

Review of Survey activities 2007

Edited by

Ole Bennike and A. K. Higgins

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Cover photographs from left to right

1. Field work in West Greenland. Photo: Jakob Lautrup.
2. Field work in the mo-clay region of Denmark. Photo: Stig A. Schack Pedersen.
3. Wind mills in Denmark. GEUS has been mapping the geology of new offshore wind mill farm areas. Photo: Jørn Bo Jensen.
4. Launching of seismic equipment from the Swedish icebreaker *Oden* during the LOMROG (**Lomonosov Ridge off Greenland**) cruise to the Arctic Ocean in 2007. Photo: Martin Jakobsson, Stockholm University.

Frontispiece: facing page

As part of the Danish Continental Shelf Project (<http://a76.dk>) bathymetric, seismic and gravimetric data were acquired in August and September 2007 during the LOMROG cruise in the Arctic Ocean north of Greenland. The LOMROG project is a co-operation between institutions in Denmark, Sweden and other nations. Results from the LOMROG cruise will be published in forthcoming years. Photo: Martin Jakobsson, Stockholm University.

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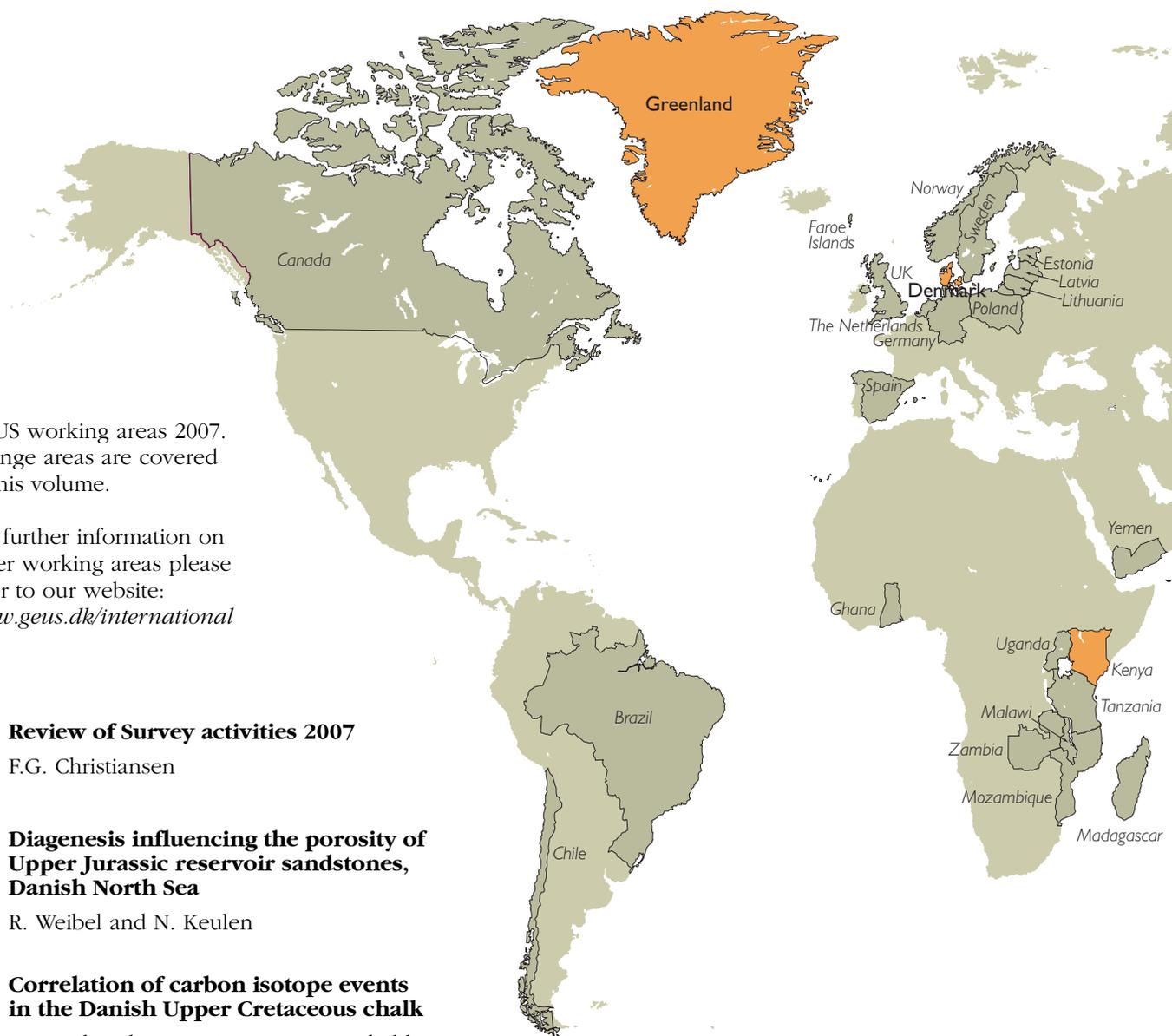
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GEUS working areas 2007. Orange areas are covered in this volume.

For further information on other working areas please refer to our website: www.geus.dk/international

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Review of Survey activities 2007

Flemming G. Christiansen

Deputy Director

After a very critical period with a major reorganisation of the scientific environment in Denmark, 2007 created new stability for the Geological Survey of Denmark and Greenland (GEUS). A new law describing the role of GEUS was passed by the Danish Parliament in the spring, followed by changes in top management and a newly formalised collaboration between GEUS, the University of Copenhagen and the University of Aarhus – the so-called Geocenter Denmark. This collaboration is very promising and will provide a much better chance of integrating young scientists in research activities.

This fifth annual issue describes selected activities that GEUS and its partners carry out in Denmark, Greenland and internationally. Together with the previous four issues it provides a good overview of the many different types of activities and projects, the advisory capacity and analytical services available from GEUS.

This 2007 review contains a total of 22 four-page papers, 13 on Denmark, five on Greenland and four with the focus on methodology or international work. Compared to the previous four that were biased towards Greenland, this issue has a majority of papers related to activities in Denmark: oil and gas, deep crustal structure, offshore wind farms, coastal processes in the Danish Wadden Sea (Vadehavet), groundwater vulnerability, raw materials, Neogene and Quaternary history, and palaeoclimate.

Chalk is the main key to the good national economy of Denmark. Better understanding of the depositional and diagenetic processes that formed the chalk and the petrophysical properties of this prolific rock is necessary to exploit the petroleum potential offshore. Chalk is covered in two papers in this issue, while two other papers on diagenesis and exhumation are also important for understanding the petroleum potential of Denmark. The deep crustal structure under Denmark is presented in one paper and Danish raw materials are described in a paper on the diatomite deposits of the Palaeogene Fur Formation.

Today climate changes and resultant adaptation are in focus. Several papers are important in this context, especially

on coastal processes, understanding of the Neogene and Quaternary history, variation in palaeoclimate and monitoring of the ice sheet in Greenland.

A dramatic increase in oil and metal prices in recent years – together with abundant new targets for exploration – is the background for the boom within the oil and mining industries in Greenland. The number of licences – and the area covered by them – is historically large. Previous and ongoing research and mapping activities together with an easy access to critical data at GEUS have been very important in the process of attracting industry to Greenland. New possibilities within both the oil and mineral industries are described in papers on the sedimentary basins of Baffin Bay and on the basement terrains in south-western Greenland. The research history of the disputed island Hans Ø in Nares Strait between Greenland and Canada is also outlined in one article.

Two papers describe the development of new analytical techniques, one on the automatic use of computer-controlled scanning electron microscopy (CCSEM) very important in exploration and for quality control of industrial materials; and the other one on the use of laser ablation - inductively coupled plasma - mass spectrometry (LA-ICP-MS) for environmental studies of bivalves.

GEUS is active in international collaboration through the EU and has ongoing activities in many different countries, especially in south-east Asia and Africa. In this issue there is one paper on tsunami damage modelling in Kenya and another on implementing the EU's Water Framework Directive.

In the summer of 2007 GEUS in collaboration with other Danish and Swedish institutions and the Swedish Polar Research Secretariat acquired data in the area north of Greenland as part of the Danish Continental Shelf Project (see frontispiece). This project aims to acquire the necessary technical data to support a Danish claim for extending the juridical continental shelf beyond 200 nautical miles before 2014.