

Phytosociological Research Center

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Worldwide Bioclimatic Classification System

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(Adapted to Synoptical Table 14/02/2020)

VOLGOGRAD (RUSSIA)

Altitude: 145 m.

Latitude: 48°41'N Longitude: 44°21'E

Temperature observation period.: 1965-1994 (30)

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

(C/mm)	Ti	Mi	mi	M'i	m'i	Pi	EPI
Jan.	-9.45	-6.11	-12.78	11.11	-35.00	33.8	0.00
Feb.	-8.61	-5.00	-12.22	12.22	-31.11	25.1	0.00
Mar.	-2.50	1.11	-6.11	22.78	-27.78	27.4	0.00
Apr.	8.61	13.89	3.33	31.11	-13.89	16.5	38.83
May.	16.95	22.78	11.11	35.00	-3.89	39.9	102.86
Jun.	21.95	27.78	16.11	40.00	2.22	33.3	143.69
Jul.	24.17	30.00	18.33	42.22	7.78	22.4	163.05
Aug.	22.78	28.89	16.67	42.78	2.78	30.0	139.20
Sep.	16.39	22.22	10.56	36.11	-2.22	14.5	78.50
Oct.	8.33	13.33	3.33	32.22	-13.89	15.0	29.82
Nov.	0.28	3.33	-2.78	22.22	-25.00	43.7	0.37
Dec.	-6.11	-3.33	-8.89	12.22	-31.11	43.4	0.00
Year	7.73	12.41	3.06	28.33	-14.26	345	696.31

BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	-112
Compensated thermicity index.....(Itc):	149
Simple continentality index.....(Ic):	33.6
Diurnality index.....(Id):	12.2
Annual ombrothermic index.....(Io):	1.80
Monthly estival ombrothermic index.....(Ios1):	0.93
Bimonthly estival ombrothermic index.....(Ios2):	1.12
Threemonthly estival ombrothermic index.....(Ios3):	1.24
Fourmonthly estival ombrothermic index.....(Ios4):	1.46
Annual ombro-evaporation index.....(Ioe):	0.50
Annual positive temperature.....(Tp):	1195
Annual negative temperature.....(Tn):	267
Estival temperature.....(Ts):	689
Positive precipitation.....(Pp):	215

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

Latitudinal Belt...: High Eutemperate

Continentality.....: Continental - Low Eucontinental

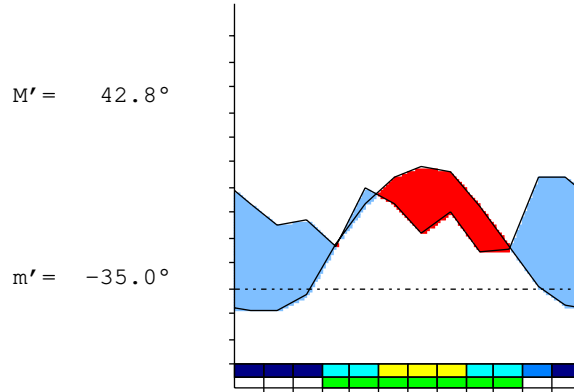
Bioclimate.....: MEDITERRANEAN XERIC-CONTINENTAL

Bioclimatic Belt...: UPPER SUPRAMEDITERRANEAN UPPER SEMIARID

VOLGOGRAD (RUSSIA)

145 m

P= 345 48° 41'N 44° 21'E 30/11 y.
 T= 7.7 ° Ic= 33.6 Tp= 1195 Tn= 267
 m= -12.8 ° M= -6.1 ° Itc= 149 Io= 1.8



MEDITERRANEAN XERIC-CONTINENTAL
 UPPER SUPRAMEDITERRANEAN UPPER SEMIARID

WATER INDEX CARD VOLGOGRAD (RUSSIA)
 Altitude: 145 m. Latitude: 48° 41'N

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jan.	-9.4	0	34	13	100	0	0	21	10	*
Feb.	-8.6	0	25	0	100	0	0	25	18	*
Mar.	-2.5	0	27	0	100	0	0	27	23	*
Apr.	8.6	39	17	-22	78	39	0	0	11	-0.5
May.	17.0	103	40	-63	15	103	0	0	6	-0.6
Jun.	22.0	144	33	-15	0	48	96	0	3	-0.7
Jul.	24.2	163	22	0	0	22	141	0	1	-0.8
Aug.	22.8	139	30	0	0	30	109	0	1	-0.7
Sep.	16.4	78	15	0	0	15	64	0	0	-0.8
Oct.	8.3	30	15	0	0	15	15	0	0	-0.4
Nov.	0.3	0	44	43	43	0	0	0	0	*
Dec.	-6.1	0	43	43	87	0	0	0	0	*
Year	7.7	696	345	*	*	272	424	73	73	*

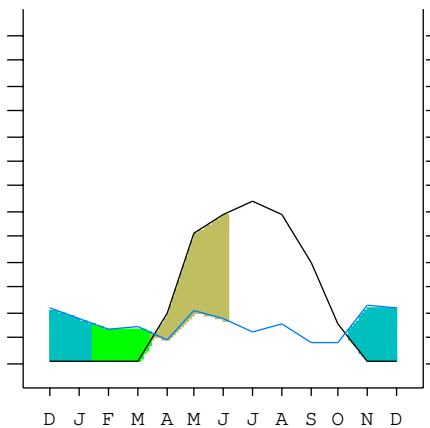
R = Reserve VR = Variation of the reserve RE = Real evapotranspiration
 DR = Drainage HC = Humidity coefficient DF = Deficit SP = Superavit

VOLGOGRAD (RUSSIA)

48°41'N 44°21'E 145 m 30/11 y.

T= 7.7 Ic= 33.6 MEDITERRANEAN XERIC-CONTINENTAL
 m= -12.8 Tp= 1195 UPPER SUPRAMEDITERRANEAN
 M= -6.1 Tn= 267 UPPER SEMIARID
 M' = 42.8 Itc= 149
 m' = -35.0 Io= 1.8
 P= 345 mm ———
 PE= 696 mm ———

Imbibing	8 Oct.
Saturation	12 Jan.
Reserve Use	17 Mar.
Deficit	4 Jun.



VOLGOGRAD (RUSSIA)

Latitude: 48°41'N Longitude: 44°21'E Altitude: 145 m

SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continentality Index [C3a]
 + Type: C. Continental
 + Subtype: 3. Eucontinental
 + Variant: a. Low

Thermic types [B1.B5]
 + Latitudinal zone: B. Temperate
 + Latitudinal belt: 1. High Eutemperate
 + Thermic type: B. Temperate
 + Thermic subtype: 5. Subtemperate

Bioclimatic types [B5.4a.4a]
 + Macrobioclimate: B. MEDITERRANEAN
 + Bioclimate: 5. XERIC-CONTINENTAL
 + Bioclimatic variant .:
 + Thermic type.....: 4. SUPRAMEDITERRANEAN
 + Thermic subtype.....: a. UPPER
 + Ombrothermic type ...: 4. SEMIARID
 + Ombrothermic subtype : a. UPPER

Bioclimatic ClassificationMexc.Sme.Sar.Euc

VOLGOGRAD (RUSSIA)

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 157
 Coldest semester of the year.....(Psw): 188
 Warmest four months period of the year.....(Pcm1): 126
 Following warmest four months period.....(Pcm2): 117
 Positive precipitation dryest 3 months.....(Ppd): 60
 Positive precipitation dryest 2 months.....(Ppd2): 30
 Positive precipitation dryest 1 month.....(Ppd1): 15
 Positive precipitation warmest 3 months.....(Pps): 86
 Positive precipitation warmest 2 months.....(Pps2): 52
 Positive precipitation warmest 1 month.....(Pps1): 22
 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	102	83	85	73

Seasonal rainfall rhythms: W > S > P > F

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 24.2
 Average coldest month [T].....(Tmin): -9.4
 Maximum temp. warmest month [M].....(Tmmax): 30.0
 Minimum temp. coldest month [m].....(Tmmin): -12.8
 Absolute Max.temp. warmest month [M'].....(Tamax): 42.8
 Absolute Min.temp. coldest month [m'].....(Tamin): -35.0
 First warmest contrasted month [M].....(Tcmax): 28.9 (8)
 First coldest contrasted month [m].....(Tcmin): 16.7 (8)
 Estival temperature.....(Ts): 689
 Positive temperature dryest 3 months.....(Tpd): 475
 Positive temperature dryest 2 months.....(Tpd2): 247
 Positive temperature dryest 1 month.....(Tpd1): 164
 Positive temperature warmest 3 months.....(Tps): 689
 Positive temperature warmest 2 months.....(Tps2): 470
 Positive temperature warmest 1 month.....(Tps1): 242
 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
Gelid... [T <=0] (Pf)	o	o	o									o
Subgelid... [m <=0] (Pf)	o	o	o								o	o
Pregelid... [m' <=0] (Pf)	o	o	o	o	o				o	o	o	o
Agelid... [m' > 0] (Pf)						o	o	o				
HiperAgelid... [all >0] (Pf)						o	o	o				

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OMBROTHERMIC PARAMETERS

Annual aridity index. [PE/P]..... (Iar): 2.02
 Mediterranean index of July. [PE/P]..... (Im1): 7.28
 Mediterranean index of July & August..... (Im2): 5.77
 Mediterranean index of June, July & August.... (Im3): 5.20

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp (x10)	*	*	*	*	165	399	333	224	300	145	150	437
Tp	*	*	*	*	86	170	220	242	228	164	83	3
Io (Iom)	*	*	*	*	1.92	2.35	1.52	0.93	1.32	0.88	1.80	156
Seasons	Winter			Spring			Summer			Autumn		
Pp (x10) / Tp	* / *			* / *			857 / 689			732 / 250		
Io (Iot)	*			*			1.244			2.928		
Semesters	December-May						June-November					
Pp (x10) / Tp	* / *						1589 / 939					
Io (Iosm)	*						1.692					

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 2153/1195=1.80 There is No Yearly Aridity

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	*	*	*	*	165	399	333	224	300	145	150	437
Tp [T*10]	*	*	*	*	86	170	220	242	228	164	83	3
Iom [Pp/Tp]	!!	!!	!!	!!	192	235	152	93	132	88	180	\$\$
Avm [200-Iom]	***	***	***	***	8	***	48	107	68	112	20	***
Seasons	Winter			Spring			Summer			Autumn		
Pp / Tp	* / *			* / *			857 / 689			732 / 250		
Iot [Pp/Tp]	**			**			124			293		
Avs E [Avm < 200]	***			***			224			***		
Weak upper arid [2]						Weak lower semiarid [2]						
Strong upper semiarid [1]						Weak upper semiarid [2]						

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin]	(Sp): 33.62
CI of Gorezinski (1920) [1.7*Sp/sin(Lat)-20.4]	55.70
CI of Conrad (1946) [1.7*Sp/sin(Lat+10)-14]	52.90
+ Subcontinental (40<CI<60)	
CI of Currey (1974) [CI=Sp/(1+Lat/3)]	1.95
+ Continental (1.7<CI<2.3)	
Rainfall Index of Lang (1925) [R=P/T]	44.62
+ Semiarid (60>R>40)	
Aridity Index of Martonne (1926) [Ia=P/(T+10)]	19.46
+ Semiarid -mediterranean- (20>Ia>15)	
I of Emberger (1930) [Q=100*P/(Tmax ² -Tmin ²)]	46.83
+ Semiarid (50>Q>30)	
I of Dantin & Revenga (1940) [DR=100*T/P]	2.24
+ Semiarid (3>DR>2)	
Aridity Index of UNEP [I=P/PE]	0.50
+ Semiarid (0.5>Im>0.2)	
Potencial Erosion I of Fournier (1960) [K=Pi ² /P].....	5.54
+ 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: 5. Meso-microthermic

Thornthwaite (1948)												
	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
P-E ratio	0.27	0.20	0.22	0.08	0.16	0.12	0.07	0.10	0.05	0.07	0.33	0.36
T-E ratio	0.00	0.00	0.00	3.87	7.63	9.88	10.88	10.25	7.38	3.75	0.13	0.00
Precipitation-effectiveness: 20.34						Temperature-efficiency: 53.76						
Moisture Index [MI=100*(P-PE)/PE]												
+ D.Semiarid (-66.7<MI<-33.3)												
Index of dryness [DI=100*d/PE]												
+ Strong deficit (33.3<DI)												
Index of humidity [HI=100*s/PE]												
+ Moderate surplus (10<HI<20)												
Potential Evapotranspiration PE												
+ First mesothermic (570<PE<712)												

