

# Phytosociological Research Center

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## Worldwide Bioclimatic Classification System

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(Adapted to Synoptical Table 14/02/2020)

BERGEN (NORWAY)

Altitude: 45 m.

Latitude: 60°12'N Longitude: 10°26'E  
 Temperature observation period.: 1952-1980 (29)  
 Rainfall observation period....: 1970-1980 (11)

(C/mm)	Ti	Mi	mi	M'i	m'i	Pi	EPI
Jan.	1.50	3.10	-0.50	13.30	-13.50	179.0	5.36
Feb.	1.30	3.30	-0.90	11.20	-10.90	139.0	5.74
Mar.	3.10	6.10	0.40	19.80	-10.00	109.0	18.55
Apr.	5.80	9.20	3.00	22.10	-5.60	140.0	39.82
May.	10.20	14.20	6.70	27.10	-0.10	83.0	81.84
Jun.	12.60	15.90	9.60	31.80	0.60	126.0	105.08
Jul.	15.00	18.80	12.20	30.50	5.20	141.0	122.86
Aug.	14.70	18.60	12.00	29.70	5.40	167.0	104.23
Sep.	12.00	15.20	9.50	26.00	1.30	228.0	69.51
Oct.	8.30	11.10	6.10	19.50	-3.10	236.0	39.69
Nov.	5.50	7.50	3.40	15.40	-5.60	207.0	19.57
Dec.	3.30	5.00	1.30	16.40	-8.40	203.0	10.41
Year	7.78	10.67	5.23	21.90	-3.72	1958	622.66

### BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	102
Compensated thermicity index.....(Itc):	102
Simple continentality index.....(Ic):	13.7
Diurnality index.....(Id):	7.5
Annual ombrothermic index.....(Io):	20.99
Monthly estival ombrothermic index.....(Ios1):	9.40
Bimonthly estival ombrothermic index.....(Ios2):	10.37
Threemonthly estival ombrothermic index.....(Ios3):	10.26
Fourmonthly estival ombrothermic index.....(Ios4):	9.85
Annual ombro-evaporation index.....(Ioe):	3.14
Annual positive temperature.....(Tp):	933
Annual negative temperature.....(Tn):	0
Estival temperature.....(Ts):	423
Positive precipitation.....(Pp):	1958

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

Latitudinal Belt...: High Subtemperate

Continentality.....: Oceanic - Low Semihyperoceanic

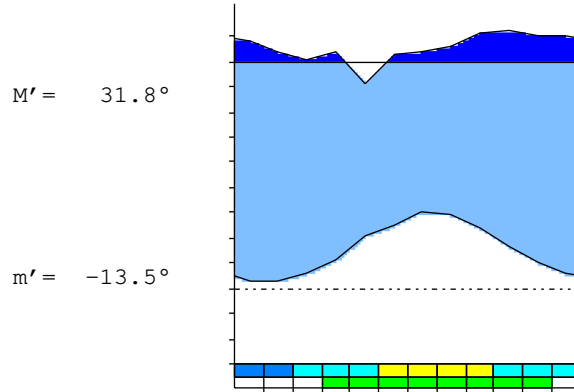
Bioclimate.....: TEMPERATE OCEANIC

Bioclimatic Belt...: UPPER SUPRATEMPERATE UPPER HYPERHUMID

BERGEN (NORWAY)

45 m

P= 1958      60° 12'N      10° 26'E      29/11 y.  
 T= 7.8 °      Ic= 13.7      Tp= 933      Tn= 0  
 m= -0.9 °      M= 3.3 °      Itc= 102      Io= 21.0



TEMPERATE OCEANIC  
 UPPER SUPRATEMPERATE UPPER HYPERHUMID

WATER INDEX CARD      BERGEN (NORWAY)  
 Altitude: 45 m.      Latitude: 60° 12'N

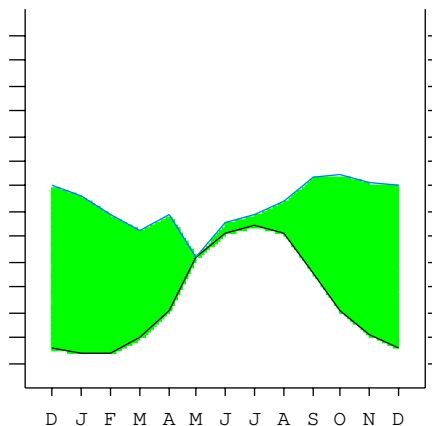
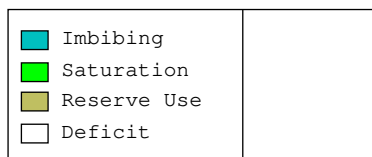
(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jan.	1.5	5	179	0	100	5	0	174	177	32.4
Feb.	1.3	6	139	0	100	6	0	133	155	23.2
Mar.	3.1	19	109	0	100	19	0	90	123	4.8
Apr.	5.8	40	140	0	100	40	0	100	111	2.5
May.	10.2	82	83	0	100	82	0	1	56	0.0
Jun.	12.6	105	126	0	100	105	0	21	39	0.1
Jul.	15.0	123	141	0	100	123	0	18	28	0.1
Aug.	14.7	104	167	0	100	104	0	63	46	0.6
Sep.	12.0	70	228	0	100	70	0	158	102	2.2
Oct.	8.3	40	236	0	100	40	0	196	149	4.9
Nov.	5.5	20	207	0	100	20	0	187	168	9.5
Dec.	3.3	10	203	0	100	10	0	193	180	18.4
Year	7.8	623	1958	*	*	623	0	1335	1335	*

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

BERGEN (NORWAY)

60°12'N    10°26'E    45 m 29/11 y.

T= 7.8      Ic= 13.7      TEMPERATE OCEANIC  
 m= -0.9      Tp= 933      UPPER SUPRATEMPERATE  
 M= 3.3      Tn= 0      UPPER HYPERHUMID  
 M' = 31.8      Itc= 102  
 m' = -13.5      Io= 21.0  
 P= 1958      mm ———  
 PE= 623      mm ———



All over the year,  
 there is no hydric deficit

BERGEN (NORWAY)

Latitude: 60°12'N Longitude: 10°26'E Altitude: 45 m

SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continentality Index [B1b]  
 + Type .....: B. Oceanic  
 + Subtype .....: 1. Semihyperoceanic  
 + Variant .....: b. Low

Thermic types [B2.B5]  
 + Latitudinal zone ....: B. Temperate  
 + Latitudinal belt ....: 2. High Subtemperate  
 + Thermic type .....: B. Temperate  
 + Thermic subtype .....: 5. Subtemperate

Bioclimatic types [C3.4a.8a]  
 + Macrobioclimate .....: C. TEMPERATE  
 + Bioclimate .....: 3. OCEANIC  
 + Bioclimatic variant .:  
 + Thermic type.....: 4. SUPRATEMPERATE  
 + Thermic subtype.....: a. UPPER  
 + Ombrothermic type ...: 8. HYPERHUMID  
 + Ombrothermic subtype : a. UPPER

Bioclimatic Classification .....Teoc.Ste.Hhu.Seo

BERGEN (NORWAY)

Latitude: 60°12'N Longitude: 10°26'E Altitude: 45 m

PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 981  
 Coldest semester of the year.....(Psw): 977  
 Warmest four months period of the year.....(Pcm1): 662  
 Following warmest four months period.....(Pcm2): 825  
 Positive precipitation dryest 3 months.....(Ppd): 332  
 Positive precipitation dryest 2 months.....(Ppd2): 209  
 Positive precipitation dryest 1 month.....(Ppd1): 83  
 Positive precipitation warmest 3 months.....(Pps): 434  
 Positive precipitation warmest 2 months.....(Pps2): 308  
 Positive precipitation warmest 1 month.....(Pps1): 141  
 Positive precipitation coldest 3 months.....(Ppw): 427  
 Positive precipitation coldest 2 months.....(Ppw2): 318  
 Positive precipitation coldest 1 month.....(Ppw1): 139

Seasons	Winter Tr1-W	Spring Tr2-P	Summer Tr3-S	Automn Tr4-F
Rainfall	521	332	434	671

Seasonal rainfall rhythms: F > W > S > P

BERGEN (NORWAY)

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 15.0  
 Average coldest month [T].....(Tmin): 1.3  
 Maximum temp. warmest month [M].....(Tmax): 18.8  
 Minimum temp. coldest month [m].....(Tmin): -0.9  
 Absolute Max.temp. warmest month [M'].....(Tamax): 31.8  
 Absolute Min.temp. coldest month [m'].....(Tamin): -13.5  
 First warmest contrasted month [M].....(Tcmax): 14.2 (5)  
 First coldest contrasted month [m].....(Tcmin): 6.7 (5)  
 Estival temperature.....(Ts): 423  
 Positive temperature dryest 3 months.....(Tpd): 191  
 Positive temperature dryest 2 months.....(Tpd2): 228  
 Positive temperature dryest 1 month.....(Tpd1): 102  
 Positive temperature warmest 3 months.....(Tps): 423  
 Positive temperature warmest 2 months.....(Tps2): 297  
 Positive temperature warmest 1 month.....(Tps1): 150  
 Positive temperature coldest 3 months.....(Tpw): 59  
 Positive temperature coldest 2 months.....(Tpw2): 28  
 Positive temperature coldest 1 month.....(Tpw1): 13

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

BERGEN (NORWAY)

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OMBROTHERMIC PARAMETERS

Annual aridity index. [PE/P]..... (Iar): 0.32  
 Mediterranean index of July. [PE/P]..... (Im1): 0.87  
 Mediterranean index of July & August..... (Im2): 0.74  
 Mediterranean index of June, July & August.... (Im3): 0.77

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp (x10)	2030	1790	1390	1090	1400	830	1260	1410	1670	2280	2360	2070
Tp	33	15	13	31	58	102	126	150	147	120	83	55
Io (Iom)	61.5	119	107	35.2	24.1	8.14	10.00	9.40	11.4	19.0	28.4	37.6
Seasons	Winter			Spring			Summer			Autumn		
Pp (x10)/Tp	5210 / 61			3320 / 191			4340 / 423			6710 / 258		
Io (Iot)	85.41			17.38			10.26			26.01		
Semesters	December-May						June-November					
Pp (x10)/Tp	8530 / 252						11050 / 681					
Io (Iosm)	33.85						16.23					

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 19580/933=20.99 There is No Yearly Aridity

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	2030	1790	1390	1090	1400	830	1260	1410	1670	2280	2360	2070
Tp [T*10]	33	15	13	31	58	102	126	150	147	120	83	55
Iom [Pp/Tp]	\$\$	\$\$	\$\$	\$\$	\$\$	814	\$\$	940	\$\$	\$\$	\$\$	\$\$
Avm [200-Iom]	***	***	***	***	***	***	***	***	***	***	***	***
Seasons	Winter			Spring			Summer			Autumn		
Pp / Tp	5210 / 61			3320 / 191			4340 / 423			6710 / 258		
Iot [Pp/Tp]	\$\$			1738			1026			2601		
Avs E [Avm < 200]	***			***			***			***		

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin] .....(Sp): 13.70  
 CI of Gorezinski (1920) [1.7\*Sp/sin(Lat)-20.4] .....: 6.44  
 CI of Conrad (1946) [1.7\*Sp/sin(Lat+10)-14] .....: 10.75  
 + Hyperoceanic (-20<CI<20)  
 CI of Currey (1974) [CI=Sp/(1+Lat/3)] .....: 0.65  
 + Oceanic (0.6<CI<1.1)  
 Rainfall Index of Lang (1925) [R=P/T] .....: 251.83  
 + Humid (R>160)  
 Aridity Index of Martonne (1926) [Ia=P/(T+10)] .....: 110.15  
 + Perhumid (Ia>60)  
 I of Emberger (1930) [Q=100\*P/(Tmmax<sup>2</sup>-Tmmin<sup>2</sup>)] .....: 555.26  
 + Humid (Q>90)  
 I of Dantin & Revenga (1940) [DR=100\*T/P] .....: 0.40  
 + Humid (2>DR>0)  
 Aridity Index of UNEP [I=P/PE] .....: 3.14  
 + Humid (I>0.65)  
 Potential Erosion I of Fournier (1960) [K=Pi<sup>2</sup>/P].....: 28.45  
 + 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	1.48	1.12	0.79	0.94	0.45	0.66	0.70	0.85	1.31	1.53	1.47	1.57
T-E ratio	0.68	0.58	1.39	2.61	4.59	5.67	6.75	6.61	5.40	3.74	2.47	1.48
Precipitation-effectiveness: 128.81						Temperature-efficiency .....: 41.99						
Moisture Index [MI=100*(P-PE)/PE] .....: 214.46 + A.Extremely humid (MI>100)												
Index of dryness [DI=100*d/PE] .....: 0.00 + No deficit (0<DI<16.7)												
Index of humidity [HI=100*s/PE] .....: 214.45 + Strong surplus (20<HI)												
Potential Evapotranspiration PE .....: 622.66 + First mesothermic (570<PE<712)												

