



## **Teleseismic P-wave traveltimes tomography model of the upper mantle below northern part of Fennoscandian Shield**

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In our study we estimate the 3-D architecture of the upper mantle beneath the northern part of the Fennoscandian shield, also known as Baltic shield, using teleseismic P-wave tomography method. Our study area is centred in northern Finland and extends to surrounding areas in Sweden, Norway, and Russia, where the bedrock is mostly of the Archaean origin and was later reworked by two orogenies during Palaeoproterozoic. The area was covered by POLENET/LAPNET broadband seismic network that was operational during the third International Polar Year 2007–2009. The network consists of 58 seismic stations, most of them broadband and is partially overlapping in the southern part of the study area with earlier SVEKALAPKO network that was operational 1998–1999. The teleseismic P-wave tomography method can complement previous studies in the area by efficiently mapping lateral velocity variations in the mantle. 111 clearly recorded teleseismic events were selected from recordings of POLENET/LAPNET network and the stations of SVEKALAPKO network located inside of our study area, and the data from the stations was handpicked and reduced to travel time residual dataset. Our study reveals a highly heterogeneous lithospheric mantle beneath the northern part of the Fennoscandian shield. We do not see any indication of a large high P-wave velocity area that may indicate presence of thick depleted lithospheric “keel”. The most significant feature seen in the velocity model is a large negative velocity anomaly (up to  $-3.5\%$ ) in depth range 100–150 km in the central part of our study area. This low-velocity area separates three high-velocity regions that correspond laterally with three cratonic components of our study area.