**Title:** Oxygen declination in the coastal ocean over the twenty-first century: Driving forces, trends, and impacts

**Author:** Md Mesbah Uddin Bhuiyan, Mahfuzur Rahman, Samsun Naher, Zahid Hasan Shahed, Mir Mohammad Ali, Abu Reza Md Towfiqul Islam

**Abstract:** Oxygen declination in coastal oceans has accelerated drastically in recent decades, both in terms of severity and spatial extent, and such disappearance of oxygen leads to dead zones where life can't survive. This phenomenon is mainly attributed to nutrient pollution and climate change due to intensified anthropogenic activities. The annual statistical oxygen mean concentrations showed the current deoxygenation trends based on (WOA_2001–2018) data comparison of 200 m below the surface water from the first two decades of the 21st century. A relatively similar significant oxygen loss of 0.5–3 ml/L was indicated in the first decade (2001–2009) over the water of continental shelves (200 m) in the tropical oceans and the areas of subtropical Pacific, Atlantic, and southern Indian oceans gradually started to fall from their moderate oxygen concentrations 4–5 ml/L between 2005 and 2009. Consequently, in the next decade (2013–2018), the negative oxygen trend persisted at a similar depth in the global oceans, and its expansion to more regions suggested that this trend of oxygen loss will continue in the future. This is a serious threat that has to be made more widely known since declines in oxygen levels in coastal oceans could have a wide range of negative impact on marine life, biogeochemical cycles, coastal habitats, economies that run on the sea, and ultimately humans. Therefore, it is crucial to investigate and put into practice management alternatives in order to lessen the effects of continuous deoxygenation on marine life and the supply of services by marine ecosystems.

**Keywords:** Eutrophication, Climate change, Hypoxia, Biodiversity, Biogeochemical cycle, Coral reef

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