Geochemical Evidence for Periods of Increased Mineral Dust Deposition in Patagonian Peat Bogs Since the Last Deglaciation.

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Atmospheric mineral dust plays an important role in the earth's climate system, influencing atmospheric parameters such as cloud condensation as well as biogeochemical cycles, affecting atmospheric CO_2 levels. Antarctic ice core records show that mineral dust deposition has varied in the Southern Hemisphere over glacial-interglacial stages, suggesting major changes in atmospheric circulation. Nevertheless, to make predictions for the near future possible, a better understanding of atmospheric dust load and transport variability in the recent past, is essential. Ombrotrophic peat bogs have proven to provide excellent records of atmospheric dust deposition for the Holocene as their accumulation rates are higher than any other archive. Hence two ombrotrophic peat bogs, located southwest (Karukinka) and southeast (Harberton) on Isla Grande de Tierra del Fuego, were sampled to investigate dust-palaeoclimatic interactions in southern South America since the last deglaciation. Here we present a detailed geochemical (major, trace elements and Nd isotopes) record for both sites. The base of the peat sequences in Karukinka and Harberton were dated by ^{14}C at ca. 8,000 cal yr BP and ca. 16,500 cal yr BP, respectively. The distribution of trace elemental (Sc, REE) concentrations within the cores indicates, besides tephra layers, episodes of increased mineral dust deposition at Harberton and Karukinka. The glacial-interglacial transition can be observed in the Harberton record (at ca. 11,500 cal yr BP), marked by a drop in the dust flux from 102 $g/m^2/yr$ to 10 $g/m^2/yr$. The most significant episode of mineral dust deposition at Karukinka is concentrated around 1,600 cal yr BP with a maximum dust flux of 108 $g/m^2/yr$. Its neodymium isotopic signature of -1 suggests crustal admixing, compared to the ε_{Nd} values of ~2, for both tephra layers.