

Phytosociological Research Center

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Worldwide Bioclimatic Classification System

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(Adapted to Synoptical Table 14/02/2020)

ECHUCA (AUSTRALIA)

Altitude: 96 m.

Latitude: 36°9'S Longitude: 144°45'E

Temperature observation period.: 1881-1990 (110)

Rainfall observation period....: 1859-1990 (132)

(C/mm)	Ti	Mi	mi	M'i	m'i	Pi	EPI
Jan.	22.89	29.85	15.55	0.00	0.00	27.5	131.77
Feb.	22.81	29.85	15.55	0.00	0.00	26.6	110.95
Mar.	20.06	25.20	14.80	0.00	0.00	32.9	90.97
Apr.	15.82	21.38	10.33	0.00	0.00	33.6	54.92
May.	12.06	17.68	6.63	0.00	0.00	42.3	33.51
Jun.	9.43	13.68	5.23	0.00	0.00	43.4	20.48
Jul.	8.62	11.66	5.49	0.00	0.00	40.9	19.02
Aug.	10.05	13.25	6.75	0.00	0.00	43.2	26.34
Sep.	12.36	16.68	8.23	0.00	0.00	39.3	39.18
Oct.	15.40	20.50	10.10	0.00	0.00	43.3	63.77
Nov.	18.61	23.98	12.93	0.00	0.00	31.3	88.92
Dec.	21.21	27.60	14.60	0.00	0.00	28.8	117.41
Year	15.78	20.94	10.52	0.00	0.00	433	797.23

BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	329
Compensated thermicity index.....(Itc):	329
Simple continentality index.....(Ic):	14.3
Diurnality index.....(Id):	14.3
Annual ombrothermic index.....(Io):	2.29
Monthly estival ombrothermic index.....(Ios1):	1.17
Bimonthly estival ombrothermic index.....(Ios2):	1.19
Threemonthly estival ombrothermic index.....(Ios3):	1.24
Fourmonthly estival ombrothermic index.....(Ios4):	1.34
Annual ombro-evaporation index.....(Ioe):	0.54
Annual positive temperature.....(Tp):	1893
Annual negative temperature.....(Tn):	0
Estival temperature.....(Ts):	669
Positive precipitation.....(Pp):	433

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

Latitudinal Belt....: Low Eutemperate

Continentality.....: Oceanic - High Euoceanic

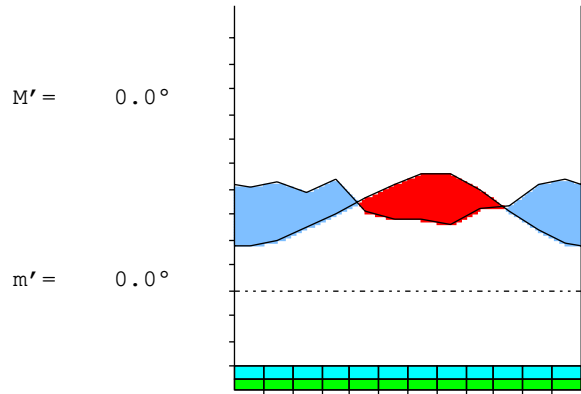
Bioclimate.....: MEDITERRANEAN PLUVISEASONAL-OCEANIC

Bioclimatic Belt....: LOW MESOMEDITERRANEAN LOW DRY

ECHUCA (AUSTRALIA)

96 m

P= 433 36° 9'S 144° 45'E 110/132 y.
 T= 15.8 ° Ic= 14.3 Tp= 1893 Tn= 0
 m= 5.5 ° M= 11.7 ° Itc= 329 Io= 2.3



MEDITERRANEAN PLUVISEASONAL-OCEANIC
 LOW MESOMEDITERRANEAN LOW DRY

WATER INDEX CARD

ECHUCA (AUSTRALIA)

Altitude: 96 m.

Latitude: 36° 9'S

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jul.	8.6	19	41	22	54	19	0	0	0	1.1
Aug.	10.1	26	43	17	70	26	0	0	0	0.6
Sep.	12.4	39	39	0	70	39	0	0	0	0.0
Oct.	15.4	64	43	-21	50	64	0	0	0	-0.3
Nov.	18.6	89	31	-50	0	81	8	0	0	-0.6
Dec.	21.2	117	29	0	0	29	89	0	0	-0.7
Jan.	22.9	132	28	0	0	28	104	0	0	-0.7
Feb.	22.8	111	27	0	0	27	84	0	0	-0.7
Mar.	20.1	91	33	0	0	33	58	0	0	-0.6
Apr.	15.8	55	34	0	0	34	21	0	0	-0.3
May.	12.1	34	42	9	9	34	0	0	0	0.2
Jun.	9.4	20	43	23	32	20	0	0	0	1.1
Year	15.8	797	433	*	*	433	364	0	0	*

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

ECHUCA (AUSTRALIA)

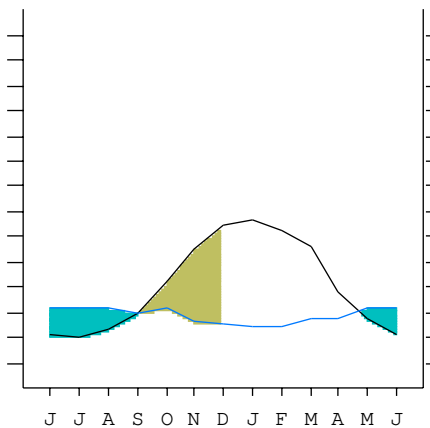
36°9'S 144°45'E

96 m 110/132 y.

T= 15.8 Ic= 14.3
 m= 5.5 Tp= 1893
 M= 11.7 Tn= 0
 M' = 0.0 Itc= 329
 m' = 0.0 Io= 2.3
 P= 433 mm ———
 PE= 797 mm ———

MEDITERRANEAN PLUVISEASONAL-OCEANIC
 LOW MESOMEDITERRANEAN
 LOW DRY

Imbibing	22 Apr.
Saturation	1 Sep.
Reserve Use	26 Nov.
Deficit	



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SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continentality Index [B2a]
 + Type: B. Oceanic
 + Subtype: 2. Euoceanic
 + Variant: a. High

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

Bioclimatic types [B8.3b.5b]
 + Macrobioclimate: B. MEDITERRANEAN
 + Bioclimate: 8. PLUVISEASONAL-OCEANIC
 + Bioclimatic variant .:
 + Thermic type.....: 3. MESOMEDITERRANEAN
 + Thermic subtype.....: b. LOW
 + Ombrothermic type ...: 5. DRY
 + Ombrothermic subtype : b. LOW

Bioclimatic ClassificationMepo.Mme.Dry.Euo

ECHUCA (AUSTRALIA)

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 181
 Coldest semester of the year.....(Psw): 252
 Warmest four months period of the year.....(Pcm1): 116
 Following warmest four months period.....(Pcm2): 160
 Positive precipitation dryest 3 months.....(Ppd): 83
 Positive precipitation dryest 2 months.....(Ppd2): 54
 Positive precipitation dryest 1 month.....(Ppd1): 27
 Positive precipitation warmest 3 months.....(Pps): 83
 Positive precipitation warmest 2 months.....(Pps2): 54
 Positive precipitation warmest 1 month.....(Pps1): 28
 Positive precipitation coldest 3 months.....(Ppw): 127
 Positive precipitation coldest 2 months.....(Ppw2): 84
 Positive precipitation coldest 1 month.....(Ppw1): 41

Seasons	Winter Tr1-W	Spring Tr2-P	Summer Tr3-S	Automn Tr4-F
Rainfall	127	113	82	108

Seasonal rainfall rhythms: W > P > F > S

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 22.9
 Average coldest month [T].....(Tmin): 8.6
 Maximum temp. warmest month [M].....(Tmmax): 29.9
 Minimum temp. coldest month [m].....(Tmmin): 5.2
 Absolute Max.temp. warmest month [M'].....(Tamax): 0.0
 Absolute Min.temp. coldest month [m'].....(Tamin): 0.0
 First warmest contrasted month [M].....(Tcmax): 29.9 (1)
 First coldest contrasted month [m].....(Tcmin): 15.6 (1)
 Estival temperature.....(Ts): 669
 Positive temperature dryest 3 months.....(Tpd): 669
 Positive temperature dryest 2 months.....(Tpd2): 457
 Positive temperature dryest 1 month.....(Tpd1): 228
 Positive temperature warmest 3 months.....(Tps): 669
 Positive temperature warmest 2 months.....(Tps2): 457
 Positive temperature warmest 1 month.....(Tps1): 229
 Positive temperature coldest 3 months.....(Tpw): 281
 Positive temperature coldest 2 months.....(Tpw2): 181
 Positive temperature coldest 1 month.....(Tpw1): 86

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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)												
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): 1.84
 Mediterranean index of January.....(Im1): 4.79
 Mediterranean index of January & February....(Im2): 4.48
 Mediterranean index of December to February...(Im3): 4.34

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp(x10)	288	275	266	329	336	423	434	409	432	393	433	313
Tp	212	229	228	201	158	121	94	86	101	124	154	186
Io (Iom)	1.36	1.20	1.17	1.64	2.12	3.50	4.60	4.75	4.29	3.18	2.81	1.68
Seasons	Summer			Autumn			Winter			Spring		
Pp(x10)/Tp	829 / 669			1088 / 479			1275 / 281			1138 / 464		
Io (Iot)	1.240			2.270			4.536			2.454		
Semesters	December-May						June-November					
Pp(x10)/Tp	1917 / 1148						2412 / 745					
Io (Iosm)	1.669						3.239					

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 4330/1893=2.29 There is No Yearly Aridity

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	288	275	266	329	336	423	434	409	432	393	433	313
Tp [T*10]	212	229	228	201	158	121	94	86	101	124	154	186
Iom [Pp/Tp]	136	120	117	164	212	350	460	475	429	318	281	168
Avm [200-Iom]	64	80	83	36	***	***	***	***	***	***	***	32
Seasons	Summer			Autumn			Winter			Spring		
Pp / Tp	829 / 669			1088 / 479			1275 / 281			1138 / 464		
Iot [Pp/Tp]	124			227			454			245		
Avs E[Avm<200]	227			***			***			***		
Strong lower semiarid [1]							Weak lower semiarid [3]					
Strong upper semiarid [2]												

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin]	(Sp): 14.27
CI of Gorezinski (1920) [1.7*Sp/sin(Lat)-20.4]	20.72
CI of Conrad (1946) [1.7*Sp/sin(Lat+10)-14]	19.64
+ Hyperoceanic (-20<CI<20)	
CI of Currey (1974) [CI=Sp/(1+Lat/3)]	1.09
+ Oceanic (0.6<CI<1.1)	
Rainfall Index of Lang (1925) [R=P/T]	27.44
+ Steppic (40>R>0)	
Aridity Index of Martonne (1926) [Ia=P/(T+10)]	16.80
+ Semiarid -mediterranean- (20>Ia>15)	
I of Emberger (1930) [Q=100*P/(Tmax ² -Tmin ²)]	50.13
+ Subhumid (90>Q>50)	
I of Dantin & Revenga (1940) [DR=100*T/P]	3.64
+ Arid (6>DR>3)	
Aridity Index of UNEP [I=P/PE]	0.54
+ Subhumid - dry (0.65>I>0.5)	
Potential Erosion I of Fournier (1960) [K=Pi ² /P].....	4.35
+ 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	0.09	0.09	0.12	0.14	0.20	0.22	0.22	0.22	0.18	0.19	0.12	0.10
T-E ratio	10.30	10.26	9.03	7.12	5.43	4.24	3.88	4.52	5.56	6.93	8.37	9.54
Precipitation-effectiveness: 18.91						Temperature-efficiency: 85.19						
Moisture Index [MI=100*(P-PE)/PE]												
+ D.Semiarid (-66.7<MI<-33.3)												
Index of dryness [DI=100*d/PE]												
+ Strong deficit (33.3<DI)												
Index of humidity [HI=100*s/PE]												
+ No surplus (0<HI<10)												
Potential Evapotranspiration PE												
+ Second mesothermic (712<PE<855)												

