

# Phytosociological Research Center

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## Worldwide Bioclimatic Classification System

Prof.Dr. Salvador Rivas-Martinez

(Adapted to Synoptical Table 30/08/2017)

GUATRACHE (ARGENTINA)

Altitude: 176 m.

Latitude: 37°38'S Longitude: 63°34'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.	23.50	31.80	14.90	42.40	2.80	47.0	139.95
Feb.	22.30	30.50	13.70	41.30	2.50	58.0	109.44
Mar.	18.40	25.90	10.80	37.20	-2.00	71.0	82.07
Apr.	14.80	22.00	7.70	34.50	-4.30	56.0	50.95
May.	10.20	16.50	4.30	30.50	-7.10	37.0	26.81
Jun.	7.20	13.40	1.70	24.20	-9.70	20.0	14.39
Jul.	6.70	13.20	0.80	22.30	-12.80	29.0	13.68
Aug.	8.40	15.50	1.40	29.70	-11.20	19.0	21.23
Sep.	11.30	18.60	4.20	32.80	-8.50	50.0	36.10
Oct.	15.20	22.80	7.00	35.30	-3.50	56.0	65.08
Nov.	18.80	27.10	10.10	38.30	-1.30	63.0	94.36
Dec.	22.40	31.00	13.30	40.10	0.70	44.0	133.07
Year	14.93	22.36	7.49	34.05	-4.53	550	787.14

### BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	289
Compensated thermicity index.....(Itc):	289
Simple continentality index.....(Ic):	16.8
Diurnality index.....(Id):	17.7
Annual ombrothermic index.....(Io):	3.07
Monthly estival ombrothermic index.....(Ios1):	1.96
Bimonthly estival ombrothermic index.....(Ios2):	2.29
Threemonthly estival ombrothermic index.....(Ios3):	2.18
Fourmonthly estival ombrothermic index.....(Ios4):	2.44
Annual ombro-evaporation index.....(Ioe):	1.61
Annual positive temperature.....(Tp):	1792
Annual negative temperature.....(Tn):	0
Estival temperature.....(Ts):	682
Positive precipitation.....(Pp):	550

N. of	P>4T	P:2T-4T	PT-2T	P<T	T<0
Months	2	8	2	0	0

Latitudinal Belt...: Low eutemperate

Continentalty.....: Oceanic - Low Euoceanic

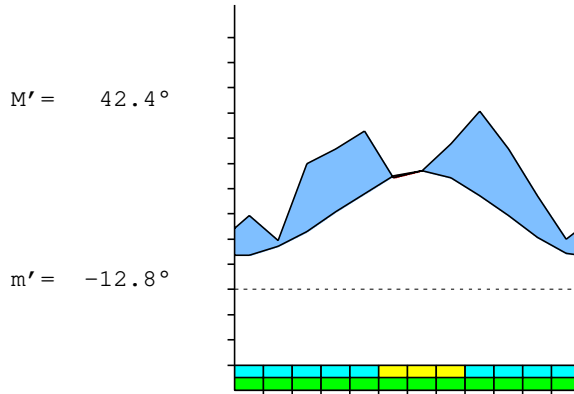
Bioclimate(Variant): TEMPERATE XERIC (SUBMEDITERRANEAN)

Bioclimatic Belt...: LOW MESOTEMPERATE UPPER DRY

GUATRACHE (ARGENTINA)

176 m

P= 550 37° 38' S 63° 34' W 10/10 y.  
 T= 14.9° Ic= 16.8 Tp= 1792 Tn= 0  
 m= 0.8° M= 13.2° Itc= 289 Io= 3.1



TEMPERATE XERIC (SUBMEDITERRANEAN)  
 LOW MESOTEMPERATE UPPER DRY

WATER INDEX CARD GUATRACHE (ARGENTINA)  
 Altitude: 176 m. Latitude: 37° 38' S

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jul.	6.7	14	29	15	36	14	0	0	0	1.1
Aug.	8.4	21	19	-2	34	21	0	0	0	-0.1
Sep.	11.3	36	50	14	48	36	0	0	0	0.3
Oct.	15.2	65	56	-9	39	65	0	0	0	-0.1
Nov.	18.8	94	63	-31	7	94	0	0	0	-0.3
Dec.	22.4	133	44	-7	0	51	82	0	0	-0.6
Jan.	23.5	140	47	0	0	47	93	0	0	-0.6
Feb.	22.3	109	58	0	0	58	51	0	0	-0.4
Mar.	18.4	82	71	0	0	71	11	0	0	-0.1
Apr.	14.8	51	56	5	5	51	0	0	0	0.0
May.	10.2	27	37	10	15	27	0	0	0	0.3
Jun.	7.2	14	20	6	21	14	0	0	0	0.3
Year	14.9	787	550	*	*	550	237	0	0	*

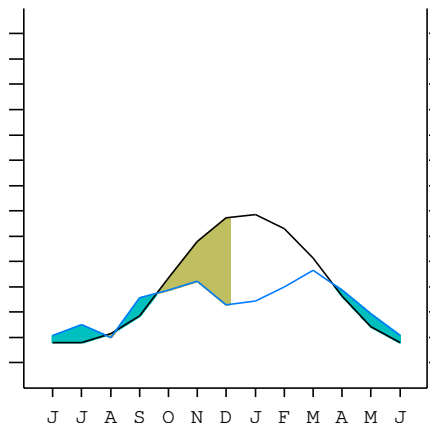
R = Reserve VR = Variation of the reserve RE = Real evapotranspiration  
 DR = Drainage HC = Humidity coefficient DF = Deficit SP = Superavit

GUATRACHE (ARGENTINA)

37°38' S 63°34' W 176 m 10/10 y.

T= 14.9 Ic= 16.8 TEMPERATE XERIC (SUBMEDITERRANEAN)  
 m= 0.8 Tp= 1792 LOW MESOTEMPERATE  
 M= 13.2 Tn= 0 UPPER DRY  
 M' = 42.4 Itc= 289  
 m' = -12.8 Io= 3.1  
 P= 550 mm ———  
 PE= 787 mm ———

Imbibing	21 Mar.
Saturation	19 Sep.
Reserve Use	3 Dec.
Deficit	



GUATRACHE (ARGENTINA)

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SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continental Index [B2b]  
 + Type .....: B. Oceanic  
 + Subtype .....: 2. Euoceanic  
 + Variant .....: b. Low  
 Thermic types [B1.B4]  
 + Latitudinal zone ....: B. Temperate  
 + Latitudinal belt ....: 1. Low eutemperate  
 + Thermic type .....: B. Temperate  
 + Thermic subtype .....: 4. Temperate  
 Bioclimatic types [C1b.3b.5a]  
 + Macrobioclimate .....: C. TEMPERATE  
 + Bioclimate .....: 1. XERIC  
 + Bioclimatic variant .: b. SUBMEDITERRANEAN  
 + Thermic type.....: 3. MESOTEMPERATE  
 + Thermic subtype.....: b. LOW  
 + Ombrothermic type ...: 5. DRY  
 + Ombrothermic subtype : a. UPPER  
 Bioclimatic Classification .....: Teho (Sbm).Mte.Dry

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 339  
 Coldest semester of the year.....(Psw): 211  
 Warmest four months period of the year.....(Pcm1): 212  
 Following warmest four months period.....(Pcm2): 184  
 Positive precipitation dryest 3 months.....(Ppd): 68  
 Positive precipitation dryest 2 months.....(Ppd2): 48  
 Positive precipitation dryest 1 month.....(Ppd1): 19  
 Positive precipitation warmest 3 months.....(Pps): 149  
 Positive precipitation warmest 2 months.....(Pps2): 91  
 Positive precipitation warmest 1 month.....(Pps1): 47  
 Positive precipitation coldest 3 months.....(Ppw): 68  
 Positive precipitation coldest 2 months.....(Ppw2): 49  
 Positive precipitation coldest 1 month.....(Ppw1): 29

Seasons	Winter Tr1-W	Spring Tr2-P	Summer Tr3-S	Automn Tr4-F
Rainfall	68	169	149	164

Seasonal rainfall rhythms: P > F > S > W

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 23.5  
 Average coldest month [T].....(Tmin): 6.7  
 Maximum temp. warmest month [M].....(Tmmax): 31.8  
 Minimum temp. coldest month [m].....(Tmmin): 0.8  
 Absolute Max.temp. warmest month [M'].....(Tamax): 42.4  
 Absolute Min.temp. coldest month [m'].....(Tamin): -12.8  
 First warmest contrasted month [M].....(Tcmax): 31.0 (12)  
 First coldest contrasted month [m].....(Tcmin): 13.3 (12)  
 Estival temperature.....(Ts): 682  
 Positive temperature dryest 3 months.....(Tpd): 223  
 Positive temperature dryest 2 months.....(Tpd2): 151  
 Positive temperature dryest 1 month.....(Tpd1): 84  
 Positive temperature warmest 3 months.....(Tps): 682  
 Positive temperature warmest 2 months.....(Tps2): 459  
 Positive temperature warmest 1 month.....(Tps1): 235  
 Positive temperature coldest 3 months.....(Tpw): 223  
 Positive temperature coldest 2 months.....(Tpw2): 139  
 Positive temperature coldest 1 month.....(Tpw1): 67

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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	o
Ultragelid...[M' <=0] (Pf)												
Hypergelid...[M <=0] (Pf)												
Gelid.....[T <=0] (Pf)												
Subgelid.....[m <=0] (Pf)												
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): 1.43  
 Mediterranean index of January.....(Im1): 2.98  
 Mediterranean index of January & February.....(Im2): 2.38  
 Mediterranean index of December to February...(Im3): 2.57

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp(x10)	440	470	580	710	560	370	200	290	190	500	560	630
Tp	224	235	223	184	148	102	72	67	84	113	152	188
Io (Iom)	1.96	2.00	2.60	3.86	3.78	3.63	2.78	4.33	2.26	4.42	3.68	3.35
Seasons	Summer			Autumn			Winter			Spring		
Pp(x10)/Tp	1490 / 682			1640 / 434			680 / 223			1690 / 453		
Io (Iot)	2.185			3.779			3.049			3.731		
Semesters	December-May						June-November					
Pp(x10)/Tp	3130 / 1116						2370 / 676					
Io (Iosm)	2.805						3.506					

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 5500/1792=3.07 **There is No Yearly Aridity**

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	440	470	580	710	560	370	200	290	190	500	560	630
Tp [T*10]	224	235	223	184	148	102	72	67	84	113	152	188
Iom [Pp/Tp]	196	200	260	386	378	363	278	433	226	442	368	335
Avm [200-Iom]	4	0	***	***	***	***	***	***	***	***	***	***
Seasons	Summer			Autumn			Winter			Spring		
Pp / Tp	1490 / 682			1640 / 434			680 / 223			1690 / 453		
Iot [Pp/Tp]	218			378			305			373		
Avs E[Avm<200]	***			***			***			***		
Weak upper semiarid [1]												

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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] .....	26.37
CI of Conrad (1946) [1.7*Sp/sin(Lat+10)-14] .....	24.65
+ Oceanic (20<CI<40)	
CI of Currey (1974) [CI=Sp/(1+Lat/3)] .....	1.24
+ Subcontinental (1.1<CI<1.7)	
Rainfall Index of Lang (1925) [R=P/T] .....	36.83
+ Steppic (40>R>0)	
Aridity Index of Martonne (1926) [Ia=P/(T+10)] .....	22.06
+ Subhumid (30>Ia>20)	
I of Emberger (1930) [Q=100*P/(Tmax <sup>2</sup> -Tmin <sup>2</sup> )] .....	54.42
+ Subhumid (90>Q>50)	
I of Dantin & Revenga (1940) [DR=100*T/P] .....	2.72
+ Semiarid (3>DR>2)	
Aridity Index of UNEP [I=P/PE] .....	0.70
+ Humid (I>0.65)	
Potential Erosion I of Fournier (1960) [K=Pi <sup>2</sup> /P] .....	9.17
+ Very low (K<60)	

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BIOCLIMATIC INDICES II

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

- + Climate .....
- + Region .....
- + Thermic type: 4. Mesothermic

Thornthwaite (1948)													
	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	
P-E ratio	0.17	0.21	0.30	0.25	0.18	0.10	0.16	0.09	0.25	0.25	0.26	0.16	
T-E ratio	10.57	10.03	8.28	6.66	4.59	3.24	3.01	3.78	5.09	6.84	8.46	10.08	
Precipitation-effectiveness:	23.78					Temperature-efficiency .....							80.64
Moisture Index [MI=100*(P-PE)/PE] .....	-30.13												
+ C1.Subhumid dry (-33.3<MI<0)													
Index of dryness [DI=100*d/PE] .....	30.12												
+ Moderate deficit (16.7<DI<33.3)													
Index of humidity [HI=100*s/PE] .....	0.00												
+ No surplus (0<HI<10)													
Potential Evapotranspiration PE .....	787.14												
+ Second mesothermic (712<PE<855)													

