

Phytosociological Research Center

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Worldwide Bioclimatic Classification System

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(Adapted to Synoptical Table 14/02/2020)

SAO JOAQUIN (BRAZIL) Altitude: 1402 m.

Latitude: 28°17'S Longitude: 49°55'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.	16.90	23.10	12.90	30.40	4.10	167.0	87.77
Feb.	17.20	23.10	13.30	35.80	4.20	161.0	77.67
Mar.	16.00	21.70	12.40	28.80	0.30	133.0	73.32
Apr.	13.30	18.80	9.70	26.90	-2.20	106.0	51.41
May.	11.10	16.30	7.60	25.00	-6.80	111.0	39.58
Jun.	9.60	14.70	5.90	22.40	-7.20	120.0	30.53
Jul.	9.40	14.70	5.70	26.80	-7.20	139.0	31.05
Aug.	10.40	16.00	6.40	26.00	-8.20	170.0	37.86
Sep.	11.40	17.10	7.30	28.00	-7.50	169.0	44.09
Oct.	12.90	18.90	8.70	27.90	-2.40	153.0	57.68
Nov.	14.50	20.60	10.20	32.00	0.30	134.0	68.58
Dec.	15.90	22.20	11.70	31.40	1.40	130.0	82.31
Year	13.22	18.93	9.32	28.45	-2.60	1693	681.85

BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	336
Compensated thermicity index.....(Itc):	334
Simple continentality index.....(Ic):	7.8
Diurnality index.....(Id):	10.5
Annual ombrothermic index.....(Io):	10.67
Monthly dry ombrothermic index.....(Iod1):	7.97
Bimonthly dry ombrothermic index.....(Iod2):	8.89
Threemonthly dry ombrothermic index.....(Iod3):	9.91
Fourmonthly dry ombrothermic index.....(Iod4):	9.40
Annual ombro-evaporation index.....(Ioe):	2.48
Annual positive temperature.....(Tp):	1586
Annual negative temperature.....(Tn):	0
Dry station temperature.....(Td):	340
Positive precipitation.....(Pp):	1693

N. of Months	P>4T	P:2T-4T	PT-2T	P<T	T<0
	12	0	0	0	0

Latitudinal Belt...: Subtropical

Continentality.....: Hyperoceanic - Low Euhyperoceanic

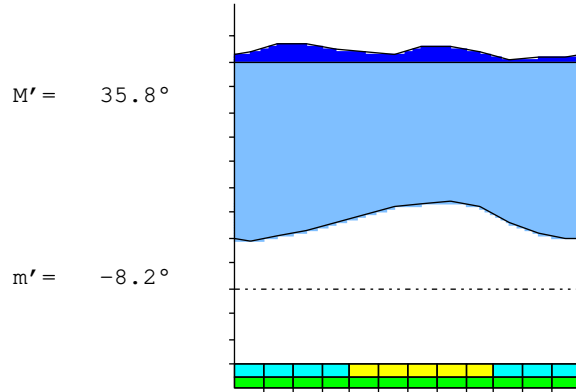
Bioclimate(Variant): TROPICAL PLUVIAL (HYGROPHYTIC)

Bioclimatic Belt...: UPPER MESOTROPICAL UPPER HUMID

SAO JOAQUIN (BRAZIL)

1402 m

P= 1693 28° 17' S 49° 55' W 30/30 y.
 T= 13.2 ° Ic= 7.8 Tp= 1586 Tn= 0
 m= 5.7 ° M= 14.7 ° Itc= 334 Io= 10.7



TROPICAL PLUVIAL (HYGROPHYTIC)
 UPPER MESOTROPICAL UPPER HUMID

WATER INDEX CARD SAO JOAQUIN (BRAZIL)
 Altitude: 1402 m. Latitude: 28° 17' S

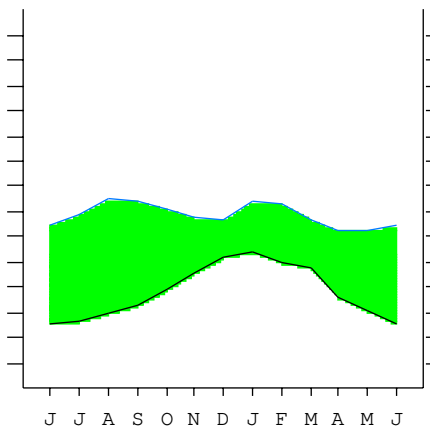
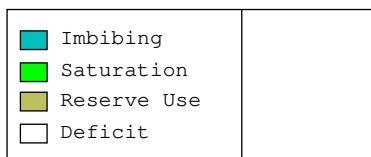
(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jul.	9.4	31	139	0	100	31	0	108	93	3.4
Aug.	10.4	38	170	0	100	38	0	132	113	3.4
Sep.	11.4	44	169	0	100	44	0	125	119	2.8
Oct.	12.9	58	153	0	100	58	0	95	107	1.6
Nov.	14.5	69	134	0	100	69	0	65	86	0.9
Dec.	15.9	82	130	0	100	82	0	48	67	0.5
Jan.	16.9	88	167	0	100	88	0	79	73	0.9
Feb.	17.2	78	161	0	100	78	0	83	78	1.0
Mar.	16.0	73	133	0	100	73	0	60	69	0.8
Apr.	13.3	51	106	0	100	51	0	55	62	1.0
May.	11.1	40	111	0	100	40	0	71	67	1.8
Jun.	9.6	31	120	0	100	31	0	89	78	2.9
Year	13.2	682	1693	*	*	682	0	1011	1011	*

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

SAO JOAQUIN (BRAZIL)

28°17' S 49°55' W 1402 m 30/30 y.

T= 13.2 Ic= 7.8 TROPICAL PLUVIAL (HYGROPHYTIC)
 m= 5.7 Tp= 1586 UPPER MESOTROPICAL
 M= 14.7 Tn= 0 UPPER HUMID
 M' = 35.8 Itc= 334
 m' = -8.2 Io= 10.7
 P= 1693 mm ————
 PE= 682 mm ————



All over the year,
 there is no hydric deficit

SAO JOAQUIN (BRAZIL)

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SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continentality Index [A2b]
 + Type: A. Hyperoceanic
 + Subtype: 2. Euhyperoceanic
 + Variant: b. Low
 Thermic types [A3.B4]
 + Latitudinal zone: A. Warm
 + Latitudinal belt: 3. Subtropical
 + Thermic type: B. Temperate
 + Thermic subtype: 4. Temperate
 Bioclimatic types [A5.3a.7a]
 + Macrobioclimate: A. TROPICAL
 + Bioclimate: 5. PLUVIAL
 + Bioclimatic variant .: HYGROPHYTIC
 + Thermic type.....: 3. MESOTROPICAL
 + Thermic subtype.....: a. UPPER
 + Ombrothermic type ...: 7. HUMID
 + Ombrothermic subtype : a. UPPER
 Bioclimatic ClassificationTrpl (Hig) .Mtr.Hum.Eho

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 831
 Coldest semester of the year.....(Psw): 862
 Warmest four months period of the year.....(Pcm1): 591
 Following warmest four months period.....(Pcm2): 476
 Positive precipitation dryest 3 months.....(Ppd): 337
 Positive precipitation dryest 2 months.....(Ppd2): 217
 Positive precipitation dryest 1 month.....(Ppd1): 106
 Positive precipitation warmest 3 months.....(Pps): 461
 Positive precipitation warmest 2 months.....(Pps2): 328
 Positive precipitation warmest 1 month.....(Pps1): 161
 Positive precipitation coldest 3 months.....(Ppw): 429
 Positive precipitation coldest 2 months.....(Ppw2): 259
 Positive precipitation coldest 1 month.....(Ppw1): 139

Seasons	Winter Tr1-W	Spring Tr2-P	Summer Tr3-S	Automn Tr4-F
Rainfall	429	456	458	350

Seasonal rainfall rhythms: S > P > W > F

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 17.2
 Average coldest month [T].....(Tmin): 9.4
 Maximum temp. warmest month [M].....(Tmax): 23.1
 Minimum temp. coldest month [m].....(Tmin): 5.7
 Absolute Max.temp. warmest month [M'].....(Tamax): 35.8
 Absolute Min.temp. coldest month [m'].....(Tamin): -8.2
 First warmest contrasted month [M].....(Tcmax): 22.2 (12)
 First coldest contrasted month [m].....(Tcmin): 11.7 (12)
 Dry station temperature.....(Td): 340
 Positive temperature dryest 3 months.....(Tpd): 340
 Positive temperature dryest 2 months.....(Tpd2): 244
 Positive temperature dryest 1 month.....(Tpd1): 133
 Positive temperature warmest 3 months.....(Tps): 501
 Positive temperature warmest 2 months.....(Tps2): 341
 Positive temperature warmest 1 month.....(Tps1): 172
 Positive temperature coldest 3 months.....(Tpw): 294
 Positive temperature coldest 2 months.....(Tpw2): 190
 Positive temperature coldest 1 month.....(Tpw1): 94

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

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OMBROTHERMIC PARAMETERS

Annual aridity index.[PE/P].....(Iar): 0.40
 Mediterranean index of January.....(Im1): 0.53
 Mediterranean index of January & February.....(Im2): 0.50
 Mediterranean index of December to February...(Im3): 0.54

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp(x10)	1300	1670	1610	1330	1060	1110	1200	1390	1700	1690	1530	1340
Tp	159	169	172	160	133	111	96	94	104	114	129	145
Io (Iom)	8.18	9.88	9.36	8.31	7.97	10.00	12.5	14.8	16.3	14.8	11.9	9.24
Seasons	Summer			Autumn			Winter			Spring		
Pp(x10)/Tp	4580 / 500			3500 / 404			4290 / 294			4560 / 388		
Io (Iot)	9.160			8.663			14.59			11.75		
Semesters	December-May						June-November					
Pp(x10)/Tp	8080 / 904						8850 / 682					
Io (Iosm)	8.938						12.98					

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 16930/1586=10.67 There is No Yearly Aridity

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	1300	1670	1610	1330	1060	1110	1200	1390	1700	1690	1530	1340
Tp [T*10]	159	169	172	160	133	111	96	94	104	114	129	145
Iom [Pp/Tp]	818	988	936	831	797	\$\$	\$\$	\$\$	\$\$	\$\$	\$\$	924
Avm [200-Iom]	***	***	***	***	***	***	***	***	***	***	***	***
Seasons	Summer			Autumn			Winter			Spring		
Pp / Tp	4580 / 500			3500 / 404			4290 / 294			4560 / 388		
Iot [Pp/Tp]	916			866			1459			1175		
Avs E [Avm<200]	***			***			***			***		

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin](Sp): 7.80
 CI of Gorezinski (1920) [1.7*Sp/sin(Lat)-20.4]: 7.58
 CI of Conrad (1946) [1.7*Sp/sin(Lat+10)-14]: 7.40
 + 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]: 128.10
 + Temperate humid (160>R>100)
 Aridity Index of Martonne (1926) [Ia=P/(T+10)]: 72.92
 + Perhumid (Ia>60)
 I of Emberger (1930) [Q=100*P/(Tmmax²-Tmmin²)]: 337.84
 + Humid (Q>90)
 I of Dantin & Revenga (1940) [DR=100*T/P]: 0.78
 + Humid (2>DR>0)
 Aridity Index of UNEP [I=P/PE]: 2.48
 + Humid (I>0.65)
 Potential Erosion I of Fournier (1960) [K=Pi²/P].....: 17.07
 + Very low (K<60)

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BIOCLIMATIC INDICES II

Bioclimatic classification of Gaussen & Bagnouls (1957)
 + Climate: A. Warm and temperate warm
 + Region: 7. Mesoaxeric (Axeric temperate)
 + Thermic type: 4. Mesothermic

Thornthwaite (1948)												
	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
P-E ratio	0.80	0.76	0.64	0.54	0.60	0.69	0.82	0.99	0.95	0.82	0.67	0.62
T-E ratio	7.60	7.74	7.20	5.99	5.00	4.32	4.23	4.68	5.13	5.80	6.52	7.15
Precipitation-effectiveness: 89.04						Temperature-efficiency: 71.37						
Moisture Index [MI=100*(P-PE)/PE]: 148.29 + A.Extremely humid (MI>100)												
Index of dryness [DI=100*d/PE]: 0.00 + No deficit (0<DI<16.7)												
Index of humidity [HI=100*s/PE]: 148.29 + Strong surplus (20<HI)												
Potential Evapotranspiration PE: 681.85 + First mesothermic (570<PE<712)												

