Title:	Long term natural and anthropogenic forcing on aquatic system - evidence based on biogeochemical and pollen proxies from lake sediments in Kashmir Himalaya, India
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Abstract:	Freshwater aquatic systems are subjected to rapid deterioration driven by multiple stressors such as climate change and human activity. The understanding of the long-term history of eutrophication and their trends provides an opportunity for developing relevant management strategies. In this study, we examine the natural versus anthropogenic impacts on Ahansar Lake using a multiproxy approach (total organic carbon (TOC), total nitrogen (TN), amino acid composition, δ15N, grain size and pollen data) on a210Pb/137Cs dated sediment core spanning the last 200 years. The amino acid datasets clearly show that the organic matter in Ahansar sediment core is less degraded and can be utilized to understand the paleoproductivity changes. Organic matter (OM) within this core is mostly derived from aquatic sources as deduced from C/N (6–11) and δ15N (0–3.2‰) values. The aquatic productivity gradually increases from 1880s, becoming accelerated after the 1930s, and peaked between 1970 and 2016 AD. This enhancement of primary productivity in the lake indicating the increased eutrophication through time due to anthropogenic activities in the recent decades. The results provide baseline information for policymakers and environmentalists to develop strategical framework for future environmental changes in an aquatic system subjected to anthropogenic stressors.
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