



Seasonal variations of heat content and its influence on the thermal structure- North Indian Ocean

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Semi-annual reversal of seasonal winds has provided an unique environment in the North Indian ocean to understand the atmospheric influence on the ocean heat budget and its influence on thermal regime. The advancements in the ocean in-situ observations, satellite based observations and ocean modelling provides us an opportunity to study the thermal structure and heat content variability on seasonal and intrannual time scales. In this study we analysed the XBT and CTD observations from various sources (WOCE, ARGO etc.) to understand intra-seasonal to seasonal heat content variability.

To address these issues we need observed ocean currents which are very sparse in the Indian Ocean. It is necessary to use ocean model simulations to study various dynamic processes which cause the heat content variability in this region. For this purpose we have used ocean model simulations to study the thermal structure and heat content variability in the upper 400m of the North Indian Ocean. We have forced the model with NCEP and ERS wind stress along with various fluxes. There are significant changes of variability between the two model simulations (NCEP vs ERS). The model simulations forced with ERS wind stress simulate better thermal structure.

The results show that horizontal and vertical gradients of temperature play an important role in setting up mean and variability of heat content. The observed interannual variability shows a good correlation with model simulations in time and space in the Arabian Sea, Bay of Bengal and the Western Indian Ocean, but the amplitude of the heat content anomalies significantly varies especially in the Bay of Bengal region.