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Moho depth and crustal structure in Europe, Greenland, and the North Atlantic region

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We present a compilation of Moho topography and crustal structure in an area which encompasses most of Europe, Greenland, Iceland, Svalbard, European Arctic shelf, and the North Atlantic Ocean. By analysing regional trends in crustal structure and links to tectonic evolution, we conclude:
(1) for each tectonic setting there are significant variations in depth to Moho and in crustal structure, essentially controlled by age of the last major tectono-thermal processes;
(2) generally-adopted global averages of crustal parameters are incorrect for any particular tectonic setting in Europe;
(3) relative thickness of the upper-middle crystalline crust (Vp<6.8 km/s) and the lower (Vp>6.8 km/s) crust is indicative of the crustal origin, i.e. oceanic, transitional, platform, or extended crust;
(4) continental rifting generally thins the upper-middle crust by 10-15 km without a change in its average Vp. Thinning of the lower crust during rifting is less significant and also generally occurs without change in lower crustal average Vp, suggesting a complex interplay of magmatic underplating, gabbro-eclogite phase transition and delamination;
(5) crustal structure of the Barents Sea shelf differs from rifted continental crust in thicknesses of the upper-middle and lower parts of the crystalline crust and in average Vp velocities in the crustal layers, indicating that processes other than rifting have also been responsible for the shelf evolution;
(6) most of the North Atlantic Ocean north of 55ºN has anomalously shallow bathymetry and anomalously thick crystalline crust (20-30 km), apparently of oceanic origin;
(7) a belt of exceptionally thick crust (ca. 30 km) of probable oceanic origin exists off-shore on both sides of southern Greenland and includes the Greenland-Iceland-Faeroe Ridge in the east and a similar "Baffin Ridge" crustal feature in the west.
Our new, high resolution, regional crustal model is based solely on seismic results, which allows its application to potential field modelling. For each of the crustal parameters included in the compilation, we discuss uncertainties associated with theoretical limitations, regional data quality, and arising from interpolation.