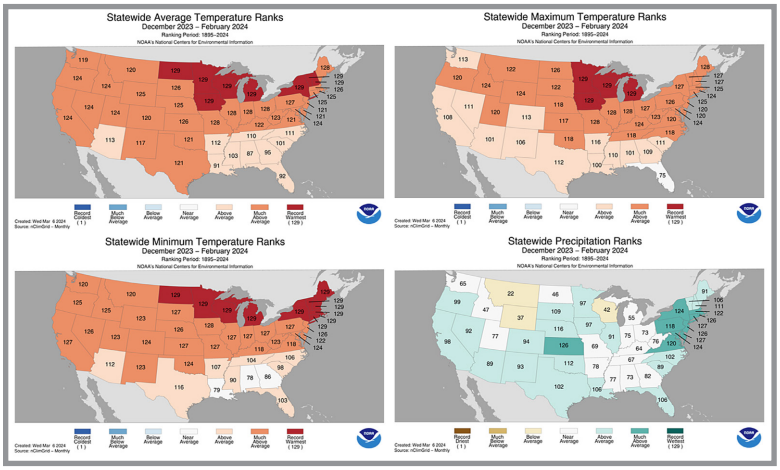
Quarterly Climate Impacts and Outlook

Southeast Region

March 2024

National and Regional Weather Highlights for Winter 2023-2024



*The winter season was **warmer and wetter than average** across much of the Southeast, particularly in VA, where it was the **9th warmest and 10th wettest on record**. Winter season precipitation was near average across AL and GA. December and January were particularly wet across most of the region, while February was near to below average in most places. NC recorded its **10th driest February on record**. Temperatures were above average across the Caribbean. Precipitation was variable across PR and above average across the U.S. Virgin Islands. For more information, see NOAA's National Climate Report.*

Highlights for the Southeast

Richmond, VA ended a streak of **638 consecutive days without measurable snowfall** on December 10th, the longest on record (since 1897). Richmond also recorded its **wettest winter on record** (since 1886) with 17.97 inches.

Unseasonably warm weather in late January resulted in some all-time daily temperature records for the month, particularly across VA and NC. Washington Reagan Airport reached 80 degrees F on January 26th, its **highest maximum temperature for any January day** on record (since 1871)

On February 17, a weather ballon launched at Dulles Airport in VA recorded a **wind speed of 265 mph at 35,000 feet**, making it the second strongest upper-level wind recorded from that location (since 1950).

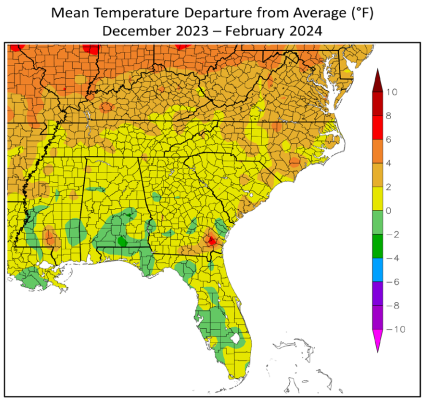
On February 5th, Miami, FL recorded its lowest winter season surface pressure on record with a value of 998.9 mb.

There were two rip current fatalities, both in PR.

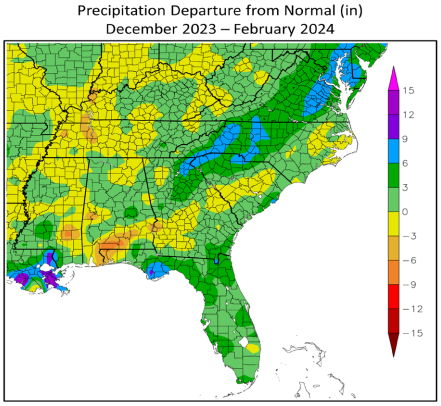
El Niño is expected to end later this spring, with **La Niña potentially developing** this summer

Regional Weather Overview for Winter 2023-2024

Temperature and Precipitation Anomalies

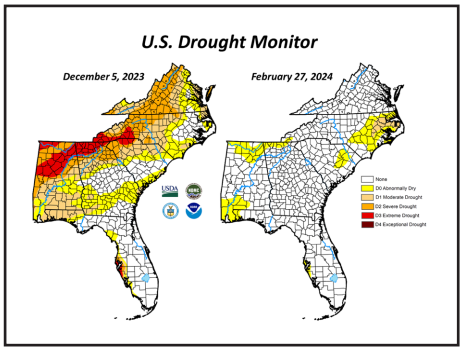


Temperatures were **above average** across much of the Southeast, particularly in parts of VA and the Carolinas, where some locations were more than 4 degrees F above average for the season. A few long-term stations, including Raleigh-Durham, NC and Roanoke, VA, observed one of their warmest winters on record. In contrast, temperatures were **below average** across much of FL and southern portions of AL and GA.



Precipitation was **above average** across much of the Southeast, particularly northern portions of FL, western and central portions of the Carolinas, and eastern VA, where seasonal totals were 5 to 10 inches above average. Several long-term stations recorded one of their wettest winters on record. Precipitation was **below average** across southern AL and GA, northwest FL, and eastern portions of the Carolinas, where monthly deficits of up to 10 inches were observed.

Drought

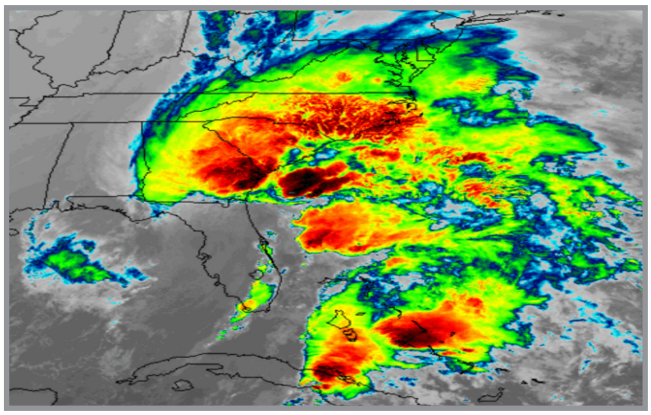


Drought conditions **improved significantly** across the Southeast this past winter. The season began with nearly half of the region in at least moderate (D1) drought, and more than a quarter of the region in at least severe (D2) drought. Extreme (D3) drought was found across northern portions of AL, GA, and SC, western NC, and the West Coast of FL. By the end of the season, **only a small pocket of moderate (D1) drought** was found in eastern NC, with pockets of abnormal dryness (D0) across some interior and coastal portions of the region.

Contacts: Chip Konrad, Chris Fuhrmann and William Schmitz (SERCC)
Ellen Mecray and Sharon Mesick (NOAA/NCEI)

Regional Climate Impacts for Winter 2023-2024

Strong Coastal Cyclone Strikes the Southeast



Satellite image of the storm on December 17th (source: NWS)

On December 17th, a low-pressure system developed over the Gulf of Mexico and tracked northeast across FL, bringing **high winds, storm surge, severe weather, and inland flooding** to parts of northeast FL and coastal sections of GA, the Carolinas, and VA. Wind gusts over 60 mph were reported along much of the East Coast. Highway 12 along the Outer Banks was closed for several days. Cape Hatteras, NC and Wilmington, NC recorded their **lowest monthly surface pressures on record** with values of 984 mb and 985.4 mb, respectively. The Charleston Harbor tide gauge recorded its **highest non-tropical tide on record** of 9.86 feet. Numerous streets, buildings, and homes were **inundated with flood waters**. Rainfall amounts were generally between 2 and 6 inches, with some locations recording over 12 inches. An **EF-1 tornado** near Myrtle Beach, SC caused major damage to trees, structures, and vehicles.

Severe Weather

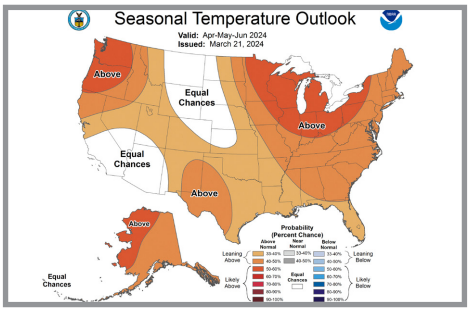
There were **606 reports of severe weather**, which is more than three times the median winter frequency observed between 2000 and 2022. There were **55 confirmed tornadoes** (22 EF-0s, 25 EF-1s, 7 EF-2s, 1 EF-3), which is more than double the median winter frequency. At least **two fatalities and 16 injuries** were associated with these tornadoes. A total of 34 tornadoes, including an EF-3 in Panama City Beach, FL, were confirmed during a **severe weather outbreak** from the 8th to the 10th of January. Winds of 50 to 60 mph were reported across a large portion of the region, with some gusts over 75 mph. For the season, there were **518 reports of high winds**, which is over 3.5 times the median winter frequency. There were also 26 hail reports. The largest hailstone was **2.75 inches (baseball-sized)** in Dothan, AL on January 9th.

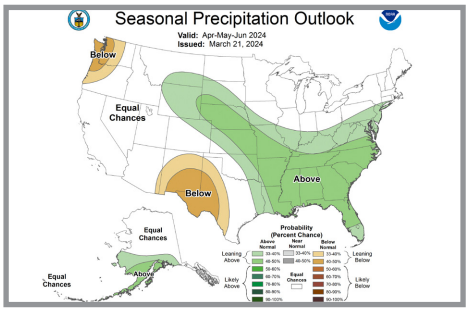
Agriculture and Livestock

Mostly warm and wet weather led to **improvements in crop conditions**, especially pasture and livestock. **Hay supplies were replenished** in many places. Increases in soil moisture and mostly above average temperatures also allowed farmers to **prepare fields for spring crops**. Periods of cooler weather in January helped peaches and fruit trees **accumulate chill hours** and **begin blooming** by February. However, the growth of some small grains, winter pastures, and citrus were slowed due to the cooler weather. Additionally, **planting and harvesting were delayed** in locations that received too much precipitation, particularly in parts of VA, NC, GA, and FL, where **flooded fields and saturated pastures** were observed. On the other hand, drier conditions across southern parts of AL and GA **slowed the growth** of fall forages and winter pastures.

Regional Climate Outlook for Spring 2024

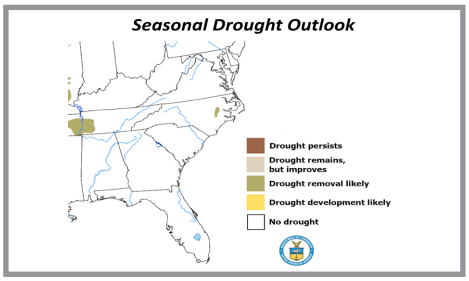
Temperature and Precipitation





NOAA's Climate Prediction Center (CPC) is forecasting **above average temperatures and above average precipitation** across the Southeast from April-June. The probability of above average temperatures and precipitation is 40-50% across most of the region, except Florida (33-40% for temperature).

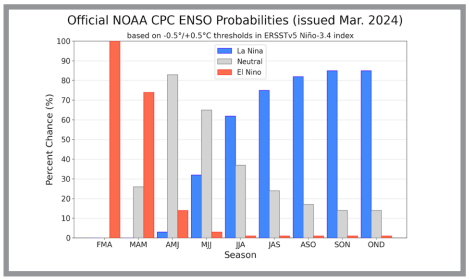
Drought



Given favorable temperature and precipitation outlooks, drought is **not expected to develop** across the region through the end of June.

ENSO Forecast

According to the latest ENSO update issued by the CPC on March 14th, oceanic and atmospheric conditions reflect a **weakening El Niño**, and a **transition to ENSO-neutral** is expected during the April-June period (83% chance). La Niña conditions are then expected to develop by the June-August period (62% chance).



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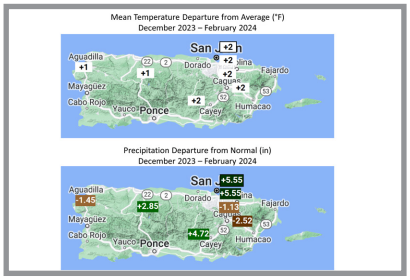
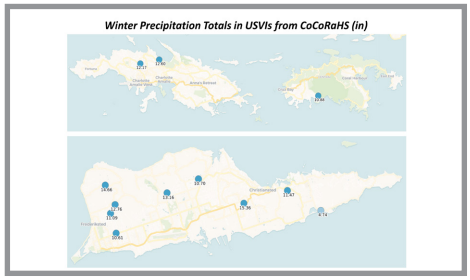
Caribbean Climate Overview and Impacts for Winter 2023-2024

Temperature and Precipitation Anomalies



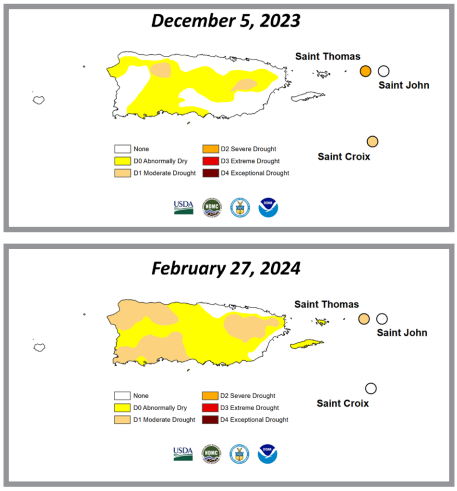


Temperatures were **above average** across PR and the USVIs. Saint Croix recorded its **warmest winter on record** (since 1951), while San Juan, PR **tied its fourth warmest winter on record** (since 1898). January was especially warm, with temperatures running up to 4 degrees F above average. Precipitation was variable. **Dry conditions** prevailed across the western and southeastern ends of PR, with **wet conditions** across the northeastern and interior portions of the island. San Juan recorded 17.03 inches (50% above average). Several CoCoRaHS gauges in the USVIs recorded over 10 inches, which is **four times the average seasonal total** based on data from long-term stations on Saint Croix and Saint Thomas. February was especially wet, with some locations on PR and Saint Croix recording more than double their monthly averages.

Agriculture and Water Resources

Above average rainfall in the north coastal region of PR allowed farmers to **make progress** on various field activities, including preparing land for new crops. Pastures were also in generally **good condition** and streamflows were **improving**. Farmers in the central region also noted frequent rainfall, but dry soils and high temperatures continued to place **stress on crops**. On the southern part of the island, warm, dry, and windy conditions prevailed, which **negatively affected** forage, fruits, and vegetables, especially in places with little or no irrigation. Forest fires also resulted in **damage to vegetation** on PR. Beneficial rains on Saint John and Saint Croix led to **improvements** in field and crop conditions. Cooler temperatures and adequate rainfall also led to improvements in poultry production. Farm ponds **began to recharge** on Saint Thomas, but **continued forage shortages** forced farmers to rotate livestock and buy hay and grain.

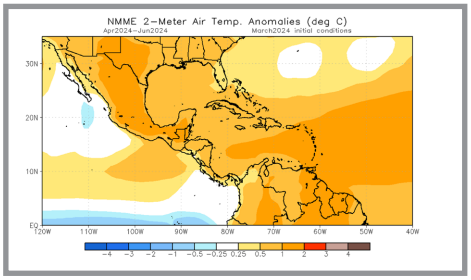
Drought

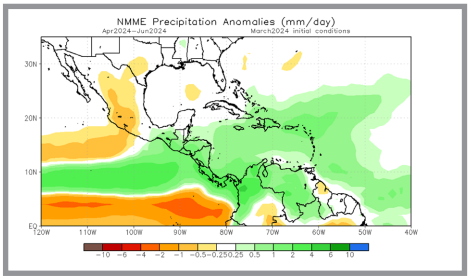


Drought conditions **worsened** across much of PR during the winter but **improved** across the USVIs. The area of moderate (D1) drought in PR increased from 5% at the beginning of the season to over 40% by the end of the season. When including abnormally dry (D0) parts of the island, this area increased from 50% to over 90%. On the other hand, drought and dryness were **eliminated** on Saint John and Saint Croix, while conditions on Saint Thomas **improved** from severe (D2) to moderate (D1) drought.

Caribbean Climate Outlook for Spring 2024

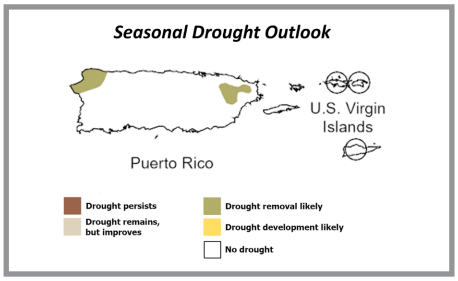
Temperature and Precipitation





According to the North American Multi-Model Ensemble (NMME), **above-average temperatures and precipitation** are expected across the Caribbean during the April-June period.

Drought



According to the CPC, drought conditions are **expected to improve across PR**, while the USVIs are **expected to be drought-free** by the end of June. However, the extended forecast from the Caribbean Climate Outlook Forum calls for drought to **worsen** across southwestern PR and **possibly develop** across the USVI over the next several months.

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
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- Southeast Regional Climate Hub
- Southeast Climate Science Center
- Community Collaborative Rain Hail and Snow Network

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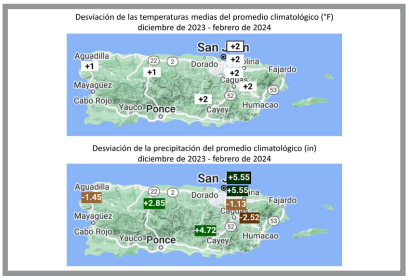
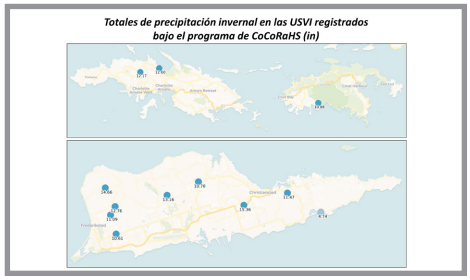
Perspectiva general del clima e impactos en el Caribe para el invierno de 2023 a 2024

Anomalías de temperatura y precipitación



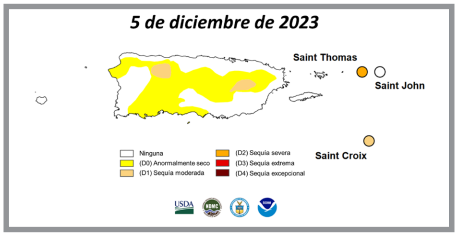


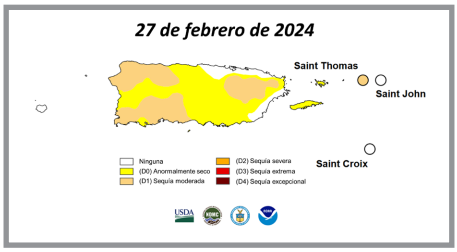
Las temperaturas estuvieron por encima del promedio en Puerto Rico (PR) y las Islas Vírgenes Americanas (USVI, por sus siglas en inglés). St. Croix registró su invierno más cálido desde que existen registros (1951), mientras que San Juan, PR empató el récord como el cuarto invierno más cálido desde 1898. Enero fue especialmente cálido, con temperaturas de hasta 4 grados F por encima del promedio. La precipitación fue variable. Las condiciones secas prevalecieron a través de los extremos oeste y sureste de PR, con condiciones húmedas en las porciones noreste e interior de la isla. San Juan registró 17.03 pulgadas de lluvia (50% más de lo normal). Varios pluviómetros del programa de CoCoRaHS registraron sobre 10 pulgadas de lluvia en las Islas Vírgenes, lo cual es cuatro veces mayor al promedio, basado en datos de estaciones a largo plazo en St. Croix y St. Thomas. Febrero fue especialmente húmedo, con algunas localidades en PR y St. Croix que registraron más del doble de sus promedios mensuales.

Agricultura y recursos hidrológicos

La lluvia por encima del promedio en la región costera norte de PR permitió a los agricultores realizar progreso en diversas actividades de campo, incluyendo la preparación de la tierra para los nuevos cultivos. Los pastizales también estuvieron en buenas condiciones en general y los flujos de corriente estaban mejorando. Los agricultores en la región central también observaron lluvias frecuentes, pero los suelos secos y las altas temperaturas continuaron causando estrés en los cultivos. En la parte sur de la isla, prevalecieron las condiciones cálidas, secas y ventosas, las cuales afectaron negativamente al forraje, las frutas y verduras, especialmente en lugares con poca o ninguna irrigación. Los incendios forestales también resultaron en daños a la vegetación en PR. Las lluvias beneficiosas en St. John y St. Croix condujeron a mejoras en las condiciones del terreno y los cultivos. Las temperaturas más frescas y la lluvia también condujeron a mejoras en la producción avícola. Los estanques comenzaron a rellenarse en St. Thomas, pero la continua escasez de forraje obligó a los agricultores a rotar el ganado y comprar heno y granos.

Sequía

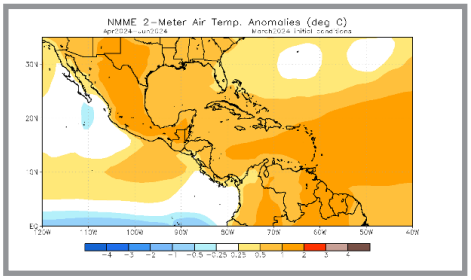


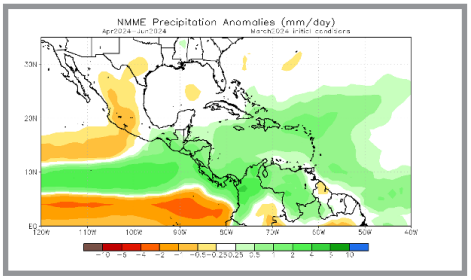


La sequía empeoró a través de gran parte de PR durante el invierno, mientras que las condiciones mejoraron a través de las USVI. El área de sequía moderada (D1) en PR aumentó de un 5% al principio de la temporada a sobre un 40% para el final de la misma. Si se incluyen las zonas con sequedad anómala (D0) para partes de la isla, entonces el área incrementó desde un 50% a sobre un 90%. Por otra parte, la sequía y sequedad fueron eliminadas en St. John y St. Croix, mientras que las condiciones en St. Thomas mejoraron de sequía severa (D2) a moderada (D1).

Perspectiva del clima en el Caribe para la primavera de 2024

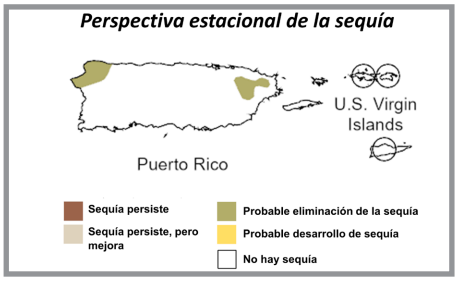
Temperatura y precipitación





Según el conjunto multi-modelo norteamericano (NMME, por sus siglas en inglés), se esperan temperaturas y precipitación por encima del promedio en todo el Caribe para el periodo de abril a junio.

Sequía



Según la perspectiva del Centro de Predicciones Climáticas (CPC, por sus siglas en inglés), se espera que las condiciones de sequía mejoren a través de PR, mientras que las USVI deben salir de la sequía para finales de junio. Sin embargo, el pronóstico a largo plazo del Foro de Perspectiva del Clima en el Caribe apuesta a que la sequía ha de empeorar a través del suroeste de PR y posiblemente se desarrolle a través de las USVI durante los próximos meses.

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