



Crustal structure beneath Central-Eastern Greenland

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Acquisition of geophysical data onshore Greenland is logistically complicated by the presence of an up to 3.4 km thick ice sheet, permanently covering most of the land mass. Previous seismic surveys have only been carried out offshore and near the coast of Greenland, where little information about the continental part of the crust could be gained. Aiming to improve our understanding about crustal thickness and composition below the Greenland ice cap, the TopoGreenland project was initiated to collect the first ever controlled source seismic data onshore Greenland. Wide-angle seismic data were acquired along an EW-trending profile, extending 310 km inland from the approximate edge of the stable ice cap near Scoresby Sund across the centre of the ice cap. In total, 348 Reftek Texan receivers recorded high-quality data from 8 equidistant shot points along the profile. Based on forward ray tracing modelling, a two-dimensional velocity model provides the first insight into the velocity structure beneath the Greenland ice sheet. Modelling results indicate a decrease of crustal thickness from 50 km below the centre of Greenland to 42 km in the eastern part of the profile. Relatively high lower crustal velocities (V_p 6.8 – 7.3) in the western part of the model may be related to past collisional tectonic events or to the passage of the Iceland mantle plume.