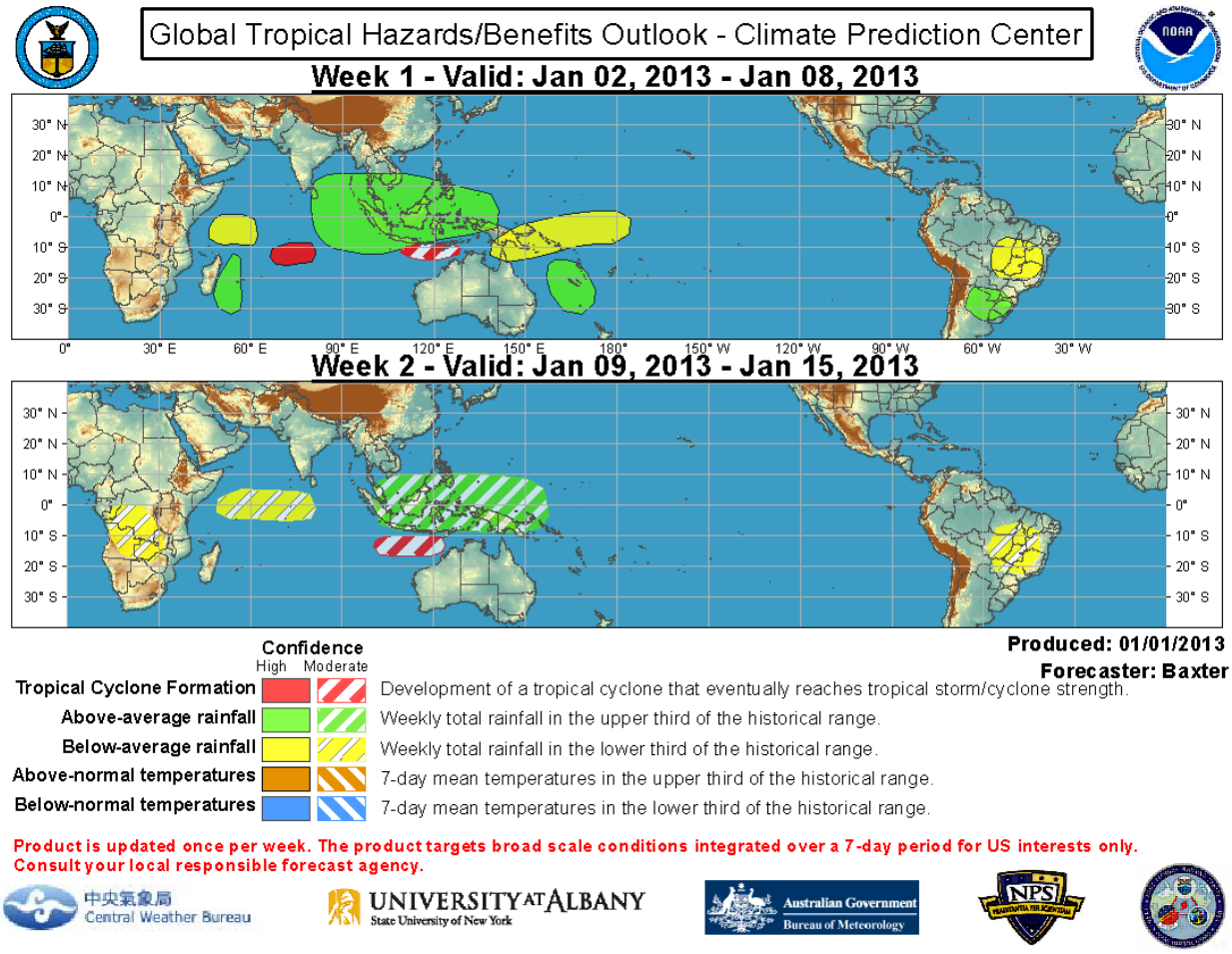

The MJO remained weak for the past several days, though with some eastward propagation through the Indian Ocean toward the Maritime Continent. Other subseasonal modes, namely, atmospheric Kelvin waves and equatorial Rossby (ER) waves, continue to partially obscure the MJO signal. However, the consensus among the dynamical forecast tools suggests modest strengthening of the MJO signal as it propagates through phases 4 and 5, implying the convectively active portion is located over the Maritime Continent, during the next one to two weeks.

The current Global Tropical Hazards/Benefits Outlook for Week-1 is based on a continuing MJO signal, ongoing and forecast tropical cyclone (TC) activity, dynamic model forecasts, and statistical prediction of other subseasonal modes. Enhanced probabilities of above-median rainfall are forecast over the Maritime Continent and the eastern Indian Ocean, where there is likely to be a short-lived constructive interference between the MJO and Kelvin/ER wave activity. Enhanced odds for above-median rainfall are also anticipated over parts of the southwestern Indian and Pacific Oceans, associated with ongong tropical cyclones (Dumile and Freda, respectively). Model foreasts, ER activity, and compensating subsidence behind Freda all support a forecast of drier-than-median conditions from Papua New Guinea

eastward to the Date Line. The north-south dipole over South America is well-supported by MJO composites and model forecasts.

The greatest risk for tropical cyclone formation during Week-1 is predicted over the South Indian Ocean associated with a tropical wave. Lower confidence for an enhanced threat of tropical cyclone formation is forecast nearer Australia as some model forecasts and statistical tools suggest formation could occur later in Week-1. This region is also favored by MJO TC-formation composities during phases 4 and 5.

During Week-2, uncertainty increases with respect to Kelvin/ER wave activity. Therefore, the outlook is based largely on phase-5 MJO composites, adjusted slightly using model guidance. Confidence is generally reduced due to relatively weak MJO activity, uncertainty due to other modes, and inconsistent model forecasts. Enhanced odds for above-average convection is favored across most of the Maritime Continent, extending across the Western Pacific, while drier-than-normal conditions are favored over the western and central Indian Ocean. The forecast of enhanced odds for below-median precipitation persist from Week-1 over Brazil. Phase-5 composites suggest drying over parts of sub-Saharan Africa, as does model guidance. The moderate TC risk is carried over in the eastern South Indian Ocean for the same reasons discussed for Week-1.

Extratropical impacts of the MJO may become more prevalant over the next couple of weeks as the diabatic heating serves as source for downstream Rossby wave propagation. The seeds for this interaction are seen in recent 200-mb zonal wind anomalies, which nearly match the canonical composites associated with phases 3 and 4. The result is a retraction of the jet across Asia and positive height anomalies downstream south of the Aleutians. This could translate to positive height anomalies across eastern North America. The latest extended range forecast is in agreement with this scenario toward the middle of January. Should the MJO bring enhanced convection into the Western Pacific and subsidence into the Indian Ocean, the opposite forcing would occur, with the MJO forcing an extention of the East Asian jet and a downstream pattern reversal over North America by the end of the month. This, of course, is just one part of the climate system which must be reconciled with various other modes of subseasonal variability.