Surface Currents in the North Indian Ocean from Argo Drifter Floats

ANITHA GERA¹

¹Indian National Centre for Ocean Information Services, Hyderabad 500055, India

The position information of the argo floats while at ocean surface can be used to infer the surface currents. Using these measurements of the years 2001 to 2009, a monthly climatology of the surface currents in the north Indian Ocean (NIO)is developed. These climatological surface currents are compared with the climatology derived from drifting buoys. The argo climatology depicts the major features of the Indian Ocean Circulation. The summer monsoon current (SMC) and winter monsoon current (WMC), the Somali Current (SC), Equatorial Current/Wyrtki Jet (EC) are well depicted in argo data and are well comparable to the drifter data set. The argo measurements being at a depth of ~ 4-6m, show robust and more pronounced currents during summer. However, the argo dataset is restricted in the Exclusive Economic Zones (EEZ) and hence the coastal currents are not well depicted. The contribution of ekman drifts, the annual cycle of the Wyrtki Jet are analysed. It is observed that, in the NIO, the contribution of ekman drift during summer to the surface currents is large. During summer, the argo surface currents are stronger compared to that from drifters. The monsoon current in argo data is 1.5 times that of drifter in summer(SMC) and 0.33times during winter(NMC). The wyrtki jet in argo is 1.15 times that of drifter during Apr-May and 0.72 times during Oct-Nov. The argo monthly surface currents are compared with that from RAMA moorings for the year 2008 at six locations and are in the range $\pm 30\%$ in magnitude. To summarize, the argo derived surface currents can be used to compliment the drifter data set.

Keywords: argo; surface currents; Wyrtki Jet.

References

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