

Field work between Kangerdlugssuaq and Angmagssalik Ø, South-East and southern East Greenland

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The coast between Kangerdlugssuaq (68°15'N) and Kangerdlugssuatsiaq (66°05'N) was mapped from the 80 ton cutter *Tycho Brahe* using 16 ft inflatable rubber dinghies in August 1977 (Bridgwater *et al.*, 1978). The coast was exceptionally clear of sea ice and it was possible to visit several localities which have not been accessible by sea since Wager's journey in 1930 (Wager, 1934). The region consists of Archaean gneisses intruded by Tertiary plutonic complexes and dense swarms of basic dykes intruded in an en echelon pattern parallel to the coast (figs 1 & 30).

The coastal region between Kangerdlugssuaq and Kap Japetus Steenstrup (latitude 66°10'N) consists of *Archaean gneisses* which are hardly affected by later regional deformation and metamorphism. They comprise supracrustal rocks (mainly psammitic and semi-pelitic gneisses), layered anorthosite-leucogabbro-gabbro complexes, and over 90 per cent granitoid gneisses which are intrusive into the other rocks and enclose them as trains of xenoliths. Some older granitoid gneiss cut by amphibolite dykes also occurs as xenoliths in the more widespread gneiss. All these rocks are cut by thin metamorphosed basic dykes.

The structure and metamorphic pattern is surprisingly uniform along this whole coastal region. The inland areas consist of granulite-facies gneisses with large-scale flat-lying folds, whereas the outer coast comprises amphibolite-facies rocks with steep coast-parallel structures. Sporadic, little deformed dolerite, metadolerite and garnet-amphibolite dykes occur which may be equivalent to more abundant garnet-amphibolite dykes in the Nagssugtoqidian mobile belt to the south.

Samples were collected from several localities in the *Nagssugtoqidian mobile belt* for isotopic studies. The northern limit of the Nagssugtoqidian mobile belt is an east-west vertical zone of high deformation about 2 km wide at Kap Japetus Steenstrup. To the south Nagssugtoqidian deformation and metamorphism are widespread.

Preliminary isotopic results from the area south of 67°N, mapped in 1976 (Bridgwater *et al.*, 1977) give the following ages.

(1) Archaean gneisses from Kangerdlugssuatsiaq give Pb-Pb whole-rock and Rb-Sr whole-rock ages between 2700 and 2800 m.y. Amphibolite-facies Nagssugtoqidian shear zones along which there has been considerable introduction or migration of alkalis fall on the same Rb-Sr whole-rock isochrons as their 2700 m.y. country rocks suggesting that movements took place in the late Archaean.

(2) Amphibolite-facies gneisses between Angmagssalik Fjord and outer Sermiligâq, which form a distinct group of dioritic and granodioritic gneisses with primary igneous textures (Blokken gneisses), give a Pb-Pb whole-rock age of *c.* 2400 m.y.

(3) Garnet gneisses forming the supposed aureole of the leuconorite charnockite complex on Angmagssalik Ø give a Rb-Sr whole-rock age of *c.* 2000 m.y.

(4) Strongly deformed presumed Archaean gneisses on Angmagssalik Ø give an error-

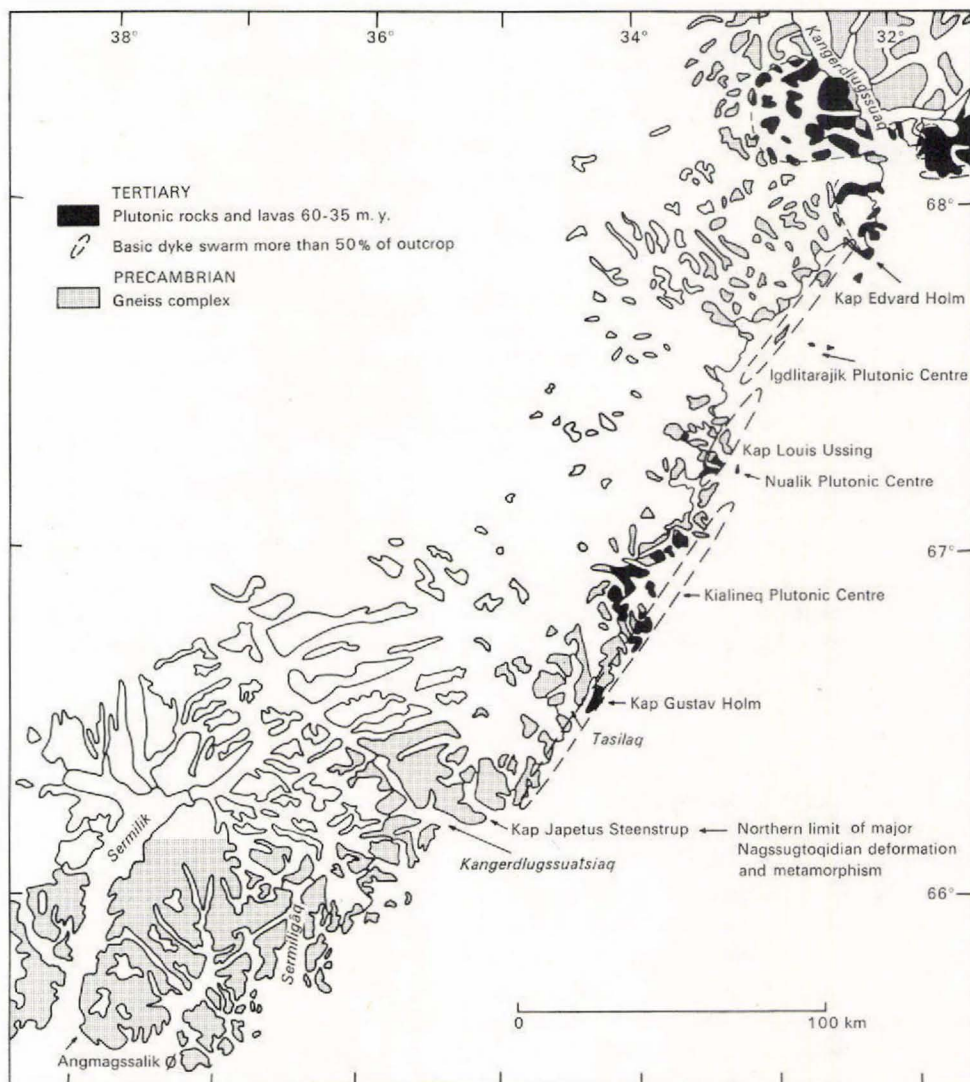


Fig. 30. Geological sketch map of the coast between Kangerdlugssuaq and Angmagssalik Ø, South-East and southern East Greenland.

chron age of approximately 2000 m.y. presumed to reflect a period of partial homogenisation of Sr isotopes during high-grade metamorphism.

(5) Post-tectonic intrusions north of Angmagssalik Ø give a Rb-Sr isochron age of 1600 m.y.

More detailed information of this work is available in Bridgwater *et al.* (1978).

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Field work in uranium geology and prospecting, northern East Greenland

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The field activity in 1977 completed a 5-year programme of exploration for uranium in northern East Greenland from 72° to 76°N (Nielsen & Larsen, 1974; Nielsen & Steenfelt, 1975; Steenfelt, 1976). The following account refers to the field activities of 1976 and 1977.

As in previous years the group undertaking uranium geology and exploration was joined by small field teams working with various other geological subjects (see e.g. Hald, Thyrsted, this report), giving a total number of about 25 participants. All field teams were supported from the base camp in Stordal, Hudson Land (fig. 31).

The Stordal base camp is now dismantled and removed, except for the markings of the primitive runway which can still be used. During the field seasons the field teams and the prospecting work were served by a Bell 206B helicopter from Heliswiss, Bern.

Besides the authors the following persons participated in the exploration programme: M. Watt, W. Koensler, C. Cooper, T. Tukiainen, R. Johansson and a number of field assistants. The field activities in uranium exploration comprised:

- (1) Follow-up of the aerial gamma-spectrometric survey of 1973 and 1974.