

zone, and perhaps the Grenville front south of Greenland. The preliminary inspection of analogue inflight displays of the data shows many distinct anomalies as well as clear regional differences corresponding to major geological units. Thus there is no doubt that a systematic regional aeromagnetic survey over the southern part of the ice cap will make it possible to gain a fuller understanding of the geology of South Greenland. The data acquired in 1984 will be incorporated into plans for such a systematic survey which we hope will be carried out at a later date.

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Preparations for the South-East Greenland mapping project 1986–1987

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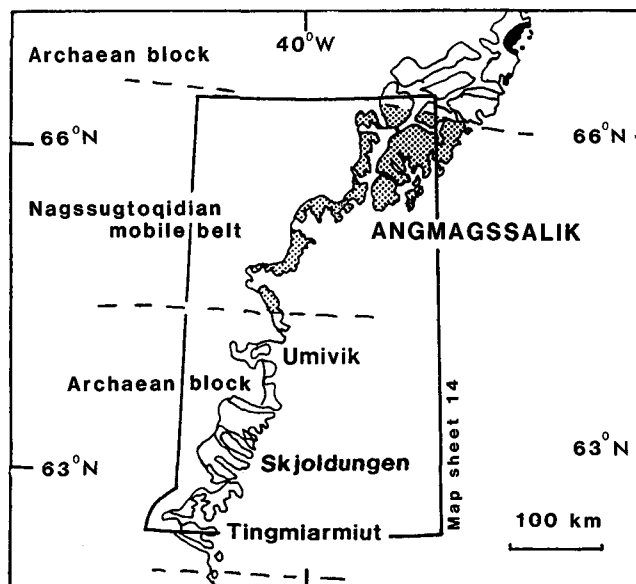
A major project in South-East Greenland is planned for 1986 and 1987 with the aim of mapping the area covered by the 1:500 000 sheet 14 (Skjoldungen) and studying the only sporadically investigated Precambrian areas between 66°45'N and 62°30'N (fig. 30). Logistic and geological reconnaissance work has been conducted in the area since 1981 (Escher & Nielsen, 1982, 1983). During August 1984 the two authors spent three days on an airborne photo-reconnaissance over most of the area. The objectives were:

1. To test a possible Twin Otter landing strip in Kagssortôq (63°15'N) in the Skjoldungen district and to observe other airstrip possibilities in the area.
2. To cover major aspects of the geology of the area with oblique photographs (more than 600 colour slides, 45 × 60 mm, are now available).
3. To gain more knowledge of the general structure of the Archaean block.

Logistics for the 1986–1987 field work

The logistic information has been assembled in an unpublished report 'SØ-Grønland 1984' (Escher & Nielsen, 1984b) which includes information on airstrips, camp sites and sketches

Fig. 30. Area of the map sheet 14 in the GGU 1:500 000 map series.



of route maps from the airborne reconnaissance. In both years helicopter transport is planned, because of difficulties experienced during earlier years of shipborne reconnaissance.

1986 project. In accordance with the initial plans (Escher & Nielsen, 1984a) the summer of 1986 will be spent in the areas between Umivik ($64^{\circ}15'N$) and the northern limits of map sheet 14 at $66^{\circ}45'N$, i.e. Nagssugtoqidian mobile belt. Base camp will be close to Angmagssalik, and T. F. D. Nielsen will be responsible for this part of the project.

1987 project. Field work in the summer of 1987 will cover the areas between Umivik ($64^{\circ}25'N$) and Tingmiarmiut ($62^{\circ}30'N$), corresponding to the Archaean block. Base camp will be situated in Kagsortôq by the recently tested Twin Otter airstrip (Escher & Nielsen, 1984b). J. C. Escher will be responsible for the operation in 1987.

Geology

Careful planning of the geological work in 1986 and 1987 is necessary, as it will not be possible to revisit the area. Accordingly, a report reviewing the major geological problems and with a complete bibliography is being prepared.

What is known of the Precambrian geology of the area between $62^{\circ}30'N$ and $66^{\circ}45'N$ has been described in the following papers: Andrews *et al.* (1973), Wright *et al.* (1973), Bridgwater *et al.* (1976), Bridgwater & Myers (1979), and Pedersen & Bridgwater (1979). Most of these deal with the Nagssugtoqidian mobile belt and sufficient data are available from this part of the area for planning the geological work. Little information, however, is available on the Archaean block to the south and the 1984 reconnaissance flights were intended to give new information which could be used to help plan the investigations in 1987. Observations on the distribution of the three major rock groups are shown in fig. 31.

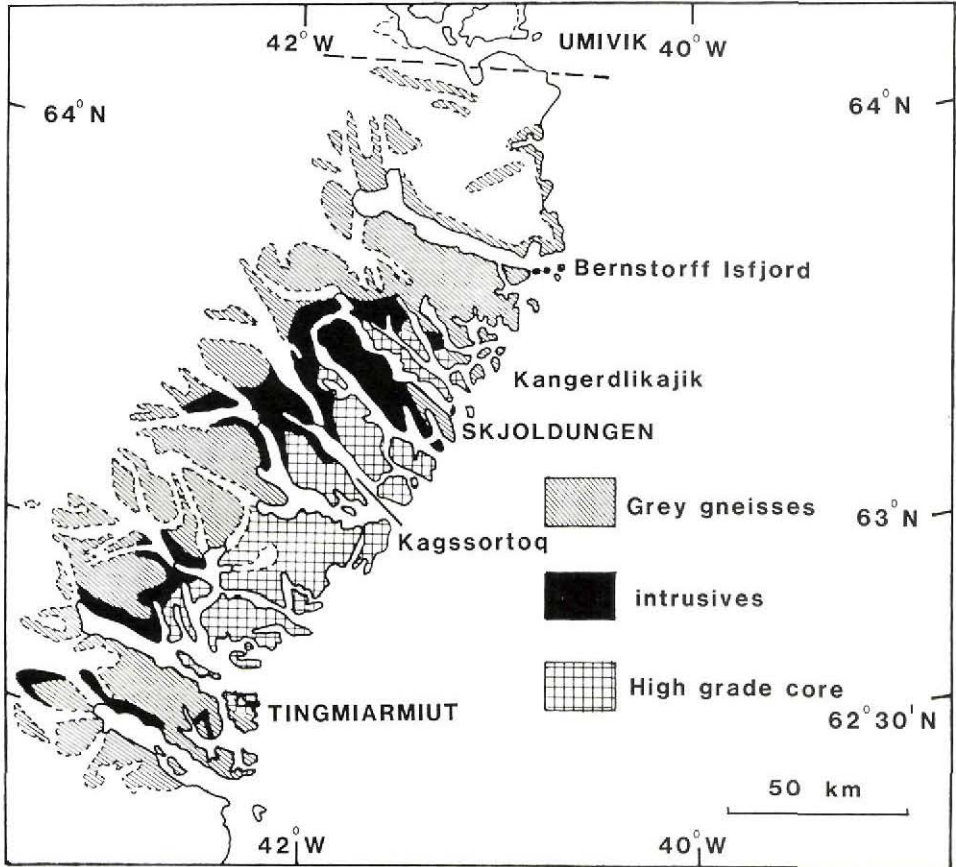


Fig. 31. The Archaean block between Umivik and Tingmiarmiut.

Parts of the coastal area of the Archaean block are dominated by granulite facies agmatitic gneisses. The gneisses from Tingmiarmiut are described by Andrews *et al.* (1973) and Bridgewater (1976) and the gneisses from the northern part of the Archaean block have been described by Escher & Nielsen (1982). All these gneisses are brownish, sometimes with orthopyroxene, and they vary from migmatitic agmatites to rather homogeneous, weakly foliated enderbitic agmatites with abundant ghosts of inclusions similar to those of the migmatitic agmatites. The enderbitic agmatites seem more common from the northern Tingmiarmiut district to Kangerdlikajik, and the migmatitic agmatites are observed towards the margins of the central high-grade core of the Archaean block. Prograde metamorphism towards the central high-grade core, from amphibolite to granulite facies, is described from Tingmiarmiut by Andrews *et al.* (1973) and from the Kangerdlikajik region by Escher & Nielsen (1982). The inland areas, and the northern and southern parts of the Archaean block, are composed of grey agmatitic gneisses with abundant supracrustal units, as also noted by Bridgewater & Gormsen (1968) which possibly never reached granulite facies.

Based on the few observations made during reconnaissance work in 1981 (Escher & Nielsen, 1982) and from loose blocks on the airstrip in Kagsortôq, the intrusives appear to include charnockites, gabbros, leucogabbros, anorthosites, granodiorites, diorites and granites. In parts of the region the erosional features recall those of the anorthosites of the Fiskenæsset district (cf. Myers, 1975).

The overall structure of the Archaean block in South-East Greenland can possibly best be described as a layered crust with a lower high-grade zone of agmatites, overlain by the sequence of intrusives, including the anorthosites mentioned above, followed by grey agmatitic gneisses with abundant supracrustal units rich in amphibolites. Updoming in the coastal area between Tingmiarmiut and Bernstorff Isfjord may have given rise to the distribution shown in fig. 31.

Logistic preparations in 1985

A condition for the field work in 1986 is that fuel depots are established during the summer of 1985. Accordingly, during August 1985 a small group, led by T. F. D. Nielsen, will operate from Angmagssalik and will establish a major fuel depot in the southern part of the working area, using the coastal vessel M/S Einar Mikkelsen.

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