

Abstract

Nyanza Gulf is a large shallow embayment connected to Lake Victoria by the deep narrow Rusinga Channel. Between December 2000 and May 2002 the gradient of nutrients along the axis of Nyanza gulf into the main lake was determined. Nutrient concentrations in the gulf were found to be different from those in the main lake with phosphorus fractions, SRP and TP being significantly higher in the main lake than in the gulf. Well oxygenated conditions in the gulf keep the $\text{PO}_4\text{-P}$ strongly bound to mineral particles whereas in the main lake, where deeper depths allows for development of anoxia, it is released into solution. The low TN:TP molar ratio in the gulf and in the main lake indicates many algae may be N-limited and heterocystous N-fixing cyanobacteria may be favored. However, the high mineral turbidity in the gulf reduces light availability and hence limits algal abundance resulting in easily measure concentrations of mineral nutrients and in particular high levels of dissolved reactive silica. The gulf is a net source of dissolved silica and total nitrogen to the main lake while the main lake is potentially a source of P to the gulf depending on interchange through Rusinga Channel.