Geophysical Research Abstracts
Vol. 13, EGU2011-12137, 2011
EGU General Assembly 2011

The role of tectonics and erosion in the evolution of topography in the western Pannonian basin

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Transdanubia constitutes the western part of the Pannonian basin system and has a polyphase deformation history. We consider this territory as a local, quasi closed source-to-sink system. Detailed investigations have been carried out in the past decades by means of geological studies, geophysical surveys and geomorphologic analysis to unravel the tectonics and stratigraphy of the area. In this paper we highlight the results and present their integrated interpretation.

The main topics discussed are as follow. (1) Revision of the Eo-Alpine evolution of the Transdanubian Ranges with regard to the eastern Alpine nappe system. Interpretation of the abundant seismic and borehole data support the allochtonous model of the Transdanubian Unit and its continuity with the Northern Calcareous Alps. (2) Neotectonics of the area, mapping active deformation using high resolution geophysical techniques. A special emphasis is given to ultrahigh-resolution water seismic data on Lake Balaton. (3) Role of active faults in the present-day topography of Transdanubia. (4) Seismic stratigraphy and tectonics of Late Miocene basin fill in southern Transdanubia and below the Lake Balaton. Deformation of the original sequences has led to erosion and mass redistribution of sediments. (5) Constraints on the amount and timing of vertical surface motions and erosional phases.

The results discussed above have been incorporated into the general geodynamic evolution of the Pannonian basin.