

# Phytosociological Research Center

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## Worldwide Bioclimatic Classification System

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

(Adapted to Synoptical Table 14/02/2020)

PUERTO CASADO (PARAGUAY)

Altitude: 87 m.

Latitude: 22°17'S Longitude: 57°52'W

Temperature observation period.: 1974-1994 (21)

Rainfall observation period....: 1974-1994 (21)

(C/mm)	Ti	Mi	mi	M'i	m'i	Pi	EPI
Jan.	28.61	34.44	22.78	41.11	13.33	143.0	175.25
Feb.	28.06	33.33	22.78	40.00	11.67	127.5	147.99
Mar.	26.95	32.22	21.67	38.33	8.89	145.3	146.06
Apr.	23.89	29.44	18.33	37.22	6.11	105.9	93.54
May.	22.50	27.78	17.22	35.56	2.78	79.3	76.52
Jun.	20.28	25.00	15.56	34.44	1.11	57.4	52.12
Jul.	20.00	25.56	14.44	34.44	0.00	46.7	52.08
Aug.	22.22	28.33	16.11	37.78	1.11	27.9	76.63
Sep.	23.89	30.00	17.78	40.00	0.56	70.9	97.44
Oct.	25.28	31.11	19.44	40.00	6.67	125.2	128.28
Nov.	26.39	32.22	20.56	40.00	9.44	148.3	147.04
Dec.	28.06	33.89	22.22	41.67	11.67	12.7	171.67
Year	24.68	30.28	19.07	38.38	6.11	1090	1364.6

### BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	647
Compensated thermicity index.....(Itc):	647
Simple continentality index.....(Ic):	8.6
Diurnality index.....(Id):	12.2
Annual ombrothermic index.....(Io):	3.68
Monthly dry ombrothermic index.....(Iod1):	1.26
Bimonthly dry ombrothermic index.....(Iod2):	1.77
Threemonthly dry ombrothermic index.....(Iod3):	2.11
Fourmonthly dry ombrothermic index.....(Iod4):	2.49
Annual ombro-evaporation index.....(Ioe):	0.80
Annual positive temperature.....(Tp):	2961
Annual negative temperature.....(Tn):	0
Dry station temperature.....(Td):	625
Positive precipitation.....(Pp):	1090

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

Latitudinal Belt...: Eutropical

Continentalty.....: Hyperoceanic - High Subhyperoceanic

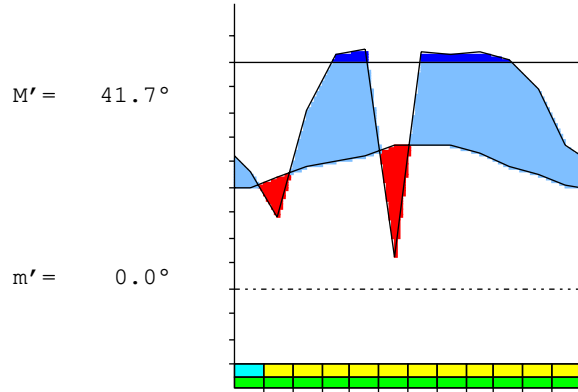
Bioclimate(Variant): TROPICAL PLUVISEASONAL (BIXERIC,MESOPHYTIC)

Bioclimatic Belt...: LOW THERMOTROPICAL LOW SUBHUMID

PUERTO CASADO (PARAGUAY)

87 m

P= 1090      22° 17' S      57° 52' W      21/21 y.  
 T= 24.7 °      Ic= 8.6      Tp= 2961      Tn= 0  
 m= 14.4 °      M= 25.6 °      Itc= 647      Io= 3.7



TROPICAL PLUVISEASONAL (BIXERIC)  
 LOW THERMOTROPICAL LOW SUBHUMID

WATER INDEX CARD      PUERTO CASADO (PARAGUAY)  
 Altitude: 87 m.      Latitude: 22° 17' S

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jul.	20.0	52	47	-5	15	52	0	0	0	-0.1
Aug.	22.2	77	28	-15	0	43	34	0	0	-0.6
Sep.	23.9	97	71	0	0	71	27	0	0	-0.2
Oct.	25.3	128	125	0	0	125	3	0	0	0.0
Nov.	26.4	147	148	1	1	147	0	0	0	0.0
Dec.	28.1	172	13	-1	0	14	158	0	0	-0.9
Jan.	28.6	175	143	0	0	143	32	0	0	-0.1
Feb.	28.1	148	128	0	0	128	20	0	0	-0.1
Mar.	27.0	146	145	0	0	145	1	0	0	0.0
Apr.	23.9	94	106	12	12	94	0	0	0	0.1
May.	22.5	77	79	3	15	77	0	0	0	0.0
Jun.	20.3	52	57	5	20	52	0	0	0	0.1
Year	24.7	1365	1090	*	*	1090	274	0	0	*

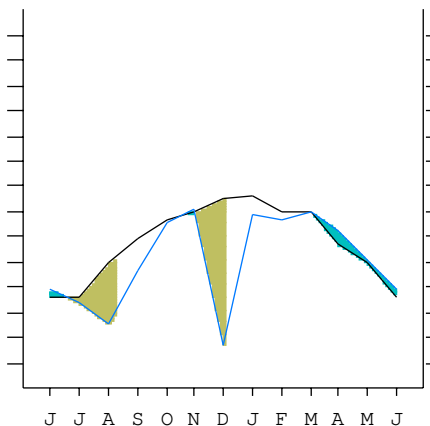
R = Reserve      VR = Variation of the reserve      RE = Real evapotranspiration  
 DR = Drainage      HC = Humidity coefficient      DF = Deficit      SP = Superavit

PUERTO CASADO (PARAGUAY)

22°17'S      57°52'W      87 m 21/21 y.

T= 24.7      Ic= 8.6      TROPICAL PLUVISEASONAL (BIXERIC)  
 m= 14.4      Tp= 2961      LOW THERMOTROPICAL  
 M= 25.6      Tn= 0      LOW SUBHUMID  
 M' = 41.7      Itc= 647  
 m' = 0.0      Io= 3.7  
 P= 1090      mm ———  
 PE= 1365      mm ———

Imbibing	2 Mar.
Saturation	1 Nov.
Reserve Use	1 Dec.
Deficit	



PUERTO CASADO (PARAGUAY)

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SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continentality Index [A3a]  
 + Type .....: A. Hyperoceanic  
 + Subtype .....: 3. Subhyperoceanic  
 + Variant .....: a. High  
 Thermic types [A2.A1]  
 + Latitudinal zone ....: A. Warm  
 + Latitudinal belt ....: 2. Eutropical  
 + Thermic type .....: A. Warm  
 + Thermic subtype .....: 1. Torrid  
 Bioclimatic types [A4c.2b.6b]  
 + Macrobioclimate .....: A. TROPICAL  
 + Bioclimate .....: 4. PLUVISEASONAL  
 + Bioclimatic variant .: BIXERIC,MESOPHYTIC  
 + Thermic type.....: 2. THERMOTROPICAL  
 + Thermic subtype.....: b. LOW  
 + Ombrothermic type ...: 6. SUBHUMID  
 + Ombrothermic subtype : b. LOW  
 Bioclimatic Classification .....Trps(Bix).Ttr.Shu.Sho

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 702  
 Coldest semester of the year.....(Psw): 388  
 Warmest four months period of the year.....(Pcm1): 429  
 Following warmest four months period.....(Pcm2): 289  
 Positive precipitation dryest 3 months.....(Ppd): 132  
 Positive precipitation dryest 2 months.....(Ppd2): 75  
 Positive precipitation dryest 1 month.....(Ppd1): 13  
 Positive precipitation warmest 3 months.....(Pps): 283  
 Positive precipitation warmest 2 months.....(Pps2): 271  
 Positive precipitation warmest 1 month.....(Pps1): 143  
 Positive precipitation coldest 3 months.....(Ppw): 132  
 Positive precipitation coldest 2 months.....(Ppw2): 104  
 Positive precipitation coldest 1 month.....(Ppw1): 47

Seasons	Jun+Jul+Aug Ttr3-3	Sep+Oct+Nov Ttr4-4	Dec+Jan+Feb Ttr1-1	Mar+Apr+May Ttr2-2
Rainfall	132	344	283	330

Tropical rainfall rhythms: 4 > 2 > 1 > 3

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 28.6  
 Average coldest month [T].....(Tmin): 20.0  
 Maximum temp. warmest month [M].....(Tmmax): 34.4  
 Minimum temp. coldest month [m].....(Tmmin): 14.4  
 Absolute Max.temp. warmest month [M'].....(Tamax): 41.7  
 Absolute Min.temp. coldest month [m'].....(Tamin): 0.0  
 First warmest contrasted month [M].....(Tcmax): 28.3 (8)  
 First coldest contrasted month [m].....(Tcmin): 16.1 (8)  
 Dry station temperature.....(Td): 625  
 Positive temperature dryest 3 months.....(Tpd): 625  
 Positive temperature dryest 2 months.....(Tpd2): 422  
 Positive temperature dryest 1 month.....(Tpd1): 281  
 Positive temperature warmest 3 months.....(Tps): 847  
 Positive temperature warmest 2 months.....(Tps2): 567  
 Positive temperature warmest 1 month.....(Tps1): 286  
 Positive temperature coldest 3 months.....(Tpw): 625  
 Positive temperature coldest 2 months.....(Tpw2): 403  
 Positive temperature coldest 1 month.....(Tpw1): 200

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

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OMBROTHERMIC PARAMETERS

Annual aridity index.[PE/P].....(Iar): 1.25  
 Mediterranean index of January.....(Im1): No  
 Mediterranean index of January & February....(Im2): No  
 Mediterranean index of December to February...(Im3): No

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp(x10)	127	1430	1275	1453	1059	793	574	467	279	709	1252	1483
Tp	281	286	281	270	239	225	203	200	222	239	253	264
Io (Iom)	0.45	5.00	4.54	5.39	4.43	3.52	2.83	2.34	1.26	2.97	4.95	5.62
Seasons	Dec+Jan+Feb			Mar+Apr+May			Jun+Jul+Aug			Sep+Oct+Nov		
Pp(x10)/Tp	2832 / 847			3305 / 733			1320 / 625			3444 / 756		
Io (Iot)	3.342			4.506			2.112			4.558		
Semesters	December-May						June-November					
Pp(x10)/Tp	6137 / 1581						4764 / 1381					
Io (Iosm)	3.882						3.451					

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 10901/2961=3.68 There is No Yearly Aridity

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	127	1430	1275	1453	1059	793	574	467	279	709	1252	1483
Tp [T*10]	281	286	281	270	239	225	203	200	222	239	253	264
Iom [Pp/Tp]	45	500	454	539	443	352	283	234	126	297	495	562
Avm [200-Iom]	155	***	***	***	***	***	***	***	74	***	***	***
Seasons	Dec+Jan+Feb			Mar+Apr+May			Jun+Jul+Aug			Sep+Oct+Nov		
Pp / Tp	2832 / 847			3305 / 733			1320 / 625			3444 / 756		
Iot [Pp/Tp]	334			451			211			456		
Avs E[Avm<200]	***			***			***			***		
Strong lower arid [1]							Weak lower semiarid [1]					

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin] .....(Sp): 8.61  
 CI of Gorezinski (1920) [1.7\*Sp/sin(Lat)-20.4] .....: 18.20  
 CI of Conrad (1946) [1.7\*Sp/sin(Lat+10)-14] .....: 13.40  
 + Hyperoceanic (-20<CI<20)  
 CI of Currey (1974) [CI=Sp/(1+Lat/3)] .....: 1.02  
 + Oceanic (0.6<CI<1.1)  
 Rainfall Index of Lang (1925) [R=P/T] .....: 44.17  
 + Semiarid (60>R>40)  
 Aridity Index of Martonne (1926) [Ia=P/(T+10)] .....: 31.44  
 + Humid (60>Ia>30)  
 I of Emberger (1930) [Q=100\*P/(Tmmax<sup>2</sup>-Tmmin<sup>2</sup>)] .....: 111.51  
 + Humid (Q>90)  
 I of Dantin & Revenga (1940) [DR=100\*T/P] .....: 2.26  
 + Semiarid (3>DR>2)  
 Aridity Index of UNEP [I=P/PE] .....: 0.80  
 + Humid (I>0.65)  
 Potencial Erosion I of Fournier (1960) [K=Pi<sup>2</sup>/P].....: 20.18  
 + Very low (K<60)

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BIOCLIMATIC INDICES II

Bioclimatic classification of Gaussen & Bagnouls (1957)  
 + Climate .....: A. Warm and temperate warm  
 + Region .....: 5. Bixeric (Bixeric)  
 + Thermic type: 1. Megathermic

Thornthwaite (1948)												
	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
P-E ratio	0.51	0.45	0.53	0.40	0.30	0.22	0.18	0.10	0.26	0.47	0.55	0.03
T-E ratio	12.87	12.63	12.13	10.75	10.13	9.13	9.00	10.00	10.75	11.38	11.88	12.63
Precipitation-effectiveness: 40.14						Temperature-efficiency .....: 133.26						
Moisture Index [MI=100*(P-PE)/PE] .....: -20.12 + C1.Subhumid dry (-33.3<MI<0)												
Index of dryness [DI=100*d/PE] .....: 20.11 + Moderate deficit (16.7<DI<33.3)												
Index of humidity [HI=100*s/PE] .....: 0.00 + No surplus (0<HI<10)												
Potential Evapotranspiration PE .....: 1364.60 + Forth mesothermic (997<PE<1440)												

