Phyisco-Chemical Properties of the Semi-Enclosed Coastal Water System in Salut-Mengkabong Lagoon, Tuaran, Sabah, Malaysia

ABSTRACT

Over the past decade, urbanization has impacted the water bodies of coastal areas of Sabah. Since much development has occurred near the coastal line, water properties may change along with changes in the surrounding environment. The water quality of Salut-Mengkabong Lagoon was chosen to conduct a study with the aim of determining the status of selected water properties. The water properties examined at 11 stations include dissolved oxygen (DO), pH, salinity (‰), temperature (°C) and nutrient- nitrate (NO3) and phosphate (PO4). Also considered are spatial and temporal nutrients (NO3 and PO4) distribution. The measurements were conducted at different tidal cycles in semi-enclosed system at SalutMengkabong Lagoon. Then, the results were compared with the Malaysia Interim Marine Water Quality Criteria and Standards (IMWQS) and ASEAN Marine Water Quality Criteria (AMWQC) to determine the status of water quality in the lagoon. Sampling was performed between October 2015 and August 2016. The results show that most DO concentrations decrease when going towards the inner lagoon, especially during flood tide. The pH, salinity and temperature showed small variations (<5%) between stations. As for NO3 and PO4 concentrations, showed that NO3 fluctuates in concentration in the inner lagoon, while PO4 shows an increasing trend approaching the inner part of the lagoon, with only slight fluctuation in the middle for both tidal cycles. In comparison with the IMWQS and AMWQC, the water quality in the lagoon does show an indication of possible serious pollution, with high nutrient input in station 11. This suggests that the developments surrounding the lagoon, including aquaculture activity, industrial, and residential areas, are actually affecting the water inside the lagoon. However, water quality may change after high input of freshwater during heavy rainfall. It is suggested that sampling need to be conducted continuously during different seasonal monsoons to better determine patterns of pollution.