

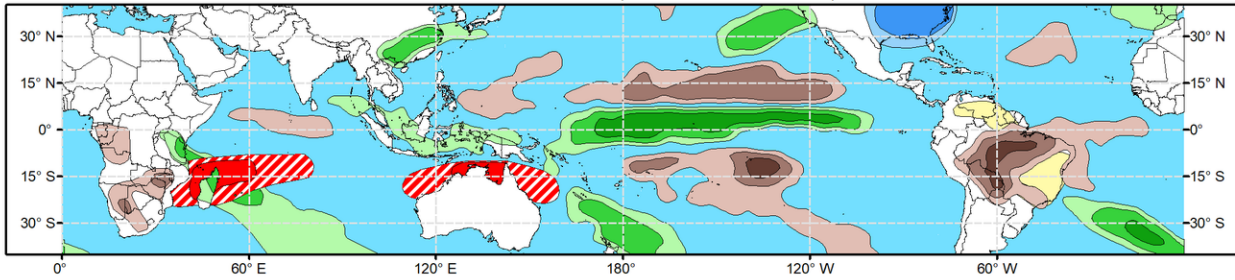


Global Tropics Hazards Outlook

Climate Prediction Center

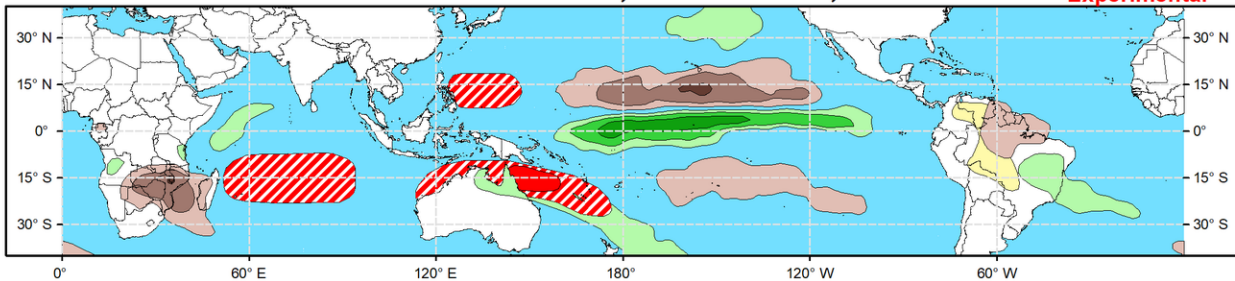


Week 2 - Valid: Jan 17, 2024 - Jan 23, 2024



Week 3 - Valid: Jan 24, 2024 - Jan 30, 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: 01/09/2024
Forecaster: Pugh

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.

A long-lived Madden-Julian Oscillation (MJO) completed a circumnavigation of the global tropics by the end of December when it began to overspread the Indian Ocean. Since the beginning of the New Year, the MJO amplitude decreased and its eastward propagation slowed due to destructive interference with the lingering positive phase of the Indian Ocean Dipole (+IOD) and an equatorial Rossby wave. The MJO was strong enough to briefly cause low-level westerly wind anomalies, associated with El Niño, to become easterly at the Date Line. Also, there was a significant increase in convection across the eastern Indian Ocean as the +IOD shows signs of weakening. The 200-hPa velocity potential anomaly field became less coherent recently as an atmospheric Kelvin wave progresses east over the Western Hemisphere. By January 8, the MJO RMM index shifted from phase 3 to 2 over the Indian Ocean which is likely due to influence from the equatorial Rossby wave. Dynamical models (GEFS, ECMWF, and Canadian) remain consistent and in good agreement that the MJO resumes eastward propagation to the Maritime Continent and West Pacific during the next two to three weeks. However, ensemble spread is large on its amplitude and speed with the GEFS favoring a stronger and slower MJO into late January.

No tropical cyclones formed from January 3 to 9 since the favorable MJO phases coincided with the Atlantic basin. As the MJO propagates eastward from the Indian to Pacific Ocean, the large-scale environment is likely to become more favorable for tropical cyclone (TC) development across the South Indian Ocean and areas surrounding northern Australia during mid-January. Prior to week-2, multiple TCs could develop across the South Indian Ocean and Arabian Sea. The GEFS and ECMWF ensemble members support a 40 percent chance of TC development across the Mozambique Channel and to the east of Madagascar during week-2 (January 17-23). A broader 20 percent chance covers more of the South Indian Ocean and extends through week-3 (January 24-30), based on MJO composites and

dynamical output. A consensus between the GFS and ECMWF models results in a 40 percent chance of TC genesis for the Gulf of Carpentaria and near the Top End of Australia during week-2. The most favored area for TC development during week-3 shifts east to the Coral Sea region, while dynamical models and MJO composites support a 20 percent chance area near northern Australia and the West Pacific later in January.

The precipitation outlook for weeks 2 and 3 are based on a historical skill weighted blend of the GFS, CFS, ECCO, and ECMWF models, MJO precipitation composites (phases 4, 5, and 6), and the influence from El Nino. During week-2 (January 17-23), constructive interference between the MJO and a Kelvin wave is expected to overcome the El Nino base state and above-average precipitation is favored for the Maritime Continent. By week-3 (January 24-30), forecast uncertainty on the precipitation outlook across this region becomes higher due to the model differences on how fast the MJO propagates eastward. By the end of January, a more canonical El Nino precipitation pattern is expected to return to the global tropics.

Based on multi-model ensemble output, there is a greater than 65 percent chance of below-average temperatures across much of the central and eastern United States during week-2 (January 17 to 23). The upcoming Arctic air outbreak is related to high latitude blocking and a negative Arctic Oscillation (AO). Lagged MJO composites, using phase 3, would favor a moderation of temperatures by the final week of January.

For hazardous weather conditions in your area during the coming two-week period, please refer to your local NWS office, the Medium Range Hazards Forecast produced by the Weather Prediction Center, and the CPC Week-2 Hazards Outlook. Forecasts made over Africa are made in coordination with the International Desk at CPC.