

# Phytosociological Research Center

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## Worldwide Bioclimatic Classification System

Prof.Dr. Salvador Rivas-Martinez

(Adapted to Synoptical Table 30/08/2017)

PATOS DE MINAS (BRAZIL)

Altitude: 940 m.

Latitude: 18°36'S Longitude: 46°31'W

Temperature observation period.: 1961-1990 (30)

Rainfall observation period....: 1961-1990 (30)

(C/mm)	Ti	Mi	mi	M'i	m'i	Pi	EPI
Jan.	22.10	27.90	18.30	33.90	13.30	273.0	100.89
Feb.	22.20	29.40	18.30	33.70	14.00	194.0	88.54
Mar.	22.90	29.50	18.00	33.90	12.90	166.0	100.97
Apr.	21.20	27.70	17.20	32.20	10.00	74.0	77.90
May.	19.70	26.70	14.40	31.60	1.50	25.0	64.94
Jun.	18.50	26.00	12.70	30.30	1.90	6.0	53.74
Jul.	18.20	25.80	12.50	32.30	4.10	13.0	53.41
Aug.	20.30	28.00	14.10	34.10	4.50	13.0	72.56
Sep.	22.10	29.10	16.30	35.90	9.60	49.0	88.50
Oct.	22.20	28.50	17.60	36.50	11.50	159.0	97.48
Nov.	22.00	27.70	18.00	34.70	11.70	205.0	95.45
Dec.	21.70	27.20	18.20	35.60	14.10	297.0	96.67
Year	21.09	27.79	16.30	33.73	9.09	1474	991.05

### BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	594
Compensated thermicity index.....(Itc):	594
Simple continentality index.....(Ic):	4.7
Diurnality index.....(Id):	13.9
Annual ombrothermic index.....(Io):	5.82
Monthly dry ombrothermic index.....(Iod1):	0.32
Bimonthly dry ombrothermic index.....(Iod2):	0.52
Three monthly dry ombrothermic index.....(Iod3):	0.56
Four monthly dry ombrothermic index.....(Iod4):	0.74
Annual ombro-evaporation index.....(Ioe):	7.19
Annual positive temperature.....(Tp):	2531
Annual negative temperature.....(Tn):	0
Dry station temperature.....(Td):	570
Positive precipitation.....(Pp):	1474

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

Latitudinal Belt...: Eutropical

Continentalty.....: Hyperoceanic - High Euhyperoceanic

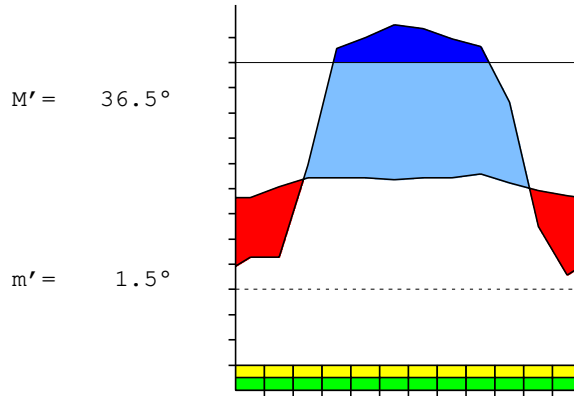
Bioclimate(Variant): TROPICAL PLUVISEASONAL (SUBXEROPHYTIC)

Bioclimatic Belt...: LOW THERMOTROPICAL UPPER SUBHUMID

PATOS DE MINAS (BRAZIL)

940 m

P= 1474      18° 36'S      46° 31'W      30/30 y.  
 T= 21.1°      Ic= 4.7      Tp= 2531      Tn= 0  
 m= 12.5°      M= 25.8°      Itc= 594      Io= 5.8



TROPICAL PLUVISEASONAL (SUBXEROPHYTIC)  
 LOW THERMOTROPICAL UPPER SUBHUMID

WATER INDEX CARD  
 Altitude: 940 m.

PATOS DE MINAS (BRAZIL)  
 Latitude: 18° 36'S

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jul.	18.2	53	13	-8	0	21	32	0	6	-0.7
Aug.	20.3	73	13	0	0	13	60	0	3	-0.8
Sep.	22.1	88	49	0	0	49	39	0	1	-0.4
Oct.	22.2	97	159	62	62	97	0	0	1	0.6
Nov.	22.0	95	205	38	100	95	0	71	36	1.1
Dec.	21.7	97	297	0	100	97	0	200	118	2.0
Jan.	22.1	101	273	0	100	101	0	172	145	1.7
Feb.	22.2	89	194	0	100	89	0	105	125	1.1
Mar.	22.9	101	166	0	100	101	0	65	95	0.6
Apr.	21.2	78	74	-4	96	78	0	0	48	0.0
May.	19.7	65	25	-40	56	65	0	0	24	-0.6
Jun.	18.5	54	6	-48	8	54	0	0	12	-0.8
Year	21.1	991	1474	*	*	860	131	614	614	*

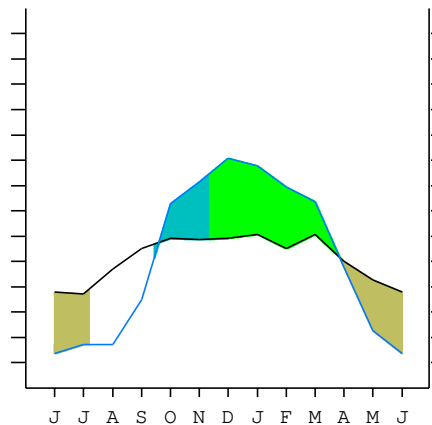
R = Reserve    VR = Variation of the reserve    RE = Real evapotranspiration  
 DR = Drainage    HC = Humidity coefficient    DF = Deficit    SP = Superavit

PATOS DE MINAS (BRAZIL)

18°36'S    46°31'W    940 m 30/30 y.

T= 21.1      Ic= 4.7      TROPICAL PLUVISEASONAL (SUBXEROPHYTIC)  
 m= 12.5      Tp= 2531      LOW THERMOTROPICAL  
 M= 25.8      Tn= 0      UPPER SUBHUMID  
 M' = 36.5      Itc= 594  
 m' = 1.5      Io= 5.8  
 P= 1474      mm ———  
 PE= 991      mm ———

Imbibing	12 Sep.
Saturation	11 Nov.
Reserve Use	29 Mar.
Deficit	7 Jul.



PATOS DE MINAS (BRAZIL)

Latitude: 18°36'S Longitude: 46°31'W Altitude: 940 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

PATOS DE MINAS (BRAZIL)

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 1294  
 Coldest semester of the year.....(Psw): 180  
 Warmest four months period of the year.....(Pcm1): 930  
 Following warmest four months period.....(Pcm2): 118  
 Positive precipitation dryest 3 months.....(Ppd): 32  
 Positive precipitation dryest 2 months.....(Ppd2): 19  
 Positive precipitation dryest 1 month.....(Ppd1): 6  
 Positive precipitation warmest 3 months.....(Pps): 633  
 Positive precipitation warmest 2 months.....(Pps2): 360  
 Positive precipitation warmest 1 month.....(Pps1): 166  
 Positive precipitation coldest 3 months.....(Ppw): 44  
 Positive precipitation coldest 2 months.....(Ppw2): 19  
 Positive precipitation coldest 1 month.....(Ppw1): 13

Seasons	Jun+Jul+Aug Ttr3-3	Sep+Oct+Nov Ttr4-4	Dec+Jan+Feb Ttr1-1	Mar+Apr+May Ttr2-2
Rainfall	32	413	764	265

Tropical rainfall rhythms: 1 > 4 > 2 > 3

PATOS DE MINAS (BRAZIL)

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 22.9  
 Average coldest month [T].....(Tmin): 18.2  
 Maximum temp. warmest month [M].....(Tmmax): 29.5  
 Minimum temp. coldest month [m].....(Tmmin): 12.5  
 Absolute Max.temp. warmest month [M'].....(Tamax): 36.5  
 Absolute Min.temp. coldest month [m'].....(Tamin): 1.5  
 First warmest contrasted month [M].....(Tcmax): 28.0 (8)  
 First coldest contrasted month [m].....(Tcmin): 14.1 (8)  
 Dry station temperature.....(Td): 570  
 Positive temperature dryest 3 months.....(Tpd): 570  
 Positive temperature dryest 2 months.....(Tpd2): 367  
 Positive temperature dryest 1 month.....(Tpd1): 185  
 Positive temperature warmest 3 months.....(Tps): 672  
 Positive temperature warmest 2 months.....(Tps2): 451  
 Positive temperature warmest 1 month.....(Tps1): 229  
 Positive temperature coldest 3 months.....(Tpw): 564  
 Positive temperature coldest 2 months.....(Tpw2): 367  
 Positive temperature coldest 1 month.....(Tpw1): 182

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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

PATOS DE MINAS (BRAZIL)

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OMBROTHERMIC PARAMETERS

Annual aridity index.[PE/P].....(Iar): 0.67  
 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)	2970	2730	1940	1660	740	250	60	130	130	490	1590	2050
Tp	217	221	222	229	212	197	185	182	203	221	222	220
Io (Iom)	13.7	12.4	8.74	7.25	3.49	1.27	0.32	0.71	0.64	2.22	7.16	9.32
Seasons	Dec+Jan+Feb			Mar+Apr+May			Jun+Jul+Aug			Sep+Oct+Nov		
Pp(x10)/Tp	7640 / 660			2650 / 638			320 / 570			4130 / 663		
Io (Iot)	11.58			4.154			0.561			6.229		
Semesters	December-May						June-November					
Pp(x10)/Tp	10290 / 1298						4450 / 1233					
Io (Iosm)	7.928						3.609					

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 14740/2531=5.82 **There is No Yearly Aridity**

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	2970	2730	1940	1660	740	250	60	130	130	490	1590	2050
Tp [T*10]	217	221	222	229	212	197	185	182	203	221	222	220
Iom [Pp/Tp]	\$\$	\$\$	874	725	349	127	32	71	64	222	716	932
Avm [200-Iom]	***	***	***	***	***	73	168	129	136	***	***	***
Seasons	Dec+Jan+Feb			Mar+Apr+May			Jun+Jul+Aug			Sep+Oct+Nov		
Pp / Tp	7640 / 660			2650 / 638			320 / 570			4130 / 663		
Iot [Pp/Tp]	1158			415			56			623		
Avs E[Avm<200]	***			***			432			***		
Upper hyperarid [1]							Weak lower arid [2]					
Strong upper arid [1]							Weak lower semiarid [1]					

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin] .....	(Sp):	4.70
CI of Gorezinski (1920) [1.7*Sp/sin(Lat)-20.4] .....		4.65
CI of Conrad (1946) [1.7*Sp/sin(Lat+10)-14] .....		2.69
+ Hyperoceanic (-20<CI<20)		
CI of Currey (1974) [CI=Sp/(1+Lat/3)] .....		0.65
+ Oceanic (0.6<CI<1.1)		
Rainfall Index of Lang (1925) [R=P/T] .....		69.89
+ Temperate warm (100>R>60)		
Aridity Index of Martonne (1926) [Ia=P/(T+10)] .....		47.41
+ Humid (60>Ia>30)		
I of Emberger (1930) [Q=100*P/(Tmax <sup>2</sup> -Tmin <sup>2</sup> )] .....		206.44
+ Humid (Q>90)		
I of Dantin & Revenga (1940) [DR=100*T/P] .....		1.43
+ Humid (2>DR>0)		
Aridity Index of UNEP [I=P/PE] .....		1.49
+ Humid (I>0.65)		
Potential Erosion I of Fournier (1960) [K=Pi <sup>2</sup> /P] .....		59.84
+ Very low (K<60)		

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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	1.21	0.82	0.68	0.29	0.09	0.02	0.05	0.04	0.18	0.66	0.88	1.34
T-E ratio	9.95	9.99	10.30	9.54	8.87	8.32	8.19	9.13	9.95	9.99	9.90	9.77
Precipitation-effectiveness: 62.53						Temperature-efficiency .....						113.90
Moisture Index [MI=100*(P-PE)/PE] .....												48.73
+ B2.Humid medium-humid (40<MI<60)												
Index of dryness [DI=100*d/PE] .....												13.22
+ No deficit (0<DI<16.7)												
Index of humidity [HI=100*s/PE] .....												61.94
+ Strong surplus (20<HI)												
Potential Evapotranspiration PE .....												991.05
+ Third mesothermic (855<PE<997)												

