



Mesozoic uplifts and basin inversion in N Poland

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The Polish Basin, located above the transition zone from the SW edge of the East European Craton to the West European Platform, formed the eastern part of the Permian–Mesozoic system of epicontinental basins of western and central Europe, the so-called Central European Basin System. Recently completed regional interpretation of seismic data from the northern part of this sedimentary basin allowed detecting several episodes of regional Mesozoic uplifts associated with extension erosion followed by complete basin inversion that took place in Late Cretaceous – Paleogene. Within the NE part of the basin, located above the East European Craton, regional high-end seismic data of the PolandSPAN survey revealed that in middle/late Jurassic and early Cretaceous time large part the NE segment of the Polish Basin was subjected to a regional uplift, followed by extensive erosion that removed most of or the entire Jurassic sedimentary cover. As a result, Cretaceous sedimentary cover rests directly above the Triassic sediments. Deep seismic imaging also proved that some of the faults dissecting pre-Cretaceous sedimentary infill of the Polish Basin are deeply rooted in the crystalline basement, and have been subjected to several phases of normal or reverse reactivation. Late Cretaceous inversion tectonics affected almost entire area of the Central European Basin System. In the northern part of the Polish Basin two competing processes have been documented that controlled development of the Upper Cretaceous syn-inversion sedimentary cover. First of the, known before, turned out to be of lesser importance. This was regional uplift and erosion of the Polish Basin's axial part called the Mid-Polish Trough, that in consequence was transferred into the Mid-Polish Anticlinorium. Inversion-related uplift of this structure commenced in Turonian and lasted until the Maastrichtian – Paleogene times. Its erosion led to redeposition of some of the eroded material into the flanking troughs and is documented by local unconformities and growth strata characterized by lateral thickness changes and lap-out geometries. These sedimentary features could be however observed only in the immediate vicinity of the Mid-Polish Anticlinorium. Further towards the east – northeast thick (up to 1000 m) Upper Cretaceous succession is characterized sigmoidal and oblique seismic reflections, and regional unconformities and numerous local discontinuity surfaces highlighted by downlap, onlap and toplap seismic terminations. All these features strongly suggest regional Late Cretaceous progradation directed generally from the north towards the south. Hitherto unknown progradational pattern indicates regional Late Cretaceous uplift of the area located in the North, i.e. of the present-day Baltic Sea and the so-called South Swedish Dome. Development of the syn-tectonic Upper Cretaceous succession can be explained using a model similar to that proposed for the Bornholm – Darłowo Fault Zone located farther towards the west, between the Bornholm island and the Polish coast.

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