

# Cenozoic pre-glacial tectonostratigraphy and erosion estimates for the northwestern Barents Sea

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The northwestern Barents Sea continental margin is located between Bjørnøya and Svalbard. It is a structurally complex area characterized by a series of highs and basins influenced by: 1) the formation of the Spitsbergen fold-and-thrust belt towards the north and the pull-apart basin, the Vestbakken Volcanic Province, to the south, and 2) the rifting and opening of the Fram Strait, the deep-water gateway connecting the Norwegian – Greenland Sea and the Arctic Ocean. By incorporating newly available 2D seismic data as well as gravity and magnetic data, this study aim to improve the understanding of the Cenozoic evolution of this area. This includes a better constrain of the timing of the main sedimentation events of the Cenozoic basins and estimates of the volume of sediments involved and the corresponding rates of erosion of the drainage area.

The Cenozoic development of this area is strongly related to the rifting and opening of the Norwegian-Greenland Sea. During the Paleocene-Eocene, the northwestern Barents Sea margin were subjected to compression/transpression when Greenland drifted towards Svalbard that led to uplift and the development of fold-and-thrust belt on Svalbard. Subsequently, from the Oligocene, a tectonic plate reorganization occurred, leading to crustal extension, sea floor spreading and opening of the Fram Strait west of Svalbard. The seismic data shows a pronounced sequence of Early – Mid Cenozoic, pre-glacial sediments overlying the oceanic crust west of Svalbard while to the east, the Svalbard platform and the Stappen High were subjected to erosion and probably acted as the main sediment source for the northwestern Barents Sea margin.

The amount of erosion will be estimated from the study of the deposited sediment volumes and their inferred source area. We will then compare the sedimentation and erosion rates to rates from other parts of the Norwegian – Barents Sea – Svalbard margin as well as relevant modern systems. Furthermore, the Cenozoic paleo-geography will be reconstructed.