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>> SYNTHESIZE MOUNTAINS OF KNOWLEDGE <<

Submitted Abstract

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First Author First Name	Christopher T. (1)
Submitting Author First Name Last Name	Christopher T. Robinson
Correspondence	robinson@eawag.ch
Co-Authors >> E-Mails will be not listed	Jolidon, Christa (2); Consoli, Gabriele (3); Peszek, Lukasz (4)
Organisations	1: Eawag/ETHZ 2: Eawag 3: Eawag/ETHZ 4: University of Rzeszow
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The Macun lakes form a high-alpine (>2,600 m asl) cirgue landscape (3.6 km2) in the Swiss National Park, comprising 26 small lakes together with a number of temporary ponds. Streams interconnect the four largest lakes, forming the drainage network that flows into the Inn River at the town of Lavin. The drainage network of Macun consists of a north and a south basin that overlie an ortho-gneiss, meta-granitoid bedrock. The south basin is influenced by various rock glaciers. The physico-chemistry and diatoms of surface waters at 10 sites has been monitored annually in mid-summer since 2001. Around 350 species of diatoms were identified. Results showed clear diatom and physico-chemical differences between the two basins. Diatoms also demonstrated a lake order effect but no notable differences between lake inlets and outlets. Nitrogen values were two-fold higher and particulate phosphorus values two-fold lower in the south basin than in the north basin. Over time, the physico-chemistry in the two basins became more homogeneous, with a reduction in rock-glacial inputs in the south basin and an overall decrease in nitrogen in the catchment. Continuous temperature records showed north basin streams to be ca. 3°C warmer than south-basin streams, but with high inter-annual variation that reflected annual differences in weather and no evidence of a general change over time (increase or decrease). The results highlight the importance of long-term monitoring for understanding ecosystem state changes in alpine freshwaters, especially during periods of rapid environmental change.

Research Area Mountain Regions Innrain 52f 6020 Innsbruck Austria WWW.IMC2022.INFO

imc2022@uibk.ac.at +43 512 507 54442