

# Phytosociological Research Center

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## Worldwide Bioclimatic Classification System

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(Adapted to Synoptical Table 30/08/2017)

LOS CORRALES DE BUELNA (ESP SANTANDER) Altitude: 100 m.

Latitude: 43°16'N Longitude: 4°4'W  
 Temperature observation period.: 1961-1968 (8)  
 Rainfall observation period....: 1961-1968 (8)

(C/mm)	Ti	Mi	mi	M'i	m'i	Pi	EPI
Jan.	9.00	14.00	4.10	19.20	-3.30	129.0	23.55
Feb.	10.00	15.00	5.00	20.60	-1.80	103.0	27.69
Mar.	10.60	16.30	5.00	23.00	0.00	99.0	37.42
Apr.	13.30	19.30	7.30	23.50	3.10	118.0	56.74
May.	14.60	20.50	8.70	28.20	4.60	82.0	72.89
Jun.	17.00	22.80	11.10	29.80	7.40	75.0	91.94
Jul.	18.60	24.80	12.30	30.20	9.10	49.0	105.30
Aug.	19.40	26.40	12.30	34.30	9.80	70.0	104.00
Sep.	19.00	26.10	11.90	33.30	9.00	81.0	87.50
Oct.	15.80	21.00	10.60	28.00	6.20	148.0	61.49
Nov.	12.00	16.60	7.50	21.50	1.70	161.0	35.45
Dec.	9.80	14.80	4.70	18.70	-1.70	168.0	25.27
Year	14.09	19.80	8.38	25.86	3.68	1283	729.22

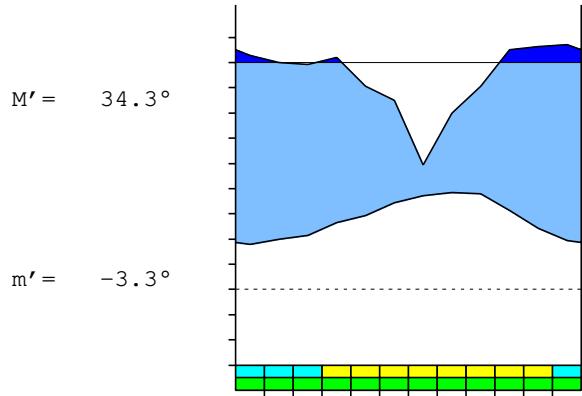
### BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	322
Compensated thermicity index.....(Itc):	322
Simple continentality index.....(Ic):	10.4
Diurnality index.....(Id):	14.2
Annual ombrothermic index.....(Io):	7.59
Monthly estival ombrothermic index.....(Ios1):	2.63
Bimonthly estival ombrothermic index.....(Ios2):	3.13
Threemonthly estival ombrothermic index.....(Ios3):	3.53
Fourmonthly estival ombrothermic index.....(Ios4):	3.97
Annual ombro-evaporation index.....(Ioe):	0.65
Annual positive temperature.....(Tp):	1691
Annual negative temperature.....(Tn):	0
Estival temperature.....(Ts):	550
Positive precipitation.....(Pp):	1283

N. of	P>4T	P:2T-4T	PT-2T	P<T	T<0
Months	10	2	0	0	0

Latitudinal Belt...: High eutemperate  
 Continentality.....: Hyperoceanic - Low Subhyperoceanic  
 Bioclimate(Variant): TEMPERATE HYPEROCEANIC (SUBMEDITERRANEAN)  
 Bioclimatic Belt...: UPPER THERMOTEMPERATE LOW HUMID

LOS CORRALES DE BUELNA (ESP SANTANDER) 100 m  
 P= 1283 43° 16'N 4° 4'W 8/8 y.  
 T= 14.1° Ic= 10.4 Tp= 1691 Tn= 0  
 m= 4.1° M= 14.0° Itc= 322 Io= 7.6



TEMPERATE HYPEROCEANIC (SUBMEDITERRANEAN)  
 UPPER THERMOTEMPERATE LOW HUMID

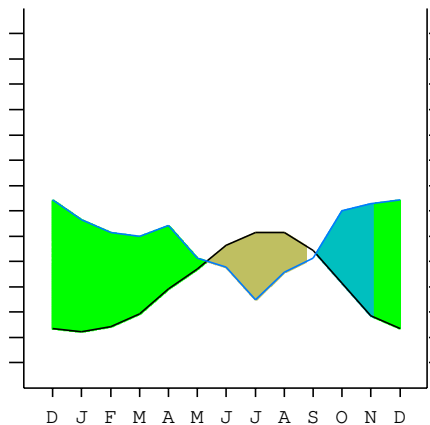
WATER INDEX CARD LOS CORRALES DE BUELNA (ESP SANTANDER)  
 Altitude: 100 m. Latitude: 43° 16'N

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jan.	9.0	24	129	0	100	24	0	105	103	4.4
Feb.	10.0	28	103	0	100	28	0	75	89	2.7
Mar.	10.6	37	99	0	100	37	0	62	75	1.6
Apr.	13.3	57	118	0	100	57	0	61	68	1.0
May.	14.6	73	82	0	100	73	0	9	39	0.1
Jun.	17.0	92	75	-17	83	92	0	0	19	-0.1
Jul.	18.6	105	49	-56	27	105	0	0	10	-0.5
Aug.	19.4	104	70	-27	0	97	7	0	5	-0.3
Sep.	19.0	87	81	0	0	81	6	0	2	0.0
Oct.	15.8	61	148	87	87	61	0	0	1	1.4
Nov.	12.0	35	161	13	100	35	0	112	57	3.5
Dec.	9.8	25	168	0	100	25	0	143	100	5.6
Year	14.1	729	1283	*	*	715	14	568	568	*

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

LOS CORRALES DE BUELNA (ESP SANTANDER)  
 43°16'N 4°4'W 100 m 8/8 y.  
 T= 14.1 Ic= 10.4 TEMPERATE HYPEROCEANIC (SUBMEDITERRANEAN)  
 m= 4.1 Tp= 1691 UPPER THERMOTEMPERATE  
 M= 14.0 Tn= 0 LOW HUMID  
 M' = 34.3 Itc= 322  
 m' = -3.3 Io= 7.6  
 P= 1283 mm ———  
 PE= 729 mm ———

Imbibing	3 Sep.
Saturation	4 Nov.
Reserve Use	11 May.
Deficit	24 Aug.



LOS CORRALES DE BUELNA (ESP SANTANDER)

Latitude: 43°16'N Longitude: 4°4'W Altitude: 100 m

SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continentality Index [A3b]  
 + Type .....: A. Hyperoceanic  
 + Subtype .....: 3. Subhyperoceanic  
 + Variant .....: b. Low

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

Bioclimatic types [C4b.2a.7b]  
 + Macrobioclimate .....: C. TEMPERATE  
 + Bioclimate .....: 4. HYPEROCEANIC  
 + Bioclimatic variant .: b. SUBMEDITERRANEAN  
 + Thermic type.....: 2. THERMOTEMPERATE  
 + Thermic subtype.....: a. UPPER  
 + Ombrothermic type ...: 7. HUMID  
 + Ombrothermic subtype : b. LOW

Bioclimatic Classification .....: Texe (Sbm) .Tte.Hum

LOS CORRALES DE BUELNA (ESP SANTANDER)

Latitude: 43°16'N Longitude: 4°4'W Altitude: 100 m

PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 505  
 Coldest semester of the year.....(Psw): 778  
 Warmest four months period of the year.....(Pcm1): 275  
 Following warmest four months period.....(Pcm2): 606  
 Positive precipitation dryest 3 months.....(Ppd): 194  
 Positive precipitation dryest 2 months.....(Ppd2): 119  
 Positive precipitation dryest 1 month.....(Ppd1): 49  
 Positive precipitation warmest 3 months.....(Pps): 200  
 Positive precipitation warmest 2 months.....(Pps2): 151  
 Positive precipitation warmest 1 month.....(Pps1): 70  
 Positive precipitation coldest 3 months.....(Ppw): 400  
 Positive precipitation coldest 2 months.....(Ppw2): 297  
 Positive precipitation coldest 1 month.....(Ppw1): 129

Seasons	Winter Tr1-W	Spring Tr2-P	Summer Tr3-S	Automn Tr4-F
Rainfall	400	299	194	390

Seasonal rainfall rhythms: W > F > P > S

LOS CORRALES DE BUELNA (ESP SANTANDER)

Latitude: 43°16'N Longitude: 4°4'W Altitude: 100 m

TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 19.4  
 Average coldest month [T].....(Tmin): 9.0  
 Maximum temp. warmest month [M].....(Tmmax): 26.4  
 Minimum temp. coldest month [m].....(Tmmin): 4.1  
 Absolute Max.temp. warmest month [M'].....(Tamax): 34.3  
 Absolute Min.temp. coldest month [m'].....(Tamin): -3.3  
 First warmest contrasted month [M].....(Tcmax): 26.1 (9)  
 First coldest contrasted month [m].....(Tcmin): 11.9 (9)  
 Estival temperature.....(Ts): 550  
 Positive temperature dryest 3 months.....(Tpd): 550  
 Positive temperature dryest 2 months.....(Tpd2): 380  
 Positive temperature dryest 1 month.....(Tpd1): 186  
 Positive temperature warmest 3 months.....(Tps): 570  
 Positive temperature warmest 2 months.....(Tps2): 384  
 Positive temperature warmest 1 month.....(Tps1): 194  
 Positive temperature coldest 3 months.....(Tpw): 288  
 Positive temperature coldest 2 months.....(Tpw2): 188  
 Positive temperature coldest 1 month.....(Tpw1): 90

LOS CORRALES DE BUELNA (ESP SANTANDER)

Latitude: 43°16'N Longitude: 4°4'W Altitude: 100 m

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

LOS CORRALES DE BUELNA (ESP SANTANDER)

Latitude: 43°16'N Longitude: 4°4'W Altitude: 100 m

OMBROTHERMIC PARAMETERS

Annual aridity index.[PE/P].....(Iar): 0.57  
 Mediterranean index of July.[PE/P].....(Im1): 2.15  
 Mediterranean index of July & August.....(Im2): 1.76  
 Mediterranean index of June, July & August....(Im3): 1.55

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp(x10)	1680	1290	1030	990	1180	820	750	490	700	810	1480	1610
Tp	98	90	100	106	133	146	170	186	194	190	158	120
Io (Iom)	17.1	14.3	10.3	9.34	8.87	5.62	4.41	2.63	3.61	4.26	9.37	13.4
Seasons	Winter			Spring			Summer			Autumn		
Pp(x10)/Tp	4000 / 288			2990 / 385			1940 / 550			3900 / 468		
Io (Iot)	13.89			7.766			3.527			8.333		
Semesters	December-May						June-November					
Pp(x10)/Tp	6990 / 673						5840 / 1018					
Io (Iosm)	10.39						5.737					

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 12830/1691=7.59 **There is No Yearly Aridity**

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	1680	1290	1030	990	1180	820	750	490	700	810	1480	1610
Tp [T*10]	98	90	100	106	133	146	170	186	194	190	158	120
Iom [Pp/Tp]	\$\$	\$\$	\$\$	934	887	562	441	263	361	426	937	\$\$
Avm [200-Iom]	***	***	***	***	***	***	***	***	***	***	***	***
Seasons	Winter			Spring			Summer			Autumn		
Pp / Tp	4000 / 288			2990 / 385			1940 / 550			3900 / 468		
Iot [Pp/Tp]	1389			777			353			833		
Avs E[Avm<200]	***			***			***			***		

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin] .....	(Sp):	10.40
CI of Gorezinski (1920) [1.7*Sp/sin(Lat)-20.4] .....		5.40
CI of Conrad (1946) [1.7*Sp/sin(Lat+10)-14] .....		8.06
+ Hyperoceanic (-20<CI<20)		
CI of Currey (1974) [CI=Sp/(1+Lat/3)] .....		0.67
+ Oceanic (0.6<CI<1.1)		
Rainfall Index of Lang (1925) [R=P/T] .....		91.05
+ Temperate warm (100>R>60)		
Aridity Index of Martonne (1926) [Ia=P/(T+10)] .....		53.25
+ Humid (60>Ia>30)		
I of Emberger (1930) [Q=100*P/(Tmax <sup>2</sup> -Tmin <sup>2</sup> )] .....		188.63
+ Humid (Q>90)		
I of Dantin & Revenga (1940) [DR=100*T/P] .....		1.10
+ Humid (2>DR>0)		
Aridity Index of UNEP [I=P/PE] .....		1.76
+ Humid (I>0.65)		
Potential Erosion I of Fournier (1960) [K=Pi <sup>2</sup> /P] .....		22.00
+ 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	0.77	0.58	0.54	0.60	0.39	0.33	0.20	0.28	0.34	0.72	0.89	1.00
T-E ratio	4.05	4.50	4.77	5.99	6.57	7.65	8.37	8.73	8.55	7.11	5.40	4.41
Precipitation-effectiveness: 66.26						Temperature-efficiency .....						76.10
Moisture Index [MI=100*(P-PE)/PE] .....												75.94
+ B3.Humid high-humid (60<MI<80)												
Index of dryness [DI=100*d/PE] .....												1.88
+ No deficit (0<DI<16.7)												
Index of humidity [HI=100*s/PE] .....												77.82
+ Strong surplus (20<HI)												
Potential Evapotranspiration PE .....												729.22
+ Second mesothermic (712<PE<855)												

