

# Phytosociological Research Center

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## Worldwide Bioclimatic Classification System

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(Adapted to Synoptical Table 30/08/2017)

ARGANDA DEL REY (ESP MADRID)

Altitude: 618 m.

Latitude: 40°18'N Longitude: 3°26'W

Temperature observation period.: 1954-1969 (16)

Rainfall observation period....: 1954-1969 (16)

(C/mm)	Ti	Mi	mi	M'i	m'i	Pi	Epi
Jan.	6.40	11.90	0.80	17.20	-4.80	32.0	14.62
Feb.	6.20	11.90	0.40	18.00	-5.70	63.0	13.80
Mar.	9.10	15.70	2.50	22.80	-3.50	40.0	29.78
Apr.	12.40	19.90	4.80	27.40	-0.70	49.0	50.14
May.	17.00	25.90	8.10	30.80	2.40	27.0	88.27
Jun.	20.10	29.70	10.50	37.90	4.80	39.0	113.29
Jul.	23.60	34.00	13.30	39.00	8.10	5.0	145.07
Aug.	22.60	32.80	12.50	38.30	7.10	6.0	126.63
Sep.	19.20	28.10	10.40	34.80	4.60	24.0	88.23
Oct.	15.00	23.40	6.60	30.70	-0.10	47.0	57.06
Nov.	8.40	14.30	2.40	21.60	-3.90	68.0	21.39
Dec.	5.20	10.40	0.10	15.50	-6.70	28.0	10.45
Year	13.77	21.50	6.03	27.83	0.13	428	758.74

### BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	243
Compensated thermicity index.....(Itc):	245
Simple continentality index.....(Ic):	18.4
Diurnality index.....(Id):	20.7
Annual ombrothermic index.....(Io):	2.59
Monthly estival ombrothermic index.....(Ios1):	0.21
Bimonthly estival ombrothermic index.....(Ios2):	0.24
Threemonthly estival ombrothermic index.....(Ios3):	0.75
Fourmonthly estival ombrothermic index.....(Ios4):	0.92
Annual ombro-evaporation index.....(Ioe):	0.53
Annual positive temperature.....(Tp):	1652
Annual negative temperature.....(Tn):	0
Estival temperature.....(Ts):	663
Positive precipitation.....(Pp):	428

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

Latitudinal Belt...: Low eutemperate

Continentality.....: Oceanic - Low Semicontinental

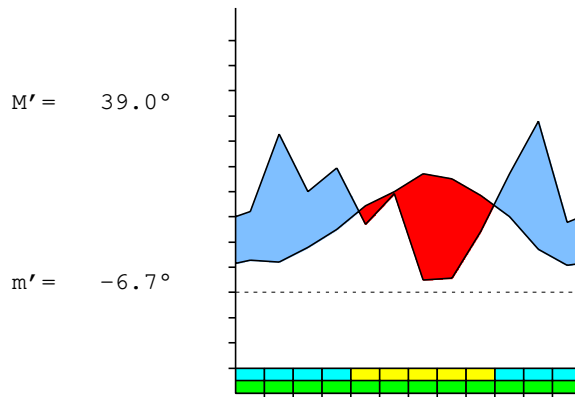
Bioclimate.....: MEDITERRANEAN PLUVISEASONAL-OCEANIC

Bioclimatic Belt...: UPPER MESOMEDITERRANEAN LOW DRY

ARGANDA DEL REY (ESP MADRID)

618 m

P= 428      40° 18'N      3° 26'W      16/16 y.  
 T= 13.8°    Ic= 18.4      Tp= 1652      Tn= 0  
 m= 0.1°      M= 10.4°      Itc= 245      Io= 2.6



MEDITERRANEAN PLUVISEASONAL-OCEANIC  
 UPPER MESOMEDITERRANEAN LOW DRY

WATER INDEX CARD

ARGANDA DEL REY (ESP MADRID)

Altitude: 618 m.

Latitude: 40° 18'N

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jan.	6.4	15	32	17	82	15	0	0	0	1.1
Feb.	6.2	14	63	18	100	14	0	31	15	3.5
Mar.	9.1	30	40	0	100	30	0	10	13	0.3
Apr.	12.4	50	49	-1	99	50	0	0	6	0.0
May.	17.0	88	27	-61	38	88	0	0	3	-0.6
Jun.	20.1	113	39	-38	0	77	37	0	2	-0.6
Jul.	23.6	145	5	0	0	5	140	0	1	-0.9
Aug.	22.6	127	6	0	0	6	121	0	0	-0.9
Sep.	19.2	88	24	0	0	24	64	0	0	-0.7
Oct.	15.0	57	47	0	0	47	10	0	0	-0.1
Nov.	8.4	21	68	47	47	21	0	0	0	2.1
Dec.	5.2	10	28	18	64	10	0	0	0	1.6
Year	13.8	759	428	*	*	387	372	41	41	*

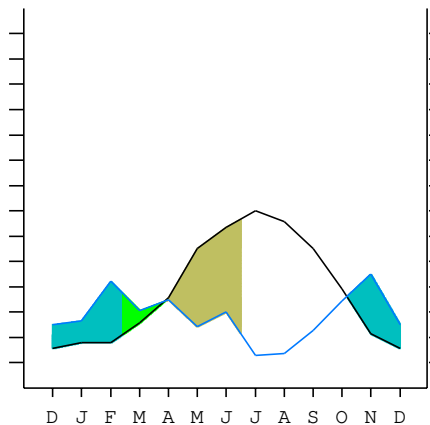
R = Reserve    VR = Variation of the reserve    RE = Real evapotranspiration  
 DR = Drainage    HC = Humidity coefficient    DF = Deficit    SP = Superavit

ARGANDA DEL REY (ESP MADRID)

40°18'N    3°26'W    618 m 16/16 y.

T= 13.8    Ic= 18.4    MEDITERRANEAN PLUVISEASONAL-OCEANIC  
 m= 0.1    Tp= 1652    UPPER MESOMEDITERRANEAN  
 M= 10.4    Tn= 0    LOW DRY  
 M' = 39.0    Itc= 245  
 m' = -6.7    Io= 2.6  
 P= 428    mm    ———  
 PE= 759    mm    ———

Imbibing	6 Oct.
Saturation	12 Feb.
Reserve Use	27 Mar.
Deficit	16 Jun.



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SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continental Index [B1a]

- + Type .....: B. Oceanic
- + Subtype .....: 1. Semicontinental
- + Variant .....: a. 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.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): 148  
 Coldest semester of the year.....(Psw): 280  
 Warmest four months period of the year.....(Pcm1): 74  
 Following warmest four months period.....(Pcm2): 175  
 Positive precipitation dryest 3 months.....(Ppd): 35  
 Positive precipitation dryest 2 months.....(Ppd2): 11  
 Positive precipitation dryest 1 month.....(Ppd1): 5  
 Positive precipitation warmest 3 months.....(Pps): 50  
 Positive precipitation warmest 2 months.....(Pps2): 11  
 Positive precipitation warmest 1 month.....(Pps1): 5  
 Positive precipitation coldest 3 months.....(Ppw): 123  
 Positive precipitation coldest 2 months.....(Ppw2): 60  
 Positive precipitation coldest 1 month.....(Ppw1): 28

Seasons	Winter Tr1-W	Spring Tr2-P	Summer Tr3-S	Automn Tr4-F
Rainfall	123	116	50	139

Seasonal rainfall rhythms: F > W > P > S

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 23.6  
 Average coldest month [T].....(Tmin): 5.2  
 Maximum temp. warmest month [M].....(Tmmax): 34.0  
 Minimum temp. coldest month [m].....(Tmmin): 0.1  
 Absolute Max.temp. warmest month [M'].....(Tamax): 39.0  
 Absolute Min.temp. coldest month [m'].....(Tamin): -6.7  
 First warmest contrasted month [M].....(Tcmax): 34.0 (7)  
 First coldest contrasted month [m].....(Tcmin): 13.3 (7)  
 Estival temperature.....(Ts): 663  
 Positive temperature dryest 3 months.....(Tpd): 654  
 Positive temperature dryest 2 months.....(Tpd2): 462  
 Positive temperature dryest 1 month.....(Tpd1): 236  
 Positive temperature warmest 3 months.....(Tps): 663  
 Positive temperature warmest 2 months.....(Tps2): 462  
 Positive temperature warmest 1 month.....(Tps1): 236  
 Positive temperature coldest 3 months.....(Tpw): 178  
 Positive temperature coldest 2 months.....(Tpw2): 116  
 Positive temperature coldest 1 month.....(Tpw1): 52

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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	o
Agelid.....[m' > 0] (Pf)					o	o	o	o	o			
HiperAgelid..[all>0] (Pf)					o	o	o	o	o			

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OMBROTHERMIC PARAMETERS

Annual aridity index.[PE/P].....(Iar): 1.77  
 Mediterranean index of July.[PE/P].....(Im1): 29.01  
 Mediterranean index of July & August.....(Im2): 24.70  
 Mediterranean index of June, July & August....(Im3): 7.70

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp(x10)	280	320	630	400	490	270	390	50	60	240	470	680
Tp	52	64	62	91	124	170	201	236	226	192	150	84
Io (Iom)	5.38	5.00	10.2	4.40	3.95	1.59	1.94	0.21	0.27	1.25	3.13	8.10
Seasons	Winter			Spring			Summer			Autumn		
Pp(x10)/Tp	1230 / 178			1160 / 385			500 / 663			1390 / 426		
Io (Iot)	6.910			3.013			0.754			3.263		
Semesters	December-May						June-November					
Pp(x10)/Tp	2390 / 563						1890 / 1089					
Io (Iosm)	4.245						1.736					

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 4280/1652=2.59 **There is No Yearly Aridity**

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	280	320	630	400	490	270	390	50	60	240	470	680
Tp [T*10]	52	64	62	91	124	170	201	236	226	192	150	84
Iom [Pp/Tp]	538	500	\$\$	440	395	159	194	21	27	125	313	810
Avm [200-Iom]	***	***	***	***	***	41	6	179	173	75	***	***
Seasons	Winter			Spring			Summer			Autumn		
Pp / Tp	1230 / 178			1160 / 385			500 / 663			1390 / 426		
Iot [Pp/Tp]	691			301			75			326		
Avs E[Avm<200]	***			***			358			***		
Lower hyperarid [2]						Weak upper arid [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): 18.40
CI of Gorezinski (1920) [1.7*Sp/sin(Lat)-20.4] .....	27.96
CI of Conrad (1946) [1.7*Sp/sin(Lat+10)-14] .....	26.66
+ Oceanic (20<CI<40)	
CI of Currey (1974) [CI=Sp/(1+Lat/3)] .....	1.27
+ Subcontinental (1.1<CI<1.7)	
Rainfall Index of Lang (1925) [R=P/T] .....	31.09
+ Steppic (40>R>0)	
Aridity Index of Martonne (1926) [Ia=P/(T+10)] .....	18.01
+ Semiarid -mediterranean- (20>Ia>15)	
I of Emberger (1930) [Q=100*P/(Tmmax <sup>2</sup> -Tmmin <sup>2</sup> )] .....	37.02
+ Semiarid (50>Q>30)	
I of Dantin & Revenga (1940) [DR=100*T/P] .....	3.22
+ 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] .....	10.80
+ 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	0.18	0.38	0.21	0.23	0.11	0.15	0.01	0.02	0.09	0.21	0.38	0.16
T-E ratio	2.88	2.79	4.10	5.58	7.65	9.05	10.62	10.17	8.64	6.75	3.78	2.34
Precipitation-effectiveness: 21.22						Temperature-efficiency .....						74.34
Moisture Index [MI=100*(P-PE)/PE] .....												-43.59
+ D.Semiarid (-66.7<MI<-33.3)												
Index of dryness [DI=100*d/PE] .....												48.98
+ Strong deficit (33.3<DI)												
Index of humidity [HI=100*s/PE] .....												5.39
+ No surplus (0<HI<10)												
Potential Evapotranspiration PE .....												758.74
+ Second mesothermic (712<PE<855)												

