POST-CONTRACTIONAL SUBSIDENCE AND UPLIFT OF THE CARPATHIAN BELT

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Several hundred metres thick Pliocene to Quaternary sequences outcropping along the Carpathian front steeply dip away from the mountain belt towards the Carpathian foredeep. They overly the Carpathian fold-and-thrust belt and document that, following the main contractional stages, the orogenic wedge first subsided and was then uplifted. Uplift occurred coeval with substantial subsidence in the basin adjacent to the E, the Focsani Depression.

To define the precise kinematics of such movements and thereby constrain these vertical movements taking place in the "wrong" place and in the "wrong" time, the Netherlands Research Center for Integrated Solid Earth Science has launched a large campaign of geological and geophysical investigation. The main components of the project are as follows:
1) acquisition of nearly 100km of seismic data designed to image the uppermost hundred metres of the Earth’s crust and thereby making a precise connection between features visible in Industry lines and at the surface
2) paleomagnetic investigations in order to constrain the age of the poorly dated continental to lacustrine sediments
3) A seismic experiment designed to detect 3-D effects on 2-D acquisition
4) Structural work to determine the stress/strain conditions during subsidence and subsequent uplift

At a larger scale, these activities are embedded in the effort made by ISES and connected groups to precisely constrain the kinematics of the Pannonian-Carpathian system.

Seismic acquisition has been performed during the summer 2002 and has been
technically very successful thanks also to the effort of the prospecting company Prospectiunii SA. Lines have been processed and are currently being interpreted. The most apparent feature is the lack of localized deformation demonstrating that subsidence and tilting affected areas of several tens of kilometers and are not related to single faults. Sampling for paleomagnetic studies has been carried out in 2002 along the same section where seismic acquisition took place. Preliminary measurements show good analytical results and will therefore produce relevant results in the coming months.