SOM algorithm applied to Ebro sub river basins aggregation.

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Recently many studies on the Ebro river basin (Spain) has been developed due to the political implications of water transfer between river basins with a deficit balance. Some of these studies are focused in the analysis of chemical parameters that for several reasons can be found in the river water.

SOM algorithm (Kohonen, 1995), normally applied in neuronal network context, has been applied to classified the analytical river stations used for sampling. The input of this algorithm are the average value of selected variables: Ca^{2+}, Na^+, Mg^{2+}, K^+, Cl^-, alkalinity, SO_4^{2-}, ammonium, nitrate, PO_4^{3-}, pH, conductivity, SAR, DBO5, oxygen, total coliform, relative conductivity, water temperature and ESP during two decades. Once that each station is represented by these variables and auxiliary ones, such us slope, soil, crops, etc; SOM algorithm begins to aggregate all stations with the best variable that could explain the similitude or difference among them.

The result was a classification in seven clusters where the explicative variables are: conductivity, proportion of ions sodium-chloride respect to the total solute concentration and biological contamination.