

Phytosociological Research Center

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Worldwide Bioclimatic Classification System

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(Adapted to Synoptical Table 30/08/2017)

MORON DE LA FRONTERA (ESP SEVILLA) Altitude: 70 m.

Latitude: 37°10'N Longitude: 5°36'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.	10.20	15.30	5.10	21.00	-1.50	117.0	20.33
Feb.	10.80	16.10	5.50	22.00	-0.90	106.0	22.30
Mar.	13.10	18.80	7.40	25.10	2.10	104.0	38.41
Apr.	15.00	21.30	8.70	28.60	3.90	53.0	52.50
May.	19.10	26.50	11.70	34.00	7.50	41.0	90.43
Jun.	22.70	30.50	14.90	38.60	9.70	14.0	124.88
Jul.	26.00	34.70	17.40	40.90	12.40	1.0	162.51
Aug.	26.20	34.70	17.80	40.60	13.20	4.0	154.25
Sep.	23.40	30.80	16.10	36.80	11.10	20.0	110.52
Oct.	18.80	24.90	12.70	31.20	6.70	70.0	69.85
Nov.	13.00	18.10	7.90	23.50	2.10	99.0	31.26
Dec.	9.60	14.60	4.70	19.30	-0.90	107.0	17.57
Year	17.32	23.86	10.82	30.13	5.45	736	894.79

BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	366
Compensated thermicity index.....(Itc):	366
Simple continentality index.....(Ic):	16.6
Diurnality index.....(Id):	17.3
Annual ombrothermic index.....(Io):	3.54
Monthly estival ombrothermic index.....(Ios1):	0.04
Bimonthly estival ombrothermic index.....(Ios2):	0.10
Threemonthly estival ombrothermic index.....(Ios3):	0.25
Fourmonthly estival ombrothermic index.....(Ios4):	0.64
Annual ombro-evaporation index.....(Ioe):	0.26
Annual positive temperature.....(Tp):	2079
Annual negative temperature.....(Tn):	0
Estival temperature.....(Ts):	749
Positive precipitation.....(Pp):	736

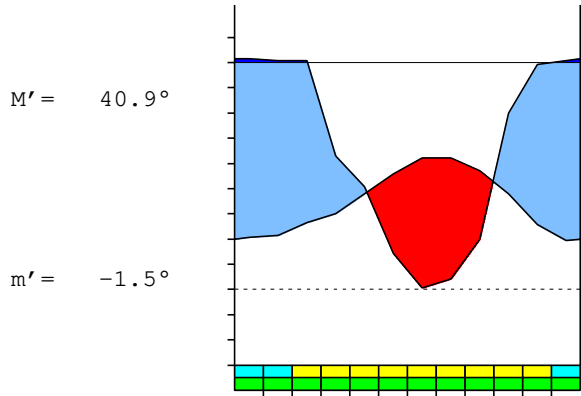
N. of	P>4T	P:2T-4T	PT-2T	P<T	T<0
Months	5	3	0	4	0

Latitudinal Belt...: Low eutemperate
 Continentality.....: Oceanic - Low Euoceanic
 Bioclimate.....: MEDITERRANEAN PLUVISEASONAL-OCEANIC
 Bioclimatic Belt...: UPPER THERMOMEDITERRANEAN UPPER DRY

MORON DE LA FRONTERA (ESP SEVILLA)

70 m

P= 736 37° 10'N 5° 36'W 14/14 y.
 T= 17.3° Ic= 16.6 Tp= 2079 Tn= 0
 m= 4.7° M= 14.6° Itc= 366 Io= 3.5



MEDITERRANEAN PLUVISEASONAL-OCEANIC
 UPPER THERMOMEDITERRANEAN UPPER DRY

WATER INDEX CARD
 Altitude: 70 m.

MORON DE LA FRONTERA (ESP SEVILLA)
 Latitude: 37° 10'N

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jan.	10.2	20	117	0	100	20	0	97	63	4.7
Feb.	10.8	22	106	0	100	22	0	84	73	3.7
Mar.	13.1	38	104	0	100	38	0	66	69	1.7
Apr.	15.0	52	53	0	100	52	0	1	35	0.0
May.	19.1	90	41	-49	51	90	0	0	17	-0.5
Jun.	22.7	125	14	-51	0	65	60	0	9	-0.8
Jul.	26.0	163	1	0	0	1	162	0	4	-0.9
Aug.	26.2	154	4	0	0	4	150	0	2	-0.9
Sep.	23.4	111	20	0	0	20	91	0	1	-0.8
Oct.	18.8	70	70	0	0	70	0	0	1	0.0
Nov.	13.0	31	99	68	68	31	0	0	0	2.1
Dec.	9.6	18	107	32	100	18	0	57	29	5.0
Year	17.3	895	736	*	*	432	463	304	304	*

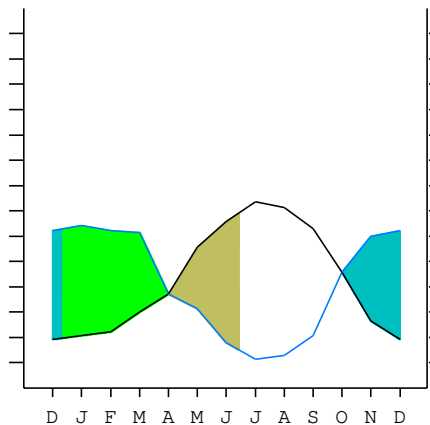
R = Reserve VR = Variation of the reserve RE = Real evapotranspiration
 DR = Drainage HC = Humidity coeficient DF = Deficit SP = Superavit

MORON DE LA FRONTERA (ESP SEVILLA)

37°10'N 5°36'W 70 m 14/14 y.

T= 17.3 Ic= 16.6 MEDITERRANEAN PLUVISEASONAL-OCEANIC
 m= 4.7 Tp= 2079 UPPER THERMOMEDITERRANEAN
 M= 14.6 Tn= 0 UPPER DRY
 M' = 40.9 Itc= 366
 m' = -1.5 Io= 3.5
 P= 736 mm
 PE= 895 mm

Imbibing	30 Sep.
Saturation	11 Dec.
Reserve Use	1 Apr.
Deficit	14 Jun.



MORON DE LA FRONTERA (ESP SEVILLA)

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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.5a]
 + Macrobioclimate: B. MEDITERRANEAN
 + Bioclimate: 8. PLUVISEASONAL-OCEANIC
 + Bioclimatic variant ..:
 + Thermic type.....: 2. THERMOMEDITERRANEAN
 + Thermic subtype.....: a. UPPER
 + Ombrothermic type ...: 5. DRY
 + Ombrothermic subtype : a. UPPER
 Bioclimatic Classification: Mehc.Tme.Dry

MORON DE LA FRONTERA (ESP SEVILLA)

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 150
 Coldest semester of the year.....(Psw): 586
 Warmest four months period of the year.....(Pcm1): 39
 Following warmest four months period.....(Pcm2): 393
 Positive precipitation dryest 3 months.....(Ppd): 19
 Positive precipitation dryest 2 months.....(Ppd2): 5
 Positive precipitation dryest 1 month.....(Ppd1): 1
 Positive precipitation warmest 3 months.....(Pps): 25
 Positive precipitation warmest 2 months.....(Pps2): 5
 Positive precipitation warmest 1 month.....(Pps1): 4
 Positive precipitation coldest 3 months.....(Ppw): 330
 Positive precipitation coldest 2 months.....(Ppw2): 224
 Positive precipitation coldest 1 month.....(Ppw1): 107

Seasons	Winter Tr1-W	Spring Tr2-P	Summer Tr3-S	Automn Tr4-F
Rainfall	330	198	19	189

Seasonal rainfall rhythms: W > P > F > S

MORON DE LA FRONTERA (ESP SEVILLA)

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 26.2
 Average coldest month [T].....(Tmin): 9.6
 Maximum temp. warmest month [M].....(Tmmax): 34.7
 Minimum temp. coldest month [m].....(Tmmin): 4.7
 Absolute Max.temp. warmest month [M'].....(Tamax): 40.9
 Absolute Min.temp. coldest month [m'].....(Tamin): -1.5
 First warmest contrasted month [M].....(Tcmax): 34.7 (7)
 First coldest contrasted month [m].....(Tcmin): 17.4 (7)
 Estival temperature.....(Ts): 749
 Positive temperature dryest 3 months.....(Tpd): 749
 Positive temperature dryest 2 months.....(Tpd2): 522
 Positive temperature dryest 1 month.....(Tpd1): 260
 Positive temperature warmest 3 months.....(Tps): 756
 Positive temperature warmest 2 months.....(Tps2): 522
 Positive temperature warmest 1 month.....(Tps1): 262
 Positive temperature coldest 3 months.....(Tpw): 306
 Positive temperature coldest 2 months.....(Tpw2): 198
 Positive temperature coldest 1 month.....(Tpw1): 96

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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
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	

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OMBROTHERMIC PARAMETERS

Annual aridity index.[PE/P].....(Iar): 1.22
 Mediterranean index of July.[PE/P].....(Im1): 162.51
 Mediterranean index of July & August.....(Im2): 63.35
 Mediterranean index of June, July & August....(Im3): 23.24

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp(x10)	1070	1170	1060	1040	530	410	140	10	40	200	700	990
Tp	96	102	108	131	150	191	227	260	262	234	188	130
Io (Iom)	11.1	11.5	9.81	7.94	3.53	2.15	0.62	0.04	0.15	0.85	3.72	7.62
Seasons	Winter			Spring			Summer			Autumn		
Pp(x10)/Tp	3300 / 306			1980 / 472			190 / 749			1890 / 552		
Io (Iot)	10.78			4.195			0.254			3.424		
Semesters	December-May						June-November					
Pp(x10)/Tp	5280 / 778						2080 / 1301					
Io (Iosm)	6.787						1.599					

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 7360/2079=3.54 **There is No Yearly Aridity**

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	1070	1170	1060	1040	530	410	140	10	40	200	700	990
Tp [T*10]	96	102	108	131	150	191	227	260	262	234	188	130
Iom [Pp/Tp]	\$\$	\$\$	981	794	353	215	62	4	15	85	372	762
Avm [200-Iom]	***	***	***	***	***	***	138	196	185	115	***	***
Seasons	Winter			Spring			Summer			Autumn		
Pp / Tp	3300 / 306			1980 / 472			190 / 749			1890 / 552		
Iot [Pp/Tp]	1078			419			25			342		
Avs E[Avm<200]	***			***			519			***		
Lower ultrahyperarid [1]							Upper ultrahyperarid [1]					
Lower hyperarid [1]							Weak lower arid [1]					
Weak upper arid [1]												

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin]	(Sp): 16.60
CI of Gorezinski (1920) [1.7*Sp/sin(Lat)-20.4]	26.31
CI of Conrad (1946) [1.7*Sp/sin(Lat+10)-14]	24.48
+ Oceanic (20<CI<40)	
CI of Currey (1974) [CI=Sp/(1+Lat/3)]	1.24
+ Subcontinental (1.1<CI<1.7)	
Rainfall Index of Lang (1925) [R=P/T]	42.48
+ Semiarid (60>R>40)	
Aridity Index of Martonne (1926) [Ia=P/(T+10)]	26.94
+ Subhumid (30>Ia>20)	
I of Emberger (1930) [Q=100*P/(Tmax ² -Tmin ²)]	62.27
+ Subhumid (90>Q>50)	
I of Dantin & Revenga (1940) [DR=100*T/P]	2.35
+ Semiarid (3>DR>2)	
Aridity Index of UNEP [I=P/PE]	0.82
+ Humid (I>0.65)	
Potential Erosion I of Fournier (1960) [K=Pi ² /P]	18.60
+ 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	0.66	0.58	0.53	0.24	0.16	0.04	0.00	0.01	0.06	0.29	0.50	0.61	
T-E ratio	4.59	4.86	5.90	6.75	8.60	10.22	11.70	11.79	10.53	8.46	5.85	4.32	
Precipitation-effectiveness:	36.80					Temperature-efficiency							93.56
Moisture Index [MI=100*(P-PE)/PE]													
+ C1.Subhumid dry (-33.3<MI<0)													
Index of dryness [DI=100*d/PE]													
+ Strong deficit (33.3<DI)													
Index of humidity [HI=100*s/PE]													
+ Strong surplus (20<HI)													
Potential Evapotranspiration PE													
+ Third mesothermic (855<PE<997)													

