.8
45 / 49	544	455	495	1494	44.2
40 / 44	403	274	349	1026	39.9
35 / 39	370	184	270	824	35.6
30 / 34	203	73	113	389	31.1
25 / 29	60	17	24	101	26.2
20 / 24	11	3	3	17	21.6
15 / 19	2	0	0	2	16.9
10 / 14	0		0	0	13.6

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.

LONDON/HEATHROW, UK

WMO No. 037720

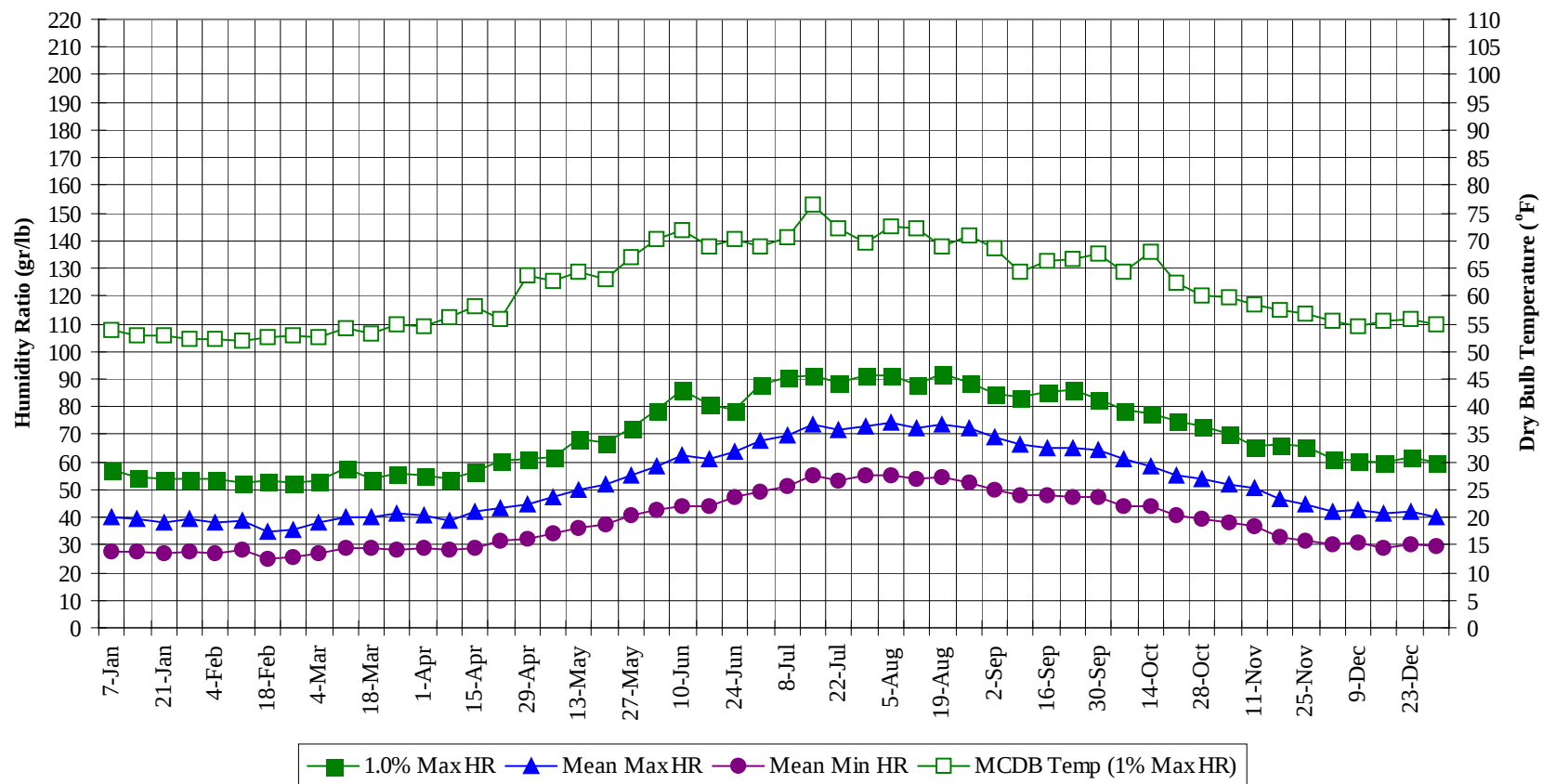
Annual Summary of Temperatures



LONDON/HEATHROW, UK

WMO No. 037720

Long Term Humidity and Dry Bulb Temperature Summary



LONDON/HEATHROW, UK

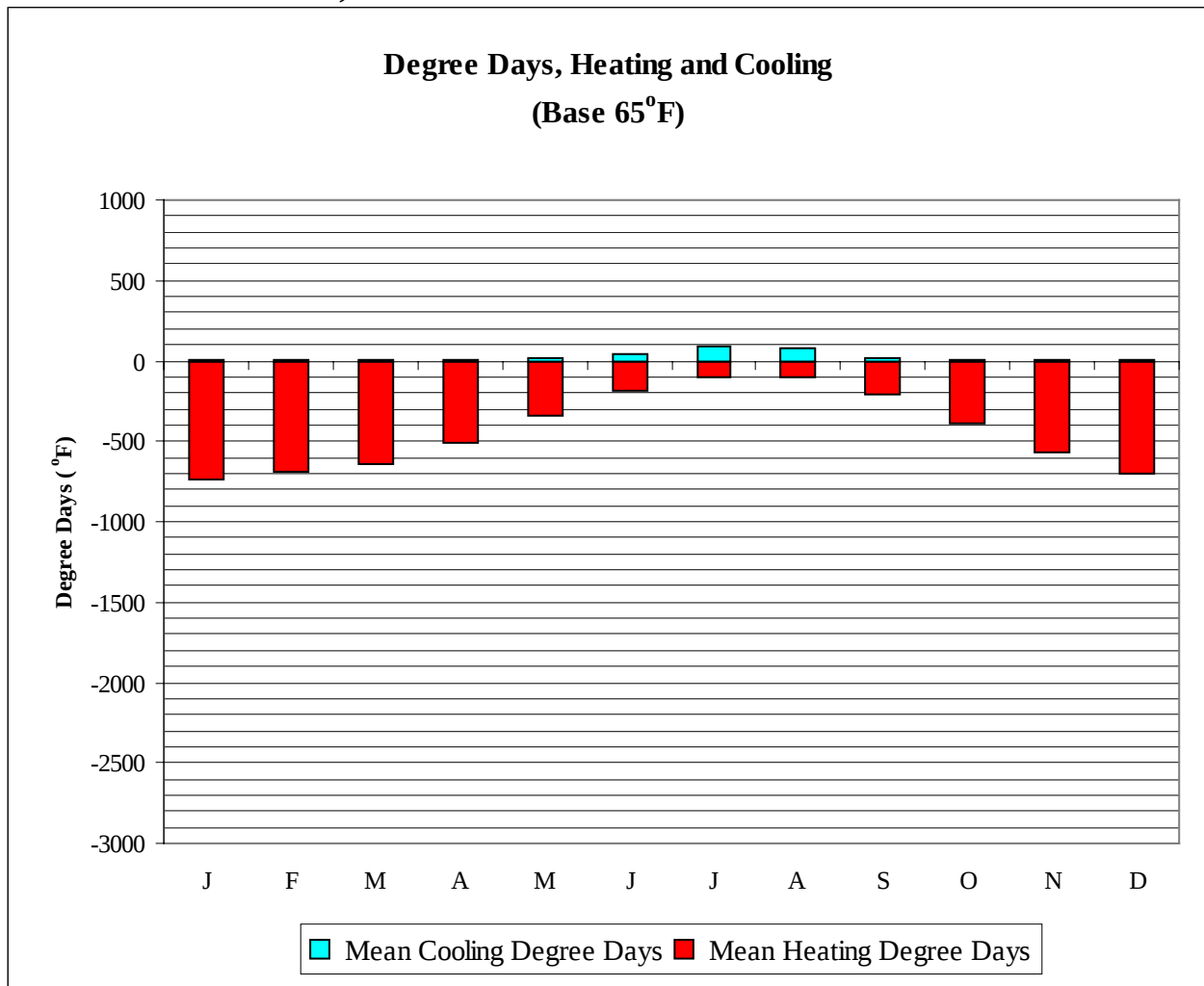
WMO No. 037720

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	55.0	52.3	45.9	36.6	23.0	57.4	53.8	40.3	27.9
14-Jan	54.0	50.9	45.5	36.1	20.0	54.6	52.9	39.6	27.5
21-Jan	55.0	52.5	45.1	36.0	25.0	53.9	52.8	38.1	27.2
28-Jan	54.0	50.8	45.9	36.2	25.0	53.9	52.1	39.5	27.3
4-Feb	53.0	49.5	45.3	35.7	27.0	53.9	52.2	38.4	26.9
11-Feb	54.0	50.1	45.9	36.6	23.0	52.5	51.9	38.8	28.1
18-Feb	54.0	50.8	44.2	34.2	25.0	53.2	52.6	34.7	24.6
25-Feb	55.0	51.3	45.4	35.5	26.0	52.5	52.8	35.3	25.4
4-Mar	55.0	49.7	47.9	36.8	28.0	53.2	52.4	38.0	27.1
11-Mar	58.0	50.9	50.5	38.3	30.0	58.1	54.2	40.0	29.0
18-Mar	61.0	51.6	50.1	38.5	30.0	53.9	53.1	40.1	28.6
25-Mar	58.0	52.4	51.2	38.8	31.0	56.0	54.7	41.1	28.4
1-Apr	63.0	53.2	52.1	38.9	32.0	55.3	54.7	40.9	28.9
8-Apr	64.0	53.7	52.4	38.9	32.0	53.9	56.1	39.0	28.5
15-Apr	67.0	55.0	55.5	40.5	32.0	56.7	58.0	41.9	29.2
22-Apr	67.0	54.1	56.5	42.1	34.0	60.2	55.8	43.5	31.5
29-Apr	70.0	56.3	57.3	42.6	34.0	60.9	63.5	45.0	32.2
6-May	78.0	60.2	59.2	43.9	36.0	61.6	62.7	47.5	33.9
13-May	74.0	58.0	60.9	45.5	38.0	68.6	64.5	50.2	35.8
20-May	75.0	60.5	62.6	46.8	41.0	67.2	63.0	52.1	37.6
27-May	78.0	62.1	64.1	49.0	44.0	72.1	67.1	55.3	40.9
3-Jun	77.0	64.1	65.2	50.0	43.0	79.1	70.4	58.4	42.4
10-Jun	82.0	65.9	66.8	51.3	44.0	86.1	71.8	62.3	44.3
17-Jun	80.0	64.1	67.8	52.1	46.0	80.5	68.8	61.4	44.0
24-Jun	81.0	64.0	68.7	53.2	48.0	79.1	70.3	63.9	47.0
1-Jul	86.0	64.6	70.9	54.6	48.0	88.2	68.9	67.4	49.4
8-Jul	86.0	65.0	72.8	56.0	50.0	90.3	70.7	69.5	51.5
15-Jul	86.0	68.4	72.6	57.0	50.0	91.0	76.6	73.7	55.3
22-Jul	86.0	65.1	72.6	56.6	51.0	88.9	72.4	71.5	53.3
29-Jul	84.0	66.3	73.6	57.0	51.0	91.0	69.7	73.1	55.0
5-Aug	89.0	66.8	74.0	57.4	51.0	91.0	72.4	74.2	54.9
12-Aug	84.0	65.4	72.4	56.7	51.0	88.2	72.1	72.5	53.6
19-Aug	84.0	65.4	73.6	56.9	51.0	91.7	68.8	73.6	54.5
26-Aug	82.0	64.3	71.6	55.6	50.0	88.9	70.9	71.9	52.8
2-Sep	79.0	64.0	69.6	54.2	48.0	84.7	68.5	68.8	50.2
9-Sep	77.0	63.7	69.0	52.7	46.0	83.3	64.3	66.0	47.9
16-Sep	74.0	62.8	66.1	51.9	46.0	85.4	66.3	64.8	47.8
23-Sep	73.0	63.4	65.1	51.2	44.0	86.1	66.8	65.0	47.3
30-Sep	72.0	62.3	63.4	50.4	43.0	82.6	67.6	64.2	47.6
7-Oct	68.0	60.0	61.6	48.4	41.0	79.1	64.3	61.4	44.2
14-Oct	70.0	61.7	60.5	47.5	37.0	77.7	68.0	58.5	43.8
21-Oct	65.0	59.0	57.5	46.0	35.0	74.9	62.5	55.5	40.4
28-Oct	64.0	57.3	56.8	45.2	37.0	72.8	60.2	53.6	39.3
4-Nov	62.0	57.8	54.9	43.7	33.0	70.0	59.6	52.1	38.3
11-Nov	61.0	56.8	53.4	42.9	33.0	65.8	58.5	50.4	36.8
18-Nov	59.0	56.0	50.6	40.3	30.0	66.5	57.3	46.5	32.9
25-Nov	59.0	56.2	49.3	39.0	28.0	65.8	56.9	44.5	31.6
2-Dec	57.0	54.2	47.4	37.8	27.0	60.9	55.4	42.1	30.1
9-Dec	57.0	53.8	47.6	38.3	27.0	60.2	54.6	42.5	30.5
16-Dec	57.0	54.0	46.3	36.8	23.0	59.5	55.5	41.4	28.9
23-Dec	56.0	53.4	46.6	38.4	27.0	61.6	55.7	41.8	30.2
31-Dec	56.0	53.0	46.0	37.5	25.0	59.5	55.0	40.3	29.5

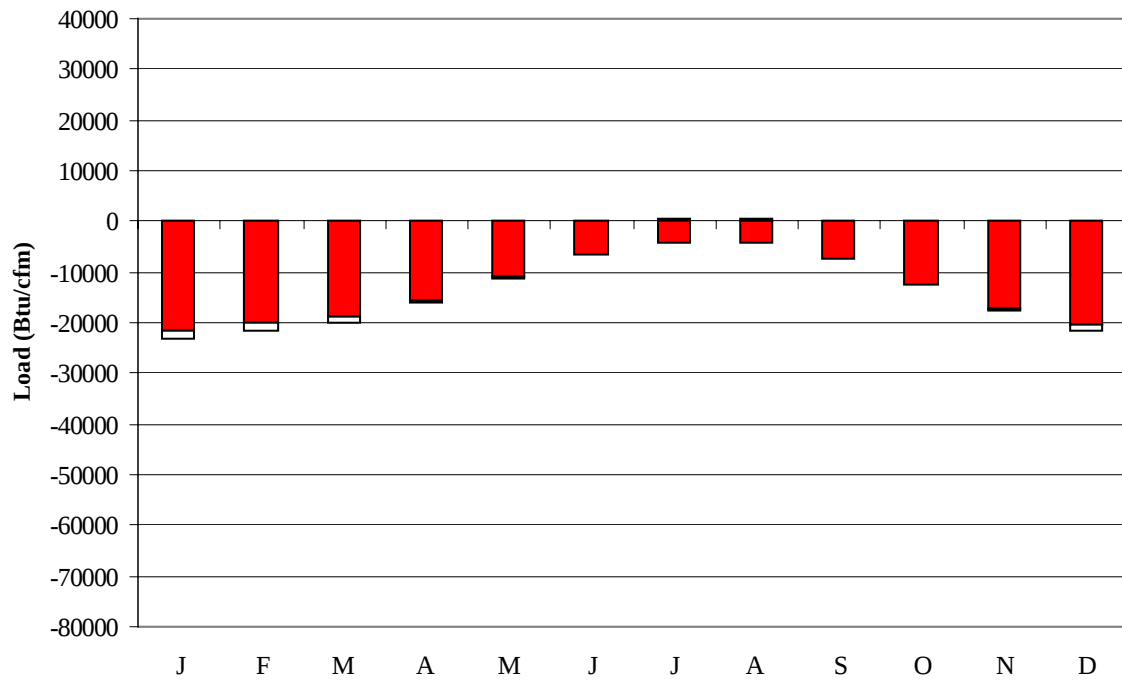
LONDON/HEATHROW, UK

WMO No. 037720



	Mean Cooling Degree Days (°F)	Mean Heating Degree Days (°F)
JAN	0	742
FEB	0	690
MAR	0	639
APR	2	509
MAY	15	342
JUN	46	184
JUL	89	98
AUG	76	107
SEP	19	208
OCT	2	391
NOV	0	573
DEC	0	698
ANN	248	5181

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

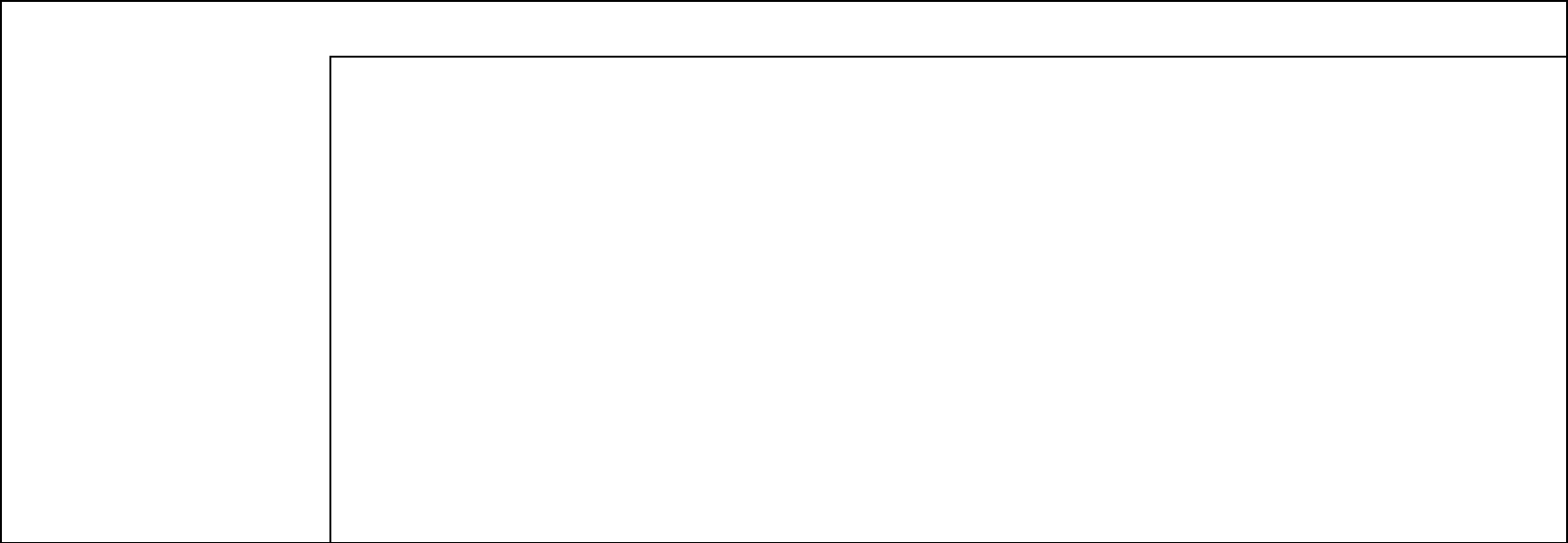


■ Average Sensible Cooling Load ■ Average Sensible Heating Load
■ Average Latent Cooling (Drying) Load ■ Average Latent Heating (Humidifying) Load

	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	-21631	0	-1376
FEB	0	-20070	0	-1557
MAR	0	-18969	0	-1020
APR	0	-15498	0	-600
MAY	32	-11095	3	-124
JUN	167	-6631	65	-10
JUL	375	-4092	261	0
AUG	281	-4399	199	0
SEP	20	-7452	63	-2
OCT	1	-12506	3	-58
NOV	0	-17180	0	-524
DEC	0	-20490	0	-1008
ANN	876	-160013	594	-6279

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

No Solar Radiation
Data Available

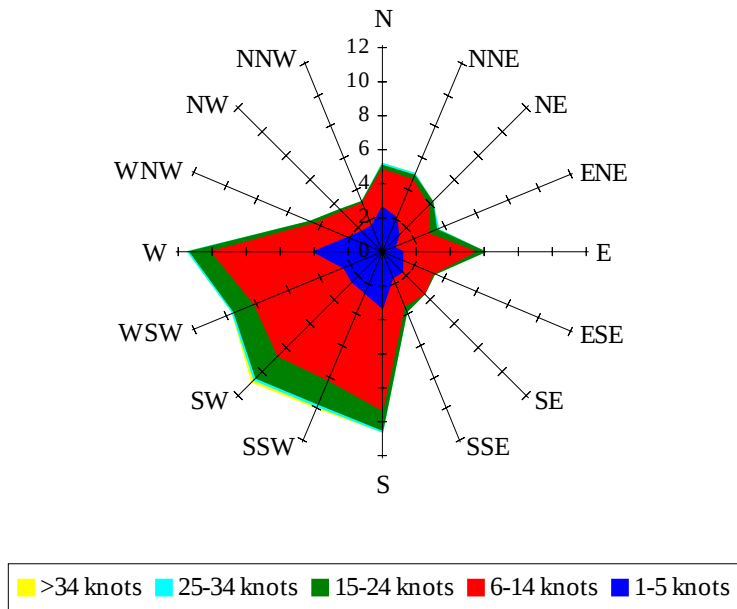


Average Annual Solar Heat and Illumination – Nearest Available Site

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

Wind Summary - December, January, and February

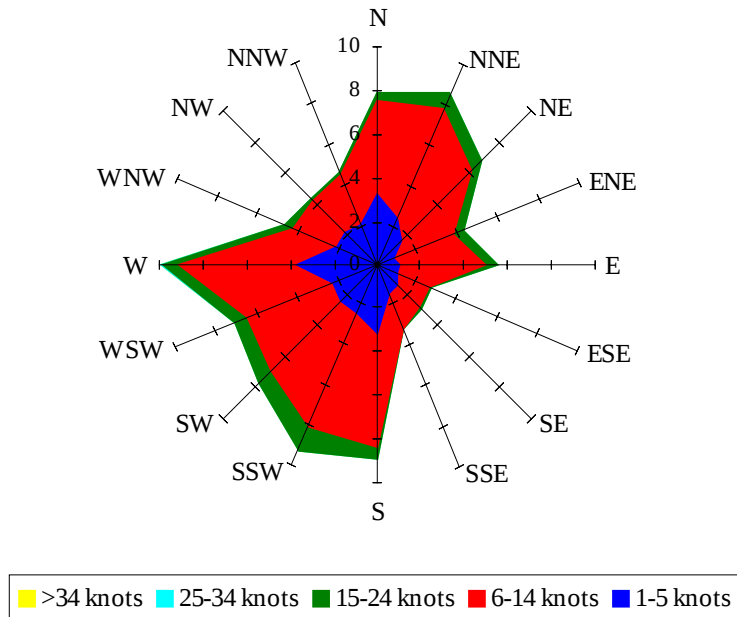
Labels of Percent Frequency on North Axis



Percent Calm = 3.00

Wind Summary - March, April, and May

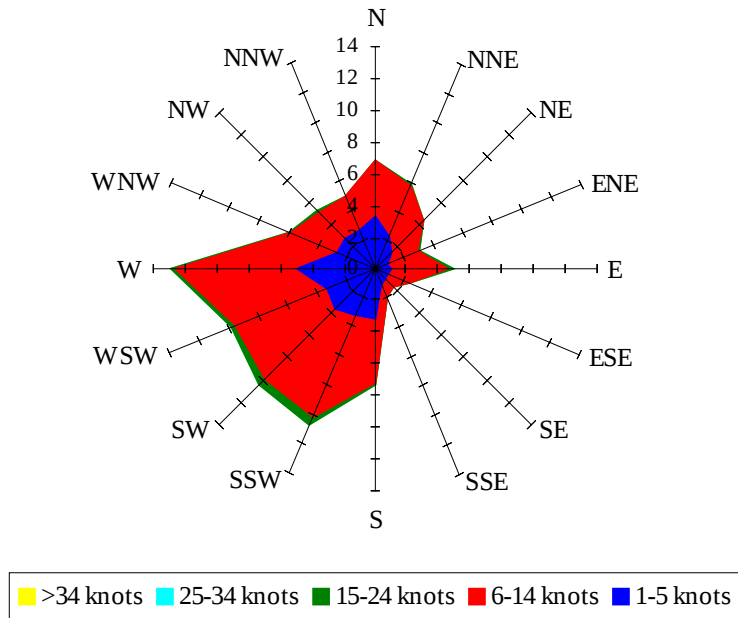
Labels of Percent Frequency on North Axis



Percent Calm = 2.01

Wind Summary - June, July, and August

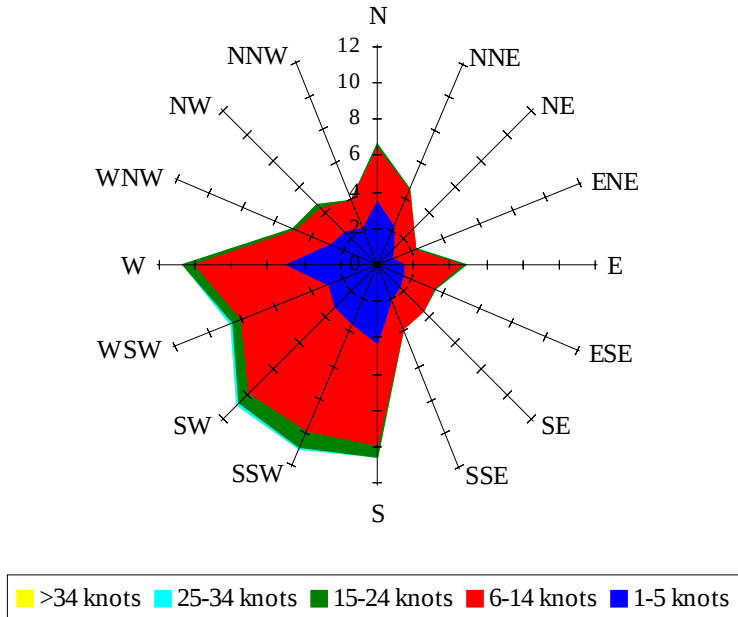
Labels of Percent Frequency on North Axis



Percent Calm = 2.02

Wind Summary - September, October, and November

Labels of Percent Frequency on North Axis



Percent Calm = 3.61