

**MAPS OF FEDTSCHENKO GLACIER,
TAJIKISTAN 1:50,000**

(Reprints of Parts of Terrestrial Photogrammetric Maps)

K. Brunner¹, A. Franz¹ and L. N. Braun²

¹Institute of Photogrammetry and Cartography, Bundeswehr University, Munich, DE

²Commission for Glaciology, Bavarian Academy of Sciences, Munich, DE

There are two expedition maps in existence of the Fedtschenko Glacier in the Pamir with a relatively large scale of 1:50,000, and consisting of two map sheets each. These maps were made during the two research expeditions in 1928 and 1958 (Brunner 1999).

The first map, "Fedtschenko-Tanimas Region", north sheet and south sheet, was made in 1928 during the German-Russian Expedition, whose primary aim was the topographic and geological investigation of the expedition region. The topographic surveys were conducted by the German research group using terrestrial photogrammetry. This topographic field work was based on a triangulation done by a Russian group (Finsterwalder 1932). The basis for the second map, "Fedtschenko Glacier", north sheet and south sheet, was made in 1958 during the International Geophysical Year (IGY) of 1957/58 by geodetic specialists from what was then the German Democratic Republic, who were participating in a glaciological expedition by the Uzbek Academy of Sciences. This topographic survey was based on the groundwork laid by the 1928 expedition (National Committee for Geodesy and Geophysics 1964).

In addition to these two maps at a scale of 1:50,000 from the years 1928 and 1958, further maps at larger scales were produced in the course of the two research expeditions. An official Soviet (Generalnie Shtab) map with a scale of 1:100,000 was consulted for support in the determination of changes in volume and thickness of the Fedtschenko Glacier, done in the year 2001 at the Institute of Photogrammetry and Cartography (Bundeswehr University, Munich). This Soviet map was made between 1975 and 1979 using aerial photogrammetry, and was issued in 1985. Thus there were three maps of the glacier showing its status at three different points in time, approximately 25 years apart.

The evaluation of these maps proved to be difficult, as they were extremely different from a geometric point of view. The map from 1958 contained a number of differences compared with the one from 1928, on which it was, in fact, based. The modern map based on the 1979 survey and published in 1985 has an entirely different, homogenous, geodetic reference system as its basis, compared with the maps made during the expeditions. The elevational changes between the historical maps of 1928 and 1958 were reevaluated based on the geodetic reference system of the 1979 map, and as a result, revised values were obtained which, in the lower reaches of the glacier, are remarkably smaller (less than 10 m) than the values published by the Nationalkomitee (1964), showing a lowering of about 30 m. Volume and thickness changes can be found in Table D, while area changes are not available.