



## **Discrimination of different sub-basins on Tajo River based on water influence factor**

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Numeric taxonomy has been applied to classify Tajo basin water (Spain) till Portugal border. Several stations, a total of 52, that estimate 15 water variables have been used in this study. The different groups have been obtained applying a Euclidean distance among stations (distance classification) and a Euclidean distance between each station and the centroid estimated among them (centroid classification), varying the number of parameters and with or without variable typification.

In order to compare the classification a log-log relation has been established, between number of groups created and distances, to select the best one. It has been observed that centroid classification is more appropriate following in a more logic way the natural constrictions than the minimum distance among stations. Variable typification doesn't improve the classification except when the centroid method is applied. Taking in consideration the ions and the sum of them as variables, the classification improved.

Stations are grouped based on electric conductivity (CE), total anions (TA), total cations (TC) and ions ratio (Na/Ca and Mg/Ca). For a given classification and comparing the different groups created a certain variation in ions concentration and ions ratio are observed. However, the variation in each ion among groups is different depending on the case. For the last group, regardless the classification, the increase in all ions is general.

Comparing the dendrograms, and groups that originated, Tajo river basin can be sub divided in five sub-basins differentiated by the main influence on water:

1. With a higher ombrogenic influence (rain fed).
2. With ombrogenic and pedogenic influence (rain and groundwater fed).
3. With pedogenic influence.
4. With lithogenic influence (geological bedrock).
5. With a higher ombrogenic and lithogenic influence added.