Mapping out Paleo-Landscapes in the Non-Glaciated Part of the Alps: More Evidence for Young Uplift of this Part of the Alps

Kurt Stüwe, Nicolas Legrain, and Stefan Hergarten

University of Graz, Earth Science, Graz, Austria (kurt.stuewe@uni-graz.at)

The easternmost part of the Alps (east of the Niedere Tauern region) is the only part of the orogen where glacial carving an be excluded as a landscape forming process as it was never ice covered during the glaciation periods. As a consequence, this region is the only part of the Alps where morphometric analysis can be used to map out pre-glacial landscapes and use their morphology to make chronological interpretations.

In view of recent suggestions that the surface uplift of the Alps may be extremely young, such mapping (and associated geochonology) is extremely important to test these predictions. For example, Hergarten et al. (EGU 2010) use numerical interpretations of digital elevation models to show that the Alps are – on average – less than 10 my old. Similarly, Wagner et al. (EGU 2010) show that the non-glaciated part of the Alps has experienced some 600 m of surface uplift in the last 4 my reflecting the re-birth of a Miocene landscape.

In order to test such predictions, we have begun to map paleosurfaces in several regions across the non-glaciated parts of the Alps, in particuar in the Fischbacher Tauern and the Koralpe regions. Both regions feature peaks above 2000 m elevation above valleys only about 500 m high. However, closer investigations show that this picture can be refined: The peaks actually appear to form summits of an undulating landscape with up to 1000 m relief. Below about 1000 – 1100 m surface elevation the landscape drops into steep gullies. We suggest that these gullies formed in the last 5 my, while the high landscape is possibly of Miocene age. Cosmogenic nuclei work is currently in progress to test these hypotheses.