

Phytosociological Research Center

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Worldwide Bioclimatic Classification System

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(Adapted to Synoptical Table 30/08/2017)

KOZHASAY (KAZAKHSTAN)

Altitude: 122 m.

Latitude: 48°13'N Longitude: 57°7'E

Temperature observation period.: 1982-1994 (13)

Rainfall observation period....: 1984-1994 (11)

(C/mm)	Ti	Mi	mi	M'i	m'i	Pi	EPi
Jan.	-14.72	-10.00	-19.44	3.89	-45.00	11.2	0.00
Feb.	-13.33	-8.33	-18.33	8.89	-42.78	7.6	0.00
Mar.	-6.11	-1.11	-11.11	17.78	-36.11	18.3	0.00
Apr.	7.78	14.44	1.11	31.11	-22.78	11.4	36.76
May.	15.56	23.33	7.78	37.78	-6.11	9.4	95.06
Jun.	21.11	28.89	13.33	42.22	0.00	20.3	137.92
Jul.	23.62	31.67	15.56	46.11	3.89	27.7	158.48
Aug.	21.95	30.00	13.89	42.78	2.22	8.6	133.51
Sep.	14.73	22.78	6.67	37.22	-7.22	27.4	71.46
Oct.	6.11	12.22	0.00	32.22	-17.22	24.1	22.60
Nov.	-2.50	2.22	-7.22	20.00	-32.22	14.5	0.00
Dec.	-10.84	-6.67	-15.00	7.22	-41.11	15.2	0.00
Year	5.28	11.62	-1.06	27.27	-20.37	196	655.79

BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	-242
Compensated thermicity index.....(Itc):	137
Simple continentality index.....(Ic):	38.3
Diurnality index.....(Id):	16.1
Annual ombrothermic index.....(Io):	1.16
Monthly estival ombrothermic index.....(Ios1):	0.39
Bimonthly estival ombrothermic index.....(Ios2):	0.80
Threemonthly estival ombrothermic index.....(Ios3):	0.85
Fourmonthly estival ombrothermic index.....(Ios4):	0.80
Annual ombro-evaporation index.....(Ioe):	1.15
Annual positive temperature.....(Tp):	1109
Annual negative temperature.....(Tn):	475
Estival temperature.....(Ts):	667
Positive precipitation.....(Pp):	129

N. of	P>4T	P:2T-4T	PT-2T	P<T	T<0
Months	0	1	3	3	5

Latitudinal Belt...: High eutemperate

Continentalty.....: Continental - High Eucontinental

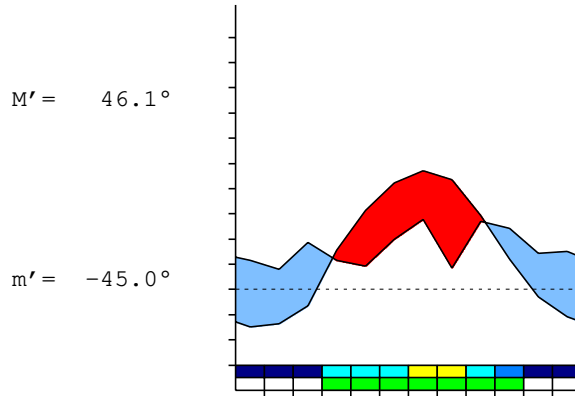
Bioclimate(Variant): MEDITERRANEAN XERIC-CONTINENTAL (STEPIC)

Bioclimatic Belt...: UPPER SUPRAMEDITERRANEAN LOW SEMIARID

KOZHASAY (KAZAKHSTAN)

122 m

P= 196 48° 13'N 57° 7'E 13/11 y.
 T= 5.3° Ic= 38.3 Tp= 1109 Tn= 475
 m= -19.4° M= -10.0° Itc= 137 Io= 1.2



MEDITERRANEAN XERIC-CONTINENTAL (STEPPIC)
 UPPER SUPRAMEDITERRANEAN LOW SEMIARID

WATER INDEX CARD KOZHASAY (KAZAKHSTAN)
 Altitude: 122 m. Latitude: 48° 13'N

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jan.	-14.7	0	11	11	42	0	0	0	0	*
Feb.	-13.3	0	8	8	50	0	0	0	0	*
Mar.	-6.1	0	18	18	68	0	0	0	0	*
Apr.	7.8	37	11	-25	43	37	0	0	0	-0.6
May.	15.6	95	9	-43	0	52	43	0	0	-0.9
Jun.	21.1	138	20	0	0	20	118	0	0	-0.8
Jul.	23.6	158	28	0	0	28	131	0	0	-0.8
Aug.	22.0	134	9	0	0	9	125	0	0	-0.9
Sep.	14.7	71	27	0	0	27	44	0	0	-0.6
Oct.	6.1	23	24	2	2	23	0	0	0	0.0
Nov.	-2.5	0	15	15	16	0	0	0	0	*
Dec.	-10.8	0	15	15	31	0	0	0	0	*
Year	5.3	656	196	*	*	196	460	0	0	*

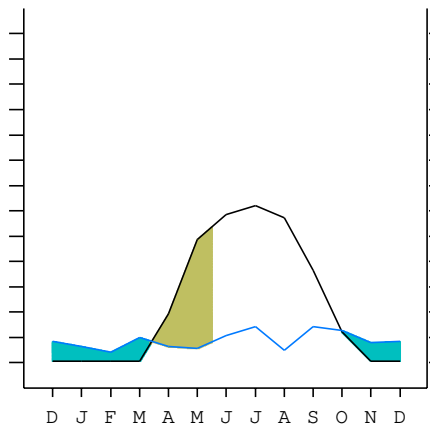
R = Reserve VR = Variation of the reserve RE = Real evapotranspiration
 DR = Drainage HC = Humidity coefficient DF = Deficit SP = Superavit

KOZHASAY (KAZAKHSTAN)

48°13'N 57°7'E 122 m 13/11 y.

T= 5.3 Ic= 38.3 MEDITERRANEAN XERIC-CONTINENTAL (STEPPIC)
 m= -19.4 Tp= 1109 UPPER SUPRAMEDITERRANEAN
 M= -10.0 Tn= 475 LOW SEMIARID
 M' = 46.1 Itc= 137
 m' = -45.0 Io= 1.2
 P= 196 mm ———
 PE= 656 mm ———

Imbibing	30 Sep.
Saturation	13 Mar.
Reserve Use	16 May.
Deficit	



KOZHASAY (KAZAKHSTAN)

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SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continental Index [C3b]
 + Type: C. Continental
 + Subtype: 3. Eucontinental
 + Variant: b. High
 Thermic types [B1.C6]
 + Latitudinal zone: B. Temperate
 + Latitudinal belt: 1. High eutemperate
 + Thermic type: C. Cold
 + Thermic subtype: 6. Cool
 Bioclimatic types [B5a.4a.4b]
 + Macrobioclimate: B. MEDITERRANEAN
 + Bioclimate: 5. XERIC-CONTINENTAL
 + Bioclimatic variant .: a. STEPPIC
 + Thermic type.....: 4. SUPRAMEDITERRANEAN
 + Thermic subtype.....: a. UPPER
 + Ombrothermic type ...: 4. SEMIARID
 + Ombrothermic subtype : b. LOW
 Bioclimatic Classification: Medo (Stp) .Sme.Sar

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 105
 Coldest semester of the year.....(Psw): 91
 Warmest four months period of the year.....(Pcm1): 66
 Following warmest four months period.....(Pcm2): 81
 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): 57
 Positive precipitation warmest 2 months.....(Pps2): 36
 Positive precipitation warmest 1 month.....(Pps1): 28
 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	34	39	56	66

Seasonal rainfall rhythms: F > S > P > W

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 23.6
 Average coldest month [T].....(Tmin): -14.7
 Maximum temp. warmest month [M].....(Tmmax): 31.7
 Minimum temp. coldest month [m].....(Tmmin): -19.4
 Absolute Max.temp. warmest month [M'].....(Tamax): 46.1
 Absolute Min.temp. coldest month [m'].....(Tamin): -45.0
 First warmest contrasted month [M].....(Tcmax): 31.7 (7)
 First coldest contrasted month [m].....(Tcmin): 15.6 (7)
 Estival temperature.....(Ts): 667
 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): 667
 Positive temperature warmest 2 months.....(Tps2): 456
 Positive temperature warmest 1 month.....(Tps1): 236
 Positive temperature coldest 3 months.....(Tpw): 0
 Positive temperature coldest 2 months.....(Tpw2): 0
 Positive temperature coldest 1 month.....(Tpw1): 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	o	o		
Ultragelid...[M' <=0] (Pf)												
Hypergelid...[M <=0] (Pf)	o	o	o									o
Gelid.....[T <=0] (Pf)	o	o	o								o	o
Subgelid.....[m <=0] (Pf)	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): 3.35
 Mediterranean index of July.[PE/P].....(Im1): 5.72
 Mediterranean index of July & August.....(Im2): 8.04
 Mediterranean index of June, July & August....(Im3): 7.60

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp(x10)	*	*	*	*	114	94	203	277	86	274	241	*
Tp	*	*	*	*	78	156	211	236	220	147	61	*
Io (Iom)	*	*	*	*	1.47	0.60	0.96	1.17	0.39	1.86	3.94	*
Seasons	Winter			Spring			Summer			Autumn		
Pp(x10)/Tp	*/*			*/*			566 / 667			*/*		
Io (Iot)	*			*			0.849			*		
Semesters	December-May						June-November					
Pp(x10)/Tp	*/*						*/*					
Io (Iosm)	*						*					

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 1289/1109=1.16 **There is No Yearly Aridity**

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	*	*	*	*	114	94	203	277	86	274	241	*
Tp [T*10]	*	*	*	*	78	156	211	236	220	147	61	*
Iom [Pp/Tp]	!!	!!	!!	!!	147	60	96	117	39	186	394	!!
Avm [200-Iom]	***	***	***	***	53	140	104	83	161	14	***	***
Seasons	Winter			Spring			Summer			Autumn		
Pp / Tp	* / *			* / *			566 / 667			* / *		
Iot [Pp/Tp]	**			**			85			**		
Avs E[Avm<200]	***			193			347			***		
Upper hyperarid [1]							Weak lower arid [1]					
Weak upper arid [2]							Strong lower semiarid [1]					
Weak lower semiarid [2]							Weak upper semiarid [1]					

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin]	(Sp): 38.34
CI of Gorezinski (1920) [1.7*Sp/sin(Lat)-20.4]	67.01
CI of Conrad (1946) [1.7*Sp/sin(Lat+10)-14]	62.68
+ Continental (60<CI<80)	
CI of Currey (1974) [CI=Sp/(1+Lat/3)]	2.25
+ Continental (1.7<CI<2.3)	
Rainfall Index of Lang (1925) [R=P/T]	37.06
+ Steppic (40>R>0)	
Aridity Index of Martonne (1926) [Ia=P/(T+10)]	12.81
+ Arid -steppic- (15>Ia>5)	
I of Emberger (1930) [Q=100*P/(Tmax ² -Tmin ²)]	31.31
+ Semiarid (50>Q>30)	
I of Dantin & Revenga (1940) [DR=100*T/P]	2.70
+ Semiarid (3>DR>2)	
Aridity Index of UNEP [I=P/PE]	0.30
+ Semiarid (0.5>Im>0.2)	
Potential Erosion I of Fournier (1960) [K=Pi ² /P]	3.92
+ Very low (K<60)	

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BIOCLIMATIC INDICES II

Bioclimatic classification of Gaussen & Bagnouls (1957)
 + Climate

- + Climate
- + Region
- + Thermic type: 6. Microthermic

Thornthwaite (1948)												
	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
P-E ratio	0.08	0.05	0.14	0.05	0.03	0.07	0.09	0.03	0.11	0.13	0.11	0.11
T-E ratio	0.00	0.00	0.00	3.50	7.00	9.50	10.63	9.88	6.63	2.75	0.00	0.00
Precipitation-effectiveness:	10.11					Temperature-efficiency						
Moisture Index [MI=100*(P-PE)/PE]												
+ E.Dry (-110<MI<-66.7)												
Index of dryness [DI=100*d/PE]												
+ Strong deficit (33.3<DI)												
Index of humidity [HI=100*s/PE]												
+ No surplus (0<HI<10)												
Potential Evapotranspiration PE												
+ First mesothermic (570<PE<712)												

