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# Abstract Book



## Coherent response of Alpine lakes to combined global warming and airborne contamination

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Due to their remoteness and simple foodwebs, Alpine lakes are considered as sentinels of climate change and as ideal research-objects to investigate the ecological effects of global warming combined with anthropogenic airborne contamination. Nonetheless, long term (decadal) monitoring is still very scarce for mountain lakes, so that the temporal perspective necessary to evaluate environmental and ecological lake evolution must rely on the palaeolimnological approach. We present the results of a sediment study conducted on a set of mountain lakes located in different catchments of the southern Central-Eastern Alps, aimed at investigating the effects of the current Alpine deglaciation on lake habitat and biodiversity. The study aimed also at revealing signs of airborne contamination. Radiometrically dated short cores from each study lake were analysed for lithological (water and organic content), biogeochemical (C and N stable isotopes and CN content of bulk organic matter) and biological (subfossil diatoms) proxies. Despite the different habitat setting and glacier/permafrost influence, all the lakes studied show clear responses to the end of the Little Ice Age, around 1850 AD, and to the warming acceleration since the 1980s. The observed responses consist in enhancing lake productivity and changing diatom species composition and biodiversity. The isotopic signature shows a coherent increase in nitrogen atmospheric deposition during the last 100-150 years, in agreement with results from many lakes in the northern hemisphere. The results suggest a possible synergy between global warming and nitrogen enrichment in driving the recent biological changes observed in all the study lakes.