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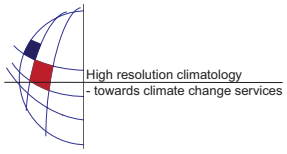

Predictive Ocean Atmosphere Model for Australia (POAMA)

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POAMA is an intra-seasonal to inter-annual climate prediction system based on the Centre for Australian Weather and Climate Research (CAWCR) coupled ocean/atmosphere model and an ocean data assimilation system. The first version (POAMA-1) (Alves et al. 2003; Zhong et al. 2005; Wang et al. 2008) has been run operationally by the Bureau of Meteorology since 2002 and it is the basis for operational seasonal climate prediction products issued by the National Climate Centre early each month.

This new system (POAMA-1.5) has been developed by the Seasonal Prediction and Climate Variability Group in the Centre for Australian Weather and Climate Research (CAWCR). This recent upgrade of the coupled system involves the introduction of a new Atmosphere/Land Initialisation (ALI) system (Hudson et al. 2007) and some re-tuning and improvements of physics, for instance, improved wind stress/current coupling, higher coupling frequency (3 hours) and re-tuned ocean vertical mixing (Wang et al. 2008). The new ALI scheme introduces more realistic atmosphere and land initial conditions into the hind-casts and creates the greater consistency between the hind-casts and real-time forecasts, thus allowing better use of the hind-casts to assess the seasonal forecast skill.

A comprehensive set of 10-member monthly ensembles has been completed covering the period 1980-2006. The results suggest that SST skill measured by anomaly correlation from the new system is higher than 0.6 up to a lead time of 9 months over the equatorial Pacific Ocean. Forecasts over the Indian Ocean, however, are skilful only at shorter lead times up to two months. The comparison between POAMA-1.5 with the first version POAMA-1 shows that the skill in the SST predictions is improved and the improvement in the new version at seasonal time scales is likely due to improved atmosphere and land initialization and coupling physics.