



Eastern Barents Sea: crustal structure of the craton-shelf transition.

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The former disputed area of the Barents Sea is a hot area for geophysical investigations, since little is known so far about its deep crustal structure, while the area is of a particular interest for hydrocarbon prospecting. Once the territorial disputes have been finally settled recently, a regional ocean bottom seismometer (OBS) survey was conducted in this area in summer 2012. The seismic line is a northeast-southwest trending profile located in the easternmost area of the Norwegian waters. The transect is approximately 600 km long and includes marine and onshore parts. The major part of the profile was recorded on the 38 OBS with an average spacing of 13 km. In addition, 80 land stations (with 1 km spacing) were deployed during the field campaign: 50 of them on the southern continuation of the marine profile, and 30 were deployed semi-parallel to the marine profile along the eastern coast of the Varanger Peninsula.

We present the crustal model of the craton-shelf transition obtained from the seismic tomography and gravity modeling. The model shows the presence of six principally different crustal domains, which correlate with the near-surface observations. The interpretation of these changes along the profile links to the different tectonic settings along the profile. Presence of the large volumes of the underplated material is attributed to the rifting events on the shelf. The lateral variations in the seismic velocities in the onshore part of the transect is interpreted as a change from the typical cratonic crust to the continental type crust of the Varanger terrane. We also show the results of the ongoing work on the S-waves tomography modeling for the same profile. The combined interpretation of P and S data will provide additional details on the compositional differences between crustal domains and will give extra information on the origin of the underplating.