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Deep Norden: Highlights of the lithospheric structure of Northern Europe, Iceland, and Greenland

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We present a review of geophysical models of the lithosphere of Norden, which includes the Nordic countries (Denmark, Iceland, Finland, Norway, Sweden), Greenland, and the adjacent regions of the neighbouring countries. The structure of the crust and the lithospheric mantle reflects the geologic evolution of Norden from Precambrian terrane accretion and subduction within the Baltic Shield and Greenland to Phanerozoic rifting, volcanism, subduction and continent-continent collision at the edges of the cratons and at the plate boundaries. The possible existence of a mantle plume below Iceland has not been uniquely demonstrated by the available seismic evidence. Its connection to the break-up of the North Atlantic Ocean ca. 65 My ago is uncertain, but the $>$30 km thick crust in the strait between Iceland and Greenland may indicate the track of the plume. Using the results from seismic (reflection and refraction profiles, P- and S-wave body-wave and surface-wave tomography), thermal, gravity, and petrologic studies, we review the structure of the crust and the lithospheric mantle of Norden and propose an integrated model of physical properties of the lithosphere of the region, including maps of lateral variation in crustal and lithospheric thicknesses and compositional variation in the lithospheric mantle. ("Episodes", 33rd IGC Sp. Issue, 2008 (in press)).