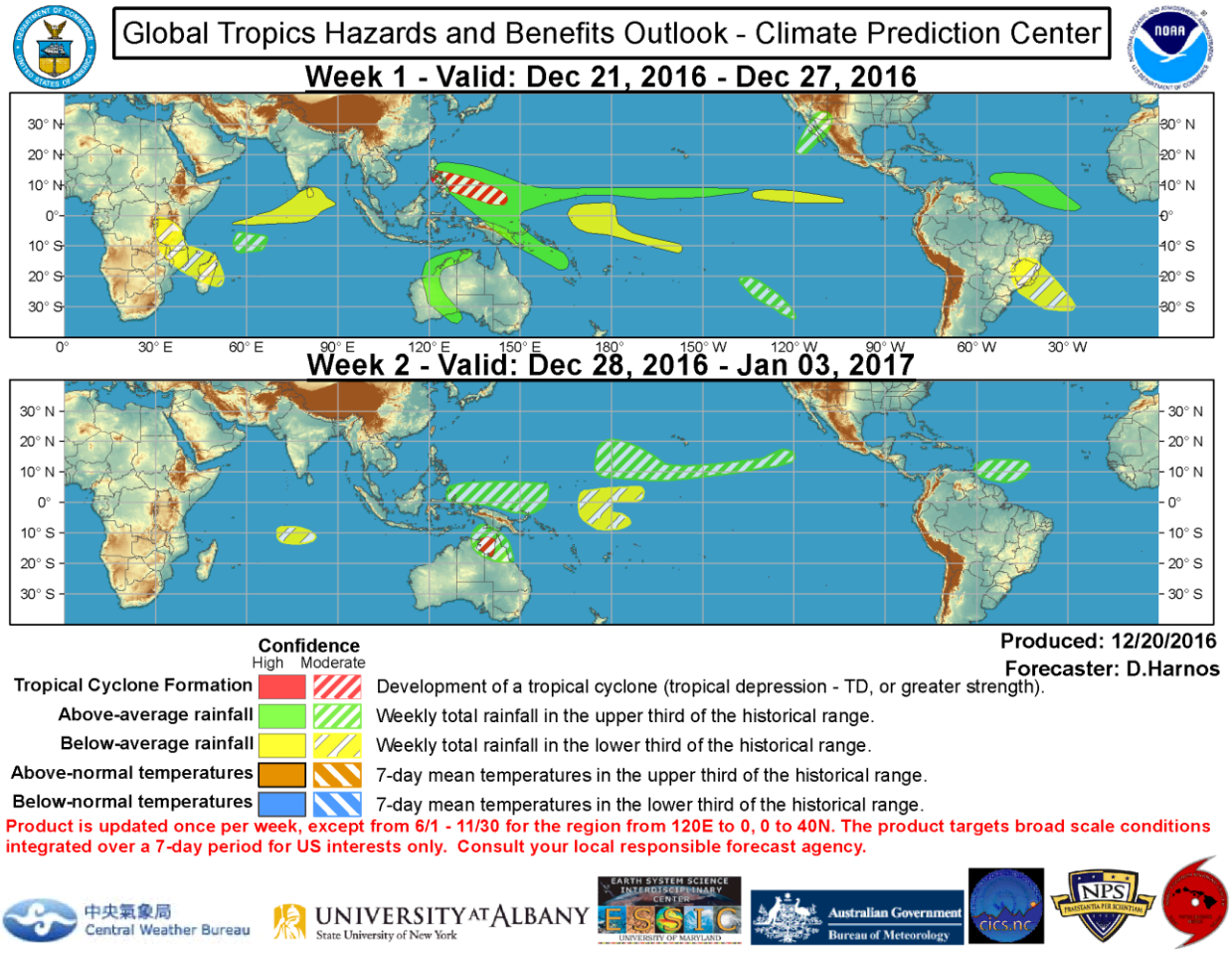


A complex pattern throughout the global tropics has continued from last week, with multiple competing modes of variability apparent. The RMM index suggests weakness in the Madden-Julian Oscillation (MJO) over the past week, despite growing amplitude towards a possible emergence over the eastern Maritime Continent or far West Pacific. The CPC velocity potential index suggests an enhanced intraseasonal convective signal shifting into this location as well; however, overlap with the La Nina base state could also be aliasing into the velocity potential anomalies in this region. Filtered outgoing longwave radiation data suggest the intraseasonal signal to actually be a Kelvin wave that is currently constructively interfering with the base state. Dynamical model forecasts of MJO activity suggest the possible emergence of a signal in the MJO band over the West Pacific late in Week-1 or during Week-2; however, the phase speed of this signature appears at the very fast end of the MJO spectrum and appears tied to the aforementioned Kelvin wave. Filtered CFS guidance suggests an absence of a robust MJO signature during the forecast period, and as such MJO-related impacts are not anticipated throughout the tropics and subtropics. Instead Kelvin wave activity, the low frequency state, and potential tropical cyclones are more likely to shape the present outlook.

The Joint Typhoon Warning Center (JTWC) declared Tropical Storm 2 had formed on 20 December off the northwest coast of Australia. This system is forecast to move southeastward while remaining at tropical storm strength, with landfall anticipated later this week near the border of the Kimberley and Pilbara regions of Western Australia. A second disturbance is being monitored by JTWC slightly to the east of Tropical Storm 2 within the Timor Sea, which is forecast to drift southwestward and possibly develop prior to the forecast period. This system is expected in the vicinity of the Kimberley coast at the beginning of the forecast period (0Z 21 December). JTWC is also monitoring a system initially near 4N/146E for possible tropical cyclogenesis that could be aided by the passage of a Kelvin wave through the region. Dynamical model guidance tracks this system west-northwest towards the Philippines over the course of Week-1, with a moderate chance of development forecast. A final area of possible tropical cyclogenesis exists to the northeast of Madagascar in Week-1; however, ensemble guidance supports little to no development of this system, and thus the associated hazard shape is limited to above-average rainfall instead of tropical cyclogenesis. In Week-2 both CFS and ECMWF ensemble guidance depict substantial anomalous rains and anomalous low pressure in the Gulf of Carpentaria, suggeting tropical cyclone potential. Accordingly, a moderate risk of tropical cyclogenesis is forecast for this region during Week-2.

During Week-1, above-average rainfall is expected along the tracks of each of the aforementioned potential tropical cyclones. A thin strip of above-average rainfall is favored with high confidence just south of 10N across much of the West and Central Pacific due to the passage of a Kelvin wave. An equatorial Rossby wave initially near 30W is expected to bring above-average rain to portions of the tropical Atlantic between 30-50W. High confidence for below-average rains is anticipated in both the Central Pacific associated with the continuing La Nina event, and also for the Indian Ocean where anomalously dry conditions have settled over the last several weeks. Moderate confidence for above-average precipitaiton is forecast from Baja California into the Southwest associated with a northward surge of tropical moisture influenced by a mid-latitude disturbance developing across the southern U.S. early in Week-1. Remaining hazards forecast during Week-1 are generally due to consistency among ensemble guidance.

The Week-2 outlook is shaped predominantly by the background La Nina state, with anomalously dry conditions in the equatorial Central Pacific and wet conditions favored to its north. Above-average rains are favored to continue with moderate confidence to continue to the north of New Guinea in Week-2, and in the vicinity of the Gulf of Carpentaria tied to possible tropical cyclogenesis. Below-average precipitation is favored in the North Pacific during Week-2 tied to anomalous 500-hPa ridging expected to build as the pattern begins to shift towards the positive phase of the North Pacific Oscillation/West Pacific pattern with a general anomalous ridge-trough dipole over the North Pacific and Bering Sea respectively. Consistent forecasts between the GEFS and ECMWF ensembles are the source for remaining Week-2 rainfall hazards.

Forecast shapes over Africa are made in consultation with the International Desk at CPC, and often reflect more regional scale variability in addition to large-scale climate factors.