

Phytosociological Research Center

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Worldwide Bioclimatic Classification System

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(Adapted to Synoptical Table 30/08/2017)

PORTO UNIAO (BRAZIL)

Altitude: 778 m.

Latitude: 26°14'S Longitude: 51°4'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.	21.90	29.10	17.10	35.90	8.40	141.0	111.97
Feb.	21.70	29.00	17.40	36.10	7.40	157.0	95.09
Mar.	20.60	27.70	16.30	34.80	15.20	132.0	90.07
Apr.	17.30	24.30	13.00	33.20	1.50	108.0	60.26
May.	14.70	21.70	10.30	30.20	-1.10	142.0	44.09
Jun.	12.30	19.00	8.00	28.40	-3.70	121.0	30.01
Jul.	12.40	19.30	7.80	28.80	-3.30	128.0	31.83
Aug.	13.70	21.00	8.80	31.50	-6.10	114.0	40.11
Sep.	15.50	22.60	10.80	34.20	-2.70	152.0	51.57
Oct.	17.90	25.00	13.00	33.80	1.20	169.0	74.06
Nov.	19.70	27.20	14.50	38.00	3.90	139.0	88.69
Dec.	21.20	28.20	16.40	36.20	5.30	175.0	107.46
Year	17.41	24.51	12.78	33.42	2.17	1678	825.21

BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	444
Compensated thermicity index.....(Itc):	444
Simple continentality index.....(Ic):	9.6
Diurnality index.....(Id):	12.7
Annual ombrothermic index.....(Io):	8.03
Monthly dry ombrothermic index.....(Iod1):	8.32
Bimonthly dry ombrothermic index.....(Iod2):	9.27
Three monthly dry ombrothermic index.....(Iod3):	9.45
Four monthly dry ombrothermic index.....(Iod4):	9.51
Annual ombro-evaporation index.....(Ioe):	1.19
Annual positive temperature.....(Tp):	2089
Annual negative temperature.....(Tn):	0
Dry station temperature.....(Td):	384
Positive precipitation.....(Pp):	1678

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

Latitudinal Belt...: Subtropical

Continentalty.....: Hyperoceanic - High Subhyperoceanic

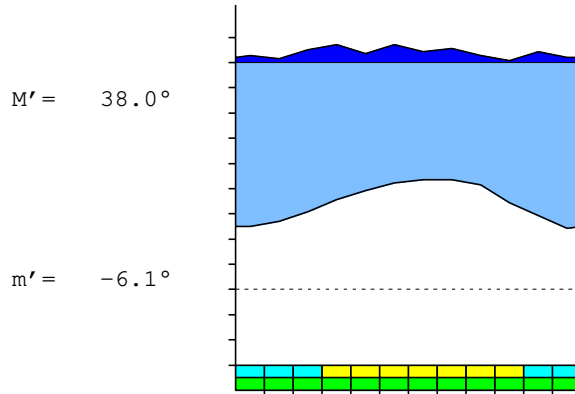
Bioclimate(Variant): TROPICAL PLUVIAL (HYGROPHYTIC)

Bioclimatic Belt...: LOW MESOTROPICAL LOW HUMID

PORTO UNIAO (BRAZIL)

778 m

P= 1678 26° 14'S 51° 4'W 30/30 y.
 T= 17.4° Ic= 9.6 Tp= 2089 Tn= 0
 m= 8.0° M= 19.0° Itc= 444 Io= 8.0



TROPICAL PLUVIAL (HYGROPHYTIC)
 LOW MESOTROPICAL LOW HUMID

WATER INDEX CARD

PORTO UNIAO (BRAZIL)

Altitude: 778 m.

Latitude: 26° 14'S

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jul.	12.4	32	128	0	100	32	0	96	89	3.0
Aug.	13.7	40	114	0	100	40	0	74	81	1.8
Sep.	15.5	52	152	0	100	52	0	100	91	1.9
Oct.	17.9	74	169	0	100	74	0	95	93	1.2
Nov.	19.7	89	139	0	100	89	0	50	72	0.5
Dec.	21.2	107	175	0	100	107	0	68	70	0.6
Jan.	21.9	112	141	0	100	112	0	29	49	0.2
Feb.	21.7	95	157	0	100	95	0	62	56	0.6
Mar.	20.6	90	132	0	100	90	0	42	49	0.4
Apr.	17.3	60	108	0	100	60	0	48	48	0.7
May.	14.7	44	142	0	100	44	0	98	73	2.2
Jun.	12.3	30	121	0	100	30	0	91	82	3.0
Year	17.4	825	1678	*	*	825	0	853	853	*

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

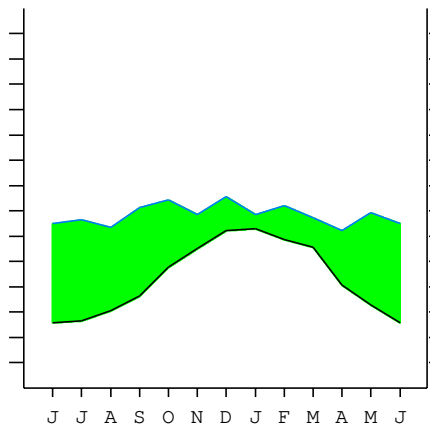
PORTO UNIAO (BRAZIL)

26°14'S 51°4'W 778 m 30/30 y.

T= 17.4 Ic= 9.6 TROPICAL PLUVIAL (HYGROPHYTIC)
 m= 8.0 Tp= 2089 LOW MESOTROPICAL
 M= 19.0 Tn= 0 LOW HUMID
 M' = 38.0 Itc= 444
 m' = -6.1 Io= 8.0
 P= 1678 mm ———
 PE= 825 mm ———

Imbibing	
Saturation	
Reserve Use	
Deficit	

All over the year,
 there is no hydric deficit



PORTO UNIAO (BRAZIL)

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SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continental Index [A3a]
 + Type: A. Hyperoceanic
 + Subtype: 3. Subhyperoceanic
 + Variant: a. High

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): 913
 Coldest semester of the year.....(Psw): 765
 Warmest four months period of the year.....(Pcm1): 605
 Following warmest four months period.....(Pcm2): 499
 Positive precipitation dryest 3 months.....(Ppd): 363
 Positive precipitation dryest 2 months.....(Ppd2): 240
 Positive precipitation dryest 1 month.....(Ppd1): 108
 Positive precipitation warmest 3 months.....(Pps): 473
 Positive precipitation warmest 2 months.....(Pps2): 298
 Positive precipitation warmest 1 month.....(Pps1): 141
 Positive precipitation coldest 3 months.....(Ppw): 363
 Positive precipitation coldest 2 months.....(Ppw2): 249
 Positive precipitation coldest 1 month.....(Ppw1): 121

Seasons	Winter Tr1-W	Spring Tr2-P	Summer Tr3-S	Automn Tr4-F
Rainfall	363	460	473	382

Seasonal rainfall rhythms: S > P > F > W

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 21.9
 Average coldest month [T].....(Tmin): 12.3
 Maximum temp. warmest month [M].....(Tmmax): 29.1
 Minimum temp. coldest month [m].....(Tmmin): 7.8
 Absolute Max.temp. warmest month [M'].....(Tamax): 38.0
 Absolute Min.temp. coldest month [m'].....(Tamin): -6.1
 First warmest contrasted month [M].....(Tcmax): 27.2 (11)
 First coldest contrasted month [m].....(Tcmin): 14.5 (11)
 Dry station temperature.....(Td): 384
 Positive temperature dryest 3 months.....(Tpd): 384
 Positive temperature dryest 2 months.....(Tpd2): 379
 Positive temperature dryest 1 month.....(Tpd1): 173
 Positive temperature warmest 3 months.....(Tps): 648
 Positive temperature warmest 2 months.....(Tps2): 436
 Positive temperature warmest 1 month.....(Tps1): 219
 Positive temperature coldest 3 months.....(Tpw): 384
 Positive temperature coldest 2 months.....(Tpw2): 247
 Positive temperature coldest 1 month.....(Tpw1): 123

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

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OMBROTHERMIC PARAMETERS

Annual aridity index.[PE/P].....(Iar): 0.49
 Mediterranean index of January.....(Im1): 0.79
 Mediterranean index of January & February.....(Im2): 0.69
 Mediterranean index of December to February...(Im3): 0.66

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp(x10)	1750	1410	1570	1320	1080	1420	1210	1280	1140	1520	1690	1390
Tp	212	219	217	206	173	147	123	124	137	155	179	197
Io (Iom)	8.25	6.44	7.24	6.41	6.24	9.66	9.84	10.3	8.32	9.81	9.44	7.06
Seasons	Summer			Autumn			Winter			Spring		
Pp(x10)/Tp	4730 / 648			3820 / 526			3630 / 384			4600 / 531		
Io (Iot)	7.299			7.262			9.453			8.663		
Semesters	December-May						June-November					
Pp(x10)/Tp	8550 / 1174						8230 / 915					
Io (Iosm)	7.283						8.995					

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 16780/2089=8.03 **There is No Yearly Aridity**

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	1750	1410	1570	1320	1080	1420	1210	1280	1140	1520	1690	1390
Tp [T*10]	212	219	217	206	173	147	123	124	137	155	179	197
Iom [Pp/Tp]	825	644	724	641	624	966	984	\$\$	832	981	944	706
Avm [200-Iom]	***	***	***	***	***	***	***	***	***	***	***	***
Seasons	Summer			Autumn			Winter			Spring		
Pp / Tp	4730 / 648			3820 / 526			3630 / 384			4600 / 531		
Iot [Pp/Tp]	730			726			945			866		
Avs E[Avm<200]	***			***			***			***		

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin]	(Sp): 9.60
CI of Gorezinski (1920) [1.7*Sp/sin(Lat)-20.4]	16.52
CI of Conrad (1946) [1.7*Sp/sin(Lat+10)-14]	13.61
+ Hyperoceanic (-20<CI<20)	
CI of Currey (1974) [CI=Sp/(1+Lat/3)]	0.99
+ Oceanic (0.6<CI<1.1)	
Rainfall Index of Lang (1925) [R=P/T]	96.39
+ Temperate warm (100>R>60)	
Aridity Index of Martonne (1926) [Ia=P/(T+10)]	61.22
+ Perhumid (Ia>60)	
I of Emberger (1930) [Q=100*P/(Tmax ² -Tmin ²)]	213.49
+ Humid (Q>90)	
I of Dantin & Revenga (1940) [DR=100*T/P]	1.04
+ Humid (2>DR>0)	
Aridity Index of UNEP [I=P/PE]	2.03
+ Humid (I>0.65)	
Potential Erosion I of Fournier (1960) [K=Pi ² /P]	18.25
+ Very low (K<60)	

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BIOCLIMATIC INDICES II

Bioclimatic classification of Gaussen & Bagnouls (1957)
 + Climate

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

Thornthwaite (1948)												
	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
P-E ratio	0.58	0.66	0.56	0.49	0.71	0.64	0.68	0.57	0.75	0.79	0.61	0.75
T-E ratio	9.85	9.77	9.27	7.78	6.61	5.54	5.58	6.16	6.97	8.05	8.87	9.54
Precipitation-effectiveness: 77.85						Temperature-efficiency						94.01
Moisture Index [MI=100*(P-PE)/PE]												103.34
+ 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]												103.33
+ Strong surplus (20<HI)												
Potential Evapotranspiration PE												825.21
+ Second mesothermic (712<PE<855)												

