

## **Sensitivity Studies on Glacigenic Dust Mobilisation in Greenland with a Mesoscale Model**

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Glacial outwash plains are a significant source of dust in high latitudes and cold climate zones. Recent growing attention to aeolian dust transport associated with these sources can partly be attributed to its importance in paleo-climate model simulations of glacial-interglacial cycles. Projections of glacier retreat in a warming climate motivate additional studies on the entrainment of glacigenic dust into the atmosphere.

Glacigenic dust sources are of relatively small spatial extent compared to low-latitude sources such as the Sahara, and, moreover they appear to be limited by sediment supply and availability. Hence, we designed a study to revisit the description of dust sources and the emission process as used by state of the art atmosphere-dust models. Dust source properties and the emission scheme are tested and adapted accordingly by using an off-line version of the dust model, which is driven by atmospheric fields from atmosphere model simulations. This way, in a computationally efficient approach different setups and source descriptions can be examined. We will present first results for atmospheric fields from the mesoscale non-hydrostatic atmosphere model COSMO with different grid spacings. The focus is on Northern Hemisphere high latitude sources in Greenland under current climate conditions.

Ultimately, results from this study will contribute to an enhanced representation of the global atmospheric dust cycle, including emissions from high-latitude dust sources that will become increasingly important in a changing climate.