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Dust records from polar ice cores

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Polar ice cores are an exceptional archive of paleo-climate. A large variety of different proxy parameters can be measured from the same core in high temporal resolution, which allows to get comprehensive information about past environmental conditions. A subgroup of these parameters is centred about mineral dust, e.g. certain element concentrations or the concentration and size distribution of insoluble dust particles. Mineral dust gets eroded from the Earth's surface in arid areas by strong surface winds and gets entrained into the atmosphere; after uplift to high-tropospheric levels it can be transported over large distances and is finally deposited on the polar ice sheets. Although quantities are very small, it can be accurately measured because it is stored in essentially pure H2O. Measurements allow conclusions about climate conditions in the source areas and about atmospheric transport conditions. This presentation will give a comprehensive overview of dust records from Greenlandic as well as Antarctic ice cores. Selected mayor results will be presented and discussed, such as time series of concentration and size distribution. Interpretations for the same proxies are partly common but partly distinct for both hemispheres.