There is a growing appreciation for the role of the tropical Indian Ocean in global climate variability. In particular, the Indian Ocean Dipole (IOD) is now understood to be a direct source of global climate variability but it also plays a primary role in the pathway of the teleconnection of El Niño/Southern Oscillation into extratropical latitudes of the southern hemisphere, especially across southern portions of Australia. This teleconnection is via generation of Rossby wave trains by convective heating fluctuations in the eastern and western poles of the IOD.

In this study we assess the ability of seasonal forecast models to predict the teleconnections of the IOD. We compare predictions from the Bureau of Meteorology’s dynamical season prediction model, Predictive Ocean Atmosphere Model for Australia (POAMA) with predictions from ENSEMBLE Project. We show a range of ability by these forecast models to simulate and predict the teleconnection driven by the IOD. Errors in this teleconnection, which severely limit the ability to predict rainfall variations across southern Australia associated with the occurrence of the IOD and ENSO, appear to stem primarily from biases in the tropical convective variations associated with the IOD. Improvement of both the mean state and variability of rainfall in the tropical Indian Ocean should thus lead to improved ability to predict extratropical climate.