

Well-based integrated stratigraphy of the Early Miocene Hall Formation (North Alpine Foreland Basin, Austria): regional and global tie-points

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The regional stratigraphic concept of the Central Paratethys is largely based on the biostratigraphy of benthic, often endemic species thus hampering a precise correlation to the international time scale. Alternative approaches to address this problem like sequence- or cyclostratigraphy have been widely ignored.

The North Alpine Foreland Basin (NAFB) comprises one of the main sedimentation areas of the Central Paratethys from Oligocene to Early Miocene. A project co-funded by the Rohöl Aufsuchungs AG and the Commission for the Paleontological and Stratigraphical Research of Austria (Austrian Academy of Science) intends to provide a high-resolution analysis for three N-S-oriented wells from the late Oligocene – Early Miocene in the NAFB. Based on the combined information from micropaleontology, geochemistry, well-log analysis and seismic images the outcome of the project will contribute to an improved age-model for the Central Paratethys as well as it will reveal new insights on the paleoceanographic and paleogeographic setting in the NAFB.

The potential of this integrated approach for a refined stratigraphic evaluation is exemplarily shown in the Early Miocene Hall Formation. Biostratigraphy of foraminifers, dinoflagellate cysts and calcareous nannoplankton allows a correlation to the regional substages of middle-late Eggenburgian and the early-middle Burdigalian (nannoplankton zones upper NN2-lower NN3). Cyclostratigraphic data derived from gamma and sonic logs in a continuous basinal clay succession corresponds very well with the Burdigalian age and suggests an absolute time frame for deposition from c. 19 to 20 Ma.

A facies model based on benthic foraminiferal communities and geochemical proxies has been applied to the interpretation of seismic images and allowed the identification of two sedimentary sequences within the Hall Fm. Most likely these sequences correspond to the global Bur 1 and 2 sequences of Abreu & Haddad (1998) which has been suggested earlier for middle-late Eggenburgian shallow-water deposits by Piller et al. (2007). However, further analysis will be necessary to rule out a potential bias of the revealed sequences by regional Alpine tectonics.

In a next step, the successful integrative approach will be applied to the Chattian-Aquitania Lower and Upper Puchkirchen Formations in the NAFB.

Abreu, V.S., Haddad, G.A., 1998. Glacioeustatic fluctuations: The mechanism linking stable isotope events and sequence stratigraphy from the early Oligocene to middle Miocene. In: Graciansky, C.-P., Hardenbol, J., Jacquin, T., Vail, P.R. (Eds.), *Mesozoic and Cenozoic Sequence Stratigraphy of European Basins*. SEPM, Special Publications 60, 245–260.

Piller, W.E., Harzhauser, M., Mandic, O., 2007. Miocene Central Paratethys stratigraphy – current status and future directions. *Stratigraphy* 4, 151–168.