Seasonal Diagnostics of Climate Events for the USRCC Region
April – June

(i) Temperature

During the April - June (AMJ) season, mean maximum temperatures did not deviate substantially from normal across the Caribbean. Only Hispaniola observed positive anomalies more than 1°C (Fig. 1). The rest of the islands were near normal. Minimum temperatures throughout the Lesser Antilles were close to normal while Hispaniola and Cuba registered above-average temperatures. Positive anomalies of 1-2°C were observed in Cuba (Fig. 2).

In Mexico, maximum temperatures were warmer than average in many places. Positive anomalies of 2-4°C were in patches along the center of the country (Fig. 1). A few states exhibited areas of below-average temperatures, including Baja California, Sonora, and Nuevo León. Maximum temperatures in Central America were also near to or warmer than average. The most abnormally warm location, with anomalies of 2-4°C, was the intersection of Guatemala, Honduras, and El Salvador.

Minimum temperatures were also above average in the majority of Mexico, where anomalies were largely 1-4°C (Fig. 2). The largest departures were in the northwest, where local portions of Baja California and Sonora states recorded anomalies of 4-6°C. In Central America, very warm mean minimum temperatures were observed in southern Guatemala, El Salvador, Honduras, and northwestern Nicaragua. Observed anomalies were 2-4°C. Cooler minimum temperatures were present in southern Nicaragua and western Costa Rica which observed negative anomalies of 1-4°C.

(ii) Precipitation

Many portions of the Caribbean received below-normal amounts of rain during the AMJ season, but Cuba and the Bahamas received above-average rains. The highest rainfall totals, 300mm and locally more than 500mm, were observed over Cuba, the Bahamas, and Haiti (Fig. 3). This resulted in seasonal surpluses of 100-300mm (Fig. 4). Large regions of 100mm or greater deficits were recorded over many other areas of the Caribbean, including Jamaica, the Dominican Republic, Puerto Rico, and some of the Windward Antilles. Many of the northern islands in the windward chain received less than 25mm of rainfall during the 3-month season.

Seasonal rainfall was greater than normal across eastern parts of Mexico where very heavy rainfall was recorded. Large areas received greater than 300mm and locally more than 500mm (Fig. 3). This led to large seasonal surpluses of more than 300mm (Fig. 4). lesser rains (100-300mm) were recorded to the west, where performance was generally near or below normal. Despite receiving moderate to heavy rains, a large swath covering Michoacán and Guerrero states observed rainfall deficits greater than 100mm. Central America received widespread heavy rainfall greater than 300mm in most areas. Localized areas within each country received greater than 750mm. This resulted in largely positive anomalies throughout Central America. Some localized areas, such as in eastern Honduras and Nicaragua, recorded deficits (Fig. 4). A portion of northeastern Panama recorded large deficits of more than 200mm.
(iii) Notable Events

A persistent 500mb ridge over the region during April brought dangerous heat to parts of Mexico, Central America, and the Caribbean. Record high temperatures have been set in several areas. For example, on April 11 temperatures reached 39.3°C in the town of Veguitas, Cuba, setting a new all-time temperature record for the nation. The persistent hot and dry weather caused a worsening of fire conditions in Central America, Southern Mexico, and Cuba.

The 2020 hurricane season is off to an active start. Tropical storm Arthur formed north of the Bahamas on May 17 from a tropical low that tracked northward along the western edge of the Bahamas. The system caused some gusty winds and heavy rains, though any damage was minimal. On May 31, tropical storm Amanda, moved ashore over Guatemala. It dropped torrential rainfall leading to many flash floods and landslides in Guatemala and El Salvador. 17 fatalities were reported. This system moved north and was renamed tropical storm Cristobal. It lashed Mexico’s Yucatan Peninsula with heavy rains for several days in early June. Rainfall amounting to 25% of annual totals in some places displaced many households and closed many roadways.

In Hispaniola, a poor rainy season to date led to developing abnormal dryness and drought during June. Rainfall accumulations less than 50% and even 25% percent of normal for the season have negatively impacted cropping activities and conditions on the ground in large swaths of southern and eastern Hispaniola (Fig. 5).

During mid-June, a large area of Saharan dust propagated across the Atlantic and affected the Caribbean. Although Saharan dust is common in the region, this was an unusually large and thick plume. Many Caribbean islands experienced poor visibility and air quality (Fig. 6).

(iv) Sea Surface Temperature and Circulation

ENSO-neutral conditions were present through the duration of the AMJ season according to NOAA’s Climate Prediction Center. A transition in equatorial East Pacific SST from positive anomalies to negative anomalies was observed during the season. Meanwhile, SST near the dateline in the Central Pacific cooled slightly but remained above average. The Niño3.4 index started April at +0.6°C and dropped rapidly through April and May to hit a low of -0.6°C. The index ended June a little warmer at -0.1°C. ENSO-neutral conditions are favored to persist through the Northern Hemisphere summer, with La Niña development slightly favored (~50-55% chance) through autumn.

Narrowing the focus to the local region, above-normal SST were present throughout the Caribbean, Gulf of Mexico, and a large swath of the Atlantic during the AMJ season. SST anomalies were 0.5-1.0°C throughout the Caribbean and 1.0-1.5°C in the western Gulf of Mexico, around Cuba, and north of the Lesser Antilles (Fig. 7). SST was generally near or slightly warmer than normal in the East Pacific.

The circulation pattern at 850mb during AMJ featured an anticyclonic anomaly centered over Panama (Fig. 8). Southwesterly wind anomalies were present over most of Central America and southern Mexico, while northeasterly anomalies were present over northern Mexico. Very little lower-level anomaly was observed across the Caribbean.

For more information, visit:
http://www.cpc.ncep.noaa.gov/products/international/usrcc/carib_cm.shtml
At 200mb, a large and strongly anomalous anticyclonic circulation was centered over the Bahamas and covered much of the Caribbean (Fig. 9). Divergence associated with this feature may have helped enhance rain over the Bahamas and Cuba, but an area of convergence over the central Caribbean may have helped suppress rainfall there. Westerly wind anomalies were observed over northwest Mexico and easterly or northeasterly anomalies were present elsewhere over the country.

Figure 1. Gridded mean maximum temperature anomaly (°C) during the 2020 AMJ season. Anomalies are computed with respect to the 1981-2010 base period.

For more information, visit:
http://www.cpc.ncep.noaa.gov/products/international/usrcc/carib_cm.shtml
Figure 2. Gridded mean minimum temperature anomaly (°C) during the 2020 AMJ season. Anomalies are computed with respect to the 1981-2010 base period.

Figure 3. Satellite-estimated rainfall total (mm) during the 2020 AMJ season.
Figure 4. Satellite-estimated rainfall anomaly (mm) during the 2020 AMJ season. Anomalies are computed with respect to the 1998-2012 base period.

Figure 5. NOAA Climate Prediction Center regional climate hazards outlook for Hispaniola. The image illustrates the state of abnormal dryness and drought as of late June based on convergence of evidence as analyzed by the International Desk.
Figure 6. Composite of the OMPS aerosol index and the VIIRS visible image both from NASA/NOAA’s Suomi NPP satellite on June 24. The image shows the large African dust plume as it moved over the Yucatan Peninsula and up through the Gulf of Mexico. Credits: NASA/NOAA, Colin Seftor

Figure 7. Average sea surface temperature (SST) anomalies (°C) for the 2020 AMJ season. Anomalies are computed with respect to the 1981-2010.
Figure 8. 850mb mean vector wind anomalies for the 2020 AMJ season. Anomalies are computed with respect to the 1981-2010.

Figure 9. 200mb wind vector anomaly for the 2020 AMJ season. Anomalies are computed with respect to the 1981-2010.

10 July 2020
Update prepared by Climate Prediction Center / NCEP