

to Pilate and then cuts obliquely across the strike. At Gros-Morne it enters a downfaulted trough and follows this trough northward to the sea.

Detailed descriptions of the drainage with regard to water supply and power development are given on pages 513-595.

CLIMATE.

SOURCE OF DATA.

Nearly all the data regarding climate are taken from the bulletins of the Observatoire Météorologique du Séminaire-Collège St. Martial,¹ which have been published semiannually for the period from July, 1909, to the end of 1916, and annually since that time. The data contained in the bulletins were collected under the supervision of J. Scherer, Directeur de l'Observatoire. Records of rainfall and temperature at many stations extend back a few years prior to 1909 but are summed up in the Bulletin Semestriel for July to December of that year. Records at Port-au-Prince covering a much longer period of observation also are summarized in different issues of the bulletin. Data from Moreau de Saint-Méry² that are definite enough to be of value are used to a small extent to supplement those taken from the bulletins.

TEMPERATURE.

All parts of the Republic have a warm and notably equable temperature. Frost, snow, and ice probably do not form anywhere in the Republic,³ even at the highest altitudes, although the temperatures on the high mountain ranges are appreciably less than those at lower altitudes.

Most of the stations at which temperature observations have been made are at low altitudes on plains, in valleys, or near the sea. The records made represent the conditions under which the greater part of the population of the Republic lives, but they do not give an entirely correct idea of the purely physical aspect of the climate. Only one station, Furcy, is located at a really high altitude, and the records from this station, though incomplete, are sufficient to show a considerably lower temperature than that prevailing on the lowlands. The following tables give the mean monthly temperatures at a number of well-distributed stations over the period for which records are available. The averages of the monthly means for the years of record available also are given.

¹ Imprimerie Nationale, Port-au-Prince. The bulletin for 1919, published in 1920, was the most recent one used in compiling the tables. The bulletins for 1920 and 1921 have been published in the meantime.

² Moreau de Saint-Méry, L. E., Description topographique, physique, civile, et politique de la partie française de l'isle Saint-Domingue, 2 vols., Philadelphia, 1797-98.

³ Moreau de Saint-Méry (vol. 2, p. 505) states that in the Canton of Fond Jean-Noël, northwest of Sal-Trou, near the crest of Montagne de la Selle, "one experiences a sensation of coldness and sometimes one even sees a kind of frost." His statement is so qualified as to be rather doubtful, considering the lack of confirmatory evidence.

Monthly mean temperature at places in Haiti.

[Degrees Centigrade.]*

Cap-Haïtien; altitude, 15 meters.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1909 ..	.....	.....	.....	.....	.....	.....	27.1	.....	.....	25.0	22.5	21.5
1910 ..	20.7	21.8	21.9	23.8	24.7	25.8	25.9	26.8	25.2	25.8	24.2	22.5
1911 ..	22.6	22.4	22.7	24.6	25.1	27.0	27.6	27.7	27.8	26.4	26.9	24.2
1912 ..	24.8	24.6	25.5	25.8	26.4	27.3	27.2	27.5	27.9	27.1	25.8	24.9
1913 ..	23.8	23.8	24.9	23.9	24.4	25.8	26.0	.....	.....	.....	25.1	24.4
1914 ..	23.2	23.6	23.4	25.2	26.1	26.5	26.8	26.5	27.0	26.5	24.8	24.3
1915 ..	23.7	21.5	22.5	22.8	.....	.....	.....	.....	.....	.....	.....	.....
1916 ..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mean .	23.1	22.9	23.5	24.3	25.3	26.5	26.8	27.0	27.0	26.2	24.9	23.9

*All means are obtained by adding the maximum and minimum and dividing by two.

Bayeux; altitude, 10 meters.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1909 ..	.....	.....	.....	.....	.....	.....	27.6	27.1	26.8	25.0	24.0	22.1
1910 ..	21.6	22.2	22.4	23.8	25.2	26.8	26.8	26.8	26.3	25.8	24.8	25.2
1911 ..	22.5	22.6	22.6	24.2	25.1	26.3	26.8	.....	27.0	26.8	25.8	23.9
1912 ..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1913 ..	23.0	25.6	23.9	23.0	24.1	25.4	26.1	26.3	26.0	25.4	24.2	23.4
1914 ..	23.0	23.2	23.1	25.0	25.9	26.3	.....	.....	.....	.....	.....	.....
1915 ..	.....	.....	.....	.....	.....	.....	27.4	27.4	27.1	26.9	24.9	23.6
1916 ..	22.4	22.3	22.3	25.1	25.4	26.8	26.5	27.0	26.6	25.7	24.5	22.5
Mean .	22.5	23.2	22.9	24.2	25.1	26.2	26.9	26.9	26.6	25.8	24.7	22.4

Port-de-Paix; altitude 25 meters.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1909 ..	.....	.....	.....	.....	.....	.....	26.8	26.2	26.0	26.4	24.5	22.7
1910 ..	20.9	21.8	22.7	23.9	25.1	26.6	26.2	26.8	26.6	26.1	.....	23.7
1911 ..	21.6	22.3	22.2	24.3	24.9	26.5	26.9	27.3	27.2	.....	.....	.....
1912 ..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1913* .	21.6	22.3	21.9	24.2	25.5	26.2	26.8	26.5	26.6	25.7	24.2	22.6
Mean .	21.4	22.1	22.3	24.1	25.2	26.4	26.7	26.6	26.6	26.1	24.3	23.0

*Furnished by M. Abbeg, Port-de-Paix.

*Monthly mean temperature at places in Haiti—Continued.***Gonaïves; altitude, 3 meters.**

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1911 ..	....	....	25.5	26.8	26.6	28.2	28.7	28.7	....	28.0	27.4	25.6
1912 ..	25.7	26.0	27.6	27.3	27.6	....	....	....	28.2	27.6	27.4	26.4
1913 ..	26.0	25.4	26.7	25.8	27.1	27.3	27.5	27.2	26.8	26.9	26.2	25.2
1914 ..	24.5	....	26.1	27.3	28.1	28.4	29.3	29.2	28.8	28.1	26.9	26.9
1915 ..	26.6	25.4	26.9	26.8	28.3	28.5	....	....	....	....	....	....
1916 ..	25.7	25.2	25.6	27.2	28.0	....	....	....	28.0	27.3	26.6	24.4
Mean .	25.7	25.4	26.4	26.9	27.6	28.1	28.5	28.4	27.9	27.6	26.6	25.7

Gantier; altitude, 117 meters.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1909 ..	....	....	....	....	....	....	27.2	26.7	26.7	26.5	23.6	22.0
1910 ..	22.9	23.7	23.4	25.1	26.4	27.5	27.2	27.4	26.6	26.5	26.4	23.9
1911 ..	23.7	24.1	24.6	25.5	26.5	26.7	27.8	28.1	27.8	26.9	26.4	24.1
1912 ..	24.4	25.6	26.8	27.0	29.0	28.2	28.8	28.8	27.7	26.1	26.9	26.4
1913 ..	24.4	25.6	26.9	25.8	26.8	27.6	28.1	27.9	27.5	27.4	26.4	25.2
1914 ..	24.0	24.6	25.2	27.4	28.2	28.0	28.0	28.6	28.2	27.8	25.9	25.9
1915 ..	24.6	25.2	25.5	26.2	27.1	27.9	28.5	28.5	28.6	28.6	27.0	25.7
1916 ..	....	....	....	26.9	27.1	27.5	27.6	27.5	27.3	26.9	25.4	23.8
Mean .	24.0	24.8	25.4	26.3	27.3	27.6	27.9	27.9	27.5	27.1	26.0	24.6

Port-au-Prince; altitude, 37 meters.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1909 ..	....	....	....	....	....	....	28.9	28.0	27.2	27.3	24.8	23.7
1910 ..	24.5	25.2	24.7	26.0	26.6	28.0	28.3	25.2	27.5	26.6	26.1	25.5
1911 ..	25.4	25.3	25.5	26.9	26.3	28.4	29.2	28.7	28.2	26.6	26.4	26.0
1912 ..	26.1	26.1	26.9	26.7	27.5	28.4	28.8	28.2	27.5	26.9	27.1	26.4
1913 ..	26.2	26.3	27.1	25.6	26.1	27.9	28.2	28.3	27.4	26.8	26.0	25.4
1914 ..	25.2	25.9	26.4	26.4	27.8	28.1	29.6	28.9	28.4	27.6	26.1	26.2
1915 ..	26.5	26.0	27.0	26.2	28.2	28.8	29.2	28.8	28.2	28.1	27.2	26.6
1916 ..	26.3	26.1	26.5	27.2	27.6	27.9	27.7	28.6	27.9	26.8	26.0	24.7
Mean .	25.7	25.8	26.3	26.4	27.2	28.2	28.8	28.5	27.8	27.1	26.2	25.6

Monthly mean temperature at places in Haiti—Continued.

Pétionville; altitude, 400 meters.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1909 ..	.....	.....	.....	.....	.....	.....	27.0	26.1	25.5	25.4	22.4	21.6
1910 ..	21.6	22.5	22.8	24.0	24.6	25.6	26.0	26.3	26.6	24.8	24.1	22.7
1911 ..	22.3	23.2	23.8	24.7	24.3	25.8	26.6	26.6	25.8	24.9	24.2	23.0
1912 ..	23.8	23.9	24.3	24.6	25.4	24.8	26.3	26.3	26.0	25.1	24.6	23.7
1913 ..	.....	.....	.....	.....	.....	.....	26.0	26.1	25.0	24.2	23.8	22.6
1914 ..	22.5	23.3	23.9	25.2	25.7	25.7	27.3	26.9	26.6	25.9	25.1	24.3
1915 ..	24.2	23.3	25.1	24.0	26.1	26.4	27.2	26.7	26.3	26.2	25.3	24.9
1916 ..	24.3	24.0	24.0	24.8	25.5	25.8	25.6	25.9	25.9	24.0	23.5	22.4
Mean .	23.1	23.4	24.0	24.5	25.3	25.7	26.5	26.3	26.0	25.1	24.1	23.1

Les Cayes; altitude, 7 meters.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1909 ..	.....	.....	.....	.....	.....	.....	27.4	26.7	25.5	26.0	25.5	24.3
1910 ..	24.0	23.8	23.7	24.4	25.4	26.7	26.7	26.9	26.8	26.3	26.2	25.0
1911 ..	24.3	24.0	.....	.....	.....	.....	.....	27.9	28.2	27.2	26.6	25.9
1912 ..	26.0	25.2	25.7	25.5	26.5	.....	.....	.....	27.1	27.1	26.8	25.8
1913 ..	24.6	24.5	25.4	24.8	25.8	26.8	26.3	26.7	26.6	26.5	26.1	25.0
1914 ..	24.3	24.7	25.0	25.7	26.7	27.5	27.2	27.1	27.0	26.9	26.0	25.9
1915 ..	24.8	24.8	25.5	25.6	26.5	27.3	26.9	27.0	26.9	27.1	26.7	26.8
1916 ..	24.8	24.7	24.6	26.3	26.4	26.8	26.9	26.7	26.7	25.7	25.6	25.1
Mean .	24.7	24.7	25.0	25.2	26.2	27.0	26.9	27.0	26.8	26.6	26.2	25.3

Furcy; altitude, 1,540 meters.

Year.	Aug.	Days of record.	Sept.	Days of record.	Dec.-Jan.	Days of record.
1906....	19.9	.....	20.3	1-12	.....	.....
1907....	19.6	.....	19.5	1-15	17.9	Dec. 1-31.
1908....	19.7	.....	19.3	1-16	.....	.....
1909....	19.0	.....	18.9	1-15	.....	.....
1910....	19.2	.....	19.3	1-16	.....	.....
1911....	19.7	.....	19.8	1-14	.....	.....
1912....	19.2	3-31.....	19.0	1-18	17.4	Dec. 24-Jan. 4.
1913....	18.4	.....	18.8	1-17	17.5	Dec. 24-Jan. 4.
1914....	19.4	.....	19.6	1-14	17.3	Dec. 23-Jan. 3.
1915....	19.6	1-11, 17-31.....	19.6	1-16	18.0	Dec. 28-Jan. 7.
1916....	19.7	1-13, 16-29, 31.....	19.3	1-13	.....	.....
1917....	18.6	.....	18.3	1-15	.....	.....
Mean...	19.3	.....	19.3	.....	17.5	.....

A notable feature of all these records is the small difference, generally about 5° C., between the highest and lowest monthly mean temperature. At Furcy this relation is even more striking, as there appears to be a difference of less than 2° C. between the mean winter and the mean summer temperature. The annual means of the different stations, arranged according to increasing temperature, are as follows:

	° C.
Furcy (approx.)	18.4
Port-de-Paix	24.6
Bayeux and Pétionville.....	24.8
Cap-Haïtien	25.1
Les Cayes	26.0
Gantier	26.4
Port-au-Prince	27.0
Gonaïves	27.1

The yearly temperature ranges and the comparisons of different stations are shown in Figure 2, which gives the curves of the average monthly means at seven stations. The curves show that Port-de-Paix has a winter temperature well below that of any other station at which records have been kept, but its summer temperature is higher than that of Pétionville and very nearly the same as that of Cap-Haïtien and Bayeux. The curve for Bayeux is omitted because it interferes so much with the curves for Cap-Haïtien and Port-de Paix. Les Cayes has a high winter and low summer temperature, its yearly range being only 2.3° C. Port-au-Prince and Gonaïves are quite the hottest places for which records are available. Although Port-au-Prince has a slightly higher monthly mean in mid-summer, its yearly average is 0.1° C. less than that of Gonaïves, which is therefore the warmest city in the Republic. An interesting comparison is afforded by the curves for Port-au-Prince and Pétionville. The two curves are nearly identical in shape, but the temperature of Port-au-Prince averages 2.2° C. higher than that of Pétionville. The stations are only about 7 kilometers apart, but Pétionville is 400 meters above sea level, as compared with 37 meters for the post of observation at Port-au-Prince. Largely because of its cooler climate Pétionville has acquired much popularity as a residential suburb of Port-au-Prince. The records for Port-au-Prince, Pétionville, and Furcy indicate an average lowering of the annual mean temperature of about 1° C. for each 150 meters increase in altitude above sea level.

In reading Figure 2 allowance should be made for the great exaggeration in the vertical scale necessary to bring out the yearly variation of temperatures and the differences between stations. As has been stated, the actual difference between winter and summer temperatures is small.

The daily variation of temperature at most of the stations is about 10° C. or a little less. At Port-au-Prince it averages 10.6° C., as shown by records extending from 1888 to 1910, inclusive. At Furcy it appears

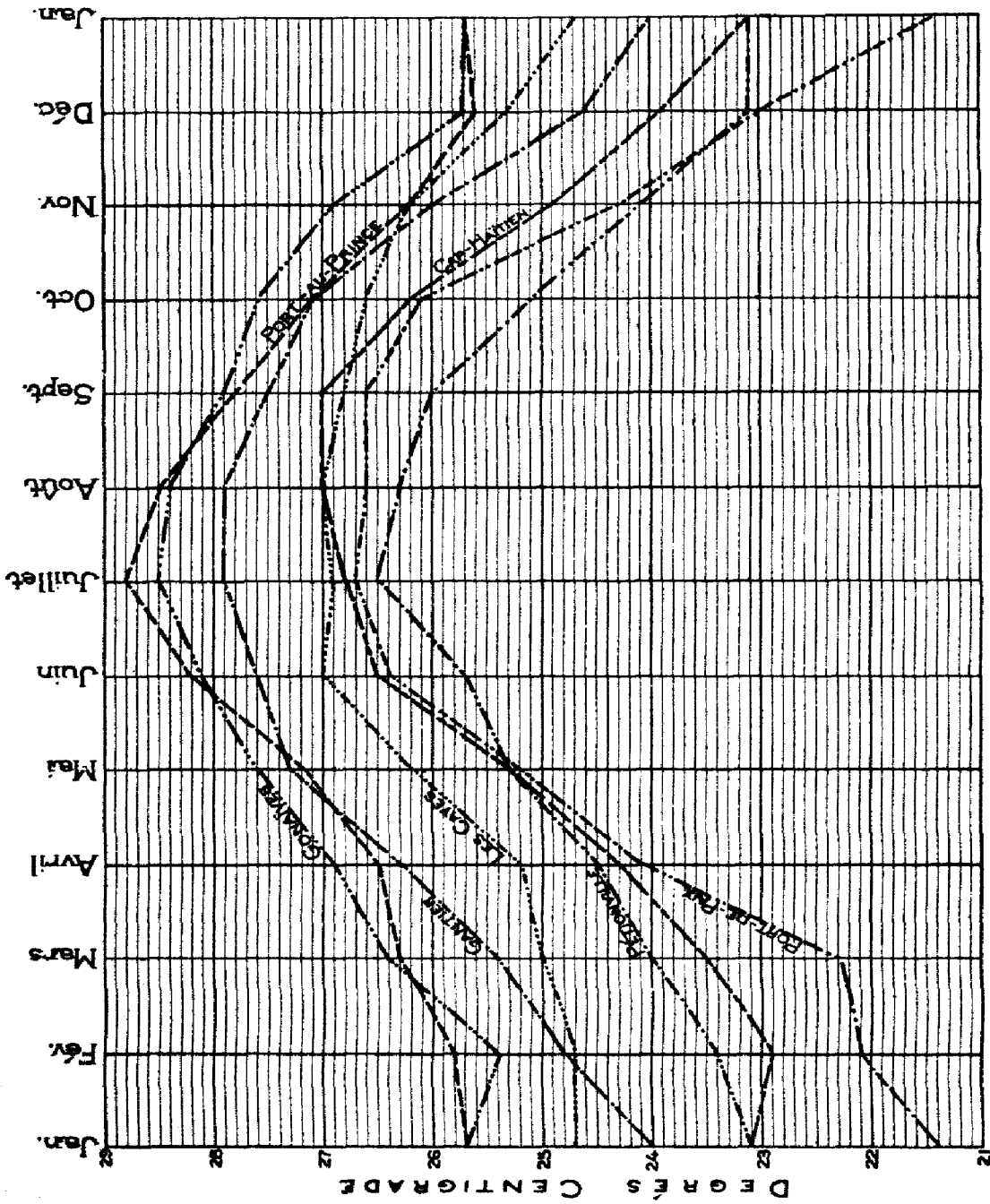


FIGURE 2.—Curves showing monthly mean temperature for different stations.

to be about 9° C. The mean daily difference in degrees Centigrade between maximum and minimum temperatures at Port-au-Prince by months based on readings taken hourly from 1888 to 1910 is as follows: January, 10.7; February, 11.3; March, 11.1; April, 10.6; May, 9.8; June, 10.5; July, 11.4; August, 11.3; September, 10.3; October, 9.6; November, 9.5; December, 10.1.

The variations appear to have some relation to rainfall, as they are smallest in the months of May, October, and November. May and October have heavy precipitation, but November has only an average amount. The variations are greatest in February, July, and August. July is the driest summer month and February is a dry winter month.

At Port-au-Prince the minimum daily temperature, based on monthly observations over a period of 16 years, occurs at 6 a. m. from November to March, inclusive, and at 5 a. m. from April to October. The daily maximum occurs at 1 p. m. from November to April, inclusive, and occurs sometimes at 12 and sometimes at 1 p. m. during the rest of the year.

For 1909 to 1916, inclusive, the maximum temperature recorded at Port-au-Prince was 37.8° C., on August 2, 1914. The minimum at Port-au-Prince was 15.2° C., on February 4, 1910. A minimum of 12.2° was recorded at Pétionville on February 3, 1910, evidently an effect of the same cold wave. The lowest recorded temperature elsewhere, except at Furcy, is 13° C. at Port-de-Paix on February 20, 1911, and March 9, 1911. At Furcy the maximum temperature recorded in the incomplete records available is 27.2° C. on September 6, 1906, and the minimum is 10.8° C. on January 2, 1913. Moreau de Saint-Méry states that in colonial days maximum temperatures of 40° C. (converted from Réaumur scale) were recorded at Le Trou, Port-au-Prince, and on the Plaine du Port-à-Piment (called Arbre Plain in this report) and that minimum temperatures of 5° C. in the parish of Dondon and 7° C. in the Canton of Nouvelle-Touraine (near Furcy) had been observed. These figures probably give a fair idea of the range of maximum and minimum temperatures throughout the Republic.

In the lowlands the high temperatures of summer are rather oppressive, particularly to persons not acclimated to the tropics, and the directness and intensity of the sun's rays add to the discomfort. It is often dangerous to exercise strenuously in the midday heat. Fortunately the nights generally are cool enough to permit refreshing sleep, although this is by no means always true in summer. At altitudes of 900 meters or more above sea level the winter nights seem chilly to persons accustomed to the lowlands, and at altitudes of 1,500 meters or more even the permanent inhabitants at times suffer considerably from cold. Some extra clothing is necessary for travelers in the mountains, and a camp fire is occasionally very pleasant. A sudden drop of several degrees in temperature often accompanies storms and causes unpleasant coldness even in the lowland plains.

PRECIPITATION.

The precipitation in the Republic, which comes chiefly as rain, is notably lacking in the uniformity and equability that characterize the temperature. The amount of precipitation varies greatly both with the seasons and at different localities. For the local irregularities the surface features are mainly responsible. The country is exceedingly mountainous, and the high ranges cause condensation of the moisture carried by the winds so that the rainfall is great on the windward side and very small on the leeward side, only a short distance away. Within the Republic there are all gradations in climate from very humid to semiarid and even to arid, and these gradations are characteristic not of large and homogeneous regions but of small and scattered districts. The effect of differences in the annual precipitation is most apparent on the vegetation and the agricultural development at different localities. In some places, such as the Arbre Plain, the vegetation is all of arid types, particularly cacti, and agriculture is almost impossible without irrigation. In other places, such as the valley of Dondon, there is a luxuriant natural forest, and crops flourish without irrigation. Many mountain ranges, such as the Montagnes la Hotte, are well watered and heavily forested.

One feature of the rainfall, however, is very constant over all the Republic, and that is its concentration into two well-defined wet or rainy seasons, one in the spring, the other in the fall. The following tables of rainfall by months at the most important observation stations not only show this feature of the rainfall but give in some detail the available rainfall records for a considerable number of years at stations where observations have been made over a sufficient interval of time to be of considerable value for use as engineering data. The writer has found it impossible to make some monthly means based on Scherer's yearly records agree with the means published by him. Some of the discrepancies are due to his use of data that had not appeared in the yearly records; others appear to be due to typographical errors in the bulletins. Most of the discrepancies are not large enough to be of much significance.

The second table, which contains the stations arranged in alphabetical order, gives only monthly means of rainfall and the number of years of observation at all stations where any records whatever have been kept for more than a year. This table gives a rough indication of the probable rainfall at a considerable number of stations that were maintained for only a short time and places the data for other stations in alphabetical order for more ready reference.

A final table gives the total yearly rainfall at all stations where the records cover sufficient time to make the means of real value, usually at least seven years. An appendix to this table gives records of annual rainfall in colonial days at a number of places, as published by Moreau de Saint-Méry. These records, although probably not so reliable as those

published by the Observatoire Météorologique, are valuable because they give an indication of the approximate amount of rainfall at some important places for which no recent records are available and because they indicate that the climate has not, as is sometimes suggested, changed radically in historical times. The long record at Léogane gives a result not much different from that of the recent observations. That at Le Trou corresponds closely with Cap-Haïtien and Limonade, as would be expected.

Rainfall in millimeters by months.

Cap-Haïtien.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1906-1909*	128.9	84.9	56.0	27.3	133.7	129.5	45.1	46.2	68.3	216.7	187.7	132.2
1909 ..	.....	.....	.....	.....	.....	.....	20.7	209.5	295.2	293.8	753.0	159.5
1910 ..	324.3	40.4	459.6	13.3	7.0	55.9	39.2	46.9	98.6	293.0	146.3	921.6
1911 ..	76.8	38.8	15.6	32.0	224.3	8.4	13.8	31.7	97.6	419.9	67.1	678.8
1912 ..	183.6	90.1	5.6	86.4	94.5	9.2	17.7	21.4	23.3	370.3	526.6	14.1
1913 ..	3.9	1.6	38.3	304.8	191.9	10.9	0.6	42.2	80.2	98.7	223.6	157.7
1914 ..	133.9	100.6	152.8	46.3	82.2	64.6	17.5	0.0	46.0	301.5	367.4	102.4
1915 ..	111.9	426.8	237.1	140.9	.....	.....	15.8	13.0	144.1	220.1	373.6	133.5
1916 ..	112.3	244.0	42.5	2.0	143.7	24.4	121.5	23.7	87.5	145.6	.....	1.0
1917 ..	10.0	70.0	11.0	149.5	197.0	186.1	0.0	14.0	67.0	127.0	278.4	378.0
1918 ..	.....	.....	.....	.....	.....	.....	117.0	.....	58.0	169.0	.....	55.0
1919 ..	152.5	72.6	.....	117.3	278.9	.....	.....	.....	.....	.....	.....	.....
Mean .	123.5	109.7	93.9	77.1	145.4	79.8	38.4	45.1	92.5	237.6	299.9	230.6

*Figures for January to June in this line show mean rainfall, 1906-1909; figures for July to December show mean rainfall, 1906-1908.

Port-de-Paix.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1907-1909*	112.4	115.1	36.9	21.8	64.9	83.9	47.0	109.2	244.5	100.8	129.5	161.5
1909 ..	.....	.....	.....	.....	.....	.....	161.0	186.5	261.0	311.4	638.0	39.0
1910 ..	582.1	67.0	103.0	32.5	58.0	114.0	66.0	185.0	173.0	297.5	.....	540.0
1911 ..	133.3	35.0	18.5	103.5	151.0	65.0	34.0	57.0	111.0	.....	.....	372.6
1912 ..	.....	124.0	16.0	52.0	35.3	52.0	40.5	102.5	99.0	253.0	666.0	105.0
1913 ..	175.0	27.0	18.0	247.0	86.5	27.0	39.0	66.0	75.0	79.0	182.0	45.0
1914 ..	106.0	67.0	113.0	38.0	30.0	59.0	14.0	15.5	76.5	13.0	111.0	12.0
1915 ..	50.0	104.2	45.0	83.0	46.0	102.5	91.5	84.0	269.0	46.0	130.0	64.0
1916 ..	150.4	95.0	39.5	36.0	69.0	120.7	36.5	106.5	48.5	129.5	287.0	23.0
1917 ..	80.0	110.5	28.0	95.5	107.5	278.0	57.0	131.0	112.0	47.0	180.5	196.5
1918 ..	19.5	70.0	29.5	87.5	42.5	74.0	13.0	59.0	79.5	75.5	113.0	97.0
1919 ..	90.5	33.0	42.5	81.0	114.0	37.5	6.0	30.0	112.0	93.0	15.0	62.0
Mean .	143.6	82.9	43.3	71.5	71.9	90.9	50.2	95.5	146.6	129.3	234.7	140.7

*Figures for January to June in this line show mean rainfall, 1907-1909; figures for July to December show mean rainfall, 1907-1908.

Rainfall in millimeters by months—Continued.

Môle St.-Nicolas.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1905-1909*	49.9	27.0	50.3	3.1	65.9	13.7	33.0	13.7	120.6	100.5	25.8	33.2
1909 ..	.....	.....	.....	.....	.....	.....	23.0	175.3	217.6	128.1	196.7	27.0
1910 ..	125.5	17.2	24.5	21.6	0.0	79.9	48.8	33.0	44.6	89.8	22.4	134.4
1911 ..	33.6	0.0	3.4	0.0	103.6	0.0	0.0	.....	5.0	16.5	0.0	6.0
1912 ..	127.1	183.0	.....	.....	.....	.....	.....	.....	.....	93.7	110.2	0.0
1913 ..	0.1	102.0	0.0	59.0	26.8	20.0	11.0	6.9	51.8	0.6	157.2	3.2
1914 ..	91.2	32.1	32.7	93.0	86.2	36.3	41.6	.....	.....	.....	.....	.....
1915 ..	17.7	77.2	29.5	23.9	44.4	53.3	24.2	41.3	29.5	14.8	13.6	0.4
1916 ..	0.0	8.2	14.3	13.5	23.8	38.4	19.6	88.9	14.6	8.76	123.0	0.0
1917 ..	1.9	11.1	0.0	105.9	49.6	24.9	16.9	68.7	40.7	29.7	169.8	85.4
1918 ..	.....	11.3	3.3	32.5	23.5	17.0	22.7	0.0	51.4	252.2	5.5	13.3
1919 ..	4.8	0.0	1.9	0.0	149.0	8.4	24.7	1.7	5.2	2.2	46.1	58.4
Mean .	46.5	32.4	25.8	26.1	59.7	24.8	26.0	39.2	72.5	79.8	67.7	32.9

* Figures for January to June in this line show mean rainfall, 1905-1909; figures for July to December show mean rainfall, 1905-1908.

Gonaïves.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1903-1909*	7.3	5.7	9.7	24.4	84.9	88.3	81.7	85.9	101.2	54.9	19.9	5.6
1909 ..	.....	.....	.....	.....	.....	.....	91.0	202.5	.....	.....	.....	.....
1910 ..	28.0	0.0	50.0	5.0	39.2	182.8	96.5	77.9	64.4	119.4	0.0	66.9
1911 ..	0.0	0.0	0.0	21.7	141.2	101.7	33.8	55.3	52.7	32.4	24.0	76.4
1912 ..	6.0	60.4	44.5	4.1	64.7	83.5	109.4	68.4	31.2	69.3	11.5	0.0
1913 ..	0.0	1.8	13.7	50.1	22.5	92.3	23.2	66.7	130.5	21.4	10.7	0.0
1914 ..	18.3	14.8	54.7	72.3	41.0	52.5	30.8	55.0	62.8	4.5	142.2	6.1
1915 ..	18.0	23.3	8.8	10.6	7.1	146.1	.....	.....	.....	.....	.....	18.0
1916 ..	0.0	30.3	0.0	12.2	115.1	148.6	50.0	38.0	175.6	67.0	46.4	0.0
1917 ..	0.0	0.0	3.8	56.0	107.6	132.6	37.6	42.5	17.4	8.5	1.1	4.3
1918 ..	0.0	27.0	3.7	8.0	70.9	71.1	56.6	7.6	163.6	45.5	0.0	0.0
1919 ..	2.1	0.0	22.4	0.0	95.8	86.5	55.9	0.0	95.2	0.0	0.0	2.5
Mean .	7.3	11.6	15.8	24.2	76.4	100.9	63.2	58.1	93.8	47.0	23.4	12.7

* Figures for January to June and September to December in this line show mean rainfall, 1903-1909; figures for July and August show mean rainfall, 1903-1908.

St.-Marc.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1905-1909*	7.9	20.4	18.6	60.7	180.4	145.2	124.8	134.8	176.5	149.6	21.3	2.5
1909 ..	.....	.....	.....	.....	.....	.....	145.7	165.7	189.0	91.7	89.6	0.0
1910 ..	54.0	50.2	0.0	0.0	36.2	177.1	119.9	18.5	76.9	108.9	0.0	23.2
1911 ..	0.0	0.0	0.0	28.3	180.9	123.2	96.4	173.3	143.6	72.1	38.6	33.1
1912 ..	5.5	21.0	18.0	11.3	45.2	180.8	179.0	.....	.....	.....	.....	.....
1919 ..	0.0	0.0	7.3	3.4	131.9	82.5	157.8	69.9	68.2	92.2	12.7	21.9
Mean .	11.0	19.3	13.1	38.5	144.0	143.8	133.1	120.8	148.0	120.4	28.3	11.0

* Figures for January to June in this line show mean rainfall, 1905-1909; figures for July to December show mean rainfall, 1905-1908.

GEOLOGY OF THE REPUBLIC OF HAITI.

Rainfall in millimeters by months—Continued.

St.-Michel de l'Atalaye.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1906-1909*	21.6	13.5	46.3	68.7	186.8	208.6	212.0	46.7	233.4	131.1	101.1	46.0
1910 ..	30.0	0.0	26.6	72.9	65.9	109.9	73.2	176.0	125.0	100.0	75.4	126.0
1911 ..	17.3	0.0	7.0	58.0	388.0	176.3	49.0	158.0	98.0	107.6	17.0	65.0
1912 ..	0.0	12.4	78.0	30.0	119.0	182.0	68.9	143.2	179.4	196.0	48.0	0.6
1913 ..	0.0	0.0	56.0	59.0	114.0	121.0	....	....	160.0	110.0	25.0	8.0
1914 ..	18.6	7.0	41.0	169.0	62.0	20.0	....	....	118.5	142.4	72.4	29.0
1915 ..	2.2	21.3	4.3	23.9	227.1	592.2	210.0	60.1	26.6	70.6	12.0	0.0
1916 ..	0.0	6.0	16.0	33.0	163.6	327.6	....	....	180.2	131.8	140.2	0.0
1917 ..	0.0	2.6	0.0	131.1	176.4	139.1	48.0	....	105.7	162.7	90.7	45.0
1918 ..	5.0	2.0	68.0	103.0	115.4	120.0	208.8	127.2	109.1	127.7	12.0	13.3
1919 ..	15.1	0.0	21.0	62.2	272.1	175.6	104.4	....	137.2	55.0	24.5	8.6
Mean .	10.9	6.5	34.2	73.3	171.4	198.4	119.1	163.7	143.6	118.5	75.3	32.3

* Figures for January to June in this line show mean rainfall, 1908-1909; figures for July to December show rainfall, 1908.

Mirebalais.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1907-1909*	3.7	47.2	83.9	169.3	277.4	189.4	222.7	220.7	298.2	169.9	35.0	6.0
1909 ..	....	....	....	....	....	....	121.5	....	....	248.2	173.0	42.0
1910 ..	20.0	0.0	85.0	32.0	293.7	325.0	169.0	396.4	348.2	150.0	79.0	207.0
1911 ..	43.5	2.0	34.5	105.5	242.5	192.5	399.9	403.3	281.0	163.0	118.0	24.0
1912 ..	8.0	16.0	119.0	212.0	304.0	243.0	351.0	289.0	343.0	264.0	118.0	6.0
1913 ..	35.0	25.0	81.0	203.0	277.0	199.0	291.0	635.0	525.0	156.0	17.0	119.0
1914 ..	20.0	38.0	125.0	86.0	472.0	426.0	201.0	388.0	554.0	673.0	405.0	144.0
1915 ..	0.0	2.0	0.0	132.0	509.0	527.0	596.0	456.0	434.0	446.0	100.0	95.0
1916 ..	36.0	287.0	161.0	333.0	746.0	791.0	436.0	385.0	597.0	789.0	492.0	1.7
Mean .	17.4	51.2	84.7	166.1	367.6	327.2	301.0	361.5	397.7	322.9	157.2	65.1

* Figures for January to June and August and September in this line show mean rainfall, 1907-1909; figures for July and October to December show mean rainfall, 1907-1908.

Thomazeau.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1905-1909*	16.8	31.9	41.6	107.5	154.8	32.4	42.5	82.5	150.1	150.6	42.7	8.7
1909 ..	....	....	....	....	....	....	10.0	105.0	119.4	87.6	199.1	0.0
1910 ..	6.0	0.0	37.6	87.6	58.5	85.8	58.8	70.1	161.5	62.5	71.0	63.0
1911 ..	0.0	14.5	27.3	78.9	124.0	21.0	27.0	3.0	92.0	136.8	128.0	0.0
1912 ..	0.0	39.1	62.8	114.1	133.5	50.0	83.3	124.0	160.7	109.0	4.0	0.0
1913 ..	0.0	0.0	0.0	96.3	105.8	7.0	96.0	45.0	69.2	155.1	33.3	17.0
1914 ..	14.8	37.8	5.5	45.0	161.0	120.0	29.0	56.5	66.0	180.0	160.0	20.8
1915 ..	14.0	35.0	10.5	35.7	151.5	234.5	280.8	164.0	109.6	....	....	....
1916 ..	....	....	....	....	....	....	36.4	....	153.6	143.3	150.0	0.0
1917 ..	0.0	17.3	7.0	148.5	198.1	145.1	62.4	44.3	75.5	129.9	78.4	15.6
1918 ..	0.0	17.6	120.2	55.3	281.9	49.7	51.0	58.1	131.0	144.9	99.0	0.0
1919 ..	0.0	0.0	10.2	147.5	21.2	42.2	35.2	32.2	140.9	108.4	0.0	27.5
Mean .	8.5	22.9	34.9	96.2	144.3	65.5	64.7	73.7	125.3	132.8	81.0	12.8

* Figures for January to June in this line show mean rainfall, 1905-1909; figures for July to December show mean rainfall, 1905-1908.

Rainfall in millimeters by months—Continued.
Port-au-Prince.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1863 ..	....	....	....	....	....	....	....	83.0	128.0	257.0	92.0	18.0
1864 ..	1.0	124.0	111.0	212.0	261.0	59.0	109.0	223.0	164.0	171.0	61.0	45.0
1865 ..	20.0	13.0	78.0	193.0	451.0	75.0	103.0	129.0	298.0	151.0	158.0	28.0
1866 ..	57.0	75.0	149.0	362.0	226.0	146.0	150.0	125.0	131.0	110.0	125.0	56.0
1867 ..	51.0	27.0	23.0	199.0	323.0	177.0	54.0	139.0	53.0	127.0	63.0	41.0
1868 ..	1.0	143.0	87.0	102.0	317.0	52.0	43.0	129.0	282.0	118.0	118.0	43.0
1869 ..	27.0	141.0	109.0	123.0	326.0	139.0	97.0	265.0	267.0	151.0	29.0	6.0
1868 ..	12.0	36.0	93.0	108.5	....	....	34.0	113.0	29.0	62.0	38.0	0.0
1884 ..	....	59.5	81.9	88.0	275.5	140.9	27.2	139.6	129.4	111.0	44.8	43.7
1885 ..	42.5	58.0	37.1	23.0	92.0	58.1	57.5	59.3	154.6	127.6	19.7	57.6
1886 ..	161.8	73.3	60.6	185.8	204.7	144.9	72.6	223.5	113.5	51.5	....	....
1887 ..	....	....	....	....	453.8	50.3	77.5	210.4	191.0	173.0	74.1	0.8
1888 ..	5.1	11.6	37.3	100.4	179.6	113.0	43.7	85.1	87.5	127.8	155.1	124.7
1889 ..	12.9	21.2	56.5	222.3	464.6	99.2	32.3	108.9	225.9	203.1	4.2	20.1
1890 ..	48.3	78.4	127.5	83.5	119.4	71.2	86.1	106.0	233.5	119.9	94.7	62.0
1891 ..	27.6	116.3	24.7	169.7	332.0	148.6	26.0	198.3	176.3	151.6	124.0	5.4
1892 ..	34.0	26.0	21.9	171.2	169.1	103.4	106.6	145.7	61.6	161.0	50.9	24.0
1893 ..	80.7	52.4	41.9	111.4	302.7	67.2	146.2	217.5	209.7	181.0	4.5	22.1
1894 ..	5.5	6.6	128.5	220.0	212.8	78.5	1.8	72.9	296.9	146.3	24.6	68.7
1895 ..	3.8	62.9	93.4	136.2	209.3	66.6	121.3	173.5	216.3	107.8	114.1	20.0
1896 ..	46.3	26.1	36.2	145.2	170.6	105.5	44.8	206.8	158.4	196.8	9.7	80.3
1897 ..	0.4	6.2	109.9	100.7	423.7	37.0	35.4	105.8	245.2	72.9	44.7	6.3
1898 ..	15.1	67.2	48.7	82.0	302.3	144.4	97.1	156.3	148.8	112.9	61.6	161.2
1899 ..	59.7	13.7	67.2	233.4	204.2	215.4	88.0	81.4	244.0	370.9	18.6	45.2
1900 ..	59.8	8.0	7.6	191.5	209.1	74.1	36.6	99.2	231.6	79.6	121.9	11.4
1901 ..	45.2	7.6	77.0	90.2	289.0	133.2	81.5	71.3	130.0	262.5	44.5	17.9
1902 ..	20.6	230.9	37.4	222.7	489.6	87.6	3.5	102.2	171.8	228.0	47.4	42.0
1903 ..	7.8	0.0	106.8	169.0	116.0	100.6	72.5	110.9	156.5	140.6	209.6	9.7
1904 ..	44.2	42.4	314.7	254.6	195.8	10.8	61.3	71.1	188.6	253.6	64.7	41.4
1905 ..	72.7	79.3	96.1	69.8	233.3	123.1	43.3	168.8	211.7	309.4	126.5	0.1
1906 ..	44.5	135.1	124.4	153.5	252.9	96.1	48.2	194.5	224.9	287.1	60.3	62.0
1907 ..	13.5	85.9	74.9	92.8	249.0	22.9	43.0	108.0	119.1	137.9	81.7	0.5
1908 ..	8.2	276.2	160.7	119.8	168.5	45.3	63.9	186.8	104.8	165.7	23.6	24.6
1909 ..	83.2	31.8	143.0	249.5	112.9	163.8	82.8	127.0	372.2	103.8	246.9	40.8
1910 ..	24.9	1.9	198.0	246.6	159.7	68.9	55.0	135.3	455.6	115.6	69.8	80.2
1911 ..	1.8	20.3	136.6	166.9	258.8	78.7	74.1	67.1	98.4	353.4	120.4	23.2
1912 ..	1.5	30.5	136.5	267.7	219.0	64.8	85.2	213.3	237.6	161.3	29.0	36.8
1913 ..	20.4	17.5	67.5	231.0	185.2	94.5	71.2	103.4	182.1	142.6	165.8	9.4
1914 ..	76.7	18.2	130.8	130.9	138.1	184.7	83.2	248.4	119.2	131.4	189.4	60.0
1915 ..	39.4	23.9	15.5	71.4	200.7	113.1	104.8	271.5	60.0	199.0	35.8	8.2
1916 ..	12.1	42.9	127.6	187.0	242.7	346.6	90.7	61.9	216.0	300.9	308.1	1.0
1917 ..	1.6	40.2	104.6	188.4	277.2	139.3	120.3	160.1	241.6	182.8	51.7	37.2
1918 ..	5.3	30.9	199.4	132.9	317.8	128.0	11.3	77.3	224.9	280.3	69.7	0.0
1919 ..	24.5	61.9	55.3	99.6	156.3	63.4	95.3	27.4	133.1	65.3	58.3	18.2
Mean ..	32.2	57.9	93.8	162.4	249.8	105.5	69.5	139.4	184.7	169.6	85.7	35.0

Jacmel.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1906-1909*	35.4	88.4	90.4	113.3	137.4	136.8	77.7	64.8	167.9	98.8	33.3	9.6
1909 ..	....	....	....	....	....	....	54.9	165.5	152.4	159.5	245.2	7.2
1910 ..	49.4	1.0	215.0	117.7	123.9	67.9	46.9	130.6	115.3	139.5	16.7	59.0
1911 ..	12.2	41.8	134.1	208.6	249.4	8.4	46.4	43.6	96.2	151.6	50.3	7.9
1912 ..	40.7	117.5	19.3	142.3	213.0	43.6	127.4	174.6	40.8	170.1	162.2	16.2
1913 ..	4.4	30.6	15.4	242.5	194.3	31.1	75.0	86.7	64.7	79.0	203.6	45.9
1914 ..	90.3	6.3	53.5	181.4	224.2	34.8	27.5	143.7	102.0	56.5	83.0	17.6
1915 ..	33.6	57.2	19.9	81.6	372.2	59.6	97.4	127.7	91.7	55.6	27.5	112.0
1916 ..	10.3	35.6	99.3	65.6	267.8	137.0	56.3	327.3	117.5	400.5	110.4	0.0
1917 ..	0.0	39.9	57.4	141.2	629.5	155.1	90.6	174.9	110.5	199.9	37.0	43.3
1918 ..	6.5	16.6	134.7	196.8	310.8	120.5	94.6	83.9	72.5	162.1	15.9	39.7
1919 ..	79.5	1.7	141.3	188.8	139.3	162.5	114.2	111.1	118.0	32.4	27.2	51.3
Mean ..	33.5	50.1	89.4	140.8	233.9	97.7	76.0	126.0	113.2	135.9	78.1	30.6

* January to June = 1906-1909; July to December = 1906-1908.

Rainfall in millimeters by months—Continued.

Les Cayes.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1906-1909 ^a	64.4	135.7	86.4	189.8	297.5	211.7	75.1	132.6	238.0	313.1	199.3	60.9
1909 ..	.....	.....	.....	.....	.....	.....	46.6	242.3	602.0	432.6	300.2	15.3
1910 ..	40.3	122.1	94.9	157.3	314.0	64.6	106.2	208.8	233.4	213.6	21.5	83.5
1911 ..	25.0	30.0	65.2	136.8	920.0	81.3	18.5	122.2	279.0	423.8	204.1	117.0
1912 ..	179.1	58.2	132.9	246.0	320.1	67.7	103.2	342.2	92.0	317.8	80.4	65.5
1913 ..	36.5	65.5	212.0	150.0	104.0	27.0	87.5	62.5	156.2	110.9	50.8	50.0
1914 ..	60.0	37.2	25.4	271.5	144.7	61.1	21.7	154.5	206.0	85.2	180.4	18.5
1915 ..	86.0	11.2	12.0	140.0	160.8	106.9	166.0	343.0	257.6	44.2	33.8	59.7
1916 ..	33.7	82.0	72.1	255.0	428.0	225.0	195.0	291.9	71.5	794.0	583.8	30.0
1917 ..	16.5	17.8	55.5	142.5	228.3	76.7	132.2	526.3	458.3	1046.5	315.2	482.4
1918 ..	350.3	162.4	120.0	210.0	484.0	266.5	451.5	276.4	193.0	578.6	223.7	239.2
Mean ..	83.5	86.9	87.4	189.9	328.8	140.2	119.4	228.3	251.0	383.6	199.4	106.8

^a January to June = 1906-1909 ; July to December = 1906-1908.

Jérémie.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1906-1909 ^a	71.1	100.7	70.6	64.5	113.7	.....	81.9	67.4	147.1	58.7	69.8	17.3
1909 ..	.....	.....	.....	.....	.....	.....	30.3	257.8	78.6	84.0	214.7	12.0
1910 ..	96.9	1.7	202.1	34.1	96.5	60.5	36.0	117.7	13.8	70.7	161.3	130.0
1911 ..	.....	.....	.....	.....	.....	.....	91.1	15.0	53.1	48.8	108.8	172.7
1912 ..	253.4	207.5	26.3	76.6	202.6	69.4	89.6	54.6	219.2	144.2	103.8	181.2
1913 ..	22.3	1.0	94.7	160.1	168.6	99.9	105.0	41.3	78.9	143.4	38.8	71.2
1914 ..	81.1	32.7	93.4	180.0	233.5	73.8	90.9	115.5	114.9	134.0	174.6	5.3
1915 ..	75.0	178.1	63.7	73.7	131.2	102.3	45.9	120.6	76.6	37.8	218.0	68.4
1916 ..	6.6	221.0	39.9	176.8	214.9	273.2	45.3	147.7	55.8	253.6	120.9	0.0
1917 ..	50.8	67.4	43.4	126.5	213.7	319.1	.....	.....	256.8	.....	.....	.....
1918 ..	44.7	140.7	44.4	178.1	96.1	125.1	126.2	95.9	106.9	232.4	153.3	13.4
1919 ..	312.8	75.0	30.7	152.8	355.9	48.9	239.8	198.6	.....	.....	.....	.....
Mean ..	93.7	102.1	70.8	109.0	166.8	130.2	88.1	105.1	115.2	110.4	124.9	58.8

^a January to May = 1906-1909 ; July to December = 1906-1908.

Moron.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1910 ..	.....	.....	.....	.....	.....	.....	.....	.....	205.9	532.5	193.3	539.5
1911 ..	76.7	75.4	18.6	112.0	537.6	31.1	74.2	76.1	75.9	132.5	68.3	291.3
1912 ..	255.2	78.6	84.9	112.6	233.0	263.4	.....	.....	.....	118.1	132.5	39.8
1913 ..	22.6	0.1	78.2	276.5	313.3	100.0	164.1	176.8	843.7	134.3	369.1	87.4
1914 ..	100.3	20.5	184.4	221.6	231.3	200.4	150.5	180.0	124.8	306.7	366.9	153.5
1915 ..	89.4	183.3	34.0	93.4	123.3	146.3	163.1	260.0	270.0	246.7	205.0	76.0
1916 ..	63.9	42.8	123.7	171.3	169.8	251.5	163.3	210.0	207.3	340.3	191.3	2.7
1917 ..	23.9	41.8	9.6	270.3	470.6	306.5	145.9	184.0	253.0	269.0	441.1	93.8
1918 ..	6.2	54.8	166.3	483.2	324.0	138.6	122.5	163.1	326.5	405.3	255.0	27.0
1919 ..	107.3	24.0	36.7	201.2	320.0	125.8	.....	.....	.....	.....	.....	.....
Mean ..	82.8	67.9	82.4	215.8	302.5	178.7	140.5	178.6	225.9	276.2	247.1	146.2

Mean monthly rainfall, in millimeters, compiled from all available records.

Station.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Years of record.
Abricots (les)	24.2	22.5	58.9	49.8	105.1	47.4	47.9	21.0	59.0	40.0	87.0	55.5	1 and 2
Anse-à-Veau	86.9	50.1	56.4	130.0	161.7	130.2	108.6	113.2	114.8	91.3	60.9	83.9	9-11
Arcabaite (l')	16.8	28.9	34.6	70.1	129.8	64.0	66.6	82.0	109.9	105.3	64.8	21.1	13
Bahon	34.5	14.7	51.9	51.6	144.0	160.4	116.3	141.1	165.5	214.3	109.6	70.0	8 and 9
Bainet	46.7	39.6	96.8	240.0	231.3	110.0	120.3	112.9	167.0	163.5	91.2	35.3	13
Basin-Bleu	34.9	33.0	18.9	49.4	123.7	128.7	88.3	117.2	118.1	111.3	106.0	61.6	8-10
Bayeux	176.3	117.5	110.6	193.7	206.1	110.4	45.9	94.2	143.8	217.4	401.5	291.8	17 and 18
Borgne (le)	172.2	112.2	81.8	181.2	115.2	99.8	47.9	50.2	91.7	196.9	387.9	185.2	8
Cap-Haïtien	123.5	109.7	98.8	77.1	145.4	79.8	88.5	45.1	92.5	237.7	298.3	230.7	12 and 13
Cayes (les)	83.5	86.9	87.4	189.9	828.8	140.2	119.4	228.3	251.0	383.6	199.4	106.8	13
Chardonnières	19.3	66.4	75.4	119.3	76.1	48.6	49.1	94.4	136.1	173.2	89.3	27.8	9
Dondon	61.7	40.9	64.6	106.7	165.5	116.2	101.5	100.9	134.3	168.1	174.7	139.0	9 and 10
Fond-Verrettes	30.9	38.2	55.2	146.0	208.1	155.1	74.8	135.1	192.6	180.4	137.7	24.4	12
Gautier	16.3	20.5	41.8	123.7	149.4	51.0	33.2	66.7	116.7	145.2	61.2	26.7	21
Gonaïves	7.3	11.6	15.8	24.2	76.4	100.9	63.2	58.1	93.8	47.0	23.4	12.7	17
Grande-Rivière du Nord	86.5	64.5	78.9	92.1	204.6	83.0	67.9	111.0	171.4	178.9	206.4	167.2	8 and 9
Hincel	24.0	3.0	8.0	88.0	177.0	237.7	149.0	75.0	283.3	68.0	47.5	13.5	2 and 3
Jacmel	33.5	50.1	89.4	140.8	233.9	97.7	76.0	126.0	135.9	135.9	78.1	30.6	14
Jérémie	93.7	102.1	70.8	109.0	106.8	130.2	88.1	105.1	115.2	110.4	124.9	58.8	12 and 13
Léogane	20.6	62.1	92.2	137.0	153.6	116.9	84.7	140.2	137.8	91.9	63.2	56.5	7 and 8
Limonade	31.2	70.1	66.3	136.7	86.0	54.9	26.8	72.8	104.2	177.9	229.6	79.9	4 and 5
Mateux	0.0	32.5	157.3	69.5	382.2	270.8	98.5	103.2	112.6	254.5	60.6	0.0	1
Miragoâne	33.5	40.0	54.1	109.3	205.6	107.4	155.2	134.3	203.7	165.6	68.1	49.1	10 and 11
Mirebalais	17.4	51.2	84.7	166.1	367.6	327.2	301.0	361.5	397.7	322.9	157.2	65.1	10
Môle St-Nicolas	46.5	32.4	25.8	26.1	59.7	24.8	28.0	38.2	72.5	79.8	67.7	32.9	14 and 15
Moron	82.8	57.9	82.4	215.8	302.5	178.7	140.5	178.6	225.9	276.2	247.1	146.2	7-9
Pétionville	28.9	40.2	92.2	183.2	220.6	111.5	77.7	120.4	192.6	162.3	71.8	26.1	20 and 21
Petit-Goave	15.9	42.5	49.1	129.4	222.9	137.9	107.5	136.6	139.5	86.9	63.4	26.1	18 and 14
Pilate	58.6	63.7	74.1	168.2	261.7	169.1	123.7	170.7	172.2	171.3	235.3	72.8	7
Port-au-Prince (St-Martial)	28.9	58.1	95.6	168.7	249.4	106.2	74.7	138.7	192.6	177.9	89.7	35.6	38
Port-au-Prince (Lalau)	26.2	53.6	122.9	177.2	201.2	119.2	71.4	137.5	200.1	181.1	108.4	38.8	13
Port-au-Prince (Ferme-Ecole Thor)	46.8	33.2	34.9	157.6	98.0	51.4	107.5	23.2	132.8	91.2	109.8	11.7	1
Port-de-Paix	143.6	82.9	43.3	71.5	71.9	90.9	50.2	95.5	146.6	129.3	234.7	140.6	18
St-Marie	11.0	19.2	13.1	138.5	144.9	143.8	133.1	120.9	140.8	107.6	27.3	9.9	8 and 9
St-Michel de l'Atalaye	10.9	6.5	33.6	76.1	172.2	215.5	119.0	163.7	144.8	118.5	75.3	31.4	12
Thomazeau	8.7	22.9	84.9	95.4	142.8	65.5	64.5	73.9	124.6	132.7	80.9	12.9	14 and 15
Tiburon	42.9	17.1	58.4	122.7	62.6	7.1	84.1	49.9	114.0	98.7	100.6	25.1	5-7

Mean annual rainfall.

Place.	Millimeters.	Place.	Millimeters.
Anse-à-Veau	1,061.7	Léogane	1,153.5
Arcahaie (1')	793.9	Limonade	1,136.4
Bahon	1,273.4	Miragoâne	1,329.0
Bainet	1,445.2	Mirebalais	2,659.4
Bassin-Bleu	986.1	Môle St.-Nicolas	542.4
Bayeux	2,109.2	Moron	2,124.8
Borgne (le)	1,728.2	Pétionville	1,326.8
Cap-Haïtien	1,584.4	Petit-Goave	1,159.7
Cayes (les)	2,107.6	Pilate	1,741.3
Chardonnières	582.0	Port-au-Prince (St.-Martial)	1,416.1
Dondon	1,974.1	Port-au-Prince (Lalue)	1,437.6
Fond-Verrettes	1,238.8	Port-de-Paix	1,282.7
Gantier	852.8	St.-Marc	910.1
Gonaïves	524.0	St.-Michel de l'Atalaye.....	1,167.2
Grande-Rivière du Nord	1,429.4	Thomazeau	859.7
Jacmel	1,205.6	Tiburon	733.2
Jérémie	1,266.3		

Colonial records of annual rainfall according to Moreau de Saint-Méry.

Place.	Millimeters.*	Years of record.
Bombardopolis	783	12
Croix-des-Bouquets	861	2
Fort-Liberté	1,510	Several
Léogane	1,350	20
Le Trou	1,473	4
Montagnes de Plymouth (Southeast of Jérémie)	4,485	1
Port-au-Prince	887	1
Port-Margot	3,804	2
St.-Louis (du Sud)	2,295	6

*Converted from feet on assumption that 1 foot equals 324 millimeters.

The seasonal distribution of rainfall is much more readily apparent in the curves shown in Figure 3 than in the tables. These curves, which cover 13 stations that probably are fairly representative of rainfall at low altitudes over the whole Republic, show that the spring rains generally last through April, May, and June and reach their maximum intensity usually in May. The fall rains come at a more variable date at different stations, ranging from August to December, and the average maximum is reached in the months of October and November. December to February, inclusive, are the dry winter months, and July is almost always the driest summer month. The fall rainy season is generally longer than the spring rainy season, and the winter dry season is longer than the summer dry season.

Unfortunately none of the stations for which records are available are at altitudes that represent the conditions on the higher mountain ranges. Fond-Verrettes, which is about 810 meters above sea level, is the highest

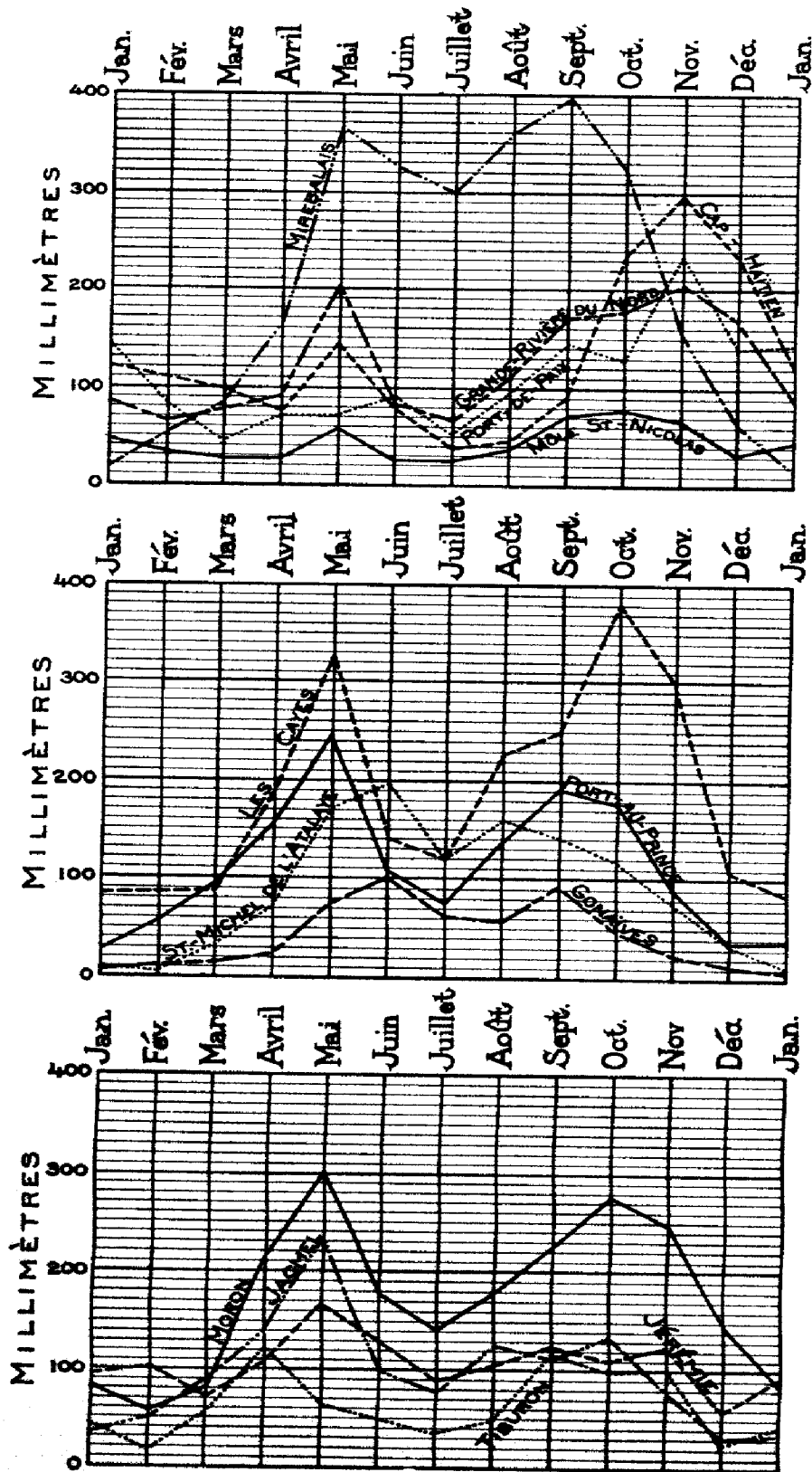


FIGURE 3.—Curves showing monthly mean rainfall for different stations.

station given in the tables. It has only a moderate yearly precipitation. Pétionville, at an altitude of 400 meters above sea level, has a slightly lower precipitation than Port-au-Prince, only 7 kilometers distant and near sea level. The heaviest precipitation, 2,659.4 millimeters, is at Mire-balaïs, an inland station only 100 meters above sea level. The lowest recorded precipitation, 524 millimeters, is at Gonaïves, which is only 3 meters above sea level. Other stations of very heavy annual precipitation, such as Les Cayes and Bayeux, are on the coast practically at sea level. The figures do not seem to signify any clear relation between altitude and amount of precipitation. The types of vegetation suggest that the most arid areas are the lowlands, such as the Artibonite Plain, Arbre Plain, and Cul-de-Sac Plain, but their aridity may be due in part to difference in temperature rather than to deficiency in rainfall.

The following table gives the available records for Furcy, the only station that stands at a really high altitude (1,540 meters), and the records for Port-au-Prince during the same periods.

Comparative rainfall in millimeters at Port-au-Prince and Furcy.

Date.	Furcy.	Port-au-Prince.
July 31 to Sept. 12, 1906.....	246.3	250.2
July 27 to Sept. 15, 1907.....	271.2	149.2
July 28 to Sept. 16, 1908.....	303.2	216.9
Aug. 1 to Sept. 15, 1909.....	645.2	282.2
Aug. 1 to Sept. 16, 1910.....	412.0	385.7
July 27 to Sept. 14, 1911.....	298.7	162.5
Aug. 3 to Sept. 18, 1912.....	353.8	278.3
July 29 to Sept. 17, 1913.....	374.4	184.8
July 23 to Sept. 14, 1914.....	224.4	343.2
July 21 to Sept. 16, 1915.....	532.0	301.0
July 28 to Sept. 13, 1916.....	438.8	102.5
July 26 to Sept. 15, 1917.....	381.4	384.2
Total	4,481.4	3,040.7
Dec. 1-31, 1907.....	17.3	0.5
Dec. 24, 1912 to Jan. 4, 1913.....	0.0	4.6
Dec. 24, 1913 to Jan. 4, 1914.....	0.0	0.0
Dec. 23, 1914 to Jan. 3, 1915.....	5.4	1.7
Dec. 28, 1915 to Jan. 3, 1916.....	4.6	1.4
Total	27.3	8.2

These figures seem to indicate that the rainfall at Furcy is nearly 50 per cent greater than that at Port-au-Prince, but it is not known whether the rainy seasons at the two places are synchronous and the results therefore can not be regarded as conclusive. Moreau de Saint-Méry states repeatedly that there is greater precipitation in the mountains than in the plains. Vallière, he says, is much wetter than Fort-Liberté. He estimates the yearly rainfall in the mountains back of Le Trou at an average

of 2,320 millimeters, about 60 per cent greater than that at Le Trou. His figures for Bombardopolis give a particularly valuable comparison with Môle St.-Nicolas, indicating nearly 50 per cent greater precipitation on the plateau near Bombardopolis. In general, it seems that the precipitation on the mountains may average 50 per cent more than that in the lowlands.

The controlling feature of the rainfall of the Republic of Haiti is the influence of its many mountain ranges on the moisture-bearing trade winds in the paths of which it lies. The general direction of these trade winds in the West Indian region is northeasterly, but over the Republic of Haiti they appear to incline somewhat more to the east. These winds, when they strike the high ridge of the Massif du Nord from Ouanaminthe to Port-de-Paix, deposit the greater part of their moisture on the northeastern slope of these mountains and the adjacent North Plain. Thus dried and rarefied they pass down the southwestern slope of these mountains and across the Central Plain and the Gonaïves Plain, and this region becomes increasingly arid as its altitude decreases.

These winds appear to come so nearly from the east that the whole of the Northwest Peninsula is in their lee and consequently that area is much more arid than its exposed position would suggest. Only on the northern slopes of its highest ranges is there enough rain to support forest growth and to raise crops without irrigation. The entire bordering lowland and much of the western plateau are arid or semiarid.

The winds that have crossed the Massif du Nord or the contiguous heights of the Dominican Republic and the Central Plain, sweep on across the Montagnes Noires, the Chaîne des Mateux, and their connecting ranges. The summits of these mountains are at some places high enough to cause considerable further condensation and to produce rainfall to support forests and garden crops. But the leeward lowlands, the lower Artibonite Plain and the Cul-de-Sac Plain, are arid or semiarid, and cultivation is there impossible without irrigation. The upper part of the Artibonite Valley appears to be so narrow that it shares the precipitation condensed by its surrounding mountains, and Mirebalais therefore has the highest rainfall of any station on record.

The Massif de la Selle, although it contains the highest peak of the Republic, does not appear to have the most abundant rainfall, because the winds have been robbed of so large a share of their moisture before reaching it. As compared with the Cul-de-Sac Plain and the south coast, however, it receives relatively high precipitation.

West of the Massif de la Selle the Southern Peninsula seems to receive more and more rain as it projects farther and farther beyond the shelter of the northern and eastern parts of the island of Haiti, and in the latitude of Jérémie it is one of the best-watered parts of the Republic. Here, as elsewhere, the north coast gets more rain than the south coast, much of

which is in fact rather arid with the one peculiar exception of Les Cayes. Perhaps the anomalously high rainfall at Les Cayes may be explained in part by the fact that although it is on the lee side of the main body of the peninsula it is also on the windward side of the mountainous projection that terminates in the Port-Salut Peninsula.

The precipitation comes in rainstorms of two very different types. The period from October to March is the season of "nords"—slow and steady rains of long duration borne by northeasterly winds. These rains may last from several hours to as much as two or three days. Few of these rainstorms yield a very large quantity of water. They are particularly characteristic of the north coast from Port-de-Paix eastward and in the western part of the Southern Peninsula. They raise the winter rainfall at Cap-Haïtien, Bayeux, Le Borgne, Port-de-Paix, Grande-Rivière du Nord, Jérémie, and Moron above that of the other stations.

The other type of rainstorm prevails in summer and is doubtless due to the northward migration of the equatorial storm belt at this season. Most of the rain in the drier parts of the Republic falls in violent storms of short duration, many of them accompanied by high wind, thunder, and lightning. Late in the summer many such storms, especially those on the south coast, become destructive hurricanes, causing great damage. Occasionally the country is swept by violent hurricanes, usually accompanied by heavy rain, which cause tidal waves that do great damage to shipping and to buildings on the water front. Especially destructive hurricanes occurred in August, 1909, and in August, 1915.

The long periods of unbroken drought at certain stations directly affect the population. At Môle St.-Nicolas, St.-Michel de l'Atalaye, and Jacmel two consecutive months of no rainfall have been recorded, and at Gonaïves, St.-Marc, and Thomazeau three consecutive months. A very great part of the rain at these stations comes in heavy storms. During the year 1919 at all the stations of observation 38 per cent of the total rainfall by months fell in single storms, although several rainy days usually were recorded each month. The intensity of rains is briefly summed up by Scherer¹ as follows:

Nos pluies sont relativement courtes. La plupart durent moins d'une heure. Une pluie de deux heures paraît déjà longue. Rarement elles dépassent quatre heures. Une pluie de 12 heures ou de 24 heures est regardée comme extraordinaire. Elle suppose une perturbation atmosphérique. D'ailleurs ce ne sont pas les longues pluies qui fournissent beaucoup d'eau au pluviomètre. Généralement les courtes pluies sont aussi les plus intenses.

This characterization of the storms of the Republic corresponds with a further statement by Scherer in the same article: "Chez nous les pluies sont plutôt locales que régionales."

¹ Scherer, J., Observatoire Météorologique du Séminaire-Collège St. Martial Bull. Ann., 1919, p. 99, 1920.

The hours of rain or the time of day at which rain is most likely to fall has also been determined by Scherer,¹ whose conclusions, based on records tabulated at many stations, are summarized as follows:

Avant d'examiner quelques tableaux en particulier, indiquons les points principaux sur lesquels doit porter la lecture. Ces points sont le minimum et le maximum de fréquence et l'amplitude, c'est-à-dire l'écart entre les valeurs extrêmes. Au bas de chaque tableau on consultera d'abord les totaux. On pourra constater vers les 9 h. ou 10 h. du matin un minimum de fréquence, commun presque à tout le pays. Les maxima indiqués dans les tableaux surviennent dans l'après-midi, à des heures différentes selon les stations, les uns plus rapprochés de midi, les autres du coucher du soleil selon la région. D'autres stations, comme les Cayes et Jérémie, ont une phase double: deux minima et deux maxima nettement marqués.

Si l'on compare les résultats mensuels d'une même station, on constate d'une part un léger déplacement pour le minimum du matin et d'autre part pour le maximum une avance vers midi ou un recul vers minuit, suivant les saisons. En certains pays il pleut à peu près aux mêmes heures toute l'année; en d'autres, des pluies tardives semblent coïncider avec l'affaiblissement du régime pluvieux annuel.

Hail, usually accompanying summer thunderstorms, is fairly common in the Republic, and many hailstorms are noted in the bulletins of the Observatoire Météorologique. They seem to have been very common at St.-Michel de l'Atalaye. Moreau de Saint-Méry speaks of hailstones "as big as the fist" which fell at Fort-Liberté on June 17, 1785, and as large as pigeons' eggs at Boucassin May 30, 1786. Such hailstorms do much damage to growing crops.

RELATIVE HUMIDITY.

The relative humidity appears to vary within wide limits. It is very different for different localities at the same time, and for the same locality at different times of the day, although the monthly means vary but little from year to year. The humidity is rarely so great anywhere as to cause great physical discomfort. It is probably less than in many tropical regions, so that the warm climate is more endurable. Observations of relative humidity at Port-au-Prince covering many years give the following monthly means: January, 65; February, 63; March, 64; April, 69; May, 73; June 68; July, 64; August, 68; September, 73; October, 75; November, 72; December, 68.

These figures show a marked correspondence of high humidity with the rainy seasons and of lower humidity with the dry seasons.

The daily fluctuation of relative humidity at Port-au-Prince usually covers a range of 30, the minimum being about 50 at midday and the maximum about 80 sometime between midnight and 4 a. m. The following table of hourly means for the year 1910, is characteristic of the daily range of humidity at this station:

¹ *Idem.*, p. 100.

Hourly mean humidity at Port-au-Prince, Haiti, in 1910.

1 a. m.	82.9	9 a. m.	63.5	5 p. m.	65.9
2 a. m.	83.3	10 a. m.	56.8	6 p. m.	71.3
3 a. m.	83.6	11 a. m.	52.0	7 p. m.	75.7
4 a. m.	83.4	12 m.	50.6	8 p. m.	78.2
5 a. m.	83.2	1 p. m.	52.8	9 p. m.	79.8
6 a. m.	82.7	2 p. m.	56.9	10 p. m.	81.5
7 a. m.	79.4	3 p. m.	60.4	11 p. m.	82.2
8 a. m.	71.3	4 p. m.	62.9	12 p. m.	82.4

The average for this year, 71.8, is somewhat higher than the general yearly average, which is about 68.5.

The only other station for which records of observations are published is Furcy, and these records like the records of temperature, are incomplete. For the midsummer period, including August and parts of July and September, the mean, based on observations at 7 a. m., 1 p. m., and 9 p. m., is 80, and for the Christmas or New Year period the mean is 78. These figures show that the humidity at Furcy is considerably higher than that at Port-au-Prince. Humidity above 90 appears to be common at Furcy, and the climate there would be very uncomfortable if the temperature were higher.

WINDS.

As the Republic lies in the belt of northeast trade winds its prevailing winds are from the northeast or east. Along the northern coast they blow very nearly from the east, probably because they are deflected in that direction by the configuration of the land. The same deflection may occur in Cul-de-Sac Plain. These winds are steadiest and most unvarying in direction in winter. In summer, as the equatorial belt moves northward, they are often replaced by local and variable storm winds.

The trade winds are locally much modified and obscured by the daily land and sea breezes of the coast. Few parts of the Republic except, perhaps, the Central Plain, are far enough from the sea to be beyond their influence. For this reason very strong and persistent winds from one direction, such as cause the accumulation of wind-blown sand and produce marked asymmetry in the growth of vegetation, are uncommon in the Republic. In general the sea breezes blow at right angles to the coast and the land breezes blow directly out to sea, but each shows a strong tendency to veer somewhat to the east, probably in conformity with the prevailing direction of the trade winds. Thus on the south coast the land breezes usually come from the northeast and sea breezes from the southeast.

The land and sea breezes do much to mitigate the tropical heat. When the sea breeze fails for a day in summer, as it does occasionally at Port-au-Prince and elsewhere, the heat is very oppressive. Moreau de Saint-Méry says that at Croix-des-Bouquets the sea breeze has failed for as much as three weeks consecutively. On the coast the breezes generally are very regular and determine the hours of sailing of small vessels engaged in fishing and coastwise traffic.