

Phytosociological Research Center

www.globalbioclimatics.org

Worldwide Bioclimatic Classification System

S.Rivas-Martinez(+) & S.Rivas-Saenz

(Adapted to Synoptical Table 14/02/2020)

ITUACU (BRAZIL)

Altitude: 531 m.

Latitude: 13°49'S Longitude: 41°18'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.	24.70	30.00	20.20	35.90	16.70	84.0	123.48
Feb.	24.60	29.90	20.40	35.90	15.30	144.0	107.77
Mar.	24.60	30.30	20.30	36.40	15.90	93.0	115.47
Apr.	24.60	30.10	20.30	36.30	15.70	91.0	107.77
May.	23.20	28.60	18.90	36.50	10.40	54.0	92.21
Jun.	22.10	27.50	17.60	34.50	10.50	24.0	76.29
Jul.	21.30	27.20	16.00	33.60	9.00	16.0	71.64
Aug.	21.10	26.80	16.00	33.70	10.90	6.0	72.59
Sep.	22.10	27.80	17.20	33.90	11.10	9.0	81.15
Oct.	23.70	29.20	18.80	38.20	11.30	24.0	105.87
Nov.	24.40	29.80	19.80	37.80	14.30	85.0	113.90
Dec.	24.90	30.40	20.10	40.00	15.50	82.0	127.47
Year	23.44	28.97	18.80	36.06	13.05	712	1195.6

BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	662
Compensated thermicity index.....(Itc):	662
Simple continentality index.....(Ic):	3.8
Diurnality index.....(Id):	11.2
Annual ombrothermic index.....(Io):	2.53
Monthly dry ombrothermic index.....(Iod1):	0.28
Bimonthly dry ombrothermic index.....(Iod2):	0.35
Threemonthly dry ombrothermic index.....(Iod3):	0.48
Fourmonthly dry ombrothermic index.....(Iod4):	0.64
Annual ombro-evaporation index.....(Ioe):	0.60
Annual positive temperature.....(Tp):	2813
Annual negative temperature.....(Tn):	0
Dry station temperature.....(Td):	645
Positive precipitation.....(Pp):	712

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

Latitudinal Belt...: Eutropical

Continentalty.....: Hyperoceanic - Low Ultrahyperoceanic

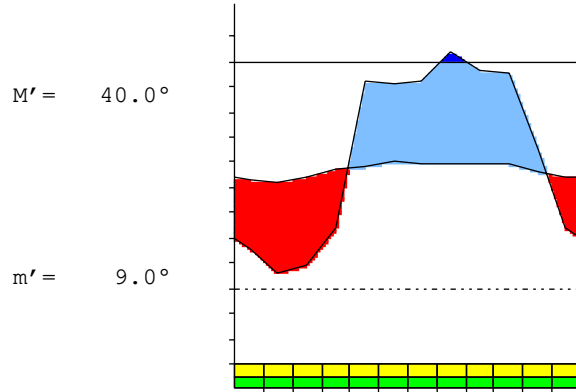
Bioclimate(Variant): TROPICAL XERIC (PLUVISEROTIN,DRY)

Bioclimatic Belt...: LOW THERMOTROPICAL LOW DRY

ITUACU (BRAZIL)

531 m

P= 712 13° 49'S 41° 18'W 30/30 y.
 T= 23.4 ° Ic= 3.8 Tp= 2813 Tn= 0
 m= 16.0 ° M= 26.8 ° Itc= 662 Io= 2.5



TROPICAL XERIC (PLUVISEROTIN)
 LOW THERMOTROPICAL LOW DRY

WATER INDEX CARD ITUACU (BRAZIL)
 Altitude: 531 m. Latitude: 13° 49'S

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jul.	21.3	72	16	0	0	16	56	0	0	-0.7
Aug.	21.1	73	6	0	0	6	67	0	0	-0.9
Sep.	22.1	81	9	0	0	9	72	0	0	-0.8
Oct.	23.7	106	24	0	0	24	82	0	0	-0.7
Nov.	24.4	114	85	0	0	85	29	0	0	-0.2
Dec.	24.9	127	82	0	0	82	45	0	0	-0.3
Jan.	24.7	123	84	0	0	84	39	0	0	-0.3
Feb.	24.6	108	144	36	36	108	0	0	0	0.3
Mar.	24.6	115	93	-22	14	115	0	0	0	-0.1
Apr.	24.6	108	91	-14	0	105	3	0	0	-0.1
May.	23.2	92	54	0	0	54	38	0	0	-0.4
Jun.	22.1	76	24	0	0	24	52	0	0	-0.6
Year	23.4	1196	712	*	*	712	484	0	0	*

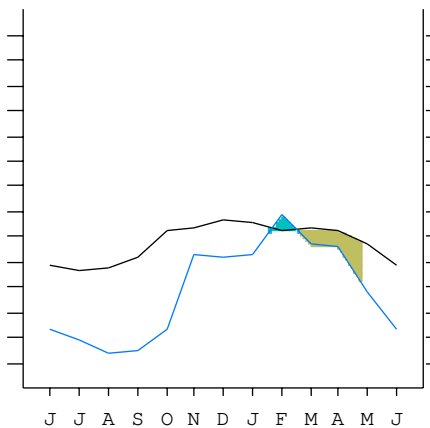
R = Reserve VR = Variation of the reserve RE = Real evapotranspiration
 DR = Drainage HC = Humidity coefficient DF = Deficit SP = Superavit

ITUACU (BRAZIL)

13°49'S 41°18'W 531 m 30/30 y.

T= 23.4 Ic= 3.8 TROPICAL XERIC (PLUVISEROTIN)
 m= 16.0 Tp= 2813 LOW THERMOTROPICAL
 M= 26.8 Tn= 0 LOW DRY
 M' = 40.0 Itc= 662
 m' = 9.0 Io= 2.5
 P= 712 mm ———
 PE= 1196 mm ———

Imbibing	16 Jan.
Saturation	19 Feb.
Reserve Use	25 Apr.
Deficit	



ITUACU (BRAZIL)

Latitude: 13°49'S Longitude: 41°18'W Altitude: 531 m

SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

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

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

Bioclimatic types [A3e.2b.5b]
 + Macrobioclimate: A. TROPICAL
 + Bioclimate: 3. XERIC
 + Bioclimatic variant .: PLUVISEROTIN, DRY
 + Thermic type.....: 2. THERMOTROPICAL
 + Thermic subtype.....: b. LOW
 + Ombrothermic type ...: 5. DRY
 + Ombrothermic subtype : b. LOW

Bioclimatic ClassificationTrxe (Pse) .Ttr.Dry.Uho

ITUACU (BRAZIL)

Latitude: 13°49'S Longitude: 41°18'W Altitude: 531 m

PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 579
 Coldest semester of the year.....(Psw): 133
 Warmest four months period of the year.....(Pcm1): 403
 Following warmest four months period.....(Pcm2): 185
 Positive precipitation dryest 3 months.....(Ppd): 31
 Positive precipitation dryest 2 months.....(Ppd2): 15
 Positive precipitation dryest 1 month.....(Ppd1): 6
 Positive precipitation warmest 3 months.....(Pps): 310
 Positive precipitation warmest 2 months.....(Pps2): 166
 Positive precipitation warmest 1 month.....(Pps1): 82
 Positive precipitation coldest 3 months.....(Ppw): 46
 Positive precipitation coldest 2 months.....(Ppw2): 22
 Positive precipitation coldest 1 month.....(Ppw1): 6

Seasons	Jun+Jul+Aug Ttr3-3	Sep+Oct+Nov Ttr4-4	Dec+Jan+Feb Ttr1-1	Mar+Apr+May Ttr2-2
Rainfall	46	118	310	238

Tropical rainfall rhythms: 1 > 2 > 4 > 3

ITUACU (BRAZIL)

Latitude: 13°49'S Longitude: 41°18'W Altitude: 531 m

TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 24.9
 Average coldest month [T].....(Tmin): 21.1
 Maximum temp. warmest month [M].....(Tmmax): 30.4
 Minimum temp. coldest month [m].....(Tmmin): 16.0
 Absolute Max.temp. warmest month [M'].....(Tamax): 40.0
 Absolute Min.temp. coldest month [m'].....(Tamin): 9.0
 First warmest contrasted month [M].....(Tcmax): 27.2 (7)
 First coldest contrasted month [m].....(Tcmin): 16.0 (7)
 Dry station temperature.....(Td): 645
 Positive temperature dryest 3 months.....(Tpd): 645
 Positive temperature dryest 2 months.....(Tpd2): 432
 Positive temperature dryest 1 month.....(Tpd1): 211
 Positive temperature warmest 3 months.....(Tps): 742
 Positive temperature warmest 2 months.....(Tps2): 496
 Positive temperature warmest 1 month.....(Tps1): 249
 Positive temperature coldest 3 months.....(Tpw): 645
 Positive temperature coldest 2 months.....(Tpw2): 424
 Positive temperature coldest 1 month.....(Tpw1): 211

ITUACU (BRAZIL)

Latitude: 13°49'S Longitude: 41°18'W Altitude: 531 m

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

ITUACU (BRAZIL)

Latitude: 13°49'S Longitude: 41°18'W Altitude: 531 m

OMBROTHERMIC PARAMETERS

Annual aridity index.[PE/P].....(Iar): 1.68
 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)	820	840	1440	930	910	540	240	160	60	90	240	850
Tp	249	247	246	246	246	232	221	213	211	221	237	244
Io (Iom)	3.29	3.40	5.85	3.78	3.70	2.33	1.09	0.75	0.28	0.41	1.01	3.48
Seasons	Dec+Jan+Feb			Mar+Apr+May			Jun+Jul+Aug			Sep+Oct+Nov		
Pp(x10)/Tp	3100 / 742			2380 / 724			460 / 645			1180 / 702		
Io (Iot)	4.178			3.287			0.713			1.681		
Semesters	December-May						June-November					
Pp(x10)/Tp	5480 / 1466						1640 / 1347					
Io (Iosm)	3.738						1.218					

ITUACU (BRAZIL)

Latitude: 13°49'S Longitude: 41°18'W Altitude: 531 m

Aridity Value Index (AVI)

[10xPP/TP=IO]: 7120/2813=2.53 There is No Yearly Aridity

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	820	840	1440	930	910	540	240	160	60	90	240	850
Tp [T*10]	249	247	246	246	246	232	221	213	211	221	237	244
Iom [Pp/Tp]	329	340	585	378	370	233	109	75	28	41	101	348
Avm [200-Iom]	***	***	***	***	***	***	91	125	172	159	99	***
Seasons	Dec+Jan+Feb			Mar+Apr+May			Jun+Jul+Aug			Sep+Oct+Nov		
Pp / Tp	3100 / 742			2380 / 724			460 / 645			1180 / 702		
Iot [Pp/Tp]	418			329			71			168		
Avs E[Avm<200]	***			***			388			***		
Lower hyperarid [1]							Strong lower arid [1]					
Strong upper arid [2]							Strong lower semiarid [2]					

ITUACU (BRAZIL)

Latitude: 13°49'S Longitude: 41°18'W Altitude: 531 m

BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin](Sp): 3.80
 CI of Gorezinski (1920) [1.7*Sp/sin(Lat)-20.4]: 6.65
 CI of Conrad (1946) [1.7*Sp/sin(Lat+10)-14]: 2.00
 + Hyperoceanic (-20<CI<20)
 CI of Currey (1974) [CI=Sp/(1+Lat/3)]: 0.68
 + Oceanic (0.6<CI<1.1)
 Rainfall Index of Lang (1925) [R=P/T]: 30.37
 + Steppic (40>R>0)
 Aridity Index of Martonne (1926) [Ia=P/(T+10)]: 21.29
 + Subhumid (30>Ia>20)
 I of Emberger (1930) [Q=100*P/(Tmmax²-Tmmin²)]: 106.56
 + Humid (Q>90)
 I of Dantin & Revenga (1940) [DR=100*T/P]: 3.29
 + Arid (6>DR>3)
 Aridity Index of UNEP [I=P/PE]: 0.60
 + Subhumid - dry (0.65>I>0.5)
 Potential Erosion I of Fournier (1960) [K=Pi²/P].....: 29.12
 + Very low (K<60)

ITUACU (BRAZIL)

Latitude: 13°49'S Longitude: 41°18'W Altitude: 531 m

BIOCLIMATIC INDICES II

Bioclimatic classification of Gaussen & Bagnouls (1957)
 + Climate: A. Warm and temperate warm
 + Region: 3. Termoxeroteric (Mediterranean warm)
 + Thermic type: 2. Macrothermic

Thornthwaite (1948)												
	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
P-E ratio	0.31	0.56	0.34	0.34	0.19	0.08	0.05	0.02	0.03	0.08	0.31	0.30
T-E ratio	11.12	11.07	11.07	11.07	10.44	9.95	9.58	9.50	9.95	10.67	10.98	11.20
Precipitation-effectiveness: 26.03						Temperature-efficiency: 126.59						
Moisture Index [MI=100*(P-PE)/PE]: -40.45 + D.Semiarid (-66.7<MI<-33.3)												
Index of dryness [DI=100*d/PE]: 40.45 + Strong deficit (33.3<DI)												
Index of humidity [HI=100*s/PE]: 0.00 + No surplus (0<HI<10)												
Potential Evapotranspiration PE: 1195.61 + Forth mesothermic (997<PE<1440)												

