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Simulations of Tropical Waves in the U. S. Navy Operational Global Atmospheric Prediction System

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This paper investigates the equatorially trapped waves in the Navy Operation Global Atmospheric Prediction System (NOAGPS) analysis and extended forecast experiments. The OLR and precipitation fields are analyzed using the spectral decomposition technique developed by Wheeler and Kildis. The results are compared with the NCAR reanalysis and satellite-retrieved measurements. It is observed that NOGAPS underestimates easterly propagating perturbations including the MJO and other shorter (5-10 days) time scales signals such as the Kelvin waves. When the atmospheric model is coupled to the dynamic ocean model (POP) the MJO signal appears in the 40-60 day time scale range. However, there is no amplification of eastward perturbations in the 5-10 day time range.

The easterly waves have been identified as one of the precursors for tropical cyclones and correct phase of the MJO has been assessed to play a key role in the tropical cyclone genesis. The shortcoming mentioned above will be investigated from the thermodynamic perspective in order to extend the predictions of tropical cyclones in NOGAPS.