

**Mass-balance of an Induan (Early Triassic) Fennoscandian-derived clinoform package in the Barents Sea: Implications for Early Triassic landscape and exhumation**

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During the Permian the Norwegian part of the Barents Sea Basin was relatively stable and dominated by sparse siliciclastic input and carbonate deposition. In the Triassic, siliciclastic sediments sourced mainly from the Uralian Orogen prograded into the basin and left behind large-scale wedges across the basin. However, seismic data show at least three fan-shaped units c. 150 m thick, recognizable as arcuate clinoform packages, prograding from the Fennoscandian Shield during the lower Induan stage (Early Triassic), prior to arrival of the large Uralian sedimentary systems. Channel- and clinoform geometries from seismic amplitude maps, along with thickness trends, show that one of these fans-shaped units prograded c. 100 km into the basin from an apex near the mouth of the present day Tana Fjord. The volume of this fan has been constrained using seismic, core and well data, and the sediment supply rate through the fan apex has been calculated using velocity and density data derived from well logs, in combination with biostratigraphic datings.

. Drainage patterns and sediment loads in the Triassic Barents Sea were analogous to the modern day Bay of Bengal, which comprises a major fluvial system draining the Himalayan orogen, and several smaller fluvial systems draining the nearby Indian craton. Furthermore, application of the empirical BQART model (Syvitski and Milliman, 2007) which explains magnitude of sediment transport in modern rivers, indicates that the drainage basin of this fan-shaped unit drained a modest but significant part of the Fennoscandian Shield (c. 1/10) and that the catchment consisted of sedimentary rocks. These results indicate the presence of remnants of Caledonian foreland basin deposits on Fennoscandia during the Early Triassic. Calculated denudation rates were likely enough to remove this sedimentary cover during the (lower) Triassic.

**References:**

Syvitski, P.M. and Milliman J.D., 2007. Geology, Geography and Humans Battle for Dominance over the Delivery of Fluvial Sediment to the Coastal Ocean. *The Journal of Geology*, 115, p. 1-19