



The upper mantle and transition zone underneath central-eastern Greenland

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Here we present models for the structure of the upper mantle and transition zone under central-eastern Greenland. The study is based on the calculation of teleseismic P and S receiver functions plus a joint inversion of those two, which gives us good estimates for the velocity structure and upper mantle discontinuities.

The calculations are based on the data of 19 temporarily installed broadband seismometers and 6 additional stations from the GLATIS and GLISN networks. Around half of the stations were installed on the ice shield, the others were operating on bedrock. The investigation area covers a 200 km x 600 km large region at 70°N, from Scorsbysund to the centre of the ice shield.

The analysis strong signals from the 410-km and 660-km discontinuities in our receiver functions. Their delay times suggest a thinner transition zone compared to IASP91, mainly caused by a depression of the 410-km discontinuity, in major parts of the region. On several stations we see a conversion, which might originate from a mid-lithospheric discontinuity, whereas the lithosphere-asthenosphere boundary does not seem to be resolved.

The objective is to link our observations with topographic features of the recent substantial uplift, the earlier history of rifting and break-up and a possible track of the Iceland plume.