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P-wave receiver function study of crustal structure in Scandinavia

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In this study we present preliminary results on the structure of the continental crust in northern Scandinavia. The research area consists of three geologically different domains: the Archaean Domain in the north-east, the Palaeoproterozoic Svecofennian Domain in the east and the Caledonian Deformed Domain in the west (Gorbatschev and Bogdanova,1993).
We present results based on data collected by 60 seismic stations during 2-4 years of deployment in the ScanArray experiment, which is an international collaboration between Scandinavian, German and British universities.
We use the receiver function (RF) technique in the LQT ray-oriented coordinate system (Vinnik, 1977). Receiver function analysis has rather high vertical resolution of the depth to seismic discontinuities which cause transformation between P- and S-waves. The whole dataset is uniformly filtered and deconvolved records are stacked using appropriate moveout corrections. We have used events with a magnitude $\geq$ 5.5 Mw, with epicentral distances range from 30° to 95°. The technique allows us to constrain crustal structure and determine the Moho depth around stations by analyzing the PS converted phases generated at discontinuities in particular the Moho.
We present preliminary interpretation of P-wave RF analysis in terms of the complex tectonic and geodynamic evolution of the Baltic Shield. Further studies will include joint P and S receiver function analysis of this area as well as investigations of the upper mantle.

References:
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