BIR MOGHREIN (MAURITANIA) Altitude: 364 m.
Latitude: 25°14'N  Longitude: 11°37'W
Temperature observation period: 1961-1993 (33)
Rainfall observation period: 1942-1993 (52)

<table>
<thead>
<tr>
<th>Month</th>
<th>Ti</th>
<th>Mi</th>
<th>mi</th>
<th>M'i</th>
<th>m'I</th>
<th>Pi</th>
<th>Epi(C/mm)</th>
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<tbody>
<tr>
<td>Jan.</td>
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<td>9.60</td>
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<td>0.00</td>
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<tr>
<td>Feb.</td>
<td>19.16</td>
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<td>0.00</td>
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<td>0.00</td>
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<td>37.53</td>
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<td>0.00</td>
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**BIOCLIMATIC INDICES AND DIAGNOSIS**

- Thermicity index..............................(It): 566
- Compensated thermicity index.............(Itc): 566
- Simple continentality index...................(Ic): 15.6
- Diurnality index.............................(Id): 28.0
- Annual ombrothermic index......................(Io): 0.15
- Monthly dry ombrothermic index..............(Iod1): 0.01
- Bimonthly dry ombrothermic index..........(Iod2): 0.02
- Threemonthly dry ombrothermic index.......(Iod3): 0.02
- Fourmonthly dry ombrothermic index.......(Iod4): 0.03
- Annual ombro-evaporation index.............(Ioe): 1.46
- Annual positive temperature...................(Tp): 2857
- Annual negative temperature...................(Tn): 0
- Dry station temperature.....................(Td): 827
- Positive precipitation......................(Pp): 42

<table>
<thead>
<tr>
<th>N. of Months</th>
<th>P&gt;4T</th>
<th>P:2T-4T</th>
<th>PT-2T</th>
<th>P&lt;T</th>
<th>T&lt;0</th>
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Latitudinal Belt....: Subtropical
Continentiality.....: Oceanic - Low Euroceanic
Bioclimate(Variant): TROPICAL HYPERDESSERTIC (MODERATE)
Bioclimatic Belt....: UPPER THERMOTROPICAL UPPER ULTRAHYPERARID
BIR MOGHREIN (MAURITANIA) 364 m

\[
P = 42 \quad 25^\circ 14'N \quad 11^\circ 37'W \quad 33/52 y.
\]

\[
T = 23.8^\circ \quad Ic = 15.6 \quad Tp = 2857 \quad Tn = 0
\]

\[
m = 10.6^\circ \quad M = 22.3^\circ \quad Itc = 566 \quad Io = 0.1
\]

TROPICAL HYPERDESERTIC (MODERATE)
UPPER THERMOTROPICAL UPPER ULTRAHYPERARID

WATER INDEX CARD BIR MOGHREIN (MAURITANIA)
Altitude: 364 m. Latitude: 25° 14’N

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<thead>
<tr>
<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>34</td>
<td>2</td>
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<td>0</td>
<td>2</td>
<td>32</td>
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<tr>
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<td>2</td>
<td>43</td>
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<td>-0.9</td>
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<tr>
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<td>1</td>
<td>70</td>
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<td>1</td>
<td>154</td>
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<td>210</td>
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<td>154</td>
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<td>5</td>
<td>52</td>
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<td>-0.9</td>
</tr>
<tr>
<td>Dec.</td>
<td>16.5</td>
<td>30</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>25</td>
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<td>42</td>
<td>1242</td>
<td>0</td>
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R = Reserve  VR = Variation of the reserve  RE = Real evapotranspiration
DR = Drainage  HC = Humidity coefficient  DF = Deficit  SP = Superavit

BIR MOGHREIN (MAURITANIA)

25°14’N 11°37’W 364 m 33/52 y.

T = 23.8°  Ic = 15.6°  Tp = 2857°  Tn = 0°  UPTROPICAL HYPERDESERTIC (MODERATE)
M = 22.3°  Tn = 0°  UPTHERMOTROPICAL
M’ = 0.0°  Itc = 566°  UPPER ULTRAHYPERARID
m’ = 0.0°  Io = 0.1°
P = 42 mm
PE = 1284 mm

All over the year, there is hydric deficit
BIR MOGHREIN (MAURITANIA)

Latitude: 25°14'N   Longitude: 11°37'W   Altitude: 364 m

SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continentality Index [B2b]
+ Type ...............: B. Oceanic
+ Subtype ..........: 2. Euroceanic
+ 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 [A1.2a.1a]
+ Macrobioclimate ......: A. TROPICAL
+ Bioclimate ..........: 1. HYPERDESERTIC
+ Bioclimatic variant :+
+ Thermic type........: 2. THERMOTROPICAL
+ Thermic subtype......: a. UPPER
+ Ombrothermic type ...: 1. ULTRAHYPERARID
+ Ombrothermic subtype : a. UPPER

Bioclimatic Classification ....................: Trpl.Ttr.Uha

BIR MOGHREIN (MAURITANIA)

Latitude: 25°14'N   Longitude: 11°37'W   Altitude: 364 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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<tbody>
<tr>
<td>Rainfall</td>
<td>9</td>
<td>3</td>
<td>4</td>
<td>24</td>
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</tbody>
</table>

Seasonal rainfall rhythms:  F > W > S > P

BIR MOGHREIN (MAURITANIA)

Latitude: 25°14'N   Longitude: 11°37'W   Altitude: 364 m

TEMPERATURE PARAMETERS

<p>| | | | | |</p>
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<th></th>
<th></th>
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<tbody>
<tr>
<td>Average warmest month [T] ..................((Tmax)): 32.1</td>
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<tr>
<td>Average coldest month [T] ..................((Tmin)): 16.5</td>
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<tr>
<td>Maximum temp. warmest month [M] .........((Tmmax)): 44.4</td>
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<td>Minimum temp. coldest month [m] ........ ((Tmmin)): 9.6</td>
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<td>Absolute Min.temp. coldest month [m'].....((Tamin)): 0.0</td>
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<td>First warmest contrasted month [M] .......((Tcmax)): 37.5 (5)</td>
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<td>First coldest contrasted month [m] .......((Tcmin)): 9.6 (5)</td>
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<td>Dry station temperature ..................((Td)): 827</td>
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<td>Positive temperature dryest 3 months .... ((Tp3)): 827</td>
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<td>Positive temperature dryest 2 months .... ((Tp2)): 506</td>
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<td>Positive temperature dryest 1 month ....  ((Tp1)): 240</td>
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<td>Positive temperature warmest 1 month ....  ((Tp1)): 321</td>
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<td>Positive temperature coldest 2 months .....((Tpw2)): 335</td>
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**SEASONAL PARAMETERS**

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<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>
<th>Dec</th>
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<td>Vegetation Activity(Pav)</td>
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</table>

**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)

---

**OMBROTHERMIC PARAMETERS**

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<th>Months</th>
<th>Dec.</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>
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<tr>
<td>Pp(x10)</td>
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<td>24</td>
<td>11</td>
<td>16</td>
<td>3</td>
<td>5</td>
<td>12</td>
<td>32</td>
<td>119</td>
<td>79</td>
<td>50</td>
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<tr>
<td>Tp</td>
<td>165</td>
<td>171</td>
<td>192</td>
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<td>220</td>
<td>240</td>
<td>266</td>
<td>321</td>
<td>311</td>
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<td>257</td>
<td>205</td>
</tr>
<tr>
<td>Io (Iom)</td>
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<th>Spring</th>
<th>Summer</th>
<th>Autumn</th>
</tr>
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<tr>
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<th>June-November</th>
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<tr>
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<td>297 / 1659</td>
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<td>Io (Iosm)</td>
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**ARIDITY VALUE INDEX (AVI)**

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<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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<tbody>
<tr>
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<td>24</td>
<td>11</td>
<td>16</td>
<td>3</td>
<td>5</td>
<td>12</td>
<td>32</td>
<td>119</td>
<td>79</td>
<td>50</td>
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<td>Tp [T*10]</td>
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<td>192</td>
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<td>220</td>
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<td>266</td>
<td>321</td>
<td>311</td>
<td>299</td>
<td>257</td>
<td>205</td>
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<td>Io [Iom]</td>
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<table>
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<tr>
<th>Seasons</th>
<th>Winter</th>
<th>Spring</th>
<th>Summer</th>
<th>Autumn</th>
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</thead>
<tbody>
<tr>
<td>Pp / Tp</td>
<td>94 / 527</td>
<td>30 / 671</td>
<td>49 / 897</td>
<td>247 / 761</td>
</tr>
<tr>
<td>Io [Iot]</td>
<td>18</td>
<td>4</td>
<td>6</td>
<td>32</td>
</tr>
<tr>
<td>Avm E[Avm&lt;200]</td>
<td>545</td>
<td>586</td>
<td>584</td>
<td>505</td>
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**Lower ultrahyperarid [7]**

**Upper ultrahyperarid [4]**

**Lower hyperarid [1]**

**Upper hyperarid [4]**
BIR MOGHREIN (MAURITANIA)
Latitude: 25°14’N   Longitude: 11°37’W   Altitude: 364 m

BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax−Tmin] ..................(Sp):  15.64
CI of Gorezinski (1920) [1.7*Sp/sin(Lat)−20.4] ......:  41.97
CI of Conrad (1946) [1.7*Sp/sin(Lat+10)−14] .........:  32.09
   + Oceanic (20<CI<40)
CI of Currey (1974) [CI=Sp/(1+Lat/3)] ...............:   1.66
   + Subcontinental (1.1<CI<1.7)
Rainfall Index of Lang (1925) [R=P/T] ...............:   1.77
   + Steppic (40>R>0)
Aridity Index of Martonne (1926) [Ia=P/(T+10)] ......:   1.24
   + Extremely arid −desert− (5>Ia>0)
I of Emberger (1930) [Q=100*P/(Tmmax²−Tmmin²)] ......:   2.23
   + Arid (30>Q>0)
I of Dantin & Revenga (1940) [DR=100*T/P] ...........:  56.56
   + Extremely arid (DR>6)
Aridity Index of UNEP [I=P/PE] ......................:   0.03
   + Hyperarid (0.05>Im)
Potential Erosion I of Fournier (1960) [K=Pi²/P].....:   3.34
   + Very low (K<60)

BIR MOGHREIN (MAURITANIA)
Latitude: 25°14’N   Longitude: 11°37’W   Altitude: 364 m

BIOCLIMATIC INDICES II

Biclimatic classification of Gaussen & Bagnouls (1957)
   + Climate ....: A. Warm and temperate warm
   + Region .....: 1. Termoeremic (Desertic warm)
   + Thermic type: 2. Macrothermic

Thornthwaite (1948)

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<tbody>
<tr>
<td>P-E ratio</td>
<td>0.01</td>
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<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.01</td>
<td>0.03</td>
<td>0.02</td>
<td>0.01</td>
</tr>
<tr>
<td>Precipitation-effectiveness: 1.14</td>
<td>Temperature-efficiency: 128.56</td>
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Moisture Index [MI=100*(P−PE)/PE] .......................:  96.72
   + E.Dry (−110<MI<−66.7)
Index of dryness [DI=100*d/PE] .....................:   96.72
   + Strong deficit (33.3<DI)
Index of humidity [HI=100*s/PE] ....................:   0.00
   + No surplus (0<HI<10)
Potential Evapotranspiration PE .....................: 1283.61
   + Forth mesothermic (997<PE<1440)

MAURITANIA
°C  25°14’N / 11°37’W / 364 m
44.4 BIR MOGHREIN
9.6 [33-52] +23.8 °C  42.1 mm