

ANKARA, TURKEY

Latitude = 40.12 N

Longitude = 32.98 E

Period of Record = 1973 to 1996

WMO No. 171280

Elevation = 3114 feet

Average Pressure = 26.75 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	95	64	53	8.9	W
0.4% Occurrence	90	63	55	7.9	W
1.0% Occurrence	88	63	56	7.8	W
2.0% Occurrence	84	62	56	7.9	W
Mean Daily Range	23	-	-	-	-
97.5% Occurrence	17	16	11	1.8	NNE
99.0% Occurrence	10	9	8	1.1	N
99.6% Occurrence	3	2	6	0.8	E
Median of Extreme Lows	-4	-5	4	0.5	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	88	92	9.8	SW
0.4% Occurrence	66	84	75	8.3	NNE
1.0% Occurrence	64	83	68	8.0	NNE
2.0% Occurrence	63	81	66	7.9	NNE
	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	102	80	0.61	9.4	SSW
0.4% Occurrence	84	73	0.50	7.4	N
1.0% Occurrence	78	71	0.47	7.0	NNE
2.0% Occurrence	74	70	0.44	6.6	NNE
Air Conditioning/ Humid Area Criteria	# of Hours	T ≥ 93°F	T ≥ 80°F	T _{wb} ≥ 73°F	T _{wb} ≥ 67°F
		15	404	0	21

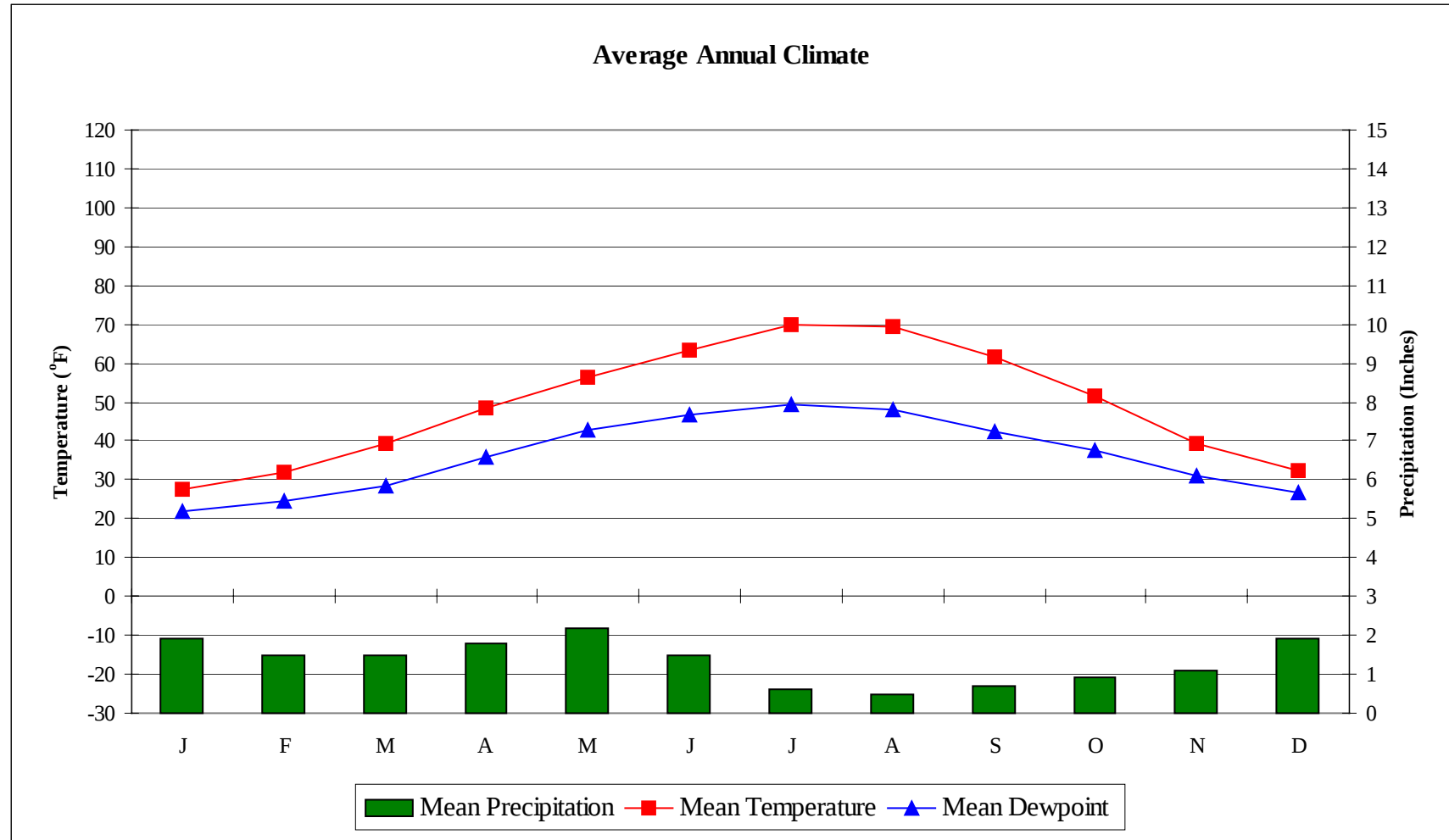
Other Site Data

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 + 0.4
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 (#)
51.9	N/A	N/A	84

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

ANKARA, TURKEY

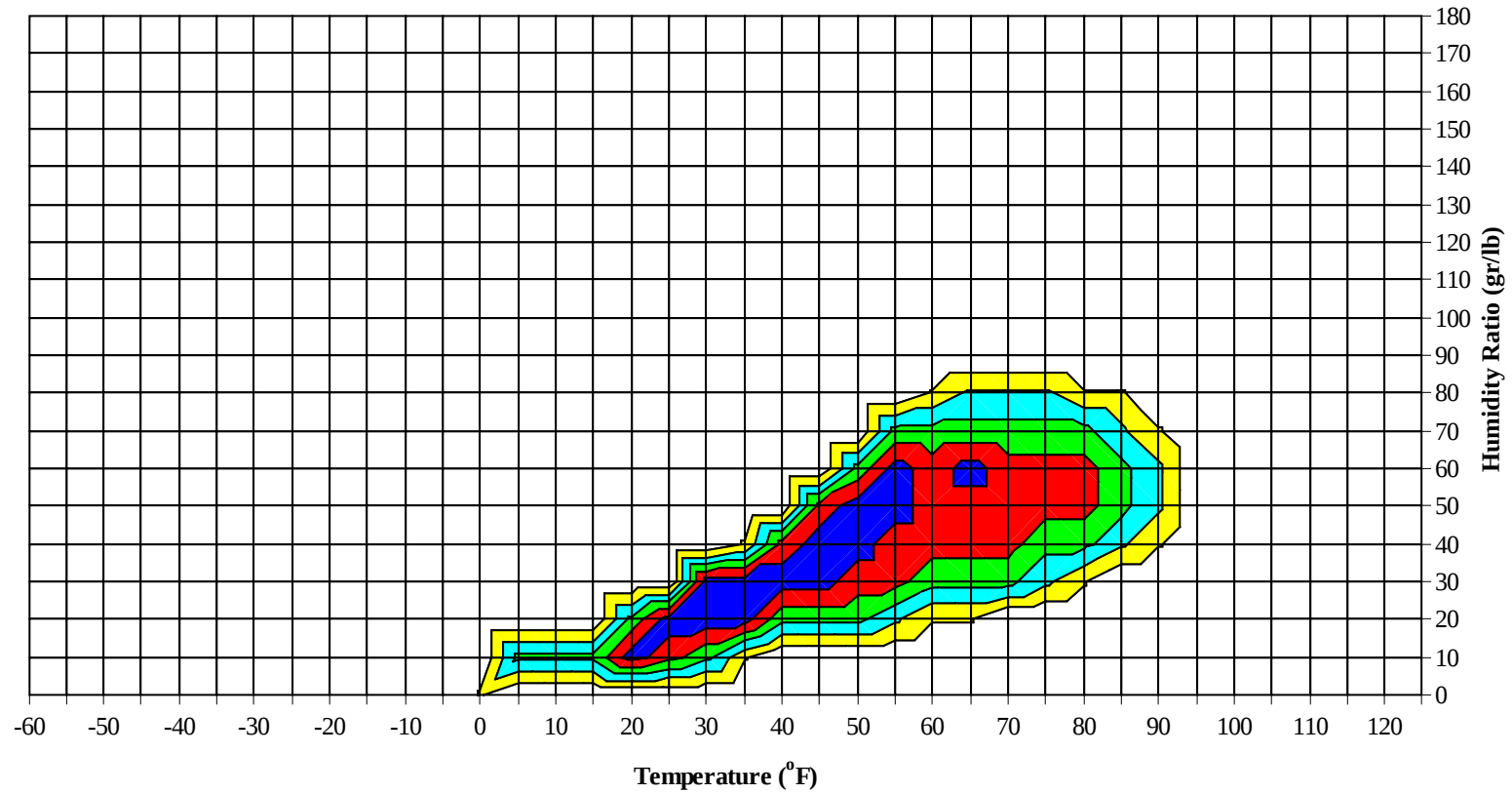
WMO No. 171280



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WMO No. 171280

Long Term Psychrometric Summary

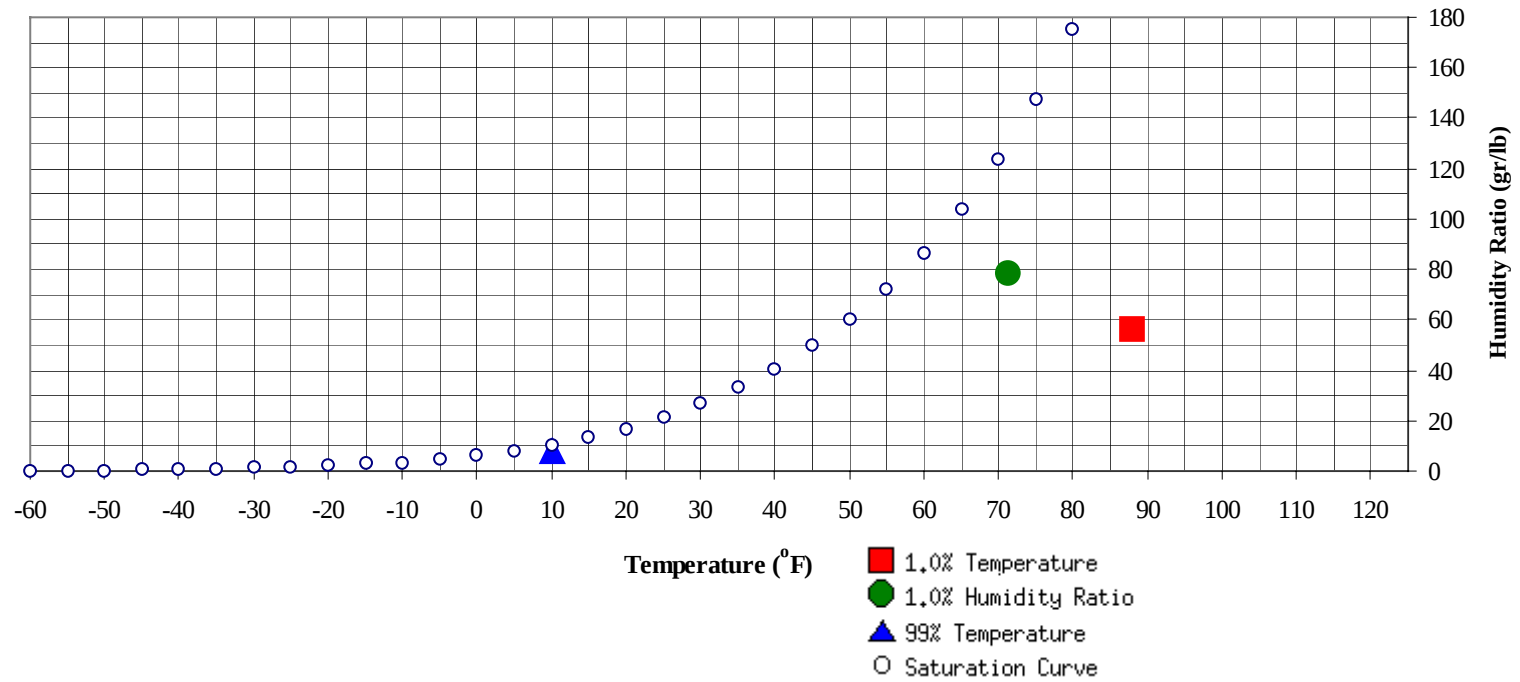


- 50% of all observations
- 80% of all observations
- 95% of all observations
- 97.5% of all observations
- 99% of all observations

ANKARA, TURKEY

WMO No. 171280

Psychrometric Summary of Peak Design Values



	(°F)	MCHR	Enthalpy	1.0% Humidity Ratio	(gr/lb)	MCDB	MCWB	MC Dewpt	Enthalpy
		(gr/lb)	(btu/lb)			(°F)	(°F)	(°F)	(btu/lb)
99% Dry Bulb	10	8.2	3.6	Ratio	78.4	71.4	62.1	57.2	29.4

1.0% Dry Bulb	(°F)	MCHR	MCWB	Enthalpy
		(gr/lb)	(°F)	(btu/lb)
	88	56.3	63	30.0

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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												2	0	2	52.7
65 / 69												6	2	8	50.0
60 / 64							2	0	2	47.2		17	7	24	47.9
55 / 59		0		0	50.0	0	6	2	8	45.3	0	28	14	42	45.4
50 / 54	0	2	0	2	44.1	1	16	7	24	42.6	3	37	26	67	42.9
45 / 49	2	14	5	21	41.3	3	28	16	47	40.4	13	40	39	93	40.5
40 / 44	7	23	14	44	38.0	11	28	26	65	38.0	24	33	40	98	37.7
35 / 39	24	47	40	111	34.5	35	51	48	134	34.4	52	40	52	145	34.2
30 / 34	57	65	65	187	29.9	49	40	55	145	29.7	69	27	40	136	29.7
25 / 29	48	42	50	140	25.0	49	27	32	108	24.9	50	10	17	77	25.1
20 / 24	35	23	26	84	20.6	26	12	14	52	20.4	19	3	6	28	20.5
15 / 19	28	16	22	66	16.5	19	8	14	41	16.2	10	1	3	14	16.7
10 / 14	20	8	13	41	11.3	12	4	6	22	11.1	5	1	1	7	11.3
5 / 9	13	4	7	24	6.1	7	2	2	11	6.2	2	0	0	2	6.5
0 / 4	8	2	4	14	1.3	5	1	1	7	1.0	1	0	0	1	1.6
-5 / -1	4	1	1	6	-3.5	3	0	0	3	-3.4	0	0	0	0	-3.7
-10 / -6	2	0	0	2	-7.3	2	0	0	2	-7.5	0	0	0	0	-7.9
-15 / -11	0	0	0	0	-12.3	0	0	0	0	-12.3	0		0	0	-11.7
-20 / -16	1	0	0	1	-16.8	0	0	0	0	-17.3	0			0	-16.1
-25 / -21	0			0	-22.3	0			0	-21.4					

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												0	0	0	64.0
90 / 94							0		0	64.0		3	1	4	63.9
85 / 89							1	0	1	61.9		7	4	11	62.2
80 / 84		1	0	1	55.8		7	2	9	60.4		26	11	37	60.7
75 / 79		6	2	8	55.5		20	7	27	58.5	0	47	24	70	59.0
70 / 74		15	5	20	53.5	0	42	18	60	56.1	2	64	35	101	57.2
65 / 69	0	18	9	27	51.6	1	41	22	64	53.8	6	42	34	81	55.7
60 / 64	0	37	20	57	49.3	6	58	45	109	52.2	26	35	55	116	54.1
55 / 59	4	47	32	82	47.1	27	43	62	132	50.3	67	14	52	133	52.0
50 / 54	19	49	50	118	45.0	74	24	57	154	47.6	82	2	21	105	48.8
45 / 49	51	43	60	153	42.1	78	8	28	113	43.8	43	0	4	47	44.5
40 / 44	55	16	34	104	38.8	34	2	6	42	39.6	12	0	0	12	40.3
35 / 39	66	7	22	95	35.3	22	1	3	26	35.8	3	0	0	3	36.4
30 / 34	34	1	6	41	30.4	6	0	0	6	30.6	0			0	32.5
25 / 29	11		1	12	26.0	0			0	27.3					
20 / 24	1			1	21.1										
15 / 19	0			0	19.0										
10 / 14															
5 / 9															
0 / 4															
-5 / -1															
-10 / -6															
-15 / -11															
-20 / -16															
-25 / -21															

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ANKARA, TURKEY

WMO No. 171280

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		2	1	3	65.1		2	0	2	63.6			0		0 62.0
90 / 94		14	6	20	64.1		15	6	21	63.0			2	0	2 61.7
85 / 89	0	25	14	39	63.3		25	13	38	62.6			9	3	12 61.0
80 / 84	0	54	30	84	61.9	0	60	31	91	61.2			27	9	36 59.4
75 / 79	2	68	44	113	60.1	1	64	43	108	59.8	0	50	22	72	57.9
70 / 74	12	51	54	117	58.6	9	53	57	118	58.0	1	52	31	84	55.8
65 / 69	31	20	41	92	57.0	29	19	41	89	56.5	4	36	32	73	54.1
60 / 64	76	10	40	126	55.2	77	9	42	128	54.5	18	34	54	107	52.4
55 / 59	78	3	16	97	52.4	79	1	14	94	51.6	49	20	49	118	49.9
50 / 54	38	0	3	41	48.6	39	0	2	41	47.8	72	7	28	107	46.4
45 / 49	9		0	9	44.5	12		0	12	43.8	61	2	9	72	42.4
40 / 44	2			2	40.3	2			2	40.0	21	0	2	23	38.6
35 / 39	0			0	38.0	0			0	37.6	11	0	0	11	34.6
30 / 34											3			3	31.0
25 / 29											0			0	26.7
20 / 24															
15 / 19															
10 / 14															
5 / 9															
0 / 4															
-5 / -1															
-10 / -6															
-15 / -11															
-20 / -16															
-25 / -21															

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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		0	0	0	57.8										
80 / 84		5	1	6	57.9										
75 / 79		17	4	21	55.9										
70 / 74		31	9	40	54.3		0		0	53.0					
65 / 69	0	26	11	36	52.7		3	0	3	52.9					
60 / 64	2	41	27	69	50.7	0	14	2	16	49.3		0	0	0	49.0
55 / 59	8	46	43	97	48.7	0	30	9	39	47.3		2	0	2	46.7
50 / 54	32	45	59	136	46.0	5	42	26	72	45.1	1	13	4	18	44.6
45 / 49	64	24	51	140	42.4	24	46	43	113	42.3	10	29	19	58	42.1
40 / 44	52	8	23	83	38.6	25	33	39	97	38.3	16	29	23	68	38.7
35 / 39	47	4	15	66	34.9	43	36	51	131	34.4	35	58	51	144	34.7
30 / 34	28	1	4	33	30.0	62	24	40	127	30.0	66	61	71	198	30.0
25 / 29	13	0	1	14	25.4	39	8	21	68	25.3	56	38	47	141	25.1
20 / 24	1			1	20.8	20	2	7	29	20.8	29	10	18	57	20.7
15 / 19	1			1	17.2	18	1	2	21	16.9	21	5	11	37	16.7
10 / 14						3			3	12.8	11	2	3	16	11.8
5 / 9											3	0	1	4	6.6
0 / 4											1		0	1	2.1
-5 / -1															
-10 / -6															
-15 / -11															
-20 / -16															
-25 / -21															

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

Period of Record = 1973 to 1996

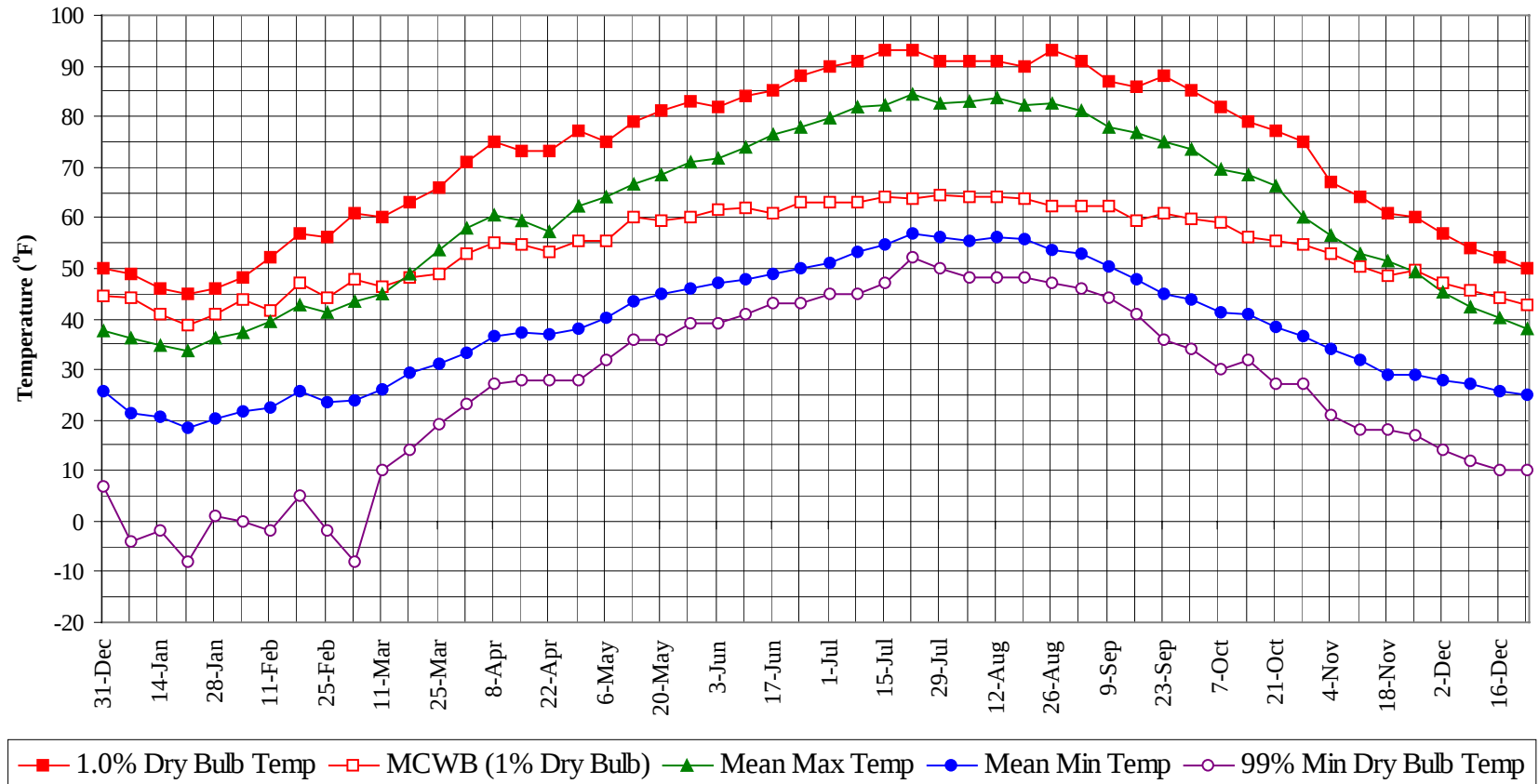
Annual Totals					
Temperature Range (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00		
95 / 99		4	1	5	64.4
90 / 94		34	13	47	63.5
85 / 89	0	69	33	101	62.6
80 / 84	0	182	85	266	61.0
75 / 79	3	270	146	420	59.1
70 / 74	24	310	208	541	57.0
65 / 69	71	212	191	474	55.0
60 / 64	205	260	291	756	52.8
55 / 59	313	242	294	850	50.0
50 / 54	365	238	286	890	46.3
45 / 49	371	234	277	883	42.3
40 / 44	262	173	206	641	38.5
35 / 39	339	244	281	865	34.6
30 / 34	371	216	279	867	29.9
25 / 29	263	126	166	556	25.1
20 / 24	131	48	69	248	20.6
15 / 19	96	31	52	179	16.5
10 / 14	50	14	23	87	11.4
5 / 9	26	7	10	43	6.2
0 / 4	15	3	6	24	1.3
-5 / -1	7	1	1	9	-3.5
-10 / -6	4	1	1	6	-7.4
-15 / -11	1	0	1	2	-12.2
-20 / -16	1	0	0	1	-16.7
-25 / -21	1			1	-21.6

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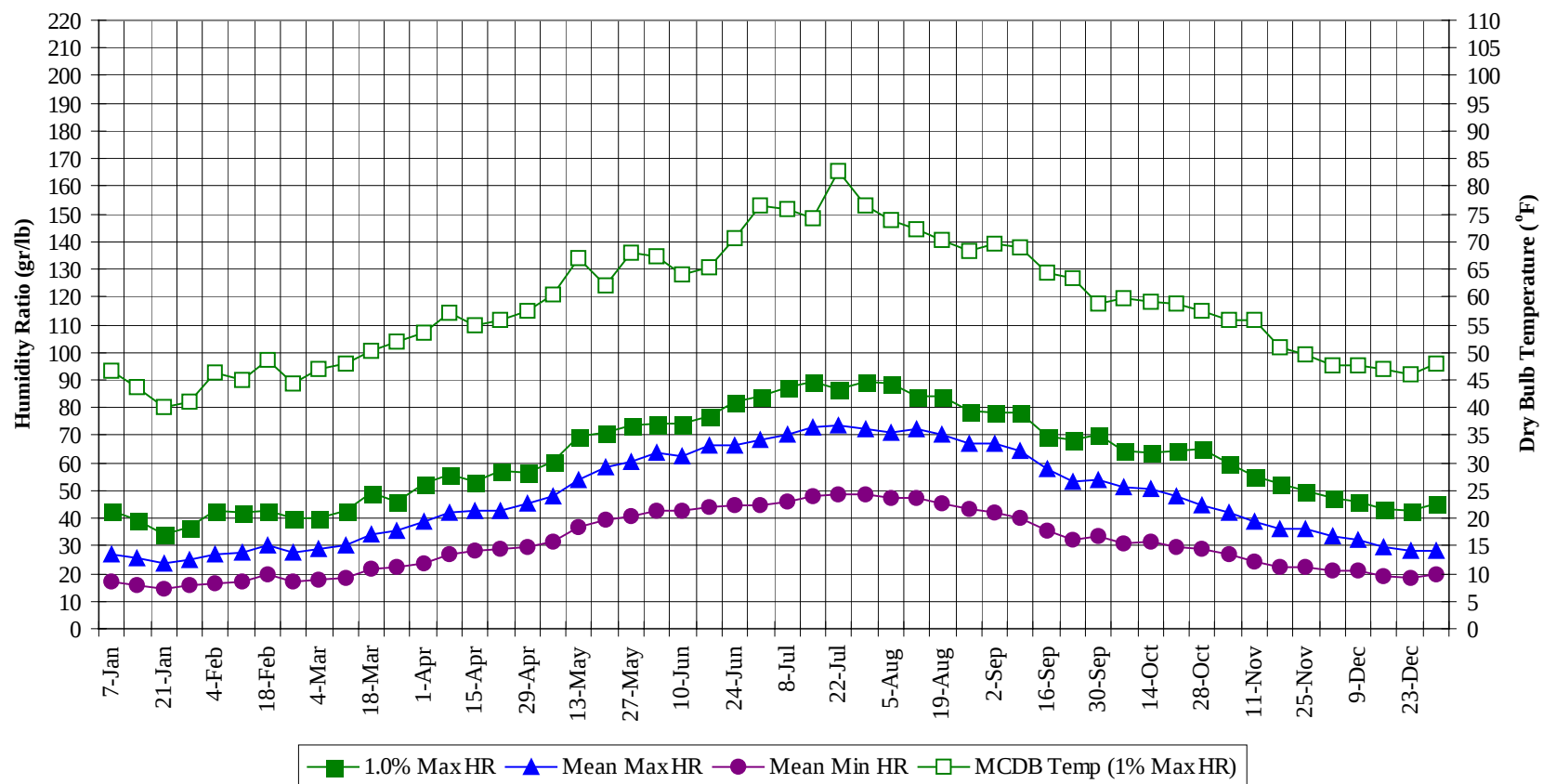
Annual Summary of Temperatures



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Long Term Humidity and Dry Bulb Temperature Summary



ANKARA, TURKEY

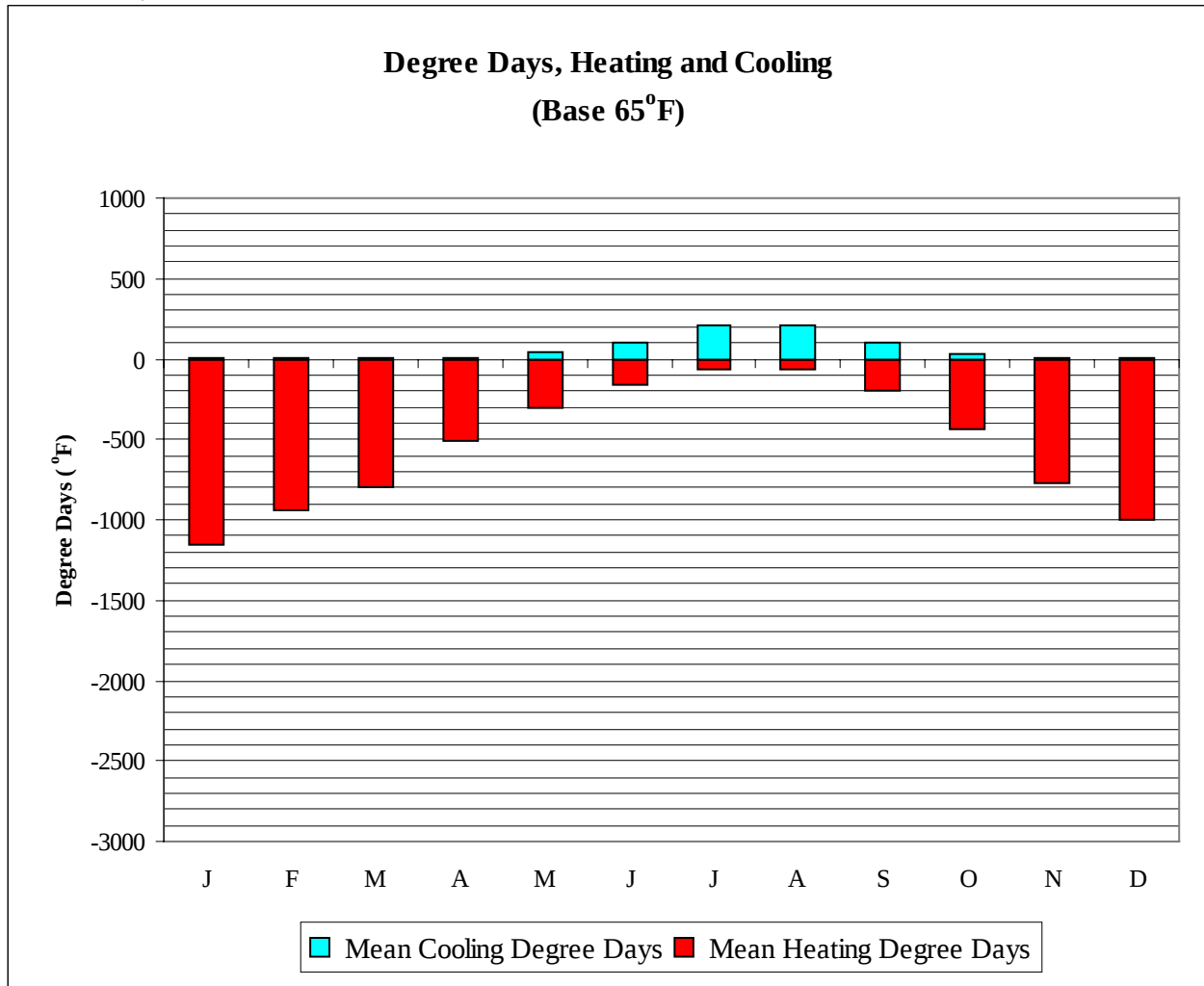
WMO No. 171280

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	49.0	44.0	36.4	21.4	-4.0	42.7	46.5	26.8	16.9
14-Jan	46.0	41.0	34.8	20.5	-2.0	39.2	43.8	25.5	15.8
21-Jan	45.0	38.6	33.5	18.4	-8.0	34.3	40.0	23.4	14.3
28-Jan	46.0	41.0	36.0	20.4	1.0	37.1	40.9	24.9	15.5
4-Feb	48.0	43.9	37.5	21.6	0.0	42.7	46.2	26.6	16.7
11-Feb	52.0	41.7	39.3	22.5	-2.0	42.0	45.1	27.6	17.2
18-Feb	57.0	46.9	42.7	25.7	5.0	42.7	48.6	30.3	19.6
25-Feb	56.0	44.2	41.4	23.6	-2.0	39.9	44.4	27.7	17.3
4-Mar	61.0	47.8	43.5	23.9	-8.0	39.9	46.9	28.6	17.6
11-Mar	60.0	46.3	44.9	26.0	10.0	42.7	47.9	30.0	18.7
18-Mar	63.0	48.0	49.0	29.4	14.0	49.0	50.3	33.9	21.8
25-Mar	66.0	48.8	53.6	31.0	19.0	46.2	52.0	35.4	22.7
1-Apr	71.0	52.8	58.0	33.4	23.0	52.5	53.5	38.5	23.9
8-Apr	75.0	55.0	60.5	36.4	27.0	56.0	57.2	42.0	26.8
15-Apr	73.0	54.6	59.4	37.3	28.0	53.2	54.8	43.0	28.6
22-Apr	73.0	53.3	57.1	36.9	28.0	57.4	55.8	42.8	28.7
29-Apr	77.0	55.5	62.2	38.0	28.0	56.7	57.3	45.4	29.7
6-May	75.0	55.5	64.0	40.1	32.0	60.2	60.3	47.9	31.5
13-May	79.0	60.0	66.8	43.3	36.0	69.3	67.0	54.1	36.6
20-May	81.0	59.5	68.5	44.9	36.0	70.7	62.1	58.2	39.2
27-May	83.0	60.0	70.9	46.1	39.0	73.5	67.9	60.5	40.6
3-Jun	82.0	61.4	71.7	47.1	39.0	74.2	67.2	63.6	42.6
10-Jun	84.0	61.9	73.9	47.8	41.0	74.2	64.0	62.7	42.6
17-Jun	85.0	60.8	76.3	48.9	43.0	77.0	65.5	66.1	44.2
24-Jun	88.0	62.9	77.7	49.8	43.0	81.9	70.5	66.5	44.8
1-Jul	90.0	63.2	79.8	51.2	45.0	84.0	76.6	68.1	44.9
8-Jul	91.0	63.1	81.8	53.3	45.0	87.5	76.0	70.3	46.2
15-Jul	93.0	64.2	82.1	54.5	47.0	89.6	74.2	72.8	48.2
22-Jul	93.0	63.9	84.6	56.9	52.0	86.8	82.7	73.7	48.5
29-Jul	91.0	64.4	82.8	56.1	50.0	89.6	76.5	72.5	48.5
5-Aug	91.0	64.0	82.9	55.5	48.0	88.9	74.0	71.2	47.2
12-Aug	91.0	64.3	83.5	56.2	48.0	84.0	72.1	72.2	47.6
19-Aug	90.0	63.8	82.3	55.8	48.0	84.0	70.4	70.2	45.6
26-Aug	93.0	62.3	82.6	53.7	47.0	79.1	68.3	67.1	43.1
2-Sep	91.0	62.4	81.3	52.9	46.0	78.4	69.8	66.8	42.1
9-Sep	87.0	62.2	77.8	50.4	44.0	78.4	69.1	64.3	40.2
16-Sep	86.0	59.3	76.7	47.6	41.0	69.3	64.5	57.5	35.6
23-Sep	88.0	60.7	75.1	44.9	36.0	68.6	63.4	53.4	32.4
30-Sep	85.0	59.8	73.6	43.8	34.0	70.0	58.9	54.1	33.2
7-Oct	82.0	58.9	69.6	41.2	30.0	64.4	59.7	51.1	31.0
14-Oct	79.0	56.3	68.6	40.8	32.0	63.7	59.2	50.3	31.3
21-Oct	77.0	55.4	66.2	38.4	27.0	64.4	58.7	48.3	29.9
28-Oct	75.0	54.6	60.1	36.6	27.0	65.1	57.4	44.7	28.6
4-Nov	67.0	52.8	56.6	34.1	21.0	59.5	55.7	41.7	27.2
11-Nov	64.0	50.2	53.0	31.7	18.0	55.3	55.9	38.6	24.4
18-Nov	61.0	48.5	51.3	28.8	18.0	52.5	50.8	36.2	22.4
25-Nov	60.0	49.8	49.2	29.0	17.0	49.7	49.7	36.4	22.6
2-Dec	57.0	47.2	45.4	27.8	14.0	47.6	47.5	33.7	21.1
9-Dec	54.0	45.7	42.4	27.1	12.0	46.2	47.5	32.1	20.8
16-Dec	52.0	44.3	40.2	25.6	10.0	43.4	47.0	29.7	19.0
23-Dec	50.0	42.9	38.0	25.1	10.0	42.7	46.0	28.3	18.5
31-Dec	50.0	44.4	37.7	25.7	7.0	45.5	47.9	28.5	19.5

ANKARA, TURKEY

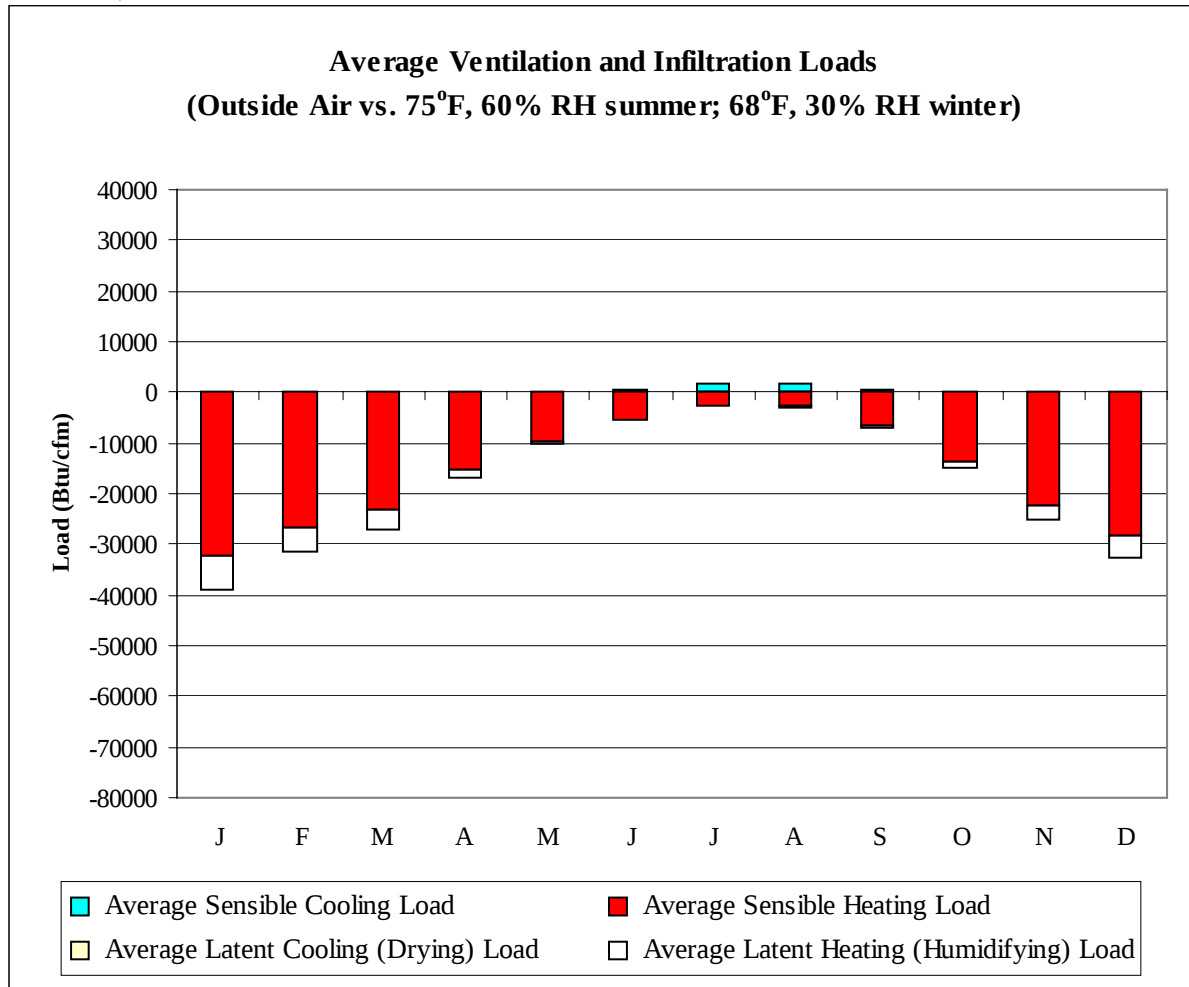
WMO No. 171280



	Mean Cooling Degree Days (°F)	Mean Heating Degree Days (°F)
JAN	0	1156
FEB	0	940
MAR	1	801
APR	11	503
MAY	39	302
JUN	105	158
JUL	211	69
AUG	207	71
SEP	97	195
OCT	25	443
NOV	0	767
DEC	0	998
ANN	697	6403

ANKARA, TURKEY

WMO No. 171280



	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	-32381	0	-6374
FEB	0	-26551	0	-5055
MAR	0	-23155	0	-4058
APR	17	-15221	0	-1430
MAY	117	-9828	0	-341
JUN	584	-5546	4	-29
JUL	1663	-2772	22	-20
AUG	1638	-2813	9	-34
SEP	561	-6599	4	-381
OCT	71	-13629	0	-1204
NOV	0	-22182	0	-3070
DEC	0	-28263	0	-4561
ANN	4651	-188940	39	-26557

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

No Solar Radiation
Data Available

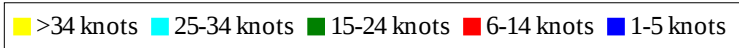
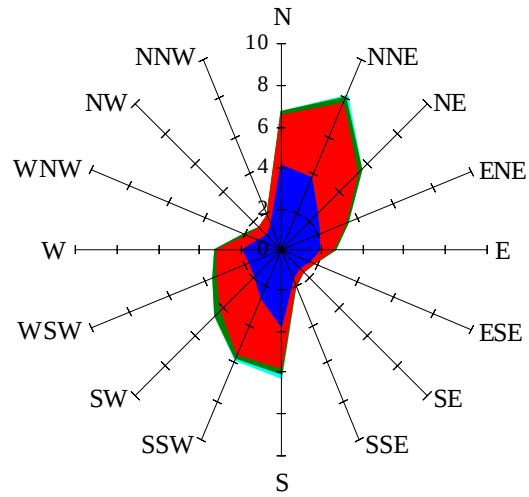


Average Annual Solar Heat and Illumination – Nearest Available Site

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

Wind Summary - December, January, and February

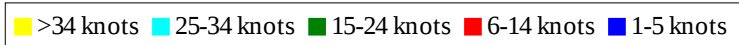
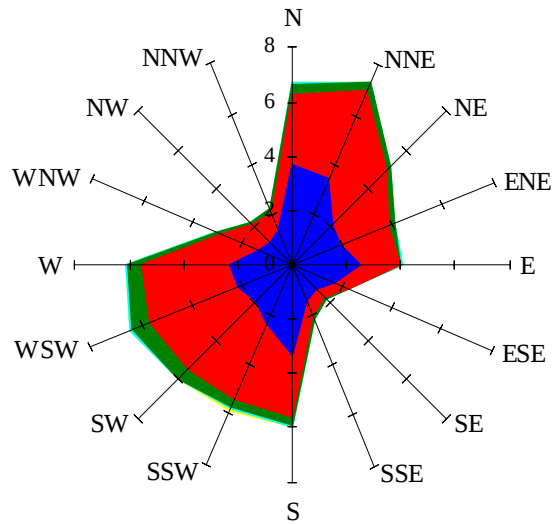
Labels of Percent Frequency on North Axis



Percent Calm = 39.73

Wind Summary - March, April, and May

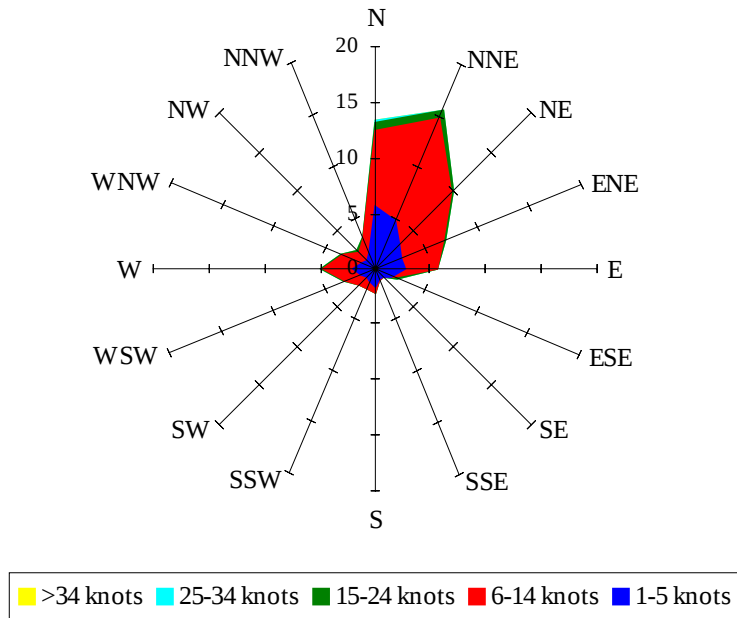
Labels of Percent Frequency on North Axis



Percent Calm = 29.13

Wind Summary - June, July, and August

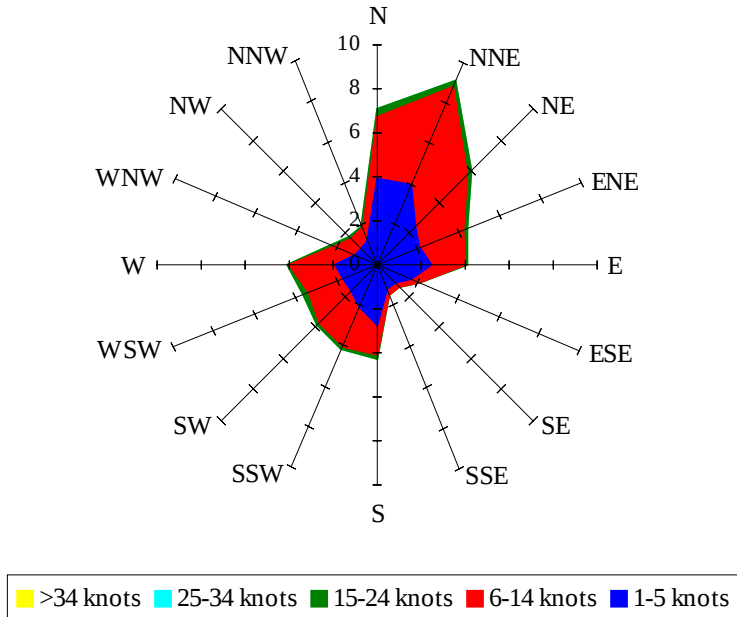
Labels of Percent Frequency on North Axis



Percent Calm = 21.47

Wind Summary - September, October, and November

Labels of Percent Frequency on North Axis



Percent Calm = 38.36