(117)

Long Term Observations of Currents Over the Off Southern Bay of Bengal

Jinadasa S.U.P.[1*], Wijesekara H.W.[2], Wijesundara W.A.A.P.[3] Fernando H.J.S.[4]

[1]Ocean University of Sri Lanka, Crow Island, Colombo 15, Sri Lanka
[2]Naval Research Laboratory (NRL), Stennis Space Center, Mississippi, USA
[3]National Aquatic Resources Research and Development Agency (NARA), Crow Island, Colombo 15, Sri Lanka
[4]University of Notre Dame, Department of Civil Engineering, Environmental and Earth Sciences, Notre Dame, Indiana, USA
**dewmina07@yahoo.com*

Abstract

The study was carried out in the southern Bay of Bengal (BoB) which located in east of Sri Lanka. The southern BOB is important for understanding water masses of the Bay of Bengal, Arabian Sea (AS) and equatorial Indian Ocean, interaction with currents. Previous studies revealed the entire BoB undergoes a dramatic seasonal variation in circulation patterns. The seasonally reversing north-south currents transport low-salinity water from the BoB into the AS while the overall flows are equatorward. The reversing monsoon currents pass adjacent to the south of Sri Lanka and transport water between the southern BoB and AS. Freshwater inputs, salinity-controlled mixed layers are important factors and have a strong influence in the flushing of the BoB. The field activities were carried out under Air-Sea Interaction in the Northern Indian Ocean (ASIRI) project in the BoB. The program included deployment of deep ocean (~4000 m) Acoustic Doppler Current Profiler (ADCP) mooring. The deployment was done in December 2013 and recovery was done in August 2015. The purpose was to understand and quantify currents, hydrography, mixing, and fresh and salty exchanges between the Southeast Arabian Sea and the Bay of Bengal which leading to give new insights into deep currents and small scale, high-frequency variability, some of which had not been observed ever before. Long-term time series of oceanographic data were collected from subsurface mooring in the southern Bay of Bengal. It was observed that some of the moorings were entangled with commercial fishing nets and lines, which leads top subsurface buoys ended up with unexpectedly closer to the surface than planned. The results indicated that near-surface currents as large as 1.75 m/s in July 2014. Currents stronger than 0.5 m/s were confined to the upper 250 m. Observations of oceanic currents, temperature, and sea surface height (SSH) revealed eddy like features formed with positive and negative SSH anomalies (~20 cm) moving westward at speeds of about 0.1 m/s. Further, results indicated the time period of the deployment, root-mean square velocity fluctuations were about 0.1 m/s near the surface but decayed with depth and became nearly uniform (~0.03–0.06 m/s) below 100 m.

Keywords: Currents, Bay of Bengal, Eddies, Intra-seasonal oscillations, Sea surface height negative SSH anomalies