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Abstract book

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Development of a database and predictive models of diatom communities in rivers: the PAEQANN project

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The PAEQANN project is a European project that aims to use modern modelling technique to model aquatic communities, especially based on artificial neural networks (ANN). PAEQANN stands for Predicting Aquatic Ecosystems Quality using Artificial Neural Networks and its objective is to characterize the impact of environmental characteristics on the structure of aquatic communities (Diatoms, Macroinvertebrates and Fishes).

In the framework of the PAEQANN project, an important database on benthic diatoms has been built. This database contains more than 2500 records, from Austria, Belgium (Wallonia), France and Luxembourg. Each station is described by 9 environmental variables characterising the type of river, and each sampling by at least 20 environmental variables, describing the water quality. All the variables have been standardised in order to be able to carry out single analyses on the whole data matrice. The structure of the database will be presented.

An example of analysis using ANN will be given. It deals with records from good ecological quality situations. Self Organizing Maps and Back Propagation are used to identify and predict benthic communities. A first attempt is made to identify the contribution of environmental variables to the algal community changes. The relevance of expression of diatom counting as relative biomass or as relative abundance is also discussed.