

Assessing Transferability of a GIS-Based Neuro-fuzzy Model to Predict Ground Water Contamination Potential

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There is a need to develop a new methodology that assesses ground water contamination potential with inexpensive yet robust data under data driven condition and uncertainty. Integration of GIS, GPS, fuzzy logic and neural networks could provide a framework from which assessment of ground water contamination potential can be made in uncertain conditions. However, the transferability of such methodologies to other regions remains a challenge because it requires elaborate calibration and training processes. The specific objective of this study was to transfer the GIS-based neuro-fuzzy methodology developed for northwest Arkansas to the eastern part of Arkansas where landuse and underlying geology are different. The primary data layers used in this study are soils, landuse, geology, and water quality data of wells. The proposed methodology has prospects to facilitate ground water contamination potential modeling at a regional scale and could be transferred to other regions. However, this would require incorporation of appropriate input parameters suitable for the region of interest.

Keywords: GIS, modeling, ground water, contamination