

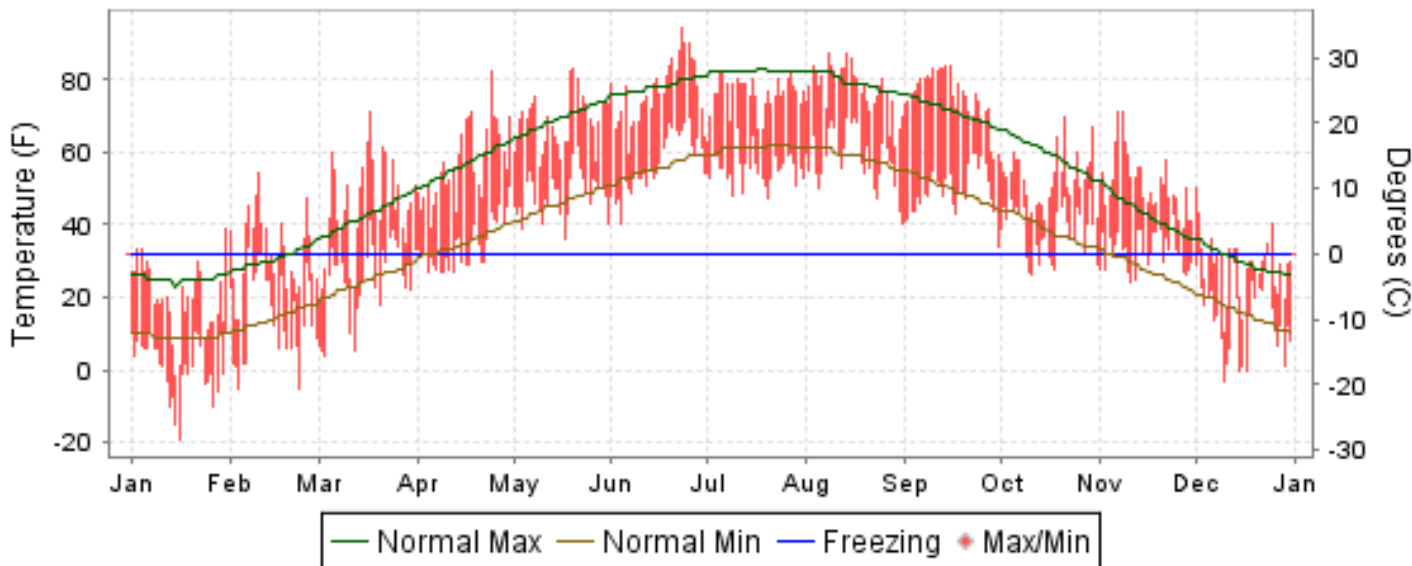


# 2009 LOCAL CLIMATOLOGICAL DATA ANNUAL SUMMARY WITH COMPARATIVE DATA

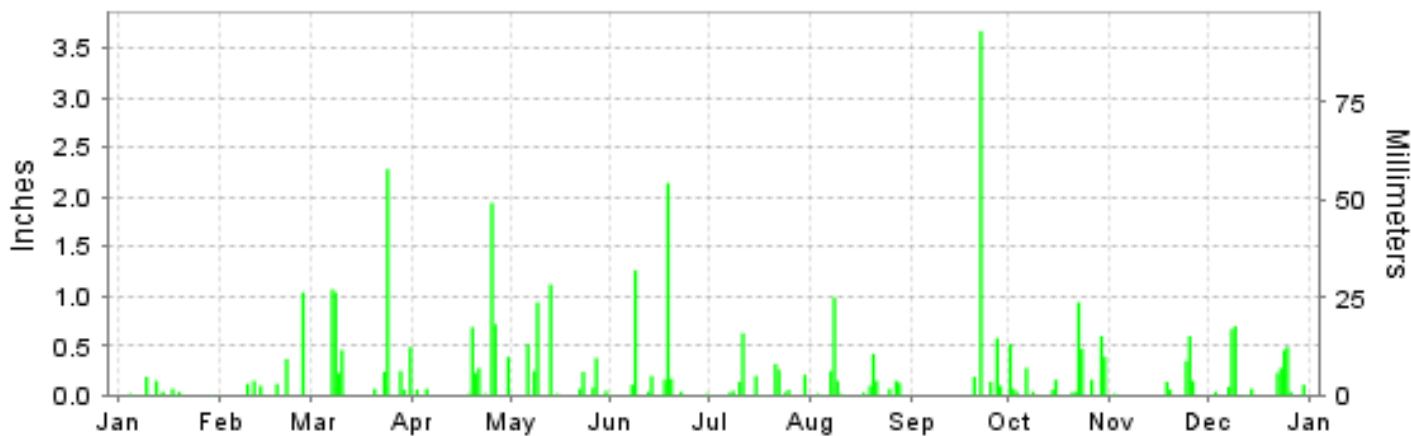
ISSN 0198-5728

## MADISON, WISCONSIN (KMSN)

### Daily Max/Min Temperature



### Daily Precipitation



### Daily Station Pressure



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NATIONAL  
CLIMATIC DATA CENTER  
ASHEVILLE, NORTH CAROLINA

*Thomas R. Karl*  
DIRECTOR  
NATIONAL CLIMATIC DATA CENTER

# METEOROLOGICAL DATA FOR 2009

## MADISON (KMSN)

LATITUDE: 43° 8' N      LONGITUDE: -89° 20' W      ELEVATION (FT): GRND: 859    BARO: 860      TIME ZONE: CENTRAL (UTC -6)      WBAN: 14837

ELEMENT		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	
TEMPERATURE °F	MEAN DAILY MAXIMUM	19.9	32.3	45.3	57.3	68.5	77.0	75.8	77.4	75.2	52.5	51.5	29.1	55.2	
	HIGHEST DAILY MAXIMUM	39	54	71	82	83	94	82	87	84	70	71	50	94	
	DATE OF OCCURRENCE	31	10	17	24	20	23	27+	14+	15+	21	08+	01	JUN 23	
	MEAN DAILY MINIMUM	1.3	15.0	25.1	34.3	48.5	57.1	55.5	58.3	49.6	38.4	32.8	15.3	35.9	
	LOWEST DAILY MINIMUM	-19	-5	4	27	36	40	47	40	34	26	24	-3	-19	
	DATE OF OCCURRENCE	16	23+	03	12+	17	04	20	31	30	11	11	10	JAN 16	
	AVERAGE DRY BULB	10.6	23.7	35.2	45.8	58.5	67.1	65.7	67.9	62.4	45.5	42.2	22.2	45.6	
	MEAN WET BULB	10.3	22.2	31.4	39.9	51.2	60.3	60.5	62.5	56.9	42.7	39.2	21.4	41.5	
	MEAN DEW POINT	4.6	16.3	24.9	30.9	43.6	55.5	56.1	58.8	53.2	39.0	34.1	17.4	36.2	
	NUMBER OF DAYS WITH:														
	MAXIMUM >= 90°	0	0	0	0	0	3	0	0	0	0	0	0	0	3
	MAXIMUM <= 32°	28	15	5	0	0	0	0	0	0	0	0	22	70	
MINIMUM <= 32°	31	27	22	16	0	0	0	0	0	9	15	31	151		
MINIMUM <= 0°	13	2	0	0	0	0	0	0	0	0	0	3	18		
H/C	HEATING DEGREE DAYS	1681	1153	918	569	210	63	34	42	94	597	677	1318	7356	
	COOLING DEGREE DAYS	0	0	0	0	16	130	62	139	21	0	0	0	368	
RH	MEAN (PERCENT)	72	71	69	60	61	69	71	74	76	79	73	79	71	
	HOUR 00 LST	75	77	76	67	67	82	83	88	90	85	80	81	79	
	HOUR 06 LST	78	79	81	75	77	82	87	87	95	89	85	84	83	
	HOUR 12 LST	68	64	60	48	51	56	56	60	55	70	62	75	60	
	HOUR 18 LST	68	64	58	49	47	57	56	64	65	74	68	76	62	
S	PERCENT POSSIBLE SUNSHINE														
W/O	NUMBER OF DAYS WITH:														
	HEAVY FOG(VISBY <= 1/4 MI)	2	1	4	0	0	3	1	1	7	1	3	0	23	
	THUNDERSTORMS	0	1	0	3	5	6	8	5	1	1	0	0	30	
CLOUDNESS	SUNRISE-SUNSET: (OKTAS)														
	CEILOMETER (<= 12,000 FT.)														
	SATELLITE (> 12,000 FT.)														
	MIDNIGHT-MIDNIGHT: (OKTAS)														
	CEILOMETER (<= 12,000 FT.)														
SATELLITE (> 12,000 FT.)															
NUMBER OF DAYS WITH:															
CLEAR															
PARTLY CLOUDY															
CLOUDY															
PR	MEAN STATION PRESS. (IN.)	29.07	29.11	29.14	29.03	29.03	28.95	29.02	29.06	29.17	29.01	29.12	29.06	29.06	
	MEAN SEA-LEVEL PRESS. (IN.)	30.07	30.10	30.10	29.97	29.96	29.87	29.94	29.98	30.10	29.96	30.07	30.02	30.01	
WINDS	RESULTANT SPEED (MPH)	2.2	2.2	1.5	3.0	1.6	1.0	1.2	1.9	0.8	0.9	0.8	0.8	0.1	
	RES. DIR. (TENS OF DEGS.)	28	29	14	03	21	07	27	20	07	08	16	04	28	
	MEAN SPEED (MPH)	6.3	8.2	8.2	8.9	7.5	5.6	4.8	6.1	4.0	7.4	6.6	7.9	6.8	
	PREVAIL.DIR.(TENS OF DEGS.)	29	32	17	34	19	32	33	19	10	06	17	34	19	
	MAXIMUM 2-MINUTE WIND														
	SPEED (MPH)	23	28	26	28	30	26	31	23	25	28	23	30	31	
	DIR. (TENS OF DEGS.)	18	02	12	19	01	35	17	13	35	30	05	10	17	
	DATE OF OCCURRENCE	17	26	23	24	09	18	15	19	28	06	17	25	JUL 15	
	MAXIMUM 3-SECOND WIND:														
	SPEED (MPH)	31	36	45	38	36	39	45	31	39	38	31	37	45	
DIR. (TENS OF DEGS.)	33	33	09	18	31	36	19	28	29	29	13	10	19		
DATE OF OCCURRENCE	13	18	17	24	13	18	24	09	28	06	06	25	JUL 24		
PRECIPITATION	WATER EQUIVALENT:														
	TOTAL (IN.)	0.54	1.91	6.19	4.43	3.68	4.17	1.94	2.49	4.68	3.80	1.32	3.20	38.35	
	GREATEST 24-HOUR (IN.)	0.19	1.04	2.28	2.61	1.19	2.30	0.77	1.15	3.67	1.04	0.63	0.97	3.67	
	DATE OF OCCURRENCE	09	26	24	25-26	08-09	18-19	10-11	07-08	22	22-23	24-25	08-09	SEP 22	
	NUMBER OF DAYS WITH:														
PRECIPITATION 0.01	9	7	10	11	11	12	11	13	5	14	6	13	122		
PRECIPITATION 0.10	2	6	8	6	6	6	6	8	5	8	4	7	72		
PRECIPITATION 1.00	0	1	3	1	1	2	0	0	1	0	0	0	9		
SNOWFALL	SNOW,ICE PELLETS,HAIL														
	TOTAL (IN.)	12.0	9.9	4.5	0.9	0.0	0.0	T	0.0	0.0	T	0.5	26.8	54.6	
	GREATEST 24-HOUR (IN.)	3.6	6.7	2.6	0.9	0.0	0.0	T	0.0	0.0	T	0.5	7.1	7.1	
	DATE OF OCCURRENCE	09	21	28	05			11			10	25	08	DEC 08	
	MAXIMUM SNOW DEPTH (IN.)	12	10	2	0	0	0	0	0	0	0	0	13	13	
	DATE OF OCCURRENCE	21+	06+	29									09	DEC 09	
NUMBER OF DAYS WITH:															
SNOWFALL >= 1.0	5	3	2	0	0	0	0	0	0	0	0	8	18		

# NORMALS, MEANS, AND EXTREMES MADISON (KMSN)

LATITUDE:  
43 ° 8 'N

LONGITUDE:  
-89 ° 20'W

ELEVATION (FT):  
GRND: 859 BARO: 860

TIME ZONE:  
CENTRAL (UTC -6)

WBAN: 14837

	ELEMENT	POR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
TEMPERATURE °F	NORMAL DAILY MAXIMUM	30	25.2	30.8	42.8	56.6	69.4	78.3	82.1	79.4	71.4	59.6	43.3	30.2	55.8
	MEAN DAILY MAXIMUM	63	26.2	30.9	42.1	57.6	69.4	78.8	82.9	80.9	72.6	60.7	44.3	30.9	56.4
	HIGHEST DAILY MAXIMUM	71	56	64	82	94	93	101	104	102	99	90	76	64	104
	YEAR OF OCCURRENCE		1989	2000	1986	1980	1975	1988	1976	1988	1953	1976	1964	2001	JUL 1976
	MEAN OF EXTREME MAXS.	67	44.8	48.8	66.6	79.5	85.8	91.4	93.3	92.0	87.6	79.3	64.9	50.3	73.7
	NORMAL DAILY MINIMUM	30	9.3	14.3	24.6	35.2	46.0	55.7	61.0	58.7	49.9	38.9	27.7	15.8	36.4
	MEAN DAILY MINIMUM	63	9.2	12.9	23.1	34.9	45.2	54.9	59.7	57.8	49.1	38.7	27.2	15.1	35.7
	LOWEST DAILY MINIMUM	71	-37	-29	-29	0	19	31	36	35	25	13	-11	-25	-37
	YEAR OF OCCURRENCE		1951	1996	1962	1982	1978	1972	1965	1968	1974	1988	1947	1983	JAN 1951
	MEAN OF EXTREME MINS.	67	-13.5	-9.5	2.7	19.7	30.0	40.1	46.7	44.2	32.7	23.2	9.7	-6.7	18.3
	NORMAL DRY BULB	30	17.3	22.6	33.7	45.9	57.7	67.0	71.6	69.1	60.7	49.3	35.5	23.0	46.1
	MEAN DRY BULB	63	17.7	21.9	32.6	46.3	57.3	67.0	71.3	69.4	60.8	49.7	35.8	23.1	46.1
	MEAN WET BULB	26	17.7	20.9	29.9	40.3	50.9	60.5	64.7	63.5	56.0	44.2	32.7	21.9	41.9
	MEAN DEW POINT	26	14.2	17.2	25.4	35.3	46.8	57.3	62.1	61.1	53.2	40.5	29.2	18.6	38.4
	NORMAL NO. DAYS WITH: MAXIMUM >= 90	30	0.0	0.0	0.0	*	0.3	2.9	5.3	2.8	0.6	0.1	0.0	0.0	12.0
	MAXIMUM <= 32	30	21.1	14.4	5.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	4.6	15.8	61.4
MINIMUM <= 32	30	30.1	26.5	24.7	12.7	2.5	*	0.0	0.0	1.0	9.5	21.4	28.8	157.2	
MINIMUM <= 0	30	10.0	5.9	0.9	*	0.0	0.0	0.0	0.0	0.0	0.0	0.2	4.9	21.9	
H/C	NORMAL HEATING DEG. DAYS	30	1490	1203	978	576	261	63	12	33	183	504	892	1298	7493
	NORMAL COOLING DEG. DAYS	30	0	0	0	6	33	123	214	154	48	4	0	0	582
RH	NORMAL (PERCENT)	30	76	74	71	66	66	68	72	76	76	73	76	78	73
	hour 00 LST	30	79	79	78	76	77	80	83	87	87	81	81	81	81
	hour 06 LST	30	80	82	82	81	81	82	85	91	91	86	84	83	84
	hour 12 LST	30	70	67	61	54	53	55	57	61	60	59	67	72	61
	hour 18 LST	30	75	71	64	56	54	54	56	59	64	68	68	74	66
S	PERCENT POSSIBLE SUNSHINE	50	47	51	52	52	58	64	67	64	60	54	39	40	54
W/O	MEAN NO. DAYS WITH: HEAVY FOG(VISBY <= 1/4 MI)	46	2.0	1.9	2.6	1.1	1.3	1.2	1.4	2.2	1.8	1.3	1.6	3.0	21.4
	THUNDERSTORMS	62	0.2	0.2	1.8	3.7	5.2	7.0	7.5	6.6	4.3	1.9	0.8	0.3	39.5
CLOUDNESS	MEAN: SUNRISE-SUNSET (OKTAS)														
	MIDNIGHT-MIDNIGHT (OKTAS)														
	MEAN NO. DAYS WITH: CLEAR														
	PARTLY CLOUDY CLOUDY														
PR	MEAN STATION PRESSURE(IN)	26	29.11	29.12	29.08	29.02	29.02	29.02	29.06	29.10	29.11	29.10	29.09	29.11	29.08
	MEAN SEA-LEVEL PRES. (IN)	26	30.08	30.09	30.04	29.96	29.95	29.94	29.97	30.02	30.03	30.03	30.04	30.08	30.02
WINDS	MEAN SPEED (MPH)	26	9.2	9.2	9.8	10.2	8.7	7.7	7.0	6.8	7.3	8.4	9.2	8.9	8.5
	PREVAIL.DIR(TENS OF DEGS)	38	31	31	32	19	19	19	19	19	19	19	19	31	19
	MAXIMUM 2-MINUTE: SPEED (MPH)	14	34	30	34	37	39	41	40	35	43	32	38	31	43
	DIR. (TENS OF DEGS)		06	10	01	18	16	36	31	33	15	19	18	15	15
	YEAR OF OCCURRENCE		1999	2007	1998	2008	2008	1998	2006	2006	2000	2007	1998	2002	SEP 2000
	MAXIMUM 3-SECOND SPEED (MPH)	14	45	41	45	53	45	53	66	44	74	49	52	40	74
	DIR. (TENS OF DEGS)		07	25	09	26	17	31	02	15	15	19	21	25	15
	YEAR OF OCCURRENCE		1999	2001	2009	1997	2008	2000	2004	2007	2000	2007	1998	2007	SEP 2000
PRECIPITATION	NORMAL (IN)	30	1.25	1.28	2.28	3.35	3.25	4.05	3.93	4.33	3.08	2.18	2.31	1.66	32.95
	MAXIMUM MONTHLY (IN)	71	2.53	3.30	6.19	7.11	10.84	10.93	10.93	15.18	9.51	5.63	7.49	4.09	15.18
	YEAR OF OCCURRENCE		1996	2008	2009	1973	2004	2008	1950	2007	1941	1984	2003	1987	AUG 2007
	MINIMUM MONTHLY (IN)	71	0.14	0.06	0.28	0.96	0.64	0.81	1.38	0.70	0.11	0.06	0.11	0.25	0.06
	YEAR OF OCCURRENCE		1981	1995	1978	1946	1981	1973	1946	1948	1979	1952	1976	1960	FEB 1995
	MAXIMUM IN 24 HOURS (IN)	71	1.27	1.59	3.01	2.83	4.37	5.28	5.25	5.00	3.67	2.78	3.43	2.19	5.28
	YEAR OF OCCURRENCE		1960	2001	1998	1975	2004	2008	1950	2007	2009	1984	2003	1990	JUN 2008
	NORMAL NO. DAYS WITH: PRECIPITATION >= 0.01	30	11.1	8.7	10.6	11.8	11.5	10.7	10.5	9.9	9.6	9.3	10.9	10.3	124.9
	PRECIPITATION >= 1.00	30	0.1	0.2	0.2	0.7	0.8	1.0	1.1	1.2	0.8	0.3	0.5	0.2	7.1
SNOWFALL	NORMAL (IN)	30	12.9	8.6	7.1	3.5	0.1	0.0	0.0	0.0	0.0	0.4	4.7	12.6	49.9
	MAXIMUM MONTHLY (IN)	62	27.5	37.0	25.4	17.4	3.0	T	T	T	T	3.9	18.3	40.4	40.4
	YEAR OF OCCURRENCE		1995	1994	1959	1973	1990	2008	2009	2006	2007	1997	1985	2008	DEC 2008
	MAXIMUM IN 24 HOURS (IN)	62	13.0	14.2	13.6	12.9	3.0	T	T	T	T	3.8	9.0	17.3	17.3
	YEAR OF OCCURRENCE		1996	1994	1971	1973	1990	1992	2009	1994	1994	1997	1985	1990	DEC 1990
	MAXIMUM SNOW DEPTH (IN)	62	32	28	16	14	4	0	0	0	0	4	9	17	32
	YEAR OF OCCURRENCE		1979	1979	1986	1973	1994					1997	1985	1990	JAN 1979
	NORMAL NO. DAYS WITH: SNOWFALL >= 1.0	30	3.3	2.6	2.1	1.0	0.0	0.0	0.0	0.0	0.0	0.1	1.7	3.4	14.2

**PRECIPITATION (inches) 2009 MADISON (KMSN)**

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1980	1.11	0.64	0.68	2.36	2.08	3.43	2.67	9.49	7.84	1.13	1.33	1.62	34.38
1981	0.14	2.47	0.33	3.42	0.64	4.99	4.81	7.06	3.10	2.68	1.71	0.75	32.10
1982	1.42	0.17	2.11	3.26	4.34	3.40	3.47	2.67	1.42	1.46	4.21	3.65	31.58
1983	0.53	2.26	2.70	2.23	4.21	1.85	1.92	5.05	2.85	2.59	3.18	2.30	31.67
1984	0.36	1.26	1.15	3.86	3.32	7.01	1.96	1.89	2.79	5.63	1.83	2.66	33.72
1985	1.43	1.89	3.13	1.52	3.35	3.06	4.48	2.98	5.00	4.58	5.13	2.39	38.94
1986	1.02	2.72	1.55	2.27	1.97	3.24	4.31	4.38	6.82	1.85	1.03	0.69	31.85
1987	0.68	0.62	1.99	2.46	3.90	1.17	3.26	7.16	3.61	1.24	3.24	4.09	33.42
1988	1.82	0.46	1.20	2.65	0.92	2.06	2.44	2.95	3.33	1.60	3.58	1.56	24.57
1989	0.61	0.57	1.69	1.69	1.72	1.67	4.97	6.46	0.89	1.88	0.98	0.26	23.39
1990	1.60	0.99	4.18	1.90	5.35	4.88	2.61	6.03	1.64	2.25	1.65	3.46	36.54
1991	1.17	0.44	4.24	4.89	2.20	3.75	5.18	2.34	3.96	5.35	3.86	1.71	39.09
1992	0.78	1.34	1.90	3.17	1.12	1.53	5.54	2.48	5.99	1.06	4.83	2.39	32.13
1993	1.60	1.18	3.29	5.33	3.81	6.67	9.34	5.57	3.74	0.91	1.55	0.35	43.34
1994	1.46	2.76	0.46	2.57	1.33	5.66	4.10	4.56	6.14	0.65	2.77	1.08	33.54
1995	2.12	0.06	2.17	4.14	3.92	1.22	4.36	5.58	1.78	4.29	3.17	0.77	33.58
1996	2.53	0.53	0.80	2.76	2.95	9.69	4.08	1.84	1.07	3.14	1.01	1.27	31.67
1997	1.36	2.52	1.54	2.50	1.94	5.23	6.23	2.33	1.38	1.31	1.20	0.95	28.49
1998	0.88	1.44	5.46	4.10	4.58	7.46	2.50	4.24	2.48	3.20	1.95	0.29	38.58
1999	2.10	0.91	0.47	6.91	3.72	5.57	4.49	3.26	1.55	0.88	1.21	0.86	31.93
2000	0.91	1.95	1.17	3.18	9.63	8.63	3.27	3.94	3.59	0.68	2.00	1.39	40.34
2001	0.99	2.64	0.59	3.07	4.16	5.40	3.09	7.64	5.53	2.62	1.59	1.13	38.45
2002	0.63	2.17	1.70	3.45	2.92	3.70	2.06	3.04	2.74	2.10	1.01	0.67	26.19
2003	0.36	0.50	1.72	2.95	3.67	2.10	4.24	0.87	4.24	1.60	7.49	2.00	31.74
2004	0.62	1.44	3.61	1.76	10.84	3.93	6.05	3.96	1.00	3.20	1.51	1.46	39.38
2005	2.20	1.45	1.56	1.68	3.96	1.65	3.92	1.22	1.95	0.76	3.36	0.99	24.70
2006	1.96	0.81	2.34	5.04	4.61	2.29	4.45	5.43	3.33	2.87	2.24	1.36	36.73
2007	0.84	1.59	3.39	4.68	1.40	4.82	2.69	15.18	2.45	3.35	0.39	3.63	44.41
2008	2.17	3.30	2.47	6.43	2.55	10.93	5.62	1.41	2.23	2.20	1.46	3.29	44.06
2009	0.54	1.91	6.19	4.43	3.68	4.17	1.94	2.49	4.68	3.80	1.32	3.20	38.35
POR= 67 YRS	1.22	1.22	2.19	3.16	3.39	4.21	3.88	3.86	3.06	2.19	2.13	1.62	32.13

WBAN : 14837

**AVERAGE TEMPERATURE (°F) 2009 MADISON (KMSN)**

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1980	17.3	15.7	28.0	45.5	57.8	65.3	73.4	70.3	59.9	43.7	35.4	22.6	44.6
1981	20.5	25.3	36.9	48.7	55.3	67.4	70.6	68.7	59.1	46.6	36.7	22.0	46.5
1982	8.0	19.1	30.6	41.7	60.8	59.6	70.9	66.3	59.0	50.6	34.2	28.8	44.1
1983	21.4	26.3	33.1	41.6	51.9	67.5	75.0	72.2	60.1	48.2	37.3	10.8	45.5
1984	14.8	30.2	26.7	45.6	53.4	67.5	70.2	71.3	59.3	52.0	33.9	26.4	45.9
1985	12.2	19.0	37.7	52.2	60.7	63.8	70.0	66.4	61.6	49.4	31.0	11.3	44.6
1986	18.2	19.4	36.2	49.8	58.4	65.9	73.2	64.8	61.6	49.7	31.2	25.5	46.2
1987	22.6	30.5	37.2	49.9	60.8	70.4	74.5	68.7	60.6	43.4	40.0	28.4	48.9
1988	13.8	17.4	34.6	46.0	60.5	69.5	74.1	74.5	63.0	43.5	38.8	24.6	46.7
1989	27.6	14.6	30.1	44.7	56.1	65.7	72.3	68.6	58.7	50.8	33.1	14.2	44.7
1990	28.6	25.8	37.7	48.5	53.6	67.6	70.6	69.9	63.7	48.3	41.0	21.4	48.1
1991	15.1	26.5	36.8	49.4	63.6	71.1	72.3	70.2	60.0	49.4	31.4	26.3	47.7
1992	25.5	29.3	34.8	43.6	58.0	64.9	67.2	65.3	60.4	48.4	34.7	24.9	46.4
1993	21.8	21.2	31.5	43.7	59.6	65.9	72.0	72.1	56.7	47.9	35.2	26.6	46.2
1994	8.8	15.8	35.8	48.3	58.0	70.3	70.7	66.5	64.9	52.4	40.2	28.8	46.7
1995	20.4	22.9	36.9	43.8	57.6	72.0	74.8	76.9	58.7	50.2	28.7	20.6	47.0
1996	15.2	21.6	28.6	42.2	53.2	66.7	67.5	68.6	60.3	48.5	28.7	22.6	43.6
1997	15.7	24.1	34.1	43.3	51.3	67.3	69.3	65.4	60.2	50.2	33.3	27.9	45.2
1998	23.7	33.5	34.2	48.1	62.5	66.3	71.2	70.6	64.7	51.6	40.6	31.3	49.9
1999	16.5	30.8	33.8	48.1	59.9	68.4	74.9	66.9	60.3	48.9	42.0	26.4	48.1
2000	20.6	29.6	40.7	45.3	59.1	65.8	69.4	69.8	61.1	52.5	34.9	11.2	46.7
2001	21.7	19.7	31.7	51.1	58.4	66.0	72.3	70.9	58.7	48.9	46.1	30.4	48.0
2002	28.2	30.5	30.1	46.8	53.4	68.8	74.1	69.5	64.2	44.8	34.3	27.4	47.7
2003	17.7	18.5	32.3	44.7	55.2	65.4	70.3	71.9	61.0	49.3	37.2	27.9	46.0
2004	15.2	23.4	38.3	47.3	57.0	65.6	69.4	65.4	65.1	51.4	40.1	26.1	47.0
2005	19.6	29.3	32.2	51.0	55.9	72.3	72.2	70.6	66.8	51.6	38.3	19.9	48.3
2006	31.6	22.3	34.7	51.0	58.6	66.6	74.2	69.9	58.3	45.3	39.3	30.5	48.5
2007	23.4	14.5	38.4	45.1	62.2	68.8	71.9	71.6	63.9	56.4	35.4	21.2	47.7
2008	17.4	16.8	29.7	47.6	54.6	68.1	71.8	69.2	63.4	49.2	36.7	17.0	45.1
2009	10.6	23.7	35.2	45.8	58.5	67.1	65.7	67.9	62.4	45.5	42.2	22.2	45.6
POR= 63 YRS	17.7	21.9	32.6	46.3	57.3	67.0	71.3	69.4	60.8	49.7	35.8	23.1	46.1

**HEATING DEGREE DAYS (base 65°F) 2009 MADISON (KMSN)**

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1980-81	2	11	178	651	881	1303	1373	1107	864	482	307	30	7189
1981-82	16	27	193	566	842	1327	1765	1281	1059	688	155	172	8091
1982-83	5	66	230	444	918	1117	1346	1078	978	693	400	57	7332
1983-84	11	6	193	519	823	1678	1550	1006	1181	575	358	20	7920
1984-85	9	21	215	397	927	1191	1632	1287	839	418	155	96	7187
1985-86	12	36	198	475	1012	1661	1444	1272	888	462	220	73	7753
1986-87	7	59	145	471	1007	1218	1309	963	857	452	192	27	6707
1987-88	3	45	150	661	743	1127	1586	1377	938	565	176	53	7424
1988-89	4	18	107	661	777	1242	1153	1404	1076	602	290	68	7402
1989-90	5	22	207	437	952	1568	1122	1092	835	519	349	46	7154
1990-91	7	12	133	511	713	1349	1539	1072	868	467	173	22	6866
1991-92	8	11	222	476	1002	1195	1216	1031	929	634	244	73	7041
1992-93	26	68	176	514	903	1236	1333	1220	1032	633	196	74	7411
1993-94	0	9	260	525	887	1182	1739	1375	896	501	241	39	7654
1994-95	6	52	80	389	736	1116	1376	1173	867	629	226	20	6670
1995-96	9	0	228	452	1081	1370	1537	1256	1123	675	385	52	8168
1996-97	18	7	174	505	1083	1306	1521	1138	951	646	416	44	7809
1997-98	28	52	157	481	945	1141	1273	875	949	496	129	95	6621
1998-99	0	1	78	409	724	1040	1497	952	962	496	178	53	6390
1999-00	0	26	177	491	681	1190	1372	1021	747	587	206	64	6562
2000-01	17	10	187	386	895	1663	1334	1260	1027	417	231	89	7516
2001-02	17	8	210	490	560	1063	1135	961	1074	560	371	52	6501
2002-03	1	7	102	623	914	1157	1459	1296	1006	607	298	70	7540
2003-04	3	5	177	478	824	1143	1537	1200	823	530	258	64	7042
2004-05	11	72	82	418	738	1200	1400	995	1010	419	283	14	6642
2005-06	9	12	69	445	795	1391	1029	1192	935	417	257	36	6587
2006-07	2	2	215	611	762	1062	1283	1408	825	592	145	21	6928
2007-08	2	6	117	299	883	1350	1468	1392	1089	514	317	16	7453
2008-09	2	8	97	487	844	1480	1681	1153	918	569	210	63	7512
2009-	34	42	94	597	677	1318							

WBAN : 14837

**COOLING DEGREE DAYS (base 65°F) 2009 MADISON (KMSN)**

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1980	0	0	0	8	39	100	268	183	31	0	0	0	629
1981	0	0	0	0	13	107	198	148	19	0	0	0	485
1982	0	0	0	0	29	16	194	114	53	3	0	0	409
1983	0	0	0	0	0	138	327	237	52	6	0	0	760
1984	0	0	0	1	5	102	177	224	50	0	0	0	559
1985	0	0	0	40	29	66	175	84	102	0	0	0	496
1986	0	0	0	13	24	105	269	59	49	0	0	0	519
1987	0	0	0	8	69	194	304	165	26	0	0	0	766
1988	0	0	0	0	43	194	296	315	54	0	0	0	902
1989	0	0	0	0	21	97	237	141	25	3	0	0	524
1990	0	0	0	32	2	132	191	171	100	1	0	0	629
1991	0	0	0	8	136	210	241	180	80	3	0	0	858
1992	0	0	0	0	33	76	100	86	42	5	0	0	342
1993	0	0	0	0	33	111	223	240	18	5	0	0	630
1994	0	0	0	10	32	207	192	108	85	3	0	0	637
1995	0	0	0	0	5	237	320	374	45	1	0	0	982
1996	0	0	0	0	28	110	103	125	41	0	0	0	407
1997	0	0	0	0	0	123	168	69	21	29	0	0	410
1998	0	0	0	0	57	140	199	182	76	0	0	0	654
1999	0	0	0	0	24	161	315	95	42	0	0	0	637
2000	0	0	0	0	32	96	159	165	78	5	0	0	535
2001	0	0	0	4	37	125	250	199	27	0	0	0	642
2002	0	0	0	21	19	173	292	156	86	5	0	0	752
2003	0	0	0	4	0	88	173	225	65	0	0	0	555
2004	0	0	0	4	16	89	155	91	93	2	0	0	450
2005	0	0	0	2	7	239	239	194	131	34	0	0	846
2006	0	0	0	2	63	90	297	161	18	6	0	0	637
2007	0	0	5	5	61	139	222	219	91	38	0	0	780
2008	0	0	0	0	2	111	220	144	57	4	0	0	538
2009	0	0	0	0	16	130	62	139	21	0	0	0	368

## SNOWFALL (inches) 2009 MADISON (KMSN)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1980-81	0.0	0.0	0.0	T	3.5	9.2	2.9	9.2	1.7	0.0	0.0	0.0	26.5
1981-82	0.0	0.0	0.0	0.1	2.0	7.2	19.4	2.4	8.6	10.3	0.0	0.0	50.0
1982-83	0.0	0.0	0.0	0.0	0.3	3.3	6.5	13.0	14.1	4.2	0.0	0.0	41.4
1983-84	0.0	0.0	0.0	0.0	2.1	22.6	6.0	0.8	6.8	3.9	0.0	0.0	42.2
1984-85	0.0	0.0	0.0	0.0	0.5	15.8	19.9	7.4	8.2	1.9	0.0	0.0	53.7
1985-86	0.0	0.0	0.0	0.0	18.3	24.0	13.9	13.3	2.7	0.2	0.0	0.0	72.4
1986-87	0.0	0.0	0.0	T	8.6	8.0	8.7	0.3	8.9	T	0.0	0.0	34.5
1987-88	0.0	0.0	0.0	0.4	3.9	32.8	16.3	6.4	1.1	1.3	0.0	0.0	62.2
1988-89	0.0	0.0	0.0	0.2	5.5	8.2	2.6	9.7	9.3	0.2	0.5	T	36.2
1989-90	0.0	0.0	0.0	0.7	4.4	4.3	10.1	11.7	0.1	0.5	3.0	T	34.8
1990-91	0.0	0.0	0.0	3.1	4.5	23.0	14.5	5.0	3.6	1.3	0.0	0.0	55.0
1991-92	T	0.0	0.0	0.5	8.0	10.2	4.5	12.3	6.9	0.1	0.0	T	42.5
1992-93	0.0	T	0.0	2.1	3.9	10.5	12.5	12.1	21.6	8.5	0.0	0.0	71.2
1993-94	0.0	0.0	T	0.2	1.2	2.5	22.5	37.0	0.6	9.7	0.0	0.0	73.7
1994-95	T	T	T	0.0	0.3	12.5	27.5	0.7	11.2	0.6	0.0	0.0	52.8
1995-96	0.0	0.0	0.0	0.1	12.8	10.3	26.4	1.3	4.7	4.9	0.0	0.0	60.5
1996-97	0.0	0.0	0.0	0.0	5.9	6.7	13.1	14.4	2.7	7.1	0.1	0.0	50.0
1997-98	0.0	0.0	0.0	3.9	3.0	14.3	18.9	1.8	12.0	T	0.0	0.0	53.9
1998-99	0.0	0.0	0.0	0.0	0.4	2.2	23.9	3.8	7.8	T	0.0	0.0	38.1
1999-00	0.0	T	0.0	0.0	T	3.2	11.7	11.2	3.5	4.5	T	0.0	34.1
2000-01	0.0	0.0	0.0	T	5.3	35.0	1.6	7.8	1.9	0.6	0.0	0.0	52.2
2001-02	0.0	0.0	0.0	T	T	2.3	7.0	7.5	11.7	3.3	0.0	0.0	31.8
2002-03	0.0	0.0	0.0	0.3	1.2	1.6	4.4	7.8	8.6	4.9	0.0	0.0	28.8
2003-04	0.0	0.0	0.0	0.0	0.3	3.6	9.2	13.9	3.4	T	1.2	0.0	31.6
2004-05	T	0.0	0.0	T	T	1.9	19.0	10.9	12.1	T	T	0.0	43.9
2005-06	0.0	0.0	0.0	0.0	5.8	15.2	4.2	12.6	9.8	T	0.3	0.0	47.9
2006-07	0.0	T	0.0	2.3	2.7	2.6	15.9	22.3	3.6	5.7	0.0	0.0	55.1
2007-08	0.0	0.0	T	0.0	1.5	33.5	23.2	31.6	10.9	0.7	T	T	101.4
2008-09	0.0	0.0	0.0	T	4.3	40.4	12.0	9.9	4.5	0.9	0.0	0.0	72.0
2009-	T	0.0	0.0	T	0.5	26.8							
POR= 62 YRS	T	T	T	0.3	3.4	11.5	11.0	8.5	8.1	2.3	0.1	T	45.2

WBAN : 14837

### REFERENCE NOTES :

<p>PAGE 1: THE TEMPERATURE GRAPH SHOWS NORMAL MAXIMUM AND NORMAL MINIMUM DAILY TEMPERATURES (SOLID CURVES) AND THE ACTUAL DAILY HIGH AND LOW TEMPERATURES (VERTICAL BARS).</p> <p>PAGE 2 AND 3: H/C INDICATES HEATING AND COOLING DEGREE DAYS. RH INDICATES RELATIVE HUMIDITY W/O INDICATES WEATHER AND OBSTRUCTIONS S INDICATES SUNSHINE. PR INDICATES PRESSURE. CLOUDINESS ON PAGE 3 IS THE SUM OF THE CEILOMETER AND SATELLITE DATA NOT TO EXCEED EIGHT EIGHTHS(OKTAS).</p> <p>GENERAL: T INDICATES TRACE PRECIPITATION, AN AMOUNT GREATER THAN ZERO BUT LESS THAN THE LOWEST REPORTABLE VALUE. + INDICATES THE VALUE ALSO OCCURS ON EARLIER DATES. BLANK ENTRIES DENOTE MISSING OR UNREPORTED DATA. NORMALS ARE 30-YEAR AVERAGES (1971 - 2000). ASOS INDICATES AUTOMATED SURFACE OBSERVING SYSTEM. PM INDICATES THE LAST DAY OF THE PREVIOUS MONTH. POR (PERIOD OF RECORD) BEGINS WITH THE JANUARY DATA MONTH AND IS THE NUMBER OF YEARS USED TO COMPUTE THE MEAN. INDIVIDUAL MONTHS WITHIN THE POR MAY BE MISSING. WHEN THE POR FOR A NORMAL IS LESS THAN 30 YEARS, THE NORMAL IS PROVISIONAL AND IS BASED ON THE NUMBER OF YEARS INDICATED. 0.* OR * INDICATES THE VALUE OR MEAN-DAYS-WITH IS BETWEEN 0.00 AND 0.05. CLOUDINESS FOR ASOS STATIONS DIFFERS FROM THE NON-ASOS OBSERVATION TAKEN BY A HUMAN OBSERVER. ASOS STATION CLOUDINESS IS BASED ON TIME-AVERAGED CEILOMETER DATA FOR CLOUDS AT OR BELOW 12,000 FEET AND ON SATELLITE DATA FOR CLOUDS ABOVE 12,000 FEET. THE NUMBER OF DAYS WITH CLEAR, PARTLY CLOUDY, AND CLOUDY CONDITIONS FOR ASOS STATIONS IS THE SUM OF THE CEILOMETER AND SATELLITE DATA FOR THE SUNRISE TO SUNSET PERIOD. CLEAR INDICATES 0 - 2 OKTAS, PARTLY CLOUDY INDICATES 3 - 6 OKTAS, AND CLOUDY INDICATES 7 OR 8 OKTAS. WHEN AT LEAST ONE OF THE ELEMENTS (CEILOMETER OR SATELLITE) IS MISSING, THE DAILY CLOUDINESS IS NOT COMPUTED.</p>	<p>GENERAL CONTINUED: WIND DIRECTION IS RECORDED IN TENS OF DEGREES (2 DIGITS) CLOCKWISE FROM TRUE NORTH. "00" INDICATES CALM. "36" INDICATES TRUE NORTH. RESULTANT WIND IS THE VECTOR AVERAGE OF THE SPEED AND DIRECTION. AVERAGE TEMPERATURE IS THE SUM OF THE MEAN DAILY MAXIMUM AND MINIMUM TEMPERATURE DIVIDED BY 2. SNOWFALL DATA COMPRISE ALL FORMS OF FROZEN PRECIPITATION, INCLUDING HAIL. A HEATING (COOLING) DEGREE DAY IS THE DIFFERENCE BETWEEN THE AVERAGE DAILY TEMPERATURE AND 65 F. DRY BULB IS THE TEMPERATURE OF THE AMBIENT AIR. DEW POINT IS THE TEMPERATURE TO WHICH THE AIR MUST BE COOLED TO ACHIEVE 100 PERCENT RELATIVE HUMIDITY. WET BULB IS THE TEMPERATURE THE AIR WOULD HAVE IF THE MOISTURE CONTENT WAS INCREASED TO 100 PERCENT RELATIVE HUMIDITY. ON JULY 1, 1996, THE NATIONAL WEATHER SERVICE BEGAN USING THE "METAR" OBSERVATION CODE THAT WAS ALREADY EMPLOYED BY MOST OTHER NATIONS OF THE WORLD. THE MOST NOTICEABLE DIFFERENCE IN THIS ANNUAL PUBLICATION WILL BE THE CHANGE IN UNITS FROM TENTHS TO EIGHTS(OKTAS) FOR REPORTING THE AMOUNT OF SKY COVER. STATION HISTORY STOPPED WITH THE 2009 ANNUAL. IF YOU NEED HISTORY GO TO "MULTI-NETWORK METADATA SYSTEM", URL IS: <a href="https://mi3.ncdc.noaa.gov/mi3qry/login.cfm">https://mi3.ncdc.noaa.gov/mi3qry/login.cfm</a></p> <p><b>NOTE:</b> The "Period of Record:(POR) for all "averages" is based on the "Summary of the Day First Order Station" and "Cooperative Summary of the Day" archives.</p>
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# 2009 MADISON WISCONSIN (KMSN)

Madison is set on a narrow isthmus of land between Lakes Mendota and Monona. Lake Mendota (15 square miles) lies northwest of Lake Monona (5 square miles) and the lakes are only two-thirds of a mile apart at one point. Drainage at Madison is southeast through two other lakes into the Rock River, which flows south into Illinois, and then west to the Mississippi. The westward flowing Wisconsin River is only 20 miles northwest of Madison. Madison lakes are normally frozen from mid-December to early April.

Madison has the typical continental climate of interior North America with a large annual temperature range and with frequent short period temperature changes. The range of extreme temperatures is from about 110 to -40 degrees. Winter temperatures (December-February) average near 20 degrees and the summer average (June-August) is in the upper 60s. Daily temperatures average below 32 degrees about 120 days and above 40 degrees for about 210 days of the year.

Madison lies in the path of the frequent cyclones and anticyclones which move eastward over this area during fall, winter and spring. In summer, the cyclones have diminished intensity and tend to pass farther north. The most frequent air masses are of polar origin. Occasional outbreaks of arctic air affect this area during the winter months. Although northward moving tropical air masses contribute considerable cloudiness and precipitation, the true Gulf air mass does not reach this area in winter, and only occasionally at other seasons. Summers are pleasant, with only occasional periods of extreme heat or high humidity.

There are no dry and wet seasons, but about 60 percent of the annual precipitation falls in the five months of May through September. Cold season precipitation is lighter, but lasts longer. Soil moisture is usually adequate in the first part of the growing season. During July, August, and September, the crops depend on current rainfall, which is mostly from thunderstorms and tends to be erratic and variable. Average occurrence of thunderstorms is just under 7 days per month during this period.

March and November are the windiest months. Tornadoes are infrequent. Dane County has about one tornado in every three to five years.

The ground is covered with 1 inch or more of snow about 60 percent of the time from about December 10 to near February 25 in an average winter. The soil is usually frozen from the first of December through most of March with an average frost penetration of 25 to 30 inches. The growing season averages 175 days.

Farming is diversified with the main emphasis on dairying. Field crops are mainly corn, oats, clover, and alfalfa, but barley, wheat, rye, and tobacco are also raised. Canning factories pack peas, sweet corn, and lima beans. Fruits are mainly apples, strawberries, and raspberries.

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