

Phytosociological Research Center

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Worldwide Bioclimatic Classification System

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(Adapted to Synoptical Table 30/08/2017)

PORTO ALEGRE (BRAZIL)

Altitude: 47 m.

Latitude: 30°1'S Longitude: 51°13'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.	24.60	30.20	20.50	39.10	11.40	100.0	138.53
Feb.	24.70	30.10	20.80	37.90	12.60	109.0	119.91
Mar.	23.10	28.30	19.30	38.10	9.60	104.0	107.30
Apr.	20.10	25.20	16.30	34.60	6.80	86.0	71.92
May.	16.80	22.10	13.00	32.60	3.30	95.0	47.89
Jun.	14.30	19.40	10.70	31.50	0.70	133.0	31.61
Jul.	14.50	19.70	10.70	32.90	1.20	122.0	34.45
Aug.	15.30	20.40	11.50	34.90	1.10	140.0	41.11
Sep.	16.80	21.80	13.10	35.80	2.20	140.0	52.06
Oct.	19.20	24.40	15.00	36.50	6.20	114.0	77.05
Nov.	21.30	26.70	17.00	39.80	8.70	104.0	97.41
Dec.	23.20	29.00	18.90	39.20	11.40	101.0	123.59
Year	19.49	24.77	15.57	36.07	6.27	1348	942.84

BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	496
Compensated thermicity index.....(Itc):	496
Simple continentality index.....(Ic):	10.4
Diurnality index.....(Id):	10.1
Annual ombrothermic index.....(Io):	5.76
Monthly dry ombrothermic index.....(Iod1):	4.28
Bimonthly dry ombrothermic index.....(Iod2):	4.91
Three monthly dry ombrothermic index.....(Iod3):	4.75
Four monthly dry ombrothermic index.....(Iod4):	4.65
Annual ombro-evaporation index.....(Ioe):	0.81
Annual positive temperature.....(Tp):	2339
Annual negative temperature.....(Tn):	0
Dry station temperature.....(Td):	600
Positive precipitation.....(Pp):	1348

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

Latitudinal Belt...: Subtropical

Continentalty.....: Hyperoceanic - Low Subhyperoceanic

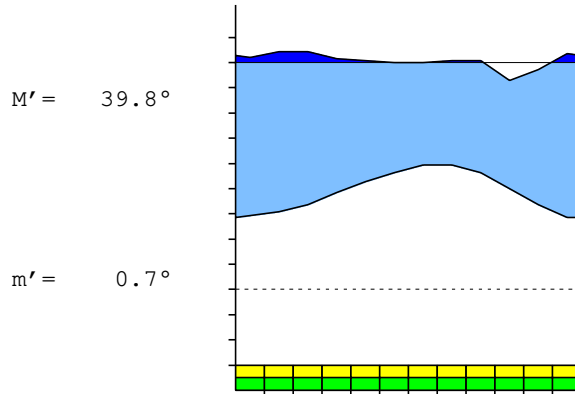
Bioclimate(Variant): TROPICAL PLUVIAL (HYGROPHYTIC)

Bioclimatic Belt...: UPPER THERMOTROPICAL UPPER SUBHUMID

PORTO ALEGRE (BRAZIL)

47 m

P= 1348 30° 1'S 51° 13'W 30/30 y.
 T= 19.5° Ic= 10.4 Tp= 2339 Tn= 0
 m= 10.7° M= 19.4° Itc= 496 Io= 5.8



TROPICAL PLUVIAL (HYGROPHYTIC)
 UPPER THERMOTROPICAL UPPER SUBHUMID

WATER INDEX CARD PORTO ALEGRE (BRAZIL)
 Altitude: 47 m. Latitude: 30° 1'S

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jul.	14.5	34	122	0	100	34	0	88	66	2.5
Aug.	15.3	41	140	0	100	41	0	99	82	2.4
Sep.	16.8	52	140	0	100	52	0	88	85	1.6
Oct.	19.2	77	114	0	100	77	0	37	61	0.4
Nov.	21.3	97	104	0	100	97	0	7	34	0.0
Dec.	23.2	124	101	-23	77	124	0	0	17	-0.1
Jan.	24.6	139	100	-39	39	139	0	0	8	-0.2
Feb.	24.7	120	109	-11	28	120	0	0	4	0.0
Mar.	23.1	107	104	-3	25	107	0	0	2	0.0
Apr.	20.1	72	86	14	39	72	0	0	1	0.1
May.	16.8	48	95	47	86	48	0	0	1	0.9
Jun.	14.3	32	133	14	100	32	0	87	44	3.2
Year	19.5	943	1348	*	*	943	0	405	405	*

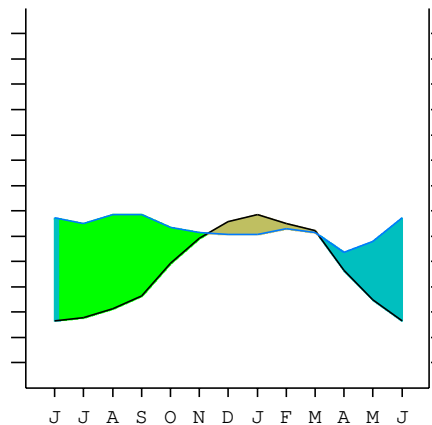
R = Reserve VR = Variation of the reserve RE = Real evapotranspiration
 DR = Drainage HC = Humidity coefficient DF = Deficit SP = Superavit

PORTO ALEGRE (BRAZIL)

30°1'S 51°13'W 47 m 30/30 y.

T= 19.5 Ic= 10.4 TROPICAL PLUVIAL (HYGROPHYTIC)
 m= 10.7 Tp= 2339 UPPER THERMOTROPICAL
 M= 19.4 Tn= 0 UPPER SUBHUMID
 M' = 39.8 Itc= 496
 m' = 0.7 Io= 5.8
 P= 1348 mm ————
 PE= 943 mm ————

Imbibing	6 Mar.
Saturation	5 Jun.
Reserve Use	7 Nov.
Deficit	



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SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continental Index [A3b]
 + Type: A. Hyperoceanic
 + Subtype: 3. Subhyperoceanic
 + Variant: b. Low

Thermic types [A3.A2]
 + Latitudinal zone: A. Warm
 + Latitudinal belt: 3. Subtropical
 + Thermic type: A. Warm
 + Thermic subtype: 2. Warm

Bioclimatic types [A5.2a.6a]
 + Macrobioclimate: A. TROPICAL
 + Bioclimate: 5. PLUVIAL
 + Bioclimatic variant ..:
 + Thermic type.....: 2. THERMOTROPICAL
 + Thermic subtype.....: a. UPPER
 + Ombrothermic type ...: 6. SUBHUMID
 + Ombrothermic subtype : a. UPPER

Bioclimatic Classification: Trhd.Ttr.Shu

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 604
 Coldest semester of the year.....(Psw): 744
 Warmest four months period of the year.....(Pcm1): 414
 Following warmest four months period.....(Pcm2): 436
 Positive precipitation dryest 3 months.....(Ppd): 285
 Positive precipitation dryest 2 months.....(Ppd2): 181
 Positive precipitation dryest 1 month.....(Ppd1): 86
 Positive precipitation warmest 3 months.....(Pps): 310
 Positive precipitation warmest 2 months.....(Pps2): 209
 Positive precipitation warmest 1 month.....(Pps1): 109
 Positive precipitation coldest 3 months.....(Ppw): 395
 Positive precipitation coldest 2 months.....(Ppw2): 255
 Positive precipitation coldest 1 month.....(Ppw1): 133

Seasons	Winter Tr1-W	Spring Tr2-P	Summer Tr3-S	Automn Tr4-F
Rainfall	395	358	310	285

Seasonal rainfall rhythms: W > P > S > F

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 24.7
 Average coldest month [T].....(Tmin): 14.3
 Maximum temp. warmest month [M].....(Tmmax): 30.2
 Minimum temp. coldest month [m].....(Tmmin): 10.7
 Absolute Max.temp. warmest month [M'].....(Tamax): 39.8
 Absolute Min.temp. coldest month [m'].....(Tamin): 0.7
 First warmest contrasted month [M].....(Tcmax): 29.0 (12)
 First coldest contrasted month [m].....(Tcmin): 18.9 (12)
 Dry station temperature.....(Td): 600
 Positive temperature dryest 3 months.....(Tpd): 600
 Positive temperature dryest 2 months.....(Tpd2): 369
 Positive temperature dryest 1 month.....(Tpd1): 201
 Positive temperature warmest 3 months.....(Tps): 725
 Positive temperature warmest 2 months.....(Tps2): 493
 Positive temperature warmest 1 month.....(Tps1): 247
 Positive temperature coldest 3 months.....(Tpw): 441
 Positive temperature coldest 2 months.....(Tpw2): 288
 Positive temperature coldest 1 month.....(Tpw1): 143

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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): 0.70
 Mediterranean index of January.....(Im1): 1.39
 Mediterranean index of January & February.....(Im2): 1.24
 Mediterranean index of December to February...(Im3): 1.23

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp(x10)	1010	1000	1090	1040	860	950	1330	1220	1400	1400	1140	1040
Tp	232	246	247	231	201	168	143	145	153	168	192	213
Io (Iom)	4.35	4.07	4.41	4.50	4.28	5.65	9.30	8.41	9.15	8.33	5.94	4.88
Seasons	Summer			Autumn			Winter			Spring		
Pp(x10)/Tp	3100 / 725			2850 / 600			3950 / 441			3580 / 573		
Io (Iot)	4.276			4.750			8.957			6.248		
Semesters	December-May						June-November					
Pp(x10)/Tp	5950 / 1325						7530 / 1014					
Io (Iosm)	4.491						7.426					

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 13480/2339=5.76 **There is No Yearly Aridity**

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	1010	1000	1090	1040	860	950	1330	1220	1400	1400	1140	1040
Tp [T*10]	232	246	247	231	201	168	143	145	153	168	192	213
Iom [Pp/Tp]	435	407	441	450	428	565	930	841	915	833	594	488
Avm [200-Iom]	***	***	***	***	***	***	***	***	***	***	***	***
Seasons	Summer			Autumn			Winter			Spring		
Pp / Tp	3100 / 725			2850 / 600			3950 / 441			3580 / 573		
Iot [Pp/Tp]	428			475			896			625		
Avs E[Avm<200]	***			***			***			***		

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin]	(Sp):	10.40
CI of Gorezinski (1920) [1.7*Sp/sin(Lat)-20.4]		14.94
CI of Conrad (1946) [1.7*Sp/sin(Lat+10)-14]		13.50
+ Hyperoceanic (-20<CI<20)		
CI of Currey (1974) [CI=Sp/(1+Lat/3)]		0.94
+ Oceanic (0.6<CI<1.1)		
Rainfall Index of Lang (1925) [R=P/T]		69.16
+ Temperate warm (100>R>60)		
Aridity Index of Martonne (1926) [Ia=P/(T+10)]		45.71
+ Humid (60>Ia>30)		
I of Emberger (1930) [Q=100*P/(Tmax ² -Tmin ²)]		169.02
+ Humid (Q>90)		
I of Dantin & Revenga (1940) [DR=100*T/P]		1.45
+ Humid (2>DR>0)		
Aridity Index of UNEP [I=P/PE]		1.43
+ Humid (I>0.65)		
Potential Erosion I of Fournier (1960) [K=Pi ² /P]		14.54
+ 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	0.37	0.41	0.40	0.35	0.43	0.67	0.60	0.69	0.66	0.49	0.42	0.39	
T-E ratio	11.07	11.12	10.40	9.05	7.56	6.44	6.52	6.89	7.56	8.64	9.58	10.44	
Precipitation-effectiveness:	58.86					Temperature-efficiency							105.26
Moisture Index [MI=100*(P-PE)/PE]												42.97	
+ B2.Humid medium-humid (40<MI<60)													
Index of dryness [DI=100*d/PE]												0.00	
+ No deficit (0<DI<16.7)													
Index of humidity [HI=100*s/PE]												42.97	
+ Strong surplus (20<HI)													
Potential Evapotranspiration PE												942.84	
+ Third mesothermic (855<PE<997)													

