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The new mineral dust record from the TALDICE ice core (East Antarctica)

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Aeolian mineral dust is an active component of the climate system, interacting both directly and indirectly with radiation and biogeochemistry. Its deposition and stratigraphical preservation in appropriate environmental settings leaves deposits that once dated can be used as paleoclimate proxies. In particular dust records from ice cores can provide insights into past variations of environmental conditions at the dust source areas, atmospheric circulation, the hydrological cycle at source and deposition sites and dust deposition mechanisms.
Here we present the new dust record from the 1620 m deep TALDICE ice core, drilled at Talos Dome (159°11' E, 72°49' S, 2315 m A.S.L.), on the edge of the East Antarctic plateau, about 290 km from the Southern Ocean and 250 km from the Ross Sea.
We analysed variations in dust concentration, depositional flux, size distributions and geochemical fingerprint.
At a first order, the TALDICE dust record confirms the major findings from previous ice core studies in terms of the large glacial/interglacial variations in dust deposition and extends the spatial coverage of this proxy to the Pacific Sector of the EAIS, at a site with relatively high accumulation rate and allowing for a good dating.
We also show new peculiar aspects emerging for this record, such as the importance of Antarctic sources for dust for this peripheral site. On shorter timescales such as the Holocene, a local signal in the dust record appears as dominant, and the variations in dust deposition during the deglaciation and the Holocene carry the potential for using this record as a proxy for the variations in the atmospheric circulation in the Ross Sea.