

# Phytosociological Research Center

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## Worldwide Bioclimatic Classification System

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(Adapted to Synoptical Table 30/08/2017)

LOPERA (ESP JAEN)

Altitude: 261 m.

Latitude: 37°56'N Longitude: 4°12'W

Temperature observation period.: 1971-1980 (10)

Rainfall observation period....: 1951-1980 (30)

(C/mm)	Ti	Mi	mi	M'i	m'i	Pi	EPI
Jan.	6.80	10.40	3.20	14.90	-0.90	63.4	10.17
Feb.	8.20	12.30	4.00	16.60	-0.10	72.4	14.02
Mar.	11.10	16.50	5.80	22.10	1.50	64.0	29.46
Apr.	14.80	20.50	9.00	27.70	4.80	49.1	52.50
May.	19.90	26.60	13.10	34.20	8.30	36.4	99.44
Jun.	24.00	30.50	17.50	35.80	13.00	21.0	139.92
Jul.	28.30	34.60	21.90	39.30	17.70	3.8	187.38
Aug.	27.60	33.60	21.60	38.00	18.10	4.9	168.84
Sep.	23.50	29.00	17.90	33.60	13.00	28.7	113.03
Oct.	16.90	21.50	12.20	27.10	7.30	65.4	58.03
Nov.	10.70	14.90	6.60	20.50	1.90	61.8	22.51
Dec.	8.00	11.80	4.10	15.60	0.30	77.9	13.26
Year	16.65	21.85	11.41	27.12	7.08	549	908.56

### BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	303
Compensated thermicity index.....(Itc):	325
Simple continentality index.....(Ic):	21.5
Diurnality index.....(Id):	13.5
Annual ombrothermic index.....(Io):	2.75
Monthly estival ombrothermic index.....(Ios1):	0.13
Bimonthly estival ombrothermic index.....(Ios2):	0.16
Threemonthly estival ombrothermic index.....(Ios3):	0.37
Fourmonthly estival ombrothermic index.....(Ios4):	0.66
Annual ombro-evaporation index.....(Ioe):	0.41
Annual positive temperature.....(Tp):	1998
Annual negative temperature.....(Tn):	0
Estival temperature.....(Ts):	799
Positive precipitation.....(Pp):	549

N. of	P>4T	P:2T-4T	PT-2T	P<T	T<0
Months	5	2	2	3	0

Latitudinal Belt...: Low eutemperate

Continentalty.....: Continental - Low Subcontinental

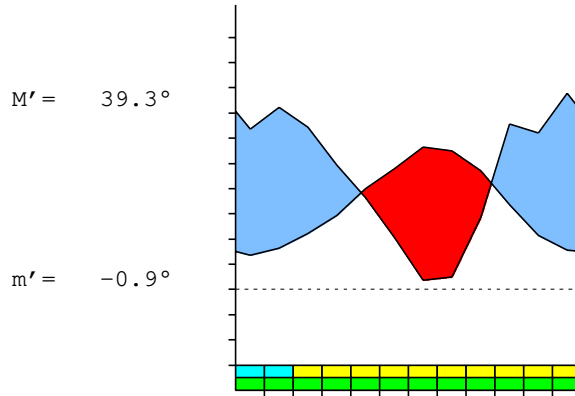
Bioclimate.....: MEDITERRANEAN PLUVISEASONAL-CONTINENTAL

Bioclimatic Belt...: LOW MESOMEDITERRANEAN LOW DRY

LOPERA (ESP JAEN)

261 m

P= 549      37° 56'N      4° 12'W      10/30 y.  
 T= 16.6°    Ic= 21.5      Tp= 1998      Tn= 0  
 m= 3.2°      M= 10.4°      Itc= 325      Io= 2.7



MEDITERRANEAN PLUVISEASONAL-CONTINENTAL  
 LOW MESOMEDITERRANEAN LOW DRY

WATER INDEX CARD

LOPERA (ESP JAEN)

Altitude: 261 m.

Latitude: 37° 56'N

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jan.	6.8	10	63	0	100	10	0	53	29	5.2
Feb.	8.2	14	72	0	100	14	0	58	44	4.1
Mar.	11.1	29	64	0	100	29	0	35	39	1.1
Apr.	14.8	53	49	-3	97	53	0	0	20	0.0
May.	19.9	99	36	-63	34	99	0	0	10	-0.6
Jun.	24.0	140	21	-34	0	55	85	0	5	-0.8
Jul.	28.3	187	4	0	0	4	184	0	2	-0.9
Aug.	27.6	169	5	0	0	5	164	0	1	-0.9
Sep.	23.5	113	29	0	0	29	84	0	1	-0.7
Oct.	16.9	58	65	7	7	58	0	0	0	0.1
Nov.	10.7	23	62	39	47	23	0	0	0	1.7
Dec.	8.0	13	78	53	100	13	0	11	6	4.8
Year	16.6	909	549	*	*	391	517	157	157	*

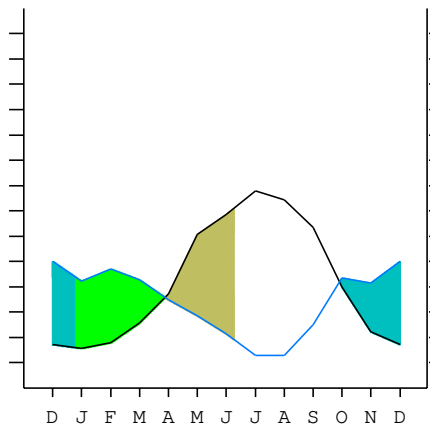
R = Reserve    VR = Variation of the reserve    RE = Real evapotranspiration  
 DR = Drainage    HC = Humidity coefficient    DF = Deficit    SP = Superavit

LOPERA (ESP JAEN)

37°56'N    4°12'W    261 m 10/30 y.

T= 16.6    Ic= 21.5    MEDITERRANEAN PLUVISEASONAL-CONTINENTAL  
 m= 3.2    Tp= 1998    LOW MESOMEDITERRANEAN  
 M= 10.4    Tn= 0    LOW DRY  
 M' = 39.3    Itc= 325  
 m' = -0.9    Io= 2.7  
 P= 549    mm    ———  
 PE= 909    mm    ———

Imbibing	28 Sep.
Saturation	25 Dec.
Reserve Use	28 Mar.
Deficit	9 Jun.



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SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continental Index [C2a]  
 + Type .....: C. Continental  
 + Subtype .....: 2. Subcontinental  
 + Variant .....: a. Low

Thermic types [B1.A3]  
 + Latitudinal zone ....: B. Temperate  
 + Latitudinal belt ....: 1. Low eutemperate  
 + Thermic type .....: A. Warm  
 + Thermic subtype .....: 3. Subwarm

Bioclimatic types [B7.3b.5b]  
 + Macrobioclimate .....: B. MEDITERRANEAN  
 + Bioclimate .....: 7. PLUVISEASONAL-CONTINENTAL  
 + Bioclimatic variant ..:  
 + Thermic type.....: 3. MESOMEDITERRANEAN  
 + Thermic subtype.....: b. LOW  
 + Ombrothermic type ...: 5. DRY  
 + Ombrothermic subtype : b. LOW

Bioclimatic Classification .....: Mehd.Mme.Dry

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 160  
 Coldest semester of the year.....(Psw): 389  
 Warmest four months period of the year.....(Pcm1): 58  
 Following warmest four months period.....(Pcm2): 269  
 Positive precipitation dryest 3 months.....(Ppd): 30  
 Positive precipitation dryest 2 months.....(Ppd2): 9  
 Positive precipitation dryest 1 month.....(Ppd1): 4  
 Positive precipitation warmest 3 months.....(Pps): 30  
 Positive precipitation warmest 2 months.....(Pps2): 9  
 Positive precipitation warmest 1 month.....(Pps1): 4  
 Positive precipitation coldest 3 months.....(Ppw): 214  
 Positive precipitation coldest 2 months.....(Ppw2): 141  
 Positive precipitation coldest 1 month.....(Ppw1): 63

Seasons	Winter Tr1-W	Spring Tr2-P	Summer Tr3-S	Automn Tr4-F
Rainfall	213	149	29	155

Seasonal rainfall rhythms: W > F > P > S

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 28.3  
 Average coldest month [T].....(Tmin): 6.8  
 Maximum temp. warmest month [M].....(Tmmax): 34.6  
 Minimum temp. coldest month [m].....(Tmmin): 3.2  
 Absolute Max.temp. warmest month [M'].....(Tamax): 39.3  
 Absolute Min.temp. coldest month [m'].....(Tamin): -0.9  
 First warmest contrasted month [M].....(Tcmax): 26.6 (5)  
 First coldest contrasted month [m].....(Tcmin): 13.1 (5)  
 Estival temperature.....(Ts): 799  
 Positive temperature dryest 3 months.....(Tpd): 799  
 Positive temperature dryest 2 months.....(Tpd2): 559  
 Positive temperature dryest 1 month.....(Tpd1): 283  
 Positive temperature warmest 3 months.....(Tps): 799  
 Positive temperature warmest 2 months.....(Tps2): 559  
 Positive temperature warmest 1 month.....(Tps1): 283  
 Positive temperature coldest 3 months.....(Tpw): 230  
 Positive temperature coldest 2 months.....(Tpw2): 148  
 Positive temperature coldest 1 month.....(Tpw1): 68

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

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OMBROTHERMIC PARAMETERS

Annual aridity index.[PE/P].....(Iar): 1.66  
 Mediterranean index of July.[PE/P].....(Im1): 49.31  
 Mediterranean index of July & August.....(Im2): 40.95  
 Mediterranean index of June, July & August....(Im3): 16.71

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp(x10)	779	634	724	640	491	364	210	38	49	287	654	618
Tp	80	68	82	111	148	199	240	283	276	235	169	107
Io (Iom)	9.74	9.32	8.83	5.77	3.32	1.83	0.88	0.13	0.18	1.22	3.87	5.78
Seasons	Winter			Spring			Summer			Autumn		
Pp(x10)/Tp	2137 / 230			1495 / 458			297 / 799			1559 / 511		
Io (Iot)	9.291			3.264			0.372			3.051		
Semesters	December-May						June-November					
Pp(x10)/Tp	3632 / 688						1856 / 1310					
Io (Iosm)	5.279						1.417					

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 5488/1998=2.75 **There is No Yearly Aridity**

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	779	634	724	640	491	364	210	38	49	287	654	618
Tp [T*10]	80	68	82	111	148	199	240	283	276	235	169	107
Iom [Pp/Tp]	974	932	883	577	332	183	88	13	18	122	387	578
Avm [200-Iom]	***	***	***	***	***	17	113	187	182	78	***	***
Seasons	Winter			Spring			Summer			Autumn		
Pp / Tp	2137 / 230			1495 / 458			297 / 799			1559 / 511		
Iot [Pp/Tp]	929			326			37			305		
Avs E[Avm<200]	***			***			481			***		
Upper ultrahyperarid [2]						Upper hyperarid [1]						
Weak upper arid [1]						Weak lower semiarid [1]						
Weak upper semiarid [1]												

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin] .....(Sp): 21.50  
 CI of Gorezinski (1920) [1.7\*Sp/sin(Lat)-20.4] .....: 39.06  
 CI of Conrad (1946) [1.7\*Sp/sin(Lat+10)-14] .....: 35.23  
 + Oceanic (20<CI<40)  
 CI of Currey (1974) [CI=Sp/(1+Lat/3)] .....: 1.58  
 + Subcontinental (1.1<CI<1.7)  
 Rainfall Index of Lang (1925) [R=P/T] .....: 32.96  
 + Steppic (40>R>0)  
 Aridity Index of Martonne (1926) [Ia=P/(T+10)] .....: 20.59  
 + Subhumid (30>Ia>20)  
 I of Emberger (1930) [Q=100\*P/(Tmax<sup>2</sup>-Tmin<sup>2</sup>)] .....: 46.24  
 + Semiarid (50>Q>30)  
 I of Dantin & Revenga (1940) [DR=100\*T/P] .....: 3.03  
 + Arid (6>DR>3)  
 Aridity Index of UNEP [I=P/PE] .....: 0.60  
 + Subhumid - dry (0.65>I>0.5)  
 Potential Erosion I of Fournier (1960) [K=Pi<sup>2</sup>/P].....: 11.06  
 + 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: 3. Macro-mesothermic

Thornthwaite (1948)												
	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
P-E ratio	0.38	0.41	0.33	0.22	0.14	0.07	0.01	0.01	0.10	0.28	0.32	0.45
T-E ratio	3.06	3.69	5.00	6.66	8.95	10.80	12.73	12.42	10.57	7.60	4.81	3.60
Precipitation-effectiveness: 27.09						Temperature-efficiency .....: 89.91						
Moisture Index [MI=100*(P-PE)/PE] .....: -39.60 + D.Semiarid (-66.7<MI<-33.3)												
Index of dryness [DI=100*d/PE] .....: 56.93 + Strong deficit (33.3<DI)												
Index of humidity [HI=100*s/PE] .....: 17.32 + Moderate surplus (10<HI<20)												
Potential Evapotranspiration PE .....: 908.56 + Third mesothermic (855<PE<997)												

