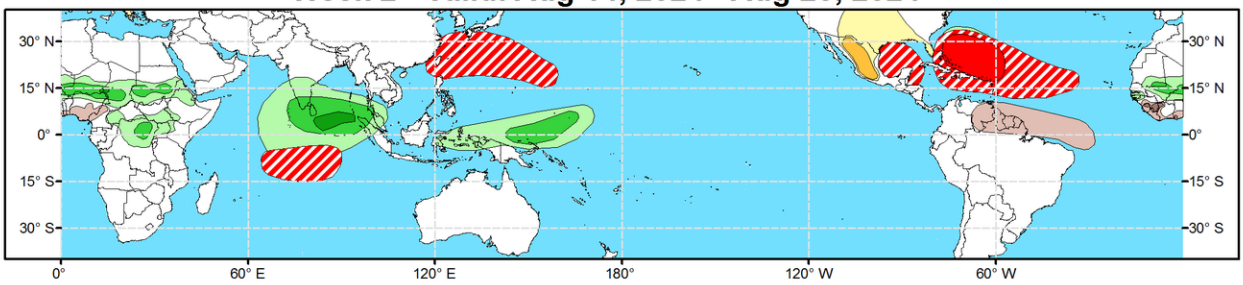
Global Tropics Hazards Outlook

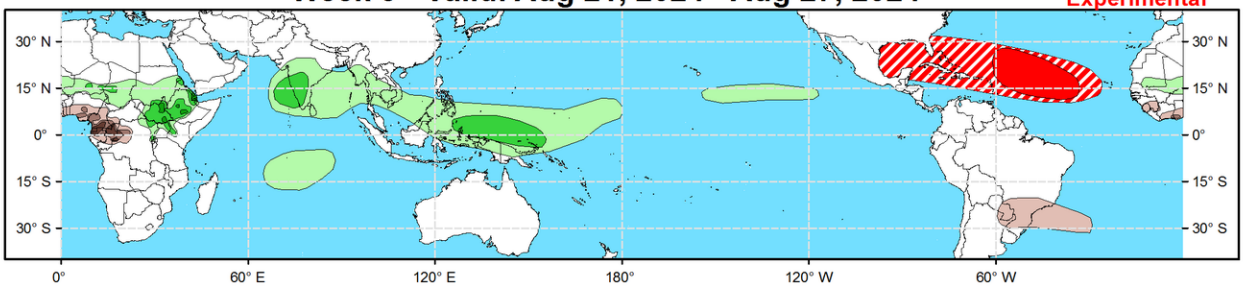
Climate Prediction Center

Week 2 - Valid: Aug 14, 2024 - Aug 20, 2024



Week 3 - Valid: Aug 21, 2024 - Aug 27, 2024

** Experimental **



Tropical Cyclone (TC) Formation Probability
>20% >40% >60%
Tropical Depression (TD) or greater strength

Above-Average Rainfall Probability
>50% >65% >80%
Weekly total rainfall in the Upper third of the historical range

Below-Average Rainfall Probability
>50% >65% >80%
Weekly total rainfall in the Lower third of the historical range

Above-Average Temperatures Probability
>50% >65% >80%
7-day max temperatures in the Upper third of the historical range

Below-Average Temperatures Probability
>50% >65% >80%
7-day min temperatures in the Lower third of the historical range

Issued: 08/06/2024
Forecaster: Allgood

This product is updated once per week and targets broad scale conditions integrated over a 7-day period for US interests only.
Consult your local responsible forecast agency.

Following a period of disorganization during much of July, the Madden-Julian Oscillation (MJO) began to exhibit increased organization during early August. The RMM-based MJO index shifted rapidly from a signal favoring the Maritime Continent to the East Pacific, likely due to influence from an unusually strong convectively coupled Kelvin wave (CCKW). This Kelvin wave completely reversed the low frequency pattern of enhanced trades across the eastern Pacific and provided a window of favorability for tropical cyclogenesis over the East Pacific basin, which has been unusually quiet since the start of the season. The upper-level velocity potential anomaly field, which is the clearest indicator of tropical intraseasonal activity, currently shows a wave-2 pattern, with enhanced divergence over the East Pacific and Western Hemisphere associated with the strong CCKW, and another area of enhanced divergence over the Indian Ocean, due to interactions between an earlier Kelvin wave and equatorial Rossby wave activity. Dynamical model MJO index forecasts show good agreement that after the CCKW crosses the Atlantic during Week-1, interactions with Rossby wave activity over the Indian Ocean will result in a broader, more canonical MJO propagation across the Indian Ocean during Weeks 2-3. Therefore, the MJO is favored to play a substantial role in the evolution of the global tropical convective pattern during the outlook period, helping to promote a renewed trade wind surge across the central Pacific, and promoting a period of high favorability for Atlantic tropical cyclone activity.

Hurricane Debby formed from a long-lived tropical wave over the eastern Gulf of Mexico on 4 August, strengthening to Category-1 intensity on the Saffir-Simpson scale just prior to landfall in the Florida Big Bend region. Weakening to tropical storm intensity, Debby is currently emerging over the Atlantic near Georgia and South Carolina, and will progress slowly across the eastern seaboard over the next few days, resulting in widespread and locally

catastrophic rainfall accumulations. Three new tropical storms formed over the East Pacific during the brief window of favorability granted by the passing CCKW, one of which, Carlotta, became the first hurricane of the East Pacific season. The tropical cyclones are currently spaced rather close together, and are experiencing "Fujuwhara" type interactions resulting in counter-clockwise path motions and general weakening. No new tropical cyclones formed over the West Pacific basin, continuing a rather quiet start to the year.

During Weeks 2-3, numerous factors appear to be coming together to support a period of high favorability for tropical cyclogenesis across the Atlantic basin, with a potential for several tropical cyclones to form during the period. During late Week-1 or early Week-2, a tropical wave crossing the Caribbean is forecast to emerge over the Gulf of Mexico, where multiple dynamical model ensemble members from the GFS and ECMWF depict formation. Later in Week-2, the passage of the CCKW, increased divergence aloft over Africa due to the strengthening MJO signal, and much above-normal sea surface temperatures (SSTs) will provide an environment highly favorable for development over the Atlantic Main Development Region (MDR). An enhanced and northerly displaced African monsoon also favors the emergence of numerous moisture laden tropical waves during the period. Therefore, a broad area of favorability is indicated on the outlook for much of the Atlantic basin during both Weeks 2 and 3. Forecast confidence higher than 60-percent for development is only precluded by differences between the GEFS and ECMWF regarding where formations would occur, with the ECMWF favoring a region near the northeast of the Lesser Antilles, and the GEFS favoring a region closer to the Bahamas. During Week-3, the area of greatest favorability is anticipated to shift eastward across the basin, as the MJO progresses towards the eastern Indian Ocean and the Maritime Continent. While confidence is high for a period of high activity across the Atlantic basin, possibly hyperactivity given the warm SSTs, it should be noted that track forecasts of individual cyclones are too unpredictable to forecast at this point, as they are dependent on the exact location of formation, intensity, and less predictable midlatitude influences. Dynamical model ensemble members depict a wide range of scenarios. Interests across the eastern US, the Gulf of Mexico, and the Caribbean should refer to the National Hurricane Center for official track forecasts once any system has developed. Elsewhere, constructive interference between the CCKW, Rossby wave activity, and the developing MJO may produce a strong westerly wind burst (WWB) across the central Indian Ocean. This WWB may provide a window of opportunity for a rare off-season south-central Indian Ocean tropical cyclone. While not unprecedented, such formations during the Arboreal winter are extremely rare. A return to a quieter pattern is favored for the East Pacific, though some dynamical models depict a potential for formations during Week-3, possibly tied to Rossby wave activity. Over the West Pacific, dynamical models show a fairly diffuse pattern of potential formation regions, with some clustering on the north side of the basin, north of the Philippines, south of Japan, and extending eastward towards Guam. The pattern becomes even more diffuse during Week-3, precluding a hazard on the outlook at this time.

Forecasts for above- and below-normal precipitation are based on historical composites of MJO events crossing the Indian Ocean, ENSO cold phase composites, a potential for tropical cyclone activity during the period, and a skill weighted consensus of the CFS, GEFS, ECMWF, and ECCC model systems. Enhanced convection over the equatorial Indian Ocean during MJO events tends to shift poleward into the South Asian Monsoon as the MJO progresses to the Maritime Continent, with enhanced convection increasing across the equatorial Maritime Continent. Forecasts over Africa were coordinated with the International Desk at the Climate Prediction Center, and Week-2 temperature forecasts over the US were coordinated with the CPC Days 8-14 outlook.