# Abstract of the DFG Project: "The determinants of algal trait dynamics in phytoplankton communities over vertical, seasonal, and inter-annual gradients"

**A project within the DFG Priority Programme 1704: Flexibility matters: Interplay between trait diversity and ecological dynamics using aquatic communities as model systems (DynaTrait)**

## 1. Summary

The research project Ri-2040/2-1 provided new insights into phytoplankton trait dynamics in pelagic environments of inland waters and mostly followed the research plan outlined in the proposal. We were able to provide a previously unexploited long-term data set of plankton observations, recorded in Germany's largest drinking water reservoir, to the scientific community. This data set enabled a detailed analysis of trait dynamics in the field on seasonal, inter-annual, and vertical scales. A major methodological breakthrough of this research is the development of a trait matrix that translates taxonomical information into trait information. A broad field monitoring program and a field experiment provided insights into feedbacks between trait-mediated phytoplankton dynamics and biogeochemistry as well as the dynamics of traits in the field. Finally, three modelling studies created a thoroughly tested and validated lake model framework for the simulation of hydrodynamics, biogeochemistry, and phytoplankton dynamics.

Overall, the project fulfilled the research plan of the proposal and was with 7 peer-reviewed publications, one dissertation, and one book chapter extraordinarily productive in terms of outreach and dissemination. Moreover, a young researcher obtained his PhD degree within the project and finally even achieved the Young Scientists Award of the German Society of Limnology.