

# Phytosociological Research Center

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## Worldwide Bioclimatic Classification System

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(Adapted to Synoptical Table 14/02/2020)

SANGRADONSO (BRAZIL)

Altitude: 480 m.

Latitude: 15°38'S Longitude: 53°55'W

Temperature observation period.: 1986-1994 (9)

Rainfall observation period....: 1984-1994 (11)

(C/mm)	Ti	Mi	mi	M'i	m'i	Pi	EPI
Jan.	24.44	29.44	19.44	32.78	16.11	159.5	121.10
Feb.	24.72	30.00	19.44	32.78	17.22	193.6	109.42
Mar.	24.44	29.44	19.44	32.78	13.89	195.8	113.53
Apr.	23.34	30.00	16.67	33.89	7.22	27.2	93.08
May.	22.50	30.00	15.00	35.00	6.11	13.7	83.95
Jun.	21.11	30.00	12.22	32.22	5.00	6.4	66.57
Jul.	20.00	29.44	10.56	32.78	3.89	8.6	59.64
Aug.	22.22	32.22	12.22	37.22	3.89	5.3	84.35
Sep.	23.61	32.22	15.00	36.11	6.11	42.2	98.10
Oct.	24.73	31.67	17.78	37.78	10.00	93.0	119.60
Nov.	24.72	30.00	19.44	36.11	12.22	210.6	119.47
Dec.	24.44	29.44	19.44	33.89	13.89	237.5	122.18
Year	23.36	30.32	16.39	34.45	9.63	1193	1191.0

### BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	634
Compensated thermicity index.....(Itc):	634
Simple continentality index.....(Ic):	4.7
Diurnality index.....(Id):	20.0
Annual ombrothermic index.....(Io):	4.26
Monthly dry ombrothermic index.....(Iod1):	0.24
Bimonthly dry ombrothermic index.....(Iod2):	0.33
Threemonthly dry ombrothermic index.....(Iod3):	0.32
Fourmonthly dry ombrothermic index.....(Iod4):	0.40
Annual ombro-evaporation index.....(Ioe):	1.00
Annual positive temperature.....(Tp):	2803
Annual negative temperature.....(Tn):	0
Dry station temperature.....(Td):	633
Positive precipitation.....(Pp):	1193

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

Latitudinal Belt...: Eutropical

Continentalty.....: Hyperoceanic - High Euhyperoceanic

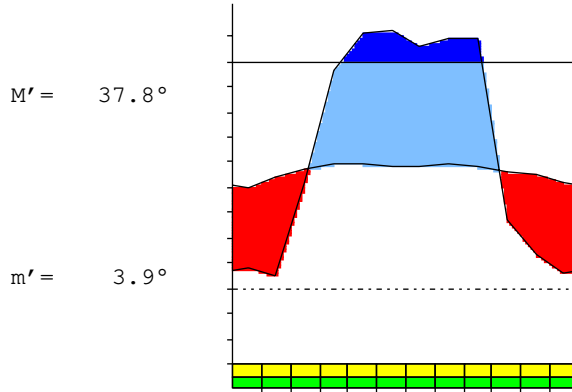
Bioclimate(Variant): TROPICAL PLUVISEASONAL (SUBXEROPHYTIC)

Bioclimatic Belt...: LOW THERMOTROPICAL LOW SUBHUMID

SANGRADONSO (BRAZIL)

480 m

P= 1193      15° 38'S      53° 55'W      9/11 y.  
 T= 23.4 °      Ic= 4.7      Tp= 2803      Tn= 0  
 m= 10.6 °      M= 29.4 °      Itc= 634      Io= 4.3



TROPICAL PLUVISEASONAL (SUBXEROPHYTIC)  
 LOW THERMOTROPICAL LOW SUBHUMID

WATER INDEX CARD      SANGRADONSO (BRAZIL)  
 Altitude: 480 m.      Latitude: 15° 38'S

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jul.	20.0	60	9	0	0	9	51	0	5	-0.8
Aug.	22.2	84	5	0	0	5	79	0	2	-0.9
Sep.	23.6	98	42	0	0	42	56	0	1	-0.5
Oct.	24.7	120	93	0	0	93	27	0	1	-0.2
Nov.	24.7	119	211	91	91	119	0	0	0	0.7
Dec.	24.4	122	238	9	100	122	0	106	53	0.9
Jan.	24.4	121	160	0	100	121	0	38	46	0.3
Feb.	24.7	109	194	0	100	109	0	84	65	0.7
Mar.	24.4	114	196	0	100	114	0	82	74	0.7
Apr.	23.3	93	27	-66	34	93	0	0	37	-0.7
May.	22.5	84	14	-34	0	48	36	0	18	-0.8
Jun.	21.1	67	6	0	0	6	60	0	9	-0.9
Year	23.4	1191	1193	*	*	882	309	311	311	*

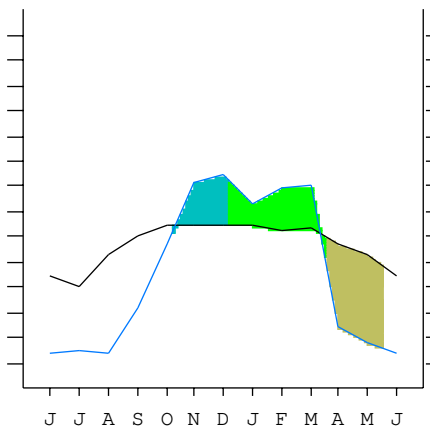
R = Reserve      VR = Variation of the reserve      RE = Real evapotranspiration  
 DR = Drainage      HC = Humidity coefficient      DF = Deficit      SP = Superavit

SANGRADONSO (BRAZIL)

15°38'S      53°55'W      480 m      9/11 y.

T= 23.4      Ic= 4.7      TROPICAL PLUVISEASONAL (SUBXEROPHYTIC)  
 m= 10.6      Tp= 2803      LOW THERMOTROPICAL  
 M= 29.4      Tn= 0      LOW SUBHUMID  
 M' = 37.8      Itc= 634  
 m' = 3.9      Io= 4.3  
 P= 1193      mm ———  
 PE= 1191      mm ———

Imbibing	7 Oct.
Saturation	3 Dec.
Reserve Use	17 Mar.
Deficit	15 May.



SANGRADONSO (BRAZIL)

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SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continentality 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.6b]  
 + Macrobioclimate .....: A. TROPICAL  
 + Bioclimate .....: 4. PLUVISEASONAL  
 + Bioclimatic variant .: SUBXEROPHYTIC  
 + Thermic type.....: 2. THERMOTROPICAL  
 + Thermic subtype.....: b. LOW  
 + Ombrothermic type ...: 6. SUBHUMID  
 + Ombrothermic subtype : b. LOW  
 Bioclimatic Classification .....Trps (Sxe).Ttr.Shu.Eho

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 1090  
 Coldest semester of the year.....(Psw): 103  
 Warmest four months period of the year.....(Pcm1): 701  
 Following warmest four months period.....(Pcm2): 430  
 Positive precipitation dryest 3 months.....(Ppd): 20  
 Positive precipitation dryest 2 months.....(Ppd2): 14  
 Positive precipitation dryest 1 month.....(Ppd1): 5  
 Positive precipitation warmest 3 months.....(Pps): 541  
 Positive precipitation warmest 2 months.....(Pps2): 304  
 Positive precipitation warmest 1 month.....(Pps1): 93  
 Positive precipitation coldest 3 months.....(Ppw): 20  
 Positive precipitation coldest 2 months.....(Ppw2): 15  
 Positive precipitation coldest 1 month.....(Ppw1): 9

Seasons	Jun+Jul+Aug Ttr3-3	Sep+Oct+Nov Ttr4-4	Dec+Jan+Feb Ttr1-1	Mar+Apr+May Ttr2-2
Rainfall	20	345	590	236

Tropical rainfall rhythms: 1 > 4 > 2 > 3

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 24.7  
 Average coldest month [T].....(Tmin): 20.0  
 Maximum temp. warmest month [M].....(Tmmax): 32.2  
 Minimum temp. coldest month [m].....(Tmmin): 10.6  
 Absolute Max.temp. warmest month [M'].....(Tamax): 37.8  
 Absolute Min.temp. coldest month [m'].....(Tamin): 3.9  
 First warmest contrasted month [M].....(Tcmax): 32.2 (8)  
 First coldest contrasted month [m].....(Tcmin): 12.2 (8)  
 Dry station temperature.....(Td): 633  
 Positive temperature dryest 3 months.....(Tpd): 633  
 Positive temperature dryest 2 months.....(Tpd2): 422  
 Positive temperature dryest 1 month.....(Tpd1): 222  
 Positive temperature warmest 3 months.....(Tps): 739  
 Positive temperature warmest 2 months.....(Tps2): 495  
 Positive temperature warmest 1 month.....(Tps1): 247  
 Positive temperature coldest 3 months.....(Tpw): 633  
 Positive temperature coldest 2 months.....(Tpw2): 411  
 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)												
Agelid.....[m'> 0] (Pf)	o	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	o

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OMBROTHERMIC PARAMETERS

Annual aridity index.[PE/P].....(Iar): 1.00  
 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)	2375	1595	1936	1958	272	137	64	86	53	422	930	2106
Tp	244	244	247	244	233	225	211	200	222	236	247	247
Io (Iom)	9.72	6.53	7.83	8.01	1.17	0.61	0.30	0.43	0.24	1.79	3.76	8.52
Seasons	Dec+Jan+Feb			Mar+Apr+May			Jun+Jul+Aug			Sep+Oct+Nov		
Pp(x10)/Tp	5906 / 736			2367 / 703			203 / 633			3458 / 731		
Io (Iot)	8.024			3.368			0.321			4.733		
Semesters	December-May						June-November					
Pp(x10)/Tp	8273 / 1439						3661 / 1364					
Io (Iosm)	5.750						2.684					

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 11934/2803=4.26 **There is No Yearly Aridity**

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	2375	1595	1936	1958	272	137	64	86	53	422	930	2106
Tp [T*10]	244	244	247	244	233	225	211	200	222	236	247	247
Iom [Pp/Tp]	972	653	783	801	117	61	30	43	24	179	376	852
Avm [200-Iom]	***	***	***	***	83	139	170	157	176	21	***	***
Seasons	Dec+Jan+Feb			Mar+Apr+May			Jun+Jul+Aug			Sep+Oct+Nov		
Pp / Tp	5906 / 736			2367 / 703			203 / 633			3458 / 731		
Iot [Pp/Tp]	802			337			32			473		
Avs E[Avm<200]	***			***			503			***		
Lower hyperarid [1]						Upper hyperarid [2]						
Strong lower arid [1]						Weak lower arid [1]						
Strong lower semiarid [1]						Weak upper semiarid [1]						

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin] .....	(Sp):	4.73
CI of Gorezinski (1920) [1.7*Sp/sin(Lat)-20.4] .....		9.44
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)] .....		0.76
+ Oceanic (0.6<CI<1.1)		
Rainfall Index of Lang (1925) [R=P/T] .....		51.10
+ Semiarid (60>R>40)		
Aridity Index of Martonne (1926) [Ia=P/(T+10)] .....		35.78
+ Humid (60>Ia>30)		
I of Emberger (1930) [Q=100*P/(Tmmax <sup>2</sup> -Tmmin <sup>2</sup> )] .....		128.79
+ Humid (Q>90)		
I of Dantin & Revenga (1940) [DR=100*T/P] .....		1.96
+ Humid (2>DR>0)		
Aridity Index of UNEP [I=P/PE] .....		1.00
+ Humid (I>0.65)		
Potencial Erosion I of Fournier (1960) [K=Pi <sup>2</sup> /P].....		47.27
+ Very low (K<60)		

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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	0.63	0.77	0.79	0.09	0.04	0.02	0.03	0.02	0.15	0.34	0.85	0.98
T-E ratio	11.00	11.12	11.00	10.50	10.13	9.50	9.00	10.00	10.62	11.13	11.12	11.00
Precipitation-effectiveness: 47.00						Temperature-efficiency .....: 126.12						
Moisture Index [MI=100*(P-PE)/PE] .....: 0.20												
+ C2.Subhumid humid (0<MI<20)												
Index of dryness [DI=100*d/PE] .....: 25.93												
+ Moderate deficit (16.7<DI<33.3)												
Index of humidity [HI=100*s/PE] .....: 26.14												
+ Strong surplus (20<HI)												
Potential Evapotranspiration PE .....: 1190.98												
+ Forth mesothermic (997<PE<1440)												

