

NEVADO DEL TOLIMA, COLOMBIA 1:12,500

(Colour Orthophoto Map)

R. Finsterwalder, Institute of Cartography and Reproduction Technology, Technical University of Munich

Nevado del Tolima is one of the three glacierized mountains of the “Parque Nacional de los Nevados Volcanos” in the Cordillera Central of the Colombian Andes. It is situated at a geographical latitude of 4°40' North and a geographical longitude of 75°20' West and reaches up to an altitude of 5221 m a.s.l. Its top rises 270 m above the snowline, which was calculated – according to the 2:1 ratio between accumulation and ablation area in 1987 – to be at an altitude of 4950 m. In 1987 a total area of 1.56 km² was covered by glaciers. Included in this sum is a glacier tongue of dead ice (visible between the spot heights 4521 m and 4677 m in the enclosed map).

In contrast to the neighbouring Nevado del Ruiz, which reaches up to 5311 m, Nevado del Tolima did not erupt in historical time. Nevertheless its volcanic activity has not completely ceased. An indication of moderate volcanic activities is given by a conic cavity, about 50 m deep, in the glaciated area near the top of the mountain, from which warm gases are escaping. In the enclosed map this conic cavity is represented by hachures and the indication of the spot height of 5135 m.

The map of Nevado del Tolima was produced in collaboration with the surveys of the glaciers of Nevado del Ruiz after its disastrous eruption in 1985 (Finsterwalder 1992). Images taken during a photo-flight in 1987 were used as the basic material for the map composition. The images were shot from a height of 4000m above ground with a wide angle camera (15 cm/23 cm) using colour films (Linder 1993). For mapping the glaciers of Nevado del Tolima one stereo model, covering 4.9 km x 3.6 km of ground, was chosen. The stereo model was orientated by the same control points that were used for the surveys of Nevado del Ruiz (Linder 1993). The measurements of the contour lines were carried out in a line by line order. In this way it was possible to generate contour lines which corresponded to the features in an orthophoto. Spot heights were measured mainly at the fronts of the glacier tongues. The area covered by clouds during the photo flight in 1985 could be mapped using photos taken in 1959. The orthophoto was generated in an analogue process, using an orthoprojector ORF1 of WILD (Eglseder 1993). The further cartographic process included colour separation, reproduction of the contour lines and the map printing itself. The colour slicing for cyan, magenta and yellow was effectuated using a scanner with a screen-distance of 60 dots per centimeter. The contour lines of the glaciated area were reproduced by cribbing and were then combined with the cyan-plate. A separate black-plate contains the contour lines for non glaciated areas, the spot heights, the lettering and the frame work. Map printing was carried out by combining the four colours black, cyan, magenta and yellow.

It is mentioned here that the orthophoto map “Nevado del Tolima 1:12,500” was used as a basis for the conventional topographic map “Nevado del Tolima 1:2500”. In addition to this map a stereo model was produced, which allows the stereoscopic view and interpretation of the map (Finsterwalder 1996).