



## **POLENET/LAPNET - a multidisciplinary seismic array research in northern Fennoscandia: first results**

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Deep structure of the crust and upper mantle of the northern, mainly Archaean part of the Fennoscandian shield, is poorly known, as the number of permanent seismic stations and controlled-source seismic profiles there has been always significantly lower compared to its southwestern part. However, even these rare studies showed that the upper mantle there is heterogeneous and seismically anisotropic. In order improve this knowledge, a temporary seismic array was deployed there during May and September, 2007. The array is a part of POLENET multidisciplinary project during the International Polar Year 2007-2009. The array consists of 33 temporary stations and permanent broadband stations in northern Finland, Sweden, Norway and Russia. The array will record teleseismic, regional and local events during 2007-2009. As most of the stations of the array are located beyond the polar circle, operation of broadband instruments in extreme polar climate conditions is a challenging task. The research aims to obtain a 3D seismic model of the crust and upper mantle down to 670 km (P- and S-wave velocity models, position of major boundaries in the crust and upper mantle and estimates of seismic anisotropy strength and orientation) in northern Fennoscandian Shield. An important part of the LAPNET project is study of regional and local seismic events. In northern Fennoscandia, local seismic events are quarry blasts and weak earthquakes originating from re-activated ancient fault zones. These events can be used to create a 3-D velocity model of the crust, which is a necessary constraint in all studies using waves from teleseismic events. We present the first results of LAPNET seismic array research.