



Fischersee & Unterer Saldursee; Foto: Patrick Runggaldier, 18th August 2012

“Change Lake”

Recent and past changes in the bio-geo-chemical parameters in the alpine lakes located on the slopes surrounding the Matschertal

Project leaders

[Karin A. Koinig](#) & [Boris Ilyashuk](#)
Institute for Alpine Environment, EURAC
Institute of Ecology, University of Innsbruck

Cooperations

[Roland Psenner](#), [Elena Ilyashuk](#), Inst. of Ecology, Univ. of Innsbruck
[Roberta Bottarin](#), [Ulrike Tappeiner](#), Inst. of Alpine Environment, EURAC
[Michael Strasser](#), Inst. of Geology, Univ. of Innsbruck
[Oliver Heiri](#), Aquatic Palaeoecology, Univ. of Bern

Recent climate warming has caused distinct changes in the chemistry and biology of high alpine lakes. These relatively small water bodies are particularly sensitive to changes in air temperature, and snow and ice cover duration. The glacier retreat in their catchment areas additionally affects the amount of particulate and solute matter transported to these lakes. In this project we want to focus on the lakes located in the mountains surrounding the Matschertal which is included in the Long-Term Ecological Research (LTER) program since 2013. So far brooks and rivers, and terrestrial ecosystem processes have been studied within this LTER site. We aim at including lakes, which are abundant in this area (16 lakes and ponds). We hypothesize that - despite their relative vicinity - these water bodies are affected quite differently by recent climate warming, depending on the interaction of the following drivers: duration of the ice free seasons, water temperature, input of organic matter from the catchment, direct glacier influence, presence of rock glaciers in the catchment, development status of lakes freshly formed on the slopes previously covered by glaciers.

Research aims

- disentangling climate change and glacier impacts on high alpine lakes by continuously monitoring parameters strongly affected by recent warming, i.e. water temperature and conductivity, in four lakes with and without glacier impact, along an altitudinal gradient (2700-3200 m a.s.l.)
- trace changes in productivity, weathering and glacier impact in 16 water bodies along an altitudinal gradient (2700-3200 m a.s.l.) by bi-annually sampling and analyzing all major limnochemical parameters and metal contents
- reconstructing temperature and glacier fluctuations over the last 10000 years for the Saldur area by studying lake sediments