

MOSCOW, RUSSIA

Latitude = 55.98 N

Longitude = 37.50 E

Period of Record = 1973 to 1996

WMO No. 275155

Elevation = 623 feet

Average Pressure = 29.25 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	84	67	74	10.1	S
0.4% Occurrence	82	66	74	9.6	S
1.0% Occurrence	79	65	73	8.8	S
2.0% Occurrence	75	63	68	8.7	S
Mean Daily Range	14	-	-	-	-
97.5% Occurrence	0	0	5	6.8	E
99.0% Occurrence	-8	-9	3	5.6	N
99.6% Occurrence	-15	-15	2	5.4	W
Median of Extreme Lows	-22	-22	1	4.3	ENE
	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	98	8.8	ESE
0.4% Occurrence	69	78	92	8.3	E
1.0% Occurrence	67	76	85	8.2	E
2.0% Occurrence	65	73	80	7.9	E
	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	106	76	0.69	7.2	E
0.4% Occurrence	93	72	0.61	7.2	E
1.0% Occurrence	88	70	0.57	7.0	E
2.0% Occurrence	82	68	0.54	7.0	E
Air Conditioning/ Humid Area Criteria	# of Hours	T ≥ 93°F	T ≥ 80°F	T _{wb} ≥ 73°F	T _{wb} ≥ 67°F
		1	58	2	86

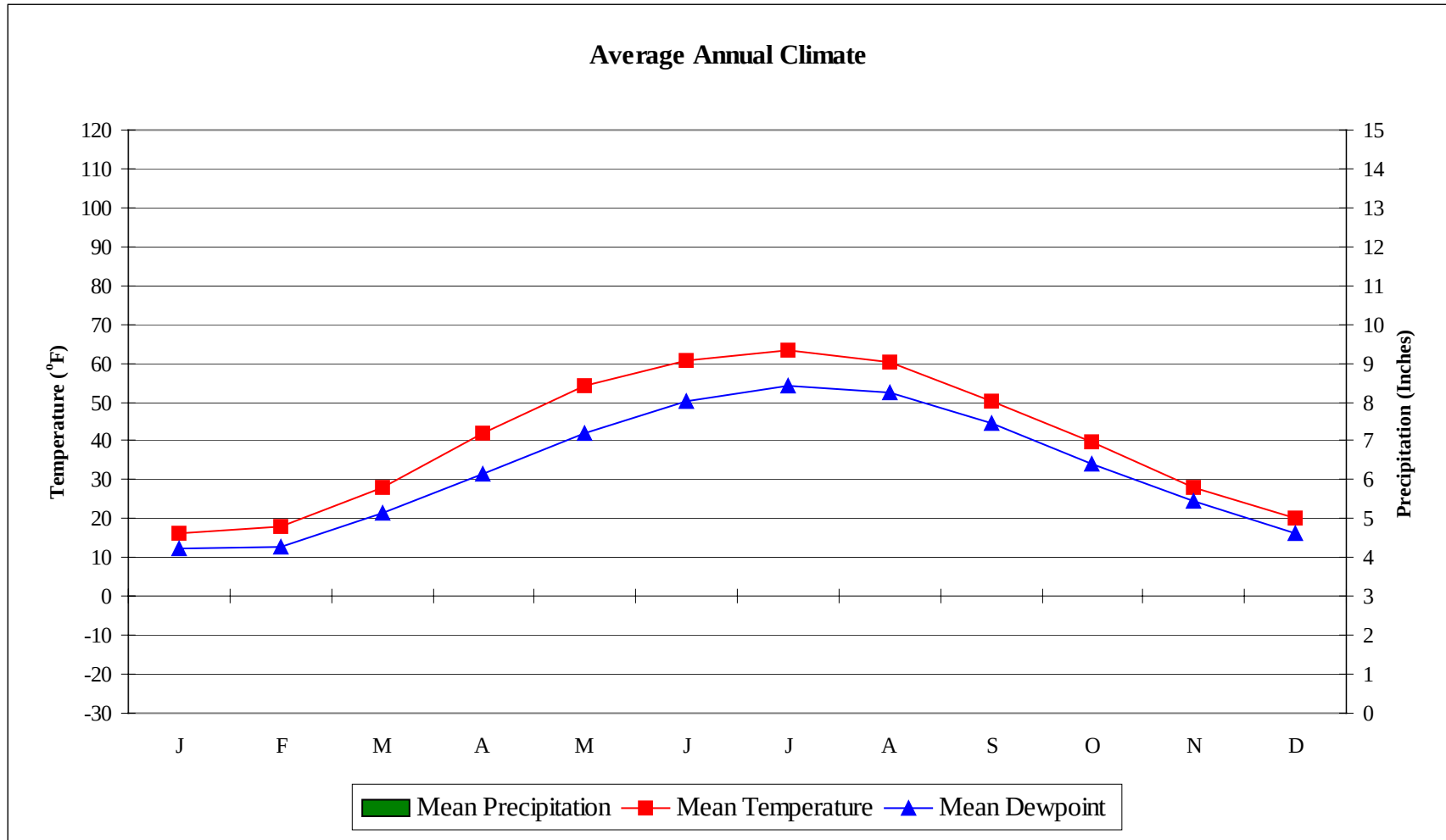
Other Site Data

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 + 0.1
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 (#)
43.0	N/A	N/A	43

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

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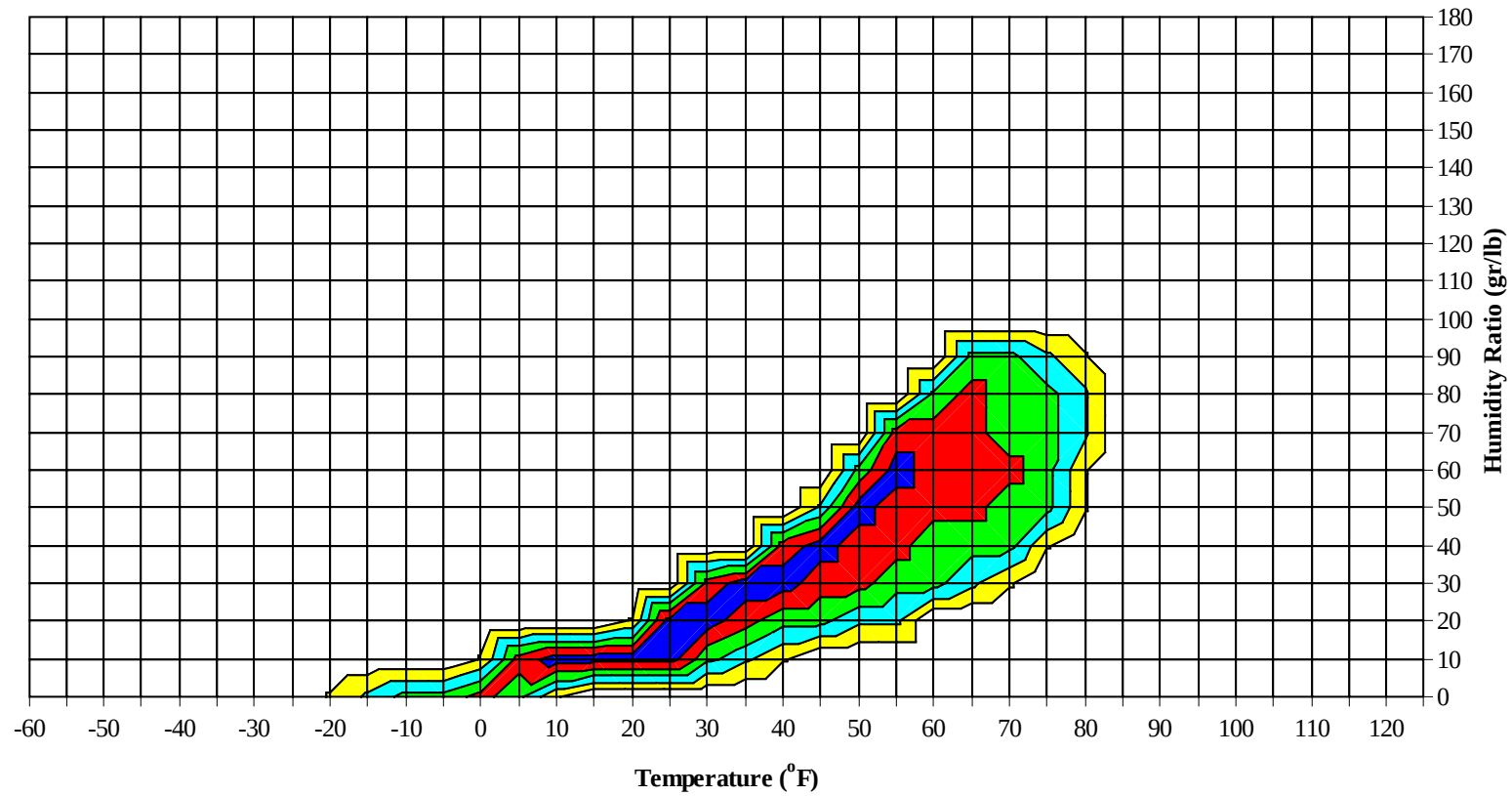


No Precipitation Data Available

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Long Term Psychrometric Summary

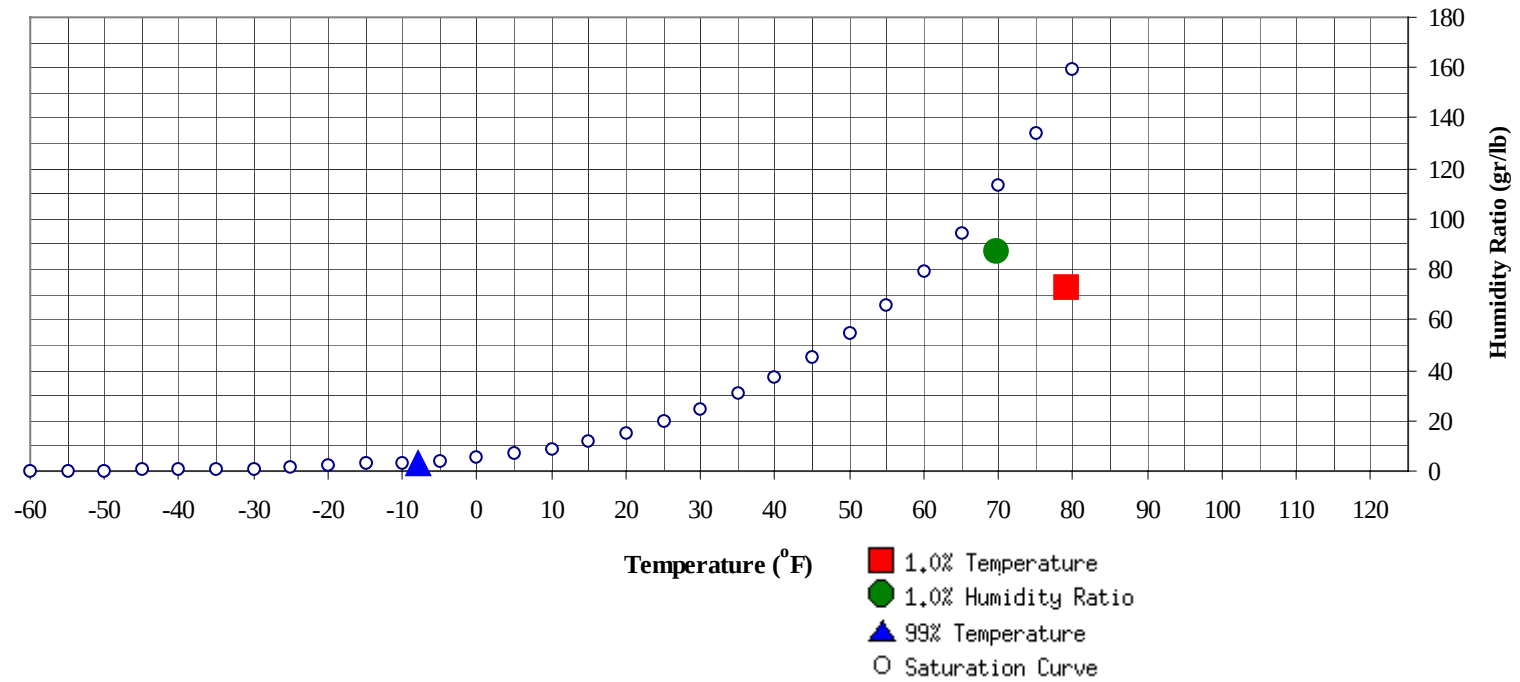


- 50% of all observations
- 80% of all observations
- 95% of all observations
- 97.5% of all observations
- 99% of all observations

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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	-8	2.9	-1.5		87.5	69.7	65.1	62.6	30.4

1.0% Dry Bulb	(°F)	MCHR (gr/lb)	MCWB (°F)	Enthalpy (btu/lb)
	79	72.9	65.1	30.4

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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		
95 / 99															
90 / 94															
85 / 89															
80 / 84															
75 / 79															
70 / 74															
65 / 69															
60 / 64													0	0	50.5
55 / 59												1	0	1	48.6
50 / 54						0			0	36.0	0	2	2	4	45.0
45 / 49						0	0		0	36.0	1	8	6	15	40.4
40 / 44						0	1	0	1	38.6	3	15	10	28	37.1
35 / 39	5	7	7	19	34.5	6	11	10	27	34.5	23	56	50	130	34.0
30 / 34	41	45	42	128	30.7	31	39	36	106	30.6	62	72	74	208	30.0
25 / 29	40	39	40	119	25.4	34	38	37	109	25.1	56	45	51	152	24.7
20 / 24	23	26	26	75	21.0	22	29	30	81	20.7	27	20	20	67	20.3
15 / 19	30	34	32	96	16.6	27	33	35	95	16.2	26	15	17	58	16.2
10 / 14	29	31	31	91	11.4	31	31	31	92	11.2	23	9	12	44	11.4
5 / 9	21	22	22	65	6.0	22	19	20	61	5.9	13	4	4	21	6.2
0 / 4	19	18	18	55	0.8	19	11	15	45	0.9	9	1	2	12	1.2
-5 / -1	11	10	10	31	-3.8	11	5	5	21	-3.7	2	0	0	2	-3.5
-10 / -6	14	9	11	34	-7.7	9	4	4	17	-7.9	1	0	0	1	-7.6
-15 / -11	5	3	4	12	-12.1	5	2	1	8	-12.1	0	0	0	0	-11.5
-20 / -16	4	3	3	10	-16.6	4	2	1	7	-16.3	0			0	-16.0
-25 / -21	3	1	1	5	-21.8	1	0	0	1	-21.7					
-30 / -26	1	1	1	3	-27.4	1	0		1	-26.4					
-35 / -31	1	0	0	1	-31.4										
-40 / -36															
-45 / -41															

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		
95 / 99															
90 / 94												0	0	0	71.5
85 / 89							0	0	0	64.7		1	0	1	70.1
80 / 84							5	2	7	62.9		10	4	14	66.9
75 / 79		0	0	0	57.3	0	16	7	23	60.9	0	30	15	45	63.8
70 / 74		4	2	6	54.7	1	30	18	49	58.2	4	45	31	80	61.0
65 / 69		6	3	9	53.5	2	23	17	42	56.1	9	37	31	77	58.9
60 / 64	0	15	10	25	51.0	12	42	39	93	53.7	44	49	57	150	56.8
55 / 59	3	24	18	45	48.0	35	42	49	126	50.9	63	38	52	153	53.4
50 / 54	13	33	30	75	45.2	64	44	52	160	47.4	67	22	35	124	49.5
45 / 49	33	41	39	112	41.7	53	24	34	111	42.9	36	7	11	54	44.8
40 / 44	26	34	33	93	38.1	33	12	17	62	39.2	11	1	2	14	40.3
35 / 39	57	53	56	166	34.4	33	8	13	54	35.6	5	0	1	6	37.0
30 / 34	65	28	40	132	30.2	14	1	2	17	30.8	0			0	33.0
25 / 29	35	4	10	49	25.1	1		0	1	25.9					
20 / 24	6	0	1	7	20.5	0			0	20.8					
15 / 19	1			1	16.6										
10 / 14															
5 / 9															
0 / 4															
-5 / -1															
-10 / -6															
-15 / -11															
-20 / -16															
-25 / -21															
-30 / -26															
-35 / -31															
-40 / -36															
-45 / -41															

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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		
95 / 99		0		0	64.0										
90 / 94		1	0	1	68.8		0		0	68.0					
85 / 89		2	1	3	67.6		1	0	1	68.2					
80 / 84	0	13	6	19	67.0		7	2	9	67.5		1	0	1	64.3
75 / 79	0	34	18	52	64.7		28	13	41	64.6		4	1	5	62.2
70 / 74	6	59	38	103	61.9	1	45	28	74	62.0		9	4	13	59.8
65 / 69	14	46	42	102	60.4	5	36	29	70	60.3					
60 / 64	64	55	71	190	58.5	42	56	63	161	58.4	1	14	7	22	58.0
55 / 59	87	31	52	170	54.8	79	47	61	188	54.5	4	32	22	58	56.3
50 / 54	65	6	18	89	50.8	76	24	38	138	50.3	22	50	42	114	52.7
45 / 49	12	1	2	15	45.8	30	4	12	46	45.4	59	63	65	188	49.3
40 / 44	1			1	41.1	10	0	2	12	41.0	67	38	52	157	44.8
35 / 39						4		0	4	37.4	41	17	24	82	40.5
30 / 34						0			0	32.5	30	10	16	55	36.4
25 / 29											12	3	5	20	31.3
20 / 24											4	0	2	6	26.2
15 / 19											0			0	22.2
10 / 14															
5 / 9															
0 / 4															
-5 / -1															
-10 / -6															
-15 / -11															
-20 / -16															
-25 / -21															
-30 / -26															
-35 / -31															
-40 / -36															
-45 / -41															

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MOSCOW, RUSSIA

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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		
95 / 99															
90 / 94															
85 / 89															
80 / 84															
75 / 79															
70 / 74		0	0	0	58.2										
65 / 69		1	0	1	55.5										
60 / 64	1	5	2	8	53.3										
55 / 59	2	13	8	23	50.9										
50 / 54	14	37	27	78	47.8	0	1	0	1	46.7	0			0	
45 / 49	36	49	45	131	43.7	3	4	3	10	44.4	0			0	
40 / 44	38	39	41	118	39.8	9	14	12	35	40.1	0	1	0	1	40.4
35 / 39	60	51	57	169	35.5	39	48	45	132	35.8	10	12	12	34	35.0
30 / 34	47	31	39	117	30.6	72	71	72	215	31.1	54	55	53	162	30.8
25 / 29	30	16	21	67	25.4	42	43	43	128	25.4	47	50	49	146	25.5
20 / 24	10	5	6	21	20.8	20	18	21	59	20.6	26	29	30	85	21.0
15 / 19	6	2	2	10	17.0	23	20	20	63	16.6	35	30	32	97	16.7
10 / 14	2	0	1	3	12.8	15	10	13	38	11.5	25	25	25	75	11.4
5 / 9	0			0	8.0	9	5	7	21	6.1	19	18	18	55	6.1
0 / 4						4	3	3	10	0.9	15	14	12	41	1.0
-5 / -1						2	1	1	4	-3.9	7	4	7	18	-3.6
-10 / -6						1	1	1	3	-7.1	5	5	6	16	-7.7
-15 / -11						0			0	-12.1	3	2	2	7	-12.1
-20 / -16											2	1	2	5	-16.7
-25 / -21											1	1	0	2	-21.5
-30 / -26											0	0	0	0	-27.8
-35 / -31											0	0	0	0	-31.7
-40 / -36											0	0	0	0	-36.3
-45 / -41											0			0	-40.8

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WMO No. 275155

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

Period of Record = 1973 to 1996

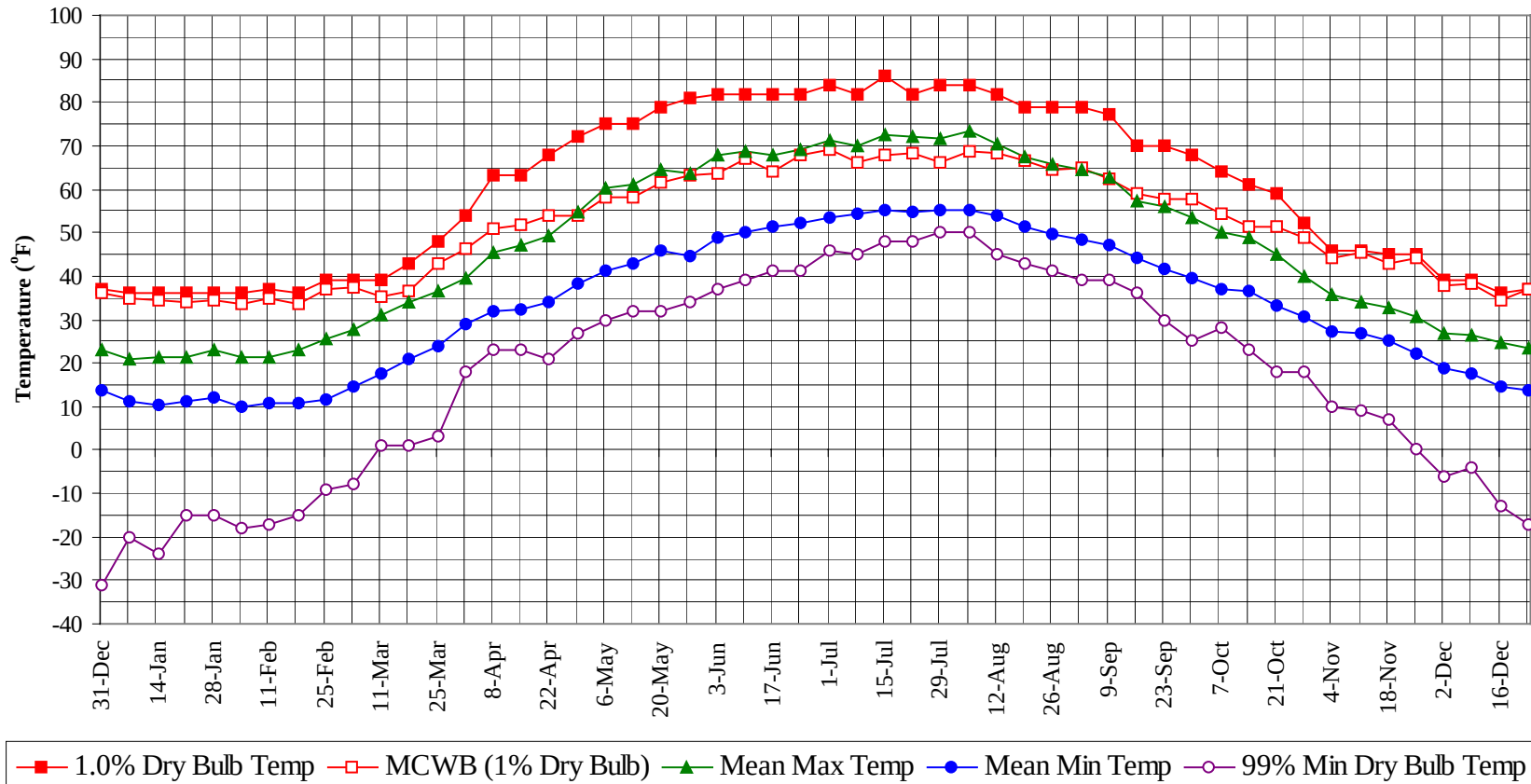
Annual Totals						
Temperature Range (°F)	Hour Group (LST)			Total Obs	M C W B (°F)	
	01 To 08	09 To 16	17 To 00			
95 / 99	0			0	64.0	
90 / 94	1			1	2	69.0
85 / 89	5			2	7	68.3
80 / 84	0	37	15	52	66.4	
75 / 79	1	114	56	171	63.8	
70 / 74	12	197	122	331	61.0	
65 / 69	31	164	131	326	59.1	
60 / 64	168	258	267	694	56.9	
55 / 59	296	250	288	833	53.1	
50 / 54	363	238	272	873	48.8	
45 / 49	276	179	207	663	43.7	
40 / 44	176	133	142	450	39.4	
35 / 39	273	255	267	795	35.1	
30 / 34	393	339	357	1089	30.6	
25 / 29	284	232	246	762	25.2	
20 / 24	133	123	130	386	20.7	
15 / 19	146	130	135	411	16.5	
10 / 14	122	102	110	334	11.4	
5 / 9	83	65	68	215	6.0	
0 / 4	66	46	49	160	0.9	
-5 / -1	32	20	22	74	-3.7	
-10 / -6	31	18	21	70	-7.7	
-15 / -11	14	6	7	27	-12.1	
-20 / -16	11	6	5	22	-16.5	
-25 / -21	5	2	2	9	-21.7	
-30 / -26	2	1	1	4	-27.2	
-35 / -31	0	0	0	0	-31.6	
-40 / -36	0	0	0	0	-36.3	
-45 / -41	0			0	-40.8	

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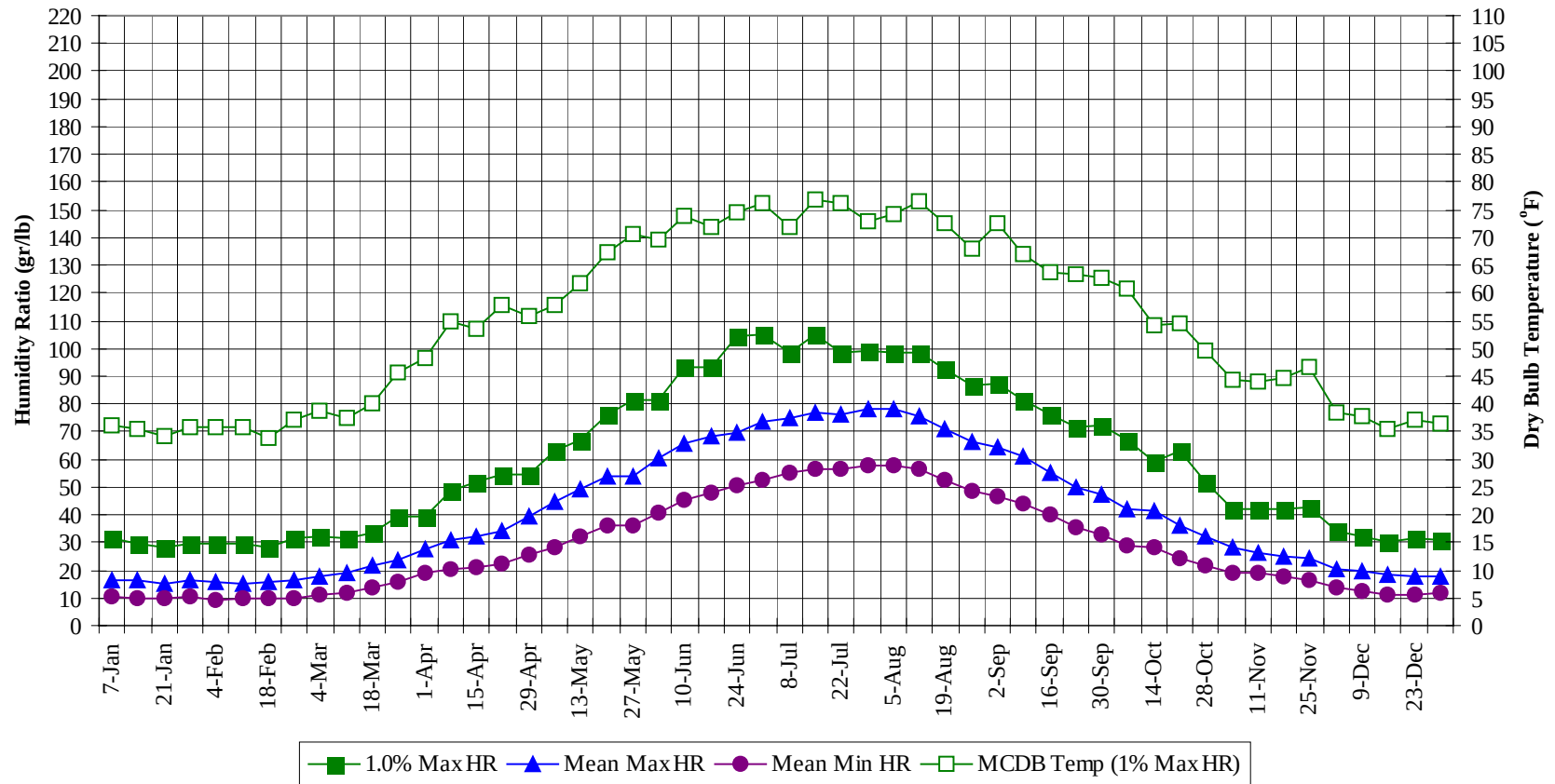
Annual Summary of Temperatures



MOSCOW, RUSSIA

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Long Term Humidity and Dry Bulb Temperature Summary



MOSCOW, RUSSIA

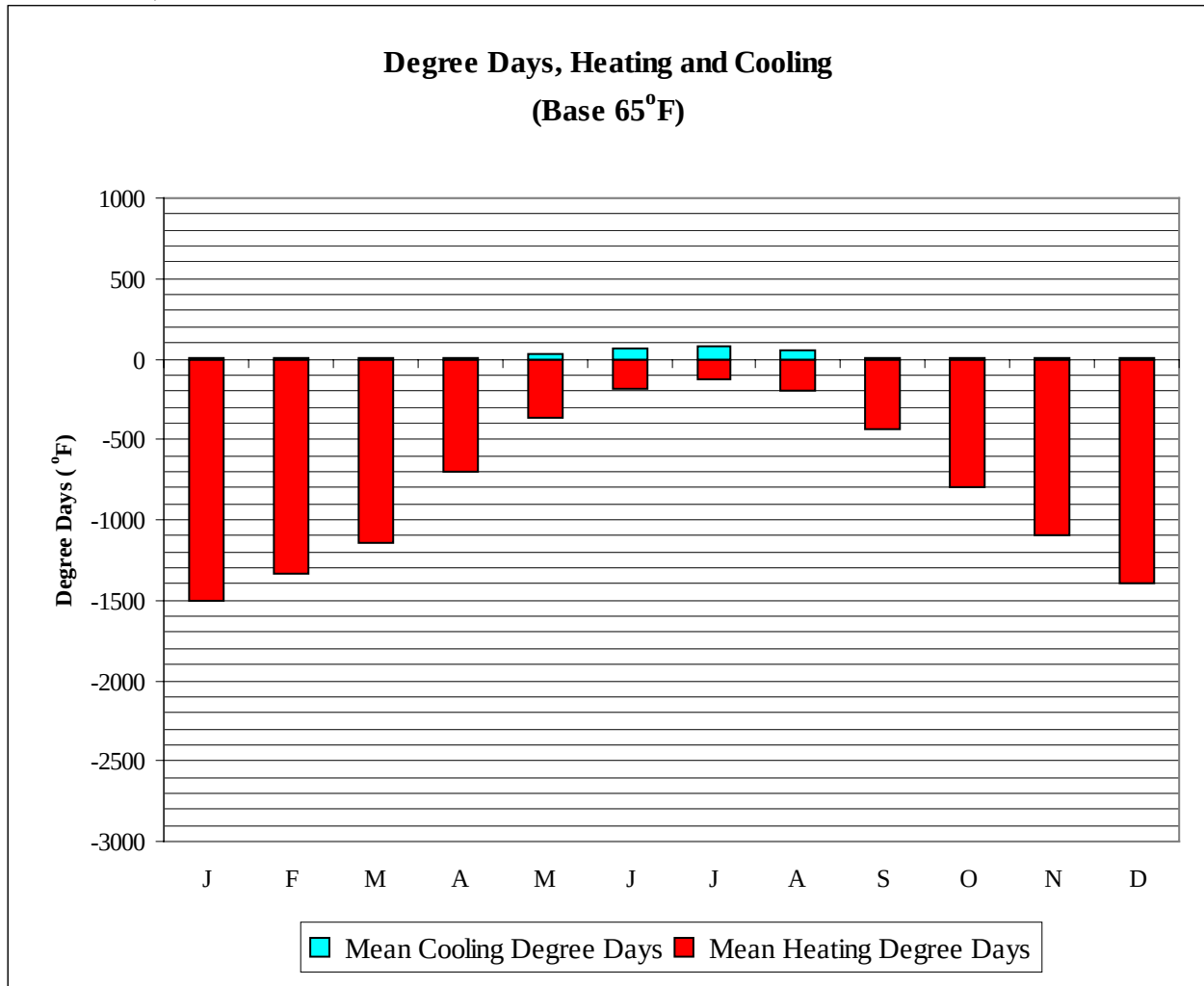
WMO No. 275155

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	36.0	34.7	20.9	11.0	-20.0	31.5	36.2	16.3	10.4
14-Jan	36.0	34.5	21.4	10.4	-24.0	29.4	35.6	16.2	10.0
21-Jan	36.0	33.8	21.1	11.3	-15.0	28.0	34.1	15.4	9.9
28-Jan	36.0	34.5	22.8	12.1	-15.0	29.4	35.7	16.5	10.3
4-Feb	36.0	33.5	21.5	9.8	-18.0	29.4	35.7	15.7	9.2
11-Feb	37.0	34.8	21.5	10.8	-17.0	29.4	35.7	15.2	9.9
18-Feb	36.0	33.8	22.9	10.8	-15.0	28.0	34.0	15.5	9.8
25-Feb	39.0	36.9	25.4	11.5	-9.0	31.5	37.0	16.5	9.9
4-Mar	39.0	37.3	27.6	14.5	-8.0	32.2	38.7	17.7	11.1
11-Mar	39.0	35.3	30.9	17.5	1.0	31.5	37.3	19.4	11.9
18-Mar	43.0	36.5	34.0	21.0	1.0	33.6	40.1	21.7	13.7
25-Mar	48.0	42.8	36.8	23.8	3.0	39.2	45.6	23.6	15.6
1-Apr	54.0	46.5	39.7	28.9	18.0	39.2	48.3	27.6	18.8
8-Apr	63.0	50.9	45.6	31.8	23.0	48.3	54.9	31.0	20.5
15-Apr	63.0	51.9	47.1	32.1	23.0	51.8	53.6	32.3	21.1
22-Apr	68.0	53.8	49.2	33.9	21.0	54.6	57.9	33.9	22.5
29-Apr	72.0	53.7	54.9	38.4	27.0	54.6	55.8	39.2	25.8
6-May	75.0	58.1	60.4	41.1	30.0	63.0	57.7	44.8	28.4
13-May	75.0	58.2	61.2	42.9	32.0	67.2	61.7	49.2	32.1
20-May	79.0	61.4	64.4	45.8	32.0	76.3	67.2	53.9	36.0
27-May	81.0	63.2	63.8	44.6	34.0	81.2	70.7	53.7	36.1
3-Jun	82.0	63.8	68.0	49.0	37.0	81.2	69.7	60.5	40.9
10-Jun	82.0	66.9	68.7	50.2	39.0	93.1	74.0	65.7	45.6
17-Jun	82.0	64.2	68.0	51.3	41.0	93.1	72.1	68.3	47.8
24-Jun	82.0	67.9	69.1	52.1	41.0	104.3	74.4	69.4	50.8
1-Jul	84.0	69.3	71.3	53.7	46.0	105.0	76.0	73.4	52.6
8-Jul	82.0	66.2	69.9	54.3	45.0	98.7	71.9	74.9	55.0
15-Jul	86.0	67.8	72.6	55.3	48.0	105.0	77.0	76.7	56.3
22-Jul	82.0	68.4	71.9	54.9	48.0	98.7	76.2	76.3	56.2
29-Jul	84.0	66.3	71.8	55.1	50.0	99.4	73.0	78.1	58.0
5-Aug	84.0	68.8	73.3	55.3	50.0	98.7	74.2	78.3	57.6
12-Aug	82.0	68.2	70.5	54.0	45.0	98.7	76.5	75.7	56.2
19-Aug	79.0	66.8	67.3	51.4	43.0	92.4	72.4	70.9	52.5
26-Aug	79.0	64.5	65.9	49.7	41.0	86.8	68.0	66.5	48.8
2-Sep	79.0	64.9	64.6	48.3	39.0	87.5	72.7	64.6	46.4
9-Sep	77.0	62.4	62.7	47.1	39.0	81.2	66.9	60.8	44.2
16-Sep	70.0	59.1	57.3	44.0	36.0	76.3	63.6	55.0	40.2
23-Sep	70.0	57.8	55.9	41.5	30.0	71.4	63.2	49.8	35.7
30-Sep	68.0	57.9	53.3	39.6	25.0	72.1	62.6	47.1	32.5
7-Oct	64.0	54.3	50.2	36.9	28.0	67.2	60.6	41.8	28.8
14-Oct	61.0	51.2	48.9	36.7	23.0	58.8	54.2	41.1	28.0
21-Oct	59.0	51.2	45.1	33.2	18.0	63.0	54.6	36.0	24.4
28-Oct	52.0	48.8	40.2	30.6	18.0	51.8	49.6	32.3	21.8
4-Nov	46.0	44.3	35.9	27.3	10.0	42.0	44.5	28.2	19.3
11-Nov	46.0	45.6	33.8	26.7	9.0	42.0	43.9	26.2	18.8
18-Nov	45.0	43.0	32.8	25.3	7.0	42.0	44.5	25.1	18.0
25-Nov	45.0	44.3	30.8	22.3	0.0	42.7	46.5	24.1	16.3
2-Dec	39.0	38.0	27.0	18.9	-6.0	34.3	38.5	20.4	13.8
9-Dec	39.0	38.1	26.5	17.6	-4.0	32.2	37.9	19.6	12.6
16-Dec	36.0	34.7	24.6	14.5	-13.0	30.1	35.4	18.2	11.2
23-Dec	37.0	36.8	23.4	13.9	-17.0	31.5	37.2	17.6	11.3
31-Dec	37.0	36.2	22.8	13.8	-31.0	30.8	36.3	17.8	11.9

MOSCOW, RUSSIA

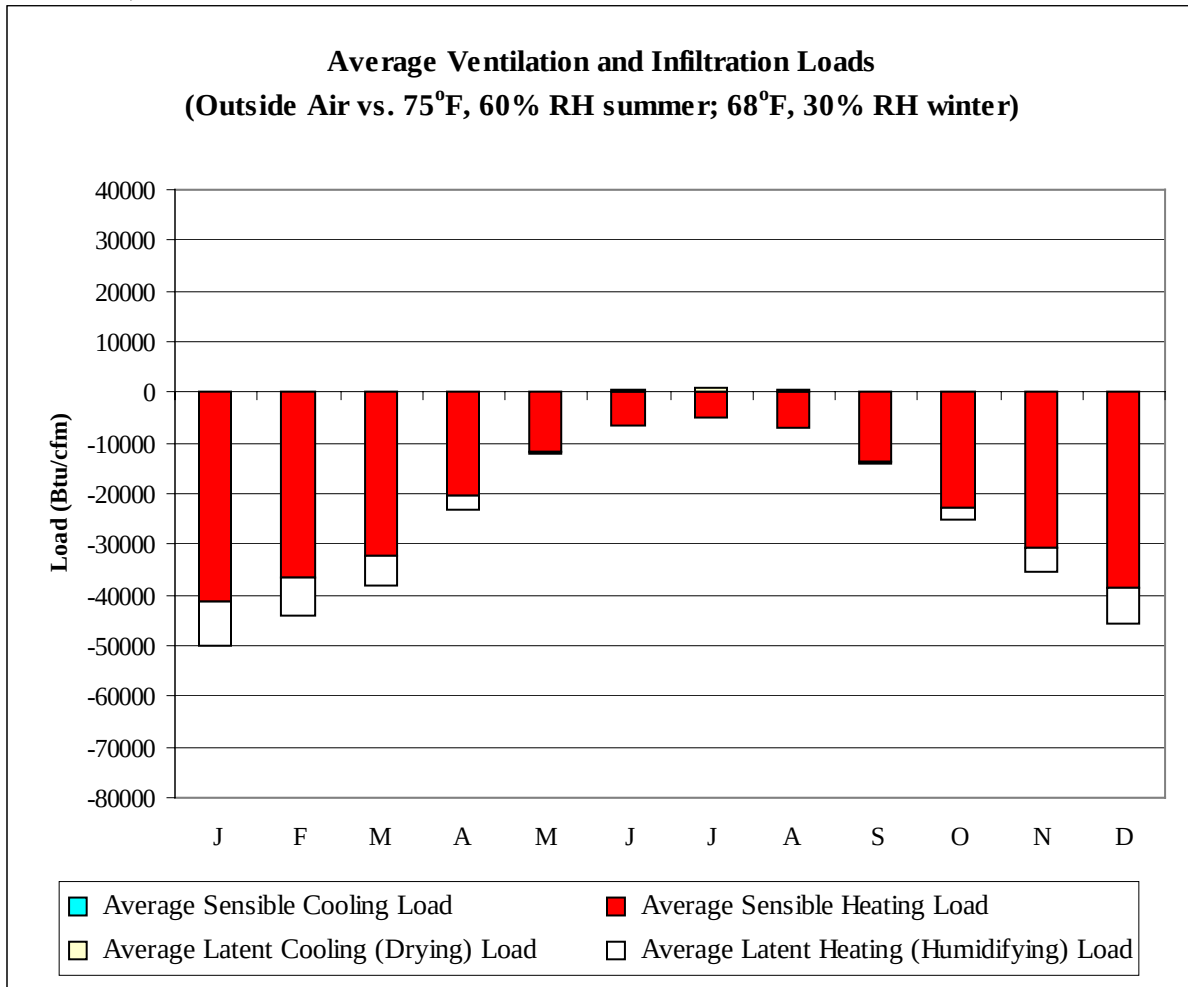
WMO No. 275155



	Mean Cooling Degree Days (°F)	Mean Heating Degree Days (°F)
JAN	0	1506
FEB	0	1330
MAR	0	1144
APR	2	699
MAY	32	366
JUN	61	189
JUL	79	128
AUG	52	200
SEP	8	443
OCT	0	791
NOV	0	1099
DEC	0	1396
ANN	234	9291

MOSCOW, RUSSIA

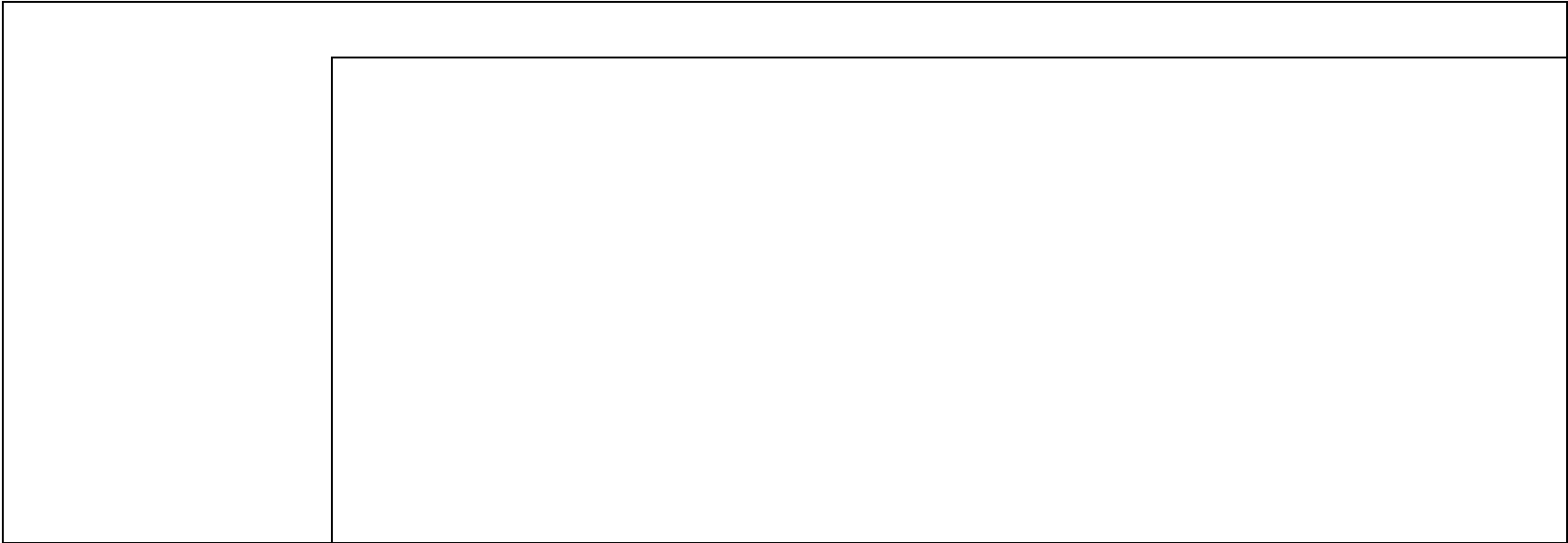
WMO No. 275155



	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	-41459	0	-8363
FEB	0	-36670	0	-7592
MAR	0	-32055	0	-6031
APR	0	-20403	0	-2664
MAY	88	-11553	6	-708
JUN	212	-6599	297	-51
JUL	288	-4908	520	-4
AUG	147	-7051	256	-6
SEP	14	-13710	12	-299
OCT	0	-22915	0	-2177
NOV	0	-30804	0	-4759
DEC	0	-38584	0	-7252
ANN	749	-26671	1091	-3990

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

No Solar Radiation
Data Available

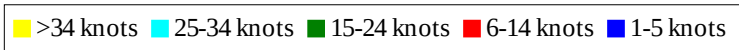
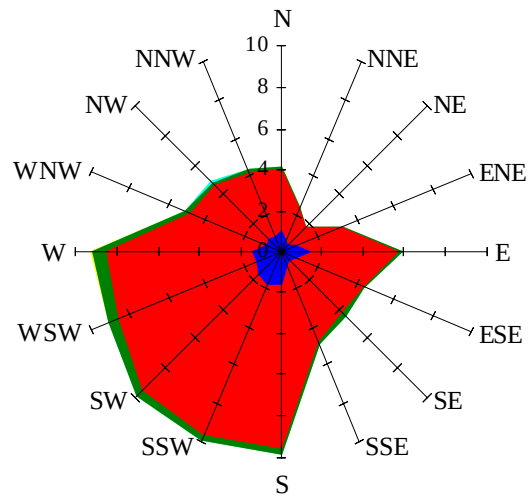


Average Annual Solar Heat and Illumination – Nearest Available Site

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

Wind Summary - December, January, and February

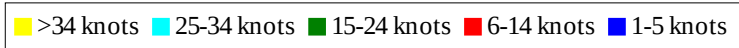
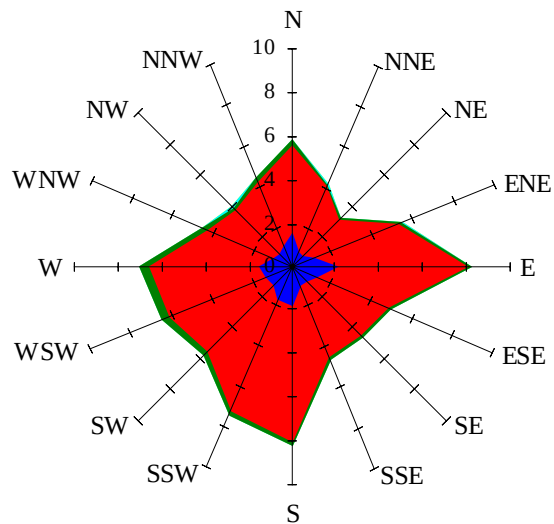
Labels of Percent Frequency on North Axis



Percent Calm = 7.42

Wind Summary - March, April, and May

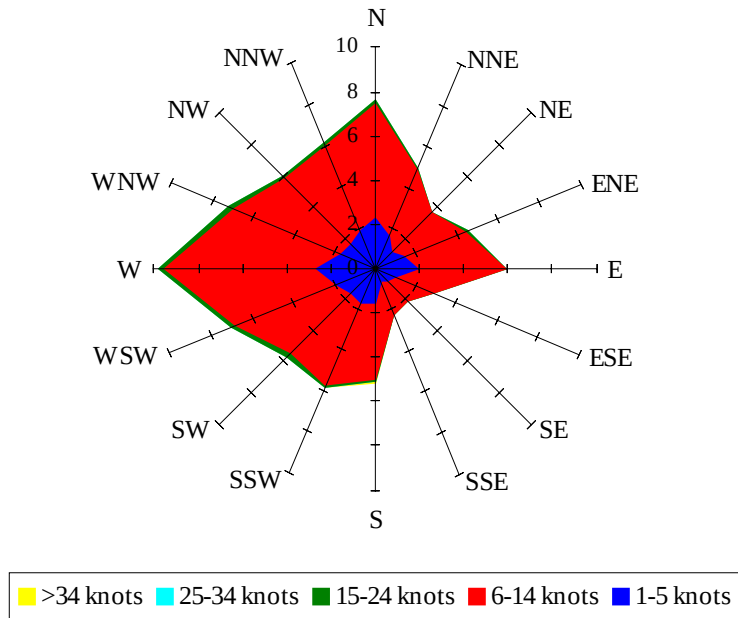
Labels of Percent Frequency on North Axis



Percent Calm = 12.12

Wind Summary - June, July, and August

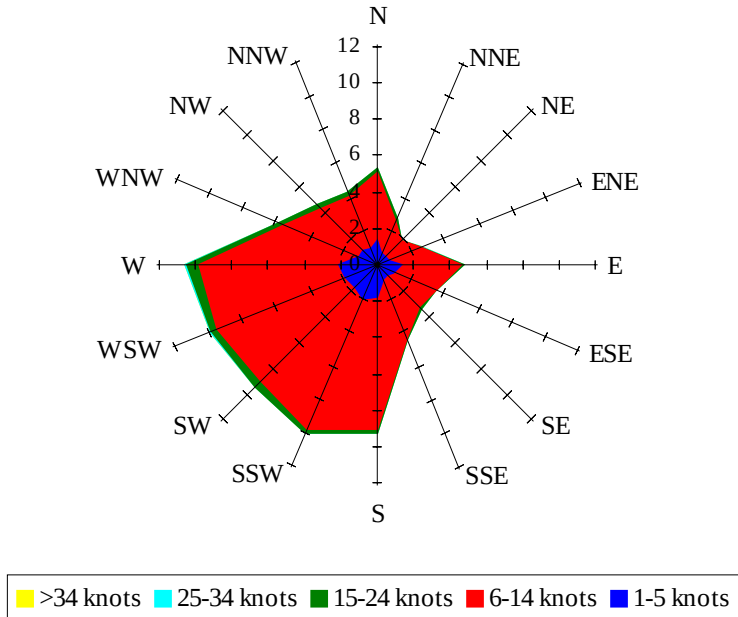
Labels of Percent Frequency on North Axis



Percent Calm = 14.16

Wind Summary - September, October, and November

Labels of Percent Frequency on North Axis



Percent Calm = 8.26