DEPARTMENT OF THE INTERIOR
WEATHER BUREAU

THE RAINFALL IN THE PHILIPPINES

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INTRODUCTION.

On the occasion of the International Congress of Directors of Meteorological Services, held at Innsbruck in September, 1905, the Solar Commission decided to request some regional statements regarding atmospheric pressure, temperature, and rainfall. A circular giving particulars as to form and extent of these statements was afterwards issued. Concerning rainfall, the secretary of the Solar Commission, Sir John Elliot, was asked to prepare a regional statement of the rainfall in India, which might serve as a model showing clearly what the Commission desired in the way of reports on regional rainfall and its variations for each meteorological organization. This statement was ready and sent to the chiefs of the various meteorological services a few months later.

For the purpose of presenting to the Solar Commission the requested statement of rainfall in the Philippine Archipelago we have revised all the available rainfall data existing in the Manila Observatory or published in its Monthly Bulletins. Except for Manila, whose uninterrupted records extend back to the year 1865, and for a few other stations, which have reported the rainfall during ten or more years, we can not present very extensive series. Considering, however, the relatively small area of our Archipelago, we believe that the data furnished are sufficient to give a fairly complete knowledge of the nature and variation of the rainfall in these Islands.

There is a great variety in the annual amount and also in the character of the rain in different places. This is due both to the great extension of the Archipelago in the N.–S. direction and to the distribution of its area into a large number of islands. Out of a total area of 115,026 square miles, two islands only, Luzon and Mindanao, cover each an area exceeding 10,000 square miles; nine others are between 10,000 and 1,000; twenty between 1,000 and 100; seventy-three between 100 and 10; and, finally two hundred and sixty-two between 10 and 1 square miles. We do not take into consideration the remaining 2,775 islets having each an area of less than 1 square mile. The greater number of the smaller islands are abruptly mountainous; very few rather flat. The main mountain ranges generally traverse the larger islands in a N.–S. direction, rarely from E. to W. From these geographical features it follows that the annual rainfall variation in the region east of the range is very different from, and in some instances quite opposite to, that prevailing in the western part; although the intervening distance is sometimes only a few miles.

Rainfall measurements have been made at about sixty stations throughout the Archipelago; but there have been many interruptions, especially when made by voluntary observers. Under Spanish dominion the meteorological service was limited to Luzon, where some fourteen stations had been established. Many of these made regular rainfall observations from 1884 to 1896. All the data obtained from the rest of the Archipelago, including the Visayas and Mindanao, have been collected by voluntary observers, among whom deserve special mention the Jesuit missionaries in Mindanao and Jolo. The American Government extended the meteorological service to the whole Archipelago in 1901. At present 51 stations take regular observations of pressure, temperature and rainfall. For the most populous regions, which comprise an area of about 73,000 square miles, we possess some rainfall records from sixty-four stations, corresponding to one station for every 1,140 square miles. In fact, there are in Luzon only the Provinces of Ilocos Norte, Abra, and Isabela, and the northern mountainous region comprising the non-Christian Province of Lepanto-Bontoc which are without any meteorological station. The Island of Mindoro, covering an area of 3,851 square miles, has but one station. In Mindanao each station corresponds to 3,000, 4,000, or 5,000 square miles.

It is true, the records of the new stations do not yet cover a sufficiently long period to give a very accurate normal average, but we consider them sufficient for a fair statement. We are confirmed in this belief by a fact observed in the long series of the Manila Observatory. On examining this series we find that the relatively dry periods—that is, those having an annual rainfall below the normal average—never lasted more than three years. Since the year 1865 such a period has occurred only three times, and—as a compensation, as it were, for the deficiency—the records invariably show that the years immediately preceding and following have been excessively rainy. The result is, that whatever period of five years you choose, it will give an average very close to the normal. The same fact can likewise be observed in the shorter series of many other stations.

The average annual rainfall of the Archipelago is 2,200 millimeters; the extreme values being 900 millimeters and 4,000 millimeters. There are no large tracts of extraordinary drought. When a relative failure of rainfall occurs, it is more or less felt throughout the Islands. In the records of the Observatory the year 1885 is the only one with an annual rainfall below 50 per cent of the normal amount.

Over the greater part of the Archipelago the heaviest rainfall occurs during the summer and autumn months from June to October, properly called the "rainy season." During the winter months, November, December, January, and February, the rains continue to fall abundantly on the eastern and northern coasts, thus constituting for the regions facing the Pacific Ocean and the larger inland seas a second rainy season. The spring months, March, April, and May, are the driest; but as the sun is ascending and the thermal focus traveling northward, local thunderstorms become more frequent throughout the Archipelago and cause heavy showers, especially on the highlands of the southern islands, the Visayas and Mindanao.

In order, therefore, to treat the subject thoroughly we must describe the yearly distribution of rainfall in the Philippines under the following headings:

I. Summer and Autumn Rainfall; Cyclonic Rainfall.
II. Winter Rains; Northeast Monsoon Rainfall.
III. Spring Rainfall; Thunder showers.

LIST OF PROVINCES AND NUMBER OF RAINFALL STATIONS OF THE PHILIPPINE ARCHIPELAGO.

Provinces and islands.	Number of rain-gauge stations.	Average rainfall.	Area of the province or island.	Ratio of area to number of stations.
		mm.	*Sq. miles.*	
Batanes Islands	1	2,860.1	64	64
Abra, Luzon	0		1,171	
Cagayan, Luzon	2	1,854	5,052	2,526
Ilocos Norte, Luzon	0		1,330	
Ilocos Sur, Luzon	2	2,304.4	471	235.5
Lepanto-Bontoc, Luzon	0		2,005	
Isabela, Luzon	0		5,018	
Nueva Vizcaya, Luzon	1	1,186.2	1,905	1,905
Union, Luzon	1	2,266.6	634	634
Benguet, Luzon	1	4,001	822	822
Pangasinan, Luzon	1	2,441.6	1,193	1,193
Tarlac, Luzon	1	1,901.8	1,025	1,025
Nueva Ecija, Luzon	1	1,784.5	2,169	2,169
Pampanga, Luzon	2	2,028	868	434
Zambales, Luzon	4	3,303.7	2,125	531.2
Bataan, Luzon	1	2,349.4	537	537
Bulacan, Luzon	1	2,103.1	1,173	1,173
Manila and Rizal, Luzon	1	1,926.5	753	753
Cavite, Luzon	3	1,744	619	206.3
Corregidor Island	1	2,199.3	2	2
Batangas, Luzon	1	1,512.8	1,201	1,201
Laguna, Luzon	2	2,061.5	629	314.5
Tayabas, Luzon	3	2,650.8	5,993	1,997.7
Camarines, Luzon	1	1,818.7	3,279	3,279
Albay, Luzon	2	3,045,2	1,783	891.5

LIST OF PROVINCES AND NUMBER OF RAINFALL STATIONS OF THE PHILIPPINE ARCHIPELAGO—Continued.

Provinces and islands.	Number of rain-gauge stations.	Average rainfall.	Area of the province or island.	Ratio of area to number of stations.
		mm.	*Sq. miles.*	
Sorsogon, Luzon	1	2,908.2	755	755
Masbate Island	1	1,445.9	1,569	1,569
Samar Island	3	2,622.9	5,276	1,758.7
Leyte Island	3	1,985.8	3,008	1,002.7
Romblon Island	1	2,368.7	37	37
Mindoro Island	1	3,116	4,024	4,024
Capiz, Panay	1	3,859.2	1,749	1,749
Iloilo, Panay	1	2,188.9	2,027	2,027
Antique, Panay	1	2,378.8	1,134	1,134
Occidental Negros	2	2,375.9	3,130	1,565
Oriental Negros	0		1,864	
Cebu Island	2	1,446.6	1,939	969.5
Bohol Island	1	2,480.7	1,511	1,511
Surigao, Mindanao	3	3,020.4	6,988	2,329.3
Davao, Mindanao	2	2,243.7	9,707	4,853.5
Cotabato, Mindanao	2	2,025.2	11,786	5,893
Misamis, Mindanao	1	1,724.6	3,777	3,777
Dapitan, Mindanao	1	1,926.5	2,015	2,015
Zamboanga, Mindanao	1	905	3,056	3,056
Basilan Island	1	1,614	520	520
Jolo Island	1	1,666.8	550	550
Cuyo Island	1	1,931.5	47	47

I. SUMMER AND AUTUMN RAINFALL; CYCLONIC RAINFALL.

The summer and autumn rainfall is very abundant throughout the Archipelago, irrespective of the position of the stations, whether they are in the eastern or western part of it; almost all of them receive at least 30 per cent of the total yearly amount. The rains set in with the first typhoon, which generally occurs during the first half of June, though sometimes as early as the second week of May. They are far from being continuous during the season, but rather fall at intervals more or less frequent and prolonged, the distribution being in very close connection with the oscillations of the atmospheric pressure due to the succeeding cyclones, which come from the Pacific and move in a direction between W. and N. As soon as the pressure rises and remains high and steady, the weather becomes clear with some thunderstorms. The zone or mean tracks of the typhoons during the summer and autumn months, June to October, can be found in the work "Cyclones of the Far East," by Rev. José Algué, Part I, Chapter VIII. During this season the first branch of the parabolic track of the typhoons is directed toward NW. by N.; its vertex lies between the eighteenth and twenty-fifth degrees of north latitude, thus exerting the greatest influence on the northern part of the Archipelago, the Island of Luzon, and the eastern Visayas.

In each fairly developed typhoon two rainy zones can be distinguished: the inner, where the real cyclonic rainfall occurs, and the outer, within which the friction of the air currents gives rise to frequent and terrific thunderstorms with abundant and often torrential rainfall. The greatest hourly quantities of rainfall registered in Manila Observatory since the year 1865, amounting to 40 or more millimeters, were due to thunderstorms formed under the influence of distant cyclones, either approaching or receding. Very often, before the barometer begins to fall decidedly, a noisy thunderstorm constitutes the first infallible indication of some approaching cyclone. Usually when a cyclone approaches the Archipelago, the sky remains clear even after the barometer has begun to fall steadily, until a big thunderstorm comes, which indicates that the cloud and rain area of the meteor is invading the place. If the cyclone continues to draw nearer, the sky does not clear after the thunderstorm, but drizzling sets in, and later the cyclonic squalls. The thunderstorms seem to be more frequent and violent at the front of a cyclone than in the rear. The storm and rain area is far from being uniform, as it depends on the shape, extension, and gradient of each cyclone. The

topographical conditions of each place also exert great influence upon the amount of rainfall and the force of the wind.

We called the rainfall of this season "cyclonic rainfall" rather than "monsoon rainfall," because the southwest winds which—generally speaking—bring most of it, are not true monsoon winds. Moreover, the statement that they bring most of the rainfall of this season had to be qualified, since, strictly speaking, for each region within the area of the storm the winds which bring the heaviest rains are generally those which come from the nearest sea, irrespective of their direction. While the wind during the passage of a typhoon either veers or backs through nearly 180 degrees of the compass, each place receives the rainfall principally when it blows from the most favorable direction. Often the stations nearer to the center of a typhoon receive less rain, and even at times none at all, while others, farther from it, are flooded. The station of Aparri, for instance, on the northeast coast of Luzon and the nearest to the general path of typhoons, has much less rainfall than San Jose de Buenavista (Antique), on the west coast of Panay. The only cause which we are able to assign for this fact is the topography of these places. Aparri has a mountain range in the western quadrants, but San Jose the open sea of Jolo.

Although it is true that the stations receiving more abundant rains are those exposed to the southwest and west winds, this does not prove that these winds are those of a real monsoon. They prevail during the months June–October, because in those months frequent typhoons cross the northeast and north of the Archipelago, giving rise to such winds. In the publications of this Observatory it has always been claimed that the southwest winds prevailing in the Archipelago do not constitute a real monsoon—that is, winds dependent chiefly on the summer center of low pressure situated on the Asiatic Continent—but that they are of cyclonic origin. This conclusion has been derived from the fact that these southwesters cease almost completely as soon as the pressure reaches its normal height over that portion of the sea which runs from Japan to the east of Mindanao, including Formosa and the Philippine Archipelago, although the Asiatic center of low pressure may remain without any apparent change. Thence the practical rule given by this Observatory: "If during the months June, July, August, September, and October the southwest winds are blowing steadily in the China, Jolo, and Mindoro Seas, there is a cyclonic vortex situated in the north." It is not infrequent, especially during the month of August,[1] to have normal pressure with easterly and southerly winds blowing steadily over the whole Archipelago for long intervals; then the rains are scarce in the central and western regions (due only to local thunderstorms), and more abundant in the eastern. Sometimes, when the pressure rises above the normal the air currents back more to the northeast, become stronger, and produce heavy rains in the eastern and southeastern parts of the Archipelago. This happens especially when the barometer, while remaining high in the north, falls a little in the southernmost part of Mindanao and over the Mindoro and Jolo Seas.

As to the distribution of the summer or cyclonic rainfall throughout the Archipelago, we may say it naturally decreases from west to east, or rather from northwest to southeast. In all the records available we find only three stations with an amount of summer rainfall below 30 per cent of the yearly normal; these are Surigao, Tandag, and Caraga. All the rest receive over 30 per cent of the annual amount, and none less than 480 millimeters. The stations reporting a quantity amounting to 70 per cent or more of the annual rainfall are, with very few exceptions, those on the western coasts of Luzon, the plains surrounding and extending northward from the Bay of Manila, in the high valley of Baguio, and on the western coasts of Mindoro and Panay. The stations with 50 to 70 per cent are those of the plains of Camarines, Luzon, the western and central Visayas (to the one hundred and twenty-fourth meridian), and western Mindanao. With these also range Aparri, on the northeast coast of Luzon; Bayombong, situated on a relatively high system of hills and valleys surrounded by higher mountains; Maasin and Ormoc, on the western coasts of Leyte; and Calbayog,

[1] See "General Weather Notes," August, 1906.

on the west coast of Samar, the last three having open seas to the southwest. Finally, the stations of the eastern coast of Luzon, the eastern Visayas, and the eastern part of Mindanao have a summer rainfall of less than 50 per cent of the annual quantity. If instead of taking into consideration the relative amount, we take the absolute quantity of the summer rains, only very few stations will change their place in the order just established, as is easily seen in the following tables:

SUMMER AND AUTUMN RAINFALL.

IN WESTERN LUZON AND THE WESTERN VISAYAS.

Stations.	Millimeters of rainfall.						
	June.	July.	August.	September.	October.	Total.	Per cent.
Vigan	315.3	556.1	474.4	483	154.8	1,983.6	92.9
Candon	502.2	564.7	474.9	459.8	168.5	2,170.1	87.7
San Fernando, Union	362.8	526.6	609.8	387.2	121.1	2,007.5	88.6
Baguio	549.4	784.4	832.3	658.6	367.5	3,192.2	79.8
Bolinao	419	619.2	562.8	517.8	161.4	2,280.2	92.1
Dagupan	439.5	534.9	391.2	408.2	159.4	1,933.2	79.2
Tarlac	268.2	395.1	258.8	377.6	207.3	1,507	79.2
Masinloc	1,135.1	992.9	758.8	518.9	247.4	3,653.1	92.4
Iba	360.8	852.1	898.8	1,200.6	49.3	3,361.6	92.9
San Isidro	217.8	341.6	278.9	360.1	179.4	1,377.8	77.2
Arayat	259.4	373.5	212.8	307	223	1,375.7	81.4
Porac	310.2	646	311.6	356.7	225.6	1,850.1	78.2
Marilao	360.6	545.1	372.5	280.1	183.2	1,741.5	82.8
Olongapo	619	764.5	657.3	523.7	168.9	2,733.4	86.3
Balanga	325.2	695.4	291.2	429	221.2	1,962	83.5
Manila	249.2	388.8	350	368.6	190.5	1,547.1	80.3
Corregidor	344.7	569	354.1	417.1	230.1	1,915	87.1
Restinga	289	592.8	329.9	633.1	123.5	1,968.3	85.3
Cavite	42.7?	224.6	198.8	314.4	104.2	884.7	74.4
Silang	348.5	330.5	314.4	303.4	91.4	1,388.2	80
Biñang	294	280.2	125.2	148.6	132.1	980.1	75.5
Santiago	186.9	368.2	239.9	321.5	120.8	1,237.3	81.8
Mamburao	595	327	997	485.4	323.2	2,727.6	87.5
Cuyo	269.2	305.8	366.5	372.5	265.8	1,579.8	81.8
San Jose Buenavista	324.4	571.4	360.2	459	308.1	2,023.1	85
Iloilo	209.1	549	327.8	280.6	261.8	1,628.3	74.4

IN CENTRAL AND EASTERN LUZON, THE CENTRAL VISAYAS, CENTRAL AND WESTERN MINDANAO.

Santo Domingo	166.8	304.2	405.7	241.4	468.7	1,586.8	55.5
Aparri	129	145.1	233.3	303	308.5	1,118.9	52.4
Tuguegarao	171.6	134	128.4	238.4	295.2	967.6	61.5
Bayombong	77.2	153	124.5	178	132.9	665.6	56.1
San Antonio	233.7	282.8	291.3	414.5	352.3	1,574.6	55.7
Nueva Caceres	178	194.2	155.4	268.7	199.7	996	54.8
Romblon	117.5	273.9	290.5	353.5	342.8	1,378.2	58.2
Capiz	410.3	451.7	383.6	398.3	835.7	2,479.6	64.2
Bacolod	234.5	379.5	329	281.8	275.1	1,499.9	69.4
La Carlota	304.8	358.7	378.6	392.9	350.9	1,785.9	68.9
Tuburan	123.1	171.3	121	175.8	197.2	788.4	56.5
Cebu	180.7	173.7	148.7	176	181.7	860.8	57.8
Tagbilaran	173.2	416.1	117.9	176.7	383	1,266.9	51.1
Balingasag	229.4	239.8	169.7	314	225.9	1,178.8	68.3
Dapitan	86.2	155.5	97.5	148.8	259.3	747.3	38.8
Jolo	122.4	171.6	146.2	170.6	208.8	819.6	49.2
Zamboanga	109.9	112.4	80.3	83.7	96.3	482.6	53.3
Isabela, Basilan	202.7	148.6	183.7	177.3	261.4	973.7	60.3
Cotabato	224	297.8	250.2	213.6	252.2	1,237.8	57.8
Tamontaca	312.3	224.8	200.6	293.8	136.5	1,168	61.2

Stations.	Millimeters of rainfall.						
	June.	July.	August.	September.	October.	Total.	Per cent.
Baler	249.6	339.5	212.8	456.1	310.1	1,568.1	41.0
Tayabas	83.8	96.6	73.9	116.5	239	609.8	42.1
Atimonan	147.4	223.3	195.1	298.7	396.1	1,260.6	47.0
Legaspi	200.7	209.9	159.1	298.4	403.4	1,271.5	40.6
Albay	207.6	266.2	242.1	299.8	212.5	1,228.2	41.5
Gubat	114	130.3	99.5	270.2	341.6	955.6	32.9
Palanoc	120.7	127.9	129	284.2	130.2	792	54.8
Calbayog	154.6	191.4	159.4	339	268.6	1,113	49.5
Borongan	249.7	156.2	140.7	253.8	344.8	1,145.2	31.2
Catbalogan	129.4	85	182.6	256.8	218.3	872.1	44.6
Tacloban	238	110.5	213.4	184	171	916.9	42.3
Ormoc	196.3	290.3	290.3	334.5	266.6	1,378	61.0
Maasin	124.4	166.5	131.3	237.5	157.4	817.1	53.5
Surigao	55.9	145.3	77.4	145.8	222	646.4	24.5
Tandag	164.2	217.1	123.7	187.4	198.3	890.7	20.1
Butuan	146.2	123.9	73	145.4	166.5	655	32.8
Caraga	86.4	142.7	75.7	67.4	128.4	500.6	20.4
Davao	209.7	246.8	202.3	149.8	191.6	1,000.2	49.3

II. WINTER OR NORTHEAST MONSOON RAINFALL.

The winter rainfall in the Philippine Archipelago is due to the northeasterly air currents which are caused by the Siberian center of high pressure extending over the Chinese Empire during the months of November, December, January, and February. These winds necessarily reach our Archipelago richly laden with moisture, because they come from the Pacific Ocean. The result are abundant rains on the eastern coasts, which for these regions constitute a second rainy season, of less importance, however, than the one during the summer and autumn months. Only in the easternmost and coast stations the total rainfall during the winter months reaches 50 per cent of the annual amount. The winter rains are far from being continuous since, like the summer rains, they come at intervals varying in frequency and duration. They follow not only the variations of the continental high pressure area, but also the barometric oscillations taking place over the southern regions of our Archipelago. Consequently the time of their setting in is very uncertain; sometimes isolated periods of northeast monsoon occur early in November, and even in October, while not unfrequently the first monsoons come late in the second half of December. Something similar happens at the end of the season. Although the center of high pressure seems to advance toward east-southeast during the months of January and February, and the winds in the Archipelago veer quickly to the east, yet it is not unusual to have bursts of northeasters after the middle of February.

About the character and causes of the northers in the Philippine Archipelago we wrote in the "Climatological Notes" for the year 1903:

> Generally, as has already been mentioned, these "northers" are due to the advance of the China center of high pressure toward our Archipelago. In this case the barometers rise extraordinarily in the northeast of the group and the winds acquire the force of a hard gale, accompanied by squalls of abundant rain. If the pressure continues to rise, the effect of the northers extends as far as the western coasts, especially of Luzon. Then the sky shrouds itself in heavy clouds and rain begins to fall at short intervals, the whole phenomenon constituting what are known in these regions as "dirty northers." The north and northeast winds retain their violence all along the eastern coasts of the Archipelago, down to Cape San Agustin, which is situated near the sixth parallel of north latitude, although, since the barometers of the Visayas and of Mindanao maintain themselves at almost equal heights, there exists no appreciable gradient south of the thirteenth parallel.

In 1903, however, the extraordinary constancy and strength of the northeast winds during December were due not so much to the invasion of the high-pressure area of the north as to the extended and stationary depressions in the southern parts of the Archipelago. An area of low pressure, whose center occupied the region between the ninth and eleventh parallels of north latitude, persisted during the greater part of the month. At Manila the barometer oscillated nearly always within the limits for "variable weather;" in the north of the island, though it reached the height proper to the "northers," it nevertheless rose considerably less than is usual for this month. More still, the days of the most violent northers were precisely those characterized by the lowest barometer readings throughout the Archipelago, since it was the depression in the south which accentuated the gradient and induced the currents from the north. This effect, which might be called peculiar to the cyclones crossing these seas in lower parallels, gave to the last December a unique character, not only on account of the great extension but also of the almost complete immovability of said southern depression.

These were the two circumstances which contributed to the great constancy in direction and the long duration of the northeast winds experienced this year. Both would have been impossible if the depression had developed into a real storm. For, whenever during these months a cyclone, regular in form and movement, passes through the south of the Archipelago, the aërial currents from the first quadrant cease on account of the wind's veering toward east, and the sky clears in the central and western regions of the Archipelago when the disturbance has crossed the meridian of Manila and enters the China Sea.

From what has been said it is easily concluded how great an influence such widely extended depressions in the south exercise on the state of the weather in the Island of Luzon. In the region of minimum pressure—that is, in the islands of the Visayas and in the north of Mindanao—calm weather generally prevailed, but the rains were so torrential as to cause not a few disastrous accidents. Hence it is clear that the region of strong winds lay in the north and northeast of the exterior zones of the depression, where the gradient was probably steeper, while the rain area penetrated to the very center thereof. More to the south reigned the weak atmospheric currents of the second quadrant, in consequence whereof, as we have been informed, the eastern coasts of Mindanao were much more navigable than in other years in which the northeast monsoon attained less force in the neighborhood of Luzon.

Conditions similar to those just described as prevailing during the month of December of 1903, may be considered as peculiar to the winter season in the Archipelago. During the last two months, January and February, the second factor is less frequent, because the southern depressions are rarer. It is noteworthy that in many instances, when the northers are due principally to southern depressions, the pressure is low also in the neighborhood of Formosa, the area of relatively high pressure extending only over northern Luzon. In this case the northers blow only in the vicinity of the Archipelago. Among the areas of low pressure crossing the southern islands there are some which develop into real typhoons, causing at times great destruction and making navigation in the southern seas dangerous during this season.

To this summary description of the character and causes of the northern monsoon rainfall we will add a few words about its amount and distribution throughout the Archipelago. The relative amount, as has been stated before, reaches 50 per cent of the annual quantity only in very few of the easternmost stations; hence, this rainfall does not constitute the principal rainy season in any considerable part of the Archipelago. The absolute amount ranges between 1,871.3 millimeters in the eastern stations of Samar and 58 millimeters in the west of Luzon. The amount also depends greatly on the topographical position; that is, whether the station is on the eastern or on the western coast, and whether it is surrounded by mountains or has a free horizon toward north and northeast. This last circumstance makes the distribution of the winter rains much more irregular than that of the summer rains. The driest regions are those on the coasts of Luzon west of the Caraballos and Zambales mountains; a fact easily understood if we remember that even in the eastern regions the most insignificant hills suffice to modify the rainfall. It is also frequently observed on the eastern coasts that when the northers are not rather strong, the rainy zone on land is very narrow, although there may be no appreciable obstacle.

NORTHEAST MONSOON RAINFALL.

IN THE EASTERN PART OF THE ARCHIPELAGO.

Stations.	Millimeters of rainfall.					
	November.	December.	January.	February.	Total.	Per cent.
Davao	128.4	146.4	156.7	110.8	542.3	26.8
Caraga	171.9	422.6	333.4	399.4	1,327.3	53.9
Tandag	284	966	682.5	403.6	2,336.1	52.8
Surigao	332.7	416	289.9	280.9	1,319.5	50
Butuan	307.2	326.2	235.9	115	984.3	49.2
Maasin	166.8	169.3	114.3	70	520.4	34
Ormoc	185	147.7	229.9	75.2	637.8	28.3
Tacloban	254.1	250	213	143.3	860.4	39.6
Borongan	446.9	537.2	526.5	360.7	1,871.3	51.1
Catbalogan	200.8	155.2	256.5	210	822.5	42.1
Calbayog	266.6	234.7	133.4	103.5	738.2	32.9
Palanoc	163.2	57.4	192.6	87.2	500.4	34.6
Gubat	540.7	572.9	293.1	191.9	1,598.6	55
Albay	301	457	233.5	168.2	1,159.7	39.2
Legaspi	265.8	419.1	445.6	248.2	1,378.7	44.1
Nueva Caceres	225	183.8	105.2	57.4	571.4	31.4
Atimonan	464.1	345	181	92.2	1,082.3	40.4
Tayabas	283.2	195.4	135.1	42.2	655.9	45.3
San Antonio	328.1	232.5	161.1	48.9	770.6	27.3
Baler	326.4	447.9	365.9	68.9	1,209.1	31.6
Bayombong	107.3	77.3	34.8	29.5	248.9	21
Tuguegarao	333.1	103.9	17.7	8.1	462.8	29.4
Aparri	277.6	218.8	247.1	95.3	838.8	39.3
Santo Domingo	186.4	324.3	263.7	48	822.4	28.7

IN THE CENTRAL AND WESTERN PARTS OF THE ARCHIPELAGO.

Cotabato	233.4	117.4	16.4	99.4	466.6	21.8
Tamontaca	151.2	76.6	61.4	50.2	339.4	17.8
Balingasag	253.6	86.2	70.2	57.1	467.1	27.1
Dapitan	360.7	298.3	124.8	118.5	902.3	46.8
Zamboanga	125.3	77.5	25.1	38.4	266.3	29.4
Isabela, Basilan	218.4	105.5	35.6	74.6	434.1	26.9
Jolo	140.4	158.3	91.2	82.3	472.2	28.3
Tagbilaran	196.8	175.9	109.1	109.9	591.7	23.8
Cebu	123.4	160.2	110	43.6	437.2	29.4
Tuburan	161.8	153.7	113.6	78	507.1	36.3
La Carlota	199	127.3	59.7	55.6	441.6	17.1
Bacolod	139.3	228.3	86.4	48.7	502.7	23.3
Iloilo	125.5	115.5	50	20.7	311.7	14.2
San Jose Buenavista	94.4	54.5	26.8	0.0	175.7	7.4
Cuyo	110.7	81.2	3.9	28.6	224.4	11.6
Capiz	348.5	446	201	118.5	1,114	28.9
Romblon	313.3	337.4	93	45.8	789.5	33.3
Mamburao	48.2	23.6	3.2	2.3	77.3	2.5
Santiago	101.6	57.5	6.5	.2	165.8	11
Restinga	105.9	29.3	1.6	1.2	138	6
Silang	97.4	35.2	33.6	14	180.2	10.4
Biñang	46	175.3	7.5	18	246.8	19
Cavite	60.1	96.6	104	16.2	276.9	23.3
Manila	131.6	58.3	28	10.1	228	11.8
Corregidor	78.5	42.5	11.4	4.4	136.8	6.2
Balanga	62.4	35.2	16.7	10.2	124.5	5.3
Marilao	59.1	73.9	11.3	6.3	150.6	7.2
Olongapo	48.8	28	6.8	.6	84.2	2.7
Porac	75.6	34.5	10.6	6.9	127.6	5.4
Arayat	59.5	38	17	5.8	120.3	7.1
San Isidro	88.7	55.6	17.3	4.7	166.3	9.3
Tarlac	67.1	35.7	4.2	8	115	6.1
Iba	87.6	7.6	0.0	2.8	98	2.7
Masinloc	63.4	20	.8	0.0	84.2	2.1
Bolinao	42.1	9.4	1.1	6	58.6	2.4
Dagupan	80.6	13.7	7.7	14.6	116.6	4.8
Baguio	132	21.6	33.9	6.8	194.3	4.8
San Fernando, Union	63.6	6.5	12.8	1.8	84.7	3.7
Candon	73	7.1	.4	5.1	85.6	3.5
Vigan	57.3	3.6	.3	.1	61.3	2.9

III. SPRING RAINFALL: MARCH, APRIL, MAY.

The rainfall during the months of March, April, and May is due almost exclusively to local storms and thunderstorms. The frequency and importance of the latter increase as the sun moves northward and consequently the thermal focus, which is the cause of such storms, moves from south to north. We do not consider it necessary to dwell at length on the cause and formation of these daily thunderstorms of tropical countries. The intense heating of the earth's surface gives rise to strong ascensional currents which form the characteristic cumulo-nimbus clouds towering on the hills and mountains. This takes place generally at about 9 o'clock in the morning. The clouds extend gradually and begin to break at about noon and during the afternoon. Often at about 8 a. m., and even earlier, the cirrous fan-like arborizations indicate in different directions the ascendent currents and the future origin of the thundercloud. After sunset the lightning glares are seen daily toward the direction where some local storm is ending its course, and toward many others, indicating different distant storms. At the end of April and during May the days without at least distant lightning and thunder are very rare.

The rainfall during these thunderstorms is very irregular, as it depends on many circumstances in connection with the intensity of the storm. Other characteristics of these spring storms, as for instance, the movement of the barometer, etc., can be found described in "The Cyclones of the Far East" (pp. 51, 52). The season of thunderstorms begins earlier in the southern part of the Archipelago than in the northern. The absolute as well as the relative amount of rain collected during this season decreases, with few exceptions, from south to north, or rather from southeast to northwest, the driest regions being those of northwest Luzon. The southern and eastern coasts of Mindanao and the eastern coasts of Samar and Luzon, up to the fourteenth parallel, receive above 400 millimeters; the lower figures are distributed irregularly, but as will be shown in the tables below, the most part of the stations getting above 200 millimeters are situated in the mean latitudes, and those getting less, in the part of the Archipelago comprising the fourt or northwestern district. The stations with a quantity below 100 millimeters are only four in number. Some extraordinary discrepancies from the average, which appear in the rainfall tables at the first glance, are due to early typhoons which now and then during these months cross the Archipelago, generally through the Visayas, rarely through southern Luzon.

SPRING RAINFALL.

IN THE METEOROLOGICAL DISTRICTS I AND III.

Stations.	Millimeters of rainfall.				
	March.	April.	May.	Total.	Per cent.
Davao	118.1	170.8	195.1	484	23.9
Tamontaca	128	82.8	191.2	402	21
Cotabato	95.3	145.4	195.8	436.5	20.4
Caraga	246.6	157.5	228.9	633	25.7
Balingasag	3.6	27.3	47.8	78.7	4.6
Butuan	98.2	67.3	193.6	359.1	18
Tandag	624.4	356.3	217.4	1,198.1	27.1
Tagbilaran	48.8	393	180.3	622.1	25.1
Surigao	189.5	305.7	176.7	671.9	25.5
Maasin	59.2	29	103.4	191.6	12.5
Cebu	60.6	31.6	99.1	191.3	12.8
Taburan	18	12.5	69.8	100.3	7.2
Ormoc	82.7	78.8	80.9	242.4	10.7
Tacloban	76.6	138	178.3	392.9	18.1
Borongan	145.6	219.5	284.4	649.5	17.7
Catbalogan	33.2	128.2	99	260.4	13.3
Calbayog	69.3	95.7	231.4	396.4	17.6
Palanoc	30.2	48.1	75.2	153.5	10.6
Romblon	12.2	65.4	123.4	201	8.5
Gubat	114.5	100.9	138.6	354	12.1
Albay	229	155.4	188.3	572.7	19.3
Legaspi	154.6	175	149.9	479.5	15.3
Nueva Caceres	54.3	120	76.8	251.3	13.8

IN THE METEOROLOGICAL DISTRICTS II AND IV.

Stations.	Millimeters of rainfall.				
	March.	April.	May.	Total.	Per cent.
Jolo	82.7	87.5	204.8	375	22.5
Isabela, Basilan	26.1	84.7	95.4	206.2	12.8
Zamboanga	25.8	42	88.3	156.1	17.3
Dapitan	50.1	121	105.8	276.9	14.4
La Carlota	47.4	87	229.3	363.7	14
Iloilo	25.9	51	172	248.9	11.4
Bacolod	10.5	29.8	117.7	158	7.3
San Jose Buenavista	4.8	60.8	114.4	180	7.6
Cuyo	2.2	19.5	105.6	127.3	6.6
Capiz	13.7	62.4	189.5	265.6	6.9
Mamburao	9.4	29.9	271.8	311.1	10
Santiago	5.7	4.6	99.4	109.7	7.2
Tayabas	60.2	23.8	99.3	183.3	12.6
Atimonan	68.7	93.7	174.6	337	12.6
Silang	7.6	41.4	117.4	166.4	9.6
San Antonio	80.6	154.6	244.6	479.8	17
Corregidor	2.3	18.7	126.5	147.5	6.7
Restinga	12.2	13.5	176.5	202.2	8.7
Biñang	0.0	9	62.1	71.1	5.5
Cavite	8.6	4.2	14.4	27.2	2.3
Manila	17.3	31	103.1	151.4	7.9
Balanga	10.6	56.3	196	262.9	11.2
Marilao	8.1	48.6	154.3	211	10
Olongapo	4.5	53	294.1	348.6	11
Porac	31.3	64.3	292.1	387.7	16.4
Arayat	8.4	36.4	149.9	194.7	11.5
Iba	3	9.8	145.2	158	4.4
San Isidro	14.4	24.7	201.3	240.4	13.5
Tarlac	33.2	73.9	172.7	279.8	14.7
Masinloc	5.5	85.9	125.7	217.1	5.5
Baler	245.7	430.3	370.4	1,046.4	27.4
Dagupan	17.2	57	317.6	391.8	16
Bolinao	10.1	26.6	101	137.7	5.5
Bayombong	37.6	70	164.1	271.7	22.9
Baguio	21.9	113.4	479.2	614.5	15.4
San Fernando, Union	3.7	10.1	160.6	174.4	7.7
Candon	1.4	13.2	204.3	218.9	8.8
Vigan	3.6	12.2	73.4	89.2	4.2
Tuguegarao	26.4	36	79.8	142.2	9.1
Aparri	45.7	37.9	94	177.6	8.3
Santo Domingo	86.6	111.9	252.4	450.9	15.8

IV. CONCLUSION.

The preceding data show that the mean yearly amount of rainfall is really high in the whole Archipelago. But as its effect depends principally on its distribution throughout the year, we must say a few words on this topic. In respect to rainfall three different climates can be distinguished in these Islands:

The first, and worst of them, has two well-defined seasons, wet and dry. This climate prevails in those regions which during the summer months receive more than 80 per cent of the annual rainfall, and consequently have five rainy months and practically seven of drought. Such regions are those facing the China Sea, the low plains extending northward and eastward from Manila Bay, the moderately high and hilly lands surrounding these plains, and the part of the provinces of Luzon facing the southern seas with mountains to the north. The same climate is found also in some valleys and plateaus extending along the central mountain range of Luzon, as Baguio (1,456 meters above sea level.)

The second climate consists of eight or nine months of rain and only four or three of drought; the precentage of rainfall being high during both the summer and winter season. This climate prevails in the eastern and southeastern parts of Luzon and in the central Visayas, where the northeasters blow almost without any obstacle.

Finally, the third and best climate is that which results from a fairly even distribution of the rainfall over the whole year, and consequently shows a quite uniform percentage for the three different seasons, summer and autumn, winter, and spring months. This climate is found south of the fourteenth parallel only, being enjoyed by some regions of southeastern Luzon, the eastern Visayas, Mindanao, and Jolo. The western part of Mindanao, as is shown by the records of Zamboanga, is the region of the whole Archipelago which receives the smallest amount of annual rainfall; but this deficiency is largely counterbalanced by a fairly regular distribution, so much so, that the tropical climate of Zamboanga is considered as one of the best in the Archipelago.

In the Island of Luzon, the Province of Nueva Vizcaya, situated about 400 meters above sea level, has only 1,186.2 millimeters of annual rainfall, but this is very well distributed. The adjacent, wide and long valley, comprising the Provinces of Isabela and Cagayan, has likewise a fairly good distribution, in fact far better than that in the western provinces of Luzon. The rainfall distribution at Baguio, 1,456 meters above sea level, must be regarded as rather abnormal, due to some peculiar local conditions; because it really differs from that observed in the other highlands of the Archipelago.

We must mention a few stations which have very great and quite abnormal annual rainfall. These are Masinloc on the Zambales coast of Luzon, facing the China Sea, with 3,954.4 millimeters; Mamburao on the western coast of Mindoro, with 3,116 millimeters; and Tandag on the eastern coast of Mindanao, with 4,424.9 millimeters. Although these averages are based on the observation of only two years, we consider them to be sufficiently reliable, owing to the special local conditions of these stations.—Masinloc is situated at the head of a large bay open to the China Sea. At a distance of a few miles to the east runs in a N.–S. direction a rather steep mountain range some 1,200 meters high. Hence the district receives the full force of the western and southwestern winds, which, striking the near-by slopes, take an ascensional movement and discharge the immense amount of moisture which they hold upon the narrow strip of land and the mountain slopes. The location of Mamburao is very much like the one just described. Tandag lies likewise at the head of a bay, which is rather small, open toward the northeast, and surrounded by hills covered with dense forests. The moist northeast winds rush into the funnel-shaped opening, take an ascending direction and discharge the greater part of their moisture as abundant precipitation.

We will conclude these remarks with the following summary of the different climatic zones of the Archipelago:

1. Zone of very definite rainy and dry seasons:

The western coasts of Luzon, from Cape Santiago to Cape Bojeador, including the western part of Manila Bay; the western coasts of Mindoro and Panay and the Calamianes group; the central plains and moderately high lands of Luzon, from Batangas to Nueva Ecija and Pangasinan; the region of Benguet.

The yearly amount of rainfall is above 2,000 millimeters in the western section and in Benguet, while in the central section, it is between 1,500 and 2,000 millimeters.

2. Zones or regions with long rainy season, including the summer, autumn and winter months, and consequently with a very short dry period:

The northern and eastern coasts and the southeastern part of Luzon, including the Cagayan and Isabela valleys; Batanes and Babuyanes Islands; the central Visayas, as Romblon, western Cebu, northern Panay and Negros; the northern part of Mindanao.

The annual amount of rainfall is very great, above 3,000 millimeters, in northern Panay; above 2,000 millimeters in northern and eastern Luzon, Batanes and Babuyanes Islands, northern Negros and Romblon; moderate, that is, below 2,000 millimeters, in the Cagayan valley of Luzon and in northern Mindanao.

3. Zones with more or less uniform distribution of rainfall over the whole year:

The southeastern end of Luzon; the eastern Visayas, Masbate, Samar, Leyte, Bohol, Camiguin, eastern Cebu, eastern and southern Negros and Panay; the eastern and southern coasts of Mindanao; Basilan and Jolo; the relatively high and hilly province of Nueva Vizcaya in Luzon.

Within these regions the annual rainfall surpasses 3,000 millimeters in some coast stations

of southeast Luzon, eastern Samar and Mindanao. In the rest it varies between 2,000 and 3,000 millimeters, except in eastern Cebu, southwest Leyte, southern and central Mindanao, Basilan, Jolo, and Nueva Vizcaya in Luzon, where the yearly amount remains below 2,000 millimeters.

RELATIVE DISTRIBUTION OF THE YEARLY AMOUNT OF RAINFALL DURING THE THREE DIFFERENT SEASONS.

Provinces.	Stations.	Average yearly rainfall.	June to October.	November to February.	March to May.
		mm.	*Per cent.*	*Per cent.*	*Per cent.*
Batanes Islands	Santo Domingo	2,860.1	55.5	28.7	15.8
Cagayan, Luzon	Aparri	2,135.3	52.4	39.3	8.3
Do	Tuguegarao	1,572.6	61.5	29.4	9.1
Ilocos Sur, Luzon	Vigan	2,134.1	92.9	2.9	4.2
Do	Candon	2,474.6	87.7	3.5	8.8
Nueva Vizcaya, Luzon	Bayombong	1,186.2	56.1	21	22.9
Union, Luzon	San Fernando	2,266.6	88.6	3.7	7.7
Benguet, Luzon	Baguio	4,001	79.8	4.8	15.4
Pangasinan, Luzon	Dagupan	2,441.6	79.2	4.8	16
Tarlac, Luzon	Tarlac	1,901.8	79.2	6.1	14.7
Nueva Ecija, Luzon	San Isidro	1,784.5	77.2	9.3	13.5
Pampanga, Luzon	Arayat	1,690.7	81.4	7.1	11.5
Do	Porac	2,365.4	78.2	5.4	16.4
Zambales, Luzon	Bolinao	2,476.5	92.1	2.4	5.5
Do	Masinloc	3,954.4	92.4	2.1	5.5
Do	Iba	3,617.6	92.9	2.7	4.4
Do	Olongapo	3,166.2	86.3	2.7	11
Bataan, Luzon	Balanga	2,349.4	83.5	5.3	11.2
Bulacan, Luzon	Marilao	2,103.1	82.8	7.2	10
Manila and Rizal, Luzon	Manila	1,926.5	80.3	11.8	7.9
Cavite, Luzon	Cavite	1,188.8	74.4	23.3	2.3
Do	Restinga	2,308.5	85.3	6	8.7
Do	Silang	1,734.8	80	10.4	9.6
Corregidor Island	Corregidor	2,199.3	87.1	6.2	6.7
Batangas, Luzon	Santiago	1,512.8	81.8	11	7.2
Laguna, Luzon	San Antonio	2,825	55.7	27.3	17
Do	Biñang	1,298	75.5	19	5.5
Tayabas, Luzon	Baler	3,823.6	41	31.6	27.4
Do	Tayabas	1,449	42.1	45.3	12.6
Do	Atimonan	2,679.9	47	40.4	12.6
Camarines, Luzon	Nueva Caceres	1,818.7	54.8	31.4	13.8
Albay, Luzon	Albay	2,960.6	41.5	39.2	19.3
Do	Legaspi	3,129.7	40.6	44.1	15.3
Sorsogon, Luzon	Gubat	2,908.2	32.9	55	12.1
Masbate	Palanoc	1,445.9	54.8	34.6	10.6
Samar	Calbayog	2,247.6	49.5	32.9	17.6
Do	Catbalogan	1,955	44.6	42.1	13.3
Do	Borongan	3,666	31.2	51.1	17.7
Leyte	Tacloban	2,170.2	42.3	39.6	18.1
Do	Ormoc	2,258.2	61	28.3	10.7
Do	Maasin	1,529.1	53.5	34	12.5
Romblon	Romblon	2,368.7	58.2	33.3	8.5
Mindoro	Mamburao	3,116	87.5	2.5	10
Capiz, Panay	Capiz	3,859.2	64.2	28.9	6.9
Iloilo, Panay	Iloilo	2,188.9	74.4	14.2	11.4
Antique, Panay	San Jose de Buenavista	2,378.8	85	7.4	7.6
Negros Occidental	Bacolod	2,160 6	69.4	23.3	7.3
Do	La Carlota	2,591.2	68.9	17.1	14
Cebu	Tuburan	1,395.8	56.5	36.3	7.2
Do	Cebu	1,489.3	57.8	29.4	12.8
Bohol	Tagbilaran	2,480.7	51.1	23.8	25.1
Surigao, Mindanao	Surigao	2,637.8	24.5	50	25.5
Do	Tandag	4,424.9	20.1	52.8	27.1
Do	Butuan	1,998.4	32.8	49.2	18
Davao, Mindanao	Caraga	2,460.9	20.4	53.9	25.7
Do	Davao	2,026.5	49.3	26.8	23.9
Cotabato, Mindanao	Cotabato	2,140.9	57.8	21.8	20.4
Do	Tamontaca	1,909.4	61.2	17.8	21
Misamis, Mindanao	Balingasag	1,724.6	68.3	27.1	4.6
Dapitan, Mindanao	Dapitan	1,926.5	38.8	46.8	14.4
Zamboanga, Mindanao	Zamboanga	905	53.3	29.4	17.3
Basilan	Isabela	1,614	60.3	26.9	12.8
Jolo	Jolo	1,666.8	49.2	28.3	22.5
Cuyo	Cuyo	1,931.5	81.8	11.6	6.6

V. RAINFALL RECORDS.

The following tables give the registered monthly rainfall of all the permanent and temporary, official and voluntary, meteorological stations in the Archipelago. Although the records of many of them are very incomplete, it has been considered useful to include even these. The interruption of five or six years, which most of the records show, corresponds to the periods covered by the Filipino insurrection, the Spanish-American war, and the disturbances following the latter. It would have been very desirable, indeed, to reopen all the old stations at which the rainfall had been recorded at any time during the years preceding these events, but this has not been possible thus far.

It must be stated that the mean annual totals found in the tables are the sums of the monthly averages, not those of the figures in the column of the annual rainfall, as in many cases the latter are wanting because the records are incomplete, those for several months being missing. The monthly averages have not all the same relative value, since in several cases they are based upon different numbers of years.

As to the order of the tables, we considered it advisable to arrange them according to the four meteorological districts into which the Archipelago is divided. The first district comprises the part lying south of the twelfth parallel and east of the meridian 123° 30′. The second includes the islands and seas extending west of the first district. The third is formed by the part of Luzon and the Visayas lying north of the twelfth parallel and east of the one hundred and twenty-second meridian. Finally, the fourth district embraces the region west of the third; that is to say, the greater part of Luzon and the Island of Mindoro.

The latitudes and longitudes are taken from the current maps of the Philippines. Many of them are only approximate as regards minutes of arc, especially of stations in the interior of islands, as no geodetic survey has as yet verified their geographical positions.

For the most part the elevations of the stations above sea level have been calculated by means of barometric observations only.

MONTHLY RAINFALL AT ALL STATIONS IN THE PHILIPPINE ISLANDS.

DAVAO.

[Latitude, 7° 01′ north; longitude, 125° 35′ east. Altitude, 3 meters.]

Years.	Millimeters of rainfall.												
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total annual.
1897	397.8	142.1	20.9	143.9	136	247.8	208.1	155.3	.....	.....	.....	.....	.....
1898	169.2	107.5	121	179.5	111.5	148	287	166	159.5	234.8	66.6	208.5	1,959.1
1902	.....	28.4	69	127.8	163.5	256.7	196	242.8	50.7	118.4	62.7	112	.....
1903	22.1	159.7	18.7	181.8	127.6	111.2	224.3	121	168.2	169.9	171	136.7	1,612.2
1904	115.2	118	179.6	285.4	228.3	276.7	187.5	173	177.5	289.3	199.6	99.3	2,329.4
1905	79	121.4	206.2	88.4	417.8	192.8	341.4	328.3	160.6	127.3	66.5	.....	.....
1906	.....	98.7	211.2	188.9	180.9	234.6	283.5	229.4	182.6	209	203.7	175.5	.....
Mean	156.7	110.8	118.1	170.8	195.1	209.7	246.8	202.3	149.8	191.6	128.4	146.4	2,026.5

COTABATO.

[Latitude, 7° 13′ north; longitude, 124° 12′ east. Altitude, 5 meters.]

1903	.....	85.9	68.1	72.9	212.8	251.7	350	187.2	133.1	285	371.1	193	.....
1904	.....	160	156.7	258.1	222.2	283.7	.....	.....	239.5	274.3	95.7	55.9	.....
1905	.....	.....	.....	57.7	52.2	.....	243.2	.....	.....	.....	.....	103.4	.....
1906	16.4	52.4	61	192.7	295.9	136.5	300.1	313.2	268.1	197.2	.....	.....	.....
Mean	16.4	99.4	95.3	145.4	195.8	224	297.8	250.2	213.6	252.2	233.4	117.4	2,140.9

MONTHLY RAINFALL AT ALL STATIONS, ETC.—Continued.

TAMONTACA.

[Latitude, 7° 11′ north; longitude, 124° 08.5′ east. Altitude, 6 meters.]

Years.	Millimeters of rainfall.												
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total annual.
1894	------	------	------	------	321.1	358.5	233.5	195.7	406.1	194.5	165.3	114.3	------
1895	21.7	30.5	128	110	90	203	------	------	------	------	------	------	------
1896	101	70	------	55.5	162.5	375.5	216	205.5	181.5	78.5	137	39	------
Mean	61.4	50.2	128	82.8	191.2	312.3	224.8	200.6	293.8	136.5	151.2	76.6	1,909.4

CARAGA.

[Latitude, 7° 30′ north; longitude, 126° 32′ east. Altitude, 30 meters.]

1902	------	------	------	------	------	------	81.5	64.3	26.7	18.4	421.4	586.4	------
1903	354.9	707.4	233.5	117.4	301.5	108.2	210.8	80.5	61.2	52.6	139.4	195.6	2,563
1904	329.4	306.8	445.5	114	123.7	35.8	15.7	40.9	94.7	343.2	31.5	553.2	2,434.4
1905	283.4	390.6	83	199.2	332.6	47.1	178.6	71.1	28.4	139.2	89.1	249.7	2,092
1906	366	192.8	224.5	199.3	157.8	154.3	227.1	121.6	125.8	88.5	178.3	528.3	2,564.3
Mean	333.4	399.4	246.6	157.5	228.9	86.4	142.7	75.7	67.4	128.4	171.9	422.6	2,460.9

BALINGASAG.

[Latitude, 8° 45′ north; longitude, 124° 44′ east. Altitude, 7.7 meters.]

1902	------	------	------	------	------	------	247.2	127.4	236.9	80.5	79.7	35.6	------
1903	19.8	117.1	------	------	------	------	298.4	210.3	351.3	350.3	188.2	188.5	------
1904	171.4	88.6	------	------	------	------	149.6	178.6	249.7	262.6	590.8	121.2	------
1905	45.5	1.5	0.0	17.5	62.6	213.6	247.9	220.2	301	214.1	225.9	51.5	1,601.3
1906	44	21.3	7.1	37.1	33	245.1	256.1	111.8	431	222	183.4	34	1,625.9
Mean	70.2	57.1	3.6	27.3	47.8	229.4	239.8	169.7	314	225.9	253.6	86.2	1,724.6

BUTUAN.

[Latitude, 8° 55′ north; longitude, 125° 31′ east. Altitude, 5 meters.]

1903	------	------	------	------	------	------	------	33.4	153.7	91.4	160.1	425.1	------
1904	323.3	224.8	150.4	------	153.5	244.9	72.3	68.6	127	300.7	692	227.4	------
1905	148.5	5.3	46	67.3	233.6	47.4	128.8	90.6	139.2	141.5	------	------	------
1906	------	------	------	------	------	------	170.6	99.5	161.6	132.3	69.5	------	------
Mean	235.9	115	98.2	67.3	193.6	146.2	123.9	73	145.4	166.5	307.2	326.2	1,998.4

TANDAG.

[Latitude, 9° 01′ north; longitude, 126° 06′ east. Altitude, 4 meters.]

1896	------	------	------	------	------	------	------	133	38	85.7	316.3	610.8	------
1897	691.3	251.4	225.6	373.6	103.5	147.8	170.9	114.4	336.9	310.9	251.8	1,321.1	4,299.2
1898	673.7	555.8	1,023.1	339	331.2	180.7	263.3	------	------	------	------	------	------
Mean	662.5	403.6	624.4	356.3	217.4	164.2	217.1	123.7	187.4	198.3	284	966	4,424.9

MONTHLY RAINFALL AT ALL STATIONS, ETC.—Continued.

TAGBILARAN.

[Latitude, 9° 38′ north; longitude, 123° 53′ east. Altitude 21.9 meters.]

Years.	Millimeters of rainfall.												
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total annual.
1902	116.2	329.2	101.8	1,728.6	505.5	270.5	1,379.6	67.2	472.3	1,142.1	255.1	207.1	6,575.2
1903	164.3	91.4	35.8	17.7	161.5	183.1	395.3	205.9	100.4	172.6	141.8	305.3	1,975.1
1904	175.1	93	75.7	203	70.2	66.7	73.5	74.7	79.2	380.2	259.6	35.8	1,586.7
1905	11.2	19.3	13.4	11.2	85.1	68.3	136.8	132.8	100.3	110.6	166.2	98.5	953.7
1906	78.6	16.5	17.2	4.5	79.3	277.4	95.2	108.9	131.2	109.7	161.5	232.9	1,312.9
Mean	109.1	109.9	48.8	393	180.3	173.2	416.1	117.9	176.7	383	196.8	175.9	2,480.7

SURIGAO.

[Latitude, 9° 48′ north; longitude, 125° 29′ east. Altitude, 4 meters.]

1902	117.3	540.9	306.3	574.3	174	46.2	232.6	117.8	46.7	174	292.1	190	2,812.2
1903	243.6	100.8	135.9	118.1	238	102.9	135.1	4.3	87.6	210.6	230.6	369.6	1,977.1
1904	688.5	447.2	233.8	399.9	117.9	72.2	89	------	------	319.9	392.9	290	------
1905	105.3	101.1	81.9	130.6	176.9	0.0	167.3	112	216.8	112.8	380.4	483.6	2,068.7
1906	294.6	214.3	------	------	------	58	102.6	75.7	231.9	292.8	367.3	747	------
Mean	289.9	280.9	189.5	305.7	176.7	55.9	145.3	77.4	145.8	222	332.7	416	2,637.8

MAASIN.

[Latitude, 10° 08′ north; longitude, 124° 50′ east. Altitude, 2.1 meters.]

1902	------	------	------	------	------	------	179.5	93.8	114.2	134.2	108.9	87.8	------
1903	115	52.1	32.1	10.7	77.3	109.6	69.9	64.4	183.2	161.5	135	254	1,264.8
1904	217.5	174.2	144.2	75.6	165.8	104.2	128.9	199.6	357.4	133.1	272.8	168	2,141.3
1905	33.8	20.1	1.3	14.6	38.4	91.7	168.1	194	196.1	164.5	199	140.7	1,262.3
1906	90.8	33.8	------	15	132.1	192.3	285.9	104.8	336.6	193.6	118.1	195.8	------
Mean	114.3	70	59.2	29	103.4	124.4	166.5	131.3	237.5	157.4	166.8	169.3	1,529.1

CEBU.

[Latitude, 10° 18′ north; longitude, 123° 54′ east. Altitude, 3 meters.]

1878	73	35	47	19	5	164	126	165	156	215	176.5	168	1,349.5
1881	------	7.6	160.5	17	101.9	------	------	40	132.5	188.2	154.3	94.3	------
1882	145.6	53.3	------	13	------	259.9	168.7	228.3	306.1	172.4	127.7	201.8	------
1894	78	66.9	59.2	10.4	156	82.1	174	231.5	179.8	84.2	84.5	122.4	1,329
1895	121.3	70.2	38.2	7	175.5	264.9	187.7	179.2	61.5	------	------	------	------
1897	86	78.8	60.2	60.9	74.8	------	------	164.7	165.1	238.8	138	272	------
1902	128.8	47.5	95.5	45	161.3	177.2	338.9	149.5	52.3	106.7	120.4	58.4	1,481.5
1903	72.5	24	30.9	7.9	34.5	200.9	133.9	74.2	236.4	112.8	79.2	425.7	1,432.9
1904	327.6	48.5	78	145.2	158.6	178.1	92.8	156.4	116.1	145.1	149.1	50.7	1,646.2
1905	7.9	14.3	.5	3.6	29.2	79.2	212.8	152.2	338.1	330.4	29	109.8	1,307
1906	59.5	33.9	35.8	18.6	94.3	219.8	128.1	94.6	191.9	223.4	175	98.6	1,373.5
Mean	110	43.6	60.6	31.6	99.1	180.7	173.7	148.7	176	181.7	123.4	160.2	1,489.3

MONTHLY RAINFALL AT ALL STATIONS, ETC.—Continued.

TUBURAN.

[Latitude, 10° 44′ north; longitude, 123° 48′ east. Altitude, 8 meters.]

Years.	Millimeters of rainfall.												
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total annual.
1902	-------	-------	-------	-------	-------	-------	319.1	33.8	71.9	170	191.5	52.7	----------
1903	76	18.3	22.3	0.0	81.3	118.5	166	60.6	121.6	126.6	123.9	436	1,351.1
1904	232.7	263.9	31.7	40.1	121.2	188.7	115.1	97.2	67.3	198	256.4	79.8	1,692.1
1905	14	13.7	0.0	6.1	9.4	70.2	125.5	183.4	331.1	304	161	93.7	1,312.1
1906	131.5	16.3	-------	3.8	67.5	115.1	131	230	287.2	187.3	76	106.4	----------
Mean	113.6	78	18	12.5	69.8	123.1	171.3	121	175.8	197.2	161.8	153.7	1,395.8

ORMOC.

[Latitude, 11° 00′ north; longitude, 124° 36′ east. Altitude, 4.5 meters.]

1902	618.6	74	195.5	132.6	90	168.7	560	156	266.2	236.2	114.3	81.8	2,693.9
1903	238.2	55.4	36.8	40.6	47.5	101.9	381	99.6	246.6	175	225	294.1	1,941.7
1904	136.5	211.5	96.3	156.9	71.1	311.4	28.1	384	453.8	191.4	155.7	154.1	2,350.8
1905	96.8	5.7	9.5	37.8	52	200	305.7	530.2	276.6	303.3	114.7	106.6	2,038.9
1906	59.2	29.5	75.5	26.3	143.9	199.3	176.8	281.7	429.1	426.9	315.2	102.1	2,265.5
Mean	229.9	75.2	82.7	78.8	80.9	196.3	290.3	290.3	334.5	266.6	185	147.7	2,258.2

TACLOBAN.

[Latitude, 11° 15′ north; longitude, 125° 00′ east. Altitude, 6 meters.]

1904	388.2	330.7	50.7	224.8	197.5	207.7	25.4	282.9	122.6	213.2	344.6	291.4	2,679.7
1905	128.1	26.2	45.5	57.9	189.1	196.5	194	229.3	245.3	128.8	163.6	208.6	1,812.9
1906	122.6	72.9	133.7	131.4	148.4	309.8	112.2	128	-------	-------	-------	-------	----------
Mean	213	143.3	76.6	138	178.3	238	110.5	213.4	184	171	254.1	250	2,170.2

BORONGAN.

[Latitude, 11° 42′ north; longitude, 125° 25′ east. Altitude, 10 meters.]

1903	623.1	399.3	109.5	135.4	325.6	295.1	265.4	75.2	193.3	194.8	416.3	907	3,936.4
1904	939.3	814.3	90.9	363.2	357.2	-------	83.3	82.6	198.6	629.9	552.5	386.3	----------
1905	246.8	78.8	158.3	111.4	260.7	116.4	177.2	254.4	338.7	352.7	369.9	431.3	2,896.6
1906	296.7	150.5	223.6	268	195.1	337.6	99	150.7	284.4	201.9	449.1	424.4	3,081
Mean	526.5	360.7	145.6	219.5	284.4	249.7	156.2	140.7	253.8	344.8	446.9	537.2	3,666

CATBALOGAN.

[Latitude, 11° 47′ north; longitude, 124° 53′ east. Altitude, 6.6 meters.]

1904	367	348	46.2	173.2	144	197	26.2	182.6	268	241.6	244.4	143.6	2,381.8
1905	46	72.1	20.3	83.3	54	61.9	143.9	-------	245.5	195	157.2	166.8	----------
Mean	256.5	210	33.2	128.2	99	129.4	85	182.6	256.8	218.3	200.8	155.2	1,955

MONTHLY RAINFALL AT ALL STATIONS, ETC.—Continued.

JOLO.

[Latitude, 6° 33′ north; longitude, 120° 59′ east. Altitude, 7 meters.]

Years.	Millimeters of rainfall.												
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total annual.
1894										120.3	178	311.7	
1895	72.5	14.3	37.2	90.4	193.1	211.5	58.8	191.5	50.4	235.9*	72.7	100.3	1,328.6
1896	99	5.9	6.3	131.2				25.4	71.7				
1897	12	10	89	20.5	392.8	147.8	235	177.1	204.2	135.6	132.7	195.6	1,752.3
1898	229	152		111	144	75	144	110	221				
1902										148.1	120.4	173.6	
1903	3	23.1	32.5	105	65.7	215.3	292	157.6	293.2	117.5	222.9	182.3	1,710.1
1904	268.8	452.8	157.4	65.6		69.1	179.3	173.3	134.9	296.4	129.2	75.2	
1905	38.1	0.0	22.4	0.0	305	19.6	209.9	38.9	229.6	420.4	59.4	69.6	1,412.9
1906	7.4	0.0	233.8	176.1	128.2	118.3	82.1	296.1	159.8	196.3	208		
Mean	91.2	82.3	82.7	87.5	204.8	122.4	171.6	146.2	170.6	208.8	140.4	158.3	1,666.8

ISABELA BASILAN.

[Latitude, 6° 43′ north; longitude, 121° 57′ east. Altitude, 7 meters.]

1903	15.7	7.1	0.0	22.5	108.5	307.6	131.1	201.9	186.7	187.9	289.3	198.6	1,656.9
1904	89.2	272.5	76.2	206.2	88.4	84.3	177.8	189	210.8	221.2	238.8	31.5	1,885.9
1905	13.2	1.5	0.0	9.6	102.4	54	140.2	112.4	145.3	320.9	112.3	91.2	1,103
1906	24.5	17.5	28.2	100.5	82.5	365	145.4	231.6	166.3	315.6	233.4	100.6	1,793.1
Mean	35.6	74.6	26.1	84.7	95.4	202.7	148.6	183.7	177.3	261.4	218.4	105.5	1,614

ZAMBOANGA.

[Latitude, 6° 54′ north; longitude, 122° 05′ east. Altitude, 3 meters.]

1894											66.1	119.1	
1895	24.5	18.9	46.9	34.3	43	151.7	21.9		108.8	95.6	83.1	104	
1896	57.9	35.1	70.1	9.3	130.1	173.1	166.2	39.1	38.3				
1903	15	8.3	0.0	43.6	41.5	66.1	55.8	48.6	79.8	71	187.1	90.6	707.4
1904	42.4	165	24.9	110.5		62.3	112.9	65	110.2	134.5	91.7	16	
1905	8.7	2.6	0.0	37.3	143.5	25.3	214.6	84.1	62.6	148.2	107.7	57.7	892.3
1906	2.1	.5	13.2	16.7	83.6	180.9	102.7	164.8	102.7	32.3	216.3		
Mean	25.1	38.4	25.8	42	88.3	109.9	112.4	80.3	83.7	96.3	125.3	77.5	905

DAPITAN.

[Latitude, 8° 38′ north; longitude, 123° 23′ east. Altitude, 6 meters.]

1902							209.3	120.3	132.8	364	291.3	183.4	
1903	140.2	60.5	6.9	58.4	71.9	139.7	156.5	95	180.8	202.2	280.9	591.6	1,984.6
1904	208	368.8	159.5	288	44.2		44.2	105.7	196.8	280.7	395.1	155.2	
1905	123.7	25.1	19.6		307.1	83.3	212.1	134.6	120.4	386.2	334.2	220.9	
1906	27.3	19.6	14.5	16.6	0.0	35.7		32	113	63.6	501.9	340.4	
Mean	124.8	118.5	50.1	121	105.8	86.2	155.5	97.5	148.8	259.3	360.7	298.3	1,926.5

MONTHLY RAINFALL AT ALL STATIONS, ETC.—Continued.

LA CARLOTA.

[Latitude, 10° 25′ north; longitude, 123° 00.8′ east. Altitude, 125 metèrs.]

Years.	Millimeters of rainfall.												
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total annual.
1889	10.1	25.9	8.4	3	44.4	287.5	369.5	357	317.9	370.8	368.4	262.9	2,425.8
1890	101.6	141.7	48.2	292.9	201	259.7	449	402.9	511.6	400	202.2	13	3,023.8
1891	179.9	60.4	61.4	30.3	101.7	175.9	584.5	588	290.8	254.2	245.4	225.9	2,798.4
1892	28.8	14.5	62.9	104.9	180.9	346.8	252.6	333.4	454.8	887.8	208.4	188.7	3,064.5
1893	10.4	144.5	50.5	20	477	409	282.5	275	379	287.6	182.5	222.4	2,740.4
1894	33.5	12	14.5	182.8	203	267.5	114.9	232	623.4	167	146	83	2,079.6
1895	135.5	82.6	47	37	262	415	347.5	336.9	313	106.6	148.4	38	2,269.5
1896	6.1	19	20.5	43.5	372	230.4	607	547	234	339.5	47.5	9	2,475.5
1897	31.5	0.0	113	69	222	351	221	335	412	344.6	242	103	2,444.1
Mean	59.7	55.6	47.4	87	229.3	304.8	358.7	378.6	392.9	350.9	199	127.3	2,591.2

BACOLOD.

[Latitude, 10° 41′ north; longitude, 122° 56′ east. Altitude, 7.4 meters.]

1903	51.3	13	6.3	2.8	91.3	178.1	334.6	200.2	298.4	223.3	149.7	429.2	1,978.2
1904	195.5	178.3	12.7	113.4	147.1	399.2							
1905	31.4	3.1	1.6	1.1	112.1	145.9	388.7	425.5	227.6	362.5	165.5	161.7	2,026.7
1906	67.4	.3	21.4	2	120.3	214.7	415.1	361.4	319.4	239.6	102.6	94	1,958.2
Mean	86.4	48.7	10.5	29.8	117.7	234.5	379.5	329	281.8	275.1	139.3	228.3	2,160.6

SAN JOSE DE BUENAVISTA.

[Latitude, 10° 44′ north; longitude, 121° 56′ east. Altitude, 4 meters.]

1902							756.8	468.8	338.1	72.1	22	10.2	
1903	18.7	0.0	0.0	87.9	56.6	215.9	343.7	93.7	345.2	316	96	186.9	1,760.6
1904	70.9	0.0	0.0	106.4					586.7	106.7	67.8	11.4	
1905	0.0	0.0	0.0	44.9		506.3	618	458.4	320.5	472.4	116.1	46.7	
1906	17.8	0.0	19.4	4.1	172.2	251.1	566.9	419.7	704.5	573.1	169.9	17.3	2,916
Mean	26.8	0.0	4.8	60.8	114.4	324.4	571.4	360.2	459	308.1	94.4	54.5	2,378.8

ILOILO.

[Latitude, 10° 41′ north; longitude, 122° 34′ east. Altitude, 6 meters.]

1894	6	16	40	7.3	15.6	42.9	72.9	223.7	365	120.2	213.4	24.8	1,147.8
1895	13	44.6	10.1	40.1	393	307	360.9	198.6	361.2	75.7	80.9	38	1,923.1
1896		15.5		35.2	403.7	144.1	801.6	163.1	73.4		56.5	46.9	
1897	51.6	20.2	37.9	55.5	79.3	202.8	235.6	369.6	288.2	464.4	153.1	142.7	2,100.9
1902	149.3	7.4	47.2	74.7	170.3	114.4	1,403.3	391.1	511.9	219.5	28.7	126.7	3,244.5
1903	5.5	1.5	3.3	4.8	165.6	244.3	427	186.2	146.3	245.6	124.5	528.3	2,082.9
1904	97.1	72.3	25.2	157.8	87.8	456.4	454.2	762	280.7	331.4	340.8	26.9	3,092.6
1905	2.8	8.9	0.0	32.4	60.7	175.8	603.1	297.5	148.8	342.8	60.6	48	1,781.4
1906	75	0.0	43.4			194.3	582	358.5	349.7	295	71.4	57.6	
Mean	50	20.7	25.9	51	172	209.1	549	327.8	280.6	261.8	125.5	115.5	2,188.9

MONTHLY RAINFALL AT ALL STATIONS, ETC.—Continued.

CUYO.

[Latitude, 10° 51′ north; longitude, 121° 00′ east. Altitude, 14 meters.]

Years.	Millimeters of rainfall.												
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total annual.
1903	0.0	0.0	0.0	1.8	88.1	139.8	442.8	179.3	453.3	419.7	37.3	164	1,926.1
1904	6.9	113.1	8.6	21.4	131.7	424.8	281.3	593.5	238.8	133.9	219.7	2.3	2,176
1905	0.0	1.3	.3	43.2	27.7	213.6	358	408.2	423.3	269.1	59.8	158.7	1,963.2
1906	8.7	0.0	0.0	11.7	175.1	298.5	141	284.9	374.6	240.6	126	0.0	1,661.1
Mean	3.9	28.6	2.2	19.5	105.6	269.2	305.8	366.5	372.5	265.8	110.7	81.2	1,931.5

CAPIZ.

[Latitude, 11° 35′ north; longitude, 122° 45′ east. Altitude, 6 meters.]

1902	278.6	58.9	28.3	31	------	129.7	281.8	178.6	140.1	336.2	70.9	114.3	------
1903	90.3	117.1	7.4	16.3	127	590.8	936.5	241.8	597.1	611.9	401.1	1,505.7	5,243
1904	405	352.4	13.1	178.5	404.1	289.4	193.1	532.6	300.9	999.9	664.8	92.7	4,426.5
1905	75.6	53.6	5.9	*24	37.3	304.8	610.5	289.7	393.6	1,494.6	254.3	------	------
1906	255.5	10.7	------	------	------	736.8	236.8	675.4	559.7	735.9	351.5	71.3	------
Mean	201	118.5	13.7	62.4	189.5	410.3	451.7	383.6	398.3	835.7	348.5	446	3,859.2

CALBAYOG.

[Latitude, 12° 04′ north; longitude, 124° 36′ east. Altitude, 4.1 meters.]

1903	92.2	29.2	47.8	82	167.1	140.5	168.4	97.8	230.1	194.6	411.7	510.8	2,172.2
1904	313.2	320.1	52.6	207	103.4	------	------	177.5	261.4	156.7	274.8	113.7	------
1905	27.4	8.4	3.3	50.3	125.8	128.8	222.5	221.1	441.7	236	113.3	178.6	1,757.2
1906	100.6	56.1	173.4	43.5	529.2	194.4	183.4	141.1	422.8	487.1	------	135.6	------
Mean	133.4	103.5	69.3	95.7	231.4	154.6	191.4	159.4	339	268.6	266.6	234.7	2,247.6

PALANOC.

[Latitude, 12° 22.5′ north; longitude, 123° 37′ east. Altitude, 3 meters.]

1904	338.1	237.5	12.7	123.3	95.9	191.6	46.2	96.5	------	------	------	72.8	------
1905	47.2	24.1	17.3	12	3.6	68.4	151.9	181.7	302.8	130.2	83.8	43.2	1,066.2
1906	------	0.0	60.5	9.1	126	102.1	185.7	108.7	265.7	130.1	242.7	56.1	------
Mean	192.6	87.2	30.2	48.1	75.2	120.7	127.9	129	284.2	130.2	163.2	57.4	1,445.9

ROMBLON.

[Latitude, 12° 35′ north; longitude, 122° 16′ east. Altitude, 6 meters.]

1903	137.4	51	1.3	29	114.6	101.3	------	------	446	223.7	341	748	------
1904	117.3	73.2	9.7	112.8	251.4	193.5	157.7	290.5	261	462	280.8	173.7	2,383.6
1905	24.4	13.1	25.5	54.3	4.1	57.8	390.1	------	------	------	318	90.4	------
Mean	93	45.8	12.2	65.4	123.4	117.5	273.9	290.5	353.5	342.8	313.3	337.4	2,368.7

MONTHLY RAINFALL AT ALL STATIONS, ETC.—Continued.

GUBAT.

[Latitude, 12° 55′ north; longitude, 124° 08′ east. Altitude, 6 meters.]

Years.	Millimeters of rainfall.												
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total annual.
1903	.....	.....	.....	.....	.....	.....	.....	.....	.....	187.2	833.6	1324.6	.....
1904	783.8	519.7	35.6	147.3	115.1	217.9	125.5	75.4	73.7	594.9	385.6	183.1	3,257.6
1905	95.5	13.7	27.9	40.6	54.9	75.7	143.9	93.1	256.5	.....	.....	.....	.....
1906	0.0	42.3	279.9	114.7	245.9	48.3	121.5	130	480.4	242.7	402.8	211.1	2,319.6
Mean	293.1	191.9	114.5	100.9	138.6	114	130.3	99.5	270.2	341.6	540.7	572.9	2,908.2

LEGASPI.

[Latitude, 13° 09′ north; longitude, 123° 45′ east. Altitude, 4.3 meters.]

1902	649.7	475.7	272.8	487.8	158	162.1	307.4	116.9	230.4	336.5	173.2	289	3,659.5
1903	128.4	130	95.9	116.9	81.4	99	194	80.3	124.3	261.4	442.8	1130.6	2,885
1904	799.3	544.9	126.3	168.8	262.3	396.6	67.6	100.6	329.7	619.7	228	168	3,811.8
1905	125.3	41.4	23	39.8	87.9	87.2	221	287.8	.....	.....	89	232.6	.....
1906	525.2	49.1	254.9	61.9	159.9	258.5	259.4	210.1	509	396.2	395.8	275.5	3,355.5
Mean	445.6	248.2	154.6	175	149.9	200.7	209.9	159.1	298.4	403.4	265.8	419.1	3,129.7

ALBAY.

[Latitude, 13° 09′ north; longitude, 123° 41.5′ east. Altitude, 7 meters.]

1891	457.5	99.5	130.1	166.9	89.1	232.6	421.1	368.8	84.2	140.8	478.9	690.6	3,360.1
1893	191.5	187.9	358.9	167.6	179.4	207.1	270	140.1	217	173.1	547.7	695.7	3,336
1894	145.3	261.7	271.9	154.5	174.3	365.2	485.4	183.5	489.6	306.2	343.2	469	3,649.8
1895	221.8	157.5	321.1	203.7	164	181.3	179.8	171.3	485	328.2	170.1	366.1	2,949.9
1896	294.1	184.7	128.8	172.6	472.5	223.1	158.4	480.5	149.8	91.6	113.6	236.7	2,706.4
1897	90.7	117.9	163	67.4	50.3	36.5	82.3	108.3	373.5	234.9	152.8	283.6	1,761.2
Mean	233.5	168.2	229	155.4	188.3	207.6	266.2	242.1	299.8	212.5	301	457	2,960.6

NUEVA CACERES.

[Latitude, 13° 38′ north; longitude, 123° 12′ east. Altitude, 8 meters.]

1887	65.2	43	181	343	137.9	212	53.4	227	345.2	162	345.1	54.5	2,169.3
1888	129.1	21	43	90	21	97	205.5	59	96	74	61.5	87.5	984.6
1902	.....	.....	.....	.....	.....	.....	277.7	202	127.2	225	63	51	.....
1903	18.1	19	4	9.8	66.8	175.5	217.2	69.5	273.5	170	557.1	658.9	2,240.3
1904	341.3	240.5	27.7	30.8	158.1	316.6	.....	.....	.....	.....	.....	.....	.....
1905	17	0.0	0.0	134.7	0.0	111.2	144.7	212.1	306.2	305.5	154.5	137.4	1,523.3
1906	60.8	20.1	70	113.2	.....	155.9	267	163.1	464.3	261.9	168.9	113.3	.....
Mean	105.2	57.4	54.3	120.2	76.8	178	194.2	155.4	268.7	199.7	225	183.8	1,818.7

MONTHLY RAINFALL AT ALL STATIONS, ETC.—Continued.

MAMBURAO.

[Latitude, 13° 15′ north; longitude, 120° 32′ east. Altitude, 4.4 meters.]

Years.	Millimeters of rainfall.												
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total annual.
1896	------	------	------	------	------	------	------	------	------	254.7	18.2	7.4	------
1897	------	------	------	29.9	86.5	367.7	424.4	698.6	497.6	391.8	78.2	39.9	------
1898	5.3	------	------	------	457	822.2	229.5	1,295.5	473.2	------	------	------	------
1899	1	2.3	9.4	------	------	------	------	------	------	------	------	------	------
Mean	3.2	2.3	9.4	29.9	271.8	595	327	997	485.4	323.2	48.2	23.6	3,116

CAVITE.

[Latitude, 14° 29′ north; longitude, 120° 54.5′ east. Altitude, 6 meters.]

1902	------	------	------	------	------	------	253.4	343.5	529.9	103.5	77.8	36.3	------
1903	17.6	5.1	2.9	5	18.4	56.2	195.9	54.2	98.8	104.8	42.4	156.9	758.2
1904	190.4	27.2	14.4	3.3	10.4	29.2	------	------	------	------	------	------	------
Mean	104	16.2	8.6	4.2	14.4	42.7	224.6	198.8	314.4	104.2	60.1	96.6	1,188.8

TAYABAS.

[Latitude, 14° 01′ north; longitude, 121° 33.5′ east. Altitude, 179 meters.]

1891	158.3	24.4	48.3	9.2	7.4	29.4	152.9	------	122.4	------	481.5	187.5	------
1892	216	35.7	109.5	26.8	25	218	133	53.3	55.5	181	428	161	1,642.8
1893	39.3	50.3	68.5	30.5	386	53.5	28.5	103.1	151.5	89	234	159.5	1,393.7
1894	70	79	25	17	86	83	36.5	25.5	47.5	583.3	413.6	351.7	1,918.1
1895	315.5	39.6	80.8	35.4	79.7	88.2	------	20.2	222	201	69	182.5	------
1897	11.8	24.2	29	------	11.5	31	132	67.2	100	140.5	73	130.2	------
Mean	135.1	42.2	60.2	23.8	99.3	83.8	96.6	73.9	116.5	239	283.2	195.4	1,449

ATIMONAN.

[Latitude, 14° 00.5′ north; longitude, 121° 55′ east. Altitude, 7 meters.]

1886	78.8	67	3	22.5	170.9	163.2	322.8	113.5	42.5	193	596.2	515.3	2,282.7
1887	120.7	163.7	131	105.5	259	223.5	135.5	280.3	271.5	168.1	707.5	502.7	3,069
1888	156.6	13.2	86	97	59.9	120.5	317	142.4	186.3	665	288.3	267.5	2,399.7
1902	405.3	89.8	65.1	165.8	162.5	128.8	305.4	159.3	317.4	591.5	235.9	63.2	2,690
1903	165.9	90.4	24.6	15.5	61.5	78	320.8	232.7	281.2	271.5	412.7	661.2	2,616
1904	274.4	263.8	60.3	82	159.2	218.4	54.8	141.7	423.9	556.2	536.2	166.3	2,937.2
1905	73.5	35	10.4	231.2	77.6	112.4	224.1	272.3	481.7	401.7	235.6	267.7	2,423.2
1906	172.8	14.4	169.5	30.2	445.8	134.5	106.2	218.3	384.9	321.7	700.2	316	2,631.1
Mean	181	92.2	68.7	93.7	174.6	147.4	223.3	195.1	298.7	396.1	464.1	345	2,679.9

MONTHLY RAINFALL AT ALL STATIONS, ETC.—Continued.

SANTIAGO.

[Latitude, 13° 46′ north; longitude, 120° 38.5′ east. Altitude, 14 meters.]

Years.	Millimeters of rainfall.												
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total annual.
1886	8	0.0	0.0	------	------	83	191	118.9	275	150.5	------	31.5	------
1887	8	0.0	20	36	117.5	181	161.5	127	421	68	106.5	60	1,306.5
1888	0.0	0.0	7	0.0	9	287	1122	367	120	72	44	101	2,129
1889	17	0.0	0.0	0.0	0.0	151	108	261	123	153.5	269	245	1,327.5
1890	9	0.0	0.0	8	62	244	173	81	511.5	336	210	2	1,636.5
1891	6	0.0	0.0	5.5	0.0	195	726	317	132	6	75	85	1,547.5
1892	0.0	0.0	15	0.0	17	76	------	10	278	11	45	0.0	------
1893	4	0.0	0.0	0.0	100	15	137	36	306	133	103	35	869
1894	5	0.0	15	0.0	20	143	255	105	688	146	45	27	1,449
1895	13	2	0.0	0.0	345	554	276	216	498	44	160.5	16	2,124.5
1896	7.5	0.0	5	0.0	350	288	692	887	201	109	14	------	------
1897	0.0	0.0	6	1	73	25.5	209.1	353	305	220	45.5	30	1,268.1
Mean	6.5	.2	5.7	4.6	99.4	186.9	368.2	239.9	321.5	120.8	101.6	57.5	1,512.8

SILANG.

[Latitude, 14° 14′ north; longitude, 120° 58′ east. Altitude, 281 meters (approximate).]

1904	18.5	38.1	0.0	25.1	191.5	428.7	316.7	300.7	------	52.1	74.2	23.9	------
1905	2.5	3.8	0.0	96.5	43.2	372.3	390.8	328	304.9	79.2	10.1	72.3	1,703.6
1906	79.9	0.0	22.8	2.5	------	244.4	283.9	------	302	143	207.8	9.4	------
Mean	33.6	14	7.6	41.4	117.4	348.5	330.5	314.4	303.4	91.4	97.4	35.2	1,734.8

SAN ANTONIO.

[Latitude, 14° 23′ north; longitude, 121° 32′ east. Altitude, 296 meters, (aproximate).]

1904	------	------	------	------	------	------	------	281.6	435.9	396	433.8	177.3	------
1905	103.6	79.8	66.3	257.8	194.4	219.4	367.1	333.5	443.3	401.9	125.8	270.4	2,863.3
1906	218.6	18	94.8	51.5	294.8	248	198.6	258.8	364.4	258.9	424.7	249.9	2,681
Mean	161.1	48.9	80.6	154.6	244.6	233.7	282.8	291.3	414.5	352.3	328.1	232.5	2,825

BIÑANG.

[Latitude, 14° 21′ north; longitude, 121° 05′ east. Altitude, 7 meters.]

1903	5.1	4.8	0.0	5.8	15	61.4	280.2	125.2	148.6	132.1	46	175.3	999.5
1904	9.9	31.2	0.0	12.2	109.2	526.5	------	------	------	------	------	------	------
Mean	7.5	18	0.0	9	62.1	294	280.2	125.2	148.6	132.1	46	175.3	1,298

CORREGIDOR.

[Latitude, 14° 23′ north; longitude, 120° 34′ east. Altitude, 5 meters.]

1903	7.6	6.4	0.0	0.0	18.8	110.7	345.2	241.6	184.9	292.9	37.8	160.2	1,406.1
1904	17.5	11.2	0.0	2.5	41.6	682.5	757.1	410.7	602.7	87.9	129	2.8	2,745.5
1905	0.0	0.0	3.8	72.4	9.1	400.3	869.7	281.8	332.7	152.4	9.4	6.9	2,138.5
1906	20.3	0.0	5.3	0.0	436.6	145.2	304.2	482.3	548.1	387.2	137.9	0.0	2,467.1
Mean	11.4	4.4	2.3	18.7	126.5	344.7	569	354.1	417.1	230.1	78.5	42.5	2,199.3

MONTHLY RAINFALL AT ALL STATIONS, ETC.—Continued.

MANILA.

[Latitude, 14° 34.7′ north; longitude, 120° 58.5′ east. Altitude, 14.2 meters.]

Years.	Millimeters of rainfall.												
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total annual.
1865	11	38	0.0	0.0	90.6	266.2	249	219	687.9	266.4	95	19.5	1,942.6
1866	44	0.0	60	20	106.4	355	134	302.7	362.5	403.9	137.5	131	2,057
1867	21.5	18.2	12.8	21.5	169	206	357.8	340.2	1,469.7	280.1	69	13	2,978.8
1868	9	0.0	0.0	0.0	75	393.7	286	286.5	462	162.4	267.3	2	1,943.9
1869	35.5	11.1	0.0	40.8	129.2	276.9	368.8	407.8	446.2	589.7	200.8	42	2,548.8
1870	82.6	24.6	3.4	21	194.1	199.2	390.1	423.3	273.7	133.8	210.8	46.1	2,002.7
1871	9.6	6.7	11.2	0.0	12.6	375.7	269.6	248.9	351.3	189.1	141.4	7.9	1,624
1872	15.3	10	28.2	39.8	89.4	168.6	206.6	798.8	357.4	198	133.4	32	1,977.5
1873	20	12.8	14	100.9	59	354.3	261.7	388.3	146.1	317.8	37.9	1	1,713.8
1874	13.9	5	2.2	17.7	37.2	110.3	284.4	422	115.6	138.2	45.5	15	1,207
1875	99.2	28.3	24.2	2.3	0.0	49.4	330.2	400.7	486.9	134.2	98.6	32.9	1,686.9
1876	28.4	3.6	9.4	29.8	185.7	222.1	470.1	339.6	520.3	58.2	61.5	61.5	1,990.2
1877	2.8	.2	.2	0.0	200.4	233.9	602	1,095.6	93.6	239.4	50.1	6.8	2,525
1878	1.5	7.5	10.8	5.5	76.2	207.2	239.1	220.5	399.6	99.6	122.4	89.6	1,479.5
1879	55.2	39.6	11.3	119.8	103.9	96.5	143.4	290.7	316.4	147.3	397.8	5	1,726.9
1880	42.3	11.6	15.6	136.4	21	205.5	809.8	499.8	349.6	172.8	105.7	36.4	2,406.5
1881	4.1	0.0	9.2	7.1	174.2	433	486.7	440.7	255.7	155.5	64.9	91.2	2,122.3
1882	9.5	28	30.7	40.8	131.9	235.1	573.6	306.3	327.5	320.3	177.4	104.9	2,286
1883	195.2	15.4	23	75.3	123.7	212.9	754.6	256.5	353.4	162	72.5	3.2	2,247.7
1884	.5	.4	5.5	0.0	96.4	297.8	721	327.5	194.2	47.5	149.1	61.7	1,901.6
1885	2	0.0	3	22.8	1.2	169.5	313.9	170.7	50.8	111.6	57.5	3.5	906.5
1886	3	16.5	0.0	31.4	107.1	219.9	225.9	248.4	233.1	363.5	63.5	89.3	1,601.6
1887	13.4	4.8	100.2	27.2	256.9	135.7	378.7	142.8	738	210.9	141.9	117.2	2,267.7
1888	16	0.0	18.8	14.3	28.2	265.4	680.6	355.2	138.1	200.2	53.4	36.9	1,807.1
1889	98.1	10.8	4.8	3.5	0.0	167.7	292.9	339	117.5	198.8	152.6	346.9	1,732.6
1890	14.1	15.6	16.4	77.3	69.6	255.5	498.8	130.8	536.7	224.9	209.9	45.4	2,095
1891	18.7	1.8	4.1	4	97.7	655.5	642.7	276.1	477.8	39.5	306.6	59.2	2,583.7
1892	43.7	17.1	27.1	13.8	76.2	114.2	231	151	377.2	77.7	100.7	52.9	1,282.6
1893	14.2	5.7	18	20.8	184.5	24.8	234.2	276.8	475.1	83.8	94.2	9.3	1,441.4
1894	10	3.3	61.9	22.1	108.1	281.3	209.9	189.5	399.2	224.6	59.9	108.6	1,678.4
1895	26.7	1.6	11.4	5.6	246.8	539.5	178.6	349.4	463.8	78.3	167.6	15.4	2,084.7
1896	1	7.6	10.6	4.9	168.8	156.6	221.8	650.2	424.6	109.2	29.8	.2	1,785.3
1897	12.3	0.0	22.4	25.6	36.3	96	245.7	263.6	263.2	121.7	73.9	142.8	1,303.5
1898	54.2	10.3	65.6	35.5	167.1	329.6	288.1	414.3	325.1	245.2	277.6	14.1	2,226.7
1899	42.4	3	29.9	70.4	65.3	217.3	1,190.9	340.1	385	79.8	227.1	143.1	2,794.3
1900	3.2	3.5	15.4	2.2	49.2	415	186.9	770.9	288	175.9	148.8	66.7	2,125.7
1901	.1	9.7	16.1	12.2	71.6	155.2	228.6	341.5	151.6	457.3	310.8	97	1,851.7
1902	27.2	1	7.6	7.2	51.4	311.3	289.2	300.2	523.3	69.6	71.1	57.6	1,716.7
1903	25.3	8.9	0.0	13.1	15.1	100.2	267.2	180.9	149.7	75.7	45.8	148.5	1,030.4
1904	34.8	27.1	11.2	30.8	70.4	437.1	682.2	219.6	382.4	139.7	81.3	20.2	2,136.8
1905	0.0	2.8	1.1	173.8	24	364.2	594.4	212.8	239.6	174	10.5	27.8	1,825
1906	12.7	13.4	9.3	4.9	358.4	154.9	310.2	362.4	471.5	322.7	205.5	44.6	2,270.5
Mean	28	10.1	17.3	31	103.1	249.2	388.8	350	368.6	190.5	131.6	58.3	1,926.5

BALANGA.

[Latitude, 14° 41′ north; longitude, 120° 32′ east. Altitude, 7.5 meters.]

1903	12.9	30.2	0.0	6.1	168.2	96.3	418.1	139.7	136.9	108.5	72.9	97.5	1,287.3
1904	14.2	10.4	36.6	36.6	96.8	422.5	939.3	385.8	521.6	103	22.1	13.2	2,602.1
1905	.3	0.0	3.3	177	4.3	548.8	960.9	269.9	330.9	126.2	8.5	6.9	2,437
1906	39.5	0.0	2.3	5.5	514.9	233.1	463.2	369.4	726.5	547.1	146	23.1	3,070.6
Mean	16.7	10.2	10.6	56.3	196	325.2	695.4	291.2	429	221.2	62.4	35.2	2,349.4

MONTHLY RAINFALL AT ALL STATIONS, ETC.—Continued.

MARILAO.

[Latitude, 14° 46′ north; longitude, 120° 56′ east. Altitude, 8 meters.]

Years.	Millimeters of rainfall.												
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total annual.
1903	7.6	2.5	0.5	37.3	27.6	160.8	461	281.8	162	108.6	80.6	162.5	1,492.8
1904	11.9	20.1	0.0	21.6	93.8	490.1	538.3	322.6	297.1	157.8	59.6	12.2	2,025.1
1905	0.0	.5	1	129.4	108.7	431	636	513.2	381.2	283.3	37	47.1	2,568.4
1906—	25.7	2	30.8	6.3	387.2	-------	-------	-------	-------	-------	-------	-------	-------
Mean	11.3	6.3	8.1	48.6	154.3	360.6	545.1	372.5	280.1	183.2	59.1	73.9	2,103.1

RESTINGA.

[Latitude, 14° 16′ north; longitude, 120° 36.5′ east. Altitude, 14 meters.]

1885	0.0	1.4	0.0	39.8	9.5	94.4	429.5	29.0	149.4	49	0.0	0.0	802
1886	0.0	0.0	0.0	0.0	16.7	178.5	14.2	-------	443.2	130.8	17.5	45.6	-------
1887	1.5	0.0	73.5	43	65	312.5	462.5	152.5	1,209	266	63.3	75.7	2,724.5
1888	0.0	0.0	0.0	0.0	147.5	274.5	1,239.5	414.5	299.5	136.5	20.5	65.5	2,598
1890	4.5	0.0	0.0	47.5	208	268	412.5	206	492.6	208.5	234.1	0.0	2,081.7
1891	10	0.0	18	0.0	1	328.5	1,085.5	706	743	4.1	180.5	28.5	3,105.1
1892	0.0	0.0	0.0	0.0	117.5	433	530	246.5	934.9	129.5	110.5	27.8	2,529.7
1393	0.0	7	31	0.0	336	25.5	568	388	635	40.5	157.5	0.0	2,188.5
1894	0.0	2.5	0.0	0.0	237	613	637.5	345	626.9	180	89	50.1	2,781
1895	0.0	1	0.0	4.5	627.2	362	549	481.5	797.5	90	185.8	0.0	3,098.5
Mean	1.6	1.2	12.2	13.5	176.5	289	592.8	329.9	633.1	123.5	105.9	29.3	2,308.5

OLONGAPO.

[Latitude, 14° 49′ north; longitude, 120° 15′ east. Altitude, 4.4 meters.]

1902	-------	-------	-------	-------	-------	-------	-------	1,192.3	869	30.5	143.5	2.8	-------
1903	0.0	1.3	0.0	0.0	49	128.8	618.2	474.7	235.5	184.6	23.7	87.8	1,803.6
1904	24.4	1.3	0.0	25.4	137	1,190.1	981.9	636.8	466.5	53.7	9	17.5	3,543.6
1905	0.0	0.0	4.6	186.4	-------	858.3	1,047.8	447.7	-------	195.7	8.4	-------	-------
1906	3	0.0	-------	0.0	696.3	298.7	410	535	-------	380.1	59.3	3.8	-------
Mean	6.8	.6	1.5	53	294.1	619	764.5	657.3	523.7	168.9	48.8	28	3,166.2

PORAC.

[Latitude, 15° 05′ north; longitude, 120° 32′ east. Altitude, 133 meters (approximate).]

1903	26.2	0.0	0.0	48.8	40.6	163.3	424.4	272.5	151.6	135.1	22.9	115.3	1,400.7
1904	5.6	27.4	27.9	12.4	217.2	481.3	670.3	259.1	360.2	135.6	52.4	4.1	2,253.5
1905	0.0	.3	80.3	184.2	35.3	464.8	1,160.9	389.1	356.6	177.8	16.5	4.9	2,870.7
1906	10.5	0.0	16.9	11.8	875.2	131.5	328.4	325.9	558.3	453.9	210.8	13.7	2,936.9
Mean	10.6	6.9	31.3	64.3	292.1	310.2	646	311.6	356.7	225.6	75.6	34.5	2,365.4

ARAYAT.

[Latitude, 15° 08′ north; longitude, 120° 46′ east. Altitude, 8.7 meters.]

1902	37.8	0.5	2	56.6	131.5	381.9	288.4	109.7	292.1	25.1	6.6	20.1	1,352.3
1903	20.8	1.5	0.0	15.5	8.1	30	142.5	199.4	112.5	172.7	1.3	156.6	860.9
1904	5.1	10.6	33.8	11.2	109.3	474.3	500.1	250.5	344.5	388.4	66.9	0.0	2,194.7
1905	0.0	0.0	0.0	86.1	52.6	290.4	643.5	290.5	303.5	144.5	14.7	0.0	1,825.8
1906	21.1	16.5	6.4	12.7	448.2	120.5	292.8	213.8	482.6	384.2	207.8	13.5	2,220.1
Mean	17	5.8	8.4	36.4	149.9	259.4	373.5	212.8	307	223	59.5	38	1,690.7

MONTHLY RAINFALL AT ALL STATIONS, ETC.—Continued.

SAN ISIDRO

[Latitude, 15° 22′ north; longitude, 120° 53′ east. Altitude, 20 meters.]

Years.	Millimeters of rainfall.												
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total annual.
1888	0.0	0.0	90.5	29	224	261	424.1	265	224	162	62	68	1,809.6
1889	115	0.0	19	20	64	156	187	218	308	228	172	181	1,668
1890	7	13	20	59	208	164	193	192	782	251.5	91	7	1,987.5
1891	6	0.0	2	6	64	418	400	441	406	82	237	74	2,136
1892	0.0	2	8	2	------	145	76.8	------	53.6	------	91	9	------
1893	0.0	11	0.0	65	438	131	359	156.7	420.2	177.5	121.2	4	1,883.6
1894	28	30	2	2	86	219	572	241	444	214	54	27	1,919
1895	0.0	2	0.0	0.0	437	274	293	367	431	83	68	1	1,956
1896	0.0	6	7	0.0	156	77	495	474	------	191	------	0.0	------
1897	3	1	40	50	214	82	394	191	185	123	22	145	1,450
1902	33.1	0.0	4.1	20.9	93.1	228.3	------	370.5	423.3	37.8	143.3	51.9	------
1903	21.4	0.0	0.0	1.3	38.1	116	386.4	234.9	295.2	150.4	9.9	200.5	1,454.1
1904	22.6	6.2	.3	0.0	199.3	505.3	------	307	367.1	248	48.4	1.1	------
1905	0.0	0.0	22.1	96.1	77.6	336.8	470.6	286.1	318	199.4	33.8	8.9	1,849.4
1906	23.7	0.0	1.6	18.8	518.5	153.6	190.5	160.7	383.4	364.2	------	------	------
Mean	17.3	4.7	14.4	24.7	201.3	217.8	341.6	278.9	360.1	179.4	88.7	55.6	1,784.5

TARLAC.

[Latitude, 15° 31′ north; longitude, 120° 35′ east. Altitude, 20 meters.]

1902	------	------	------	------	------	------	375.9	300.2	373.8	141.6	55.6	17	------
1903	9.4	24.4	0.0	46.7	81.3	146.3	428.7	155.7	220.7	171.7	91.7	150.9	1,527.5
1904	.8	2.8	55.9	23.4	91.4	495.1	409.2	219	384.0	144.5	30	2	1,858.1
1905	.5	0.0	31	161.6	39.4	289.8	538.1	249.1	419.6	213.6	21.9	.6	1,965.2
1906	6.1	4.8	45.7	63.8	478.6	141.5	223.6	369.8	490.1	365.3	136.1	7.9	2,333.3
Mean	4.2	8	33.2	73.9	172.7	268.2	395.1	258.8	377.6	207.3	67.1	35.7	1,901.8

MASINLOC.

[Latitude, 15° 34′ north; longitude, 119° 56′ east. Altitude, 6 meters.]

1903	0.0	0.0	0.0	24.6	176.8	------	903.9	905.5	325.4	407.4	------	------	------
1904	------	0.0	10.2	93.5	127.8	1,171.2	961.1	687.8	447	87.4	91.2	27.4	------
1905	0.0	0.0	6.3	139.7	72.4	1,099	1,113.7	683.1	784.3	------	35.6	12.7	------
1906	2.5	------	------	------	------	------	------	------	------	------	------	------	------
Mean	.8	0.0	5.5	85.9	125.7	1,135.1	992.9	758.8	518.9	247.4	63.4	20	3,954.4

IBA.

[Latitude, 15° 21′ north; longitude, 119° 57′ east. Altitude, 4.2 meters.]

1902	0.0	5.6	6.1	11.2	217.7	504.5	852.1	898.8	1,200.6	49.3	87.6	7.6	3,841.1
1903	0.0	0.0	0.0	8.4	73.6	217.2	------	------	------	------	------	------	------
Mean	0.0	2.8	3	9.8	145.2	360.8	852.1	898.8	1,200.6	49.3	87.6	7.6	3,617.6

MONTHLY RAINFALL AT ALL STATIONS, ETC.—Continued.

BALER.

[Latitude, 15° 47′ north; longitude, 121° 34′ east. Altitude, 7 meters.]

Years.	Millimeters of rainfall.												
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total annual.
1902	------	------	------	------	------	------	------	196.8	248.7	304.5	406.4	382	------
1903	273.3	117.9	53.3	239	389.9	290.8	249.4	53.3	506.5	275.7	274.6	779.8	3,503.5
1904	509.5	56.1	6.4	682	------	233.7	559.9	248.9	425.4	469.9	134.4	------	------
1905	152.4	63.5	421.6	508	203.2	238.8	370.8	237.2	384.8	86.4	139.7	270.5	3,076.9
1906	528.3	38.1	501.6	292.1	518.2	235	177.8	327.6	715	414	676.9	359.4	4,784
Mean	365.9	68.9	245.7	430.3	370.4	249.6	339.5	212.8	456.1	310.1	326.4	447.9	3,823.6

DAGUPAN.

[Latitude, 16° 03′ north; longitude, 120° 20′ east. Altitude, 4.7 meters.]

1902	22.4	0.3	7.6	2.8	193.8	447.4	445.8	520.7	379.2	83.1	37.3	2	2,142.4
1903	4.3	2.8	1.3	54.9	214.4	271.5	664.2	351.3	295.4	340.9	169.4	49.5	2,419.9
1904	8.3	63.8	16.6	86.4	149.1	614.2	654	419.9	270.2	147.3	42.5	9.6	2,481.9
1905	0.0	5.1	29.1	101.6	108.9	533.9	695.4	287.7	720	81.7	10.1	2.8	2,576.3
1906	3.3	.8	31.4	39.5	921.8	330.4	215.2	376.3	376.3	143.8	143.8	4.8	2,587.4
Mean	7.7	14.6	17.2	57	317.6	439.5	534.9	391.2	408.2	159.4	80.6	13.7	2,441.6

BOLINAO.

[Latitude, 16° 24′ north; longitude, 119° 53′ east. Altitude, 4 meters.]

1886	13.9	0.0	0.0	0.0	119	629	464.2	498.5	708	130.5	0.0	16.4	2,579.5
1887	0.0	0.0	0.0	29	41	111	538	161	751	151	9	0.0	1,791
1888	0.0	0.0	0.0	------	102	463	392	422	------	------	0.0	21	------
1889	0.0	0.0	22	0.0	25	140	555	726	262	217	35	0.0	1,982
1890	0.0	0.0	30	9	200	286	------	------	547	177	------	------	------
1891	0.0	.4	0.0	0.0	20	751	736	404	793	8	94	0.0	2,806.4
1892	0.0	8	68	3	123	691	649	288	1,008	188	9	40	3,075
1894	0.0	0.0	3	35	66.8	298.8	238.8	326.4	676.2	201	38	13	1,897
1895	0.0	0.0	0.0	3	197	199.3	312	334.4	442.8	55.3	161.5	0.0	2,705.3
1896	0.0	0.0	13	12	------	131	902	962	343.6	668.6	0.0	0.0	------
1897	0.0	0.0	0.0	19.6	5.8	507	805	350	255	124.8	21	4	2,092.2
1902	------	------	------	------	------	------	589	773.7	402.8	9.4	38.1	2.5	------
1903	0.0	7.6	5.1	5.3	100.6	122.4	726.2	599.7	167.9	179.3	126.7	20.8	2,061.6
1904	0.0	73.4	0.0	103.6	273.3	844	906.2	563.4	224.8	79.2	55.7	13.6	3,137.2
1905	0.0	.2	0.0	126.1	39.4	692.3	855	470.7	666.6	70.3	2	.5	2,923.1
1906	2	0.0	------	------	------	------	------	------	------	------	------	------	------
Mean	1.1	6	10.1	26.6	101	419	619.2	562.2	517.8	161.4	42.1	9.4	2,476.5

BAGUIO.

[Latitude, 16° 35′ north; longitude, 120° 43′ east. Altitude, 1,456 meters.]

1902	63.4	1.8	29	24.6	483.6	488.9	388.6	1,238	602.7	212.1	75.9	24.1	3,632.7
1903	5.1	0.0	16.5	97	131.8	168.4	760.8	767.9	490	883.1	236.2	54.9	3,611.7
1904	86.9	30.5	20.6	92.7	199.1	983.5	1,394.9	566.9	511	263.6	152.6	0.0	4,302.3
1905	0.0	1	19.5	176	183.8	764.3	1,023.7	1,028.5	739.7	235.2	9.3	17	4,198
1906	14.2	.8	23.8	176.5	1,397.8	341.7	354.1	560.4	949.5	243.7	185.9	12.2	4,260.6
Mean	33.9	6.8	21.9	113.4	479.2	549.4	784.4	832.3	658.6	367.5	132	21.6	4,001

MONTHLY RAINFALL AT ALL STATIONS, ETC.—Continued.

BALER.

[Latitude, 15° 47′ north; longitude, 121° 34′ east. Altitude, 7 meters.]

Years.	January.	February.	M	September.	October.	November.	December.	Total annual.
1902	.....	.....		248.7	304.5	406.4	382	.....
1903	273.3	117.9		506.5	275.7	274.6	779.8	3,503.5
1904	509.5	56.1		425.4	469.9	134.4	.....	.....
1905	152.4	63.5	4	384.8	86.4	139.7	270.5	3,076.9
1906	528.3	38.1	5	715	414	676.9	359.4	4,784
Mean	365.9	68.9	2	456.1	310.1	326.4	447.9	3,823.6

[ude, 4.7 meters.]

1902	22.4	0.3		379.2	83.1	37.3	2	2,142.4
1903	4.3	2.8		295.4	340.9	169.4	49.5	2,419.9
1904	8.3	63.8		270.2	147.3	42.5	9.6	2,481.9
1905	0.0	5.1		720	81.7	10.1	2.8	2,576.3
1906	3.3	.8		376.3	143.8	143.8	4.8	2,587.4
Mean	7.7	14.6		408.2	159.4	80.6	13.7	2,441.6

[tude, 4 meters.]

1886	13.9	0.0		708	130.5	0.0	16.4	2,579.5
1887	0.0	0.0		751	151	9	0.0	1,791
1888	0.0	0.0				0.0	21	
1889	0.0	0.0		262	217	35	0.0	1,982
1890	0.0	0.0		547	177			
1891	0.0	.4		793	8	94	0.0	2,806.4
1892	0.0	8		008	188	9	40	3,075
1894	0.0	0.0		676.2	201	38	13	1,897
1895	0.0	0.0		442.8	55.3	161.5	0.0	2,705.3
1896	0.0	0.0		343.6	668.6	0.0	0.0	
1897	0.0	0.0		255	124.8	21	4	2,092.2
1902	.....	.....		402.8	9.4	38.1	2.5	
1903	0.0	7.6		167.9	179.3	126.7	20.8	2,061.6
1904	0.0	73.4		224.8	79.2	55.7	13.6	3,137.2
1905	0.0	.2		666.6	70.3	2	.5	2,923.1
1906	2	0.0						
Mean	1.1	6		517.8	161.4	42.1	9.4	2,476.5

[de, 1,456 meters.]

1902	63.4	1.8		302.7	212.1	75.9	24.1	3,632.7
1903	5.1	0.0		190	883.1	236.2	54.9	3,611.7
1904	86.9	30.5		511	263.6	152.6	0.0	4,302.3
1905	0.0	1		739.7	235.2	9.3	17	4,198
1906	14.2	.8		949.5	243.7	185.9	12.2	4,260.6
Mean	33.9	6.8		658.6	367.5	132	21.6	4,001

MONTHLY RAINFALL AT ALL STATIONS, ETC.—Continued.

SAN FERNANDO, UNION.

[Latitude, 16° 37′ north; longitude, 120° 18′ east. Altitude, 12 meters.]

Years.	Millimeters of rainfall.												
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total annual.
1902	49.6	0.0	0.0	0.0	134.4	78.5	308.8	820.7	439.4	1.8	5.8	5.1	1,844.1
1903	3	0.0	0.0	12.2	53.6	115.8	511.5	724.2	254	407.4	159.5	18	2,256.5
1904	4.6	4.8	1	.5	39.9	706.6	963.8	------	------	51.6	64.1	3.3	------
1905	0.0	0.0	0.0	37	62.7	647.7	567	485.8	409.1	53.9	1.5	1.5	2,266.2
1906	9.7	4.1	17.4	.8	512.6	265.6	281.8	408.4	446.5	90.9	87.1	4.6	2,129.5
Mean	12.8	1.8	3.7	10.1	160.6	362.8	526.6	609.8	387.2	121.1	63.6	6.5	2,266.6

BAYOMBONG.

[Latitude, 16° 29′ north; longitude, 121° 11.5′ east. Altitude, 253 meters.]

1886	39.7	54.8	7	84.5	280.1	116.8	182.1	39.5	136.5	25.4	65.9	38	1,070.3
1887	11	2.5	85.6	46.5	103	62	81	87.5	187	72	62	36.2	836.3
1888	30.4	------	42.7	30.7	65.4	59.3	169.4	120.2	41.3	49.9	30.3	76.8	------
1889	40.3	------	32	17.5	15.1	78.5	122.8	63.4	127.5	124.3	100.5	134.3	------
1890	76.4	37.9	12.1	85.5	92.9	68.2	97.1	63.6	132.8	102.3	107	------	------
1891	21.5	23.3	13	20.2	27.7	94	73	142.5	167.8	56.4	139.8	80.2	859.4
1892	24	35.2	33.8	48.5	325.1	39.8	267.2	212.6	207.3	401.6	185.7	79.6	1,860.4
1893	------	23.1	74.5	226.9	403.3	99.2	231.6	267	423.5	231	167	96	------
Mean	34.8	29.5	37.6	70	164.1	77.2	153	124.5	178	132.9	107.3	77.3	1,186.2

CANDON.

[Latitude, 17° 12′ north; longitude, 120° 26′ east. Altitude, 6 meters.]

1902	------	------	------	------	------	------	336.2	600.2	592.3	21.1	50.8	0.0	------
1903	0.0	0.0	0.0	33.3	5.3	147	586.7	344.4	275.6	465.8	166.1	11.7	2,035.9
1904	0.0	------	0.0	3.3	107.4	818.4	1,050.3	412.2	281.9	35.3	------	4.3	------
1905	0.0	0.0	4.3	3.8	13	809.2	585.5	595.2	452.1	147.8	2.3	16.5	2,629.7
1906	1.5	15.2	------	12.3	691.6	234.4	265	422.7	697.3	172.7	72.9	3	------
Mean	.4	5.1	1.4	13.2	204.3	502.2	564.7	474.9	459.8	168.5	73	7.1	2,474.6

VIGAN.

[Latitude, 17° 34′ north; longitude, 120° 23′ east. Altitude, 22 meters.]

1887	0.0	0.0	0.0	0.0	0.0	------	543	110	487	67	------	------	------
1888	0.0	0.0	8	0.0	60	192	633	865	360	82	10	0.0	2,210
1889	------	------	0.0	0.0	0.0	223	------	------	------	------	173	0.0	------
1890	0.0	0.0	0.0	29	117	------	------	229	535	57	0.0	0.0	------
1891	0.0	0.0	0.0	0.0	0.0	505	------	417	864	15	0.0	0.0	------
1893	0.0	0.0	0.0	0.0	205.2	119.2	------	290	569	8	0.0	0.0	------
1894	0.0	0.0	0.0	0.0	9	127.1	------	233	267	17	28	3	------
1895	0.0	0.0	0.0	0.0	127	183.8	293	532	493	56	313	0.0	1,997.8
1896	0.0	0.0	0.0	6	219	172	580	539	314	1,034	0.0	0.0	2,864
1902	------	------	------	------	------	------	283.9	654.2	843.3	0.0	------	3.8	------
1903	0.0	0.0	16.3	11.4	45	177	456.9	593.1	217.2	382.3	94.5	24.6	2,018.3
1904	0.0	1	0.0	51.1	76.5	753	979.2	517.2	195.1	53.1	7.6	0.0	2,633.8
1905	0.0	0.0	22.6	10.6	22.3	693.3	894.3	558.1	517.5	86.4	4.1	15.5	2,824.7
1906	3.8	------	0.0	50	------	323.3	341.3	629.6	616.6	------	------	0.0	------
Mean	.3	.1	3.6	12.2	73.4	315.3	556.1	474.4	483	154.8	57.3	3.6	2,134.1

MONTHLY RAINFALL AT ALL STATIONS, ETC.—Continued.

TUGUEGARAO.

[Latitude, 17° 35' north; longitude, 121° 39' east. Altitude, 33 meters.]

Years.	Millimeters of rainfall.												
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total annual.
1881	2.4	0.2	2.2	8.5	16.4	56.9	214.8	65	33	203.6	29.7	85.2	717.9
1882	4.3	2	20.1	37.8	37.8	48.2	94.4	70.9	119.1	83.9	70.7	93	682.2
1903	13.7	7.4	0.0	48.3	119.4	118.4	98.6	80.2	126.7	681.2	288.6	153.3	1,735.8
1904	57.6	23.3	0.0	31.7	83.7	372.6	194.5	159.9	87.6	62.2	106.7	52.1	1,231.9
1905	1.8	11.4	68.4	16.7	21.9	365.8	82.4	252.1	314.7	228.9	187.2	104.9	1,656.2
1906	26.3	4.1	67.6	72.7	199.6	67.9	119.3	142.1	749.6	511.6	1,315.7	134.9	3,411.4
Mean	17.7	8.1	26.4	36	79.8	171.6	134	128.4	238.4	295.2	333.1	103.9	1,572.6

APARRI.

[Latitude, 18° 22' north; longitude, 121° 34' east. Altitude, 3.5 meters.]

1886	993.7	485	0.0	0.0	218.9	133.5	------	106.9	28.7	107	135.7	149.5	------
1887	0.0	.5	54.7	23	23.3	22.3	66.4	32	258.4	117.4	253.4	310.6	1,162
1891	43.8	15	21	81	0.0	82	181	470	500	81	632	640	2,746.8
1892	391	30	170	13	------	------	140	180	410	780.5	260	440	------
1895	------	------	70.6	66.4	143.9	83.8	130	129.4	418	112.3	138.1	49.5	------
1896	22	------	57.5	8	------	35	------	290	198	232.3	40	115.5	------
1902	708.6	124.7	7.4	14	50.8	99.3	273.8	363.5	594.4	118.9	161	198.1	2,714.5
1903	65.5	85.6	0.0	30	79.5	11.7	49	324.1	110.2	538	352.5	208.8	1,854.9
1904	101.5	49	17.3	19	86.5	257.3	267.1	224.2	69	238.6	56.9	119.1	1,505.5
1905	4.8	64.3	26.2	20.3	65.2	346.7	146	348.3	235.9	404.6	238.3	109.3	2,009.9
1906	140.1	3.8	77.7	142.6	177.5	218.7	52.5	97.5	510.2	663.4	785.4	66	2,935.4
Mean	247.1	95.3	45.7	37.9	94	129	145.1	233.3	303	308.5	277.6	218.8	2,135.3

SANTO DOMINGO.

[Latitude, 20° 28' north; longitude, 121° 59' east. Altitude, 18.7 meters.]

1903	270.1	27.2	51.8	141	201.1	163.6	340.7	910.7	186.9	734.1	310.8	344.3	3,682.3
1904	306.8	66.7	20	10.2	110.3	262.7	406.5	377	168.6	151.3	121.2	363.5	2,364.8
1905	150.2	85.5	154.8	89	21	151	267.6	207.6	186.1	370.8	123	227.6	2,034.2
1906	327.6	12.5	119.9	207.5	677	90.1	202	127.4	424.1	618.6	190.8	361.9	3,359.4
Mean	263.7	48	86.6	111.9	252.4	166.8	304.2	405.7	241.4	468.7	186.4	324.3	2,860.1