A preliminary study of marine water quality status using principal component analysis at three selected mangrove estuaries in east coast Peninsular Malaysia

ABSTRACT

This research presents marine water quality status in three different mangrove estuaries. The objective of this study is to evaluate the surface water quality of three estuaries in east coast Peninsular Malaysia. The parameters measured were Dissolved Oxygen (DO), pH, Biochemical Oxygen Demand (BOD), total dissolved solid (TDS), ammonium (NH4-N), turbidity (TUR), total suspended solid (TSS) and coliform. Monthly sampling was performed during the dry season, from June 2016 until September 2016. Data were analysed using principal component analysis (PCA). PCA yielded two PCs where VF1 forms strong factor loadings for pH, NH4-N, SAL, and TDS signifying saltwater intrusion in mangrove area. VF2 designed strong factors of BOD, TUR and Coliform and strong negative loading of DO indicating anthropogenic pollutions in the area. This study output will be a baseline setting for future studies in mangrove estuary marine water quality. Mangrove marine water samples of future monitoring studies in mangrove estuary will benefit by enabling understanding of pollution loading and coastal water quality. It is essential to plan a workable water quality modelling as powerful tool to simulate marine water quality and forecast future consequences to facilitate mangrove biodiversity conservation.

Keyword: Marine water quality; Mangrove; Estuaries; South China Sea; Principal component analysis