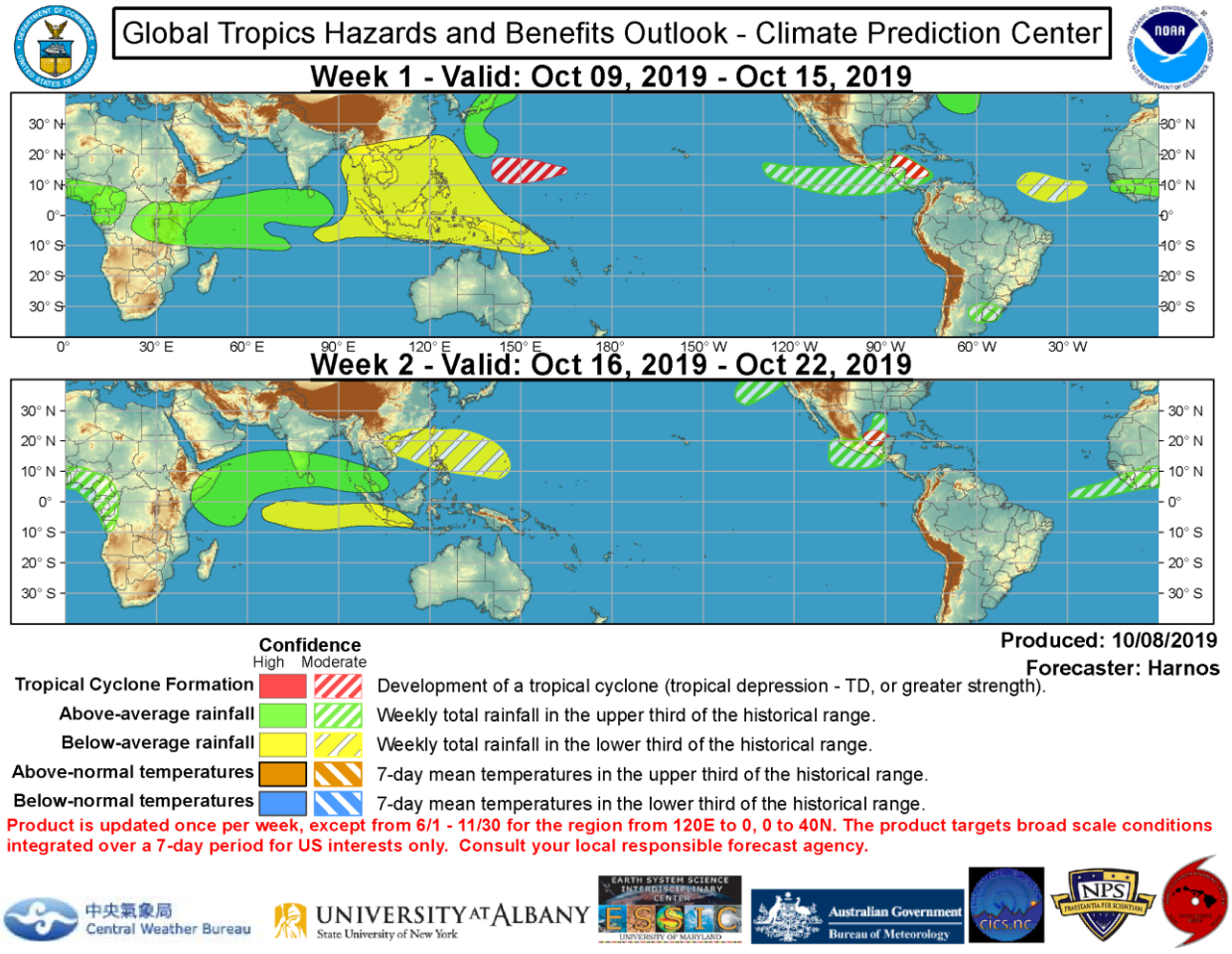

The primary player across the global tropics continues to be the ongoing low frequency state across the Indian Ocean and Maritime Continent in association with the positive phase of the Indian Ocean Dipole (IOD). This pattern has been apparent in sea surface temperatures since May, with its atmospheric footprint also emerging over the past several months. This signal has been aliased into the RMM index since mid-September, resulting in what appears to be a stagnant Madden-Julian Oscillation (MJO) over the Western Hemisphere. However, if there is an MJO presence, it appears more likely to be over the West Pacific at present. This is evidenced by forecasts of an eastward shifting packet of enhanced low-level westerlies over the next two weeks with embedded equatorial Rossby wave features within it. RMM forecasts suggest persistence of the IOD during the next several weeks, although some signs of an emerging MJO across the Indian Ocean are possible by Week-2. The resultant outlook does hint at MJO activity over the Indian Ocean during Week-2, but overall the forecast remains fairly low confidence outside of areas that the low frequency IOD state has a robust footprint that may not destructively interfere with any such MJO development.

Super Typhoon Hagibis was the only tropical cyclone (TC) to form last week. The system developed out of a low east of the Mariana Islands on the 4th of October and underwent rapid intensification on the

5th and 6th to reach a peak intensity of 140 knots (Category 5 on the Saffir Simpson scale). The most recent advisory from the Joint Typhoon Warning Center places Hagibis near 18N/143E with 135 knot winds and an accompanying forecast track to the north that possibly approaches Honshu by the weekend.

The National Hurricane Center (NHC) is presently monitoring three areas in the Atlantic for TC formation over the next five days. The first is for a system between the Azores and Bermuda, with a short window to develop into a tropical or subtropical system before increasingly hostile environmental conditions build on late Wednesday. NHC gives this chance a 40% chance of forming over the next 48 hours, but this is left off of our outlook given the likely subtropical nature of the system if it were to develop or possibility the system forms prior to the outlook period (0 UTC on the 9th). Two disturbances off the east coast, one between Florida and the Bahamas, the other between the Carolinas and Bermuda, have a chances to develop into subtropical or tropical systems over the next 5 days. A system presently east of Florida has a 40% chance of forming over the next 48 hrs, but appears likely to merge with a second low to its north near the beginning of the forecast period, resulting in it being left off the outlook. The aforementioned low to its north has a 10% (30%) chance of becoming a subtropical or tropical cyclone over the next 48 hours (5 days), and is omitted from this outlook given the low confidence of formation and likelihood of the system being subtropical. Areas of concern for TC formation beyond day 5 include the Western Caribbean and across Micronesia during both Week-1 and Week-2. The former area is tied to a forecast low to track near Central America and possibly across the Yucatan Peninsula into the Bay of Campeche during Week-2, resulting in a moderate risk of TC formation in both weeks. There is some concern this system could instead develop over the East Pacific, although model guidance suggests a more likely Atlantic formation at this time. In the West Pacific, models hint at the chance for a low to undergo tropical cyclogenesis in the wake of Hagibis between approximately 140-165E between 10-20N. Moderate confidence of a TC forming here exists during Week-1, although the development of another low tracking through this region and becoming a TC cannot be ruled out during Week-2.

Confidence in precipitation forecasts during the next two weeks are greatest with the IOD influence across the Eastern Hemisphere with anomalously wet conditions from East Africa through the Central Indian Ocean and dry conditions across the Maritime Continent and Southeast Asia. There is some shift to these regions during Week-2, with more of a north-south orientation tied to the possible emergence of the MJO as hinted at by the ECMWF. High confidence also exists for above-normal rains during Week-1 along the track of Hagibis and the possible subtropical system tracking off the East Coast. Moderate confidence for above-normal rains exists across portions of the East Pacific, Western Caribbean, and Gulf of Mexico during both weeks tied to disturbances that could develop into TCs. Moderate confidence exists for above-normal precipitation off the West Coast and into the Pacific Northwest and Northern California during Week-2, associated with anomalous troughing forecast in the Northeast Pacific that could phase with a second trough that may merge prior to this with the remnants of Hagibis.

Remaining forecasts of above- and below-normal precipitation with moderate confidence over the next two weeks result from dynamical model consensus among CFS, ECMWF, and GEFS guidance.

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