

Spatial analysis of groundwater quality using self-organizing maps

Lazhar Belkhiri, Lotfi Mouni, Ammar Tiri, Tahoorah Sheikhy Narany, Razki Nouibet	Authors
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Description

Hydrochemical data of groundwater samples collected from thirty-five wells in alluvial aquifer of El Milia were examined using Self-Organizing Map (SOM) approach. Based on visualization of SOM-analysis and hydrochemical characteristics, groundwater samples were clustered into three clusters, which revealed three basic representative water types: freshwater (cluster 1), moderate salinity (cluster 2), and high salinity (cluster 3). Based on ionic ratio, the source of soluble ions in the groundwater of the freshwater types was found to be the carbonate rock dissolution, while evaporation and evapotranspiration were found to be the main factors affecting the chemistry of the groundwater characterized by the moderate and high salinity types, respectively. This study shows that the SOM approach can be successfully used to classify and characterize the groundwater in terms of quality.

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