

## Mineral composition of dust layers in a shallow ice core drilled in Pamir Alay Mountains of Central Asia

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Dust (mineral particles) contained in the ice core has been used as a proxy of past atmospheric circulation or arid climate condition. Most of dust studies have just analyzed dust flux and size distribution, but little study focused the meteorological type and composition of dust. Since the type and composition of dust varies depending on its origin and transport process, they are potential to reveal detailed source of dust and atmospheric circulation fluctuation. In this study, we analyzed mineral composition of dust layers of a shallow ice core drilled in the Pamir Alay Mountains of Central Asia of Kyrgyz Republic in August 2016, using an optical microscope and a scanning electron microscope. The depth profiles of dust differed between small size ( $1 < d \leq 15 \mu\text{m}$ ) and large size ( $d > 15 \mu\text{m}$ ). The dust layers consisting mainly of small size dust contained abundant yellow colored minerals, while those with large size dust contained more abundant red colored minerals. Furthermore, the dust layers of large size dust contained calcite originating from limestone, which is an unique geology of Pamir region, indicating they are originate from near the glacier. Results revealed that the meteorological type and composition differed significantly among the dust layers of the ice core. In particular, they are possibly originated from two different sources, including a short distance consisting of calcite and red mineral, and a long-distance without them.

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