

Phytosociological Research Center

www.globalbioclimatics.org

Worldwide Bioclimatic Classification System

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

(Adapted to Synoptical Table 14/02/2020)

VILLA ANGELA (ARGENTINA)

Altitude: 74 m.

Latitude: 27°34'S Longitude: 60°44'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. | 27.20 | 36.30 | 19.90 | 43.80 | 8.80 | 116.0 | 166.50 |
| Feb. | 26.40 | 35.10 | 19.80 | 44.40 | 9.00 | 143.0 | 136.78 |
| Mar. | 23.30 | 31.50 | 17.60 | 42.30 | 7.00 | 126.0 | 105.90 |
| Apr. | 20.20 | 28.30 | 14.70 | 36.90 | 2.60 | 99.0 | 67.79 |
| May. | 17.40 | 24.30 | 11.60 | 34.10 | -1.60 | 44.0 | 46.69 |
| Jun. | 14.50 | 21.60 | 9.10 | 33.40 | -4.00 | 33.0 | 28.42 |
| Jul. | 13.60 | 21.40 | 7.70 | 33.40 | -5.60 | 32.0 | 25.56 |
| Aug. | 16.60 | 25.70 | 9.20 | 40.90 | -4.10 | 15.0 | 43.58 |
| Sep. | 19.20 | 28.10 | 12.40 | 42.60 | -0.30 | 48.0 | 63.31 |
| Oct. | 22.00 | 30.60 | 14.30 | 44.40 | 1.10 | 73.0 | 96.86 |
| Nov. | 24.30 | 32.70 | 16.50 | 44.10 | 8.40 | 98.0 | 124.64 |
| Dec. | 26.90 | 35.60 | 18.50 | 44.20 | 8.90 | 75.0 | 166.44 |
| Year | 20.97 | 29.27 | 14.27 | 40.38 | 2.52 | 902 | 1072.5 |

BIOCLIMATIC INDICES AND DIAGNOSIS

| | |
|---|------|
| Thermicity index.....(It): | 501 |
| Compensated thermicity index.....(Itc): | 501 |
| Simple continentality index.....(Ic): | 13.6 |
| Diurnality index.....(Id): | 17.1 |
| Annual ombrothermic index.....(Io): | 3.59 |
| Monthly dry ombrothermic index.....(Iod1): | 0.90 |
| Bimonthly dry ombrothermic index.....(Iod2): | 1.56 |
| Threemonthly dry ombrothermic index.....(Iod3): | 1.79 |
| Fourmonthly dry ombrothermic index.....(Iod4): | 2.00 |
| Annual ombro-evaporation index.....(Ioe): | 0.84 |
| Annual positive temperature.....(Tp): | 2516 |
| Annual negative temperature.....(Tn): | 0 |
| Dry station temperature.....(Td): | 447 |
| Positive precipitation.....(Pp): | 902 |

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

Latitudinal Belt...: Subtropical

Continentality.....: Oceanic - Low Semihyperoceanic

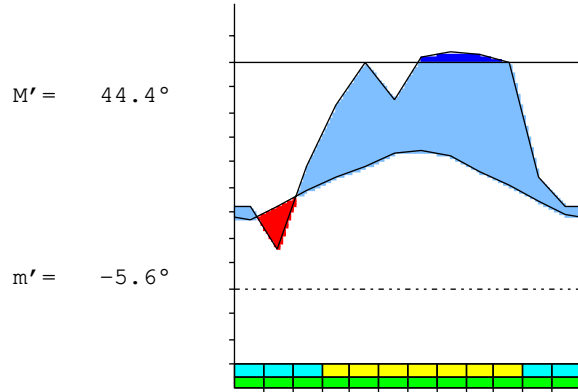
Bioclimate(Variant): TROPICAL XERIC (PLUVISEROTIN,DRY)

Bioclimatic Belt...: UPPER THERMOTROPICAL UPPER DRY

VILLA ANGELA (ARGENTINA)

74 m

P= 902 27° 34'S 60° 44'W 10/10 y.
 T= 21.0 ° Ic= 13.6 Tp= 2516 Tn= 0
 m= 7.7 ° M= 21.4 ° Itc= 501 Io= 3.6



TROPICAL XERIC (PLUVISEROTIN)
 UPPER THERMOTROPICAL UPPER DRY

WATER INDEX CARD VILLA ANGELA (ARGENTINA)
 Altitude: 74 m. Latitude: 27° 34'S

| (C/mm) | T | PE | P | VR | R | RE | DF | SP | DR | HC |
|--------|------|------|-----|-----|----|-----|-----|----|----|------|
| Jul. | 13.6 | 26 | 32 | 6 | 66 | 26 | 0 | 0 | 0 | 0.2 |
| Aug. | 16.6 | 44 | 15 | -29 | 37 | 44 | 0 | 0 | 0 | -0.6 |
| Sep. | 19.2 | 63 | 48 | -15 | 22 | 63 | 0 | 0 | 0 | -0.2 |
| Oct. | 22.0 | 97 | 73 | -22 | 0 | 95 | 2 | 0 | 0 | -0.2 |
| Nov. | 24.3 | 125 | 98 | 0 | 0 | 98 | 27 | 0 | 0 | -0.2 |
| Dec. | 26.9 | 166 | 75 | 0 | 0 | 75 | 91 | 0 | 0 | -0.5 |
| Jan. | 27.2 | 167 | 116 | 0 | 0 | 116 | 51 | 0 | 0 | -0.3 |
| Feb. | 26.4 | 137 | 143 | 6 | 6 | 137 | 0 | 0 | 0 | 0.0 |
| Mar. | 23.3 | 106 | 126 | 20 | 26 | 106 | 0 | 0 | 0 | 0.1 |
| Apr. | 20.2 | 68 | 99 | 31 | 58 | 68 | 0 | 0 | 0 | 0.4 |
| May. | 17.4 | 47 | 44 | -3 | 55 | 47 | 0 | 0 | 0 | 0.0 |
| Jun. | 14.5 | 28 | 33 | 5 | 59 | 28 | 0 | 0 | 0 | 0.1 |
| Year | 21.0 | 1072 | 902 | * | * | 902 | 170 | 0 | 0 | * |

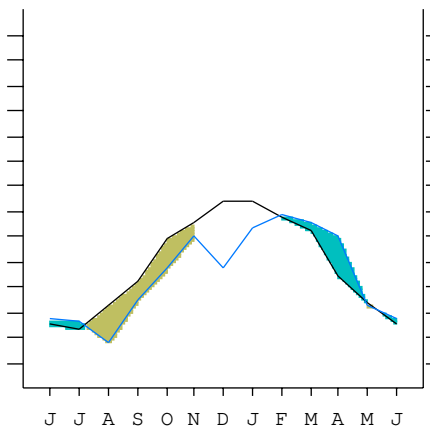
R = Reserve VR = Variation of the reserve RE = Real evapotranspiration
 DR = Drainage HC = Humidity coefficient DF = Deficit SP = Superavit

VILLA ANGELA (ARGENTINA)

27°34'S 60°44'W 74 m 10/10 y.

T= 21.0 Ic= 13.6 TROPICAL XERIC (PLUVISEROTIN)
 m= 7.7 Tp= 2516 UPPER THERMOTROPICAL
 M= 21.4 Tn= 0 UPPER DRY
 M' = 44.4 Itc= 501
 m' = -5.6 Io= 3.6
 P= 902 mm ———
 PE= 1072 mm ———

| | |
|-------------|---------|
| Imbibing | 12 May. |
| Saturation | |
| Reserve Use | 28 Apr. |
| Deficit | 28 Oct. |



VILLA ANGELA (ARGENTINA)

Latitude: 27°34'S Longitude: 60°44'W Altitude: 74 m

SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continentality 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 [A3e.2a.5a]
 + Macrobioclimate: A. TROPICAL
 + Bioclimate: 3. XERIC
 + Bioclimatic variant .: PLUVISEROTIN, DRY
 + Thermic type.....: 2. THERMOTROPICAL
 + Thermic subtype.....: a. UPPER
 + Ombrothermic type ...: 5. DRY
 + Ombrothermic subtype : a. UPPER
 Bioclimatic ClassificationTrxe(Pse).Ttr.Dry.Seo

VILLA ANGELA (ARGENTINA)

Latitude: 27°34'S Longitude: 60°44'W Altitude: 74 m

PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 631
 Coldest semester of the year.....(Psw): 271
 Warmest four months period of the year.....(Pcm1): 432
 Following warmest four months period.....(Pcm2): 302
 Positive precipitation dryest 3 months.....(Ppd): 80
 Positive precipitation dryest 2 months.....(Ppd2): 47
 Positive precipitation dryest 1 month.....(Ppd1): 15
 Positive precipitation warmest 3 months.....(Pps): 334
 Positive precipitation warmest 2 months.....(Pps2): 191
 Positive precipitation warmest 1 month.....(Pps1): 116
 Positive precipitation coldest 3 months.....(Ppw): 80
 Positive precipitation coldest 2 months.....(Ppw2): 65
 Positive precipitation coldest 1 month.....(Ppw1): 32

| Seasons | Winter Tr1-W | Spring Tr2-P | Summer Tr3-S | Automn Tr4-F |
|----------|-----------------|-----------------|-----------------|-----------------|
| Rainfall | 80 | 219 | 334 | 269 |

Seasonal rainfall rhythms: S > F > P > W

VILLA ANGELA (ARGENTINA)

Latitude: 27°34'S Longitude: 60°44'W Altitude: 74 m

TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 27.2
 Average coldest month [T].....(Tmin): 13.6
 Maximum temp. warmest month [M].....(Tmax): 36.3
 Minimum temp. coldest month [m].....(Tmin): 7.7
 Absolute Max.temp. warmest month [M'].....(Tamax): 44.4
 Absolute Min.temp. coldest month [m'].....(Tamin): -5.6
 First warmest contrasted month [M].....(Tcmax): 35.6 (12)
 First coldest contrasted month [m].....(Tcmin): 18.5 (12)
 Dry station temperature.....(Td): 447
 Positive temperature dryest 3 months.....(Tpd): 447
 Positive temperature dryest 2 months.....(Tpd2): 302
 Positive temperature dryest 1 month.....(Tpd1): 166
 Positive temperature warmest 3 months.....(Tps): 805
 Positive temperature warmest 2 months.....(Tps2): 541
 Positive temperature warmest 1 month.....(Tps1): 272
 Positive temperature coldest 3 months.....(Tpw): 447
 Positive temperature coldest 2 months.....(Tpw2): 281
 Positive temperature coldest 1 month.....(Tpw1): 136

VILLA ANGELA (ARGENTINA)

Latitude: 27°34'S Longitude: 60°44'W Altitude: 74 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 | | | |
| 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 | o | | | |
| Agelid.....[m'> 0] (Pf) | o | o | o | o | | | | | | o | o | o |
| HiperAgelid..[all>0] (Pf) | o | o | o | o | | | | | | o | o | o |

VILLA ANGELA (ARGENTINA)

Latitude: 27°34'S Longitude: 60°44'W Altitude: 74 m

OMBROTHERMIC PARAMETERS

Annual aridity index.[PE/P].....(Iar): 1.19
 Mediterranean index of January.....(Im1): 1.44
 Mediterranean index of January & February....(Im2): 1.17
 Mediterranean index of December to February...(Im3): 1.41

| Months | Dec. | Jan. | Feb. | Mar. | Apr. | May. | Jun. | Jul. | Aug. | Sep. | Oct. | Nov. |
|------------|--------------|------|------|------------|------|------|---------------|------|------|------------|------|------|
| Pp(x10) | 750 | 1160 | 1430 | 1260 | 990 | 440 | 330 | 320 | 150 | 480 | 730 | 980 |
| Tp | 269 | 272 | 264 | 233 | 202 | 174 | 145 | 136 | 166 | 192 | 220 | 243 |
| Io (Iom) | 2.79 | 4.26 | 5.42 | 5.41 | 4.90 | 2.53 | 2.28 | 2.35 | 0.90 | 2.50 | 3.32 | 4.03 |
| Seasons | Summer | | | Autumn | | | Winter | | | Spring | | |
| Pp(x10)/Tp | 3340 / 805 | | | 2690 / 609 | | | 800 / 447 | | | 2190 / 655 | | |
| Io (Iot) | 4.149 | | | 4.417 | | | 1.790 | | | 3.344 | | |
| Semesters | December-May | | | | | | June-November | | | | | |
| Pp(x10)/Tp | 6030 / 1414 | | | | | | 2990 / 1102 | | | | | |
| Io (Iosm) | 4.264 | | | | | | 2.713 | | | | | |

VILLA ANGELA (ARGENTINA)

Latitude: 27°34'S Longitude: 60°44'W Altitude: 74 m

Aridity Value Index (AVI)

[10xPP/TP=IO]: 9020/2516=3.59 There is No Yearly Aridity

| Months | Dec. | Jan. | Feb. | Mar. | Apr. | May. | Jun. | Jul. | Aug. | Sep. | Oct. | Nov. |
|---------------------|------------|------|------|------------|------|------|-----------|------|------|------------|------|------|
| Pp [P*10] | 750 | 1160 | 1430 | 1260 | 990 | 440 | 330 | 320 | 150 | 480 | 730 | 980 |
| TP [T*10] | 269 | 272 | 264 | 233 | 202 | 174 | 145 | 136 | 166 | 192 | 220 | 243 |
| Iom [Pp/TP] | 279 | 426 | 542 | 541 | 490 | 253 | 228 | 235 | 90 | 250 | 332 | 403 |
| Avm [200-Iom] | *** | *** | *** | *** | *** | *** | *** | *** | 110 | *** | *** | *** |
| Seasons | Summer | | | Autumn | | | Winter | | | Spring | | |
| Pp / Tp | 3340 / 805 | | | 2690 / 609 | | | 800 / 447 | | | 2190 / 655 | | |
| Iot [Pp/TP] | 415 | | | 442 | | | 179 | | | 334 | | |
| Avs E[Avm<200] | *** | | | *** | | | *** | | | *** | | |
| Weak upper arid [1] | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

VILLA ANGELA (ARGENTINA)

Latitude: 27°34'S Longitude: 60°44'W Altitude: 74 m

BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin](Sp): 13.60
 CI of Gorezinski (1920) [1.7*Sp/sin(Lat)-20.4]: 29.56
 CI of Conrad (1946) [1.7*Sp/sin(Lat+10)-14]: 23.92
 + Oceanic (20<CI<40)
 CI of Currey (1974) [CI=Sp/(1+Lat/3)]: 1.33
 + Subcontinental (1.1<CI<1.7)
 Rainfall Index of Lang (1925) [R=P/T]: 43.02
 + Semiarid (60>R>40)
 Aridity Index of Martonne (1926) [Ia=P/(T+10)]: 29.13
 + Subhumid (30>Ia>20)
 I of Emberger (1930) [Q=100*P/(Tmmax²-Tmmin²)]: 71.68
 + Subhumid (90>Q>50)
 I of Dantin & Revenga (1940) [DR=100*T/P]: 2.32
 + Semiarid (3>DR>2)
 Aridity Index of UNEP [I=P/PE]: 0.84
 + Humid (I>0.65)
 Potencial Erosion I of Fournier (1960) [K=Pi²/P].....: 22.67
 + Very low (K<60)

VILLA ANGELA (ARGENTINA)

Latitude: 27°34'S Longitude: 60°44'W Altitude: 74 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 | 0.41 | 0.53 | 0.50 | 0.41 | 0.18 | 0.14 | 0.14 | 0.06 | 0.19 | 0.28 | 0.37 | 0.26 |
| T-E ratio | 12.24 | 11.88 | 10.48 | 9.09 | 7.83 | 6.52 | 6.12 | 7.47 | 8.64 | 9.90 | 10.93 | 12.10 |
| Precipitation-effectiveness: 34.59 | | | | | | Temperature-efficiency: 113.22 | | | | | | |
| Moisture Index [MI=100*(P-PE)/PE]: -15.90 + C1.Subhumid dry (-33.3<MI<0) | | | | | | | | | | | | |
| Index of dryness [DI=100*d/PE]: 15.89 + No deficit (0<DI<16.7) | | | | | | | | | | | | |
| Index of humidity [HI=100*s/PE]: 0.00 + No surplus (0<HI<10) | | | | | | | | | | | | |
| Potential Evapotranspiration PE: 1072.48 + Forth mesothermic (997<PE<1440) | | | | | | | | | | | | |

