

# Phytosociological Research Center

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## Worldwide Bioclimatic Classification System

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(Adapted to Synoptical Table 30/08/2017)

CARTAYA (ESP HUELVA)

Altitude: 80 m.

Latitude: 37°22'N Longitude: 7°15'W

Temperature observation period.: 1973-1991 (19)

Rainfall observation period....: 1973-1990 (18)

(C/mm)	Ti	Mi	mi	M'i	m'i	Pi	EPI
Jan.	10.80	14.90	6.80	19.30	1.50	71.0	20.94
Feb.	11.70	15.60	7.80	20.90	3.10	59.4	24.11
Mar.	13.70	18.50	8.90	25.20	4.70	41.7	39.46
Apr.	15.30	20.20	10.40	27.30	6.10	45.5	52.01
May.	18.70	24.30	13.10	31.70	8.60	27.9	84.55
Jun.	23.10	29.10	17.20	37.20	12.80	7.3	127.48
Jul.	26.70	33.80	19.60	40.20	15.60	2.7	171.38
Aug.	26.20	33.50	18.90	39.50	14.80	7.5	154.14
Sep.	24.10	30.60	17.70	36.20	12.70	16.2	115.73
Oct.	19.30	24.70	14.00	31.70	9.60	54.6	71.39
Nov.	14.80	19.60	10.10	25.30	5.30	94.6	37.73
Dec.	11.70	15.80	7.70	21.60	2.20	85.8	23.54
Year	18.01	23.38	12.68	29.68	8.08	514	922.46

### BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	397
Compensated thermicity index.....(Itc):	397
Simple continentality index.....(Ic):	15.9
Diurnality index.....(Id):	14.6
Annual ombrothermic index.....(Io):	2.38
Monthly estival ombrothermic index.....(Ios1):	0.10
Bimonthly estival ombrothermic index.....(Ios2):	0.19
Threemonthly estival ombrothermic index.....(Ios3):	0.23
Fourmonthly estival ombrothermic index.....(Ios4):	0.48
Annual ombro-evaporation index.....(Ioe):	0.29
Annual positive temperature.....(Tp):	2161
Annual negative temperature.....(Tn):	0
Estival temperature.....(Ts):	760
Positive precipitation.....(Pp):	514

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

Latitudinal Belt...: Low eutemperate

Continentalty.....: Oceanic - Low Euoceanic

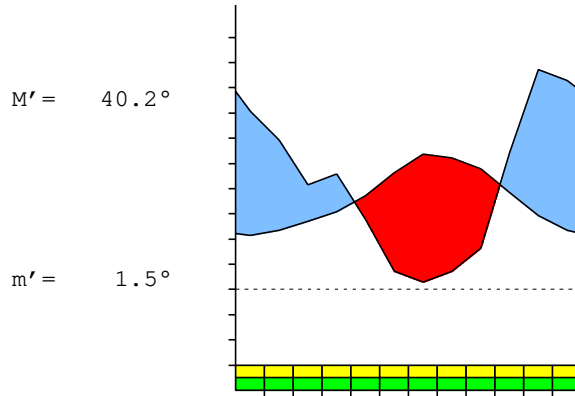
Bioclimate.....: MEDITERRANEAN PLUVISEASONAL-OCEANIC

Bioclimatic Belt...: UPPER THERMOMEDITERRANEAN LOW DRY

CARTAYA (ESP HUELVA)

80 m

P= 514      37° 22'N      7° 15'W      19/18 y.  
 T= 18.0°    Ic= 15.9      Tp= 2161      Tn= 0  
 m= 6.8°      M= 14.9°      Itc= 397      Io= 2.4



MEDITERRANEAN PLUVISEASONAL-OCEANIC  
 UPPER THERMOMEDITERRANEAN LOW DRY

WATER INDEX CARD  
 Altitude: 80 m.

CARTAYA (ESP HUELVA)  
 Latitude: 37° 22'N

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jan.	10.8	21	71	0	100	21	0	50	30	2.3
Feb.	11.7	24	59	0	100	24	0	35	33	1.4
Mar.	13.7	39	42	0	100	39	0	2	17	0.0
Apr.	15.3	52	46	-7	93	52	0	0	9	-0.1
May.	18.7	85	28	-57	37	85	0	0	4	-0.6
Jun.	23.1	127	7	-37	0	44	83	0	2	-0.9
Jul.	26.7	171	3	0	0	3	169	0	1	-0.9
Aug.	26.2	154	8	0	0	8	147	0	1	-0.9
Sep.	24.1	116	16	0	0	16	100	0	0	-0.8
Oct.	19.3	71	55	0	0	55	17	0	0	-0.2
Nov.	14.8	38	95	57	57	38	0	0	0	1.5
Dec.	11.7	24	86	43	100	24	0	19	10	2.6
Year	18.0	922	514	*	*	407	515	107	107	*

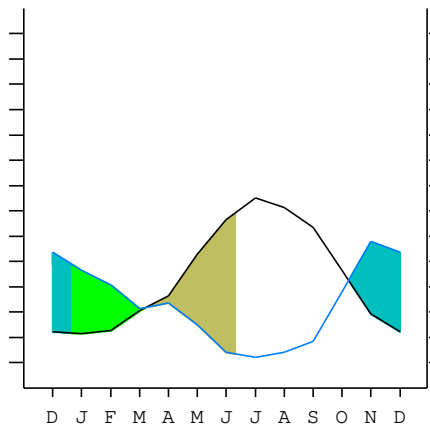
R = Reserve    VR = Variation of the reserve    RE = Real evapotranspiration  
 DR = Drainage    HC = Humidity coefficient    DF = Deficit    SP = Superavit

CARTAYA (ESP HUELVA)

37°22'N    7°15'W    80 m 19/18 y.

T= 18.0    Ic= 15.9    MEDITERRANEAN PLUVISEASONAL-OCEANIC  
 m= 6.8    Tp= 2161    UPPER THERMOMEDITERRANEAN  
 M= 14.9    Tn= 0    LOW DRY  
 M' = 40.2    Itc= 397  
 m' = 1.5    Io= 2.4  
 P= 514    mm    ———  
 PE= 922    mm    ———

Imbibing	7 Oct.
Saturation	21 Dec.
Reserve Use	8 Mar.
Deficit	10 Jun.



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SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continental Index [B2b]  
 + Type .....: B. Oceanic  
 + Subtype .....: 2. Euoceanic  
 + 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 [B8.2a.5b]  
 + Macrobioclimate .....: B. MEDITERRANEAN  
 + Bioclimate .....: 8. PLUVISEASONAL-OCEANIC  
 + Bioclimatic variant ..:  
 + Thermic type.....: 2. THERMOMEDITERRANEAN  
 + Thermic subtype.....: a. UPPER  
 + 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): 116  
 Coldest semester of the year.....(Psw): 398  
 Warmest four months period of the year.....(Pcm1): 34  
 Following warmest four months period.....(Pcm2): 306  
 Positive precipitation dryest 3 months.....(Ppd): 18  
 Positive precipitation dryest 2 months.....(Ppd2): 10  
 Positive precipitation dryest 1 month.....(Ppd1): 3  
 Positive precipitation warmest 3 months.....(Pps): 26  
 Positive precipitation warmest 2 months.....(Pps2): 10  
 Positive precipitation warmest 1 month.....(Pps1): 3  
 Positive precipitation coldest 3 months.....(Ppw): 216  
 Positive precipitation coldest 2 months.....(Ppw2): 130  
 Positive precipitation coldest 1 month.....(Ppw1): 71

Seasons	Winter Tr1-W	Spring Tr2-P	Summer Tr3-S	Automn Tr4-F
Rainfall	216	115	17	165

Seasonal rainfall rhythms: W > F > P > S

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 26.7  
 Average coldest month [T].....(Tmin): 10.8  
 Maximum temp. warmest month [M].....(Tmmax): 33.8  
 Minimum temp. coldest month [m].....(Tmmin): 6.8  
 Absolute Max.temp. warmest month [M'].....(Tamax): 40.2  
 Absolute Min.temp. coldest month [m'].....(Tamin): 1.5  
 First warmest contrasted month [M].....(Tcmax): 33.5 (8)  
 First coldest contrasted month [m].....(Tcmin): 18.9 (8)  
 Estival temperature.....(Ts): 760  
 Positive temperature dryest 3 months.....(Tpd): 760  
 Positive temperature dryest 2 months.....(Tpd2): 498  
 Positive temperature dryest 1 month.....(Tpd1): 267  
 Positive temperature warmest 3 months.....(Tps): 770  
 Positive temperature warmest 2 months.....(Tps2): 529  
 Positive temperature warmest 1 month.....(Tps1): 267  
 Positive temperature coldest 3 months.....(Tpw): 342  
 Positive temperature coldest 2 months.....(Tpw2): 225  
 Positive temperature coldest 1 month.....(Tpw1): 108

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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): 1.79  
 Mediterranean index of July.[PE/P].....(Im1): 63.47  
 Mediterranean index of July & August.....(Im2): 31.91  
 Mediterranean index of June, July & August....(Im3): 25.89

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp(x10)	858	710	594	417	455	279	73	27	75	162	546	946
Tp	117	108	117	137	153	187	231	267	262	241	193	148
Io (Iom)	7.33	6.57	5.08	3.04	2.97	1.49	0.32	0.10	0.29	0.67	2.83	6.39
Seasons	Winter			Spring			Summer			Autumn		
Pp(x10)/Tp	2162 / 342			1151 / 477			175 / 760			1654 / 582		
Io (Iot)	6.322			2.413			0.230			2.842		
Semesters	December-May						June-November					
Pp(x10)/Tp	3313 / 819						1829 / 1342					
Io (Iosm)	4.045						1.363					

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 5142/2161=2.38 **There is No Yearly Aridity**

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	858	710	594	417	455	279	73	27	75	162	546	946
Tp [T*10]	117	108	117	137	153	187	231	267	262	241	193	148
Iom [Pp/Tp]	733	657	508	304	297	149	32	10	29	67	283	639
Avm [200-Iom]	***	***	***	***	***	51	168	190	171	133	***	***
Seasons	Winter			Spring			Summer			Autumn		
Pp / Tp	2162 / 342			1151 / 477			175 / 760			1654 / 582		
Iot [Pp/Tp]	632			241			23			284		
Avs E[Avm<200]	***			***			530			***		
Upper ultrahyperarid [1]							Lower hyperarid [2]					
Upper hyperarid [1]							Weak lower arid [1]					
Weak lower semiarid [1]												

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin] .....	(Sp):	15.90
CI of Gorezinski (1920) [1.7*Sp/sin(Lat)-20.4] .....		24.14
CI of Conrad (1946) [1.7*Sp/sin(Lat+10)-14] .....		22.74
+ Oceanic (20<CI<40)		
CI of Currey (1974) [CI=Sp/(1+Lat/3)] .....		1.18
+ Subcontinental (1.1<CI<1.7)		
Rainfall Index of Lang (1925) [R=P/T] .....		28.55
+ Steppic (40>R>0)		
Aridity Index of Martonne (1926) [Ia=P/(T+10)] .....		18.36
+ Semiarid -mediterranean- (20>Ia>15)		
I of Emberger (1930) [Q=100*P/(Tmmax <sup>2</sup> -Tmmin <sup>2</sup> )] .....		46.91
+ Semiarid (50>Q>30)		
I of Dantin & Revenga (1940) [DR=100*T/P] .....		3.50
+ Arid (6>DR>3)		
Aridity Index of UNEP [I=P/PE] .....		0.56
+ Subhumid - dry (0.65>I>0.5)		
Potential Erosion I of Fournier (1960) [K=Pi <sup>2</sup> /P].....		17.40
+ 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	0.37	0.30	0.19	0.20	0.10	0.02	0.01	0.02	0.05	0.22	0.45	0.45
T-E ratio	4.86	5.26	6.16	6.89	8.42	10.40	12.02	11.79	10.85	8.68	6.66	5.26
Precipitation-effectiveness: 23.67						Temperature-efficiency .....						97.25
Moisture Index [MI=100*(P-PE)/PE] .....												-44.26
+ D.Semiarid (-66.7<MI<-33.3)												
Index of dryness [DI=100*d/PE] .....												55.82
+ Strong deficit (33.3<DI)												
Index of humidity [HI=100*s/PE] .....												11.57
+ Moderate surplus (10<HI<20)												
Potential Evapotranspiration PE .....												922.46
+ Third mesothermic (855<PE<997)												

