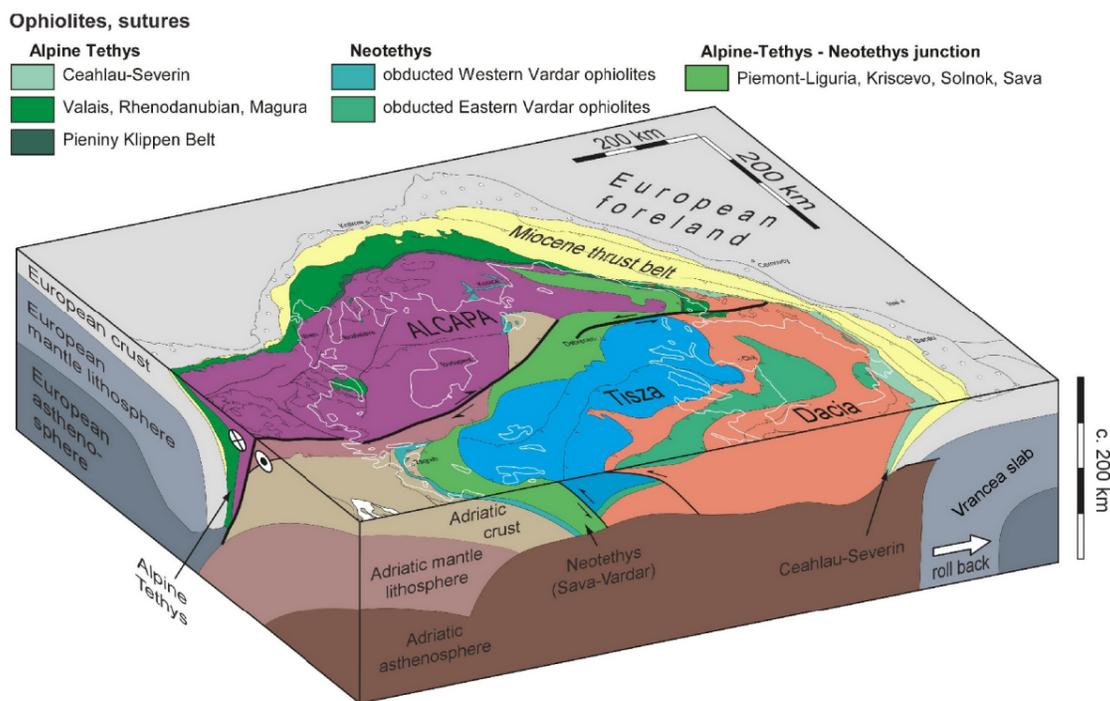




Flex lecture - Thursday 8 May 2008, 16:00

The Carpathians - Pannonian system: Integrated research towards understanding orogenic processes



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ISES has been created as a joint venture between VU University Amsterdam, University of Utrecht and TU Delft to develop a new programme of research activities in Solid Earth Sciences using an integrated approach involving a wide range of subdisciplines. One of the main areas where ISES researchers are focused to derive accurate quantitative methods for geoprediction is the Pannonian-Carpathian system. Among the processes studied in the Pannonian -Carpathians system, the flex lecture will discuss:

The “soft” orogenic collision: what does it mean - the Carpathians example - In low topography orogens collisional deformation can potentially couple and thicken the lower orogenic plate. Deformation pulses are well recorded through sequence stratigraphic boundaries with both short and long wavelengths, corresponding to activation of individual thrust sheets and regional thickening of the orogenic core.

High-Resolution Stratigraphic Evolution of the Neogene in the Paratethyan Vienna Basin - The goal is to analyse the stratigraphic evolution of the Vienna basin during the Middle - Late Miocene at a very high temporal resolution in a vertically complete stratigraphic sequence. This is achieved by high-resolution well measurements. Chronostratigraphic and sedimentological results with obtained times series are combined in order to derive forcing mechanism controlling basin fill in terms of tectonics, eustasy and basin connectivity.

Upper crustal structures in neotectonic active areas: high density seismic and potential field data - The Vrancea Zone has an intense seismic activity comprising intermediate depth earthquakes, with magnitudes up to 7.5. This isolated segment of the orogen indicates that a final stage of collision is still in progress. Integration of seismic velocity and potential fields modeling led to refining the SE Carpathians structures, in particular with novel geophysical methodologies.

Location, timing and rates of SE Carpathians exhumation: insights from low-temperature thermochronology - The evolution of the SE Carpathians is an effect of the interplay between orogenic and intra-plate processes conditioned by the late stage evolution of the Vrancea slab. AFT and (U-Th)/He thermochronology indicate an exhumation history linked with nappe emplacement overprinted by Quaternary exhumation resulting from orogenic thickening during the coeval inversion of the entire Carpathians - Pannonian system.

Miocene to Pliocene evolution of the Central Paratethys - Precise dating and high-resolution correlations are prerequisites for sound geological constraints on the evolution of the basin geometry. A new time frame for Paratethys sediments is a crucial constraint for better understanding of Mediterranean-Paratethyan water exchanges. Understanding the hydrological budget and the balance between continental and lacustrine environments is key in the reconstruction of regional geodynamic settings.

Connectivity between sedimentary basins: inferences for the evolution of Paratethys basins - During orogenic growth, sedimentary basins can evolve independently as a result of separation from regional or global sea level(s). Differences between sea-levels and the heights of separating barriers are low. The Paratethys is characterized by endemic evolution of numerous sub-basins which have often connectivity events