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Crustal structure in the Eastern Barents Sea from a new wide-angle seismic profile.

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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 several sub-profiles. 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.

This presentation presents the preliminary results of seismic data interpretation. The modeling of the crustal structure along the composite profile is done by combining the forward ray-tracing method with the joint reflection/refraction seismic tomography. The shallow sedimentary structure is incorporated into the model from the high-resolution exploration seismic studies. The crustal structure is further refined by gravity modeling based on marine and satellite gravity data. We compare the crustal structure with the tectonic settings and speculate on its tectonic evolution.