



## **Glaciation Changes in the Hohe Tauern Range (Austria) between 1969 and 2003 based on Optical Remote Imagery: First Results**

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Climate warming during the last decades caused substantial glacier retreat in the European Alps. The analysis of such glaciation changes around the highest mountain range of Austria, the Hohe Tauern Range, is one of the objectives of the project ALPCHANGE (see [www.alpchange.at](http://www.alpchange.at)). The analysed area within the Hohe Tauern Range extends over 3540 km<sup>2</sup> (46.8-47.1°N, 12.7-13.5°E) thereby comprising the sub-units Glockner Mountains, Schober Mountains, Goldberg Mountains and Ankogel Mountains. This study presents first results of a comprehensive analysis of glaciation changes between 1969 and 2003 based on very high resolution airborne (CIR, true color ortho images) as well as spaceborne (Landsat, SPOT 5 and Quickbird) remote sensing data. Data sets include the years 1969 (first Austrian glacier inventory based on aerial images), 1983 (colour infrared ortho images combined with Landsat data), 1998 (second Austrian glacier inventory based on aerial images, SPOT 5), and 2003 (true colour ortho images, Quickbird). Glacier extent of 1983 and 2003 were manually delineated ensuring a high grade of accuracy due to large snow cover in some parts of the study area during these two stages. In total, some 218 glaciers have been analysed in this study. Changes in the total glaciated area of the sub-units seen over the entire 34 year period are as follows: Glockner Mountains -33%, Schober Mountains -48%, Goldberg Mountains -42% and Ankogel Mountains -36%. The deglaciation during the five years of the ultimate period (1998-2003) is in the same order of magnitude

as during the fifteen years of the penultimate period (1983-1998) strongly underlining the high cryospheric impact of the recent warm years.