

HELMHOLTZ WATER INITIATIVE SOLUTION LAB (SOLVE)

Securing Terrestrial Water Cycles: the Helmholtz Solution Lab Elbe River Basin



Challenge

While **“keeping water in the landscape”** is a key principle of the German National Water Strategy, its implementation is still fragmented, with around 25,000 planned measures (2022-2027, FGG Elbe) needing prioritization and evaluation

Aim

Advance the science needed to operationalize the principle of “keeping water in the landscape” by developing actionable, basin-scale solutions that optimize water management for the benefit of both society and ecosystems.

Partners

- Umweltbundesamt (UBA)
- Deutscher Verein des Gas- und Wasserfaches e.V. (DVGW)
- Flussgebietsgemeinschaft Elbe (FGG Elbe)
- Sächsisches Landesamt für Umwelt, Landwirtschaft und Geologie (LfULG)
- Landesbetrieb für Hochwasserschutz und Wasserwirtschaft Sachsen-Anhalt (LHW)
- Landesamt für Umwelt Brandenburg (LfU)
- Berliner Wasserbetriebe (BWB)
- Czech Hydrometeorological Institute (CHI)
- Water Research Institute (IWW)
- Arizona State University (ASU)
- Max Planck Institute of Geoanthropology (MPI)

Region

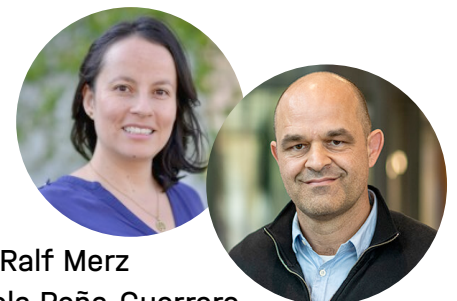
Our research area is the Elbe River Basin.

Scientific methods

- Integrates hydrological and biological connectivity as a unifying scientific concept
- Combines advanced hydrological and groundwater modelling, remote sensing, long-term monitoring data (e.g., TERENO), environmental genomics (eOMICS), and AI and machine learning for parameterization and predictive modelling
- Develops basin-scale models to quantify the cumulative effects of water management measures
- Applies scenario analysis and Decision Theatre tools for interactive, data-driven decision support

Modes of participation and co-design

- Co-design from the outset: stakeholders define needs, scientists develop methods
- Continuous engagement via task forces, workshops, feedback loops, and scenario dialogues
- Interactive tools such as the Decision Theatre for collaborative decision-making
- as a central platform for co-design, knowledge exchange, and long-term science-policy-practice integration



Contact

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Website:

<https://wasser.helmholtz.de/en/about-us/solve>