

# Phytosociological Research Center

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## Worldwide Bioclimatic Classification System

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(Adapted to Synoptical Table 30/08/2017)

MAQUINCHAO (ARGENTINA)

Altitude: 888 m.

Latitude: 41°15'S Longitude: 68°44'W

Temperature observation period.: 1941-1950 (10)

Rainfall observation period....: 1941-1950 (10)

(C/mm)	Ti	Mi	mi	M'i	m'i	Pi	EPI
Jan.	17.70	26.90	8.90	35.50	-2.50	7.0	112.42
Feb.	16.40	25.50	8.10	38.00	-2.50	9.0	87.43
Mar.	12.60	21.50	5.10	35.00	-6.50	16.0	66.32
Apr.	8.80	17.10	2.10	26.50	-11.00	10.0	39.56
May.	4.40	11.00	-0.20	21.50	-17.50	27.0	17.48
Jun.	2.00	8.30	-2.50	19.50	-17.50	6.0	6.93
Jul.	0.90	6.70	-4.00	16.50	-17.50	17.0	3.23
Aug.	1.60	8.60	-3.00	19.50	-16.50	6.0	6.55
Sep.	5.50	13.50	-0.60	23.50	-14.50	8.0	25.99
Oct.	9.60	17.90	2.10	30.00	-7.00	6.0	53.59
Nov.	12.90	21.60	4.60	32.50	-6.50	6.0	76.87
Dec.	16.40	25.30	7.30	35.50	-2.00	11.0	106.23
Year	9.07	16.99	2.33	27.79	-10.13	129	602.60

### BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	118
Compensated thermicity index.....(Itc):	118
Simple continentality index.....(Ic):	16.8
Diurnality index.....(Id):	18.0
Annual ombrothermic index.....(Io):	1.19
Monthly estival ombrothermic index.....(Ios1):	0.40
Bimonthly estival ombrothermic index.....(Ios2):	0.47
Threemonthly estival ombrothermic index.....(Ios3):	0.53
Fourmonthly estival ombrothermic index.....(Ios4):	0.52
Annual ombro-evaporation index.....(Ioe):	0.74
Annual positive temperature.....(Tp):	1088
Annual negative temperature.....(Tn):	0
Estival temperature.....(Ts):	505
Positive precipitation.....(Pp):	129

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

Latitudinal Belt...: Low eutemperate

Continentalty.....: Oceanic - Low Euoceanic

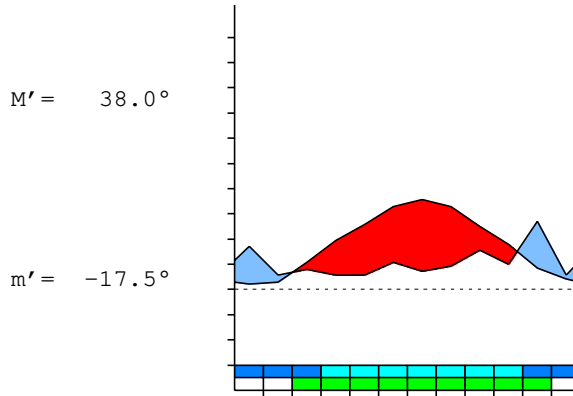
Bioclimate.....: MEDITERRANEAN XERIC-OCEANIC

Bioclimatic Belt...: UPPER SUPRAMEDITERRANEAN LOW SEMIARID

MAQUINCHAO (ARGENTINA)

888 m

P= 129      41° 15' S      68° 44' W      10/10 y.  
 T= 9.1°      Ic= 16.8      Tp= 1088      Tn= 0  
 m= -4.0°      M= 6.7°      Itc= 118      Io= 1.2



MEDITERRANEAN XERIC-OCEANIC  
 UPPER SUPRAMEDITERRANEAN LOW SEMIARID

WATER INDEX CARD      MAQUINCHAO (ARGENTINA)  
 Altitude: 888 m.      Latitude: 41° 15' S

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jul.	0.9	3	17	14	22	3	0	0	0	4.2
Aug.	1.6	7	6	-1	22	7	0	0	0	0.0
Sep.	5.5	26	8	-18	4	26	0	0	0	-0.6
Oct.	9.6	54	6	-4	0	10	44	0	0	-0.8
Nov.	12.9	77	6	0	0	6	71	0	0	-0.9
Dec.	16.4	106	11	0	0	11	95	0	0	-0.8
Jan.	17.7	112	7	0	0	7	105	0	0	-0.9
Feb.	16.4	87	9	0	0	9	78	0	0	-0.8
Mar.	12.6	66	16	0	0	16	50	0	0	-0.7
Apr.	8.8	40	10	0	0	10	30	0	0	-0.7
May.	4.4	17	27	10	10	17	0	0	0	0.5
Jun.	2.0	7	6	-1	9	7	0	0	0	-0.1
Year	9.1	603	129	*	*	129	474	0	0	*

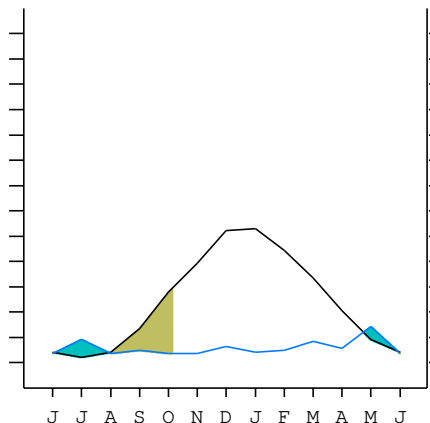
R = Reserve    VR = Variation of the reserve    RE = Real evapotranspiration  
 DR = Drainage    HC = Humidity coefficient    DF = Deficit    SP = Superavit

MAQUINCHAO (ARGENTINA)

41°15' S    68°44' W    888 m 10/10 y.

T= 9.1      Ic= 16.8      MEDITERRANEAN XERIC-OCEANIC  
 m= -4.0      Tp= 1088      UPPER SUPRAMEDITERRANEAN  
 M= 6.7      Tn= 0      LOW SEMIARID  
 M' = 38.0      Itc= 118  
 m' = -17.5      Io= 1.2  
 P= 129      mm      ———  
 PE= 603      mm      ———

Imbibing	23 Apr.
Saturation	28 May.
Reserve Use	3 Oct.
Deficit	



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SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continental Index [B2b]  
 + Type .....: B. Oceanic  
 + Subtype .....: 2. Euoceanic  
 + Variant .....: b. Low  
 Thermic types [B1.B5]  
 + Latitudinal zone ....: B. Temperate  
 + Latitudinal belt ....: 1. Low eutemperate  
 + Thermic type .....: B. Temperate  
 + Thermic subtype .....: 5. Subtemperate  
 Bioclimatic types [B6.4a.4b]  
 + Macrobioclimate .....: B. MEDITERRANEAN  
 + Bioclimate .....: 6. XERIC-OCEANIC  
 + Bioclimatic variant ..:  
 + Thermic type.....: 4. SUPRAMEDITERRANEAN  
 + Thermic subtype.....: a. UPPER  
 + Ombrothermic type ...: 4. SEMIARID  
 + Ombrothermic subtype : b. LOW  
 Bioclimatic Classification .....: MepDC.Sme.Sar

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 55  
 Coldest semester of the year.....(Psw): 74  
 Warmest four months period of the year.....(Pcm1): 33  
 Following warmest four months period.....(Pcm2): 59  
 Positive precipitation dryest 3 months.....(Ppd): 20  
 Positive precipitation dryest 2 months.....(Ppd2): 12  
 Positive precipitation dryest 1 month.....(Ppd1): 6  
 Positive precipitation warmest 3 months.....(Pps): 27  
 Positive precipitation warmest 2 months.....(Pps2): 16  
 Positive precipitation warmest 1 month.....(Pps1): 7  
 Positive precipitation coldest 3 months.....(Ppw): 29  
 Positive precipitation coldest 2 months.....(Ppw2): 23  
 Positive precipitation coldest 1 month.....(Ppw1): 17

Seasons	Winter Tr1-W	Spring Tr2-P	Summer Tr3-S	Automn Tr4-F
Rainfall	29	20	27	53

Seasonal rainfall rhythms: F > W > S > P

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 17.7  
 Average coldest month [T].....(Tmin): 0.9  
 Maximum temp. warmest month [M].....(Tmmax): 26.9  
 Minimum temp. coldest month [m].....(Tmmin): -4.0  
 Absolute Max.temp. warmest month [M'].....(Tamax): 38.0  
 Absolute Min.temp. coldest month [m'].....(Tamin): -17.5  
 First warmest contrasted month [M].....(Tcmax): 26.9 (1)  
 First coldest contrasted month [m].....(Tcmin): 8.9 (1)  
 Estival temperature.....(Ts): 505  
 Positive temperature dryest 3 months.....(Tpd): 167  
 Positive temperature dryest 2 months.....(Tpd2): 225  
 Positive temperature dryest 1 month.....(Tpd1): 20  
 Positive temperature warmest 3 months.....(Tps): 505  
 Positive temperature warmest 2 months.....(Tps2): 341  
 Positive temperature warmest 1 month.....(Tps1): 177  
 Positive temperature coldest 3 months.....(Tpw): 45  
 Positive temperature coldest 2 months.....(Tpw2): 25  
 Positive temperature coldest 1 month.....(Tpw1): 9

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

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OMBROTHERMIC PARAMETERS

Annual aridity index.[PE/P].....(Iar): 4.67  
 Mediterranean index of January.....(Im1): 16.06  
 Mediterranean index of January & February.....(Im2): 12.49  
 Mediterranean index of December to February...(Im3): 11.34

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp(x10)	110	70	90	160	100	270	60	170	60	80	60	60
Tp	164	177	164	126	88	44	20	9	16	55	96	129
Io (Iom)	0.67	0.40	0.55	1.27	1.14	6.14	3.00	18.9	3.75	1.45	0.63	0.47
Seasons	Summer			Autumn			Winter			Spring		
Pp(x10)/Tp	270 / 505			530 / 258			290 / 45			200 / 280		
Io (Iot)	0.535			2.054			6.444			0.714		
Semesters	December-May						June-November					
Pp(x10)/Tp	800 / 763						490 / 325					
Io (Iosm)	1.048						1.508					

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 1290/1088=1.19 **There is No Yearly Aridity**

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	110	70	90	160	100	270	60	170	60	80	60	60
Tp [T*10]	164	177	164	126	88	44	20	9	16	55	96	129
Iom [Pp/Tp]	67	40	55	127	114	614	300	\$\$	375	145	63	47
Avm [200-Iom]	133	160	145	73	86	***	***	***	***	55	138	153
Seasons	Summer			Autumn			Winter			Spring		
Pp / Tp	270 / 505			530 / 258			290 / 45			200 / 280		
Iot [Pp/Tp]	53			205			644			71		
Avs E[Avm<200]	439			***			***			346		
Upper hyperarid [1]						Strong lower arid [1]						
Weak lower arid [4]						Weak upper arid [1]						
Strong lower semiarid [1]						Weak lower semiarid [2]						

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin] .....	(Sp): 16.80
CI of Gorezinski (1920) [1.7*Sp/sin(Lat)-20.4] .....	22.92
CI of Conrad (1946) [1.7*Sp/sin(Lat+10)-14] .....	22.62
+ Oceanic (20<CI<40)	
CI of Currey (1974) [CI=Sp/(1+Lat/3)] .....	1.14
+ Subcontinental (1.1<CI<1.7)	
Rainfall Index of Lang (1925) [R=P/T] .....	14.23
+ Steppic (40>R>0)	
Aridity Index of Martonne (1926) [Ia=P/(T+10)] .....	6.77
+ Arid -steppic- (15>Ia>5)	
I of Emberger (1930) [Q=100*P/(Tmax <sup>2</sup> -Tmin <sup>2</sup> )] .....	18.23
+ Arid (30>Q>0)	
I of Dantin & Revenga (1940) [DR=100*T/P] .....	7.03
+ Extremely arid (DR>6)	
Aridity Index of UNEP [I=P/PE] .....	0.21
+ Semiarid (0.5>Im>0.2)	
Potential Erosion I of Fournier (1960) [K=Pi <sup>2</sup> /P] .....	5.65
+ Very low (K<60)	

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BIOCLIMATIC INDICES II

Bioclimatic classification of Gaussen & Bagnouls (1957)  
 + Climate .....

- + Climate .....
- + Region .....
- + Thermic type: 5. Meso-microthermic

Thornthwaite (1948)												
	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
P-E ratio	0.02	0.03	0.07	0.04	0.16	0.03	0.11	0.03	0.04	0.02	0.02	0.04
T-E ratio	7.97	7.38	5.67	3.96	1.98	0.90	0.40	0.72	2.47	4.32	5.80	7.38
Precipitation-effectiveness: 6.30						Temperature-efficiency .....						48.96
Moisture Index [MI=100*(P-PE)/PE] .....												-78.59
+ E.Dry (-110<MI<-66.7)												
Index of dryness [DI=100*d/PE] .....												78.58
+ Strong deficit (33.3<DI)												
Index of humidity [HI=100*s/PE] .....												0.00
+ No surplus (0<HI<10)												
Potential Evapotranspiration PE .....												602.60
+ First mesothermic (570<PE<712)												

