

Phytosociological Research Center

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Worldwide Bioclimatic Classification System

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(Adapted to Synoptical Table 30/08/2017)

MARTE (BRAZIL)

Altitude: 720 m.

Latitude: 23°31'S Longitude: 46°38'W

Temperature observation period.: 1950-1994 (45)

Rainfall observation period....: 1970-1994 (25)

(C/mm)	Ti	Mi	mi	M'i	m'i	Pi	Epi
Jan.	21.11	25.00	17.22	36.11	10.00	223.5	102.19
Feb.	21.95	26.11	17.78	37.78	11.11	198.4	95.69
Mar.	20.56	24.44	16.67	32.78	10.00	153.7	88.05
Apr.	18.89	22.78	15.00	32.78	5.00	57.2	68.74
May.	16.11	20.00	12.22	37.78	2.22	74.9	50.02
Jun.	15.56	18.89	12.22	30.00	1.11	59.9	44.39
Jul.	15.28	18.89	11.67	31.11	0.00	38.4	44.84
Aug.	15.56	19.44	11.67	32.22	2.22	54.4	49.38
Sep.	16.11	19.44	12.78	32.22	0.00	87.6	53.22
Oct.	16.95	20.00	13.89	35.00	3.89	116.6	64.36
Nov.	18.61	22.22	15.00	35.00	7.22	152.7	77.30
Dec.	20.28	23.89	16.67	37.22	8.89	238.0	96.46
Year	18.08	21.76	14.40	34.17	5.14	1455	834.65

BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	486
Compensated thermicity index.....(Itc):	473
Simple continentality index.....(Ic):	6.7
Diurnality index.....(Id):	8.3
Annual ombrothermic index.....(Io):	6.71
Monthly dry ombrothermic index.....(Iod1):	2.51
Bimonthly dry ombrothermic index.....(Iod2):	3.01
Three monthly dry ombrothermic index.....(Iod3):	3.29
Four monthly dry ombrothermic index.....(Iod4):	3.64
Annual ombro-evaporation index.....(Ioe):	2.37
Annual positive temperature.....(Tp):	2170
Annual negative temperature.....(Tn):	0
Dry station temperature.....(Td):	464
Positive precipitation.....(Pp):	1455

N. of	P>4T	P:2T-4T	PT-2T	P<T	T<0
Months	8	4	0	0	0

Latitudinal Belt...: Subtropical

Continentalty.....: Hyperoceanic - Low Euhyperoceanic

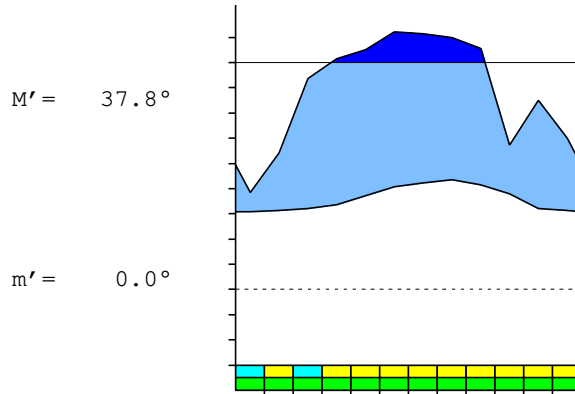
Bioclimate(Variant): TROPICAL PLUVIAL (HYGROPHYTIC)

Bioclimatic Belt...: LOW MESOTROPICAL LOW HUMID

MARTE (BRAZIL)

720 m

P= 1455 23° 31'S 46° 38'W 45/25 y.
 T= 18.1° Ic= 6.7 Tp= 2170 Tn= 0
 m= 11.7° M= 18.9° Itc= 473 Io= 6.7



TROPICAL PLUVIAL (HYGROPHYTIC)
 LOW MESOTROPICAL LOW HUMID

WATER INDEX CARD

MARTE (BRAZIL)

Altitude: 720 m.

Latitude: 23° 31'S

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jul.	15.3	45	38	-6	94	45	0	0	11	-0.1
Aug.	15.6	49	54	5	99	49	0	0	5	0.1
Sep.	16.1	53	88	1	100	53	0	33	19	0.6
Oct.	17.0	64	117	0	100	64	0	52	36	0.8
Nov.	18.6	77	153	0	100	77	0	75	56	0.9
Dec.	20.3	96	238	0	100	96	0	142	99	1.4
Jan.	21.1	102	224	0	100	102	0	121	110	1.1
Feb.	22.0	96	198	0	100	96	0	103	106	1.0
Mar.	20.6	88	154	0	100	88	0	66	86	0.7
Apr.	18.9	69	57	-12	88	69	0	0	43	-0.1
May.	16.1	50	75	12	100	50	0	13	28	0.4
Jun.	15.6	44	60	0	100	44	0	16	22	0.3
Year	18.1	835	1455	*	*	835	0	621	621	*

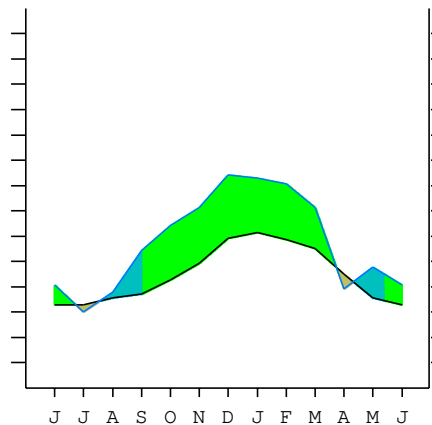
R = Reserve VR = Variation of the reserve RE = Real evapotranspiration
 DR = Drainage HC = Humidity coefficient DF = Deficit SP = Superavit

MARTE (BRAZIL)

23°31'S 46°38'W 720 m 45/25 y.

T= 18.1 Ic= 6.7 TROPICAL PLUVIAL (HYGROPHYTIC)
 m= 11.7 Tp= 2170 LOW MESOTROPICAL
 M= 18.9 Tn= 0 LOW HUMID
 M' = 37.8 Itc= 473
 m' = 0.0 Io= 6.7
 P= 1455 mm ———
 PE= 835 mm ———

Imbibing	10 Apr.
Saturation	14 May.
Reserve Use	26 Mar.
Deficit	



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SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continental Index [A2b]
 + Type: A. Hyperoceanic
 + Subtype: 2. Euhyperoceanic
 + Variant: b. Low

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

Bioclimatic types [A5.3b.7b]
 + Macrobioclimate: A. TROPICAL
 + Bioclimate: 5. PLUVIAL
 + Bioclimatic variant ..:
 + Thermic type.....: 3. MESOTROPICAL
 + Thermic subtype.....: b. LOW
 + Ombrothermic type ...: 7. HUMID
 + Ombrothermic subtype : b. LOW

Bioclimatic Classification: Trhd.Mtr.Hum

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 1024
 Coldest semester of the year.....(Psw): 432
 Warmest four months period of the year.....(Pcm1): 814
 Following warmest four months period.....(Pcm2): 230
 Positive precipitation dryest 3 months.....(Ppd): 153
 Positive precipitation dryest 2 months.....(Ppd2): 93
 Positive precipitation dryest 1 month.....(Ppd1): 38
 Positive precipitation warmest 3 months.....(Pps): 576
 Positive precipitation warmest 2 months.....(Pps2): 422
 Positive precipitation warmest 1 month.....(Pps1): 198
 Positive precipitation coldest 3 months.....(Ppw): 153
 Positive precipitation coldest 2 months.....(Ppw2): 98
 Positive precipitation coldest 1 month.....(Ppw1): 38

Seasons	Winter Tr1-W	Spring Tr2-P	Summer Tr3-S	Automn Tr4-F
Rainfall	152	356	659	285

Seasonal rainfall rhythms: S > P > F > W

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 22.0
 Average coldest month [T].....(Tmin): 15.3
 Maximum temp. warmest month [M].....(Tmmax): 26.1
 Minimum temp. coldest month [m].....(Tmmin): 11.7
 Absolute Max.temp. warmest month [M'].....(Tamax): 37.8
 Absolute Min.temp. coldest month [m'].....(Tamin): 0.0
 First warmest contrasted month [M].....(Tcmax): 26.1 (2)
 First coldest contrasted month [m].....(Tcmin): 17.8 (2)
 Dry station temperature.....(Td): 464
 Positive temperature dryest 3 months.....(Tpd): 464
 Positive temperature dryest 2 months.....(Tpd2): 308
 Positive temperature dryest 1 month.....(Tpd1): 153
 Positive temperature warmest 3 months.....(Tps): 636
 Positive temperature warmest 2 months.....(Tps2): 431
 Positive temperature warmest 1 month.....(Tps1): 220
 Positive temperature coldest 3 months.....(Tpw): 464
 Positive temperature coldest 2 months.....(Tpw2): 308
 Positive temperature coldest 1 month.....(Tpw1): 153

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

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OMBROTHERMIC PARAMETERS

Annual aridity index.[PE/P].....(Iar): 0.57
 Mediterranean index of January.....(Im1): 0.46
 Mediterranean index of January & February.....(Im2): 0.47
 Mediterranean index of December to February...(Im3): 0.45

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp(x10)	2380	2235	1984	1537	572	749	599	384	544	876	1166	1527
Tp	203	211	220	206	189	161	156	153	156	161	170	186
Io (Iom)	11.7	10.6	9.04	7.48	3.03	4.65	3.85	2.51	3.50	5.44	6.88	8.21
Seasons	Summer			Autumn			Winter			Spring		
Pp(x10)/Tp	6599 / 633			2858 / 556			1527 / 464			3569 / 517		
Io (Iot)	10.42			5.144			3.291			6.907		
Semesters	December-May						June-November					
Pp(x10)/Tp	9457 / 1189						5096 / 981					
Io (Iosm)	7.954						5.196					

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 14553/2170=6.71 **There is No Yearly Aridity**

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	2380	2235	1984	1537	572	749	599	384	544	876	1166	1527
Tp [T*10]	203	211	220	206	189	161	156	153	156	161	170	186
Iom [Pp/Tp]	\$\$	\$\$	904	748	303	465	385	251	350	544	688	821
Avm [200-Iom]	***	***	***	***	***	***	***	***	***	***	***	***
Seasons	Summer			Autumn			Winter			Spring		
Pp / Tp	6599 / 633			2858 / 556			1527 / 464			3569 / 517		
Iot [Pp/Tp]	1042			514			329			691		
Avs E[Avm<200]	***			***			***			***		

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin]	(Sp):	6.67
CI of Gorezinski (1920) [1.7*Sp/sin(Lat)-20.4]		8.02
CI of Conrad (1946) [1.7*Sp/sin(Lat+10)-14]		6.53
+ Hyperoceanic (-20<CI<20)		
CI of Currey (1974) [CI=Sp/(1+Lat/3)]		0.75
+ Oceanic (0.6<CI<1.1)		
Rainfall Index of Lang (1925) [R=P/T]		80.49
+ Temperate warm (100>R>60)		
Aridity Index of Martonne (1926) [Ia=P/(T+10)]		51.83
+ Humid (60>Ia>30)		
I of Emberger (1930) [Q=100*P/(Tmax ² -Tmin ²)]		266.76
+ Humid (Q>90)		
I of Dantin & Revenga (1940) [DR=100*T/P]		1.24
+ Humid (2>DR>0)		
Aridity Index of UNEP [I=P/PE]		1.74
+ Humid (I>0.65)		
Potential Erosion I of Fournier (1960) [K=Pi ² /P]		38.92
+ Very low (K<60)		

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BIOCLIMATIC INDICES II

Bioclimatic classification of Gaussen & Bagnouls (1957)

- + Climate
- + Region
- + Thermic type: 3. Macro-mesothermic

Thornthwaite (1948)												
	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
P-E ratio	0.99	0.85	0.66	0.23	0.34	0.27	0.16	0.24	0.40	0.54	0.69	1.08
T-E ratio	9.50	9.88	9.25	8.50	7.25	7.00	6.88	7.00	7.25	7.63	8.37	9.13
Precipitation-effectiveness: 64.45						Temperature-efficiency						97.64
Moisture Index [MI=100*(P-PE)/PE]												74.36
+ B3.Humid high-humid (60<MI<80)												
Index of dryness [DI=100*d/PE]												0.00
+ No deficit (0<DI<16.7)												
Index of humidity [HI=100*s/PE]												74.35
+ Strong surplus (20<HI)												
Potential Evapotranspiration PE												834.65
+ Second mesothermic (712<PE<855)												

