

Groundwater quality assessment in Marand Region, northwest Iran

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To study hydrochemical characteristics of groundwater, water samples were collected in an area of 40 km² and 17 locations from Marand plain, Eastern Azerbaijan province. Samples analysed for major cations and anions and processed by statistical methods. While carrying out factor analysis, three major parameters of groundwater composition were extracted. Piper diagram and correlation matrix results indicate that the main type of groundwater is bicarbonate with influential role of alkaline earths. Studying Isoelectrical conductivity, total dissolved solid contours, and a Pie chart in hydrochemical maps shows an increase in EC, TDS and Chloride concentration in the groundwater located in the northeast of the region. Changes in the spatial interpretation of the groundwater parameters indicate that the quality and geochemical characteristics of groundwater have a close correlation with topography, Geology, and hydrograph of Marand plain. Samples which have been obtained from southern parts of the region (near to aquifer recharge centre) show very suitable quality, but the composition of the groundwater changes in the northeast because of an increase of ionic constituents and the existence of fine grain sediments in aquifer zones. We can conclude that factors such as groundwater flow paths, water level increase and human influences (urban wastewater and agricultural activities) made this part of the region sustainable.