



Development of new mapping standards for geological surveys in Greenland

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The current official topographic and geological maps of Greenland are in scale of 1:250:000 and 1:500.000 respectively, allowing only very limited amount of detail. The maps are outdated, and periglacial landscapes have changed significantly since the acquisition date. Hence, new affordable mapping products of high quality are in demand that can be available within a restricted time frame. In order to fulfill those demands a new mapping standard based on satellite imagery was developed, where classifications are mainly carried out with algorithms suitable for automatization. A Digital Elevation Model (ArcticDEM) was applied allowing examination of topographic and geological structures and 3D visualizing. Information on topographic features and lithology was extracted based on analysis of spectral characteristics from different multispectral data sources (Landsat 8, ASTER, WorldView-3) partly combined with the DEM. A first product is completed, and validation was carried out by field surveys. Field and remotely sensed data were integrated into a GIS database, and derived data will be freely available providing a valuable tool for planning and carrying out mineral exploration and other field activities.

This study offers a method for generating up-to-date, low-cost and high quality mapping products suitable for Arctic regions, where accessibility is restricted due to remoteness and lack of infrastructure.