



The southwestern Nansen Basin: Crustal stretching and sea floor spreading

Kai Berglar, Axel Ehrhardt, Volkmar Damm, Ingo Heyde, Bernd Schreckenberger, and Udo Barckhausen
Federal Institute for Geosciences and Natural Resources (BGR), Stilleweg 2, 30655 Hannover, Germany

New geophysical data were collected in August/September 2013 north of Svalbard in the zone from the North Barents shelf towards the oceanic Nansen Basin. We acquired 1056 km of multi-channel seismic data, 2658 km of magnetic data and more than 5000 km of gravity, bathymetric and sediment echosounder data.

In the east of the working area, the transition from the Yermak Plateau to the Nansen Basin is characterized by block faulting and well developed syn-rift basins. A large crustal block located about 80 km east of the Yermak Plateau and 120 km north of the slope of the Barents shelf indicates extensive rifting and east-west directed crustal stretching and the absence of oceanic crust in that area.

A different picture is found north of Kvitoya Island, in the western part of the working area. There, the slope of the Barents shelf is very steep and a distinct continent-ocean-boundary seems to be located directly at the foot of the slope where we interpret oceanic crust characterized by irregular topography based on the multi-channel seismic data. This will be tested by an analysis of the gravity and magnetic data which is currently work in progress.

The combination of east-west-directed continental stretching east of the Yermak Plateau and adjacent oceanic crust to the west points to an opening of the southwesternmost part of the Nansen Basin prior to the spreading of the Gakkel Ridge, possibly related to the opening of the Amerasian Basin.