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über sedimentologische Studien
in der Hollabrunn-Mistelbach-Formation
auf den Blättern 22 Hollabrunn und 23 Hadres

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Deposits of the Hollabrunn-Mistelbach Formation (Pannonian) dominantly represent products of braided river deposition. Migration of channels and channel bedforms, rapid channel abandonment, erosion of overbank deposits, fluctuation of amount of water and transported material within the channel have been documented in abundant outcrops.

Recognized facies and architectural elements have been assigned according to the "classical" scheme of MIALL (1985). Several cyclicity motives have been recognized within the area under study. Two of these motives predominate.

Greater scale cyclicity is represented by fining upward (FU) cycles with a thickness of about 15–20 m. These cycles start with several meters (about 10 m) of gravel beds (facies Gm, Gt, Gp). Gravels are overlain by several meters (about 5 m) of sandy beds (facies St, Sp, Sh and Sr). Gravels and sands represent predominantly migrating bedforms with various composition (gravelly bars and bedforms, sandy bedforms) and scale (dunes, bars, ripples). Levee, flood plain or abandoned channel deposits ("overbank fines") form the final part of the cycle. These fine-grained deposits are represented by facies Fm, Fr, Fl and are usually relatively thin (dm–1 m thickness). The FU cycles of this scale are interpreted as a product of deposition within the main active channel. The multi-storey fill of the channel reflects its evolution. Various stages of a braided river have been recognized (gravel-dominated and sand-dominated braided rivers, proximal and medial reaches of the river system). The origin of the cyclicity can be connected with allocyclicity (tectonic?).

A subordinate small scale cyclicity is formed by FU cycles with a thickness of about 1–3 m. The deposits are interpreted as a product of deposition within the smaller single channel (inner bar and top bar deposits). These cycles are most probably connected with flood and small channel migration (autocyclicity). Multiple repetition of these small scale cycles has been documented.

A typical feature (architectural element) is the channel shape of deposits of various grain size and multiple fill of these channels. The channels have small depth (high width/depth ratio). Alternation of relatively thick gravel beds with mudstone beds has been documented repeatedly. This reflects both rapid shift of the thalweg and rapid abandonment of the channel.

Fine overbank deposits thicker than 1 m have been described on several localities. This features can reflect deposition (or periods of deposition) within a relatively flat area separated to flat, shallow and wide pools. Abundance and scale of documented intraclasts within the coarser grained deposits also reflect the important role and extent of the flood plain area. Intraclasts were eroded from the adjacent flood plain.

Gravels of the Hollabrunn-Mistelbach Formation are polymict. Quartz pebbles play the dominant role (39.2 %–81.3 %), important is also the presence of crystalline rocks (5.4 %–19.9 %) and especially the presence of sedimentary rocks (3.0 %–45.4 %). Various limestones are the most abundant sedimentary rocks. Limestones form the largest found cobbles (about 15 cm in diameter). The extraclasts are many times smaller than the associated intraclasts.

Morphology (pebble shape and roundness) has been studied only for quartz pebbles. Great differences in the shape of pebbles (ZINGG, 1935) have been recognized on various localities. Localities with the highest presence of discoidal pebbles (30 %–50 %) dominate, but also localities with the dominant role of spherical or rod pebbles have been recognized. The mean maximal projection sphericity (SNEED-FOLK, 1958) ranges from 0.71 to 0.62 and the mean flatness index (CAILLEUX, 1945) ranges from 1.79 to 2.21. The mean Krumbein roundness (KRUMBEIN, 1941) ranges from 0.49 to 0.6 and the presence of well rounded pebbles was between 14.5 % and 32.9 %.

The role of synsedimentary tectonic has been recognized in several localities.