The Late Alpine Kleszczów Graben (south-central Poland): the role of the reactivation faults in its origin and structural evolution

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Kleszczów Graben (south-central Poland) is prein the Permian-Mesozoic sequence: 1) NE-SW to ENE-WSW, 2) NW-SE to WNW-ESE. These faults are generated mainly in Kimmerian and Alpine tectonics and some of these are older and continue down to the Moho boundary (Holy Cross Fault).

Sedimentation and deformation pattern of the Permian–Mesozoic sequence was controlled by these regional faults. Structural analysis of the field investigations in the open cast brown coal with older faults.

Structural relationship between the Permian- mine "Belchatów" (eastern part). The recon--Mesozoic fault sets and fabric of Cenozoic struction of the main deformations in the Kleszczów Graben was made: 1) reactivation of sented. Tectonic analysis of deep wells data WSW-ENE and NW-SE faults in transtension revealed the occurence of the two main fault sets regime in Late Oligocene-Early Miocene (WNW-ESE the maximum stress axis) and opening pull-apart basins along WSW-ENE faults; 2) reactivation of NE-SW faults in extensional regime in the Late Sarmatian-Early Panonian (high angle plunge maximum stress axis) and vertical displacement of Cenozoic series; 3) reactivation of NW-SE inversion faults with strike-slip movements in transpresional regime in the Late-Middle Pleistocene (with NE-SW shorten-Cenozoic Kleszczów Graben infilling was made ing direction). Analysis of the youngest deformaon the basis of the two data groups: results of the tions in the Kleszczów Graben and recent seismic shallow drilling of brown coal and the detailed activities in the region indicate the relationship

The Alpine collision seen from Paris Basin and southern North Sea

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Basins) have recorded compressional deformations related to the alpine collision from Upper Cretaceous to present-day. Deformation events in both basin domains are of similar age. Compression started during Upper Turonian with a paroxysm at the end of Cretaceous times (Maastrichtian). Eocene deformations (so-called "pyrenean") are well recorded in both domains. preferentially in the Paris Basin.

Although both domains have very similar tectonic timing, they significantly differ in tectonic Paris Basin. style and structure size. The Paris Basin exibits a regional scale folding with a 200-300 km wave- tectonics in the West European Platform is dislength. On the contrary the Southern North Sea cussed in mechanical terms.

The Paris Basin and the Southern North Sea bas- Domain is characterised by narrow spaced faultins (Broad Fourteen Basin, Sole Pit Basin, Dutch ing (few tens kms) with associated folding. The Central Graben, Central and West Netherlands Paris Basin mainly records lithosphere buckling from Upper Cretaceous to present-day with slight changes of the compression direction (N-S during Upper Cretaceous to NW-SE during Upper Miocene) with some NE-SW trending folds of Upper Cretaceous age (Bray anticline). The Southern North Sea Domain is characterised by spectacular inversion of mesozoic grabens, through reactivation of normal faults into strike-slip reverse Another event occurred during the Oligocene, but faults. The amount of uplit associated with strong erosion and related to fault reactivation is higher in the Southern North Sea Domain than in the

This twofold style of alpine age compressional