

## **Sr-Isotope and $^{40}\text{Ar}/^{39}\text{Ar}$ ages from the sedimentary cover of Baia de Arieş unit, Traşcau 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. The study area is located in Cheile Runcului, a small gorge which cuts through a greenschist facies metasedimentary succession, located at the contact between the Baia de Arieş and the Biharia nappe (both Biharia nappe complex). From bottom to the top the succession is built up by metaconglomerates and metasandstones, greyish dolomites, a few metres of reddish marbles and white calzitic marbles at the top. Until now the metasediments were interpreted to be Paleozoic in age, but with respect to lithological similarities a Permian to Jurassic age seems to be likely. To answer this question Sr-isotope analyses on pure white marbles, possibly representing Jurassic metasediments were performed. Preliminary Sr-isotope data support a Jurassic age for these marbles, but further samples need to be analysed. Internal deformation as well as the contacts kinematic indicators and stretching lineations were investigated to get information on the direction of thrusting. Preliminary  $^{40}\text{Ar}/^{39}\text{Ar}$  ages on Biotite, as well as fission track data address the age of metamorphism and cooling and aid for a thermotectonic characterisation of the involved units. Already available data together with new data from this study 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:

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