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BIBOB – Cross-Border Beaver Dam Management in the Context of Climate Change

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Background

- The beavers' ability to dam water in rivers significantly alters hydraulic, hydrological, and ecological conditions up- and downstream of the dam locations.
- However, the extent to which these changes affect regional surface and groundwater conditions is often unclear.
- In cultural landscapes, this lack of knowledge complicates the work of environmental and water authorities when deciding whether beaver dams can be left in place or interventions are necessary.

Objectives

- Quantitative assessment of the impacts of beaver dams on surface and groundwater dynamics considering the coupling effects
- Evaluation of positive and negative effects of beaver activities on hydraulic, hydrological, and ecological conditions
- Development of decision-making tools for local authorities and environmental agencies for improved, data-based beaver dam management
- Promotion of awareness and understanding of the beaver dams' role in watercourse restoration and climate adaptation

Methods

- Analysis of status quo: legal basis and regulations, responsibilities, technical & non-technical management options
- Field surveys and monitoring (permanent and temporary):
 - Survey of water levels, retention volumes and discharge conditions on and below ground
 - Use of ground based and airborne measuring devices
 - Monitoring of beaver populations and activities
- Coupled hydronumerical simulations of surface/groundwater flows for site specific conditions and varying scenarios

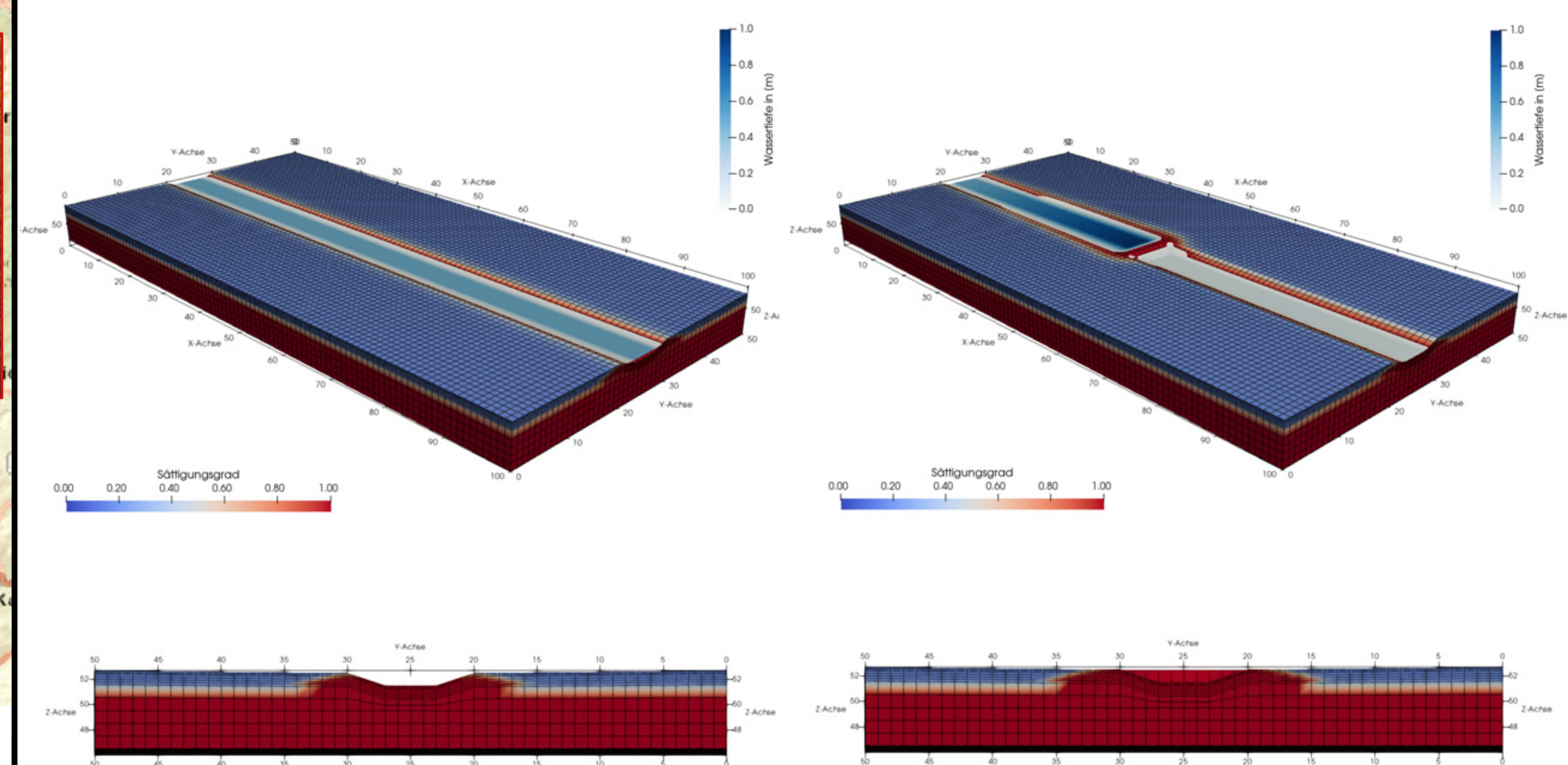


Pressure sensor and camera installed upstream of the Liščí Potok beaver dam

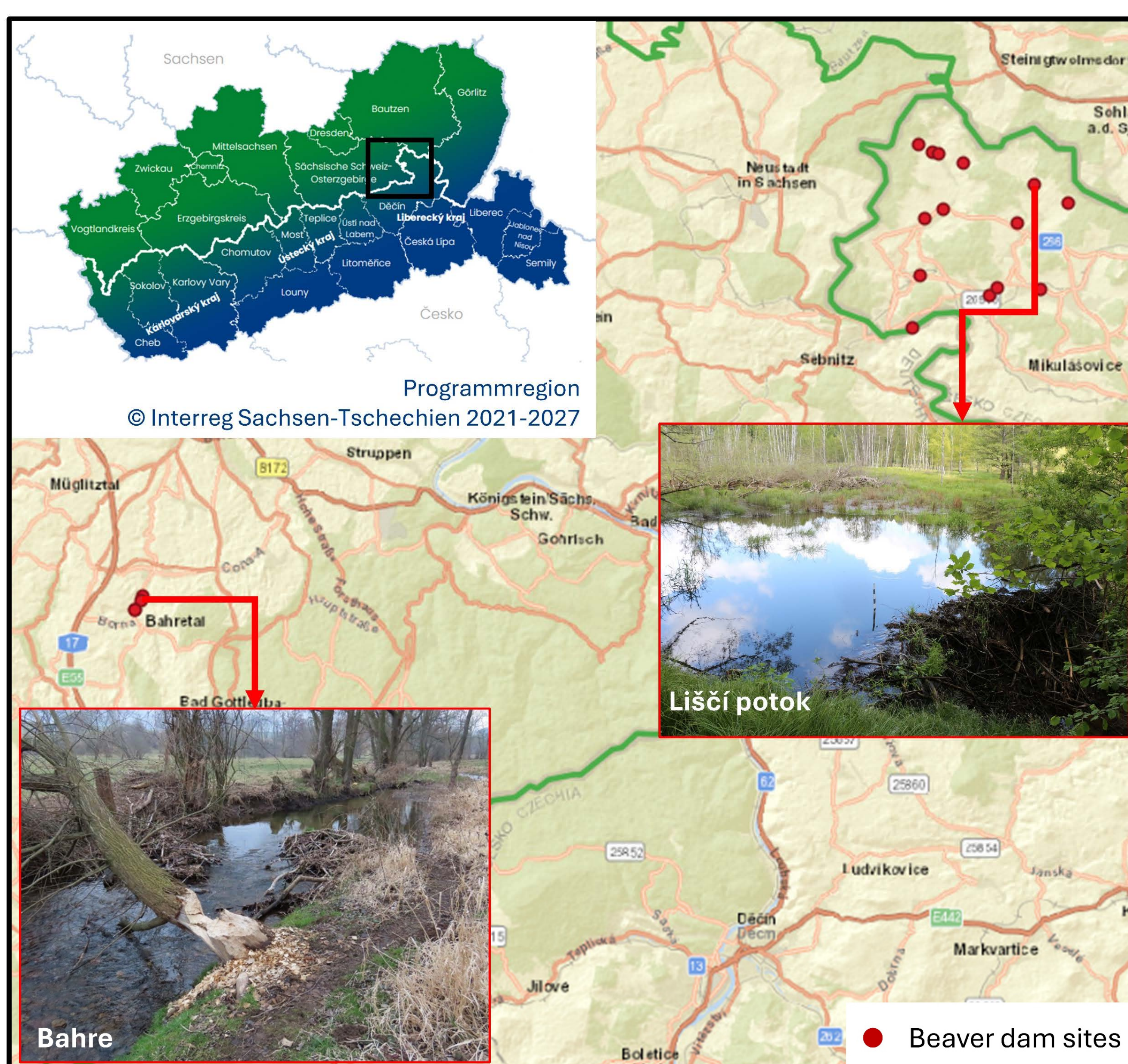


Discharge measurement at Liščí Potok (top) and view to beaver dam at Lobendava (bottom)

Numerical Simulations



Water depths and soil saturation (blue: unsaturated, red: fully saturated) for an idealised river section without (left) and with (right) beaver dam (Patzig, 2025)



Study area in Saxon/Bohemian Switzerland and investigated beaver dam sites in Germany and the Czech Republic



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