# Forecasting Local Impacts of the MJO with the POAMA Seasonal Prediction System

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## Abstract

In this talk I will discuss our analysis of the simulation and prediction of the MJO and some of its local impacts using a long hindcast dataset of the Predictive Ocean-Atmosphere Model for Australia (POAMA) version 1.5b. The hindcasts available are a 10-member ensemble starting from the 1st day of each month from January 1980 to December 2006. First, I will discuss our systematic analysis of the prediction of the MJO as defined by the Wheeler-Hendon Real-time Multivariate MJO (RMM) index. The procedure employed is consistent with that recommended by the U.S.-CLIVAR MJO Working Group (Gottschalck et al. 2009) for assessment of realtime predictions of the MJO. Forecasts of the two component (RMM1 and RMM2) index are quantitatively compared with observed behaviour derived from NCEP reanalyses and satellite OLR using the bivariate correlation skill, bivariate RMSE, and measures of the MJO amplitude and phase error. Comparison is also made with a simple vector autoregressice (VAR) prediction model of the RMM index as a benchmark. This comparison shows that the dynamical model exceeds the skill of the benchmark, although some model spin-up lasting up to 10 days is identified. These results are described in full by Rashid et al. (2010).

The second part of my talk will cover our work that is currently being written-up in Marshall et al. (2010). This work extends that of Rashid et al. (2010) to look at the model's simulation of MJO impacts, especially that on local rainfall. Knowing that POAMA does a reasonable job at forecasting the RMM index, we are interested in how that may translate into its ability to predict rainfall and other local parameters. We consider this by constructing composites of the rainfall associated with the RMM index in the model and compare them to the same composites constructed from observations. As expected, the dynamical model best depicts the MJO-rainfall relationship in the topical Indo-Pacific, and is less able to replicate the complicated higher-latitude rainfall signals of the MJO. Further, we find that the model's ability to replicate the observed MJO-rainfall relationship is better for forecast lead times beyond 2 weeks, likely owing to problems associated with the initial model spin-up.

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