

Phytosociological Research Center

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Worldwide Bioclimatic Classification System

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(Adapted to Synoptical Table 14/02/2020)

MANAUS (BRAZIL)

Altitude: 48 m.

Latitude: 3°8'S Longitude: 60°1'W

Temperature observation period.: 1949-1960 (12)

Rainfall observation period....: 1949-1960 (12)

| (C/mm) | Ti | Mi | mi | M'i | m'i | Pi | EPI |
|--------|-------|-------|-------|-------|-------|-------|--------|
| Jan. | 26.20 | 31.10 | 23.90 | 37.40 | 20.40 | 266.0 | 133.04 |
| Feb. | 26.20 | 31.10 | 23.90 | 37.60 | 20.00 | 247.0 | 119.10 |
| Mar. | 26.40 | 31.10 | 23.90 | 36.10 | 19.40 | 269.0 | 135.69 |
| Apr. | 26.20 | 30.60 | 23.90 | 34.60 | 20.20 | 267.0 | 127.97 |
| May. | 26.30 | 31.10 | 23.90 | 35.00 | 20.00 | 194.0 | 132.44 |
| Jun. | 26.60 | 31.10 | 23.90 | 35.00 | 19.00 | 100.0 | 136.30 |
| Jul. | 26.80 | 31.70 | 23.90 | 35.20 | 17.60 | 64.0 | 142.04 |
| Aug. | 27.50 | 32.80 | 23.90 | 36.70 | 19.20 | 38.0 | 149.25 |
| Sep. | 27.90 | 33.30 | 23.90 | 37.20 | 20.00 | 60.0 | 146.71 |
| Oct. | 27.80 | 33.30 | 24.40 | 37.80 | 20.20 | 124.0 | 151.74 |
| Nov. | 27.60 | 32.80 | 24.40 | 37.20 | 20.20 | 152.0 | 147.19 |
| Dec. | 26.80 | 32.20 | 23.90 | 38.60 | 19.60 | 216.0 | 144.80 |
| Year | 26.86 | 31.85 | 23.98 | 36.53 | 19.65 | 1997 | 1666.3 |

BIOCLIMATIC INDICES AND DIAGNOSIS

| | |
|---|------|
| Thermicity index.....(It): | 819 |
| Compensated thermicity index.....(Itc): | 819 |
| Simple continentality index.....(Ic): | 1.7 |
| Diurnality index.....(Id): | 9.4 |
| Annual ombrothermic index.....(Io): | 6.20 |
| Monthly dry ombrothermic index.....(Iod1): | 1.38 |
| Bimonthly dry ombrothermic index.....(Iod2): | 1.77 |
| Threemonthly dry ombrothermic index.....(Iod3): | 1.97 |
| Fourmonthly dry ombrothermic index.....(Iod4): | 2.41 |
| Annual ombro-evaporation index.....(Ioe): | 1.20 |
| Annual positive temperature.....(Tp): | 3223 |
| Annual negative temperature.....(Tn): | 0 |
| Dry station temperature.....(Td): | 822 |
| Positive precipitation.....(Pp): | 1997 |

| N. of Months | P>4T | P:2T-4T | PT-2T | P<T | T<0 |
|--------------|------|---------|-------|-----|-----|
| | 8 | 3 | 1 | 0 | 0 |

Latitudinal Belt...: Equatorial

Continentalty.....: Hyperoceanic - High Ultrahyperoceanic

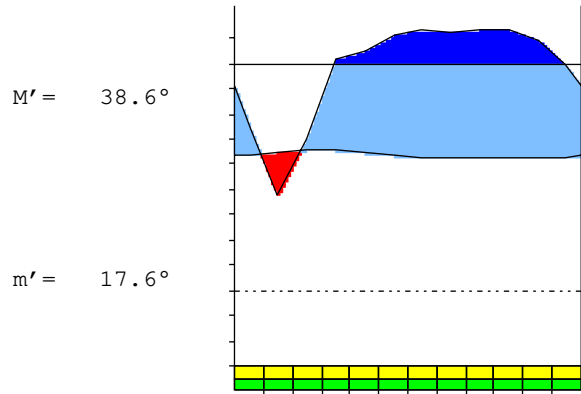
Bioclimate(Variant): TROPICAL PLUVISEASONAL (MESOPHYTIC)

Bioclimatic Belt...: UPPER INFRATROPICAL LOW HUMID

MANAUS (BRAZIL)

48 m

P= 1997 3° 8'S 60° 1'W 12/12 y.
 T= 26.9 ° Ic= 1.7 Tp= 3223 Tn= 0
 m= 23.9 ° M= 31.1 ° Itc= 819 Io= 6.2



TROPICAL PLUVISEASONAL (MESOPHYTIC)
 UPPER INFRATROPICAL LOW HUMID

WATER INDEX CARD

MANAUS (BRAZIL)

Altitude: 48 m.

Latitude: 3° 8'S

| (C/mm) | T | PE | P | VR | R | RE | DF | SP | DR | HC |
|--------|------|------|------|-----|-----|------|-----|-----|-----|------|
| Jul. | 26.8 | 142 | 64 | -64 | 0 | 128 | 14 | 0 | 23 | -0.5 |
| Aug. | 27.5 | 149 | 38 | 0 | 0 | 38 | 111 | 0 | 12 | -0.7 |
| Sep. | 27.9 | 147 | 60 | 0 | 0 | 60 | 87 | 0 | 6 | -0.5 |
| Oct. | 27.8 | 152 | 124 | 0 | 0 | 124 | 28 | 0 | 3 | -0.1 |
| Nov. | 27.6 | 147 | 152 | 5 | 5 | 147 | 0 | 0 | 1 | 0.0 |
| Dec. | 26.8 | 145 | 216 | 71 | 76 | 145 | 0 | 0 | 1 | 0.4 |
| Jan. | 26.2 | 133 | 266 | 24 | 100 | 133 | 0 | 109 | 55 | 0.9 |
| Feb. | 26.2 | 119 | 247 | 0 | 100 | 119 | 0 | 128 | 91 | 1.0 |
| Mar. | 26.4 | 136 | 269 | 0 | 100 | 136 | 0 | 133 | 112 | 0.9 |
| Apr. | 26.2 | 128 | 267 | 0 | 100 | 128 | 0 | 139 | 126 | 1.0 |
| May. | 26.3 | 132 | 194 | 0 | 100 | 132 | 0 | 62 | 94 | 0.4 |
| Jun. | 26.6 | 136 | 100 | -36 | 64 | 136 | 0 | 0 | 47 | -0.2 |
| Year | 26.9 | 1666 | 1997 | * | * | 1426 | 240 | 571 | 571 | * |

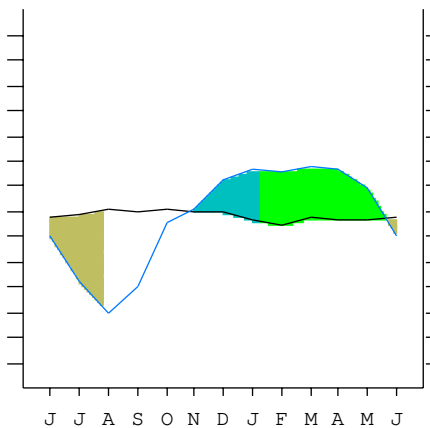
R = Reserve VR = Variation of the reserve RE = Real evapotranspiration
 DR = Drainage HC = Humidity coefficient DF = Deficit SP = Superavit

MANAUS (BRAZIL)

3°8'S 60°1'W 48 m 12/12 y.

T= 26.9 Ic= 1.7 TROPICAL PLUVISEASONAL (MESOPHYTIC)
 m= 23.9 Tp= 3223 UPPER INFRATROPICAL
 M= 31.1 Tn= 0 LOW HUMID
 M' = 38.6 Itc= 819
 m' = 17.6 Io= 6.2
 P= 1997 mm ———
 PE= 1666 mm ———

| | |
|-------------|---------|
| Imbibing | 26 Oct. |
| Saturation | 6 Jan. |
| Reserve Use | 19 May. |
| Deficit | 25 Jul. |



MANAUS (BRAZIL)

Latitude: 3°8'S Longitude: 60°1'W Altitude: 48 m

SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continentality Index [A1a]
 + Type: A. Hyperoceanic
 + Subtype: 1. Ultrahyperoceanic
 + Variant: a. High
 Thermic types [A1.A1]
 + Latitudinal zone: A. Warm
 + Latitudinal belt: 1. Equatorial
 + 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 ClassificationTrps (Mes).Itr.Hum.Uho

MANAUS (BRAZIL)

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 654
 Coldest semester of the year.....(Psw): 1343
 Warmest four months period of the year.....(Pcm1): 374
 Following warmest four months period.....(Pcm2): 998
 Positive precipitation dryest 3 months.....(Ppd): 162
 Positive precipitation dryest 2 months.....(Ppd2): 98
 Positive precipitation dryest 1 month.....(Ppd1): 38
 Positive precipitation warmest 3 months.....(Pps): 336
 Positive precipitation warmest 2 months.....(Pps2): 184
 Positive precipitation warmest 1 month.....(Pps1): 60
 Positive precipitation coldest 3 months.....(Ppw): 782
 Positive precipitation coldest 2 months.....(Ppw2): 513
 Positive precipitation coldest 1 month.....(Ppw1): 266

| Seasons | Jun+Jul+Aug Ttr3-3 | Sep+Oct+Nov Ttr4-4 | Dec+Jan+Feb Ttr1-1 | Mar+Apr+May Ttr2-2 |
|----------|-----------------------|-----------------------|-----------------------|-----------------------|
| Rainfall | 202 | 336 | 729 | 730 |

Tropical rainfall rhythms: 2 > 1 > 4 > 3

MANAUS (BRAZIL)

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 27.9
 Average coldest month [T].....(Tmin): 26.2
 Maximum temp. warmest month [M].....(Tmmax): 33.3
 Minimum temp. coldest month [m].....(Tmmin): 23.9
 Absolute Max.temp. warmest month [M'].....(Tamax): 38.6
 Absolute Min.temp. coldest month [m'].....(Tamin): 17.6
 First warmest contrasted month [M].....(Tcmax): 33.3 (9)
 First coldest contrasted month [m].....(Tcmin): 23.9 (9)
 Dry station temperature.....(Td): 822
 Positive temperature dryest 3 months.....(Tpd): 822
 Positive temperature dryest 2 months.....(Tpd2): 554
 Positive temperature dryest 1 month.....(Tpd1): 275
 Positive temperature warmest 3 months.....(Tps): 833
 Positive temperature warmest 2 months.....(Tps2): 557
 Positive temperature warmest 1 month.....(Tps1): 279
 Positive temperature coldest 3 months.....(Tpw): 788
 Positive temperature coldest 2 months.....(Tpw2): 524
 Positive temperature coldest 1 month.....(Tpw1): 262

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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 |

MANAUS (BRAZIL)

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OMBROTHERMIC PARAMETERS

Annual aridity index.[PE/P].....(Iar): 0.83
 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 | 2660 | 2470 | 2690 | 2670 | 1940 | 1000 | 640 | 380 | 600 | 1240 | 1520 |
| Tp | 268 | 262 | 262 | 264 | 262 | 263 | 266 | 268 | 275 | 279 | 278 | 276 |
| Io (Iom) | 8.06 | 10.2 | 9.43 | 10.2 | 10.2 | 7.38 | 3.76 | 2.39 | 1.38 | 2.15 | 4.46 | 5.51 |
| Seasons | Dec+Jan+Feb | | | Mar+Apr+May | | | Jun+Jul+Aug | | | Sep+Oct+Nov | | |
| Pp(x10)/Tp | 7290 / 792 | | | 7300 / 789 | | | 2020 / 809 | | | 3360 / 833 | | |
| Io (Iot) | 9.205 | | | 9.252 | | | 2.497 | | | 4.034 | | |
| Semesters | December-May | | | | | | June-November | | | | | |
| Pp(x10)/Tp | 14590 / 1581 | | | | | | 5380 / 1642 | | | | | |
| Io (Iosm) | 9.228 | | | | | | 3.276 | | | | | |

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 19970/3223=6.20 There is No Yearly Aridity

| Months | Dec. | Jan. | Feb. | Mar. | Apr. | May. | Jun. | Jul. | Aug. | Sep. | Oct. | Nov. |
|-------------------------|-------------|--------|------|-------------|------|------|-------------|------|------|-------------|------|------|
| Pp [P*10] | 2160 | 2660 | 2470 | 2690 | 2670 | 1940 | 1000 | 640 | 380 | 600 | 1240 | 1520 |
| Tp [T*10] | 268 | 262 | 262 | 264 | 262 | 263 | 266 | 268 | 275 | 279 | 278 | 276 |
| Iom [Pp/Tp] | 806 | \$\$\$ | 943 | \$\$ | \$\$ | 738 | 376 | 239 | 138 | 215 | 446 | 551 |
| Avm [200-Iom] | *** | *** | *** | *** | *** | *** | *** | *** | 62 | *** | *** | *** |
| Seasons | Dec+Jan+Feb | | | Mar+Apr+May | | | Jun+Jul+Aug | | | Sep+Oct+Nov | | |
| Pp / Tp | 7290 / 792 | | | 7300 / 789 | | | 2020 / 809 | | | 3360 / 833 | | |
| Iot [Pp/Tp] | 920 | | | 925 | | | 250 | | | 403 | | |
| Avs E[Avm<200] | *** | | | *** | | | *** | | | *** | | |
| Weak lower semiarid [1] | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin](Sp): 1.70
 CI of Gorezinski (1920) [1.7*Sp/sin(Lat)-20.4]: 32.47
 CI of Conrad (1946) [1.7*Sp/sin(Lat+10)-14]: -1.28
 + Hyperoceanic (-20<CI<20)
 CI of Currey (1974) [CI=Sp/(1+Lat/3)]: 0.83
 + Oceanic (0.6<CI<1.1)
 Rainfall Index of Lang (1925) [R=P/T]: 74.35
 + Temperate warm (100>R>60)
 Aridity Index of Martonne (1926) [Ia=P/(T+10)]: 54.18
 + Humid (60>Ia>30)
 I of Emberger (1930) [Q=100*P/(Tmax²-Tmin²)]: 371.41
 + Humid (Q>90)
 I of Dantin & Revenga (1940) [DR=100*T/P]: 1.34
 + Humid (2>DR>0)
 Aridity Index of UNEP [I=P/PE]: 1.20
 + Humid (I>0.65)
 Potential Erosion I of Fournier (1960) [K=Pi²/P].....: 36.23
 + Very low (K<60)

MANAUS (BRAZIL)

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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 | 1.06 | 0.98 | 1.07 | 1.07 | 0.75 | 0.36 | 0.22 | 0.12 | 0.20 | 0.44 | 0.55 | 0.83 |
| T-E ratio | 11.79 | 11.79 | 11.88 | 11.79 | 11.83 | 11.97 | 12.06 | 12.38 | 12.55 | 12.51 | 12.42 | 12.06 |
| Precipitation-effectiveness: 76.50 | | | | | | Temperature-efficiency: 145.03 | | | | | | |
| Moisture Index [MI=100*(P-PE)/PE]: 19.85 + C2.Subhumid humid (0<MI<20) | | | | | | | | | | | | |
| Index of dryness [DI=100*d/PE]: 14.40 + No deficit (0<DI<16.7) | | | | | | | | | | | | |
| Index of humidity [HI=100*s/PE]: 34.25 + Strong surplus (20<HI) | | | | | | | | | | | | |
| Potential Evapotranspiration PE: 1666.27 + Megathermic (PE>1440) | | | | | | | | | | | | |

