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Intraseasonal, seasonal and interannual variability in the measured currents in the equatorial Indian Ocean

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The National Institute of Oceanography (NIO) initiated long-term time-series current measurements in the eastern Equatorial Indian Ocean (EIO) since February 2000 to till present with the funding support from the Government of India. Time-series currents are measured in the EIO along the equator at 3 locations – 93˚E, 83˚E and 77˚E from 6 nominal depths at 100 m, 300 m, 500 m, 1000 m, 2000 m and 4000 m. The currents are measured using the Aanderaa Recording Current Meters with data acquiring at 1 hour interval. To obtain current profiles in the upper 200 m at all the 3 locations, Acoustic Doppler Current Profilers (ADCPs) have been added to the moorings in 2003. The analysis of the long-term currents data from the 3 locations revealed stronger 10-60 day intraseasonal variability (bi-weekly to Madden-Julian Oscillations) in the eastern basin (93E) and dominant seasonal semi-annual (180 day) variability in the central basin (at 77E and 83E). Eastward flowing intermonsoon spring (April-May) and fall (October - November) equatorial Wyrtki jets (120-160 cm/s) are the dominant seasonal currents in the upper 100 m and interannual variability is noticed both in the time of occurrence of these jets and their magnitudes. It is noticed that intraseasonal variability penetrates to deeper depths in the eastern basin and semi-annual variability reaches to deeper depths in the central basin. This variability in the ocean currents is also seen in the surface wind forcing. The analysis further reveals that propagation of long-equatorial waves and their reflection at the eastern boundary cause the observed complex variability in the eastern basin of EIO. Eastward flowing Equatorial Undercurrents (EUCs) are found both in early spring (February - March) and during

monsoon months (August- September). The variability in the measured currents and the associated dynamics will be presented and discussed.