



Mixed-Layer Salinity Budget in the Tropical Indian Ocean: Seasonal cycle based only on Observations

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The mixed-layer salinity (MLS) budget in the tropical Indian Ocean is estimated from a combination of satellite products, atmospheric reanalysis, and in situ observations over the 2004-2012 period, to investigate the mechanisms controlling the seasonal MLS variability. In contrast with previous studies in the Tropical Indian Ocean, our results reveal that the coverage, resolution and quality of available observations are now sufficient to approach a closed climatological seasonal salt budget. In the South-Central Arabian Sea and South-western Tropical Indian Ocean (SCAS and STIO, respectively), where seasonal variability of the MLS is pronounced, the monthly MLS tendency terms are well captured by the diagnostic. In the SCAS region, in agreement with previous results, the seasonal cycle of the MLS is mainly due to meridional advection driven by the monsoon winds. In the STIO, contrary to previous results which indicate that the MLS budget is dominated by meridional advection, our results reveal that freshwater flux due to precipitation plays an important role in the seasonal cycle of MLS.