

Phytosociological Research Center

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Worldwide Bioclimatic Classification System

Prof.Dr. Salvador Rivas-Martinez

(Adapted to Synoptical Table 30/08/2017)

MALAGA (ESP MALAGA)

Altitude: 8 m.

Latitude: 36°43'N Longitude: 4°25'W

Temperature observation period.: 1931-1970 (40)

Rainfall observation period....: 1931-1970 (40)

(C/mm)	Ti	Mi	mi	M'i	m'i	Pi	Epi
Jan.	12.50	16.50	8.50	21.00	3.90	59.0	26.53
Feb.	13.20	17.10	9.30	22.20	5.10	49.0	29.18
Mar.	15.00	18.80	11.10	24.60	7.20	62.0	45.44
Apr.	16.70	20.50	12.80	26.80	9.40	46.0	59.90
May.	19.30	23.30	15.20	29.80	10.70	25.0	88.24
Jun.	22.80	26.60	19.00	33.50	15.50	5.0	123.35
Jul.	25.20	29.20	21.30	37.60	18.20	1.0	152.54
Aug.	25.60	29.70	21.60	36.70	18.90	3.0	147.25
Sep.	23.50	27.50	19.60	33.30	16.00	28.0	109.60
Oct.	19.70	23.40	15.90	28.00	11.40	62.0	73.03
Nov.	15.80	19.70	11.90	24.20	8.00	63.0	41.52
Dec.	13.30	17.10	9.40	21.50	5.30	66.0	28.92
Year	18.55	22.45	14.63	28.27	10.80	469	925.52

BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	436
Compensated thermicity index.....(Itc):	436
Simple continentality index.....(Ic):	13.1
Diurnality index.....(Id):	8.1
Annual ombrothermic index.....(Io):	2.11
Monthly estival ombrothermic index.....(Ios1):	0.04
Bimonthly estival ombrothermic index.....(Ios2):	0.08
Threemonthly estival ombrothermic index.....(Ios3):	0.12
Fourmonthly estival ombrothermic index.....(Ios4):	0.37
Annual ombro-evaporation index.....(Ioe):	0.36
Annual positive temperature.....(Tp):	2226
Annual negative temperature.....(Tn):	0
Estival temperature.....(Ts):	736
Positive precipitation.....(Pp):	469

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

Latitudinal Belt...: Low eutemperate

Continentalty.....: Oceanic - Low Semihyperoceanic

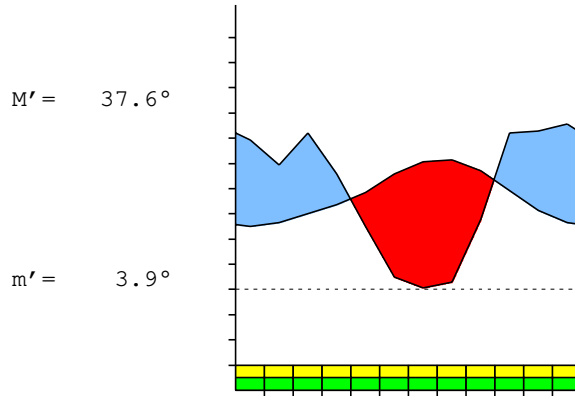
Bioclimate.....: MEDITERRANEAN PLUVISEASONAL-OCEANIC

Bioclimatic Belt...: LOW THERMOMEDITERRANEAN LOW DRY

MALAGA (ESP MALAGA)

8 m

P= 469 36° 43'N 4° 25'W 40/40 y.
 T= 18.6° Ic= 13.1 Tp= 2226 Tn= 0
 m= 8.5° M= 16.5° Itc= 436 Io= 2.1



MEDITERRANEAN PLUVISEASONAL-OCEANIC
 LOW THERMOMEDITERRANEAN LOW DRY

WATER INDEX CARD

MALAGA (ESP MALAGA)

Altitude: 8 m.

Latitude: 36° 43'N

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jan.	12.5	27	59	32	91	27	0	0	0	1.2
Feb.	13.2	29	49	9	100	29	0	11	5	0.6
Mar.	15.0	45	62	0	100	45	0	17	11	0.3
Apr.	16.7	60	46	-14	86	60	0	0	5	-0.2
May.	19.3	88	25	-63	23	88	0	0	3	-0.7
Jun.	22.8	123	5	-23	0	28	95	0	1	-0.9
Jul.	25.2	153	1	0	0	1	152	0	1	-0.9
Aug.	25.6	147	3	0	0	3	144	0	0	-0.9
Sep.	23.5	110	28	0	0	28	82	0	0	-0.7
Oct.	19.7	73	62	0	0	62	11	0	0	-0.1
Nov.	15.8	42	63	21	21	42	0	0	0	0.5
Dec.	13.3	29	66	37	59	29	0	0	0	1.2
Year	18.6	926	469	*	*	442	484	27	27	*

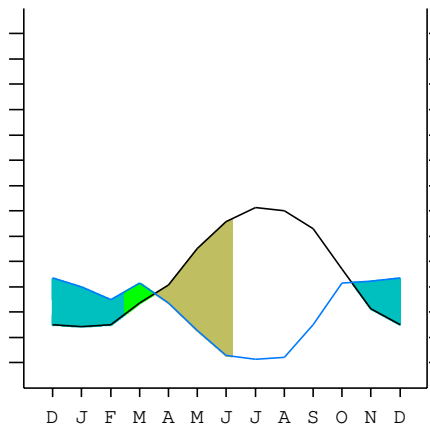
R = Reserve VR = Variation of the reserve RE = Real evapotranspiration
 DR = Drainage HC = Humidity coefficient DF = Deficit SP = Superavit

MALAGA (ESP MALAGA)

36°43'N 4°25'W 8 m 40/40 y.

T= 18.6 Ic= 13.1 MEDITERRANEAN PLUVISEASONAL-OCEANIC
 m= 8.5 Tp= 2226 LOW THERMOMEDITERRANEAN
 M= 16.5 Tn= 0 LOW DRY
 M' = 37.6 Itc= 436
 m' = 3.9 Io= 2.1
 P= 469 mm ———
 PE= 926 mm ———

Imbibing	11 Oct.
Saturation	14 Feb.
Reserve Use	17 Mar.
Deficit	6 Jun.



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SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

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

Thermic types [B1.A3]
 + Latitudinal zone: B. Temperate
 + Latitudinal belt: 1. Low eutemperate
 + Thermic type: A. Warm
 + Thermic subtype: 3. Subwarm

Bioclimatic types [B8.2b.5b]
 + Macrobioclimate: B. MEDITERRANEAN
 + Bioclimate: 8. PLUVISEASONAL-OCEANIC
 + Bioclimatic variant ..:
 + Thermic type.....: 2. THERMOMEDITERRANEAN
 + Thermic subtype.....: b. LOW
 + Ombrothermic type ...: 5. DRY
 + Ombrothermic subtype : b. LOW

Bioclimatic Classification: Mehc.Tme.Dry

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 124
 Coldest semester of the year.....(Psw): 345
 Warmest four months period of the year.....(Pcm1): 37
 Following warmest four months period.....(Pcm2): 250
 Positive precipitation dryest 3 months.....(Ppd): 9
 Positive precipitation dryest 2 months.....(Ppd2): 4
 Positive precipitation dryest 1 month.....(Ppd1): 1
 Positive precipitation warmest 3 months.....(Pps): 32
 Positive precipitation warmest 2 months.....(Pps2): 4
 Positive precipitation warmest 1 month.....(Pps1): 3
 Positive precipitation coldest 3 months.....(Ppw): 174
 Positive precipitation coldest 2 months.....(Ppw2): 108
 Positive precipitation coldest 1 month.....(Ppw1): 59

Seasons	Winter Tr1-W	Spring Tr2-P	Summer Tr3-S	Automn Tr4-F
Rainfall	174	133	9	153

Seasonal rainfall rhythms: W > F > P > S

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 25.6
 Average coldest month [T].....(Tmin): 12.5
 Maximum temp. warmest month [M].....(Tmmax): 29.7
 Minimum temp. coldest month [m].....(Tmmin): 8.5
 Absolute Max.temp. warmest month [M'].....(Tamax): 37.6
 Absolute Min.temp. coldest month [m'].....(Tamin): 3.9
 First warmest contrasted month [M].....(Tcmax): 23.3 (5)
 First coldest contrasted month [m].....(Tcmin): 15.2 (5)
 Estival temperature.....(Ts): 736
 Positive temperature dryest 3 months.....(Tpd): 736
 Positive temperature dryest 2 months.....(Tpd2): 508
 Positive temperature dryest 1 month.....(Tpd1): 252
 Positive temperature warmest 3 months.....(Tps): 743
 Positive temperature warmest 2 months.....(Tps2): 508
 Positive temperature warmest 1 month.....(Tps1): 256
 Positive temperature coldest 3 months.....(Tpw): 390
 Positive temperature coldest 2 months.....(Tpw2): 257
 Positive temperature coldest 1 month.....(Tpw1): 125

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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): 1.97
Mediterranean index of July.[PE/P].....(Im1): 152.54
Mediterranean index of July & August.....(Im2): 74.95
Mediterranean index of June, July & August....(Im3): 47.02

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp(x10)	660	590	490	620	460	250	50	10	30	280	620	630
Tp	133	125	132	150	167	193	228	252	256	235	197	158
Io (Iom)	4.96	4.72	3.71	4.13	2.75	1.30	0.22	0.04	0.12	1.19	3.15	3.99
Seasons	Winter			Spring			Summer			Autumn		
Pp(x10)/Tp	1740 / 390			1330 / 510			90 / 736			1530 / 590		
Io (Iot)	4.462			2.608			0.122			2.593		
Semesters	December-May						June-November					
Pp(x10)/Tp	3070 / 900						1620 / 1326					
Io (Iosm)	3.411						1.222					

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 4690/2226=2.11 **There is No Yearly Aridity**

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	660	590	490	620	460	250	50	10	30	280	620	630
Tp [T*10]	133	125	132	150	167	193	228	252	256	235	197	158
Iom [Pp/Tp]	496	472	371	413	275	130	22	4	12	119	315	399
Avm [200-Iom]	***	***	***	***	***	70	178	196	188	81	***	***
Seasons	Winter			Spring			Summer			Autumn		
Pp / Tp	1740 / 390			1330 / 510			90 / 736			1530 / 590		
Iot [Pp/Tp]	446			261			12			259		
Avs E[Avm<200]	***			***			562			***		
Lower ultrahyperarid [1]							Upper ultrahyperarid [2]					
Lower hyperarid [1]							Strong lower semiarid [1]					
Weak lower semiarid [1]												

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin]	(Sp): 13.10
CI of Gorezinski (1920) [1.7*Sp/sin(Lat)-20.4]	16.85
CI of Conrad (1946) [1.7*Sp/sin(Lat+10)-14]	16.59
+ Hyperoceanic (-20<CI<20)	
CI of Currey (1974) [CI=Sp/(1+Lat/3)]	0.99
+ Oceanic (0.6<CI<1.1)	
Rainfall Index of Lang (1925) [R=P/T]	25.28
+ Steppic (40>R>0)	
Aridity Index of Martonne (1926) [Ia=P/(T+10)]	16.43
+ Semiarid -mediterranean- (20>Ia>15)	
I of Emberger (1930) [Q=100*P/(Tmmax ² -Tmmin ²)]	57.91
+ Subhumid (90>Q>50)	
I of Dantin & Revenga (1940) [DR=100*T/P]	3.96
+ Arid (6>DR>3)	
Aridity Index of UNEP [I=P/PE]	0.51
+ Subhumid - dry (0.65>I>0.5)	
Potential Erosion I of Fournier (1960) [K=Pi ² /P]	9.29
+ Very low (K<60)	

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BIOCLIMATIC INDICES II

Bioclimatic classification of Gaussen & Bagnouls (1957)
 + Climate

- + Climate
- + Region
- + Thermic type: 3. Macro-mesothermic

Thornthwaite (1948)												
	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
P-E ratio	0.29	0.23	0.28	0.19	0.09	0.01	0.00	0.01	0.09	0.25	0.28	0.32
T-E ratio	5.63	5.94	6.75	7.52	8.68	10.26	11.34	11.52	10.57	8.87	7.11	5.99
Precipitation-effectiveness: 20.36						Temperature-efficiency						100.17
Moisture Index [MI=100*(P-PE)/PE]												-49.33
+ D.Semiarid (-66.7<MI<-33.3)												
Index of dryness [DI=100*d/PE]												52.28
+ Strong deficit (33.3<DI)												
Index of humidity [HI=100*s/PE]												2.95
+ No surplus (0<HI<10)												
Potential Evapotranspiration PE												925.52
+ Third mesothermic (855<PE<997)												

