***Adriatic indentation vs. Carpathian slab roll-back: what triggered rapid exhumation and lateral escape in the Eastern Alps?***

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The Eastern Alps are the site of rapid Miocene exhumation and eastward, orogen-parallel (lateral) escape of deeply buried basement nappes derived from the thickened European continental margin of the Mesozoic Alpine Tethys ocean. The question as to which forces triggered such late-orogenic deformations can be discussed by comparing timing and kinematics of doming, strike-slip escape and normal faulting in the Tauern Window with kinematics and duration of (1) Adriatic indentation, and (2) extension in the Pannonian Basin associated with slab roll-back in the Carpathians. Rapid exhumation (faster than 1 mm a-1) in the Tauern Window occurred from about 23-20 to 11 Ma, after which exhumation rates decreased while orogen-parallel extension combined with lateral escape still affected parts of the Eastern Alps further to the east. The 23-11 Ma period roughly coincided with the duration of differential N-directed motion of eastern part of the Adriatic indenter bounded to the west by the Miocene Giudicarie Line. Structures that accommodated focused exhumation and lateral escape in the Tauern Window form a conjugate pattern: Upright folds and strike-slip shear zones trend ENE-WSW in the western part of the Tauern Window, whereas they trend WNW-ESE in the eastern part. Likewise, normal faults at either end of the Tauern Window accommodated top-W and top-SE extension, respectively, at the W and E ends of the Tauern Window. This conjugate pattern of exhumation-related structures conforms to a triangular shape of the rigid upper crustal Austroalpine units that formed the leading edge of the Adriatic indenter south of the Tauern Window at that time. Contemporaneous doming, strike-slip escape and low-angle normal faulting initially affected both ends of the Tauern Window, but slowed down earlier (at ca. 17 Ma) in the east (Katschberg Shear Zone System) and later in the west at ca. 11 Ma (Brenner Shear Zone System). After 11 Ma continuing slow indentation related to the counterclockwise rotation of the Adria plate up to the present time was accommodated by sinistral strike-slip faulting along the northern border of the Tauern Window, orogen-parallel normal faulting east of the Tauern Window and S-directed thrusting in the Southern Alps. In contrast, rapid E-W extension of the Pannonian Basin behind the E-ward retreating Carpathian subduction system occurred during a relatively short period of time, i.e. 17.5-15 Ma. These considerations confirm the postulates of Ratschbacher et al. (1991), indicating that Miocene lateral escape of the eastern Alpine orogenic lithosphere was primarily driven by N-S convergence between the rigid upper crustal Adriatic indenter and the initially still hot and ductile core of the Alps. However, E-ward slab rollback of the European lithosphere in the Carpathians also contributed by assisting orogen-parallel extension and lateral escape via relaxation of forces laterally bounding the Alpine orogenic system.

Ratschbacher, L., Frisch, W., Linzer, H.-G., Merle, O. 1991. Lateral Extrusion in the Eastern Alps, Part 2: Structural Analysis. *Tectonics*, 10, 2, 257-271.