Phytosociological Research Center
www.globalbioclimatics.org
Worldwide Bioclimatic Classification System
Prof.Dr. Salvador Rivas-Martinez
(Adapted to Synoptical Table 30/08/2017)

KEMI (FINLAND) Altitude: 18 m.
Latitude: 65°46'N  Longitude: 24°34'E
Temperature observation period.: 1982−1994 (13)
Rainfall observation period....: 1982−1994 (13)

<table>
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<tr>
<th>(°C/mm)</th>
<th>Ti</th>
<th>Mi</th>
<th>mi</th>
<th>M'</th>
<th>m'</th>
<th>Pi</th>
<th>Epi</th>
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<td>Jan.</td>
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<td>−15.00</td>
<td>5.00</td>
<td>−41.11</td>
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<td>−8.33</td>
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<td>19.44</td>
<td>10.56</td>
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<td>1.11</td>
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<td>16.67</td>
<td>−20.83</td>
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BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.............................. (It):  −231
Compensated thermicity index............. (Itc):  −127
Simple continentality index............. (Ic):  27.0
Diurnality index..........................(Id):  9.4
Annual ombrothermic index............... (Io):  6.30
Monthly estival ombrothermic index......(Ios1):  4.95
Bimonthly estival ombrothermic index... (Ios2):  4.98
Threemonthly estival ombrothermic index (Ios3):  4.72
Fourmonthly estival ombrothermic index (Ios4):  4.94
Annual ombro−evaporation index.......... (Ioe):  2.00
Annual positive temperature.............. (Tp):  559
Annual negative temperature............... (Tn):  467
Estival temperature...................... (Ts):  397
Positive precipitation.................. (Pp):  352

N. of Months | P>4T | P:2T−4T | PT−2T | PT< | T<0
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<td>6</td>
<td>0</td>
<td>0</td>
<td>0</td>
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Latitudinal Belt....: High subtemperate
Continentality......: Continental − High Subcontinental
Bioclimate........: BOREAL SUBCONTINENTAL
Bioclimatic Belt...: LOW SUPRABOREAL LOW HUMID
KEMI (FINLAND) 18 m

\[ P = 528 \text{ mm}, \quad T = 0.8^\circ, \quad Ic = 27.0, \quad Tp = 559, \quad Tn = 467, \quad m = -15.0^\circ, \quad M = -8.9^\circ, \quad Itc = -127, \quad Io = 6.3 \]

BOREAL SUBCONTINENTAL
LOW SUPRABOREAL LOW HUMID

WATER INDEX CARD KEMI (FINLAND)
Altitude: 18 m. Latitude: 65° 46'N

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<th>(C/mm)</th>
<th>T</th>
<th>PE</th>
<th>P</th>
<th>VR</th>
<th>R</th>
<th>RE</th>
<th>DF</th>
<th>SP</th>
<th>DR</th>
<th>HC</th>
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<td>0</td>
<td>28</td>
<td>0</td>
<td>100</td>
<td>0</td>
<td>0</td>
<td>28</td>
<td>23</td>
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<td>Feb.</td>
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<td>27</td>
<td>0</td>
<td>100</td>
<td>0</td>
<td>0</td>
<td>27</td>
<td>25</td>
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<td>-8.1</td>
<td>0</td>
<td>18</td>
<td>0</td>
<td>100</td>
<td>0</td>
<td>0</td>
<td>18</td>
<td>22</td>
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<td>23</td>
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<td>0</td>
<td>0</td>
<td>23</td>
<td>22</td>
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<td>73</td>
<td>39</td>
<td>-34</td>
<td>66</td>
<td>73</td>
<td>0</td>
<td>11</td>
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<td>0</td>
<td>114</td>
<td>20</td>
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<td>15.0</td>
<td>154</td>
<td>74</td>
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<td>74</td>
<td>80</td>
<td>0</td>
<td>3</td>
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<td>Aug.</td>
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<td>66</td>
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<td>50</td>
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<td>1</td>
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<td>7</td>
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<td>1.9</td>
<td>15</td>
<td>73</td>
<td>58</td>
<td>58</td>
<td>15</td>
<td>0</td>
<td>3</td>
<td>3.9</td>
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<td>Nov.</td>
<td>-3.9</td>
<td>0</td>
<td>46</td>
<td>42</td>
<td>100</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>2</td>
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<td>-9.2</td>
<td>0</td>
<td>34</td>
<td>0</td>
<td>100</td>
<td>0</td>
<td>0</td>
<td>34</td>
<td>18</td>
<td>*</td>
</tr>
<tr>
<td>Year</td>
<td>0.8</td>
<td>552</td>
<td>528</td>
<td>*</td>
<td>*</td>
<td>394</td>
<td>158</td>
<td>134</td>
<td>134</td>
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</table>

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

KEMI (FINLAND) 65°46’N 24°34’E 18 m 13/13 y.

\[ T = 0.8^\circ, \quad Ic = 27.0, \quad Tp = 559, \quad Tn = 467, \quad M = -8.9^\circ, \quad Itc = -127, \quad Io = 6.3 \]

Imbibing 4 Sep.
Saturation 28 Nov.
Reserve Use 13 Apr.
Deficit 24 Jun.
KEMI (FINLAND)

Latitude: 65°46’N  Longitude: 24°34’E  Altitude: 18 m

SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continentality Index [C2b]
- Type .................: C. Continental
- Subtype ............: 2. Subcontinental
- Variant ............: b. High

Thermic types
- Latitudinal zone ....: B. Temperate
- Latitudinal belt ....: 2. High subtemperate
- Thermic type ......: C. Cold
- Thermic subtype ...: 7. Cold

Bioclimatic types [D4.4b.7b]
- Macrobioclimate ......: D. BOREAL
- Bioclimate ...........: 4. SUBCONTINENTAL
- Bioclimatic variant : 4. SUPRABOREAL
- Thermic type.........: b. LOW
- Thermic subtype......: 7. HUMID
- Ombrothermic type ...: 7. HUMID
- Ombrothermic subtype : b. LOW

Bioclimatic Classification ....................: Boco.Obo.Hum

KEMI (FINLAND)

Latitude: 65°46’N  Longitude: 24°34’E  Altitude: 18 m

PRECIPITATION PARAMETERS

<table>
<thead>
<tr>
<th>Seasons</th>
<th>Winter Tr1-W</th>
<th>Spring Tr2-P</th>
<th>Summer Tr3-S</th>
<th>Autumn Tr4-F</th>
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<tr>
<td>Rainfall</td>
<td>88</td>
<td>80</td>
<td>187</td>
<td>171</td>
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Seasonal rainfall rhythms:  S > F > W > P

KEMI (FINLAND)

Latitude: 65°46’N  Longitude: 24°34’E  Altitude: 18 m

TEMPERATURE PARAMETERS

| Average warmest month [T] ....................... (Tmax): | 15.0 |
| Average coldest month [T] ....................... (Tmin): | -11.9 |
| Maximum temp. warmest month [M] .................. (Tmmax): | 19.4 |
| Minimum temp. coldest month [m] ................ (Tmmin): | -15.6 |
| Absolute Max. temp. warmest month [M’] .......... (Tamax): | 31.1 |
| Absolute Min. temp. coldest month [m’] .......... (Tamin): | -41.1 |
| First warmest contrasted month [M] ............ (Tcmax): | -3.3 (3) |
| First coldest contrasted month [m] ............ (Tcmin): | -12.8 (3) |
| Estival temperature ........................... (Ts): | 397 |
| Positive temperature dryest 3 months......... (Tpd): | 0 |
| Positive temperature dryest 2 months......... (Tpd2): | 0 |
| Positive temperature dryest 1 month......... (Tpd1): | 0 |
| Positive temperature warmest 3 months....... (Tps): | 397 |
| Positive temperature warmest 2 months....... (Tps2): | 281 |
| Positive temperature warmest 1 month....... (Tps1): | 150 |
| Positive temperature coldest 3 months....... (Tpw): | 0 |
| Positive temperature coldest 2 months....... (Tpw2): | 0 |
| Positive temperature coldest 1 month....... (Tpw1): | 0 |
### Seasonal Parameters

**Latitude:** 65°46'N  
**Longitude:** 24°34'E  
**Altitude:** 18 m

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<tr>
<th>Semester</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
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<td>o</td>
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<td>Dryest</td>
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<td>4 months</td>
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### Ombrothermic Parameters

**Latitude:** 65°46'N  
**Longitude:** 24°34'E  
**Altitude:** 18 m

- **Annual Aridity Index: [P/E/P]**: 1.04
- **Mediterranean Index of July: [P/E/P]**: 2.08
- **Mediterranean Index of July & August:** 1.94
- **Mediterranean Index of June, July & August:** 2.15

#### Months

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<td>Pp(x10)</td>
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<td>*</td>
<td>*</td>
<td>*</td>
<td>391</td>
<td>478</td>
<td>742</td>
<td>655</td>
<td>528</td>
<td>726</td>
<td>*</td>
</tr>
<tr>
<td>Tp</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>61</td>
<td>117</td>
<td>150</td>
<td>131</td>
<td>81</td>
<td>19</td>
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<td>Io (Iom)</td>
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<td>4.10</td>
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#### Seasons

- **Winter**: Pp(x10) / Tp: */*  
- **Spring**: Io (Iot): *  
- **Summer**: Io: *  
- **Autumn**:  

#### Semesters

- **December-May**: Pp(x10) / Tp: 1875 / 397  
- **June-November**: Io: 4.719

### Aridity Value Index (AVI)

**Latitude:** 65°46'N  
**Longitude:** 24°34'E  
**Altitude:** 18 m

- **AVI**: [10×P/E/P=I]: $3520/559=6.30$  
- **There is No Yearly Aridity**

#### Months

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<td>Pp [P*10]</td>
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<td>726</td>
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<td>Tp [T*10]</td>
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<td>117</td>
<td>150</td>
<td>131</td>
<td>81</td>
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<tr>
<td>Io (Iom)</td>
<td>!</td>
<td>!</td>
<td>!</td>
<td>!</td>
<td>!</td>
<td>!</td>
<td>639</td>
<td>410</td>
<td>495</td>
<td>502</td>
<td>655</td>
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#### Seasons

- **Winter**: Pp / Tp: */*  
- **Spring**: Io (Iot): **472**  
- **Summer**:  
- **Autumn**:  

### Ombrothermic Parameters

- **Annual Aridity Index: [P/E/P]**: 1.04
- **Mediterranean Index of July: [P/E/P]**: 2.08
- **Mediterranean Index of July & August**: 1.94
- **Mediterranean Index of June, July & August**: 2.15

- **Winter**: Pp(x10) / Tp: 1875 / 397  
- **Spring**: Io (Iot): 4.719  
- **Summer**: Io: *  
- **Autumn**:  

### Aridity Value Index (AVI)

- **AVI**: [10×P/E/P=I]: $3520/559=6.30$  
- **There is No Yearly Aridity**
KEMI (FINLAND)
Latitude: 65°46'N   Longitude: 24°34'E   Altitude: 18 m

BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax−Tmin] ..................(Sp): 26.95
CI of Gorezinski (1920) [1.7*Sp/sin(Lat)−20.4] ......: 29.84
CI of Conrad (1946) [1.7*Sp/sin(Lat+10)−14] .........: 33.27
+ 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] ...............: 691.57
+ Humid (R>160)
Aridity Index of Martonne (1926) [Ia=P/(T+10)] ......: 49.05
+ Humid (60>IA>30)
I of Emberger (1930) [Q=100*P/(Tmmax²−Tmmin²)] ......: 388.73
+ Humid (Q>90)
I of Dantin & Revenga (1940) [DR=100*T/P] ..........: 0.14
+ Humid (2>DR>0)
Aridity Index of UNEP [I=P/PE] .....................: 0.96
+ Humid (I>0.65)
Potencial Erosion I of Fournier (1960) [K=Pi²/P].....: 10.43
+ Very low (K<60)

KEMI (FINLAND)
Latitude: 65°46'N   Longitude: 24°34'E   Altitude: 18 m

BIOCLIMATIC INDICES II

Bioclimatic classification of Gaussen & Bagnouls (1957)

+ Climate ......: B. Cold and temperate cold
+ Region ......: 11. Psicroaxeric (Axeric cold)
+ Thermic type: 7. Hipermicrothermic

Thornthwaite (1948)

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<td>Temperature-efficiency: 25.13</td>
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Moisture Index [MI=100*(P−PE)/PE] ...............: -4.31
+ C1. Subhumid dry (-33.3<MI<0)
Index of dryness [DI=100*d/PE] ..................: 28.55
+ Moderate deficit (16.7<DI<33.3)
Index of humidity [HI=100*s/PE] .................: 24.25
+ Strong surplus (20<HI)
Potential Evapotranspiration PE .................: 551.65
+ Second microthermic (427<PE<570)

FINLAND
°C 65°46'N / 24°34'E / 18 m
KEMI (13-13) +0.8 °C 527.9 mm