



Caribbean climate outlook



June - July - August 2013

CariCOF - The Caribbean Climate Outlook Forum

find out more at cimh.edu.bb/rcc and cimh.edu.bb/?p=precipoutlook or e-mail cmeerbeeck@cimh.edu.bb

FMA 2013

Dry across the Caribbean (until heavy April rains in Lesser Antilles)



Fair weather for tourists in high season



Water shortages through April (or March/mid-April in Lesser Antilles)

February - March - April 2013 in the Caribbean

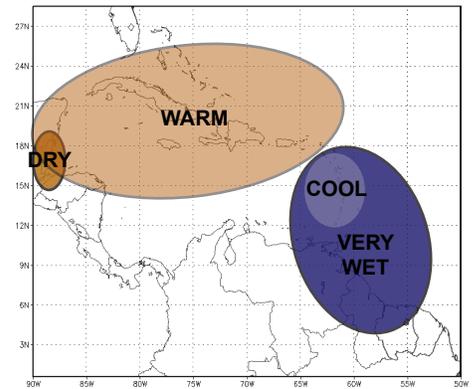
Weather in numbers

1. Antigua: February rainfall (10.7 mm) second lowest on record (1928 -2013).
2. Grenada: March rainfall of 3.6mm and 20 dry days made March one of the driest on record.
3. Trinidad and Tobago: February rainfall (6.1 mm) 3rd lowest on record since 1946, after 2010 (2.1 mm) and 1960 (4.9 mm).

Headline Impacts

- February and March generally dry across the region. Drought impacted many communities: unusual water shortages and high numbers of bush fires.
- Unusually heavy rainfall in many parts of the eastern Caribbean by late-March/April. Rains alleviated drought, but also led to floods. Significant flood impacts: 2 deaths in Dominica, millions TT\$ losses in Trinidad and Tobago and disruption of normal life in some neighbourhoods of Paramaribo, Suriname.

Weather in April 2013



June - July - August rainfall

Climatology

First half of Atlantic hurricane season usually sees:

1. Belize:

June marks onset wet season with frequent rain storms.

2. Northern Caribbean:

July and August usually less wet than remainder of the wet season, (so-called "mid-summer drought").

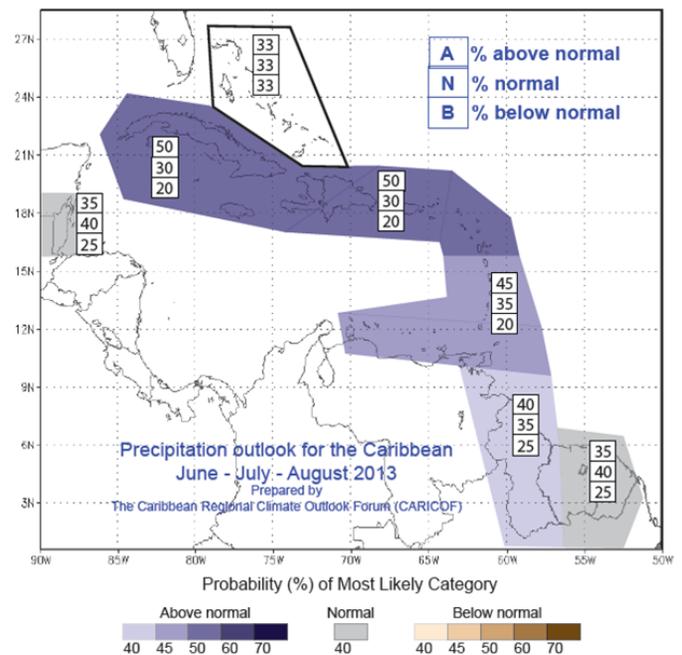
3. Eastern Caribbean:

Frequent heavy rainfall mostly brought about by African easterly waves, which may develop into tropical cyclones.

4. Guianas:

Frequent heavy rainfall storms. August usually marks end of primary wet season.

JJA 2013 Precipitation Outlook



<<< see outlook discussion on page 2 >>>

JJA outlook

Wet and mild across Antilles



Reduction in heat stress and drink / recreational water production



Enhanced risk of floods, pests and vector borne diseases

Climate outlook in detail

June - July - August precipitation outlook summary

Rainfall in the Caribbean during June-July-August shows a strong tendency (50% probability) to above normal across all of the Antilles. This inference can be made with relatively high confidence, given a convergence of all models to showing such trend. Other areas where normal to above normal rainfall is the predominant trend with in decreasing order of above normal probabilities are the western half of the Guianas, the eastern half and Belize. By comparison, models are confidently showing that little can be inferred on expected rainfall in the Bahamas. As the Antilles enter the wet season which coincides with the hurricane season, rainfall is mostly convective in origin, i.e. falling from storm clouds, whether or not inbedded in tropical cyclones. Two factors contribute to an above normal rainfall outlook for the Antilles.

1. Well above average North Atlantic tropical sea surface temperatures (SSTs), providing more heat and moisture - the primary fuel source for storms and cyclones.
2. Trade winds over the Atlantic Ocean are expected to be weaker than average. This allows storms to grow taller and more potent due to reduced vertical wind shear.

ENSO conditions

Eastern Pacific equatorial SST anomalies have recently hovered just below average (i.e. deviation of 0°C to -0.5°C). Most models tend to maintain fairly small anomalies (i.e. close to 0°C) in the coming months. Note that, as ENSO shows little signal, its impact on temperatures and rainfall in the Caribbean is low, if existent.

NAO conditions and the Atlantic Subtropical High

A particular negative phase of the North Atlantic Oscillation (NAO - a measure of the strength and size of the Subtropical High pressure cell over the Atlantic Ocean) has been reducing dry season rainfall to below normal. A subsequent northward shift of the High was noted in mid-April. This, in combination with a strong and persistent trough over the Windward Islands, has led to drought busting rains and some floods in the eastern Caribbean. Though NAO will likely remain negative, this prediction is not very confident. Nevertheless, a weaker and/or more northerly High should reduce trade wind speed. This will help sustain above average Atlantic SSTs and reduce vertical shearing of storms, thus enhancing the probability of strong disturbances and tropical cyclones as well as rain.

Caribbean Sea and Ambient Temperatures

Currently, the tropical North Atlantic shows SSTs that are about 0.5-1°C above average. Such conditions are expected to last into August. Consequently, more evaporation than usual may be expected, promoting rainfall across the Lesser Antilles.

The expected above normal rainfall across the Antilles should keep air temperatures at relatively mild below normal to normal levels.

Precipitation outlook - background

The Caribbean Climate Outlooks are prepared by the Caribbean Regional Climate Outlook Forum (CariCOF). The Caribbean Institute for Meteorology and Hydrology in its role as WMO RCC in demonstration phase coordinates the CariCOF process. Contributors to the outlooks are the Meteorological Services from the region.

The outlook is produced by combining objective input (climate model output) and subjective input (experience). Precipitation forecasts from the Climate Prediction Tool (CPT - a statistical model) in the form of probabilities of above-, near-, or below normal rainfall, are balanced with similar output from dynamical climate models, i.e. general circulation models. Both model types predict seasonal rainfall based on the latest observed climate state (e.g. tropical sea surface temperatures).

Currently output from climate models from the International Research Institute for Climate Prediction (IRI), the United Kingdom Met Office (UKMO), the European Centre for Medium-Range Weather Forecasts (ECMWF and EUROSIP), the WMO LRF-MME and the APCC outlooks are examined.

Precipitation probabilities are estimated for a number of sub-regions based on the model forecasts, the level of agreement between the different models, and a subjective confidence in the different predictions based on current conditions and a knowledge of the local climatic conditions. In addition, the probabilities provided by the various contributors are consulted to present a consistent forecast.

The precipitation outlook is issued in the form of a map of tercile probabilities showing regions having homogeneous forecast probabilities for below, near, and above normal precipitation. The terciles separate the possible outcomes into three categories (terciles) based on the historical precipitation record, with probabilities adding up to 100. The three terciles are:

- Above Normal - Wettest Third of the Record
- Near Normal - Middle Third of the Record
- Below Normal - Driest Third of the Record

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