

# Phytosociological Research Center

www.globalbioclimatics.org

## Worldwide Bioclimatic Classification System

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(Adapted to Synoptical Table 30/08/2017)

RONDA (ESP MALAGA)

Altitude: 1180 m.

Latitude: 36°41'N Longitude: 5°3'W

Temperature observation period.: 1982-1989 (8)

Rainfall observation period....: 1967-1989 (23)

(C/mm)	Ti	Mi	mi	M'i	m'i	Pi	EPi
Jan.	3.90	7.80	-0.10	15.00	-6.60	197.0	12.35
Feb.	4.20	8.00	0.40	15.90	-6.20	255.0	13.31
Mar.	6.70	11.10	2.20	18.50	-3.70	80.1	27.87
Apr.	7.20	11.00	3.40	18.70	-2.40	104.8	32.38
May.	10.20	14.70	5.70	21.50	0.10	46.2	53.99
Jun.	15.00	20.90	9.20	27.30	2.70	28.1	85.49
Jul.	19.90	26.90	12.80	32.30	5.20	3.6	120.96
Aug.	20.10	27.40	12.80	33.60	7.60	36.6	114.55
Sep.	17.70	23.50	11.90	30.40	6.20	48.1	86.90
Oct.	12.00	17.00	7.00	24.40	1.80	167.6	51.92
Nov.	7.70	11.50	4.00	19.10	-2.70	349.5	27.06
Dec.	5.10	8.70	1.40	15.10	-4.90	181.9	16.31
Year	10.81	15.71	5.89	22.65	-0.24	1498	643.08

### BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	185
Compensated thermicity index.....(Itc):	185
Simple continentality index.....(Ic):	16.2
Diurnality index.....(Id):	14.6
Annual ombrothermic index.....(Io):	11.55
Monthly estival ombrothermic index.....(Ios1):	0.18
Bimonthly estival ombrothermic index.....(Ios2):	1.00
Threemonthly estival ombrothermic index.....(Ios3):	1.24
Fourmonthly estival ombrothermic index.....(Ios4):	1.76
Annual ombro-evaporation index.....(Ioe):	0.28
Annual positive temperature.....(Tp):	1297
Annual negative temperature.....(Tn):	0
Estival temperature.....(Ts):	550
Positive precipitation.....(Pp):	1499

N. of	P>4T	P:2T-4T	PT-2T	P<T	T<0
Months	8	1	2	1	0

Latitudinal Belt...: Low eutemperate

Continentalty.....: Oceanic - Low Euoceanic

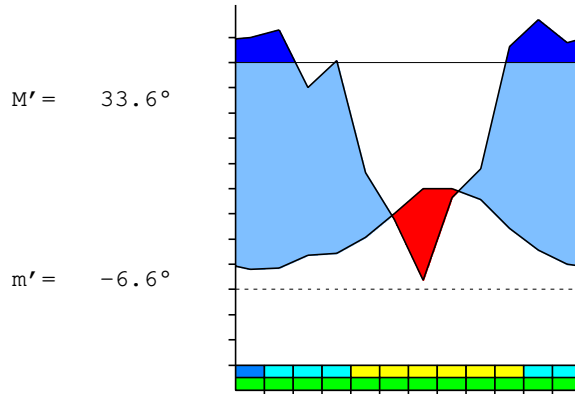
Bioclimate.....: MEDITERRANEAN PLUVISEASONAL-OCEANIC

Bioclimatic Belt...: LOW SUPRAMEDITERRANEAN UPPER HUMID

RONDA (ESP MALAGA)

1180 m

P= 1498      36° 41'N      5° 3'W      8/23 y.  
 T= 10.8°      Ic= 16.2      Tp= 1297      Tn= 0  
 m= -0.1°      M= 7.8°      Itc= 185      Io= 11.6



MEDITERRANEAN PLUVISEASONAL-OCEANIC  
 LOW SUPRAMEDITERRANEAN UPPER HUMID

WATER INDEX CARD

RONDA (ESP MALAGA)

Altitude: 1180 m.

Latitude: 36° 41'N

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jan.	3.9	12	197	0	100	12	0	185	175	14.9
Feb.	4.2	13	255	0	100	13	0	242	208	18.1
Mar.	6.7	28	80	0	100	28	0	52	130	1.8
Apr.	7.2	32	105	0	100	32	0	72	101	2.2
May.	10.2	54	46	-8	92	54	0	0	51	-0.1
Jun.	15.0	85	28	-57	35	85	0	0	25	-0.6
Jul.	19.9	121	4	-35	0	38	83	0	13	-0.9
Aug.	20.1	115	37	0	0	37	78	0	6	-0.6
Sep.	17.7	87	48	0	0	48	39	0	3	-0.4
Oct.	12.0	52	168	100	100	52	0	16	9	2.2
Nov.	7.7	27	350	0	100	27	0	322	166	11.9
Dec.	5.1	16	182	0	100	16	0	166	166	10.1
Year	10.8	643	1498	*	*	444	199	1055	1055	*

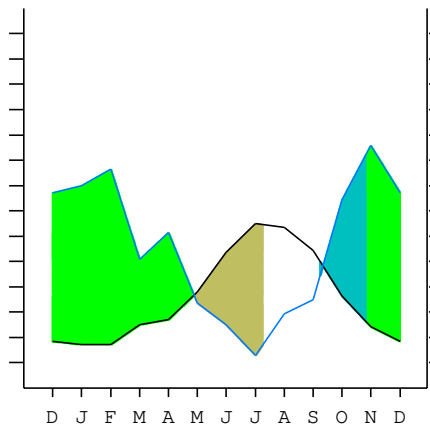
R = Reserve    VR = Variation of the reserve    RE = Real evapotranspiration  
 DR = Drainage    HC = Humidity coefficient    DF = Deficit    SP = Superavit

RONDA (ESP MALAGA)

36°41'N      5°3'W      1180 m      8/23 y.

T= 10.8      Ic= 16.2      MEDITERRANEAN PLUVISEASONAL-OCEANIC  
 m= -0.1      Tp= 1297      LOW SUPRAMEDITERRANEAN  
 M= 7.8      Tn= 0      UPPER HUMID  
 M' = 33.6      Itc= 185  
 m' = -6.6      Io= 11.6  
 P= 1498      mm      ———  
 PE= 643      mm      ———

Imbibing	8 Sep.
Saturation	26 Oct.
Reserve Use	28 Apr.
Deficit	9 Jul.



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SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continental Index [B2b]  
 + Type .....: B. Oceanic  
 + Subtype .....: 2. Euoceanic  
 + Variant .....: b. Low

Thermic types [B1.B5]  
 + Latitudinal zone ....: B. Temperate  
 + Latitudinal belt ....: 1. Low eutemperate  
 + Thermic type .....: B. Temperate  
 + Thermic subtype .....: 5. Subtemperate

Bioclimatic types [B8.4b.7a]  
 + Macrobioclimate .....: B. MEDITERRANEAN  
 + Bioclimate .....: 8. PLUVISEASONAL-OCEANIC  
 + Bioclimatic variant ..:  
 + Thermic type.....: 4. SUPRAMEDITERRANEAN  
 + Thermic subtype.....: b. LOW  
 + Ombrothermic type ...: 7. HUMID  
 + Ombrothermic subtype : a. UPPER  
 Bioclimatic Classification .....: Mehc.Sme.Hum

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 330  
 Coldest semester of the year.....(Psw): 1168  
 Warmest four months period of the year.....(Pcm1): 116  
 Following warmest four months period.....(Pcm2): 896  
 Positive precipitation dryest 3 months.....(Ppd): 68  
 Positive precipitation dryest 2 months.....(Ppd2): 32  
 Positive precipitation dryest 1 month.....(Ppd1): 4  
 Positive precipitation warmest 3 months.....(Pps): 88  
 Positive precipitation warmest 2 months.....(Pps2): 40  
 Positive precipitation warmest 1 month.....(Pps1): 37  
 Positive precipitation coldest 3 months.....(Ppw): 634  
 Positive precipitation coldest 2 months.....(Ppw2): 452  
 Positive precipitation coldest 1 month.....(Ppw1): 197

Seasons	Winter Tr1-W	Spring Tr2-P	Summer Tr3-S	Automn Tr4-F
Rainfall	633	231	68	565

Seasonal rainfall rhythms: W > F > P > S

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 20.1  
 Average coldest month [T].....(Tmin): 3.9  
 Maximum temp. warmest month [M].....(Tmmax): 27.4  
 Minimum temp. coldest month [m].....(Tmmin): -0.1  
 Absolute Max.temp. warmest month [M'].....(Tamax): 33.6  
 Absolute Min.temp. coldest month [m'].....(Tamin): -6.6  
 First warmest contrasted month [M].....(Tcmax): 27.4 (8)  
 First coldest contrasted month [m].....(Tcmin): 12.8 (8)  
 Estival temperature.....(Ts): 550  
 Positive temperature dryest 3 months.....(Tpd): 550  
 Positive temperature dryest 2 months.....(Tpd2): 349  
 Positive temperature dryest 1 month.....(Tpd1): 199  
 Positive temperature warmest 3 months.....(Tps): 577  
 Positive temperature warmest 2 months.....(Tps2): 400  
 Positive temperature warmest 1 month.....(Tps1): 201  
 Positive temperature coldest 3 months.....(Tpw): 132  
 Positive temperature coldest 2 months.....(Tpw2): 81  
 Positive temperature coldest 1 month.....(Tpw1): 39

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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)	o											
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): 0.43  
 Mediterranean index of July.[PE/P].....(Im1): 33.60  
 Mediterranean index of July & August.....(Im2): 5.86  
 Mediterranean index of June, July & August....(Im3): 4.70

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp(x10)	1819	1970	2550	801	1048	462	281	36	366	481	1676	3495
Tp	51	39	42	67	72	102	150	199	201	177	120	77
Io (Iom)	35.7	50.5	60.7	12.0	14.6	4.53	1.87	0.18	1.82	2.72	14.0	45.4
Seasons	Winter			Spring			Summer			Autumn		
Pp(x10)/Tp	6339 / 132			2311 / 241			683 / 550			5652 / 374		
Io (Iot)	48.02			9.589			1.242			15.11		
Semesters	December-May						June-November					
Pp(x10)/Tp	8650 / 373						6335 / 924					
Io (Iosm)	23.19						6.856					

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 14985/1297=11.55 **There is No Yearly Aridity**

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	1819	1970	2550	801	1048	462	281	36	366	481	1676	3495
Tp [T*10]	51	39	42	67	72	102	150	199	201	177	120	77
Iom [Pp/Tp]	\$\$	\$\$	\$\$	\$\$	\$\$	453	187	18	182	272	\$\$	\$\$
Avm [200-Iom]	***	***	***	***	***	***	13	182	18	***	***	***
Seasons	Winter			Spring			Summer			Autumn		
Pp / Tp	6339 / 132			2311 / 241			683 / 550			5652 / 374		
Iot [Pp/Tp]	\$\$			959			124			1511		
Avs E[Avm<200]	***			***			212			***		
Upper ultrahyperarid [1]							Weak lower semiarid [1]					
Weak upper semiarid [2]												

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin] .....(Sp): 16.20  
 CI of Gorezinski (1920) [1.7\*Sp/sin(Lat)-20.4] .....: 25.70  
 CI of Conrad (1946) [1.7\*Sp/sin(Lat+10)-14] .....: 23.85  
 + Oceanic (20<CI<40)  
 CI of Currey (1974) [CI=Sp/(1+Lat/3)] .....: 1.22  
 + Subcontinental (1.1<CI<1.7)  
 Rainfall Index of Lang (1925) [R=P/T] .....: 138.64  
 + Temperate humid (160>R>100)  
 Aridity Index of Martonne (1926) [Ia=P/(T+10)] .....: 72.01  
 + Perhumid (Ia>60)  
 I of Emberger (1930) [Q=100\*P/(Tmax<sup>2</sup>-Tmin<sup>2</sup>)] .....: 199.60  
 + Humid (Q>90)  
 I of Dantin & Revenga (1940) [DR=100\*T/P] .....: 0.72  
 + Humid (2>DR>0)  
 Aridity Index of UNEP [I=P/PE] .....: 2.33  
 + Humid (I>0.65)  
 Potential Erosion I of Fournier (1960) [K=Pi<sup>2</sup>/P].....: 81.52  
 + Low (60<K<90)

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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: 5. Meso-microthermic

Thornthwaite (1948)												
	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
P-E ratio	1.48	1.95	0.49	0.65	0.23	0.12	0.01	0.14	0.20	0.93	2.42	1.29
T-E ratio	1.76	1.89	3.01	3.24	4.59	6.75	8.95	9.05	7.97	5.40	3.46	2.29
Precipitation-effectiveness: 99.09						Temperature-efficiency .....: 58.36						
Moisture Index [MI=100*(P-PE)/PE] .....: 133.02 + A.Extremely humid (MI>100) Index of dryness [DI=100*d/PE] .....: 30.98 + Moderate deficit (16.7<DI<33.3) Index of humidity [HI=100*s/PE] .....: 164.01 + Strong surplus (20<HI) Potential Evapotranspiration PE .....: 643.08 + First mesothermic (570<PE<712)												

