



Role of remote forcing from the Bay of Bengal in the maintenance of Laccadive High off the southwest coast of India

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The Indian ocean circulation is primarily driven by the seasonally varying monsoonal wind patterns. The wind reversal produces different circulation features in the Arabian Sea (AS) and the Bay of Bengal (BoB). The Laccadive low (LL) and Laccadive high (LH) are the seasonal eddies that are generated during boreal summer and winter, respectively over the offshore region to the southwest coast of India. The change in the winds causes two pairs of seasonal upwelling (Jan-March, July-Sept) and downwelling (April-June, Oct-Dec) coastally trapped Kelvin wave that travel along the coastal rim of the BoB and AS. The 2nd downwelling Kelvin wave is the only Kelvin wave that reaches to the southeastern AS (SEAS) during post-monsoon season. The westward radiated component (downwelling Rossby wave) of the poleward coastally trapped Kelvin wave plays an important role in the formation of Laccadive anticyclonic eddy that strengthen in the month of December. Aim of the current study is to analyze the impact of the interannual variability of the second downwelling Kelvin wave on the Laccadive High. The effect of altered remote forcing from BoB on the formation and strength of Laccadive High was also studied. The wavelet analysis of the sea surface height anomaly data acquired from Topex/Poseidon for the period of 1992-2012 depicted weakening of Kelvin wave in the El-Nino Southern Oscillation (ENSO) and positive Indian Ocean Dipole (IOD) years. The weak presence of 2nd downwelling Kelvin wave was found to be strongly correlated with the weakening of the anticyclonic eddy off the southwest coast of India. The East India Coastal Current (EICC) and West India Coastal Current (WICC) got weaken due to the influence of these interannual modes. The strength of mini warm pool region off the southwest coast of India was also studied. Analysis shows that the variability of westward radiated Rossby wave has a significant influence in the maintenance of Laccadive High.