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Can intraseasonal to decadal forecasts benefit from from consideration of lunar forcing?

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ABSTRACT

A possible forcing mechanism for intra-seasonal rainfall distribution to bi-decadal climate variability is explored. The atmospheric response to external forcing is demonstrated at a daily and annual time scale by noting variation in the Southern Annular Mode (SAM) as a function of changing lunar tidal potential. The predictability of the SAM, and the subsequent rainfall response over north-eastern South Africa, is evaluated by using an index derived from lunar tidal as a predictor. At intra-seasonal time scales, it is shown that an increase in rainfall between years with lower predicted SAM and years with a higher predicted SAM occurs on very specific parts of the lunar synodic month, providing indications that intra-seasonal outlooks for rainfall by forecast models may benefit from the consideration of lunar cycle characteristics.