



## **Patagonian and Antarctic dust as recorded in the sediments of Laguna Potrok Aike (Patagonia, Argentina)**

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Although an increasing number of terrestrial paleoclimatic records from southern South America has been published during the last decade, these archives mostly cover the Lateglacial and/or the Holocene. Only little is known about the Patagonian climate before the Last Glacial Maximum. Here, we present a continuous, high-resolution magnetic susceptibility record for the past 48 ka from the maar lake Laguna Potrok Aike (51°58' S, 70°23' W, southern Patagonia, Argentina). Magnetic susceptibility serves as an excellent parameter for the parallelization of sediment cores all over Laguna Potrok Aike including sediment cores taken within the ICDP (International Continental Scientific Drilling Program) project PASADO (Potrok Aike maar lake Sediment Archive Drilling prOject). Additionally, magnetic susceptibility is assumed to be a proxy for dust deposition in this lake. Distinct similarities were found between the independently dated magnetic susceptibility record from Laguna Potrok Aike and the non-sea-salt calcium (nss-Ca) flux from the EPICA Dome C ice core record (75°06' S, 123°24' E) the latter being a proxy for mineral dust deposition in Antarctica [1]. Comparison of the two records and variations in grain size of the Laguna Potrok Aike sediment records indicate a relatively high aeolian activity in southern South America during the glacial period. During the Holocene climatic conditions driving sediment deposition seem to have been more variable and less dominated by wind compared to glacial times. Although the source of the dust found in Antarctic ice cores often has been attributed to Patagonia [2], we present the first evidence for contemporaneity of aeolian deposition in both the target area (Antarctica) and the major source area (Patagonia). Considering the similarities of the two records, magnetic susceptibility might yield the potential for chronological information: transfer of the ice core age model to a lacustrine sediment record. This would be important as additional time control for the recently recovered sediment record within the ICDP deep drilling project PASADO. To support this idea, we performed Sr/Nd-isotopic analyses on the assumed aeolian, well sorted fraction (63-200  $\mu\text{m}$ ) deposited in Laguna Potrok Aike during the last glaciation as well as on the <5  $\mu\text{m}$  fraction which is commonly found as dust in Antarctica - both on the same samples. These results are compared to the Sr/Nd-isotopic signatures measured directly on dust from Antarctic ice cores [2]: the isotopic data field of sediments from Laguna Potrok Aike superposes a large part of isotopic data from Antarctic dust, although the  $^{87}\text{Sr}/^{86}\text{Sr}$ -data seems to show a slight offset to lower values. In conclusion our analyses confirm previous studies that suggested southern South America to be the main source area of east Antarctic dust during glacial periods. However, this is the first evidence for a contemporaneous dust deposition pattern in Patagonia and Antarctica.

### References

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