

Abstract

Groundwater is one of the vital sources of meeting the needs of human societies. Today, this source contributes significantly to the economic growth of various societies. The domination of arid and semi-arid climates in a vast area of the country together with the growth of the population leads to increase in water demand for drinking, industrial and agricultural purposes.

This research was carried out to investigate the spatial and temporal changes of groundwater quality variables including pH, TDS, CL, EC, HCO₃ and SO₄ on Kerman plain during the years 2011-2012 to 2016-2017 using land surveying methods. After selecting the sources of survey (wells), the control of the statistics and the normalization of the data was examined with the Kolmogorov-Smirnov test.

For this purpose, using geostatistical software, a suitable Variogram model was fitted to the spatial structure of the data. In this study, different interpolation methods such as kriging, inverse distance, and cokriging were used. The best method is selected upon the use of evaluating criteria determined by RMSE, MAE, NSE, and MBE. The spatial zonation of groundwater quality in the plain in the 5-year statistical period indicates a downward trend in the direction of the southeast to northwest. In other words, the northwest (outlet of the plain) has the lowest water quality, which can be attributed to the sewage from urban, rural, industrial, mining, as well as the use of various chemical fertilizers in agricultural lands.

Eventually, the aquifer was monitored for agricultural and drinking purposes using Wilcox and Schuler standards, which showed the prevalence of inappropriate and unsafe conditions for agriculture and drinking in most of the plain.

Key words: Introspection, Geospatial, GS + Software, Variogram Model, Kerman Plain



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