

# Phytosociological Research Center

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## Worldwide Bioclimatic Classification System

Prof.Dr. Salvador Rivas-Martinez

(Adapted to Synoptical Table 30/08/2017)

LOS ARCOS (ESP NAVARRA)

Altitude: 446 m.

Latitude: 42°34'N Longitude: 2°11'W

Temperature observation period.: 1981-1997 (17)

Rainfall observation period....: 1981-1997 (17)

(C/mm)	Ti	Mi	mi	M'i	m'i	Pi	EPI
Jan.	5.00	9.00	1.10	15.80	-3.80	37.0	11.18
Feb.	6.40	11.00	1.80	17.80	-3.80	33.4	15.86
Mar.	8.90	14.40	3.40	22.50	-2.00	30.6	30.98
Apr.	10.50	16.30	4.70	23.70	-0.30	56.2	42.65
May.	14.80	20.80	8.90	29.00	2.80	49.5	76.74
Jun.	18.40	25.10	11.70	33.60	5.60	39.3	105.01
Jul.	22.30	29.60	14.90	37.30	9.30	25.6	137.67
Aug.	22.40	29.30	15.40	35.90	9.60	20.7	128.85
Sep.	18.80	25.30	12.30	33.50	6.90	24.4	87.87
Oct.	14.30	19.70	8.90	26.60	2.60	33.6	55.21
Nov.	9.00	13.20	4.80	20.70	-1.50	53.8	24.98
Dec.	6.10	9.60	2.70	16.50	-3.10	50.1	13.95
Year	13.08	18.61	7.55	26.08	1.86	454	730.96

### BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	232
Compensated thermicity index.....(Itc):	232
Simple continentality index.....(Ic):	17.4
Diurnality index.....(Id):	14.7
Annual ombrothermic index.....(Io):	2.89
Monthly estival ombrothermic index.....(Ios1):	0.92
Bimonthly estival ombrothermic index.....(Ios2):	1.04
Threemonthly estival ombrothermic index.....(Ios3):	1.36
Fourmonthly estival ombrothermic index.....(Ios4):	1.73
Annual ombro-evaporation index.....(Ioe):	0.74
Annual positive temperature.....(Tp):	1569
Annual negative temperature.....(Tn):	0
Estival temperature.....(Ts):	631
Positive precipitation.....(Pp):	454

N. of	P>4T	P:2T-4T	PT-2T	P<T	T<0
Months	5	4	2	1	0

Latitudinal Belt...: Low eutemperate

Continentality.....: Oceanic - Low Semicontinental

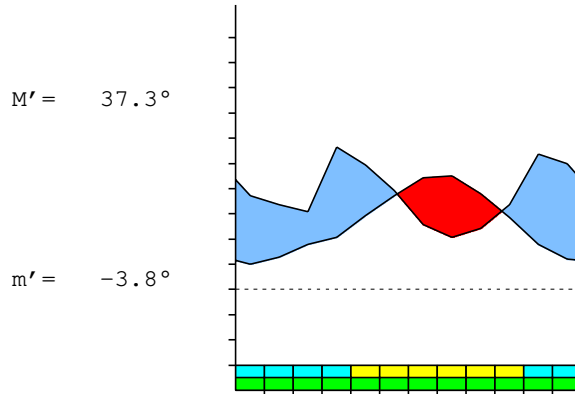
Bioclimate.....: MEDITERRANEAN PLUVISEASONAL-OCEANIC

Bioclimatic Belt...: UPPER MESOMEDITERRANEAN UPPER DRY

LOS ARCOS (ESP NAVARRA)

446 m

P= 454      42° 34'N      2° 11'W      17/17 y.  
 T= 13.1°    Ic= 17.4      Tp= 1569      Tn= 0  
 m= 1.1°      M= 9.0°      Itc= 232      Io= 2.9



MEDITERRANEAN PLUVISEASONAL-OCEANIC  
 UPPER MESOMEDITERRANEAN UPPER DRY

WATER INDEX CARD      LOS ARCOS (ESP NAVARRA)  
 Altitude: 446 m.      Latitude: 42° 34'N

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jan.	5.0	11	37	26	91	11	0	0	0	2.3
Feb.	6.4	16	33	9	100	16	0	8	4	1.1
Mar.	8.9	31	31	-0	100	31	0	0	2	0.0
Apr.	10.5	43	56	0	100	43	0	13	8	0.3
May.	14.8	77	50	-27	73	77	0	0	4	-0.3
Jun.	18.4	105	39	-66	7	105	0	0	2	-0.6
Jul.	22.3	138	26	-7	0	33	105	0	1	-0.8
Aug.	22.4	129	21	0	0	21	108	0	0	-0.8
Sep.	18.8	88	24	0	0	24	63	0	0	-0.7
Oct.	14.3	55	34	0	0	34	22	0	0	-0.3
Nov.	9.0	25	54	29	29	25	0	0	0	1.1
Dec.	6.1	14	50	36	65	14	0	0	0	2.5
Year	13.1	731	454	*	*	433	298	21	21	*

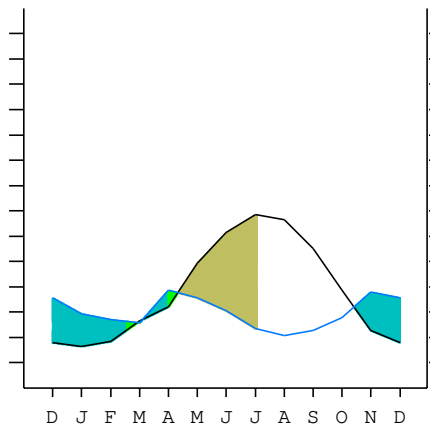
R = Reserve    VR = Variation of the reserve    RE = Real evapotranspiration  
 DR = Drainage    HC = Humidity coefficient    DF = Deficit    SP = Superavit

LOS ARCOS (ESP NAVARRA)

42°34'N    2°11'W    446 m 17/17 y.

T= 13.1    Ic= 17.4    MEDITERRANEAN PLUVISEASONAL-OCEANIC  
 m= 1.1    Tp= 1569    UPPER MESOMEDITERRANEAN  
 M= 9.0    Tn= 0    UPPER DRY  
 M' = 37.3    Itc= 232  
 m' = -3.8    Io= 2.9  
 P= 454    mm    ———  
 PE= 731    mm    ———

Imbibing	13 Oct.
Saturation	1 Apr.
Reserve Use	10 Apr.
Deficit	2 Jul.



LOS ARCOS (ESP NAVARRA)

Latitude: 42°34'N Longitude: 2°11'W Altitude: 446 m

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.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

LOS ARCOS (ESP NAVARRA)

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 193

Coldest semester of the year.....(Psw): 261

Warmest four months period of the year.....(Pcm1): 110

Following warmest four months period.....(Pcm2): 175

Positive precipitation dryest 3 months.....(Ppd): 71

Positive precipitation dryest 2 months.....(Ppd2): 45

Positive precipitation dryest 1 month.....(Ppd1): 21

Positive precipitation warmest 3 months.....(Pps): 71

Positive precipitation warmest 2 months.....(Pps2): 46

Positive precipitation warmest 1 month.....(Pps1): 21

Positive precipitation coldest 3 months.....(Ppw): 121

Positive precipitation coldest 2 months.....(Ppw2): 87

Positive precipitation coldest 1 month.....(Ppw1): 37

Seasons	Winter Tr1-W	Spring Tr2-P	Summer Tr3-S	Automn Tr4-F
Rainfall	120	136	85	111

Seasonal rainfall rhythms: P > W > F > S

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 22.4

Average coldest month [T].....(Tmin): 5.0

Maximum temp. warmest month [M].....(Tmmax): 29.6

Minimum temp. coldest month [m].....(Tmmin): 1.1

Absolute Max.temp. warmest month [M'].....(Tamax): 37.3

Absolute Min.temp. coldest month [m'].....(Tamin): -3.8

First warmest contrasted month [M].....(Tcmax): 29.6 (7)

First coldest contrasted month [m].....(Tcmin): 14.9 (7)

Estival temperature.....(Ts): 631

Positive temperature dryest 3 months.....(Tpd): 635

Positive temperature dryest 2 months.....(Tpd2): 412

Positive temperature dryest 1 month.....(Tpd1): 224

Positive temperature warmest 3 months.....(Tps): 635

Positive temperature warmest 2 months.....(Tps2): 447

Positive temperature warmest 1 month.....(Tps1): 224

Positive temperature coldest 3 months.....(Tpw): 175

Positive temperature coldest 2 months.....(Tpw2): 111

Positive temperature coldest 1 month.....(Tpw1): 50

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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): 1.61  
 Mediterranean index of July.[PE/P].....(Im1): 5.38  
 Mediterranean index of July & August.....(Im2): 5.76  
 Mediterranean index of June, July & August....(Im3): 4.34

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp(x10)	501	370	334	306	562	495	393	256	207	244	336	538
Tp	61	50	64	89	105	148	184	223	224	188	143	90
Io (Iom)	8.21	7.40	5.22	3.44	5.35	3.34	2.14	1.15	0.92	1.30	2.35	5.98
Seasons	Winter			Spring			Summer			Autumn		
Pp(x10)/Tp	1205 / 175			1363 / 342			856 / 631			1118 / 421		
Io (Iot)	6.886			3.985			1.357			2.656		
Semesters	December-May						June-November					
Pp(x10)/Tp	2568 / 517						1974 / 1052					
Io (Iosm)	4.967						1.876					

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 4542/1569=2.89 **There is No Yearly Aridity**

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	501	370	334	306	562	495	393	256	207	244	336	538
Tp [T*10]	61	50	64	89	105	148	184	223	224	188	143	90
Iom [Pp/Tp]	821	740	522	344	535	334	214	115	92	130	235	598
Avm [200-Iom]	***	***	***	***	***	***	***	85	108	70	***	***
Seasons	Winter			Spring			Summer			Autumn		
Pp / Tp	1205 / 175			1363 / 342			856 / 631			1118 / 421		
Iot [Pp/Tp]	689			399			136			266		
Avs E[Avm<200]	***			***			***			***		
Weak upper arid [1]							Strong lower semiarid [1]					
Weak lower semiarid [1]												

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin] .....(Sp): 17.40  
 CI of Gorezinski (1920) [1.7\*Sp/sin(Lat)-20.4] .....: 23.33  
 CI of Conrad (1946) [1.7\*Sp/sin(Lat+10)-14] .....: 23.25  
 + 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] .....: 34.74  
 + Steppic (40>R>0)  
 Aridity Index of Martonne (1926) [Ia=P/(T+10)] .....: 19.68  
 + Semiarid -mediterranean- (20>Ia>15)  
 I of Emberger (1930) [Q=100\*P/(Tmmax<sup>2</sup>-Tmmin<sup>2</sup>)] .....: 51.91  
 + Subhumid (90>Q>50)  
 I of Dantin & Revenga (1940) [DR=100\*T/P] .....: 2.88  
 + Semiarid (3>DR>2)  
 Aridity Index of UNEP [I=P/PE] .....: 0.62  
 + Subhumid - dry (0.65>I>0.5)  
 Potential Erosion I of Fournier (1960) [K=Pi<sup>2</sup>/P].....: 6.95  
 + 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	0.22	0.19	0.16	0.29	0.22	0.15	0.09	0.07	0.09	0.15	0.29	0.30
T-E ratio	2.25	2.88	4.00	4.72	6.66	8.28	10.03	10.08	8.46	6.44	4.05	2.74
Precipitation-effectiveness: 22.02						Temperature-efficiency .....: 70.60						
Moisture Index [MI=100*(P-PE)/PE] .....: -37.86 + D.Semiarid (-66.7<MI<-33.3)												
Index of dryness [DI=100*d/PE] .....: 40.80 + Strong deficit (33.3<DI)												
Index of humidity [HI=100*s/PE] .....: 2.93 + No surplus (0<HI<10)												
Potential Evapotranspiration PE .....: 730.96 + Second mesothermic (712<PE<855)												

