

Phytosociological Research Center

www.globalbioclimatics.org

Worldwide Bioclimatic Classification System

Prof.Dr. Salvador Rivas-Martinez

(Adapted to Synoptical Table 30/08/2017)

GIARABUB (LIBYA)

Altitude: 7 m.

Latitude: 29°45'N Longitude: 24°32'E

Temperature observation period.: 1979-1994 (16)

Rainfall observation period....: 1979-1994 (16)

(C/mm)	Ti	Mi	mi	M'i	m'i	Pi	EPI
Jan.	12.78	18.89	6.67	26.67	-1.11	3.0	18.25
Feb.	14.45	21.11	7.78	31.67	-1.11	0.5	24.30
Mar.	17.50	25.00	10.00	40.00	0.56	0.8	47.39
Apr.	21.11	29.44	12.78	45.56	3.89	1.0	81.00
May.	26.39	34.44	18.33	47.78	10.00	0.3	158.36
Jun.	29.45	37.78	21.11	49.44	9.44	0.0	186.16
Jul.	30.00	38.33	21.67	47.22	12.22	0.0	196.22
Aug.	29.17	37.22	21.11	45.00	11.67	0.0	178.83
Sep.	27.50	35.00	20.00	44.44	12.78	0.0	147.81
Oct.	23.06	30.00	16.11	40.00	6.11	0.0	92.54
Nov.	18.34	25.00	11.67	35.00	1.11	0.5	46.27
Dec.	14.45	21.11	7.78	30.00	0.00	2.8	24.58
Year	22.02	29.44	14.58	40.23	5.46	9	1201.7

BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	476
Compensated thermicity index.....(Itc):	476
Simple continentality index.....(Ic):	17.2
Diurnality index.....(Id):	16.7
Annual ombrothermic index.....(Io):	0.03
Monthly estival ombrothermic index.....(Ios1):	No
Bimonthly estival ombrothermic index.....(Ios2):	No
Three monthly estival ombrothermic index.....(Ios3):	No
Four monthly estival ombrothermic index.....(Ios4):	0.00
Annual ombro-evaporation index.....(Ioe):	0.03
Annual positive temperature.....(Tp):	2642
Annual negative temperature.....(Tn):	0
Estival temperature.....(Ts):	886
Positive precipitation.....(Pp):	9

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

Latitudinal Belt...: Subtropical

Continentalty.....: Oceanic - Low Semicontinental

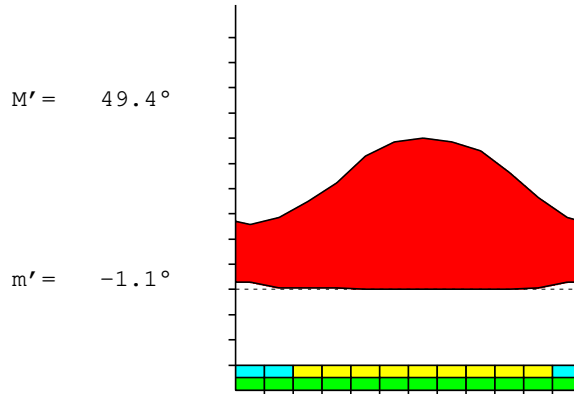
Bioclimate.....: MEDITERRANEAN HYPERDESERTIC OCEANIC

Bioclimatic Belt...: UPPER INFRAMEDITERRANEAN LOW ULTRAHYPERARID

GIARABUB (LIBYA)

7 m

P= 9 29° 45'N 24° 32'E 16/16 y.
 T= 22.0° Ic= 17.2 Tp= 2642 Tn= 0
 m= 6.7° M= 18.9° Itc= 476 Io= 0.0



MEDITERRANEAN HYPERDESERTIC OCEANIC
 UPPER INFRAMEDITERRANEAN LOW ULTRAHYPERARID

WATER INDEX CARD

GIARABUB (LIBYA)

Altitude: 7 m.

Latitude: 29° 45'N

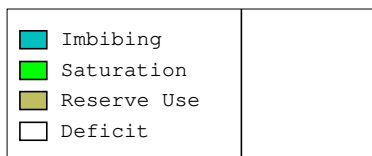
(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jan.	12.8	18	3	0	0	3	15	0	0	-0.8
Feb.	14.4	24	1	0	0	1	24	0	0	-0.9
Mar.	17.5	47	1	0	0	1	47	0	0	-0.9
Apr.	21.1	81	1	0	0	1	80	0	0	-0.9
May.	26.4	158	0	0	0	0	158	0	0	-0.9
Jun.	29.5	186	0	0	0	0	186	0	0	-1.0
Jul.	30.0	196	0	0	0	0	196	0	0	-1.0
Aug.	29.2	179	0	0	0	0	179	0	0	-1.0
Sep.	27.5	148	0	0	0	0	148	0	0	-1.0
Oct.	23.1	93	0	0	0	0	93	0	0	-1.0
Nov.	18.3	46	1	0	0	1	46	0	0	-0.9
Dec.	14.4	25	3	0	0	3	22	0	0	-0.8
Year	22.0	1202	9	*	*	9	1193	0	0	*

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

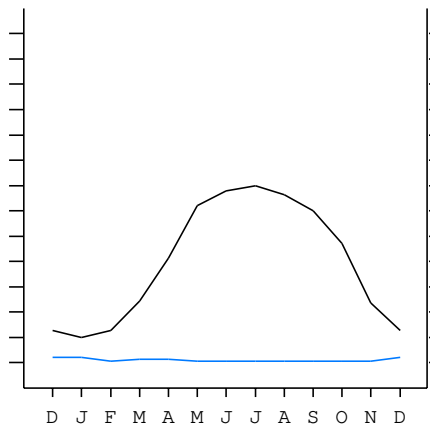
GIARABUB (LIBYA)

29°45'N 24°32'E 7 m 16/16 y.

T= 22.0 Ic= 17.2 MEDITERRANEAN HYPERDESERTIC OCEANIC
 m= 6.7 Tp= 2642 UPPER INFRAMEDITERRANEAN
 M= 18.9 Tn= 0 LOW ULTRAHYPERARID
 M' = 49.4 Itc= 476
 m' = -1.1 Io= 0.0
 P= 9 mm ———
 PE= 1202 mm ———



All over the year,
 there is hydric deficit



GIARABUB (LIBYA)

Latitude: 29°45'N Longitude: 24°32'E Altitude: 7 m

SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continental Index [B1a]
 + Type: B. Oceanic
 + Subtype: 1. Semicontinental
 + Variant: a. Low

Thermic types [A3.A2]
 + Latitudinal zone: A. Warm
 + Latitudinal belt: 3. Subtropical
 + Thermic type: A. Warm
 + Thermic subtype: 2. Warm

Bioclimatic types [B2.1a.1b]
 + Macrobioclimate: B. MEDITERRANEAN
 + Bioclimate: 2. HYPERDESERTIC OCEANIC
 + Bioclimatic variant ..:
 + Thermic type.....: 1. INFRAMEDITERRANEAN
 + Thermic subtype.....: a. UPPER
 + Ombrothermic type ...: 1. ULTRAHYPERARID
 + Ombrothermic subtype : b. LOW

Bioclimatic Classification: Mepc.Ime.Uha

GIARABUB (LIBYA)

Latitude: 29°45'N Longitude: 24°32'E Altitude: 7 m

PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 0
 Coldest semester of the year.....(Psw): 9
 Warmest four months period of the year.....(Pcm1): 0
 Following warmest four months period.....(Pcm2): 6
 Positive precipitation dryest 3 months.....(Ppd): 0
 Positive precipitation dryest 2 months.....(Ppd2): 0
 Positive precipitation dryest 1 month.....(Ppd1): 0
 Positive precipitation warmest 3 months.....(Pps): 0
 Positive precipitation warmest 2 months.....(Pps2): 0
 Positive precipitation warmest 1 month.....(Pps1): 0
 Positive precipitation coldest 3 months.....(Ppw): 6
 Positive precipitation coldest 2 months.....(Ppw2): 4
 Positive precipitation coldest 1 month.....(Ppw1): 3

Seasons	Winter Tr1-W	Spring Tr2-P	Summer Tr3-S	Automn Tr4-F
Rainfall	6	2	0	0

Seasonal rainfall rhythms: W > P > S > F

GIARABUB (LIBYA)

Latitude: 29°45'N Longitude: 24°32'E Altitude: 7 m

TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 30.0
 Average coldest month [T].....(Tmin): 12.8
 Maximum temp. warmest month [M].....(Tmmax): 38.3
 Minimum temp. coldest month [m].....(Tmmin): 6.7
 Absolute Max.temp. warmest month [M'].....(Tamax): 49.4
 Absolute Min.temp. coldest month [m'].....(Tamin): -1.1
 First warmest contrasted month [M].....(Tcmax): 37.8 (6)
 First coldest contrasted month [m].....(Tcmin): 21.1 (6)
 Estival temperature.....(Ts): 886
 Positive temperature dryest 3 months.....(Tpd): 886
 Positive temperature dryest 2 months.....(Tpd2): 595
 Positive temperature dryest 1 month.....(Tpd1): 295
 Positive temperature warmest 3 months.....(Tps): 886
 Positive temperature warmest 2 months.....(Tps2): 595
 Positive temperature warmest 1 month.....(Tps1): 300
 Positive temperature coldest 3 months.....(Tpw): 417
 Positive temperature coldest 2 months.....(Tpw2): 272
 Positive temperature coldest 1 month.....(Tpw1): 128

GIARABUB (LIBYA)

Latitude: 29°45'N Longitude: 24°32'E Altitude: 7 m

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

GIARABUB (LIBYA)

Latitude: 29°45'N Longitude: 24°32'E Altitude: 7 m

OMBROTHERMIC PARAMETERS

Annual aridity index.[PE/P].....(Iar): 135.02
 Mediterranean index of July.[PE/P].....(Im1): No
 Mediterranean index of July & August.....(Im2): No
 Mediterranean index of June, July & August....(Im3): No

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp(x10)	28	30	5	8	10	3	0	0	0	0	0	5
Tp	145	128	145	175	211	264	295	300	292	275	231	183
Io (Iom)	0.19	0.23	0.03	0.05	0.05	0.01	0.00	0.00	0.00	0.00	0.00	0.03
Seasons	Winter			Spring			Summer			Autumn		
Pp(x10)/Tp	63 / 417			21 / 650			0 / 886			5 / 689		
Io (Iot)	0.151			0.032			0.000			0.007		
Semesters	December-May						June-November					
Pp(x10)/Tp	84 / 1067						5 / 1575					
Io (Iosm)	0.079						0.003					

GIARABUB (LIBYA)

Latitude: 29°45'N Longitude: 24°32'E Altitude: 7 m

Aridity Value Index (AVI)

[10xPP/TP=IO]: 89/2642=0.03 Lower ultrahyperarid (1) [2341]

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	28	30	5	8	10	3	0	0	0	0	0	5
Tp [T*10]	145	128	145	175	211	264	295	300	292	275	231	183
Iom [Pp/Tp]	19	23	3	5	5	1	0	0	0	0	0	3
Avm [200-Iom]	181	177	197	195	195	199	200	200	200	200	200	197
Seasons	Winter			Spring			Summer			Autumn		
Pp / Tp	63 / 417			21 / 650			0 / 886			5 / 689		
Iot [Pp/Tp]	15			3			0			1		
Avs E[Avm<200]	554			590			600			597		
Lower ultrahyperarid [13]							Upper ultrahyperarid [2]					
Lower hyperarid [1]												

GIARABUB (LIBYA)

Latitude: 29°45'N Longitude: 24°32'E Altitude: 7 m

BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin](Sp): 17.22
 CI of Gorezinski (1920) [1.7*Sp/sin(Lat)-20.4]: 38.59
 CI of Conrad (1946) [1.7*Sp/sin(Lat+10)-14]: 31.78
 + Oceanic (20<CI<40)
 CI of Currey (1974) [CI=Sp/(1+Lat/3)]: 1.58
 + Subcontinental (1.1<CI<1.7)
 Rainfall Index of Lang (1925) [R=P/T]: 0.40
 + Steppic (40>R>0)
 Aridity Index of Martonne (1926) [Ia=P/(T+10)]: 0.28
 + Extremely arid -desert- (5>Ia>0)
 I of Emberger (1930) [Q=100*P/(Tmax²-Tmin²)]: 0.62
 + Arid (30>Q>0)
 I of Dantin & Revenga (1940) [DR=100*T/P]: 247.38
 + Extremely arid (DR>6)
 Aridity Index of UNEP [I=P/PE]: 0.01
 + Hyperarid (0.05>Im)
 Potential Erosion I of Fournier (1960) [K=Pi²/P].....: 1.01
 + Very low (K<60)

GIARABUB (LIBYA)

Latitude: 29°45'N Longitude: 24°32'E Altitude: 7 m

BIOCLIMATIC INDICES II

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

Thornthwaite (1948)												
	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
P-E ratio	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
T-E ratio	5.75	6.50	7.88	9.50	11.88	13.25	13.50	13.13	12.38	10.38	8.25	6.50
Precipitation-effectiveness: 0.27						Temperature-efficiency: 118.89						
Moisture Index [MI=100*(P-PE)/PE]: -99.26 + E.Dry (-110<MI<-66.7)												
Index of dryness [DI=100*d/PE]: 99.25 + Strong deficit (33.3<DI)												
Index of humidity [HI=100*s/PE]: 0.00 + No surplus (0<HI<10)												
Potential Evapotranspiration PE: 1201.70 + Forth mesothermic (997<PE<1440)												

