PATTERNS OF CLIMATE, WATER PER CAPITA, WATERGY, & SUN: MADISON, WI

CLIMATE

AVERAGE HIGH & LOW TEMPERATURES: 1971 – 2000 *Source: mrcc.sws.uiuc.edu*

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	
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	˚F HIGH
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	˚F LOW
-3.8	*-0.7*	*6.0*	*13.7*	*20.8*	*25.7*	*27.8*	*26.3*	*21.9*	*15.3*	*6.3*	*-1.0*	*13.2*	*˚C HIGH*
-12.6	*-9.8*	*-4.1*	*1.8*	*7.8*	*13.2*	*16.1*	*14.8*	*9.9*	*3.8*	*-2.4*	*-9.0*	*2.4*	*˚C LOW*

HIGHEST TEMP ON RECORD:[1] 104 ˚F / *40.0 ˚C* — July 10, 1976 *Source: mrcc.sws.uiuc.edu*

LOWEST TEMP ON RECORD:[1] -37 ˚F / *-38.3 ˚C* — January 30, 1951

WATER PER CAPITA

AVERAGE RAINFALL: 1971 – 2000 *Source: mrcc.sws.uiuc.edu*

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	
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	INCHES
31.8	*32.5*	*57.9*	*85.1*	*82.6*	*102.9*	*99.8*	*110.0*	*78.2*	*55.4*	*58.7*	*42.2*	*836.9*	*mm*

WETTEST YEAR'S RAINFALL:[2] 43.34 INCHES / *1100.8 mm* — 1993 *Source: mrcc.sws.uiuc.edu*

DRIEST YEAR'S RAINFALL:[2] 21.08 INCHES / *535.4 mm* — 1976

LONGEST PERIOD W/ NO MEASURABLE PRECIPITATION: 54 days (9/23–11/15/1952) *Source: see note #3*

AREA: 84.70 SQ MILES / *Wikipedia 219.3 km²*

POPULATION: 223,389 *Source & Year: census.gov, 2006 est*

RAINFALL INCOME: 595 GPCD / *2252 ℓpcd*

WATERGY

MUNICIPAL USE: 116 GPCD / *438 ℓpcd*

# of kWh used annually by MWU to pump water:[4] 20,600,371 *2010*

# of average WI homes this energy could power:[4, 5] 2,418 *2009*

Source/Year: see note #4 / 2010

SUN

LATITUDE: 43 *Source: Google Earth*

ELEVATION: 868 FT / *265 m*

WINTER-SOLSTICE SHADOW RATIO:* 1: 2.29

	ON MAR 21	ON JUN 21	ON SEP 21	ON DEC 21
[A] DEGREES N or S of DUE E THE SUN RISES:	0	32N	0	32S
[A] DEGREES N or S of DUE W THE SUN SETS:	0	32N	0	32S
[B] # of DEGREES SUN IS ABOVE THE SOUTHERN HORIZON AT NOON:	47	70	47	24

To find current magnetic declination for location: HarvestingRainwater.com/books/volume1/volume-1-resource-pages-appendix-6/#magdec

**Object height:length of shadow cast at solar noon (Dec 21's is longest noontime shadow of year). The ratio is 1:x, where x = 1/(tangent(90-(latitude+23.44))*

Notes: 1. Period of record for temperature extremes: 1947-2001. // 2. Period of record for rainfall extremes: 1943–2001. // 3. Tom Workoff, Service Climatologist, Midwestern Regional Climate Ctr, via phone 8/24/2011 // 4. Mr Robin Piper, Customer Service Mgr, Madison Water Utility (MWU), via email 8/25/2011. This is an all-inclusive gpcd. The 1997-2009 average residential-only gpcd of 75.3 was noted in Water Demand Projections, compiled by Black & Veatch for MWU, 1/21/2011. Accessed 8/23/2011 from cityofmadison.com/water/plans/documents/WaterDemandProjections2011_1_21rev1.pdf - 2011-02-01 // 5. Avg WI home kWh/mo = 710, eia.gov/cneaf/electricity/esr/table5.html

A. Rainwater Harvesting for Drylands & Beyond, Vol 1, or www.esrl.noaa.gov/gmd/grad/solcalc/ // B. RWHDB Vol 1, or Mar 21 =90–latitude, Jun 21 =90–(lat–23.44), Sep 21 =90–lat, Dec 21 =90–(lat+23.44)

Available online at: www.harvestingrainwater.com/watergy-climate/water-conservation-and-climate-overview-data-sheets/