



Triassic structural and stratigraphic evolution of the Central German North Sea sector

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The subsurface of the Central German North Sea sector is characterized by a complex sequence of tectonic events that span from the Permo-Carboniferous initiation of the Southern Permian Basin to the present day. The Triassic period is one of the most prominent stratigraphic intervals in this area due to alternating phases of relatively tectonic quiescence and intense tectonic activity with the development of grabens, salt-tectonics movements, various regional and local erosional events and strong local and regional changes in subsidence over time. The heterogeneous geological history led to complex structural and lithological patterns.

The presented results are part of a comprehensive investigation of the Central German North Sea sector. It was carried out within the scope of the project TUNB (www.bgr.bund.de). The main goal was to enhance the understanding of the Triassic geological development in the area of interest due to detailed seismic interpretation of several hundred 2D seismic lines and as well 3D seismic data sets.

A seismostratigraphic concept was used to interpret most formations of the Triassic resulting in a detailed subdivision of the Triassic unit. Depth and thickness maps for every stratigraphic unit and geological cross sections provided new insights regarding an overall basin evolution as well as the timing and mechanisms of rifting and salt-tectonics. New results concerning the evolution of the Keuper in the German North Sea and especially the Triassic evolution of the Horn Graben, as one of the major Triassic rift-structures in the North Sea, will be highlighted. We will show aspects of strong tectonic subsidence in the Horn Graben in the Lower Triassic. In parts of the study area, halotectonic movements started in the Upper Triassic, earlier than previously proposed. Besides mapping of regional seismic reflectors, distinct sedimentary features like fluvial channel systems of the Stuttgart formation (Middle Keuper) or subsion-like structures along the major Upper Jurassic to Lower Cretaceous unconformity, which are related to erosion of Triassic evaporitic formations, will be shown.