

# Multistratigraphic approach for the Keuper (Upper Triassic) in the eastern Central European Basin and the Danish Basin

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The Keuper stratigraphy in the Central European Basin suffers from different lithostratigraphies which are in use in the respective countries. Furthermore biostratigraphy and chronostratigraphy of certain intervals is in part poorly constrained (e. g. the Norian). Although several attempts for correlation have been made (e. g. SPBA Project) those open questions hamper sedimentary basin analyses as well as detailed facies analyses.

A multistratigraphic approach for the Keuper has been developed for the eastern Central European Basin and the Danish Basin combining lithostratigraphy, allostratigraphy, biostratigraphy, chronostratigraphy and cyclostratigraphy resulting in a framework for a basin-wide homogenised stratigraphy.

The Keuper of the eastern Central European Basin and the Danish Basin can be subdivided into 5 formations of the basinal facies that interfinger with formations of the marginal facies. The Vindelician-Bohemian marginal facies can be subdivided into 5 formations, the Scandinavian marginal facies into 2 informal units and 2 formations and the East European marginal facies into 2 formations. The Keuper formations of both basinal and marginal facies have mostly diachronous boundaries.

Characteristic of the Keuper are the so-called unconformities D 1 to D 8 (DSK 2005) which are partly of basinwide, partly of more local importance. Based on the basinwide unconformities D 1, D 2, D 4, D 5, D 8 the 4 allostratigraphic units, so-called called "Folgen" in German, are established giving a basinwide quasi-isochronous stratigraphic framework. A further subdivision into so-called "Subfolgen" is possible for larger parts of the basin using unconformities and marker horizons with a quasi-isochronous distribution (e. g. Grenzdolomit).

Some newly founds of conchostracans enable the correlation with the preliminary

conchostracan zonation of KOZUR & WEEMS (2005), which is well correlated with the international chronostratigraphic scale. However, those biostratigraphic data are rare and large parts of the basin (e. g. Central Poland) are still poorly biostratigraphically constrained. The allostratigraphic framework in combination with biostratigraphic data, however, is a strong tool for importing the chronostratigraphic standard into those poorly constrained parts of the basin.

The Keuper shows a pronounced hierarchic cyclicity that allows a detailed cyclostratigraphic analysis pointing to 4 large cycles, which consist in turn of numerous small scale cycles that can be interpreted as short-term excentricity cycles, except for the Arnstadt Fm (Norian) that can be interpreted as long-term excentricity cycles. The results of cyclostratigraphy point to a duration of approximately 31-32 Ma for sediments of the Keuper and additional 5-6 Ma for unconformities of the Keuper suggesting a more continuous sedimentation as compared to 16 Ma for sediments and more than 16 Ma for unconformities after NITSCH et al. (2005).

## Literature

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