

Freshwater ecosystems are among the most threatened ecosystems. Protected areas offer ecosystems where direct human impacts are low, but are still affected by climate change.

Therefore, understanding how climate change caused hydrological changes affect risks to species and biodiversity preservation is of great societal relevance. In particular, knowledge is required to (i) assess climate change related risks for freshwater ecosystems and biodiversity associated with flow cessation, (ii) monitor and set species-based and general biodiversity protection targets for intermittent streams, and (iii) identify priority conservation areas for the future.

The main goals of the project are: (i) to obtain data on flow intermittence for the selection of representative protected areas and to use this data in hydrological models to identify the effects of climate change on flow intermittence; (ii) to test the suitability of environmental DNA for assessing the biodiversity of intermittent streams, and (iii) to implement novel tools that can be used to set targets for species-based protection and preservation of biodiversity and to identify priority conservation areas.

The project will allow us to obtain baseline hydrologic data on intermittent rivers in Europe via a citizen-science-based inventory of the flow state of intermittent rivers. The project will also assess small aquatic fauna communities and EU-protected species through standard (multi-habitat sampling) and molecular (targeted/metabarcoding eDNA approach) biodiversity assessments.

A hydrological model will be used to determine the impacts of climate change on the frequency and duration of flow intermittence for the selected study sites. Finally, the project will detect and quantify flow intermittence effects on selected biodiversity indicators and translate the results to policy statements, stakeholder recommendations, risk assessments, and management and monitoring plans for protected areas.