

Ice core estimates of paleoclimatic changes in aeolian dust

H. Fischer (1), A. Wegner (2), and G. Winckler (3)

(1) University of Bern, Physics Institute, Climate and Environmental Physics, University of Bern, Switzerland

(hubertus.fischer@climate.unibe.ch), (2) Alfred Wegener Institute for Polar and Marine Research, Bremerhaven, Germany, (3) Lamont Doherty Earth Observatory, Columbia University, Palisades, NY, USA

Ice cores from both polar regions represent a perfect recorder of paleoclimatic changes in the atmospheric mineral dust load. Changes in the atmospheric concentration of mineral dust on top of the ice sheets are influenced by (i) climate changes at the dust source, (ii) transport and deposition en route and (iii) the deposition conditions on top of the ice sheet, which may all change back in time. The information retrieved from the ice core dust record is multifaceted, reaching from isotopic fingerprints of different source regions, concentration changes mainly due to the intensity of dust mobilization at the source to changes in the transport time as reflected in the size distribution of mineral dust in the ice. Here we will summarize the latest results gained from various Greenland and Antarctic ice cores to estimate the causes of the prominent changes in atmospheric dust concentrations on top of the ice sheet and contrast them to model estimates.