

WP 4 | Ecology of running waters and lakes in permafrost areas

Project progress report | Sampling of springs, creeks and lakes in the province of Bolzano (PP1)

Springs and running waters

In the three sites chosen for the research project the sampling of rock glacier influenced springs and creeks as well as some reference creeks was carried out in 2012 in Ulten (Rossbänke), Schnals (Lazaun) and Reintal (Napfengletscher, fig. 1).

Temperature, conductivity and dissolved oxygen were measured in the field, pH, principal ions and nutrients at the biological laboratory, while metals were analyzed at the University of Innsbruck. For the biological characterization of springs and creeks samples of diatoms of macro- and meiozoobenthos were taken.



Fig. 1



Fig. 2

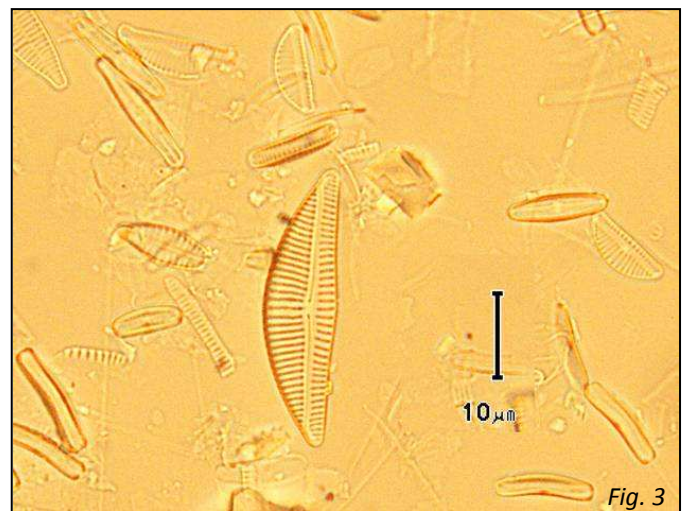


Fig. 3

Diatoms are unicellular algae, which are found in water bodies on stones, plants and sediment. They are sampled using a small brush (fig. 2), and taxonomically determined under a microscope (fig. 3). From the species compositions an evaluation of the nutrient situation of the sampled water body can be obtained.



Fig. 4

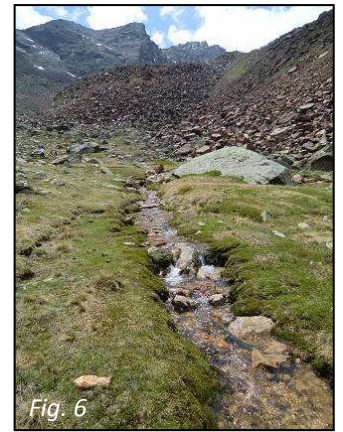


Fig. 5

The macrozoobenthos (fig. 4) is the community of small invertebrate animals living on the ground of water bodies. These animals are sampled by means of a small mash net (fig 5) and identified under the microscope.

The aim of the research is to find out, to which extent the composition of the species living in creeks influenced by rock glaciers differ from the composition of not influenced waters, the so called reference waters (fig. 6 shows a creek in Ulten valley).

A further target is to clarify the kind of influence which the changed chemical composition and the presence of heavy metals exert on the aquatic fauna.



Lakes

Ecological analyses of lakes located in permafrost influenced areas were performed in September 2012. Samples of the principal biological components were collected in three lakes (Hungerschartensee at 2778 m altitude in Schlanders, fig. 7; Wilder Pludersee, 2483 m altitude in Ulten; Großer Malersee, 2501 m altitude in Sand in Taufers, fig. 8). The analysed components were: phytoplankton, zooplankton, coastal fauna (makro- and meiozoobenthos), coastal diatoms as well as zoobenthos of the profundal zone. Along with biological samples (fig. 9) water samples at various depths for physical and chemical analyses were also taken.

Temperature of the whole water column and transparency were measured in the field. Chemical analyses were performed at the Biological Laboratory for the same parameters as for running waters, while for heavy metals analysis the responsible is also in this case the Innsbruck University. From four other lakes, which are to a certain degree also influenced by rock glaciers, surface samples for chemical analyses and samples of the coastal fauna were taken. These lakes are: Oberer Hungersee (2713 m altitude, Schlanders), Schwarzsee (2544 m altitude, Ulten), Obere Napfenlacke (2514 m altitude) und Untere Napfenlacke (2478 m altitude, Sand in Taufers).

