Phytosociological Research Center

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Worldwide Bioclimatic Classification System

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(Adapted to Synoptical Table 14/02/2020)

ROSARIO (ARGENTINA) Altitude: 25 m.

Latitude: 32°55'S Longitude: 60°47'W
Temperature observation period.: 1977-1994 (18)
Rainfall observation period....: 1954-1994 (41)

(C/mm)	Ti	Mi	mi	M'i	m'i	Pi	EPi
Jan.	24.73	31.67	17.78	42.22	5.00	83.8	143.39
Feb.	24.45	30.56	18.33	43.89	3.89	83.8	120.68
Mar.	21.67	27.22	16.11	37.22	0.00	109.2	98.47
Apr.	18.06	23.33	12.78	34.44	-1.11	91.4	62.41
May.	13.89	18.89	8.89	31.67	-4.44	48.3	36.83
Jun.	10.28	15.56	5.00	28.89	-11.11	33.0	19.50
Jul.	11.11	16.11	6.11	28.89	-10.00	33.0	23.86
Aug.	11.95	17.22	6.67	32.22	-7.22	40.6	29.46
Sep.	14.17	20.56	7.78	40.00	-6.11	53.3	42.46
Oct.	16.95	23.33	10.56	37.78	-2.78	86.4	66.75
Nov.	20.56	27.22	13.89	38.33	-0.56	91.4	96.96
Dec.	23.61	30.00	17.22	42.22	3.89	114.3	133.82
Year	17.62	23.47	11.76	36.48	-2.55	869	874.58

BIOCLIMATIC INDICES AND DIAGNOSIS

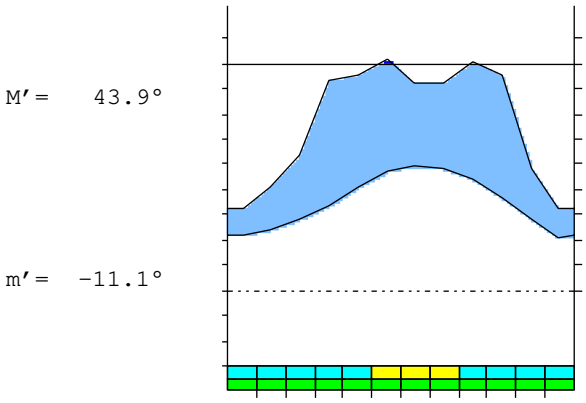
Thermicity index.....(It): 382
Compensated thermicity index.....(Itc): 382
Simple continentality index.....(Ic): 14.4
Diurnality index.....(Id): 13.9
Annual ombrothermic index.....(Io): 4.11
Monthly estival ombrothermic index.....(Ios1): 3.39
Bimonthly estival ombrothermic index.....(Ios2): 3.41
Threemonthly estival ombrothermic index.....(Ios3): 3.87
Fourmonthly estival ombrothermic index.....(Ios4): 4.00
Annual ombro-evaporation index.....(Ioe): 0.99
Annual positive temperature.....(Tp): 2114
Annual negative temperature.....(Tn): 0
Estival temperature.....(Ts): 728
Positive precipitation.....(Pp): 869

N. of	P>4T	P:2T-4T	PT-2T	P<T	T<0
Months	5	7	0	0	0

Latitudinal Belt...: Subtropical
Continentality.....: Oceanic - High Euoceanic
Bioclimate.....: TEMPERATE OCEANIC
Bioclimatic Belt...: LOW THERMOTEMPERATE LOW SUBHUMID

ROSARIO (ARGENTINA) 25 m

P= 869 32° 55'S 60° 47'W 18/41 y.
T= 17.6 ° Ic= 14.4 Tp= 2114 Tn= 0
m= 5.0 ° M= 15.6 ° Itc= 382 Io= 4.1



TEMPERATE OCEANIC
LOW THERMOTEMPERATE LOW SUBHUMID

WATER INDEX CARD ROSARIO (ARGENTINA)
Altitude: 25 m. Latitude: 32° 55'S

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jul.	11.1	24	33	9	74	24	0	0	0	0.3
Aug.	11.9	29	41	11	85	29	0	0	0	0.3
Sep.	14.2	42	53	11	96	42	0	0	0	0.2
Oct.	17.0	67	86	4	100	67	0	15	8	0.2
Nov.	20.6	97	91	-6	94	97	0	0	4	0.0
Dec.	23.6	134	114	-20	75	134	0	0	2	-0.1
Jan.	24.7	143	84	-60	15	143	0	0	1	-0.4
Feb.	24.5	121	84	-15	0	99	22	0	0	-0.3
Mar.	21.7	98	109	11	11	98	0	0	0	0.1
Apr.	18.1	62	91	29	40	62	0	0	0	0.4
May.	13.9	37	48	11	51	37	0	0	0	0.3
Jun.	10.3	20	33	13	65	20	0	0	0	0.6
Year	17.6	875	869	*	*	853	22	15	15	*

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

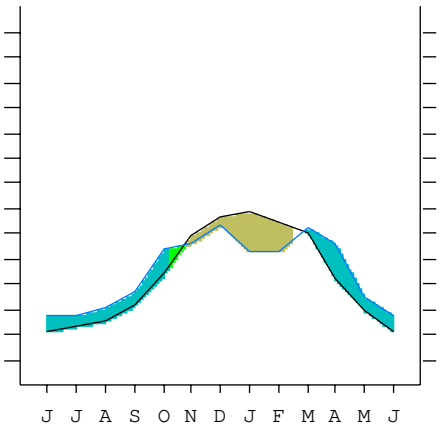
ROSARIO (ARGENTINA)

32°55'S 60°47'W 25 m 18/41 y.

T= 17.6 Ic= 14.4
m= 5.0 Tp= 2114
M= 15.6 Tn= 0
M'= 43.9 Itc= 382
m'= -11.1 Io= 4.1
P= 869 mm
PE= 875 mm

TEMPERATE OCEANIC
LOW THERMOTEMPERATE
LOW SUBHUMID

Imbibing	24 Feb.
Saturation	7 Oct.
Reserve Use	24 Oct.
Deficit	13 Feb.



ROSARIO (ARGENTINA)

Latitude: 32°55'S Longitude: 60°47'W Altitude: 25 m

SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continentality Index [B2a]
- + Type .....: B. Oceanic
- + Subtype .....: 2. Euoceanic
- + Variant .....: a. High

Thermic types [A3.A3]
- + Latitudinal zone ....: A. Warm
- + Latitudinal belt ....: 3. Subtropical
- + Thermic type .....: A. Warm
- + Thermic subtype .....: 3. Subwarm

Bioclimatic types [C3.2b.6b]
- + Macrobioclimate .....: C. TEMPERATE
- + Bioclimate .....: 3. OCEANIC
- + Bioclimatic variant .:
- + Thermic type.....: 2. THERMOTEMPERATE
- + Thermic subtype.....: b. LOW
- + Ombrothermic type ...: 6. SUBHUMID
- + Ombrothermic subtype : b. LOW

Bioclimatic Classification .....Teoc.Tte.Shu.Euo

ROSARIO (ARGENTINA)

Latitude: 32°55'S Longitude: 60°47'W Altitude: 25 m

PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 574
Coldest semester of the year.....(Psw): 295
Warmest four months period of the year.....(Pcm1): 391
Following warmest four months period.....(Pcm2): 206
Positive precipitation dryest 3 months.....(Ppd): 107
Positive precipitation dryest 2 months.....(Ppd2): 66
Positive precipitation dryest 1 month.....(Ppd1): 33
Positive precipitation warmest 3 months.....(Pps): 282
Positive precipitation warmest 2 months.....(Pps2): 168
Positive precipitation warmest 1 month.....(Pps1): 84
Positive precipitation coldest 3 months.....(Ppw): 107
Positive precipitation coldest 2 months.....(Ppw2): 66
Positive precipitation coldest 1 month.....(Ppw1): 33

Seasons	Winter Tr1-W	Spring Tr2-P	Summer Tr3-S	Automn Tr4-F
Rainfall	106	231	281	248

Seasonal rainfall rhythms: S > F > P > W

ROSARIO (ARGENTINA)

Latitude: 32°55'S Longitude: 60°47'W Altitude: 25 m

TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 24.7
Average coldest month [T].....(Tmin): 10.3
Maximum temp. warmest month [M].....(Tmmax): 31.7
Minimum temp. coldest month [m].....(Tmmin): 5.0
Absolute Max.temp. warmest month [M'].....(Tamax): 43.9
Absolute Min.temp. coldest month [m'].....(Tamin): -11.1
First warmest contrasted month [M].....(Tcmax): 31.7 (1)
First coldest contrasted month [m].....(Tcmin): 17.8 (1)
Estival temperature.....(Ts): 728
Positive temperature dryest 3 months.....(Tpd): 333
Positive temperature dryest 2 months.....(Tpd2): 214
Positive temperature dryest 1 month.....(Tpd1): 103
Positive temperature warmest 3 months.....(Tps): 728
Positive temperature warmest 2 months.....(Tps2): 492
Positive temperature warmest 1 month.....(Tps1): 247
Positive temperature coldest 3 months.....(Tpw): 333
Positive temperature coldest 2 months.....(Tpw2): 214
Positive temperature coldest 1 month.....(Tpw1): 103

ROSARIO (ARGENTINA)

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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

ROSARIO (ARGENTINA)

Latitude: 32°55'S Longitude: 60°47'W Altitude: 25 m

OMBROTHERMIC PARAMETERS

Annual aridity index.[PE/P].....(Iar): 1.01
Mediterranean index of January.....(Im1): 1.71
Mediterranean index of January & February.....(Im2): 1.58
Mediterranean index of December to February...(Im3): 1.41

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp(x10)	1143	838	838	1092	914	483	330	330	406	533	864	914
Tp	236	247	245	217	181	139	103	111	120	142	170	206
Io (Iom)	4.84	3.39	3.43	5.04	5.06	3.48	3.21	2.97	3.40	3.76	5.10	4.45
Seasons	Summer			Automn			Winter			Spring		
Pp(x10)/Tp	2819 / 728			2489 / 536			1066 / 333			2311 / 517		
Io (Iot)	3.873			4.642			3.197			4.472		
Semesters	December-May						June-November					
Pp(x10)/Tp	5308 / 1264						3377 / 850					
Io (Iosm)	4.199						3.972					

ROSARIO (ARGENTINA)

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 8685/2114=4.11 There is No Yearly Aridity

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	1143	838	838	1092	914	483	330	330	406	533	864	914
Tp [T*10]	236	247	245	217	181	139	103	111	120	142	170	206
Iom [Pp/Tp]	484	339	343	504	506	348	321	297	340	376	510	445
Avm [200-Iom]	***	***	***	***	***	***	***	***	***	***	***	***
Seasons	Summer			Automn			Winter			Spring		
Pp / Tp	2819 / 728			2489 / 536			1066 / 333			2311 / 517		
Iot [Pp/Tp]	387			464			320			447		
Avs E[Avm<200]	***			***			***			***		

ROSARIO (ARGENTINA)

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin] .....(Sp): 14.45
CI of Gorezinski (1920) [1.7*Sp/sin(Lat)-20.4] .....: 24.80
CI of Conrad (1946) [1.7*Sp/sin(Lat+10)-14] .....: 22.08
  + Oceanic (20<CI<40)
CI of Currey (1974) [CI=Sp/(1+Lat/3)] .....: 1.21
  + Subcontinental (1.1<CI<1.7)
Rainfall Index of Lang (1925) [R=P/T] .....: 49.29
  + Semiarid (60>R>40)
Aridity Index of Martonne (1926) [Ia=P/(T+10)] .....: 31.45
  + Humid (60>Ia>30)
I of Emberger (1930) [Q=100*P/(Tmmax²-Tmmin²)] .....: 88.80
  + Subhumid (90>Q>50)
I of Dantin & Revenga (1940) [DR=100*T/P] .....: 2.03
  + Semiarid (3>DR>2)
Aridity Index of UNEP [I=P/PE] .....: 0.99
  + Humid (I>0.65)
Potencial Erosion I of Fournier (1960) [K=Pi²/P].....: 15.04
  + Very low (K<60)

ROSARIO (ARGENTINA)

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BIOCLIMATIC INDICES II

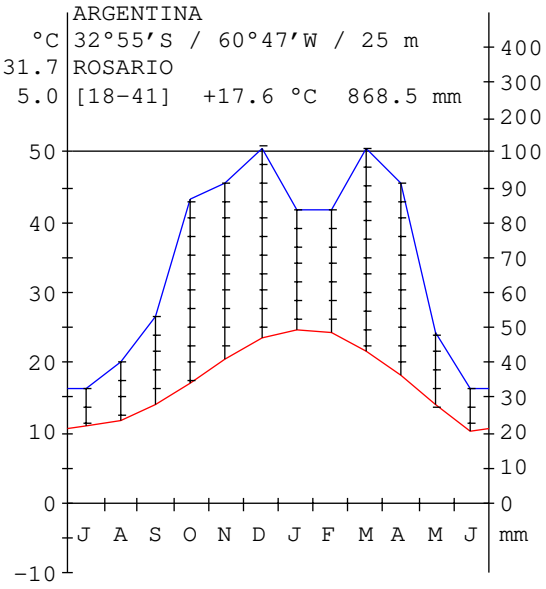
Bioclimatic classification of Gaussen & Bagnouls (1957)
  + Climate ....: A. Warm and temperate warm
  + Region .....: 7. Mesoaxeric (Axeric temperate)
  + Thermic type: 3. Macro-mesothermic

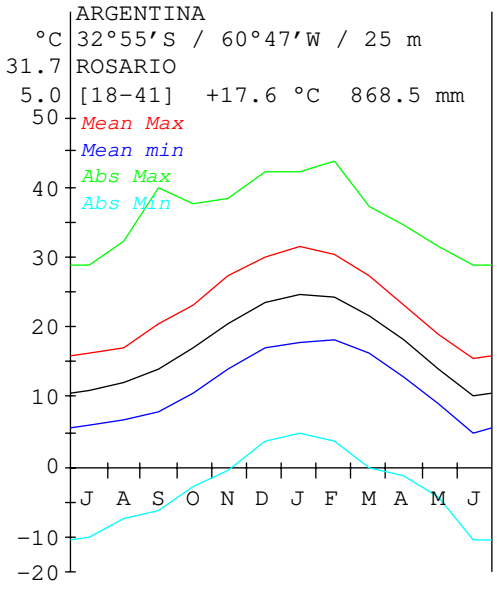
Thornthwaite (1948)

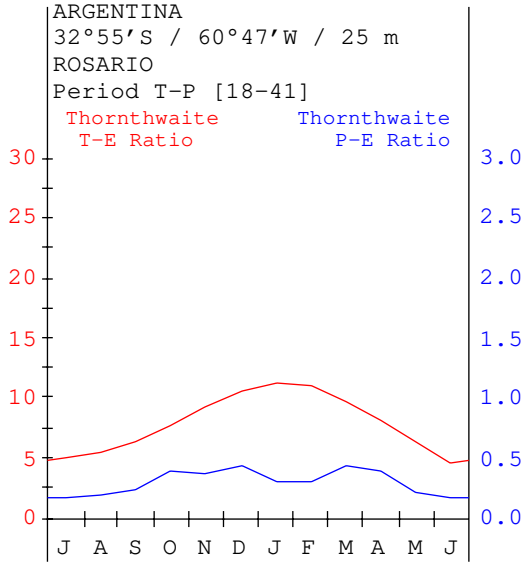
	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
P-E ratio	0.31	0.31	0.44	0.40	0.22	0.16	0.16	0.19	0.24	0.38	0.37	0.44
T-E ratio	11.13	11.00	9.75	8.13	6.25	4.63	5.00	5.38	6.38	7.63	9.25	10.62

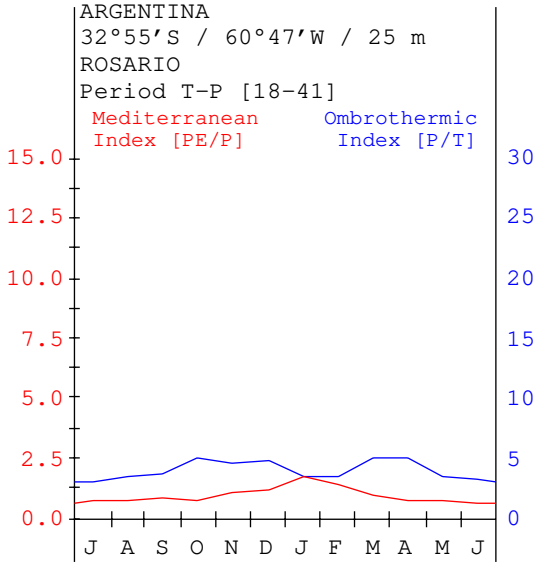
Precipitation-effectiveness: 36.20 Temperature-efficiency ....: 95.14

Moisture Index [MI=100*(P-PE)/PE] .....: -0.70
  + C1.Subhumid dry (-33.3<MI<0)
Index of dryness [DI=100*d/PE] .....: 2.46
  + No deficit (0<DI<16.7)
Index of humidity [HI=100*s/PE] .....: 1.76
  + No surplus (0<HI<10)
Potential Evapotranspiration PE .....: 874.58
  + Third mesothermic (855<PE<997)




ARGENTINA
°C 32°55'S / 60°47'W / 25 m
31.7 ROSARIO
5.0 [18-41] +17.6 °C 868.5 mm
50
Mean Max
Mean min
40
Abs Max
Abs Min
30
20
10
0
-10
-20
J A S O N D J F M A M J


ARGENTINA
32°55'S / 60°47'W / 25 m
ROSARIO
Period T-P [18-41]
Thornthwaite T-E Ratio
Thornthwaite P-E Ratio
30
25
20
15
10
5
0
3.0
2.5
2.0
1.5
1.0
0.5
0.0
J A S O N D J F M A M J


ARGENTINA
32°55'S / 60°47'W / 25 m
ROSARIO
Period T-P [18-41]
Mediterranean Index [PE/P]
Ombrothermic Index [P/T]
15.0
12.5
10.0
7.5
5.0
2.5
0.0
30
25
20
15
10
5
0
J A S O N D J F M A M J