



## **Graveyard in the South Indian Ocean: a mechanism for SICZ variability?**

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Tropical-extratropical interactions occur frequently in the subtropical convergence zones of the Southern Hemisphere. The South Indian convergence zone (SICZ) is perhaps the most variable of the three zones, at least at synoptic to subseasonal timescales. The synoptic cloud bands that characterise these tropical-extratropical interactions in the SICZ produce as much as 50% of the wet season rainfall over subtropical southern Africa. Drought years have been characterised by below average cloud band counts and are often concomitant with El-Nino years. This motivates the question: what is the mechanism that may link synoptic cloud band frequency in the SICZ with El-Nino? We explore this question with the aid of the conceptual framework of the subtropical convergence zones as “graveyards” for mid-latitude synoptic disturbances, after Trenberth (1976). Widlansky et al (2010) elaborated a theory that posits that negative zonal stretching deformation of the mean upper-level westerly flow in the subtropical convergence zones encourages absorption of extratropical wave activity. This is manifest when eastward moving mid-latitude disturbances are meridionally elongated as they near the graveyard region, resulting in tropical-extratropical bands of convective cloud. Our results present seasonal frequency of cloud bands in the SICZ, interpreted through wave activity fluxes and zonal stretching deformation. We discuss the usefulness of this theory in understanding interannual variability of the SICZ.