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A record of the Atlantic Multidecadal Oscillator in the sediment magnetic properties of Alpine lakes

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We analyze published magnetic properties of lake sediments from the Alpine region that were previously interpreted as climate proxy records. The spectral analysis of these climate proxies during the last $\sim$ 2000 yr show a statistically significant frequency peak with a period of about 50 yr, which is characteristic of the Atlantic Multidecadal Oscillator (AMO), a feature defined by a persistent oscillations in North Atlantic sea-surface temperatures. We compare the alpine lake records to Greenland ice core δ^{18}O record where AMO-related variability was recognized during the last 8000 yr by Knudsen et al. (2010) and show that the filtered components of the relevant period form the Greenland record correspond to that of the alpine records, within the precision of the available age models. We conclude that AMO fluctuations played a significant role in pacing the variability of the alpine rock-magnetic properties during the last $\sim$ 2000 yr, possibly by influencing the ratio between the authigenic and detrital magnetic particles.