

Phytosociological Research Center

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Worldwide Bioclimatic Classification System

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(Adapted to Synoptical Table 30/08/2017)

MAHALATSWE (BOTSWANA)

Altitude: 1001 m.

Latitude: 23°4'S Longitude: 26°48'E

Temperature observation period.: 1950-1980 (31)

Rainfall observation period....: 1950-1980 (31)

(C/mm)	Ti	Mi	mi	M'i	m'i	Pi	EPI
Jan.	25.50	32.00	19.00	42.00	9.00	84.0	143.56
Feb.	24.50	31.00	18.00	39.00	10.00	95.0	114.02
Mar.	23.00	29.00	17.00	38.00	9.00	77.0	102.52
Apr.	20.50	28.00	13.00	37.00	0.00	30.0	71.96
May.	17.00	26.00	8.00	34.00	-6.00	10.0	46.32
Jun.	13.50	23.00	4.00	31.00	-4.00	6.0	25.55
Jul.	13.50	23.00	4.00	31.00	-7.00	3.0	26.70
Aug.	16.50	26.00	7.00	35.00	-4.00	2.0	45.07
Sep.	20.00	29.00	11.00	39.00	-3.00	7.0	70.82
Oct.	24.00	32.00	16.00	40.00	2.00	28.0	118.44
Nov.	25.00	32.00	18.00	41.00	8.00	72.0	130.08
Dec.	25.00	32.00	18.00	41.00	8.00	97.0	138.36
Year	20.67	28.58	12.75	37.33	1.83	511	1033.4

BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	477
Compensated thermicity index.....(Itc):	477
Simple continentality index.....(Ic):	12.0
Diurnality index.....(Id):	19.0
Annual ombrothermic index.....(Io):	2.06
Monthly dry ombrothermic index.....(Iod1):	0.12
Bimonthly dry ombrothermic index.....(Iod2):	0.17
Three monthly dry ombrothermic index.....(Iod3):	0.25
Four monthly dry ombrothermic index.....(Iod4):	0.35
Annual ombro-evaporation index.....(Ioe):	7.81
Annual positive temperature.....(Tp):	2480
Annual negative temperature.....(Tn):	0
Dry station temperature.....(Td):	435
Positive precipitation.....(Pp):	511

N. of	P>4T	P:2T-4T	PT-2T	P<T	T<0
Months	0	5	2	5	0

Latitudinal Belt...: Eutropical

Continentalty.....: Oceanic - High Semihyperoceanic

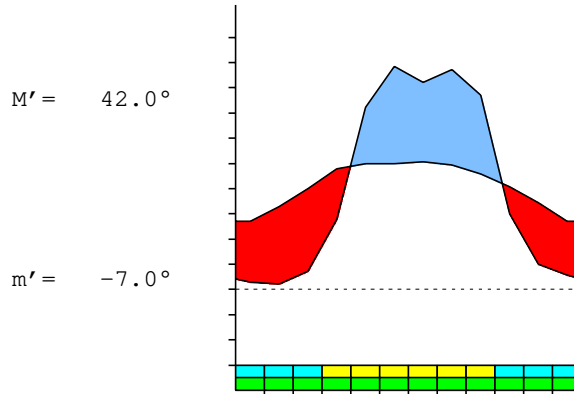
Bioclimate(Variant): TROPICAL XERIC (DRY)

Bioclimatic Belt...: LOW MESOTROPICAL LOW DRY

MAHALATSWE (BOTSWANA)

1001 m

P= 511 23° 4'S 26° 48'E 31/31 y.
 T= 20.7° Ic= 12.0 Tp= 2480 Tn= 0
 m= 4.0° M= 23.0° Itc= 477 Io= 2.1



TROPICAL XERIC (DRY)
 LOW MESOTROPICAL LOW DRY

WATER INDEX CARD MAHALATSWE (BOTSWANA)
 Altitude: 1001 m. Latitude: 23° 4'S

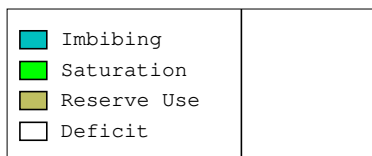
(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jul.	13.5	27	3	0	0	3	24	0	0	-0.8
Aug.	16.5	45	2	0	0	2	43	0	0	-0.9
Sep.	20.0	71	7	0	0	7	64	0	0	-0.9
Oct.	24.0	118	28	0	0	28	90	0	0	-0.7
Nov.	25.0	130	72	0	0	72	58	0	0	-0.4
Dec.	25.0	138	97	0	0	97	41	0	0	-0.2
Jan.	25.5	144	84	0	0	84	60	0	0	-0.4
Feb.	24.5	114	95	0	0	95	19	0	0	-0.1
Mar.	23.0	103	77	0	0	77	26	0	0	-0.2
Apr.	20.5	72	30	0	0	30	42	0	0	-0.5
May.	17.0	46	10	0	0	10	36	0	0	-0.7
Jun.	13.5	26	6	0	0	6	20	0	0	-0.7
Year	20.7	1033	511	*	*	511	522	0	0	*

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

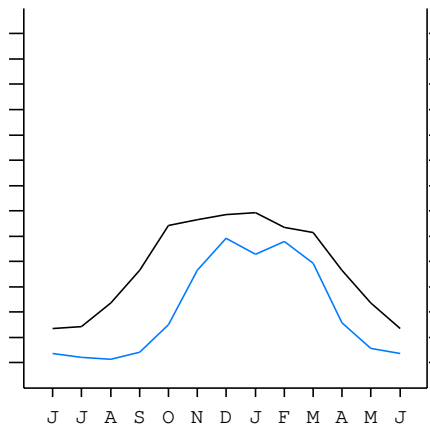
MAHALATSWE (BOTSWANA)

23°4'S 26°48'E 1001 m 31/31 y.

T= 20.7 Ic= 12.0 TROPICAL XERIC (DRY)
 m= 4.0 Tp= 2480 LOW MESOTROPICAL
 M= 23.0 Tn= 0 LOW DRY
 M' = 42.0 Itc= 477
 m' = -7.0 Io= 2.1
 P= 511 mm ———
 PE= 1033 mm ———



All over the year,
 there is hydric deficit



MAHALATSWE (BOTSWANA)

Latitude: 23°4'S Longitude: 26°48'E Altitude: 1001 m

SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continental Index [B1a]
 + Type: B. Oceanic
 + Subtype: 1. Semihyperoceanic
 + Variant: a. High
 Thermic types [A2.A2]
 + Latitudinal zone: A. Warm
 + Latitudinal belt: 2. Eutropical
 + Thermic type: A. Warm
 + Thermic subtype: 2. Warm
 Bioclimatic types [A3.3b.5b]
 + Macrobioclimate: A. TROPICAL
 + Bioclimate: 3. XERIC
 + Bioclimatic variant ..:
 + Thermic type.....: 3. MESOTROPICAL
 + Thermic subtype.....: b. LOW
 + Ombrothermic type ...: 5. DRY
 + Ombrothermic subtype : b. LOW
 Bioclimatic Classification: Trxe.Mtr.Dry

MAHALATSWE (BOTSWANA)

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 453
 Coldest semester of the year.....(Psw): 58
 Warmest four months period of the year.....(Pcm1): 348
 Following warmest four months period.....(Pcm2): 123
 Positive precipitation dryest 3 months.....(Ppd): 11
 Positive precipitation dryest 2 months.....(Ppd2): 5
 Positive precipitation dryest 1 month.....(Ppd1): 2
 Positive precipitation warmest 3 months.....(Pps): 253
 Positive precipitation warmest 2 months.....(Pps2): 181
 Positive precipitation warmest 1 month.....(Pps1): 84
 Positive precipitation coldest 3 months.....(Ppw): 11
 Positive precipitation coldest 2 months.....(Ppw2): 9
 Positive precipitation coldest 1 month.....(Ppw1): 6

Seasons	Jun+Jul+Aug Ttr3-3	Sep+Oct+Nov Ttr4-4	Dec+Jan+Feb Ttr1-1	Mar+Apr+May Ttr2-2
Rainfall	11	107	276	117

Tropical rainfall rhythms: 1 > 2 > 4 > 3

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 25.5
 Average coldest month [T].....(Tmin): 13.5
 Maximum temp. warmest month [M].....(Tmmax): 32.0
 Minimum temp. coldest month [m].....(Tmmin): 4.0
 Absolute Max.temp. warmest month [M'].....(Tamax): 42.0
 Absolute Min.temp. coldest month [m'].....(Tamin): -7.0
 First warmest contrasted month [M].....(Tcmax): 23.0 (6)
 First coldest contrasted month [m].....(Tcmin): 4.0 (6)
 Dry station temperature.....(Td): 435
 Positive temperature dryest 3 months.....(Tpd): 435
 Positive temperature dryest 2 months.....(Tpd2): 300
 Positive temperature dryest 1 month.....(Tpd1): 165
 Positive temperature warmest 3 months.....(Tps): 755
 Positive temperature warmest 2 months.....(Tps2): 505
 Positive temperature warmest 1 month.....(Tps1): 255
 Positive temperature coldest 3 months.....(Tpw): 435
 Positive temperature coldest 2 months.....(Tpw2): 270
 Positive temperature coldest 1 month.....(Tpw1): 135

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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)				o	o	o	o	o	o			
Agelid.....[m' > 0] (Pf)	o	o	o							o	o	o
HiperAgelid..[all>0] (Pf)	o	o	o							o	o	o

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OMBROTHERMIC PARAMETERS

Annual aridity index.[PE/P].....(Iar): 2.02
 Mediterranean index of January.....(Im1): 1.71
 Mediterranean index of January & February.....(Im2): 1.44
 Mediterranean index of December to February...(Im3): 1.43

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp(x10)	970	840	950	770	300	100	60	30	20	70	280	720
Tp	250	255	245	230	205	170	135	135	165	200	240	250
Io (Iom)	3.88	3.29	3.88	3.35	1.46	0.59	0.44	0.22	0.12	0.35	1.17	2.88
Seasons	Dec+Jan+Feb			Mar+Apr+May			Jun+Jul+Aug			Sep+Oct+Nov		
Pp(x10)/Tp	2760 / 750			1170 / 605			110 / 435			1070 / 690		
Io (Iot)	3.680			1.934			0.253			1.551		
Semesters	December-May						June-November					
Pp(x10)/Tp	3930 / 1355						1180 / 1125					
Io (Iosm)	2.900						1.049					

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 5110/2480=2.06 **There is No Yearly Aridity**

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	970	840	950	770	300	100	60	30	20	70	280	720
Tp [T*10]	250	255	245	230	205	170	135	135	165	200	240	250
Iom [Pp/Tp]	388	329	388	335	146	59	44	22	12	35	117	288
Avm [200-Iom]	***	***	***	***	54	141	156	178	188	165	83	***
Seasons	Dec+Jan+Feb			Mar+Apr+May			Jun+Jul+Aug			Sep+Oct+Nov		
Pp / Tp	2760 / 750			1170 / 605			110 / 435			1070 / 690		
Iot [Pp/Tp]	368			193			25			155		
Avs E[Avm<200]	***			***			521			***		
Upper ultrahyperarid [1]						Lower hyperarid [2]						
Upper hyperarid [1]						Strong lower arid [1]						
Weak lower arid [1]						Strong lower semiarid [1]						
Weak lower semiarid [1]												

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin](Sp): 12.00
 CI of Gorezinski (1920) [1.7*Sp/sin(Lat)-20.4]: 31.67
 CI of Conrad (1946) [1.7*Sp/sin(Lat+10)-14]: 23.39
 + Oceanic (20<CI<40)
 CI of Currey (1974) [CI=Sp/(1+Lat/3)]: 1.38
 + Subcontinental (1.1<CI<1.7)
 Rainfall Index of Lang (1925) [R=P/T]: 24.73
 + Steppic (40>R>0)
 Aridity Index of Martonne (1926) [Ia=P/(T+10)]: 16.66
 + Semiarid -mediterranean- (20>Ia>15)
 I of Emberger (1930) [Q=100*P/(Tmmax²-Tmmin²)]: 50.69
 + Subhumid (90>Q>50)
 I of Dantin & Revenga (1940) [DR=100*T/P]: 4.04
 + Arid (6>DR>3)
 Aridity Index of UNEP [I=P/PE]: 0.49
 + Semiarid (0.5>Im>0.2)
 Potential Erosion I of Fournier (1960) [K=Pi²/P].....: 18.41
 + Very low (K<60)

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BIOCLIMATIC INDICES II

Bioclimatic classification of Gaussen & Bagnouls (1957)
 + Climate: A. Warm and temperate warm
 + Region: 3. Termoxeroteric (Mediterranean warm)
 + Thermic type: 2. Macrothermic

Thornthwaite (1948)												
	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
P-E ratio	0.30	0.35	0.29	0.11	0.03	0.02	0.01	0.01	0.02	0.09	0.26	0.36
T-E ratio	11.48	11.02	10.35	9.23	7.65	6.07	6.07	7.43	9.00	10.80	11.25	11.25
Precipitation-effectiveness: 18.49						Temperature-efficiency: 111.60						
Moisture Index [MI=100*(P-PE)/PE]: -50.55 + D.Semiarid (-66.7<MI<-33.3)												
Index of dryness [DI=100*d/PE]: 50.55 + Strong deficit (33.3<DI)												
Index of humidity [HI=100*s/PE]: 0.00 + No surplus (0<HI<10)												
Potential Evapotranspiration PE: 1033.41 + Forth mesothermic (997<PE<1440)												

