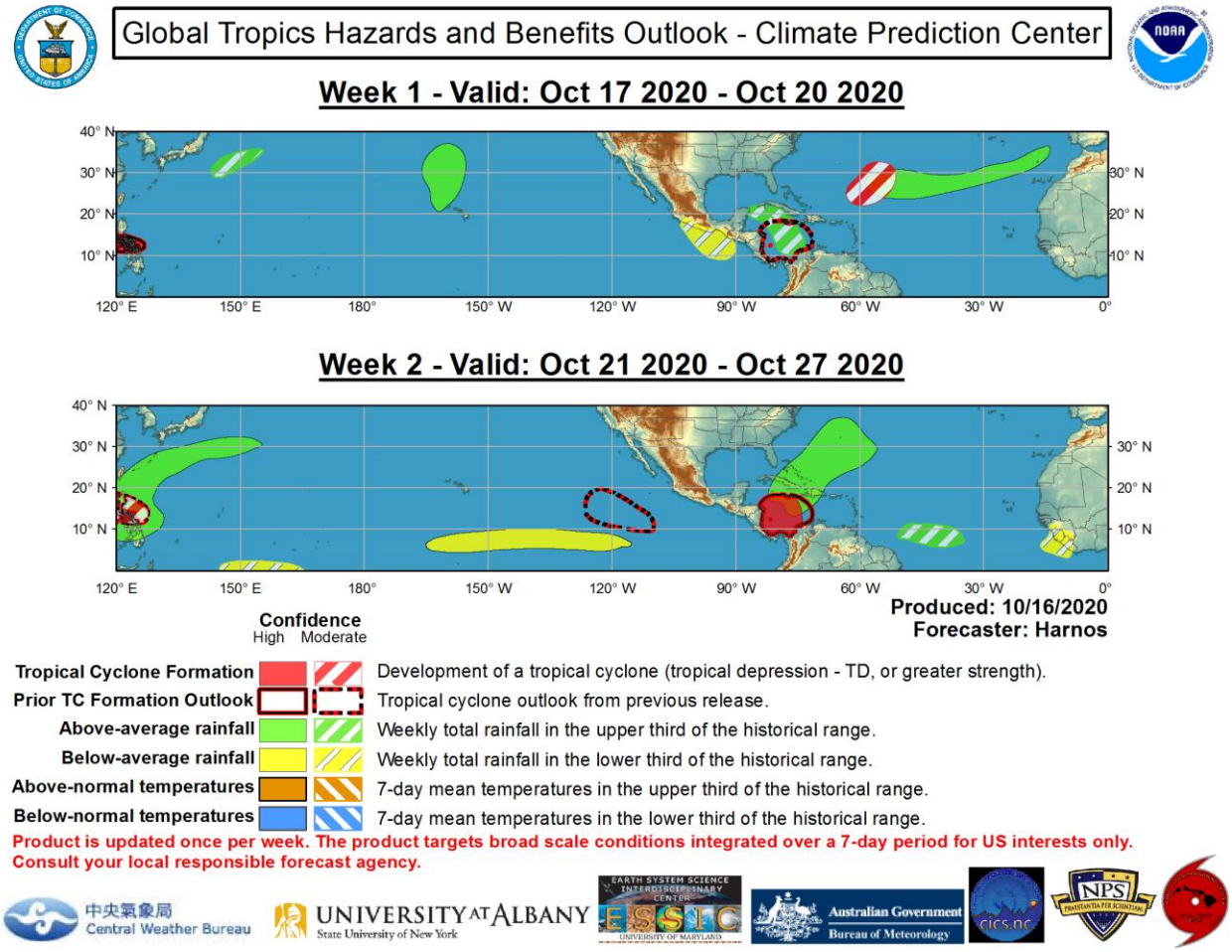

The original MJO perspective remains on track, with the MJO over the Maritime Continent at present and forecast to reach the Western Pacific next week. As noted in the initial outlook, there does appear to be a transition underway in the model forecasts of the RMM, with more members of both the GEFS and ECMWF latching on to forecasts that rapidly shift RMM1 to negative values tied to Kelvin wave activity over the Western Hemisphere. Spread in the GEFS forecasts has also increased substantially, including a handful of members with large RMM2 projections during Week-2. The overarching summary of the anticipated subseasonal tropical climate impacts see the MJO making it to the Pacific next week, while Kelvin wave activity crosses the Western Hemisphere, helping to increase TC formation chances over the Western Caribbean.

NHC is monitoring a pair of areas in the Atlantic for TC formation as of 2 PM EDT on the 16th of October. The first is a non-tropical system near 30N/55W at present, which may become a subtropical or tropical cyclone later this week (40% chance through 48 hours, 60% chance through 5 days, with moderate confidence on the updated outlook here). The second area is over the Western Caribbean, which has been highlighted since Tuesday. NHC gives this system a 30% chance of forming over the next 5 days, resulting in it being left off the Days 1-4 graphic (this was formerly moderate confidence for TC

formation during Week-1 in the initial outlook). High confidence exists for this system to develop during Week-2. The East Pacific TC formation area on the original outlook from Week-2 is left off, with the Kelvin wave crossing the basin appearing to be a bit weaker and more progressive relative to the initial perspective, while the suppressed conditions in its wake may be a bit stronger than initially anticipated. Above- and below-normal precipitation areas are updated to reflect the latest forecast TC tracks, in addition to the most recent ensemble guidance from the GEFS and ECMWF models. For hazardous weather concerns during the upcoming two weeks across the U.S. please refer to your local NWS Forecast Office, the Weather Prediction Center's Medium Range Hazards Forecast, and CPC's Week-2 U.S. Hazards Outlook.

----- The original discussion from the 13th of October follows below. -----

The Madden-Julian oscillation (MJO) has been portrayed as relatively stationary over the Maritime Continent during the past week by the Real-time Multivariate MJO (RMM) index. This lack of eastward propagation appears largely due to an uptick in equatorial Rossby wave activity over the Eastern Hemisphere that also resulted in Tropical Storms Linfa and Nangka forming over the South China Sea. RMM index forecasts from the GEFS and ECMWF generally show a strengthening MJO over the Maritime Continent (Phase 5) during Week-1 that moves over the West Pacific during Week-2 (Phase 6). This evolution occurs despite continued equatorial Rossby wave development forecast by both ensemble suites over the Eastern Hemisphere, evidenced by the highly active tropical cyclone (TC) formation forecast the next two weeks. In addition to the continued Rossby wave considerations, the La Nina background state has been suppressing convection east of the Maritime Continent since at least late boreal summer, leading to the potential for destructive interference should the MJO push eastward, further limiting forecast confidence moving forward. Some members in both the GEFS and ECMWF fail to maintain amplitude in Phases 6/7 and instead shift rapidly toward negative RMM1 values (MJO Phases 8/1), possibly tied to Kelvin wave activity forecast over the Atlantic during Week-2.

The two aforementioned TCs developed over the South China Sea during the prior week. Tropical Storm Linfa formed on the 10th and made landfall over Vietnam the following day accompanied by 40 knot winds and heavy rainfall. Unfortunately, Linfa's landfall occurred during a recent wet period for Southeast Asia, resulting in flooding and landslides that claimed at least two dozen fatalities across Vietnam and Cambodia. Tropical Storm Ningka formed on the 12th, and is forecast to be positioned over Hainan at the start of the outlook period. Unfortunately, Ningka is also poised to strike Vietnam, albeit north of the primary impacts from Linfa, but could still lead to further health and humanitarian concerns from additional heavy rains.

The parade of Rossby waves propagating westward across the Eastern Hemisphere looks to continue during Week-1, leading to multiple TC development concerns. A circulation currently over India (Invest 91B) appears likely to emerge near the Gulf of Khambhat in the coming days before propagating westward toward Oman (high confidence for Week-1 TC formation). Another circulation is poised to cross Southeast Asia and emerge over the Bay of Bengal before possibly impacting India (moderate confidence for Week-1 TC formation). A third circulation (Invest 94W) is forecast over the Central Philippines at the beginning of the forecast period, with intensification to TC intensity likely over the South China Sea before unfortunately tracking toward flood-ravaged Vietnam similarly to Tropical Storm Linfa (high confidence for Week-1 TC formation). Another TC may form over the West Pacific or South China Sea early in Week-2 before tracking toward Hainan (moderate confidence for TC formation during Week-2).

Closer to North America, the National Hurricane Center (NHC) gives a 90% chance for the remnants of Tropical Storm Norbert to redevelop over the East Pacific during the next 48 hours, although this is left off this outlook given it is a system that has already been named. Later in the forecast period, the passage of a Kelvin wave could help spin up a disturbance between 10-20N and 110-125W (moderate confidence for Week-2 TC formation). Over the Atlantic, an easterly wave to the southeast of the Windward Islands is given a 20% chance of becoming a TC over the next 48 hours by NHC, with little chance of development thereafter resulting in it not being highlighted by this forecast. Lastly, the Kelvin wave pushing across the Pacific is likely to increase TC formation odds over the Western Caribbean during the outlook period. Both the GEFS and ECMWF models emphasize TC formation chances near the Week-1/Week-2 interface. The GEFS develops this system more rapidly and further east than the ECMWF, bringing an intensifying disturbance northward toward Cuba that potentially approaches North America late in Week-2. The ECMWF develops the system more slowly and closer to Central America while having a more westward track, relative to the GFS, that would limit concerns about U.S. impacts. If the GFS solution comes to bear, this TC could be the fourth major hurricane of the Atlantic season given a broadly favorable environment and ample oceanic heat content. Moderate (high) confidence for TC formation exists over the Western Caribbean during Week-1 (Week-2) to account for difficulty in pinning down the timing of genesis between the two periods, with a nod to increased chances during the latter period. Subtropical cyclone formation chances also appear to be elevated over the Atlantic in the near-term, although dynamical model guidance is highly inconsistent on the location and timing of such an occurrence.

Precipitation forecasts the next two weeks leverage the low frequency state (increased confidence for below-normal precipitation for the West Pacific during both weeks), MJO likely pushing eastward over the Maritime Continent and West Pacific (increased confidence for below-normal precipitation over portions of the Indian Ocean), and numerous possible aforementioned TC tracks. Remaining areas of enhanced or suppressed rainfall are a result of consensus between the CFS and ECMWF ensemble means. For hazardous weather concerns during the upcoming two weeks across the U.S. please refer to

your local NWS Forecast Office, the Weather Prediction Center's Medium Range Hazards Forecast, and CPC's Week-2 U.S. Hazards Outlook.

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