of 0.25mm/a. After this period of rapid faulting the near surface geothermal gradient is increased dramatically (>50°C/km). In order to investigate the theoretically possible surface heat flux a parameter map was calculated showing the surface heat flux in the hanging wall at a distance of 0-90km to the fault trace. This plot shows that within 10km to the fault trace the surface heat flux is increased distinclty for all faulting angles and faulting velocities. For high angled normal faults the lateral cooling effect considered in the two-dimensional model is too large and the surface heat flux near the fault trace is about 0.050W/m² less. An interesting feature is that low angled faults influence the surface heat flux in the hanging wall >100km distance to the fault trace, whereas the influence on the near surface thermal structure during high angled normal faulting is considerably reduced (<50km).

The presented model shows that rapid relative displacement during normal faulting produces a warming of the adjacent hanging wall and consequently an increased surface heat flow. This effect can easily provide the heat necessary for the resetting of the FT ages in the hanging wall of the Rechnitz Window without the assumption of a hidden volcanic body.

Dunkl, I. and Demény, A., in press. Tectonophysics.
Sachsenhofer, R.F., 1991. Maturität im Steirischen Tertiärbecken. Erdöl Erdgas Kohle, 107, 12-17.

Gondwana origin of the Tisza-Dacia Unit? Arguments from paleomagnetism

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The origin of the crustal units today forming the Intra-Carpathian area is still under debate (CSONTOS 1995). The so called Tisza -Dacia unit is built up by the Apuseni Mts., the South and the East Carpathians and is characterized by a common Tertiary tectonic evolution. The pre-Tertiary tectonic history of these blocks is hardly known. Middle Jurassic to Lower Cretaceous sediments from Piatra Craiului and Bucegi Mts. (SE Carpathians, Romania) were sampled for a paleomagnetic study. The sites are situated in the massifs of Piatra Craiului and Bucegi and in the strongly faulted area between them.

The Jurassic sediments lie on pre-alpine polymetamorphic crystalline basement of the Leaota massif which is part of the alpine Bukovinian nappe system. Facies development (fining up) and syn-sedimentary tectonics (normal faults) point to a scenario of extension tectonics presumably lasting from Middle Jurassic to Early Cretaceous.

At present we are able to isolate a common component for all sites with identical inclinations (≈ 62°) and declinations ranging from 20° to 160°. The scatter of the mean declinations are interpreted as the result of differential clockwise rotations.

In the Bucegi massif the common component (D 122°/I 62°) is better grouped in geographic than in stratigraphic co-ordinates pointing to a post-tectonic remagnetization. The steep inclination (actual geomagnetic field inclination ≈ 64°) indicates a remagnetization event which took place just before the Early Miocene large scale rotations.

Jurassic limestones reveal shallow reverse inclinations (≈ -30°) at high demagnetization temperatures additionally.

Clockwise rotations of the Apuseni Mts. and the South and East Carpathians (Tisza-Dacia unit) were already described by BAZHENOV et al. (1993) and PATRASCU et al. (1990,1994). Their investigations of Middle to Upper Cretaceous and Tertiary sedimentary and volcanic rocks reveal rotations of more than 80° and a timing of this movements prior to the Middle Miocene. PATRASCU et al. (1990) were able to give a well defined Upper Cretaceous (70-80 Ma) paleolatitude for the Apuseni Mts. of 21° N. The shallow reverse inclination from the Jurassic limestones corresponds to a paleolatitude of about 16°. Both the Cretaceous and the Jurassic paleolatitude are a convincing argument for the Gondwana origin of the Tisza-Dacia unit.

The ongoing project focuses on the detection of primary magnetic remanences of Middle Jurassic to Early Cretaceous age in the SE-Carpathians. The reconstruction of the plate tectonic puzzle in the Carpathian realm will greatly benefit from further paleomagnetic research.

Neogene magmatism at the Alpine-Pannonian transition zone

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Neogene alkaline volcanism developed in two main stages and formed two volcanic fields (Styrian Volcanic Field, SVF and Little Hungarian Plain Volcanic Field, LHPVF) at the Alpine-Pannonian transition zone. In the SVF, a Karpatian/Early Badenian trachyandesitic-latitic volcanism was followed by a Late Pliocene alkaline basaltic one, whereas in the LHPVF a Sarmatian/Early Pannonian bimodal