

## Can Rainfall be Predicted at Decadal Timescales?

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Is rainfall prediction at decadal time-scales even possible, is a question that was sought to be answered using the 'near term' or 'decadal' climate experiments included within CMIP5. While some would argue that the experiments demonstrate decadal predictability, the consensus is that the skill of projected rainfall is minimal. But is there a way of using more predictable variables to predict rainfall at such long time scales? The present study attempts to answer this question by using SST based indices as predictors of Australian rainfall, correcting biases in these SST indices, and finally using the corrected simulations of these indices to derive rainfall (as compared to using the raw simulated rainfall which compares poorly with observations). In an assessment focusing on the Australian mainland, the study employs a model combination approach which combines rainfall predictions using individual SST indices, wherein the combination changes as a function of lead time, allowing SST indices to dominate or disappear, depending on both their relevance as well as the accuracy of the predictions made. It is shown that this strategy allows significant and clear improvements in predictability of rainfall across the continent up to as much as 48 months into the future.