

# Phytosociological Research Center

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## Worldwide Bioclimatic Classification System

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(Adapted to Synoptical Table 14/02/2020)

ESCUELA DE ARTIL (ARGENTINA)

Altitude: 400 m.

Latitude: 31°24'S Longitude: 64°15'W

Temperature observation period.: 1949-1994 (46)

Rainfall observation period....: 1954-1994 (41)

(C/mm)	Ti	Mi	mi	M'i	m'i	Pi	EPI
Jan.	23.61	31.11	16.11	45.56	5.56	104.1	131.19
Feb.	22.78	30.00	15.56	43.89	3.33	114.3	105.58
Mar.	21.11	27.78	14.44	37.78	0.56	88.9	94.74
Apr.	17.23	23.89	10.56	36.11	-0.56	48.3	58.90
May.	13.61	20.56	6.67	33.33	-6.67	33.0	36.90
Jun.	10.56	17.78	3.33	31.67	-8.33	7.6	21.83
Jul.	10.83	18.33	3.33	35.00	-10.56	12.7	24.18
Aug.	12.50	20.56	4.44	37.22	-7.22	12.7	33.40
Sep.	15.00	22.78	7.22	37.78	-6.11	20.3	48.31
Oct.	17.78	25.00	10.56	40.56	-1.11	61.0	73.48
Nov.	20.56	27.78	13.33	40.56	2.22	94.0	97.16
Dec.	22.78	30.00	15.56	42.78	3.89	121.9	124.03
Year	17.36	24.63	10.09	38.52	-2.08	719	849.69

### BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	385
Compensated thermicity index.....(Itc):	385
Simple continentality index.....(Ic):	13.1
Diurnality index.....(Id):	16.1
Annual ombrothermic index.....(Io):	3.45
Monthly estival ombrothermic index.....(Ios1):	4.41
Bimonthly estival ombrothermic index.....(Ios2):	4.71
Threemonthly estival ombrothermic index.....(Ios3):	4.92
Fourmonthly estival ombrothermic index.....(Ios4):	4.84
Annual ombro-evaporation index.....(Ioe):	0.85
Annual positive temperature.....(Tp):	2084
Annual negative temperature.....(Tn):	0
Estival temperature.....(Ts):	692
Positive precipitation.....(Pp):	719

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

Latitudinal Belt...: Subtropical

Continentality.....: Oceanic - Low Semihyperoceanic

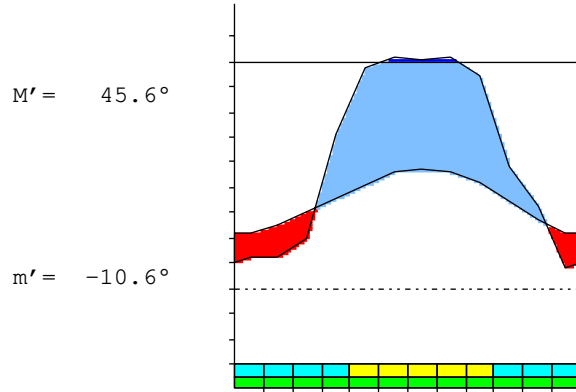
Bioclimate.....: TEMPERATE XERIC

Bioclimatic Belt...: LOW THERMOTEMPERATE UPPER DRY

ESCUELA DE ARTIL (ARGENTINA)

400 m

P= 719      31° 24'S      64° 15'W      46/41 y.  
 T= 17.4 °    Ic= 13.1      Tp= 2084      Tn= 0  
 m= 3.3 °    M= 17.8 °    Itc= 385      Io= 3.4



TEMPERATE XERIC  
 LOW THERMOTEMPERATE UPPER DRY

WATER INDEX CARD      ESCUELA DE ARTIL (ARGENTINA)  
 Altitude: 400 m.      Latitude: 31° 24'S

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jul.	10.8	24	13	0	0	13	11	0	0	-0.4
Aug.	12.5	33	13	0	0	13	21	0	0	-0.6
Sep.	15.0	48	20	0	0	20	28	0	0	-0.5
Oct.	17.8	73	61	0	0	61	12	0	0	-0.1
Nov.	20.6	97	94	0	0	94	3	0	0	0.0
Dec.	22.8	124	122	0	0	122	2	0	0	0.0
Jan.	23.6	131	104	0	0	104	27	0	0	-0.2
Feb.	22.8	106	114	9	9	106	0	0	0	0.0
Mar.	21.1	95	89	-6	3	95	0	0	0	0.0
Apr.	17.2	59	48	-3	0	51	8	0	0	-0.1
May.	13.6	37	33	0	0	33	4	0	0	-0.1
Jun.	10.6	22	8	0	0	8	14	0	0	-0.6
Year	17.4	850	719	*	*	719	131	0	0	*

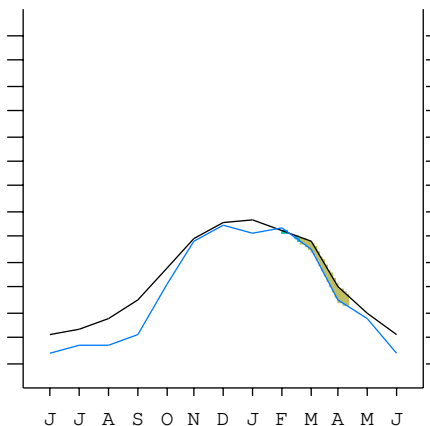
R = Reserve    VR = Variation of the reserve    RE = Real evapotranspiration  
 DR = Drainage    HC = Humidity coefficient    DF = Deficit    SP = Superavit

ESCUELA DE ARTIL (ARGENTINA)

31°24'S    64°15'W    400 m 46/41 y.

T= 17.4    Ic= 13.1    TEMPERATE XERIC  
 m= 3.3    Tp= 2084    LOW THERMOTEMPERATE  
 M= 17.8    Tn= 0    UPPER DRY  
 M' = 45.6    Itc= 385  
 m' = -10.6    Io= 3.4  
 P= 719    mm ———  
 PE= 850    mm ———

Imbibing	23 Jan.
Saturation	18 Feb.
Reserve Use	9 Apr.
Deficit	



ESCUELA DE ARTIL (ARGENTINA)

Latitude: 31°24'S Longitude: 64°15'W Altitude: 400 m

SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continentality Index [B1b]  
 + Type .....: B. Oceanic  
 + Subtype .....: 1. Semihyperoceanic  
 + Variant .....: b. Low  
 Thermic types [A3.A3]  
 + Latitudinal zone ....: A. Warm  
 + Latitudinal belt ....: 3. Subtropical  
 + Thermic type .....: A. Warm  
 + Thermic subtype .....: 3. Subwarm  
 Bioclimatic types [C1.2b.5a]  
 + Macrobioclimate .....: C. TEMPERATE  
 + Bioclimate .....: 1. XERIC  
 + Bioclimatic variant .:  
 + Thermic type.....: 2. THERMOTEMPERATE  
 + Thermic subtype.....: b. LOW  
 + Ombrothermic type ...: 5. DRY  
 + Ombrothermic subtype : a. UPPER  
 Bioclimatic Classification .....: Texe.Tte.Dry.Seo

ESCUELA DE ARTIL (ARGENTINA)

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 584  
 Coldest semester of the year.....(Psw): 135  
 Warmest four months period of the year.....(Pcm1): 429  
 Following warmest four months period.....(Pcm2): 102  
 Positive precipitation dryest 3 months.....(Ppd): 33  
 Positive precipitation dryest 2 months.....(Ppd2): 20  
 Positive precipitation dryest 1 month.....(Ppd1): 8  
 Positive precipitation warmest 3 months.....(Pps): 340  
 Positive precipitation warmest 2 months.....(Pps2): 218  
 Positive precipitation warmest 1 month.....(Pps1): 104  
 Positive precipitation coldest 3 months.....(Ppw): 33  
 Positive precipitation coldest 2 months.....(Ppw2): 20  
 Positive precipitation coldest 1 month.....(Ppw1): 8

Seasons	Winter Tr1-W	Spring Tr2-P	Summer Tr3-S	Automn Tr4-F
Rainfall	33	175	340	170

Seasonal rainfall rhythms: S > P > F > W

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 23.6  
 Average coldest month [T].....(Tmin): 10.6  
 Maximum temp. warmest month [M].....(Tmax): 31.1  
 Minimum temp. coldest month [m].....(Tmin): 3.3  
 Absolute Max.temp. warmest month [M'].....(Tamax): 45.6  
 Absolute Min.temp. coldest month [m'].....(Tamin): -10.6  
 First warmest contrasted month [M].....(Tcmax): 20.6 (8)  
 First coldest contrasted month [m].....(Tcmin): 4.4 (8)  
 Estival temperature.....(Ts): 692  
 Positive temperature dryest 3 months.....(Tpd): 339  
 Positive temperature dryest 2 months.....(Tpd2): 214  
 Positive temperature dryest 1 month.....(Tpd1): 106  
 Positive temperature warmest 3 months.....(Tps): 692  
 Positive temperature warmest 2 months.....(Tps2): 464  
 Positive temperature warmest 1 month.....(Tps1): 236  
 Positive temperature coldest 3 months.....(Tpw): 339  
 Positive temperature coldest 2 months.....(Tpw2): 214  
 Positive temperature coldest 1 month.....(Tpw1): 106

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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		
Agelid.....[m'> 0] (Pf)	o	o	o								o	o
HiperAgelid..[all>0] (Pf)	o	o	o								o	o

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OMBROTHERMIC PARAMETERS

Annual aridity index.[PE/P].....(Iar): 1.18  
 Mediterranean index of January.....(Im1): 1.26  
 Mediterranean index of January & February....(Im2): 1.08  
 Mediterranean index of December to February...(Im3): 1.06

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp(x10)	1219	1041	1143	889	483	330	76	127	127	203	610	940
Tp	228	236	228	211	172	136	106	108	125	150	178	206
Io (Iom)	5.35	4.41	5.02	4.21	2.80	2.42	0.72	1.17	1.02	1.35	3.43	4.57
Seasons	Summer			Autumn			Winter			Spring		
Pp(x10)/Tp	3403 / 692			1702 / 520			330 / 339			1753 / 533		
Io (Iot)	4.920			3.276			0.974			3.286		
Semesters	December-May						June-November					
Pp(x10)/Tp	5105 / 1211						2083 / 872					
Io (Iosm)	4.215						2.388					

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 7188/2084=3.45 **There is No Yearly Aridity**

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	1219	1041	1143	889	483	330	76	127	127	203	610	940
Tp [T*10]	228	236	228	211	172	136	106	108	125	150	178	206
Iom [Pp/Tp]	535	441	502	421	280	242	72	117	102	135	343	457
Avm [200-Iom]	***	***	***	***	***	***	128	83	98	65	***	***
Seasons	Summer			Autumn			Winter			Spring		
Pp / Tp	3403 / 692			1702 / 520			330 / 339			1753 / 533		
Iot [Pp/Tp]	492			328			97			329		
Avs E[Avm<200]	***			***			309			***		
Strong upper arid [1]							Weak upper arid [1]					
Strong lower semiarid [2]							Weak lower semiarid [1]					

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin] .....	(Sp): 13.05
CI of Gorezinski (1920) [1.7*Sp/sin(Lat)-20.4] .....	22.18
CI of Conrad (1946) [1.7*Sp/sin(Lat+10)-14] .....	19.55
+ Hyperoceanic (-20<CI<20)	
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] .....	41.40
+ Semiarid (60>R>40)	
Aridity Index of Martonne (1926) [Ia=P/(T+10)] .....	26.27
+ Subhumid (30>Ia>20)	
I of Emberger (1930) [Q=100*P/(Tmmax <sup>2</sup> -Tmmin <sup>2</sup> )] .....	75.13
+ Subhumid (90>Q>50)	
I of Dantin & Revenga (1940) [DR=100*T/P] .....	2.42
+ Semiarid (3>DR>2)	
Aridity Index of UNEP [I=P/PE] .....	0.85
+ Humid (I>0.65)	
Potencial Erosion I of Fournier (1960) [K=Pi <sup>2</sup> /P].....	20.67
+ Very low (K<60)	

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BIOCLIMATIC INDICES II

Bioclimatic classification of Gaussen & Bagnouls (1957)  
 + Climate ..... A. Warm and temperate warm  
 + Region ..... 3. Termoxeroteric (Mediterranean warm)  
 + Thermic type: 3. Macro-mesothermic

Thornthwaite (1948)												
	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
P-E ratio	0.40	0.45	0.36	0.20	0.15	0.03	0.05	0.05	0.08	0.25	0.38	0.48
T-E ratio	10.62	10.25	9.50	7.75	6.12	4.75	4.87	5.63	6.75	8.00	9.25	10.25
Precipitation-effectiveness: 28.92						Temperature-efficiency .....: 93.76						
Moisture Index [MI=100*(P-PE)/PE] .....												
+ C1.Subhumid dry (-33.3<MI<0)												
Index of dryness [DI=100*d/PE] .....												
+ No deficit (0<DI<16.7)												
Index of humidity [HI=100*s/PE] .....												
+ No surplus (0<HI<10)												
Potential Evapotranspiration PE .....												
+ Second mesothermic (712<PE<855)												

