



Occurrence and intraseasonal variability of surface currents in the equatorial Indian Ocean

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Surface currents in the equatorial Indian Ocean are dominated by the semiannual reversing Wyrtki jets. These wind-driven currents are eastward flowing during the Indian intermonsoon; April-May and October-November. During boreal summer and winter however, the equatorial surface currents weaken and reverse to be westward flowing. Previous studies on zonal currents in the equatorial Indian Ocean have focused mainly on the seasonal and interannual variabilities with limited studies on subseasonal variability. In this study, we examine the intraseasonal variability of equatorial Indian Ocean currents as generated by winds and the ocean's internal mechanisms using the HYbrid Coordinate Ocean Model (HYCOM) reanalysis with the Navy Coupled Ocean Data Assimilation (NCODA). The results show that local forcing is mainly through direct impact of wind stress while remote forcing occurs mainly through equatorial Rossby waves. Although the dominant energy of variability lies in the semi-annual period (i.e. 120-180 day), there is substantial energy in the intraseasonal period (i.e. 30-90 day) for zonal currents in the surface layer of the equatorial Indian Ocean. Year-to-year variability in both semi-annual and intraseasonal periods are also evident. The causes for these are further examined and discussed.