

Phytosociological Research Center

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Worldwide Bioclimatic Classification System

Prof.Dr. Salvador Rivas-Martinez

(Adapted to Synoptical Table 30/08/2017)

MADRID (ESP MADRID)

Altitude: 667 m.

Latitude: 40°25'N Longitude: 3°41'W

Temperature observation period.: 1931-1970 (40)

Rainfall observation period....: 1931-1970 (40)

(C/mm)	Ti	Mi	mi	M'i	m'i	Pi	EPI
Jan.	4.90	8.50	1.40	14.10	-4.40	38.0	9.67
Feb.	6.50	11.00	2.10	16.50	-3.20	34.0	14.43
Mar.	10.00	14.80	5.10	21.20	0.10	46.0	33.56
Apr.	12.70	18.30	7.10	24.70	2.20	45.0	51.25
May.	15.70	21.40	10.10	28.90	4.50	44.0	78.00
Jun.	20.60	26.80	14.40	33.60	9.20	27.0	116.85
Jul.	24.20	30.90	17.50	36.00	12.40	11.0	150.15
Aug.	23.70	30.10	17.20	35.20	12.60	14.0	135.33
Sep.	19.80	25.40	14.20	31.80	8.40	31.0	91.76
Oct.	14.00	18.60	9.50	24.50	3.00	53.0	51.10
Nov.	8.90	12.70	5.20	17.60	0.10	47.0	22.82
Dec.	5.60	9.00	2.30	13.90	-2.50	48.0	11.33
Year	13.88	18.96	8.84	24.83	3.53	438	766.27

BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	238
Compensated thermicity index.....(Itc):	244
Simple continentality index.....(Ic):	19.3
Diurnality index.....(Id):	13.4
Annual ombrothermic index.....(Io):	2.63
Monthly estival ombrothermic index.....(Ios1):	0.45
Bimonthly estival ombrothermic index.....(Ios2):	0.52
Threemonthly estival ombrothermic index.....(Ios3):	0.76
Fourmonthly estival ombrothermic index.....(Ios4):	1.14
Annual ombro-evaporation index.....(Ioe):	0.70
Annual positive temperature.....(Tp):	1666
Annual negative temperature.....(Tn):	0
Estival temperature.....(Ts):	685
Positive precipitation.....(Pp):	438

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

Latitudinal Belt...: Low eutemperate

Continentality.....: Oceanic - High Semicontinental

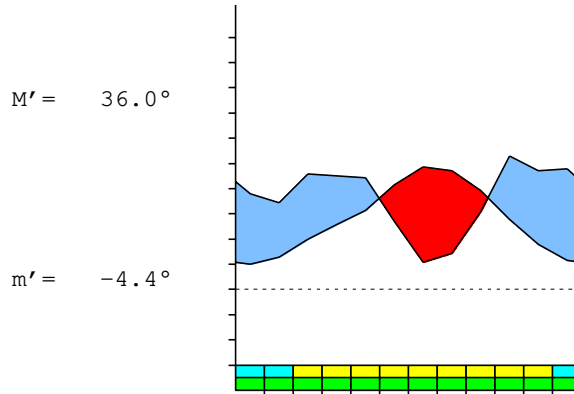
Bioclimate.....: MEDITERRANEAN PLUVISEASONAL-OCEANIC

Bioclimatic Belt...: UPPER MESOMEDITERRANEAN LOW DRY

MADRID (ESP MADRID)

667 m

P= 438 40° 25'N 3° 41'W 40/40 y.
 T= 13.9° Ic= 19.3 Tp= 1666 Tn= 0
 m= 1.4° M= 8.5° Itc= 244 Io= 2.6



MEDITERRANEAN PLUVISEASONAL-OCEANIC
 UPPER MESOMEDITERRANEAN LOW DRY

WATER INDEX CARD

MADRID (ESP MADRID)

Altitude: 667 m.

Latitude: 40° 25'N

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jan.	4.9	10	38	28	91	10	0	0	0	2.9
Feb.	6.5	14	34	9	100	14	0	11	5	1.3
Mar.	10.0	34	46	0	100	34	0	12	9	0.3
Apr.	12.7	51	45	-6	94	51	0	0	4	-0.1
May.	15.7	78	44	-34	60	78	0	0	2	-0.4
Jun.	20.6	117	27	-60	0	87	30	0	1	-0.7
Jul.	24.2	150	11	0	0	11	139	0	1	-0.9
Aug.	23.7	135	14	0	0	14	121	0	0	-0.8
Sep.	19.8	92	31	0	0	31	61	0	0	-0.6
Oct.	14.0	51	53	2	2	51	0	0	0	0.0
Nov.	8.9	23	47	24	26	23	0	0	0	1.0
Dec.	5.6	11	48	37	63	11	0	0	0	3.2
Year	13.9	766	438	*	*	415	351	23	23	*

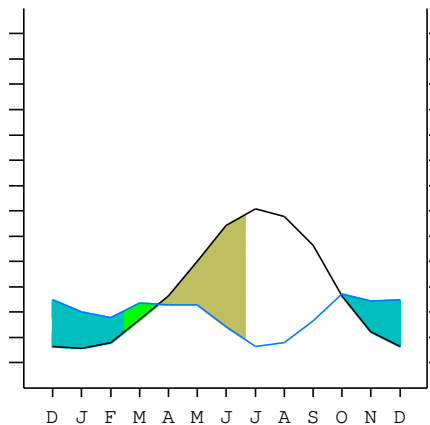
R = Reserve VR = Variation of the reserve RE = Real evapotranspiration
 DR = Drainage HC = Humidity coefficient DF = Deficit SP = Superavit

MADRID (ESP MADRID)

40°25'N 3°41'W 667 m 40/40 y.

T= 13.9 Ic= 19.3 MEDITERRANEAN PLUVISEASONAL-OCEANIC
 m= 1.4 Tp= 1666 UPPER MESOMEDITERRANEAN
 M= 8.5 Tn= 0 LOW DRY
 M' = 36.0 Itc= 244
 m' = -4.4 Io= 2.6
 P= 438 mm ———
 PE= 766 mm ———

Imbibing	30 Sep.
Saturation	14 Feb.
Reserve Use	20 Mar.
Deficit	20 Jun.



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SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continental Index [B1b]
 + Type: B. Oceanic
 + Subtype: 1. Semicontinental
 + Variant: b. High

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

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 180
 Coldest semester of the year.....(Psw): 258
 Warmest four months period of the year.....(Pcm1): 83
 Following warmest four months period.....(Pcm2): 186
 Positive precipitation dryest 3 months.....(Ppd): 52
 Positive precipitation dryest 2 months.....(Ppd2): 25
 Positive precipitation dryest 1 month.....(Ppd1): 11
 Positive precipitation warmest 3 months.....(Pps): 52
 Positive precipitation warmest 2 months.....(Pps2): 25
 Positive precipitation warmest 1 month.....(Pps1): 11
 Positive precipitation coldest 3 months.....(Ppw): 120
 Positive precipitation coldest 2 months.....(Ppw2): 86
 Positive precipitation coldest 1 month.....(Ppw1): 38

Seasons	Winter Tr1-W	Spring Tr2-P	Summer Tr3-S	Automn Tr4-F
Rainfall	120	135	52	131

Seasonal rainfall rhythms: P > F > W > S

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 24.2
 Average coldest month [T].....(Tmin): 4.9
 Maximum temp. warmest month [M].....(Tmmax): 30.9
 Minimum temp. coldest month [m].....(Tmmin): 1.4
 Absolute Max.temp. warmest month [M'].....(Tamax): 36.0
 Absolute Min.temp. coldest month [m'].....(Tamin): -4.4
 First warmest contrasted month [M].....(Tcmax): 30.9 (7)
 First coldest contrasted month [m].....(Tcmin): 17.5 (7)
 Estival temperature.....(Ts): 685
 Positive temperature dryest 3 months.....(Tpd): 685
 Positive temperature dryest 2 months.....(Tpd2): 479
 Positive temperature dryest 1 month.....(Tpd1): 242
 Positive temperature warmest 3 months.....(Tps): 685
 Positive temperature warmest 2 months.....(Tps2): 479
 Positive temperature warmest 1 month.....(Tps1): 242
 Positive temperature coldest 3 months.....(Tpw): 170
 Positive temperature coldest 2 months.....(Tpw2): 105
 Positive temperature coldest 1 month.....(Tpw1): 49

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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): 1.75
 Mediterranean index of July.[PE/P].....(Im1): 13.65
 Mediterranean index of July & August.....(Im2): 11.42
 Mediterranean index of June, July & August....(Im3): 7.74

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp(x10)	480	380	340	460	450	440	270	110	140	310	530	470
Tp	56	49	65	100	127	157	206	242	237	198	140	89
Io (Iom)	8.57	7.76	5.23	4.60	3.54	2.80	1.31	0.45	0.59	1.57	3.79	5.28
Seasons	Winter			Spring			Summer			Autumn		
Pp(x10)/Tp	1200 / 170			1350 / 384			520 / 685			1310 / 427		
Io (Iot)	7.059			3.516			0.759			3.068		
Semesters	December-May						June-November					
Pp(x10)/Tp	2550 / 554						1830 / 1112					
Io (Iosm)	4.603						1.646					

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 4380/1666=2.63 **There is No Yearly Aridity**

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	480	380	340	460	450	440	270	110	140	310	530	470
Tp [T*10]	56	49	65	100	127	157	206	242	237	198	140	89
Iom [Pp/Tp]	857	776	523	460	354	280	131	45	59	157	379	528
Avm [200-Iom]	***	***	***	***	***	***	69	155	141	43	***	***
Seasons	Winter			Spring			Summer			Autumn		
Pp / Tp	1200 / 170			1350 / 384			520 / 685			1310 / 427		
Iot [Pp/Tp]	706			352			76			307		
Avs E[Avm<200]	***			***			364			***		
Strong lower arid [1]							Weak lower arid [1]					
Strong upper arid [1]							Weak lower semiarid [1]					
Strong upper semiarid [1]												

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin](Sp): 19.30
 CI of Gorezinski (1920) [1.7*Sp/sin(Lat)-20.4]: 30.21
 CI of Conrad (1946) [1.7*Sp/sin(Lat+10)-14]: 28.57
 + Oceanic (20<CI<40)
 CI of Currey (1974) [CI=Sp/(1+Lat/3)]: 1.33
 + Subcontinental (1.1<CI<1.7)
 Rainfall Index of Lang (1925) [R=P/T]: 31.55
 + Steppic (40>R>0)
 Aridity Index of Martonne (1926) [Ia=P/(T+10)]: 18.34
 + Semiarid -mediterranean- (20>Ia>15)
 I of Emberger (1930) [Q=100*P/(Tmmax²-Tmmin²)]: 45.97
 + Semiarid (50>Q>30)
 I of Dantin & Revenga (1940) [DR=100*T/P]: 3.17
 + Arid (6>DR>3)
 Aridity Index of UNEP [I=P/PE]: 0.57
 + Subhumid - dry (0.65>I>0.5)
 Potential Erosion I of Fournier (1960) [K=Pi²/P].....: 6.41
 + 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: 4. Mesothermic

Thornthwaite (1948)												
	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
P-E ratio	0.23	0.19	0.24	0.21	0.19	0.10	0.03	0.04	0.11	0.24	0.25	0.29
T-E ratio	2.21	2.93	4.50	5.71	7.06	9.27	10.89	10.67	8.91	6.30	4.00	2.52
Precipitation-effectiveness: 21.19						Temperature-efficiency: 74.97						
Moisture Index [MI=100*(P-PE)/PE]: -42.84 + D.Semiarid (-66.7<MI<-33.3)												
Index of dryness [DI=100*d/PE]: 45.85 + Strong deficit (33.3<DI)												
Index of humidity [HI=100*s/PE]: 3.00 + No surplus (0<HI<10)												
Potential Evapotranspiration PE: 766.27 + Second mesothermic (712<PE<855)												

