

Impact of Flood on Phytoplankton Biochemical Composition in Subtropical Reservoir, Lake Nasser

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Abstract : Lake Nasser is vital to Egypt as it is the main Nile water reservoir. One of the major challenges in ecological flood is to establish how environmental enrichment in nutrients availability may affect both the biochemical composition of phytoplankton and the species communities. Samples were collected from twenty sites representing different lake sectors along the main channel of the lake during 2017. Generally, phytoplankton distribution during flood season in Lake Nasser indicates the predominance of Cyanophyceae at all lake sectors. Increases in NO_2 (9.31 $\mu\text{g/l}$) and PO_4 (7.11 $\mu\text{g/l}$) at the Abu-Simble sector are associated with changes in community structure and biochemical composition of phytoplankton, where Cyanophyceae blooming occur associated with retardation in biopolymeric particulate organic carbon. The maximum total biochemical contents (91.29 mg/l) and biopolymeric particulate organic carbon (37.15 mg/l) was found at El-Madiq sector where there was optimum nutrients (NO_2 0.479 $\mu\text{g/l}$ and PO_4 5.149 $\mu\text{g/l}$), a highly positive correlation was found between Cyanophyceae and NO_2 in the lake ($r = 0.956$). A highly positive correlation was detected between carbohydrates and both transparency and pH in the lake ($r = 0.974$ and 0.787). Also carbohydrates had a positive relation with Bacillariophyceae ($r = 0.610$). Flood positively alter the water quality of the lake by increasing dissolved oxygen and nutrients enrichment to the aquatic ecosystem, affecting other aquatic organisms of higher trophic levels as economic fishes inhabiting the lake.

Keywords : aquatic microalgae, Aswan high dam lake, biochemical composition, fresh water

Conference Title : ICEMBB 2020 : International Conference on Energy Management, Biofuels and Biorefining

Conference Location : Mumbai, India

Conference Dates : February 06-07, 2020