Modelling changes in environmental parameters induced by multiple stressors

Level: Bachelor/Master (internship/thesis)

Field: Environmental Chemistry; Water Chemistry; Environmental modelling

Duration: 5 months

Starting date: Any time

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Project description

The project aims to mechanistically model the relationship between stressors and environmental variables. In particular, the project attempts to predict the concentration of dissolved oxygen (DO), dissolved organic carbon (DOC), and electrical conductivity (EC) in aquatic systems facing binary combinations of temperature increases, salinisation, and hydromorphological modifications.

Problem description

Non-chemical stressors usually affect organisms by influencing environmental variables. In other words, environmental variables play an integral role in the stressor-response causality. Stressors, such as temperature increases, salinisation, and hydromorphological modifications, have impacts on biogeochemical cycles, thus affecting environmental variables, such as DO, DOC, and EC. Subsequently, changes in the environmental variables exert effects on behaviour of organisms.

The research will focus on the following components:

- Which biogeochemical cycles determine the proposed environmental variables (DO, DOC, and EC)?
- What is the relationship between the stressor intensity and the rate of biogeochemical cycles?
- How do stressors interact with each other affect the biogeochemical cycles?