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Micromorphological difference between glacial and glaciofluvial quartz grain, evidence from Svalbard

Klára Krbcová

Charles University in Prague, Physical geography and geoecology, Prague, Czech Republic (klara.krbcova@seznam.cz)

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Klára Krbcová
Department of Physical Geography and Geoecology, Faculty of Science, Charles University in Prague, Albertov 6, Prague 2, 128 43, Czech Republic; Klara.Krbcova@seznam.cz
Micromorphology of glaciofluvial sediments were only partially shown by Mahaney et al. (2001). This paper deals with the main diagnostic textures of glaciofluvial sediments and changes of their micromorphology caused fluvial transport.
All samples were collected in Svalbard in August 2012. Two glacial samples and six glaciofluvial samples were taken near the glacier Bertilbreen and one glacial sample and seven glaciofluvial samples were taken near the glacier Hørbyebreen. Samples were prepared according to the Mahaney (2002) and examined under electron microscope. The correlation analyses was used to set the main glaciofluvial microtextures. Similarity of the samples was tested by one-way ANOVA by F-test.
Increasing numbers of V-shaped pits, rounded grains, meandering ridges and microblocks are typical for characteristic microtextures of glaciofluvial grains which had greater rate of fluvial transport. But the grains mainly transported by glacier had a greater percentage occurence of subangular grains, straight steps, straight and curved grooves, adhering particles, pitting and V-shaped etch pits. The fastest change in variability was set during the first kilometre of fluvial transport.
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Keywords: exoscopy, quartz grains micromorphology, glaciofluvial sediments

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