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Early Miocene depositional environments and tectonics in the northern Vienna Basin

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The Mistelbach Horst is an elongate rhombic, SW-NE oriented element along the north-western margin of the Vienna Basin with a maximum length of c. 60 km and a maximum width of c. 20 km. During the pioneer phase of Paratethys stratigraphy, the hydrocarbon exploration drillings of this area were the base for Foraminifera eco-zonations, proposed by Rudolf Grill in several papers. Although these zones are still in use and are common sense in Paratethys literature, they were never defined in a modern sense. Grill's concept rather tried to illustrate typical assemblages, which should help in prospection. Moreover, the exploration geologists of the 1940-1950s were not aware of the complex tectonic setting of the area, which was strongly shaped during the Styrian tectonic phase.

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. Micropalaeontological 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 palaeoecological 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 palaeogeographic reconstruction of the basin itself.