

# Phytosociological Research Center

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## Worldwide Bioclimatic Classification System

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(Adapted to Synoptical Table 14/02/2020)

HUANCAYO (PERU)

Altitude: 3380 m.

Latitude: 12°7'S Longitude: 75°20'W

Temperature observation period.: 1940-1960 (21)

Rainfall observation period....: 1940-1960 (21)

(C/mm)	Ti	Mi	mi	M'i	m'i	Pi	EPI
Jan.	12.50	18.00	7.00	24.00	0.00	119.0	60.97
Feb.	12.50	18.00	7.00	24.00	0.00	123.0	53.76
Mar.	12.00	18.00	6.00	24.00	-1.00	107.0	55.44
Apr.	12.00	19.00	5.00	23.00	-4.00	55.0	51.74
May.	11.00	19.00	3.00	23.00	-6.00	25.0	47.61
Jun.	9.50	19.00	0.00	23.00	-9.00	8.0	38.00
Jul.	9.50	19.00	0.00	22.00	-10.00	8.0	39.60
Aug.	11.00	20.00	2.00	24.00	-6.00	14.0	48.57
Sep.	12.50	20.00	5.00	24.00	-2.00	40.0	55.42
Oct.	13.00	20.00	6.00	25.00	-3.00	69.0	62.13
Nov.	13.00	20.00	6.00	26.00	-3.00	67.0	60.97
Dec.	12.50	19.00	6.00	25.00	-3.00	89.0	61.52
Year	11.75	19.08	4.42	23.92	-3.92	724	635.75

### BIOCLIMATIC INDICES AND DIAGNOSIS

Thermicity index.....(It):	308
Compensated thermicity index.....(Itc):	308
Simple continentality index.....(Ic):	3.5
Diurnality index.....(Id):	19.0
Annual ombrothermic index.....(Io):	5.13
Monthly dry ombrothermic index.....(Iod1):	0.84
Bimonthly dry ombrothermic index.....(Iod2):	0.84
Threemonthly dry ombrothermic index.....(Iod3):	1.00
Fourmonthly dry ombrothermic index.....(Iod4):	1.34
Annual ombro-evaporation index.....(Ioe):	1.14
Annual positive temperature.....(Tp):	1410
Annual negative temperature.....(Tn):	0
Dry station temperature.....(Td):	300
Positive precipitation.....(Pp):	724

N. of Months	P>4T	P:2T-4T	PT-2T	P<T	T<0
	7	2	1	2	0

Latitudinal Belt...: Eutropical

Continentality.....: Hyperoceanic - Low Ultrahyperoceanic

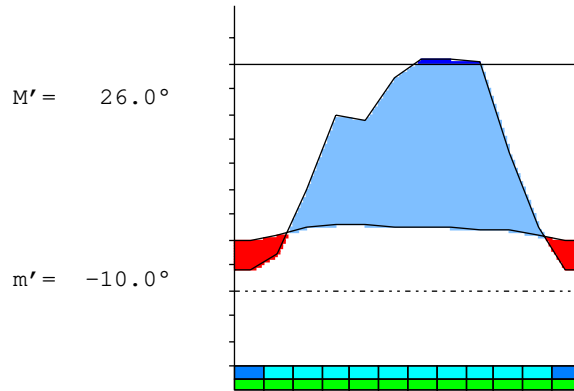
Bioclimate(Variant): TROPICAL PLUVISEASONAL (SUBMESOPHYTIC)

Bioclimatic Belt...: LOW SUPRATROPICAL UPPER SUBHUMID

HUANCAYO (PERU)

3380 m

P= 724      12° 7'S      75° 20'W      21/21 y.  
 T= 11.8 °    Ic= 3.5      Tp= 1410      Tn= 0  
 m= 0.0 °    M= 19.0 °    Itc= 308      Io= 5.1



TROPICAL PLUVISEASONAL (SUBMESOPHYTIC)  
 LOW SUPRATROPICAL UPPER SUBHUMID

WATER INDEX CARD      HUANCAYO (PERU)  
 Altitude: 3380 m.      Latitude: 12° 7'S

(C/mm)	T	PE	P	VR	R	RE	DF	SP	DR	HC
Jul.	9.5	40	8	-32	16	40	0	0	3	-0.7
Aug.	11.0	49	14	-16	0	30	19	0	1	-0.7
Sep.	12.5	55	40	0	0	40	15	0	1	-0.2
Oct.	13.0	62	69	7	7	62	0	0	0	0.1
Nov.	13.0	61	67	6	13	61	0	0	0	0.0
Dec.	12.5	62	89	27	40	62	0	0	0	0.4
Jan.	12.5	61	119	58	98	61	0	0	0	0.9
Feb.	12.5	54	123	2	100	54	0	68	34	1.2
Mar.	12.0	55	107	0	100	55	0	52	43	0.9
Apr.	12.0	52	55	0	100	52	0	3	23	0.0
May.	11.0	48	25	-23	77	48	0	0	11	-0.4
Jun.	9.5	38	8	-30	47	38	0	0	6	-0.7
Year	11.8	636	724	*	*	602	34	122	122	*

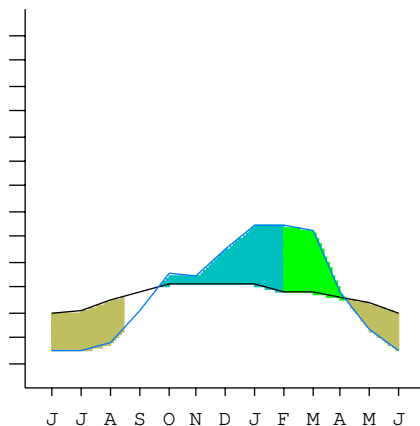
R = Reserve    VR = Variation of the reserve    RE = Real evapotranspiration  
 DR = Drainage    HC = Humidity coefficient    DF = Deficit    SP = Superavit

HUANCAYO (PERU)

12°7'S    75°20'W    3380 m    21/21 y.

T= 11.8    Ic= 3.5    TROPICAL PLUVISEASONAL (SUBMESOPHYTIC)  
 m= 0.0    Tp= 1410    LOW SUPRATROPICAL  
 M= 19.0    Tn= 0    UPPER SUBHUMID  
 M' = 26.0    Itc= 308  
 m' = -10.0    Io= 5.1  
 P= 724    mm    ———  
 PE= 636    mm    ———

Imbibing	21 Sep.
Saturation	1 Feb.
Reserve Use	4 Apr.
Deficit	14 Aug.



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SUMMARY OF RIVAS-MARTINEZ CLASSIFICATION

Continentality Index [A1b]  
 + Type .....: A. Hyperoceanic  
 + Subtype .....: 1. Ultrahyperoceanic  
 + Variant .....: b. Low

Thermic types [A2.B4]  
 + Latitudinal zone ....: A. Warm  
 + Latitudinal belt ....: 2. Eutropical  
 + Thermic type .....: B. Temperate  
 + Thermic subtype .....: 4. Temperate

Bioclimatic types [A4.4b.6a]  
 + Macrobioclimate .....: A. TROPICAL  
 + Bioclimate .....: 4. PLUVISEASONAL  
 + Bioclimatic variant .: SUBMESOPHYTIC  
 + Thermic type.....: 4. SUPRATROPICAL  
 + Thermic subtype.....: b. LOW  
 + Ombrothermic type ...: 6. SUBHUMID  
 + Ombrothermic subtype : a. UPPER

Bioclimatic Classification .....Trps (Smf) .Str.Shu.Uho

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PRECIPITATION PARAMETERS

Warmest semester of the year.....(Pss): 507  
 Coldest semester of the year.....(Psw): 217  
 Warmest four months period of the year.....(Pcm1): 265  
 Following warmest four months period.....(Pcm2): 404  
 Positive precipitation dryest 3 months.....(Ppd): 30  
 Positive precipitation dryest 2 months.....(Ppd2): 16  
 Positive precipitation dryest 1 month.....(Ppd1): 8  
 Positive precipitation warmest 3 months.....(Pps): 176  
 Positive precipitation warmest 2 months.....(Pps2): 136  
 Positive precipitation warmest 1 month.....(Pps1): 69  
 Positive precipitation coldest 3 months.....(Ppw): 41  
 Positive precipitation coldest 2 months.....(Ppw2): 16  
 Positive precipitation coldest 1 month.....(Ppw1): 8

Seasons	Jun+Jul+Aug Ttr3-3	Sep+Oct+Nov Ttr4-4	Dec+Jan+Feb Ttr1-1	Mar+Apr+May Ttr2-2
Rainfall	30	176	331	187

Tropical rainfall rhythms: 1 > 2 > 4 > 3

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TEMPERATURE PARAMETERS

Average warmest month [T].....(Tmax): 13.0  
 Average coldest month [T].....(Tmin): 9.5  
 Maximum temp. warmest month [M].....(Tmmax): 20.0  
 Minimum temp. coldest month [m].....(Tmmin): 0.0  
 Absolute Max.temp. warmest month [M'].....(Tamax): 26.0  
 Absolute Min.temp. coldest month [m'].....(Tamin): -10.0  
 First warmest contrasted month [M].....(Tcmax): 19.0 (6)  
 First coldest contrasted month [m].....(Tcmin): 0.0 (6)  
 Dry station temperature.....(Td): 300  
 Positive temperature dryest 3 months.....(Tpd): 300  
 Positive temperature dryest 2 months.....(Tpd2): 190  
 Positive temperature dryest 1 month.....(Tpd1): 95  
 Positive temperature warmest 3 months.....(Tps): 385  
 Positive temperature warmest 2 months.....(Tps2): 260  
 Positive temperature warmest 1 month.....(Tps1): 130  
 Positive temperature coldest 3 months.....(Tpw): 300  
 Positive temperature coldest 2 months.....(Tpw2): 190  
 Positive temperature coldest 1 month.....(Tpw1): 95

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

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OMBROTHERMIC PARAMETERS

Annual aridity index.[PE/P].....(Iar): 0.88  
 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)	890	1190	1230	1070	550	250	80	80	140	400	690	670
Tp	125	125	125	120	120	110	95	95	110	125	130	130
Io (Iom)	7.12	9.52	9.84	8.92	4.58	2.27	0.84	0.84	1.27	3.20	5.31	5.15
Seasons	Dec+Jan+Feb			Mar+Apr+May			Jun+Jul+Aug			Sep+Oct+Nov		
Pp(x10)/Tp	3310 / 375			1870 / 350			300 / 300			1760 / 385		
Io (Iot)	8.827			5.343			1.000			4.571		
Semesters	December-May						June-November					
Pp(x10)/Tp	5180 / 725						2060 / 685					
Io (Iosm)	7.145						3.007					

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Aridity Value Index (AVI)

[10xPP/TP=IO]: 7240/1410=5.13 There is No Yearly Aridity

Months	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Pp [P*10]	890	1190	1230	1070	550	250	80	80	140	400	690	670
Tp [T*10]	125	125	125	120	120	110	95	95	110	125	130	130
Iom [Pp/Tp]	712	952	984	892	458	227	84	84	127	320	531	515
Avm [200-Iom]	***	***	***	***	***	***	116	116	73	***	***	***
Seasons	Dec+Jan+Feb			Mar+Apr+May			Jun+Jul+Aug			Sep+Oct+Nov		
Pp / Tp	3310 / 375			1870 / 350			300 / 300			1760 / 385		
Iot [Pp/Tp]	883			534			100			457		
Avs E[Avm<200]	***			***			304			***		
Weak upper arid [3]						Weak lower semiarid [1]						

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BIOCLIMATIC INDICES I

CI of Supan (1884) [Tmax-Tmin] .....	(Sp):	3.50
CI of Gorezinski (1920) [1.7*Sp/sin(Lat)-20.4] .....		7.95
CI of Conrad (1946) [1.7*Sp/sin(Lat+10)-14] .....		1.80
+ Hyperoceanic (-20<CI<20)		
CI of Currey (1974) [CI=Sp/(1+Lat/3)] .....		0.69
+ Oceanic (0.6<CI<1.1)		
Rainfall Index of Lang (1925) [R=P/T] .....		61.62
+ Temperate warm (100>R>60)		
Aridity Index of Martonne (1926) [Ia=P/(T+10)] .....		33.29
+ Humid (60>Ia>30)		
I of Emberger (1930) [Q=100*P/(Tmax <sup>2</sup> -Tmin <sup>2</sup> )] .....		181.00
+ Humid (Q>90)		
I of Dantin & Revenga (1940) [DR=100*T/P] .....		1.62
+ Humid (2>DR>0)		
Aridity Index of UNEP [I=P/PE] .....		1.14
+ Humid (I>0.65)		
Potencial Erosion I of Fournier (1960) [K=Pi <sup>2</sup> /P].....		20.90
+ 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: 4. Mesothermic

Thornthwaite (1948)												
	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
P-E ratio	0.62	0.65	0.56	0.27	0.12	0.03	0.03	0.06	0.19	0.34	0.32	0.45
T-E ratio	5.63	5.63	5.40	5.40	4.95	4.27	4.27	4.95	5.63	5.85	5.85	5.63
Precipitation-effectiveness: 36.47						Temperature-efficiency .....: 63.45						
Moisture Index [MI=100*(P-PE)/PE] .....												
+ C2.Subhumid humid (0<MI<20)												
Index of dryness [DI=100*d/PE] .....												
+ No deficit (0<DI<16.7)												
Index of humidity [HI=100*s/PE] .....												
+ Moderate surplus (10<HI<20)												
Potential Evapotranspiration PE .....												
+ First mesothermic (570<PE<712)												

