



New U-He ages for the Eastern Alps

Kurt Stüwe (1), Nicolas Legrain (1), Andreas Wölfler (1), Istvan Dunkl (2), and Todd Ehlers (3)

(1) University of Graz, Earth Science, Graz, Austria (kurt.stuewe@uni-graz.at), (2) University of Göttingen, Göttingen, Goldschmidtstrass 3 (Istvan.dunkl@geo.uni-goettingen.de), (3) Universität Tübingen, Institute for Geowissenschaften, Deutschland (todd.ehlers@uni-tuebingen.de)

With respect to the youngest part of the tectonic evolution of the Alpine orogen, the eastern end of the Alps holds a unique position. Firstly, this part of the orogen is the region with maximum convergence between the Adriatic and the European plates. This is due its position far east of the rotation pole of the Adriatic plate. Secondly, the eastern end of the Alps is the only region of the mountain belt where peaks exist that are substantially above 2000 m but have never been ice covered during the glaciation periods. As such, geomorphological evidence and low-temperature geochronology can be used to infer the young uplift history since the Miocene.

Curiously, fission track ages are generally of Eocene or Oligocene age and are thus much older than in the remainder of the range. This contrast between active tectonism and old fission track ages suggest that the current tectonics, surface uplift and current erosion regime may be extremely young and separated from the Eocene exhumation by a substantial hiatus.

U-He age dating is a method that allows to constrain the evolution during this hiatus. It measures cooling through about the 60°C isotherm – a half way mark between fission track ages and surface temperature. Thus, it is a critical method to constrain if rocks cooled nearer the Oligocene exhumation as indicated by fission track ages or nearer to late Miocene – indicating the onset of the young tectonism.

In this project we have aimed at a spatial coverage of the eastern Alps east of the Tauern window using U-He dating of apatite. Field work was done in summer 2010 and mineral separation and selection during late 2010. Our data are currently in analysis and will be presented during this meeting.