





### BRIEF COMMENTS ON THE MAPS

The production of this glacier map series was made possible by the fact that Salajekna is situated at the international border between Norway and Sweden. Thus, it has been photographed much more frequently than would normally have been the case because air photography activities are seldom coordinated across the border. Several of the flight lines were not always terminated exactly at the border and thus a Swedish flight may contain pictures of Norwegian territory, and vice versa. This has been a benefit for the production of the present glacier map series.

The earliest air photography of Salajekna was made in 1950 when Widerøes Flyveselskap A/S completed a large photography task for a mining company in Svalbard, Norway. On 23 August 1950 no less than 1 259 vertical air photographs were taken of the mountain areas south and east of Salajekna at a scale of 1:15 000 (flying height 4 500 m). This large operation consisted of 28 east-west flight lines and some of these crossed the border. Stereoscopic coverage was obtained for certain Swedish mountain areas, including the glacier Salajekna.

In preparation for the official ground inspection of the border in 1959-62, it was decided by the Border Commission that a complete air photography should be made of the Norwegian-Swedish border (as well as the borders between Norway and Sweden and Finland in the north). This task was divided between the Norwegian company Widerøes Flyveselskap A/S and the Swedish official mapping agency, Rikets Ämbetsverk (RAA), Stockholm. Parts of the border line in the Svalbard area was flown by RAA on 25 Sept. 1957 but due to various circumstances one flight line happened to run completely within Norway. Another flight was therefore made on 21 August 1958 along the border and these two series of good photographs made possible the construction of the second glacier map. In both cases the flying height was about 5 000 m and the picture scale about 1:32 000.

For the production of the new Norwegian topographic map series (1:50 000) a special air photography was arranged. This photography was completed on 23 August 1971 by Widerøes Flyveselskap A/S at a scale of 1:30 000. However, the flight lines run from north to south and the pictures did not cover completely the entire glacier. This is the reason why the third map in the series is slightly incomplete.

Finally, for the purpose of making a map of mountain vegetation in Sweden a special series of infrared false colour photography was completed in 1960. For technical reasons, however, some of the flights had to be repeated during the summer of 1962. In this case the flights were made in an east-west direction and fortunately the camera was not stopped exactly at the border, thus a complete high-altitude stereo coverage was obtained for the entire glacier Salajekna and some adjacent glaciers. The result from this photography is shown on the main map in this series. The photography was made on 18 August 1960 and 7 August 1962 at a scale of 1:60 000. In the latter case snow conditions were not so good as in 1960 but the photographs, mainly covering the lower parts of the glacier, presented no real problem in the map compilation because most of the glacier ice was exposed.

The construction of the 1950 map was made in a A-B stereo plotter by the Fyllingen-Widerøes Company in Oslo, whereas all the other construction work was made in a B-B stereo plotter at the Department of Physical Geography, University of Stockholm. The accuracy is therefore slightly different - the first map, which is based upon large-scale photographs, has errors which are only within 0.5 m in all directions whereas the other maps may have an accuracy which is within 2 m or so in relative determination. The error in absolute determination may be slightly larger, partly due to problems connected to the relatively small number of control points and to a special technical problem for the 1980 photography where parts of the stereo plotting was made at the very edge of the photograph without support from a neighbouring stereo model to the west.

The first International Symposium on Glacier Mapping held 1965 in Ottawa, Canada, recommended the scale of 1:10 000 and the contour interval 10 m for glacier maps. Due to the size of Salajekna it proved impractical to use this large scale, so the scale of 1:20 000 was selected to keep the size of the map within reasonable limits. (This scale has also been selected for certain maps of large glaciers in Norway.)

All the four maps were constructed at the scale of 1:25 000 but only the main map is reproduced without reduction in scale. The three others, used for comparison and intended for calculations of glacier volume variations, were reduced to 1:50 000 before printing. In all cases the recommended contour interval, 10 m, was used both in the compilation procedure and in the printed versions.

The Universal Transverse Mercator grid net, Zone 33, is drawn for each 2 km on all maps. In addition, the local Norwegian rectangular net, used by the Norwegian Geographical Survey (NGU), Zone 5 is marked in the frame by X and Y coordinates on the western Norwegian part of the maps, whereas coordinates for the National Swedish net (Rikets nät) are marked in the frame on the eastern part of the maps. Finally, geographical coordinates for 16°20' East Greenwich and for one North latitude are shown by tick marks in the inner frame on all maps.

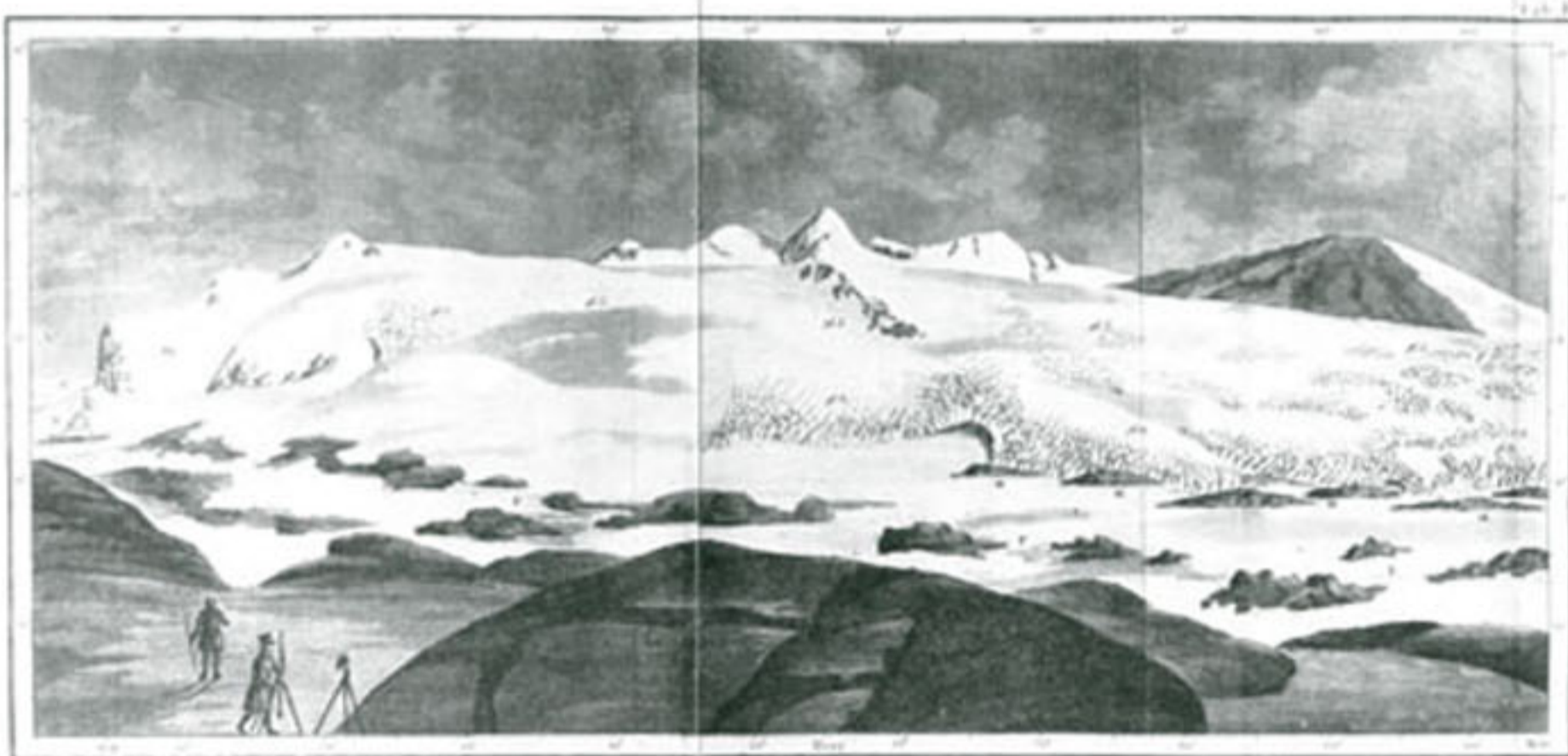
The production of this map series was made possible through a cooperation between the Hydrological Department within the Norwegian Water Resources and Electricity Board (NVE) and the Department of Physical Geography at the University of Stockholm.

For the location of the map area and for previously published glacier maps in Norway and Sweden, see the location map to the left. Note, however, that some of the older maps are no more available or very difficult to obtain.

Gunnar Østrem

### LITERATURE

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*Utsyn af Svalbarns och Japetska fjællens Gletscher fra Svalbarns Læger.*



1950 (top part)

1980 (bottom part)



SALAJEKNA  
22 AUG. 1960

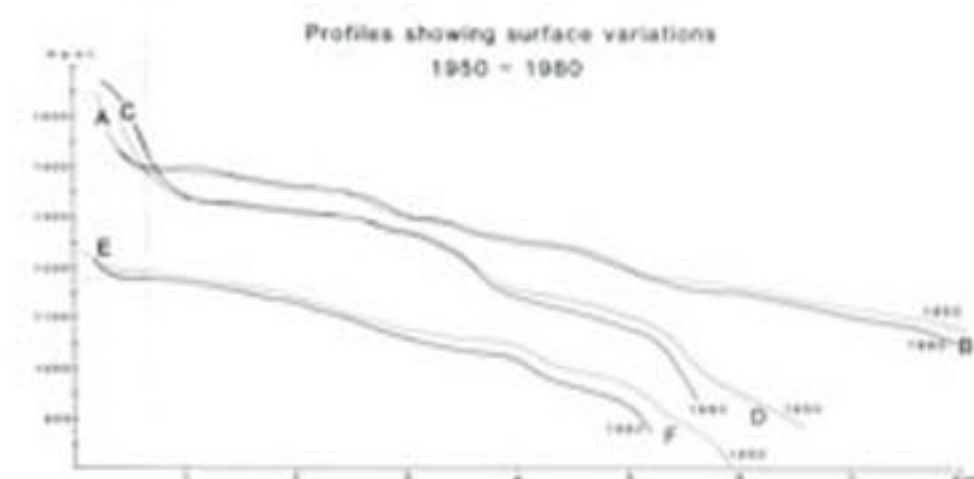
Continuation of verticals taken on 22 August 1960 by the Royal Swedish Air Force. (Permission for publication given 31 November 1963 by Forsvarsstatens). Some survey points, used for glacier retreat measurements, are marked by white or black circles. Approximate scale 1:13 500.



Large rocks, used as survey points, were painted in August 1960 to make them clearly visible on aerial photographs, compare the picture above. Photo: Valter Schytt.



A small section of the ice margin 1960 (enlargement of one of the verticals shown above) showing annual moraines located between 1465 and 1485.



The diagrams indicate that the glacier surface in many places has lowered several tens of metres during 30 years. Note, however, that the glacier seems to grow in its upper parts. The profile A-B indicates variable growth (no 'waists') in the area about 1350-1450 m a.s.l.