

# **Redistribution of low-salinity pools off east coast of India during southwest monsoon season**

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**Abstract:** The east coast of India receives significant inputs of fresh water into the Bay of Bengal during the southwest monsoon in comparison with the lower influx seen on the west coast. However, in situ observations made off the east coast suggest that in some years low-salinity pools appear offshore, as opposed to where the river discharge actually takes place. To date, no studies have offered any plausible reason for this anomaly. In an attempt to understand the processes involved, we used numerical modelling to elucidate the causes and mechanisms underlying the appearance of offshore low salinity pools. The model uses temperature and salinity information from the World Ocean Atlas 2001 as initial conditions, and is forced using wind stress derived from the weekly wind for July 2002 and 2010 from the NCEP FNL Operational Global Analysis, because of the need to validate the model using more recent observations. It was found that the formation of a low-salinity pool to the south of 16N and its migration to an offshore region is a result of (i) coastal orientation, (ii) surface circulation supported by a weak East India Coastal Current that redistributes fresh water from two rivers, the Krishna and Godavari, and (iii) an influx of low salinity from the much larger river system to the north, resulting in anomalous pool(s) of low-salinity waters away from the coast. These findings are corroborated by CTD data, ARGO data, and Ocean Surface Current Analysis Real-Time currents.