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The Mesozoic and Cenozoic evolution of the southwestern Baltic Sea

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In the frame of the Priority Program 1135 of the German Research Foundation (DFG) "Dynamics of sedimentary systems under varying stress conditions by example of the Central European Basin System", the scientific goal of the NeoBaltic project is to describe the post-Permian to recent structural and sedimentary evolution of the entire western Baltic Sea region, with a special emphasis on neotectonic activity and it relation to salt dynamics and the possible reactivation of deeper inherited structures. In order to investigate these scientific goals the Universities of Aarhus (DK) and Hamburg has since 1998 completed seven marine campaigns in the western Baltic Sea, collecting 2D high resolution seismic (HRS), gravity and magnetic data in the entire region during different projects. Since 2004 all these data has been available for the NeoBaltic project. All together the data pool have more than 8000 km HRS, 6000 km gravity and 5000 km magnetic data.

Until now the project work has been focused on the completion of the data processing and the digital interpretation of important Mesozoic and Cenozoic markers on the seismic sections from the Bays of Kiel and Mecklenburg. Furthermore, several maps have been completed from the potential field data (gravity and magnetic).

As a result of the digital interpretation of the HRS data, the overall geological evolution of the northern part of the NGB can be subdivided into four distinct periods. During the Triassic and the Early Jurassic, E-W extension and the deposition of clastic sediments initiated the movement of the underlying Zechstein evaporites. This is seen by the presence of several salt pillows in the region. The deposition ceased dur-

ing the Middle Jurassic, when the entire area was uplifted, due to the Mid North Sea Doming. The uplift resulted in a pronounced erosion of Upper Triassic and Lower Jurassic strata. This event is marked by a clear unconformity on the seismic sections. The region remained an area of non-deposition until the end of the Early Cretaceous. The sedimentation resumed in the late part of the Early Cretaceous and continued throughout the Late Cretaceous. No pronounced halokinesis has been detected during this period. Towards the end of the Late Cretaceous, the Alpine Collision caused the reactivation of salt structures seen on a thinning of the Cenozoic sequence across the different structures. As a result of the different Pleistocene glaciasations, several buried valleys have been detected on the seismic sections, especially in the Bay of Kiel and the Danish Lillebælt region. Some of these buried valleys contain biogenic gas, which results in a sufficient pull-down of the underlying markers on the seismic sections.