MIOCENE TECTONICS AT THE PANNONIAN-CARPATHIAN TRANSITION: THE BOGDAN VODA - DRAGOS VODA FAULT SYSTEM, NORTHERN ROMANIA

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Tertiary tectonics in the Pannonian-Carpathian transition zone was dominated by opposed rotations of Alcapa and Tisza-Dacia, separated by the Mid-Hungarian lineament (MHL). While in the Pannonian basin the MHL is well known from geophysical and borehole data, its northeastern continuation remains a matter of discussion. Our field based study, located in the Maramures mountains of northern Romania, provides new kinematic data from the Bogdan Voda fault, a first order candidate for the prolongation of the MHL to the northeast.

In the Burdigalian, the Pienides (unmetamorphic flysch nappes) were emplaced onto the autochthonous Paleogene flysch units. Kinematic data consistently indicate top to the SE-directed thrusting of the Pienides and selected imbrications in the autochthonous units. Between Langhian and Tortonian these thrust contacts were offset by the E-W trending Bogdan Voda fault and its eastern continuation, the Dragos-Voda fault. These two faults share a common polyphase history, at least since the Burdigalian. Kinematic data derived from mesoscale faults indicate sinistral strike-slip displacement, in good agreement with kinematics inferred from map view. The NE-SW trending Greben fault, another fault of regional importance, was coevally active as a normal fault. From stratigraphic arguments major activity of this fault system is constrained to the time interval between 16.4-10 Ma.

While deformation is strongly concentrated in the sedimentary units, the easterly located basement units are affected by abundant minor faults of similar kinematics.
covering a wide area. These SW-NE trending strike slip faults feature a normal component and resemble an imbricate fan geometry. Since Burdigalian thrusting is consistently SE-directed on either side of the Bogdan-Dragos Voda fault, major post-Burdigalian differential rotations can be excluded for the northern and southern block respectively. Hydrothermal veins within Pannonian volcanic units are aligned along the fault trace of the Bogdan Voda fault, indicating a post 10 Ma reactivation of the fault in an extensional regime.

Interestingly, kinematic data from the Preluca fault, an exposed part of the North Transylvanian fault, reveal a similar stress pattern as that deduced for the Bogdan-Dragos Voda fault. Rather than featuring a single principal continuation, the existence of several faults connected to the Mid-Hungarian lineament has to be taken into consideration - at least in northern Romania.