

Phytosociological Research Center

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Worldwide Bioclimatic Classification System

Prof.Dr. Salvador Rivas-Martinez

(Adapted to Synoptical Table 30/08/2017)

ESPERANCE (AUSTRALIA)

Altitude: 25 m.

Latitude: 33°49'S Longitude: 121°53'E

Temperature observation period.: 1969-1993 (25)

Rainfall observation period....: 1969-1993 (25)

| (C/mm) | Ti | Mi | mi | M'i | m'i | Pi | EPI |
|--------|-------|-------|-------|------|------|------|--------|
| Jan. | 20.75 | 24.70 | 16.90 | 0.00 | 0.00 | 13.1 | 108.17 |
| Feb. | 21.12 | 25.83 | 16.08 | 0.00 | 0.00 | 26.1 | 95.95 |
| Mar. | 19.99 | 24.36 | 15.59 | 0.00 | 0.00 | 25.0 | 88.18 |
| Apr. | 18.13 | 21.21 | 15.04 | 0.00 | 0.00 | 47.3 | 66.18 |
| May. | 15.48 | 18.61 | 12.44 | 0.00 | 0.00 | 80.6 | 48.38 |
| Jun. | 13.36 | 16.18 | 10.33 | 0.00 | 0.00 | 80.4 | 34.70 |
| Jul. | 12.58 | 14.93 | 10.38 | 0.00 | 0.00 | 98.4 | 33.20 |
| Aug. | 13.05 | 15.23 | 10.68 | 0.00 | 0.00 | 84.8 | 38.15 |
| Sep. | 14.31 | 18.68 | 10.23 | 0.00 | 0.00 | 55.2 | 47.01 |
| Oct. | 15.79 | 19.05 | 12.55 | 0.00 | 0.00 | 51.4 | 62.84 |
| Nov. | 17.70 | 20.85 | 14.35 | 0.00 | 0.00 | 39.1 | 78.39 |
| Dec. | 19.40 | 22.55 | 16.05 | 0.00 | 0.00 | 16.4 | 98.01 |
| Year | 16.80 | 20.18 | 13.39 | 0.00 | 0.00 | 618 | 799.15 |

BIOCLIMATIC INDICES AND DIAGNOSIS

| | |
|--|------|
| Thermicity index.....(It): | 421 |
| Compensated thermicity index.....(Itc): | 421 |
| Simple continentality index.....(Ic): | 8.5 |
| Diurnality index.....(Id): | 9.8 |
| Annual ombrothermic index.....(Io): | 3.06 |
| Monthly estival ombrothermic index.....(Ios1): | 0.63 |
| Bimonthly estival ombrothermic index.....(Ios2): | 0.94 |
| Three monthly estival ombrothermic index.....(Ios3): | 0.91 |
| Four monthly estival ombrothermic index.....(Ios4): | 1.20 |
| Annual ombro-evaporation index.....(Ioe): | 0.37 |
| Annual positive temperature.....(Tp): | 2017 |
| Annual negative temperature.....(Tn): | 0 |
| Estival temperature.....(Ts): | 613 |
| Positive precipitation.....(Pp): | 618 |

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

Latitudinal Belt...: Subtropical

Continentalty.....: Hyperoceanic - High Subhyperoceanic

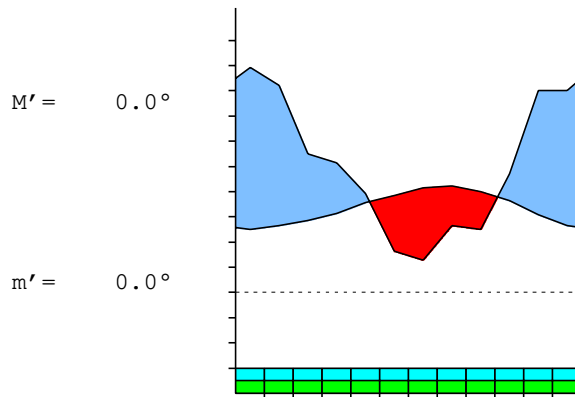
Bioclimatic.....: MEDITERRANEAN PLUVISEASONAL-OCEANIC

Bioclimatic Belt...: LOW THERMOMEDITERRANEAN UPPER DRY

ESPERANCE (AUSTRALIA)

25 m

P= 618 33° 49' S 121° 53' E 25/25 y.
 T= 16.8° Ic= 8.5 Tp= 2017 Tn= 0
 m= 10.4° M= 14.9° Itc= 421 Io= 3.1



MEDITERRANEAN PLUVISEASONAL-OCEANIC
 LOW THERMOMEDITERRANEAN UPPER DRY

WATER INDEX CARD

ESPERANCE (AUSTRALIA)

Altitude: 25 m.

Latitude: 33° 49' S

| (C/mm) | T | PE | P | VR | R | RE | DF | SP | DR | HC |
|--------|------|-----|-----|-----|-----|-----|-----|----|----|------|
| Jul. | 12.6 | 33 | 98 | 22 | 100 | 33 | 0 | 43 | 22 | 1.9 |
| Aug. | 13.1 | 38 | 85 | 0 | 100 | 38 | 0 | 47 | 34 | 1.2 |
| Sep. | 14.3 | 47 | 55 | 0 | 100 | 47 | 0 | 8 | 21 | 0.1 |
| Oct. | 15.8 | 63 | 51 | -11 | 89 | 63 | 0 | 0 | 11 | -0.1 |
| Nov. | 17.7 | 78 | 39 | -39 | 49 | 78 | 0 | 0 | 5 | -0.5 |
| Dec. | 19.4 | 98 | 16 | -49 | 0 | 66 | 32 | 0 | 3 | -0.8 |
| Jan. | 20.8 | 108 | 13 | 0 | 0 | 13 | 95 | 0 | 1 | -0.8 |
| Feb. | 21.1 | 96 | 26 | 0 | 0 | 26 | 70 | 0 | 1 | -0.7 |
| Mar. | 20.0 | 88 | 25 | 0 | 0 | 25 | 63 | 0 | 0 | -0.7 |
| Apr. | 18.1 | 66 | 47 | 0 | 0 | 47 | 19 | 0 | 0 | -0.2 |
| May. | 15.5 | 48 | 81 | 32 | 32 | 48 | 0 | 0 | 0 | 0.6 |
| Jun. | 13.4 | 35 | 80 | 46 | 78 | 35 | 0 | 0 | 0 | 1.3 |
| Year | 16.8 | 799 | 618 | * | * | 520 | 279 | 98 | 98 | * |

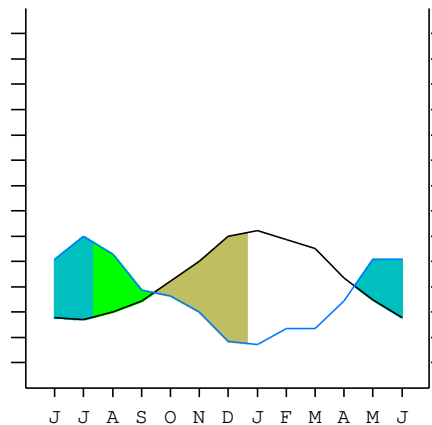
R = Reserve VR = Variation of the reserve RE = Real evapotranspiration
 DR = Drainage HC = Humidity coefficient DF = Deficit SP = Superavit

ESPERANCE (AUSTRALIA)

33°49' S 121°53' E 25 m 25/25 y.

T= 16.8 Ic= 8.5 MEDITERRANEAN PLUVISEASONAL-OCEANIC
 m= 10.4 Tp= 2017 LOW THERMOMEDITERRANEAN
 M= 14.9 Tn= 0 UPPER DRY
 M' = 0.0 Itc= 421
 m' = 0.0 Io= 3.1
 P= 618 mm ———
 PE= 799 mm ———

| | |
|-------------|---------|
| Imbibing | 12 Apr. |
| Saturation | 11 Jul. |
| Reserve Use | 13 Sep. |
| Deficit | 19 Dec. |



ESPERANCE (AUSTRALIA)

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SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continental Index [A3a]
 + Type: A. Hyperoceanic
 + Subtype: 3. Subhyperoceanic
 + Variant: a. High
 Thermic types [A3.A3]
 + Latitudinal zone: A. Warm
 + Latitudinal belt: 3. Subtropical
 + Thermic type: A. Warm
 + Thermic subtype: 3. Subwarm
 Bioclimatic types [B8.2b.5a]
 + Macrobioclimate: B. MEDITERRANEAN
 + Bioclimate: 8. PLUVISEASONAL-OCEANIC
 + Bioclimatic variant ..:
 + Thermic type.....: 2. THERMOMEDITERRANEAN
 + Thermic subtype.....: b. LOW
 + Ombrothermic type ...: 5. DRY
 + Ombrothermic subtype : a. UPPER
 Bioclimatic Classification: Mehc.Tme.Dry

ESPERANCE (AUSTRALIA)

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 167
 Coldest semester of the year.....(Psw): 451
 Warmest four months period of the year.....(Pcm1): 81
 Following warmest four months period.....(Pcm2): 307
 Positive precipitation dryest 3 months.....(Ppd): 56
 Positive precipitation dryest 2 months.....(Ppd2): 30
 Positive precipitation dryest 1 month.....(Ppd1): 13
 Positive precipitation warmest 3 months.....(Pps): 64
 Positive precipitation warmest 2 months.....(Pps2): 39
 Positive precipitation warmest 1 month.....(Pps1): 26
 Positive precipitation coldest 3 months.....(Ppw): 264
 Positive precipitation coldest 2 months.....(Ppw2): 183
 Positive precipitation coldest 1 month.....(Ppw1): 98

| Seasons | Winter Tr1-W | Spring Tr2-P | Summer Tr3-S | Automn Tr4-F |
|----------|-----------------|-----------------|-----------------|-----------------|
| Rainfall | 263 | 145 | 55 | 152 |

Seasonal rainfall rhythms: W > F > P > S

ESPERANCE (AUSTRALIA)

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 21.1
 Average coldest month [T].....(Tmin): 12.6
 Maximum temp. warmest month [M].....(Tmmax): 25.8
 Minimum temp. coldest month [m].....(Tmmin): 10.2
 Absolute Max.temp. warmest month [M'].....(Tamax): 0.0
 Absolute Min.temp. coldest month [m'].....(Tamin): 0.0
 First warmest contrasted month [M].....(Tcmax): 25.8 (2)
 First coldest contrasted month [m].....(Tcmin): 16.1 (2)
 Estival temperature.....(Ts): 613
 Positive temperature dryest 3 months.....(Tpd): 613
 Positive temperature dryest 2 months.....(Tpd2): 402
 Positive temperature dryest 1 month.....(Tpd1): 208
 Positive temperature warmest 3 months.....(Tps): 619
 Positive temperature warmest 2 months.....(Tps2): 419
 Positive temperature warmest 1 month.....(Tps1): 211
 Positive temperature coldest 3 months.....(Tpw): 390
 Positive temperature coldest 2 months.....(Tpw2): 256
 Positive temperature coldest 1 month.....(Tpw1): 126

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

ESPERANCE (AUSTRALIA)

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OMBROTHERMIC PARAMETERS

Annual aridity index.[PE/P].....(Iar): 1.29
 Mediterranean index of January.....(Im1): 8.24
 Mediterranean index of January & February.....(Im2): 5.20
 Mediterranean index of December to February...(Im3): 5.43

| Months | Dec. | Jan. | Feb. | Mar. | Apr. | May. | Jun. | Jul. | Aug. | Sep. | Oct. | Nov. |
|------------|--------------|------|------|------------|------|------|---------------|------|------|------------|------|------|
| Pp(x10) | 164 | 131 | 261 | 251 | 473 | 806 | 804 | 984 | 848 | 552 | 514 | 391 |
| Tp | 194 | 208 | 211 | 200 | 181 | 155 | 134 | 126 | 131 | 143 | 158 | 177 |
| Io (Iom) | 0.84 | 0.63 | 1.24 | 1.25 | 2.61 | 5.21 | 6.02 | 7.82 | 6.50 | 3.86 | 3.25 | 2.21 |
| Seasons | Summer | | | Autumn | | | Winter | | | Spring | | |
| Pp(x10)/Tp | 556 / 613 | | | 1530 / 536 | | | 2636 / 390 | | | 1456 / 478 | | |
| Io (Iot) | 0.908 | | | 2.854 | | | 6.759 | | | 3.047 | | |
| Semesters | December-May | | | | | | June-November | | | | | |
| Pp(x10)/Tp | 2086 / 1149 | | | | | | 4092 / 868 | | | | | |
| Io (Iosm) | 1.816 | | | | | | 4.715 | | | | | |

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 6178/2017=3.06 **There is No Yearly Aridity**

| Months | Dec. | Jan. | Feb. | Mar. | Apr. | May. | Jun. | Jul. | Aug. | Sep. | Oct. | Nov. |
|-------------------------|-----------|------|------|------------|------|---------------------|------------|------|------|------------|------|------|
| Pp [P*10] | 164 | 131 | 261 | 251 | 473 | 806 | 804 | 984 | 848 | 552 | 514 | 391 |
| Tp [T*10] | 194 | 208 | 211 | 200 | 181 | 155 | 134 | 126 | 131 | 143 | 158 | 177 |
| Iom [Pp/Tp] | 84 | 63 | 124 | 125 | 261 | 521 | 602 | 782 | 650 | 386 | 325 | 221 |
| Avm [200-Iom] | 116 | 137 | 76 | 75 | *** | *** | *** | *** | *** | *** | *** | *** |
| Seasons | Summer | | | Autumn | | | Winter | | | Spring | | |
| Pp / Tp | 556 / 613 | | | 1530 / 536 | | | 2636 / 390 | | | 1456 / 478 | | |
| Iot [Pp/Tp] | 91 | | | 285 | | | 676 | | | 305 | | |
| Avs E[Avm<200] | 329 | | | *** | | | *** | | | *** | | |
| Weak lower arid [1] | | | | | | Weak upper arid [2] | | | | | | |
| Weak lower semiarid [2] | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

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BIOCLIMATIC INDICES I

| | | |
|--|-------|--------|
| CI of Supan (1884) [Tmax-Tmin] | (Sp): | 8.54 |
| CI of Gorezinski (1920) [1.7*Sp/sin(Lat)-20.4] | | 5.69 |
| CI of Conrad (1946) [1.7*Sp/sin(Lat+10)-14] | | 6.97 |
| + Hyperoceanic (-20<CI<20) | | |
| CI of Currey (1974) [CI=Sp/(1+Lat/3)] | | 0.70 |
| + Oceanic (0.6<CI<1.1) | | |
| Rainfall Index of Lang (1925) [R=P/T] | | 36.76 |
| + Steppic (40>R>0) | | |
| Aridity Index of Martonne (1926) [Ia=P/(T+10)] | | 23.05 |
| + Subhumid (30>Ia>20) | | |
| I of Emberger (1930) [Q=100*P/(Tmax ² -Tmin ²)] | | 109.82 |
| + Humid (Q>90) | | |
| I of Dantin & Revenga (1940) [DR=100*T/P] | | 2.72 |
| + Semiarid (3>DR>2) | | |
| Aridity Index of UNEP [I=P/PE] | | 0.77 |
| + Humid (I>0.65) | | |
| Potential Erosion I of Fournier (1960) [K=Pi ² /P] | | 15.66 |
| + Very low (K<60) | | |

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BIOCLIMATIC INDICES II

Bioclimatic classification of Gaussen & Bagnouls (1957)
 + Climate

- + Climate
- + Region
- + Thermic type: 3. Macro-mesothermic

| Thornthwaite (1948) | | | | | | | | | | | | |
|---|------|------|------|------|------|------------------------------|------|------|------|------|------|--------|
| | Jan. | Feb. | Mar. | Apr. | May. | Jun. | Jul. | Aug. | Sep. | Oct. | Nov. | Dec. |
| P-E ratio | 0.04 | 0.09 | 0.09 | 0.19 | 0.37 | 0.39 | 0.50 | 0.42 | 0.25 | 0.22 | 0.16 | 0.06 |
| T-E ratio | 9.34 | 9.50 | 9.00 | 8.16 | 6.97 | 6.01 | 5.66 | 5.87 | 6.44 | 7.11 | 7.97 | 8.73 |
| Precipitation-effectiveness: 27.89 | | | | | | Temperature-efficiency | | | | | | 90.75 |
| Moisture Index [MI=100*(P-PE)/PE] | | | | | | | | | | | | -22.70 |
| + C1.Subhumid dry (-33.3<MI<0) | | | | | | | | | | | | |
| Index of dryness [DI=100*d/PE] | | | | | | | | | | | | 34.94 |
| + Strong deficit (33.3<DI) | | | | | | | | | | | | |
| Index of humidity [HI=100*s/PE] | | | | | | | | | | | | 12.25 |
| + Moderate surplus (10<HI<20) | | | | | | | | | | | | |
| Potential Evapotranspiration PE | | | | | | | | | | | | 799.15 |
| + Second mesothermic (712<PE<855) | | | | | | | | | | | | |

