

MAPS DEPICTING THICKNESS CHANGES

O. Reinwarth and H. Rentsch

Commission for Glaciology, Bavarian Academy of Sciences, Munich

R. Finsterwalder and K. Brunner

Institute of Cartography, Technical University, Munich

A. Bayerische Gletscher (Bavarian Glaciers); 1 : 5'000

Blatt 1 : Nördlicher und Südlicher Schneeferner, 1949-1971

Blatt 2 : Höllentalferner und Blaueis, 1949-1970

Blatt 3 : Watzmanngletscher, 1959-1970

The three special maps "Bayerische Gletscher", scale 1 : 5'000 represent the changes in area and thickness within the periods from 1949 to 1959 and from 1959 to 1970/71 for the five small glaciers Nördlicher Schneeferner, Südlicher Schneeferner (sheet 1), Höllentalferner and Blaueis (sheet 2) and Watzmanngletscher (sheet 3) in the Eastern Alps (South Germany). Contrary to tables and diagrams such a cartographical representation can show the spacial distribution of the changes on the glacier surface.

For each of the first four glaciers two maps have been produced, one of them showing the state of glacier in 1949 and in 1959, the other the state in 1959 and in 1970 and 1971. Sheet 3 (Watzmanngletscher) shows the state only in 1959 and in 1970. The contour lines (vertical interval 20 m) and the glacier boundary - separately showing the firm limit and visible ice edge - of the later state of glaciation have been printed in blue and those of the former state in red. The changes in area of the glaciers have been marked using flat tints; the yellow tint standing for retreat in area, the red tint for increase in area. The constant ice-free surroundings have been marked by grey overprints: rocks dark grey, debris light grey. In addition the mean annual change in thickness as a function of the altitude above sea level has been drawn into the map sheets. Moreover, moraines are drawn as red line symbols, using interrupted lines for uncertain moraines. The moraines originated from the maximum stages about 1850 and 1920. The five-colour special maps are based upon terrestrial photogrammetric surveys (1949, 1970 and 1971) and an aerial photogrammetric survey (1959).

B. Changes in Elevation of Glaciers in the Eastern Alps
1950-1969; Scale 1 : 20'000

The maps shows the changes in area of eight glaciers in the Eastern Alps (Austria) of two periods between 1950 (1953) and 1969 (1971). The contour lines (vertical interval 100 m) represent the latest stage. The mean annual change in thickness of the glacier in function of the altitude above sea level is displayed for each glacier in diagrams for both periods. The map of the eight glaciers in the Eastern Alps is based upon terrestrial and aerial photogrammetric surveys.

REFERENCES

- Finsterwalder, R. and Rentsch, H., 1973: Das Verhalten der bayerischen Gletscher in den letzten zwei Jahrzehnten. Erläuterungen zu den Gletscherstandskarten für die Jahre 1949(50)-1959-1970(71). Zeitschrift für Gletscherkunde und Glazialgeologie, Bd. IX, p. 59-72.
- Finsterwalder, R. and Rentsch, H., 1977: Die Erfassung der Höhenänderung von Ostalpengletschern in den Zeiträumen 1950-1959-1969. Zeitschrift für Gletscherkunde und Glazialgeologie, Bd. XII/1 (1976), p. 29-35.