

# Phytosociological Research Center

www.globalbioclimatics.org

## Worldwide Bioclimatic Classification System

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(Adapted to Synoptical Table 30/08/2017)

SEIRA (ESP HUESCA)

Altitude: 815 m.

Latitude: 42°29'N Longitude: 0°26'E

Temperature observation period.: 1935-1969 (35)

Rainfall observation period....: 1935-1969 (35)

| (C/mm) | Ti    | Mi    | mi    | M'i   | m'i   | Pi    | EPI    |
|--------|-------|-------|-------|-------|-------|-------|--------|
| Jan.   | 2.10  | 8.10  | -3.90 | 14.30 | -9.20 | 69.0  | 5.31   |
| Feb.   | 3.80  | 10.20 | -2.60 | 17.10 | -7.90 | 72.0  | 10.81  |
| Mar.   | 7.30  | 14.10 | 0.60  | 20.90 | -4.40 | 103.0 | 29.70  |
| Apr.   | 10.00 | 16.40 | 3.50  | 23.00 | -1.30 | 98.0  | 47.11  |
| May.   | 13.30 | 20.10 | 6.60  | 26.80 | 1.40  | 125.0 | 74.60  |
| Jun.   | 17.20 | 24.30 | 10.20 | 30.80 | 5.10  | 97.0  | 102.35 |
| Jul.   | 20.50 | 28.30 | 12.70 | 33.60 | 8.20  | 85.0  | 127.32 |
| Aug.   | 19.50 | 26.90 | 12.10 | 32.40 | 7.60  | 104.0 | 111.48 |
| Sep.   | 16.70 | 23.70 | 9.70  | 29.40 | 4.40  | 109.0 | 80.90  |
| Oct.   | 11.90 | 18.40 | 5.30  | 24.30 | -0.20 | 98.0  | 49.22  |
| Nov.   | 6.50  | 12.60 | 0.40  | 18.40 | -4.00 | 108.0 | 20.58  |
| Dec.   | 3.10  | 8.60  | -2.30 | 14.50 | -7.10 | 90.0  | 8.16   |
| Year   | 10.99 | 17.64 | 4.36  | 23.79 | -0.62 | 1158  | 667.54 |

### BIOCLIMATIC INDICES AND DIAGNOSIS

|                                                      |      |
|------------------------------------------------------|------|
| Thermicity index.....(It):                           | 152  |
| Compensated thermicity index.....(Itc):              | 154  |
| Simple continentality index.....(Ic):                | 18.4 |
| Diurnality index.....(Id):                           | 15.6 |
| Annual ombrothermic index.....(Io):                  | 8.78 |
| Monthly estival ombrothermic index.....(Ios1):       | 4.15 |
| Bimonthly estival ombrothermic index.....(Ios2):     | 4.72 |
| Three monthly estival ombrothermic index.....(Ios3): | 5.00 |
| Four monthly estival ombrothermic index.....(Ios4):  | 5.83 |
| Annual ombro-evaporation index.....(Ioe):            | 1.14 |
| Annual positive temperature.....(Tp):                | 1319 |
| Annual negative temperature.....(Tn):                | 0    |
| Estival temperature.....(Ts):                        | 572  |
| Positive precipitation.....(Pp):                     | 1158 |

| N. of  | P>4T | P:2T-4T | PT-2T | P<T | T<0 |
|--------|------|---------|-------|-----|-----|
| Months | 12   | 0       | 0     | 0   | 0   |

Latitudinal Belt...: Low eutemperate

Continentalty.....: Oceanic - Low Semicontinental

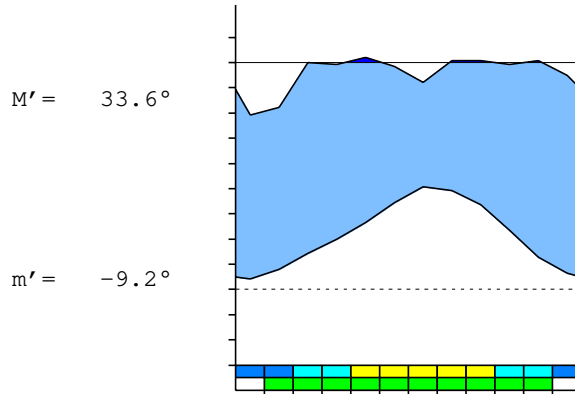
Bioclimate.....: TEMPERATE OCEANIC

Bioclimatic Belt...: LOW SUPRATEMPERATE LOW HUMID

SEIRA (ESP HUESCA)

815 m

P= 1158      42° 29'N      0° 26'E      35/35 y.  
 T= 11.0°      Ic= 18.4      Tp= 1319      Tn= 0  
 m= -3.9°      M= 8.1°      Itc= 154      Io= 8.8



TEMPERATE OCEANIC  
 LOW SUPRATEMPERATE LOW HUMID

WATER INDEX CARD

SEIRA (ESP HUESCA)

Altitude: 815 m.

Latitude: 42° 29'N

| (C/mm) | T    | PE  | P    | VR  | R   | RE  | DF | SP  | DR  | HC   |
|--------|------|-----|------|-----|-----|-----|----|-----|-----|------|
| Jan.   | 2.1  | 5   | 69   | 0   | 100 | 5   | 0  | 64  | 65  | 11.9 |
| Feb.   | 3.8  | 11  | 72   | 0   | 100 | 11  | 0  | 61  | 63  | 5.6  |
| Mar.   | 7.3  | 30  | 103  | 0   | 100 | 30  | 0  | 73  | 68  | 2.4  |
| Apr.   | 10.0 | 47  | 98   | 0   | 100 | 47  | 0  | 51  | 60  | 1.0  |
| May.   | 13.3 | 75  | 125  | 0   | 100 | 75  | 0  | 50  | 55  | 0.6  |
| Jun.   | 17.2 | 102 | 97   | -5  | 95  | 102 | 0  | 0   | 27  | 0.0  |
| Jul.   | 20.5 | 127 | 85   | -42 | 52  | 127 | 0  | 0   | 14  | -0.3 |
| Aug.   | 19.5 | 111 | 104  | -7  | 45  | 111 | 0  | 0   | 7   | 0.0  |
| Sep.   | 16.7 | 81  | 109  | 28  | 73  | 81  | 0  | 0   | 3   | 0.3  |
| Oct.   | 11.9 | 49  | 98   | 27  | 100 | 49  | 0  | 22  | 13  | 0.9  |
| Nov.   | 6.5  | 21  | 108  | 0   | 100 | 21  | 0  | 87  | 50  | 4.2  |
| Dec.   | 3.1  | 8   | 90   | 0   | 100 | 8   | 0  | 82  | 66  | 10.0 |
| Year   | 11.0 | 668 | 1158 | *   | *   | 668 | 0  | 490 | 490 | *    |

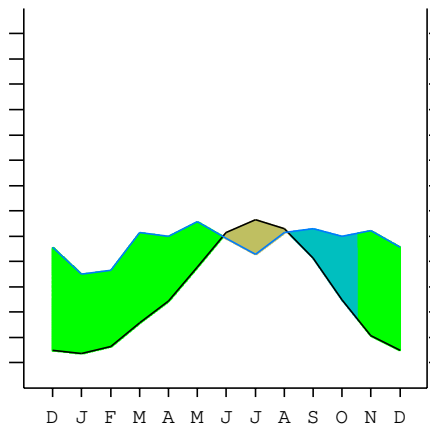
R = Reserve    VR = Variation of the reserve    RE = Real evapotranspiration  
 DR = Drainage    HC = Humidity coefficient    DF = Deficit    SP = Superavit

SEIRA (ESP HUESCA)

42°29'N    0°26'E    815 m 35/35 y.

T= 11.0      Ic= 18.4      TEMPERATE OCEANIC  
 m= -3.9      Tp= 1319      LOW SUPRATEMPERATE  
 M= 8.1      Tn= 0      LOW HUMID  
 M' = 33.6    Itc= 154  
 m' = -9.2    Io= 8.8  
 P= 1158      mm    ———  
 PE= 668      mm    ———

|             |         |
|-------------|---------|
| Imbibing    | 7 Aug.  |
| Saturation  | 17 Oct. |
| Reserve Use | 28 May. |
| Deficit     |         |



SEIRA (ESP HUESCA)

Latitude: 42°29'N Longitude: 0°26'E Altitude: 815 m

SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continental Index [B1a]  
 + Type .....: B. Oceanic  
 + Subtype .....: 1. Semicontinental  
 + Variant .....: a. Low

Thermic types [B1.B5]  
 + Latitudinal zone .....: B. Temperate  
 + Latitudinal belt .....: 1. Low eutemperate  
 + Thermic type .....: B. Temperate  
 + Thermic subtype .....: 5. Subtemperate

Bioclimatic types [C3.4b.7b]  
 + Macrobioclimate .....: C. TEMPERATE  
 + Bioclimate .....: 3. OCEANIC  
 + Bioclimatic variant ..:  
 + Thermic type.....: 4. SUPRATEMPERATE  
 + Thermic subtype.....: b. LOW  
 + Ombrothermic type ...: 7. HUMID  
 + Ombrothermic subtype : b. LOW  
 Bioclimatic Classification .....: Teco.Ste.Hum

SEIRA (ESP HUESCA)

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 618  
 Coldest semester of the year.....(Psw): 540  
 Warmest four months period of the year.....(Pcm1): 395  
 Following warmest four months period.....(Pcm2): 365  
 Positive precipitation dryest 3 months.....(Ppd): 231  
 Positive precipitation dryest 2 months.....(Ppd2): 141  
 Positive precipitation dryest 1 month.....(Ppd1): 69  
 Positive precipitation warmest 3 months.....(Pps): 286  
 Positive precipitation warmest 2 months.....(Pps2): 189  
 Positive precipitation warmest 1 month.....(Pps1): 85  
 Positive precipitation coldest 3 months.....(Ppw): 231  
 Positive precipitation coldest 2 months.....(Ppw2): 159  
 Positive precipitation coldest 1 month.....(Ppw1): 69

| Seasons  | Winter<br>Tr1-W | Spring<br>Tr2-P | Summer<br>Tr3-S | Automn<br>Tr4-F |
|----------|-----------------|-----------------|-----------------|-----------------|
| Rainfall | 231             | 326             | 286             | 315             |

Seasonal rainfall rhythms: P > F > S > W

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 20.5  
 Average coldest month [T].....(Tmin): 2.1  
 Maximum temp. warmest month [M].....(Tmmax): 28.3  
 Minimum temp. coldest month [m].....(Tmmin): -3.9  
 Absolute Max.temp. warmest month [M'].....(Tamax): 33.6  
 Absolute Min.temp. coldest month [m'].....(Tamin): -9.2  
 First warmest contrasted month [M].....(Tcmax): 28.3 (7)  
 First coldest contrasted month [m].....(Tcmin): 12.7 (7)  
 Estival temperature.....(Ts): 572  
 Positive temperature dryest 3 months.....(Tpd): 90  
 Positive temperature dryest 2 months.....(Tpd2): 59  
 Positive temperature dryest 1 month.....(Tpd1): 21  
 Positive temperature warmest 3 months.....(Tps): 572  
 Positive temperature warmest 2 months.....(Tps2): 400  
 Positive temperature warmest 1 month.....(Tps1): 205  
 Positive temperature coldest 3 months.....(Tpw): 90  
 Positive temperature coldest 2 months.....(Tpw2): 52  
 Positive temperature coldest 1 month.....(Tpw1): 21

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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   |     |
| Ultragelid...[M' <=0] (Pf) |     |     |     |     |     |     |     |     |     |     |     |     |
| Hypergelid...[M <=0] (Pf)  |     |     |     |     |     |     |     |     |     |     |     |     |
| Gelid.....[T <=0] (Pf)     |     |     |     |     |     |     |     |     |     |     |     |     |
| Subgelid.....[m <=0] (Pf)  | o   | o   |     |     |     |     |     |     |     |     |     | o   |
| Pregelid.....[m' <=0] (Pf) | o   | o   | o   | o   |     |     |     |     |     | o   | o   | o   |
| Agelid.....[m' > 0] (Pf)   |     |     |     |     | o   | o   | o   | o   | o   |     |     |     |
| HiperAgelid..[all>0] (Pf)  |     |     |     |     | o   | o   | o   | o   | o   |     |     |     |

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OMBROTHERMIC PARAMETERS

Annual aridity index.[PE/P].....(Iar): 0.58  
 Mediterranean index of July.[PE/P].....(Im1): 1.50  
 Mediterranean index of July & August.....(Im2): 1.26  
 Mediterranean index of June, July & August....(Im3): 1.19

| Months     | Dec.         | Jan. | Feb. | Mar.       | Apr. | May. | Jun.          | Jul. | Aug. | Sep.       | Oct. | Nov. |
|------------|--------------|------|------|------------|------|------|---------------|------|------|------------|------|------|
| Pp(x10)    | 900          | 690  | 720  | 1030       | 980  | 1250 | 970           | 850  | 1040 | 1090       | 980  | 1080 |
| Tp         | 31           | 21   | 38   | 73         | 100  | 133  | 172           | 205  | 195  | 167        | 119  | 65   |
| Io (Iom)   | 29.0         | 32.9 | 18.9 | 14.1       | 9.80 | 9.40 | 5.64          | 4.15 | 5.33 | 6.53       | 8.24 | 16.6 |
| Seasons    | Winter       |      |      | Spring     |      |      | Summer        |      |      | Autumn     |      |      |
| Pp(x10)/Tp | 2310 / 90    |      |      | 3260 / 306 |      |      | 2860 / 572    |      |      | 3150 / 351 |      |      |
| Io (Iot)   | 25.67        |      |      | 10.65      |      |      | 5.000         |      |      | 8.974      |      |      |
| Semesters  | December-May |      |      |            |      |      | June-November |      |      |            |      |      |
| Pp(x10)/Tp | 5570 / 396   |      |      |            |      |      | 6010 / 923    |      |      |            |      |      |
| Io (Iosm)  | 14.07        |      |      |            |      |      | 6.511         |      |      |            |      |      |

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 11580/1319=8.78 **There is No Yearly Aridity**

| Months         | Dec.      | Jan. | Feb. | Mar.       | Apr. | May. | Jun.       | Jul. | Aug. | Sep.       | Oct. | Nov. |
|----------------|-----------|------|------|------------|------|------|------------|------|------|------------|------|------|
| Pp [P*10]      | 900       | 690  | 720  | 1030       | 980  | 1250 | 970        | 850  | 1040 | 1090       | 980  | 1080 |
| Tp [T*10]      | 31        | 21   | 38   | 73         | 100  | 133  | 172        | 205  | 195  | 167        | 119  | 65   |
| Iom [Pp/Tp]    | \$\$      | \$\$ | \$\$ | \$\$       | 980  | 940  | 564        | 415  | 533  | 653        | 824  | \$\$ |
| Avm [200-Iom]  | ***       | ***  | ***  | ***        | ***  | ***  | ***        | ***  | ***  | ***        | ***  | ***  |
| Seasons        | Winter    |      |      | Spring     |      |      | Summer     |      |      | Autumn     |      |      |
| Pp / Tp        | 2310 / 90 |      |      | 3260 / 306 |      |      | 2860 / 572 |      |      | 3150 / 351 |      |      |
| Iot [Pp/Tp]    | 2567      |      |      | 1065       |      |      | 500        |      |      | 897        |      |      |
| Avs E[Avm<200] | ***       |      |      | ***        |      |      | ***        |      |      | ***        |      |      |
|                |           |      |      |            |      |      |            |      |      |            |      |      |
|                |           |      |      |            |      |      |            |      |      |            |      |      |
|                |           |      |      |            |      |      |            |      |      |            |      |      |
|                |           |      |      |            |      |      |            |      |      |            |      |      |

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin] .....(Sp): 18.40  
 CI of Gorezinski (1920) [1.7\*Sp/sin(Lat)-20.4] .....: 25.91  
 CI of Conrad (1946) [1.7\*Sp/sin(Lat+10)-14] .....: 25.44  
 + Oceanic (20<CI<40)  
 CI of Currey (1974) [CI=Sp/(1+Lat/3)] .....: 1.21  
 + Subcontinental (1.1<CI<1.7)  
 Rainfall Index of Lang (1925) [R=P/T] .....: 105.35  
 + Temperate humid (160>R>100)  
 Aridity Index of Martonne (1926) [Ia=P/(T+10)] .....: 55.16  
 + Humid (60>Ia>30)  
 I of Emberger (1930) [Q=100\*P/(Tmax<sup>2</sup>-Tmin<sup>2</sup>)] .....: 147.39  
 + Humid (Q>90)  
 I of Dantin & Revenga (1940) [DR=100\*T/P] .....: 0.95  
 + Humid (2>DR>0)  
 Aridity Index of UNEP [I=P/PE] .....: 1.73  
 + Humid (I>0.65)  
 Potential Erosion I of Fournier (1960) [K=Pi<sup>2</sup>/P].....: 13.49  
 + Very low (K<60)

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BIOCLIMATIC INDICES II

Bioclimatic classification of Gaussen & Bagnouls (1957)  
 + Climate .....: A. Warm and temperate warm  
 + Region .....: 7. Mesoaxeric (Axeric temperate)  
 + Thermic type: 5. Meso-microthermic

| Thornthwaite (1948)                     |        |      |      |      |      |      |                                     |      |      |      |      |      |
|-----------------------------------------|--------|------|------|------|------|------|-------------------------------------|------|------|------|------|------|
|                                         | Jan.   | Feb. | Mar. | Apr. | May. | Jun. | Jul.                                | Aug. | Sep. | Oct. | Nov. | Dec. |
| P-E ratio                               | 0.50   | 0.49 | 0.63 | 0.55 | 0.64 | 0.43 | 0.34                                | 0.44 | 0.50 | 0.51 | 0.69 | 0.64 |
| T-E ratio                               | 0.94   | 1.71 | 3.29 | 4.50 | 5.99 | 7.74 | 9.23                                | 8.77 | 7.52 | 5.35 | 2.93 | 1.39 |
| Precipitation-effectiveness:            | 63.66  |      |      |      |      |      | Temperature-efficiency .....: 59.36 |      |      |      |      |      |
| Moisture Index [MI=100*(P-PE)/PE] ..... | 73.47  |      |      |      |      |      |                                     |      |      |      |      |      |
| + B3.Humid high-humid (60<MI<80)        |        |      |      |      |      |      |                                     |      |      |      |      |      |
| Index of dryness [DI=100*d/PE] .....    | 0.00   |      |      |      |      |      |                                     |      |      |      |      |      |
| + No deficit (0<DI<16.7)                |        |      |      |      |      |      |                                     |      |      |      |      |      |
| Index of humidity [HI=100*s/PE] .....   | 73.46  |      |      |      |      |      |                                     |      |      |      |      |      |
| + Strong surplus (20<HI)                |        |      |      |      |      |      |                                     |      |      |      |      |      |
| Potential Evapotranspiration PE .....   | 667.54 |      |      |      |      |      |                                     |      |      |      |      |      |
| + First mesothermic (570<PE<712)        |        |      |      |      |      |      |                                     |      |      |      |      |      |

