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Interseasonal hydrological characteristics and variabilities in surface water of tropical estuarine ecosystems within Niger Delta, Nigeria

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Abstract

We present a seasonal and baseline survey of selected physicochemical parameters in epipelagic samples from Qua Iboe (QIB) and Cross River (CRV) estuaries in Niger Delta region of Nigeria. The parameters analysed were temperature, pH, salinity, turbidity, total suspended solids (TSS), dissolved oxygen (DO), biochemical oxygen demand (BOD), total organic carbon (TOC), total nitrogen, available phosphorus, Ca^{2+}, Mg^{2+}, Na^{+}, K^{+} (exchangeable cations) and SO_4^{2-}, Cl^{-}, NH_4^{+} and NO_3^{-}. The results showed that the physicochemical parameters exhibited spatiotemporally explicit variabilities. The mean levels of the parameters were higher during the wet season (June–September) except salinity, DO, Cl^{-} and NH_4^{+} in CRV, whilst QIB recorded higher mean levels for temperature, pH, salinity, BOD, TOC, SO_4^{2-}, Cl^{-} and NH_4^{+} during the dry season (November–February). Significant seasonal variability was recorded for salinity, DO, turbidity, TSS, SO_4^{2-} and NH_4^{+} levels in CRV and for turbidity, DO, BOD, TSS, TOC, available P, Na, Cl^{-} and NO_3^{-} levels in QIB. This study confirmed that the degree of variability of the various physicochemical surface water quality indicators is dependent on the prevalent environmental estuarine factors.

Keywords

Water chemistry Estuary Pollution Niger Delta Physicochemical compositions

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