

U. S. DEPARTMENT OF AGRICULTURE

---

REPORT FOR SEPTEMBER, 1910.

---

PORTO RICO SECTION

OF THE

CLIMATOLOGICAL SERVICE

OF THE

WEATHER BUREAU

---

PUBLISHED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE

---

UNDER DIRECTION OF  
WILLIS L. MOORE  
CHIEF U. S. WEATHER BUREAU

BY

OLIVER L. FASSIG,  
SECTION DIRECTOR.

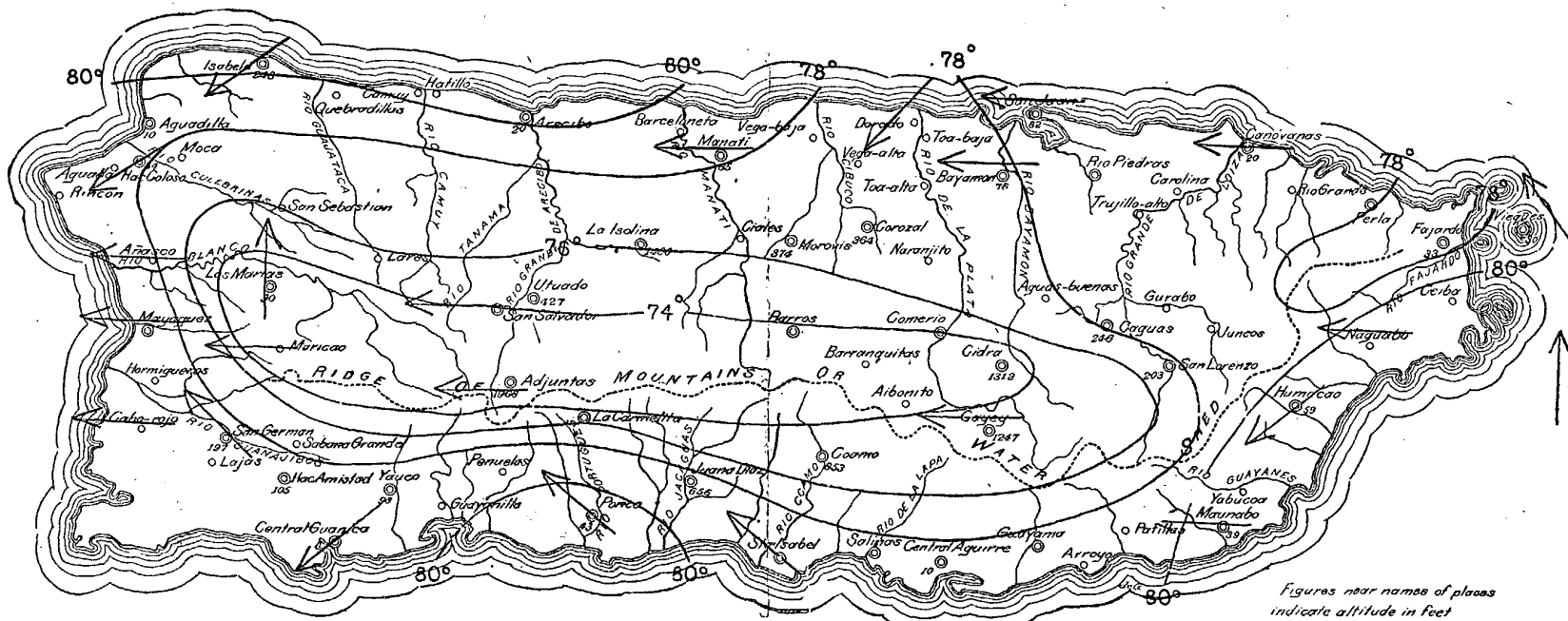


RICHMOND, VA.:  
WEATHER BUREAU OFFICE  
OCTOBER 28, 1910.

OCT 8 1910

OCT 8 1910

MONTHLY MEAN ISOTHERMS AND PREVAILING WINDS FOR SEPTEMBER, 1910.  
 (Arrows fly with the wind.)



Figures near names of places indicate altitude in feet

U. S. DEPARTMENT OF AGRICULTURE,  
**CLIMATOLOGICAL SERVICE**

OF THE  
**WEATHER BUREAU.**  
 CENTRAL OFFICE: WASHINGTON, D. C.

**PORTO RICO SECTION.**  
 OLIVER L. FASSIG, Section Director.

VOL. XII. SAN JUAN, PORTO RICO, SEPTEMBER, 1910. No. 9

**GENERAL SUMMARY.**

The month of September, 1910, was decidedly cool, having the lowest mean temperature on record, for the Section as a whole, since the establishment of the Climatological Service in 1898. The lowest previous records for September are those of 1904 and 1906, with a mean temperature of 78.3°, as compared with 77.9° for September, 1910. The comparatively low mean temperature was due mostly to lower afternoon temperatures, as the mean daily minimum was but half a degree below normal, while the mean daily maximum was a degree and a half below. The extreme minimum temperature (54°) was also very low for September, having been equaled but once in the past twelve years. The average daily maximum temperature for the month was 86.6° and the average daily minimum was 69.0°.

The rainfall of the month, for the Section as a whole, was decidedly above the average for the past twelve years. Along the western and southwestern coasts the total rainfall of the month was below normal. Along the eastern coast and at stations in the north-central portion of the Island, within the area of the storm of the 6-7th, the excess of rain above the normal for September was from 10 to 15 inches; excessive rates of rainfall occurred at several stations during this storm: Over ten inches were reported from the following stations for the period of 24 hours ending 6 p. m. September 7th, with a maximum of 18.22 inches at Naguabo: Comerio Falls, Corozal, Humacao, Central Ingénio, Maunabo, Naguabo and Rio Blanco; practically, the total amounts recorded fell during a period of twelve hours.

**PRESSURE.**

The mean sea-level atmospheric pressure at San Juan was 29.95 inches. The highest recorded was 30.03 inches, on the 30th; the lowest, 29.76 inches, on the 6th.

**TEMPERATURE.**

The monthly mean for the Section, 34 stations reporting, was 77.9°, or 1.2° below the normal. The monthly mean for the Northern division, 17 stations, was 77.2°; for the Eastern division, 4 stations, 80.5°; for the Southern division, 5 stations, 78.2°, and for the Western division, 6 stations, 76.9°. The highest monthly mean was 82.0°, at Culebra, followed by 81.8°, at Maunabo. The lowest monthly mean was 72.4°, at Alto de la Bandera, followed by 73.1°, at Maricao. The highest recorded during the month was 96°, at Humacao, on the 26th, followed by 95°, at Ponce, on the 1st. The lowest recorded during the month was 54°, at Las Marias, on the 6th, followed by 56°, at Jayuya, on the 25th. The greatest local monthly range was 36°, at Las Marias, the least, 17°, at San Juan. The greatest daily range was 32°, at Jayuya, on the 25th.

**HUMIDITY.**

At San Juan the average humidity at 9 a. m. was 78 per cent; the highest was 91 per cent on the 9th and 27th, and the lowest was 69 per cent on the 5th.

**PRECIPITATION.**

The average for the Section, 44 stations reporting, was 11.12 inches, or 3.31 inches above the normal. The averages by divisions were: Northern, 18 stations, 10.71 inches; Eastern, 6 stations, 18.89 inches; Southern, 9 stations, 8.14 inches, and Western, 9 stations, 9.80 inches. The greatest monthly amount was 29.24 inches, at Naguabo, followed by 25.34 inches, at Humacao. The least was 2.90 inches, at Isabela, followed by 3.51 inches, at Guánica Centrale. The greatest amount in any 24 consecutive hours was 18.22 inches, at Naguabo, on the 7th. The average number of rainy days was 17. The greatest number of rainy days was 26, at Caguas; the least, 7, at Hacienda Potala and at Ponce.

**WIND.**

The prevailing wind was from the east. At San Juan, the average velocity was 10 miles per hour. The maximum velocity recorded at San Juan was 72 miles per hour, from the northeast, on the 6th.

**SUNSHINE AND CLOUDINESS.**

The average number of clear days, determined from the records of 35 stations, was 11; partly cloudy, 10; cloudy, 9. The greatest number of clear days recorded was 25, at Dorado; the greatest number of cloudy days, 22, at Maricao. At San Juan, 55 per cent of the possible sunshine was recorded.

**DATES OF MISCELLANEOUS PHENOMENA.**

*Earthquakes:* Stations in all parts of the Island reported slight shocks on the 9th, the shocks having been strongest in the extreme west portion; other dates were: Cidra, 11th; La Carmelita, 10th, 11th; San Salvador, 6th, 8th.

*Fog:* Alto de la Bandera, 17th, 20th, 27th, 30th.

*Halo, lunar:* Cayey, 17th, 18th; Santa Isabel, 13th.

*Haze:* Bayamón, 29th; San Juan, 24th.

*Rains, heavy:* Añasco, 2.05 inches on the 15th; Arecibo, 2.00, 14th; Arecibo (Bacupey), 3.20, 16th; Cayey, 2.14, 27th; Cidra, 2.00, 27th; Coloso, 3.03, 15th; Fajardo, 2.60, 15th; Guayama, 2.32, 27th; La Carmelita (A), 2.76, 15th; La Carmelita (B), 2.88, 15th; Las Marias, 2.20, 11th, 2.15, 29th; Maricao, 2.40, 8th; Maunabo, 4.00, 27th, 3.00, 28th; Naguabo, 2.44, 14th; San Sebastián, 2.22, 10th, 2.38, 16th; Vieques, 2.11, 15th. See following page for special report covering heavy rains of the 6-7th.

*Thunderstorms:* Alto de la Bandera, 1st, 5th, 6th, 9th, 10th, 14th, 16th, 22d, 23d, 24th, 26th, 28th, 29th, 30th; Bayamón, 6th, 7th, 10th, 13th, 14th, 21st, 22d; Canóvanas, 6th, 10th, 13th, 14th; Cayey, 6th; Coloso, 2d, 15th, 16th, 17th, 28th; Culebra, 15th; Guánica Centrale, 6th, 7th; Isabela, 14th; La Carmelita (A), 7th, 10th, 11th, 14th, 15th; Las Marias, 23d, 29th; Manati, 6th, 14th, 22d, 23d; Maricao, 11th, 13th, 29th, 30th; Maunabo, 14th; Naguabo, 6th, 14th; Rio Blanco, —; San Juan, 6th, 10th, 14th, 15th, 21st, 22d, 27th; San Salvador, 5th, 6th, 8th, 9th; Santa Isabel, 6th, 9th, 14th, 27th, 28th; Vieques, 6th, 7th, 9th, 13th, 14th.

**ERRATA.**

Report for June, 1910. Page 45: Manati, greatest precipitation in 24 hours should be 0.36; Hacienda Destino, total precipitation should be 1.09, and same correction should also be made on page 48.

Report for July, 1910. Page 51: Mean sea-level pressure, highest and lowest, at San Juan, should be 30.03, 30.12, and 30.00, respectively; greatest number cloudy days should be 18. Page 53: Eastern Division, highest temperature should be 95; Caguas, number rainy days should be 29; Hacienda Potala, total precipitation should be 0.22; Page 54: Lares, mean maximum should be 88.1. Page 56: Corozal, precipitation on 5th should be 2.30.

**THE LOCAL STORM OF SEPTEMBER 6-7, 1910, IN PORTO RICO.**

During the night of September 6-7, 1910, a wind and rain-storm of considerable intensity passed over the northeastern portion of the Island of Porto Rico. The damage to property was comparatively small, and was confined almost entirely to the north coast east of San Juan, and to the east coast from Fajardo to Mannabo. In San Juan and the suburbs of Santurce and Rio Piedras the high wind and torrential rains played havoc with telephone and telegraph wires; the electric lighting and power system was temporarily put out of service, plunging the city into intense darkness and causing great confusion and alarm.

During the morning and afternoon of the 6th there were indications of the approach of a tropical storm in the appearance of the sky, the steadily increasing northeast wind and slowly falling barometer, though the center was evidently at a considerable distance to the south of the Island.\* The wind increased to a gale and the rain fell in torrents, creating the impression in and about San Juan that the hurricane was upon us. As communication with the rest of the Island was cut off during the early stages of the storm, this impression deepened into conviction. The limited extent of the storm was not realized until the following day, when news came from other parts of the Island showing normal weather conditions over more than two-thirds of Porto Rico.

As the storm was unusual in character, the cooperative observers of the U. S. Climatological Service were called upon for more detailed information concerning weather conditions on the 6th and 7th. San Juan was within the area of greatest violence, and an excellent opportunity was afforded to study the character and progress of the storm by means of the self-recording-instruments in the local office of the Weather Bureau.

During the early morning of the 6th the sky was comparatively free from clouds, a few strato-cumulus moving from the northeast, while a fresh northeast wind was blowing with a velocity above the normal. By 9 a. m., the time of the local a. m. observation, the sky was about three-fourths covered, five-tenths strato-cumulus moving rapidly from the northeast and about two-tenths alto-stratus from the southwest. By 10 a. m. the entire sky was overcast and practically remained so until the close of the following day, preventing further observation of the upper clouds. Rain began about 9 a. m., continued to noon, began again at 3 p. m. and continued with only occasional interruptions to about 4 a. m. of the 7th. From 6 p. m. to 8 p. m. the rain fell in torrents. The wind and the lower clouds continued steadily from the northeast, with increasing velocity, until about 8 p. m., when a maximum wind velocity of 72 miles per hour was recorded by the register in the office of the Weather Bureau. The barometer indicated a pressure very nearly normal for the season in the early morning of the 6th and until about 10 a. m. During the early afternoon the pressure fell but little, allowing for the usual diurnal variation, but the barometer did not respond to the usual diurnal rise from 4 to 5 p. m. At 5.45 p. m. the barometer stood at 29.93 (reduced to sea level) having remained nearly stationary for two hours; a sudden and rapid fall now began to a minimum of 29.76 at 7.20 p. m.; the barometer then rose even more rapidly to 29.92 at about 8.15 p. m., and then followed the usual diurnal rise to a normal pressure of 29.98 at 10.30 p. m. The entire period of the fall and rise in the barometer was about two hours and a half. At about 8.30 p. m. the wind began to veer from northeast to east, and later to east-southeast, while the velocity steadily

decreased to about 30 miles per hour by midnight, although between 1 and 2 a. m. of the 7th the velocity again rose to a maximum of 50 miles per hour, without, however, being accompanied by any marked variation from the normal course of the barometer. Thunder and lightning were reported by observers in all parts of the Island during the night of the 6-7th.

Reports from substations indicated that the storm was confined to a comparatively small portion of the Island, along and near the east coast, and along the north coast from Fajardo to a few miles west of San Juan, and extended southward to Caguas, about twenty miles inland. Brisk to high northeast winds, occasionally rising to hurricane force, prevailed over practically the entire storm area during the afternoon and night of the 6th; the maximum velocity occurred generally between 7 p. m. and 8 p. m., with a secondary maximum between midnight and 2 o'clock in the morning of the 7th. The reports indicated a velocity along the east and northeast coast fully as high as the maximum recorded at San Juan. Most of the damage throughout the storm area was caused by the phenomenally heavy rains, which washed the cane fields and raised the rivers to unprecedented flood heights; several bridges along the east coast were destroyed. The rainfall at some stations broke all previous records for intensity during short intervals. There were two areas of excessive rainfall, one with Naguabo as a center with a fall of about 18 inches in 12 hours, the other with Comerio as a center with a fall of about 13 inches in 12 hours. Along the north coast from San Juan to Fajardo the rainfall was from 6 to 7 inches. At Caguas, between Naguabo and Comerio, the total rainfall was about 5 inches. Over fully two-thirds of the Island the cooperative observers reported that the weather conditions were about normal during the entire day. Some trees were uprooted in several localities within the storm area, but comparatively little damage was done to fruit trees by the high winds.

There was no conclusive evidence of an atmospheric whirl in the position of the uprooted trees and broken branches, a point to which special attention was called in the request for information. The steady northeast direction of the wind in all portions of the storm area indicated a disturbance more in the nature of a squall moving from east to west than a local cyclonic storm; the rapid fall and rise of the barometer at San Juan was distinct evidence, however, in favor of a whirl. The utter darkness which prevailed just preceding and during the storm made it impossible to observe the cloud movements. The existence of a current from the southwest as observed at the 9 a. m. observation indicated a general condition favorable to the production of local disturbances of wind and heavy rain, and it is possible that a cyclonic whirl existed at some distance above the surface of the earth.

Further study of the general weather conditions which prevailed over the West Indies at the time will doubtless reveal more fully the nature of the storm which passed over the eastern portion of Porto Rico.

Further details of wind and rainfall in connection with the storm are given below.

**HEAVY RAINS OF THE 6-7th (IN INCHES).**

Bayamón.....	4.67	Comerio Falls.....	12.80	Naguabo.....	19.11
Caguas.....	6.50	Corozal.....	12.87	Ponce.....	4.09
Canóvanas.....	8.45	Culebra.....	5.69	Río Blanco.....	14.83
Cayey.....	5.43	Fajardo.....	6.81	Río Piedras.....	6.63
Central Ingénio.....	10.54	Humacao.....	15.62	San Juan.....	6.55
Cidra.....	9.40	Mannabo.....	10.68	Vieques.....	6.75

**ACCUMULATED AMOUNTS OF RAINFALL FOR SUCCESSIVE PERIODS INDICATED, AT SAN JUAN.**

Minutes.....	5	10	15	20	25	30	35	40	45	50	60	80	100
Inches.....	0.08	0.25	0.40	0.54	0.66	0.95	1.17	1.46	1.71	1.95	2.61	3.98	4.18

**GREATEST RAINFALL AT SAN JUAN IN ANY PERIOD AS INDICATED.**

Time.....	5 min.	10 min.	15 min.	30 min.	1 hr.	2 hrs.	24 hrs.
Inches.....	0.43	0.91	1.31	2.09	3.43	4.21	6.40*

\*Time of precipitation as actually recorded, 13 hrs. 10 min.

\* Later advices from Washington located the center of a tropical disturbance in the eastern portion of the Caribbean Sea, about 200 miles to the southeast of the Island of Porto Rico.

Climatological Data for September, 1910.

Table with columns: Stations, Divisions, Elevation, Length of record, Temperature (Mean, Departure from normal, Highest, Date, Lowest, Date, Greatest daily range), Precipitation (Length of record, Total, Departure from normal, Greatest in 24 hours, Rainy days, Clear days, Pt. cloudy days, Cloudy days), Sky, Prevailing direction of wind, Observers.

All records are used in determining section or division means, but the mean departures from normal temperature and precipitation are based only on records from stations that have ten or more years of observation.

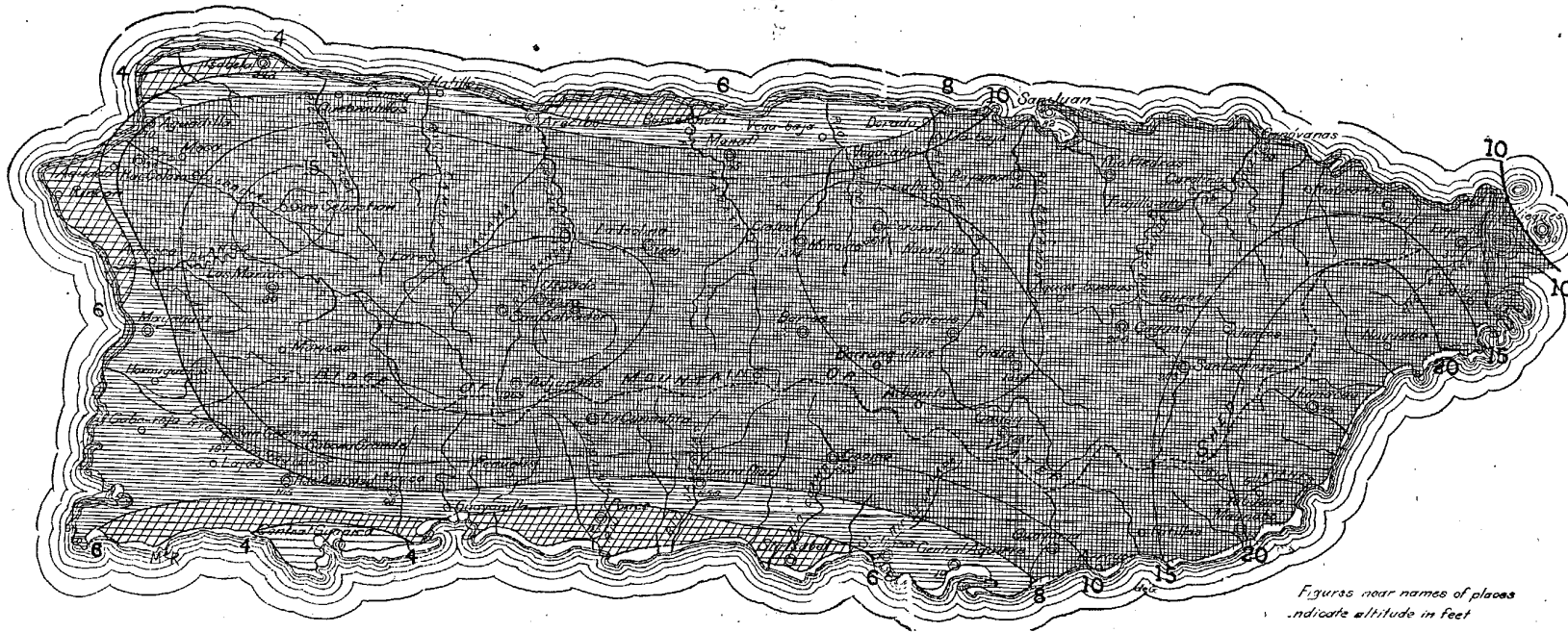
Reference letters not capital appearing in the table indicate number of days missing; for example, b represents two days, etc. †And other dates.

Estimated and incomplete data not considered in means.

\*Partially estimated.

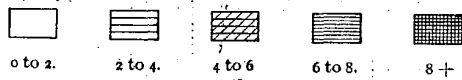


# TOTAL PRECIPITATION FOR SEPTEMBER, 1910



Figures near names of places  
indicate altitude in feet

## SCALE OF SHADES—Inches.



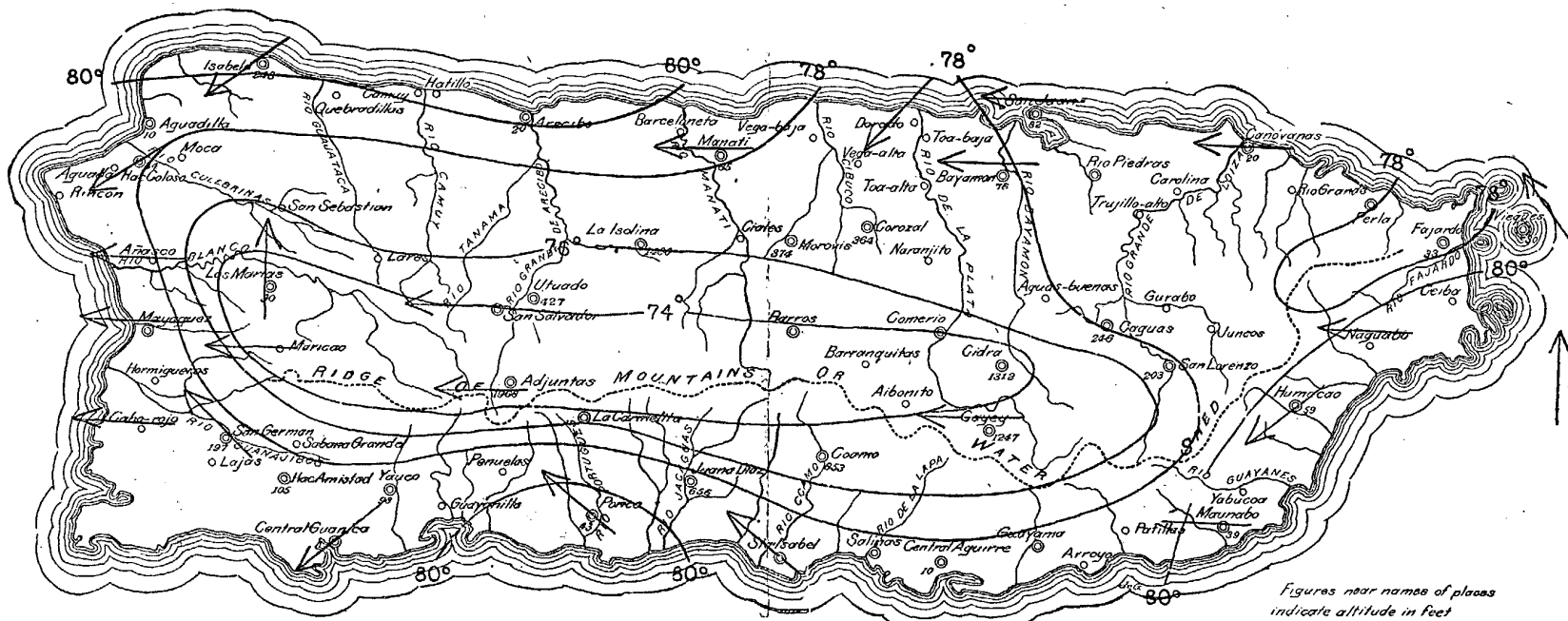
Daily Precipitation for September, 1910.

Stations.	Day of month.																															Total.						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31							
<b>NORTHERN DIVISION.</b>																																						
Aibonito.....																																						
Alto de la Bandera.....	.28	.25	.28																																			
Arecibo.....						.30	.35	.50	.35	.25	.25	.87								.50	.78	.20	.07	.40	.04													
Arecibo (Bacupey).....	.03	T.				.35	.70	.45												2.00	.40	.30																
Bayamon.....	T.	T.				.08	.90	.45											.52	1.18	.22	3.20	T.	.90	.07													
Caguas.....	.10	.06	.02	.05	.10	.50	6.00	.50	.10	.20	.10	.05	.60	1.80	.06	.02	.01																					
Camuy.....				.45	.40	7.75	.70	.05	.06	.30	.12				.80	.30	.12																					
Cidra.....	T.					.60	1.10	4.33	.04	.10	T.	.05	.45	.05	.41	.76	T.	T.																				
Comerio Falls.....	.11	.01				1.00	1.10	8.30	.07	.30	.02	.34	.12	.15	.20	.60	.15	.03									.30											
Corozal.....	.14	.01				.73	.81	.77	b	.16	.21				.55	.02	.08																					
Dorado.....	.10	.20	.10	.26	T.	1.00	2.40	.10	.30	.10	.10	.10	.11	T.	.20	T.	T.	.15	.20	.26	.25	T.	.25	T.	T.													
Isabela.....						.30	.45	.35								.65	.45	.25																				
Isolina.....																																						
Jayuya.....	.10	.05				.99	1.47	.97				.05	.06							1.10	1.12	.39	.08	.39														
Juncos.....																																						
Lares.....	.10	.28				.38	.58	.12	.83	.60	.36			.12	.20	1.40				.76	.20	.15																
Munati.....	.12	.02		.03		1.90	1.72	.02	.23			.06			1.04	.94																						
Rio Piedras.....				.28	.13	6.50			.13	.37				.13	.40	.22																						
SAN JUAN.....	.18			.02	.20	5.42	1.13	.02	.14	.16	.03	T.	.30	1.28	.20	.01	.08	.04	1.00	.06	.52		.01															
San Salvador.....		.13				.50	1.03	.62	.20	1.72	.06	.17			.20	.94	.13	.31	.33																			
<b>EASTERN DIVISION.</b>																																						
Central Ingenio.....				.22	.82	.47	c	.28	.30	.02	.36	.08	.08	1.78	2.21					.20	.23	.05																
Fajardo *.....				.10	.02	.31	6.50	.10			.08				1.00	2.60	.62	.04			.10	.02	.15	.16														
Humacao.....				.20	.33	.72	d				.62		.30	.06	2.32	2.42	.11	.31	.40			.07	.06															
Maunabo.....				.47	1.28	.18	e	.01	.18	.08	.42	.06		1.61	1.32	.99	.19	.13	.25	.07			.02	.07														
Naguabo.....	T.	.01		.11	.36	.89	f	.02	.53	.02	.30	.29	.11	2.44	.80	.25	.24	T.				.04																
Rio Blanco.....			0.5		.78	1.29	g	.22											.15			.15	.20	.50														
<b>SOUTHERN DIVISION.</b>																																						
Central Aguirre.....				.25	2.26	1.31		.08	.02					1.07	1.05									.05				.09	1.39									
Guánica Central.....				.10	.88	1.04				.10	.18			.35	.60								.26															
Guayama *.....				.30	1.75	1.92		.27							1.26	.59	.07																					
Hacienda Destino.....				.76	.13	2.05									3.4	.05	.18						.57	.02														
Hacienda Potilla.....				.34	2.86	1.35		.12						1.10		.75																						
Juana Diaz.....																																						
La Carmelita A.....				.01	.54	1.74	.05	.15	.47	1.51				.19	63	2.76	.31	.98	.45	.03	.74			.14	.04	1.08		.07	.11	.68	1.59	.08						
La Carmelita B.....	.02			.07	.85	1.83	.12	.56	.53	1.54				.69	2.88	.28	.90	.33					.78		.02	.04	.15	.88	.89	.57								
Penuelas.....																																						
Ponce.....	T.				.09	4.00	.04	T.							1.10								.30						T.	.10	.11							
Santa Isabel.....				.25	.65	1.32		.14							.71	.96							.26						.03	.58								
Yauco.....																																						
<b>WESTERN DIVISION.</b>																																						
Añasco.....			T.				T.						.05	T.	.60	2.05	.40	.20							.05		T.			.02	T.	1.20						
Cabo Rojo *.....				.13	.18	.07	.90	.62						1.04	.15								.13															
Coloso.....	.08						.17	.42	.10	T.	.90				.14	3.03	.26	.14	.28	.68	T.	.02	.02	.05	.43													
Las Marias.....	.37			.32	.10	.20	.64	.19	.25						.90	2.20							.50	1.00	.10	.50	.50	.75	.51	.10		.25						
Maricao.....				.49	.26	.10	T.	.78	2.40	T.	.90	.82		1.85	.20	.85					T.	1.65		1.60	1.00		.12											
Mayaguez.....				.37	.90			.57	.95	.18	.13	.93			.13						.14	.10	.14	1.80			.08		.90									
Sabana Grande.....	.70						.90	1.03	.02						.45	.80	.50	.60					.40		1.60			.60		.24	1.00							
San German.....	.12						1.00	.60	T.						.40	T.	.30						.26		1.40	T.			1.40		T.	.96						
San Sebastián.....	.38			.08		.10	.45	.12	.38	2.22	.48	1.33	.68	1.97	1.33	2.38	.26	.32	.19				.22					.36	.21									
<b>CULEBRA ISLAND.</b>																																						
Culebra.....			.01		.18	5.51	.01	.40	.01	.03				.68	1.02														.04	.80	.05							
<b>VIEQUES ISLAND.</b>																																						
Vieques.....	.03				.11	.39	6.36		.30	.05					1.14	2.11		.11											1.06	.79	.25							
<b>LATE REPORTS.</b>																																						

\* Rainfall measured in the morning; amount then recorded is for the preceding 24 hours. T. Trace, or less than .01 inch.  
 † Partially estimated. a 10.00 b 12.10 c 10.07 d 14.90 e 10.50 f 18.22 g 13.54



MONTHLY MEAN ISOTHERMS AND PREVAILING WINDS FOR SEPTEMBER, 1910.  
(Arrows fly with the wind.)



Figures near names of places indicate altitude in feet

U. S. DEPARTMENT OF AGRICULTURE,  
**CLIMATOLOGICAL SERVICE**

OF THE  
**WEATHER BUREAU.**  
 CENTRAL OFFICE: WASHINGTON, D. C.

PORTO RICO SECTION,  
 OLIVER L. FASSIG, Section Director.

VOL. XII. SAN JUAN, PORTO RICO, SEPTEMBER, 1910. No. 9

**GENERAL SUMMARY.**

The month of September, 1910, was decidedly cool, having the lowest mean temperature on record, for the Section as a whole, since the establishment of the Climatological Service in 1898. The lowest previous records for September are those of 1904 and 1906, with a mean temperature of 78.3°, as compared with 77.9° for September, 1910. The comparatively low mean temperature was due mostly to lower afternoon temperatures, as the mean daily minimum was but half a degree below normal, while the mean daily maximum was a degree and a half below. The extreme minimum temperature (54°) was also very low for September, having been equaled but once in the past twelve years. The average daily maximum temperature for the month was 86.6° and the average daily minimum was 69.0°.

The rainfall of the month, for the Section as a whole, was decidedly above the average for the past twelve years. Along the western and southwestern coasts the total rainfall of the month was below normal. Along the eastern coast and at stations in the north-central portion of the Island, within the area of the storm of the 6-7th, the excess of rain above the normal for September was from 10 to 15 inches; excessive rates of rainfall occurred at several stations during this storm: Over ten inches were reported from the following stations for the period of 24 hours ending 6 p. m. September 7th, with a maximum of 18.22 inches at Naguabo: Comerio Falls, Co-rozal, Humacao, Central Ingénio, Maunabo, Naguabo and Rio Blanco; practically, the total amounts recorded fell during a period of twelve hours.

**PRESSURE.**

The mean sea-level atmospheric pressure at San Juan was 29.95 inches. The highest recorded was 30.03 inches, on the 30th; the lowest, 29.76 inches, on the 6th.

**TEMPERATURE.**

The monthly mean for the Section, 34 stations reporting, was 77.9°, or 1.2° below the normal. The monthly mean for the Northern division, 17 stations, was 77.2°; for the Eastern division, 4 stations, 80.5°; for the Southern division, 5 stations, 78.2°, and for the Western division, 6 stations, 76.9°. The highest monthly mean was 82.0°, at Culebra, followed by 81.8°, at Maunabo. The lowest monthly mean was 72.4°, at Alto de la Bandera, followed by 73.1°, at Maricao. The highest recorded during the month was 96°, at Humacao, on the 26th, followed by 95°, at Ponce, on the 1st. The lowest recorded during the month was 54°, at Las Marias, on the 6th, followed by 56°, at Jayuya, on the 25th. The greatest local monthly range was 36°, at Las Marias, the least, 17°, at San Juan. The greatest daily range was 32°, at Jayuya, on the 25th.

**HUMIDITY.**

At San Juan the average humidity at 9 a. m. was 78 per cent; the highest was 91 per cent on the 9th and 27th, and the lowest was 69 per cent on the 5th.

**PRECIPITATION.**

The average for the Section, 44 stations reporting, was 11.12 inches, or 3.31 inches above the normal. The averages by divisions were: Northern, 18 stations, 10.71 inches; Eastern, 6 stations, 18.89 inches; Southern, 9 stations, 8.14 inches, and Western, 9 stations, 9.80 inches. The greatest monthly amount was 29.24 inches, at Naguabo, followed by 25.34 inches, at Humacao. The least was 2.90 inches, at Isabela, followed by 3.51 inches, at Guánica Centrale. The greatest amount in any 24 consecutive hours was 18.22 inches, at Naguabo, on the 7th. The average number of rainy days was 17. The greatest number of rainy days was 26, at Caguas; the least, 7, at Hacienda Potala and at Ponce.

**WIND.**

The prevailing wind was from the east. At San Juan, the average velocity was 10 miles per hour. The maximum velocity recorded at San Juan was 72 miles per hour, from the northeast, on the 6th.

**SUNSHINE AND CLOUDINESS.**

The average number of clear days, determined from the records of 35 stations, was 11; partly cloudy, 10; cloudy, 9. The greatest number of clear days recorded was 25, at Dorado; the greatest number of cloudy days, 22, at Maricao. At San Juan, 55 per cent of the possible sunshine was recorded.

**DATES OF MISCELLANEOUS PHENOMENA.**

*Earthquakes:* Stations in all parts of the Island reported slight shocks on the 9th, the shocks having been strongest in the extreme west portion; other dates were: Cidra, 11th; La Carmelita, 10th, 11th; San Salvador, 6th, 8th.

*Fog:* Alto de la Bandera, 17th, 20th, 27th, 30th.

*Halo, lunar:* Cayey, 17th, 18th; Santa Isabel, 13th.

*Haze:* Bayamón, 29th; San Juan, 24th.

*Rains, heavy:* Añasco, 2.05 inches on the 15th; Arecibo, 2.00, 14th; Arecibo (Bacupey), 3.20, 16th; Cayey, 2.14, 27th; Cidra, 2.00, 27th; Coloso, 3.03, 15th; Fajardo, 2.60, 15th; Guayama, 2.32, 27th; La Carmelita (A), 2.76, 15th; La Carmelita (B), 2.88, 15th; Las Marias, 2.20, 11th, 2.15, 29th; Maricao, 2.40, 8th; Maunabo, 4.00, 27th, 3.00, 28th; Naguabo, 2.44, 14th; San Sebastián, 2.22, 10th, 2.38, 16th; Vieques, 2.11, 15th. See following page for special report covering heavy rains of the 6-7th.

*Thunderstorms:* Alto de la Bandera, 1st, 5th, 6th, 9th, 10th, 14th, 16th, 22d, 23d, 24th, 26th, 28th, 29th, 30th; Bayamón, 6th, 7th, 10th, 13th, 14th, 21st, 22d; Canóvanas, 6th, 10th, 13th, 14th; Cayey, 6th; Coloso, 2d, 15th, 16th, 17th, 28th; Culebra, 15th; Guánica Centrale, 6th, 7th; Isabela, 14th; La Carmelita (A), 7th, 10th, 11th, 14th, 15th; Las Marias, 23d, 29th; Manati, 6th, 14th, 22d, 23d; Maricao, 11th, 13th, 29th, 30th; Maunabo, 14th; Naguabo, 6th, 14th; Rio Blanco, —; San Juan, 6th, 10th, 14th, 15th, 21st, 22d, 27th; San Salvador, 5th, 6th, 8th, 9th; Santa Isabel, 6th, 9th, 14th, 27th, 28th; Vieques, 6th, 7th, 9th, 13th, 14th.

**ERRATA.**

Report for June, 1910. Page 45: Manati, greatest precipitation in 24 hours should be 0.36; Hacienda Destino, total precipitation should be 1.09, and same correction should also be made on page 48.

Report for July, 1910. Page 51: Mean sea-level pressure, highest and lowest, at San Juan, should be 30.03, 30.12, and 30.00, respectively; greatest number cloudy days should be 18. Page 53: Eastern Division, highest temperature should be 95; Caguas, number rainy days should be 29; Hacienda Potala, total precipitation should be 0.22; Page 54: Lares, mean maximum should be 88.1. Page 56: Corozal, precipitation on 5th should be 2.30.

**THE LOCAL STORM OF SEPTEMBER 6-7, 1910, IN PORTO RICO.**

During the night of September 6-7, 1910, a wind and rain-storm of considerable intensity passed over the northeastern portion of the Island of Porto Rico. The damage to property was comparatively small, and was confined almost entirely to the north coast east of San Juan, and to the east coast from Fajardo to Mannabo. In San Juan and the suburbs of Santurce and Rio Piedras the high wind and torrential rains played havoc with telephone and telegraph wires; the electric lighting and power system was temporarily put out of service, plunging the city into intense darkness and causing great confusion and alarm.

During the morning and afternoon of the 6th there were indications of the approach of a tropical storm in the appearance of the sky, the steadily increasing northeast wind and slowly falling barometer, though the center was evidently at a considerable distance to the south of the Island.\* The wind increased to a gale and the rain fell in torrents, creating the impression in and about San Juan that the hurricane was upon us. As communication with the rest of the Island was cut off during the early stages of the storm, this impression deepened into conviction. The limited extent of the storm was not realized until the following day, when news came from other parts of the Island showing normal weather conditions over more than two-thirds of Porto Rico.

As the storm was unusual in character, the cooperative observers of the U. S. Climatological Service were called upon for more detailed information concerning weather conditions on the 6th and 7th. San Juan was within the area of greatest violence, and an excellent opportunity was afforded to study the character and progress of the storm by means of the self-recording-instruments in the local office of the Weather Bureau.

During the early morning of the 6th the sky was comparatively free from clouds, a few strato-cumulus moving from the northeast, while a fresh northeast wind was blowing with a velocity above the normal. By 9 a. m., the time of the local a. m. observation, the sky was about three-fourths covered, five-tenths strato-cumulus moving rapidly from the northeast and about two-tenths alto-stratus from the southwest. By 10 a. m. the entire sky was overcast and practically remained so until the close of the following day, preventing further observation of the upper clouds. Rain began about 9 a. m., continued to noon, began again at 3 p. m. and continued with only occasional interruptions to about 4 a. m. of the 7th. From 6 p. m. to 8 p. m. the rain fell in torrents. The wind and the lower clouds continued steadily from the northeast, with increasing velocity, until about 8 p. m., when a maximum wind velocity of 72 miles per hour was recorded by the register in the office of the Weather Bureau. The barometer indicated a pressure very nearly normal for the season in the early morning of the 6th and until about 10 a. m. During the early afternoon the pressure fell but little, allowing for the usual diurnal variation, but the barometer did not respond to the usual diurnal rise from 4 to 5 p. m. At 5.45 p. m. the barometer stood at 29.93 (reduced to sea level) having remained nearly stationary for two hours; a sudden and rapid fall now began to a minimum of 29.76 at 7.20 p. m.; the barometer then rose even more rapidly to 29.92 at about 8.15 p. m., and then followed the usual diurnal rise to a normal pressure of 29.98 at 10.30 p. m. The entire period of the fall and rise in the barometer was about two hours and a half. At about 8.30 p. m. the wind began to veer from northeast to east, and later to east-southeast, while the velocity steadily

decreased to about 30 miles per hour by midnight, although between 1 and 2 a. m. of the 7th the velocity again rose to a maximum of 50 miles per hour, without, however, being accompanied by any marked variation from the normal course of the barometer. Thunder and lightning were reported by observers in all parts of the Island during the night of the 6-7th.

Reports from substations indicated that the storm was confined to a comparatively small portion of the Island, along and near the east coast, and along the north coast from Fajardo to a few miles west of San Juan, and extended southward to Caguas, about twenty miles inland. Brisk to high northeast winds, occasionally rising to hurricane force, prevailed over practically the entire storm area during the afternoon and night of the 6th; the maximum velocity occurred generally between 7 p. m. and 8 p. m., with a secondary maximum between midnight and 2 o'clock in the morning of the 7th. The reports indicated a velocity along the east and northeast coast fully as high as the maximum recorded at San Juan. Most of the damage throughout the storm area was caused by the phenomenally heavy rains, which washed the cane fields and raised the rivers to unprecedented flood heights; several bridges along the east coast were destroyed. The rainfall at some stations broke all previous records for intensity during short intervals. There were two areas of excessive rainfall, one with Naguabo as a center with a fall of about 18 inches in 12 hours, the other with Comerio as a center with a fall of about 13 inches in 12 hours. Along the north coast from San Juan to Fajardo the rainfall was from 6 to 7 inches. At Caguas, between Naguabo and Comerio, the total rainfall was about 5 inches. Over fully two-thirds of the Island the cooperative observers reported that the weather conditions were about normal during the entire day. Some trees were uprooted in several localities within the storm area, but comparatively little damage was done to fruit trees by the high winds.

There was no conclusive evidence of an atmospheric whirl in the position of the uprooted trees and broken branches, a point to which special attention was called in the request for information. The steady northeast direction of the wind in all portions of the storm area indicated a disturbance more in the nature of a squall moving from east to west than a local cyclonic storm; the rapid fall and rise of the barometer at San Juan was distinct evidence, however, in favor of a whirl. The utter darkness which prevailed just preceding and during the storm made it impossible to observe the cloud movements. The existence of a current from the southwest as observed at the 9 a. m. observation indicated a general condition favorable to the production of local disturbances of wind and heavy rain, and it is possible that a cyclonic whirl existed at some distance above the surface of the earth.

Further study of the general weather conditions which prevailed over the West Indies at the time will doubtless reveal more fully the nature of the storm which passed over the eastern portion of Porto Rico.

Further details of wind and rainfall in connection with the storm are given below.

**HEAVY RAINS OF THE 6-7th (IN INCHES).**

Bayamón.....	4.67	Comerio Falls.....	12.80	Naguabo.....	19.11
Caguas.....	6.50	Corozal.....	12.87	Ponce.....	4.09
Canóvanas.....	8.45	Culebra.....	5.69	Río Blanco.....	14.83
Cayey.....	5.43	Fajardo.....	6.81	Río Piedras.....	6.63
Central Ingénio.....	10.54	Humacao.....	15.62	San Juan.....	6.55
Cidra.....	9.40	Mannabo.....	10.68	Vieques.....	6.75

**ACCUMULATED AMOUNTS OF RAINFALL FOR SUCCESSIVE PERIODS INDICATED, AT SAN JUAN.**

Minutes.....	5	10	15	20	25	30	35	40	45	50	60	80	100
Inches.....	0.08	0.25	0.40	0.54	0.66	0.95	1.17	1.46	1.71	1.95	2.61	3.98	4.18

**GREATEST RAINFALL AT SAN JUAN IN ANY PERIOD AS INDICATED.**

Time.....	5 min.	10 min.	15 min.	30 min.	1 hr.	2 hrs.	24 hrs.
Inches.....	0.43	0.91	1.31	2.09	3.43	4.21	6.40*

\*Time of precipitation as actually recorded, 13 hrs. 10 min.

\* Later advices from Washington located the center of a tropical disturbance in the eastern portion of the Caribbean Sea, about 200 miles to the southeast of the Island of Porto Rico.

Climatological Data for September, 1910.

Stations	Divisions.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.					Sky.				Prevailing direction of wind.	Observers.
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Length of record, years.	Total.	Departure from the normal.	Greatest in 24 hours.	Rainy days.	Clear days.	Pt. cloudy days.	Cloudy days.		
Aibonito.....	Northern.....	2059																		Diego Becerra.
Alto de la Bandera.....	do.....	2572	5	72.4		85	13	60	12	24	5	8.45		0.87	23	7	16	7	e.	Juan Torres.
Arecibo.....	do.....		9	80.3		94	21†	67	24†	26	5	5.80		2.00	12					Dr. Fernando Aleman.
Arecibo (Bacupey).....	do.....	375†	11	76.6		89	2†	64	24†	24	12	10.43		3.20	20	6	12	12	se.	W. J. Young.
Bayamón.....	do.....	76	11	77.6		90	2†	64	24†	23	12	11.07	+2.97	3.82	22	11	7	12	e.	R. L. Jungmanns.
Caguas.....	do.....	246	12	78.8	+0.3	92	25†	67	13†	24	12	10.74	+3.24	6.00	26					Dr. M. J. Cruz.
Canóvanas.....	do.....	20	11	79.8	-1.0	90	1†	69	22†	20	22	14.01	+8.76	7.75	21	18	9	3	e.	Wm. S. Murr.
Cayey.....	do.....	1342	7	76.2		92	25	62	21	29	9	11.23		4.33	13	19	6	5	e.	H. Massó.
Cidra.....	do.....	1312	8	73.2		88	23	59	23	20	9	16.52		8.90	17	13	6	7		José C. Vazquez.
Comerio Falls.....	do.....		3	77.6		90	23†	67	21†	22	3	18.60		10.00	18					P. R. Power and Light Co.
Corozal.....	do.....	600	9	77.8		91	2†	64	24	24	10	19.42	+10.86	12.10	24	1	14	15		H. T. Jason.
Dorado.....	do.....	2	2	77.6		87	14	65	22	19	2	6.48		2.40	20	25	1	4	ne.	Jacinto Nevarez.
Isabela.....	do.....	243	10	80.6b	+0.7	92	13†	69	22†	23	11	2.90	-2.08	0.65	9	11	14	5	ne.	Juan C. Monclova.
Isolina.....	do.....	1400																		William A. Murphy.
Jayuya.....	do.....		2	74.8		70	2†	56	25	32	2	7.59		1.47	17	14	6	10		Juan B. Frau.
Juncos.....	do.....		8	76.8		91	3	63	18†	27	8	10.35		1.70	23	7	11	12		José Barreras.
Lares.....	do.....	1425	12	79.5	-0.5	93	23	68	7†	23	12	7.94	+1.01	1.90	16	10	9	11	e.	Paul Vilella, Jr.
Mauati.....	do.....	374	12	79.5	-0.5	91	23	68	7†	23	8	11.50		6.50	12	12	17	1		J. Gandia.
Río Piedras.....	do.....	75																		University Farm
SAN JUAN.....	do.....	82	12	79.2	-1.8	87	4	70	7	13	12	11.64	+6.51	6.40	24	12	10	8	e.	SECTION CENTER.
San Salvador.....	do.....	1476	10	74.0	-1.2	88	2	61	25	24	10	8.19	-2.63	1.72	19	11	13	6	e.	Ginard & Co.
For the Division.....				77.2		94	21†	56	25	32		10.71		12.10	19	12	10	8	e.	
Central Ingénio.....	Eastern.....																			K. A. Behne.
Fajardo.....	do.....	15	11	77.8	-3.6	87	11	68	7	14	6	20.89		10.07	21					Fajardo Sugar Co.
Humacao.....	do.....	59	15	80.1		96	26	66	6	29	11	25.34	+5.03	6.50	18	13	0	17		Antonio Roig.
Mannabo.....	do.....	39	11	81.8	-0.1	94	1†	71	21†	20	11	24.95	+13.19	14.90	17	10	0	20	ne.	Ernesto Velázquez.
Naguabo.....	do.....		2	80.4		91	1†	70	21†	20	2	29.24	+14.44	10.50	22	22	2	6	e.	Harold I. Sewall.
Río Blanco.....	do.....	150									7	25.00*		13.54	22	18	6	6	e.	Et. Lavergne.
For the Division.....				80.0		96	26	66	6	29		18.89		18.22	20	16	2	12	e.	
Central Aguirre.....	Southern.....	10	12	78.3	-2.8	91	13	64	26	25	12	7.57	+0.68	2.26	10	0	19	11		Central Aguirre Co.
Guánica Central.....	do.....	8	8	78.9		89	1†	67	2	21	8	3.51		1.04	8	14	16	0	ne.	Francisco Faure.
Guayama.....	do.....	17									10	9.20	+1.43	2.32	13					A. R. McLane.
Hacienda Destino.....	do.....										3	5.85		2.05	10					Central Aguirre Co.
Hacienda Potala.....	do.....										3	7.05		2.86	7					Central Aguirre Co.
Juana Diaz.....	do.....	190																		Eugenio LeCompte.
La Carmelita A.....	do.....	1542	8	74.0		89	1†	62	21	26	8	14.33		2.76	23	7	21	2		J. W. Van Leenhoff.
La Carmelita B.....	do.....	2500									8	15.07		2.88	23	1	27	2		J. W. Van Leenhoff.
Peñuelas.....	do.....																			Gabino Bulasquide.
Ponce.....	do.....	82	8	80.6		95	1	68	21†	25	10	5.74	-0.23	4.00	7	17	6	7	se.	Bias C. Silva.
Santa Isabel.....	do.....	22	9	79.0		91	6†	68	21	21	10	4.90	-0.60	1.32	9	15	5	10	se.	Central Aguirre Co.
Yanco.....	do.....																			Manuel Troche.
For the Division.....				78.2		95	1	62	21	26		8.14		4.00	12	9	16	5	se.	
Añasco.....	Western.....	25	4	78.8		92	7	65	7†	27	4	4.57		2.05	8	17	8	5	e.	Felix Reina.
Cabo Rojo.....	do.....										3	6.95		1.16	14	13	8	9	e.	V. A. Carbonell.
Coloso.....	do.....	34	10	78.1	-1.0	90	2†	61	14	26	12	8.62	-0.69	3.03	19	14	11	5	ne.	Adolfo Reichard.
Las Marias.....	do.....	984	10	73.2	-3.7	90	2	54	6	30	10	12.83	-0.65	2.20	21	9	0	21	e.	P. Roselló.
Maricao.....	do.....	1394	4	73.1		88	5	60	3†	26	4	15.00		2.40	18	8	0	22	e.	Pedro Cordero.
Mayagüez.....	do.....	30	11	79.9	+0.2	93	10	61	9	27	14	7.61	-1.23	1.80	15	0	31	0	e.	Agricultural Exp. Station.
Sabana Grande.....	do.....										2	9.44		1.60	14					Vicente Velez.
San Germán.....	do.....	197	9	78.4		92	1†	65	11†	25	9	6.43		1.40	9	18	11	1	se.	J. J. Siebert.
San Sebastián.....	do.....										3	16.71		2.38	22	7	11	12		Ramón Roure.
For the Division.....				76.9		93	10	54	6	30		9.80		3.03	16	11	10	9	e.	
Culebra.....	Culebra Island.....	47	4	82.0		92	22†	72	7	17	4	9.03		5.51	13	6	12	12	se.	U. S. Naval Station.
Vieques.....	Vieques Island.....	45	11	79.9	-1.0	90	3†	70	15	18	10	12.70	+4.97	6.36	12	19	1	10	s.	Juan Pomaes.
For the Section.....				77.9	-1.2	96	26	54	6	32		11.12	+3.31	18.22	17	11	10	9	e.	
LATE REPORTS.																				

All records are used in determining section or division means, but the mean departures from normal temperature and precipitation are based only on records from stations that have ten or more years of observation.

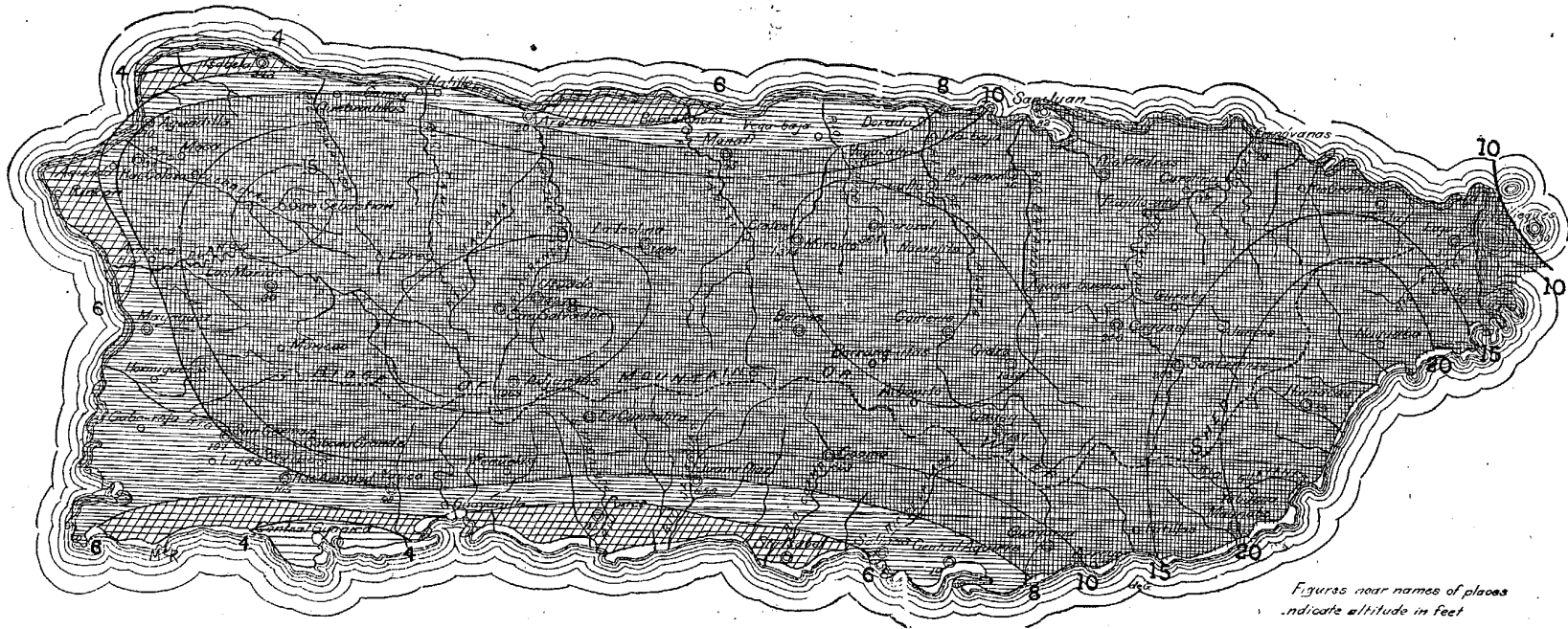
Reference letters not capital appearing in the table indicate number of days missing; for example, b represents two days, etc. †And other dates.

Estimated and incomplete data not considered in means.

\*Partially estimated.

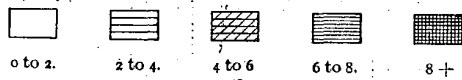


# TOTAL PRECIPITATION FOR SEPTEMBER, 1910



Figures near names of places  
indicate altitude in feet

## SCALE OF SHADES—Inches.



Daily Precipitation for September, 1910.

Table with columns for Stations, Day of month (1-31), and Total. Rows are categorized into Northern, Eastern, Southern, and Western Divisions, plus Culebra and Vieques Islands, and Late Reports.

\* Rainfall measured in the morning; amount then recorded is for the preceding 24 hours. T. Trace, or less than .01 inch. † Partially estimated.