Geographical subdivision of Greenland

Martin Ghisler

The use of standard geographical subdivisions when referring to the location of particular areas in reports or publications is a prerequisite for accurate communication of information. Thus expressions like 'South-West Greenland' should always refer to the same region. For about 15 years GGU has used the standard subdivision of Greenland shown in 'Geology of Greenland' (Escher & Watt, 1976, fig. 473 on p. 582; also reproduced on the back cover of GGU Reports **140** and **145**), even though the standard has not always been rigorously applied.

When the divisions used in 'Geology of Greenland' were drawn up, current practise was one of the main criteria used when placing the divisions. However, current practise at that time (1976) was entirely based on descriptions of onshore regions. There was no need to establish standard subdivisions of the offshore area, as there was very little survey activity offshore at the time. Now, 15 years later, the situation is different. As explained in later articles in this volume, considerable activity offshore both west and east of Greenland is expected in the coming years, and a rapidly increasing number of publications and reports can be expected to appear as results accrue. It is therefore timely to reconsider the standard subdivision and adjust this in accordance with what is likely to be convenient in describing offshore areas.

To avoid confusion, it has been agreed that offshore divisions should as far as possible agree with onshore divisions, so that for example 'the South-West Greenland shelf' and 'offshore South-West Greenland' both refer to the maritime area lying offshore from South-West Greenland. Furthermore, it was agreed that while the new standard boundaries should be natural and convenient for workers describing offshore Greenland, the changes made in relation to the system used for the past 15 years should be as few and slight as possible.

Compared to the divisions used in the publication of 'Geology of Greenland', the main changes are (1) the subdivisions northern West Greenland and northern East Greenland have been discarded, and the areas previously covered by these terms are now incorporated in North-West and North-East Greenland respectively; (2) the boundary between southern and central West Greenland has been moved about one degree north.

The subdivisions that have been agreed on are shown in the accompanying map (fig. 1) and are as follows:

North Greenland is separated onshore from North-West Greenland by Humboldt Gletscher and from North-East Greenland by Nioghalvfjerdsfjorden, and inland by the 79° 30'N parallel. Offshore North Greenland is separated from offshore North-West and North-East Greenland by the 80th parallel.

North-West Greenland is separated from onshore central West Greenland by the 72nd parallel and the fjord Umîarfik, and North-East Greenland from onshore central East Greenland by Kong Oscar Fjord and Forsblad Fjord. Offshore the equivalent boundary is the 72nd parallel. The northern boundary of offshore East Greenland coincides roughly with the Jan Mayen Fracture Zone.

Central West Greenland and southern West Greenland are separated onshore by the fjords Alángorssûp imâ and Arfersiorfik and the glacier Usugdlûp sermia, while offshore the 68th parallel serves as the boundary.

In East Greenland the boundary between central and southern East Greenland has been retained along the northern side of Watkins Bjerg.

The line separating southern West Greenland from South-West Greenland runs through Frederikshåb Isblink onshore, and along the 62nd parallel offshore. The line separating East Greenland from South-East Greenland runs along Glacier de France and through Kangertígtivatsiaq, and continues offshore along the 66th parallel. Thus the Greenland–Iceland Ridge lies offshore East Greenland.

The southern border of South-East Greenland runs through Lindenow Fjord. The onshore area south and west of this, as far north as Kobberminebugt, is termed South Greenland, while the area between Kobberminebugt and Frederikshåb Isblink is called South-West Greenland. The boundary between offshore South-West and South Greenland is the seawards projection of the onshore boundary.

The geographical subdivision of Greenland described in the foregoing need not be used where its use would

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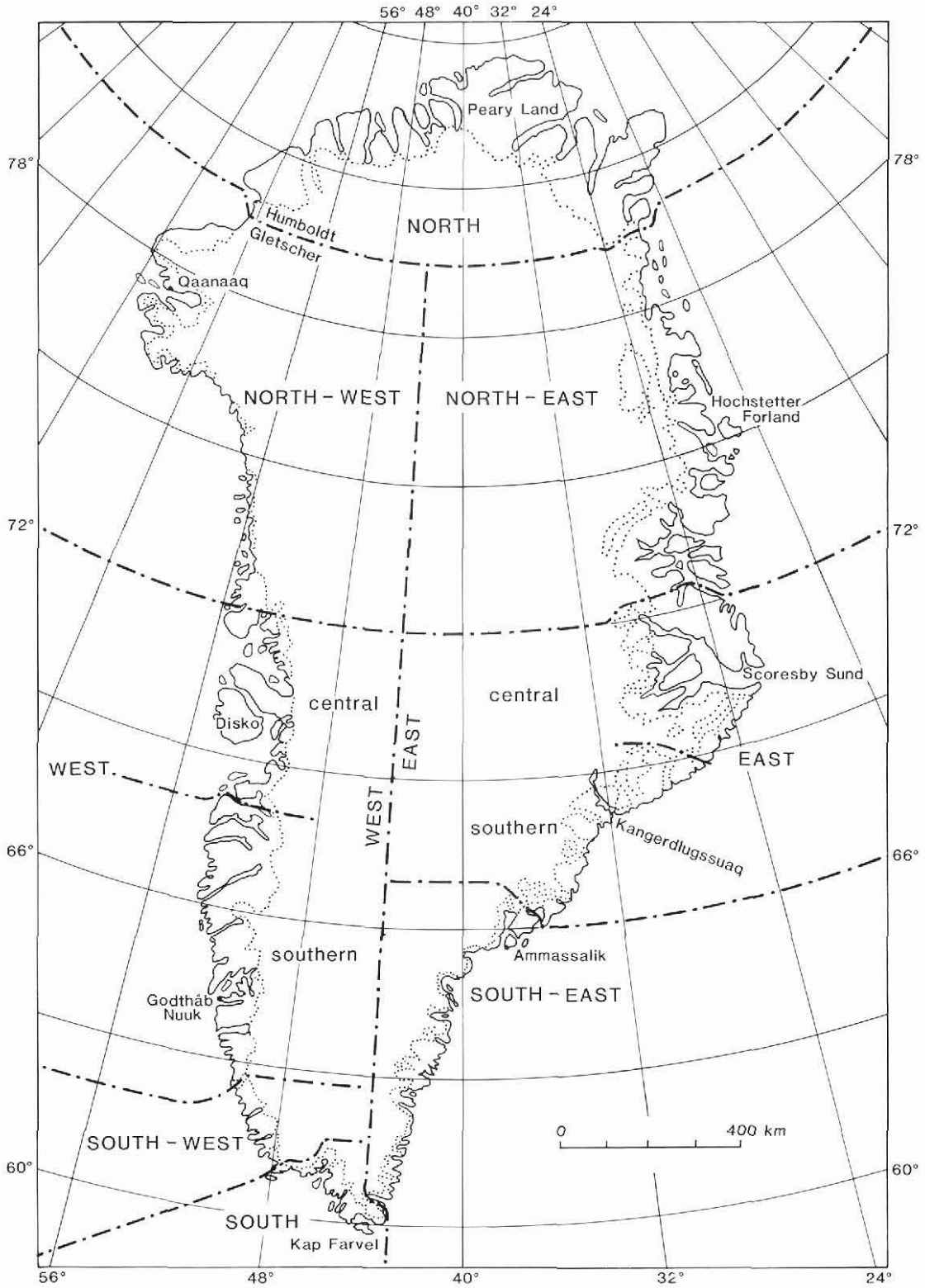

Fig. 1. Geographical subdivision of Greenland, both onshore and offshore, as used by the Survey.

lead to long and unwieldy titles. For example, the East Greenland Caledonides will continue to be called just this, even though this tectonic unit stretches from East Greenland through North-East Greenland into North Greenland.

Reference

Escher, A. & Watt, W. S. (edit.) 1976: *Geology of Greenland*, 603 pp. Copenhagen: Geol. Surv. Greenland.

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Geological mapping of Greenland

Peter R. Dawes

Geological maps provide an important means of documenting and advancing geological knowledge. As well as presenting detailed information in a practical way, geological maps are essential in assessing a region's geological history; they are prerequisite for meaningful evaluation of mineral resources.

Production of geological maps is one of the fundamental activities of geological surveys. In Greenland, both the initiation of geological mapping and the establishment of a geological survey have been late developments compared with many other countries. Consequently, national map coverage at a standard scale (in the case of Greenland, 1:500 000) is not yet complete. The sheer size of Greenland (2 186 000 km^2), its arctic setting, severe climate and rugged topography are important factors that have governed overall mapping policy and field techniques.

Historical background

Historically, Greenland has attracted much international expeditionary activity. This exploration, together with work undertaken under early national government sponsorship that goes back to the beginning of the 19th century, has provided the fundamental knowledge on which geological mapping programmes could be based. In the later part of the 19th century efforts to foster a Greenland Survey met with short-lasting success. Although new initiatives were taken in the thirties, the war years intervened before the forerunner of the present Geological Survey of Greenland (Grønlands Geologiske Undersøgelse or GGU) was founded in 1946 with headquarters in Copenhagen. GGU's first expedition reached Greenland that summer.

The idea of regional map sheet coverage had emerged much earlier. It was initiated when exploration in northern Greenland between 1916 and 1923 aimed, somewhat ambitiously, at the production of a series of coloured map sheets at a common scale covering the vast region between Baffin Bay and the Greenland Sea. In fact the series came to be issued as five maps each on a different scale (Dawes & Haller, 1979). The name of the Danish geologist/cartographer Lauge Koch is firmly associated with this phase of geological work in Greenland. It was also Koch who organised the first regional mapping expeditions (between 1926 and 1958) in East and North-East Greenland that resulted in map sheets on a common scale (1:250 000) covering the region between 72° and 76°N (fig. 1; Koch & Haller, 1971).

Koch's expeditions operated in the remote and logistically difficult regions of Greenland, along the north and east coasts, characterised by major Palaeozoic fold belts. Thus, when GGU was founded to take care of the systematic geological investigation of Greenland, it naturally directed its initial activity to regions not being surveyed by the Koch expeditions. It concentrated its resources in what happened to be the geologically much less well-known, but inhabited regions of the west coast with the vast expanses of Precambrian crystalline rocks. Moreover topographical mapping of this coast was relatively well advanced and exploitation of mineral deposits that might arise from the systematic mapping would