



Pre-breakup age of East Greenland Ridge strata

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The East Greenland Ridge (EGR) is a submarine elevation that juts out from the Northeast Greenland shelf, separating the modern Boreas Basin in north from the Greenland Basin in south. The EGR strikes roughly northwest-southeast and lies almost perpendicular to the Mohns Spreading Ridge and sub-parallel to the Knipovich Spreading Ridge. The EGR is about 320 km long and includes several en-echelon elongated crests. The flanks on either side of the EGR are generally high and steep, with escarpments exposing outcropping sub-strata.

The EGR has been characterized as a continental sliver. However, this is based on analysis of seismic data only, while no direct evidence has hitherto been published to strengthen this interpretation. In 2012, two up-slope transects on the northeastern lower flank of the EGR were dredged by GEUS and UiT in order to obtain in-situ samples of the outcropping strata. Subsequent work by GEUS on the dredged samples was concentrated on lithological description and age determination of selected rock samples. The selected samples were either fresh and angular, or too soft to have survived long transport, and therefore interpreted to be in-situ or near in-situ (local and limited transported) and representative for the geology of the EGR.

Some rock samples of greenish grey, slightly sandy mudstones were dated by palynological analysis to be of Late Triassic (Carnian) age, i.e. to pre-date the onset of seafloor spreading in this part of the Northeast Atlantic Ocean by more than 150 ma years. Notably, no basalts were dredged, which further supports the interpretation that the strata overlying the basement of the EGR is composed of pre-breakup sediments, and thus strengthen the characterization of the EGR as a continental sliver.