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## **Modelling the low frequency variability of the Indian Ocean.**

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This study investigates the low-frequency variability of the Indian Ocean based on Coupled Model Intercomparison Project (CMIP5) model outputs, observed and reanalysis datasets, and CSIR ocean models. While the existence of semi-annual and annual signals is well known the presence of decadal to multi-decadal signals is less understood. In the South African context, the variability of the Indian Ocean associated with large-scale, low-frequency modes of variability, has implications for the predictability of the regional climate driven by ocean dynamics. Thus far, low pass filtered Ocean Temperature, Sea Surface height, and zonal and meridional components of the ocean currents are subjected to spectral analysis for identification of statistically significant periodicities at the low-frequency timescale. This study also aims to report the relationship between low-frequency variability in the Indonesian Throughflow (ITF) outflow region and the southern Indian Ocean (SIO) in the decadal to multi-decadal timescale.

### **HPC content**

The CSIR models are run using Lengau, the high-performance computer, at the Centre for High-Performance Computing at the CSIR in Cape Town, South Africa. The multi-year CSIR model simulations are performed in a parallel computing regime, utilizing up to 2000 cores for efficiency.

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