

Phytosociological Research Center

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Worldwide Bioclimatic Classification System

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(Adapted to Synoptical Table 30/08/2017)

ESQUEL (ARGENTINA)

Altitude: 815 m.

Latitude: 42°56'S Longitude: 71°9'W

Temperature observation period.: 1944-1994 (51)

Rainfall observation period....: 1944-1994 (51)

(C/mm)	Ti	Mi	mi	M'i	m'i	Pi	Epi
Jan.	15.00	22.78	7.22	38.89	-3.89	14.2	98.59
Feb.	14.45	22.78	6.11	35.00	-5.00	20.8	79.52
Mar.	12.50	20.00	5.00	32.22	-7.22	34.3	68.15
Apr.	8.61	15.00	2.22	27.22	-10.00	48.8	40.36
May.	6.11	11.11	1.11	22.22	-12.22	69.1	26.15
Jun.	3.34	7.78	-1.11	18.89	-20.00	98.3	12.76
Jul.	2.50	7.22	-2.22	21.11	-17.78	64.3	10.32
Aug.	3.89	8.89	-1.11	18.89	-17.78	63.0	18.04
Sep.	6.94	12.78	1.11	23.89	-12.78	32.5	35.01
Oct.	9.16	16.11	2.22	30.00	-7.22	18.5	54.14
Nov.	10.84	17.78	3.89	32.78	-7.22	21.6	67.38
Dec.	13.61	21.11	6.11	35.00	-3.89	18.8	91.54
Year	8.91	15.28	2.55	28.01	-10.42	504	601.96

BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	139
Compensated thermicity index.....(Itc):	139
Simple continentality index.....(Ic):	12.5
Diurnality index.....(Id):	16.7
Annual ombrothermic index.....(Io):	4.71
Monthly estival ombrothermic index.....(Ios1):	0.95
Bimonthly estival ombrothermic index.....(Ios2):	1.19
Threemonthly estival ombrothermic index.....(Ios3):	1.25
Fourmonthly estival ombrothermic index.....(Ios4):	1.40
Annual ombro-evaporation index.....(Ioe):	0.34
Annual positive temperature.....(Tp):	1070
Annual negative temperature.....(Tn):	0
Estival temperature.....(Ts):	431
Positive precipitation.....(Pp):	504

N. of	P>4T	P:2T-4T	PT-2T	P<T	T<0
Months	6	2	3	1	0

Latitudinal Belt...: Low eutemperate

Continentality.....: Oceanic - Low Semihyperoceanic

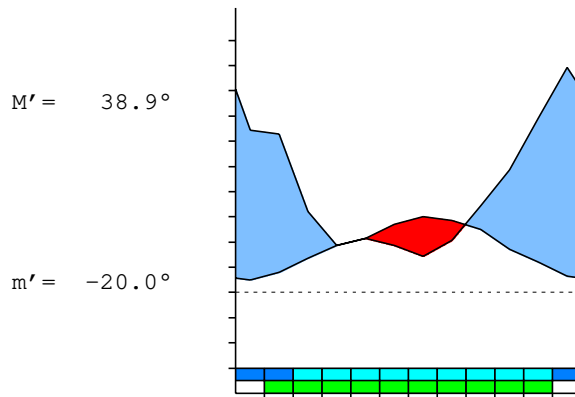
Bioclimate.....: MEDITERRANEAN PLUVISEASONAL-OCEANIC

Bioclimatic Belt...: UPPER SUPRAMEDITERRANEAN LOW SUBHUMID

ESQUEL (ARGENTINA)

815 m

P= 504 42° 56' S 71° 9' W 51/51 y.
 T= 8.9° Ic= 12.5 Tp= 1070 Tn= 0
 m= -2.2° M= 7.2° Itc= 139 Io= 4.7



MEDITERRANEAN PLUVISEASONAL-OCEANIC
 UPPER SUPRAMEDITERRANEAN LOW SUBHUMID

WATER INDEX CARD

ESQUEL (ARGENTINA)

Altitude: 815 m.

Latitude: 42° 56' S

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jul.	2.5	10	64	0	100	10	0	54	36	5.2
Aug.	3.9	18	63	0	100	18	0	45	41	2.4
Sep.	6.9	35	33	-3	97	35	0	0	20	0.0
Oct.	9.2	54	19	-36	62	54	0	0	10	-0.6
Nov.	10.8	67	22	-46	16	67	0	0	5	-0.6
Dec.	13.6	92	19	-16	0	35	57	0	3	-0.7
Jan.	15.0	99	14	0	0	14	84	0	1	-0.8
Feb.	14.4	80	21	0	0	21	59	0	1	-0.7
Mar.	12.5	68	34	0	0	34	34	0	0	-0.4
Apr.	8.6	40	49	8	8	40	0	0	0	0.2
May.	6.1	26	69	43	51	26	0	0	0	1.6
Jun.	3.3	13	98	49	100	13	0	37	19	6.7
Year	8.9	602	504	*	*	368	234	136	136	*

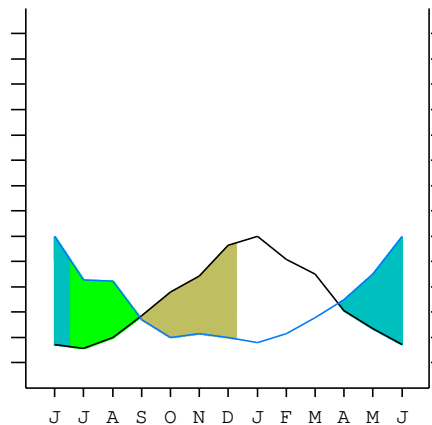
R = Reserve VR = Variation of the reserve RE = Real evapotranspiration
 DR = Drainage HC = Humidity coefficient DF = Deficit SP = Superavit

ESQUEL (ARGENTINA)

42°56' S 71°9' W 815 m 51/51 y.

T= 8.9 Ic= 12.5 MEDITERRANEAN PLUVISEASONAL-OCEANIC
 m= -2.2 Tp= 1070 UPPER SUPRAMEDITERRANEAN
 M= 7.2 Tn= 0 LOW SUBHUMID
 M' = 38.9 Itc= 139
 m' = -20.0 Io= 4.7
 P= 504 mm ———
 PE= 602 mm ———

Imbibing	25 Mar.
Saturation	18 Jun.
Reserve Use	29 Aug.
Deficit	7 Dec.



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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. Low eumperate
 + Thermic type: B. Temperate
 + Thermic subtype: 5. Subtemperate
 Bioclimatic types [B8.4a.6b]
 + Macrobioclimate: B. MEDITERRANEAN
 + Bioclimate: 8. PLUVISEASONAL-OCEANIC
 + Bioclimatic variant ..:
 + Thermic type.....: 4. SUPRAMEDITERRANEAN
 + Thermic subtype.....: a. UPPER
 + Ombrothermic type ...: 6. SUBHUMID
 + Ombrothermic subtype : b. LOW
 Bioclimatic Classification: Mehc.Sme.Shu

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 128
 Coldest semester of the year.....(Psw): 376
 Warmest four months period of the year.....(Pcm1): 88
 Following warmest four months period.....(Pcm2): 281
 Positive precipitation dryest 3 months.....(Ppd): 54
 Positive precipitation dryest 2 months.....(Ppd2): 33
 Positive precipitation dryest 1 month.....(Ppd1): 14
 Positive precipitation warmest 3 months.....(Pps): 54
 Positive precipitation warmest 2 months.....(Pps2): 35
 Positive precipitation warmest 1 month.....(Pps1): 14
 Positive precipitation coldest 3 months.....(Ppw): 226
 Positive precipitation coldest 2 months.....(Ppw2): 163
 Positive precipitation coldest 1 month.....(Ppw1): 64

Seasons	Winter Tr1-W	Spring Tr2-P	Summer Tr3-S	Automn Tr4-F
Rainfall	225	72	53	152

Seasonal rainfall rhythms: W > F > P > S

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 15.0
 Average coldest month [T].....(Tmin): 2.5
 Maximum temp. warmest month [M].....(Tmmax): 22.8
 Minimum temp. coldest month [m].....(Tmmin): -2.2
 Absolute Max.temp. warmest month [M'].....(Tamax): 38.9
 Absolute Min.temp. coldest month [m'].....(Tamin): -20.0
 First warmest contrasted month [M].....(Tcmax): 22.8 (2)
 First coldest contrasted month [m].....(Tcmin): 6.1 (2)
 Estival temperature.....(Ts): 431
 Positive temperature dryest 3 months.....(Tpd): 431
 Positive temperature dryest 2 months.....(Tpd2): 286
 Positive temperature dryest 1 month.....(Tpd1): 150
 Positive temperature warmest 3 months.....(Tps): 431
 Positive temperature warmest 2 months.....(Tps2): 295
 Positive temperature warmest 1 month.....(Tps1): 150
 Positive temperature coldest 3 months.....(Tpw): 97
 Positive temperature coldest 2 months.....(Tpw2): 58
 Positive temperature coldest 1 month.....(Tpw1): 25

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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
Ultragelid...[M' <=0] (Pf)												
Hypergelid...[M <=0] (Pf)												
Gelid.....[T <=0] (Pf)												
Subgelid.....[m <=0] (Pf)						o	o	o				
Pregelid.....[m' <=0] (Pf)	o	o	o	o	o	o	o	o	o	o	o	o
Agelid.....[m' > 0] (Pf)												
HiperAgelid..[all>0] (Pf)												

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OMBROTHERMIC PARAMETERS

Annual aridity index.[PE/P].....(Iar): 1.19
 Mediterranean index of January.....(Im1): 6.94
 Mediterranean index of January & February.....(Im2): 5.09
 Mediterranean index of December to February...(Im3): 5.01

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp(x10)	188	142	208	343	488	691	983	643	630	325	185	216
Tp	136	150	145	125	86	61	33	25	39	69	92	108
Io (Iom)	1.38	0.95	1.44	2.74	5.67	11.3	29.4	25.7	16.2	4.68	2.02	1.99
Seasons	Summer			Autumn			Winter			Spring		
Pp(x10)/Tp	538 / 431			1522 / 272			2256 / 97			726 / 269		
Io (Iot)	1.249			5.591			23.19			2.695		
Semesters	December-May						June-November					
Pp(x10)/Tp	2060 / 703						2982 / 367					
Io (Iosm)	2.931						8.132					

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 5042/1070=4.71 **There is No Yearly Aridity**

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	188	142	208	343	488	691	983	643	630	325	185	216
Tp [T*10]	136	150	145	125	86	61	33	25	39	69	92	108
Iom [Pp/Tp]	138	95	144	274	567	\$\$	\$\$	\$\$	\$\$	468	202	199
Avm [200-Iom]	62	105	56	***	***	***	***	***	***	***	***	1
Seasons	Summer			Autumn			Winter			Spring		
Pp / Tp	538 / 431			1522 / 272			2256 / 97			726 / 269		
Iot [Pp/Tp]	125			559			2319			269		
Avs E[Avm<200]	223			***			***			***		
Weak upper arid [1]							Weak lower semiarid [3]					

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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]	10.80
CI of Conrad (1946) [1.7*Sp/sin(Lat+10)-14]	12.63
+ Hyperoceanic (-20<CI<20)	
CI of Currey (1974) [CI=Sp/(1+Lat/3)]	0.82
+ Oceanic (0.6<CI<1.1)	
Rainfall Index of Lang (1925) [R=P/T]	56.57
+ Semiarid (60>R>40)	
Aridity Index of Martonne (1926) [Ia=P/(T+10)]	26.66
+ Subhumid (30>Ia>20)	
I of Emberger (1930) [Q=100*P/(Tmax ² -Tmin ²)]	98.09
+ Humid (Q>90)	
I of Dantin & Revenga (1940) [DR=100*T/P]	1.77
+ Humid (2>DR>0)	
Aridity Index of UNEP [I=P/PE]	0.84
+ Humid (I>0.65)	
Potential Erosion I of Fournier (1960) [K=Pi ² /P]	19.16
+ Very low (K<60)	

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BIOCLIMATIC INDICES II

Bioclimatic classification of Gaussen & Bagnouls (1957)
 + Climate

- + Climate
- + Region
- + Thermic type: 5. Meso-microthermic

Thornthwaite (1948)												
	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
P-E ratio	0.05	0.08	0.16	0.26	0.42	0.70	0.45	0.42	0.18	0.09	0.10	0.08
T-E ratio	6.75	6.50	5.63	3.87	2.75	1.50	1.13	1.75	3.12	4.12	4.88	6.12
Precipitation-effectiveness: 29.98						Temperature-efficiency						48.13
Moisture Index [MI=100*(P-PE)/PE]												-16.24
+ C1.Subhumid dry (-33.3<MI<0)												
Index of dryness [DI=100*d/PE]												38.81
+ Strong deficit (33.3<DI)												
Index of humidity [HI=100*s/PE]												22.56
+ Strong surplus (20<HI)												
Potential Evapotranspiration PE												601.96
+ First mesothermic (570<PE<712)												

