

# Phytosociological Research Center

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## Worldwide Bioclimatic Classification System

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(Adapted to Synoptical Table 14/02/2020)

PORTO VELHO (BRAZIL)

Altitude: 95 m.

Latitude: 8°46'S Longitude: 63°5'W

Temperature observation period.: 1975-1990 (16)

Rainfall observation period....: 1975-1990 (16)

(C/mm)	Ti	Mi	mi	M'i	m'i	Pi	EPI
Jan.	25.00	30.30	21.70	35.20	15.40	347.0	120.63
Feb.	25.50	30.60	21.80	36.00	15.40	296.0	114.42
Mar.	25.70	28.50	21.80	34.20	14.00	313.0	128.39
Apr.	25.50	30.80	21.90	34.00	12.80	206.0	117.99
May.	24.50	30.60	21.00	34.00	12.00	118.0	105.59
Jun.	23.50	30.30	19.20	34.00	10.00	39.0	88.46
Jul.	24.00	31.60	18.30	32.00	10.00	25.0	97.71
Aug.	25.00	32.90	19.00	36.20	10.00	202.0	113.93
Sep.	25.60	32.70	20.80	36.00	14.00	87.0	120.72
Oct.	25.80	32.30	21.80	37.00	16.40	185.0	131.27
Nov.	25.70	31.40	22.00	35.80	19.00	207.0	128.39
Dec.	25.50	30.70	22.00	35.40	17.00	216.0	129.91
Year	25.11	31.06	20.94	34.98	13.83	2241	1397.4

### BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	746
Compensated thermicity index.....(Itc):	746
Simple continentality index.....(Ic):	2.3
Diurnality index.....(Id):	13.9
Annual ombrothermic index.....(Io):	7.44
Monthly dry ombrothermic index.....(Iod1):	1.04
Bimonthly dry ombrothermic index.....(Iod2):	1.35
Threemonthly dry ombrothermic index.....(Iod3):	2.53
Fourmonthly dry ombrothermic index.....(Iod4):	3.98
Annual ombro-evaporation index.....(Ioe):	1.60
Annual positive temperature.....(Tp):	3013
Annual negative temperature.....(Tn):	0
Dry station temperature.....(Td):	720
Positive precipitation.....(Pp):	2241

N. of Months	P>4T	P:2T-4T	PT-2T	P<T	T<0
	9	1	2	0	0

Latitudinal Belt...: Eutropical

Continentality.....: Hyperoceanic - Low Ultrahyperoceanic

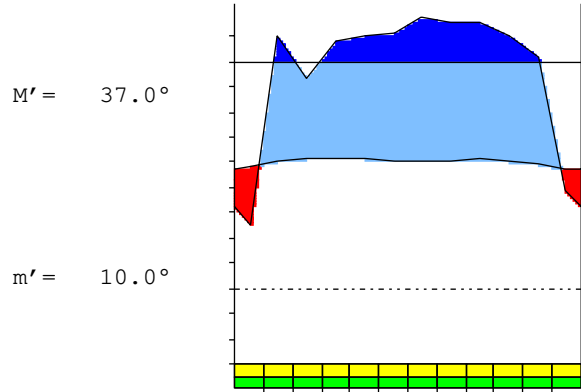
Bioclimate(Variant): TROPICAL PLUVISEASONAL (MESOPHYTIC)

Bioclimatic Belt...: UPPER INFRATROPICAL LOW HUMID

PORTO VELHO (BRAZIL)

95 m

P= 2241      8° 46'S      63° 5'W      16/16 y.  
 T= 25.1 °    Ic= 2.3      Tp= 3013      Tn= 0  
 m= 19.2 °    M= 30.3 °    Itc= 746      Io= 7.4



TROPICAL PLUVISEASONAL (MESOPHYTIC)  
 UPPER INFRATROPICAL LOW HUMID

WATER INDEX CARD      PORTO VELHO (BRAZIL)  
 Altitude: 95 m.      Latitude: 8° 46'S

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jul.	24.0	98	25	-51	0	76	22	0	18	-0.7
Aug.	25.0	114	202	88	88	114	0	0	9	0.7
Sep.	25.6	121	87	-34	54	121	0	0	4	-0.2
Oct.	25.8	131	185	46	100	131	0	8	6	0.4
Nov.	25.7	128	207	0	100	128	0	79	42	0.6
Dec.	25.5	130	216	0	100	130	0	86	64	0.6
Jan.	25.0	121	347	0	100	121	0	226	145	1.8
Feb.	25.5	114	296	0	100	114	0	182	163	1.5
Mar.	25.7	128	313	0	100	128	0	185	174	1.4
Apr.	25.5	118	206	0	100	118	0	88	131	0.7
May.	24.5	106	118	0	100	106	0	12	72	0.1
Jun.	23.5	88	39	-49	51	88	0	0	36	-0.5
Year	25.1	1397	2241	*	*	1375	22	866	866	*

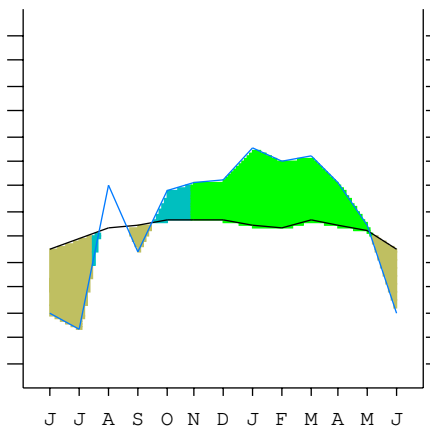
R = Reserve    VR = Variation of the reserve    RE = Real evapotranspiration  
 DR = Drainage    HC = Humidity coefficient    DF = Deficit    SP = Superavit

PORTO VELHO (BRAZIL)

8°46'S    63°5'W    95 m 16/16 y.

T= 25.1    Ic= 2.3    TROPICAL PLUVISEASONAL (MESOPHYTIC)  
 m= 19.2    Tp= 3013    UPPER INFRATROPICAL  
 M= 30.3    Tn= 0    LOW HUMID  
 M' = 37.0    Itc= 746  
 m' = 10.0    Io= 7.4  
 P= 2241    mm ———  
 PE= 1397    mm ———

Imbibing	12 Sep.
Saturation	26 Oct.
Reserve Use	7 May.
Deficit	21 Jul.



PORTO VELHO (BRAZIL)

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SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continentality Index [A1b]  
 + Type .....: A. Hyperoceanic  
 + Subtype .....: 1. Ultrahyperoceanic  
 + Variant .....: b. Low

Thermic types [A2.A1]  
 + Latitudinal zone ....: A. Warm  
 + Latitudinal belt ....: 2. Eutropical  
 + Thermic type .....: A. Warm  
 + Thermic subtype .....: 1. Torrid

Bioclimatic types [A4.1a.7b]  
 + Macrobioclimate .....: A. TROPICAL  
 + Bioclimate .....: 4. PLUVISEASONAL  
 + Bioclimatic variant .: MESOPHYTIC  
 + Thermic type.....: 1. INFRATROPICAL  
 + Thermic subtype.....: a. UPPER  
 + Ombrothermic type ...: 7. HUMID  
 + Ombrothermic subtype : b. LOW

Bioclimatic Classification .....Trps (Mes).Itr.Hum.Uho

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 1564  
 Coldest semester of the year.....(Psw): 677  
 Warmest four months period of the year.....(Pcm1): 695  
 Following warmest four months period.....(Pcm2): 1162  
 Positive precipitation dryest 3 months.....(Ppd): 182  
 Positive precipitation dryest 2 months.....(Ppd2): 64  
 Positive precipitation dryest 1 month.....(Ppd1): 25  
 Positive precipitation warmest 3 months.....(Pps): 479  
 Positive precipitation warmest 2 months.....(Pps2): 392  
 Positive precipitation warmest 1 month.....(Pps1): 185  
 Positive precipitation coldest 3 months.....(Ppw): 182  
 Positive precipitation coldest 2 months.....(Ppw2): 64  
 Positive precipitation coldest 1 month.....(Ppw1): 39

Seasons	Jun+Jul+Aug Ttr3-3	Sep+Oct+Nov Ttr4-4	Dec+Jan+Feb Ttr1-1	Mar+Apr+May Ttr2-2
Rainfall	266	479	859	637

Tropical rainfall rhythms: 1 > 2 > 4 > 3

PORTO VELHO (BRAZIL)

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 25.8  
 Average coldest month [T].....(Tmin): 23.5  
 Maximum temp. warmest month [M].....(Tmmax): 32.9  
 Minimum temp. coldest month [m].....(Tmmin): 18.3  
 Absolute Max.temp. warmest month [M'].....(Tamax): 37.0  
 Absolute Min.temp. coldest month [m'].....(Tamin): 10.0  
 First warmest contrasted month [M].....(Tcmax): 32.9 (8)  
 First coldest contrasted month [m].....(Tcmin): 19.0 (8)  
 Dry station temperature.....(Td): 720  
 Positive temperature dryest 3 months.....(Tpd): 720  
 Positive temperature dryest 2 months.....(Tpd2): 475  
 Positive temperature dryest 1 month.....(Tpd1): 240  
 Positive temperature warmest 3 months.....(Tps): 771  
 Positive temperature warmest 2 months.....(Tps2): 515  
 Positive temperature warmest 1 month.....(Tps1): 258  
 Positive temperature coldest 3 months.....(Tpw): 720  
 Positive temperature coldest 2 months.....(Tpw2): 475  
 Positive temperature coldest 1 month.....(Tpw1): 235

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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			
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): 0.62  
 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)	2160	3470	2960	3130	2060	1180	390	250	2020	870	1850	2070
Tp	255	250	255	257	255	245	235	240	250	256	258	257
Io (Iom)	8.47	13.9	11.6	12.2	8.08	4.82	1.66	1.04	8.08	3.40	7.17	8.05
Seasons	Dec+Jan+Feb			Mar+Apr+May			Jun+Jul+Aug			Sep+Oct+Nov		
Pp(x10)/Tp	8590 / 760			6370 / 757			2660 / 725			4790 / 771		
Io (Iot)	11.30			8.415			3.669			6.213		
Semesters	December-May						June-November					
Pp(x10)/Tp	14960 / 1517						7450 / 1496					
Io (Iosm)	9.862						4.980					

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 22410/3013=7.44 **There is No Yearly Aridity**

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	2160	3470	2960	3130	2060	1180	390	250	2020	870	1850	2070
Tp [T*10]	255	250	255	257	255	245	235	240	250	256	258	257
Iom [Pp/Tp]	847	\$\$\$	\$\$\$	\$\$\$	808	482	166	104	808	340	717	805
Avm [200-Iom]	***	***	***	***	***	***	34	96	***	***	***	***
Seasons	Dec+Jan+Feb			Mar+Apr+May			Jun+Jul+Aug			Sep+Oct+Nov		
Pp / Tp	8590 / 760			6370 / 757			2660 / 725			4790 / 771		
Iot [Pp/Tp]	1130			841			367			621		
Avs E[Avm<200]	***			***			***			***		
Strong lower semiarid [1]							Strong upper semiarid [1]					

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin] .....	(Sp):	2.30
CI of Gorezinski (1920) [1.7*Sp/sin(Lat)-20.4] .....		5.25
CI of Conrad (1946) [1.7*Sp/sin(Lat+10)-14] .....		-1.85
+ Hyperoceanic (-20<CI<20)		
CI of Currey (1974) [CI=Sp/(1+Lat/3)] .....		0.59
+ Hyperoceanic (0<CI<0.6)		
Rainfall Index of Lang (1925) [R=P/T] .....		89.25
+ Temperate warm (100>R>60)		
Aridity Index of Martonne (1926) [Ia=P/(T+10)] .....		63.83
+ Perhumid (Ia>60)		
I of Emberger (1930) [Q=100*P/(Tmmax <sup>2</sup> -Tmmin <sup>2</sup> )] .....		299.79
+ Humid (Q>90)		
I of Dantin & Revenga (1940) [DR=100*T/P] .....		1.12
+ Humid (2>DR>0)		
Aridity Index of UNEP [I=P/PE] .....		1.60
+ Humid (I>0.65)		
Potencial Erosion I of Fournier (1960) [K=Pi <sup>2</sup> /P].....		53.73
+ Very low (K<60)		

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BIOCLIMATIC INDICES II

Bioclimatic classification of Gaussen & Bagnouls (1957)  
 + Climate ..... A. Warm and temperate warm  
 + Region ..... 3. Termoxeroteric (Mediterranean warm)  
 + Thermic type: 1. Megathermic

Thornthwaite (1948)												
	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
P-E ratio	1.47	1.22	1.29	0.81	0.45	0.13	0.08	0.81	0.31	0.72	0.81	0.86
T-E ratio	11.25	11.48	11.57	11.48	11.02	10.57	10.80	11.25	11.52	11.61	11.57	11.48
Precipitation-effectiveness: 89.65						Temperature-efficiency .....: 135.59						
Moisture Index [MI=100*(P-PE)/PE] .....												
+ B3.Humid high-humid (60<MI<80)												
Index of dryness [DI=100*d/PE] .....												
+ No deficit (0<DI<16.7)												
Index of humidity [HI=100*s/PE] .....												
+ Strong surplus (20<HI)												
Potential Evapotranspiration PE .....												
+ Forth mesothermic (997<PE<1440)												

