



Fennoscandian lithosphere – electromagnetic and seismic constraints

T. Korja (1), E. Kozlovskaya (2), and M. Smirnov (1)

(1) University of Oulu, Department of Physical Sciences, Geophysics, University of Oulu, Finland (toivo.korja@oulu.fi, +358 (0)8 5531287), (2) Sodankylä Geophysical Observatory/Oulu unit, University of Oulu, Finland

Knowledge of the present-day structure of the Earth's mantle is essential to our understanding of plate tectonics as well as Earth's thermomechanical evolution over long periods of geological time. Several factors including temperature, chemical composition, presence of partial melt or water influence seismic velocities and electrical conductivity in the upper mantle. Similarly, anisotropy may have a profound effect on seismic and magnetotelluric observations.

During last ten years, several large scale multinational and national seismic and magnetotelluric experiments have been carried out in Fennoscandia including e.g. the SVEKALAPKO seismic tomography experiment, Swedish National Seismic Network (SNSN) array monitoring, BEAR and EMMA magnetotelluric array studies and magnetotelluric profiling such as TOR and Jamtland. Altogether these studies cover most of Fennoscandia and make it possible to correlate two different data sets and to study lithospheric structures in Fennoscandia. In particular, we will compare the thickness of the lithosphere obtained from seismic anisotropy studies and from magnetotelluric studies. We will also correlate spatially sparse indications on seismic reflectors and electrically conducting layers in the mantle lithosphere. Finally, we aim to compare directly absolute values of seismic velocity and electrical conductivity.