

# Phytosociological Research Center

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## Worldwide Bioclimatic Classification System

Prof.Dr. Salvador Rivas-Martinez

(Adapted to Synoptical Table 30/08/2017)

VERA (ARGENTINA)

Altitude: 58 m.

Latitude: 29°28'S Longitude: 60°12'W

Temperature observation period.: 1941-1950 (10)

Rainfall observation period....: 1941-1950 (10)

| (C/mm) | Ti    | Mi    | mi    | M'i   | m'i   | Pi    | EPI    |
|--------|-------|-------|-------|-------|-------|-------|--------|
| Jan.   | 26.70 | 34.20 | 18.60 | 42.50 | 10.00 | 77.0  | 163.15 |
| Feb.   | 26.00 | 33.10 | 19.80 | 41.40 | 7.70  | 139.0 | 132.06 |
| Mar.   | 23.00 | 29.70 | 17.40 | 39.80 | 8.50  | 142.0 | 104.60 |
| Apr.   | 19.90 | 26.30 | 14.00 | 35.40 | 5.00  | 108.0 | 68.03  |
| May.   | 16.90 | 23.20 | 11.40 | 34.00 | -1.60 | 64.0  | 45.88  |
| Jun.   | 14.20 | 20.00 | 9.60  | 31.30 | -2.00 | 51.0  | 29.17  |
| Jul.   | 13.40 | 19.90 | 7.80  | 31.90 | -4.30 | 35.0  | 27.14  |
| Aug.   | 15.50 | 22.80 | 9.10  | 37.40 | -2.50 | 18.0  | 39.53  |
| Sep.   | 17.90 | 24.80 | 11.87 | 38.80 | 0.50  | 69.0  | 56.64  |
| Oct.   | 20.20 | 27.00 | 12.60 | 42.40 | 2.80  | 85.0  | 82.17  |
| Nov.   | 23.00 | 30.00 | 16.10 | 41.20 | 7.50  | 106.0 | 111.51 |
| Dec.   | 25.50 | 32.70 | 18.20 | 43.40 | 7.90  | 120.0 | 148.82 |
| Year   | 20.18 | 26.98 | 13.87 | 38.29 | 3.29  | 1014  | 1008.7 |

### BIOCLIMATIC INDICES AND DIAGNOSIS

|  |      |
|--|------|
| Thermicity index.....(It):                       | 479  |
| Compensated thermicity index.....(Itc):          | 479  |
| Simple continentality index.....(Ic):            | 13.3 |
| Diurnality index.....(Id):                       | 15.6 |
| Annual ombrothermic index.....(Io):              | 4.19 |
| Monthly dry ombrothermic index.....(Iod1):       | 1.16 |
| Bimonthly dry ombrothermic index.....(Iod2):     | 1.83 |
| Three monthly dry ombrothermic index.....(Iod3): | 2.41 |
| Four monthly dry ombrothermic index.....(Iod4):  | 2.80 |
| Annual ombro-evaporation index.....(Ioe):        | 1.94 |
| Annual positive temperature.....(Tp):            | 2422 |
| Annual negative temperature.....(Tn):            | 0    |
| Dry station temperature.....(Td):                | 431  |
| Positive precipitation.....(Pp):                 | 1014 |

| N. of  | P>4T | P:2T-4T | PT-2T | P<T | T<0 |
|--------|------|---------|-------|-----|-----|
| Months | 6    | 5       | 1     | 0   | 0   |

Latitudinal Belt...: Subtropical

Continentalty.....: Oceanic - Low Semihyperoceanic

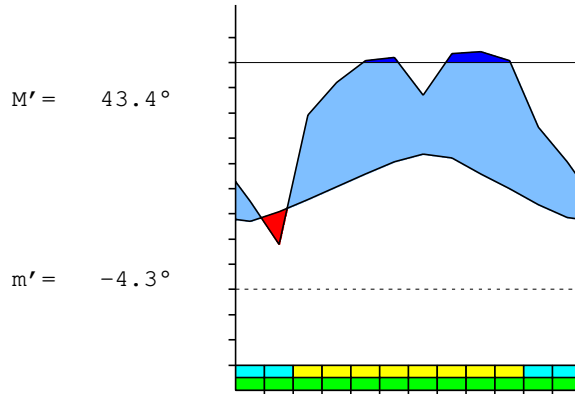
Bioclimate(Variant): TROPICAL PLUVISEASONAL (PLUVISEROTIN,MESOPHYTIC)

Bioclimatic Belt...: LOW MESOTROPICAL LOW SUBHUMID

VERA (ARGENTINA)

58 m

P= 1014      29° 28' S      60° 12' W      10/10 y.  
 T= 20.2°      Ic= 13.3      Tp= 2422      Tn= 0  
 m= 7.8°      M= 19.9°      Itc= 479      Io= 4.2



TROPICAL PLUVISEASONAL (PLUVISEROTIN)  
 LOW MESOTROPICAL LOW SUBHUMID

WATER INDEX CARD

VERA (ARGENTINA)

Altitude: 58 m.

Latitude: 29° 28' S

| (C/mm) | T    | PE   | P    | VR  | R   | RE  | DF | SP | DR | HC   |
|--------|------|------|------|-----|-----|-----|----|----|----|------|
| Jul.   | 13.4 | 27   | 35   | 0   | 100 | 27  | 0  | 8  | 10 | 0.2  |
| Aug.   | 15.5 | 40   | 18   | -22 | 78  | 40  | 0  | 0  | 5  | -0.5 |
| Sep.   | 17.9 | 57   | 69   | 12  | 91  | 57  | 0  | 0  | 2  | 0.2  |
| Oct.   | 20.2 | 82   | 85   | 3   | 94  | 82  | 0  | 0  | 1  | 0.0  |
| Nov.   | 23.0 | 112  | 106  | -6  | 88  | 112 | 0  | 0  | 1  | 0.0  |
| Dec.   | 25.5 | 149  | 120  | -29 | 59  | 149 | 0  | 0  | 0  | -0.1 |
| Jan.   | 26.7 | 163  | 77   | -59 | 0   | 136 | 27 | 0  | 0  | -0.5 |
| Feb.   | 26.0 | 132  | 139  | 7   | 7   | 132 | 0  | 0  | 0  | 0.0  |
| Mar.   | 23.0 | 105  | 142  | 37  | 44  | 105 | 0  | 0  | 0  | 0.3  |
| Apr.   | 19.9 | 68   | 108  | 40  | 84  | 68  | 0  | 0  | 0  | 0.5  |
| May.   | 16.9 | 46   | 64   | 16  | 100 | 46  | 0  | 2  | 1  | 0.3  |
| Jun.   | 14.2 | 29   | 51   | 0   | 100 | 29  | 0  | 22 | 12 | 0.7  |
| Year   | 20.2 | 1009 | 1014 | *   | *   | 982 | 27 | 32 | 32 | *    |

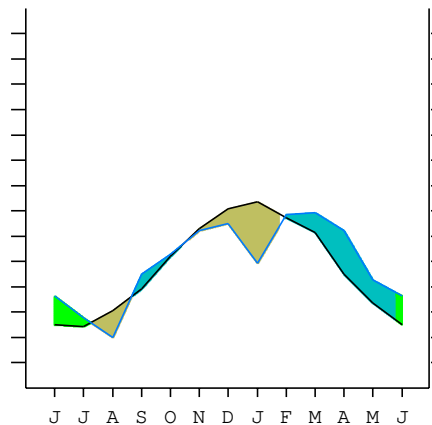
R = Reserve    VR = Variation of the reserve    RE = Real evapotranspiration  
 DR = Drainage    HC = Humidity coefficient    DF = Deficit    SP = Superavit

VERA (ARGENTINA)

29°28' S    60°12' W    58 m 10/10 y.

T= 20.2      Ic= 13.3      TROPICAL PLUVISEASONAL (PLUVISEROTIN)  
 m= 7.8      Tp= 2422      LOW MESOTROPICAL  
 M= 19.9      Tn= 0      LOW SUBHUMID  
 M' = 43.4    Itc= 479  
 m' = -4.3    Io= 4.2  
 P= 1014      mm    ———  
 PE= 1009     mm    ———

|             |         |
|-------------|---------|
| Imbibing    | 28 Jan. |
| Saturation  | 26 May. |
| Reserve Use | 11 Oct. |
| Deficit     | 21 Jan. |



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SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continental Index [B1b]  
 + Type .....: B. Oceanic  
 + Subtype .....: 1. Semihyperoceanic  
 + Variant .....: b. Low

Thermic types [A3.A2]  
 + Latitudinal zone .....: A. Warm  
 + Latitudinal belt .....: 3. Subtropical  
 + Thermic type .....: A. Warm  
 + Thermic subtype .....: 2. Warm

Bioclimatic types [A4e.3b.6b]  
 + Macrobioclimate .....: A. TROPICAL  
 + Bioclimate .....: 4. PLUVISEASONAL  
 + Bioclimatic variant .: e. PLUVISEROTIN, MESOPHYTIC  
 + Thermic type.....: 3. MESOTROPICAL  
 + Thermic subtype.....: b. LOW  
 + Ombrothermic type ...: 6. SUBHUMID  
 + Ombrothermic subtype : b. LOW

Bioclimatic Classification .....: Trde (Pse) .Mtr. Shu

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 669  
 Coldest semester of the year.....(Psw): 345  
 Warmest four months period of the year.....(Pcm1): 442  
 Following warmest four months period.....(Pcm2): 365  
 Positive precipitation dryest 3 months.....(Ppd): 104  
 Positive precipitation dryest 2 months.....(Ppd2): 53  
 Positive precipitation dryest 1 month.....(Ppd1): 18  
 Positive precipitation warmest 3 months.....(Pps): 336  
 Positive precipitation warmest 2 months.....(Pps2): 216  
 Positive precipitation warmest 1 month.....(Pps1): 77  
 Positive precipitation coldest 3 months.....(Ppw): 104  
 Positive precipitation coldest 2 months.....(Ppw2): 86  
 Positive precipitation coldest 1 month.....(Ppw1): 35

| Seasons  | Winter<br>Tr1-W | Spring<br>Tr2-P | Summer<br>Tr3-S | Automn<br>Tr4-F |
|----------|-----------------|-----------------|-----------------|-----------------|
| Rainfall | 104             | 260             | 336             | 314             |

Seasonal rainfall rhythms: S > F > P > W

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 26.7  
 Average coldest month [T].....(Tmin): 13.4  
 Maximum temp. warmest month [M].....(Tmmax): 34.2  
 Minimum temp. coldest month [m].....(Tmmin): 7.8  
 Absolute Max.temp. warmest month [M'].....(Tamax): 43.4  
 Absolute Min.temp. coldest month [m'].....(Tamin): -4.3  
 First warmest contrasted month [M].....(Tcmax): 34.2 (1)  
 First coldest contrasted month [m].....(Tcmin): 18.6 (1)  
 Dry station temperature.....(Td): 431  
 Positive temperature dryest 3 months.....(Tpd): 431  
 Positive temperature dryest 2 months.....(Tpd2): 289  
 Positive temperature dryest 1 month.....(Tpd1): 155  
 Positive temperature warmest 3 months.....(Tps): 782  
 Positive temperature warmest 2 months.....(Tps2): 527  
 Positive temperature warmest 1 month.....(Tps1): 267  
 Positive temperature coldest 3 months.....(Tpw): 431  
 Positive temperature coldest 2 months.....(Tpw2): 276  
 Positive temperature coldest 1 month.....(Tpw1): 134

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

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OMBROTHERMIC PARAMETERS

Annual aridity index.[PE/P].....(Iar): 0.99  
 Mediterranean index of January.....(Im1): 2.12  
 Mediterranean index of January & February.....(Im2): 1.37  
 Mediterranean index of December to February...(Im3): 1.32

| Months     | Dec.         | Jan. | Feb. | Mar.       | Apr. | May. | Jun.          | Jul. | Aug. | Sep.       | Oct. | Nov. |
|------------|--------------|------|------|------------|------|------|---------------|------|------|------------|------|------|
| Pp(x10)    | 1200         | 770  | 1390 | 1420       | 1080 | 640  | 510           | 350  | 180  | 690        | 850  | 1060 |
| Tp         | 255          | 267  | 260  | 230        | 199  | 169  | 142           | 134  | 155  | 179        | 202  | 230  |
| Io (Iom)   | 4.71         | 2.88 | 5.35 | 6.17       | 5.43 | 3.79 | 3.59          | 2.61 | 1.16 | 3.85       | 4.21 | 4.61 |
| Seasons    | Summer       |      |      | Autumn     |      |      | Winter        |      |      | Spring     |      |      |
| Pp(x10)/Tp | 3360 / 782   |      |      | 3140 / 598 |      |      | 1040 / 431    |      |      | 2600 / 611 |      |      |
| Io (Iot)   | 4.297        |      |      | 5.251      |      |      | 2.413         |      |      | 4.255      |      |      |
| Semesters  | December-May |      |      |            |      |      | June-November |      |      |            |      |      |
| Pp(x10)/Tp | 6500 / 1380  |      |      |            |      |      | 3640 / 1042   |      |      |            |      |      |
| Io (Iosm)  | 4.710        |      |      |            |      |      | 3.493         |      |      |            |      |      |

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 10140/2422=4.19 **There is No Yearly Aridity**

| Months                    | Dec.       | Jan. | Feb. | Mar.       | Apr. | May. | Jun.       | Jul. | Aug. | Sep.       | Oct. | Nov. |
|---------------------------|------------|------|------|------------|------|------|------------|------|------|------------|------|------|
| Pp [P*10]                 | 1200       | 770  | 1390 | 1420       | 1080 | 640  | 510        | 350  | 180  | 690        | 850  | 1060 |
| Tp [T*10]                 | 255        | 267  | 260  | 230        | 199  | 169  | 142        | 134  | 155  | 179        | 202  | 230  |
| Iom [Pp/Tp]               | 471        | 288  | 535  | 617        | 543  | 379  | 359        | 261  | 116  | 385        | 421  | 461  |
| Avm [200-Iom]             | ***        | ***  | ***  | ***        | ***  | ***  | ***        | ***  | 84   | ***        | ***  | ***  |
| Seasons                   | Summer     |      |      | Autumn     |      |      | Winter     |      |      | Spring     |      |      |
| Pp / Tp                   | 3360 / 782 |      |      | 3140 / 598 |      |      | 1040 / 431 |      |      | 2600 / 611 |      |      |
| Iot [Pp/Tp]               | 430        |      |      | 525        |      |      | 241        |      |      | 426        |      |      |
| Avs E[Avm<200]            | ***        |      |      | ***        |      |      | ***        |      |      | ***        |      |      |
| Strong lower semiarid [1] |            |      |      |            |      |      |            |      |      |            |      |      |
|                           |            |      |      |            |      |      |            |      |      |            |      |      |
|                           |            |      |      |            |      |      |            |      |      |            |      |      |
|                           |            |      |      |            |      |      |            |      |      |            |      |      |

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin] .....(Sp): 13.30  
 CI of Gorezinski (1920) [1.7\*Sp/sin(Lat)-20.4] .....: 25.56  
 CI of Conrad (1946) [1.7\*Sp/sin(Lat+10)-14] .....: 21.57  
 + Oceanic (20<CI<40)  
 CI of Currey (1974) [CI=Sp/(1+Lat/3)] .....: 1.23  
 + Subcontinental (1.1<CI<1.7)  
 Rainfall Index of Lang (1925) [R=P/T] .....: 50.24  
 + Semiarid (60>R>40)  
 Aridity Index of Martonne (1926) [Ia=P/(T+10)] .....: 33.59  
 + Humid (60>Ia>30)  
 I of Emberger (1930) [Q=100\*P/(Tmax<sup>2</sup>-Tmin<sup>2</sup>)] .....: 91.45  
 + Humid (Q>90)  
 I of Dantin & Revenga (1940) [DR=100\*T/P] .....: 1.99  
 + Humid (2>DR>0)  
 Aridity Index of UNEP [I=P/PE] .....: 1.01  
 + Humid (I>0.65)  
 Potential Erosion I of Fournier (1960) [K=Pi<sup>2</sup>/P].....: 19.89  
 + 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: 2. Macrothermic

| Thornthwaite (1948)   |       |       |       |      |      |                                      |      |      |      |      |       |       |
|---|-------|-------|-------|------|------|--------------------------------------|------|------|------|------|-------|-------|
|   | Jan.  | Feb.  | Mar.  | Apr. | May. | Jun.                                 | Jul. | Aug. | Sep. | Oct. | Nov.  | Dec.  |
| P-E ratio   | 0.27  | 0.52  | 0.57  | 0.45 | 0.28 | 0.23                                 | 0.16 | 0.07 | 0.29 | 0.35 | 0.41  | 0.45  |
| T-E ratio   | 12.02 | 11.70 | 10.35 | 8.95 | 7.60 | 6.39                                 | 6.03 | 6.97 | 8.05 | 9.09 | 10.35 | 11.48 |
| Precipitation-effectiveness:  | 40.41 |       |       |      |      | Temperature-efficiency .....: 108.99 |      |      |      |      |       |       |
| Moisture Index [MI=100*(P-PE)/PE] .....: 0.52<br>+ C2.Subhumid humid (0<MI<20)      |       |       |       |      |      |                                      |      |      |      |      |       |       |
| Index of dryness [DI=100*d/PE] .....: 2.66<br>+ No deficit (0<DI<16.7)              |       |       |       |      |      |                                      |      |      |      |      |       |       |
| Index of humidity [HI=100*s/PE] .....: 3.18<br>+ No surplus (0<HI<10)               |       |       |       |      |      |                                      |      |      |      |      |       |       |
| Potential Evapotranspiration PE .....: 1008.71<br>+ Forth mesothermic (997<PE<1440) |       |       |       |      |      |                                      |      |      |      |      |       |       |

