

Contribute of GIS techniques in the evaluation of anthropic impact change in a sub-alpine shallow lake

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Abstract: This paper presents a calculation method to estimate theoretical nutrient loads (phosphorus and nitrogen) reaching to Pusiano catchment (Northern Italy) between 1961 and 2000. This approach integrate a classical method of nutrient loads calculation with aspects concerning GIS techniques. The dataset used in this work is a collection of socio-economic data concerning point and nonpoint sources. The nutrient loads is calculated using appropriate coefficients integrated with an empirical evaluation of the decay load along the distance between the source and the lake shore. The theoretical results are compared with the lake phosphorus loads calculated using a steady state mass balance model. The results has been also compared with previously nutrient loads estimations obtained with different approaches.

The results obtained in this paper seem to give value to this approach that is in good agreement with the ecological response of the lacustrine environment in the last 40 years. These results suggest future improvement in the use GIS techniques in the evaluation of the real nutrient load reaching to the lake, but underline the persistence of same problems related to the estimation of the nutrient decay along the rivers and the estimation of appropriate export coefficients.

Keywords: Nutrients load, Geographic Information System; Catchment; Modelling