

## **Late Miocene lacustrine deltaic deposits: the junction of the Danube-Kisalföld Basin and the Gerecse Hills, Hungary**

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The Transdanubian Range played an important role in the Western Carpathians–Paleo-Danube (?)–Pannonian Basin source-to-sink system during the Late Miocene. This elevated basement block formed a barrier between the Danube-Kisalföld Basin (DKB) and rest of Lake Pannon basins to the S-SE until 9.2 Ma ago (Sztanó et al., 2016). Afterwards flooding started resulting in deposition of open-water clay marls in the northern foreland (Cziczér et al., 2009). As filling up of the DKB progressed, deltaic lobes developed above this flooded basement high. This depositional environment produced the successions located in the Gerecse Hills, near Neszmély. In a deep valley there are 11 outcrops within a 1 km distance.

The oldest strata are clays with intercalations of very fine cross-laminated sand with lenticular to wavy bedding and coarse mollusc-hash of hummocky cross-lamination. Higher up in the succession cross-laminated sandstone becomes dominant. Sand bodies are often cut by erosional surfaces, commonly paved by rip-up mud-clasts or marked by wedge-shaped silty-sandy fills with tabular and trough cross-bedding. The sandy sediments are overlain by mottled, oxidized siltstones with calcareous concretions or by an organic-rich to carbonaceous clay with carbonized wood trunks. These carbonaceous clays lead correlation of the sections and are overlain by the blue, fossiliferous clays again. For fossils of the succession see Magyar et al. (this volume). The exposed Pannonian succession was deposited in shallow water above storm-wave base to lower shoreface/deltafront and in delta plain channels. The sedimentary successions partly reflect cyclic changes of water depth and are interpreted as lacustrine parasequences indicating repeated rises of base level. The littoral shell debris may have been accumulated by storms or as a transgressive lag related to minor oscillations of lake level. Some of the fluvial deposits could be channels on the delta plain, but those of a more complex cut-and-fill structure are interpreted as small incised valleys, therefore may reveal minor drops of base-level.

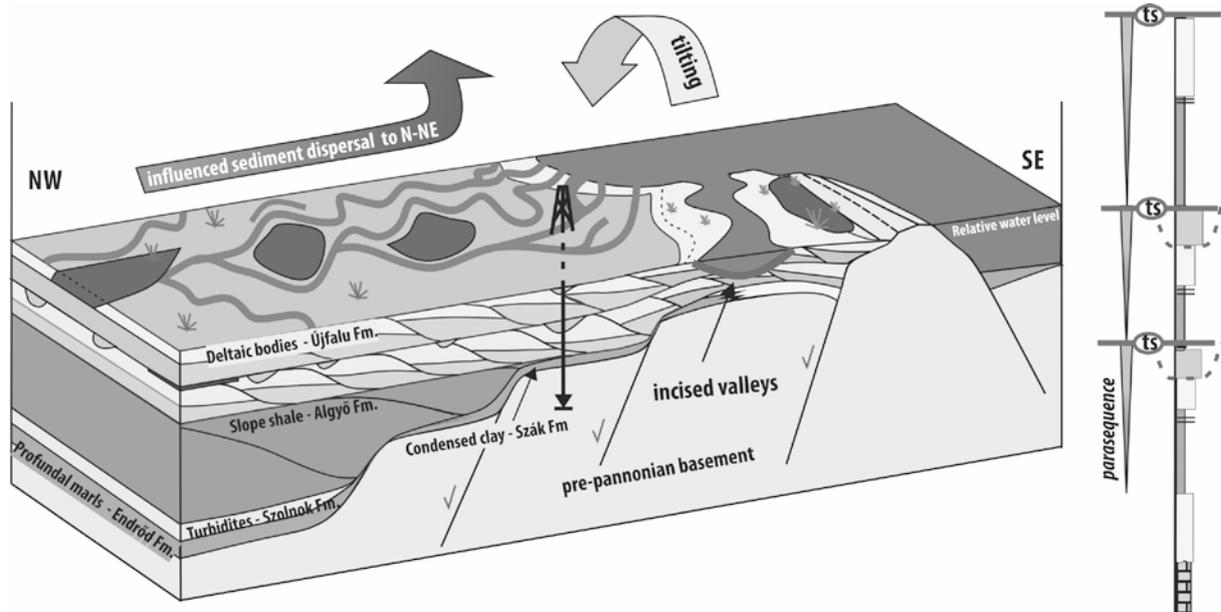
A relation was found between thickness and abundance of various shallow lacustrine facies and locus of major faults of the area. Although the regional trend of palaeotransport directions is towards SE-E, unusual directions towards N and NE were measured, which

indicate that the Gerecse block was not only a passive morphostructural feature, but its relative vertical motions may have actively influenced the locus of different sedimentary environments, incision of channels in particular, and sediment dispersal directions. The delta system finally progressed around/partly over the Gerecse Hills and reached the Buda Hills area to the south at about 8.6 Ma (cf. Magyar et al., 2013).

**Acknowledgement:** The research was connected to project TÉT-12-SK-HU-2013-0020 supported by the National Research, Development and Innovation Office of Hungary.

**References:**

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**Figure 1:** Conceptual block model of delta development and its structural control.