

Phytosociological Research Center

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Worldwide Bioclimatic Classification System

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(Adapted to Synoptical Table 30/08/2017)

ZUFRE (ESP HUELVA)

Altitude: 369 m.

Latitude: 37°50'N Longitude: 6°20'W

Temperature observation period.: 1953-1969 (17)

Rainfall observation period....: 1953-1969 (17)

| (C/mm) | Ti | Mi | mi | M'i | m'i | Pi | EPI |
|--------|-------|-------|-------|-------|-------|-------|--------|
| Jan. | 9.50 | 13.10 | 5.90 | 18.10 | 2.10 | 114.0 | 19.69 |
| Feb. | 9.60 | 13.30 | 5.80 | 19.70 | 1.10 | 102.0 | 19.81 |
| Mar. | 11.10 | 15.10 | 7.20 | 21.80 | 3.50 | 113.0 | 31.16 |
| Apr. | 13.80 | 18.60 | 8.90 | 25.70 | 5.20 | 62.0 | 48.35 |
| May. | 18.00 | 24.10 | 12.00 | 31.30 | 7.10 | 51.0 | 85.28 |
| Jun. | 21.30 | 28.00 | 14.70 | 35.40 | 9.30 | 29.0 | 114.76 |
| Jul. | 25.30 | 33.60 | 17.10 | 38.70 | 12.40 | 0.0 | 155.41 |
| Aug. | 25.60 | 33.40 | 17.80 | 38.80 | 13.70 | 4.0 | 148.44 |
| Sep. | 22.90 | 29.80 | 15.90 | 36.40 | 11.40 | 28.0 | 108.98 |
| Oct. | 18.00 | 23.10 | 13.00 | 28.80 | 8.30 | 95.0 | 66.56 |
| Nov. | 12.30 | 16.10 | 8.60 | 22.80 | 4.90 | 115.0 | 30.31 |
| Dec. | 10.20 | 13.90 | 6.50 | 19.50 | 2.60 | 118.0 | 21.72 |
| Year | 16.47 | 21.84 | 11.12 | 28.08 | 6.80 | 831 | 850.49 |

BIOCLIMATIC INDICES AND DIAGNOSIS

| | |
|--|------|
| Thermicity index.....(It): | 355 |
| Compensated thermicity index.....(Itc): | 355 |
| Simple continentality index.....(Ic): | 16.1 |
| Diurnality index.....(Id): | 16.5 |
| Annual ombrothermic index.....(Io): | 4.21 |
| Monthly estival ombrothermic index.....(Ios1): | No |
| Bimonthly estival ombrothermic index.....(Ios2): | 0.08 |
| Three monthly estival ombrothermic index.....(Ios3): | 0.46 |
| Four monthly estival ombrothermic index.....(Ios4): | 0.93 |
| Annual ombro-evaporation index.....(Ioe): | 0.33 |
| Annual positive temperature.....(Tp): | 1976 |
| Annual negative temperature.....(Tn): | 0 |
| Estival temperature.....(Ts): | 722 |
| Positive precipitation.....(Pp): | 831 |

| N. of | P>4T | P:2T-4T | PT-2T | P<T | T<0 |
|--------|------|---------|-------|-----|-----|
| Months | 7 | 1 | 2 | 2 | 0 |

Latitudinal Belt...: Low eutemperate

Continentalty.....: Oceanic - Low Euoceanic

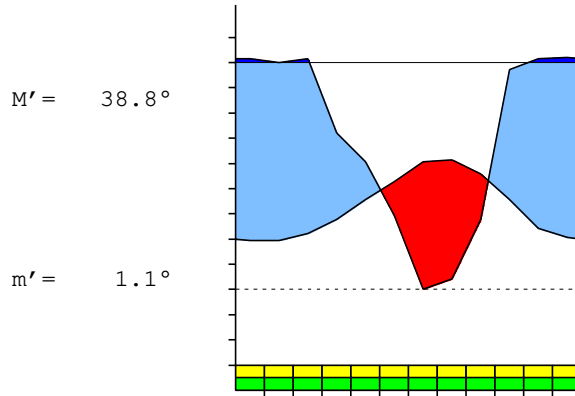
Bioclimate.....: MEDITERRANEAN PLUVISEASONAL-OCEANIC

Bioclimatic Belt...: UPPER THERMOMEDITERRANEAN LOW SUBHUMID

ZUFRE (ESP HUELVA)

369 m

P= 831 37° 50'N 6° 20'W 17/17 y.
 T= 16.5° Ic= 16.1 Tp= 1976 Tn= 0
 m= 5.9° M= 13.1° Itc= 355 Io= 4.2



MEDITERRANEAN PLUVISEASONAL-OCEANIC
 UPPER THERMOMEDITERRANEAN LOW SUBHUMID

WATER INDEX CARD

ZUFRE (ESP HUELVA)

Altitude: 369 m.

Latitude: 37° 50'N

| (C/mm) | T | PE | P | VR | R | RE | DF | SP | DR | HC |
|--------|------|-----|-----|-----|-----|-----|-----|-----|-----|------|
| Jan. | 9.5 | 20 | 114 | 0 | 100 | 20 | 0 | 94 | 73 | 4.7 |
| Feb. | 9.6 | 20 | 102 | 0 | 100 | 20 | 0 | 82 | 78 | 4.1 |
| Mar. | 11.1 | 31 | 113 | 0 | 100 | 31 | 0 | 82 | 80 | 2.6 |
| Apr. | 13.8 | 48 | 62 | 0 | 100 | 48 | 0 | 14 | 47 | 0.2 |
| May. | 18.0 | 85 | 51 | -34 | 66 | 85 | 0 | 0 | 23 | -0.4 |
| Jun. | 21.3 | 115 | 29 | -66 | 0 | 95 | 20 | 0 | 12 | -0.7 |
| Jul. | 25.3 | 155 | 0 | 0 | 0 | 0 | 155 | 0 | 6 | -1.0 |
| Aug. | 25.6 | 148 | 4 | 0 | 0 | 4 | 144 | 0 | 3 | -0.9 |
| Sep. | 22.9 | 109 | 28 | 0 | 0 | 28 | 81 | 0 | 1 | -0.7 |
| Oct. | 18.0 | 67 | 95 | 28 | 28 | 67 | 0 | 0 | 1 | 0.4 |
| Nov. | 12.3 | 30 | 115 | 72 | 100 | 30 | 0 | 13 | 7 | 2.7 |
| Dec. | 10.2 | 22 | 118 | 0 | 100 | 22 | 0 | 96 | 52 | 4.4 |
| Year | 16.5 | 850 | 831 | * | * | 450 | 401 | 381 | 381 | * |

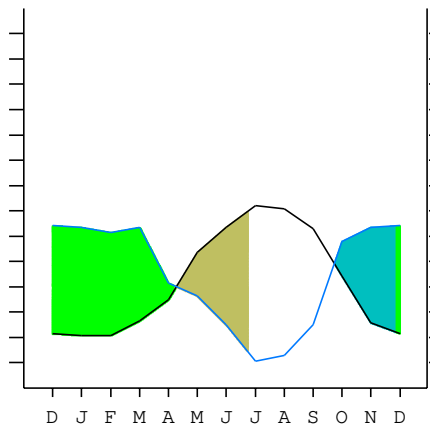
R = Reserve VR = Variation of the reserve RE = Real evapotranspiration
 DR = Drainage HC = Humidity coefficient DF = Deficit SP = Superavit

ZUFRE (ESP HUELVA)

37°50'N 6°20'W 369 m 17/17 y.

T= 16.5 Ic= 16.1 MEDITERRANEAN PLUVISEASONAL-OCEANIC
 m= 5.9 Tp= 1976 UPPER THERMOMEDITERRANEAN
 M= 13.1 Tn= 0 LOW SUBHUMID
 M' = 38.8 Itc= 355
 m' = 1.1 Io= 4.2
 P= 831 mm ———
 PE= 850 mm ———

| | |
|-------------|---------|
| Imbibing | 23 Sep. |
| Saturation | 26 Nov. |
| Reserve Use | 9 Apr. |
| Deficit | 23 Jun. |



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SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continental Index [B2b]
 + Type: B. Oceanic
 + Subtype: 2. Euoceanic
 + Variant: b. Low

Thermic types [B1.A3]
 + Latitudinal zone: B. Temperate
 + Latitudinal belt: 1. Low eutemperate
 + Thermic type: A. Warm
 + Thermic subtype: 3. Subwarm

Bioclimatic types [B8.2a.6b]
 + Macrobioclimate: B. MEDITERRANEAN
 + Bioclimate: 8. PLUVISEASONAL-OCEANIC
 + Bioclimatic variant ..:
 + Thermic type.....: 2. THERMOMEDITERRANEAN
 + Thermic subtype.....: a. UPPER
 + Ombrothermic type ...: 6. SUBHUMID
 + Ombrothermic subtype : b. LOW

Bioclimatic Classification: Mehc.Tme.Shu

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 207
 Coldest semester of the year.....(Psw): 624
 Warmest four months period of the year.....(Pcm1): 61
 Following warmest four months period.....(Pcm2): 442
 Positive precipitation dryest 3 months.....(Ppd): 32
 Positive precipitation dryest 2 months.....(Ppd2): 4
 Positive precipitation dryest 1 month.....(Ppd1): 0
 Positive precipitation warmest 3 months.....(Pps): 32
 Positive precipitation warmest 2 months.....(Pps2): 4
 Positive precipitation warmest 1 month.....(Pps1): 4
 Positive precipitation coldest 3 months.....(Ppw): 334
 Positive precipitation coldest 2 months.....(Ppw2): 216
 Positive precipitation coldest 1 month.....(Ppw1): 114

| Seasons | Winter Tr1-W | Spring Tr2-P | Summer Tr3-S | Automn Tr4-F |
|----------|-----------------|-----------------|-----------------|-----------------|
| Rainfall | 334 | 226 | 33 | 238 |

Seasonal rainfall rhythms: W > F > P > S

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 25.6
 Average coldest month [T].....(Tmin): 9.5
 Maximum temp. warmest month [M].....(Tmmax): 33.6
 Minimum temp. coldest month [m].....(Tmmin): 5.8
 Absolute Max.temp. warmest month [M'].....(Tamax): 38.8
 Absolute Min.temp. coldest month [m'].....(Tamin): 1.1
 First warmest contrasted month [M].....(Tcmax): 33.6 (7)
 First coldest contrasted month [m].....(Tcmin): 17.1 (7)
 Estival temperature.....(Ts): 722
 Positive temperature dryest 3 months.....(Tpd): 738
 Positive temperature dryest 2 months.....(Tpd2): 509
 Positive temperature dryest 1 month.....(Tpd1): 253
 Positive temperature warmest 3 months.....(Tps): 738
 Positive temperature warmest 2 months.....(Tps2): 509
 Positive temperature warmest 1 month.....(Tps1): 256
 Positive temperature coldest 3 months.....(Tpw): 293
 Positive temperature coldest 2 months.....(Tpw2): 191
 Positive temperature coldest 1 month.....(Tpw1): 95

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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 |

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OMBROTHERMIC PARAMETERS

Annual aridity index.[PE/P].....(Iar): 1.02
 Mediterranean index of July.[PE/P].....(Im1): No
 Mediterranean index of July & August.....(Im2): 75.96
 Mediterranean index of June, July & August....(Im3): 12.69

| Months | Dec. | Jan. | Feb. | Mar. | Apr. | May. | Jun. | Jul. | Aug. | Sep. | Oct. | Nov. |
|------------|--------------|------|------|------------|------|------|---------------|------|------|------------|------|------|
| Pp(x10) | 1180 | 1140 | 1020 | 1130 | 620 | 510 | 290 | 0 | 40 | 280 | 950 | 1150 |
| Tp | 102 | 95 | 96 | 111 | 138 | 180 | 213 | 253 | 256 | 229 | 180 | 123 |
| Io (Iom) | 11.6 | 12.0 | 10.6 | 10.2 | 4.49 | 2.83 | 1.36 | 0.00 | 0.16 | 1.22 | 5.28 | 9.35 |
| Seasons | Winter | | | Spring | | | Summer | | | Autumn | | |
| Pp(x10)/Tp | 3340 / 293 | | | 2260 / 429 | | | 330 / 722 | | | 2380 / 532 | | |
| Io (Iot) | 11.40 | | | 5.268 | | | 0.457 | | | 4.474 | | |
| Semesters | December-May | | | | | | June-November | | | | | |
| Pp(x10)/Tp | 5600 / 722 | | | | | | 2710 / 1254 | | | | | |
| Io (Iosm) | 7.756 | | | | | | 2.161 | | | | | |

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 8310/1976=4.21 **There is No Yearly Aridity**

| Months | Dec. | Jan. | Feb. | Mar. | Apr. | May. | Jun. | Jul. | Aug. | Sep. | Oct. | Nov. |
|--------------------------|------------|------|------|------------|------|------|--------------------------|------|------|------------|------|------|
| Pp [P*10] | 1180 | 1140 | 1020 | 1130 | 620 | 510 | 290 | 0 | 40 | 280 | 950 | 1150 |
| Tp [T*10] | 102 | 95 | 96 | 111 | 138 | 180 | 213 | 253 | 256 | 229 | 180 | 123 |
| Iom [Pp/Tp] | \$\$ | \$\$ | \$\$ | \$\$ | 449 | 283 | 136 | 0 | 16 | 122 | 528 | 935 |
| Avm [200-Iom] | *** | *** | *** | *** | *** | *** | 64 | 200 | 184 | 78 | *** | *** |
| Seasons | Winter | | | Spring | | | Summer | | | Autumn | | |
| Pp / Tp | 3340 / 293 | | | 2260 / 429 | | | 330 / 722 | | | 2380 / 532 | | |
| Iot [Pp/Tp] | 1140 | | | 527 | | | 46 | | | 447 | | |
| Avs E[Avm<200] | *** | | | *** | | | 448 | | | *** | | |
| Lower ultrahyperarid [1] | | | | | | | Upper ultrahyperarid [1] | | | | | |
| Weak lower arid [1] | | | | | | | Weak lower semiarid [2] | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin](Sp): 16.10
 CI of Gorezinski (1920) [1.7*Sp/sin(Lat)-20.4]: 24.22
 CI of Conrad (1946) [1.7*Sp/sin(Lat+10)-14]: 22.93
 + Oceanic (20<CI<40)
 CI of Currey (1974) [CI=Sp/(1+Lat/3)]: 1.18
 + Subcontinental (1.1<CI<1.7)
 Rainfall Index of Lang (1925) [R=P/T]: 50.47
 + Semiarid (60>R>40)
 Aridity Index of Martonne (1926) [Ia=P/(T+10)]: 31.40
 + Humid (60>Ia>30)
 I of Emberger (1930) [Q=100*P/(Tmax²-Tmin²)]: 75.87
 + Subhumid (90>Q>50)
 I of Dantin & Revenga (1940) [DR=100*T/P]: 1.98
 + Humid (2>DR>0)
 Aridity Index of UNEP [I=P/PE]: 0.98
 + Humid (I>0.65)
 Potential Erosion I of Fournier (1960) [K=Pi²/P].....: 16.76
 + 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: 3. Macro-mesothermic

| Thornthwaite (1948) | | | | | | | | | | | | |
|--|------|------|------|------|------|-------------------------------------|-------|-------|-------|------|------|------|
| | Jan. | Feb. | Mar. | Apr. | May. | Jun. | Jul. | Aug. | Sep. | Oct. | Nov. | Dec. |
| P-E ratio | 0.66 | 0.58 | 0.62 | 0.29 | 0.21 | 0.10 | 0.00 | 0.01 | 0.09 | 0.41 | 0.60 | 0.67 |
| T-E ratio | 4.27 | 4.32 | 5.00 | 6.21 | 8.10 | 9.58 | 11.38 | 11.52 | 10.30 | 8.10 | 5.54 | 4.59 |
| Precipitation-effectiveness: 42.39 | | | | | | Temperature-efficiency: 88.92 | | | | | | |
| Moisture Index [MI=100*(P-PE)/PE]: -2.29 + C1.Subhumid dry (-33.3<MI<0) | | | | | | | | | | | | |
| Index of dryness [DI=100*d/PE]: 47.13 + Strong deficit (33.3<DI) | | | | | | | | | | | | |
| Index of humidity [HI=100*s/PE]: 44.83 + Strong surplus (20<HI) | | | | | | | | | | | | |
| Potential Evapotranspiration PE: 850.49 + Second mesothermic (712<PE<855) | | | | | | | | | | | | |

