Phytosociological Research Center

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Worldwide Bioclimatic Classification System

Prof.Dr. Salvador Rivas-Martinez

(Adapted to Synoptical Table 30/08/2017)

TANDIL (ARGENTINA) Altitude: 176 m.

Latitude: 37°14'S Longitude: 59°14'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.	21.39	30.00	12.78	42.22	2.22	67.1	123.74
Feb.	20.84	28.89	12.78	42.22	1.11	80.5	101.04
Mar.	18.61	26.11	11.11	37.78	0.00	96.5	85.77
Apr.	14.45	21.11	7.78	32.22	-3.89	80.0	52.73
May.	11.11	17.22	5.00	30.00	-7.22	63.0	33.74
Jun.	7.78	12.78	2.78	25.00	-10.00	47.5	18.31
Jul.	7.50	12.78	2.22	27.22	-8.89	38.9	18.67
Aug.	8.89	15.00	2.78	22.78	-7.22	38.9	26.10
Sep.	11.11	17.22	5.00	30.00	-6.11	65.8	38.34
Oct.	14.17	21.11	7.22	33.89	-5.00	58.9	62.16
Nov.	16.95	23.89	10.00	37.22	-1.11	81.5	83.40
Dec.	17.50	22.78	12.22	41.11	-1.11	72.4	94.01
Year	14.19	20.74	7.64	33.47	-3.94	791	738.02

BIOCLIMATIC INDICES AND DIAGNOSIS

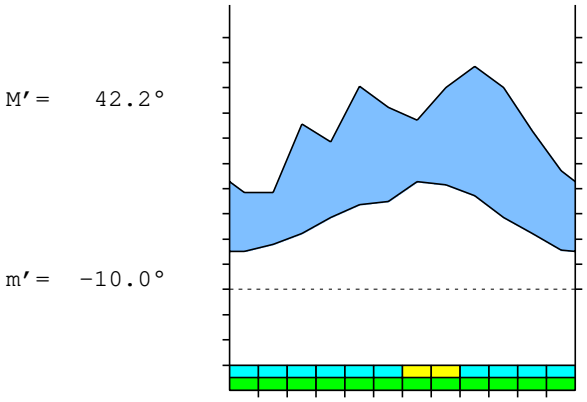
Thermicity index.....(It): 292
Compensated thermicity index.....(Itc): 292
Simple continentality index.....(Ic): 13.9
Diurnality index.....(Id): 17.2
Annual ombrothermic index.....(Io): 4.64
Monthly estival ombrothermic index.....(Ios1): 3.14
Bimonthly estival ombrothermic index.....(Ios2): 3.50
Threemonthly estival ombrothermic index.....(Ios3): 3.68
Fourmonthly estival ombrothermic index.....(Ios4): 3.93
Annual ombro-evaporation index.....(Ioe): 1.53
Annual positive temperature.....(Tp): 1703
Annual negative temperature.....(Tn): 0
Estival temperature.....(Ts): 597
Positive precipitation.....(Pp): 791

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

Latitudinal Belt...: Low eutemperate
Continentality.....: Oceanic - Low Semihyperoceanic
Bioclimate.....: TEMPERATE OCEANIC
Bioclimatic Belt...: UPPER THERMOTEMPERATE LOW SUBHUMID

TANDIL (ARGENTINA) 176 m

P=	791	37° 14'S		59° 14'W		51/51 y.	
T=	14.2°	Ic=	13.9	Tp=	1703	Tn=	0
m=	2.2°	M=	12.8°	Itc=	292	Io=	4.6



TEMPERATE OCEANIC
UPPER THERMOTEMPERATE LOW SUBHUMID

WATER INDEX CARD TANDIL (ARGENTINA)
Altitude: 176 m. Latitude: 37° 14'S

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jul.	7.5	19	39	4	100	19	0	17	8	1.0
Aug.	8.9	26	39	0	100	26	0	13	11	0.4
Sep.	11.1	38	66	0	100	38	0	27	19	0.7
Oct.	14.2	62	59	-3	97	62	0	0	10	0.0
Nov.	17.0	83	82	-2	95	83	0	0	5	0.0
Dec.	17.5	94	72	-22	73	94	0	0	2	-0.2
Jan.	21.4	124	67	-57	17	124	0	0	1	-0.4
Feb.	20.8	101	81	-17	0	97	4	0	1	-0.2
Mar.	18.6	86	97	11	11	86	0	0	0	0.1
Apr.	14.4	53	80	27	38	53	0	0	0	0.5
May.	11.1	34	63	29	67	34	0	0	0	0.8
Jun.	7.8	18	48	29	96	18	0	0	0	1.5
Year	14.2	738	791	*	*	734	4	57	57	*

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

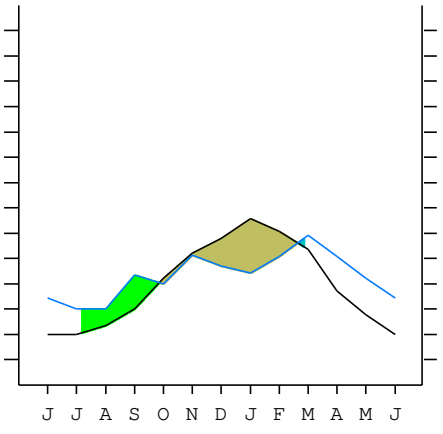
TANDIL (ARGENTINA)

37°14'S 59°14'W 176 m 51/51 y.

T=	14.2	Ic=	13.9
m=	2.2	Tp=	1703
M=	12.8	Tn=	0
M'=	42.2	Itc=	292
m'=	-10.0	Io=	4.6
P=	791	mm	
PE=	738	mm	

TEMPERATE OCEANIC
UPPER THERMOTEMPERATE
LOW SUBHUMID

Imbibing	20 Feb.
Saturation	6 Jul.
Reserve Use	27 Sep.
Deficit	25 Feb.



TANDIL (ARGENTINA)

Latitude: 37°14'S Longitude: 59°14'W Altitude: 176 m

SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continentality Index [B1b]
- + Type .....: B. Oceanic
- + Subtype .....: 1. Semihyperoceanic
- + Variant .....: b. Low

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

Bioclimatic types [C3.2a.6b]
- + Macrobioclimate .....: C. TEMPERATE
- + Bioclimate .....: 3. OCEANIC
- + Bioclimatic variant .:
- + Thermic type.....: 2. THERMOTEMPERATE
- + Thermic subtype.....: a. UPPER
- + Ombrothermic type ...: 6. SUBHUMID
- + Ombrothermic subtype : b. LOW

Bioclimatic Classification .....: Teco.Tte.Shu

TANDIL (ARGENTINA)

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 478
Coldest semester of the year.....(Psw): 313
Warmest four months period of the year.....(Pcm1): 317
Following warmest four months period.....(Pcm2): 229
Positive precipitation dryest 3 months.....(Ppd): 125
Positive precipitation dryest 2 months.....(Ppd2): 78
Positive precipitation dryest 1 month.....(Ppd1): 39
Positive precipitation warmest 3 months.....(Pps): 244
Positive precipitation warmest 2 months.....(Pps2): 148
Positive precipitation warmest 1 month.....(Pps1): 67
Positive precipitation coldest 3 months.....(Ppw): 125
Positive precipitation coldest 2 months.....(Ppw2): 86
Positive precipitation coldest 1 month.....(Ppw1): 39

Seasons	Winter Tr1-W	Spring Tr2-P	Summer Tr3-S	Automn Tr4-F
Rainfall	125	206	220	239

Seasonal rainfall rhythms: F > S > P > W

TANDIL (ARGENTINA)

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 21.4
Average coldest month [T].....(Tmin): 7.5
Maximum temp. warmest month [M].....(Tmmax): 30.0
Minimum temp. coldest month [m].....(Tmmin): 2.2
Absolute Max.temp. warmest month [M'].....(Tamax): 42.2
Absolute Min.temp. coldest month [m'].....(Tamin): -10.0
First warmest contrasted month [M].....(Tcmax): 30.0 (1)
First coldest contrasted month [m].....(Tcmin): 12.8 (1)
Estival temperature.....(Ts): 597
Positive temperature dryest 3 months.....(Tpd): 242
Positive temperature dryest 2 months.....(Tpd2): 164
Positive temperature dryest 1 month.....(Tpd1): 75
Positive temperature warmest 3 months.....(Tps): 608
Positive temperature warmest 2 months.....(Tps2): 422
Positive temperature warmest 1 month.....(Tps1): 214
Positive temperature coldest 3 months.....(Tpw): 242
Positive temperature coldest 2 months.....(Tpw2): 153
Positive temperature coldest 1 month.....(Tpw1): 75

TANDIL (ARGENTINA)

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

TANDIL (ARGENTINA)

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OMBROTHERMIC PARAMETERS

Annual aridity index.[PE/P].....(Iar): 0.93
Mediterranean index of January.....(Im1): 1.84
Mediterranean index of January & February.....(Im2): 1.52
Mediterranean index of December to February...(Im3): 1.45

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp(x10)	724	671	805	965	800	630	475	389	389	658	589	815
Tp	175	214	208	186	145	111	78	75	89	111	142	170
Io (Iom)	4.14	3.14	3.86	5.19	5.54	5.67	6.11	5.19	4.38	5.92	4.16	4.81
Seasons	Summer			Automn			Winter			Spring		
Pp(x10)/Tp	2200 / 597			2395 / 442			1253 / 242			2062 / 422		
Io (Iot)	3.683			5.422			5.184			4.883		
Semesters	December-May						June-November					
Pp(x10)/Tp	4595 / 1039						3315 / 664					
Io (Iosm)	4.423						4.992					

TANDIL (ARGENTINA)

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 7910/1703=4.64 There is No Yearly Aridity

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	724	671	805	965	800	630	475	389	389	658	589	815
Tp [T*10]	175	214	208	186	145	111	78	75	89	111	142	170
Iom [Pp/Tp]	414	314	386	519	554	567	611	519	438	592	416	481
Avm [200-Iom]	***	***	***	***	***	***	***	***	***	***	***	***
Seasons	Summer			Automn			Winter			Spring		
Pp / Tp	2200 / 597			2395 / 442			1253 / 242			2062 / 422		
Iot [Pp/Tp]	368			542			518			488		
Avs E[Avm<200]	***			***			***			***		

TANDIL (ARGENTINA)

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin] .....(Sp): 13.89
CI of Gorezinski (1920) [1.7*Sp/sin(Lat)-20.4] .....: 18.63
CI of Conrad (1946) [1.7*Sp/sin(Lat+10)-14] .....: 18.16
  + Hyperoceanic (-20<CI<20)
CI of Currey (1974) [CI=Sp/(1+Lat/3)] .....: 1.04
  + Oceanic (0.6<CI<1.1)
Rainfall Index of Lang (1925) [R=P/T] .....: 55.74
  + Semiarid (60>R>40)
Aridity Index of Martonne (1926) [Ia=P/(T+10)] .....: 32.70
  + Humid (60>Ia>30)
I of Emberger (1930) [Q=100*P/(Tmmax²-Tmmin²)] .....: 88.37
  + Subhumid (90>Q>50)
I of Dantin & Revenga (1940) [DR=100*T/P] .....: 1.79
  + Humid (2>DR>0)
Aridity Index of UNEP [I=P/PE] .....: 1.07
  + Humid (I>0.65)
Potencial Erosion I of Fournier (1960) [K=Pi²/P].....: 11.77
  + Very low (K<60)

TANDIL (ARGENTINA)

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BIOCLIMATIC INDICES II

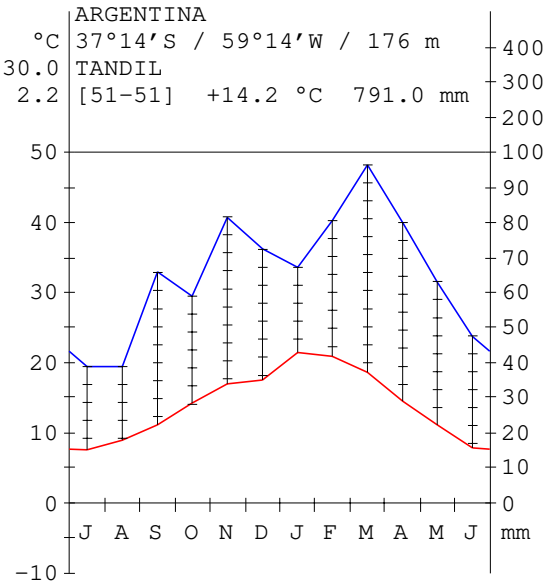
Bioclimatic classification of Gaussen & Bagnouls (1957)
  + Climate ....: A. Warm and temperate warm
  + Region .....: 7. Mesoaxeric (Axeric temperate)
  + Thermic type: 4. Mesothermic

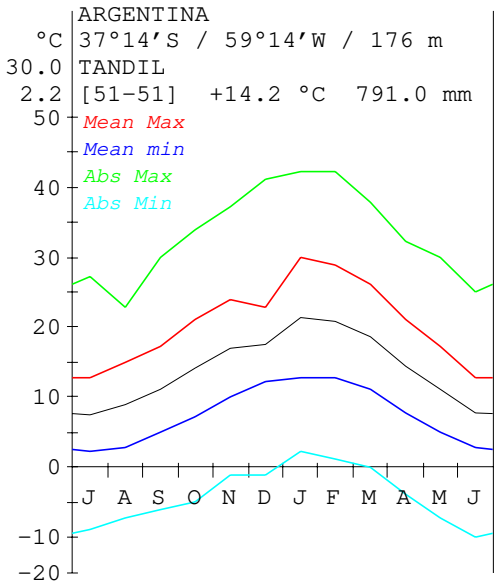
Thornthwaite (1948)

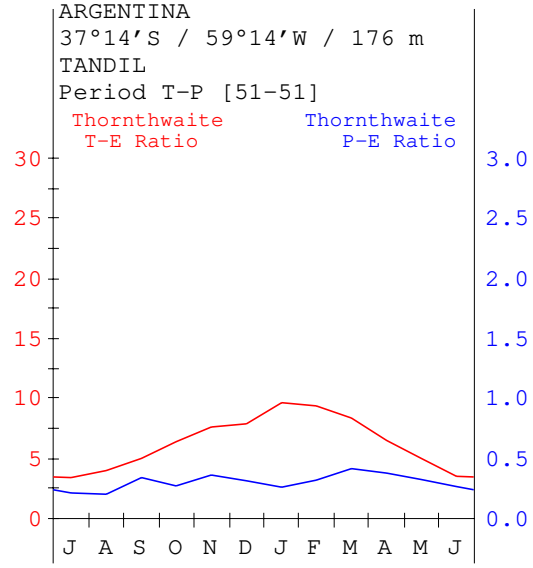
	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
P-E ratio	0.26	0.32	0.42	0.38	0.32	0.26	0.21	0.20	0.34	0.27	0.36	0.31
T-E ratio	9.63	9.38	8.37	6.50	5.00	3.50	3.38	4.00	5.00	6.38	7.63	7.88

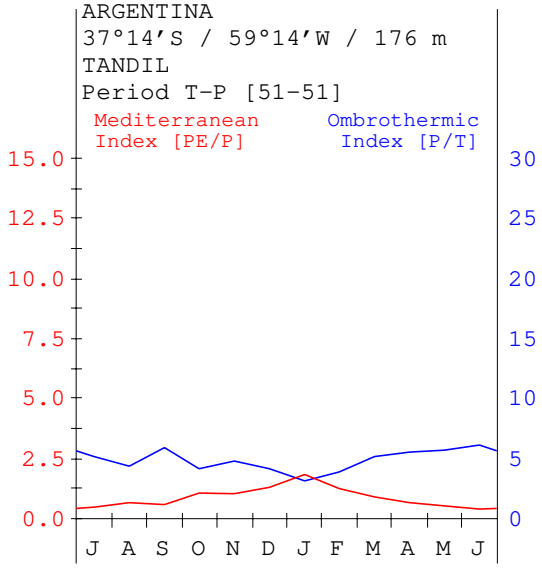
Precipitation-effectiveness: 36.53 Temperature-efficiency ....: 76.64

Moisture Index [MI=100*(P-PE)/PE] .....: 7.18
  + C2.Subhumid humid (0<MI<20)
Index of dryness [DI=100*d/PE] .....: 0.53
  + No deficit (0<DI<16.7)
Index of humidity [HI=100*s/PE] .....: 7.71
  + No surplus (0<HI<10)
Potential Evapotranspiration PE .....: 738.02
  + Second mesothermic (712<PE<855)




ARGENTINA
°C 37°14'S / 59°14'W / 176 m
30.0 TANDIL
2.2 [51-51] +14.2 °C 791.0 mm
50
Mean Max
Mean min
40
Abs Max
Abs Min
30
20
10
0
-10
-20
J A S O N D J F M A M J


ARGENTINA
37°14'S / 59°14'W / 176 m
TANDIL
Period T-P [51-51]
Thornthwaite T-E Ratio
Thornthwaite P-E Ratio
30
25
20
15
10
5
0
3.0
2.5
2.0
1.5
1.0
0.5
0.0
J A S O N D J F M A M J


ARGENTINA
37°14'S / 59°14'W / 176 m
TANDIL
Period T-P [51-51]
Mediterranean Index [PE/P]
Ombrothermic Index [P/T]
15.0
12.5
10.0
7.5
5.0
2.5
0.0
30
25
20
15
10
5
0
J A S O N D J F M A M J