



## **Hydrogeochemical assessment of groundwater quality in a river delta using multivariate statistical techniques**

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The knowledge of the factors controlling the regional groundwater quality regime is important for planning and management of the groundwater resources. This work applies conventional hydrogeochemical and multivariate statistical techniques to identify the main factors and mechanisms controlling the hydrogeochemistry of groundwater in the deltaic environment of River Pinios (Thessaly) as well as possible areas of interactions between groundwater and surface water bodies. Hierarchical Cluster Analysis (HCA) and Principal Components Analysis (PCA) are performed using a data set of physical-chemical parameters from surface water and groundwater sites. Through HCA the paper's objective is to group together surface water and groundwater monitoring sites based on similarities in hydrochemistry in order to indicate areas of groundwater-surface water interaction. On the other hand, PCA aims at indicating factors responsible for the hydrogeochemical characteristics of the water bodies in the river delta (e.g., water-rock interaction, seawater intrusion, anthropogenic activities).