sub-parallel to the main structural units. Direction of these faults is W–E in the eastern part of the basin and gradually changes to NE–SW in the west, according to the bending of the Pieniny Klippen Belt. Longitudinal faults are cut and displaced by NNW and NE striking oblique faults which belong to the younger system. NNW and NE striking oblique faults are right and left lateral, respectively, which appear to had functioned as conjugate system of faults. Structural analysis of fault patterns indicates four major stages in the Neogene evolution of Orava — Nowy Targ Basin:

These stages are:

- Formation of the system of longitudinal faults in the Lower and Middle Miocene. The origin of this system was related to oblique convergence between Carpathian microplate and North European Platform which changed into a continent — continent type collision at that time. Oblique collision produced shear stress and generated left lateral movement along these faults.

- Decreasing deposition rates convinced regional thermal sag mechanism, affecting source area as well. During Late Eocene to Early Oligocene times prominent uplift took place, followed by minor subsidence. This uplift, having the general plate convergence background, is interpreted here to be a reaction to compressional stress development and a shift of locus of shortening to the north. Its final relocation and creation of main detachment surfaces resulted in stress relaxation and limited subsidence, therefore the Late Oligocene—Early Miocene basin would develop on top of undergoing initial thrusting flysch sequences. Further continuation of shortening introduced orogenic processes into the Outer Carpathians.

Late Jurassic to Miocene dynamics of the Polish part of Outer Carpathian Basins and its regional implications

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The Late Jurassic to Early Neogene tectonic evolution of the Polish part of Outer Carpathian fold-and-thrust flysch belt was a subject of the research. The flysch sequences in Poland are divided into several tectonic and facial units related to primal basins/sub-basins; Magura, Dukla, Fore-Dukla, Silesian, Subsilesian and Skole units were analysed here. Outwards of flysch belt basin the European platform Peri-Tethyan basins developed, including Polish Trough and its southern prolongation, of which tectonic relations with northern Tethyan realm are in question.

Synthetic 1-D sections of the basin-fill for individual zones of flysch belt sub-basins were reconstructed and backstripped in order to calculate tectonic component of the basement vertical movements. The results are highly dependent on paleobathymetry estimations. For the Polish Trough maps of subsidence rates were constructed, and correlation of the main tectonic events between Outer Carpathian and European plate (Polish Trough) were analysed. Subsidence pattern is consistent the across analysed part of the basin would developed on top of undergoing initial thrusting flysch sequences. Together with extensional/transensional major tectonic event in the Inner Carpathians it allows to suggest that the Outer Carpathian basins were affected by extensional tectonic regime at that time.

Superposition of left lateral movement and lateral irregularities of fault planes along the mentioned longitudinal faults caused local change of transpression regime and origin of the initial sedimentary basin in the Badenian.

Uppermost Badenian — Lower Sarmatian. Strike slip movements ceased but horizontal compression still existed. Horizontal compression of NNW–SSE direction generated conjugated system of oblique faults. These faults were responsible for the displacement of older fault lines and disintegration the basement of the basin into blocks.

The stress field reorganisation in the Upper Sarmatian. Post-compressional release and uplift stages favoured the development of normal faults along older fault lines (rejuvenated faults) and distinct sedimentation rate increasing.

Geoelectrical profiles shows that some faults were still active during Pliocene and Pleistocene.