Clement, P. 1980: Glaciologiske undersøgelser i Johan Dahl Land, Vestgrønland 1979. Unpubl. int. GGU report, 63 pp.

Olesen, O. B. & Weidick, A. 1978: Glaciological investigations in Johan Dahl Land 1978. Unpubl. int. GGU report, 109 pp.

Weidick, A. & Olesen, O. B. 1980: Hydrological basins in West Greenland. *Rapp. Grønlands geol. Unders.* **94,** 51 pp.

Status of the West Greenland Glacier Inventory 1980

Anker Weidick

A first attempt at a regional assessment of water resources in West Greenland was made by Weidick & Olesen (1978, 1980) with compilation of a basin inventory. It comprises an identification and coding system together with basic physiographic parameters and estimates of water balance elements for a total of 870 basins lying between the west coast and the Inland Ice and extending up to latitude 71°N. A rough assessment of the total water balance of West Greenland (484 000 km^2) was made whereby 157 km^3 of water are retained on the Inland Ice out of a total annual precipitation of 217 km^3, while the net ablation of the Inland Ice contributes about 60 km^3 to the annual runoff and 97 km^3 are lost due to calving.

Glacier inventory

It was soon realized that the glaciological information contained in the basin inventory required expansion and refinement. Accordingly, it was decided to compile a glacier inventory according to internationally agreed guidelines (UNESCO/IAHS, 1970; TTS, 1977) in co-operation with the World Glacier Inventory project.

In the project area there are about 270 lobes of the Inland Ice and between 10^3 and 10^4 separate local glaciers and larger perennial snow patches. Topographic maps are available on a scale of 1:250 000 supplemented by a fairly good coverage of photographs. The coding of the glaciers is based upon basin areal divisions made by Weidick & Olesen (1980) with minor changes to include glaciers which are not connected to well-defined hydrological basins. Measurements of glacier areas are now being made within the GGU using a TEKTRONIX graphic system. However, there is a special problem in delineating individual ice streams of the Inland Ice, especially higher up, so that the areal data for individual lobes may be quite unreliable, although errors should compensate for sector and district areal totals. There is a further problem that the surface drainage patterns, inferred from the maps and photographs, may not reflect the correct sub-glacial drainage patterns.

In addition to the numerical coding of the physiographic parameters of ice features ac-

cording to TTS (1977), about a hundred 1:250 000 atlas sheets are in preparation to cover the coastal area of about 100 000 km^2. They show water bodies like major lakes and rivers, individual local glaciers and Inland Ice sectors with their code numbers and the trim-line zone of the Inland Ice foreland.

The first priority is the inventory of the Inland Ice lobes which constitute about 97 per cent of the total area of West Greenland covered by glaciers. In view of their large number and poor cartographic representation, the inventory of local glaciers may not be carried beyond coding and location on the published atlas sheets in most cases. However, for areas of immediate interest for hydroelectricity, a full inventory of local glaciers is envisaged. For example, five map sheets around Fiskenæsfjorden and four sheets around Agdluitsoq fjord have been processed by the Geological Institute, Aarhus University, under contract to GGU.

Applications

The inventory is a compact way of storing physiographic information about glaciers in West Greenland. Combined with models of specific ablation and runoff, presently under development within GGU, it will provide the basis for making preliminary estimates of runoff for basins where no field measurements are available. The coding system developed for the glaciers is also a useful framework for storing other glaciological information, especially historical data, as many glaciers are unnamed or have had several different names. Lastly, the inventory will be a Danish contribution to the world-wide effort to record the present state of glacier-cover, which is presently being sponsored by the World Glacier Inventory project.

References

UNESCO/IAHS 1970: Perennial ice and snow masses: a guide for compilation and assemblage of data for a World Inventory. *UNESCO tech. Pap. Hydr.* **1,** 59 pp.

TTS 1977: *Instruction for compilation and assemblage of data for a World Glacier Inventory.* 19 pp. Zürich: Temporary Technical Secretariat for World Glacier Inventory.

Weidick, A. & Olesen, O. B. 1978: *Hydrologiske bassiner i Vestgrønland,* 160 pp. Copenhagen: Geol. Surv. Greenland.

Weidick, A. & Olesen, O. B. 1980: Hydrological basins in West Greenland. *Rapp. Grønlands geol. Unders.* **94,** 51 pp.