



Spatial pattern assessment of Lake Kivu basin rivers water quality using National Sanitation Foundation Water Quality and Rivers Pollution Indices

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ABSTRACT

Spatial variation of water quality in rivers is a function of the surrounding environment and land, the reason why water indices are important to reduce the bulk of information into a simplified and understandable manner for specific purposes. This study aimed at assessing the spatial distribution of water quality of 23 Rwandan rivers that drain into the Lake Kivu by using the National Sanitation Foundation Water Quality Index (NSFWQI) and the River Pollution Index (RPI). The study collected field data and analyzed the parameters of the NSFWQI and RPI including suspended solids, turbidity, biological oxygen demand, nitrate, temperature, total phosphorus, pH, fecal coliform and dissolved oxygen. For gathering details related to entities adjacent to rivers, land use and land cover, topography and rainfall have been analyzed. The results showed that good water quality (negligibly polluted) was located in areas dominated by forestland while bad and very bad (39%, 26%) classes of rivers (severely polluted) were influenced by the dominance of farmland. Moreover, 22% of rivers in medium class were equivalent to 26% moderately polluted due to the disturbance of other land use types and other factors such as slope and tropical rainfall.

Keywords: Lake Kivu; Land use; NSFWQI; Rivers; River pollution index; Rwanda; Water quality

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