

Phytosociological Research Center

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Worldwide Bioclimatic Classification System

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(Adapted to Synoptical Table 30/08/2017)

MINAS DE RIOTINTO (ESP HUELVA)

Altitude: 421 m.

Latitude: 37°42'N Longitude: 6°36'W

Temperature observation period.: 1968-1977 (10)

Rainfall observation period....: 1961-1990 (30)

(C/mm)	Ti	Mi	mi	M'i	m'i	Pi	Epi
Jan.	9.60	13.10	6.00	17.60	1.30	108.0	20.22
Feb.	10.10	13.70	6.50	19.00	2.30	92.7	21.79
Mar.	11.20	15.20	7.30	22.00	2.50	88.3	31.87
Apr.	14.00	18.50	9.40	25.30	4.20	75.4	49.82
May.	17.10	22.20	12.10	30.50	6.60	45.0	78.39
Jun.	21.30	26.90	15.80	35.10	11.20	24.7	114.97
Jul.	25.80	32.20	19.40	37.70	14.70	3.0	160.76
Aug.	25.30	31.80	18.90	37.30	13.30	5.9	145.53
Sep.	21.90	27.30	16.40	32.90	11.50	22.3	101.11
Oct.	17.90	22.30	13.40	29.00	8.00	64.5	66.15
Nov.	13.20	16.90	9.40	22.50	4.90	79.9	34.41
Dec.	9.70	13.40	6.00	19.20	1.40	102.9	20.09
Year	16.42	21.13	11.72	27.34	6.83	713	845.12

BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	355
Compensated thermicity index.....(Itc):	355
Simple continentality index.....(Ic):	16.2
Diurnality index.....(Id):	12.9
Annual ombrothermic index.....(Io):	3.62
Monthly estival ombrothermic index.....(Ios1):	0.12
Bimonthly estival ombrothermic index.....(Ios2):	0.17
Threemonthly estival ombrothermic index.....(Ios3):	0.46
Fourmonthly estival ombrothermic index.....(Ios4):	0.88
Annual ombro-evaporation index.....(Ioe):	0.30
Annual positive temperature.....(Tp):	1971
Annual negative temperature.....(Tn):	0
Estival temperature.....(Ts):	724
Positive precipitation.....(Pp):	713

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

Latitudinal Belt...: Low eutemperate

Continentalty.....: Oceanic - Low Euoceanic

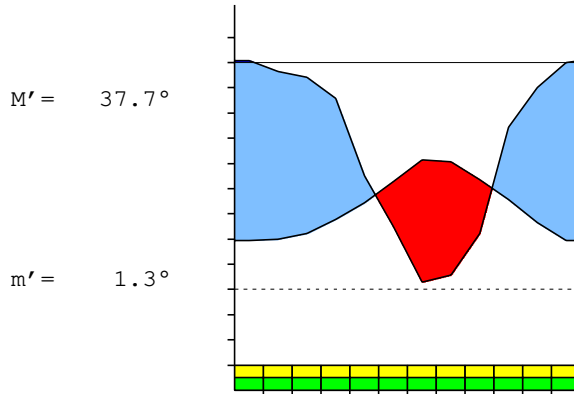
Bioclimate.....: MEDITERRANEAN PLUVISEASONAL-OCEANIC

Bioclimatic Belt...: UPPER THERMOMEDITERRANEAN LOW SUBHUMID

MINAS DE RIOTINTO (ESP HUELVA)

421 m

P= 713 37° 42'N 6° 36'W 10/30 y.
 T= 16.4° Ic= 16.2 Tp= 1971 Tn= 0
 m= 6.0° M= 13.1° Itc= 355 Io= 3.6



MEDITERRANEAN PLUVISEASONAL-OCEANIC
 UPPER THERMOMEDITERRANEAN LOW SUBHUMID

WATER INDEX CARD MINAS DE RIOTINTO (ESP HUELVA)
 Altitude: 421 m. Latitude: 37° 42'N

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jan.	9.6	20	108	0	100	20	0	88	51	4.3
Feb.	10.1	22	93	0	100	22	0	71	61	3.2
Mar.	11.2	32	88	0	100	32	0	56	59	1.7
Apr.	14.0	50	75	0	100	50	0	26	42	0.5
May.	17.1	78	45	-33	67	78	0	0	21	-0.4
Jun.	21.3	115	25	-67	0	91	24	0	11	-0.7
Jul.	25.8	161	3	0	0	3	158	0	5	-0.9
Aug.	25.3	146	6	0	0	6	140	0	3	-0.9
Sep.	21.9	101	22	0	0	22	79	0	1	-0.7
Oct.	17.9	66	65	0	0	65	2	0	1	0.0
Nov.	13.2	34	80	45	45	34	0	0	0	1.3
Dec.	9.7	20	103	55	100	20	0	28	14	4.1
Year	16.4	845	713	*	*	444	402	269	269	*

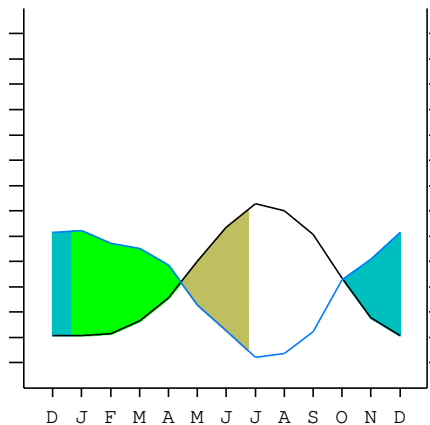
R = Reserve VR = Variation of the reserve RE = Real evapotranspiration
 DR = Drainage HC = Humidity coefficient DF = Deficit SP = Superavit

MINAS DE RIOTINTO (ESP HUELVA)

37°42'N 6°36'W 421 m 10/30 y.

T= 16.4 Ic= 16.2 MEDITERRANEAN PLUVISEASONAL-OCEANIC
 m= 6.0 Tp= 1971 UPPER THERMOMEDITERRANEAN
 M= 13.1 Tn= 0 LOW SUBHUMID
 M' = 37.7 Itc= 355
 m' = 1.3 Io= 3.6
 P= 713 mm ———
 PE= 845 mm ———

Imbibing	2 Oct.
Saturation	20 Dec.
Reserve Use	14 Apr.
Deficit	23 Jun.



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SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continental Index [B2b]
 + Type: B. Oceanic
 + Subtype: 2. Euoceanic
 + Variant: b. Low
 Thermic types [B1.A3]
 + Latitudinal zone: B. Temperate
 + Latitudinal belt: 1. Low eutemperate
 + Thermic type: A. Warm
 + Thermic subtype: 3. Subwarm
 Bioclimatic types [B8.2a.6b]
 + Macrobioclimate: B. MEDITERRANEAN
 + Bioclimate: 8. PLUVISEASONAL-OCEANIC
 + Bioclimatic variant ..:
 + Thermic type.....: 2. THERMOMEDITERRANEAN
 + Thermic subtype.....: a. UPPER
 + Ombrothermic type ...: 6. SUBHUMID
 + Ombrothermic subtype : b. LOW
 Bioclimatic Classification: Mehc.Tme.Shu

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 165
 Coldest semester of the year.....(Psw): 547
 Warmest four months period of the year.....(Pcm1): 56
 Following warmest four months period.....(Pcm2): 355
 Positive precipitation dryest 3 months.....(Ppd): 31
 Positive precipitation dryest 2 months.....(Ppd2): 9
 Positive precipitation dryest 1 month.....(Ppd1): 3
 Positive precipitation warmest 3 months.....(Pps): 31
 Positive precipitation warmest 2 months.....(Pps2): 9
 Positive precipitation warmest 1 month.....(Pps1): 3
 Positive precipitation coldest 3 months.....(Ppw): 304
 Positive precipitation coldest 2 months.....(Ppw2): 211
 Positive precipitation coldest 1 month.....(Ppw1): 108

Seasons	Winter Tr1-W	Spring Tr2-P	Summer Tr3-S	Automn Tr4-F
Rainfall	303	208	33	166

Seasonal rainfall rhythms: W > P > F > S

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 25.8
 Average coldest month [T].....(Tmin): 9.6
 Maximum temp. warmest month [M].....(Tmmax): 32.2
 Minimum temp. coldest month [m].....(Tmmin): 6.0
 Absolute Max.temp. warmest month [M'].....(Tamax): 37.7
 Absolute Min.temp. coldest month [m'].....(Tamin): 1.3
 First warmest contrasted month [M].....(Tcmax): 31.8 (8)
 First coldest contrasted month [m].....(Tcmin): 18.9 (8)
 Estival temperature.....(Ts): 724
 Positive temperature dryest 3 months.....(Tpd): 730
 Positive temperature dryest 2 months.....(Tpd2): 511
 Positive temperature dryest 1 month.....(Tpd1): 258
 Positive temperature warmest 3 months.....(Tps): 730
 Positive temperature warmest 2 months.....(Tps2): 511
 Positive temperature warmest 1 month.....(Tps1): 258
 Positive temperature coldest 3 months.....(Tpw): 294
 Positive temperature coldest 2 months.....(Tpw2): 193
 Positive temperature coldest 1 month.....(Tpw1): 96

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

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OMBROTHERMIC PARAMETERS

Annual aridity index.[PE/P].....(Iar): 1.19
 Mediterranean index of July.[PE/P].....(Im1): 53.59
 Mediterranean index of July & August.....(Im2): 34.41
 Mediterranean index of June, July & August....(Im3): 12.54

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp(x10)	1029	1080	927	883	754	450	247	30	59	223	645	799
Tp	97	96	101	112	140	171	213	258	253	219	179	132
Io (Iom)	10.6	11.3	9.18	7.88	5.39	2.63	1.16	0.12	0.23	1.02	3.60	6.05
Seasons	Winter			Spring			Summer			Autumn		
Pp(x10)/Tp	3036 / 294			2087 / 423			336 / 724			1667 / 530		
Io (Iot)	10.33			4.934			0.464			3.145		
Semesters	December-May						June-November					
Pp(x10)/Tp	5123 / 717						2003 / 1254					
Io (Iosm)	7.145						1.597					

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 7126/1971=3.62 **There is No Yearly Aridity**

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	1029	1080	927	883	754	450	247	30	59	223	645	799
Tp [T*10]	97	96	101	112	140	171	213	258	253	219	179	132
Iom [Pp/Tp]	\$\$	\$\$	918	788	539	263	116	12	23	102	360	605
Avm [200-Iom]	***	***	***	***	***	***	84	188	177	98	***	***
Seasons	Winter			Spring			Summer			Autumn		
Pp / Tp	3036 / 294			2087 / 423			336 / 724			1667 / 530		
Iot [Pp/Tp]	1033			493			46			315		
Avs E[Avm<200]	***			***			449			***		
Upper ultrahyperarid [1]							Lower hyperarid [1]					
Weak lower arid [1]							Strong lower semiarid [2]					

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin]	(Sp): 16.20
CI of Gorezinski (1920) [1.7*Sp/sin(Lat)-20.4]	24.63
CI of Conrad (1946) [1.7*Sp/sin(Lat+10)-14]	23.23
+ Oceanic (20<CI<40)	
CI of Currey (1974) [CI=Sp/(1+Lat/3)]	1.19
+ Subcontinental (1.1<CI<1.7)	
Rainfall Index of Lang (1925) [R=P/T]	43.39
+ Semiarid (60>R>40)	
Aridity Index of Martonne (1926) [Ia=P/(T+10)]	26.97
+ Subhumid (30>Ia>20)	
I of Emberger (1930) [Q=100*P/(Tmax ² -Tmin ²)]	71.20
+ Subhumid (90>Q>50)	
I of Dantin & Revenga (1940) [DR=100*T/P]	2.30
+ Semiarid (3>DR>2)	
Aridity Index of UNEP [I=P/PE]	0.84
+ Humid (I>0.65)	
Potential Erosion I of Fournier (1960) [K=Pi ² /P]	16.37
+ Very low (K<60)	

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BIOCLIMATIC INDICES II

Bioclimatic classification of Gaussen & Bagnouls (1957)
 + Climate

- + Climate
- + Region
- + Thermic type: 3. Macro-mesothermic

Thornthwaite (1948)												
	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
P-E ratio	0.62	0.51	0.47	0.36	0.19	0.09	0.01	0.02	0.07	0.27	0.39	0.58
T-E ratio	4.32	4.55	5.04	6.30	7.70	9.58	11.61	11.38	9.85	8.05	5.94	4.36
Precipitation-effectiveness: 35.65						Temperature-efficiency						88.69
Moisture Index [MI=100*(P-PE)/PE]												-15.68
+ C1.Subhumid dry (-33.3<MI<0)												
Index of dryness [DI=100*d/PE]												47.51
+ Strong deficit (33.3<DI)												
Index of humidity [HI=100*s/PE]												31.82
+ Strong surplus (20<HI)												
Potential Evapotranspiration PE												845.12
+ Second mesothermic (712<PE<855)												

