

# XV INCONTRO DEI DOTTORANDI E GIOVANI RICERCATORI IN ECOLOGIA E SCIENZE DEI SISTEMI ACQUATICI

8-10 maggio 2019

Centro per lo Studio dei Fiumi Alpini – ALPSTREAM  
c/o Lou Pourtoun, Borgata Sant'Antonio 17, Ostana (CN)

## RIASSUNTI



## SESSIONE “ALPINE AQUATIC ECOSYSTEMS”

**Giovedì 9 maggio 2019 ore 9.30-10.45, chair: Francesca Bona**

[ore 9.30] **Alpine stream ecosystems under increased influence of rock glaciers**

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The present human-accelerated deglaciation is quickly leading mountain permafrost, shrinking at lower rates than glaciers, to have an increasing influence on alpine stream ecosystems.

We present a research conducted in the European Alps (Solda valley), aimed at characterising the habitat and biota of streams fed by active rock glaciers, and appraise the hydroecological influence of this evident form of mountain permafrost along the river continuum. We compared rock glacial streams with groundwater- and glacier-fed streams in terms of physical and chemical habitat, benthic invertebrate community, and food web (stable isotope analysis). The rock glacial streams exhibited unique habitat settings, with stable channels and clear waters influenced by permafrost (constantly cold water <1.5°C, high electrical conductivity and high concentrations of major ions and trace elements). Benthic organic detritus, primary production and epilithic biomass exhibited values comparable to non-glacial streams. This abundance of autochthonous resources supported a food web comparable in terms of complexity to those of krenal and glacio-rhithral sites. The invertebrate community was comparable in terms of composition, abundance and diversity to that of non-glacial reaches, but included also cold-stenothermal species.

Furthermore, intensive longitudinal surveys of habitat conditions undertaken to assess the glacial influence along the glacier-fed stream revealed a primary role exerted by the rock glacial tributary in shaping water parameters during late summer, revealing a major role of thawing permafrost along the river continuum. Thus, rock glacial streams can be considered as a unique alpine stream habitat, shaping the hydrochemistry, biodiversity and ecosystem functions in deglaciating catchments.

[ore 9.45] **Effects of climate change and drying conditions on CPOM processing in alpine streams (NW Italy)**

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Lotic ecosystems have been recognized as extremely sensitive to climate change, because of the raising of water temperatures and the disruption of hydrologic cycles. Among rivers, mountain streams are particularly fragile since highest rates of climate change are occurring above the treeline. The aim of the study was to investigate the functional impact of droughts in three Alpine streams (Po, Pellice and Varaita - NW Italy), that are currently experiencing droughts during the summer season. In particular,