

GRAN PARADISO NATIONAL PARK
LIFE+ BIOAQUAE
LIFE+ LIMNOPIRINEUS

Grand Hotel, Centro Visitatori Homo et Ibex
Ceresole Reale (TO) 6th - 8th July 2017

**INTERNATIONAL MEETING ON
THE CONSERVATION OF HIGH
MOUNTAIN LAKES**

ABSTRACT BOOK



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Sediments of high mountain lakes as records of long-term environmental change

Monica Tolotti¹, Ulrike Nickus², Bertha Thaler³, Hansjörg Thies⁴

¹*IASMA Research and Innovation Centre, Edmund Mach Foundation, Via Mach 1, 38010 S. Michele all'Adige, Italy, email: monica.tolotti@fmach.it;* ²*Institute of Atmospheric and Cryospheric Sciences, University of Innsbruck, Innrain 52, 6020 Innsbruck, Austria;* ³*Biological Laboratory, Environmental Agency, Autonomous Province of Bozen/Bolzano, Unterbergstr. 2, 39055 Leifers, Italy;* ⁴*Institute of Interdisciplinary Mountain Research, Austrian Academy of Sciences, Innsbruck, Austria, Technikerstr. 21a, A - 6020 Innsbruck, Austria*

A limnological and paleolimnological survey of high mountain lakes in North- and South-Tyrol was conducted within the Interreg Project Permaqua (Permafrost and its effects on water balance and mountain water ecology) aiming at reconstructing the ecological evolution of lakes in permafrost regions since the end of the Little Ice Age (~1850), and investigating potential effects of permafrost thawing on lake geochemistry and biology. In fact, recent studies conducted in the Central Alps outlined potential effects of rock glacier thawing on the ecological quality of headwaters. Sediment cores from four lakes located above ~2500 m a.s.l. on crystalline bedrock were radioisotopically dated, and analysed for lithological, geochemical, and biological proxies. All cores studied showed major lithological and biological changes between the end of the Little Ice Age and the first decades of the 20th century. Concentrations of heavy metals increased in the studied cores during the last ~150 years and reached highest values after the 1990s. On the contrary, changes in diatom species composition which typically characterize many low-land lakes of the northern hemisphere after the economic development in the 1960s were not recorded in the lakes investigated. Although it is not possible to explain the observed changes as directly related to the presence of active rock glaciers in the lake catchments, it seems likely that long-term changes of biological and chemical indicators observed in the studied sediment cores are due to a combination of factors, such as geochemistry, weathering, or catchment characteristics.