

Phytosociological Research Center

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Worldwide Bioclimatic Classification System

Prof.Dr. Salvador Rivas-Martinez

(Adapted to Synoptical Table 30/08/2017)

MARSABIT (KENYA)

Altitude: 1433 m.

Latitude: 2°5'S Longitude: 37°59'E

Temperature observation period.: 1964-1980 (17)

Rainfall observation period....: 1935-1980 (46)

(C/mm)	Ti	Mi	mi	M'i	m'i	Pi	E _{Pi}
Jan.	20.60	25.60	16.10	31.10	13.30	36.0	81.67
Feb.	21.10	26.10	16.10	29.40	13.90	16.0	77.72
Mar.	21.70	25.60	16.70	29.40	13.90	79.0	91.33
Apr.	21.10	25.00	16.70	29.40	13.30	208.0	83.51
May.	20.60	24.40	16.10	28.90	12.80	104.0	80.88
Jun.	19.40	23.90	14.40	27.20	10.60	8.0	69.02
Jul.	18.90	23.90	13.30	27.20	10.60	18.0	67.86
Aug.	18.30	23.30	13.30	27.80	8.90	20.0	63.32
Sep.	19.40	24.40	13.30	28.90	9.40	13.0	69.71
Oct.	20.00	24.40	15.00	28.90	12.20	119.0	76.64
Nov.	20.00	23.90	16.10	26.70	12.80	142.0	75.17
Dec.	19.40	23.30	15.60	28.30	11.70	71.0	72.47
Year	20.04	24.48	15.23	28.60	11.95	834	909.30

BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	566
Compensated thermicity index.....(Itc):	566
Simple continentality index.....(Ic):	3.4
Diurnality index.....(Id):	11.1
Annual ombrothermic index.....(Io):	3.47
Monthly dry ombrothermic index.....(Iod1):	0.41
Bimonthly dry ombrothermic index.....(Iod2):	0.68
Three monthly dry ombrothermic index.....(Iod3):	0.81
Four monthly dry ombrothermic index.....(Iod4):	1.94
Annual ombro-evaporation index.....(Ioe):	1.41
Annual positive temperature.....(Tp):	2405
Annual negative temperature.....(Tn):	0
Dry station temperature.....(Td):	566
Positive precipitation.....(Pp):	834

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

Latitudinal Belt...: Equatorial

Continentalty.....: Hyperoceanic - Low Ultrahyperoceanic

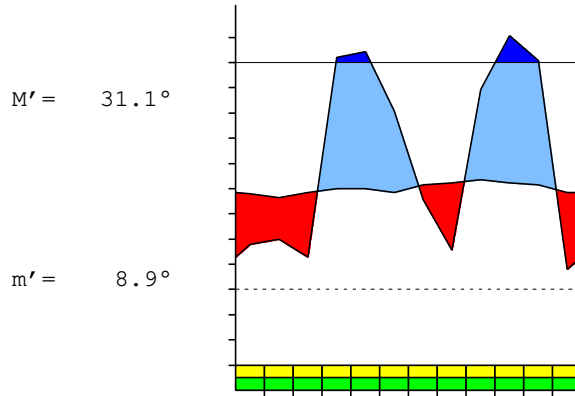
Bioclimatic(Variant): TROPICAL XERIC (BIXERIC, DRY)

Bioclimatic Belt...: UPPER THERMOTROPICAL UPPER DRY

MARSABIT (KENYA)

1433 m

P= 834 2° 5' S 37° 59' E 17/46 y.
 T= 20.0° Ic= 3.4 Tp= 2405 Tn= 0
 m= 13.3° M= 23.3° Itc= 566 Io= 3.5



TROPICAL XERIC (BIXERIC)
 UPPER THERMOTROPICAL UPPER DRY

WATER INDEX CARD MARSABIT (KENYA)

Altitude: 1433 m. Latitude: 2° 5' S

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jul.	18.9	68	18	-39	0	57	11	0	4	-0.7
Aug.	18.3	63	20	0	0	20	43	0	2	-0.6
Sep.	19.4	70	13	0	0	13	57	0	1	-0.8
Oct.	20.0	77	119	42	42	77	0	0	1	0.5
Nov.	20.0	75	142	58	100	75	0	9	5	0.8
Dec.	19.4	72	71	-1	99	72	0	0	2	0.0
Jan.	20.6	82	36	-46	53	82	0	0	1	-0.5
Feb.	21.1	78	16	-53	0	69	9	0	1	-0.7
Mar.	21.7	91	79	0	0	79	12	0	0	-0.1
Apr.	21.1	84	208	100	100	84	0	24	12	1.4
May.	20.6	81	104	0	100	81	0	23	18	0.2
Jun.	19.4	69	8	-61	39	69	0	0	9	-0.8
Year	20.0	909	834	*	*	777	132	57	57	*

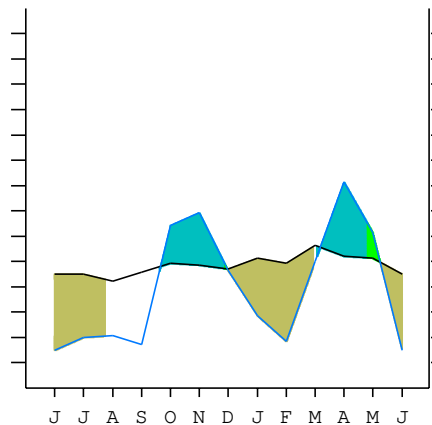
R = Reserve VR = Variation of the reserve RE = Real evapotranspiration
 DR = Drainage HC = Humidity coefficient DF = Deficit SP = Superavit

MARSABIT (KENYA)

2°5' S 37°59' E 1433 m 17/46 y.

T= 20.0 Ic= 3.4 TROPICAL XERIC (BIXERIC)
 m= 13.3 Tp= 2405 UPPER THERMOTROPICAL
 M= 23.3 Tn= 0 UPPER DRY
 M' = 31.1 Itc= 566
 m' = 8.9 Io= 3.5
 P= 834 mm ———
 PE= 909 mm ———

Imbibing	3 Mar.
Saturation	25 Apr.
Reserve Use	9 May.
Deficit	26 Feb.



MARSABIT (KENYA)

Latitude: 2°5'S Longitude: 37°59'E Altitude: 1433 m

SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continental Index [A1b]
 + Type: A. Hyperoceanic
 + Subtype: 1. Ultrahyperoceanic
 + Variant: b. Low
 Thermic types [A1.A2]
 + Latitudinal zone: A. Warm
 + Latitudinal belt: 1. Equatorial
 + Thermic type: A. Warm
 + Thermic subtype: 2. Warm
 Bioclimatic types [A3c.2a.5a]
 + Macrobioclimate: A. TROPICAL
 + Bioclimate: 3. XERIC
 + Bioclimatic variant .: c. BIXERIC, DRY
 + Thermic type.....: 2. THERMOTROPICAL
 + Thermic subtype.....: a. UPPER
 + Ombrothermic type ...: 5. DRY
 + Ombrothermic subtype : a. UPPER
 Bioclimatic Classification: Trxe(Bix).Ttr.Dry

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 451
 Coldest semester of the year.....(Psw): 320
 Warmest four months period of the year.....(Pcm1): 339
 Following warmest four months period.....(Pcm2): 150
 Positive precipitation dryest 3 months.....(Ppd): 46
 Positive precipitation dryest 2 months.....(Ppd2): 26
 Positive precipitation dryest 1 month.....(Ppd1): 8
 Positive precipitation warmest 3 months.....(Pps): 303
 Positive precipitation warmest 2 months.....(Pps2): 95
 Positive precipitation warmest 1 month.....(Pps1): 79
 Positive precipitation coldest 3 months.....(Ppw): 46
 Positive precipitation coldest 2 months.....(Ppw2): 38
 Positive precipitation coldest 1 month.....(Ppw1): 20

Seasons	Jun+Jul+Aug Ttr3-3	Sep+Oct+Nov Ttr4-4	Dec+Jan+Feb Ttr1-1	Mar+Apr+May Ttr2-2
Rainfall	46	274	123	391

Tropical rainfall rhythms: 2 > 4 > 1 > 3

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 21.7
 Average coldest month [T].....(Tmin): 18.3
 Maximum temp. warmest month [M].....(Tmmax): 26.1
 Minimum temp. coldest month [m].....(Tmmin): 13.3
 Absolute Max.temp. warmest month [M'].....(Tamax): 31.1
 Absolute Min.temp. coldest month [m'].....(Tamin): 8.9
 First warmest contrasted month [M].....(Tcmax): 24.4 (9)
 First coldest contrasted month [m].....(Tcmin): 13.3 (9)
 Dry station temperature.....(Td): 566
 Positive temperature dryest 3 months.....(Tpd): 566
 Positive temperature dryest 2 months.....(Tpd2): 383
 Positive temperature dryest 1 month.....(Tpd1): 194
 Positive temperature warmest 3 months.....(Tps): 639
 Positive temperature warmest 2 months.....(Tps2): 428
 Positive temperature warmest 1 month.....(Tps1): 217
 Positive temperature coldest 3 months.....(Tpw): 566
 Positive temperature coldest 2 months.....(Tpw2): 372
 Positive temperature coldest 1 month.....(Tpw1): 183

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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): 1.09
 Mediterranean index of January.....(Im1): No
 Mediterranean index of January & February.....(Im2): No
 Mediterranean index of December to February...(Im3): No

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp(x10)	710	360	160	790	2080	1040	80	180	200	130	1190	1420
Tp	194	206	211	217	211	206	194	189	183	194	200	200
Io (Iom)	3.66	1.75	0.76	3.64	9.86	5.05	0.41	0.95	1.09	0.67	5.95	7.10
Seasons	Dec+Jan+Feb			Mar+Apr+May			Jun+Jul+Aug			Sep+Oct+Nov		
Pp(x10)/Tp	1230 / 611			3910 / 634			460 / 566			2740 / 594		
Io (Iot)	2.013			6.167			0.813			4.613		
Semesters	December-May						June-November					
Pp(x10)/Tp	5140 / 1245						3200 / 1160					
Io (Iosm)	4.129						2.759					

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 8340/2405=3.47 **There is No Yearly Aridity**

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	710	360	160	790	2080	1040	80	180	200	130	1190	1420
Tp [T*10]	194	206	211	217	211	206	194	189	183	194	200	200
Iom [Pp/Tp]	366	175	76	364	986	505	41	95	109	67	595	710
Avm [200-Iom]	***	25	124	***	***	***	159	105	91	133	***	***
Seasons	Dec+Jan+Feb			Mar+Apr+May			Jun+Jul+Aug			Sep+Oct+Nov		
Pp / Tp	1230 / 611			3910 / 634			460 / 566			2740 / 594		
Iot [Pp/Tp]	201			617			81			461		
Avs E[Avm<200]	***			***			354			***		
Strong lower arid [1]							Weak lower arid [1]					
Strong upper arid [1]							Weak upper arid [2]					
Strong lower semiarid [1]							Weak upper semiarid [1]					

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin](Sp): 3.40
 CI of Gorezinski (1920) [1.7*Sp/sin(Lat)-20.4]: 138.60
 CI of Conrad (1946) [1.7*Sp/sin(Lat+10)-14]: 13.61
 + Hyperoceanic (-20<CI<20)
 CI of Currey (1974) [CI=Sp/(1+Lat/3)]: 2.01
 + Continental (1.7<CI<2.3)
 Rainfall Index of Lang (1925) [R=P/T]: 41.61
 + Semiarid (60>R>40)
 Aridity Index of Martonne (1926) [Ia=P/(T+10)]: 27.76
 + Subhumid (30>Ia>20)
 I of Emberger (1930) [Q=100*P/(Tmax²-Tmin²)]: 165.37
 + Humid (Q>90)
 I of Dantin & Revenga (1940) [DR=100*T/P]: 2.40
 + Semiarid (3>DR>2)
 Aridity Index of UNEP [I=P/PE]: 0.92
 + Humid (I>0.65)
 Potential Erosion I of Fournier (1960) [K=Pi²/P].....: 51.88
 + Very low (K<60)

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BIOCLIMATIC INDICES II

Bioclimatic classification of Gaussen & Bagnouls (1957)
 + Climate: A. Warm and temperate warm
 + Region: 5. Bixeric (Bixeric)
 + Thermic type: 2. Macrothermic

Thornthwaite (1948)												
	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
P-E ratio	0.13	0.05	0.31	0.91	0.43	0.03	0.06	0.07	0.04	0.51	0.61	0.29
T-E ratio	9.27	9.50	9.77	9.50	9.27	8.73	8.50	8.23	8.73	9.00	9.00	8.73
Precipitation-effectiveness:	34.50					Temperature-efficiency: 108.22						
Moisture Index [MI=100*(P-PE)/PE]: -8.28 + C1.Subhumid dry (-33.3<MI<0)												
Index of dryness [DI=100*d/PE]: 14.53 + No deficit (0<DI<16.7)												
Index of humidity [HI=100*s/PE]: 6.25 + No surplus (0<HI<10)												
Potential Evapotranspiration PE: 909.30 + Third mesothermic (855<PE<997)												

