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Abstract book

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Prediction of aquatic macro-invertebrate communities using Artificial Neural Networks

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Artificial Neural Networks (ANN) have been successfully applied to a variety of different water management problems. Examples of these are hydrological modelling, water quality modelling and prediction of drinking water consumption. The use of ANN for purposes of ecological research has only hesitantly begun. The main reason of this might be the lack of transparency of Neural Networks. Until recently ANN was considered a black box technique, however recent developments have made it possible to visualise the contents of these black boxes. This has resulted in the development of so called Product Unit Networks (PUN's), which have also been called 'white box neural network function finders'. These PUN's are able to extract and quantify multivariate power functions from complex data sets. We tried applying these methods to data sets of macro-invertebrate communities and abiotic variables from Dutch surface waters. The first results are promising and show the added value of application of these techniques for ecological research.