

Phytosociological Research Center

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Worldwide Bioclimatic Classification System

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(Adapted to Synoptical Table 30/08/2017)

BAHRAIN-MUHARRAQ (BAHRAIN ISLANDS)

Altitude: 2 m.

Latitude: 26°16'N Longitude: 50°37'E

Temperature observation period.: 1981-1994 (14)

Rainfall observation period....: 1981-1994 (14)

(C/mm)	Ti	Mi	mi	M'i	m'i	Pi	Epi
Jan.	17.22	20.00	14.44	28.89	2.78	29.0	23.57
Feb.	18.34	21.11	15.56	32.22	8.89	13.2	28.66
Mar.	21.39	24.44	18.33	33.89	7.78	9.4	60.33
Apr.	25.28	28.89	21.67	37.78	15.00	9.1	118.54
May.	29.45	32.78	26.11	43.89	18.89	2.3	184.57
Jun.	32.23	35.56	28.89	45.00	22.78	0.0	208.57
Jul.	33.89	37.22	30.56	43.89	25.00	0.0	227.74
Aug.	34.45	37.78	31.11	45.00	27.22	0.0	223.03
Sep.	32.23	35.56	28.89	42.22	22.22	0.0	184.99
Oct.	28.89	32.22	25.56	41.11	17.22	0.8	153.08
Nov.	24.45	27.22	21.67	35.00	12.78	2.8	88.76
Dec.	19.17	21.67	16.67	29.44	7.78	14.0	35.09
Year	26.42	29.54	23.29	38.19	15.69	81	1536.9

BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	609
Compensated thermicity index.....(Itc):	609
Simple continentality index.....(Ic):	17.2
Diurnality index.....(Id):	7.2
Annual ombrothermic index.....(Io):	0.25
Monthly dry ombrothermic index.....(Iod1):	No
Bimonthly dry ombrothermic index.....(Iod2):	No
Three monthly dry ombrothermic index.....(Iod3):	No
Four monthly dry ombrothermic index.....(Iod4):	0.02
Annual ombro-evaporation index.....(Ioe):	0.04
Annual positive temperature.....(Tp):	3170
Annual negative temperature.....(Tn):	0
Dry station temperature.....(Td):	1006
Positive precipitation.....(Pp):	81

N. of	P>4T	P:2T-4T	PT-2T	P<T	T<0
Months	0	0	1	11	0

Latitudinal Belt...: Subtropical

Continentalty.....: Oceanic - Low Semicontinental

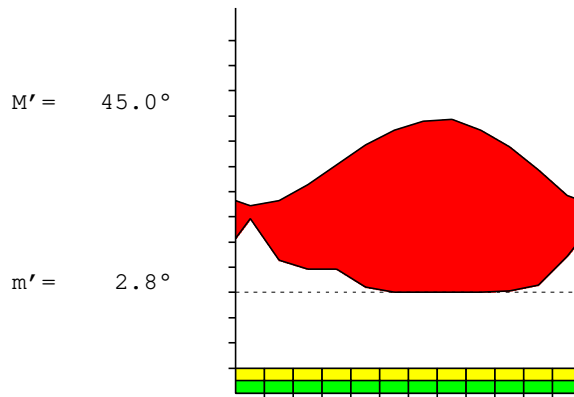
Bioclimate(Variant): TROPICAL DESERTIC (HYPERARID)

Bioclimatic Belt...: LOW THERMOTROPICAL LOW HYPERARID

BAHRAIN-MUHARRAQ (BAHRAIN ISLANDS)

2 m

P= 81 26° 16'N 50° 37'E 14/14 y.
 T= 26.4° Ic= 17.2 Tp= 3170 Tn= 0
 m= 14.4° M= 20.0° Itc= 609 Io= 0.3



TROPICAL DESERTIC (HYPERARID)
 LOW THERMOTROPICAL LOW HYPERARID

WATER INDEX CARD

BAHRAIN-MUHARRAQ (BAHRAIN ISLANDS)

Altitude: 2 m.

Latitude: 26° 16'N

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jan.	17.2	24	29	5	5	24	0	0	0	0.2
Feb.	18.3	29	13	-5	0	19	10	0	0	-0.5
Mar.	21.4	60	9	0	0	9	51	0	0	-0.8
Apr.	25.3	119	9	0	0	9	109	0	0	-0.9
May.	29.5	185	2	0	0	2	182	0	0	-0.9
Jun.	32.2	209	0	0	0	0	209	0	0	-1.0
Jul.	33.9	228	0	0	0	0	228	0	0	-1.0
Aug.	34.5	223	0	0	0	0	223	0	0	-1.0
Sep.	32.2	185	0	0	0	0	185	0	0	-1.0
Oct.	28.9	153	1	0	0	1	152	0	0	-0.9
Nov.	24.5	89	3	0	0	3	86	0	0	-0.9
Dec.	19.2	35	14	0	0	14	21	0	0	-0.6
Year	26.4	1537	81	*	*	81	1456	0	0	*

R = Reserve VR = Variation of the reserve RE = Real evapotranspiration
 DR = Drainage HC = Humidity coefficient DF = Deficit SP = Superavit

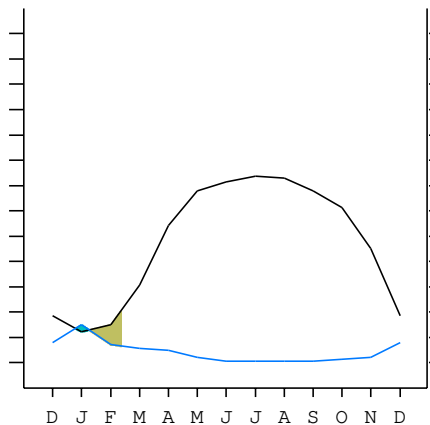
BAHRAIN-MUHARRAQ (BAHRAIN ISLANDS)

26°16'N 50°37'E

2 m 14/14 y.

T= 26.4 Ic= 17.2 TROPICAL DESERTIC (HYPERARID)
 m= 14.4 Tp= 3170 LOW THERMOTROPICAL
 M= 20.0 Tn= 0 LOW HYPERARID
 M' = 45.0 Itc= 609
 m' = 2.8 Io= 0.3
 P= 81 mm
 PE= 1537 mm

Imbibing	24 Dec.
Saturation	8 Jan.
Reserve Use	11 Feb.
Deficit	



BAHRAIN-MUHARRAQ (BAHRAIN ISLANDS)

Latitude: 26°16'N Longitude: 50°37'E Altitude: 2 m

SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continental Index [B1a]
 + Type: B. Oceanic
 + Subtype: 1. Semicontinental
 + Variant: a. Low
 Thermic types [A3.A1]
 + Latitudinal zone: A. Warm
 + Latitudinal belt: 3. Subtropical
 + Thermic type: A. Warm
 + Thermic subtype: 1. Torrid
 Bioclimatic types [A2.2b.2b]
 + Macrobioclimate: A. TROPICAL
 + Bioclimate: 2. DESERTIC
 + Bioclimatic variant ..:
 + Thermic type.....: 2. THERMOTROPICAL
 + Thermic subtype.....: b. LOW
 + Ombrothermic type ...: 2. HYPERARID
 + Ombrothermic subtype : b. LOW
 Bioclimatic Classification: Trps.Ttr.Har

BAHRAIN-MUHARRAQ (BAHRAIN ISLANDS)

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 3
 Coldest semester of the year.....(Psw): 78
 Warmest four months period of the year.....(Pcm1): 0
 Following warmest four months period.....(Pcm2): 47
 Positive precipitation dryest 3 months.....(Ppd): 0
 Positive precipitation dryest 2 months.....(Ppd2): 0
 Positive precipitation dryest 1 month.....(Ppd1): 0
 Positive precipitation warmest 3 months.....(Pps): 0
 Positive precipitation warmest 2 months.....(Pps2): 0
 Positive precipitation warmest 1 month.....(Pps1): 0
 Positive precipitation coldest 3 months.....(Ppw): 56
 Positive precipitation coldest 2 months.....(Ppw2): 42
 Positive precipitation coldest 1 month.....(Ppw1): 29

Seasons	Winter Tr1-W	Spring Tr2-P	Summer Tr3-S	Automn Tr4-F
Rainfall	56	20	0	3

Seasonal rainfall rhythms: W > P > F > S

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 34.5
 Average coldest month [T].....(Tmin): 17.2
 Maximum temp. warmest month [M].....(Tmmax): 37.8
 Minimum temp. coldest month [m].....(Tmmin): 14.4
 Absolute Max.temp. warmest month [M'].....(Tamax): 45.0
 Absolute Min.temp. coldest month [m'].....(Tamin): 2.8
 First warmest contrasted month [M].....(Tcmax): 28.9 (4)
 First coldest contrasted month [m].....(Tcmin): 21.7 (4)
 Dry station temperature.....(Td): 1006
 Positive temperature dryest 3 months.....(Tpd): 1006
 Positive temperature dryest 2 months.....(Tpd2): 661
 Positive temperature dryest 1 month.....(Tpd1): 322
 Positive temperature warmest 3 months.....(Tps): 1006
 Positive temperature warmest 2 months.....(Tps2): 683
 Positive temperature warmest 1 month.....(Tps1): 345
 Positive temperature coldest 3 months.....(Tpw): 547
 Positive temperature coldest 2 months.....(Tpw2): 356
 Positive temperature coldest 1 month.....(Tpw1): 172

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SEASONAL PARAMETERS

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Warmest semester...(Sms)					o	o	o	o	o	o		
Dryest semester....(Smd)					o	o	o	o	o	o		
Warmest 4 months...(Cm1)						o	o	o	o			
Dryest 4 months....(Cmd)						o	o	o	o			
Vegetation Activity(Pav)	o	o	o	o	o	o	o	o	o	o	o	o
Ultragelid...[M' <=0] (Pf)												
Hypergelid...[M <=0] (Pf)												
Gelid.....[T <=0] (Pf)												
Subgelid.....[m <=0] (Pf)												
Pregelid.....[m' <=0] (Pf)												
Agelid.....[m' > 0] (Pf)	o	o	o	o	o	o	o	o	o	o	o	o
HiperAgelid..[all>0] (Pf)	o	o	o	o	o	o	o	o	o	o	o	o

BAHRAIN-MUHARRAQ (BAHRAIN ISLANDS)

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OMBROTHERMIC PARAMETERS

Annual aridity index.[PE/P].....(Iar): 19.07
 Mediterranean index of July.[PE/P].....(Im1): No
 Mediterranean index of July & August.....(Im2): No
 Mediterranean index of June, July & August....(Im3): No

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp(x10)	140	290	132	94	91	23	0	0	0	0	8	28
Tp	192	172	183	214	253	295	322	339	345	322	289	245
Io (Iom)	0.73	1.68	0.72	0.44	0.36	0.08	0.00	0.00	0.00	0.00	0.03	0.11
Seasons	Winter			Spring			Summer			Autumn		
Pp(x10)/Tp	562 / 547			208 / 761			0 / 1006			36 / 856		
Io (Iot)	1.027			0.273			0.000			0.042		
Semesters	December-May						June-November					
Pp(x10)/Tp	770 / 1309						36 / 1861					
Io (Iosm)	0.588						0.019					

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 806/3170=0.25 [Upper hyperarid \(4\) \[1985\]](#)

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	140	290	132	94	91	23	0	0	0	0	8	28
Tp [T*10]	192	172	183	214	253	295	322	339	345	322	289	245
Iom [Pp/Tp]	73	168	72	44	36	8	0	0	0	0	3	11
Avm [200-Iom]	127	32	128	156	164	192	200	200	200	200	197	189
Seasons	Winter			Spring			Summer			Autumn		
Pp / Tp	562 / 547			208 / 761			0 / 1006			36 / 856		
Iot [Pp/Tp]	103			27			0			4		
Avs E[Avm<200]	287			512			600			586		
Lower ultrahyperarid [8]						Upper ultrahyperarid [1]						
Lower hyperarid [1]						Upper hyperarid [1]						
Strong lower arid [1]						Strong upper arid [2]						
Strong lower semiarid [1]						Strong upper semiarid [1]						

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin]	(Sp):	17.23
CI of Gorezinski (1920) [1.7*Sp/sin(Lat)-20.4]		45.79
CI of Conrad (1946) [1.7*Sp/sin(Lat+10)-14]		35.52
+ Oceanic (20<CI<40)		
CI of Currey (1974) [CI=Sp/(1+Lat/3)]		1.77
+ Continental (1.7<CI<2.3)		
Rainfall Index of Lang (1925) [R=P/T]		3.05
+ Steppic (40>R>0)		
Aridity Index of Martonne (1926) [Ia=P/(T+10)]		2.21
+ Extremely arid -desert- (5>Ia>0)		
I of Emberger (1930) [Q=100*P/(Tmmax ² -Tmmin ²)]		6.61
+ Arid (30>Q>0)		
I of Dantin & Revenga (1940) [DR=100*T/P]		32.77
+ Extremely arid (DR>6)		
Aridity Index of UNEP [I=P/PE]		0.05
+ Arid (0.2>Im>0.05)		
Potential Erosion I of Fournier (1960) [K=Pi ² /P]		10.43
+ Very low (K<60)		

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BIOCLIMATIC INDICES II

Bioclimatic classification of Gaussen & Bagnouls (1957)
 + Climate

- + Climate
- + Region
- + Thermic type: 1. Megathermic

Thornthwaite (1948)												
	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
P-E ratio	0.11	0.05	0.03	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.05
T-E ratio	7.75	8.25	9.63	11.38	13.25	14.50	15.25	15.50	14.50	13.00	11.00	8.63
Precipitation-effectiveness: 2.75						Temperature-efficiency						142.65
Moisture Index [MI=100*(P-PE)/PE]												-94.76
+ E.Dry (-110<MI<-66.7)												
Index of dryness [DI=100*d/PE]												94.75
+ Strong deficit (33.3<DI)												
Index of humidity [HI=100*s/PE]												0.00
+ No surplus (0<HI<10)												
Potential Evapotranspiration PE												1536.93
+ Megathermic (PE>1440)												

