



## **Volcanic ash layers in the long TALDICE ice core (East Antarctic plateau)**

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The TALDICE (TALos Dome Ice CorE) European project aims to provide a continuous and detailed climatic and environmental record of the last two glacial cycles through the study of a deep ice core from the Antarctic coastal site of Talos Dome (72°49' S, 159°11' E, 2315 m). Drilling was completed in December 2007 at the depth of 1620 m.

Tephra studies in the TALDICE record can contribute to solve correlation and dating issues, as well as to provide new insight into the Late Quaternary explosive volcanic history of tephra source regions. A hundred of visible volcanic events have been detected so far during core logging; most likely further tephra layers invisible to the naked eye will be discovered by grain size analysis for continental dust studies. We have characterised 35 tephra layers from the uppermost 1300 m of the TALDICE ice core, spanning the last 70 kyr. Grain size and ash concentration measurements were performed using a Coulter counter set up in a dust-free clean room. Volcanic ash particles were studied under a scanning electron microscope and were characterised for their major element composition with an electron microprobe.

Volcanic grains in the studied samples are up to 150  $\mu\text{m}$  large and mainly consist of pristine glass fragments showing various morphologies. The glass geochemical composition is invariably alkaline, indicating provenance from Antarctic within-plate volcanoes. Both coarse particle size and chemical signature of the studied samples strongly suggest that are derived from vents of the McMurdo volcanic province, located ca. 200 km from Talos Dome. A few studied layers contain coarse feldspar grains in addition to glass particles and could be suitable for radiometric dating.

Our study provides the first well-dated tephrostratigraphy for the northern Victoria Land region along with initial tephrostratigraphic links with other Antarctic climatic records.