

# Phytosociological Research Center

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## Worldwide Bioclimatic Classification System

Prof.Dr. Salvador Rivas-Martinez

(Adapted to Synoptical Table 30/08/2017)

MORATALLA (ESP MURCIA)

Altitude: 1085 m.

Latitude: 38°8'N Longitude: 2°3'W

Temperature observation period.: 1973-1989 (17)

Rainfall observation period....: 1972-1989 (18)

(C/mm)	Ti	Mi	mi	M'i	m'i	Pi	EPI
Jan.	5.60	10.70	0.50	17.00	-5.00	25.9	15.75
Feb.	5.70	10.80	0.50	18.40	-5.80	36.0	15.92
Mar.	7.50	13.30	1.70	21.00	-3.40	39.4	27.73
Apr.	9.20	15.10	3.40	22.70	-1.30	42.0	38.46
May.	12.50	18.80	6.30	25.60	1.20	51.1	63.64
Jun.	17.30	24.60	10.10	30.90	5.50	29.8	97.22
Jul.	21.30	29.60	13.00	35.40	8.30	18.6	127.88
Aug.	21.30	29.20	13.50	34.90	9.40	21.6	119.69
Sep.	18.20	25.40	11.00	30.20	6.50	30.8	87.01
Oct.	12.50	18.60	6.30	25.40	1.10	46.3	49.67
Nov.	8.50	13.90	3.10	20.60	-2.30	46.9	26.54
Dec.	6.10	11.20	1.00	17.80	-4.60	27.1	17.16
Year	12.14	18.43	5.87	24.99	0.80	415	686.67

### BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	233
Compensated thermicity index.....(Itc):	233
Simple continentality index.....(Ic):	15.7
Diurnality index.....(Id):	16.6
Annual ombrothermic index.....(Io):	2.85
Monthly estival ombrothermic index.....(Ios1):	0.87
Bimonthly estival ombrothermic index.....(Ios2):	0.94
Threemonthly estival ombrothermic index.....(Ios3):	1.17
Fourmonthly estival ombrothermic index.....(Ios4):	1.67
Annual ombro-evaporation index.....(Ioe):	0.91
Annual positive temperature.....(Tp):	1457
Annual negative temperature.....(Tn):	0
Estival temperature.....(Ts):	599
Positive precipitation.....(Pp):	416

N. of	P>4T	P:2T-4T	PT-2T	P<T	T<0
Months	7	1	3	1	0

Latitudinal Belt...: Low eutemperate

Continentalty.....: Oceanic - Low Euoceanic

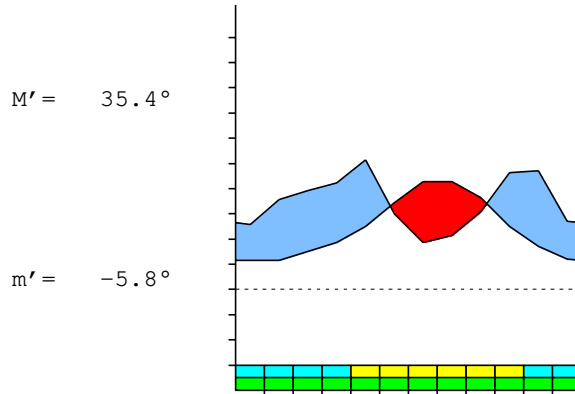
Bioclimate.....: MEDITERRANEAN PLUVISEASONAL-OCEANIC

Bioclimatic Belt...: UPPER MESOMEDITERRANEAN UPPER DRY

MORATALLA (ESP MURCIA)

1085 m

P= 415      38° 8'N      2° 3'W      17/18 y.  
 T= 12.1°    Ic= 15.7      Tp= 1457      Tn= 0  
 m= 0.5°      M= 10.7°      Itc= 233      Io= 2.9



MEDITERRANEAN PLUVISEASONAL-OCEANIC  
 UPPER MESOMEDITERRANEAN UPPER DRY

WATER INDEX CARD MORATALLA (ESP MURCIA)

Altitude: 1085 m.      Latitude: 38° 8'N

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jan.	5.6	16	26	10	40	16	0	0	0	0.6
Feb.	5.7	16	36	20	61	16	0	0	0	1.2
Mar.	7.5	28	39	12	72	28	0	0	0	0.4
Apr.	9.2	38	42	4	76	38	0	0	0	0.0
May.	12.5	64	51	-13	63	64	0	0	0	-0.1
Jun.	17.3	97	30	-63	0	93	4	0	0	-0.6
Jul.	21.3	128	19	0	0	19	109	0	0	-0.8
Aug.	21.3	120	22	0	0	22	98	0	0	-0.8
Sep.	18.2	87	31	0	0	31	56	0	0	-0.6
Oct.	12.5	50	46	0	0	46	3	0	0	0.0
Nov.	8.5	27	47	20	20	27	0	0	0	0.7
Dec.	6.1	17	27	10	30	17	0	0	0	0.5
Year	12.1	687	415	*	*	416	271	0	0	*

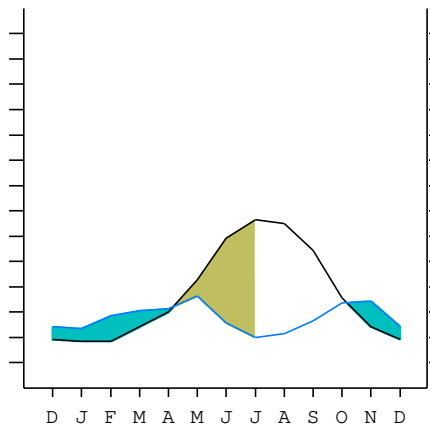
R = Reserve    VR = Variation of the reserve    RE = Real evapotranspiration  
 DR = Drainage    HC = Humidity coefficient    DF = Deficit    SP = Superavit

MORATALLA (ESP MURCIA)

38°8'N      2°3'W      1085 m 17/18 y.

T= 12.1      Ic= 15.7      MEDITERRANEAN PLUVISEASONAL-OCEANIC  
 m= 0.5      Tp= 1457      UPPER MESOMEDITERRANEAN  
 M= 10.7      Tn= 0      UPPER DRY  
 M' = 35.4    Itc= 233  
 m' = -5.8    Io= 2.9  
 P= 415      mm      ———  
 PE= 687     mm      ———

Imbibing	5 Oct.
Saturation	7 Apr.
Reserve Use	29 Jun.
Deficit	



MORATALLA (ESP MURCIA)

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SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

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

Thermic types [B1.B4]  
 + Latitudinal zone ....: B. Temperate  
 + Latitudinal belt ....: 1. Low eutemperate  
 + Thermic type .....: B. Temperate  
 + Thermic subtype .....: 4. Temperate

Bioclimatic types [B8.3a.5a]  
 + Macrobioclimate .....: B. MEDITERRANEAN  
 + Bioclimate .....: 8. PLUVISEASONAL-OCEANIC  
 + Bioclimatic variant ..:  
 + Thermic type.....: 3. MESOMEDITERRANEAN  
 + Thermic subtype.....: a. UPPER  
 + Ombrothermic type ...: 5. DRY  
 + Ombrothermic subtype : a. UPPER  
 Bioclimatic Classification .....: Mehc.Mme.Dry

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 198  
 Coldest semester of the year.....(Psw): 217  
 Warmest four months period of the year.....(Pcm1): 101  
 Following warmest four months period.....(Pcm2): 146  
 Positive precipitation dryest 3 months.....(Ppd): 70  
 Positive precipitation dryest 2 months.....(Ppd2): 40  
 Positive precipitation dryest 1 month.....(Ppd1): 19  
 Positive precipitation warmest 3 months.....(Pps): 71  
 Positive precipitation warmest 2 months.....(Pps2): 40  
 Positive precipitation warmest 1 month.....(Pps1): 19  
 Positive precipitation coldest 3 months.....(Ppw): 89  
 Positive precipitation coldest 2 months.....(Ppw2): 62  
 Positive precipitation coldest 1 month.....(Ppw1): 26

Seasons	Winter Tr1-W	Spring Tr2-P	Summer Tr3-S	Automn Tr4-F
Rainfall	89	132	70	124

Seasonal rainfall rhythms: P > F > W > S

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 21.3  
 Average coldest month [T].....(Tmin): 5.6  
 Maximum temp. warmest month [M].....(Tmmax): 29.6  
 Minimum temp. coldest month [m].....(Tmmin): 0.5  
 Absolute Max.temp. warmest month [M'].....(Tamax): 35.4  
 Absolute Min.temp. coldest month [m'].....(Tamin): -5.8  
 First warmest contrasted month [M].....(Tcmax): 29.6 (7)  
 First coldest contrasted month [m].....(Tcmin): 13.0 (7)  
 Estival temperature.....(Ts): 599  
 Positive temperature dryest 3 months.....(Tpd): 599  
 Positive temperature dryest 2 months.....(Tpd2): 426  
 Positive temperature dryest 1 month.....(Tpd1): 213  
 Positive temperature warmest 3 months.....(Tps): 608  
 Positive temperature warmest 2 months.....(Tps2): 426  
 Positive temperature warmest 1 month.....(Tps1): 213  
 Positive temperature coldest 3 months.....(Tpw): 174  
 Positive temperature coldest 2 months.....(Tpw2): 113  
 Positive temperature coldest 1 month.....(Tpw1): 56

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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							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): 1.65  
 Mediterranean index of July.[PE/P].....(Im1): 6.88  
 Mediterranean index of July & August.....(Im2): 6.16  
 Mediterranean index of June, July & August....(Im3): 4.93

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp(x10)	271	259	360	394	420	511	298	186	216	308	463	469
Tp	61	56	57	75	92	125	173	213	213	182	125	85
Io (Iom)	4.44	4.63	6.32	5.25	4.57	4.09	1.72	0.87	1.01	1.69	3.70	5.52
Seasons	Winter			Spring			Summer			Autumn		
Pp(x10)/Tp	890 / 174			1325 / 292			700 / 599			1240 / 392		
Io (Iot)	5.115			4.538			1.169			3.163		
Semesters	December-May						June-November					
Pp(x10)/Tp	2215 / 466						1940 / 991					
Io (Iosm)	4.753						1.958					

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 4155/1457=2.85 **There is No Yearly Aridity**

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	271	259	360	394	420	511	298	186	216	308	463	469
Tp [T*10]	61	56	57	75	92	125	173	213	213	182	125	85
Iom [Pp/Tp]	444	463	632	525	457	409	172	87	101	169	370	552
Avm [200-Iom]	***	***	***	***	***	***	28	113	99	31	***	***
Seasons	Winter			Spring			Summer			Autumn		
Pp / Tp	890 / 174			1325 / 292			700 / 599			1240 / 392		
Iot [Pp/Tp]	511			454			117			316		
Avs E[Avm<200]	***			***			239			***		
Weak upper arid [1]							Strong lower semiarid [1]					
Weak lower semiarid [1]							Strong upper semiarid [1]					
Weak upper semiarid [1]												

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin] .....	(Sp): 15.70
CI of Gorezinski (1920) [1.7*Sp/sin(Lat)-20.4] .....	22.82
CI of Conrad (1946) [1.7*Sp/sin(Lat+10)-14] .....	21.84
+ Oceanic (20<CI<40)	
CI of Currey (1974) [CI=Sp/(1+Lat/3)] .....	1.15
+ Subcontinental (1.1<CI<1.7)	
Rainfall Index of Lang (1925) [R=P/T] .....	34.22
+ Steppic (40>R>0)	
Aridity Index of Martonne (1926) [Ia=P/(T+10)] .....	18.77
+ Semiarid -mediterranean- (20>Ia>15)	
I of Emberger (1930) [Q=100*P/(Tmmax <sup>2</sup> -Tmmin <sup>2</sup> )] .....	47.44
+ Semiarid (50>Q>30)	
I of Dantin & Revenga (1940) [DR=100*T/P] .....	2.92
+ Semiarid (3>DR>2)	
Aridity Index of UNEP [I=P/PE] .....	0.61
+ Subhumid - dry (0.65>I>0.5)	
Potential Erosion I of Fournier (1960) [K=Pi <sup>2</sup> /P].....	6.28
+ Very low (K<60)	

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BIOCLIMATIC INDICES II

Bioclimatic classification of Gaussen & Bagnouls (1957)  
 + Climate .....

- + Climate .....
- + Region .....
- + Thermic type: 4. Mesothermic

Thornthwaite (1948)												
	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
P-E ratio	0.15	0.21	0.22	0.22	0.24	0.12	0.06	0.07	0.12	0.22	0.25	0.15
T-E ratio	2.52	2.56	3.38	4.14	5.63	7.78	9.58	9.58	8.19	5.63	3.82	2.74
Precipitation-effectiveness: 20.25						Temperature-efficiency .....						65.56
Moisture Index [MI=100*(P-PE)/PE] .....												-39.49
+ D.Semiarid (-66.7<MI<-33.3)												
Index of dryness [DI=100*d/PE] .....												39.48
+ Strong deficit (33.3<DI)												
Index of humidity [HI=100*s/PE] .....												0.00
+ No surplus (0<HI<10)												
Potential Evapotranspiration PE .....												686.67
+ First mesothermic (570<PE<712)												

