

Preventing the brownification of water

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[SE1]: Preventing the brownification of water **Lund University**

How to make my region climate resilient Interreg

Blue Transition

Pilot summary

Problem:

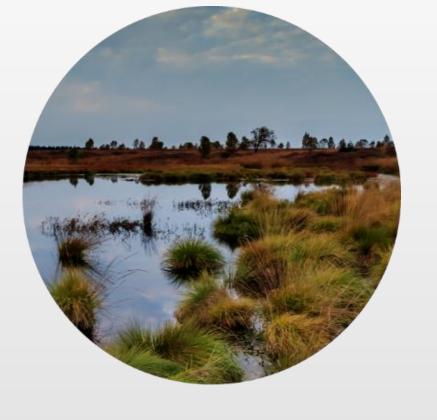
Brownification of lake water is a major problem for drinking water supply, biodiversity and tourism

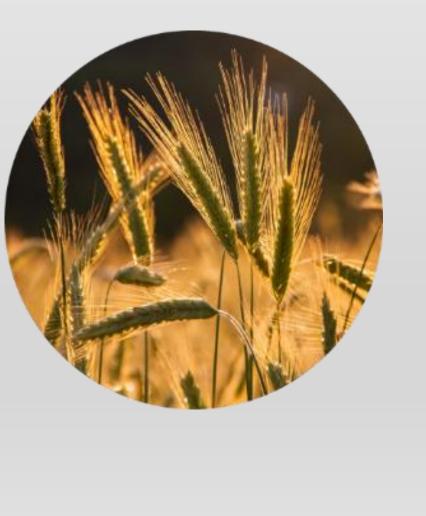
Reason for brownification:

- Unfavourable forest management (tree species) -> increase in dissolved organic matter (DOM) flux to surface water
- Drainage systems (e.g. ditches in forests) -> direct, fast, inflow of DOM into the lake
- Extreme weather events \rightarrow further increase of inflow
- Leakage of DOM from peat bogs

Challenges/possible solutions:

- Creating more and larger riparian zones
- Avoid any direct drainage into the lake
- Better forest water management
- Knowledge of the complex hydrogeological system (here, of lake Bolmen)





Activities

- Investigations of ditched drainage leading directly to the lake vs. natural/re-established riparian zones of different size and structure
- Investigation of the effect of different tree species in the forest to the organic matter release (including seasonal changes)
- Combining both approaches to build a conceptual model

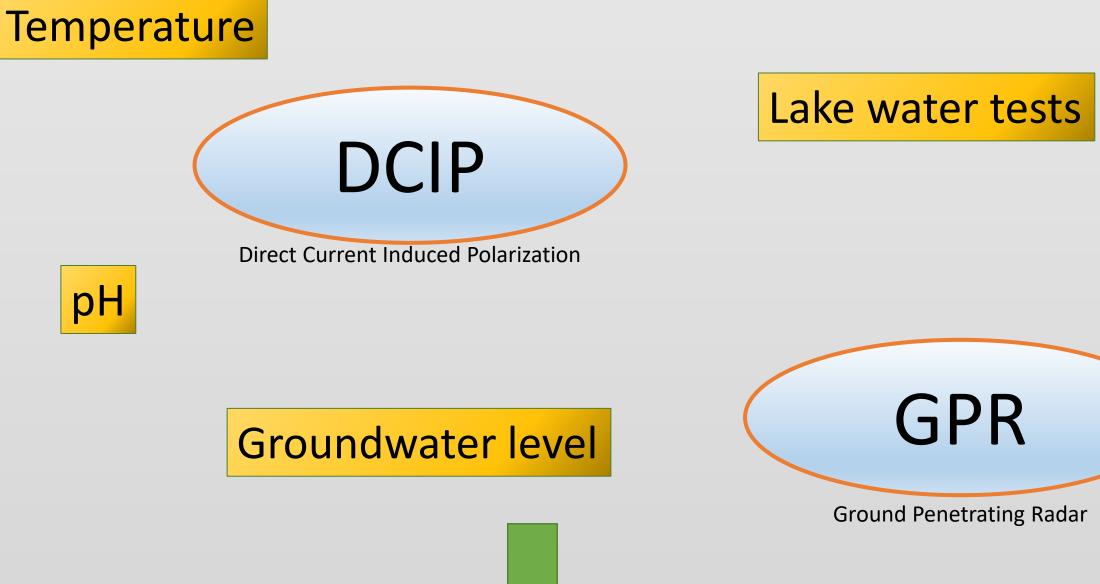
Riparian zones

Monitoring of different riparian zones with geophysical, hydrological and microbiological methods

Areas

Forest areas

Investigating forest areas with different tree species composition through geophysical and microbiological methods



DOM content



Hydraulic conductivity



Methods

Chemical investigations



Microbiological investigations



 Recommendations for an optimized riparain zone design in terms of size and structure

Outcome

- Determine relationship btw. ground- and lake pollution and tree species composition
- Find forest design with less impact in terms of brownification

Governance

Interaction with **Forest owners**

Recommendation report (riparian zone design, healthy forest)

Stakeholder workshops

Summer School

Regular meetings with Sydvatten (water supply company)

Digital Twins?

Social Media Presence

Press Releases

Contribution to public science video







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