Abstract

Groundwater resources are very important, especially in arid and semi-arid regions. The surface and underground water sources in each region do not have the same quality and quantity. Human activities in the fields of agriculture, industry and urban have a high potential for contamination of these resources and reduce the quality of them. This study was conducted to investigate the quantitative and quantitative spatial and temporal variations of groundwater quality and water quality in Kerman plain in the 8-year statistical period by geostatistical methods. In this regard, after selecting the best points to be evaluated due to the distribution and accuracy of the data, control and rebuild statistics,ensure the data is normal, Using spss software. and using the GS+ software, the best model for changing the spatial structure of the data, including water depth and quality parameters(EC،Cl^-،SO42-، SAR, Na^+**)**, fitted. Also, to determine the concentration of quality elements in 2012, a sampling period of 60 wells was conducted and relevant tests were also carried out. to simplify the determination of hydrochemical parameters for agriculture, three risks for water quality assessment were used, which include: salinity risk included(EC،Cl), sodium risk included (SAR,Na^+**) ,** heavy metal hazard included(fe) .for interpolation of the characteristics, ordinary kriging (OK), simple kriging (SK), inverse distance weighting (IDW), co kriging (CK), and indicator Kriging (IK), methods were used. the indicator kriging was used to prepare the risk maps for the concentration of water quality elements in water. the performance of different geostatistical methods was evaluated using cross-validation method. groundwater quality and quantity zonation maps and risk concentration maps of the studied elements were provided by ArcGIS software. Based on the results, The semivariogram of the spherical model as the best fitted model to the spatial structure of qualitative and quantitative data and co kriging (CK), simple kriging (SK) methods, as best interpolation methods for qualitative and quantitative data respectively.and semivariogram gaussian models were identified as the best option for zoning the iron parameter in conventional kriging method. the possibility of an increased risk of iron infections in the south of the plain and it shows the risk of salinity and sodium in the north of the plain.

Key words: geostatistic, GS+، ArcGIS ,semivariogram, interpolation, kriging

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