

STRUCTURAL AND THERMOCHRONOLOGICAL EVOLUTION OF THE KREUZECK MASSIF (EASTERN ALPS, AUSTRIA)

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The Kreuzeck Massif belongs to the Austroalpine basement units to the south of the Tauern Window. The SE trending dextral Möllvalley strike slip fault marks the border to the Penninic units. It was active during lateral extrusion in Early to Middle Miocene time. Conjugate, ENE trending sinistral and SE trending dextral faults of the same event characterize the Austroalpine zone of the study area. The alpine history is documented by two different deformation events: 1. Cretaceous metamorphism attained amphibolite and locally eclogite facies to the margin of the Tauern Window, and greenschist facies further to the south. 2. Tertiary brittle deformation and exhumation of different blocks with different uplift rates. Since Grundman & Morteani (1985) and Staufenberg (1987) it is known, that the northern part of the Austroalpine basement of the Kreuzeck Massif underwent a similar uplift and cooling history as the adjacent Penninic units of the Tauern Window. A prominent boundary is the "Main Mylonitic Zone" (Putiš et al. 2003) a NW-SE striking shear zone parallel to the Möll Valley. In the northern part apatite fission tracks show Miocene ages (19 – 11 Ma) whereas to the south of that shear zone the ages range from Oligocene to early Miocene (31 – 21 Ma). That indicates different uplift rates of these two units along the "Main Mylonitic Zone". Zircon fission track ages in the Kreuzeck area show a wide range from paleogene ages close to the Penninic Tauern Window (51 – 34 Ma) to Jurassic and Cretaceous ages (160 – 75 Ma) more to the south (Dunkl et al. 2003). That shows that the Austroalpine basement south to the eastern Tauern Window has not suffered Miocene thermal overprint reaching the zircon fission track annealing temperature (240 – 280 °C). Thermochronological investigations by means of fission track dating (apatite, zircon) and apatite (U-Th)/He thermochronometry as well as structural analysis should register Tertiary uplift history of the whole Kreuzeck Massif and the neighbouring Penninic units.

References

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