

Seasonal variation of water characteristics in Kuala Sibuti river estuary in Miri, Sarawak, Malaysia

ABSTRACT

This paper presents the water characteristics of Kuala Sibuti river estuary, which is margined by pristine mangrove forest. For this purpose, nutrients, chlorophyll a and environmental parameters were investigated for 12 months. Physical, chemical and biological parameters of this estuarine water followed a seasonal rhythm and induced by the annual cycle of the monsoon. Surface water temperature ranged from 27.4°C to 32.2°C with a wide variety of salinity from 0.70 PSU to 27.10 PSU followed by Dissolved Oxygen (DO) from 1.94 to 6.71 mg/L. The concentration of chlorophyll a was found to be varied from 0.02 to 0.16 mg/m³. Nitrate, phosphate and ammonium concentrations ranged from 0.40 to 3.53mg/L, 0.01 to 1.92 mg/L and 0.06 to 1.24 mg/L, respectively. Pearson correlation coefficients showed a significant relationship between nitrate and TDS, nitrate and pH, ammonium and salinity, temperature and salinity, temperature and TDS, phosphate and light attenuation in this estuarine environment. The estuary was found to be mesohaline in nature. Estuarine Water Quality Index (EWQI) calculated from phosphate (PO₄), suspended matter (SM) and dissolved oxygen (DO) indicate very good quality (4.95). Significantly seasonal difference for salinity, water temperature and, TDS were observed probably related to tidal flow and upstream river runoff.

Keyword: Estuary; Water characteristics; Nutrients; Chlorophyll a; Kuala Sibuti; Sarawak