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## **Late Cenozoic enhanced exhumation along the eastern Periadriatic fault and its linkage to the Tauern window, Eastern Alps**

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Indentation of rigid blocks into rheologically weak orogens is generally associated with lateral and vertical extrusion of rocks. In this study, we applied apatite (U-Th)/He (AHe) dating to the Karawanken plutonic belts located close to the eastern Periadriatic fault. The fault is displaced and segmented into three portions: a straight segment west of the Hochstuhl-Möll Valley (HVM) fault system, a central segment between the NW-trending HVM and Lavant Valley faults with a Neogene positive flower structure separating the north-vergent North Karawanken from the south-vergent South Karawanken unit, and an eastern segment largely buried underneath Neogene sediments. In the central segment, we find AHe ages mostly ranging from 6 to 9 Ma, in contrast to older ages west of the HVM directly at the PAF (ca. 20 Ma) and from the basement north of the Klagenfurt basin (ca. 25 to 30 Ma). This age pattern confirms and constrains the positive flower structure as an area of young exhumation.

AHe ages similar to the central segment of the eastern Periadriatic fault were reported from the Tauern window (Foeken et al., 2007; Wölfler et al., 2012). We suggest that the HVM fault system acts as a transfer fault and connects shortening of an apparent positive flower structure and associated exhumation with coeval updoming in the eastern Tauern window. Interestingly, the HVM fault corresponds roughly with the western boundary of a lower crustal Pannonian fragment.

These findings indicate a late Neogene deformation event within the Eastern Alps, possibly triggered by revived indentation of Adria.

### **References**

- Foeken, J. P. T., Persano, C., Stuart, F. M., ter Voorde, M., 2007. Role of topography in isotherm perturbation: Apatite (U-Th)/He and fission track results from the Malta tunnel, Tauern Window, Austria. *Tectonics*, v. 26, TC3006, doi:10.1029/2006TC002049.
- Wölfler, A., Stüwe, K., Danišić, M., Evans. N. J., 2012. Low temperature thermochronology in the Eastern Alps: Implications for structural and topographic evolution. *Tectonophysics*, v. 541-543, p. 1–18.