

Mapping the Spatial Variability of Groundwater quality in Urmia (Iran): Comparison of Different Interpolation Methods

R. Taghizadeh-Mehrjardi^{1,*}, M. Zareian-Jahromi², F. Asadzadeh³

¹ Faculty of Agriculture, Natural Resources and Desert Studies, Higher Education Complex of Ardakan, Ardakan, Iran, PO BOX: 89515-147, Yazd, Iran; ² Faculty of Natural Resources, University of Tehran, Karaj, Iran; ³ Faculty of Agriculture, University of Urmia, Urmia, Iran

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Abstract: Groundwater deterioration hazard assessments are needed for clearer appreciation of the actions needed to protect groundwater quality, and should become an essential component of environmental best-practice. Water quality mapping is the main procedure of this assessment. At present research, we compare efficiency of three interpolation techniques included IDW, kriging and cokriging for predicting of some groundwater quality indices such as: Na⁺, TH, EC, SAR, Cl⁻ and SO₄²⁻. Data were related to 97 wells in Urmia plain, Azarbayjan Province, Iran. After normalization of data, variogram was computed. Suitable model for fitness on experimental variogram was selected based on less RSS value. Then the best method for interpolation was selected, using cross-validation, ME and RMSE. Results showed that for SO₄²⁻ kriging had the lowest RMSE and for SAR co-kriging performed better than other methods and for the rest of GWQI included TH, EC and Cl⁻ and Na⁺, IDW technique had better result than geostatistical method to simulate groundwater quality indices. Finally, using geostatistical and IDW methods, map of Groundwater were prepared in GIS environment.

Key words: *Groundwater quality, Interpolation, Geostatistics, Urmia plain*

* Corresponding: E-Mail: rh_taghizade@yahoo.com; Tel: +983527220909; Fax: +983527226767