



Regional surface-wave tomography for Norway and adjacent regions

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The coverage of seismic models of the upper mantle beneath northern Europe and the European Arctic is very variable. There are a number of tomographic studies for regions bordering to Norway, e.g. Iceland Plume domain, central Europe or the Arctic region. For Norway, however, very few such studies have been carried out; in fact, one of the more recent studies is the work by Bannister et al. (1991). Using arrival times of Pn and Sn waves, they found relatively low P- and S-wave velocities in the upper mantle underneath the regions of maximum uplift in Southern Norway. Unfortunately, this kind of study cannot resolve at which depth in the upper mantle the low-velocity anomalies are located.

During the last decades, new seismic stations were permanently or temporarily installed in and around this region. We extensively searched for broadband data from such stations from the early 1970s until 2005 and were able to retrieve surface wave observations from the data archives at NORSAR, University of Bergen, University of Helsinki, the Kola Science Center in Apatity, and the Geological Service of Denmark in addition to data from global data centers.

After we concentrated in a first step on the European Arctic and the greater Barents Sea region (Levshin et al. 2007, GJI, in print), we extended the acquired data set of Rayleigh and Love wave group velocity measurements to cover entire Norway and (accidentally) large parts of Fennoscandia. Our preferred inversion strategy involves inversion of group velocity observations to 2-D group velocity maps and subsequent local 1-D depth inversions for shear wave velocity structure. Both the details of the procedure and the latest results will be presented and discussed.