

# Phytosociological Research Center

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## Worldwide Bioclimatic Classification System

Prof.Dr. Salvador Rivas-Martinez

(Adapted to Synoptical Table 30/08/2017)

EL ESCUDO (ESP SANTANDER)

Altitude: 1022 m.

Latitude: 43°3'N Longitude: 3°53'W

Temperature observation period.: 1953-1960 (8)

Rainfall observation period....: 1953-1960 (8)

(C/mm)	Ti	Mi	mi	M'i	m'i	Pi	EPi
Jan.	1.60	4.20	-1.10	11.10	-9.80	165.0	8.45
Feb.	1.50	4.60	-1.60	12.30	-7.00	93.0	8.07
Mar.	4.00	8.50	0.50	16.40	-6.20	102.0	24.53
Apr.	5.40	9.60	1.30	18.80	-4.60	133.0	35.42
May.	9.20	13.60	4.90	21.40	0.20	144.0	64.76
Jun.	11.40	15.60	7.30	23.30	2.00	131.0	79.98
Jul.	13.80	18.10	9.50	28.10	4.20	93.0	95.95
Aug.	14.00	19.20	8.90	24.90	4.60	88.0	90.43
Sep.	12.90	17.80	8.00	22.30	3.70	124.0	72.74
Oct.	8.90	13.20	4.60	17.30	-2.40	228.0	47.37
Nov.	4.80	8.30	1.20	15.00	-4.00	176.0	23.01
Dec.	3.00	5.80	0.20	11.40	-4.00	149.0	14.25
Year	7.54	11.54	3.64	18.52	-1.94	1626	564.95

### BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	105
Compensated thermicity index.....(Itc):	105
Simple continentality index.....(Ic):	12.5
Diurnality index.....(Id):	10.3
Annual ombrothermic index.....(Io):	17.97
Monthly estival ombrothermic index.....(Ios1):	6.29
Bimonthly estival ombrothermic index.....(Ios2):	6.51
Threemonthly estival ombrothermic index.....(Ios3):	7.96
Fourmonthly estival ombrothermic index.....(Ios4):	9.42
Annual ombro-evaporation index.....(Ioe):	0.99
Annual positive temperature.....(Tp):	905
Annual negative temperature.....(Tn):	0
Estival temperature.....(Ts):	392
Positive precipitation.....(Pp):	1626

N. of	P>4T	P:2T-4T	PT-2T	P<T	T<0
Months	12	0	0	0	0

Latitudinal Belt...: High eutemperate

Continentalty.....: Oceanic - Low Semihyperoceanic

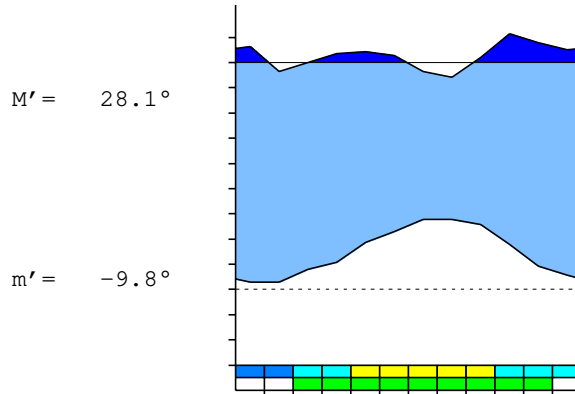
Bioclimate.....: TEMPERATE OCEANIC

Bioclimatic Belt...: UPPER SUPRATEMPERATE LOW HYPERHUMID

EL ESCUDO (ESP SANTANDER)

1022 m

P= 1626      43° 3'N      3° 53'W      8/8 y.  
 T= 7.5°      Ic= 12.5      Tp= 905      Tn= 0  
 m= -1.6°      M= 4.6°      Itc= 105      Io= 18.0



TEMPERATE OCEANIC  
 UPPER SUPRATEMPERATE LOW HYPERHUMID

WATER INDEX CARD EL ESCUDO (ESP SANTANDER)

Altitude: 1022 m.      Latitude: 43° 3'N

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jan.	1.6	8	165	0	100	8	0	157	144	18.5
Feb.	1.5	8	93	0	100	8	0	85	115	10.5
Mar.	4.0	25	102	0	100	25	0	77	96	3.1
Apr.	5.4	35	133	0	100	35	0	98	97	2.7
May.	9.2	65	144	0	100	65	0	79	88	1.2
Jun.	11.4	80	131	0	100	80	0	51	70	0.6
Jul.	13.8	96	93	-3	97	96	0	0	35	0.0
Aug.	14.0	90	88	-2	95	90	0	0	17	0.0
Sep.	12.9	73	124	5	100	73	0	46	32	0.7
Oct.	8.9	47	228	0	100	47	0	181	106	3.8
Nov.	4.8	23	176	0	100	23	0	153	130	6.6
Dec.	3.0	14	149	0	100	14	0	135	132	9.4
Year	7.5	565	1626	*	*	565	0	1061	1061	*

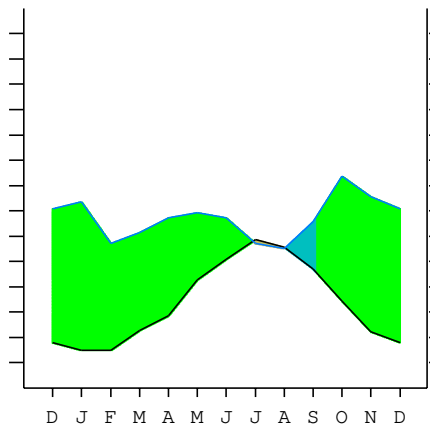
R = Reserve      VR = Variation of the reserve      RE = Real evapotranspiration  
 DR = Drainage      HC = Humidity coefficient      DF = Deficit      SP = Superavit

EL ESCUDO (ESP SANTANDER)

43°3'N      3°53'W      1022 m      8/8 y.

T= 7.5      Ic= 12.5      TEMPERATE OCEANIC  
 m= -1.6      Tp= 905      UPPER SUPRATEMPERATE  
 M= 4.6      Tn= 0      LOW HYPERHUMID  
 M' = 28.1      Itc= 105  
 m' = -9.8      Io= 18.0  
 P= 1626      mm      ———  
 PE= 565      mm      ———

Imbibing	2 Aug.
Saturation	4 Sep.
Reserve Use	29 Jun.
Deficit	



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SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continental Index [B1b]  
 + Type .....: B. Oceanic  
 + Subtype .....: 1. Semihyperoceanic  
 + Variant .....: b. Low

Thermic types [B1.B5]  
 + Latitudinal zone .....: B. Temperate  
 + Latitudinal belt .....: 1. High eutemperate  
 + Thermic type .....: B. Temperate  
 + Thermic subtype .....: 5. Subtemperate

Bioclimatic types [C3.4a.8b]  
 + Macrobioclimate .....: C. TEMPERATE  
 + Bioclimate .....: 3. OCEANIC  
 + Bioclimatic variant ..:  
 + Thermic type.....: 4. SUPRATEMPERATE  
 + Thermic subtype.....: a. UPPER  
 + Ombrothermic type ...: 8. HYPERHUMID  
 + Ombrothermic subtype : b. LOW

Bioclimatic Classification .....: Teco.Ste.Hhu

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 808  
 Coldest semester of the year.....(Psw): 818  
 Warmest four months period of the year.....(Pcm1): 436  
 Following warmest four months period.....(Pcm2): 718  
 Positive precipitation dryest 3 months.....(Ppd): 305  
 Positive precipitation dryest 2 months.....(Ppd2): 181  
 Positive precipitation dryest 1 month.....(Ppd1): 88  
 Positive precipitation warmest 3 months.....(Pps): 305  
 Positive precipitation warmest 2 months.....(Pps2): 181  
 Positive precipitation warmest 1 month.....(Pps1): 88  
 Positive precipitation coldest 3 months.....(Ppw): 407  
 Positive precipitation coldest 2 months.....(Ppw2): 258  
 Positive precipitation coldest 1 month.....(Ppw1): 93

Seasons	Winter Tr1-W	Spring Tr2-P	Summer Tr3-S	Automn Tr4-F
Rainfall	407	379	312	528

Seasonal rainfall rhythms: F > W > P > S

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 14.0  
 Average coldest month [T].....(Tmin): 1.5  
 Maximum temp. warmest month [M].....(Tmmax): 19.2  
 Minimum temp. coldest month [m].....(Tmmin): -1.6  
 Absolute Max.temp. warmest month [M'].....(Tamax): 28.1  
 Absolute Min.temp. coldest month [m'].....(Tamin): -9.8  
 First warmest contrasted month [M].....(Tcmax): 19.2 (8)  
 First coldest contrasted month [m].....(Tcmin): 8.9 (8)  
 Estival temperature.....(Ts): 392  
 Positive temperature dryest 3 months.....(Tpd): 407  
 Positive temperature dryest 2 months.....(Tpd2): 278  
 Positive temperature dryest 1 month.....(Tpd1): 140  
 Positive temperature warmest 3 months.....(Tps): 407  
 Positive temperature warmest 2 months.....(Tps2): 278  
 Positive temperature warmest 1 month.....(Tps1): 140  
 Positive temperature coldest 3 months.....(Tpw): 61  
 Positive temperature coldest 2 months.....(Tpw2): 31  
 Positive temperature coldest 1 month.....(Tpw1): 15

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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	
Ultragelid...[M' <=0] (Pf)												
Hypergelid...[M <=0] (Pf)												
Gelid.....[T <=0] (Pf)												
Subgelid.....[m <=0] (Pf)	o	o										
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): 0.35  
 Mediterranean index of July.[PE/P].....(Im1): 1.03  
 Mediterranean index of July & August.....(Im2): 1.03  
 Mediterranean index of June, July & August....(Im3): 0.85

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp(x10)	1490	1650	930	1020	1330	1440	1310	930	880	1240	2280	1760
Tp	30	16	15	40	54	92	114	138	140	129	89	48
Io (Iom)	49.7	103	62.0	25.5	24.6	15.7	11.5	6.74	6.29	9.61	25.6	36.7
Seasons	Winter			Spring			Summer			Autumn		
Pp(x10)/Tp	4070 / 61			3790 / 186			3120 / 392			5280 / 266		
Io (Iot)	66.72			20.38			7.959			19.85		
Semesters	December-May						June-November					
Pp(x10)/Tp	7860 / 247						8400 / 658					
Io (Iosm)	31.82						12.77					

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 16260/905=17.97 **There is No Yearly Aridity**

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	1490	1650	930	1020	1330	1440	1310	930	880	1240	2280	1760
Tp [T*10]	30	16	15	40	54	92	114	138	140	129	89	48
Iom [Pp/Tp]	\$\$	\$\$	\$\$	\$\$	\$\$	\$\$	\$\$	674	629	961	\$\$	\$\$
Avm [200-Iom]	***	***	***	***	***	***	***	***	***	***	***	***
Seasons	Winter			Spring			Summer			Autumn		
Pp / Tp	4070 / 61			3790 / 186			3120 / 392			5280 / 266		
Iot [Pp/Tp]	\$\$			2038			796			1985		
Avs E[Avm<200]	***			***			***			***		

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin] .....(Sp): 12.50  
 CI of Gorezinski (1920) [1.7\*Sp/sin(Lat)-20.4] .....: 10.73  
 CI of Conrad (1946) [1.7\*Sp/sin(Lat+10)-14] .....: 12.59  
 + Hyperoceanic (-20<CI<20)  
 CI of Currey (1974) [CI=Sp/(1+Lat/3)] .....: 0.81  
 + Oceanic (0.6<CI<1.1)  
 Rainfall Index of Lang (1925) [R=P/T] .....: 215.60  
 + Humid (R>160)  
 Aridity Index of Martonne (1926) [Ia=P/(T+10)] .....: 92.69  
 + Perhumid (Ia>60)  
 I of Emberger (1930) [Q=100\*P/(Tmax<sup>2</sup>-Tmin<sup>2</sup>)] .....: 444.17  
 + Humid (Q>90)  
 I of Dantin & Revenga (1940) [DR=100\*T/P] .....: 0.46  
 + Humid (2>DR>0)  
 Aridity Index of UNEP [I=P/PE] .....: 2.88  
 + Humid (I>0.65)  
 Potential Erosion I of Fournier (1960) [K=Pi<sup>2</sup>/P].....: 31.97  
 + Very low (K<60)

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BIOCLIMATIC INDICES II

Bioclimatic classification of Gaussen & Bagnouls (1957)  
 + Climate .....: A. Warm and temperate warm  
 + Region .....: 7. Mesoaxeric (Axeric temperate)  
 + Thermic type: 5. Meso-microthermic

Thornthwaite (1948)												
	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
P-E ratio	1.34	0.71	0.71	0.90	0.86	0.72	0.46	0.43	0.65	1.45	1.26	1.13
T-E ratio	0.72	0.68	1.80	2.43	4.14	5.13	6.21	6.30	5.80	4.00	2.16	1.35
Precipitation-effectiveness: 106.11						Temperature-efficiency .....: 40.72						
Moisture Index [MI=100*(P-PE)/PE] .....: 187.81 + A.Extremely humid (MI>100)												
Index of dryness [DI=100*d/PE] .....: 0.00 + No deficit (0<DI<16.7)												
Index of humidity [HI=100*s/PE] .....: 187.80 + Strong surplus (20<HI)												
Potential Evapotranspiration PE .....: 564.95 + Second microthermic (427<PE<570)												

