

Seasonal and spatial variation of mixed layer depth around Sri Lankan waters

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Abstract

Sri Lanka is located in the northern Indian Ocean and low saline Bay of Bengal located on its eastern side and relatively high saline Arabian Sea located on its western side. Waters around the island are also experiences strong reversal currents forced by monsoons.

This paper presents the seasonal and spatial variability of thermocline, halocline and mixed layer depth around Sri Lanka waters based on salinity and temperature profiles derived from ARGO floats and CTD profiles from world ocean experimental cruises. The surface salinity in the Bay of Bengal is range from 31 to 35.5 with low salinity during October to December. During the northeast monsoon (January), there is a deep mixed layer extending to 80-100m with the surface temperature about 27° C. During the southwest monsoon the depth of the mixed layer is decreased to < 50 m. On the other hand, during south west monsoon, mixed layer depth is small compared to NE monsoon in the entire region, whereas depth is less than 40 m in the Arabian Sea. The spatial and seasonal thermocline gradient are also estimated based on temperature difference between the surface mixed layer and deep layer (just below thermocline). The thermocline gradient is large during NE monsoon compared to SW monsoon for the entire region.

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