



Determining hydrogeochemical facies with multivariate analysis in Aguascalientes, Mexico

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In underground water study, results difficult discriminate clearly the differences among hydrogeochemical facies due to different water contributions with different origins, which behave chemically in the same way. For instance, hydrogeochemical models realized in Aguascalientes, México have demonstrated that conventional analysis of major and minor ions through Piper, Stiff, Shoeller, and Chadda Diagrams results insufficient to reach an acceptable discrimination of existent facies in this zone. Based in this, application of statistics techniques of multivariate analysis is necessary to use jointly the information given for ions, metals, stable isotopes and local geology. In this study are managed physicochemical variables gotten as of recent sampling of potable water wells in Aguascalientes, México. This data was manipulated with Cluster Analysis, which is useful to discriminate water facies through patterns recognition. Factor Analysis joined to Principal Components Analysis and Varimax Rows were also worn to identify statistic correlations among the studied parameters and the processes occurring in the aquifer. Study's objectives are verifying previous results in the zone and conclude if this mathematic methodology is or not reliable when local geologic composition and isotopic variables are considered.