Phytosociological Research Center

www.globalbioclimatics.org

Worldwide Bioclimatic Classification System

Prof. Dr. Salvador Rivas-Martínez

(Adapted to Synoptical Table 30/08/2017)

SAN MARCOS CO (COLOMBIA) Altitude: 41 m.
Latitude: 8°38'N Longitude: 75°10'W
Temperature observation period.: 1988−1994 (7)
Rainfall observation period....: 1985−1994 (10)

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Year 27.34 32.64 22.04 37.50 18.52 1156 1744.7

**BIOCLIMATIC INDICES AND DIAGNOSIS**

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Latitudinal Belt....: Eutropical
Continentality......: Hyperoceanic − High Ultrahyperoceanic
Bioclimatovicariant): TROPICAL XERIC (PLUVISEROTIN,DRY)
Bioclimatic Belt....: UPPER INFRATROPICAL UPPER DRY
SAN MARCOS CO (COLOMBIA) 41 m

P = 1156 mm  8° 38’N  75° 10’W  7/10 y.

T = 27.3°  Ic= 1.4  Tp= 3281
m = 21.1°  M = 32.2°  Itc = 807

M’ = 38.3°  m’ = 17.2°

TROPICAL XERIC (PLUVISEROTIN)
UPPER INFRATROPICAL UPPER DRY

WATER INDEX CARD  SAN MARCOS CO (COLOMBIA)
Altitude: 41 m.  Latitude: 8° 38’N

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Year  27.3  1745  1156  *  *  1156  589  0  0  *

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

SAN MARCOS CO (COLOMBIA)

8°38’N  75°10’W  41 m  7/10 y.

T = 27.3°  Ic= 1.4  Tp= 3281
M = 32.2°  Tn= 0

M’ = 38.3°  Itc = 807
m’ = 17.2°  Io = 3.5

P = 1156 mm
PE = 1745 mm

**Legend**
- Imbibing: 1 Jul.
- Saturation
- Reserve Use: 6 Oct.
- Deficit: 8 Dec.
SAN MARCOS CO (COLOMBIA)
Latitude: 8°38’N   Longitude: 75°10’W   Altitude: 41 m

SUMMARY OF RIVAS–MARTINEZ CLASSIFICATION

Continuity Index [A1a]
+ Type ..............: A. Hyperoceanic
+ Subtype ...........: 1. Ultrahyperoceanic
+ Variant ...........: a. High

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

Bioclimatic types [A3e.1a.5a]
+ Macrobioclimate ......: A. TROPICAL
+ Bioclimate ...........: 3. XERIC
+ Bioclimatic variant : e. PLUVISEROTIN, DRY
+ Thermic type.........: 1. INFRATROPICAL
+ Thermic subtype......: a. UPPER
+ Ombrothermic type ...: 5. DRY
+ Ombrothermic subtype : a. UPPER

Bioclimatic Classification ......................: Trxe(Pse).Itr.Dry

SAN MARCOS CO (COLOMBIA)
Latitude: 8°38’N   Longitude: 75°10’W   Altitude: 41 m

PRECIPITATION PARAMETERS

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<th>Mar+Apr+May</th>
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Tropical rainfall rhythms: 4 > 3 > 2 > 1

SAN MARCOS CO (COLOMBIA)
Latitude: 8°38’N   Longitude: 75°10’W   Altitude: 41 m

TEMPERATURE PARAMETERS

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Dry station temperature......................: 819

SAN MARCOS CO (COLOMBIA)
Latitude: 8°38’N   Longitude: 75°10’W   Altitude: 41 m

Precipitation values:

- Warmest semester of the year: 798
- Coldest semester of the year: 358
- Warmest four months period: 678
- Following warmest four months period: 125
- Positive precipitation dryest 3 months: 31
- Positive precipitation dryest 2 months: 5
- Positive precipitation dryest 1 month: 0
- Positive precipitation warmest 3 months: 523
- Positive precipitation warmest 2 months: 368
- Positive precipitation warmest 1 month: 160
- Positive precipitation coldest 3 months: 252
- Positive precipitation coldest 2 months: 137

SAN MARCOS CO (COLOMBIA)
Latitude: 8°38’N   Longitude: 75°10’W   Altitude: 41 m

Temperature values:

- Average warmest month [T]: 28.1
- Average coldest month [T]: 26.7
- Minimum temp. warmest month [M]: 33.3
- Minimum temp. coldest month [m]: 21.1
- Absolute Max. temp. warmest month [M’]: 38.3
- Absolute Min. temp. coldest month [m’]: 17.2
- First warmest contrasted month [M]: 33.3
- First coldest contrasted month [m]: 21.7
- Dry station temperature: 819
### Seasonal Parameters

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### Ombrotrophic Parameters

<table>
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<tr>
<th></th>
<th>Dec</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
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<tbody>
<tr>
<td>Pp (x10)</td>
<td>254</td>
<td>51</td>
<td>0</td>
<td>330</td>
<td>686</td>
<td>1372</td>
<td>1143</td>
<td>1549</td>
<td>1549</td>
<td>2083</td>
<td>1600</td>
<td>940</td>
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<tr>
<td>Tp</td>
<td>272</td>
<td>272</td>
<td>275</td>
<td>275</td>
<td>272</td>
<td>267</td>
<td>270</td>
<td>275</td>
<td>275</td>
<td>281</td>
<td>272</td>
<td>272</td>
</tr>
<tr>
<td>Io (Iom)</td>
<td>0.93</td>
<td>0.19</td>
<td>0.00</td>
<td>1.20</td>
<td>2.52</td>
<td>5.14</td>
<td>4.24</td>
<td>5.63</td>
<td>5.63</td>
<td>7.57</td>
<td>5.70</td>
<td>3.45</td>
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<tr>
<td>Seasons</td>
<td>Dec+Jan+Feb</td>
<td>Mar+Apr+May</td>
<td>Jun+July+Aug</td>
<td>Sep+Oct+Nov</td>
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</tr>
<tr>
<td>Pp (x10)/Tp</td>
<td>305 / 819</td>
<td>2388 / 814</td>
<td>4241 / 820</td>
<td>4623 / 828</td>
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<tr>
<td>Io (Iot)</td>
<td>0.372</td>
<td>2.934</td>
<td>5.175</td>
<td>5.585</td>
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<tr>
<td>Semesters</td>
<td>December-May</td>
<td>June-November</td>
<td></td>
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</tr>
<tr>
<td>Pp (x10)/Tp</td>
<td>2693 / 1633</td>
<td>8864 / 1647</td>
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<tr>
<td>Io (Iosm)</td>
<td>1.649</td>
<td>5.381</td>
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### Aridity Value Index (AVI)

<table>
<thead>
<tr>
<th></th>
<th>10xPP/TP=IO:</th>
<th>11557/3281=3.52 There is No Yearly Aridity</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Dec</td>
<td>Jan</td>
</tr>
<tr>
<td>Pp [P*10]</td>
<td>254</td>
<td>51</td>
</tr>
<tr>
<td>Tp [T*10]</td>
<td>272</td>
<td>272</td>
</tr>
<tr>
<td>Iom [Pp/Tp]</td>
<td>93</td>
<td>19</td>
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<tr>
<td>Avm [200-Iom]</td>
<td>107</td>
<td>181</td>
</tr>
<tr>
<td>Seasons</td>
<td>Dec+Jan+Feb</td>
<td>Mar+Apr+May</td>
</tr>
<tr>
<td>Pp / Tp</td>
<td>305 / 819</td>
<td>2388 / 814</td>
</tr>
<tr>
<td>Io (Iot)</td>
<td>37</td>
<td>293</td>
</tr>
<tr>
<td>Avm E[Avm&lt;200]</td>
<td>488</td>
<td>***</td>
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</tbody>
</table>

#### Aridity Classes
- Lower ultrahyperarid [1]
- Upper ultrahyperarid [1]
- Upper hyperarid [1]
- Weak upper arid [1]
- Strong lower semiarid [1]
SAN MARCOS CO (COLOMBIA)
Latitude: 8°38’N   Longitude: 75°10’W   Altitude: 41 m
BIOCLIMATIC INDICES I

CI of Supan (1884) \[T_{\text{max}}-T_{\text{min}}\] (Sp): 1.39
CI of Gorezinski (1920) \[1.7*Sp/\sin(\text{Lat})-20.4\] (Sp): -4.66
CI of Conrad (1946) \[1.7*Sp/\sin(\text{Lat}+10)-14\] (Sp): -6.60
+ Hyperoceanic \((-20<\text{CI}<20)\)
CI of Currey (1974) \[@\text{CI}=Sp/(1+\text{Lat}/3)\] (Sp): 0.36
+ Hyperoceanic \((0<\text{CI}<0.6)\)
Rainfall Index of Lang (1925) \[@R=P/T\] (Sp): 42.27
+ Semiarid \((60>R>40)\)
Aridity Index of Martonne (1926) \[@I_a=P/(T+10)\] (Sp): 30.95
+ Humid \((60>I_a>30)\)
I of Emberger (1930) \[@Q=100*P/(T_{\text{max}}^2-T_{\text{min}}^2)\] (Sp): 173.72
+ Humid \((Q>90)\)
I of Dantin & Revenga (1940) \[@DR=100*T/P\] (Sp): 2.37
+ Semiarid \((3>DR>2)\)
Aridity Index of UNEP \[@I=P/PE\] (Sp): 0.66
+ Humid \((I>0.65)\)
Potential Erosion I of Fournier (1960) \[@K=Pi^2/P\] (Sp): 37.54
+ Very low \((K<60)\)

SAN MARCOS CO (COLOMBIA)
Latitude: 8°38’N   Longitude: 75°10’W   Altitude: 41 m
BIOCLIMATIC INDICES II

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

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</thead>
<tbody>
<tr>
<td>P-E ratio</td>
<td>0.01</td>
<td>0.00</td>
<td>0.10</td>
<td>0.23</td>
<td>0.50</td>
<td>0.41</td>
<td>0.57</td>
<td>0.79</td>
<td>0.58</td>
<td>0.33</td>
<td>0.08</td>
</tr>
<tr>
<td>Precipitation-effectiveness: 41.68 Temperature-efficiency: 147.63</td>
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Thornthwaite (1948)

Moisture Index \[@MI=100*(P-PE)/PE\] (Sp): -33.76
+ D.Semiarid \((-66.7<MI<-33.3)\)
Index of dryness \[@DI=100*d/PE\] (Sp): 33.75
+ Strong deficit \((33.3<DI)\)
Index of humidity \[@HI=100*s/PE\] (Sp): 0.00
+ No surplus \((0<HI<10)\)
Potential Evapotranspiration PE (Sp): 1744.68
+ Megathermic \((PE>1440)\)

COLOMBIA
°C 8°38’N / 75°10’W / 41 m
SAN MARCOS CO
(7-10) +27.3 °C 1155.7 mm
COLOMBIA
8°38'N / 75°10'W / 41 m
SAN MARCOS CO
21.1 °C [7-10] +27.3 °C 1155.7 mm
Mean Max
Mean min
Abs Max
Abs Min

Period T-P [7-10]
Thornthwaite
T-E Ratio

Mediterranean
Index [PE/P]
Ombrothermic
Index [P/T]