

# Phytosociological Research Center

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## Worldwide Bioclimatic Classification System

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(Adapted to Synoptical Table 30/08/2017)

PUNTA INDIO (ARGENTINA)

Altitude: 17 m.

Latitude: 35°21'S Longitude: 57°18'W

Temperature observation period.: 1984-1994 (11)

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

(C/mm)	Ti	Mi	mi	M'i	m'i	Pi	Epi
Jan.	22.50	28.89	16.11	41.11	3.89	52.8	127.69
Feb.	21.95	27.78	16.11	40.00	5.00	68.1	104.79
Mar.	18.89	23.89	13.89	36.11	2.22	93.5	83.28
Apr.	16.67	22.22	11.11	32.22	0.00	80.0	60.51
May.	12.50	17.22	7.78	27.22	-2.22	83.6	36.22
Jun.	10.00	15.00	5.00	23.89	-5.00	63.5	23.38
Jul.	8.89	13.89	3.89	22.78	-6.11	43.7	20.57
Aug.	10.00	15.00	5.00	26.11	-5.00	64.5	26.81
Sep.	12.22	17.22	7.22	27.78	-3.89	98.0	39.25
Oct.	15.00	20.00	10.00	28.89	-1.11	71.6	61.48
Nov.	17.50	22.78	12.22	32.78	1.11	74.2	81.38
Dec.	21.11	27.22	15.00	37.78	3.89	64.0	117.23
Year	15.60	20.93	10.28	31.39	-0.60	858	782.61

### BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	334
Compensated thermicity index.....(Itc):	334
Simple continentality index.....(Ic):	13.6
Diurnality index.....(Id):	12.8
Annual ombrothermic index.....(Io):	4.58
Monthly estival ombrothermic index.....(Ios1):	2.35
Bimonthly estival ombrothermic index.....(Ios2):	2.72
Threemonthly estival ombrothermic index.....(Ios3):	2.82
Fourmonthly estival ombrothermic index.....(Ios4):	3.12
Annual ombro-evaporation index.....(Ioe):	1.02
Annual positive temperature.....(Tp):	1872
Annual negative temperature.....(Tn):	0
Estival temperature.....(Ts):	656
Positive precipitation.....(Pp):	858

N. of	P>4T	P:2T-4T	PT-2T	P<T	T<0
Months	9	3	0	0	0

Latitudinal Belt...: Subtropical

Continentalty.....: Oceanic - Low Semihyperoceanic

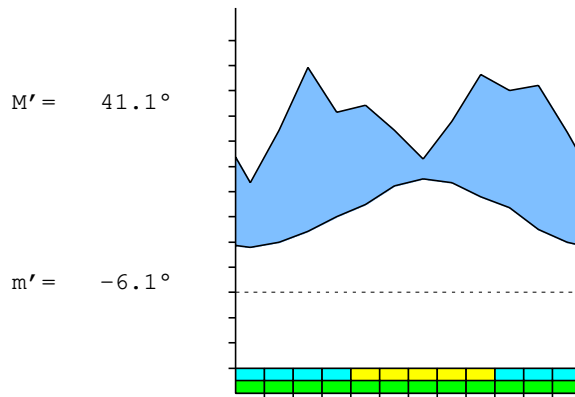
Bioclimate(Variant): TEMPERATE OCEANIC (SUBMEDITERRANEAN)

Bioclimatic Belt...: UPPER THERMOTEMPERATE LOW SUBHUMID

PUNTA INDIO (ARGENTINA)

17 m

P= 858      35° 21'S      57° 18'W      11/11 y.  
 T= 15.6°    Ic= 13.6      Tp= 1872      Tn= 0  
 m= 3.9°      M= 13.9°      Itc= 334      Io= 4.6



TEMPERATE OCEANIC (SUBMEDITERRANEAN)  
 UPPER THERMOTEMPERATE LOW SUBHUMID

WATER INDEX CARD  
 Altitude: 17 m.

PUNTA INDIO (ARGENTINA)  
 Latitude: 35° 21'S

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jul.	8.9	21	44	0	100	21	0	23	16	1.1
Aug.	10.0	27	65	0	100	27	0	38	27	1.4
Sep.	12.2	39	98	0	100	39	0	59	43	1.4
Oct.	15.0	61	72	0	100	61	0	10	26	0.1
Nov.	17.5	81	74	-7	93	81	0	0	13	0.0
Dec.	21.1	117	64	-53	40	117	0	0	7	-0.4
Jan.	22.5	128	53	-40	0	92	35	0	3	-0.5
Feb.	22.0	105	68	0	0	68	37	0	2	-0.3
Mar.	18.9	83	94	10	10	83	0	0	1	0.1
Apr.	16.7	61	80	19	30	61	0	0	0	0.3
May.	12.5	36	84	47	77	36	0	0	0	1.3
Jun.	10.0	23	64	23	100	23	0	17	9	1.7
Year	15.6	783	858	*	*	711	72	147	147	*

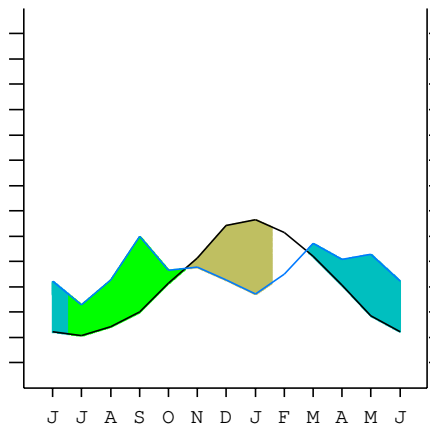
R = Reserve    VR = Variation of the reserve    RE = Real evapotranspiration  
 DR = Drainage    HC = Humidity coefficient    DF = Deficit    SP = Superavit

PUNTA INDIO (ARGENTINA)

35°21'S    57°18'W      17 m 11/11 y.

T= 15.6    Ic= 13.6      TEMPERATE OCEANIC (SUBMEDITERRANEAN)  
 m= 3.9    Tp= 1872      UPPER THERMOTEMPERATE  
 M= 13.9    Tn= 0          LOW SUBHUMID  
 M' = 41.1    Itc= 334  
 m' = -6.1    Io= 4.6  
 P= 858      mm    ———  
 PE= 783     mm    ———

Imbibing	24 Feb.
Saturation	18 Jun.
Reserve Use	18 Oct.
Deficit	16 Jan.



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SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continental Index [B1b]  
 + Type .....: B. Oceanic  
 + Subtype .....: 1. Semihyperoceanic  
 + Variant .....: b. Low  
 Thermic types [B1.A3]  
 + Latitudinal zone ....: B. Temperate  
 + Latitudinal belt ....: 1. Subtropical  
 + Thermic type .....: A. Warm  
 + Thermic subtype .....: 3. Subwarm  
 Bioclimatic types [C3b.2a.6b]  
 + Macroclimate .....: C. TEMPERATE  
 + Bioclimate .....: 3. OCEANIC  
 + Bioclimatic variant .: b. SUBMEDITERRANEAN  
 + Thermic type.....: 2. THERMOTEMPERATE  
 + Thermic subtype.....: a. UPPER  
 + Ombrothermic type ...: 6. SUBHUMID  
 + Ombrothermic subtype : b. LOW  
 Bioclimatic Classification .....: Teco (Sbm).Tte.Shu

PUNTA INDIO (ARGENTINA)

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 433  
 Coldest semester of the year.....(Psw): 425  
 Warmest four months period of the year.....(Pcm1): 278  
 Following warmest four months period.....(Pcm2): 271  
 Positive precipitation dryest 3 months.....(Ppd): 172  
 Positive precipitation dryest 2 months.....(Ppd2): 107  
 Positive precipitation dryest 1 month.....(Ppd1): 44  
 Positive precipitation warmest 3 months.....(Pps): 185  
 Positive precipitation warmest 2 months.....(Pps2): 121  
 Positive precipitation warmest 1 month.....(Pps1): 53  
 Positive precipitation coldest 3 months.....(Ppw): 172  
 Positive precipitation coldest 2 months.....(Ppw2): 107  
 Positive precipitation coldest 1 month.....(Ppw1): 44

Seasons	Winter Tr1-W	Spring Tr2-P	Summer Tr3-S	Automn Tr4-F
Rainfall	171	243	184	257

Seasonal rainfall rhythms: F > P > S > W

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 22.5  
 Average coldest month [T].....(Tmin): 8.9  
 Maximum temp. warmest month [M].....(Tmmax): 28.9  
 Minimum temp. coldest month [m].....(Tmmin): 3.9  
 Absolute Max.temp. warmest month [M'].....(Tamax): 41.1  
 Absolute Min.temp. coldest month [m'].....(Tamin): -6.1  
 First warmest contrasted month [M].....(Tcmax): 28.9 (1)  
 First coldest contrasted month [m].....(Tcmin): 16.1 (1)  
 Estival temperature.....(Ts): 656  
 Positive temperature dryest 3 months.....(Tpd): 289  
 Positive temperature dryest 2 months.....(Tpd2): 189  
 Positive temperature dryest 1 month.....(Tpd1): 89  
 Positive temperature warmest 3 months.....(Tps): 656  
 Positive temperature warmest 2 months.....(Tps2): 445  
 Positive temperature warmest 1 month.....(Tps1): 225  
 Positive temperature coldest 3 months.....(Tpw): 289  
 Positive temperature coldest 2 months.....(Tpw2): 189  
 Positive temperature coldest 1 month.....(Tpw1): 89

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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): 0.91  
 Mediterranean index of January.....(Im1): 2.42  
 Mediterranean index of January & February.....(Im2): 1.92  
 Mediterranean index of December to February...(Im3): 1.89

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp(x10)	640	528	681	935	800	836	635	437	645	980	716	742
Tp	211	225	220	189	167	125	100	89	100	122	150	175
Io (Iom)	3.03	2.35	3.10	4.95	4.80	6.69	6.35	4.92	6.45	8.02	4.77	4.24
Seasons	Summer			Autumn			Winter			Spring		
Pp(x10)/Tp	1849 / 656			2571 / 481			1717 / 289			2438 / 447		
Io (Iot)	2.820			5.350			5.943			5.452		
Semesters	December-May						June-November					
Pp(x10)/Tp	4420 / 1136						4155 / 736					
Io (Iosm)	3.890						5.645					

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 8575/1872=4.58 **There is No Yearly Aridity**

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	640	528	681	935	800	836	635	437	645	980	716	742
Tp [T*10]	211	225	220	189	167	125	100	89	100	122	150	175
Iom [Pp/Tp]	303	235	310	495	480	669	635	492	645	802	477	424
Avm [200-Iom]	***	***	***	***	***	***	***	***	***	***	***	***
Seasons	Summer			Autumn			Winter			Spring		
Pp / Tp	1849 / 656			2571 / 481			1717 / 289			2438 / 447		
Iot [Pp/Tp]	282			535			594			545		
Avs E[Avm<200]	***			***			***			***		

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin] .....	(Sp):	13.61
CI of Gorezinski (1920) [1.7*Sp/sin(Lat)-20.4] .....		19.59
CI of Conrad (1946) [1.7*Sp/sin(Lat+10)-14] .....		18.52
+ Hyperoceanic (-20<CI<20)		
CI of Currey (1974) [CI=Sp/(1+Lat/3)] .....		1.06
+ Oceanic (0.6<CI<1.1)		
Rainfall Index of Lang (1925) [R=P/T] .....		54.96
+ Semiarid (60>R>40)		
Aridity Index of Martonne (1926) [Ia=P/(T+10)] .....		33.49
+ Humid (60>Ia>30)		
I of Emberger (1930) [Q=100*P/(Tmax <sup>2</sup> -Tmin <sup>2</sup> )] .....		104.64
+ Humid (Q>90)		
I of Dantin & Revenga (1940) [DR=100*T/P] .....		1.82
+ Humid (2>DR>0)		
Aridity Index of UNEP [I=P/PE] .....		1.10
+ Humid (I>0.65)		
Potential Erosion I of Fournier (1960) [K=Pi <sup>2</sup> /P] .....		11.20
+ Very low (K<60)		

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BIOCLIMATIC INDICES II

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

- + Climate .....
- + Region .....
- + Thermic type: 3. Macro-mesothermic

Thornthwaite (1948)													
	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	
P-E ratio	0.19	0.26	0.40	0.36	0.42	0.34	0.23	0.34	0.51	0.33	0.32	0.25	
T-E ratio	10.13	9.88	8.50	7.50	5.63	4.50	4.00	4.50	5.50	6.75	7.88	9.50	
Precipitation-effectiveness:	39.39					Temperature-efficiency .....							84.25
Moisture Index [MI=100*(P-PE)/PE] .....												9.57	
+ C2.Subhumid humid (0<MI<20)													
Index of dryness [DI=100*d/PE] .....												9.20	
+ No deficit (0<DI<16.7)													
Index of humidity [HI=100*s/PE] .....												18.76	
+ Moderate surplus (10<HI<20)													
Potential Evapotranspiration PE .....												782.61	
+ Second mesothermic (712<PE<855)													

