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On influencing factors of hypoxia in waters adjacent to the Changjiang estuary

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Abstract Based on observational data from ten cruises carried out in 2012 and 2013, the distribution of dissolved oxygen (DO) and the evolution of hypoxia (DO concentrations <2.0 mg L⁻¹) in waters adjacent to the Changjiang estuary are studied. The linkage between summer hypoxia and hydrodynamic conditions is explored. The results suggest that hypoxia frequently occurred from June to October to the south of the Changjiang estuary near the 30-50 m isobaths and was prone to happening under strong stratification without the presence of the Kuroshio Subsurface Water (KSW). Over the Changjiang Bank, hypoxia mainly occurred in July, August and September. Low-oxygen areas initially appeared under strong stratification induced by the spreading of the Changjiang Diluted Water (CDW), and developed into hypoxic zones due to lack of DO replenishment from the relatively DO-rich Yellow Sea Water and the KSW. The yearly evolution of hypoxia was influenced by shelf circulation especially the path of the KSW in the bottom layer of the water to the south of the Changjiang estuary, and the extension of the CDW in

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