

Phytosociological Research Center

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Worldwide Bioclimatic Classification System

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(Adapted to Synoptical Table 30/08/2017)

PUNTA DEL AGUA (ARGENTINA)

Altitude: 2600 m.

Latitude: 28°36'S Longitude: 68°39'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.	15.10	22.20	9.10	29.60	2.40	38.0	86.09
Feb.	14.40	21.40	7.80	31.00	0.70	36.0	69.99
Mar.	12.10	19.70	5.80	29.50	-3.50	9.0	59.93
Apr.	10.40	18.30	2.90	27.20	-6.00	5.0	45.39
May.	9.40	16.70	2.20	28.00	-14.40	3.0	39.28
Jun.	7.10	14.10	-0.10	23.60	-18.00	1.0	26.87
Jul.	6.20	13.40	-0.30	26.40	-15.10	7.0	24.45
Aug.	7.10	14.60	-0.50	26.90	-15.00	5.0	29.99
Sep.	8.20	16.50	0.80	27.50	-14.00	14.0	36.67
Oct.	10.20	18.30	3.00	28.50	-7.30	4.0	51.90
Nov.	12.50	20.70	5.50	28.30	-4.00	15.0	66.25
Dec.	15.10	24.40	8.10	31.20	-4.00	16.0	86.81
Year	10.65	18.36	3.69	28.14	-8.18	153	623.62

BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	237
Compensated thermicity index.....(Itc):	237
Simple continentality index.....(Ic):	8.9
Diurnality index.....(Id):	16.3
Annual ombrothermic index.....(Io):	1.20
Monthly dry ombrothermic index.....(Iod1):	0.14
Bimonthly dry ombrothermic index.....(Iod2):	0.24
Three monthly dry ombrothermic index.....(Iod3):	0.33
Four monthly dry ombrothermic index.....(Iod4):	0.46
Annual ombro-evaporation index.....(Ioe):	3.50
Annual positive temperature.....(Tp):	1278
Annual negative temperature.....(Tn):	0
Dry station temperature.....(Td):	269
Positive precipitation.....(Pp):	153

N. of	P>4T	P:2T-4T	PT-2T	P<T	T<0
Months	0	2	4	6	0

Latitudinal Belt...: Subtropical

Continentalty.....: Hyperoceanic - High Subhyperoceanic

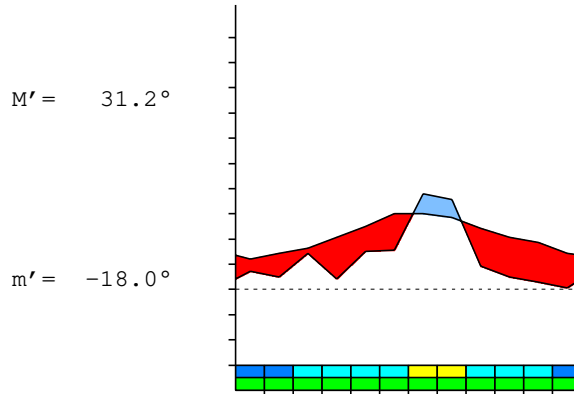
Bioclimate(Variant): TROPICAL XERIC (SEMIARID)

Bioclimatic Belt...: UPPER SUPRATROPICAL LOW SEMIARID

PUNTA DEL AGUA (ARGENTINA)

2600 m

P= 153 28° 36'S 68° 39'W 10/10 y.
 T= 10.6° Ic= 8.9 Tp= 1278 Tn= 0
 m= -0.3° M= 13.4° Itc= 237 Io= 1.2



TROPICAL XERIC (SEMIARID)
 UPPER SUPRATROPICAL LOW SEMIARID

WATER INDEX CARD PUNTA DEL AGUA (ARGENTINA)
 Altitude: 2600 m. Latitude: 28° 36'S

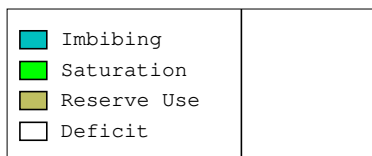
(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jul.	6.2	24	7	0	0	7	17	0	0	-0.7
Aug.	7.1	30	5	0	0	5	25	0	0	-0.8
Sep.	8.2	37	14	0	0	14	23	0	0	-0.6
Oct.	10.2	52	4	0	0	4	48	0	0	-0.9
Nov.	12.5	66	15	0	0	15	51	0	0	-0.7
Dec.	15.1	87	16	0	0	16	71	0	0	-0.8
Jan.	15.1	86	38	0	0	38	48	0	0	-0.5
Feb.	14.4	70	36	0	0	36	34	0	0	-0.4
Mar.	12.1	60	9	0	0	9	51	0	0	-0.8
Apr.	10.4	45	5	0	0	5	40	0	0	-0.8
May.	9.4	39	3	0	0	3	36	0	0	-0.9
Jun.	7.1	27	1	0	0	1	26	0	0	-0.9
Year	10.6	624	153	*	*	153	471	0	0	*

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

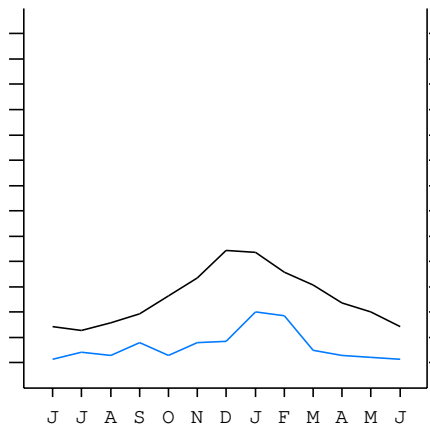
PUNTA DEL AGUA (ARGENTINA)

28°36'S 68°39'W 2600 m 10/10 y.

T= 10.6 Ic= 8.9 TROPICAL XERIC (SEMIARID)
 m= -0.3 Tp= 1278 UPPER SUPRATROPICAL
 M= 13.4 Tn= 0 LOW SEMIARID
 M' = 31.2 Itc= 237
 m' = -18.0 Io= 1.2
 P= 153 mm ———
 PE= 624 mm ———



All over the year,
 there is hydric deficit



PUNTA DEL AGUA (ARGENTINA)

Latitude: 28°36'S Longitude: 68°39'W Altitude: 2600 m

SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continental Index [A3a]
 + Type: A. Hyperoceanic
 + Subtype: 3. Subhyperoceanic
 + Variant: a. High
 Thermic types [A3.B5]
 + Latitudinal zone: A. Warm
 + Latitudinal belt: 3. Subtropical
 + Thermic type: B. Temperate
 + Thermic subtype: 5. Subtemperate
 Bioclimatic types [A3.4a.4b]
 + Macrobioclimate: A. TROPICAL
 + Bioclimate: 3. XERIC
 + Bioclimatic variant ..:
 + Thermic type.....: 4. SUPRATROPICAL
 + Thermic subtype.....: a. UPPER
 + Ombrothermic type ...: 4. SEMIARID
 + Ombrothermic subtype : b. LOW
 Bioclimatic Classification: Trxe.Str.Sar

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 119
 Coldest semester of the year.....(Psw): 34
 Warmest four months period of the year.....(Pcm1): 105
 Following warmest four months period.....(Pcm2): 18
 Positive precipitation dryest 3 months.....(Ppd): 9
 Positive precipitation dryest 2 months.....(Ppd2): 4
 Positive precipitation dryest 1 month.....(Ppd1): 1
 Positive precipitation warmest 3 months.....(Pps): 90
 Positive precipitation warmest 2 months.....(Pps2): 54
 Positive precipitation warmest 1 month.....(Pps1): 38
 Positive precipitation coldest 3 months.....(Ppw): 13
 Positive precipitation coldest 2 months.....(Ppw2): 8
 Positive precipitation coldest 1 month.....(Ppw1): 7

Seasons	Winter Tr1-W	Spring Tr2-P	Summer Tr3-S	Automn Tr4-F
Rainfall	13	33	90	17

Seasonal rainfall rhythms: S > P > F > W

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 15.1
 Average coldest month [T].....(Tmin): 6.2
 Maximum temp. warmest month [M].....(Tmmax): 24.4
 Minimum temp. coldest month [m].....(Tmmin): -0.5
 Absolute Max.temp. warmest month [M'].....(Tamax): 31.2
 Absolute Min.temp. coldest month [m'].....(Tamin): -18.0
 First warmest contrasted month [M].....(Tcmax): 24.4 (12)
 First coldest contrasted month [m].....(Tcmin): 8.1 (12)
 Dry station temperature.....(Td): 269
 Positive temperature dryest 3 months.....(Tpd): 269
 Positive temperature dryest 2 months.....(Tpd2): 165
 Positive temperature dryest 1 month.....(Tpd1): 71
 Positive temperature warmest 3 months.....(Tps): 446
 Positive temperature warmest 2 months.....(Tps2): 302
 Positive temperature warmest 1 month.....(Tps1): 151
 Positive temperature coldest 3 months.....(Tpw): 204
 Positive temperature coldest 2 months.....(Tpw2): 133
 Positive temperature coldest 1 month.....(Tpw1): 62

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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)						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): 4.08
 Mediterranean index of January.....(Im1): 2.27
 Mediterranean index of January & February.....(Im2): 2.11
 Mediterranean index of December to February...(Im3): 2.70

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp(x10)	160	380	360	90	50	30	10	70	50	140	40	150
Tp	151	151	144	121	104	94	71	62	71	82	102	125
Io (Iom)	1.06	2.52	2.50	0.74	0.48	0.32	0.14	1.13	0.70	1.71	0.39	1.20
Seasons	Summer			Autumn			Winter			Spring		
Pp(x10)/Tp	900 / 446			170 / 319			130 / 204			330 / 309		
Io (Iot)	2.018			0.533			0.637			1.068		
Semesters	December-May						June-November					
Pp(x10)/Tp	1070 / 765						460 / 513					
Io (Iosm)	1.399						0.897					

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 1530/1278=1.20 **There is No Yearly Aridity**

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	160	380	360	90	50	30	10	70	50	140	40	150
Tp [T*10]	151	151	144	121	104	94	71	62	71	82	102	125
Iom [Pp/Tp]	106	252	250	74	48	32	14	113	70	171	39	120
Avm [200-Iom]	94	***	***	126	152	168	186	87	130	29	161	80
Seasons	Summer			Autumn			Winter			Spring		
Pp / Tp	900 / 446			170 / 319			130 / 204			330 / 309		
Iot [Pp/Tp]	202			53			64			107		
Avs E[Avm<200]	***			446			403			270		
Upper ultrahyperarid [1]							Upper hyperarid [2]					
Strong lower arid [1]							Weak lower arid [2]					
Strong upper arid [2]							Strong lower semiarid [4]					
Weak upper semiarid [1]												

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin]	(Sp):	8.90
CI of Gorezinski (1920) [1.7*Sp/sin(Lat)-20.4]		11.21
CI of Conrad (1946) [1.7*Sp/sin(Lat+10)-14]		10.25
+ Hyperoceanic (-20<CI<20)		
CI of Currey (1974) [CI=Sp/(1+Lat/3)]		0.84
+ Oceanic (0.6<CI<1.1)		
Rainfall Index of Lang (1925) [R=P/T]		14.37
+ Steppic (40>R>0)		
Aridity Index of Martonne (1926) [Ia=P/(T+10)]		7.41
+ Arid -steppic- (15>Ia>5)		
I of Emberger (1930) [Q=100*P/(Tmax ² -Tmin ²)]		25.71
+ Arid (30>Q>0)		
I of Dantin & Revenga (1940) [DR=100*T/P]		6.96
+ Extremely arid (DR>6)		
Aridity Index of UNEP [I=P/PE]		0.25
+ Semiarid (0.5>Im>0.2)		
Potential Erosion I of Fournier (1960) [K=Pi ² /P]		9.44
+ Very low (K<60)		

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BIOCLIMATIC INDICES II

Bioclimatic classification of Gaussen & Bagnouls (1957)

- + Climate: A. Warm and temperate warm
- + Region
- + Thermic type: 5. Meso-microthermic

Thornthwaite (1948)												
	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
P-E ratio	0.16	0.16	0.04	0.02	0.01	0.00	0.03	0.02	0.07	0.02	0.06	0.06
T-E ratio	6.80	6.48	5.45	4.68	4.23	3.19	2.79	3.19	3.69	4.59	5.63	6.80
Precipitation-effectiveness: 6.52						Temperature-efficiency: 57.51						
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)												

