

# Phytosociological Research Center

www.globalbioclimatics.org

## Worldwide Bioclimatic Classification System

S.Rivas-Martinez(+) & S.Rivas-Saenz

(Adapted to Synoptical Table 14/02/2020)

VERA (ARGENTINA)

Altitude: 58 m.

Latitude: 29°28'S Longitude: 60°12'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.	26.70	34.20	18.60	42.50	10.00	77.0	163.15
Feb.	26.00	33.10	19.80	41.40	7.70	139.0	132.06
Mar.	23.00	29.70	17.40	39.80	8.50	142.0	104.60
Apr.	19.90	26.30	14.00	35.40	5.00	108.0	68.03
May.	16.90	23.20	11.40	34.00	-1.60	64.0	45.88
Jun.	14.20	20.00	9.60	31.30	-2.00	51.0	29.17
Jul.	13.40	19.90	7.80	31.90	-4.30	35.0	27.14
Aug.	15.50	22.80	9.10	37.40	-2.50	18.0	39.53
Sep.	17.90	24.80	11.87	38.80	0.50	69.0	56.64
Oct.	20.20	27.00	12.60	42.40	2.80	85.0	82.17
Nov.	23.00	30.00	16.10	41.20	7.50	106.0	111.51
Dec.	25.50	32.70	18.20	43.40	7.90	120.0	148.82
Year	20.18	26.98	13.87	38.29	3.29	1014	1008.7

### BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	479
Compensated thermicity index.....(Itc):	479
Simple continentality index.....(Ic):	13.3
Diurnality index.....(Id):	15.6
Annual ombrothermic index.....(Io):	4.19
Monthly dry ombrothermic index.....(Iod1):	1.16
Bimonthly dry ombrothermic index.....(Iod2):	1.83
Threemonthly dry ombrothermic index.....(Iod3):	2.41
Fourmonthly dry ombrothermic index.....(Iod4):	2.80
Annual ombro-evaporation index.....(Ioe):	1.01
Annual positive temperature.....(Tp):	2422
Annual negative temperature.....(Tn):	0
Dry station temperature.....(Td):	431
Positive precipitation.....(Pp):	1014

N. of Months	P>4T	P:2T-4T	PT-2T	P<T	T<0
	6	5	1	0	0

Latitudinal Belt...: Subtropical

Continentality.....: Oceanic - Low Semihyperoceanic

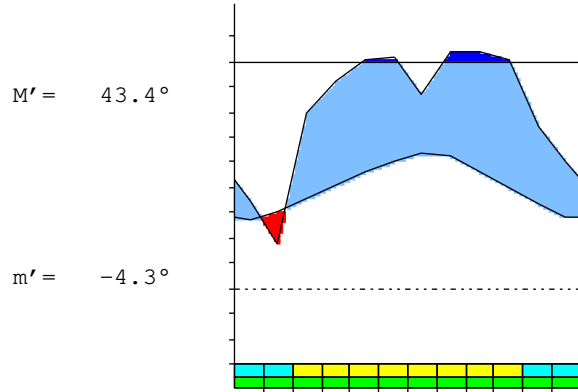
Bioclimate(Variant): TROPICAL PLUVISEASONAL (PLUVISEROTIN, MESOPHYTIC)

Bioclimatic Belt...: LOW MESOTROPICAL LOW SUBHUMID

VERA (ARGENTINA)

58 m

P= 1014      29° 28'S      60° 12'W      10/10 y.  
 T= 20.2 °      Ic= 13.3      Tp= 2422      Tn= 0  
 m= 7.8 °      M= 19.9 °      Itc= 479      Io= 4.2



TROPICAL PLUVISEASONAL (PLUVISEROTIN)  
 LOW MESOTROPICAL LOW SUBHUMID

WATER INDEX CARD

VERA (ARGENTINA)

Altitude: 58 m.

Latitude: 29° 28'S

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jul.	13.4	27	35	0	100	27	0	8	10	0.2
Aug.	15.5	40	18	-22	78	40	0	0	5	-0.5
Sep.	17.9	57	69	12	91	57	0	0	2	0.2
Oct.	20.2	82	85	3	94	82	0	0	1	0.0
Nov.	23.0	112	106	-6	88	112	0	0	1	0.0
Dec.	25.5	149	120	-29	59	149	0	0	0	-0.1
Jan.	26.7	163	77	-59	0	136	27	0	0	-0.5
Feb.	26.0	132	139	7	7	132	0	0	0	0.0
Mar.	23.0	105	142	37	44	105	0	0	0	0.3
Apr.	19.9	68	108	40	84	68	0	0	0	0.5
May.	16.9	46	64	16	100	46	0	2	1	0.3
Jun.	14.2	29	51	0	100	29	0	22	12	0.7
Year	20.2	1009	1014	*	*	982	27	32	32	*

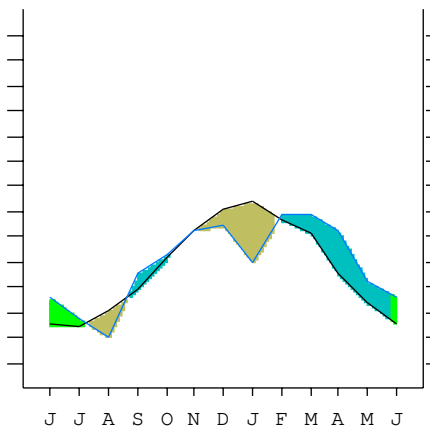
R = Reserve    VR = Variation of the reserve    RE = Real evapotranspiration  
 DR = Drainage    HC = Humidity coefficient    DF = Deficit    SP = Superavit

VERA (ARGENTINA)

29°28'S    60°12'W    58 m 10/10 y.

T= 20.2    Ic= 13.3    TROPICAL PLUVISEASONAL (PLUVISEROTIN)  
 m= 7.8    Tp= 2422    LOW MESOTROPICAL  
 M= 19.9    Tn= 0    LOW SUBHUMID  
 M' = 43.4    Itc= 479  
 m' = -4.3    Io= 4.2  
 P= 1014    mm ———  
 PE= 1009    mm ———

Imbibing	28 Jan.
Saturation	26 May.
Reserve Use	11 Oct.
Deficit	21 Jan.



VERA (ARGENTINA)

Latitude: 29°28'S Longitude: 60°12'W Altitude: 58 m

SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continentality Index [B1b]  
 + Type .....: B. Oceanic  
 + Subtype .....: 1. Semihyperoceanic  
 + Variant .....: b. Low

Thermic types [A3.A2]  
 + Latitudinal zone ....: A. Warm  
 + Latitudinal belt ....: 3. Subtropical  
 + Thermic type .....: A. Warm  
 + Thermic subtype .....: 2. Warm

Bioclimatic types [A4e.3b.6b]  
 + Macrobioclimate .....: A. TROPICAL  
 + Bioclimate .....: 4. PLUVISEASONAL  
 + Bioclimatic variant .: PLUVISEROTIN, MESOPHYTIC  
 + Thermic type.....: 3. MESOTROPICAL  
 + Thermic subtype.....: b. LOW  
 + Ombrothermic type ...: 6. SUBHUMID  
 + Ombrothermic subtype : b. LOW

Bioclimatic Classification .....Trps(Pse).Mtr.Shu.Seo

VERA (ARGENTINA)

Latitude: 29°28'S Longitude: 60°12'W Altitude: 58 m

PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 669  
 Coldest semester of the year.....(Psw): 345  
 Warmest four months period of the year.....(Pcm1): 442  
 Following warmest four months period.....(Pcm2): 365  
 Positive precipitation dryest 3 months.....(Ppd): 104  
 Positive precipitation dryest 2 months.....(Ppd2): 53  
 Positive precipitation dryest 1 month.....(Ppd1): 18  
 Positive precipitation warmest 3 months.....(Pps): 336  
 Positive precipitation warmest 2 months.....(Pps2): 216  
 Positive precipitation warmest 1 month.....(Pps1): 77  
 Positive precipitation coldest 3 months.....(Ppw): 104  
 Positive precipitation coldest 2 months.....(Ppw2): 86  
 Positive precipitation coldest 1 month.....(Ppw1): 35

Seasons	Winter Tr1-W	Spring Tr2-P	Summer Tr3-S	Automn Tr4-F
Rainfall	104	260	336	314

Seasonal rainfall rhythms: S > F > P > W

VERA (ARGENTINA)

Latitude: 29°28'S Longitude: 60°12'W Altitude: 58 m

TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 26.7  
 Average coldest month [T].....(Tmin): 13.4  
 Maximum temp. warmest month [M].....(Tmax): 34.2  
 Minimum temp. coldest month [m].....(Tmin): 7.8  
 Absolute Max.temp. warmest month [M'].....(Tamax): 43.4  
 Absolute Min.temp. coldest month [m'].....(Tamin): -4.3  
 First warmest contrasted month [M].....(Tcmax): 34.2 (1)  
 First coldest contrasted month [m].....(Tcmin): 18.6 (1)  
 Dry station temperature.....(Td): 431  
 Positive temperature dryest 3 months.....(Tpd): 431  
 Positive temperature dryest 2 months.....(Tpd2): 289  
 Positive temperature dryest 1 month.....(Tpd1): 155  
 Positive temperature warmest 3 months.....(Tps): 782  
 Positive temperature warmest 2 months.....(Tps2): 527  
 Positive temperature warmest 1 month.....(Tps1): 267  
 Positive temperature coldest 3 months.....(Tpw): 431  
 Positive temperature coldest 2 months.....(Tpw2): 276  
 Positive temperature coldest 1 month.....(Tpw1): 134

VERA (ARGENTINA)

Latitude: 29°28'S Longitude: 60°12'W Altitude: 58 m

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

VERA (ARGENTINA)

Latitude: 29°28'S Longitude: 60°12'W Altitude: 58 m

OMBROTHERMIC PARAMETERS

Annual aridity index.[PE/P].....(Iar): 0.99  
 Mediterranean index of January.....(Im1): 2.12  
 Mediterranean index of January & February....(Im2): 1.37  
 Mediterranean index of December to February...(Im3): 1.32

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp(x10)	1200	770	1390	1420	1080	640	510	350	180	690	850	1060
Tp	255	267	260	230	199	169	142	134	155	179	202	230
Io (Iom)	4.71	2.88	5.35	6.17	5.43	3.79	3.59	2.61	1.16	3.85	4.21	4.61
Seasons	Summer			Autumn			Winter			Spring		
Pp(x10)/Tp	3360 / 782			3140 / 598			1040 / 431			2600 / 611		
Io (Iot)	4.297			5.251			2.413			4.255		
Semesters	December-May						June-November					
Pp(x10)/Tp	6500 / 1380						3640 / 1042					
Io (Iosm)	4.710						3.493					

VERA (ARGENTINA)

Latitude: 29°28'S Longitude: 60°12'W Altitude: 58 m

Aridity Value Index (AVI)

[10xPP/TP=IO]: 10140/2422=4.19 There is No Yearly Aridity

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	1200	770	1390	1420	1080	640	510	350	180	690	850	1060
TP [T*10]	255	267	260	230	199	169	142	134	155	179	202	230
Iom [Pp/TP]	471	288	535	617	543	379	359	261	116	385	421	461
Avm [200-Iom]	***	***	***	***	***	***	***	***	84	***	***	***
Seasons	Summer			Autumn			Winter			Spring		
Pp / Tp	3360 / 782			3140 / 598			1040 / 431			2600 / 611		
Iot [Pp/TP]	430			525			241			426		
Avs E[Avm<200]	***			***			***			***		
Strong lower semiarid [1]												

VERA (ARGENTINA)

Latitude: 29°28'S Longitude: 60°12'W Altitude: 58 m

BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin] .....(Sp): 13.30  
 CI of Gorezinski (1920) [1.7\*Sp/sin(Lat)-20.4] .....: 25.56  
 CI of Conrad (1946) [1.7\*Sp/sin(Lat+10)-14] .....: 21.57  
 + Oceanic (20<CI<40)  
 CI of Currey (1974) [CI=Sp/(1+Lat/3)] .....: 1.23  
 + Subcontinental (1.1<CI<1.7)  
 Rainfall Index of Lang (1925) [R=P/T] .....: 50.24  
 + Semiarid (60>R>40)  
 Aridity Index of Martonne (1926) [Ia=P/(T+10)] .....: 33.59  
 + Humid (60>Ia>30)  
 I of Emberger (1930) [Q=100\*P/(Tmmax<sup>2</sup>-Tmmin<sup>2</sup>)] .....: 91.45  
 + Humid (Q>90)  
 I of Dantin & Revenga (1940) [DR=100\*T/P] .....: 1.99  
 + Humid (2>DR>0)  
 Aridity Index of UNEP [I=P/PE] .....: 1.01  
 + Humid (I>0.65)  
 Potencial Erosion I of Fournier (1960) [K=Pi<sup>2</sup>/P].....: 19.89  
 + Very low (K<60)

VERA (ARGENTINA)

Latitude: 29°28'S Longitude: 60°12'W Altitude: 58 m

BIOCLIMATIC INDICES II

Bioclimatic classification of Gaussen & Bagnouls (1957)  
 + Climate .....: A. Warm and temperate warm  
 + Region .....: 3. Termoxeroteric (Mediterranean warm)  
 + Thermic type: 2. Macrothermic

Thornthwaite (1948)												
	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
P-E ratio	0.27	0.52	0.57	0.45	0.28	0.23	0.16	0.07	0.29	0.35	0.41	0.45
T-E ratio	12.02	11.70	10.35	8.95	7.60	6.39	6.03	6.97	8.05	9.09	10.35	11.48
Precipitation-effectiveness: 40.41						Temperature-efficiency .....: 108.99						
Moisture Index [MI=100*(P-PE)/PE] .....: 0.52 + C2.Subhumid humid (0<MI<20)												
Index of dryness [DI=100*d/PE] .....: 2.66 + No deficit (0<DI<16.7)												
Index of humidity [HI=100*s/PE] .....: 3.18 + No surplus (0<HI<10)												
Potential Evapotranspiration PE .....: 1008.71 + Forth mesothermic (997<PE<1440)												

