

Climate Review for PR and USVI – December 2021



Synopsis: *The last month of the year followed the generally dry trend that we have observed through the year. Most of the area experienced below normal rainfall, except for a few sections of western and southeastern Puerto Rico. All of the climatological sites ended the month with warmer than normal temperatures. St. Croix set eleven daily high temperature records. Drought conditions continued for most of the area with no improvement or significant deterioration observed.*

Observed Conditions:

December, as the first month of the meteorological winter, begins to experience cooler temperatures across the islands. The south coast of Puerto Rico still reaches the upper 80s; but for the other areas with low elevations, highs usually reach the low and mid-80s. High temperatures across the mountains are as low as the upper 60s to the mid-70s. During the nighttime, low temperatures range from the upper 50s at the central interior of Puerto Rico to the upper 60s and mid-70s across the lower elevations. During the month, rainfall due to the local effects also diminish, and most of the rainfall received is carried by the trade winds across the eastern half of the local area. Across eastern Puerto Rico, normal rainfall amounts are around 4 to 6 inches, with a maximum of 8 to 10 inches near El Yunque; for western Puerto Rico and the U.S. Virgin Islands, 3 to 4 inches, and 1 to 2 inches for the southern slopes of Puerto Rico.

The dryer-than-normal trend continued during December for most of the area. Most of the area was below normal, except for very localized spots along western, southeastern and around the municipality of Dorado. Rainfall deficits were in general 1 to 3 inches, and 5 to 8 inches for north-central and northeastern Puerto Rico (Figure 1). Places such as the south coast from Guanica to Ponce, northern Salinas and eastern Vieques barely observed 10% to 25% of normal rainfall. At the Luis Muñoz Marín International Airport (JSJ), rainfall was less than one inch above normal, but the rest of the San Juan metropolitan area stayed below average. Across the U.S. Virgin Islands, both climatological sites at St. Thomas (IST) and St. Croix (ISX) ended drier than normal (Table 1). In fact, IST ended as the ninth driest December on record, and ISX at the third driest.

The satellite and Doppler radar rainfall estimates were 1 to 3 inches for most of the southern slopes west of Salinas, the western interior and most of the western coast of Puerto Rico, as well as for Vieques Culebra. For the San Juan metro area and the eastern half of Puerto Rico, amounts were around 3 to 5 inches, and up to 15 inches for El Yunque (Figure 2). For the U.S. Virgin Islands, radar and satellite rainfall estimates were mostly less than two inches, except for central to western St. Croix, where independent rain gauges recorded over 2 inches. Most of the activity that affected the eastern sections of Puerto Rico was related to decaying frontal boundaries dragged by the trade winds. It is worth noting that the Doppler radar was out of service for the first half of the month and the estimates were mainly based on satellites for this period. Across the COOP stations, the warmest high temperature was 92°F at Aguirre, the coolest low was at 54°F at Adjuntas Substation. Paraíso station had the rainiest month with 10.03". No daily records were set at JSJ or IST, but 11 daily maximum temperature records were set at ISX. In fact, ISX ended as the third warmest December on record, while at JSJ, it was the tenth warmest.

The drought conditions persisted across the islands throughout the month. Abnormally dry (D0) conditions cover all of the southern slopes, the interior, north central, northwest, eastern interior, east, the San Juan metro area and eastern Vieques. Additionally, a Moderate Drought (D1) is now present for the southern slopes, also the interior, sections of the north and eastern interior. In summary, about 82% of Puerto Rico is now under any drought classification. Across the U.S. Virgin Islands, D1 conditions continue for St. John, while Severe Drought Conditions (D2) are being observed in St. Thomas, and an Extreme Drought (D3) for St. Croix (Figure 3).

Looking Ahead:

The latest seasonal outlook issued by the Caribbean Climate Outlook Forum (CariCOF) for the 3-month period of December-January-February (DJF) has equal chances of observing near normal precipitation (Figure 4) and temperatures (Figure 5) across the eastern Caribbean. La Niña conditions are observed, which are favored to continue through the rest of the winter months. La Niña conditions generally favor less rainfall through the winter months.

More info: <http://rcc.cimh.edu.bb/climate-outlooks/>

Figures and Tables

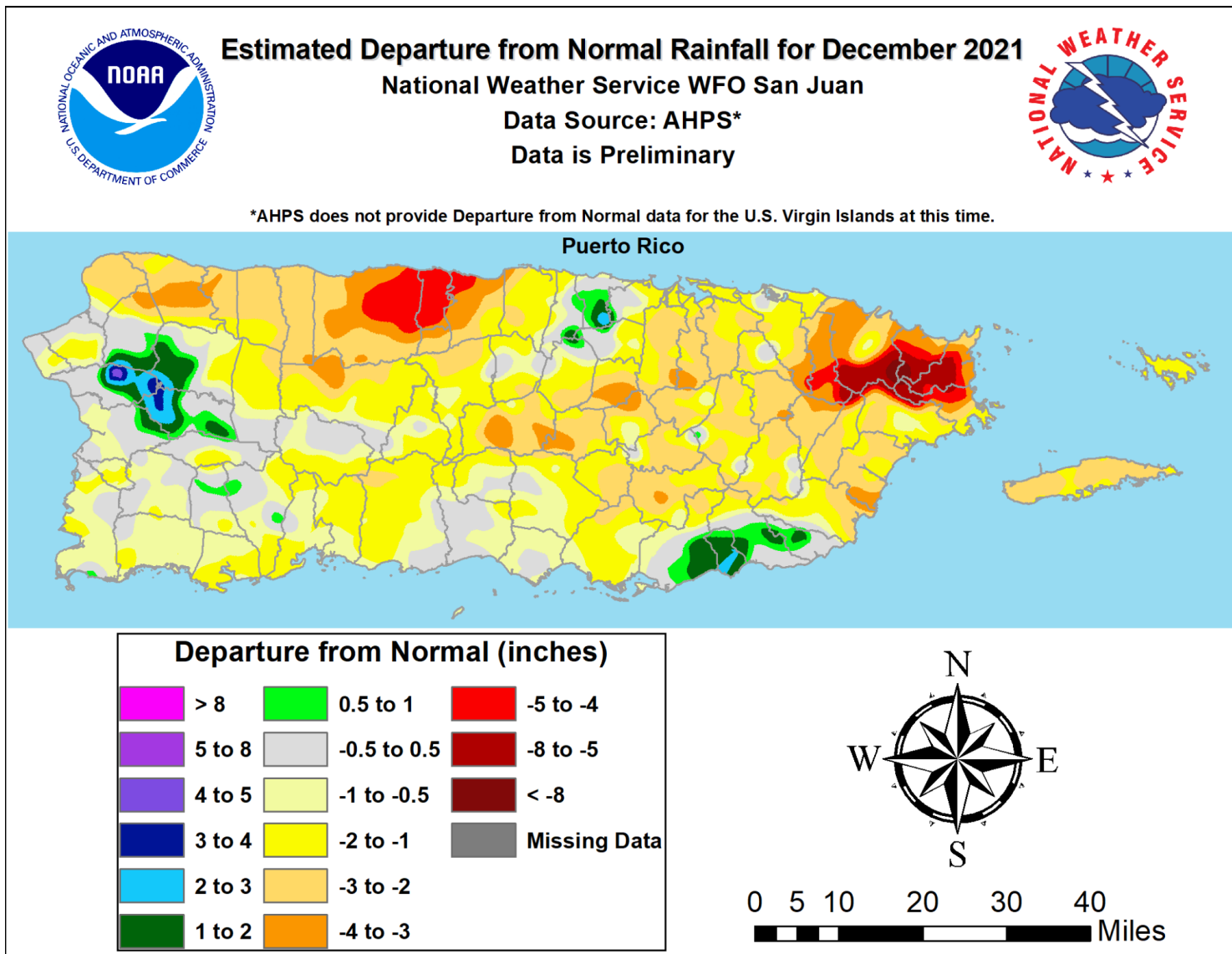


Figure 1. Departure from normal rainfall for the month of December 2021.



Radar Estimated Rainfall for December 2021

National Weather Service WFO San Juan

Data Source: AHPS, COOP, CoCoRaHS

Data is Preliminary



* Doppler Radar was out of service the first half of December, Satellite estimates were used for that time.

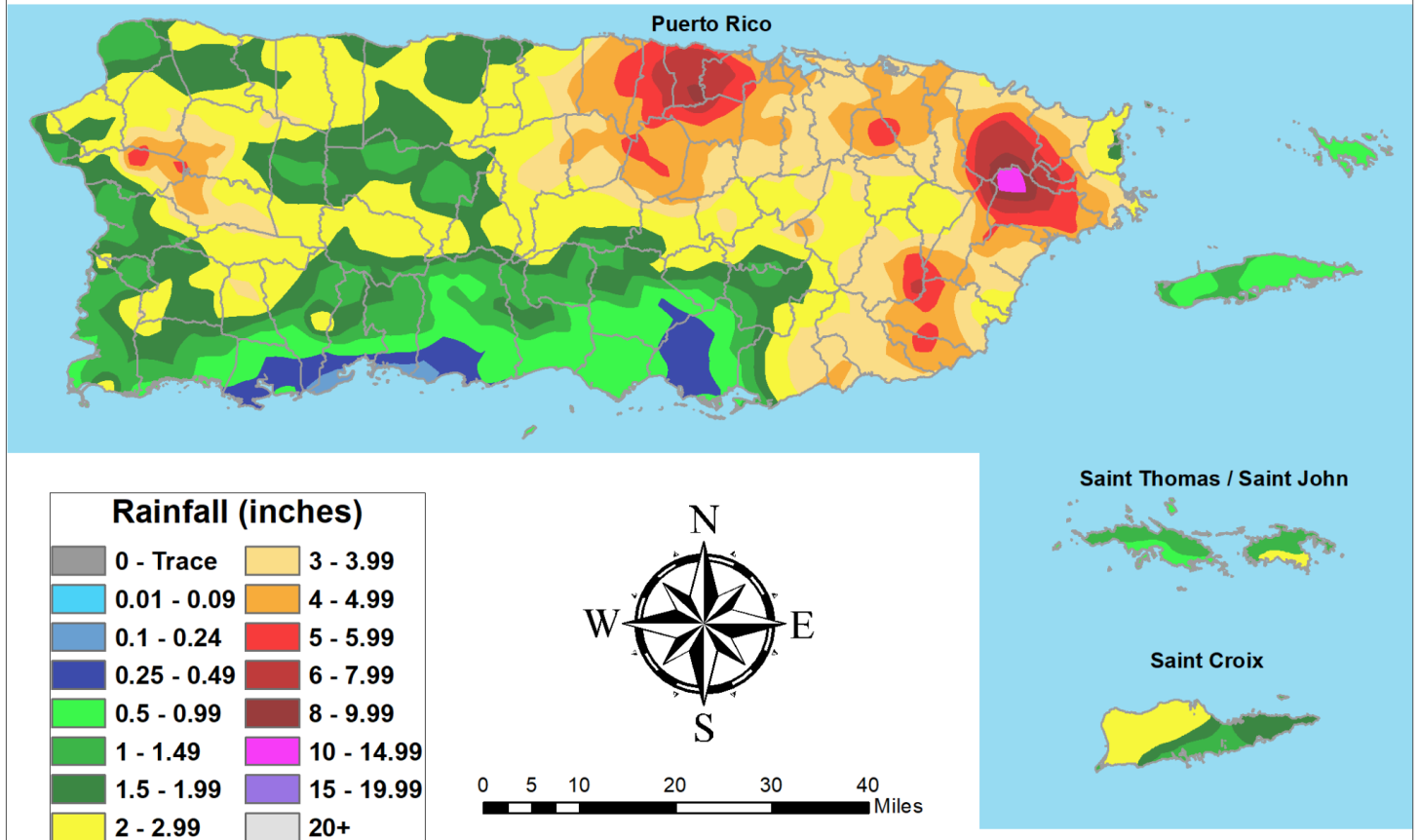


Figure 2. Total estimated rainfall for the month of December 2021.

U.S. Drought Monitor Caribbean

January 4, 2022
(Released Thursday, Jan. 6, 2022)
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	18.24	81.76	28.04	0.00	0.00	0.00
Last Week 12-28-2021	18.24	81.76	28.04	0.00	0.00	0.00
3 Months Ago 10-05-2021	56.20	43.80	11.84	0.00	0.00	0.00
Start of Calendar Year 01-04-2022	18.24	81.76	28.04	0.00	0.00	0.00
Start of Water Year 09-28-2021	56.20	43.80	11.84	0.00	0.00	0.00
One Year Ago 01-05-2021	77.70	22.30	3.31	0.00	0.00	0.00

Note: Statistics do not include areas represented by points.

Intensity:

	None		D2 Severe Drought
	D0 Abnormally Dry		D3 Extreme Drought
	D1 Moderate Drought		D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

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droughtmonitor.unl.edu

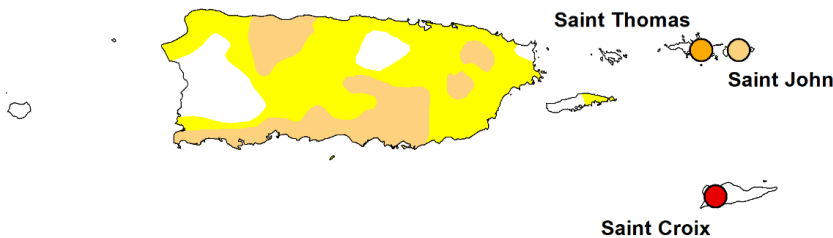


Figure 3. U.S. Drought Monitor for Puerto Rico and the U.S. Virgin Islands. Released January 4th, 2022.

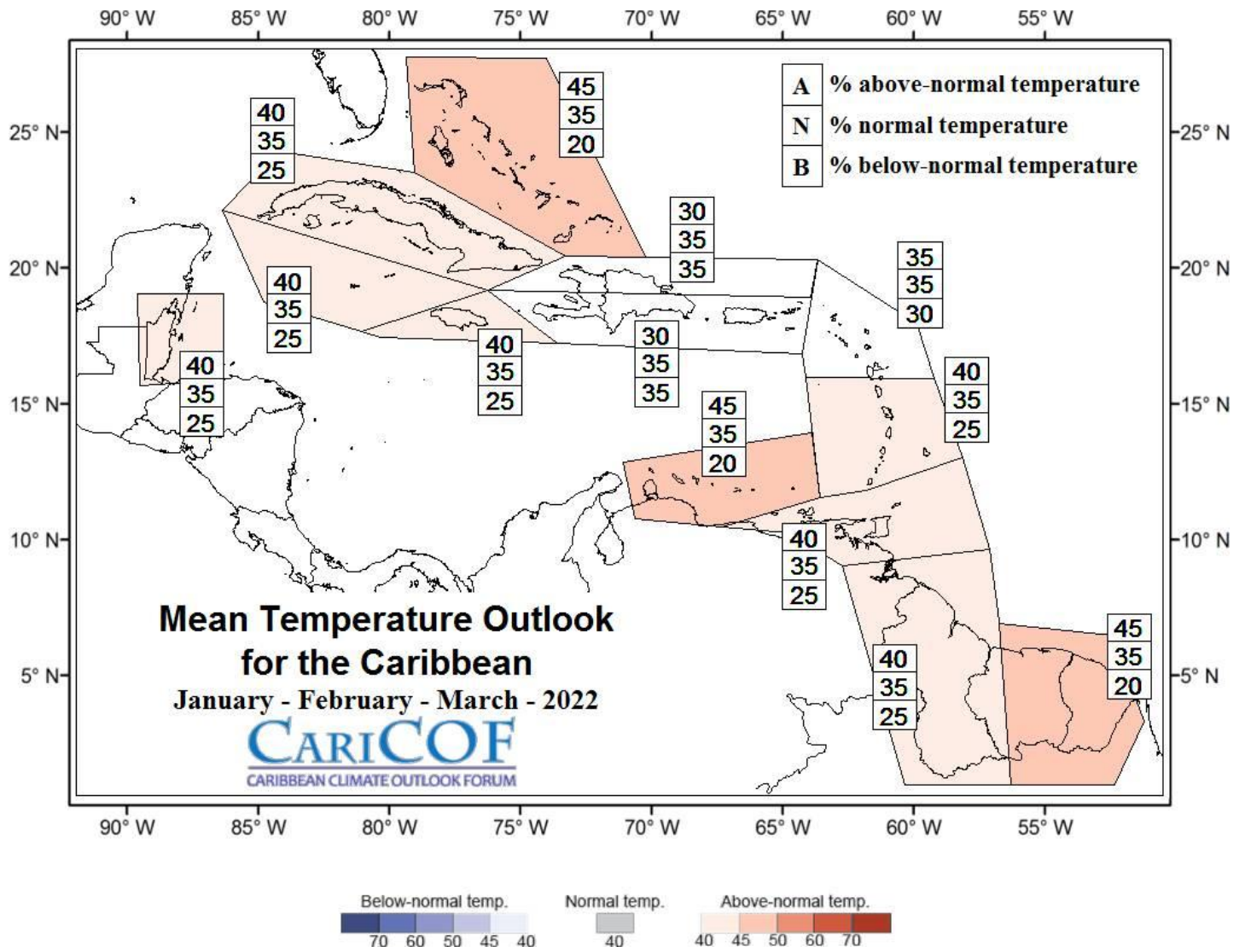


Figure 4. CariCOF 3-month rainfall forecast

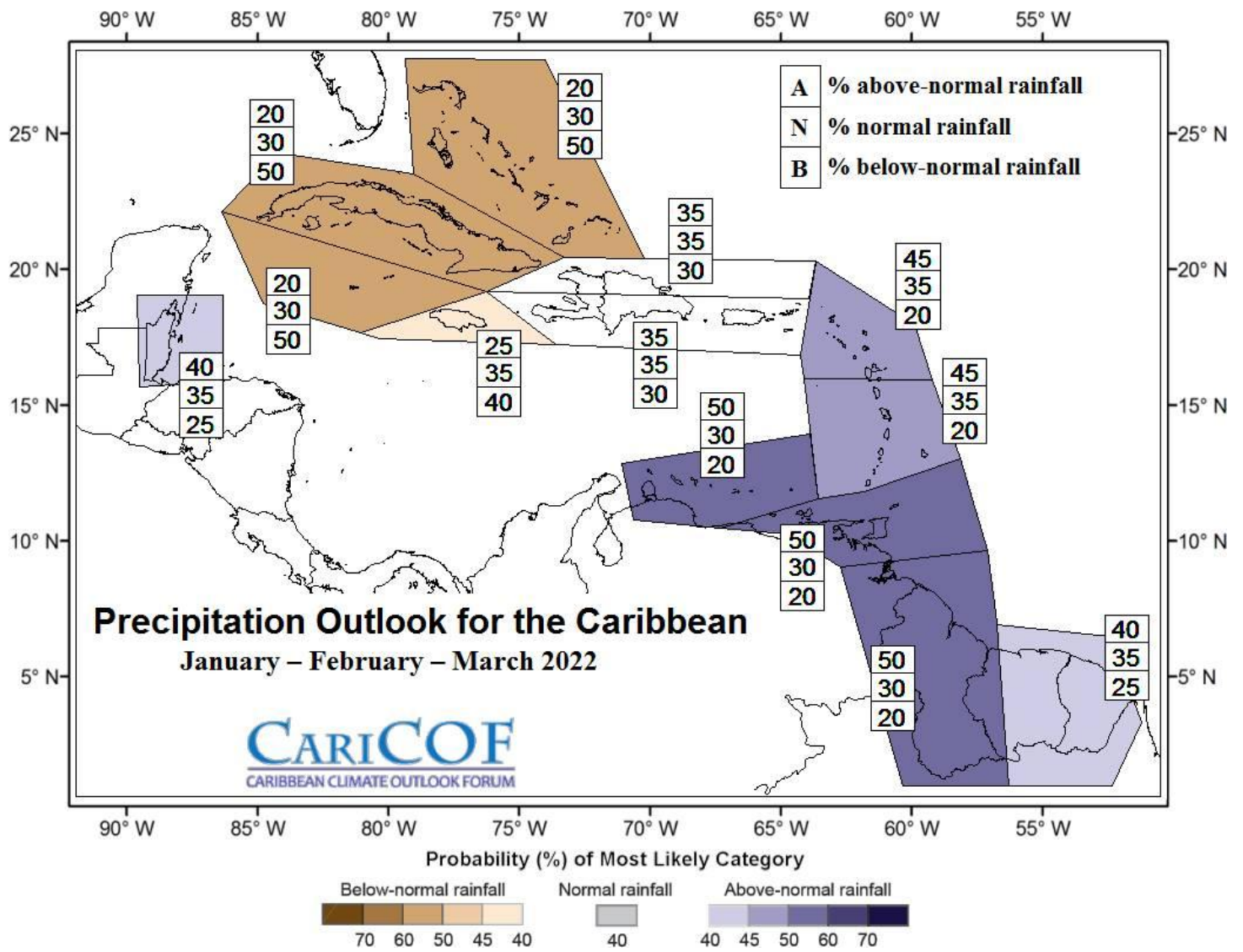


Figure 5. CariCOF 3-month temperature forecast

	Total Monthly Rainfall	Monthly departure from normal rainfall	Year-To-Date departure from normal rainfall.
JSJ	5.67"	0.82"	-9.03"**
IST	1.41"	-1.52"	-12.47"*
ISX	1.18"	-2.07"	-15.55"

Table 1. Rainfall highlights for the local international airports.

*The official total rainfall for IST is missing 7 days of rainfall data in the month of February due to equipment problems.

The Doppler radar estimated **1.39"** of rain during that 7-day period.

**The official total rainfall for JSJ has 10 days of data used by its backup site, San Juan WFO, which is 1.25 miles east of JSJ.

	Highest Daily Max Temp (°F)	Lowest Daily Min Temp (°F)	Monthly Mean Temp (°F)	Monthly departure from normal Mean Temp (°F)
JSJ	89 – Dec 2 nd	71 – Dec 21 st	79.8	1.0
IST	89 – Dec 8 th *	71 – Dec 21 st	80.4	0.3
ISX	91 – Dec 8 th	70 – Dec 21 st	81.0	2.2

Table 2. Temperature (°F) highlights for the local international airports.

*Date of last occurrence. This temperature was observed in more than one day.

	Records Set or Tied This Month	Previous Record and Year
JSJ	-No Records-	-No Records-
IST	-No Records-	-No Records-
ISX	<p>90 - Dec 1st</p> <p>90 - Dec 2nd</p> <p>89 - Dec 3rd</p> <p>90 - Dec 4th</p> <p>90 - Dec 5th</p> <p>91 - Dec 8th</p> <p>89 - Dec 9th</p> <p>89 - Dec 11th</p> <p>89 - Dec 15th</p> <p>89 - Dec 17th</p> <p>88 - Dec 30th</p>	<p>89 - 1995</p> <p>89 - 1985</p> <p>89 - 2002</p> <p>89 - 1972</p> <p>89 - 1972</p> <p>88 - 2019</p> <p>88 - 2018</p> <p>88 - 2009</p> <p>89 - 2012</p> <p>88 - 2019</p> <p>88 - 1998</p>

Table 3. Maximum daily temperature (°F) records set or tied in December 2021.