



## **Tectonic evolution of the Alpine-Carpathian junction during the Early Miocene [Karpatian Tectonics]**

**K. Decker** (1), M. Hölzel (1), P. Strauss (2), M. Wagneich (1) & A. Zamolyi (1)

(1) Department of Geodynamics and Sedimentology, University of Vienna  
(Kurt.Decker@univie.ac.at) (2) OMV Exploration & Production GmbH, Vienna  
(Philipp.Strauss@omv.com)

Early Miocene tectonics in the area between the Eastern Alps and the outer West Carpathians encompass complex deformation of both, the thrust units and the European foreland. Complexities arise from the irregular shape of the European margin, the corner effect of the Bohemian promontory and the generally oblique convergence between the European foreland and the Alpine-Carpathian allochthon. 3D and 2D seismic data, which cover both the external Alpine-Carpathian thrust sheets (Washberg-Zdanice Unit) and piggy-back basins on top of the allochthon, age data from growth strata related to fold-thrusting and piggy-back basin formation, and tectonic outcrop data are used to constrain the kinematics and timing of Early Miocene deformation in the region. Data indicate that pinning of the Alpine-Carpathian thrust front south and west of the Bohemian promontory, and the foreland recess east of it, caused superposition of thrusting and sinistral wrenching during thrusting into the recess. Such kinematics lead to complex 3D fold-thrust geometries in the lowermost thrust sheets of the Molasse Basin (Washberg-Zdanice Unit), The establishment of NE-striking sinistral wrench faults and out-of-sequence thrusts in the overriding Alpine-Carpathian thrusts, and the formation of Early Miocene (Karpatian) piggy-back basins with complex geometries on top of the allochthon. Seismic data show piggy-back basins containing up to 1.5 km (about 0.75 s TWT) thick sediments. Fault data and growth strata from autochthonous Early Miocene basins on the Bohemian Massif indicate that significant foreland deformation occurred concurrent with thrust faulting and sinistral wrenching of the allochthon. Data particularly show Early Miocene inversion of Jurassic-Cretaceous grabens and half-grabens in the overthrust part of the Bohemian Massif and reactivations of pre-existing NE-striking Variscan basement faults in the fore-

land of the Alpine-Carpathian thrusts. Growth strata and small Early Miocene basins delimited by these sinistral faults prove repeated periods of fault reactivation during short periods of time within the Early Miocene and suggest temporary stress coupling across the Alpine-Carpathian floor thrust.