

# Phytosociological Research Center

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## Worldwide Bioclimatic Classification System

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(Adapted to Synoptical Table 14/02/2020)

ULANGOM (MONGOLIA)

Altitude: 936 m.

Latitude: 49°51'N Longitude: 92°4'E

Temperature observation period.: 1987-1994 (8)

Rainfall observation period....: 1988-1994 (7)

(C/mm)	Ti	Mi	mi	M'i	m'i	Pi	Epi
Jan.	-29.45	-23.89	-35.00	-11.11	-43.89	0.0	0.00
Feb.	-27.22	-22.22	-32.22	-12.22	-45.00	1.5	0.00
Mar.	-16.39	-10.56	-22.22	-1.11	-37.22	4.3	0.00
Apr.	-0.56	5.56	-6.67	22.22	-22.22	2.0	0.00
May.	11.11	18.33	3.89	30.00	-5.00	0.3	81.78
Jun.	15.27	21.11	9.44	31.11	-3.89	30.5	111.44
Jul.	18.06	23.89	12.22	28.89	5.00	15.7	130.63
Aug.	16.39	22.78	10.00	30.00	2.22	26.2	109.19
Sep.	10.84	17.78	3.89	37.78	-2.78	2.5	63.74
Oct.	0.00	6.11	-6.11	17.22	-21.11	41.1	0.00
Nov.	-9.45	-6.11	-12.78	10.00	-28.89	18.5	0.00
Dec.	-22.23	-17.78	-26.67	-7.78	-40.00	13.0	0.00
Year	-2.80	2.92	-8.52	14.58	-20.23	156	496.78

### BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	-617
Compensated thermicity index.....(Itc):	-2
Simple continentality index.....(Ic):	47.5
Diurnality index.....(Id):	14.4
Annual ombrothermic index.....(Io):	1.05
Monthly estival ombrothermic index.....(Ios1):	0.87
Bimonthly estival ombrothermic index.....(Ios2):	1.22
Threemonthly estival ombrothermic index.....(Ios3):	1.46
Fourmonthly estival ombrothermic index.....(Ios4):	1.20
Annual ombro-evaporation index.....(Ioe):	0.31
Annual positive temperature.....(Tp):	717
Annual negative temperature.....(Tn):	1053
Estival temperature.....(Ts):	497
Positive precipitation.....(Pp):	75

N. of Months	P>4T	P:2T-4T	PT-2T	P<T	T<0
	1	0	2	3	6

Latitudinal Belt...: High Eutemperate

Continentality.....: Continental - Low Hypercontinental

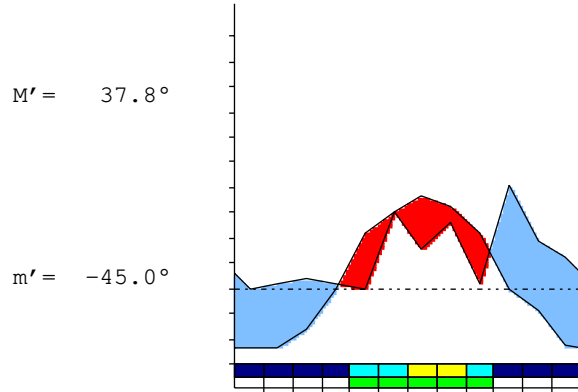
Bioclimate(Variant): MEDITERRANEAN XERIC-CONTINENTAL (STEPIC)

Bioclimatic Belt...: LOW OROMEDITERRANEAN LOW SEMIARID

ULANGOM (MONGOLIA)

936 m

P= 156      49° 51'N      92° 4'E      8/7 y.  
 T= -2.8 °    Ic= 47.5      Tp= 717      Tn= 1053  
 m= -35.0 °    M= -23.9 °    Itc= -2      Io= 1.0



MEDITERRANEAN XERIC-CONTINENTAL (STEPPIC)  
 LOW OROMEDITERRANEAN LOW SEMIARID

WATER INDEX CARD      ULANGOM (MONGOLIA)  
 Altitude: 936 m.      Latitude: 49° 51'N

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jan.	-29.5	0	0	0	73	0	0	0	0	*
Feb.	-27.2	0	2	2	74	0	0	0	0	*
Mar.	-16.4	0	4	4	78	0	0	0	0	*
Apr.	-0.6	0	2	2	80	0	0	0	0	*
May.	11.1	82	0	-80	0	81	1	0	0	-0.9
Jun.	15.3	111	31	0	0	31	81	0	0	-0.7
Jul.	18.1	131	16	0	0	16	115	0	0	-0.8
Aug.	16.4	109	26	0	0	26	83	0	0	-0.7
Sep.	10.8	64	3	0	0	3	61	0	0	-0.9
Oct.	0.0	0	41	41	41	0	0	0	0	*
Nov.	-9.4	0	19	19	60	0	0	0	0	*
Dec.	-22.2	0	13	13	73	0	0	0	0	*
Year	-2.8	497	156	*	*	156	341	0	0	*

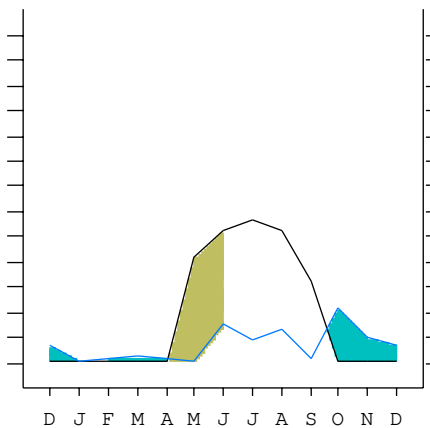
R = Reserve    VR = Variation of the reserve    RE = Real evapotranspiration  
 DR = Drainage    HC = Humidity coefficient    DF = Deficit    SP = Superavit

ULANGOM (MONGOLIA)

49°51'N    92°4'E    936 m    8/7 y.

T= -2.8    Ic= 47.5    MEDITERRANEAN XERIC-CONTINENTAL (STEPPIC)  
 m= -35.0    Tp= 717    LOW OROMEDITERRANEAN  
 M= -23.9    Tn= 1053    LOW SEMIARID  
 M' = 37.8    Itc= -2  
 m' = -45.0    Io= 1.0  
 P= 156    mm ———  
 PE= 497    mm ———

Imbibing	18 Sep.
Saturation	
Reserve Use	1 Apr.
Deficit	30 May.



ULANGOM (MONGOLIA)

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SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continentality Index [C4a]  
 + Type .....: C. Continental  
 + Subtype .....: 4. Hypercontinental  
 + Variant .....: a. Low

Thermic types [B1.D8]  
 + Latitudinal zone ....: B. Temperate  
 + Latitudinal belt ....: 1. High Eutemperate  
 + Thermic type .....: D. Gelid  
 + Thermic subtype .....: 8. Ultramicrothermic

Bioclimatic types [B5a.5b.4b]  
 + Macrobioclimate .....: B. MEDITERRANEAN  
 + Bioclimate .....: 5. XERIC-CONTINENTAL  
 + Bioclimatic variant .: STEPPIC  
 + Thermic type.....: 5. OROMEDITERRANEAN  
 + Thermic subtype.....: b. LOW  
 + Ombrothermic type ...: 4. SEMIARID  
 + Ombrothermic subtype : b. LOW

Bioclimatic Classification .....Mexc(Stp).Ome.Sar.Hco

ULANGOM (MONGOLIA)

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 116  
 Coldest semester of the year.....(Psw): 39  
 Warmest four months period of the year.....(Pcm1): 73  
 Following warmest four months period.....(Pcm2): 75  
 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): 72  
 Positive precipitation warmest 2 months.....(Pps2): 42  
 Positive precipitation warmest 1 month.....(Pps1): 16  
 Positive precipitation coldest 3 months.....(Ppw): 0  
 Positive precipitation coldest 2 months.....(Ppw2): 0  
 Positive precipitation coldest 1 month.....(Ppw1): 0

Seasons	Winter Tr1-W	Spring Tr2-P	Summer Tr3-S	Automn Tr4-F
Rainfall	14	6	72	62

Seasonal rainfall rhythms: S > F > W > P

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 18.1  
 Average coldest month [T].....(Tmin): -29.5  
 Maximum temp. warmest month [M].....(Tmmax): 23.9  
 Minimum temp. coldest month [m].....(Tmmin): -35.0  
 Absolute Max.temp. warmest month [M'].....(Tamax): 37.8  
 Absolute Min.temp. coldest month [m'].....(Tamin): -45.0  
 First warmest contrasted month [M].....(Tcmax): 18.3 (5)  
 First coldest contrasted month [m].....(Tcmin): 3.9 (5)  
 Estival temperature.....(Ts): 497  
 Positive temperature dryest 3 months.....(Tpd): 0  
 Positive temperature dryest 2 months.....(Tpd2): 0  
 Positive temperature dryest 1 month.....(Tpd1): 0  
 Positive temperature warmest 3 months.....(Tps): 497  
 Positive temperature warmest 2 months.....(Tps2): 345  
 Positive temperature warmest 1 month.....(Tps1): 181  
 Positive temperature coldest 3 months.....(Tpwc): 0  
 Positive temperature coldest 2 months.....(Tpwc2): 0  
 Positive temperature coldest 1 month.....(Tpwc1): 0

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

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OMBROTHERMIC PARAMETERS

Annual aridity index.[PE/P].....(Iar): 3.19  
 Mediterranean index of July.[PE/P].....(Im1): 8.32  
 Mediterranean index of July & August.....(Im2): 5.72  
 Mediterranean index of June, July & August....(Im3): 4.85

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp(x10)	*	*	*	*	*	3	305	157	262	25	*	*
Tp	*	*	*	*	*	111	153	181	164	108	*	*
Io (Iom)	*	*	*	*	*	0.03	2.00	0.87	1.60	0.23	*	*
Seasons	Winter			Spring			Summer			Autumn		
Pp(x10)/Tp	*/*			*/*			724 / 497			*/*		
Io (Iot)	*			*			1.456			*		
Semesters	December-May						June-November					
Pp(x10)/Tp	*/*						*/*					
Io (Iosm)	*						*					

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 752/717=1.05 There is No Yearly Aridity

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	*	*	*	*	*	3	305	157	262	25	*	*
Tp [T*10]	*	*	*	*	*	111	153	181	164	108	*	*
Iom [Pp/Tp]	!!	!!	!!	!!	!!	3	200	87	160	23	\$\$	!!
Avm [200-Iom]	***	***	***	***	***	197	0	113	40	177	***	***
Seasons	Winter			Spring			Summer			Autumn		
Pp / Tp	* / *			* / *			724 / 497			* / *		
Iot [Pp/Tp]	**			**			146			**		
Avs E[Avm<200]	***			197			153			***		
Lower ultrahyperarid [1]							Lower hyperarid [1]					
Weak upper arid [1]							Weak lower semiarid [2]					
Strong upper semiarid [1]												

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin] .....(Sp): 47.51  
 CI of Gorezinski (1920) [1.7\*Sp/sin(Lat)-20.4] .....: 85.27  
 CI of Conrad (1946) [1.7\*Sp/sin(Lat+10)-14] .....: 79.40  
 + Continental (60<CI<80)  
 CI of Currey (1974) [CI=Sp/(1+Lat/3)] .....: 2.70  
 + Hypercontinental (2.3<CI<5)  
 Rainfall Index of Lang (1925) [R=P/T] .....: -55.52  
 +  
 Aridity Index of Martonne (1926) [Ia=P/(T+10)] .....: 21.62  
 + Subhumid (30>Ia>20)  
 I of Emberger (1930) [Q=100\*P/(Tmmax<sup>2</sup>-Tmmin<sup>2</sup>)] .....: -23.78  
 +  
 I of Dantin & Revenga (1940) [DR=100\*T/P] .....: -1.80  
 +  
 Aridity Index of UNEP [I=P/PE] .....: 0.31  
 + Semiarid (0.5>Im>0.2)  
 Potential Erosion I of Fournier (1960) [K=Pi<sup>2</sup>/P].....: 10.86  
 + Very low (K<60)

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BIOCLIMATIC INDICES II

Bioclimatic classification of Gaussen & Bagnouls (1957)  
 + Climate .....: B. Cold and temperate cold  
 + Region .....: 10. Psicroxeroterico (Submediterranean)  
 + Thermic type: 8. Ultramicrothermic

Thornthwaite (1948)												
	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
P-E ratio	0.00	0.01	0.03	0.01	0.00	0.13	0.06	0.10	0.01	0.31	0.14	0.09
T-E ratio	0.00	0.00	0.00	0.00	5.00	6.87	8.13	7.38	4.88	0.00	0.00	0.00
Precipitation-effectiveness: 8.87						Temperature-efficiency .....: 32.25						
Moisture Index [MI=100*(P-PE)/PE] .....: -68.68 + E.Dry (-110<MI<-66.7)												
Index of dryness [DI=100*d/PE] .....: 68.66 + Strong deficit (33.3<DI)												
Index of humidity [HI=100*s/PE] .....: 0.00 + No surplus (0<HI<10)												
Potential Evapotranspiration PE .....: 496.78 + Second microthermic (427<PE<570)												

