



Pilot study completed: Paving the way for stereoscopic DEMs, orthophotos and vector maps over the ice-free parts of Greenland

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We present the work towards developing new Digital Elevation Models (DEMs), orthophotos, and vector maps over the ice-free parts of Greenland. The products will be based on high-resolution stereoscopic images co-registered to Ground Control Points (GCPs) to reduce horizontal and vertical errors. Here, we provide a status overview of our achievements wrt. DEMs and orthophotos.

We have conducted a pilot study in which four areas have been mapped using SPOT-6 and -7 images: The Disko Bay, Narsaq, Tasiilaq, and Zackenberg. The images have been acquired in 2016, with a few additions from 2014, and the areas cover approximately 82.000 km², i.e. ~20% of the total ice-free area. The technical requirements for the products have been defined in close collaboration with end-users from governmental institutions, emergency management offices, the tourist industry, etc., to ensure a direct applicability following product completion. This has resulted in 8 m DEMs and 1.5 m orthophotos. Validation against GCPs shows horizontal and vertical offsets of approximately 0.5 ± 2 m, i.e. values that meet our expectations and satisfy end-user needs. The GCPs make out an extensive network of huts, helipads, ports, large boulders, etc., measured using GPS by collaborators during field campaigns.

The experiences gained in the product development as well as the broad range of collaborations provides confidence that the set-up for a production of the total ice-free area has been established, which can deliver products with a high accuracy in time and space. That will make them useful for a wide range of purposes. The next step therefore is to secure the given upgrade. More on that to come!