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The role of the memory inherited by the system from the Cretaceous-Tertiary evolution of convergent margins into the build-up of the Source area (Apuseni Mountains, Romania).

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The Apuseni mountains in Romania take a central position in the Alpine Carpathian Dinaride system and separate the Pannonian basin in the west from the Transsylvanian basin in the east. The Cretaceous age nappe stack involves from bottom to top Tisza- (Bihor and Codru) and Dacia-derived units (Biharia, according to Schmid et al., 2008) overlain by the South Apuseni and Transylvanian ophiolite belt. This study tries to provide new and additional information on the structural and metamorphic evolution of these units from the Jurassic obduction to neotectonic activity. This also comprises information on their interaction with the neighbouring basins. The objective is to show the impact of large scale (plate) tectonics (f.i. in terms of its thermal configuration and strengths profile) and the impact of early-formed tectonic features for the further evolution, specifically the formation of the surrounding basins together with its feedback with topography. This approach includes investigation of kinematics along first order contacts during distinct events together with the thermotectonic characterization of the involved units. While the early "high-grade" evolution will be geochronologically addressed by Sm/Nd, Rb/Sr and Ar/Ar dating, fission track analysis on zircon and apatite will be used to constrain the low-temperature part of the story. Already available data by Sanders (1998), Schuller (2004), Merten (in preparation) and Kounov (in preparation) together with new own data will be used to provide a 4D model for the late-stage thermal evolution of the Apuseni mountains. Thermal modelling will be compared and integrated with numerical modelling of the landscape evolution. The hereby generated data and information on erosion and exhumation will be further used in associated partner projects of the Source to Sink research network which addresses the evolution of the Danube system from the hinterland to the Black Sea.

References:

Sanders, C. A. E. (1998), Tectonics and erosion – Competitive forces in a compressive orogen: A fission track study of the Romanian Carpathians, PhD-thesis, Vrije Universiteit, Amsterdam, pp. 204.

Schuller, V. (2004), Evolution and geodynamic significance of the Upper Cretaceous Gosau basin in the Apuseni Mountains (Romania), PhD Thesis, Tubinger Geowiss. Arb. Reihe A70, 112 pp.

Schmid, S. M., D. Bernoulli, B. Fügenschuh, L. Matenco, S. Schaefer, R. Schuster, M. Tischler and K. Ustaszewski (2008), The Alps-Carpathians-Dinaridic orogenic system: correlation and evolution of tectonic units, Swiss Journal of Geosciences, 2008.