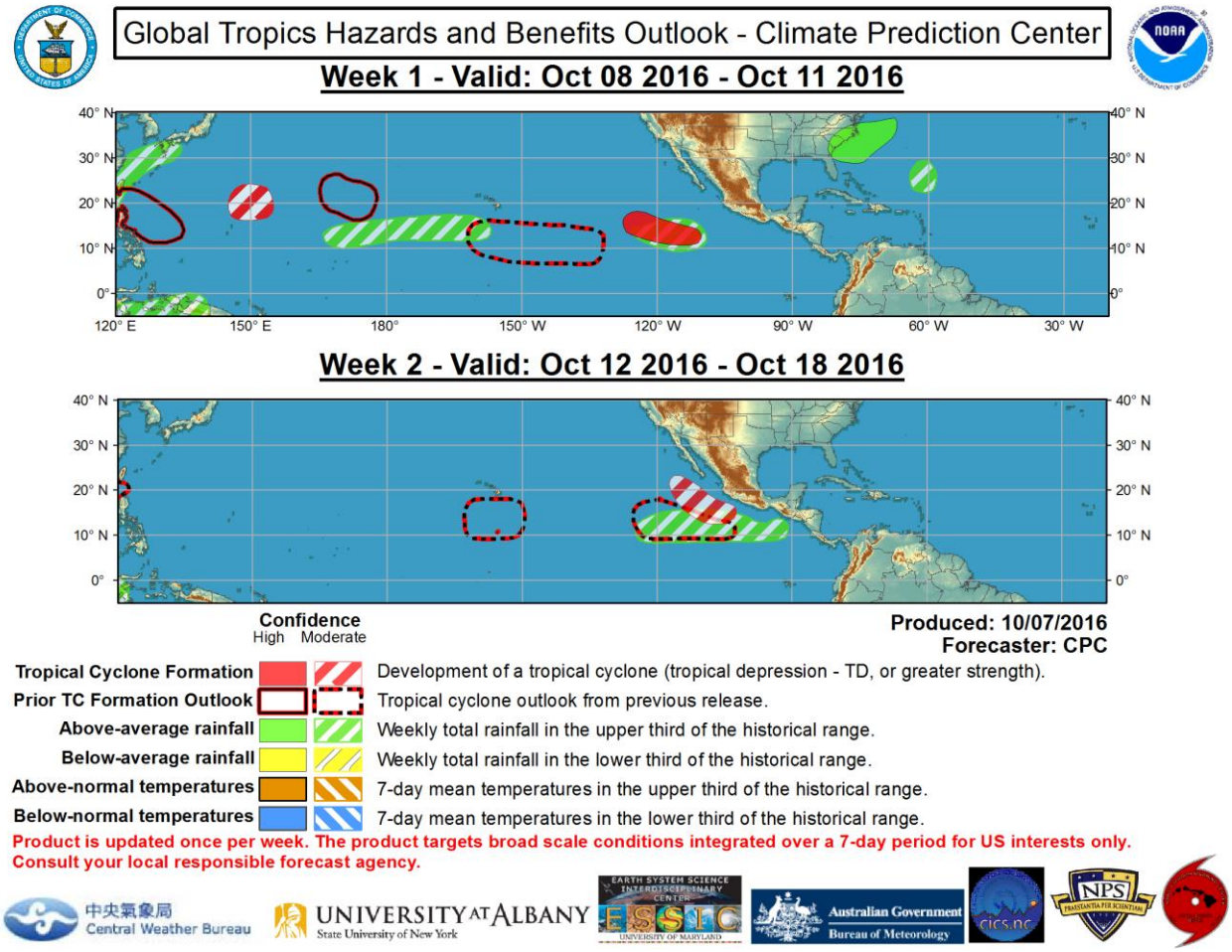

Recent observations and the RMM-based and CPC velocity potential-based MJO indices depict little to no eastward propagation of an intraseasonal signal during the past few days. The negative phase of the Indian Ocean Dipole (IOD), which favors enhanced (suppressed) convection over the Maritime Continent (Arabian Sea), continues to strongly influence the pattern. Kelvin wave activity continues across the Pacific basin, and may increase the potential for additional tropical cyclone development over the western North Pacific and the Eastern Pacific during the next 1-2 weeks.

In the Atlantic basin, Hurricane Matthew remains a major hurricane with peak sustained winds near 120 mph, and is currently rated Category-3 on the Saffir-Simpson Hurricane Wind Scale. Since its emergence from the north-central Caribbean Sea several days ago, Matthew moved across the Bahamas, and as of noon, Oct 7, its western eyewall is grazing the Atlantic Coast of central and northern Florida. The National Hurricane Center (NHC) predicts the hurricane will pass very close to the southern Atlantic coastline about as far north as Myrtle Beach, SC, before curving offshore in a broad, clockwise looping

pattern, returning to the northern Bahamas as a tropical storm or depression towards the middle of next week. Tropical Storm Nicole is about 15 degrees longitude east of Matthew's position and currently maintains peak winds near 70 mph after briefly attaining hurricane intensity, and is nearly stationary. Track and intensity projections from NHC show Nicole making slow northward progress and getting very close to Bermuda by the middle of next week, still at Tropical Storm intensity. Areas of above-average rainfall predicted over the western Atlantic are associated with both Matthew and Nicole. No new areas of tropical cyclone development are expected over the Atlantic basin during the next two weeks.

The eastern Pacific basin, however, is forecast to have a greater chance of tropical cyclone development during both Weeks 1 and 2, perhaps related in part to Kelvin wave activity. In Week-1, the highlighted tropical cyclone formation area (high confidence) is bounded by 11N-18N/110W-128W. In Week-2, the projected formation area (also moderate confidence) is forecast to be somewhat closer to the western coast of Mexico. Both areas of expected tropical cyclone development are also likely to be accompanied by areas of above-average rainfall, as depicted on the graphic.

Across the central North Pacific, above-average rainfall is anticipated between approximately 10N-18N/160W-165E, which is supported by the latest CFS and ECMWF precipitation forecasts for Week-1. This area may be related to passing kelvin wave activity.

In the western North Pacific, Typhoon Chaba recently moved into the southern Sea of Japan as a Category-1 Typhoon, followed by rapid weakening.

Tropical Storm Aere moved from the Philippine Sea westward across the Luzon Strait into the South China Sea during the past few days. The Joint Typhoon Warning Center (JTWC) predicts Aere will briefly strengthen to minimal typhoon intensity, followed by a rapid weakening as it moves across the northern portion of the South China Sea towards Hainan Island. In terms of future tropical cyclogenesis during the upcoming week, there is a moderate chance of development over the western North Pacific, just

northeast of Guam and the Northern Marianas. This forecast area is supported by both the Central Weather Bureau in Taiwan and the JTWC.

Forecasts for enhanced or suppressed precipitation were modified based on the latest tropical cyclone forecast tracks and dynamical model guidance.

---------- The original forecast discussion follows ----------

The MJO signal remained weak this past week, with some indication of an enhanced convective phase over the Maritime Continent. This is supported by CPC's 200-hPa Velocity Potential Anomalies (VPA) and Outgoing Longwave Radiation Anomalies (OLRA) during the past several weeks. This is also consistent with the evolution of the RMM-based MJO index, which has been meandering throughout phases 4 and 5 (Maritime Continent) during the past three weeks. The weakness of the MJO signal appears to be associated with competing modes of tropical variability. On the lower-frequency end, there is a slowly evolving base state, and a negative phase of the Indian Ocean Dipole (IOD). This phase of the IOD favors persistent enhanced convection across the eastern Indian Ocean and the Maritime Continent region. On the higher-frequency end of modal tropical variability are fast, eastward-moving Kelvin Waves, often associated with convective envelopes. These Kelvin Waves can also help to initiate tropical cyclogenesis. The 850-hPa wind anomaly pattern during the past week depicts an anomalous cyclonic circulation pattern centered over eastern China, which is associated with the monsoon gyre. In addition, westerly wind anomalies at 850-hPa have strengthened over the near-equatorial eastern Indian Ocean and Maritime Continent, with persistent easterly anomalies across the near-equatorial western Pacific. This is consistent with anomalous low-level convergence, rising motion, and enhanced convection over the Maritime Continent. During early to mid-September, a fast eastward moving convective envelope raced across the tropical Pacific, most likely associated with a Kelvin Wave. More recently, however, the region of enhanced convection has become quasi-stationary over the Maritime Continent, which now suggests the dominance of lower-frequency modes.

The RMM-based index forecasts continue this idea of competing modes of tropical variability for the ensuing two-week period, leading to considerable uncertainty in the MJO forecast. In general, the RMM-based index forecasts predict a weakening amplitude of the index during Week-1 over the Maritime Continent, with little if any eastward propagation of ensemble members. This is followed by fast eastward propagation, perhaps associated with Kelvin Wave activity during Week-2.

The tropical Atlantic, the western North Pacific, and the eastern Pacific basins have been active this past week with tropical cyclones. Some of the highlights include major Hurricane Matthew in the Atlantic, which formed shortly before crossing over the Windward Islands. Matthew rapidly attained major hurricane status over the next few days, briefly topping out as a category-5 hurricane on the Saffir-Simpson scale. As of 11am EDT, Oct 4, Matthew is still a very dangerous Category-4 hurricane, with the storm center moving over the Windward Passage and eastern Cuba. Matthew is expected to track very close to the United States East Coast in the next few days. In the western North Pacific, Typhoon Chaba (which briefly became a super-typhoon) currently (Oct 4) has winds near 125 mph. It passed east of Taiwan, and is projected to continue recurving northeastward across the southern Sea of Japan, with the storm's center possibly passing just south of Misawa Air Base in northern Honshu. As for future tropical cyclogenesis, there are three potential areas highlighted on the graphic. During Week-1, Kelvin wave activity emanating from the vicinity of the Maritime Continent may contribute to an enhanced risk of tropical cyclone formation in portions of the far western North Pacific/South China Sea (high confidence), over the west-central Pacific just west of the Date Line (high confidence), and over the east-central Pacific to the south and southeast of the Hawaiian archipelago (moderate confidence). During Week-2, the chances for tropical cyclogenesis are enhanced across the South China Sea (moderate confidence), just south of Hawaii (moderate confidence), and the eastern Pacific (also moderate confidence).

For Week-1, moderate confidence areas of above-average rainfall are anticipated over the South China Sea and Philippines, Indonesia, the central and eastern low-latitude Pacific, and from Brazil out over parts of the South Atlantic. All but the last area is attributed to the intraseasonal signal and/or expected tropical cyclone activity, while the final area is due to mid-latitude frontal activity. Above-average rainfall (high confidence) is predicted from the north-central Caribbean northward across the Bahamas, far western Atlantic, and the U.S. East Coast states, associated with the predicted track of Matthew and its interaction with an upper-level trough. The eastward extension encompassing much of the region near and south of Bermuda is related to recently formed Tropical Storm Nicole. Below-average rainfall (moderate confidence) is anticipated over southern India and adjacent portions of the Indian Ocean. This area of enhanced subsidence and reduced rainfall is consistent with a negative IOD, and the expectation of the enhanced convective phase of the intraseasonal signal over the Maritime Continent.

For Week-2, three areas of above-average rainfall (moderate confidence) are highlighted on the map. These areas include the South China Sea, Indonesia, and the eastern tropical Pacific. These areas are attributed to the base state and/or tropical cyclone activity.

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