

# Phytosociological Research Center

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## Worldwide Bioclimatic Classification System

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(Adapted to Synoptical Table 30/08/2017)

SALTA (ARGENTINA)

Altitude: 1189 m.

Latitude: 24°51'S Longitude: 65°29'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.	21.70	28.90	16.40	37.00	9.90	194.0	110.71
Feb.	20.90	27.80	15.90	39.80	8.80	146.0	89.45
Mar.	19.00	25.50	14.40	34.50	2.60	102.0	78.60
Apr.	16.90	23.90	11.60	33.60	0.70	29.0	58.46
May.	14.20	22.00	8.10	33.00	-4.00	7.0	42.11
Jun.	11.30	20.20	4.80	33.10	-7.20	3.0	26.35
Jul.	10.90	20.40	3.60	34.60	-7.20	3.0	26.13
Aug.	13.60	23.40	5.50	36.80	-3.30	2.0	41.10
Sep.	16.40	25.60	8.80	38.00	-1.90	7.0	57.75
Oct.	18.90	27.20	11.80	38.80	2.40	23.0	81.58
Nov.	20.60	28.40	14.20	39.00	1.80	71.0	95.83
Dec.	21.70	29.50	15.60	39.50	4.30	105.0	111.66
Year	17.17	25.23	10.89	36.47	0.58	692	819.73

### BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	412
Compensated thermicity index.....(Itc):	412
Simple continentality index.....(Ic):	10.8
Diurnality index.....(Id):	17.9
Annual ombrothermic index.....(Io):	3.36
Monthly dry ombrothermic index.....(Iod1):	0.15
Bimonthly dry ombrothermic index.....(Iod2):	0.20
Three monthly dry ombrothermic index.....(Iod3):	0.22
Four monthly dry ombrothermic index.....(Iod4):	0.30
Annual ombro-evaporation index.....(Ioe):	12.57
Annual positive temperature.....(Tp):	2061
Annual negative temperature.....(Tn):	0
Dry station temperature.....(Td):	358
Positive precipitation.....(Pp):	692

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

Latitudinal Belt...: Subtropical

Continentality.....: Hyperoceanic - Low Subhyperoceanic

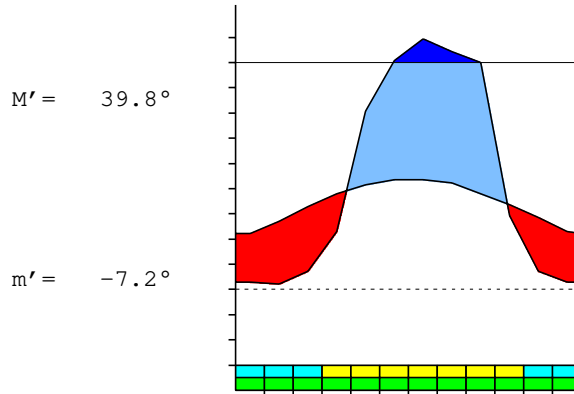
Bioclimate(Variant): TROPICAL XERIC (DRY)

Bioclimatic Belt...: LOW MESOTROPICAL UPPER DRY

SALTA (ARGENTINA)

1189 m

P= 692      24° 51'S      65° 29'W      10/10 y.  
 T= 17.2°    Ic= 10.8      Tp= 2061      Tn= 0  
 m= 3.6°      M= 20.4°      Itc= 412      Io= 3.4



TROPICAL XERIC (DRY)  
 LOW MESOTROPICAL UPPER DRY

WATER INDEX CARD      SALTA (ARGENTINA)  
 Altitude: 1189 m.      Latitude: 24° 51'S

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jul.	10.9	26	3	-12	0	15	11	0	1	-0.8
Aug.	13.6	41	2	0	0	2	39	0	1	-0.9
Sep.	16.4	58	7	0	0	7	51	0	0	-0.8
Oct.	18.9	82	23	0	0	23	59	0	0	-0.7
Nov.	20.6	96	71	0	0	71	25	0	0	-0.2
Dec.	21.7	112	105	0	0	105	7	0	0	0.0
Jan.	21.7	111	194	83	83	111	0	0	0	0.7
Feb.	20.9	89	146	17	100	89	0	40	20	0.6
Mar.	19.0	79	102	0	100	79	0	23	22	0.2
Apr.	16.9	58	29	-29	71	58	0	0	11	-0.5
May.	14.2	42	7	-35	35	42	0	0	5	-0.8
Jun.	11.3	26	3	-23	12	26	0	0	3	-0.8
Year	17.2	820	692	*	*	629	191	63	63	*

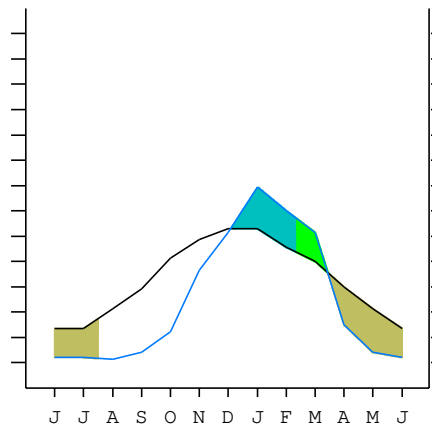
R = Reserve    VR = Variation of the reserve    RE = Real evapotranspiration  
 DR = Drainage    HC = Humidity coefficient    DF = Deficit    SP = Superavit

SALTA (ARGENTINA)

24°51'S    65°29'W    1189 m 10/10 y.

T= 17.2    Ic= 10.8    TROPICAL XERIC (DRY)  
 m= 3.6    Tp= 2061    LOW MESOTROPICAL  
 M= 20.4    Tn= 0    UPPER DRY  
 M' = 39.8    Itc= 412  
 m' = -7.2    Io= 3.4  
 P= 692    mm    ———  
 PE= 820    mm    ———

Imbibing	3 Dec.
Saturation	9 Feb.
Reserve Use	14 Mar.
Deficit	16 Jul.



SALTA (ARGENTINA)

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SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continental Index [A3b]  
 + Type .....: A. Hyperoceanic  
 + Subtype .....: 3. Subhyperoceanic  
 + 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 [A3.3b.5a]  
 + Macrobioclimate .....: A. TROPICAL  
 + Bioclimate .....: 3. XERIC  
 + Bioclimatic variant .:  
 + Thermic type.....: 3. MESOTROPICAL  
 + Thermic subtype.....: b. LOW  
 + Ombrothermic type ...: 5. DRY  
 + Ombrothermic subtype : a. UPPER  
 Bioclimatic Classification .....: Trxe.Mtr.Dry

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 641  
 Coldest semester of the year.....(Psw): 51  
 Warmest four months period of the year.....(Pcm1): 516  
 Following warmest four months period.....(Pcm2): 141  
 Positive precipitation dryest 3 months.....(Ppd): 8  
 Positive precipitation dryest 2 months.....(Ppd2): 5  
 Positive precipitation dryest 1 month.....(Ppd1): 2  
 Positive precipitation warmest 3 months.....(Pps): 445  
 Positive precipitation warmest 2 months.....(Pps2): 299  
 Positive precipitation warmest 1 month.....(Pps1): 194  
 Positive precipitation coldest 3 months.....(Ppw): 8  
 Positive precipitation coldest 2 months.....(Ppw2): 6  
 Positive precipitation coldest 1 month.....(Ppw1): 3

Seasons	Winter Tr1-W	Spring Tr2-P	Summer Tr3-S	Automn Tr4-F
Rainfall	8	101	445	138

Seasonal rainfall rhythms: S > F > P > W

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 21.7  
 Average coldest month [T].....(Tmin): 10.9  
 Maximum temp. warmest month [M].....(Tmmax): 29.5  
 Minimum temp. coldest month [m].....(Tmmin): 3.6  
 Absolute Max.temp. warmest month [M'].....(Tamax): 39.8  
 Absolute Min.temp. coldest month [m'].....(Tamin): -7.2  
 First warmest contrasted month [M].....(Tcmax): 23.4 (8)  
 First coldest contrasted month [m].....(Tcmin): 5.5 (8)  
 Dry station temperature.....(Td): 358  
 Positive temperature dryest 3 months.....(Tpd): 358  
 Positive temperature dryest 2 months.....(Tpd2): 245  
 Positive temperature dryest 1 month.....(Tpd1): 136  
 Positive temperature warmest 3 months.....(Tps): 643  
 Positive temperature warmest 2 months.....(Tps2): 434  
 Positive temperature warmest 1 month.....(Tps1): 217  
 Positive temperature coldest 3 months.....(Tpw): 358  
 Positive temperature coldest 2 months.....(Tpw2): 222  
 Positive temperature coldest 1 month.....(Tpw1): 109

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

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OMBROTHERMIC PARAMETERS

Annual aridity index.[PE/P].....(Iar): 1.18  
 Mediterranean index of January.....(Im1): 0.57  
 Mediterranean index of January & February.....(Im2): 0.59  
 Mediterranean index of December to February...(Im3): 0.70

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp(x10)	1050	1940	1460	1020	290	70	30	30	20	70	230	710
Tp	217	217	209	190	169	142	113	109	136	164	189	206
Io (Iom)	4.84	8.94	6.99	5.37	1.72	0.49	0.27	0.28	0.15	0.43	1.22	3.45
Seasons	Summer			Autumn			Winter			Spring		
Pp(x10)/Tp	4450 / 643			1380 / 501			80 / 358			1010 / 559		
Io (Iot)	6.921			2.754			0.223			1.807		
Semesters	December-May						June-November					
Pp(x10)/Tp	5830 / 1144						1090 / 917					
Io (Iosm)	5.096						1.189					

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 6920/2061=3.36 **There is No Yearly Aridity**

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	1050	1940	1460	1020	290	70	30	30	20	70	230	710
Tp [T*10]	217	217	209	190	169	142	113	109	136	164	189	206
Iom [Pp/Tp]	484	894	699	537	172	49	27	28	15	43	122	345
Avm [200-Iom]	***	***	***	***	28	151	173	172	185	157	78	***
Seasons	Summer			Autumn			Winter			Spring		
Pp / Tp	4450 / 643			1380 / 501			80 / 358			1010 / 559		
Iot [Pp/Tp]	692			275			22			181		
Avs E[Avm<200]	***			***			531			***		
Upper ultrahyperarid [1]						Lower hyperarid [3]						
Strong lower arid [2]						Weak lower semiarid [1]						
Weak upper semiarid [1]												

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin] .....	(Sp): 10.80
CI of Gorezinski (1920) [1.7*Sp/sin(Lat)-20.4] .....	23.29
CI of Conrad (1946) [1.7*Sp/sin(Lat+10)-14] .....	18.13
+ Hyperoceanic (-20<CI<20)	
CI of Currey (1974) [CI=Sp/(1+Lat/3)] .....	1.16
+ Subcontinental (1.1<CI<1.7)	
Rainfall Index of Lang (1925) [R=P/T] .....	40.29
+ Semiarid (60>R>40)	
Aridity Index of Martonne (1926) [Ia=P/(T+10)] .....	25.46
+ Subhumid (30>Ia>20)	
I of Emberger (1930) [Q=100*P/(Tmax <sup>2</sup> -Tmin <sup>2</sup> )] .....	80.72
+ Subhumid (90>Q>50)	
I of Dantin & Revenga (1940) [DR=100*T/P] .....	2.48
+ Semiarid (3>DR>2)	
Aridity Index of UNEP [I=P/PE] .....	0.84
+ Humid (I>0.65)	
Potential Erosion I of Fournier (1960) [K=Pi <sup>2</sup> /P] .....	54.39
+ 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	0.83	0.62	0.44	0.11	0.03	0.01	0.01	0.01	0.02	0.08	0.28	0.42
T-E ratio	9.77	9.40	8.55	7.60	6.39	5.09	4.90	6.12	7.38	8.50	9.27	9.77
Precipitation-effectiveness: 28.68						Temperature-efficiency .....						92.75
Moisture Index [MI=100*(P-PE)/PE] .....												-15.58
+ C1.Subhumid dry (-33.3<MI<0)												
Index of dryness [DI=100*d/PE] .....												23.29
+ Moderate deficit (16.7<DI<33.3)												
Index of humidity [HI=100*s/PE] .....												7.71
+ No surplus (0<HI<10)												
Potential Evapotranspiration PE .....												819.73
+ Second mesothermic (712<PE<855)												

