



Locating the Caledonian Deformation Front in the Western Barents Sea

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The crustal architecture of the Paleozoic sedimentary basins and the underlying basement is still not fully understood in the Western Barents Sea region. It has been proposed that the major basins have developed along the structural framework inherited from the early Devonian Caledonian orogeny. However, the location of the Caledonian suture zone and its orientation and the extent of the deformation front are still poorly constrained and are ambiguous in the Barents Sea. Two orientations of the Caledonian Deformation Front (CDF) have been proposed earlier: north-south (from the potential fields data) and southwest-northeast (from seismic data). Knowledge of the spatial extent and orientation of the CDF has a major effect on our understanding of the evolution of the Barents Sea and provides important constraints on the basin-basement interaction. In 2014 a marine seismic experiment was conducted in the Western Barents Sea. One of the goals of the experiment is to discriminate between two proposed models and to constrain the location of the Caledonian Deformation front offshore northern Norway.

We present the joint interpretation of collocated newly collected wide-angle seismic data (Ocean Bottom Seismometers) and reprocessing of the reflection seismic dataset (Multi-channel seismics) collected in the mid 80's, using modern computational techniques. The two seismic methods provide best resolution at different depth ranges, and in our modeling we combine the results from the two methods to constrain the location of the CDF along transect running Northwest-Southeast across the Western Barents Sea.