



## Structural synthesis of the western Northern Calcareous Alps

S. Kilian (1), M. Bischof (1,2), C. Garber (1), A. Kositz (1), J. Mackowitz (1,3), P. Sommer (1,2), H. Ortner (1), and B. Fügenschuh (1)

(1) Universität Innsbruck, Geologie und Paläontologie, Innsbruck, Austria (sinah.kilian@uibk.ac.at), (2) GeoZT gmbh, Hall, Austria, (3) Franz Fischerstraße 17, Innsbruck, Austria

The pre-Tertiary structural evolution of the western Northern Calcareous Alps (NCA) was controlled by two processes: Jurassic to Early Cretaceous rifting and Albian to Cenomanian thrusting. Jurassic rifting caused drowning of Triassic carbonate platforms. Facies differentiation and variation of thickness in Liassic syn-rift deep water sediments shows horsts and grabens that can be easily identified in existing geological maps. Detailed investigations and structural analyses of fault geometries showed that Jurassic tectonic activity is marked by E-W striking normal faults and N-S striking tear faults. Major normal faults dip northwards while north and south dipping normal faults are observed in the hanging walls.

Cretaceous nappe stacking can be chronologically ordered by the youngest sediments on top of the nappes. Nappe stacking in the western NCA occurred during Albian and Cenomanian. Cretaceous mostly NNW-vergent transpressive thrusting is indicated by WSW-ENE oriented folds on hectometric scale. These folds have been overprinted by kilometric NW-vergent folds going together with the deposition of the synorogenic Gosau growth strata (Coniacian – Maastrichtian). All folds are segmented by NW-SE striking tear faults (Eisbacher & Brandner, 1996). 60 % of folding occurred till the end of the deposition of the Gosau.

Cenozoic shortening mainly tightened pre-existing folds. No heteroaxial refolding can be observed. Part of post Cretaceous shortening was accommodated by out-of-sequence break through thrusting. This kinematic history is different from the evolution of the basement nappes of the internal part of the Austroalpine (Schmid et al. 2004).

### References:

Eisbacher, G.H. & Brandner, R. (1996): Superposed fold-trust structures and high-angle faults, Northwestern Calcareous Alps, Austria. - *Eclogae geol. Helv.*, 89: 553-571.  
Schmid, S.M., Fügenschuh B., Kiessling, E., Schuster R. (2004): Tectonic map and overall structure of the Alpine orogen. - *Eclogae geol. Helv.*, 97: 93-117