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## Hydrochemical Classification of Groundwater with Artificial Neural Networks

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Growing datasets of inorganic hydrochemical analyses together with large differences in the measured concentrations raise the demand for data compression while maintaining critical information. The data should subsequently be displayed in an orderly and understandable way. Here, a type of artificial neural network, Kohonen's self-organizing map (SOM), is trained on inorganic hydrochemical data. Based on this network, clusters are built and associated to the salinity source distribution of the spatial variation at a former potash mining site. This combined two-step clustering approach managed to assign the groundwater analyses automatically to five different clusters, three geogenic and two anthropogenic, according to their inorganic chemical composition. The spatial distribution of the SOM clusters helps to understand the large scale hydrogeological context. This approach provides the hydrogeologist with a tool to quickly and automatically analyze large datasets and present them in a clear and comprehensible format.