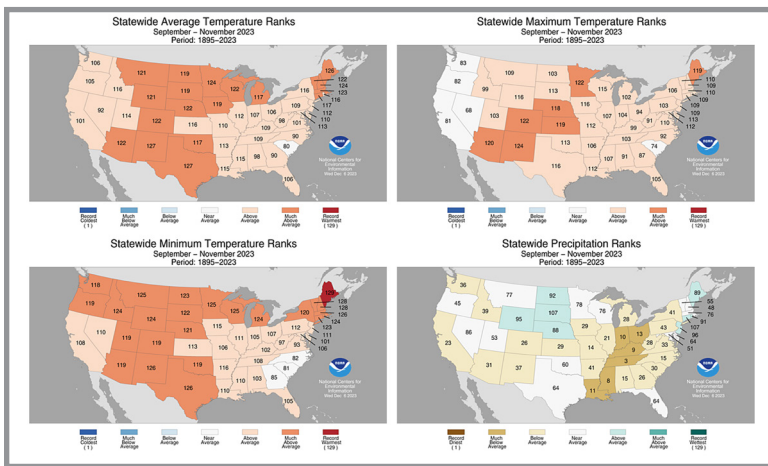




## National and Regional Weather Highlights for Autumn 2023



The autumn season was **warmer than average** across the Southeast, except in South Carolina, which was near average. **Precipitation was below average**, except in Florida, where precipitation was near average in September and October but above average in November. Continuing the trend from the summer, **temperatures were much above average across the Caribbean**, while **precipitation was below average**, except across parts of the U.S. Virgin Islands, which were above average. The Atlantic hurricane season ended as the **fourth most active since 1950**. For more information, see [NOAA's National Climate Report](#).

### Highlights for the Southeast

San Juan, PR recorded its **warmest autumn** on record (since 1898), while Miami, FL recorded its **second warmest autumn** (since 1895).

Washington Dulles Airport reached 100 degrees F on September 6th, its **highest maximum temperature** for any September day on record (since 1962).

Heavy rain from a slow-moving thunderstorm resulted in **flash flooding** of up to 3 feet in downtown Atlanta, GA on September 14th, forcing several buildings and tourist attractions to be evacuated and washing away vehicles.

Smoke from wildfires in Canada resulted in **air quality alerts** across parts of GA, SC, and FL in early October.

Miami, FL tied its **all-time warmest minimum temperature** of 84 degrees F on October 12th.

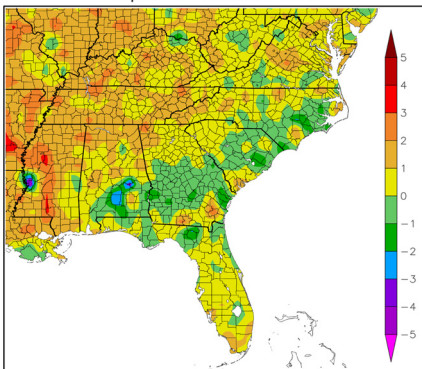
Dozens of **wildfires** across the region in November resulted in reduced visibility and air quality in northern and interior portions of the Southeast.

There were [seven rip current fatalities](#) and [one lightning fatality](#) across the Southeast this autumn.

## Regional Weather Overview for Autumn 2023

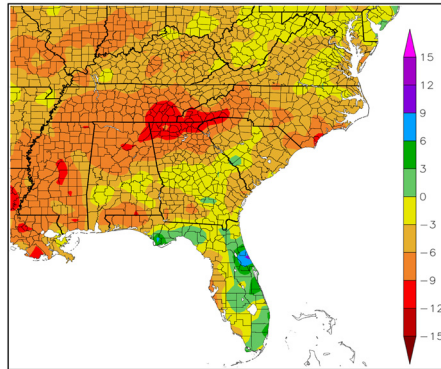
### Temperature and Precipitation Anomalies

Mean Temperature Departure from Average (°F)  
September – November 2023



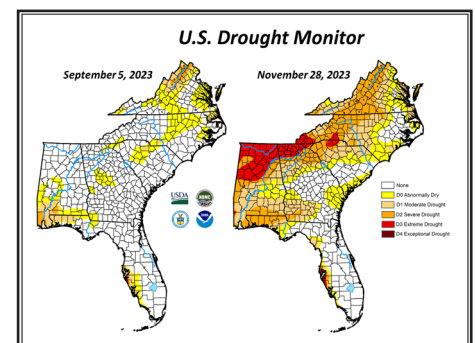
Temperatures were **above average** across the interior of the Southeast, as well as northern portions of VA, southern portions of GA, and South FL, where some locations were over 2 degrees F above average. In contrast, temperatures were **below average** across central and southern portions of AL and GA, eastern portions of the Carolinas, and the FL Panhandle, where some locations were over 2 degrees F below average.

Precipitation Departure from Normal (in)  
September – November 2023



Precipitation was **below average** across much of the Southeast, particularly across northern portions of AL, GA, SC, and western NC, where monthly deficits of over 10 inches were observed. [Several locations recorded one of their driest autumns on record](#). In contrast, precipitation was **above average** across parts of the FL Panhandle and eastern portions of the FL Peninsula, where some locations recorded over 15 inches of precipitation.

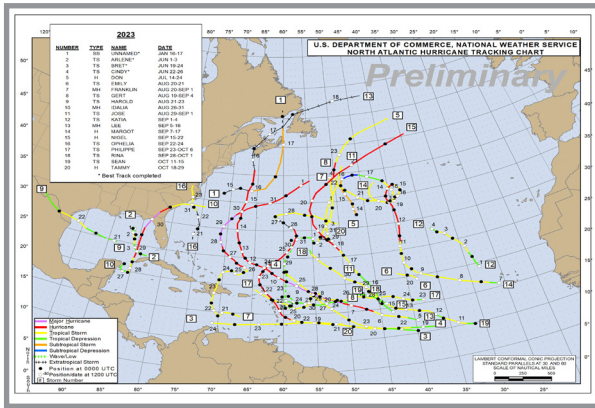
### Drought



Drought conditions **expanded and intensified** across the Southeast this past autumn. Extreme (D3) drought emerged across northern AL and GA, and western portions of the Carolinas. Moderate (D1) and severe (D2) drought expanded along the northern Gulf Coast and emerged across the interior of the region. Small areas of abnormal dryness (D0) and moderate (D1) developed across eastern sections of VA, the Carolinas, and GA. A ribbon of extreme (D3) drought persisted along the West Coast of FL. By the end of the season, **over 50% of the region was in drought**.

# Regional Climate Impacts for Autumn 2023

## Atlantic Hurricane Season Summary



2023 Atlantic tropical cyclone tracks (source: NOAA)

The 2023 Atlantic hurricane season saw **20 named storms**, the **fourth highest number of storms** in a season since 1950. Of these storms, seven became hurricanes and three became major hurricanes (category 3+). While the number of named storms was above the average of 14, **the number of hurricanes and major hurricanes were at their climatological averages**. The accumulated cyclone energy was above the seasonal average. While El Niño conditions were present, record warm temperatures in the Atlantic Ocean helped tip the scales towards a more active season. Of the 20 named storms, seven affected the Southeast, including all three major hurricanes: **Tropical Storm Arlene** (South FL), **Hurricane Franklin** (PR, USVIs), **Hurricane Idalia** (FL, GA, SC, NC), **Hurricane Lee** (PR, USVIs), **Tropical Storm Ophelia** (NC, VA), **Tropical Storm Philippe** (PR), and **Hurricane Tammy** (PR, USVIs).

## Severe Weather

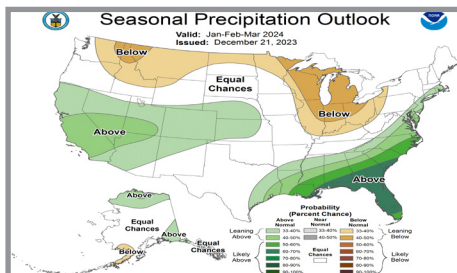
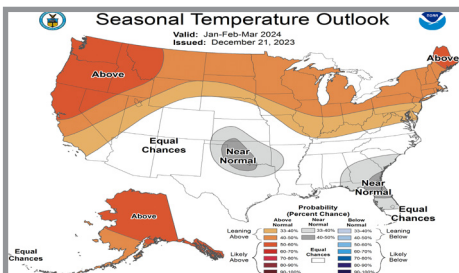
There were **340 reports of severe weather**, which is 181% of the median autumn frequency observed between 2000 and 2022. There were **12 confirmed tornadoes** (8 EF-0s, 1 EF-1, 3 EF-2s), which is 34% of the median autumn frequency. Most of these occurred as part of a small **severe weather outbreak** in FL on October 11th and 12th, resulting in major damage to structures, snapped trees, downed power lines, and flipped vehicles. There were 280 reports of high winds, which is nearly double the median autumn frequency. Many of these occurred during a **severe weather outbreak** on September 7th and 8th, where 60 to 70 mph winds stretched from the FL Panhandle to northern VA. The largest hailstones reported were **1.75 inches** (golf ball-sized) across parts of GA and SC on September 7th and 12th.

## Agriculture and Livestock

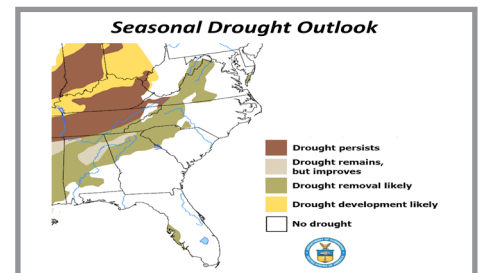
Mostly dry weather with periods of cool temperatures negatively impacted many crops in the region. In general, crop progress was slower in parts of AL and VA where moisture deficits were the greatest. **Dry soil** made it difficult to harvest peanuts and plant winter grasses and grains. **Cooler temperatures** also slowed the germination of some fall crops. Pecan production was low in GA, as were the quantity and size of apples and pumpkins in VA. **Poor grazing conditions and lack of hay** forced operators to use supplemental feed or sell livestock. However, **beneficial precipitation** towards the end of the season improved pastures and helped farmers finish harvesting and planting winter crops. **Tropical Storm Ophelia caused significant damage** to agricultural facilities and resulted in numerous poultry deaths in eastern NC.

# Regional Climate Outlook for Winter 2024

## Temperature and Precipitation



## Drought

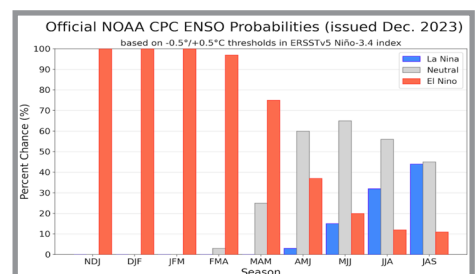


NOAA's Climate Prediction Center (CPC) is forecasting **near-normal temperatures** across much of FL, southeastern AL, and central and southern portions of GA and SC. **Above-average temperatures** are expected across northern VA, with equal chances of above or below temperatures elsewhere. **Precipitation is expected to be above-average** across the region this winter.

Given favorable temperature and precipitation outlooks, **drought removal is expected** across much of the region, with **improvements likely** across northern AL and GA.

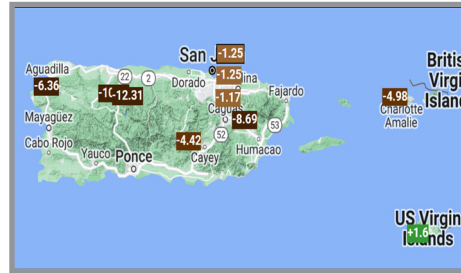
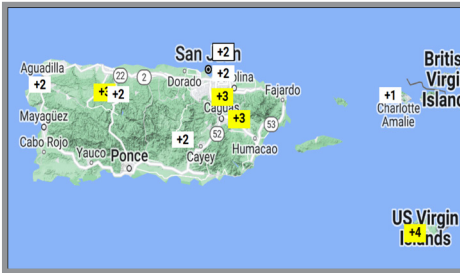
## ENSO Forecast

According to the **latest ENSO update** issued by the CPC on December 14th, **El Niño is expected to continue through the Northern Hemisphere winter**, with a 60% chance of a transition to ENSO-neutral during the April-June period. Oceanic and atmospheric conditions reflected a strong El Niño in place at the end of November. **There is a greater than 50% chance of an historically strong El Niño**, which could rank in the top 5 of El Niño events since 1950.



# Caribbean Climate Overview and Impacts for Autumn 2023

## Temperature and Precipitation Anomalies

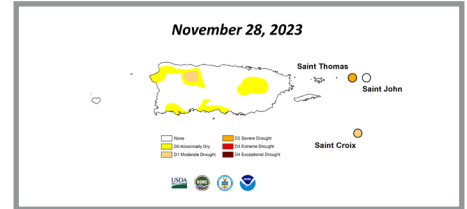
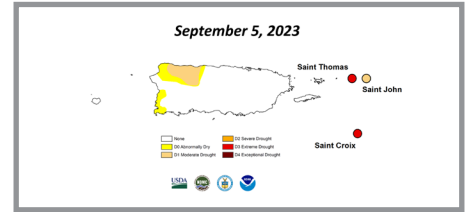


**Temperatures were much above average** across PR and the USVIs. San Juan, PR, and St. Croix recorded their **warmest autumn on record**, while St. Thomas recorded its fourth warmest autumn on record. September was the **warmest month on record** in San Juan and on St. Croix. Heat index values reached **110 degrees F** in parts of the Caribbean. **Rainfall was below average**. The largest deficits were found along northern and central portions of PR and parts of the USVIs, where seasonal totals ranked in the **top 5 driest** in places such as Arecibo, Dos Bocas, and St. Thomas. After a very dry summer, parts of the USVIs and eastern portions of PR received **beneficial rainfall** during the autumn season, particularly from tropical disturbances and cyclones.

## Agriculture and Water Resources

Extreme temperatures continued to affect agricultural production in PR and the USVIs, with **significant losses** to livestock and poultry. **Hay shortages** were also reported. **Heat stress** remained an issue for farmers, which limited the amount of field work. However, **recent rainfall** helped recharge farm ponds and provided moisture for planting, harvesting, and germination. Pasture **conditions improved** across parts of PR and on St. John, though the exceptionally dry conditions that have persisted on St. Croix prevented much of the rain from penetrating the soil. In addition, some parts of PR received **too much rain**, which resulted in soil erosion, landslides, and flooded fields. While soil moisture improved, **streamflows remained low**, especially in the western part of PR where some moderate drought continued to be observed.

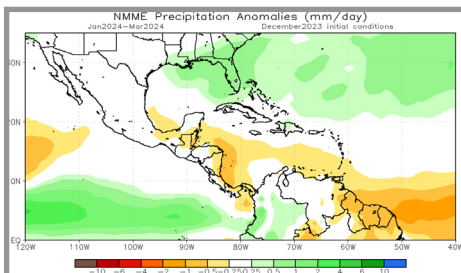
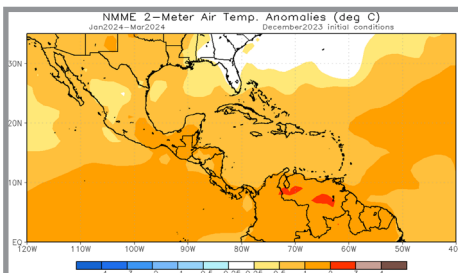
## Drought



Drought conditions **improved across the northwest part of PR**, where only a small pocket of moderate (D1) drought remained, while abnormal dryness (D0) emerged along the southern coast and eastern interior. Conditions also **improved across the USVIs**. The season began with extreme (D3) drought on St. Thomas and St. Croix, which quickly intensified to exceptional (D4) drought. Severe (D2) drought was observed on St. John. By the end of October, St. Thomas and St. Croix had improved to severe (D2) drought, while dryness was eliminated on St. John. St. Croix improved to moderate (D1) drought by the end of the season.

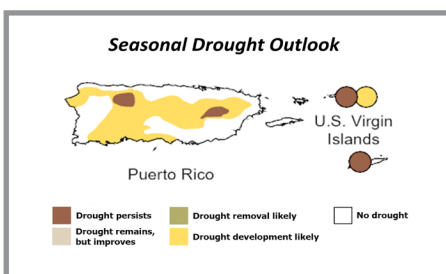
# Caribbean Climate Outlook for Winter 2024

## Temperature and Precipitation



According to the [North American Multi-Model Ensemble \(NMME\)](#), **above-average temperatures** are expected across the Caribbean, while precipitation is forecasted to be **near average** during the January-March period.

## Drought



The extended forecast from the [Caribbean Climate Outlook Forum](#) calls for **drought to persist in the USVIs** through February, while drought is expected to **evolve across western PR**. This is consistent with the CPC outlook, which shows **drought developing and persisting** across the region this winter.

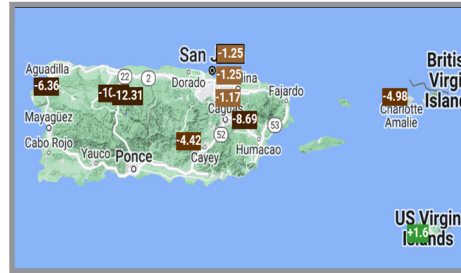
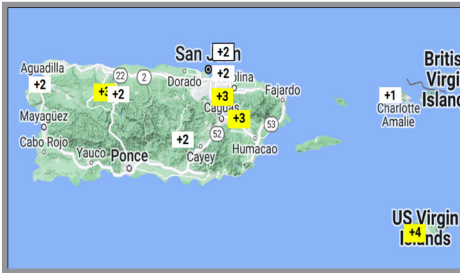
## Southeast Region Partners

- [National Oceanic and Atmospheric Administration](#)
- [National Centers for Environmental Information](#)
- [National Weather Service Eastern Region](#)
- [National Weather Service Southern Region](#)
- [Climate Prediction Center](#)
- [National Hurricane Center](#)
- [National Integrated Drought Information System](#)
- [Carolinas Integrated Sciences and Assessments](#)
- [National Sea Grant Office](#)
- [Southeast and Caribbean Regional Collaboration Team](#)
- [State Climatologists](#)
- [Southeast Regional Climate Hub](#)
- [Southeast Climate Science Center](#)
- [South Atlantic Landscape Conservation Cooperative](#)



# Perspectiva general del clima e impactos en el Caribe para el otoño de 2023

## Anomalías de temperatura y precipitación

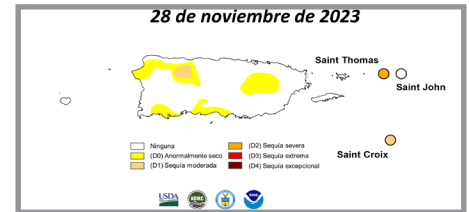
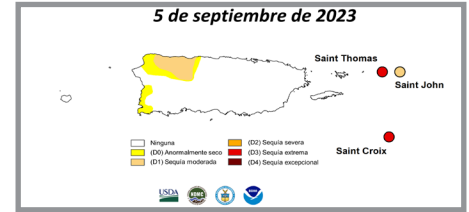


Las temperaturas estuvieron muy por encima del promedio en Puerto Rico (PR) y las Islas Vírgenes Americanas (USVI por sus siglas en inglés). San Juan, PR, y St. Croix registraron su otoño más cálido desde que existen registros, mientras que St. Thomas registró su cuarto otoño más cálido. Septiembre fue el mes más cálido desde que hay registros para San Juan y St. Croix. El Índice de Calor llegó hasta los 110 grados F en partes del Caribe. La lluvia estuvo por debajo del promedio. Los déficits más grandes se registraron en zonas del norte y centro de PR y partes de las USVI, donde las acumulaciones totales para la temporada terminaron entre las 5 más secas para lugares como Arecibo, Dos Bocas, y St. Thomas. Tras un verano muy seco, partes de las USVI y el este de PR recibieron lluvia beneficiosa durante el otoño, especialmente debido a disturbios y ciclones tropicales.

## Agricultura y recursos hidrológicos

Las temperaturas extremas continuaron afectando la producción agrícola en PR y las USVI, con pérdidas significativas al ganado y al sector avícola. También se reportó escasez de heno. El estrés por el calor siguió siendo un problema para los agricultores, limitando la cantidad de trabajo en las fincas agrícolas. En cambio, la lluvia reciente ayudó a subir los niveles de los estanques, y proveyó humedad para sembrar, cosechar, y germinar. Las condiciones de los pastizales mejoraron en partes de PR y St. John, aunque las condiciones extremadamente secas que persistieron en St. Croix impidieron que gran parte de la lluvia penetrara la tierra. Además, algunas partes de PR recibieron demasiada lluvia, lo que causó erosión, deslizamientos e inundaciones de terreno. Aunque mejoró el contenido de humedad en los suelos, los niveles de los ríos y arroyos se mantuvieron bajos, especialmente en áreas del oeste de PR donde se siguió observando una sequía moderada.

## Sequía



La sequía mejoró en el noroeste de PR, donde solo se mantiene una pequeña área de sequía moderada (D1), mientras que apareció sequedad anómala (D0) en la costa sur y el interior este de la isla. También las condiciones mejoraron en las USVI. La temporada comenzó con sequía extrema (D3) en St. Thomas y St. Croix, y se intensificó rápidamente a sequía excepcional (D4). En St. John se observó sequía severa (D2). Ya para finales de octubre, St. Thomas y St. Croix habían mejorado a sequía severa, mientras que se eliminaron las condiciones secas en St. John. St. Croix mejoró a sequía moderada para finales de la temporada.

# Perspectiva del clima en el Caribe para el invierno de 2024

## Temperatura y precipitación

