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"Gheorghe Asachi" Technical University of Iasi, Romania

MAPPING NITRATE LEVELS IN GROUNDWATER USING GIS

Gabriela Biali*, Florian Stătescu, Vasile Lucian Pavel

"Gheorghe Asachi" Technical University of Iasi, Faculty of Hidrotechnical Engineering, Geodesy and Environmental Protection, 65 Dimitrie Mangeron Blvd, 700050, Iasi, Romania

Abstract

This paper is an analysis of a case study which entails the assessment of pollution degree with nitrate in the Prut river basin, by analysing 23 wells. The novelty of this work is the use of modeling done by GIS techniques, namely the Digital Terrain Model (DTM) interpolation technique, to obtain further information starting from discrete information.
In the present paper, we emphasized the increasing tendency of nitrates and nitrites content in the underground waters, in direct correlation with the agricultural land use methods and implicitly the leachate quantity, using modeling methods based on GIS technique. Both the physical pollution (due to processes such as: hydraulic or wind erosion, destructuring, compacting etc.) and chemical pollution (due to the alluvial transport with significant pesticide quantities) contributed to the degradation of the groundwater quality.
The possibilities to use DTM are discussed for the particular case of the spatial and temporal evolution of the nitrate concentrations in the ground water in a specific territory. Also, the paper pointed out accurately the exposed territory to pollution risk, or that land with both critical or off the limits of pollution, according to the normative for water protection. The outcomes of the spatial information studies using specific software were shown in 2D and 3D graphical representations. By considering this analysis we were able to emphasize the advantages of using DTM technique and conclude about its viability in providing accurate data.

Key words: GIS, model MNT, software Surfer, underground water

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* Author to whom all correspondence should be addressed: e-mail: gbiali@yahoo.com