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Tracing Environmental Change of Potrok Aike, Argentina using Beryllium Isotopes

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We have examined the relationship between beryllium isotopes and the hydrological record of the Laguna Potrok Aike sediment record for the last 16 kyr. Our study shows that beryllium isotope concentrations are inversely correlated to the water balance of the lake. When the lake level was high, concentrations of beryllium-10 (Be-10) and beryllium-9 (Be-9) were relatively low, e.g. at around 13,000 cal. BP. At the same time, however, the Be-10/Be-9 ratio was the highest of the entire period studied, which indicates that the Be-10 concentration was relatively higher than at any other time of this record. This fluctuation coincides with the transition from the last glacial maximum to the Late-Glacial. Our study thus confirms that beryllium isotopes may be useful for climate change studies in a lacustrine environment. It is unclear if the Be-10 fluctuations represent a concentration mechanism in the lake or less precipitation. However, these lake sediment studies suggest that Be-10 studies will be useful in providing environmental and climatic change records from this and other lakes, similar to studies in Lake Malawi by McHargue et al.