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SPATIAL AND TEMPORAL CHANGES IN WATER QUALITY PARAMETERS OF A SHALLOW LAKE

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Abstract

This article presents the result of investigation on the spatial and temporal changes in water quality of Uluabat Lake. It examines the relationship between water and sediment quality parameters, and assesses the factors affecting eutrophication. Water and sediment quality are examined at 8 stations in the lake between May 2008, and May 2009. Water and sediment quality parameters measured are T, pH, EC, SD, NH₄-N, NO₃-N, TN, PO₄-P, TP. Also DO, alkalinity, hardness, SS, BOD, COD, Chl-a parameters in water and organic matter content in sediment are measured. SS, Chl-a, TP concentrations showed their maximum value in the summer (122.75 mg L⁻¹, 43.87 mg m⁻³ and 0.48 mg L⁻¹ respectively), and their minimum value during winter (12 mg L⁻¹, 6.80 mg m⁻³, 0.076 mg L⁻¹ respectively). TN indicated a maximum concentration in summer (23.23 mg L⁻¹) and a minimum during spring (3.89 mg L⁻¹). This study reveals the importance of relationships between temperature DO and nutrients in water. Effect of pH, relation of temperature, conductivity with all nutrients in the sediment, and the differences between the seasons are designated as statistically significant. Water pollution has measured extremely high in station 8 according to Chl-a, BOD and COD parameters, and station 1 indicates the same situation with respect to nitrogen parameters. The results revealed the importance and the need for strict control of point and non-point pollution loads for the preservation of the Uluabat Lake's water quality. Compliance requirements should be set up for activities that could adversely affect water quality.

Key words: nutrients, sediment, shallow lake, water pollution

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