

Geology of the North Atlantic

Contact person: Flemming G. Christiansen

E-mail: fgc@geus.dk



As a multidisciplinary research institution, GEUS is committed to the study of the North Atlantic region. The opening of the North Atlantic Ocean marked the culmination of a 340 Ma history of extensional deformation and sediment basin formation since the end of the Caledonian orogeny. Geological data from onshore East and West Greenland and the Faeroe Islands and offshore data from the Labrador Sea, the NE Atlantic and the North Sea provide a unique database for describing and understanding the processes of continental rifting and the onset of active seafloor spreading.



Palaeogeographic maps

Based on detailed field mapping GEUS can provide customised palaeogeographic and other thematic maps at all stratigraphic levels. The palaeogeographic maps can thus provide information on the depositional systems, sediment transport directions, land/sea distribution and structural lineaments along the Greenland margin. These maps are crucial in the reconstruction of

the North Atlantic region and the prediction of sand-rich systems sourced from the Greenland margin.

Magmatic evolution

The late syn-rift and the earliest sea-floor spreading sequences were influenced by widespread igneous activity along the rifted plate boundaries. The sedimentary basins in West Greenland, southern East Greenland and North-East Greenland contain a detailed record of the magmatic history related to plume impact, continental rifting and onset of sea-floor spreading. The onshore, non-vegetated outcrops provide excellent 3-D exposures of the interaction between sedimentary and volcanic systems.

Petroleum systems

East Greenland rift basins are situated close to the deep-water frontier basins offshore Norway e.g. the Møre and Vøring Basins and west of the Shetland Islands. Recent research involves petroleum system analysis combining information on source rocks, reservoirs, structural style and subsidence history to produce coherent models for migration, entrapment and preservation. East Greenland may thus form basin-scale analogues to the deeply buried areas of the North Atlantic margins.

Biostratigraphic database

Well-established stratigraphy tied to dinoflagellate cyst, microfossil and ammonite zonations covering most time intervals. GEUS' long experience in biostratigraphic research thus provides first-hand knowledge from most of the North Atlantic region including the North Sea and European continents.

Sample database

During almost 50 years of field work in Greenland GEUS has collected an extensive rock sample database representing all major lithologies and stratigraphic intervals. The database provides opportunities for comparative studies concerning lithology, provenance, diagenesis and geochemistry.

GEUS
Geological Survey of
Denmark and Greenland

Thoravej 8
DK-2400 Copenhagen NV
Denmark

Phone: +45 38 14 20 00
Fax: +45 38 14 20 50
E-mail: geus@geus.dk

The Geological Survey of Denmark
and Greenland (GEUS) is a research
and advisory institution in the Ministry
of Environment and Energy