

Phytosociological Research Center

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Worldwide Bioclimatic Classification System

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(Adapted to Synoptical Table 30/08/2017)

COCHABAMBA (BOLIVIA)

Altitude: 2550 m.

Latitude: 17°25'S Longitude: 66°10'W

Temperature observation period.: 1982-1994 (13)

Rainfall observation period....: 1976-1994 (19)

(C/mm)	Ti	Mi	mi	M'i	m'i	Pi	Epi
Jan.	18.06	23.89	12.22	35.00	7.22	94.0	81.72
Feb.	17.50	23.33	11.67	30.00	3.33	68.8	67.35
Mar.	17.50	24.44	10.56	30.56	2.22	38.4	72.16
Apr.	16.39	25.00	7.78	30.00	-1.11	12.7	59.94
May.	14.17	24.44	3.89	28.89	-4.44	2.3	47.33
Jun.	12.22	23.33	1.11	30.00	-6.67	1.3	35.69
Jul.	12.50	23.33	1.67	28.33	-5.00	2.5	38.22
Aug.	13.89	23.89	3.89	30.56	-5.56	7.6	48.19
Sep.	16.67	25.56	7.78	30.56	-3.33	6.1	63.51
Oct.	18.06	26.11	10.00	32.78	0.00	20.8	78.83
Nov.	18.34	25.56	11.11	31.67	5.00	38.1	80.08
Dec.	18.34	25.00	11.67	32.78	5.56	70.1	83.79
Year	16.14	24.49	7.78	30.93	-0.23	363	756.82

BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	406
Compensated thermicity index.....(Itc):	406
Simple continentality index.....(Ic):	6.1
Diurnality index.....(Id):	22.2
Annual ombrothermic index.....(Io):	1.87
Monthly dry ombrothermic index.....(Iod1):	0.11
Bimonthly dry ombrothermic index.....(Iod2):	0.14
Three monthly dry ombrothermic index.....(Iod3):	0.16
Four monthly dry ombrothermic index.....(Iod4):	0.34
Annual ombro-evaporation index.....(Ioe):	10.16
Annual positive temperature.....(Tp):	1936
Annual negative temperature.....(Tn):	0
Dry station temperature.....(Td):	389
Positive precipitation.....(Pp):	363

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

Latitudinal Belt...: Eutropical

Continentalty.....: Hyperoceanic - Low Euhyperoceanic

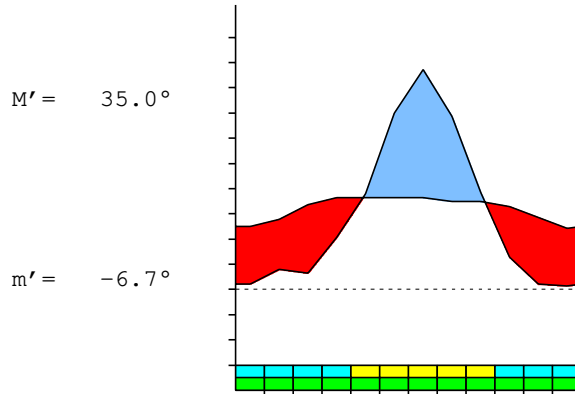
Bioclimate(Variant): TROPICAL XERIC (SEMIARID)

Bioclimatic Belt...: LOW MESOTROPICAL UPPER SEMIARID

COCHABAMBA (BOLIVIA)

2550 m

P= 363 17° 25' S 66° 10' W 13/19 y.
 T= 16.1° Ic= 6.1 Tp= 1936 Tn= 0
 m= 1.1° M= 23.3° Itc= 406 Io= 1.9



TROPICAL XERIC (SEMIARID)
 LOW MESOTROPICAL UPPER SEMIARID

WATER INDEX CARD COCHABAMBA (BOLIVIA)
 Altitude: 2550 m. Latitude: 17° 25' S

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jul.	12.5	38	3	0	0	3	36	0	0	-0.9
Aug.	13.9	48	8	0	0	8	41	0	0	-0.8
Sep.	16.7	64	6	0	0	6	57	0	0	-0.9
Oct.	18.1	79	21	0	0	21	58	0	0	-0.7
Nov.	18.3	80	38	0	0	38	42	0	0	-0.5
Dec.	18.3	84	70	0	0	70	14	0	0	-0.1
Jan.	18.1	82	94	12	12	82	0	0	0	0.1
Feb.	17.5	67	69	1	14	67	0	0	0	0.0
Mar.	17.5	72	38	-14	0	52	20	0	0	-0.4
Apr.	16.4	60	13	0	0	13	47	0	0	-0.7
May.	14.2	47	2	0	0	2	45	0	0	-0.9
Jun.	12.2	36	1	0	0	1	34	0	0	-0.9
Year	16.1	757	363	*	*	363	394	0	0	*

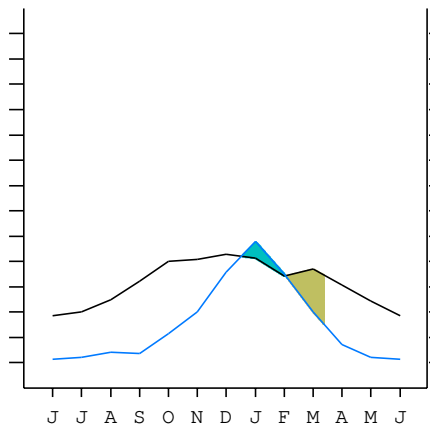
R = Reserve VR = Variation of the reserve RE = Real evapotranspiration
 DR = Drainage HC = Humidity coefficient DF = Deficit SP = Superavit

COCHABAMBA (BOLIVIA)

17°25' S 66°10' W 2550 m 13/19 y.

T= 16.1 Ic= 6.1 TROPICAL XERIC (SEMIARID)
 m= 1.1 Tp= 1936 LOW MESOTROPICAL
 M= 23.3 Tn= 0 UPPER SEMIARID
 M' = 35.0 Itc= 406
 m' = -6.7 Io= 1.9
 P= 363 mm
 PE= 757 mm

Imbibing	16 Dec.
Saturation	2 Feb.
Reserve Use	13 Mar.
Deficit	



COCHABAMBA (BOLIVIA)

Latitude: 17°25'S Longitude: 66°10'W Altitude: 2550 m

SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continental Index [A2b]
 + Type: A. Hyperoceanic
 + Subtype: 2. Euhyperoceanic
 + Variant: b. Low
 Thermic types [A2.A3]
 + Latitudinal zone: A. Warm
 + Latitudinal belt: 2. Eutropical
 + Thermic type: A. Warm
 + Thermic subtype: 3. Subwarm
 Bioclimatic types [A3.3b.4a]
 + Macrobioclimate: A. TROPICAL
 + Bioclimate: 3. XERIC
 + Bioclimatic variant .:
 + Thermic type.....: 3. MESOTROPICAL
 + Thermic subtype.....: b. LOW
 + Ombrothermic type ...: 4. SEMIARID
 + Ombrothermic subtype : a. UPPER
 Bioclimatic Classification: Trxe.Mtr.Sar

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 330
 Coldest semester of the year.....(Psw): 33
 Warmest four months period of the year.....(Pcm1): 223
 Following warmest four months period.....(Pcm2): 122
 Positive precipitation dryest 3 months.....(Ppd): 6
 Positive precipitation dryest 2 months.....(Ppd2): 4
 Positive precipitation dryest 1 month.....(Ppd1): 1
 Positive precipitation warmest 3 months.....(Pps): 129
 Positive precipitation warmest 2 months.....(Pps2): 108
 Positive precipitation warmest 1 month.....(Pps1): 38
 Positive precipitation coldest 3 months.....(Ppw): 11
 Positive precipitation coldest 2 months.....(Ppw2): 4
 Positive precipitation coldest 1 month.....(Ppw1): 1

Seasons	Jun+Jul+Aug Ttr3-3	Sep+Oct+Nov Ttr4-4	Dec+Jan+Feb Ttr1-1	Mar+Apr+May Ttr2-2
Rainfall	11	65	232	53

Tropical rainfall rhythms: 1 > 4 > 2 > 3

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 18.3
 Average coldest month [T].....(Tmin): 12.2
 Maximum temp. warmest month [M].....(Tmmax): 26.1
 Minimum temp. coldest month [m].....(Tmmin): 1.1
 Absolute Max.temp. warmest month [M'].....(Tamax): 35.0
 Absolute Min.temp. coldest month [m'].....(Tamin): -6.7
 First warmest contrasted month [M].....(Tcmax): 23.3 (6)
 First coldest contrasted month [m].....(Tcmin): 1.1 (6)
 Dry station temperature.....(Td): 389
 Positive temperature dryest 3 months.....(Tpd): 389
 Positive temperature dryest 2 months.....(Tpd2): 264
 Positive temperature dryest 1 month.....(Tpd1): 122
 Positive temperature warmest 3 months.....(Tps): 547
 Positive temperature warmest 2 months.....(Tps2): 367
 Positive temperature warmest 1 month.....(Tps1): 183
 Positive temperature coldest 3 months.....(Tpw): 386
 Positive temperature coldest 2 months.....(Tpw2): 247
 Positive temperature coldest 1 month.....(Tpw1): 122

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

COCHABAMBA (BOLIVIA)

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OMBROTHERMIC PARAMETERS

Annual aridity index.[PE/P].....(Iar): 2.09
 Mediterranean index of January.....(Im1): No
 Mediterranean index of January & February.....(Im2): No
 Mediterranean index of December to February...(Im3): No

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp(x10)	701	940	688	384	127	23	13	25	76	61	208	381
Tp	183	181	175	175	164	142	122	125	139	167	181	183
Io (Iom)	3.82	5.20	3.93	2.19	0.77	0.16	0.11	0.20	0.55	0.37	1.15	2.08
Seasons	Dec+Jan+Feb			Mar+Apr+May			Jun+Jul+Aug			Sep+Oct+Nov		
Pp(x10)/Tp	2329 / 539			534 / 481			114 / 386			650 / 531		
Io (Iot)	4.321			1.111			0.295			1.225		
Semesters	December-May						June-November					
Pp(x10)/Tp	2863 / 1020						764 / 917					
Io (Iosm)	2.808						0.833					

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 3627/1936=1.87 **There is No Yearly Aridity**

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	701	940	688	384	127	23	13	25	76	61	208	381
Tp [T*10]	183	181	175	175	164	142	122	125	139	167	181	183
Iom [Pp/Tp]	382	520	393	219	77	16	11	20	55	37	115	208
Avm [200-Iom]	***	***	***	***	123	184	189	180	145	163	85	***
Seasons	Dec+Jan+Feb			Mar+Apr+May			Jun+Jul+Aug			Sep+Oct+Nov		
Pp / Tp	2329 / 539			534 / 481			114 / 386			650 / 531		
Iot [Pp/Tp]	432			111			30			122		
Avs E[Avm<200]	***			***			515			***		
Upper ultrahyperarid [3]						Lower hyperarid [1]						
Upper hyperarid [1]						Weak lower arid [1]						
Strong upper arid [1]						Strong lower semiarid [1]						

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin]	(Sp):	6.12
CI of Gorezinski (1920) [1.7*Sp/sin(Lat)-20.4]		14.36
CI of Conrad (1946) [1.7*Sp/sin(Lat+10)-14]		8.59
+ Hyperoceanic (-20<CI<20)		
CI of Currey (1974) [CI=Sp/(1+Lat/3)]		0.90
+ Oceanic (0.6<CI<1.1)		
Rainfall Index of Lang (1925) [R=P/T]		22.48
+ Steppic (40>R>0)		
Aridity Index of Martonne (1926) [Ia=P/(T+10)]		13.88
+ Arid -steppic- (15>Ia>5)		
I of Emberger (1930) [Q=100*P/(Tmax ² -Tmin ²)]		53.30
+ Subhumid (90>Q>50)		
I of Dantin & Revenga (1940) [DR=100*T/P]		4.45
+ Arid (6>DR>3)		
Aridity Index of UNEP [I=P/PE]		0.48
+ Semiarid (0.5>Im>0.2)		
Potential Erosion I of Fournier (1960) [K=Pi ² /P]		24.36
+ 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	0.41	0.29	0.15	0.05	0.01	0.00	0.01	0.03	0.02	0.08	0.15	0.29
T-E ratio	8.13	7.88	7.88	7.38	6.38	5.50	5.63	6.25	7.50	8.13	8.25	8.25
Precipitation-effectiveness: 14.90						Temperature-efficiency						87.14
Moisture Index [MI=100*(P-PE)/PE]												-52.08
+ D.Semiarid (-66.7<MI<-33.3)												
Index of dryness [DI=100*d/PE]												52.07
+ Strong deficit (33.3<DI)												
Index of humidity [HI=100*s/PE]												0.00
+ No surplus (0<HI<10)												
Potential Evapotranspiration PE												756.82
+ Second mesothermic (712<PE<855)												

