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The Mistelbach Halfgraben – a key area for the geologic evolution of the northern Vienna Basin

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The so-called Mistelbach Block is an elongate halfgraben (MHG), oriented SW-NE along the western margin of the Vienna Basin. Tectonically, it is separated from surrounding geological units by the Bisamberg Fault in the SW, the Steinberg Fault in the E and the Schrattenberg Fault in the W and NW.

The MHG is of major importance to understand the geodynamic evolution of the Vienna Basin:

1. Existing stratigraphic and micropaleontological schemes for the Vienna Basin are largely based on drillings on the MHG from the 1940ies. At that time, no information on the complex tectonic setting of the area was available and consequently, the well-log-correlations have to be seriously questioned in the light of new data.
2. The area switched from being an embayment of the Alpine Carpathian Foredeep during Early Miocene times towards being part of the Vienna Basin during the Middle Miocene and remained a junction between both units during the Late Miocene.

New high-resolution 3D-seismic data of the OMV-AG revealed spectacular insights into the tectonic setting of the highly structured area, clearly contradicting existing stratigraphic schemes. Strongly tilted Lower Miocene strata are separated from Middle Miocene formations by a major erosional phase and discordance, including canyon-like features. Micropaleontological analyses on samples of 17 cores were performed for bio- and lithostratigraphic re-interpretation. Biostratigraphy is largely based on benthic and planktonic foraminifers, which went further into analyses to gain paleoecological information. In combination with 2D- and 3D-seismic data correlative horizons were defined and interpreted. Thus, the study aims at a refined stratigraphic model for the Miocene depositional systems in the northern Vienna Basin and a renewed paleogeographic reconstruction of the basin itself.