

# **Meteorology of Monteverde, Costa Rica 2007**

**Technical Report submitted to the Monteverde Institute**



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## Executive Summary

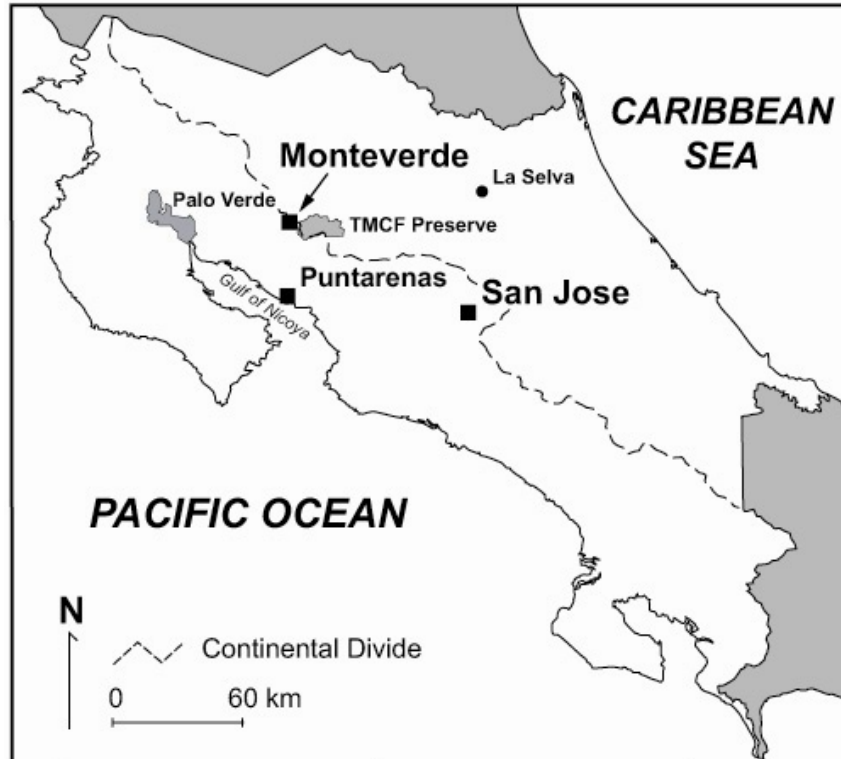
The meteorological station at the Monteverde Institute (MVI) in Monteverde, Costa Rica records precipitation, temperature, relative humidity, and solar radiation at 10-minute intervals throughout the day. In addition, manual measurements of rainfall are made by Marlene Campbell Leiton at approximately 8 am of each working day. During 2007, we infer that there were three periods (1 March through 19 June, 18 September through 3 October, and 5 November through 31 December) during which the recording rain gauge was not working properly and one period (27 October through 22 November) during which the temperature/humidity probe was giving erroneous data. Based on the manual precipitation measurements, annual rainfall totaled 4098 mm for the period from 8 am on 2 January 2007 through 8 am on 31 December 2007; this is more than fifty percent greater than the long-term annual average. Eighty percent of the annual precipitation fell during the rainy season (May through October) and three percent during the dry season (February through April). Excluding the period when the probe was not working properly, the average temperature was 17.6°C; the warmest day and the coolest day were 20.0°C and 13.8°C, respectively, and the average relative humidity was 88%. The average solar radiation was 172 W/m<sup>2</sup> or 14.9 MJ/m<sup>2</sup>/day. This report builds on and complements the 2004 meteorological report by Johnson et al. (2005) and the 2005 and 2006 reports by Guswa and Rhodes (2006, 2007).

Monthly meteorological summaries are available at [www.science.smith.edu/~aguswa/research.html](http://www.science.smith.edu/~aguswa/research.html), and more information can be obtained from Prof. Andrew J. Guswa (aguswa@email.smith.edu).

# 1 Introduction

## 1.1 Climate

Monteverde, Costa Rica (84°48' W Long., 10°18' N Lat., see Figure 1) lies on the leeward side of the Continental Divide on the Cordillera de Tilarán. Its climate is characterized by three seasons: wet (May through October), transitional (November through January), and dry (February through April). Climate and weather are largely influenced by the migration of the Intertropical Convergence Zone (ITCZ), as well as by polar cold fronts, Pacific low-pressure systems, nearby tropical depressions, and the trade winds (Clark et al., 2000).



**Figure 1.** Monteverde, Costa Rica lies on the Continental Divide northwest of San Jose.

From May through October (the wet season), the ITCZ migrates over Costa Rica bringing intense convective precipitation events. Rainfall is heaviest during June and September-October and eases slightly during the veranillo or “little summer” in July and August. During the transitional and dry seasons, the ITCZ is located south of Costa Rica, and moisture is brought to the region via northeasterly trade winds from the Caribbean Sea (Clark et al., 2000). Orographic clouds spill over the continental divide, bringing fog and drizzle, and rainfall decreases rapidly going west into the rain shadow of the mountains.

## **1.2 Additional Meteorological Data Sources**

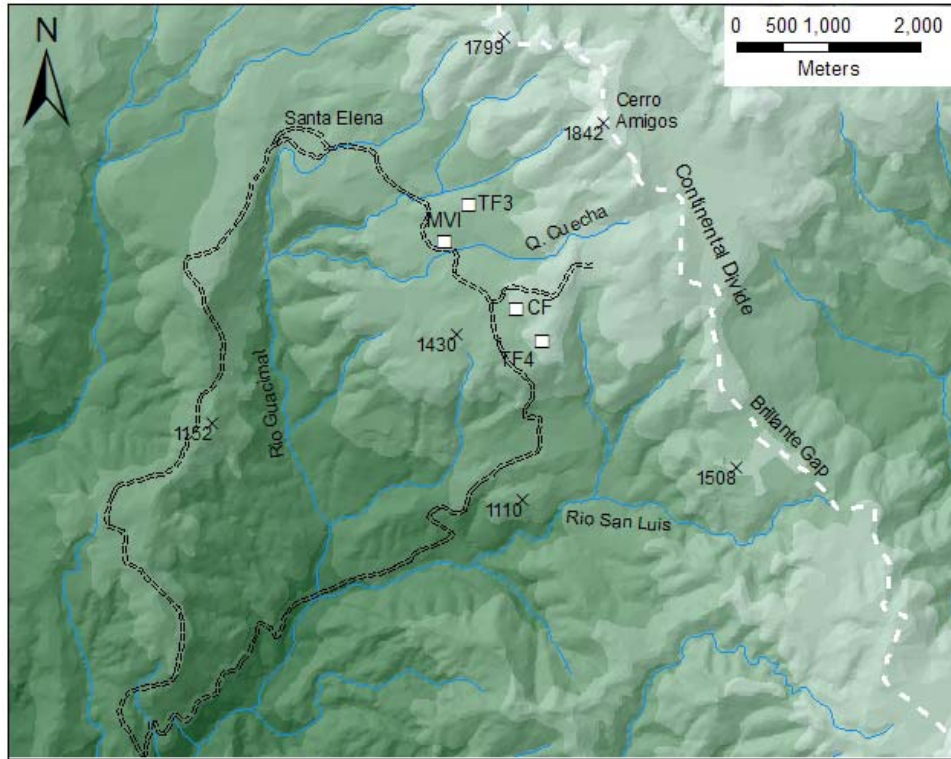
The primary sources for historical meteorological information about Monteverde are daily rainfall records from J. Campbell and A. Pounds measured at the Campbell Farm (see Figure 2) since 1973 (published in Clark et al., 2000 and Pounds et al., 1999). Based on these rainfall data from 1973 to 2006 (Pounds, personal communication, 2007), mean annual precipitation is 2710 mm, with a minimum and maximum annual precipitation of 1973 mm (in 1994) and 3632 mm (in 2005), respectively.

The Organization for Tropical Studies (OTS) maintains meteorological stations within Palo Verde National Park (10°21' N, 85°21' W) adjacent to the Tempisque River on the Pacific side of Costa Rica and at La Selva (10°26' N, 83°59' W) on the Atlantic Side (see Figure 1). Data from the OTS sites indicate that La Selva receives an average of 4240 mm of annual precipitation, while Palo Verde receives 1017 mm. The two regions differ not only in precipitation totals but also in seasonal precipitation. Sixty percent of La Selva's annual precipitation and eighty-seven percent of Palo Verde's annual precipitation falls during the wet season. The average temperature at La Selva is 26°C while the average temperature at Palo Verde is 28°C. The station at Palo Verde also measures other variables including wind speed, relative humidity, and solar radiation. Average values for these variables are 0.8 m/s, 80%, and 233 W/m<sup>2</sup>, respectively (Organization for Tropical Studies, 2005).

The World Meteorological Organization (2006) provides rainfall data for the cities of Puntarenas and Guapiles, Costa Rica. In Puntarenas, south of Monteverde on the Pacific coast at the mouth of the Gulf of Nicoya, the mean annual rainfall is 1600 mm (determined from records from 1936-2000) with 87% falling during the wet season. In Guapiles, east of Monteverde on the Caribbean side, the mean annual rainfall is 4577 mm (determined from records from 1964-1998) with 59% falling during the wet season.

## **1.3 Site Description**

Since 11 June 2004, Profs. Andrew Guswa and Amy Rhodes from Smith College have operated a Campbell Scientific meteorological station on the roof of the Monteverde Institute (see Figures 2 and 3). This station records precipitation, temperature, relative humidity, and solar radiation at ten-minute intervals. From June 2003 through June 2004, the meteorological station was located in a forest clearing near the Monteverde Institute (Johnson et al., 2005).



**Figure 2.** The met station is located on the roof of the Monte Verde Institute (indicated by “MVI”) in Monteverde, Costa Rica. Additional rain data are recorded at the Campbell Farm (indicated by “CF”, location approximate).



**Figure 3.** The red oval identifies the meteorological station at the Monte Verde Institute that has been in operation since 11 June 2004.

## 2 Meteorological Data: 2007

### 2.1 Precipitation

Precipitation at the Monteverde Institute is measured using a Campbell Scientific 8" siphoning tipping-bucket rain gauge. The bucket tips when 0.01 in (0.254 mm) of rainfall accumulates, and a data logger records rainfall depths over 10-minute intervals. The rain gauge has a precision of +/- 2% for rainfall intensities up to 19.7 in/hr (500 mm/hr). The rain gauge is not designed to measure cloud-water interception, and the recorded amounts may underestimate the total hydrologic input. In addition to the tipping bucket, rainfall accumulations in a manual rain gauge are recorded at approximately 8 am on work days by Marlene Leiton Campbell of the Monteverde Institute (see Appendix B for the complete record of manual measurements).

During 2007, the tipping-bucket rain gauge became clogged on a couple of instances. Such a clog was observed first-hand and removed on 19 June 2007. A comparison of the rainfall measurements made by Malene Campbell Leiton and those recorded by the rain gauge (Appendix B) indicate that the tipping-bucket gauge was not working properly during the following periods: 1 March through 19 June, 18 September through 3 October, and 5 November through 31 December. A comparison of monthly precipitation also reveals these discrepancies (Table 1).

**Table 2.** Monthly precipitation at the Monteverde Institute, Monteverde, Costa Rica for 2007 as measured by Marlene Cambell Leiton and recorded by the tipping-bucket rain gauge. For added context, average monthly values from the Campbell Farm (1973-2006) are also included.

	Manual	Tipping-Bucket	Campbell Farm
January	85.5 <sup>1</sup>	92.5	91
February	25.8	31.8	60
March	29.1	0.3	44
April	66.8	1.0	52
May	412.5	7.1	289
June	308.2	128.5	345
July	236.6	271.5	283
August	542.2	604.8	318
September	775.9	498.6	407
October	1007.3	961.9	439
November	362.4	15.2	230
December	245.4	84.1	149
<b>Total</b>	4097.7		2710

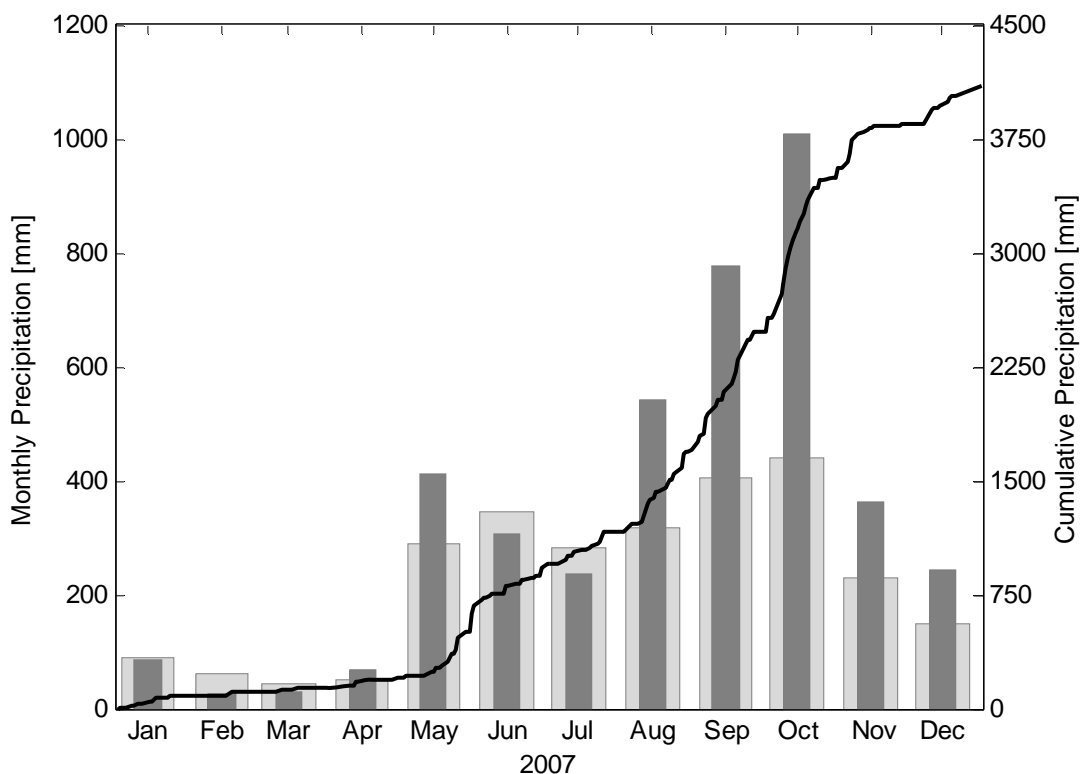
<sup>1</sup>The total for January 2007 does not include the rain measured on 2 January 2007; that accumulation represents the entire period from 19 December 2006 through 2 January 2007, and the data from the tipping-bucket gauge indicate that the rain fell in December 2006 not January 2007.

Rainfall measured by Marlene Campbell Leiton in 2007 totaled 4127 mm, approximately 1400 mm above the long-term average. Rainfall during the rainy season was 3283 mm or 80% of the total precipitation, while the dry season accounted for 122 mm of precipitation or just 3% of the annual total.

Table 2 presents monthly rainfall at the Monteverde Institute for 2004-2007. Figure 4 presents the accumulated and monthly precipitation for 2007, showing clearly the seasonal variation.

**Table 2.** Monthly precipitation at the Monteverde Institute, Monteverde, Costa Rica. The first number represents the depth of rainfall in mm; the number in parentheses indicates the number of days with rain. Data for 2007 are from the manual gauge; data for 2004-2006 are from the tipping-bucket rain gauge.

	2004	2005	2006	2007	Average
January		254.8 (27)	157.0 (26)	85.5	175.7 (27)
February		45.7 (24)	49.8 (23)	25.8	40.4 (24)
March		21.1 (11)	28.2 (16)	29.1	26.1 (14)
April		42.2 (10)	11.9 (10)	66.8	40.3 (10)
May		333.5 (20)	191.3 (23)	412.5	312.4 (22)
June		605.0 (29)	531.4 (23)	308.2	481.5 (26)
July	199.4 (29)	327.7 (30)	374.7 (28)	236.6	284.6 (29)
August	221.5 (26)	318.8 (27)	155.7 (27)	542.2	309.6 (27)
September	585.2 (27)	539.8 (29)	355.6 (27)	775.9	564.1 (28)
October	404.4 (28)	978.4 (30)	373.9 (27)	1007.3	691.0 (28)
November	183.4 (24)	250.7 (27)	224.3 (27)	362.4	255.2 (26)
December	226.6 (21)	73.2 (22)	153.7 (24)	245.4	174.8 (22)
<b>Total</b>		3971 (286)	2607 (281)	4098	3356 (283)

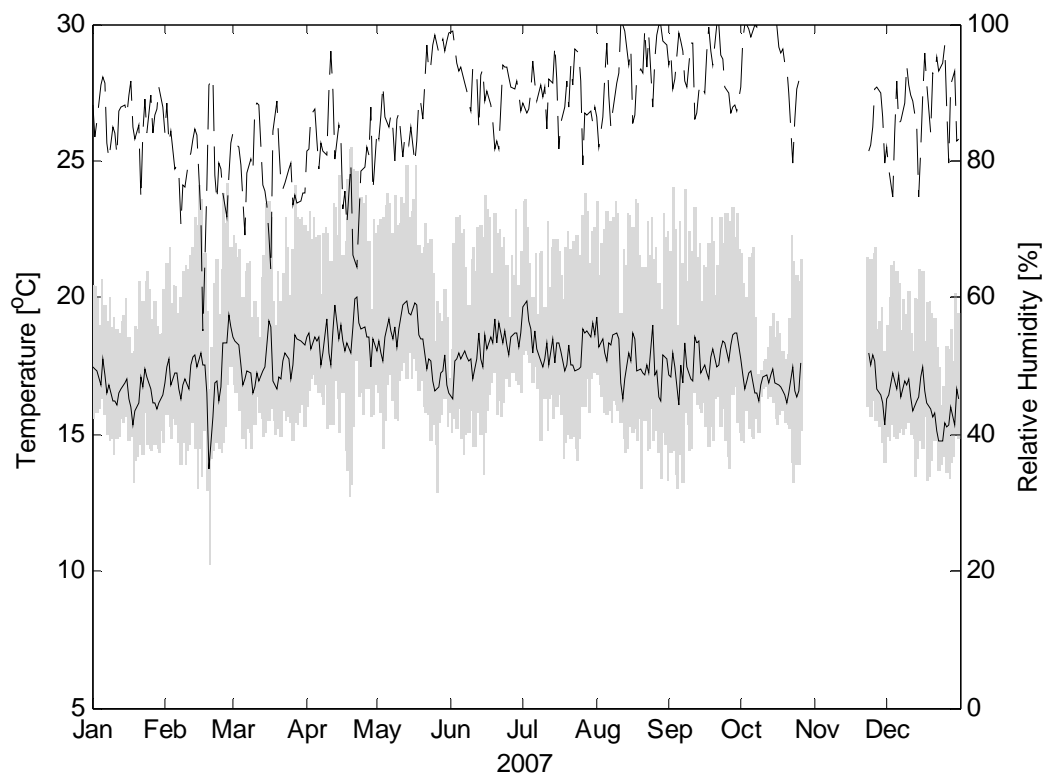


**Figure 4.** Cumulative and monthly precipitation at the Monteverde Institute, Monteverde, Costa Rica from 2 January 2007 through 31 December 2007. The dark bars and solid line represent data from the manual rain gauge as recorded by Marlene Campbell Leitón. The light bars represent the long-term (1973-2006) average monthly precipitation measured at the Campbell Farm.

## 2.2 Temperature and Humidity

Temperature and relative humidity are measured by a Vaisala temperature and relative humidity probe, which has a precision of  $\pm 2\%$  for humidity between 10% and 90%, and  $\pm 3\%$  for humidity greater than 90%. For 2007, we have identified a four-week period (27 October through 22 November) during which the probe was not working properly (perhaps due to the excessive rain in October). Excluding this period, the mean annual temperature in Monteverde during 2007 was 17.6°C. The warmest and coolest days were 20.0°C and 13.8°C, respectively. The mean relative humidity for the year was 88%.

Figure 5 displays the average daily temperature, daily temperature range, and average daily humidity. Table 3 presents monthly climate data including mean temperature and warmest and coolest days. Daily temperature and humidity data can be found in Appendix A.



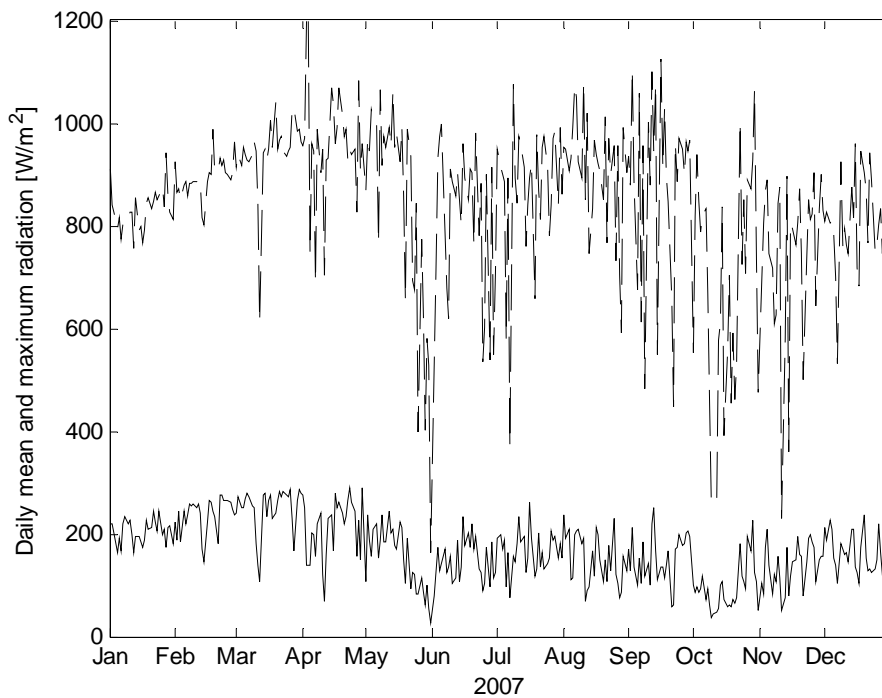
**Figure 5.** Daily mean temperature (solid line) and relative humidity (dashed line) for 2007 as measured at the Monteverde Institute, Monteverde, Costa Rica. The gray bars represent the temperature range for each day. There is a gap in the data set from 27 October through 22 November.

**Table 3.** Monthly data for temperature, humidity, and solar radiation at the Monteverde Institute, Monteverde, Costa Rica, 2007. Temperature and relative humidity data from 27 October through 22 November are excluded.

	Mean temperature (°C)	Warmest day (°C)	Coollest day (°C)	Mean humidity (%)	Mean solar radiation (W/m <sup>2</sup> )
January	16.6	17.8	15.3	86	204
February	17.2	19.3	13.8	78	237
March	17.7	19.2	16.5	78	249
April	18.6	20.0	17.5	80	209
May	18.3	19.9	16.5	89	154
June	18.1	19.2	16.3	90	146
July	18.2	19.9	17.3	89	167
August	17.7	19.3	16.2	93	151
September	17.8	18.7	16.0	93	151
October	16.8	17.6	16.2	99	94
November	17.0	18.0	15.3	86	138
December	16.2	17.4	14.7	88	164
Annual	17.6	20.0	13.8	88	172

### 2.3 Solar Radiation

The average daily radiation in Monteverde during 2007 was 172 W/m<sup>2</sup> or 14.9 MJ/m<sup>2</sup>/day. Figure 6 provides the daily average radiation (W/m<sup>2</sup>) and the daily maximum radiation (W/m<sup>2</sup>) as measured at the Monteverde Institute in 2007. Monthly data are available in Table 3, and daily data are presented in Appendix A. The Li-Cor silicon pyranometer has a precision of ±3%.



**Figure 6.** Daily average (solid line) and maximum (dashed line) solar radiation (W/m<sup>2</sup>) at the Monteverde Institute, Monteverde, Costa Rica in 2007.

## Acknowledgments

The authors wish to acknowledge and thank Ilona Johnson '06 for writing the first meteorological report (Johnson et al., 2005) and providing the template for this report, Marlene Leiton Campbell for measuring daily rainfall, Alan Pounds for providing the data from the Campbell Farm, and the Monteverde Institute for providing the physical space and power for the meteorological station. The cover photo was taken by Stephen Tilley.

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## **Appendix A: Monthly meteorological summaries**

Monthly Climate Summary - January 2007

The Monteverde Institute, Monteverde, Puntarenas, Costa Rica

Elev: 1420m Lat: 10 deg. 18 min. 20 sec. N Long: 84 deg. 48 min. 34 sec. W

Day	Mean Temp Deg.C	Max Temp Deg.C	Time Max Temp	Min Temp Deg.C	Time Min Temp	Daily Rain (mm)	Max Rain Rate (mm/hr)	Time Max Rain	Mean Rel. Humid (%)	Max Rel. Humid (%)	Time Max Humid	Min Rel. Humid (%)	Time Min Humid	Mean Solar Rad (W/m2)	Max Solar Rad (W/m2)	Time Max Rad
1	17.5	20.4	1320	15.6	2320	2.3	1.5	2240	88.3	94.7	1820	77.1	950	218	910	1200
2	17.4	20.4	1330	15.8	410	2.3	1.5	2350	83.5	94.8	2150	69.5	1330	219	840	1140
3	17.3	20.0	1240	15.8	620	4.3	1.5	2340	85.9	94.0	2340	70.7	1310	203	828	1150
4	16.8	19.0	1350	15.9	750	6.6	1.5	2210	91.2	95.2	110	81.4	1350	162	794	1250
5	17.8	20.7	1320	16.3	2350	6.3	1.5	2330	92.2	97.2	2320	81.1	1320	190	815	1150
6	17.2	19.8	1350	15.7	120	3.6	1.5	2330	91.3	96.9	30	81.2	1350	166	774	1320
7	16.5	19.1	1450	15.0	2350	0.3	1.5	50	82.5	91.5	110	71.7	1430	220	802	1240
8	16.8	20.0	1320	14.8	330	1.0	1.5	2230	80.3	91.3	2140	57.9	1220	233	816	1200
9	16.3	18.9	1450	14.8	2340	4.3	3.0	2320	84.9	94.1	2340	72.1	1400	218	815	1140
10	16.2	19.3	1410	14.3	530	3.6	3.0	300	84.1	95.7	220	72.5	1130	225	827	1220
11	16.1	18.9	1400	14.9	540	0.0	0.0	2350	80.7	90.9	100	64.6	1400	199	827	1150
12	16.5	18.7	1500	14.9	0	4.8	12.2	1240	87.2	94.6	1140	77.3	1510	162	757	1350
13	16.7	19.1	1440	15.6	2330	5.8	4.6	1900	88.0	94.7	2350	74.3	1300	194	855	1130
14	16.9	19.3	1210	15.4	600	5.3	1.5	2340	88.3	95.0	0	76.0	1410	195	791	1110
15	17.0	20.0	1340	15.7	710	2.5	1.5	1610	86.7	94.2	820	73.9	1340	185	798	1300
16	16.3	18.6	1450	14.8	1910	3.8	1.5	2310	89.6	94.9	920	78.2	1450	173	766	1240
17	16.0	17.9	1130	14.9	430	18.8	3.0	300	91.6	94.5	1950	86.9	240	187	791	1220
18	15.3	18.1	1330	13.2	730	13.7	4.6	330	85.1	95.5	420	68.9	1310	228	844	1200
19	15.8	18.9	1320	14.0	40	0.5	1.5	810	83.2	95.3	2310	64.3	1440	210	855	1130
20	16.2	18.9	1430	14.1	420	1.3	1.5	1250	85.4	94.5	30	73.4	1630	212	834	1210
21	17.1	20.6	1140	14.6	500	0.3	1.5	10	74.4	88.5	2320	49.1	1050	243	849	1140
22	16.8	19.9	1450	14.2	340	0.0	0.0	2350	84.1	90.4	2220	72.5	530	222	866	1210
23	17.4	20.6	1210	15.8	2050	0.3	1.5	2120	89.0	95.5	430	76.4	1210	205	851	1150
24	17.1	20.9	1400	14.6	210	0.5	1.5	940	84.0	97.6	2210	66.2	830	244	857	1200
25	16.6	20.3	1300	14.5	2350	0.0	0.0	2350	89.5	97.0	230	73.6	1300	197	877	1250
26	16.2	19.2	1320	14.4	0	0.3	1.5	230	84.1	94.1	1940	70.0	1140	209	836	1140
27	16.1	19.9	1340	14.6	2250	0.0	0.0	2350	86.7	95.8	2150	70.3	1340	172	943	1250
28	15.9	18.9	1120	14.5	1920	0.0	0.0	2350	87.7	96.1	2200	76.4	1120	211	858	1200
29	16.1	18.6	1200	14.3	340	0.5	1.5	2150	90.8	96.8	750	80.9	1200	214	828	1140
30	16.4	18.7	1420	15.2	440	2.0	1.5	1940	88.0	95.3	510	77.4	1620	179	811	1240
31	16.8	20.4	1430	14.7	340	0.0	0.0	2350	84.1	93.7	300	70.3	1430	224	924	1230
Month Tot.	16.6	20.9		13.2		95.0	12.2		86.2	97.6		49.1		204	943	

Monthly Climate Summary - February 2007

The Monteverde Institute, Monteverde, Puntarenas, Costa Rica

Elev: 1420m Lat: 10 deg. 18 min. 20 sec. N Long: 84 deg. 48 min. 34 sec. W

Day	Mean Temp Deg.C	Max Temp Deg.C	Time Max Temp	Min Temp Deg.C	Time Min Temp	Daily Rain (mm)	Max Rain Rate (mm/hr)	Time Max Rain	Mean Rel. Humid (%)	Max Rel. Humid (%)	Time Max Humid	Min Rel. Humid (%)	Time Min Humid	Mean Solar Rad (W/m2)	Max Solar Rad (W/m2)	Time Max Rad
1	17.5	21.3	1350	15.7	0	0.0	0.0	2350	88.5	94.6	1940	74.4	1400	186	866	1130
2	17.7	21.9	1410	15.3	2300	0.0	0.0	2350	82.5	94.2	10	66.0	1320	245	872	1150
3	16.8	19.8	1450	14.8	310	0.3	1.5	400	84.2	92.7	10	73.5	1450	184	850	1300
4	17.2	20.5	1400	15.5	600	0.0	0.0	2350	78.9	93.1	600	67.5	1250	244	880	1150
5	17.2	20.4	1420	15.4	320	0.0	0.0	2350	79.4	91.3	620	68.2	1350	218	885	1110
6	16.7	19.4	1300	14.7	2100	0.5	1.5	2230	78.2	93.6	1830	59.6	720	236	859	1110
7	16.3	20.0	1240	13.9	600	0.5	1.5	800	70.5	80.6	0	56.2	1140	256	884	1150
8	16.8	21.0	1330	14.7	410	0.3	1.5	30	76.5	88.3	2110	55.0	1310	253	882	1130
9	17.0	21.2	1210	13.9	500	0.0	0.0	2350	76.1	88.5	250	58.1	1040	257	885	1150
10	16.7	21.0	1330	14.4	500	0.0	0.0	2350	80.1	89.6	2210	61.9	1330	252	885	1150
11	17.6	21.6	1110	14.6	410	0.0	0.0	2350	81.1	94.1	400	62.0	1100	257	882	1200
12	17.8	21.8	1340	15.4	550	0.0	0.0	2350	83.1	94.8	550	65.3	1340	241	885	1140
13	17.9	23.0	1130	14.5	2350	0.0	0.0	2350	84.6	94.9	2330	64.8	1020	170	816	1010
14	17.5	22.6	1220	13.0	320	0.3	1.5	440	83.8	97.4	710	61.9	1220	147	800	1000
15	18.0	24.1	1340	14.4	630	0.0	0.0	2350	71.8	92.5	2140	41.5	1150	222	885	1200
16	17.6	23.6	1330	13.5	230	0.0	0.0	2350	55.2	80.9	2050	32.4	1210	265	904	1150
17	17.5	21.6	1400	15.1	230	0.0	0.0	2350	65.4	81.8	2150	47.9	40	261	900	1200
18	16.5	19.5	1150	12.9	2350	1.0	1.5	2330	76.3	93.8	2330	60.1	840	245	988	1330
19	13.8	16.7	1520	10.2	500	24.1	15.2	650	91.0	96.8	810	83.1	1510	233	906	1250
20	15.6	18.2	1110	14.1	310	3.0	1.5	2230	92.1	95.1	2230	83.5	1110	180	907	1150
21	16.9	20.5	1340	14.4	600	1.0	1.5	1410	78.0	91.8	10	61.8	1410	275	930	1210
22	16.9	21.4	1340	14.7	2200	0.5	1.5	2230	74.2	89.9	1900	46.5	1100	274	917	1200
23	16.2	19.4	1130	14.5	2350	0.0	0.0	2350	79.7	88.0	1820	66.4	1100	266	927	1220
24	16.8	21.0	1340	14.3	40	0.0	0.0	2350	78.8	90.7	2020	64.3	1350	265	902	1200
25	18.4	23.8	1220	14.7	130	0.0	0.0	2350	75.3	87.8	2210	57.3	1000	267	900	1210
26	18.3	22.7	1350	15.3	600	0.0	0.0	2350	71.8	86.1	10	43.0	350	262	888	1200
27	19.3	24.2	1430	16.8	0	0.0	0.0	2350	77.9	87.0	610	60.3	1330	249	903	1150
28	18.9	21.8	1220	17.5	2350	0.3	1.5	850	82.7	91.8	850	73.1	1520	236	964	1140
Month Tot.	17.2	24.2		10.2		31.8	15.2		78.5	97.4		32.4		237	988	

Monthly Climate Summary - March 2007

The Monteverde Institute, Monteverde, Puntarenas, Costa Rica

Elev: 1420m Lat: 10 deg. 18 min. 20 sec. N Long: 84 deg. 48 min. 34 sec. W

Day	Mean Temp Deg.C	Max Temp Deg.C	Time Max Temp	Min Temp Deg.C	Time Min Temp	Daily Rain (mm)	Max Rain Rate (mm/hr)	Time Max Rain	Mean Rel. Humid (%)	Max Rel. Humid (%)	Time Max Humid	Min Rel. Humid (%)	Time Min Humid	Mean Solar Rad (W/m2)	Max Solar Rad (W/m2)	Time Max Rad
1	18.6	22.3	1430	16.8	440	N/A	N/A	N/A	84.1	93.9	2130	66.9	1350	240	915	1200
2	18.4	22.0	1400	16.5	640	N/A	N/A	N/A	82.7	94.2	0	64.9	1330	274	940	1140
3	18.3	21.5	1430	16.5	2350	N/A	N/A	N/A	82.1	93.8	150	67.1	1350	250	918	1130
4	17.6	21.8	1340	15.9	2350	N/A	N/A	N/A	79.4	90.2	640	65.3	1210	252	953	1150
5	16.8	2N/A	1340	14.8	500	N/A	N/A	N/A	74.5	91.5	350	58.0	1310	269	940	1140
6	17.0	21.0	1410	14.5	620	N/A	N/A	N/A	69.2	84.1	2250	52.4	940	279	928	1150
7	17.3	21.3	1450	15.2	620	N/A	N/A	N/A	78.3	92.5	2320	60.6	1330	273	923	1140
8	17.2	21.4	1400	15.1	650	N/A	N/A	N/A	80.3	94.3	520	63.1	1350	254	937	1140
9	16.5	19.3	1330	14.4	440	N/A	N/A	N/A	78.4	85.3	940	65.3	0	249	962	1150
10	16.7	19.9	1130	15.4	0	N/A	N/A	N/A	88.0	93.8	1520	79.5	1130	181	944	1120
11	17.2	19.3	1500	16.4	500	N/A	N/A	N/A	88.3	93.7	0	75.7	1450	139	845	1050
12	17.0	18.6	1200	15.8	450	N/A	N/A	N/A	88.1	95.0	1900	78.3	1430	107	613	1200
13	17.3	20.7	1420	15.6	500	N/A	N/A	N/A	76.5	88.7	20	63.8	1220	274	942	1110
14	17.4	21.6	1350	14.9	440	N/A	N/A	N/A	75.7	92.8	2110	60.4	1350	279	949	1220
15	18.3	23.4	1250	15.1	400	N/A	N/A	N/A	73.7	88.7	1920	48.2	1050	232	928	1140
16	19.2	23.6	1330	15.5	600	N/A	N/A	N/A	69.2	87.4	550	52.8	2350	264	949	1140
17	19.0	23.0	1330	16.0	310	N/A	N/A	N/A	64.0	83.0	2220	44.0	100	274	1005	1250
18	17.0	19.9	1350	15.5	350	N/A	N/A	N/A	84.3	93.5	2150	72.0	1350	230	953	1150
19	16.7	19.0	1510	14.9	420	N/A	N/A	N/A	88.9	93.9	630	81.1	1830	241	1041	1120
20	17.1	21.0	1310	15.2	2340	N/A	N/A	N/A	82.4	92.7	550	67.6	1310	264	950	1130
21	17.0	19.9	1320	14.9	110	N/A	N/A	N/A	76.9	88.6	510	66.3	1310	283	968	1140
22	17.7	20.9	1500	15.8	700	N/A	N/A	N/A	75.8	89.3	1820	64.6	1310	271	975	1140
23	18.0	22.9	1350	15.5	340	N/A	N/A	N/A	76.8	91.1	350	58.9	1340	282	947	1200
24	17.8	21.9	1440	15.7	100	N/A	N/A	N/A	78.8	89.5	1930	62.2	1440	274	935	1140
25	17.0	20.1	1340	15.4	2340	N/A	N/A	N/A	79.5	91.6	650	67.0	1210	273	944	1220
26	17.6	21.8	1350	14.7	420	N/A	N/A	N/A	73.4	87.9	2100	61.7	1210	286	952	1150
27	18.6	24.1	1210	15.4	530	N/A	N/A	N/A	75.1	87.3	2040	51.5	1210	231	1026	1200
28	18.5	22.9	1030	15.3	540	N/A	N/A	N/A	73.9	85.6	0	54.5	1020	167	1030	1020
29	18.4	22.9	1410	15.8	120	N/A	N/A	N/A	74.0	84.8	2130	57.2	1240	266	985	1100
30	18.3	22.9	1340	16.1	550	N/A	N/A	N/A	75.3	87.5	1910	60.2	1230	284	986	1100
31	18.2	22.6	1330	15.3	440	N/A	N/A	N/A	75.4	95.9	1920	58.1	950	279	962	1140
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Month																
Tot.	17.7	24.1		14.4		N/A	N/A		78.2	95.9		44.0		249	1041	

Monthly Climate Summary - April 2007

The Monteverde Institute, Monteverde, Puntarenas, Costa Rica

Elev: 1420m Lat: 10 deg. 18 min. 20 sec. N Long: 84 deg. 48 min. 34 sec. W

Day	Mean Temp Deg.C	Max Temp Deg.C	Time Max Temp	Min Temp Deg.C	Time Min Temp	Daily Rain (mm)	Max Rain Rate (mm/hr)	Time Max Rain	Mean Rel. Humid (%)	Max Rel. Humid (%)	Time Max Humid	Min Rel. Humid (%)	Time Min Humid	Mean Solar Rad (W/m2)	Max Solar Rad (W/m2)	Time Max Rad
1	18.6	22.5	1330	16.0	450	N/A	N/A	N/A	81.3	90.8	510	64.7	1240	277	957	1250
2	18.7	23.2	1330	16.6	400	N/A	N/A	N/A	81.6	93.7	1840	66.0	1230	250	971	1100
3	18.1	22.1	1140	17.0	520	N/A	N/A	N/A	86.7	94.0	1430	69.8	1140	138	1263	1120
4	18.5	22.9	1330	17.2	410	N/A	N/A	N/A	87.7	95.3	1910	63.3	1330	137	747	1020
5	18.4	22.2	1300	16.8	2350	N/A	N/A	N/A	83.0	93.9	330	68.0	1300	201	958	1250
6	18.5	22.3	1420	16.5	300	N/A	N/A	N/A	78.8	91.5	1750	63.8	1420	200	946	1410
7	17.5	20.1	1400	16.4	430	N/A	N/A	N/A	82.6	92.2	2110	74.4	1300	155	690	1400
8	18.0	22.4	1410	16.0	550	N/A	N/A	N/A	81.6	91.9	250	63.1	1330	220	987	1200
9	19.2	22.6	1430	16.8	320	N/A	N/A	N/A	81.0	93.1	2150	67.9	1540	240	904	940
10	18.0	22.4	950	15.2	540	N/A	N/A	N/A	90.1	97.4	2350	66.7	1200	122	949	930
11	17.6	21.4	1040	15.3	520	N/A	N/A	N/A	95.9	97.7	630	82.3	1040	70	702	1030
12	18.8	23.5	1300	15.4	540	N/A	N/A	N/A	90.1	97.9	640	68.7	1300	158	928	1210
13	19.7	23.3	1550	16.9	20	N/A	N/A	N/A	80.4	96.4	10	67.9	1550	229	931	1020
14	18.5	22.3	1420	16.3	2200	N/A	N/A	N/A	85.3	96.2	420	69.4	1410	238	1070	1110
15	19.0	24.5	1340	15.1	440	N/A	N/A	N/A	83.1	96.9	600	54.3	1340	168	1038	1210
16	18.4	21.6	1330	16.5	600	N/A	N/A	N/A	73.0	84.1	510	59.9	1300	279	959	1150
17	18.0	22.1	1310	14.4	2350	N/A	N/A	N/A	75.5	85.7	2200	60.9	1140	250	990	1240
18	18.4	24.4	1110	13.7	10	N/A	N/A	N/A	70.7	94.7	2240	37.0	1110	261	1070	1300
19	18.0	25.4	1240	12.7	220	N/A	N/A	N/A	79.7	96.6	650	35.1	1300	241	1017	1200
20	18.9	25.5	1130	13.1	320	N/A	N/A	N/A	66.2	87.4	300	32.2	1120	218	973	1130
21	19.9	24.7	1240	15.3	310	N/A	N/A	N/A	65.4	90.3	300	44.4	1210	234	989	1110
22	N/A	24.6	1230	17.7	2300	N/A	N/A	N/A	64.5	81.6	1910	45.8	1220	266	927	1130
23	19.1	23.7	1400	16.4	550	N/A	N/A	N/A	71.2	84.8	2340	50.1	1300	289	949	1130
24	18.9	23.7	1510	16.5	230	N/A	N/A	N/A	78.5	89.0	540	60.5	1500	260	940	1210
25	18.9	23.5	1400	15.7	140	N/A	N/A	N/A	79.1	95.0	2250	60.0	1400	245	950	1130
26	18.6	23.7	1400	16.6	10	N/A	N/A	N/A	82.0	96.5	2000	63.1	1350	155	826	1350
27	18.6	22.0	1230	16.7	350	N/A	N/A	N/A	80.9	91.5	200	69.5	1830	227	1082	1200
28	17.5	19.6	1210	15.7	1940	N/A	N/A	N/A	87.8	95.8	1900	75.7	1040	149	908	1010
29	18.5	22.9	1330	15.7	520	N/A	N/A	N/A	75.7	85.6	2250	59.6	1220	291	961	850
30	18.1	22.4	1340	16.8	250	N/A	N/A	N/A	84.3	93.0	910	72.1	1340	107	868	1340
Month Tot.	18.6	25.5		12.7		N/A	N/A		80.1	97.9		32.2		209	1263	

Monthly Climate Summary - May 2007

The Monteverde Institute, Monteverde, Puntarenas, Costa Rica

Elev: 1420m Lat: 10 deg. 18 min. 20 sec. N Long: 84 deg. 48 min. 34 sec. W

Day	Mean Temp Deg.C	Max Temp Deg.C	Time Max Temp	Min Temp Deg.C	Time Min Temp	Daily Rain (mm)	Max Rain Rate (mm/hr)	Time Max Rain	Mean Rel. Humid (%)	Max Rel. Humid (%)	Time Max Humid	Min Rel. Humid (%)	Time Min Humid	Mean Solar Rad (W/m2)	Max Solar Rad (W/m2)	Time Max Rad
1	18.4	22.7	1230	16.5	1900	N/A	N/A	N/A	83.3	95.1	1850	67.7	1230	235	970	1230
2	18.0	22.9	1250	15.8	300	N/A	N/A	N/A	86.8	96.4	1420	62.1	1250	189	946	1210
3	17.7	22.9	1120	14.5	330	N/A	N/A	N/A	91.1	97.7	2350	66.6	1110	157	1025	1110
4	18.6	23.4	1320	15.5	130	N/A	N/A	N/A	86.5	97.9	210	67.5	1330	210	1010	1020
5	19.2	23.8	1310	16.8	110	N/A	N/A	N/A	84.8	96.2	100	65.5	1310	218	999	1140
6	18.8	23.5	1350	17.1	630	N/A	N/A	N/A	86.7	97.0	550	62.4	1350	151	768	1330
7	18.5	22.4	1100	16.2	150	N/A	N/A	N/A	84.7	96.2	220	73.2	1010	187	1064	1100
8	18.9	23.7	1300	15.5	240	N/A	N/A	N/A	80.1	95.3	1940	61.0	1300	237	918	1200
9	18.2	22.7	1220	15.5	120	N/A	N/A	N/A	86.2	96.0	2230	67.6	1220	183	974	1110
10	18.9	22.7	1300	16.9	450	N/A	N/A	N/A	87.1	95.1	530	73.1	1300	186	951	1100
11	19.7	23.7	1350	17.3	520	N/A	N/A	N/A	80.5	91.8	2220	67.0	1400	245	991	1050
12	19.8	23.4	1400	17.6	1630	N/A	N/A	N/A	83.4	97.3	2350	66.2	1040	200	955	1040
13	19.9	24.9	1320	17.0	130	N/A	N/A	N/A	83.5	97.4	50	65.2	1320	210	1062	1100
14	19.4	23.0	1050	18.0	1900	N/A	N/A	N/A	82.2	89.7	650	70.7	1050	178	951	1050
15	19.4	23.2	1330	17.1	2200	N/A	N/A	N/A	85.0	96.5	1900	71.3	1330	169	980	920
16	19.8	23.6	1340	17.8	1730	N/A	N/A	N/A	79.7	92.2	1700	66.4	1300	223	923	1140
17	19.7	24.8	1420	17.3	2350	N/A	N/A	N/A	82.8	97.2	2310	59.3	1350	212	990	1250
18	18.6	21.9	1150	16.6	210	N/A	N/A	N/A	89.0	97.8	300	73.5	1350	147	857	1310
19	18.5	21.6	1330	16.9	410	N/A	N/A	N/A	88.3	96.6	840	73.7	1330	104	653	1320
20	18.5	21.8	1220	16.0	500	N/A	N/A	N/A	86.2	96.7	2350	73.7	1040	192	987	1210
21	17.4	22.7	850	15.8	2340	N/A	N/A	N/A	96.9	98.4	2350	75.6	850	94	934	840
22	17.8	22.0	1350	15.7	10	N/A	N/A	N/A	93.2	98.6	520	71.8	1400	126	692	1120
23	17.7	22.2	1150	14.7	330	N/A	N/A	N/A	94.0	98.4	630	72.2	1150	119	674	1140
24	17.0	20.9	1030	15.3	510	N/A	N/A	N/A	96.9	98.7	2350	81.1	1020	83	844	1020
25	16.6	18.4	1320	14.6	510	N/A	N/A	N/A	98.5	98.9	600	97.4	1430	82	398	1130
26	16.8	19.9	850	12.9	240	N/A	N/A	N/A	95.8	98.7	40	84.5	850	115	772	1140
27	17.2	19.5	940	15.4	440	N/A	N/A	N/A	96.8	98.7	610	89.2	930	84	618	910
28	17.3	19.1	1130	15.7	350	N/A	N/A	N/A	97.7	98.6	650	93.4	1010	62	403	1000
29	17.9	20.4	1350	16.3	2350	N/A	N/A	N/A	96.2	98.7	630	86.2	1350	99	579	1420
30	16.8	19.3	1120	15.3	250	N/A	N/A	N/A	97.5	98.6	2350	88.5	1110	53	528	930
31	16.5	17.0	1030	15.8	2210	N/A	N/A	N/A	98.8	99.0	2240	98.6	110	27	164	1020
Month Tot.	18.3	24.9		12.9		N/A	N/A		89.0	99.0		59.3		154	1064	

Monthly Climate Summary - June 2007

The Monteverde Institute, Monteverde, Puntarenas, Costa Rica

Elev: 1420m Lat: 10 deg. 18 min. 20 sec. N Long: 84 deg. 48 min. 34 sec. W

Day	Mean Temp Deg.C	Max Temp Deg.C	Time Max Temp	Min Temp Deg.C	Time Min Temp	Daily Rain (mm)	Max Rain Rate (mm/hr)	Time Max Rain	Mean Rel. Humid (%)	Max Rel. Humid (%)	Time Max Humid	Min Rel. Humid (%)	Time Min Humid	Mean Solar Rad (W/m2)	Max Solar Rad (W/m2)	Time Max Rad
1	16.3	18.1	1200	15.0	420	N/A	N/A	N/A	98.9	99.1	540	98.6	1510	79	527	1050
2	17.7	22.0	1110	15.6	140	N/A	N/A	N/A	96.7	98.9	610	78.0	1110	126	712	950
3	17.7	23.0	1100	15.2	540	N/A	N/A	N/A	94.4	98.7	600	71.1	1250	172	930	1040
4	18.0	23.0	1110	15.9	2350	N/A	N/A	N/A	93.2	98.4	2230	66.7	1110	128	975	1100
5	17.7	22.4	1000	14.8	410	N/A	N/A	N/A	93.6	98.4	2350	70.5	1000	144	998	1010
6	18.1	22.5	1300	14.3	620	N/A	N/A	N/A	91.4	98.8	610	70.5	1300	171	784	1250
7	17.9	21.1	1310	15.0	2330	N/A	N/A	N/A	90.3	98.6	2350	76.3	1140	124	678	900
8	17.7	19.7	1020	15.1	0	N/A	N/A	N/A	88.5	98.6	100	78.1	2000	137	619	1020
9	17.8	21.4	1220	15.9	2250	N/A	N/A	N/A	87.2	96.6	1750	72.6	1220	157	912	1110
10	17.0	21.9	850	14.6	430	N/A	N/A	N/A	93.8	98.3	630	64.8	910	102	886	1040
11	17.8	20.9	940	14.6	340	N/A	N/A	N/A	92.9	97.5	440	76.0	930	113	857	900
12	18.7	22.6	1150	15.8	330	N/A	N/A	N/A	84.7	97.3	130	70.3	1150	187	903	1130
13	17.7	22.7	1110	15.0	2350	N/A	N/A	N/A	92.7	99.1	2350	75.4	1110	109	850	1110
14	17.5	22.2	1220	13.5	520	N/A	N/A	N/A	93.6	99.3	610	74.0	950	136	800	930
15	18.6	23.8	1210	15.1	400	N/A	N/A	N/A	88.6	98.8	410	67.4	1210	234	961	1210
16	18.1	23.3	1310	15.9	110	N/A	N/A	N/A	90.1	98.7	150	68.7	1320	178	892	1300
17	18.6	22.9	1400	16.4	350	N/A	N/A	N/A	88.2	98.1	1910	68.2	1310	200	852	1110
18	18.3	20.9	1120	16.9	710	N/A	N/A	N/A	85.7	96.3	720	74.6	1120	174	912	1150
19	19.2	23.1	1420	17.2	520	N/A	N/A	N/A	81.7	89.6	340	68.9	1420	219	905	1120
20	18.3	22.4	1340	15.7	1740	18.8	76.2	1630	82.8	98.1	1650	68.9	1340	169	762	1040
21	19.1	22.5	1050	16.3	430	1.3	1.5	2110	81.7	95.9	1720	69.2	930	196	979	1210
22	18.3	21.9	1230	15.7	510	4.3	6.1	1940	93.9	100.9	2350	72.3	100	131	782	950
23	18.8	22.2	1140	16.1	430	1.0	1.5	2350	93.6	101.0	700	78.6	1420	123	882	950
24	18.3	21.2	1150	17.0	1900	13.0	24.4	1320	93.7	99.4	2100	82.2	1150	89	535	1300
25	17.9	19.3	1350	16.7	630	5.6	3.0	1050	92.4	98.9	0	83.9	1400	104	601	1340
26	18.6	21.6	1400	17.2	540	4.6	4.6	2120	90.7	97.8	2140	77.6	1330	173	900	1140
27	18.7	20.8	1320	17.3	640	2.8	1.5	2220	90.5	96.9	210	82.1	1320	95	538	800
28	18.7	23.2	1330	17.0	450	60.5	77.7	1450	91.6	100.6	1630	70.2	1310	186	913	1110
29	18.2	20.5	1020	16.8	2230	0.5	1.5	1120	90.0	100.9	710	72.7	1650	113	548	1020
30	18.7	21.7	1330	16.5	120	0.5	1.5	2330	87.4	95.0	540	74.4	1330	125	709	1040
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Month																
Tot.	18.1	23.8		13.5		N/A	77.7		90.5	101.0		64.8		146	998	

Monthly Climate Summary - July 2007

The Monteverde Institute, Monteverde, Puntarenas, Costa Rica

Elev: 1420m Lat: 10 deg. 18 min. 20 sec. N Long: 84 deg. 48 min. 34 sec. W

Day	Mean Temp Deg.C	Max Temp Deg.C	Time Max Temp	Min Temp Deg.C	Time Min Temp	Daily Rain (mm)	Max Rain Rate (mm/hr)	Time Max Rain	Mean Rel. Humid (%)	Max Rel. Humid (%)	Time Max Humid	Min Rel. Humid (%)	Time Min Humid	Mean Solar Rad (W/m2)	Max Solar Rad (W/m2)	Time Max Rad
1	19.6	23.5	1210	17.9	2020	18.0	48.8	1750	88.5	99.9	1900	71.3	1210	190	950	1150
2	19.9	23.6	1610	18.0	250	1.0	1.5	2320	86.9	98.1	1900	71.4	1540	199	914	1100
3	19.2	22.6	1430	17.9	520	0.5	1.5	310	87.7	97.0	320	70.6	1420	171	901	1420
4	18.9	21.3	1340	17.6	2230	4.8	1.5	2350	90.1	98.5	2120	78.8	1530	189	887	1110
5	18.0	20.0	1400	16.9	700	48.0	39.6	300	94.5	99.2	350	80.7	1130	97	576	1400
6	18.8	21.6	1440	17.4	40	4.6	4.6	1820	91.5	99.5	2350	78.8	1440	163	894	1110
7	18.1	19.3	1200	16.6	2350	8.6	10.7	930	88.8	99.5	0	75.8	1630	76	369	1200
8	17.7	21.6	1140	14.8	2350	17.3	9.1	1910	91.2	99.8	2350	75.2	1150	158	1075	1100
9	17.5	21.7	1250	14.8	0	21.6	7.6	1450	89.4	99.9	1430	75.0	1250	146	892	1100
10	17.8	19.6	1540	16.3	20	2.0	1.5	220	90.6	97.1	430	81.6	1550	180	845	1250
11	18.4	22.8	1450	15.1	1820	2.0	3.0	1800	84.8	95.5	250	69.6	1450	235	974	1010
12	17.6	20.4	1350	16.3	40	20.1	4.6	2200	91.9	99.9	2130	79.2	1350	184	961	1200
13	18.5	21.9	1330	16.4	350	10.7	3.0	120	91.2	100.4	2350	77.8	1500	194	914	1140
14	17.6	22.1	1020	15.5	430	6.9	1.5	2020	97.0	101.1	530	74.3	1020	124	759	1020
15	18.3	22.1	1100	16.0	350	0.8	1.5	2150	91.9	100.5	400	74.5	1100	154	841	1050
16	18.3	21.7	1330	16.4	2320	0.5	1.5	550	81.8	92.9	0	67.5	1330	263	894	1330
17	18.0	20.9	1300	15.7	340	0.0	0.0	2350	85.4	97.0	1710	70.8	2330	192	921	1110
18	17.3	19.9	1410	14.1	450	6.3	9.1	1730	87.9	98.2	1750	70.2	0	119	660	850
19	17.6	21.8	1140	14.7	2340	13.2	4.6	2150	91.7	99.4	2340	74.3	1200	131	976	1120
20	18.2	22.4	1420	15.0	10	0.8	1.5	1840	88.0	100.5	2010	69.6	1410	202	870	1300
21	17.5	21.8	1110	14.8	410	16.0	3.0	2050	94.0	100.3	2020	74.7	920	134	813	1320
22	17.6	22.0	1320	14.9	610	4.6	1.5	1930	91.0	100.1	630	69.4	1320	164	954	1010
23	17.3	22.3	1100	14.5	430	9.9	3.0	1710	96.3	101.1	2210	72.5	940	131	973	1100
24	17.4	22.3	1050	14.1	600	24.1	6.1	2350	95.8	101.3	2300	71.7	1020	142	913	1050
25	17.4	21.6	1000	14.8	350	25.4	6.1	130	91.8	101.3	450	74.7	1000	151	779	940
26	18.9	23.0	1140	16.0	520	0.3	1.5	110	79.5	97.0	1810	60.2	1040	206	840	1030
27	18.7	23.9	1330	16.0	2300	1.3	3.0	1410	87.1	100.1	2250	66.6	1230	189	971	1200
28	18.8	23.2	1350	17.0	1940	1.3	1.5	2150	86.6	98.5	2150	70.7	1350	194	985	1150
29	18.5	21.3	1150	15.8	530	0.0	0.0	2350	87.3	96.9	530	77.5	1340	154	839	1140
30	19.0	22.4	1200	17.1	540	0.3	1.5	2230	85.6	98.2	2110	74.1	1410	180	992	1150
31	18.6	22.6	1220	17.2	1530	2.8	9.1	1400	88.0	97.6	1440	73.9	1220	154	861	1100
Month Tot.	18.2	23.9		14.1		273.6	48.8		89.5	101.3		60.2		167	1075	

Monthly Climate Summary - August 2007

The Monteverde Institute, Monteverde, Puntarenas, Costa Rica

Elev: 1420m Lat: 10 deg. 18 min. 20 sec. N Long: 84 deg. 48 min. 34 sec. W

Day	Mean Temp Deg.C	Max Temp Deg.C	Time Max Temp	Min Temp Deg.C	Time Min Temp	Daily Rain (mm)	Max Rain Rate (mm/hr)	Time Max Rain	Mean Rel. Humid (%)	Max Rel. Humid (%)	Time Max Humid	Min Rel. Humid (%)	Time Min Humid	Mean Solar Rad (W/m2)	Max Solar Rad (W/m2)	Time Max Rad
1	19.3	23.6	1410	17.2	450	3.6	4.6	1940	86.5	97.7	1940	69.9	1400	236	951	1330
2	18.2	20.9	1230	16.8	2350	0.0	0.0	2350	82.1	92.6	0	68.1	1220	192	949	1140
3	18.5	22.0	1310	16.3	1930	11.9	16.8	1850	86.3	99.8	2010	70.9	1310	208	908	1150
4	18.0	22.5	1130	15.8	2320	23.4	25.9	1630	92.2	101.0	2330	70.8	1110	112	930	1130
5	17.7	23.2	1110	15.7	30	19.8	36.6	1600	97.2	100.9	2100	71.6	1110	114	990	1110
6	18.3	22.8	1330	15.9	2220	1.8	7.6	1450	89.8	99.5	2230	73.4	1200	199	1071	1320
7	18.3	22.8	1320	15.4	530	0.3	1.5	1820	84.8	99.7	540	69.2	1320	206	1051	1310
8	18.6	23.0	1100	16.2	2210	1.8	6.1	1940	87.2	100.5	2350	66.5	1100	207	924	1050
9	18.7	23.5	1420	16.1	150	4.6	12.2	2330	91.4	100.8	2350	67.1	1300	182	892	1250
10	18.5	23.1	1050	15.8	530	22.6	30.5	2040	92.9	100.9	2350	68.5	1100	192	1079	1100
11	16.9	19.4	1020	15.4	530	63.2	39.6	1300	100.5	101.4	2310	93.7	1030	68	852	1010
12	16.3	21.8	1100	14.8	1930	40.9	56.4	1210	99.7	101.6	510	81.3	1100	90	1020	1100
13	17.0	21.2	1110	14.3	340	35.3	36.6	1540	99.0	101.6	630	85.3	830	96	745	1100
14	17.9	23.1	1420	14.5	310	5.6	13.7	1840	93.9	101.5	650	71.5	1420	165	834	1200
15	17.6	23.1	1120	15.3	440	35.3	38.1	1710	96.5	101.4	2350	65.5	1120	117	966	1210
16	18.7	22.6	1110	15.0	30	0.3	1.5	240	85.4	101.3	0	68.9	1040	214	938	1030
17	18.5	23.6	1440	15.2	520	9.1	38.1	1640	86.7	98.8	520	67.4	1440	197	920	1050
18	17.3	23.5	1220	14.7	500	24.1	33.5	1830	92.1	100.3	1750	69.6	1220	149	906	1050
19	17.4	21.5	1030	15.6	2050	9.1	10.7	1520	93.5	100.6	1650	74.8	1030	108	850	1010
20	17.2	21.1	920	13.0	620	16.8	19.8	2040	92.8	101.2	2350	67.0	850	150	1013	1120
21	17.1	21.1	1200	15.5	600	29.7	21.3	1320	99.2	101.5	650	82.9	1050	107	767	1110
22	17.5	22.8	1200	14.4	550	9.7	3.0	2020	93.6	101.5	650	66.3	1200	177	969	1120
23	17.2	21.5	1020	14.5	220	40.4	54.9	1300	98.5	101.3	650	82.8	1020	129	899	1150
24	19.0	23.0	1340	15.9	320	1.5	3.0	1840	87.9	101.3	630	69.6	1540	228	956	1210
25	17.2	21.4	1220	14.8	2300	49.8	21.3	1730	94.9	101.1	2110	75.8	1200	121	732	1210
26	17.3	21.8	1320	15.1	230	17.3	22.9	2250	98.3	101.2	430	77.9	1310	103	956	1310
27	16.4	20.5	1040	14.3	2350	91.2	45.7	1420	99.9	101.4	2350	85.0	820	75	702	1000
28	16.2	19.6	840	13.4	230	7.1	16.8	1510	100.2	101.7	610	87.7	840	87	592	930
29	17.9	23.1	1100	15.1	520	2.8	6.1	2000	97.7	101.5	640	72.1	1110	158	990	1030
30	17.8	22.2	1320	14.6	2350	22.9	41.1	1600	96.9	100.8	2140	80.4	1320	126	902	1300
31	17.2	22.4	1110	13.3	520	3.8	3.0	1840	94.1	101.1	440	73.7	1110	169	934	1110
Month Tot.	17.7	23.6		13.0		605.5	56.4		93.3	101.7		65.5		151	1079	

Monthly Climate Summary - September 2007

The Monteverde Institute, Monteverde, Puntarenas, Costa Rica

Elev: 1420m Lat: 10 deg. 18 min. 20 sec. N Long: 84 deg. 48 min. 34 sec. W

Day	Mean Temp Deg.C	Max Temp Deg.C	Time Max Temp	Min Temp Deg.C	Time Min Temp	Daily Rain (mm)	Max Rain Rate (mm/hr)	Time Max Rain	Mean Rel. Humid (%)	Max Rel. Humid (%)	Time Max Humid	Min Rel. Humid (%)	Time Min Humid	Mean Solar Rad (W/m2)	Max Solar Rad (W/m2)	Time Max Rad
1	17.1	21.7	1040	14.3	410	45.0	68.6	1510	95.9	101.4	2350	73.2	1030	129	878	940
2	18.0	24.0	1240	14.4	550	0.3	1.5	40	90.5	101.4	150	64.2	1240	212	1105	1150
3	17.4	22.5	1100	13.6	2300	48.0	64.0	1450	91.9	100.8	1640	70.6	1100	134	882	1110
4	16.1	19.0	1120	13.0	540	2.8	13.7	1430	98.6	101.3	2010	86.8	1120	100	675	1120
5	17.6	22.8	1050	14.3	2350	116.8	64.0	1800	97.5	101.5	2350	72.2	1050	151	1058	1040
6	16.9	21.2	1130	13.2	340	15.5	16.8	1520	96.0	101.7	350	84.1	1130	103	611	900
7	18.4	24.0	1240	15.8	1810	5.8	9.1	1750	91.8	100.4	2020	68.2	1240	185	955	1140
8	17.4	20.6	1520	15.3	2350	27.4	15.2	2010	90.9	101.0	2350	70.7	1500	119	481	1250
9	17.0	22.4	1000	14.4	550	31.8	30.5	1450	97.1	101.5	620	74.2	1140	142	1000	1050
10	17.0	21.7	940	14.4	210	49.5	47.2	1820	97.4	101.4	550	73.6	940	101	879	930
11	18.6	23.3	1420	16.5	530	0.0	0.0	2350	86.2	94.7	1740	70.8	1440	218	1100	1110
12	18.4	21.5	1310	16.1	2330	0.0	0.0	2350	86.9	97.5	2330	74.4	1200	251	945	1140
13	18.4	22.0	1130	15.9	130	49.5	42.7	1850	90.2	100.4	2140	73.9	1130	167	1076	1140
14	17.2	19.9	840	15.8	300	2.8	3.0	1020	91.4	100.6	250	76.6	2000	110	550	840
15	17.6	21.2	1100	16.1	0	3.3	3.0	1900	89.9	100.2	1930	72.7	1100	135	1126	1050
16	17.2	21.1	1130	15.3	340	11.4	4.6	1240	96.1	101.1	2350	77.5	1130	135	914	1100
17	17.0	22.0	1010	14.6	420	16.3	3.0	1010	99.7	101.3	640	81.4	1010	113	1031	1010
18	17.9	22.9	1140	15.3	2350	N/A	N/A	N/A	96.0	101.1	2300	69.8	1140	140	897	1150
19	18.1	22.1	1300	14.8	520	N/A	N/A	N/A	94.1	101.3	640	74.4	1310	168	849	910
20	17.5	20.1	950	16.3	400	N/A	N/A	N/A	100.6	101.3	2350	91.3	950	59	659	1100
21	17.6	21.2	910	16.4	510	N/A	N/A	N/A	100.2	101.4	2350	84.7	910	60	447	710
22	18.1	22.9	1410	15.3	520	N/A	N/A	N/A	95.5	101.7	520	72.7	1410	170	961	1240
23	18.4	22.0	1210	15.9	600	N/A	N/A	N/A	94.9	101.3	650	77.4	1210	173	885	1030
24	18.3	23.1	1150	14.7	2330	N/A	N/A	N/A	90.8	100.7	2350	70.9	1150	199	971	1100
25	17.7	23.1	1050	14.2	120	N/A	N/A	N/A	90.0	101.0	150	61.5	1050	179	948	1100
26	18.3	22.8	1410	13.8	310	N/A	N/A	N/A	86.9	99.8	320	68.2	1300	180	899	1030
27	18.6	23.3	1040	16.5	40	N/A	N/A	N/A	88.0	99.6	2140	65.0	1040	202	964	1120
28	18.7	22.3	1500	16.8	20	N/A	N/A	N/A	88.2	98.6	1930	71.3	1500	205	947	1030
29	18.7	23.1	1150	15.4	2350	N/A	N/A	N/A	87.4	98.7	2350	70.0	1150	196	965	1240
30	17.7	21.7	1100	15.1	140	N/A	N/A	N/A	90.8	99.5	200	74.9	1100	100	554	1100
Month Tot.	17.8	24.0		13.0		N/A	68.6		93.0	101.7		61.5		151	1126	

Monthly Climate Summary - October 2007

The Monteverde Institute, Monteverde, Puntarenas, Costa Rica

Elev: 1420m Lat: 10 deg. 18 min. 20 sec. N Long: 84 deg. 48 min. 34 sec. W

Day	Mean Temp Deg.C	Max Temp Deg.C	Time Max Temp	Min Temp Deg.C	Time Min Temp	Daily Rain (mm)	Max Rain Rate (mm/hr)	Time Max Rain	Mean Rel. Humid (%)	Max Rel. Humid (%)	Time Max Humid	Min Rel. Humid (%)	Time Min Humid	Mean Solar Rad (W/m2)	Max Solar Rad (W/m2)	Time Max Rad
1	17.2	21.6	1010	14.8	2350	N/A	N/A	N/A	97.9	101.4	2350	82.0	840	87	819	1010
2	16.6	20.5	1100	14.7	130	N/A	N/A	N/A	100.1	101.4	620	87.3	1050	96	939	1050
3	17.0	20.0	1100	15.9	310	N/A	N/A	N/A	100.1	101.3	630	89.6	1100	87	848	1050
4	17.3	21.5	920	15.2	520	20.3	7.6	1200	99.4	101.4	640	82.5	920	92	786	1050
5	17.3	21.6	850	14.9	440	18.0	15.2	1550	98.1	101.4	540	76.4	850	116	820	940
6	16.5	21.9	1010	14.9	500	60.2	13.7	1340	99.9	101.5	500	81.2	1010	73	832	1000
7	16.5	19.3	1030	15.5	250	36.1	6.1	1610	99.6	101.1	2350	87.0	1000	91	668	1000
8	16.3	17.2	1310	15.0	220	5.6	1.5	2350	101.9	102.2	830	101.1	40	63	456	1250
9	16.8	17.3	1100	16.4	200	121.4	9.1	1420	102.2	102.3	2350	102.1	1230	37	260	1200
10	17.1	17.7	1300	16.6	210	95.8	21.3	1200	102.3	102.4	2350	102.2	1320	43	266	1030
11	17.2	17.8	1350	16.7	200	97.8	18.3	1810	104.0	104.7	2350	102.4	550	47	269	1320
12	16.9	18.2	1030	16.3	1330	87.4	27.4	1430	104.7	104.8	2350	104.5	1040	55	576	1020
13	17.1	19.0	1200	16.4	340	19.8	6.1	1830	104.7	104.8	600	104.3	1210	99	613	1130
14	17.4	19.4	1300	16.1	2310	33.3	36.6	1510	103.6	104.8	540	100.5	1330	106	836	1140
15	16.8	18.6	1030	15.6	420	10.7	16.8	1450	102.2	103.4	750	98.9	2350	73	393	1240
16	16.8	19.2	920	15.4	550	17.3	13.7	1640	96.6	98.8	0	90.8	1000	58	557	840
17	16.8	18.7	1110	15.7	500	27.9	13.7	1430	95.8	96.6	600	89.6	1210	60	703	950
18	16.6	18.0	940	15.8	440	36.6	35.1	1140	96.3	96.6	840	95.9	1030	56	454	810
19	16.4	17.8	1240	15.4	420	44.2	39.6	1350	94.4	96.1	430	92.4	1310	71	592	930
20	16.2	17.9	1140	15.3	1850	64.8	56.4	1350	93.7	95.6	50	91.7	1150	63	460	1040
21	16.5	19.2	1010	15.2	330	38.6	29.0	1520	90.1	93.6	140	81.9	1050	75	533	1000
22	17.4	22.3	1250	13.9	2350	5.3	24.4	1500	79.6	89.6	30	63.6	1250	180	1003	1130
23	16.6	21.3	910	13.2	100	39.6	22.9	1440	86.0	90.9	2350	65.5	820	119	724	920
24	16.3	20.9	930	13.9	540	0.0	0.0	2350	90.4	93.0	740	78.7	930	107	852	930
25	16.6	20.6	820	13.9	530	11.9	7.6	1450	91.7	96.6	1950	77.0	820	93	708	810
26	17.6	21.4	1450	15.1	2350	0.3	1.5	0	92.3	103.4	720	83.4	1430	196	891	1220
27	N/A	N/A	N/A	N/A	N/A	2.0	1.5	2240	N/A	N/A	N/A	N/A	N/A	168	873	1020
28	N/A	N/A	N/A	N/A	N/A	0.0	0.0	2350	N/A	N/A	N/A	N/A	N/A	226	928	1010
29	N/A	N/A	N/A	N/A	N/A	0.0	0.0	2350	N/A	N/A	N/A	N/A	N/A	123	1064	1050
30	N/A	N/A	N/A	N/A	N/A	0.0	0.0	2350	N/A	N/A	N/A	N/A	N/A	106	739	1010
31	N/A	N/A	N/A	N/A	N/A	66.8	12.2	1110	N/A	N/A	N/A	N/A	N/A	52	474	730
Month Tot.	16.8	22.3		15.3		N/A	56.4		99.3	104.8	63.6		94	1064		

Monthly Climate Summary - November 2007

The Monteverde Institute, Monteverde, Puntarenas, Costa Rica

Elev: 1420m Lat: 10 deg. 18 min. 20 sec. N Long: 84 deg. 48 min. 34 sec. W

Day	Mean Temp Deg.C	Max Temp Deg.C	Time Max Temp	Min Temp Deg.C	Time Min Temp	Daily Rain (mm)	Max Rain Rate (mm/hr)	Time Max Rain	Mean Rel. Humid (%)	Max Rel. Humid (%)	Time Max Humid	Min Rel. Humid (%)	Time Min Humid	Mean Solar Rad (W/m2)	Max Solar Rad (W/m2)	Time Max Rad
1	N/A	N/A	N/A	N/A	N/A	7.1	3.0	0	N/A	N/A	N/A	N/A	N/A	102	688	910
2	N/A	N/A	N/A	N/A	N/A	2.3	1.5	2050	N/A	N/A	N/A	N/A	N/A	83	807	910
3	N/A	N/A	N/A	N/A	N/A	0.5	1.5	1720	N/A	N/A	N/A	N/A	N/A	173	869	1110
4	N/A	N/A	N/A	N/A	N/A	0.5	1.5	2040	N/A	N/A	N/A	N/A	N/A	207	889	1120
5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	138	746	940
6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	83	719	1050
7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	122	608	1030
8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	107	625	1120
9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	155	843	1220
10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	114	874	1140
11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	49	230	1310
12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	74	581	1310
13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	175	896	1300
14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	79	361	1010
15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	119	805	1050
16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	144	794	1050
17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	150	763	1250
18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	193	807	1220
19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	160	871	1120
20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	156	746	1000
21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	80	501	1240
22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	145	742	1000
23	18.0	21.5	1350	16.0	440	N/A	N/A	N/A	81.6	93.8	2120	68.9	1340	191	851	1140
24	17.5	21.4	1300	15.7	340	N/A	N/A	N/A	82.3	92.4	1750	67.5	1240	198	812	1150
25	17.9	21.6	1320	16.2	310	N/A	N/A	N/A	84.8	93.5	2210	70.0	1320	185	822	1150
26	17.7	21.8	1200	15.5	1630	N/A	N/A	N/A	90.6	100.2	650	76.2	1240	175	905	1200
27	16.6	18.8	1420	15.5	550	N/A	N/A	N/A	90.8	99.2	2310	71.6	1010	107	645	1430
28	16.5	19.2	1210	15.3	2350	N/A	N/A	N/A	90.0	99.1	1850	74.3	1140	148	832	1130
29	16.1	19.6	1220	14.7	2300	N/A	N/A	N/A	86.4	97.0	1730	68.4	1210	157	899	1210
30	15.3	18.1	1400	13.9	500	N/A	N/A	N/A	79.8	89.2	2140	60.2	810	156	829	1200
-----																
Month																
Tot.	17.0	21.8		13.9		N/A	3.0		85.8	100.2		60.2		138	905	

Monthly Climate Summary - December 2007

The Monteverde Institute, Monteverde, Puntarenas, Costa Rica

Elev: 1420m Lat: 10 deg. 18 min. 20 sec. N Long: 84 deg. 48 min. 34 sec. W

Day	Mean Temp Deg.C	Max Temp Deg.C	Time Max Temp	Min Temp Deg.C	Time Min Temp	Daily Rain (mm)	Max Rain Rate (mm/hr)	Time Max Rain	Mean Rel. Humid (%)	Max Rel. Humid (%)	Time Max Humid	Min Rel. Humid (%)	Time Min Humid	Mean Solar Rad (W/m2)	Max Solar Rad (W/m2)	Time Max Rad
1	16.3	19.0	1440	14.9	40	N/A	N/A	N/A	82.1	89.4	640	70.4	1440	214	809	1140
2	16.5	20.0	1150	14.7	400	N/A	N/A	N/A	78.8	88.6	1830	63.3	1150	187	825	1120
3	17.2	21.2	1330	15.3	620	N/A	N/A	N/A	74.6	91.6	2100	57.8	220	225	804	1130
4	16.9	21.3	1150	14.9	330	N/A	N/A	N/A	84.0	96.8	2120	65.8	1130	210	808	1120
5	16.7	20.9	1120	14.8	220	N/A	N/A	N/A	91.5	100.2	2320	69.0	1120	151	783	1020
6	17.2	20.5	1230	15.0	130	N/A	N/A	N/A	85.6	98.5	0	62.2	2350	139	701	1320
7	16.4	18.8	1310	15.2	2350	N/A	N/A	N/A	85.7	95.2	1520	44.4	50	104	530	1300
8	16.9	20.0	1430	15.0	300	N/A	N/A	N/A	88.4	98.8	2110	75.2	1430	181	923	1100
9	16.8	19.4	1400	15.2	730	N/A	N/A	N/A	94.1	99.5	150	77.6	1320	169	760	1050
10	17.0	20.3	1300	15.4	220	N/A	N/A	N/A	91.0	98.9	1900	78.1	1310	159	794	1020
11	16.4	18.7	1050	15.0	540	N/A	N/A	N/A	89.6	98.7	40	79.4	1020	162	764	950
12	15.8	18.1	1440	14.8	2350	N/A	N/A	N/A	88.8	95.0	700	75.2	1450	147	744	1400
13	16.2	19.9	1140	13.4	210	N/A	N/A	N/A	85.0	97.7	240	72.5	2230	208	874	1140
14	16.4	19.9	1320	14.1	0	N/A	N/A	N/A	74.8	87.5	2320	53.2	130	209	816	1140
15	17.1	21.0	1050	14.7	510	N/A	N/A	N/A	81.8	98.6	2200	60.1	300	134	961	1040
16	17.4	21.0	1220	14.4	500	N/A	N/A	N/A	89.2	99.6	2000	72.6	1250	126	716	1210
17	16.6	18.4	1050	15.6	2240	N/A	N/A	N/A	95.9	99.6	2320	87.5	1530	104	683	1250
18	16.2	19.8	1340	13.3	2330	N/A	N/A	N/A	91.4	99.6	310	73.6	1250	175	946	1140
19	15.9	19.9	1320	13.5	0	N/A	N/A	N/A	84.1	98.5	640	67.0	1450	238	905	1210
20	15.6	19.4	1150	14.0	540	N/A	N/A	N/A	92.9	99.5	2000	73.0	1150	152	870	1110
21	15.8	19.2	1340	14.8	440	N/A	N/A	N/A	92.7	99.9	1800	79.5	1340	126	766	1250
22	15.1	18.2	1240	13.7	630	N/A	N/A	N/A	95.1	99.3	10	81.2	1220	133	941	1120
23	14.7	17.5	1220	13.7	710	N/A	N/A	N/A	93.0	98.0	740	84.9	1930	123	890	1210
24	14.7	16.1	1330	13.9	930	N/A	N/A	N/A	94.2	98.3	1940	80.2	1230	133	750	1020
25	15.4	16.8	1110	14.2	1640	N/A	N/A	N/A	97.0	98.6	1620	95.3	1130	148	763	1130
26	15.3	18.2	1320	13.6	640	N/A	N/A	N/A	87.7	97.5	350	72.8	1410	219	802	1130
27	15.3	18.1	1450	13.4	540	N/A	N/A	N/A	79.7	92.0	2050	61.2	210	164	835	1050
28	16.0	18.9	1040	14.0	0	N/A	N/A	N/A	91.1	97.4	1640	80.3	110	121	747	1040
29	15.4	17.7	1130	14.2	820	N/A	N/A	N/A	93.2	97.4	710	82.1	1120	138	914	1120
30	16.7	20.1	1330	14.9	500	N/A	N/A	N/A	83.0	91.6	120	68.2	1340	215	826	1130
31	16.3	19.4	1220	14.8	2350	N/A	N/A	N/A	83.1	92.5	1730	68.2	1330	181	876	1110
Month Tot.	16.2	21.3		13.3		N/A	N/A		87.7	100.2		44.4		164	961	

## Appendix B: Manual rain-gauge measurements

Rainfall accumulations at the Monteverde Institute for 2007

On work days, Marlene Campbell Leiton measured accumulations in a manual gauge located on the front lawn. The recording (tipping-bucket) rain gauge is located on the roof of the institute and records rainfall over ten-minute intervals; its data have been amalgamated to match the measurement dates for the manual gauge.

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 aguswa@email.smith.edu

Year	Month	Day	Time	Manual Recording	
				Gauge [mm]	Gauge [mm]
2006	12	19	8 am		
2007	1	2	8 am	29.7	0.0
2007	1	3	8 am	4.1	4.3
2007	1	4	8 am	6.4	7.1
2007	1	5	8 am	2.3	2.0
2007	1	8	8 am	8.9	9.7
2007	1	9	8 am	2.0	2.0
2007	1	10	8 am	5.8	6.9
2007	1	11	8 am	0.3	0.0
2007	1	12	8 am	0.3	0.0
2007	1	15	8 am	14.7	17.8
2007	1	16	8 am	2.8	1.3
2007	1	17	8 am	10.2	11.7
2007	1	18	8 am	16.0	23.4
2007	1	19	8 am	1.3	1.0
2007	1	22	8 am	2.5	1.8
2007	1	23	8 am	0.3	0.0
2007	1	24	8 am	1.8	0.5
2007	1	25	8 am	1.0	0.3
2007	1	26	8 am	1.5	0.3
2007	1	29	8 am	0.5	0.0
2007	1	30	8 am	2.8	1.5
2007	1	31	8 am	0.0	1.0
2007	2	1	8 am	0.0	0.0
2007	2	2	8 am	0.0	0.0
2007	2	5	8 am	0.0	0.3
2007	2	6	8 am	0.0	0.0
2007	2	7	8 am	2.8	1.0
2007	2	8	8 am	0.0	0.3
2007	2	9	8 am	0.0	0.0
2007	2	12	8 am	0.3	0.0
2007	2	13	8 am	0.3	0.0
2007	2	14	8 am	0.0	0.3
2007	2	15	8 am	0.0	0.0
2007	2	16	8 am	0.0	0.0
2007	2	19	8 am	19.8	12.2
2007	2	20	8 am	0.3	13.7
2007	2	21	8 am	2.3	2.8
2007	2	22	8 am	0.0	0.8
2007	2	23	8 am	0.0	0.3
2007	2	26	8 am	0.0	0.0
2007	2	27	8 am	0.0	0.0
2007	2	28	8 am	0.0	0.0
2007	3	1	8 am	1.5	0.3

Year	Month	Day	Time	Manual Recording	
				Gauge [mm]	Gauge [mm]
2007	3	2	8 am	0.3	0.0
2007	3	5	8 am	2.0	0.0
2007	3	6	8 am	0.3	0.0
2007	3	7	8 am	0.0	0.0
2007	3	8	8 am	0.8	0.0
2007	3	9	8 am	0.0	0.0
2007	3	12	8 am	5.8	0.0
2007	3	13	8 am	6.9	0.0
2007	3	14	8 am	0.3	0.0
2007	3	15	8 am	0.0	0.0
2007	3	16	8 am	0.0	0.0
2007	3	19	8 am	6.9	0.0
2007	3	20	8 am	3.8	0.0
2007	3	21	8 am	0.0	0.0
2007	3	22	8 am	0.0	0.0
2007	3	23	8 am	0.0	0.0
2007	3	26	8 am	0.5	0.0
2007	3	27	8 am	0.0	0.0
2007	3	28	8 am	0.0	0.0
2007	3	29	8 am	0.0	0.0
2007	3	30	8 am	0.0	0.0
2007	4	2	8 am	0.0	0.0
2007	4	3	8 am	0.5	0.0
2007	4	9	8 am	5.1	0.5
2007	4	10	8 am	0.3	0.0
2007	4	11	8 am	4.1	0.0
2007	4	12	8 am	32.5	0.0
2007	4	13	8 am	1.3	0.3
2007	4	16	8 am	1.8	0.0
2007	4	17	8 am	0.0	0.0
2007	4	18	8 am	0.0	0.0
2007	4	19	8 am	0.3	0.0
2007	4	20	8 am	0.0	0.0
2007	4	23	8 am	0.0	0.0
2007	4	24	8 am	0.0	0.0
2007	4	25	8 am	0.0	0.0
2007	4	26	8 am	0.8	0.3
2007	4	27	8 am	0.3	0.0
2007	4	30	8 am	19.8	0.0
2007	5	1	8 am	0.3	0.0
2007	5	2	8 am	0.8	0.0
2007	5	3	8 am	12.2	0.3
2007	5	4	8 am	0.3	0.5
2007	5	7	8 am	1.8	0.3
2007	5	8	8 am	0.3	0.3
2007	5	9	8 am	0.3	0.0
2007	5	10	8 am	0.0	0.0
2007	5	11	8 am	0.0	0.0
2007	5	14	8 am	25.4	0.5
2007	5	15	8 am	0.3	0.0
2007	5	16	8 am	17.3	0.0
2007	5	17	8 am	2.0	0.3
2007	5	18	8 am	21.1	0.8
2007	5	21	8 am	15.5	2.0

Year	Month	Day	Time	Manual Recording	
				Gauge [mm]	Gauge [mm]
2007	5	22	8 am	52.1	0.5
2007	5	23	8 am	1.0	0.5
2007	5	24	8 am	33.0	0.5
2007	5	25	8 am	77.2	0.3
2007	5	28	8 am	36.8	0.3
2007	5	29	8 am	1.3	0.0
2007	5	30	8 am	4.8	0.0
2007	5	31	8 am	108.7	0.3
2007	6	1	8 am	60.5	0.3
2007	6	4	8 am	37.6	0.5
2007	6	5	8 am	14.7	0.3
2007	6	6	8 am	3.8	0.3
2007	6	7	8 am	1.3	0.5
2007	6	8	8 am	13.5	1.0
2007	6	11	8 am	2.3	2.5
2007	6	12	8 am	0.5	1.0
2007	6	13	8 am	0.3	1.5
2007	6	14	8 am	52.1	2.3
2007	6	15	8 am	1.0	0.8
2007	6	18	8 am	17.8	3.8
2007	6	19	8 am	0.3	1.5
2007	6	20	8 am	0.0	0.3
2007	6	21	8 am	17.8	18.8
2007	6	22	8 am	0.3	1.3
2007	6	25	8 am	19.8	21.3
2007	6	26	8 am	4.3	5.8
2007	6	27	8 am	1.8	2.3
2007	6	28	8 am	1.3	2.8
2007	6	29	8 am	57.2	59.7
2007	7	2	8 am	21.1	18.8
2007	7	3	8 am	1.8	1.5
2007	7	4	8 am	1.3	0.8
2007	7	5	8 am	1.3	49.5
2007	7	6	8 am	0.8	5.6
2007	7	9	8 am	27.9	27.4
2007	7	10	8 am	23.6	23.6
2007	7	11	8 am	0.8	0.3
2007	7	12	8 am	0.3	2.0
2007	7	13	8 am	28.2	25.4
2007	7	16	8 am	13.0	13.2
2007	7	17	8 am	0.3	0.0
2007	7	18	8 am	0.0	0.0
2007	7	19	8 am	6.1	6.4
2007	7	20	8 am	13.0	13.7
2007	7	23	8 am	14.7	20.8
2007	7	24	8 am	13.5	11.4
2007	7	25	8 am	63.2	47.5
2007	7	26	8 am	0.8	0.8
2007	7	27	8 am	1.3	0.0
2007	7	30	8 am	2.3	2.5
2007	7	31	8 am	1.3	0.3
2007	8	1	8 am	1.0	2.8
2007	8	2	8 am	2.3	3.6
2007	8	3	8 am	0.3	0.0

Year	Month	Day	Time	Manual Recording	
				Gauge [mm]	Gauge [mm]
2007	8	6	8 am	50.8	55.1
2007	8	7	8 am	1.3	1.8
2007	8	8	8 am	0.3	0.3
2007	8	9	8 am	2.5	2.0
2007	8	10	8 am	1.3	4.6
2007	8	13	8 am	122.7	127.5
2007	8	14	8 am	33.0	34.3
2007	8	15	8 am	8.9	5.8
2007	8	16	8 am	33.0	35.3
2007	8	17	8 am	0.3	0.0
2007	8	20	8 am	33.0	42.4
2007	8	21	8 am	20.3	20.8
2007	8	22	8 am	25.4	26.9
2007	8	23	8 am	7.6	8.6
2007	8	24	8 am	40.4	40.1
2007	8	27	8 am	40.4	68.8
2007	8	28	8 am	91.2	91.2
2007	8	29	8 am	6.4	6.9
2007	8	30	8 am	4.6	4.8
2007	8	31	8 am	15.2	21.1
2007	9	3	8 am	50.8	48.8
2007	9	4	8 am	42.9	48.0
2007	9	5	8 am	10.9	11.2
2007	9	6	8 am	107.7	108.5
2007	9	7	8 am	24.6	15.5
2007	9	10	8 am	50.8	65.3
2007	9	11	8 am	40.6	49.3
2007	9	12	8 am	0.0	0.0
2007	9	13	8 am	0.0	0.0
2007	9	14	8 am	48.3	49.8
2007	9	17	8 am	59.7	23.6
2007	9	18	8 am	34.3	12.2
2007	9	19	8 am	42.4	8.1
2007	9	20	8 am	72.4	7.4
2007	9	21	8 am	50.8	14.7
2007	9	24	8 am	82.6	28.7
2007	9	25	8 am	3.0	3.6
2007	9	26	8 am	50.8	1.8
2007	9	27	8 am	2.3	1.8
2007	9	28	8 am	1.0	0.5
2007	10	1	8 am	2.5	5.8
2007	10	2	8 am	82.0	34.5
2007	10	3	8 am	8.9	23.1
2007	10	4	8 am	2.8	3.8
2007	10	5	8 am	20.1	20.3
2007	10	8	8 am	127.0	114.3
2007	10	9	8 am	81.3	30.7
2007	10	10	8 am	101.6	132.8
2007	10	11	8 am	62.2	81.8
2007	10	12	8 am	92.7	94.7
2007	10	15	8 am	101.6	121.2
2007	10	16	8 am	38.1	10.2
2007	10	17	8 am	57.2	18.8
2007	10	18	8 am	54.6	26.7

Year	Month	Day	Time	Manual Recording	
				Gauge [mm]	Gauge [mm]
2007	10	19	8 am	27.9	38.9
2007	10	22	8 am	82.6	145.0
2007	10	23	8 am	5.1	5.3
2007	10	24	8 am	43.9	39.6
2007	10	25	8 am	0.5	0.3
2007	10	26	8 am	0.5	11.9
2007	10	29	8 am	13.2	2.0
2007	10	30	8 am	0.5	0.0
2007	10	31	8 am	0.5	0.0
2007	11	1	8 am	74.9	69.1
2007	11	2	8 am	0.5	6.1
2007	11	5	8 am	31.0	2.0
2007	11	6	8 am	55.4	0.5
2007	11	7	8 am	98.0	0.5
2007	11	8	8 am	16.3	0.5
2007	11	9	8 am	23.4	0.3
2007	11	12	8 am	2.5	0.8
2007	11	13	8 am	21.8	0.3
2007	11	14	8 am	6.1	0.0
2007	11	15	8 am	5.8	0.3
2007	11	16	8 am	6.1	0.0
2007	11	19	8 am	6.1	0.5
2007	11	20	8 am	0.5	0.0
2007	11	21	8 am	1.0	0.3
2007	11	22	8 am	0.8	0.3
2007	11	23	8 am	1.3	0.0
2007	11	26	8 am	0.5	0.3
2007	11	27	8 am	0.0	0.3
2007	11	28	8 am	0.3	0.0
2007	11	29	8 am	8.1	0.3
2007	11	30	8 am	2.0	0.0
2007	12	3	8 am	0.0	0.3
2007	12	4	8 am	0.3	0.0
2007	12	5	8 am	0.3	0.3
2007	12	6	8 am	0.5	0.0
2007	12	7	8 am	0.5	0.0
2007	12	10	8 am	85.1	0.3
2007	12	11	8 am	20.3	0.0
2007	12	12	8 am	0.5	0.0
2007	12	13	8 am	0.5	0.0
2007	12	14	8 am	0.5	0.0
2007	12	17	8 am	36.8	0.0
2007	12	18	8 am	16.3	0.0
2007	12	19	8 am	14.2	0.0
2007	12	20	8 am	6.1	0.0
2007	12	31	8 am	63.5	83.3