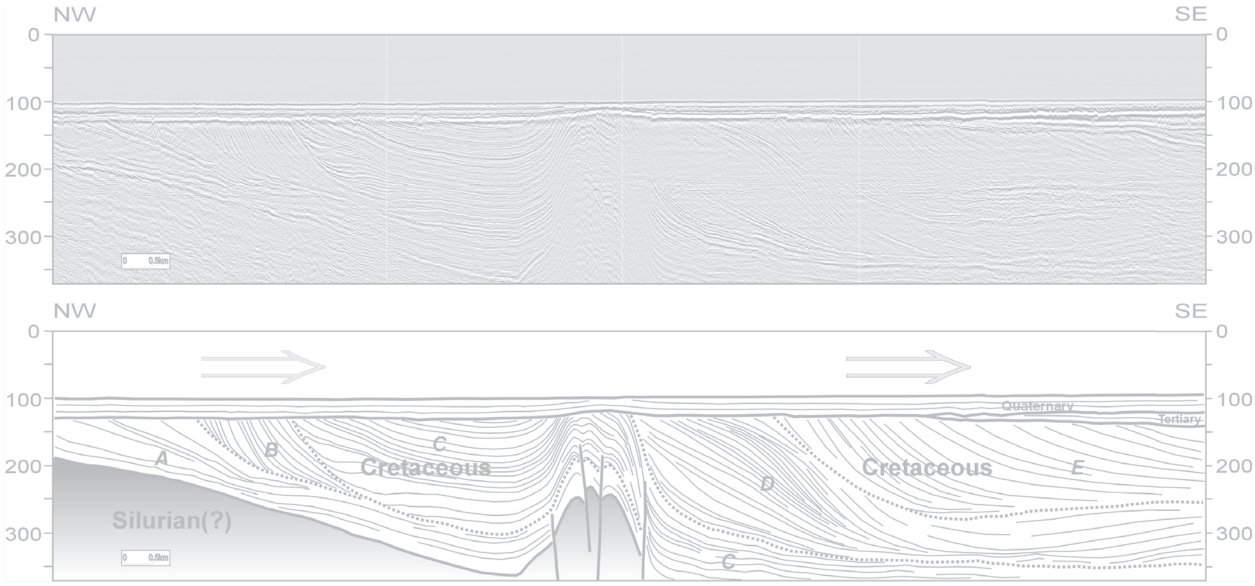

Fig. 2. Seismic example of Upper Cretaceous depositonal and tectonic architecture related to inversion and strike-slip movements within the Bornholm – Darłowo Fault Zone. See Fig. 2 for location. Dotted lines: boundaries of identified depositional units A, B, C, D, and E. Note prominent progradational pattern developed within the syn-inversion Upper Cretaceous succession. Arrows – general direction of progradation for the entire Upper Cretaceous inversion-related complex.

generally S- and SE-directed, progradational depositional system with the major source area provided by uplifted basement blocks, in particular by the Bornholm Block (Fig. 2). Development of the identified depositional sequences could be related to episodes of inversion-related tectonic activity and/or eustatic sea-level changes. Closer to the Christiansø Block some syn-tectonic deposition also took place and resulted in subtle thickness changes within the hinge zones of inversion-related growth folds. Lack of significant sediment supply from the inverted and uplifted offshore part of the Mid-Polish Trough suggests that in this area NW-SE – located marginal trough parallel to the inversion axis of the Mid-Polish Trough did not form, and that uplifted Bornholm Block played by far more prominent role for development of syn-inversion depositional successions.

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Miocene Reactivation of the Inherited Foreland Fault Zones and Its Influence on Development of the E Polish Carpathian Foredeep Basin

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Miocene Carpathian Foredeep basin (CFb) developed in front of the Carpathian orogenic wedge, at the junction area between the East European (Precambrian) and Palaeozoic Platforms (see e.g. Krzywiec, 2001 for recent summary and further references). Its development was to a large degree controlled by structure of the foreland plate, especially by reactivated NW-SE trending basement faults related to Mesozoic history of the Mid-Polish Trough. Various genetically linked extensional and compressional features are present both within the basement as well as sedimentary infill of the E CFb. Systems of normal faults of total offset in range of 2.5km that define the so-called Wielkie Oczy Graben dominate in the most eastern part of the basin. Their formation was associated with subduction and flexural extension of the foreland plate beneath the Carpathians. Within the hangingwall, compressional deformations (hangingwall-vergent backthrusts) related to slight inversion of basement

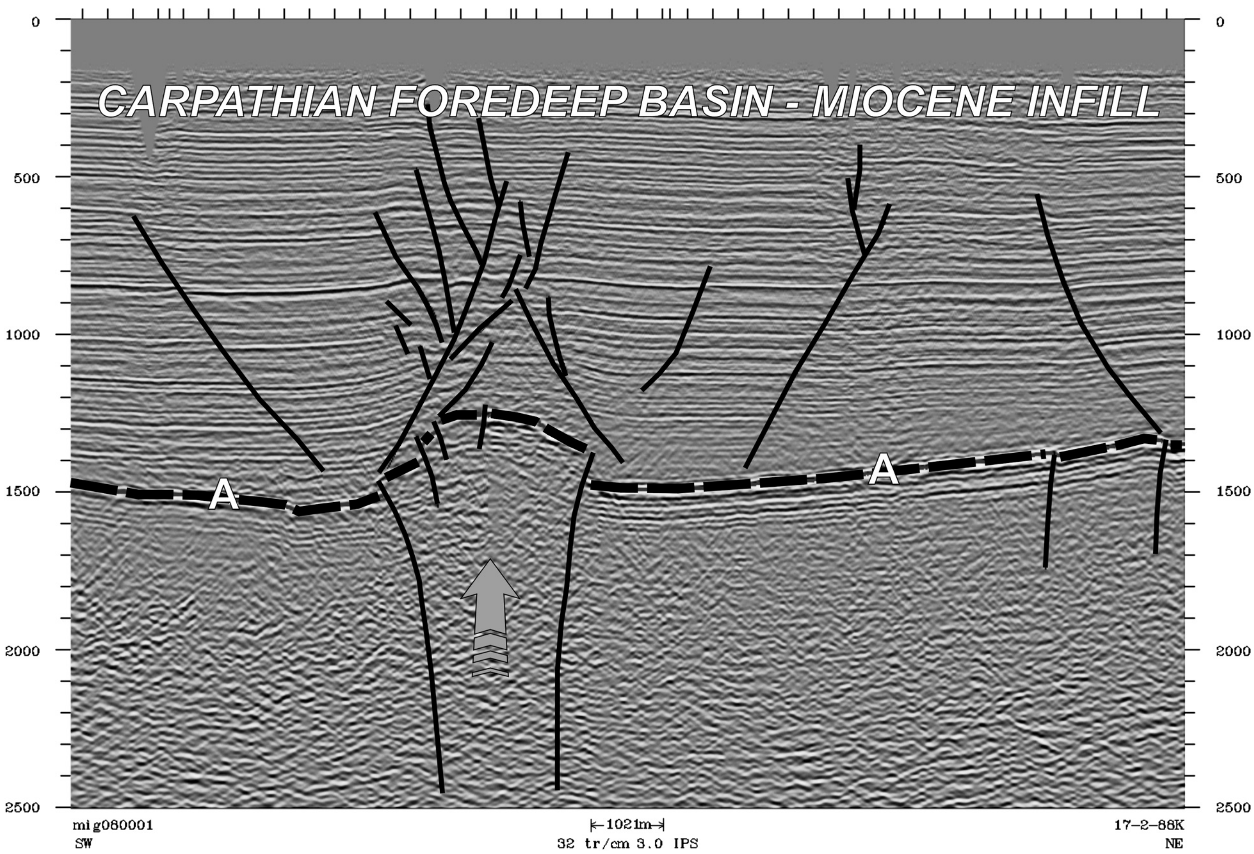

Fig. 1. Seismic image of the Ryszkowa Wola High – basement pop-up structure related to strike-slip movements. Vertical scale – two-way traveltime. A – strong composite seismic horizon related to the top of the pre-Miocene basement and Badenian anhydrites.

extensional system caused by Carpathian collision formed. Towards the NW extensional features are replaced by strike-slip related basement pop-up structures (e.g. Ryszkowa Wola High; Fig. 1). Basement wrenching resulted from the Miocene reactivation of inherited Mesozoic fault zones, obliquely oriented in respect to the advancing Carpathians. Localised basement uplift led to formation of complex fault zones within the Miocene sedimentary infill.

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Role of the SW Margin of the East European Craton During the Mid-Polish Trough Mesozoic Development and Inversion – Integration of Seismic and Potential Field Data

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Mid-Polish Trough (MPT) developed along the NW-SE trending Tornquist – Teisseyre Zone from Permian to Cretaceous times and was filled with several kilometres of sediments including thick Zechstein evaporites. MPT was inverted in Late Cretaceous – Palaeocene times, at which time its axial part was eroded (see Krzywiec, 2002 for recent overview and