

Study Project

Monitoring small temporal changes in DOM using EEM-PARAFAC

About us

The Chair of Urban Water Systems Engineering is involved in the education of students (Bachelor and Master) in environmental and civil engineering. Our research covers all aspects of the urban water cycle: urban water supply, wastewater treatment and energy recovery, water recycling, drainage systems, industrial wastewater treatment, membrane systems, and the urban water-food-energy nexus. The group of Advanced Water Treatment explores physical, chemical and biological removal mechanisms of contaminants in waste water with a focus on contaminants of emerging concerns.



Topic

Managed Aquifer Recharge (MAR) is an important strategy to store water for later supply. During MAR, contamination such as trace organic compounds (TOCs) can be reduced by biodegradation. This is highly dependent on environmental factors, such as influent water quality, temperature and dissolved organic matter (DOM). Small temporal changes in DOM might impact biodegradation of TOCs.

DOM can be measured and characterized using EEM-PARAFAC (fluorescence excitation-emission matrix-parallel factor analysis), (Sciscenko et al. 2022, <https://doi.org/10.1016/j.ceja.2022.100286>). At the Chair of Urban Water Systems Engineering, a fluorescence spectrometer can be used to determine temporal changes in DOM.

This study project aims to measure DOM at different concentration and explore the temporal variability of DOM in a laboratory setup. This provides the basis for later experiments on the influence of DOM in MAR.

Tasks

- Operation and evaluation of DOM with EEM-PARAFAC
- Plan and setup DOM measurements
- Test temporal variability of DOM EEM-PARAFAC

Requirements

- Interest and basic knowledge in water treatment and water reuse
- Motivation to work in the laboratory. Experience preferable but not required.

Time Range

The work is designed for a period of 5 months and should be started soon (Autumn 2024).

Kontakt

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