WE302 Multivariate analysis of monitoring data in Flanders: what are the major drivers of ecological water quality?K. Viaene, ARCHE; J. Teuchies, University of Antwerp / Department of Biology (SPHERE Research Group); E. Bennetsen, Flanders Environment Agency (VMM); L. Bervoets, University of Antwerp / Department of Biology (SPHERE Research Group); B. Slootmaekers, Systemic Physiological and Ecotoxicological Research (SPHERE), University of Antwerp / Department of Biology; F. Verdonck, ARCHE. With the WFD, member states are obliged to set up monitoring programs for assessing the chemical and ecological status of water bodies. These provide a wealth of data, offering a unique insight into how pollutants affect ecosystems. In this context, multivariate techniques such as redundancy analysis (RDA) can be key tools to identify the main drivers for ecological status and determine the effects of pollutants compared to other natural and human factors. A long-term (2007-2015) monitoring dataset of water bodies in Flanders was compiled and analyzed using multivariate techniques. The abundances of macroinvertebrates (MI), macrophytes (MP) and the quality indices for three major groups (MI, MP and phytobenthos) were studied for their correlation with physiochemical parameters (e.g. pH, O_2, N, P, BOD and COD), hydromorphology (e.g. river bank, stream velocity, meandering), nearby land use and pollutants. In general, the amount of variation explained by the multivariate analyses is low (10-50%), especially for MI. This is often observed for this type of datasets because of missing variables, sampling problems, ecological interactions, natural variability etc. The major observation across all analyses is that physiochemistry is the key factor for ecological water quality: the organic load and related parameters (N, P, BOD, COD) clearly correlate with low water quality indicators e.g. the MI groups Tubificidae and Culicidae are the only MI positive correlated with total P. Other environmental parameters such as river bank structure or meandering only become important once the water quality had a score of average or higher. This is an important finding that can help guide future restoration efforts. In our analysis, pollutants did not explain much variation which means that, over all sites, pollutants did not play a key role in determining the ecological status of water bodies. However, it is likely that they are important for a low number of local sites and that this signal is lost in this type of meta-analysis. Additionally, pollutants are often correlated themselves with organic load, masking their importance in this analysis. A dedicated analysis with selected sites would help to further clarify this. This type of multivariate analysis provides an integrated view on different types of environmental variables potentially affecting water quality and can help environmental legislators decide on the most resource-efficient way to improve water quality.