

Structural interpretation of seismic data in Polish Outer Carpathians southwest and southeast of Krakow

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The deep structure of the Polish Outer Carpathians and its basement, that is southern prolongation of the North European Platform, has been recognized by deep boreholes as well as by deep seismic sounding profiles. The Polish Outer Carpathians are built up from the flysch deposited during Late Jurassic-Neogene times. They form nappes thrust over the southern part of the North European platform covered by the autochthonous Miocene deposits. Relationship between basement and flysch nappes in the Outer Carpathians is based on interpretation of seismic and magnetotelluric survey. The Precambrian basement beneath the Outer West Carpathians is divided into two basement blocks: the Upper Silesia Block on the west and the Małopolska Block on the east. The Krakow-Smilno Fault system marks the boundary between two different tectonic realms within the North European Plate.

In the area southwest of Krakow, the Precambrian basement is covered discordantly by Devonian and Upper Paleozoic formations. The Mesozoic sequences are known only from the eastern part of the investigated area, their thickness significantly increasing eastwards. The Miocene deposits lay discordantly on the various Paleozoic, Mesozoic and Paleogene rocks. The series of mainly normal faults reach top of Paleozoic, sometimes Miocene rocks. The biggest strike-slip faults cuts also allochthonous flysch sequences. In the area southeast of Kraków, the oldest rocks are represented by Precambrian phyllites covered by Paleozoic, Triassic, Jurassic, Upper Cretaceous and Miocene deposits. The investigated top of Jurassic horizon is cut by series of faults, dividing the Mesozoic basement into separate blocks. The large thrust Łąka faults are cutting through Paleozoic, Mesozoic, Miocene and allochthonous flysch sequences. The southwestern fault systems developed under mainly extensional regime with strong strike-slip component, while southeastern systems developed under mainly compressional regime.

Olistostromes and olistoliths: a historical review and modern perspectives

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The terms olistostrome and olistolith have been introduced by G. Flores (4th World Petroleum Congress, Rome, 1955) to indicate either mass-transported bodies with a chaotic block-in-matrix fabric, or single slide blocks, intercalated between layered sequences in the Tertiary succession of Sicily. Both terms soon became extensively used by the international geological community world-wide. With the extended usage, they evolved to generally indicate stratally disrupted to chaotic complexes and “exotic” bed packages, which originated by mass-transport events, mainly recycling extrabasinal rocks. In this extended meaning, the