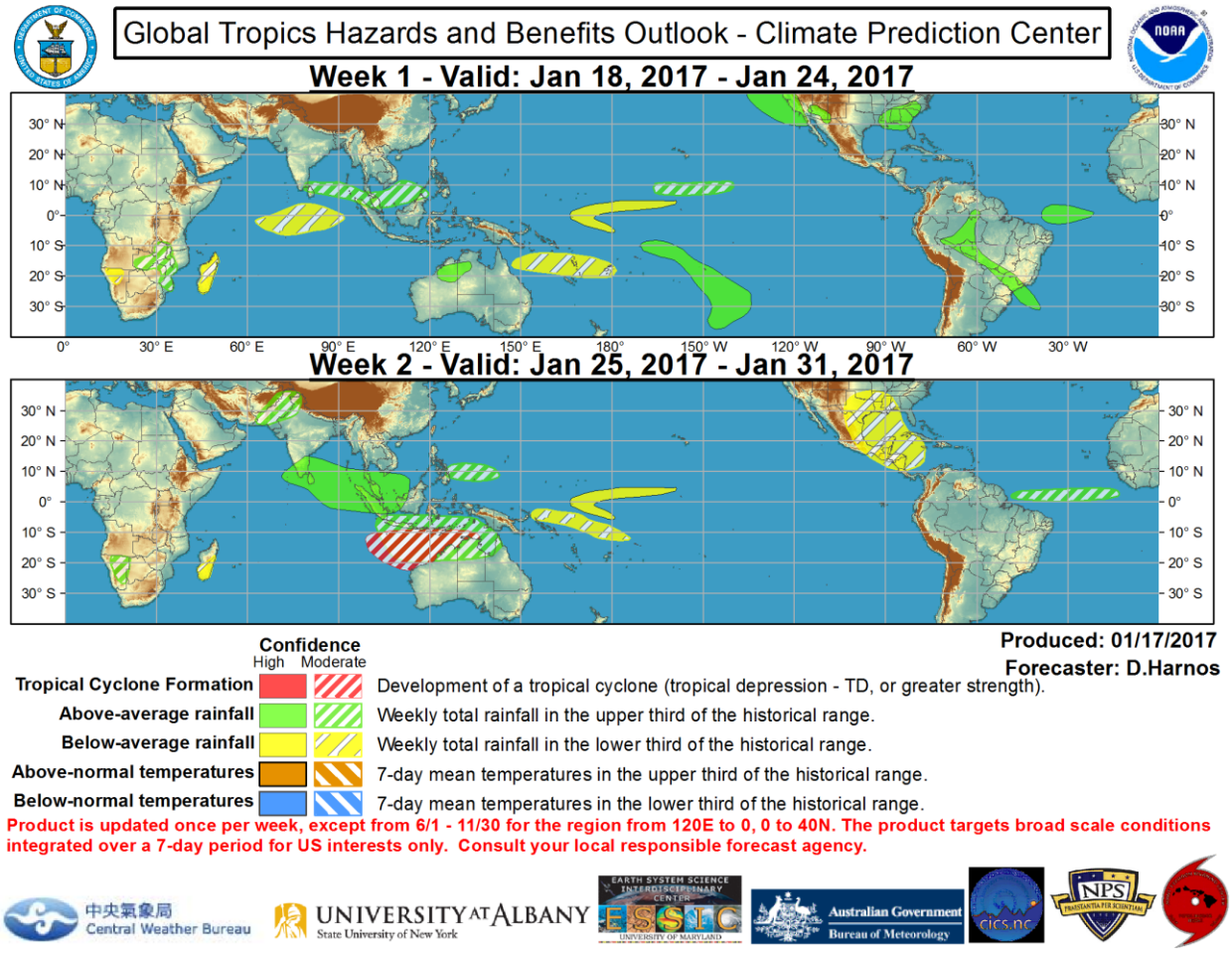

Disparate perspectives on observing and tracking the Madden-Julian Oscillation (MJO) over the past week result when comparing the RMM index and CPC velocity-potential based index. The RMM index indicates weakness in the MJO, as it generally has over the past 40 days, whereas the CPC index has tracked an enhanced subseasonal signal from the Maritime Continent into the Western Hemisphere over the course of January. The RMM index appears to be coming around to the CPC index, however, as dynamical model forecasts consistently show an emerging and strengthening intraseasonal signal in Phase 8/1 (corresponding to presence over the Western Hemisphere and Africa) over the course of Week-1. The Week-1 MJO signal is anticipated to be strong, with some moderation forecast for Week-2 as the signal shifts into the Western Indian Ocean. Whether the signal can propagate into the eastern Indian Ocean late in Week-2 is unclear, with dynamical model ensemble means showing a weakening signal in the RMM framework. This is to be taken cautiously, however, as differences in the phase speed of the intraseasonal envelope could well be cancelling out, causing the appearance of a weakening MJO due to the averaging. Expectations of the MJO in Phase 1 during Week-1 and Phase 2 in Week-2 are relied upon heavily in the present outlook. The low frequency footprint in the Pacific is currently being destructively interfered with by the subseasonal signal, but also influences the current outlook.

During the past week, Tropical Depression 1 (originally formed on 7 January) redeveloped near 10N/110W on 15 January. This disturbance tracked westward through the South China Sea and grazed the southern coast of Vietnam while gradually weakening, and has disspiated prior to this outlook. Dynamical models continue to suggest potential tropical cyclogenesis northeast of Madagascar during Week-1, but this signal has been persistent for several weeks in the GEFS and CFS and has yet to verify, which suggests these signals are a result of model bias. No tropical cyclone formation is anticipated during Week-1, with the Southern Hemisphere season off to a slow start in 2017. Dynamical models suggest potential for a system developing north of the Kimberly Coast of Australia and tracking westward during Week-2, resulting in a moderate risk of tropical cyclogenesis forecast here. Weak signals also exist for possible tropical cyclone formation during Week-2 in the South Pacific to the east of French Polynesia, but confidence is insufficient to forecast a specific hazard.

The Week-1 outlook attempts to mesh historical characteristics of MJO activity in Phase 1 with CFS and ECENS guidance. Phase 1 of the MJO features enhanced precipitation for the Southeast Pacific and South America, with high confidence of above-average rainfall forecast for these areas. An equatorial Rossby wave in the Atlantic also results in a high confidence of above-average rainfall there. An atmospheric river is expected to bring yet another surge of tropical moisture into western North America, with accompanying high confidence of above-average rainfall for California and parts of the Desert Southwest. A 500-hPa closed low over the Misssissippi Valley is expected to bring above-average rain to the Southeast U.S. with high confidence. Continued below-average rainfall for the Central Pacific is favored associated with the low frequency state. Remaining Week-1 precipitation shapes are a result of dynamical model consensus between the CFS and ECENS.

During Week-2, the outlook again utilizes CFS and ECENS guidance with a tilt towards MJO composites for Phase 2, and to a lesser extent, Phase 3. High confidence of above-average rainfall is expected from Southern India through the South China Sea and western Maritime Continent, associated with the presence of the active phase of the MJO. Moderate confidence of below-average rainfall east of New Guinea is also a typical MJO response to a signal in Phase 2 or 3. High confidence of below-average rains near the dateline in the Central Pacific continue from Week-1, associated with the low frequency footprint. Moderate confidence of above-average rains are also favored in Week-2 across the southern Maritime Continent and north of Australia associated with possible tropical cyclone formation. Remaining hazard areas are generally due to consistency among ensemble guidance, but lack a robust connection to the expected intraseasonal or low frequency states.

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