

Phytosociological Research Center

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Worldwide Bioclimatic Classification System

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(Adapted to Synoptical Table 30/08/2017)

HERAT (AFGHANISTAN)

Altitude: 964 m.

Latitude: 34°18'N Longitude: 62°13'E

Temperature observation period.: 1962-1980 (19)

Rainfall observation period....: 1962-1980 (19)

(C/mm)	Ti	Mi	mi	M'i	m'i	Pi	EPI
Jan.	1.70	8.40	-3.80	28.80	-26.70	48.0	0.98
Feb.	4.90	12.30	-0.50	28.80	-20.50	47.0	6.08
Mar.	10.30	17.40	3.60	31.00	-13.30	54.0	26.64
Apr.	15.40	23.20	8.90	36.20	-2.30	48.0	56.89
May.	21.70	29.70	13.30	39.70	3.00	8.0	113.97
Jun.	27.20	34.90	18.30	43.20	9.70	0.0	169.32
Jul.	29.50	36.50	21.30	44.40	14.70	0.0	194.60
Aug.	27.50	35.00	19.00	42.70	8.40	0.0	166.47
Sep.	22.30	31.10	12.90	39.30	1.30	0.0	102.59
Oct.	15.80	25.10	6.50	34.40	-5.60	2.0	52.95
Nov.	8.80	18.10	0.80	30.00	-12.80	12.0	17.10
Dec.	4.20	12.10	-1.80	24.80	-22.20	33.0	4.65
Year	15.78	23.65	8.21	35.27	-5.53	252	912.25

BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	204
Compensated thermicity index.....(Itc):	321
Simple continentality index.....(Ic):	27.8
Diurnality index.....(Id):	18.6
Annual ombrothermic index.....(Io):	1.33
Monthly estival ombrothermic index.....(Ios1):	No
Bimonthly estival ombrothermic index.....(Ios2):	No
Three monthly estival ombrothermic index.....(Ios3):	No
Four monthly estival ombrothermic index.....(Ios4):	0.08
Annual ombro-evaporation index.....(Ioe):	0.04
Annual positive temperature.....(Tp):	1893
Annual negative temperature.....(Tn):	0
Estival temperature.....(Ts):	842
Positive precipitation.....(Pp):	252

N. of	P>4T	P:2T-4T	PT-2T	P<T	T<0
Months	4	1	1	6	0

Latitudinal Belt...: Subtropical

Continentality.....: Continental - High Subcontinental

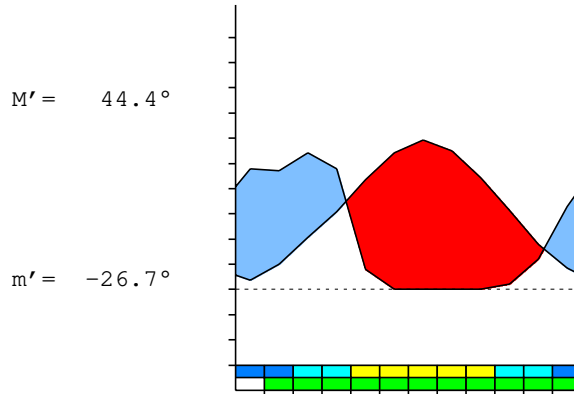
Bioclimate.....: MEDITERRANEAN XERIC-CONTINENTAL

Bioclimatic Belt...: LOW MESOMEDITERRANEAN LOW SEMIARID

HERAT (AFGHANISTAN)

964 m

P= 252 34° 18'N 62° 13'E 19/19 y.
 T= 15.8° Ic= 27.8 Tp= 1893 Tn= 0
 m= -3.8° M= 8.4° Itc= 321 Io= 1.3



MEDITERRANEAN XERIC-CONTINENTAL
 LOW MESOMEDITERRANEAN LOW SEMIARID

WATER INDEX CARD HERAT (AFGHANISTAN)
 Altitude: 964 m. Latitude: 34° 18'N

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jan.	1.7	1	48	47	75	1	0	0	0	*
Feb.	4.9	6	47	25	100	6	0	16	8	6.7
Mar.	10.3	27	54	0	100	27	0	27	18	1.0
Apr.	15.4	57	48	-9	91	57	0	0	9	-0.1
May.	21.7	114	8	-91	0	99	15	0	4	-0.9
Jun.	27.2	169	0	0	0	0	169	0	2	-1.0
Jul.	29.5	195	0	0	0	0	195	0	1	-1.0
Aug.	27.5	166	0	0	0	0	166	0	1	-1.0
Sep.	22.3	103	0	0	0	0	103	0	0	-1.0
Oct.	15.8	53	2	0	0	2	51	0	0	-0.9
Nov.	8.8	17	12	0	0	12	5	0	0	-0.2
Dec.	4.2	5	33	28	28	5	0	0	0	6.0
Year	15.8	912	252	*	*	208	704	44	44	*

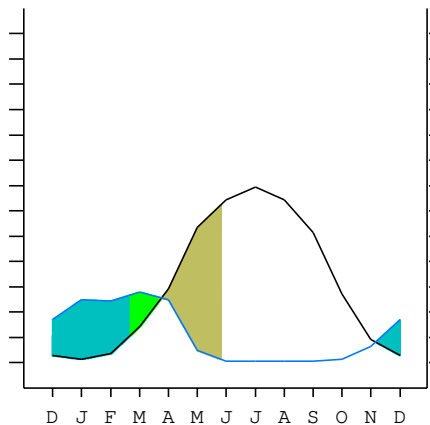
R = Reserve VR = Variation of the reserve RE = Real evapotranspiration
 DR = Drainage HC = Humidity coefficient DF = Deficit SP = Superavit

HERAT (AFGHANISTAN)

34°18'N 62°13'E 964 m 19/19 y.

T= 15.8 Ic= 27.8 MEDITERRANEAN XERIC-CONTINENTAL
 m= -3.8 Tp= 1893 LOW MESOMEDITERRANEAN
 M= 8.4 Tn= 0 LOW SEMIARID
 M' = 44.4 Itc= 321
 m' = -26.7 Io= 1.3
 P= 252 mm ———
 PE= 912 mm ———

Imbibing	5 Nov.
Saturation	19 Feb.
Reserve Use	23 Mar.
Deficit	26 May.



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SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continental Index [C2b]
 + Type: C. Continental
 + Subtype: 2. Subcontinental
 + Variant: b. High
 Thermic types [A3.A3]
 + Latitudinal zone: A. Warm
 + Latitudinal belt: 3. Subtropical
 + Thermic type: A. Warm
 + Thermic subtype: 3. Subwarm
 Bioclimatic types [B5.3b.4b]
 + Macrobioclimate: B. MEDITERRANEAN
 + Bioclimate: 5. XERIC-CONTINENTAL
 + Bioclimatic variant ..:
 + Thermic type.....: 3. MESOMEDITERRANEAN
 + Thermic subtype.....: b. LOW
 + Ombrothermic type ...: 4. SEMIARID
 + Ombrothermic subtype : b. LOW
 Bioclimatic Classification: Medo.Mme.Sar

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 10
 Coldest semester of the year.....(Psw): 242
 Warmest four months period of the year.....(Pcm1): 0
 Following warmest four months period.....(Pcm2): 95
 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): 128
 Positive precipitation coldest 2 months.....(Ppw2): 81
 Positive precipitation coldest 1 month.....(Ppw1): 48

Seasons	Winter Tr1-W	Spring Tr2-P	Summer Tr3-S	Automn Tr4-F
Rainfall	128	110	0	14

Seasonal rainfall rhythms: W > P > F > S

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 29.5
 Average coldest month [T].....(Tmin): 1.7
 Maximum temp. warmest month [M].....(Tmmax): 36.5
 Minimum temp. coldest month [m].....(Tmmin): -3.8
 Absolute Max.temp. warmest month [M'].....(Tamax): 44.4
 Absolute Min.temp. coldest month [m'].....(Tamin): -26.7
 First warmest contrasted month [M].....(Tcmax): 25.1 (10)
 First coldest contrasted month [m].....(Tcmin): 6.5 (10)
 Estival temperature.....(Ts): 842
 Positive temperature dryest 3 months.....(Tpd): 842
 Positive temperature dryest 2 months.....(Tpd2): 567
 Positive temperature dryest 1 month.....(Tpd1): 272
 Positive temperature warmest 3 months.....(Tps): 842
 Positive temperature warmest 2 months.....(Tps2): 570
 Positive temperature warmest 1 month.....(Tps1): 295
 Positive temperature coldest 3 months.....(Tpw): 108
 Positive temperature coldest 2 months.....(Tpw2): 59
 Positive temperature coldest 1 month.....(Tpw1): 17

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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
Ultragelid...[M' <=0] (Pf)												
Hypergelid...[M <=0] (Pf)												
Gelid.....[T <=0] (Pf)												
Subgelid.....[m <=0] (Pf)	o	o										o
Pregelid.....[m' <=0] (Pf)	o	o	o	o						o	o	o
Agelid.....[m' > 0] (Pf)					o	o	o	o	o			
HiperAgelid..[all>0] (Pf)					o	o	o	o	o			

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OMBROTHERMIC PARAMETERS

Annual aridity index.[PE/P].....(Iar): 3.62
 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)	330	480	470	540	480	80	0	0	0	0	20	120
Tp	42	17	49	103	154	217	272	295	275	223	158	88
Io (Iom)	7.86	28.2	9.59	5.24	3.12	0.37	0.00	0.00	0.00	0.00	0.13	1.36
Seasons	Winter			Spring			Summer			Autumn		
Pp(x10)/Tp	1280 / 108			1100 / 474			0 / 842			140 / 469		
Io (Iot)	11.85			2.321			0.000			0.299		
Semesters	December-May						June-November					
Pp(x10)/Tp	2380 / 582						140 / 1311					
Io (Iosm)	4.089						0.107					

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 2520/1893=1.33 **There is No Yearly Aridity**

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	330	480	470	540	480	80	0	0	0	0	20	120
Tp [T*10]	42	17	49	103	154	217	272	295	275	223	158	88
Iom [Pp/Tp]	786	\$\$	959	524	312	37	0	0	0	0	13	136
Avm [200-Iom]	***	***	***	***	***	163	200	200	200	200	187	64
Seasons	Winter			Spring			Summer			Autumn		
Pp / Tp	1280 / 108			1100 / 474			0 / 842			140 / 469		
Iot [Pp/Tp]	1185			232			0			30		
Avs E[Avm<200]	***			***			600			451		
Lower ultrahyperarid [5]							Upper ultrahyperarid [1]					
Upper hyperarid [1]							Strong lower arid [1]					
Weak lower semiarid [1]												

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin]	(Sp):	27.80
CI of Gorezinski (1920) [1.7*Sp/sin(Lat)-20.4]		63.46
CI of Conrad (1946) [1.7*Sp/sin(Lat+10)-14]		53.67
+ Subcontinental (40<CI<60)		
CI of Currey (1974) [CI=Sp/(1+Lat/3)]		2.24
+ Continental (1.7<CI<2.3)		
Rainfall Index of Lang (1925) [R=P/T]		15.97
+ Steppic (40>R>0)		
Aridity Index of Martonne (1926) [Ia=P/(T+10)]		9.78
+ Arid -steppic- (15>Ia>5)		
I of Emberger (1930) [Q=100*P/(Tmax ² -Tmin ²)]		19.12
+ Arid (30>Q>0)		
I of Dantin & Revenga (1940) [DR=100*T/P]		6.26
+ Extremely arid (DR>6)		
Aridity Index of UNEP [I=P/PE]		0.28
+ Semiarid (0.5>Im>0.2)		
Potential Erosion I of Fournier (1960) [K=Pi ² /P]		11.57
+ Very low (K<60)		

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BIOCLIMATIC INDICES II

Bioclimatic classification of Gaussen & Bagnouls (1957)
 + Climate

- + Climate
- + Region
- + Thermic type: 3. Macro-mesothermic

Thornthwaite (1948)												
	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
P-E ratio	0.34	0.29	0.28	0.21	0.02	0.00	0.00	0.00	0.00	0.01	0.06	0.20
T-E ratio	0.77	2.21	4.64	6.93	9.77	12.24	13.27	12.38	10.03	7.11	3.96	1.89
Precipitation-effectiveness: 14.02						Temperature-efficiency						85.19
Moisture Index [MI=100*(P-PE)/PE]												-72.38
+ E.Dry (-110<MI<-66.7)												
Index of dryness [DI=100*d/PE]												77.15
+ Strong deficit (33.3<DI)												
Index of humidity [HI=100*s/PE]												4.78
+ No surplus (0<HI<10)												
Potential Evapotranspiration PE												912.25
+ Third mesothermic (855<PE<997)												

