



Seismic Data from the Kane Basin, Northwest Greenland - Insight into a white spot on the map

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The opening history of the Baffin Bay and the possible extent of oceanic crust within the basin is a key question in order to reconstruct the plate tectonic development of the Arctic region. To contribute to the scientific discussion, a multi-component geophysical and geological survey was carried out in 2010 in the area of the Northern Baffin Bay. Because of the fortunate ice conditions we seized the chance to go to the Kane Basin, half way between the Baffin Bay in the South and the Lincoln Sea in the North, one of a series of basins that are aligned along the Nares Strait. In addition the unclear situation within the Baffin Bay the Nares Strait is one of the most disputed areas in the Arctic. As the opening of the Baffin Bay and the formation of oceanic crust must have been compensated somewhere between Greenland and Ellesmere Island a transform fault was proposed. However, in particular land geological data does not support this thesis and let assume moreover that no lateral displacement occurred between Greenland and Ellesmere Island.

In order to shed some more light onto the potential transform fault (the Wegener Fault) two reflection seismic lines were shot within the eastern Kane Basin supported by sonobuoys. Furthermore, magnetic and gravity data is acquired.

This paper presents first insight into the eastern side of the Kane Basin. The eastern Kane Basin is characterized by a deeper rim and a more shallow central part of the basin. The term basin is probably misleading as most of it is floored by Proterozoic crust without any sedimentary beds on top of it. Only in the western part of the Kane Basin a sedimentary infill can be recorded which terminates with an erosional truncation on to the seafloor. The significant amount of sediments and debris that is washed into the Kane Basin by rivers and glaciers is transported to the Baffin Bay Fan by the considerably strong N-S current through the Nares Strait. A pull-apart development of the Kane Basin can't be supported, however, the steepening of sedimentary beds towards Ellesmere Island points to a transform boundary.