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Tracing Aeolian dust provenance at Talos Dome (East Antarctica): local versus remote sources

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The Strontium and Neodymium isotopic composition of Aeolian mineral dust is a robust method for mineral dust source tracing. Over the last decade, efforts have been put on the reconstruction of Aeolian dust provenance onto the interior of East Antarctica. These works have been carried out in parallel on both (1) ice core samples and (2) on target samples from the Potential Souce regions of the Southern Hemisphere.
Results from Vostok, EPICA-Dome C and other sites from the interior of Antarctica, and comparison with results from potential sources suggested an overall uniform geographic provenance for dust during glacial periods over the last 800.000 years, likely from southern South America (SSA), and different dust source(s) during interglacials. These evidence have been then corroborated by several complementary studies based on dust elemental composition (e.g. Marino et al., 2008), on dust magnetic properties (e.g. Lanci et al., 2008) and dust mineralogical composition (Sala, 2009).

Today, a new deep ice core has been drilled in Talos dome (72°48'S, 159°06'E) in the framework of the TALos Dome ICE core drilling project (TALDICE). The site is located on the edge of the East Antarctic Plateau on the opposite side with respect to south America. A preliminary dust concentration and size profile for the TALDICE ice core is available today, and according to preliminary dating it spans about 250 kyrs. Comparison with EDC shows striking similarities for the oldest part of the record and until the deglaciation, but some slight differences arise during the ACR and the beginning of the Holocene.
Preliminary results on dust Strontium and Neodymium isotopic fingerprint of TALDICE dust are available. Interestingly the isotopic composition of TALDICE glacial dust is remarkably similar to that obtained from ice core dust samples of similar age from sites located in the East Antarctic interior. Results will be presented and compared with new data from (I) local Antarctic dust sources and (II) from continental areas of the Southern Hemisphere.