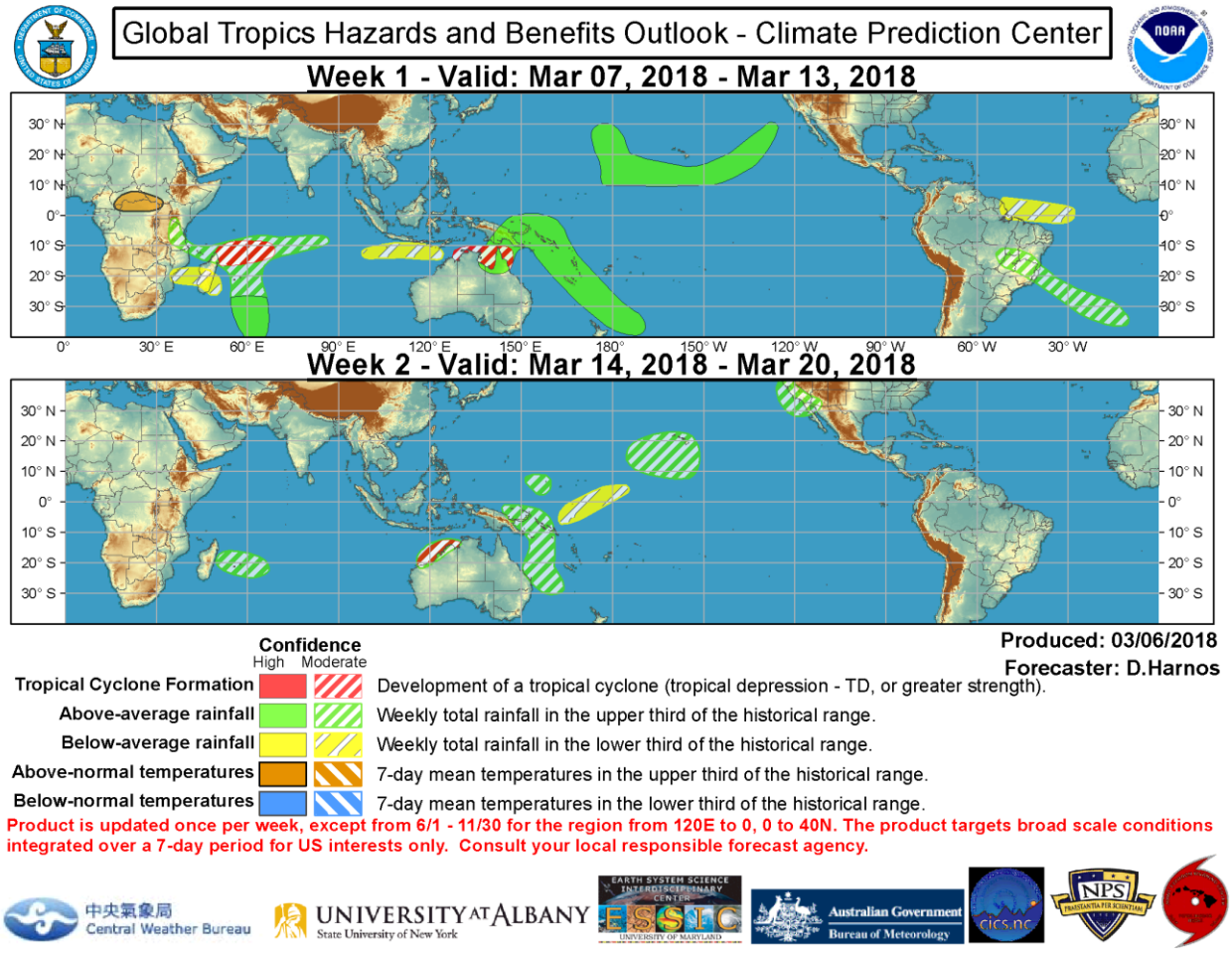

During the past week the Madden-Julian Oscillation (MJO) continued eastward across the Indian Ocean and into Phase-3, while decreasing in amplitude. This decrease in amplitude appears tied to multiple factors: complex tropical/extratropical interactions across the western hemisphere, Rossby wave activity in the Central Pacific, and fairly weak low-level anomalies in the zonal wind field. Dynamical model guidance suggests some initial eastward propagation of the MJO early in Week-1, before a westward shift tied to anticipated Rossby wave activity in the southern Indian Ocean that may develop into a tropical cyclone (TC). By Week-2 the signal appears likely to decay to within the unit circle, signifying the end of this consistently active period for the MJO since late 2017. The upper-level signature of the MJO appears more robust, and could tilt tropical impacts in Week-1 towards a Phase-4 response and a Phase-5 flavor during Week-2. Extratropical MJO impacts appear minimal for the next two weeks, as dynamical model guidance is inconsistent with the circulation evolution relative to canonical lagged responses expected with a Phase-3 event.

TC Dumazile developed near 13S/55E on March 2nd. The system initially tracked south-southwestward, paralleling the coast of Madagascar, before shifting to a more southeasterly track over the last two days. Dumazile peaked as a Category 3 storm with 105 knot winds on the 5th of March, and is currently

estimated to have 95 knot winds (Category 2). While the core of Dumazile remained off the coast of Madagascar, the outer bands of the slow-moving storm brought flooding rains in excess of 8 inches to parts of the country. Just prior to this outlook being issued, Tropical Cyclone Hola was declared at 15 UTC on the 6th of March near 16S/169E by the Joint Typhoon Warning Center. This system is forecast to intensify over the next 3 days, with an initial westward track before a shift to the Southeast that could see the system approach the northern island of New Zealand by early next week.

Looking forward, a few areas of possible TC formation exist during the next two weeks. Equatorial Rossby wave activity is indicated by dynamical models over the southwestern Indian Ocean during Week-1, with a moderate chance of this disturbance developing into a TC sometime around the coming weekend. Models also indicate a westward moving feature tracking from the Coral Sea through the Gulf of Carpentaria towards the Timor Sea during the second half of Week-1 that also has moderate confidence of developing. The Kimberley Coast of Australia looks to remain active in Week-2, with a moderate risk of tropical cyclogenesis in its vicinity during that period.

In Week-1, high confidence for above-normal rainfall is anticipated with the track of TC Dumazile and TC Hola in the South Pacific. In the South Pacific, the high confidence of above-normal rainfall extends across the eastern Maritime Continent and Gulf of Carpentaria associated with the South Pacific Convergence Zone and a possible TC, respectively. Elsewhere, high confidence exists for above-normal rainfall in the North Pacific surrounding Hawaii in association with an anomalous mid-level trough equatorward of the block in the far North Pacific. A surface trough could bring above-normal rains across eastern Brazil and the southern Atlantic Ocean during Week-1. Remaining areas forecast to experience above- or below-normal rains in Week-1 all possess moderate confidence and are a result of consensus between the GFS, CFS, and ECMWF ensembles.

During Week-2, model consensus is very poor given the likely weakening of the MJO event coupled with the weakening La Nina event in the Pacific due to the recent westerly wind bursts and associated downwelling oceanic Kelvin waves. Troughing continues to be forecast in the Northeast Pacific which could bring above-normal precipitation to Hawaii during the period. This trough appears likely to shift closer to the west coast of North America, bringing the potential for above-normal precipitation to parts of California and the Southwest. Continued equatorial Rossby wave activity appears likely east of New Guinea and off the east coast of Australia in Week-2, resulting in moderate confidence for above-normal rains in those locations. Aside from the above-normal rains along the Kimberley Coast in association with possible TC activity, remaining areas of above- or below-normal rains in Week-2 lack clear ties to established modes of tropical variability and are the product of dynamical model consensus.

Forecasts over Africa are made in consultation with the CPC international desk and can represent local scale conditions in addition to global scale variability.