

# Phytosociological Research Center

www.globalbioclimatics.org

## Worldwide Bioclimatic Classification System

Prof.Dr. Salvador Rivas-Martinez

(Adapted to Synoptical Table 30/08/2017)

PARACATU (BRAZIL)

Altitude: 711 m.

Latitude: 17°13'S Longitude: 46°52'W

Temperature observation period.: 1974-1990 (17)

Rainfall observation period....: 1974-1990 (17)

(C/mm)	Ti	Mi	mi	M'i	m'i	Pi	EPI
Jan.	23.70	29.50	19.30	36.00	11.70	260.0	114.25
Feb.	24.00	30.00	19.30	36.20	12.40	179.0	102.43
Mar.	24.00	30.20	19.10	35.60	12.70	149.0	109.74
Apr.	23.20	29.60	18.00	34.80	10.00	67.0	92.72
May.	21.20	28.20	15.70	34.00	5.10	29.0	73.12
Jun.	19.40	27.20	13.30	31.60	4.30	7.0	55.49
Jul.	19.20	27.10	13.10	34.40	-0.10	15.0	55.74
Aug.	21.40	29.10	15.00	36.00	6.80	16.0	78.81
Sep.	23.50	30.50	17.50	37.00	8.10	36.0	98.88
Oct.	24.20	29.10	19.00	37.80	10.60	133.0	116.44
Nov.	23.70	29.60	18.50	36.80	12.00	224.0	109.20
Dec.	23.20	28.60	19.40	36.40	10.80	324.0	108.01
Year	22.56	29.06	17.27	35.55	8.70	1439	1114.8

### BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	628
Compensated thermicity index.....(Itc):	628
Simple continentality index.....(Ic):	5.0
Diurnality index.....(Id):	14.1
Annual ombrothermic index.....(Io):	5.32
Monthly dry ombrothermic index.....(Iod1):	0.36
Bimonthly dry ombrothermic index.....(Iod2):	0.57
Three monthly dry ombrothermic index.....(Iod3):	0.63
Four monthly dry ombrothermic index.....(Iod4):	0.83
Annual ombro-evaporation index.....(Ioe):	7.46
Annual positive temperature.....(Tp):	2707
Annual negative temperature.....(Tn):	0
Dry station temperature.....(Td):	600
Positive precipitation.....(Pp):	1439

N. of	P>4T	P:2T-4T	PT-2T	P<T	T<0
Months	6	1	2	3	0

Latitudinal Belt...: Eutropical

Continentality.....: Hyperoceanic - High Euhyperoceanic

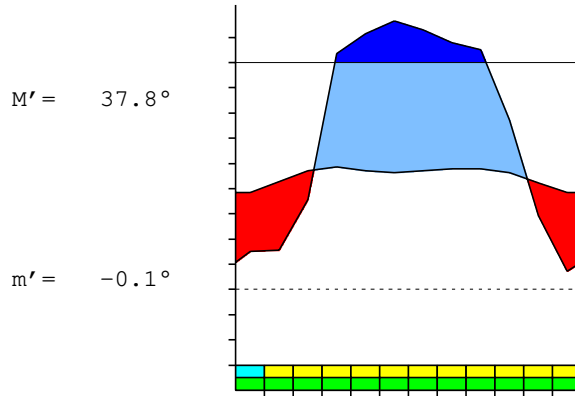
Bioclimate(Variant): TROPICAL PLUVISEASONAL (SUBXEROPHYTIC)

Bioclimatic Belt...: LOW THERMOTROPICAL UPPER SUBHUMID

PARACATU (BRAZIL)

711 m

P= 1439      17° 13' S      46° 52' W      17/17 y.  
 T= 22.6°      Ic= 5.0      Tp= 2707      Tn= 0  
 m= 13.1°      M= 27.1°      Itc= 628      Io= 5.3



TROPICAL PLUVISEASONAL (SUBXEROPHYTIC)  
 LOW THERMOTROPICAL UPPER SUBHUMID

WATER INDEX CARD

PARACATU (BRAZIL)

Altitude: 711 m.

Latitude: 17° 13' S

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jul.	19.2	56	15	0	0	15	41	0	4	-0.7
Aug.	21.4	79	16	0	0	16	63	0	2	-0.7
Sep.	23.5	99	36	0	0	36	63	0	1	-0.6
Oct.	24.2	116	133	17	17	116	0	0	1	0.1
Nov.	23.7	109	224	83	100	109	0	31	16	1.0
Dec.	23.2	108	324	0	100	108	0	216	116	1.9
Jan.	23.7	114	260	0	100	114	0	146	131	1.2
Feb.	24.0	102	179	0	100	102	0	77	104	0.7
Mar.	24.0	110	149	0	100	110	0	39	71	0.3
Apr.	23.2	93	67	-26	74	93	0	0	36	-0.2
May.	21.2	73	29	-44	30	73	0	0	18	-0.6
Jun.	19.4	55	7	-30	0	37	18	0	9	-0.8
Year	22.6	1115	1439	*	*	930	185	509	509	*

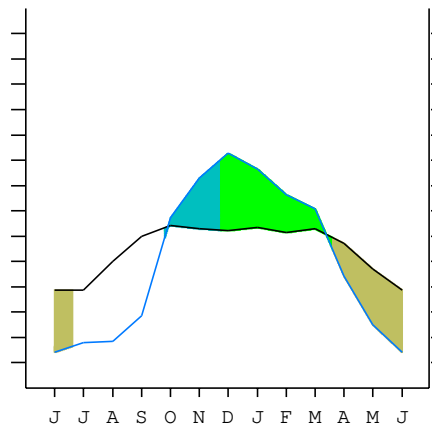
R = Reserve    VR = Variation of the reserve    RE = Real evapotranspiration  
 DR = Drainage    HC = Humidity coefficient    DF = Deficit    SP = Superavit

PARACATU (BRAZIL)

17°13' S    46°52' W    711 m 17/17 y.

T= 22.6      Ic= 5.0      TROPICAL PLUVISEASONAL (SUBXEROPHYTIC)  
 m= 13.1      Tp= 2707      LOW THERMOTROPICAL  
 M= 27.1      Tn= 0      UPPER SUBHUMID  
 M' = 37.8      Itc= 628  
 m' = -0.1      Io= 5.3  
 P= 1439      mm      ———  
 PE= 1115      mm      ———

Imbibing	24 Sep.
Saturation	22 Nov.
Reserve Use	19 Mar.
Deficit	19 Jun.



PARACATU (BRAZIL)

Latitude: 17°13'S Longitude: 46°52'W Altitude: 711 m

SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continental Index [A2a]  
 + Type .....: A. Hyperoceanic  
 + Subtype .....: 2. Euhyperoceanic  
 + Variant .....: a. High

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

Bioclimatic types [A4.2b.6a]  
 + Macrobioclimate .....: A. TROPICAL  
 + Bioclimate .....: 4. PLUVISEASONAL  
 + Bioclimatic variant .:  
 + Thermic type.....: 2. THERMOTROPICAL  
 + Thermic subtype.....: b. LOW  
 + Ombrothermic type ...: 6. SUBHUMID  
 + Ombrothermic subtype : a. UPPER

Bioclimatic Classification .....: Trde.Ttr.Shu

PARACATU (BRAZIL)

Latitude: 17°13'S Longitude: 46°52'W Altitude: 711 m

PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 1269  
 Coldest semester of the year.....(Psw): 170  
 Warmest four months period of the year.....(Pcm1): 655  
 Following warmest four months period.....(Pcm2): 67  
 Positive precipitation dryest 3 months.....(Ppd): 38  
 Positive precipitation dryest 2 months.....(Ppd2): 22  
 Positive precipitation dryest 1 month.....(Ppd1): 7  
 Positive precipitation warmest 3 months.....(Pps): 588  
 Positive precipitation warmest 2 months.....(Pps2): 328  
 Positive precipitation warmest 1 month.....(Pps1): 133  
 Positive precipitation coldest 3 months.....(Ppw): 51  
 Positive precipitation coldest 2 months.....(Ppw2): 22  
 Positive precipitation coldest 1 month.....(Ppw1): 15

Seasons	Jun+Jul+Aug Ttr3-3	Sep+Oct+Nov Ttr4-4	Dec+Jan+Feb Ttr1-1	Mar+Apr+May Ttr2-2
Rainfall	38	393	763	245

Tropical rainfall rhythms: 1 > 4 > 2 > 3

PARACATU (BRAZIL)

Latitude: 17°13'S Longitude: 46°52'W Altitude: 711 m

TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 24.2  
 Average coldest month [T].....(Tmin): 19.2  
 Maximum temp. warmest month [M].....(Tmmax): 30.5  
 Minimum temp. coldest month [m].....(Tmmin): 13.1  
 Absolute Max.temp. warmest month [M'].....(Tamax): 37.8  
 Absolute Min.temp. coldest month [m'].....(Tamin): -0.1  
 First warmest contrasted month [M].....(Tcmax): 29.1 (8)  
 First coldest contrasted month [m].....(Tcmin): 15.0 (8)  
 Dry station temperature.....(Td): 600  
 Positive temperature dryest 3 months.....(Tpd): 600  
 Positive temperature dryest 2 months.....(Tpd2): 386  
 Positive temperature dryest 1 month.....(Tpd1): 194  
 Positive temperature warmest 3 months.....(Tps): 717  
 Positive temperature warmest 2 months.....(Tps2): 480  
 Positive temperature warmest 1 month.....(Tps1): 242  
 Positive temperature coldest 3 months.....(Tpw): 598  
 Positive temperature coldest 2 months.....(Tpw2): 386  
 Positive temperature coldest 1 month.....(Tpw1): 192

PARACATU (BRAZIL)

Latitude: 17°13'S Longitude: 46°52'W Altitude: 711 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	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

PARACATU (BRAZIL)

Latitude: 17°13'S Longitude: 46°52'W Altitude: 711 m

OMBROTHERMIC PARAMETERS

Annual aridity index.[PE/P].....(Iar): 0.77  
 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)	3240	2600	1790	1490	670	290	70	150	160	360	1330	2240
Tp	232	237	240	240	232	212	194	192	214	235	242	237
Io (Iom)	14.0	11.0	7.46	6.21	2.89	1.37	0.36	0.78	0.75	1.53	5.50	9.45
Seasons	Dec+Jan+Feb			Mar+Apr+May			Jun+Jul+Aug			Sep+Oct+Nov		
Pp(x10)/Tp	7630 / 709			2450 / 684			380 / 600			3930 / 714		
Io (Iot)	10.76			3.582			0.633			5.504		
Semesters	December-May						June-November					
Pp(x10)/Tp	10080 / 1393						4310 / 1314					
Io (Iosm)	7.236						3.280					

PARACATU (BRAZIL)

Latitude: 17°13'S Longitude: 46°52'W Altitude: 711 m

Aridity Value Index (AVI)

[10xPP/TP=IO]: 14390/2707=5.32 **There is No Yearly Aridity**

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	3240	2600	1790	1490	670	290	70	150	160	360	1330	2240
Tp [T*10]	232	237	240	240	232	212	194	192	214	235	242	237
Iom [Pp/Tp]	\$\$	\$\$	746	621	289	137	36	78	75	153	550	945
Avm [200-Iom]	***	***	***	***	***	63	164	122	125	47	***	***
Seasons	Dec+Jan+Feb			Mar+Apr+May			Jun+Jul+Aug			Sep+Oct+Nov		
Pp / Tp	7630 / 709			2450 / 684			380 / 600			3930 / 714		
Iot [Pp/Tp]	1076			358			63			550		
Avs E[Avm<200]	***			***			411			***		
Upper hyperarid [1]							Weak lower arid [1]					
Strong upper arid [2]							Weak lower semiarid [1]					
Strong upper semiarid [1]												

PARACATU (BRAZIL)

Latitude: 17°13'S Longitude: 46°52'W Altitude: 711 m

BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin] .....	(Sp):	5.00
CI of Gorezinski (1920) [1.7*Sp/sin(Lat)-20.4] .....		8.32
CI of Conrad (1946) [1.7*Sp/sin(Lat+10)-14] .....		4.59
+ Hyperoceanic (-20<CI<20)		
CI of Currey (1974) [CI=Sp/(1+Lat/3)] .....		0.74
+ Oceanic (0.6<CI<1.1)		
Rainfall Index of Lang (1925) [R=P/T] .....		63.79
+ Temperate warm (100>R>60)		
Aridity Index of Martonne (1926) [Ia=P/(T+10)] .....		44.20
+ Humid (60>Ia>30)		
I of Emberger (1930) [Q=100*P/(Tmax <sup>2</sup> -Tmin <sup>2</sup> )] .....		189.68
+ Humid (Q>90)		
I of Dantin & Revenga (1940) [DR=100*T/P] .....		1.57
+ Humid (2>DR>0)		
Aridity Index of UNEP [I=P/PE] .....		1.29
+ Humid (I>0.65)		
Potential Erosion I of Fournier (1960) [K=Pi <sup>2</sup> /P] .....		72.95
+ Low (60<K<90)		

PARACATU (BRAZIL)

Latitude: 17°13'S Longitude: 46°52'W Altitude: 711 m

BIOCLIMATIC INDICES II

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

- + Climate .....
- + Region .....
- + Thermic type: 2. Macrothermic

Thornthwaite (1948)													
	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	
P-E ratio	1.10	0.72	0.59	0.25	0.10	0.02	0.05	0.05	0.12	0.52	0.93	1.42	
T-E ratio	10.67	10.80	10.80	10.44	9.54	8.73	8.64	9.63	10.57	10.89	10.67	10.44	
Precipitation-effectiveness:	58.75					Temperature-efficiency .....							121.82
Moisture Index [MI=100*(P-PE)/PE] .....												29.08	
+ B1.Humid low-humid (20<MI<40)													
Index of dryness [DI=100*d/PE] .....												16.57	
+ No deficit (0<DI<16.7)													
Index of humidity [HI=100*s/PE] .....												45.65	
+ Strong surplus (20<HI)													
Potential Evapotranspiration PE .....												1114.81	
+ Forth mesothermic (997<PE<1440)													

