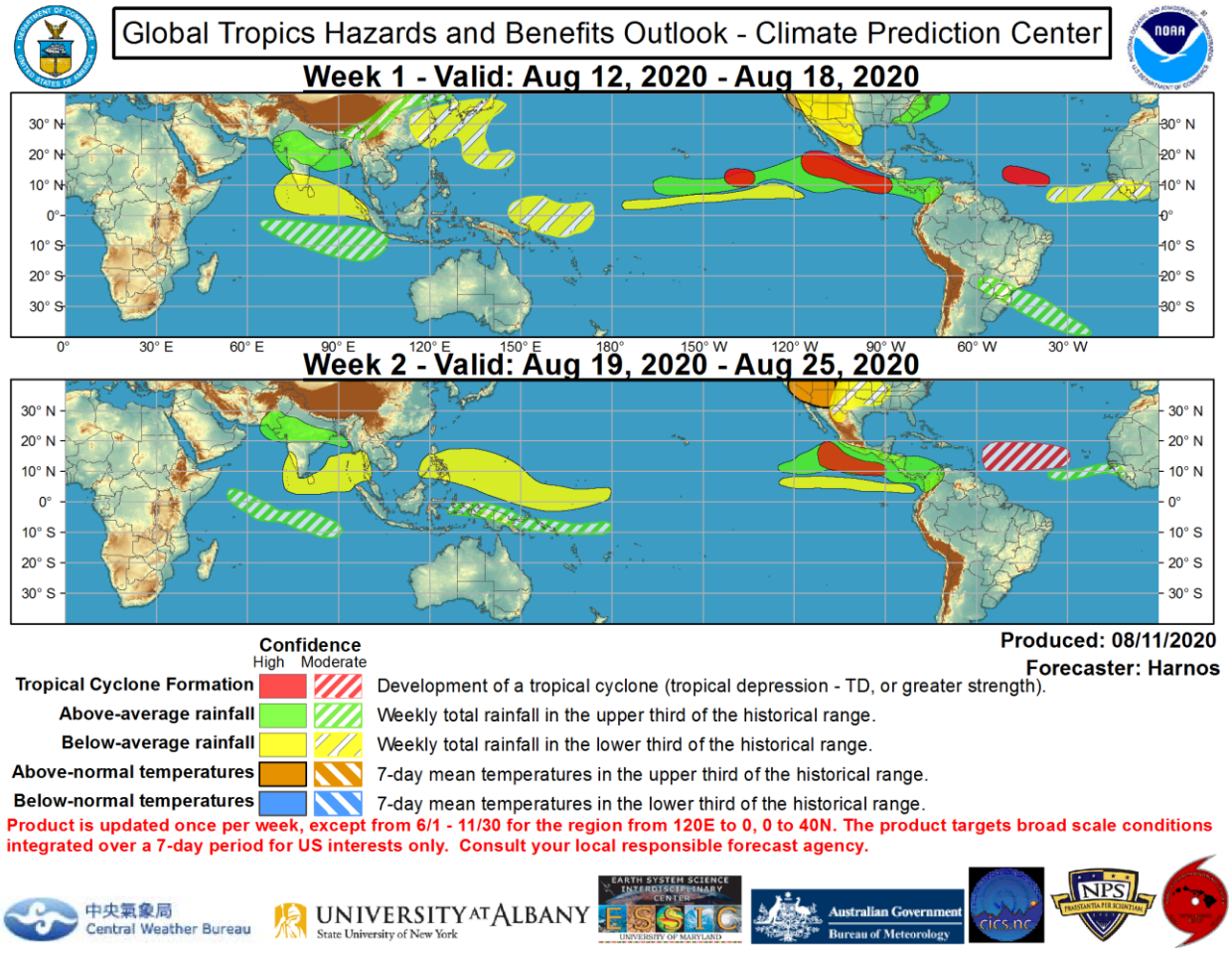

The large-scale circulation over the Pacific during the past week closely resembled La Nina conditions, with anomalous upper-level westerlies and enhanced trades, while convection was suppressed (enhanced) near and west of the Date Line (over the Indian Ocean). Some of this is likely due to the superposition of the Madden-Julian Oscillation (MJO), which was situated over the Maritime Continent throughout the last 7 days. In addition, there is an atmospheric Kelvin waves over the Atlantic and another over the Pacific. Model guidance forecasts the continued eastward propagation of the MJO and these Kelvin waves over the coming days, although uncertainty abounds regarding the intensity of these features. The GEFS rapidly brings the RMM index across the Pacific and into the Western Hemisphere over the next two weeks, likely due to its emphasis on the aforementioned Kelvin waves which it maintains at relatively high intensity. Conversely, the ECMWF is weaker with its representation of these Kelvin waves, and tracks them to the Western Hemisphere with the RMM index, but at a lower amplitude. Regardless of the RMM perspective, both models predict the active MJO envelope to be over the Central Pacific during Week-1, and East Pacific in Week-2.

Tropical cyclone (TC) formation last week saw a notable uptick for the West Pacific basin, tied to: localized constructive interference of the low-frequency state and MJO, further presence of equatorial

Rossby wave activity, and Kelvin waves to the east of the region. Tropical Storm Jangmi, Tropical Depression Six, and Typhoon Mekkhala all formed in the past 72 hours, nearly doubling the four TCs observed to date for this basin in 2020. Jangmi brought up to 3 inches of rain to Korea, which was struggling from flooding due to antecedent rainfall. Mekkhala recently made landfall over eastern China, with over 6 inches of rain observed in some places. Elsewhere, Hurricane Elida formed over the East Pacific on the 9th. The National Hurricane Center (NHC) forecasts Elida to gradually weaken through the weekend as it tracks to the northwest and away from North America.

The TC hotspot looks likely to shift from the West Pacific to the East Pacific in the near future. The mechanisms behind this appear tied to Kelvin wave activity creating a more favorable large-scale environment (e.g. enhanced lift, reduced vertical wind shear). NHC is currently monitoring three disturbances that may develop into TCs over the next five days. NHC gives two of these disturbances a 70% and 80% chance of forming over the next 5 days (high confidence of TC formation during Week-1 of this outlook), while the third has a 40% chance of development during that window. The third system is likely to track along the west coast of Mexico near where one of the other systems may develop, resulting in this being combined into one larger TC development area. The deterministic ECMWF and its ensemble mean both suggest this third system could track toward the tip of Baja California which could yield a limited surge of moisture from the Gulf of California into the Southwest, giving life to what has been a poor-performing North American Monsoon to date. The approaching MJO could prolong this active East Pacific TC spell into Week-2, by furthering an environment favorable for large-scale ascent coupled with any disturbances initiated in the wake of the second Kelvin wave. A high risk for TC formation is posted during Week-2 extending from south of El Savlador west-northwestward roughly paralleling the coastline of Mexico.

Things are relatively quieter in the Atlantic initially, with NHC monitoring only one system that is currently 900 miles west-southwest of Cabo Verde. NHC gives this system a 90% chance of forming over the next 48 hours (high confidence for TC formation during Week-1), before conditions deteriorate amidst large-scale subsidence over the Atlantic from the suppressed portion of the MJO envelope and Kelvin wave over the Atlantic. The Kelvin wave over the Pacific is likely to overspread the Atlantic by early next week, which could trigger renewed TC formation chances during Week-2 across the main development region. Similar to the Pacific in Week-1 and Week-2, the MJO is likely to approach during Week-3, setting the stage for a prolonged period of conditions favorable for TCs in the Atlantic during the second half of August given the one-two punch of the Kelvin wave helping to spin up disturbances and the MJO then providing an atmosphere favorable for their development. A moderate risk of TC formation is posted between the Leeward Islands and Cabo Verde between roughly 10-20N to account for these chances during Week-2.

Precipitation forecasts during the next two weeks closely mirror anticipated TC tracks in addition to the forecast MJO and Kelvin wave progressions and low frequency considerations. Also of note is enhanced precipitation forecast across portions of India the next two weeks, with strong cross-equatorial flow recently observed over the western Indian Ocean as the monsoon picks up over the region. Conversely, the North American Monsoon appears likely to continue to underperform, with heat and dryness concerns remaining over the Southwest, but the TC activity uptick brings some limited hope for needed rains. While widespread dryness is forecast over much of the West and Central Pacific during the next two weeks, there are also some hints from the GFS of a weak TC developing around the 20th between 140-150E and 15-20N that cannot be ruled out, but confidence is insufficient to include a formation area in the present outlook.

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