

Spatial and temporal variation of mixed layer depth in the Southern Sea of Sri Lanka

Danushka Fernando¹, Upul Premarathne¹ and Priyantha Jinadasa^{2*}

¹Department of Oceanography and Marine Geology, Faculty of Fisheries and Marine Sciences and Technology, University of Ruhuna, Matara, Sri Lanka

²National Aquatic Resources Research and Development Agency (NARA), Crow Island, Colombo 15, Sri Lanka

The southern sea of Sri Lanka is most important region of the Indian Ocean as it is more dynamic and productive during the summer monsoon. According to the geography of Sri Lanka, behavior of summer monsoon highly effective on upper most layers of the ocean than winter monsoon along the southern coast. Mixed Layer Depth (MLD) is highly sensible to the variation of physical factors of uppermost layers of the ocean. Study of MLD variation is most important factor for fishery forecasting and validation. This study mainly focused on behavior of MLD during the monsoon seasons with observed temperature/salinity maxima and minima. MLD was calculated using salinity and temperature profiles. Sea Surface Temperature (SST) and Sea Surface Salinity (SSS) contour maps were generated using satellite and reanalysis data. The highest SST in 2016 was recorded during first-inter monsoon period. This study shows significant relationship between MLD and wind speed ($R^2=0.49$ $p < 0.05$). Due to the high wind speed, MLD of 33.7 m was identified in March 2016 (First-inter monsoon). Wyrki jets and wind stirring can be considered as responsible for enrichment of the mixed layer through cool thermocline water in first-inter monsoon period. MLD of first-inter monsoon period was very thicker than the winter monsoon period and winter monsoon is identified as a very low wind mixing season of this area.

Keywords: mixed layer depth, inter monsoon

*Corresponding author – email: udaya@nara.ac.lk