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Evalutaion of the Surface Water Quality Using the Water Quality Index and Discriminant Analysis Method

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Abstract : Water resources present to the public order of the world a very important problem for the protection and management of water quality given the complexity of water quality data sets. In this study, the water quality index (WQI) and irrigation water quality index (IWQI) were calculated in order to evaluate the surface water quality for drinking and irrigation purposes based on nine hydrochemical parameters. In order to separate the variables that are the most responsible for the spatial differentiation, the discriminant analysis (DA) was applied. The results show that the surface water quality for drinking is poor quality and very poor quality based on WQI values, however, the values of IWQI reflect that this water is acceptable for irrigation with a restriction for sensitive plants. Consequently, the discriminant analysis DA method has shown that the following parameters pH, potassium, chloride, sulfate, and bicarbonate are significant discrimination between the different stations with the spatial variation of the surface water quality, therefore, the results obtained in this study provide very useful information to decision-makers

Keywords : surface water quality, drinking and irrigation purposes, water quality index, discriminant analysis
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