

Dry Season 2021-22

CariCOF Caribbean Climate Outlooks

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Participating countries and territories

Antigua & Barbuda, Aruba, Bahamas, Barbados, Belize, Cayman Islands, Cuba, Curaçao, Dominica, Dominican Republic, French Guiana, Grenada, Guadeloupe, Guyana, Haïti, Jamaica, Martinique, Puerto Rico, St. Barth's, St. Kitts & Nevis, St. Lucia, St. Maarten/St. Martin, St. Vincent & the Grenadines, Suriname, Trinidad & Tobago and the US Virgin Islands



Key Messages

1. Recently:

- **Excessive rains** in the Guianas and parts of Trinidad. Strong **heat stress** in September. **Moderate or worse drought** in parts of the Bahamas, Cuba, Dominican Republic, Guadeloupe, Martinique and St. Barth's. **Past 5 weeks particularly dry** in most of the Antilles (except Cuba).

2. The 2021-22 Dry Season Outlook:

- *December to February:* (early dry season) Slow **decrease in rainfall, wet days & wet spells** / **increase in dry spells, no heatwaves.**
- *March to May:* (late dry season) **Drought** possible in many islands and Belize, frequent **dry spells, heat stress** from April/May, **flooding rains** more likely from April/May.
- **Potential for flooding/flash floods and related hazards:** still moderate in December in the Caribbean Islands and Belize, high until early-February in the Guianas; high in May in the Guianas, becoming moderate in April (Greater Antilles) or May (elsewhere).

3. Prepare for: Drought (though unlikely extreme), floods and cascading hazards, heat stress in humans and in animals from April or May.

What to expect in coming months?

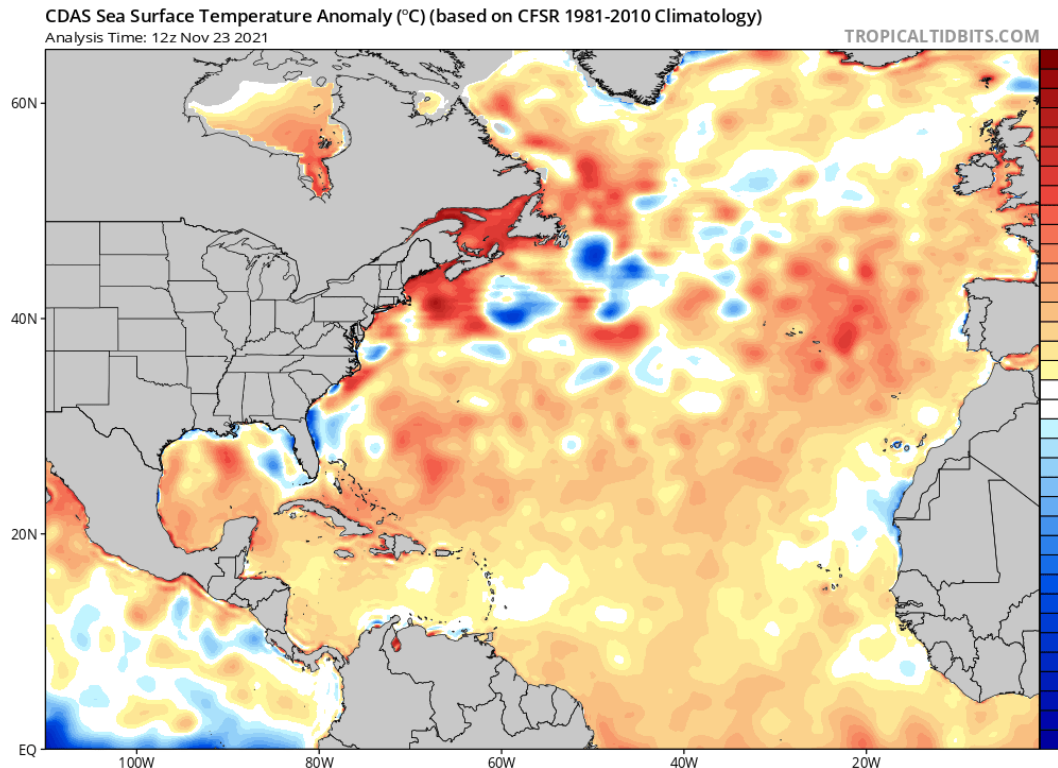
Will it look any different this year?



Any factors driving different climate conditions this year?

Persistent, unusually warm sea surface temperatures in western Caribbean Sea & North Atlantic

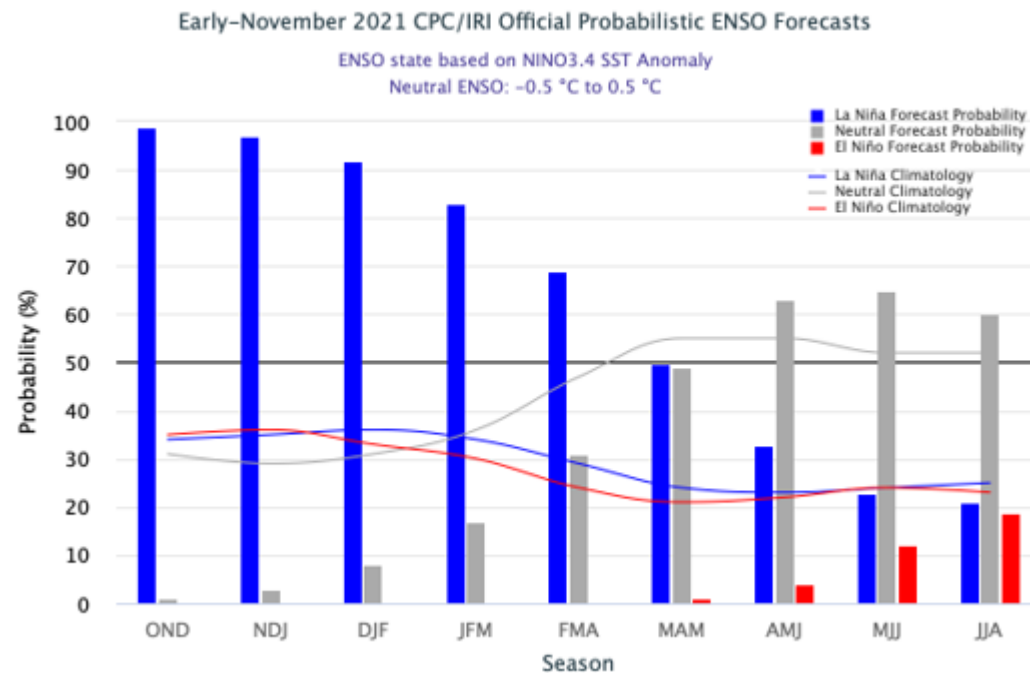
➔ boosts humidity, rainfall and air temperature, but reduces chance of drought and frequent dry spells.



Observations of late November SST anomalies (source: NOAA/NCEP)

Return to La Niña for the second consecutive year.

➔ boosts rainfall (except in the northern Caribbean), but tempers heat and reduces chance of drought and frequent dry spells.



El Niño/La Niña: Recent Evolution, Current Status and Predictions (Source: NOAA CPC / IRI)

How wet will the next three to six months be?

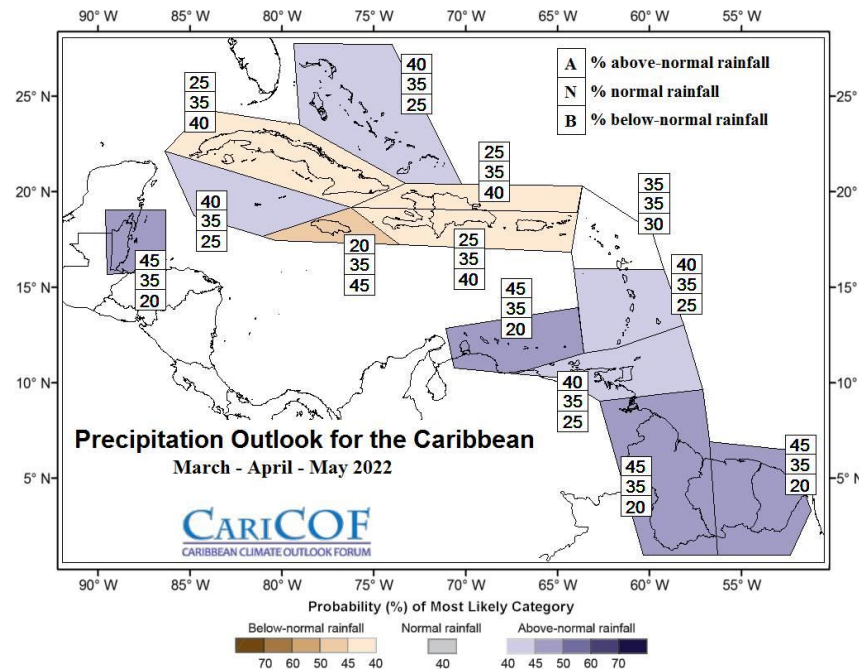
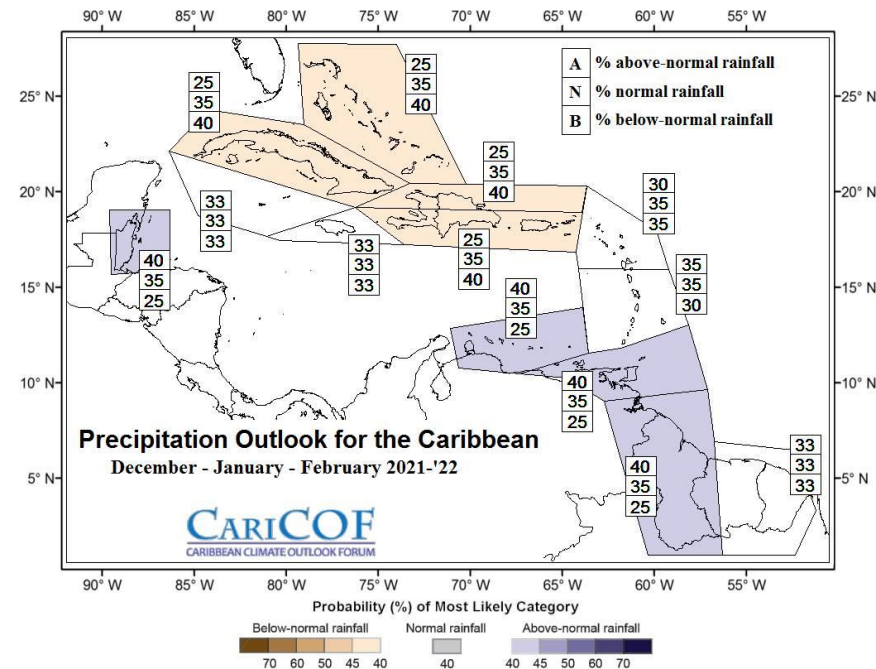
December 2021 to February 2022

March to May 2022

FORECAST:

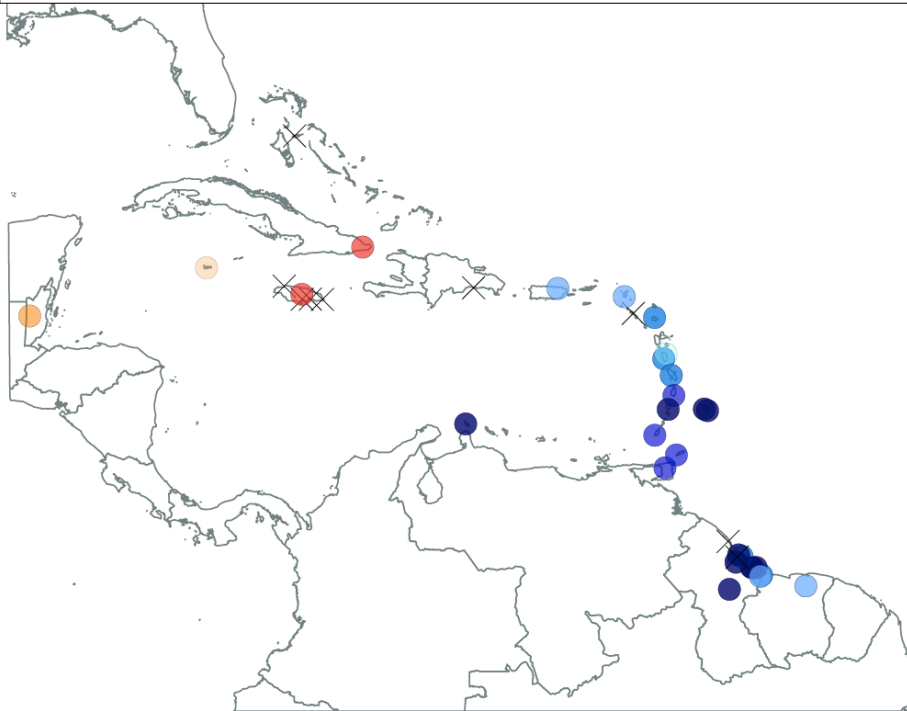
1. December to February at least as wet as usual in ABC Is., Belize, western parts of the Guianas, Trinidad & Tobago, but possibly drier than usual in the Bahamas, Cuba, Hispaniola and US Territories.

2. March to May 2022 possibly even drier than usual in the Greater Antilles (except Cayman Is.), but wetter than usual in most other areas.



Flood potential from increasingly frequent spells of heavy rainfall

December 2020 to February 2021
Frequency of very wet spells



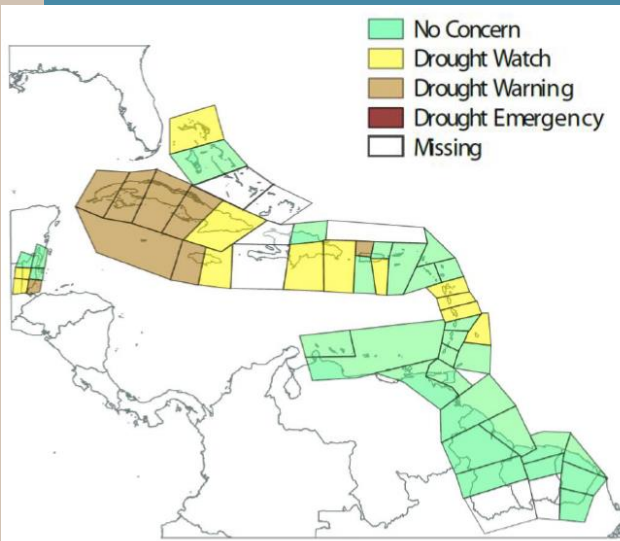
What usually happens from Dec. to Feb.?

- **Wet spells:** 1 to 3 in most places (ABC Islands: 2 to 6; Guianas: 1 to 5), with up to 1 or 2 ending up very wet (ABC Islands & Guianas: up to 3).
- **Floods:** typically, 2 significant floods in the Guianas; 1 significant flood event during December in some years in other areas.

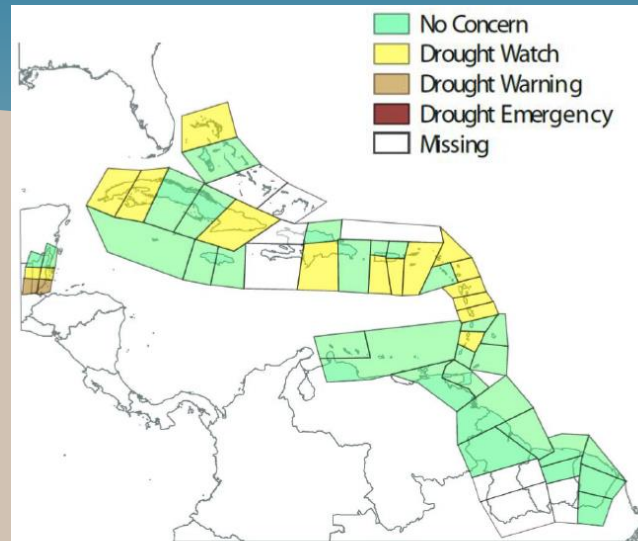
Forecast and Implications:

- **The potential for flash floods, long-term flooding and cascading hazards** is expected to be moderate to high in the Caribbean Islands and Belize until December, and particularly high in the coastal Guianas until early-February.
- **Potentially slower depletion** of large water reservoirs and soil moisture in most of the region.
- The frequency of showers should slowly decrease from December to February, leading to a **slow increase in wildfire potential**.

Drought concerns in the Caribbean?



Short-term drought alert levels
at the end of February 2022



Long-term drought alert levels
at the end of May 2022

Suggested drought alert & action levels

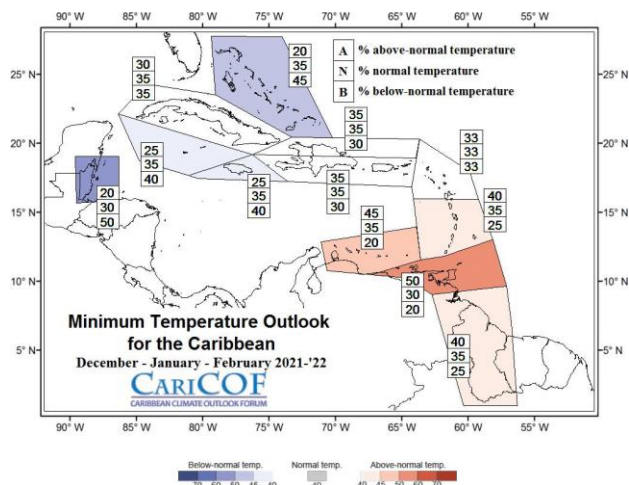
ALERT LEVEL	MEANING	ACTION LEVEL
NO CONCERN	No drought concern	<ul style="list-style-type: none"> ✓ monitor resources ✓ update and ratify management plans ✓ public awareness campaigns ✓ upgrade infrastructure
DROUGHT WATCH	Drought possible	<ul style="list-style-type: none"> ✓ keep updated ✓ protect resources and conserve water ✓ implement management plans ✓ response training ✓ monitor and repair infrastructure
DROUGHT WARNING	Drought evolving	<ul style="list-style-type: none"> ✓ protect resources ✓ conserve and recycle water ✓ implement management plans ✓ release public service announcements ✓ last minute infrastructural repairs and upgrades ✓ report impacts
DROUGHT EMERGENCY	Drought of immediate concern	<ul style="list-style-type: none"> ✓ release public service announcements ✓ implement management and response plans ✓ enforce water restrictions and recycling ✓ enforce resource protection ✓ repair infrastructure ✓ report impacts

IMPLICATIONS:

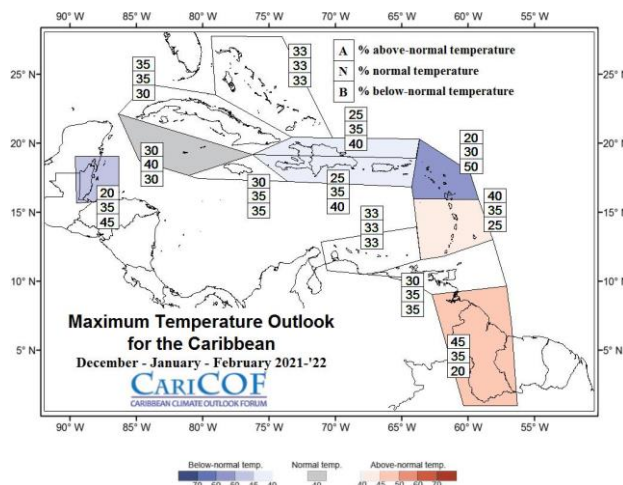
- Agricultural impacts of drought are likely in the Cayman Is., Cuba, southeast Belize and northwest Puerto Rico and possible in many other islands.
- Depletion of groundwater and other large reservoirs can potentially pose a concern in Belize, and in many islands.

How hot will the next three to six months be?

Night time



Day time

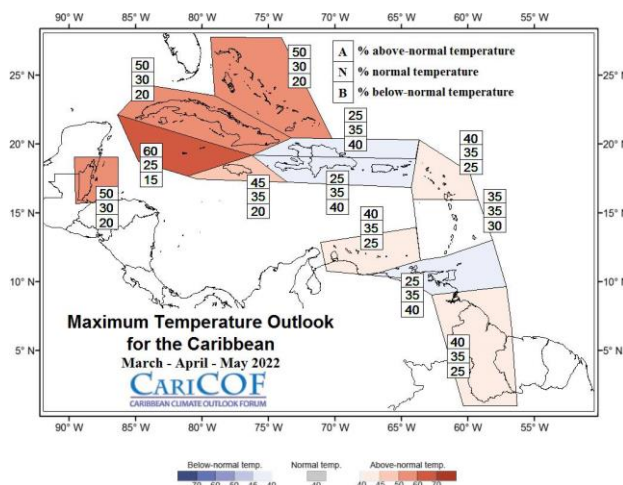
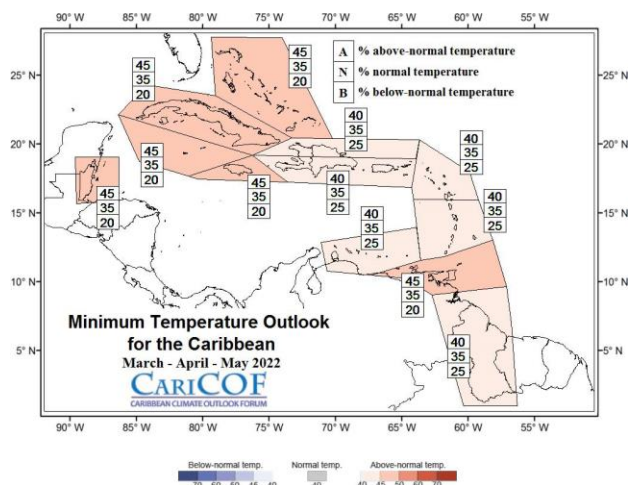


FORECAST:

1. Comfortably cool conditions from December to March.
2. Temperatures becoming uncomfortably high during heatwaves from April or May onwards.
3. April and May potentially very hot in Belize and Cuba.

IMPLICATIONS:

- Little to no heat discomfort until March.
- Heat stress in the vulnerable population & small livestock from April (Belize, Cuba & Trinidad) or May (elsewhere).
- Cooling need may be increased from April onwards, particularly in the northwestern Caribbean.



Milder

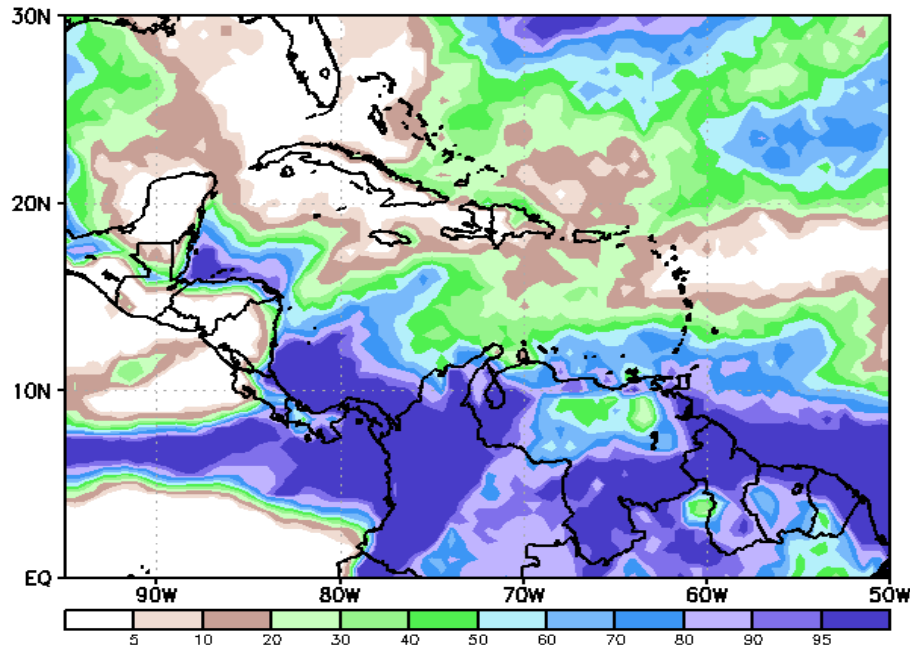
Usual

Hotter

Week-1 exceedance precipitation probability

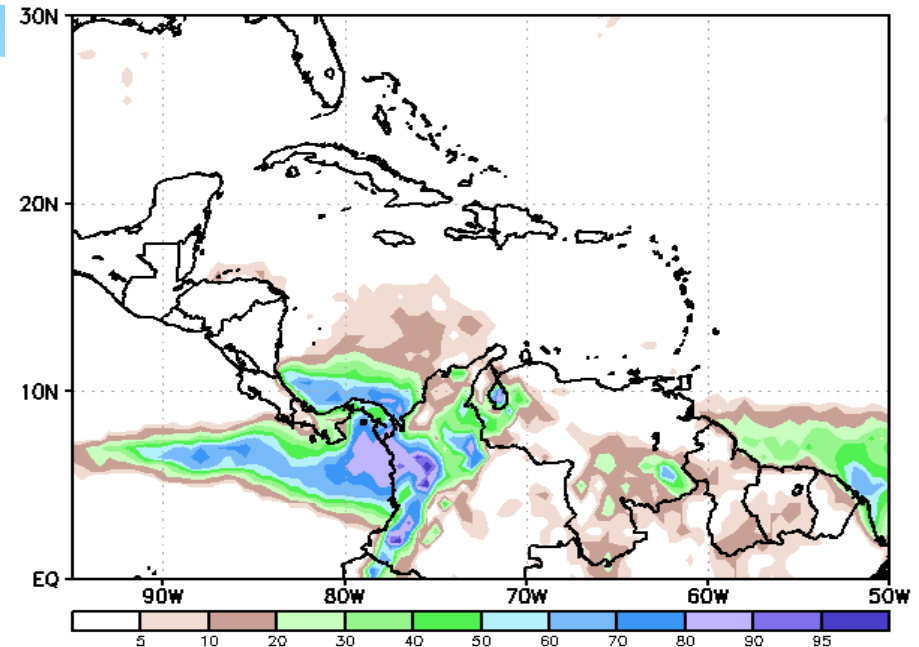
Period of validity: 24 – 30 November 2021

Probability for at least 25 mm rain



Most of the Antilles, the interior of Belize, and the Bahamas forecast to be quite dry

Probability for at least 100 mm rain



Some flood potential in the coastal Guianas

<http://usregionalclimatecenter.noaa.gov/>

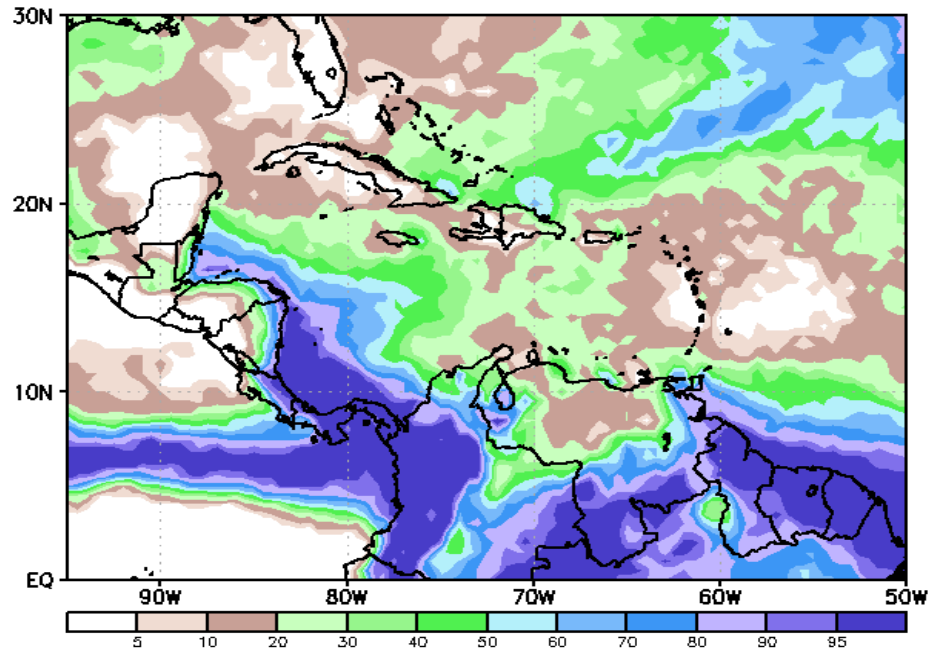


CARICOF
CARIBBEAN CLIMATE OUTLOOK FORUM

Week-1 exceedance precipitation probability

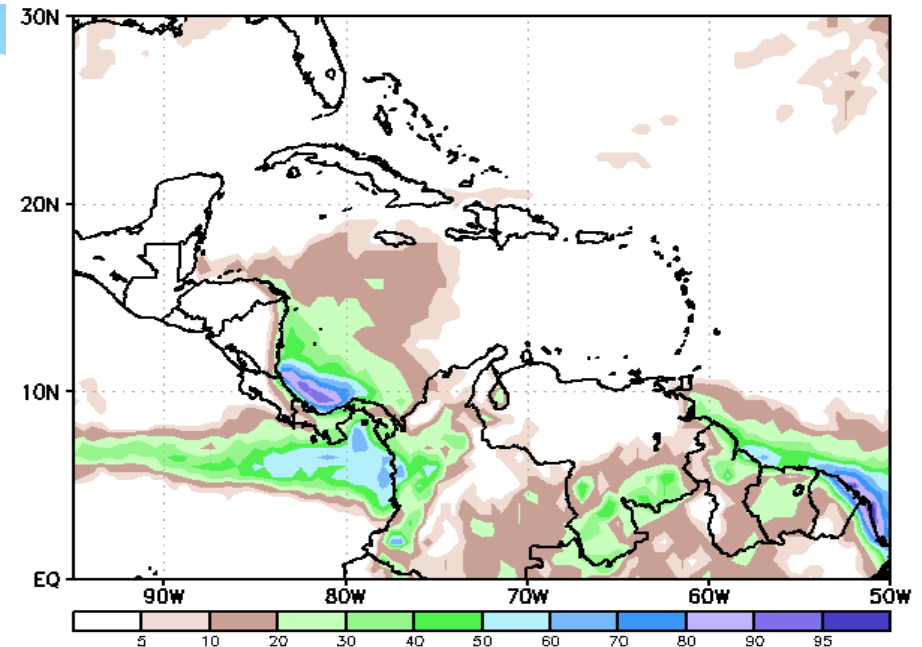
Period of validity: 1 – 7 December 2021

Probability for at least 25 mm rain



Most of the Antilles, the interior of Belize, and the Bahamas forecast to be dry

Probability for at least 100 mm rain



High flood potential in coastal French Guiana, some potential in northern Guyana and Suriname

<http://usregionalclimatecenter.noaa.gov/>





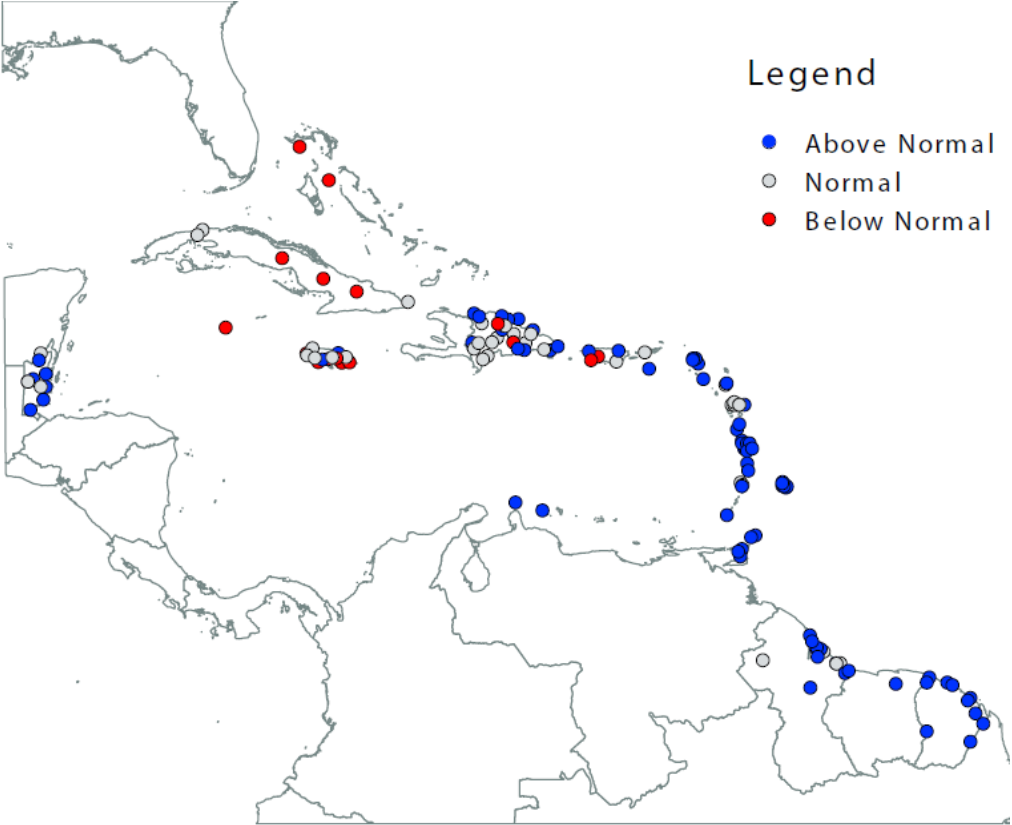
How trustworthy are the forecasts?

How good are they?

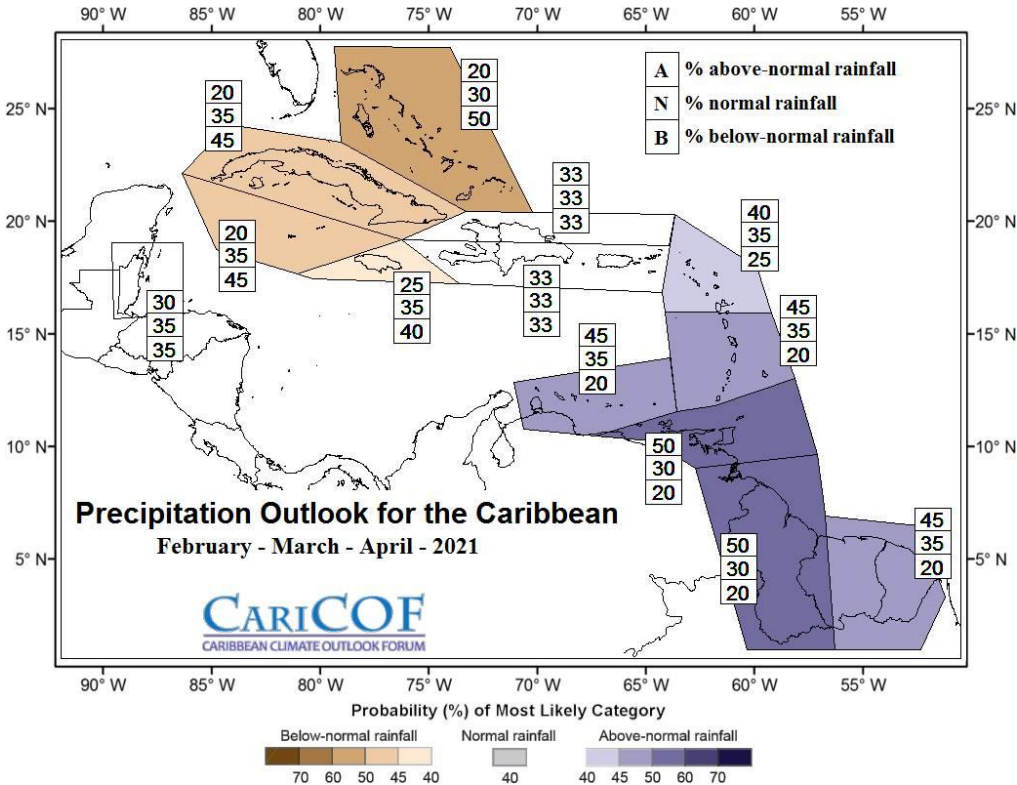
HOW GOOD ARE THE FORECASTS?

1. Rainfall during Feb.-Mar.-Apr. 2021

Observed rainfall category



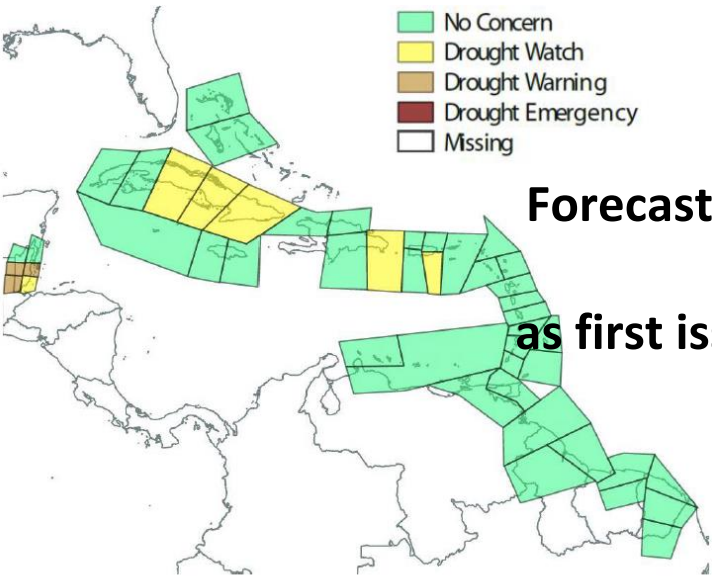
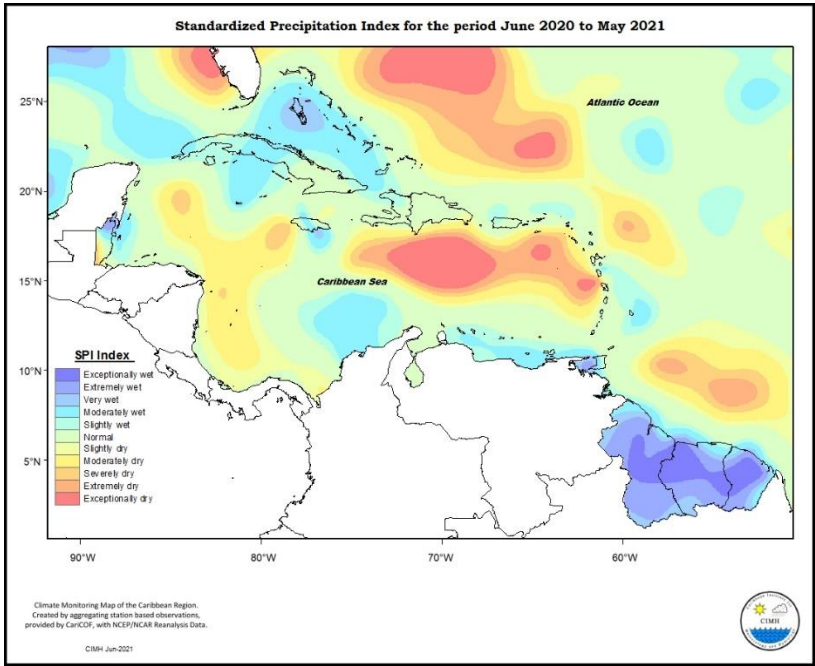
Forecasted temperature probabilities by category



HOW GOOD ARE THE FORECASTS?

2. Long term drought situation by the end of May 2021

Observed drought in orange and red

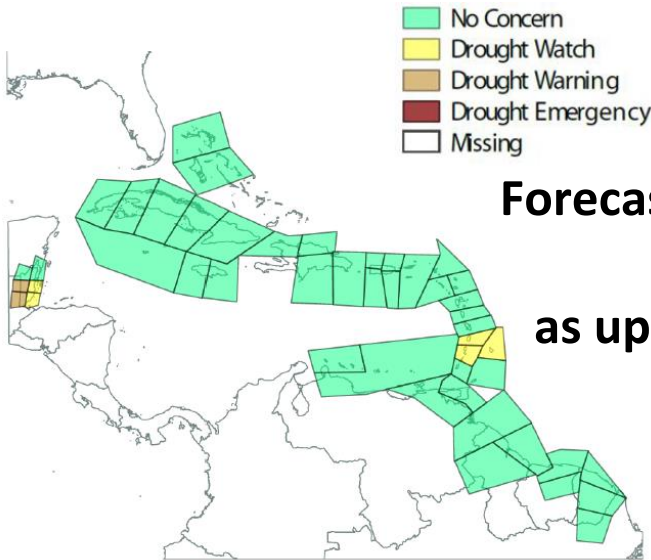


Forecasted drought alert levels

as first issued in November 2020

Suggested alert levels for long term drought at the end of May 2021

(updated November 2020 – covering June 2020 to May 2021)



Forecasted drought alert levels

as updated in February 2021

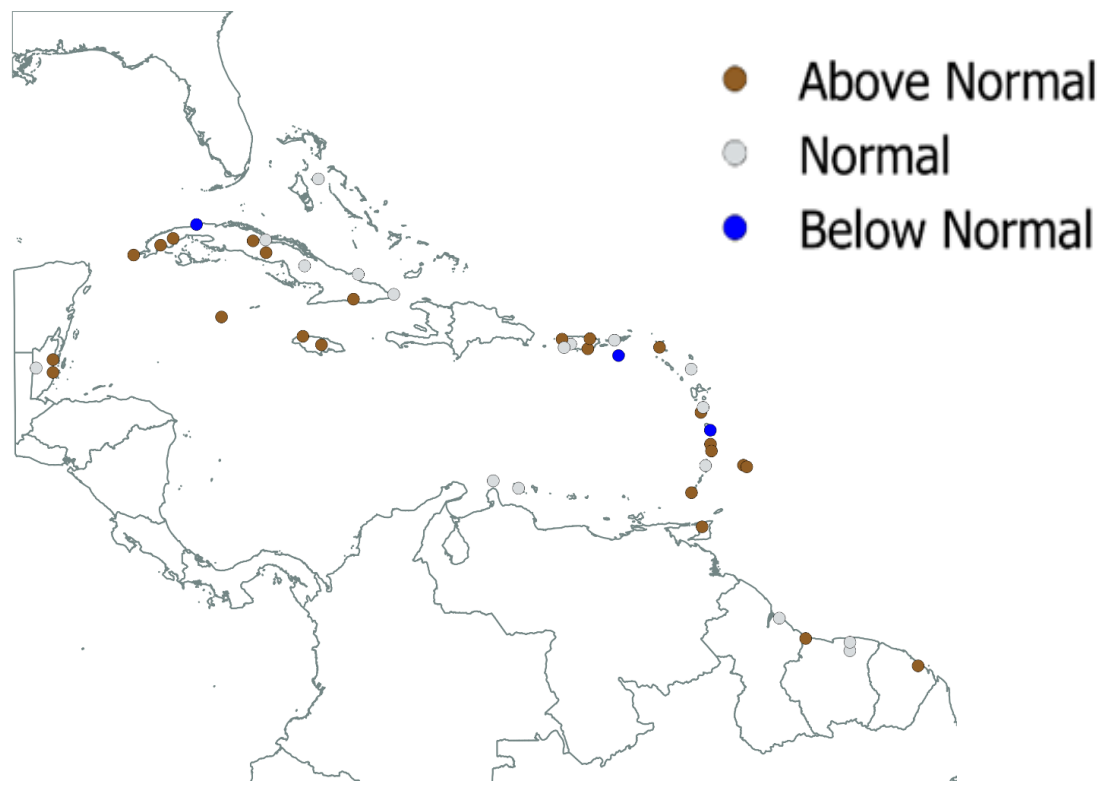
Long term drought alert levels by the end of May 2021

(updated January 2020 – covering June 2020 to May 2021)

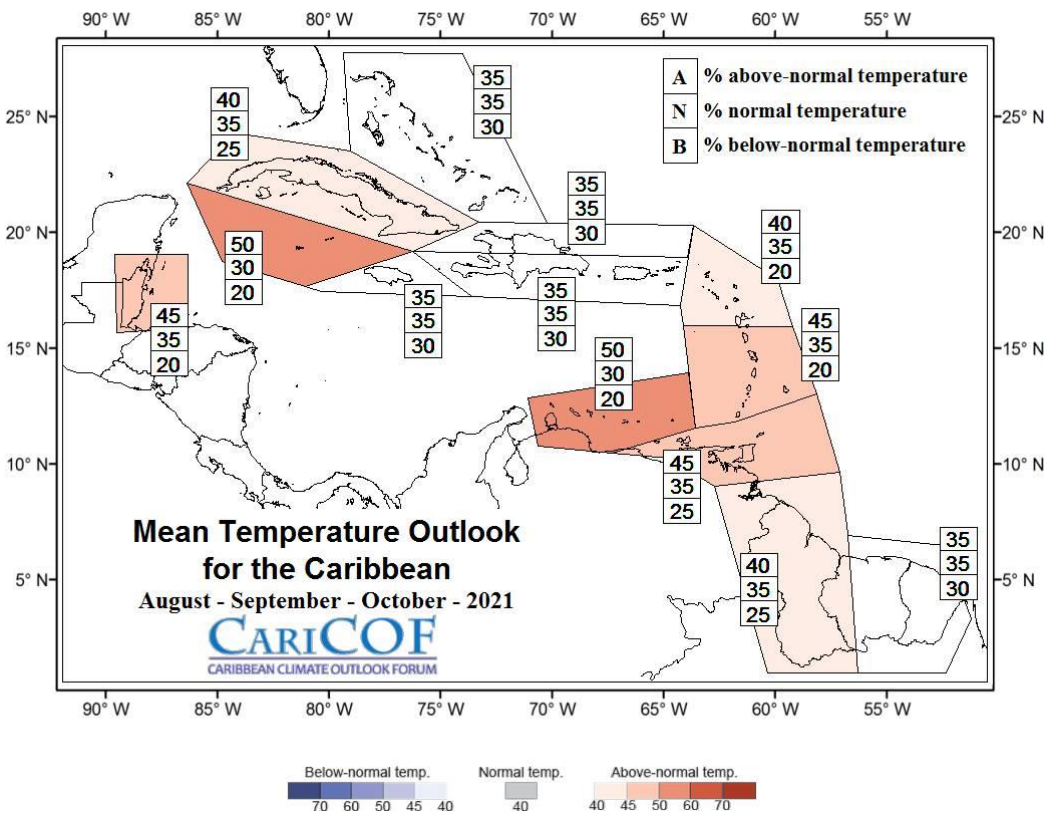
HOW GOOD ARE THE FORECASTS?

3. Temperatures during Aug.-Sep.-Oct. 2021

Observed temperature category



Forecasted temperature probabilities by category





The Climate Outlooks in **summary**

December 2021 – January - February 2022

- * **Slower than usual decrease in rainfall and wet days towards the end of February**
→ **slower than usual decrease in surface and soil moisture.**
- * **Flash flood and long-term flooding potential decreasing from *moderate to high* in December to *marginal* by February in the islands and Belize, but *particularly high* until early-February in the Guianas.**
- * Flood potential *high* in the week of 1-7 December in coastal French Guiana.
- * **Drought concerns arising in (parts of) many islands and in parts of Belize.**
- * **Frequent dry spells expected westward of Puerto Rico throughout the season, but only from February in other areas.**
- * Growing rainfall deficits until at least 7 December in most islands and the interior of Belize.
- * **No heat discomfort during this period marking the cool season.**
- * **Some cold nights expected, particularly in Belize and at higher elevations elsewhere.**

* Stay tuned as we update the information each month on rcc.cimh.edu.bb!!

March – April - May 2022

- * **Long-term Drought** concerns arising in southern Belize, and possibly in some of the islands of The Bahamas and in many islands along the Antilles.
- * **Annual peak in frequency of dry spells** in the Caribbean Islands and Belize and some dry spells in the Guianas until April.
- * **Shower frequency** relatively low during the second half of the dry season.
- * Rainfall intensity when it does rain to likely increase towards May.
- * **Flash flood and long-term flooding potential** *limited* in March but *increasing* from April in the Greater Antilles, and May in Belize, the Guianas and the Lesser Antilles.
- * **Heat stress** in the vulnerable population & small livestock from April (Belize, Cuba & Trinidad) or May (elsewhere).
- * *Stay tuned as we update the information each month on **rcc.cimh.edu.bb!!***




Keep yourself updated

- **Make your national Meteorological Services your go-to partner for local climate information**
- The Caribbean Regional Climate Centre provides additional regional information

Keep yourself updated

Our bulletins aim to offer more digestible overviews:



Caribbean Climate Outlook Newsletter

December 2017 to February 2018

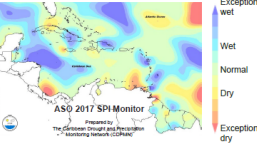
BRIEF SUMMARY: August 2017 to February 2018

August to October 2017: Major hurricane activity has been record high in the Caribbean during September of the wet/hurricane season. This led to destructive wind, extreme wet spell related flash floods and inundations in at least 10 territories. The hottest feel-like temperatures of 2017 in Haiti, Lesser Antilles and Guianas were recorded between August and October, which resulted in heatwaves and heat stress among the vulnerable.

December 2017 to February 2018: With the exception of southern Haiti and, possibly, parts of The Bahamas and western Cuba, drought or excessive dryness is not forecast to be a major concern in the C'bean during this relatively cool period, marking the early dry season in the islands. The short wet season in the Guianas is likely to be wetter than usual, with reliable rains, but also flash flood and long-term flooding concern.

LOOKING BACK:

August-September-October 2017 (ASO)



Observations

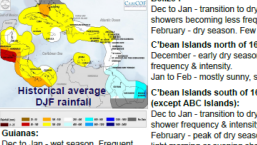
- **RAINFALL:** ASO: SW Guyana, E Puerto Rico very dry; Barbados, N & S Belize, E Tobago, E Trinidad very wet. September: Central Belize, W Jamaica very dry; Barbados, E Cuba, Dominica, Dominican Rep., Guadeloupe, W Guyana, central Jamaica, St. Kitts and S Suriname very wet. August: French Guiana very dry, SE Puerto Rico, Tobago very wet.
- **TEMPERATURES:** ASO: warmer than average, especially in central Bahamas & SW Trinidad (<1.2°C above avg.), slightly cooler than average in Antigua and parts of the Grenadines.

Notable Climate Records:

- **WET:** ASO: 3 locations in Dom. Rep. (180-230% of avg.), 1 in Guadeloupe (175% of avg.), 1 in Trinidad (100% of avg.). October: 1 location in Belize, 2 in Trinidad.
- **DRY:** October: 1 location in Dom. Rep.
- **HOT:** ASO: 1 location in The Bahamas, 1 in Dominica, 2 in Guyana, 1 in Martinique recorded their highest minimum temperatures; 1 location in The Bahamas, 2 in Guyana, 1 in St. Lucia their highest mean; 1 location in Guyana, 1 in Haiti, 1 in Trinidad their highest maximum.

WHAT NEXT?

Rainfall patterns December-January-February (DJF)



Historical average DJF rainfall

Guianas: Dec to Jan - wet season. Frequent, heavy showers. February - dry season. Heavy showers on some days.

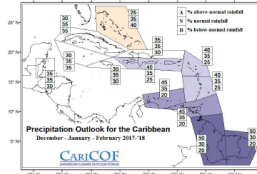
Belize: Dec to Jan - transition to dry season. Heavy showers becoming less frequent. February - dry season. Few heavy showers.

C'bean islands north of 16°N: December - early dry season. Decreasing shower frequency & intensity. Jan to Feb - mostly sunny, some days with showers.

C'bean islands south of 16°N (except ABC islands): Dec to Jan - transition to dry season. Decreasing shower frequency & intensity. February - peak of dry season. Often sunny, mostly light morning or evening showers on some days.

ABC Islands: transition from dry to season in Feb. Frequent heavy showers December in most years.

DJF 2017-'18 Rainfall Outlook



Precipitation Outlook for the Caribbean November - January - February 2017-18

Confidence (in %) for rainfall to be:

Below-normal	Normal	Above-normal
>70 60 50 45 40	>40	40 45 50 60 >70

DJF rainfall is likely to be above-normal in the Guianas, S Hispaniola, Lesser Antilles and US Caribbean territories, but below-normal in the Bahamas. White areas indicate where the forecast indicates little information on total rainfall.

NOVEMBER 2017 find out more by using the clickable images and headings or visit ccc.cimh.edu.bb e-mail cari-cof@cimh.edu.bb


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NOVEMBER 2017 VOL II | ISSUE X NOV 2017 - FEB 2018


Announcement

BLEACHING ALERT LEVEL 1 ISSUED FOR THE CARIBBEAN IN 1-4 WEEKS. WORST BLEACHING EVENT IN HONDURAS. COOLING IN WESTERN CARIBBEAN


REPORT CORAL BLEACHING OBSERVATIONS



A GUIDE TO ASSESSING CORAL REEF RESILIENCE



NOAA CORAL REEF WATCH RELEASES ENHANCED THERMAL HISTORY PRODUCT SUITE



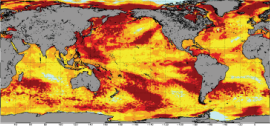
CARIBBEAN CORAL REEF WATCH

Notable Observations

- There is cooling in the Western Caribbean but Eastern, and especially Southern Caribbean still warming. Expected to continue through November.
- Worst coral bleaching event ever, ongoing in Honduras.
- Bleaching Alert Level 2 issued for ABC islands, Panama, and Colombia. Remainder of the Caribbean under bleaching watch.

Current Global Conditions

- Guam experienced its worst bleaching event in 5 years with severe and widespread bleaching for the 4th time in 5 years
- Bleaching Alert Level 2 issued for E. FSM (Micronesia).
- West Papua, N. Java, and some of the Coral Triangle under bleaching warnings.



CARIBBEAN CORAL REEF WATCH

Alert Level Guide

Alert Level	Interpretation
No Stress	No Thermal Stress
Watch	Low-level thermal stress
Warning	Thermal stress is accumulating
Alert level 1	Bleaching expected
Alert level 2	Widespread bleaching and some mortality expected

CARIBBEAN DROUGHT BULLETIN

October 2017 | Volume IV | ISSUE 5

Announcement

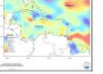
Recent and forecasted conditions suggest some concern over short and long term drought over the north and central Bahamas (particularly central), from November 2017 into early 2018. Conditions over Haiti should also be monitored. There is little concern about drought over the remainder of the Caribbean.

Month at a Glance

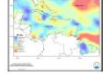
Normal to above normal rainfall was experienced over the islands of the eastern Caribbean for September 2017. Trinidad, Tobago, St. Vincent, and St. Lucia were normal. Grenada slightly wet; Barbados very to extremely wet from south to north; Martinique slight to moderately wet; Dominica and Guadeloupe exceptionally wet; Antigua moderately wet; and St. Kitts very wet. Conditions in the Guianas ranged from moderately dry in the north to extremely wet in southern Suriname and western Guyana. Aruba and Curacao were normal. Conditions in Hispaniola ranged from slight to moderately dry in southern Haiti to exceptionally wet in the west of the Dominican Republic, while Jamaica ranged from extremely wet in central areas to severely dry in the west. Grand Cayman was normal. Western Cuba was slightly dry to slightly wet, and eastern areas normal to exceptionally wet. Belize ranged from exceptionally dry in central areas to moderately dry in the south and moderately wet in the north.

July-August-September

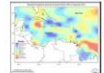
Apart from Trinidad that was slightly wet to moderately dry, the islands of the eastern Caribbean experienced normal to above normal rainfall for the three month period. Tobago, Grenada, St. Vincent, St. Lucia and Martinique were normal; Barbados and Dominica moderate to extremely wet; Guadeloupe extreme to exceptionally wet; Antigua slightly wet, and St. Kitts very wet. Conditions in the Guianas ranged from moderately dry to exceptionally wet in central areas of Guyana to the west into western Suriname. Both Aruba and Curacao were normal. Conditions in Hispaniola ranged from normal in the southwest to exceptionally wet northern Dominican Republic, while Jamaica was moderately wet in central areas to extremely dry in the west. Grand Cayman was normal. Western Cuba was slightly dry to slightly wet, and eastern areas normal to exceptionally wet. In Belize, conditions ranged from exceptionally dry in central areas to normal to the north and south.



JUL - SEP 2017 SPI 3 MONTHS



APR - SEP 2017 SPI 6 MONTHS



OCT 2016 - SEP 2017 SPI 14 MONTHS

Please note that this and future bulletins will feature climate forecast information for the subsequent month. Previous issues would have featured climate forecasts for the same month of issue.

Chapter on Caribbean drought in newly released publication. <https://www.crcpress.com/Drought-and-Water-Crisis-Integration-Science-Management-and-Policy/Second-Volume-Pulse/p/book/9781138035645>

Caribbean Drought Bulletin

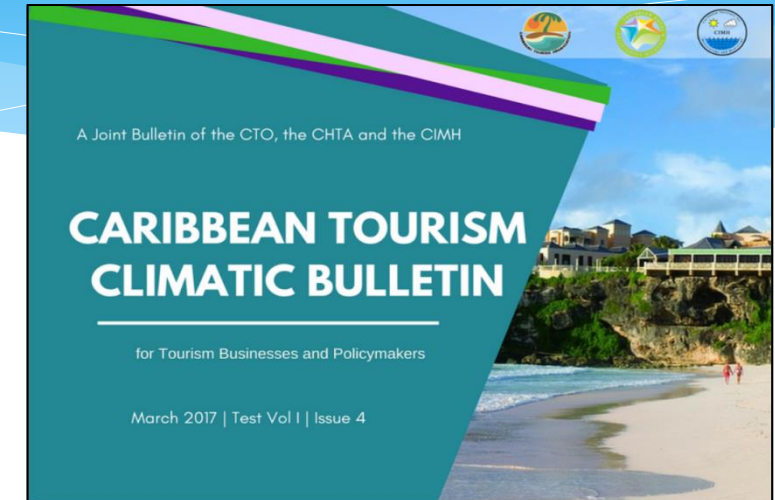
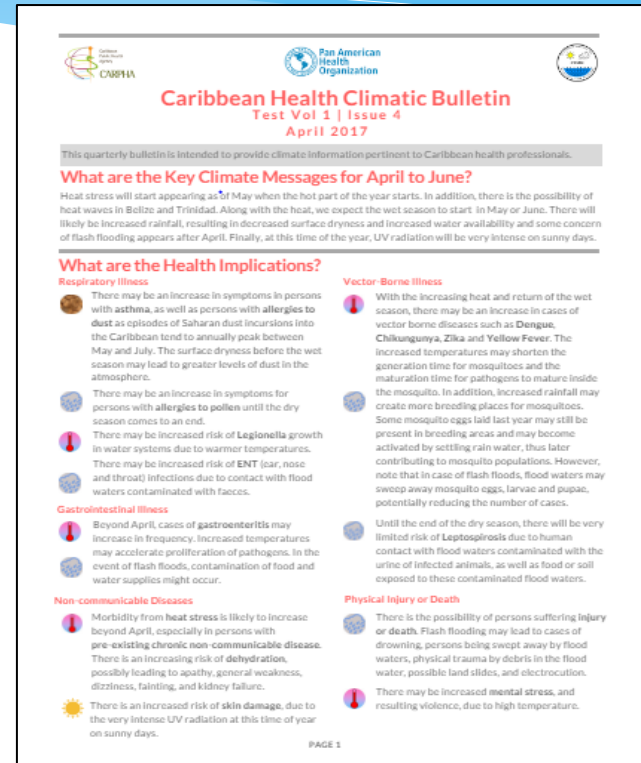
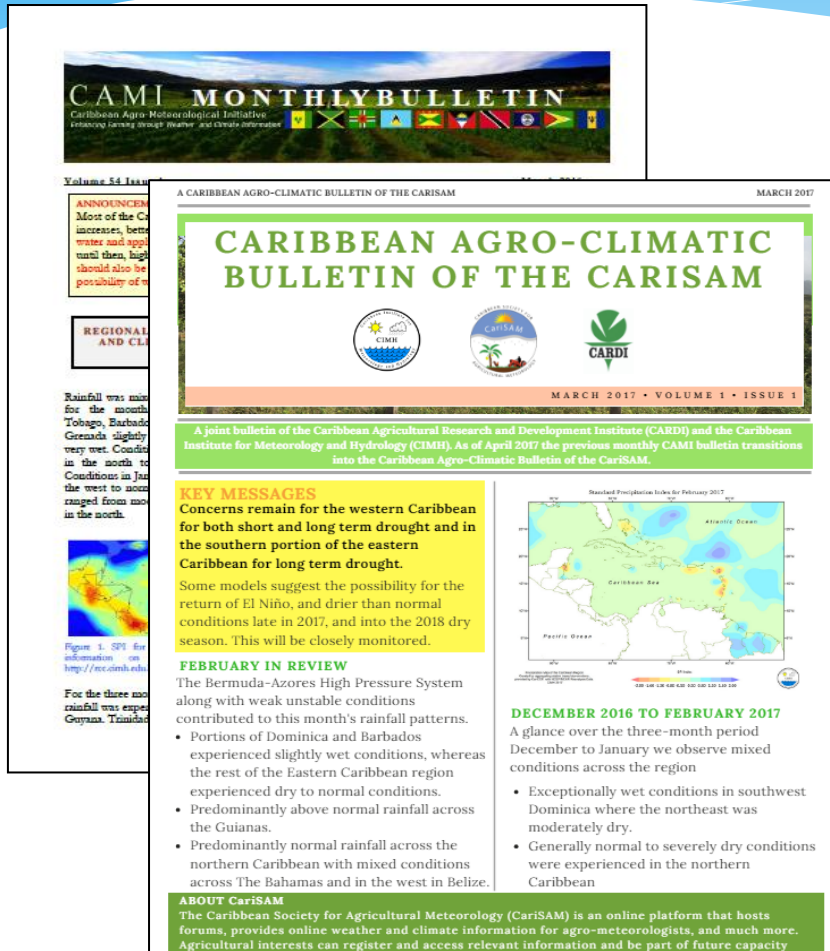
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Caribbean Coral Reef Watch
[Click here](#)

Caribbean Drought Bulletin
[Click here](#)

Keep yourself updated

Our bulletins aim to offer more digestible overviews:



Caribbean Tourism-Climatic Bulletin
(since 2017)

Caribbean Health-Climatic Bulletin
(since 2017)

Caribbean Agro-Climatic Bulletin of the CarisAM

**Regional climate data, information, tools,
experimental and operational products
are available at**

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