

A cold pool formation in the Lakshadweep Sea and a possible method for the synthetic enhancement of upwellingJohnson Zachariah[†]; Rajan C.K; Chiranjivi Jayaram[†] Cochin University of Science and Technology, IndiaLeading author: johnson_zacharia@yahoo.co.uk

Lakshadweep Sea is one of the biggest fishing zones in the world. During the Indian summer monsoon period (June-September) the observed SST distribution in the Lakshadweep Sea shows a distinct cold pool in the open ocean with relatively cooler waters ($SST < 27^{\circ}\text{C}$) with a diameter of ~200-300 km. This cold pool which we name it as the Lakshadweep cold pool (LCP) forms by the mid of June as a small cooling and with the progress of the time LCP shows maximum intensification and spatial extension during July and by the end of August the northern part of the pool extends northward along the southwest coast and by September gets annihilated. The vertical temperature profiles in the region shows pronounced shoaling of the thermocline when compared to the outskirts of the LCP. The presence of enhanced Chlorophyll-a concentration and productivity in the region shows correlation to the temporal and spatial variation of LCP. The cooling episodes varied in number, intensity, duration and spatial extent in each summer monsoon. Analysis of the available in-situ and satellite data sets shows that LCP owes its genesis to the elevated bathymetric (140m deep) steering in presence of the pole-ward under current. The further intensification and spatial spread of LCP after its genesis owes to the eddy induced cooling and westward spread of positive wind stress curl in the region. The possibility for the bathymetry modification is examined. It is envisaged that the proper modification of the elevated bathymetric dimensions could trigger more nutrient rich waters to the surface and in turn could enhance the existing fish catch and productivity in the region