

# Phytosociological Research Center

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## Worldwide Bioclimatic Classification System

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(Adapted to Synoptical Table 30/08/2017)

MULA (ESP MURCIA)

Altitude: 395 m.

Latitude: 38°4'N Longitude: 1°29'W

Temperature observation period.: 1942-1969 (28)

Rainfall observation period....: 1942-1969 (28)

(C/mm)	Ti	Mi	mi	M'i	m'i	Pi	EPI
Jan.	7.70	13.30	2.10	18.60	-2.80	22.0	12.92
Feb.	9.40	15.40	3.40	21.10	-1.90	22.0	18.16
Mar.	12.00	18.30	5.80	24.40	0.00	26.0	34.26
Apr.	15.00	21.70	8.20	28.00	2.60	54.0	54.24
May.	18.80	26.00	11.50	32.30	6.30	35.0	90.34
Jun.	23.10	31.50	14.80	38.00	9.50	19.0	130.99
Jul.	27.50	36.50	18.50	41.20	12.70	3.0	179.38
Aug.	27.10	35.80	18.50	40.60	13.10	10.0	164.16
Sep.	22.30	30.60	14.10	37.30	9.40	27.0	103.24
Oct.	17.00	24.40	9.60	30.60	5.10	43.0	59.04
Nov.	12.40	19.50	5.30	26.00	1.40	30.0	29.61
Dec.	8.00	13.80	2.10	20.10	-2.20	39.0	13.50
Year	16.69	23.90	9.49	29.85	4.43	330	889.85

### BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	321
Compensated thermicity index.....(Itc):	330
Simple continentality index.....(Ic):	19.8
Diurnality index.....(Id):	18.0
Annual ombrothermic index.....(Io):	1.65
Monthly estival ombrothermic index.....(Ios1):	0.11
Bimonthly estival ombrothermic index.....(Ios2):	0.24
Threemonthly estival ombrothermic index.....(Ios3):	0.41
Fourmonthly estival ombrothermic index.....(Ios4):	0.69
Annual ombro-evaporation index.....(Ioe):	0.71
Annual positive temperature.....(Tp):	2003
Annual negative temperature.....(Tn):	0
Estival temperature.....(Ts):	777
Positive precipitation.....(Pp):	330

N. of	P>4T	P:2T-4T	PT-2T	P<T	T<0
Months	1	6	2	3	0

Latitudinal Belt...: Low eutemperate

Continentality.....: Oceanic - High Semicontinental

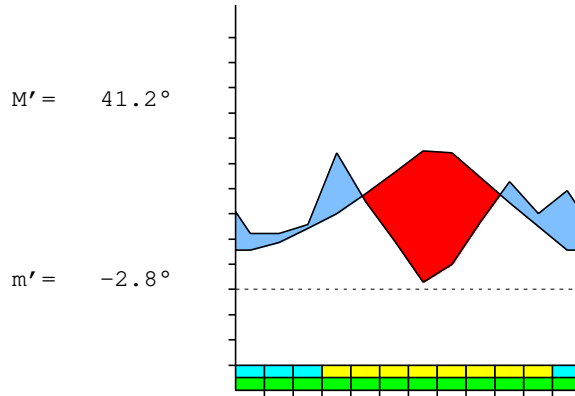
Bioclimate.....: MEDITERRANEAN XERIC-OCEANIC

Bioclimatic Belt...: LOW MESOMEDITERRANEAN UPPER SEMIARID

MULA (ESP MURCIA)

395 m

P= 330      38° 4'N      1° 29'W      28/28 y.  
 T= 16.7°    Ic= 19.8      Tp= 2003      Tn= 0  
 m= 2.1°      M= 13.3°      Itc= 330      Io= 1.6



MEDITERRANEAN XERIC-OCEANIC  
 LOW MESOMEDITERRANEAN UPPER SEMIARID

WATER INDEX CARD

MULA (ESP MURCIA)

Altitude: 395 m.

Latitude: 38° 4'N

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jan.	7.7	13	22	9	35	13	0	0	0	0.7
Feb.	9.4	18	22	4	39	18	0	0	0	0.2
Mar.	12.0	34	26	-8	31	34	0	0	0	-0.2
Apr.	15.0	54	54	-0	30	54	0	0	0	0.0
May.	18.8	90	35	-30	0	65	25	0	0	-0.6
Jun.	23.1	131	19	0	0	19	112	0	0	-0.8
Jul.	27.5	179	3	0	0	3	176	0	0	-0.9
Aug.	27.1	164	10	0	0	10	154	0	0	-0.9
Sep.	22.3	103	27	0	0	27	76	0	0	-0.7
Oct.	17.0	59	43	0	0	43	16	0	0	-0.2
Nov.	12.4	30	30	0	0	30	0	0	0	0.0
Dec.	8.0	14	39	25	26	14	0	0	0	1.8
Year	16.7	890	330	*	*	330	560	0	0	*

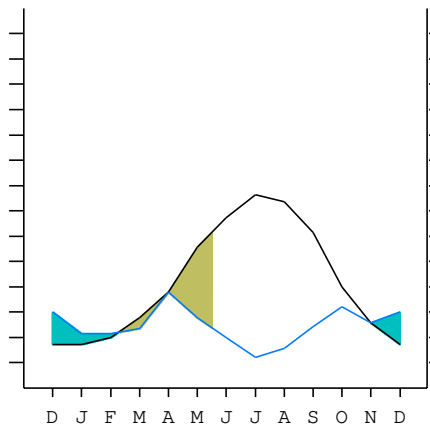
R = Reserve    VR = Variation of the reserve    RE = Real evapotranspiration  
 DR = Drainage    HC = Humidity coefficient    DF = Deficit    SP = Superavit

MULA (ESP MURCIA)

38°4'N    1°29'W    395 m 28/28 y.

T= 16.7    Ic= 19.8    MEDITERRANEAN XERIC-OCEANIC  
 m= 2.1    Tp= 2003    LOW MESOMEDITERRANEAN  
 M= 13.3    Tn= 0    UPPER SEMIARID  
 M' = 41.2    Itc= 330  
 m' = -2.8    Io= 1.6  
 P= 330    mm    ———  
 PE= 890    mm    ———

Imbibing	30 Oct.
Saturation	10 Feb.
Reserve Use	17 May.
Deficit	



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SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continental Index [B1b]

- + Type .....: B. Oceanic
- + Subtype .....: 1. Semicontinental
- + Variant .....: b. High

Thermic types [B1.A3]

- + Latitudinal zone ....: B. Temperate
- + Latitudinal belt ....: 1. Low eutemperate
- + Thermic type .....: A. Warm
- + Thermic subtype .....: 3. Subwarm

Bioclimatic types [B6.3b.4a]

- + Macrobioclimate .....: B. MEDITERRANEAN
- + Bioclimate .....: 6. XERIC-OCEANIC
- + Bioclimatic variant ..:
- + Thermic type.....: 3. MESOMEDITERRANEAN
- + Thermic subtype.....: b. LOW
- + Ombrothermic type ...: 4. SEMIARID
- + Ombrothermic subtype : a. UPPER

Bioclimatic Classification .....: MepDC.Mme.Sar

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 137

Coldest semester of the year.....(Psw): 193

Warmest four months period of the year.....(Pcm1): 59

Following warmest four months period.....(Pcm2): 134

Positive precipitation dryest 3 months.....(Ppd): 32

Positive precipitation dryest 2 months.....(Ppd2): 13

Positive precipitation dryest 1 month.....(Ppd1): 3

Positive precipitation warmest 3 months.....(Pps): 32

Positive precipitation warmest 2 months.....(Pps2): 13

Positive precipitation warmest 1 month.....(Pps1): 3

Positive precipitation coldest 3 months.....(Ppw): 83

Positive precipitation coldest 2 months.....(Ppw2): 61

Positive precipitation coldest 1 month.....(Ppw1): 22

Seasons	Winter Tr1-W	Spring Tr2-P	Summer Tr3-S	Automn Tr4-F
Rainfall	83	115	32	100

Seasonal rainfall rhythms: P > F > W > S

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 27.5

Average coldest month [T].....(Tmin): 7.7

Maximum temp. warmest month [M].....(Tmmax): 36.5

Minimum temp. coldest month [m].....(Tmmin): 2.1

Absolute Max.temp. warmest month [M'].....(Tamax): 41.2

Absolute Min.temp. coldest month [m'].....(Tamin): -2.8

First warmest contrasted month [M].....(Tcmax): 36.5 (7)

First coldest contrasted month [m].....(Tcmin): 18.5 (7)

Estival temperature.....(Ts): 777

Positive temperature dryest 3 months.....(Tpd): 777

Positive temperature dryest 2 months.....(Tpd2): 546

Positive temperature dryest 1 month.....(Tpd1): 275

Positive temperature warmest 3 months.....(Tps): 777

Positive temperature warmest 2 months.....(Tps2): 546

Positive temperature warmest 1 month.....(Tps1): 275

Positive temperature coldest 3 months.....(Tpw): 251

Positive temperature coldest 2 months.....(Tpw2): 157

Positive temperature coldest 1 month.....(Tpw1): 77

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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): 2.70  
 Mediterranean index of July.[PE/P].....(Im1): 59.79  
 Mediterranean index of July & August.....(Im2): 26.43  
 Mediterranean index of June, July & August....(Im3): 14.83

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp(x10)	390	220	220	260	540	350	190	30	100	270	430	300
Tp	80	77	94	120	150	188	231	275	271	223	170	124
Io (Iom)	4.88	2.86	2.34	2.17	3.60	1.86	0.82	0.11	0.37	1.21	2.53	2.42
Seasons	Winter			Spring			Summer			Autumn		
Pp(x10)/Tp	830 / 251			1150 / 458			320 / 777			1000 / 517		
Io (Iot)	3.307			2.511			0.412			1.934		
Semesters	December-May						June-November					
Pp(x10)/Tp	1980 / 709						1320 / 1294					
Io (Iosm)	2.793						1.020					

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 3300/2003=1.65 **There is No Yearly Aridity**

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	390	220	220	260	540	350	190	30	100	270	430	300
Tp [T*10]	80	77	94	120	150	188	231	275	271	223	170	124
Iom [Pp/Tp]	488	286	234	217	360	186	82	11	37	121	253	242
Avm [200-Iom]	***	***	***	***	***	14	118	189	163	79	***	***
Seasons	Winter			Spring			Summer			Autumn		
Pp / Tp	830 / 251			1150 / 458			320 / 777			1000 / 517		
Iot [Pp/Tp]	331			251			41			193		
Avs E[Avm<200]	***			***			470			***		
Upper ultrahyperarid [1]							Upper hyperarid [1]					
Strong lower arid [1]							Weak upper arid [1]					
Weak lower semiarid [1]							Weak upper semiarid [1]					

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin] .....(Sp): 19.80  
 CI of Gorezinski (1920) [1.7\*Sp/sin(Lat)-20.4] .....: 34.19  
 CI of Conrad (1946) [1.7\*Sp/sin(Lat+10)-14] .....: 31.25  
 + Oceanic (20<CI<40)  
 CI of Currey (1974) [CI=Sp/(1+Lat/3)] .....: 1.45  
 + Subcontinental (1.1<CI<1.7)  
 Rainfall Index of Lang (1925) [R=P/T] .....: 19.77  
 + Steppic (40>R>0)  
 Aridity Index of Martonne (1926) [Ia=P/(T+10)] .....: 12.36  
 + Arid -steppic- (15>Ia>5)  
 I of Emberger (1930) [Q=100\*P/(Tmax<sup>2</sup>-Tmin<sup>2</sup>)] .....: 24.85  
 + Arid (30>Q>0)  
 I of Dantin & Revenga (1940) [DR=100\*T/P] .....: 5.06  
 + Arid (6>DR>3)  
 Aridity Index of UNEP [I=P/PE] .....: 0.37  
 + Semiarid (0.5>Im>0.2)  
 Potential Erosion I of Fournier (1960) [K=Pi<sup>2</sup>/P].....: 8.84  
 + Very low (K<60)

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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: 3. Macro-mesothermic

Thornthwaite (1948)												
	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
P-E ratio	0.11	0.11	0.12	0.24	0.13	0.06	0.01	0.03	0.09	0.18	0.14	0.21
T-E ratio	3.46	4.23	5.40	6.75	8.46	10.40	12.38	12.20	10.03	7.65	5.58	3.60
Precipitation-effectiveness: 14.18						Temperature-efficiency .....: 90.13						
Moisture Index [MI=100*(P-PE)/PE] .....: -62.92 + D.Semiarid (-66.7<MI<-33.3)												
Index of dryness [DI=100*d/PE] .....: 62.91 + Strong deficit (33.3<DI)												
Index of humidity [HI=100*s/PE] .....: 0.00 + No surplus (0<HI<10)												
Potential Evapotranspiration PE .....: 889.85 + Third mesothermic (855<PE<997)												

