

PATTERNS OF CLIMATE, WATER PER CAPITA, WATERGY, & SUN: AMMAN, JORDAN

CLIMATE	AVERAGE HIGH & LOW TEMPERATURES: 1976 - 2005 <small>Source: met.jometeo.gov.jo (note #1)</small>												
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
	12.2	13.5	17.0	22.7	27.6	30.5	32.1	32.1	30.5	26.5	19.7	14.2	23.2
	3.9	4.5	6.6	10.2	14.2	17.5	19.7	19.4	17.6	14.5	9.3	5.5	11.9
	54.0	56.3	62.6	72.9	81.7	86.9	89.8	89.8	86.9	79.7	67.5	57.6	73.8
39.0	40.1	43.9	50.4	57.6	63.5	67.5	66.9	63.7	58.1	48.7	41.9	53.4	
HIGHEST TEMP ON RECORD:		44	111			LOWEST TEMP ON RECORD:		-6.5	20				
		°C	°F					°C	°F				
AVERAGE RAINFALL: 1923 - 1990 <small>Source: www.worldclimate.com</small>													
JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	
63.3	62.6	43.6	17.3	3.5	0.0	0.0	0.0	0.3	6.1	28.2	48.0	272.9	
2.49	2.46	1.72	0.68	0.14	0.00	0.00	0.00	0.01	0.24	1.11	1.89	10.74	
WETTEST YEAR'S RAINFALL:		450.34	17.73			DRIEST YEAR'S RAINFALL:		98.0	3.86				
		mm	INCHES					mm	INCHES				
LONGEST PERIOD W/ NO MEASURABLE PRECIPITATION: <small>Source:</small>													
AREA:	1680	km ²	POPULATION:		2,919,000	RAINFALL INCOME:		430	lpcd				
<small>Wikipedia</small>	649	SQ MILES	<small>Source/Year:</small>		<small>Wikipedia / 2010</small>			114	GPCD				
WATERGY	Percentage of Jordan's total electricity consumption used to pump water in 2001 ⁴ :							15.3%					
	Daily shortage in liters of city of Amman's water supply ⁵ :							90 million					
# of avg Jordanian citizens whose kWh usage would be needed to desalinate that water ⁶ :							48,291	MUNICIPAL USE:		130	lpcd		
										34	GPCD		
							<small>Source/Year: see note #3</small>						
SUN	LATITUDE:	32	WINTER-SOLSTICE SHADOW RATIO:*						ON MAR 21	ON JUN 21	ON SEP 21	ON DEC 21	
	<small>Source: Google Earth</small>		1: 1.45				^ DEGREES N or S of DUE E THE SUN RISES:		0	27N	0	27S	
	ELEVATION:	790	m					^ DEGREES N or S of DUE W THE SUN SETS:		0	27N	0	27S
		2591	FT	^ # of DEGREES SUN IS ABOVE THE SOUTHERN HORIZON AT NOON:						58	81	58	35
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 $x = 1/(\tan(90-(\text{latitude}+23.44)))$

Notes: 1. Site accessed 27 Feb 2008 per Wikipedia // 2. Site accessed 2 April 2009 // 3. Individual share of water supply in Amman Governorate, per dos.gov.jo. Date not given. Site accessed 2 May 2011. // 4. *Electric Energy Access in Jordan, Lebanon and Syria*, Sami Karaki (American Univ of Beirut) et alii // 5. www.jordanembassyus.org/new-jib/factsheets/environment.shtml#water // 6. Per Energy Recovery Inc (www.energyrecovery.com/tools/power_model.php4) reverse osmosis desalination consumes 2.33 kWh per cubic meter of water treated); per Karaki et alii, *annual* per capita kWh usage in Jordan in 2002 was 1585 kWh; $90,000 \times 2.33 \times 365 = 76,540,499$, divided by 1585 = 48,291

A. Rainwater Harvesting for Drylands & Beyond, Vol 1, or www.esrl.noaa.gov/gmd/grad/solcalc/ // B. RWHDDB Vol 1, or Mar 21 = $90 - \text{latitude}$, Jun 21 = $90 - (\text{lat} - 23.44)$, Sep 21 = $90 - \text{lat}$, Dec 21 = $90 - (\text{lat} + 23.44)$