

## **GRANATSPITZE WITH STUBACHER SONNBLICK KEES 1990, AUSTRIA, (1:5000)**

(Image Line Map)

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The Stubacher Sonnblick Glacier in the Hohe Tauern Range of the Austrian Alps was mapped in 1991 by J. Aschenbrenner, Vienna, and H. Slupetzky, Salzburg. The cartography was done by H. Krottendorfer, Vienna. The presented map is one of a series of five maps of glaciers in the upper Stubach valley. The sheet Granatspitze is derived from the prototype map 'Stubacher Sonnblickkees' (published in Vol. VII, 1998), counted as 'first generation', a preliminary version (Aschenbrenner et al. 1998). The experience gained here was used to produce the other four maps 'Alpinzentrum Rudolfshütte', 'Hohe Rif-fel', 'Johannisberg', 'Medelzkopf'). Basically, to have the same cartographic design on all five maps and to make further improvements, the sheet Granatspitze covering the Sonnblickkees ('third generation') was developed and printed in 1993 (Aschenbrenner and Slupetzky 1995).

When comparing the two versions of maps, the improvement is obvious. The black plate was reduced to the area of rock by providing enhancement of the rock drawing; even in the previous version the black plate was lightened in order to reduce the darkness in the shade. Three features were additionally depicted by a free-hand line drawing: crevasses, rock and debris. The modulation of contour lines only worked sufficiently well on the glacier surface, so it was not used on the terrain anymore. The production of the orthophoto was entirely done by digital picture processing.

Looking back, it is interesting to note the rapid change in the techniques and methods of surveying and in the way of documentation of glaciers. The main goal of the 'Aschenbrenner maps' was to combine a conventional orthophoto-map with a conventional line map including all characteristics of a topographic map, especially glaciers. The 'Granatspitze' map is an example of the change from classical glacier maps to digital ones. It will, however, be an everlasting question, whether a minimum standard of representing glaciers in digital versions is sufficient (to fulfil scientific demands), or whether a glacier map should be (and not only could be) more sophisticated: a beautiful cartographic-artistic product representing a part of nature in an adequate way.

In terms of glaciological purposes: the Stubacher Sonnblick Kees had an area of 1.504 km<sup>2</sup> in 1990 compared to 1.772 km<sup>2</sup> in 1969 (Austrian Glacier Inventory 1969). On all five maps the glacierized area (17 glaciers) was reduced from 7.2 km<sup>2</sup> in 1969 to 6.5 km<sup>2</sup> in 1990, which means an area loss of 9% (Slupetzky 1997).