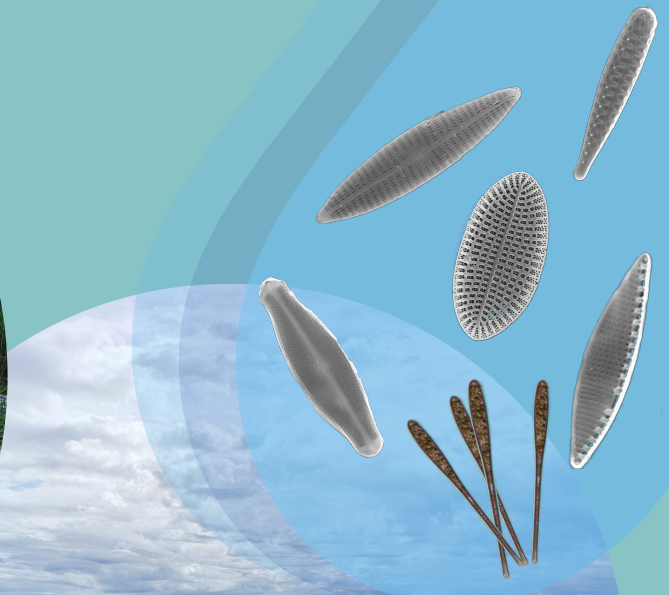


XVI European Diatom meeting

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MICROALGAS EDÁFICAS
DEL SURESTE

DIVERSITY OF EPILITHIC DIATOMS IN ALPINE HEADWATERS

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Alpine headwaters are critical ecosystems that sustain millions of people through the provision of drinking water, hydropower, and key ecosystem services including those connected with tourism. Their environmental settings and high ecological value make them particularly vulnerable to climate change, with cascading effects on both ecosystem integrity and human well-being. Furthermore, due to their remoteness and their small dimensions, mountain headwaters are rarely included in monitoring programs, and little data is available to evaluate their status and evolution in the present context of environmental changes.

The Alpine Space project WATERWISE (2024-2027) aims at developing integrative tools for assessing the vulnerability of Alpine headwaters by jointly considering water quantity, water quality, biodiversity, and socio-economic aspects. A central component of the project is the continuous exchange of knowledge with local stakeholders, incorporating their perceptions and management needs on biodiversity conservation into a bottom-up approach to support the design of effective and sustainable strategies.

As a part of the biodiversity assessment framework, we investigate epilithic diatom communities across eight pilot catchments in the Alpine region. The study sites represent a wide range of hydrological regimes, i.e. from glacier-fed systems to snow- and rain-fed streams, as well as from groundwater- to permafrost-influenced environments, spanning diverse geological substrates.

This poster presents preliminary results of the analysis of samples collected from the study sites during 2025, addressing water chemistry and the composition of epilithic diatom communities. We include the concentration of key trace elements (e.g., heavy metals) that can be used as proxies of cryosphere degradation. We particularly focus on the morphological diversity of the genera *Achnanthydium*, *Gomphonema*, *Encyonema* and *Cocconeis*, including populations that may potentially represent species new to science.