

# Phytosociological Research Center

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## Worldwide Bioclimatic Classification System

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(Adapted to Synoptical Table 30/08/2017)

TORRIJOS (ESP MALAGA)

Altitude: 780 m.

Latitude: 36°50'N Longitude: 4°22'W

Temperature observation period.: 1956-1969 (14)

Rainfall observation period....: 1956-1969 (14)

(C/mm)	Ti	Mi	mi	M'i	m'i	Pi	EPI
Jan.	7.60	13.60	1.70	22.20	-3.50	67.0	20.03
Feb.	8.60	14.50	2.70	22.40	-2.00	89.0	23.56
Mar.	9.90	16.00	3.80	23.80	0.00	100.0	34.81
Apr.	11.30	17.40	5.20	24.70	1.50	67.0	44.78
May.	14.90	21.90	7.90	28.40	3.70	57.0	73.29
Jun.	17.60	24.60	10.70	32.60	6.70	15.0	93.40
Jul.	21.40	29.60	13.30	36.80	9.50	0.0	124.97
Aug.	21.80	29.50	14.10	35.20	10.10	3.0	120.06
Sep.	19.00	26.10	11.90	33.60	7.80	19.0	87.11
Oct.	15.00	21.60	8.50	28.60	5.10	63.0	58.82
Nov.	9.70	15.20	4.20	23.20	0.50	116.0	27.91
Dec.	7.80	13.40	2.10	21.50	-1.80	192.0	20.05
Year	13.72	20.28	7.17	27.75	3.13	788	728.80

### BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	290
Compensated thermicity index.....(Itc):	290
Simple continentality index.....(Ic):	14.2
Diurnality index.....(Id):	16.3
Annual ombrothermic index.....(Io):	4.79
Monthly estival ombrothermic index.....(Ios1):	No
Bimonthly estival ombrothermic index.....(Ios2):	0.07
Threemonthly estival ombrothermic index.....(Ios3):	0.30
Fourmonthly estival ombrothermic index.....(Ios4):	0.99
Annual ombro-evaporation index.....(Ioe):	0.25
Annual positive temperature.....(Tp):	1646
Annual negative temperature.....(Tn):	0
Estival temperature.....(Ts):	608
Positive precipitation.....(Pp):	788

N. of	P>4T	P:2T-4T	PT-2T	P<T	T<0
Months	7	1	1	3	0

Latitudinal Belt...: Low eutemperate

Continentalty.....: Oceanic - High Euoceanic

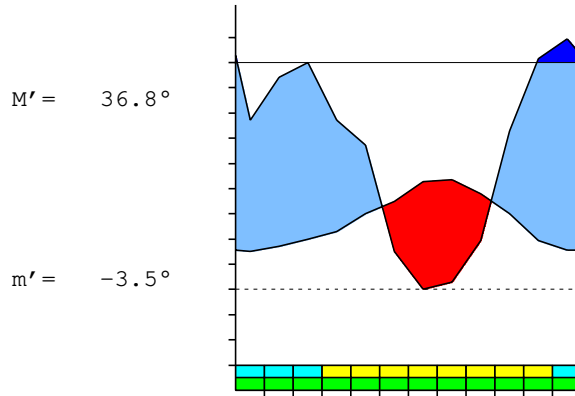
Bioclimate.....: MEDITERRANEAN PLUVISEASONAL-OCEANIC

Bioclimatic Belt...: UPPER MESOMEDITERRANEAN LOW SUBHUMID

TORRIJOS (ESP MALAGA)

780 m

P= 788      36° 50'N      4° 22'W      14/14 y.  
 T= 13.7°    Ic= 14.2      Tp= 1646      Tn= 0  
 m= 1.7°      M= 13.6°      Itc= 290      Io= 4.8



MEDITERRANEAN PLUVISEASONAL-OCEANIC  
 UPPER MESOMEDITERRANEAN LOW SUBHUMID

WATER INDEX CARD      TORRIJOS (ESP MALAGA)  
 Altitude: 780 m.      Latitude: 36° 50'N

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jan.	7.6	20	67	0	100	20	0	47	65	2.3
Feb.	8.6	24	89	0	100	24	0	65	65	2.7
Mar.	9.9	35	100	0	100	35	0	65	65	1.8
Apr.	11.3	45	67	0	100	45	0	22	44	0.4
May.	14.9	73	57	-16	84	73	0	0	22	-0.2
Jun.	17.6	93	15	-78	5	93	0	0	11	-0.8
Jul.	21.4	125	0	-5	0	5	120	0	5	-1.0
Aug.	21.8	120	3	0	0	3	117	0	3	-0.9
Sep.	19.0	87	19	0	0	19	68	0	1	-0.7
Oct.	15.0	59	63	4	4	59	0	0	1	0.0
Nov.	9.7	28	116	88	92	28	0	0	0	3.1
Dec.	7.8	20	192	8	100	20	0	164	82	8.5
Year	13.7	729	788	*	*	424	305	364	364	*

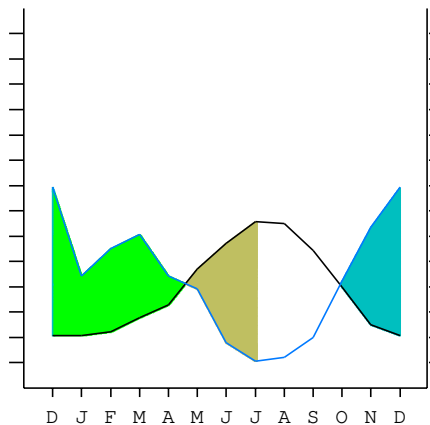
R = Reserve    VR = Variation of the reserve    RE = Real evapotranspiration  
 DR = Drainage    HC = Humidity coefficient    DF = Deficit    SP = Superavit

TORRIJOS (ESP MALAGA)

36°50'N    4°22'W    780 m 14/14 y.

T= 13.7    Ic= 14.2    MEDITERRANEAN PLUVISEASONAL-OCEANIC  
 m= 1.7    Tp= 1646    UPPER MESOMEDITERRANEAN  
 M= 13.6    Tn= 0    LOW SUBHUMID  
 M' = 36.8    Itc= 290  
 m' = -3.5    Io= 4.8  
 P= 788    mm    ———  
 PE= 729    mm    ———

Imbibing	29 Sep.
Saturation	2 Dec.
Reserve Use	18 Apr.
Deficit	2 Jul.



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SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continental Index [B2a]  
 + Type .....: B. Oceanic  
 + Subtype .....: 2. Euoceanic  
 + Variant .....: a. High  
 Thermic types [B1.B4]  
 + Latitudinal zone ....: B. Temperate  
 + Latitudinal belt ....: 1. Low eutemperate  
 + Thermic type .....: B. Temperate  
 + Thermic subtype .....: 4. Temperate  
 Bioclimatic types [B8.3a.6b]  
 + Macrobioclimate .....: B. MEDITERRANEAN  
 + Bioclimate .....: 8. PLUVISEASONAL-OCEANIC  
 + Bioclimatic variant ..:  
 + Thermic type.....: 3. MESOMEDITERRANEAN  
 + Thermic subtype.....: a. UPPER  
 + Ombrothermic type ...: 6. SUBHUMID  
 + Ombrothermic subtype : b. LOW  
 Bioclimatic Classification .....: Mehc.Mme.Shu

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 157  
 Coldest semester of the year.....(Psw): 631  
 Warmest four months period of the year.....(Pcm1): 37  
 Following warmest four months period.....(Pcm2): 438  
 Positive precipitation dryest 3 months.....(Ppd): 18  
 Positive precipitation dryest 2 months.....(Ppd2): 3  
 Positive precipitation dryest 1 month.....(Ppd1): 0  
 Positive precipitation warmest 3 months.....(Pps): 22  
 Positive precipitation warmest 2 months.....(Pps2): 3  
 Positive precipitation warmest 1 month.....(Pps1): 3  
 Positive precipitation coldest 3 months.....(Ppw): 348  
 Positive precipitation coldest 2 months.....(Ppw2): 259  
 Positive precipitation coldest 1 month.....(Ppw1): 67

Seasons	Winter Tr1-W	Spring Tr2-P	Summer Tr3-S	Automn Tr4-F
Rainfall	348	224	18	198

Seasonal rainfall rhythms: W > P > F > S

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 21.8  
 Average coldest month [T].....(Tmin): 7.6  
 Maximum temp. warmest month [M].....(Tmmax): 29.6  
 Minimum temp. coldest month [m].....(Tmmin): 1.7  
 Absolute Max.temp. warmest month [M'].....(Tamax): 36.8  
 Absolute Min.temp. coldest month [m'].....(Tamin): -3.5  
 First warmest contrasted month [M].....(Tcmax): 29.6 (7)  
 First coldest contrasted month [m].....(Tcmin): 13.3 (7)  
 Estival temperature.....(Ts): 608  
 Positive temperature dryest 3 months.....(Tpd): 608  
 Positive temperature dryest 2 months.....(Tpd2): 432  
 Positive temperature dryest 1 month.....(Tpd1): 214  
 Positive temperature warmest 3 months.....(Tps): 622  
 Positive temperature warmest 2 months.....(Tps2): 432  
 Positive temperature warmest 1 month.....(Tps1): 218  
 Positive temperature coldest 3 months.....(Tpw): 240  
 Positive temperature coldest 2 months.....(Tpw2): 154  
 Positive temperature coldest 1 month.....(Tpw1): 76

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

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OMBROTHERMIC PARAMETERS

Annual aridity index.[PE/P].....(Iar): 0.92  
 Mediterranean index of July.[PE/P].....(Im1): No  
 Mediterranean index of July & August.....(Im2): 81.68  
 Mediterranean index of June, July & August....(Im3): 18.80

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp(x10)	1920	670	890	1000	670	570	150	0	30	190	630	1160
Tp	78	76	86	99	113	149	176	214	218	190	150	97
Io (Iom)	24.6	8.82	10.3	10.1	5.93	3.83	0.85	0.00	0.14	1.00	4.20	12.0
Seasons	Winter			Spring			Summer			Autumn		
Pp(x10)/Tp	3480 / 240			2240 / 361			180 / 608			1980 / 437		
Io (Iot)	14.50			6.205			0.296			4.531		
Semesters	December-May						June-November					
Pp(x10)/Tp	5720 / 601						2160 / 1045					
Io (Iosm)	9.517						2.067					

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 7880/1646=4.79 **There is No Yearly Aridity**

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	1920	670	890	1000	670	570	150	0	30	190	630	1160
Tp [T*10]	78	76	86	99	113	149	176	214	218	190	150	97
Iom [Pp/Tp]	\$\$	882	\$\$	\$\$	593	383	85	0	14	100	420	\$\$
Avm [200-Iom]	***	***	***	***	***	***	115	200	186	100	***	***
Seasons	Winter			Spring			Summer			Autumn		
Pp / Tp	3480 / 240			2240 / 361			180 / 608			1980 / 437		
Iot [Pp/Tp]	1450			620			30			453		
Avs E[Avm<200]	***			***			501			***		
Lower ultrahyperarid [1]							Upper ultrahyperarid [1]					
Upper hyperarid [1]							Weak upper arid [2]					

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin] .....	(Sp): 14.20
CI of Gorezinski (1920) [1.7*Sp/sin(Lat)-20.4] .....	19.87
CI of Conrad (1946) [1.7*Sp/sin(Lat+10)-14] .....	19.10
+ Hyperoceanic (-20<CI<20)	
CI of Currey (1974) [CI=Sp/(1+Lat/3)] .....	1.07
+ Oceanic (0.6<CI<1.1)	
Rainfall Index of Lang (1925) [R=P/T] .....	57.45
+ Semiarid (60>R>40)	
Aridity Index of Martonne (1926) [Ia=P/(T+10)] .....	33.23
+ Humid (60>Ia>30)	
I of Emberger (1930) [Q=100*P/(Tmax <sup>2</sup> -Tmin <sup>2</sup> )] .....	90.24
+ Humid (Q>90)	
I of Dantin & Revenga (1940) [DR=100*T/P] .....	1.74
+ Humid (2>DR>0)	
Aridity Index of UNEP [I=P/PE] .....	1.08
+ Humid (I>0.65)	
Potential Erosion I of Fournier (1960) [K=Pi <sup>2</sup> /P] .....	46.78
+ Very low (K<60)	

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BIOCLIMATIC INDICES II

Bioclimatic classification of Gaussen & Bagnouls (1957)  
 + Climate .....

- + Climate .....
- + Region .....
- + Thermic type: 4. Mesothermic

Thornthwaite (1948)												
	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
P-E ratio	0.39	0.51	0.56	0.34	0.26	0.05	0.00	0.01	0.07	0.29	0.66	1.24
T-E ratio	3.42	3.87	4.45	5.09	6.70	7.92	9.63	9.81	8.55	6.75	4.36	3.51
Precipitation-effectiveness: 43.81						Temperature-efficiency .....						74.07
Moisture Index [MI=100*(P-PE)/PE] .....												8.12
+ C2.Subhumid humid (0<MI<20)												
Index of dryness [DI=100*d/PE] .....												41.82
+ Strong deficit (33.3<DI)												
Index of humidity [HI=100*s/PE] .....												49.95
+ Strong surplus (20<HI)												
Potential Evapotranspiration PE .....												728.80
+ Second mesothermic (712<PE<855)												

