



## **New insights into the crustal structure of northern Baffin Bay**

Tabea Altenbernd (1), Wilfried Jokat (1), and Volkmar Damm (2)

(1) Alfred Wegener Institute for Polar and Marine Research, Bremerhaven, Germany , (2) Federal Institute for Geosciences and Natural Resources, Hannover, Germany

The Baffin Bay, located between Canada and Greenland, is a sediment filled oceanic basin which developed during Paleocene and Eocene times. Its genesis is closely related to the opening of Labrador Sea and Davis Strait. While the crust of the Labrador Sea and Davis Strait has been studied in detail, data on central and northern Baffin Bay is scarce. Southern Baffin Bay is underlain by oceanic crust with volcanic margins. The margins of northern Baffin Bay are characterized by serpentinized mantle material. To study the crustal structure of central and northern Baffin Bay and analyse the change from amagmatic to volcanic margins, a multidisciplinary scientific cruise was undertaken in 2010. Refraction seismic profiles were acquired along with other geophysical data in the Greenlandic part of Baffin Bay. We present a P-wave velocity model of one of these profiles. The 321-km-long profile consists of 25 ocean bottom seismometers (OBS) and runs from the deep area of northern Baffin Bay to the shelf area of Melville Bay.

The model can be divided into different crustal sections: In the central Northern Baffin Bay, 6-km-thick sediments overlay a 3-5 km thick oceanic crust, which thickens towards the continental slope. At the shelf edge, a buried seamount and high velocities in the lower crust are indicators for volcanic activity and intrusions of mafic material in this region. These features mark the onset of the transition between oceanic and continental crust. The stretched continental crust of Melville Bay is characterized by basement highs and deep sediment basins. Well constrained reflections of the Moho can be found at a depth of 22-24 km in many seismic sections. Near the Greenland margin, a basement outcrop, characterized by high velocities, is present.