COCORAHS PUERTO RICO

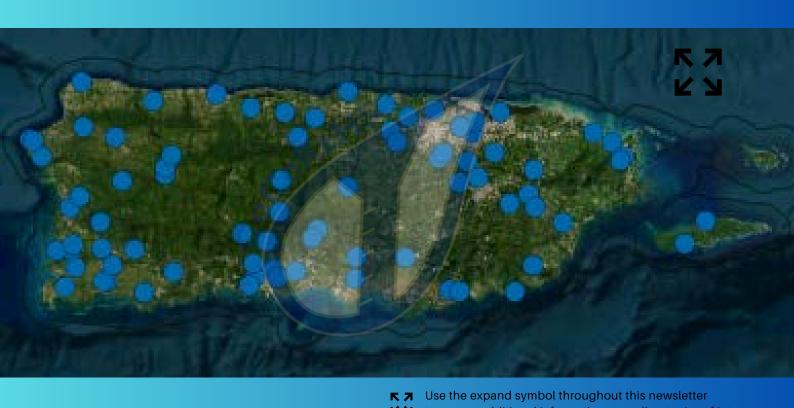
new volunteers

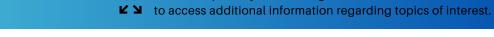
<u>events</u>

<u>weather</u>

<u>knowledge</u>

<u>summary</u>





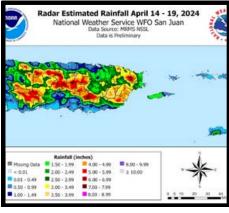


81 ACTIVE STATIONS





2023 Hurricane Season Continued on Page 2



2024 Rainfall Events

<u>Continued on Page 5</u>



Meet & Greet Event Continued on Page 7

2023 HURRICANE SEASON SUMMARY

The 2023 Atlantic hurricane season concluded on November 30th, recording a total of 20 named storms, making it the fourth-highest in terms of named storms since 1950. This surpasses the average seasonal statistics, which typically include 14 named storms, seven hurricanes, and three major hurricanes. In this anomalous season, seven storms escalated to hurricanes, with three reaching the classification of major hurricanes. Despite the presence of El Niño, usually associated with a less active hurricane season in the Atlantic, one factor defined the atypical nature of the 2023 season—record-warm sea surface temperatures in the Atlantic basin. This factor played a significant role in creating conditions conducive to the formation and intensification of tropical cyclones.

Tropical Storm Franklin

On August 26th, the outer rainbands of the system deteriorated weather conditions in Puerto Rico. These rains resulted in flash flooding, with several rivers reaching flood stages, and mudslides occurring in the mountainous areas.

Rainfall amounts ranged from 2 to 4 inches along the southern and eastern portions of Puerto Rico, including Culebra, and sections of the northern U.S. Virgin Islands.

Major Hurricane Lee

On September 8th, swells from Hurricane Lee deteriorated marine conditions across the Atlantic waters and the Mona and Anegada passages. High surf conditions were also observed along the north and east-facing beaches of the local islands.



Tropical Storm Phillipe

From October 1 to 5, the outer bands of Tropical Storm Philippe, as it passed northeast of the islands, resulted in heavy rainfall, small stream river rises, lightning strikes, and flooding across various sectors of the islands. Eastern Puerto Rico experienced 5 to 10 inches of rainfall, contributing to adverse weather conditions. St. John in the Virgin Islands reported significant rainfall amounts through CoCoRaHS stations, documenting impact of the storm on the region.

Tropical Storm Tammy

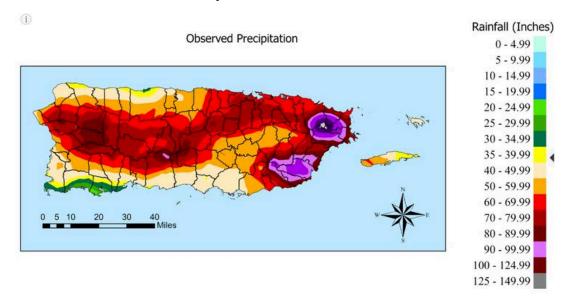
From October 27 to 29, the outer feeder bands from Tropical Storm Tammy, combined with the presence of an upper-level trough, a pre-frontal trough, and even the remnants of Tropical Storm Sean, caused another significant rainfall event. Over Puerto Rico, 3 to 7 inches of rainfall were collected, impacting most of the area. Additionally, a funnel cloud was detected during this activity.

During this period, the San Juan Area climate site set the record for the wettest day of any day in October, with 5.20 inches collected on the 27th.

RAINFALL SUMMARY

2023

2023 Annual Precipitation Total For Puerto Rico



During the summer months, the southern municipalities of Puerto Rico experienced rainfall approximately 6 to 12 inches above the average, while the situation was markedly different in the northern half, where precipitation was below normal. Rainfall also increased across the United States Virgin Islands, with areas in St. Croix and St. John receiving 10 to 15 inches during this period. The most significant weather event during this time was Tropical Cyclone Franklin, which moved south of the islands as a tropical storm. Franklin then looped north over Hispaniola and proceeded to the north of Puerto Rico, where it intensified into a hurricane, impacting the local islands with its rain bands.

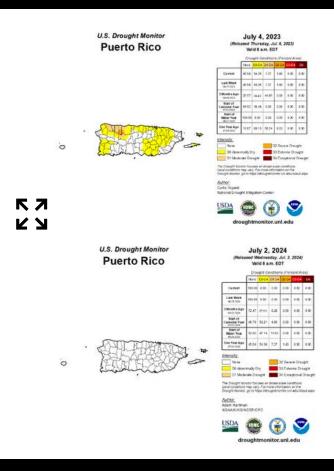
Throughout the fall months, a noticeable trend emerged as most of Puerto Rico experienced drier conditions than normal. This occurred despite the influence of various tropical events, including nearby tropical storms Philippe and Tammy, coupled with the presence of a robust upper-level trough in late October and another in the earlier half of November. Notably, a Flash Flood Watch was issued during this period. Contrasting this, the U.S. Virgin Islands witnessed a different narrative, with several CoCoRaHS stations recording 6-8 inches of rainfall in a 24-hour period during Tropical Storm Philippe.

By the End of 2023

Over 150 inches of rainfall were recorded near El Yunque, while the San Juan metro area, central interior, and the west observed rainfall ranging from 60 to 90 inches. Lesser amounts were noted across sections in the eastern interior, southern plains, and the northwest coast of Puerto Rico.

October marked the wettest month of the year for the San Juan Area climate site, with a total of 9.73 inches collected. It concluded as the 8th wettest October on record.

SIGNIFICANT WEATHER EVENTS

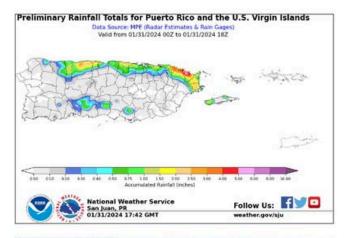


Significant Rainfall Event

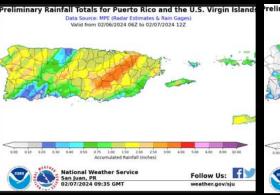
Significant improvement in drought conditions has been observed in Puerto Rico, as rainfall events increased in frequency early in the year. During June 2023, nearly 47% of Puerto Rico was classified as Abnormally Dry, while nearly 6% was under a Moderate Drought (northwestern Puerto Rico). Since then, water reservoirs recovered, river level increased, and the vegetation health improved as well.

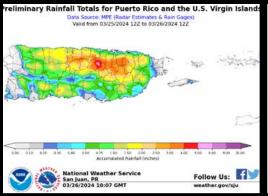
Frontal boundary by the end of January

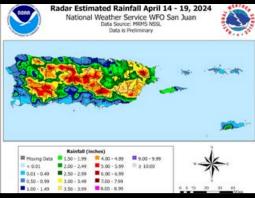
After a mostly dry start of the year across the region, the combination of a frontal boundary and a very weak steering flow, increased the shower activity across the north and northeast coast of Puerto Rico. Some isolated areas saw almost 6" of accumulation. In fact, a daily record was set at the LMM International Airport, with 1.21" collected.











A Polar Trough Feb 6-8 2024

A deep-layered trough along with several frontal boundaries was approaching the Caribbean Islands in the first week of February. The winds became light and from the southsouthwest, pulling plenty of moisture from the Caribbean Sea. First, several clusters of showers moved across western Puerto Rico, but the rain then spread eastward during the day. In the evening hours, the rain reached the Virgin Islands, with pulses of heavy rain observed. The next day was wet as well, although not as intense, with several periods of continuous light to moderate showers. In Puerto Rico, the areas around Caguas collected up to 5 inches, while 3 to 5 inches fell in general in the east, interior and west. The most significant accumulation was for the island of Saint Croix, with several CoCoRaHS stations with values of 5 to 8 inches, and 2 to 4 for St. Thomas and St. John. A few rivers reached flood stage with this event, but the main impacts were associated with strong gusty winds that resulted in reports of several tree limbs in the ground.

Cold Front March 25 2024

The day started sunny on the islands as a cold front approached from the northwest. Instability was enhanced, and the moisture associated with the front triggered scattered to numerous showers across most of Puerto Rico. Later in the day, as the frontal boundary crossed the region, showers became widespread and strong, with thunderstorm activity detected. Rainfall accumulations ranged from 2 to 5 inches over the eastern interior and just southwest of the San Juan metro area. A few rivers over northcentral Puerto Rico reached flood stage, and flash flood warnings were issued. Reports due to small streams out of their banks flooding small bridges and roads were received.

April 14-21 2024

The onset of the early wet season for the eastern Caribbean was due to an upper level trough combining with a surface trough. These features increased moisture and instability, resulting in a multi-day rain event. At first, widespread showers were observed along northern and eastern Puerto Rico and across the local waters. However, as the surface trough moved away, instability remained, resulting in active afternoons across much of the region. Reports from flooding and mudslides were considerable, and multiple rivers reached flood stage. Rainfall accumulations were in the order of 2 to 4 inches each day, with isolated amounts around 5 inches.

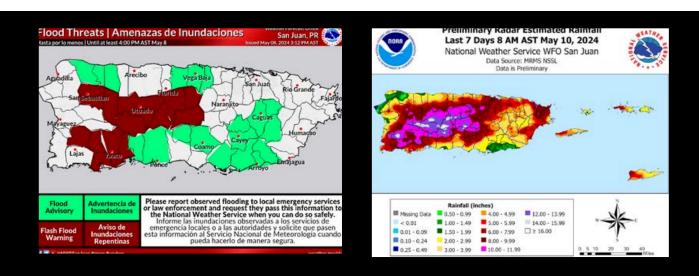
Late April 2024

After the passages of this trough, the wet pattern never really went away. Several upper level trough and moisture surges from the Caribbean Sea continued to generate more and more showers, and soils became really saturated. The rain was mainly focused on the interior, west and south Puerto Rico, but without reaching the coastal areas. Several pulses of rain also reached Saint Croix, where residents indicated that their cisterns were filled and some minor flooding was observed at times. Significant improvements in rivers, reservoirs and soil conditions were observed for most of the region, except the extreme northwest of Puerto Rico.

May 3-5, 2024

Puerto Rico and the U.S. Virgin Islands observed two events with above-normal moisture and instability from May 3rd through the 9th. The weather scenario for May 3rd involved an upper-level trough and an induced surface trough with deep moisture from the Caribbean, which enhanced thunderstorms and downpours across most of PR. Besides those atmospheric conditions, it is essential to highlight that April ended up being one of the wettest periods for any other end of the month since we have historical records. The USGS river streamflow stations reported that most of the eastern half of the rivers had streamflows from above-normal to much above-normal ahead of the event. This situation triggered a Flood Watch that was issued for the islands from Friday through Sunday.

During the event, on Friday, the preliminary rainfall totals from May 2nd at 8 PM to May 3rd at 8 PM AST (24-hour period) indicate a peak of approximately 4-8 inches, primarily in isolated areas of eastern Puerto Rico and western Saint Croix. This was a significant amount of rainfall, causing localized flooding and other weather-related issues. Meanwhile, the remaining islands generally received between one and two inches. Although widespread activity was not observed during the weekend, PR's western and interior sections received between 1 and 2 inches of rain, with isolated higher amounts each day.



May 6-9, 2024

Saturated soils from the previous rainfall events enhanced the risk of flash and river flooding, as another mid to upper-level trough lingered across the region from Monday through Thursday. With increased instability across the Northeast Caribbean, and as a surface high pressure migrated from the western to central Atlantic, moisture was pooled into the region, with total precipitable water values well above the climatological value for these dates. Most of the USGS monitored rivers showed above normal to high levels.

Each day the amount of rainfall was locally significant. In fact, rescues were needed in San Sebastián, and Yauco. The rivers went out of their banks in Añasco, Utuado, Orocovis, Vega Baja, Corozal, Arecibo, San Germán, Hormigueros, Mayagüez, San Juan, Ponce, Ciales, Manatí, and many others without a river gage. At the end of the event, a significant portion of the interior and western Puerto Rico collected over 10", with isolated amounts surpassing 14 inches. Areas in the east, as well as the Virgin Islands collected more than 5", all of this in only seven days. An astonishing amount of 32 flash flood warnings were issued during this short period of time, with 115 Local Storm Reports created as well.











NEW VOLUNTEERS

15 New Volunteers since June 2023

PR-MY-8	PR-SJ-18
PR-LJ-6	PR-CV-2
PR-BC-I	PR-SJ-19
PR-LP-1	PR-SL-2
PR-DR_4	PR-AC-5
PR-MT-3	PR-AB-2
PR-OR-2	PR-CM-I
PR-BY-3	B b a p

Thank You!

2024 COCORAHS PR MEET & GREET

On June 29, 2024, WFO San Juan held Puerto Rico's first CoCoRaHS Meet & Greet event. Welcoming our CoCoRaHS volunteers was a profound honor.

The purpose of this event was to provide our volunteers the opportunity to to meet their State Coordinators, fellow CoCoRaHS colleagues, and the NWS staff. Nonetheless, an excellent opportunity to bring together the CoCoRaHS Puerto Rico community. The event was offered both in person and virtually.



Excellent way of motivating the community of observers. Excited to see more activities." - CoCoRaHS PR Volunteer







CoCoRaHS PR Volunteers & Guests

Roy Rodríguez (PR-TR-3), Manuel Pimentel (PR-BY-1), José Maldonado (PR-MT-3), José J. Correa (PR-SI-1), Zulma Martínez (PR-LJ-2), Joshua Ortíz (PR-GM-2), Hector Martínez-Medina (PR-SN-2), Luis Cruz (PR-FJ-5), Angel Torres (PR-TB-1), Aníbal Nieves (PR-PC-6), Jaime Colón (PR-AC-1), Silmarie Crespo (USDA), Luz Jiménez (PR-CN-2) and Amaury Vázquez (PR-VB-2).

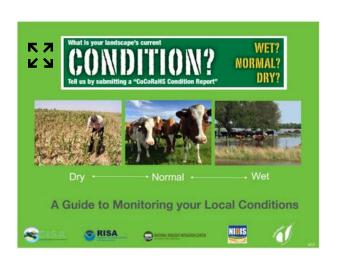
CoCoRaHS PR Volunteers (Virtual)

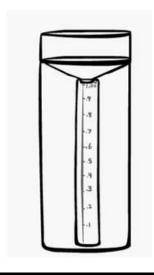
Hilda Bonilla (PR-VQ-3), Victor M. González-Rosas, Juan Sepúlveda (PR-LR-2), Jorge Collazo (PR-PC-8), Victor M. González-Rosas (PR-MY-8), and Sarah Martínez (Guest)

COCORAHS KNOWLEDGE SHOWCASE

Condition Monitoring Report

Condition monitoring reports are submitted on a regular (weekly, biweekly, monthly) basis to share information about the effects of local precipitation on the environment and society. By submitting reports on a regular basis, you create a baseline to see change through time, such as seasonal differences or changes caused by more or less precipitation. Please refer to the Condition Monitoring training slide show for more information.

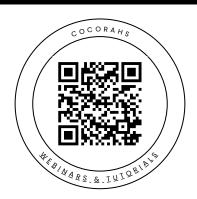




How to Read your Gauge

It is important to be as accurate as possible when reading your gauge. Scientists, engineers, and other professionals may use your data.

SCAN FOR MORE WEBINARS & TUTORIALS



PRECIPITATION SUMMARY COOP & COCORAHS STATIONS

JULY 1, 2023 THROUGH JULY 16, 2024



Precipitation Data collected from volunteers from the Cooperative Observer Network (COOP) and the Community Collaborative Rain, Hail and Snow Network.

ENSENADA 1 W	COOP	58.08	GUAYAMA 1.1 W	CoCoRaHS	55.31
MAGUEYES ISLAND	COOP	31.33	SANTA ISABEL 3.2 NNE	CoCoRaHS	43.08
LAJAS SUBSTATION	COOP	38,41	PONCE 8.1 N	CoCoRaHS	42.22
SABANA GRANDE 2 ENE	COOP	58.93	JAYUYA 3.1 SSE	CoCoRaHS	96.39
MARICAO FISH HATCHERY	COOP	111.53	PONCE 3.5 W	CoCoRaHS	34.52
ADJUNTAS SUBSTATION	COOP	99.02	PENUELAS 5.0 NNE	CoCoRaHS	50.01
HACIENDA CONSTANZA 2W	COOP	79	GUAYAMA 0.8 E	CoCoRaHS	43.83
LAJAS 2.2 E	CoCoRaHS	58.8	SALINAS 6.7 NNE	CoCoRaHS	29.56
CABO ROJO 0.8 SE	CoCoRaHS	26.72	MOROVIS 1 N	COOP	87.41
MAYAGUEZ ARRIBA	CoCoRaHS	71	DOS BOCAS	COOP	80.66
LAS MARIAS 9.6 ESE	CoCoRaHS	87.06	MANATI 2 E	COOP	73.4
LARES 1.6 SSW	CoCoRaHS	84.35	ARECIBO OBSERVATORY	COOP	88.68
LAJAS 3.3 SSE	CoCoRaHS	38.1	TOA BAJA LEVITTOWN	COOP	57.16
GUANICA 0.9 WNW	CoCoRaHS	27.89	PALMAREJO VEGA BAJA	COOP	87.53
CABO ROJO 1.1 ENE	CoCoRaHS	67.19	CIALES 2S	COOP	89.41
COLOSO	COOP	72.8	ARECIBO 5.2 ESE	CoCoRaHS	63.56
RINCON	COOP	41.77	CAMPANILLA 0.3 S	CoCoRaHS	69.43
GUAJATACA DAM	COOP	71.06	FINCA LA LOMA	CoCoRaHS	79.66
MORA CAMP	COOP	55.29	BAYAMON 3.9 SSE	CoCoRaHS	49.35
ISABELA SUBSTATION	COOP	61.94	SAN JUAN 2.4 WSW	CoCoRaHS	85.87
CALERO CAMP	COOP	45.7	TOA ALTA 2.7 SSW	CoCoRaHS	85.44
RINCON 1.5 N	CoCoRaHS	57.5	SABANA HOYOS	CoCoRaHS	50.06
RINCON 2.8 SE	CoCoRaHS	60.61	VEGA BAJA 2.8 N	CoCoRaHS	76.93
AGUADILLA 5.5 NNE	CoCoRaHS	52.23	YABUCOA 3 SE	COOP	54.38
MOCA 0.3 S	CoCoRaHS	74.09	SAN LORENZO 1SW	COOP	79.41
QUEBRADILLAS 1.6 SE	CoCoRaHS	67.24	JUNCOS 1 SE	COOP	67.41
LARES 2.0 NNE	CoCoRaHS	91.65	ROOSEVELT ROADS	WBAN	43.56
LARES 0.5 SW	CoCoRaHS	66.65	RIO BLANCO LOWER	COOP	88.64
AGUIRRE	COOP	47.58	PARAISO	COOP	129.29
GUAYAMA 1SW	COOP	57.87	HUMACAO NATURAL RESERVE	COOP	77.52
PONCE 4 E	COOP	42.64	JUNCOS 0.3 WSW	CoCoRaHS	79.11
JUANA DIAZ CAMP	COOP	43.39	FINCA APONTE	CoCoRaHS	64.97
CORRAL VIEJO	COOP	81.82	FAJARDO	COOP	15.06
JAJOME ALTO	COOP	89.34	TRUJILLO ALTO 2 SSW	COOP	81.09
AIBONITO 1 S	COOP	87.16	SAN JUAN L M MARIN INTL AP	WBAN	72.6
ADJUNTAS 2 NW	COOP	48.36	WFO SAN JUAN	COOP	71.96
TORO NEGRO FOREST	COOP	85.07	PALMA SOLA	COOP	107.85
PONCE 3.2 NNE	CoCoRaHS	37.37	TRUJILLO ALTO 2.5 S	CoCoRaHS	58.41
PONCE 5.0 NNW	CoCoRaHS	57.29	FAJARDO 1.1 S	CoCoRaHS	82.19
PONCE 2.3 NE	CoCoRaHS	33.5	FAJARDO 1.9 SSW	CoCoRaHS	91
JUANA DIAZ 2.9 SW	CoCoRaHS	39.56	CAROLINA 1.7 NNW	CoCoRaHS	70.01
	Control of the Contro		CULEBRA HILL	COOP	9.16

A Message from WFO San Juan's Meteorologist in Charge





As the Meteorologist in Charge (MIC) of the National Weather Service (NWS) San Juan, I want to sincerely thank all COCORAHS (Community Collaborative Rain, Hail, and Snow Network) observers for their invaluable contributions. Your dedication in providing daily precipitation data enhances the accuracy and reliability of our weather forecasts, warnings, and climate monitoring. By sharing detailed, near real-time information on rain events, you enable us to better understand and predict local weather patterns, ultimately helping us protect lives and property. Your efforts also support research, improve hydrological models, and verify our weather predictions, making you an indispensable part of our meteorological community.

Thank you for being such an important part of our team.

Precipitation Summary COOP & CoCoRaHS stations July 1, 2023 through July 16, 2024

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