

Miocene and Quaternary sediments in the Wachau region, revisited

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Compared to the geological map sheet 37 Mautern (scale 1:50.000; Matura et al., 1983), current mapping of the Wachau (scale 1:10.000) confirms the distribution of the Variscan metamorphic bedrock, but shows differences in the Oligocene-Miocene and Quaternary deposits. The latter are discussed in this contribution.

Middle Miocene (Badenian) sediments in the Wachau valley were deposited in an elongated marine embayment, following the present-day Danube valley upstream to Spitz. The geological map of Matura et al. (1983) shows chaotically layered deposits north of Wösendorf within strongly weathered paragneiss, which are referred to a pre-Miocene mass movement. The age of the blocky deposits around Weißenkirchen, consisting mainly of Gföhl orthogneiss, is not specified, although a relationship to the pre-Miocene deposits is implied. Further, the map shows about a dozen localities of marine clay, marl, sand and rounded gravel, mostly dated as Early Badenian due to their microfossil content. These sediments are known from valley slopes at altitudes up to 330 m, but also from lower than 150 m from boreholes 55 m below the Danube level.

In the course of the current mapping a supposedly pre-Miocene, cemented gravitative deposit northwest of Wösendorf was sampled for micro- and nannofossil analyses, as well as the clayey matrix beneath Gföhl orthogneiss blocks. Additional smaller mass movement deposits, represented by unconsolidated diamict sediment, were found. The largest are located west of Hundsheim, interbedded with marine sands and clays. Therefore, at least some of these deposits are interpreted asolistostroms, deposited in a tens of meters deep marine basin. They may have been mobilised due to the transgressions of the Central Paratethys sea into the pre-existing valley. First nannofossil data from the cemented breccia and the matrix beneath the Gföhl orthogneiss blocks indicate an Early to Middle Miocene age. New outcrops of greyish-green marl and pale yellow sand of presumably marine origin have been mapped e.g. near Dürnstein and Mauternbach. Boulders, gravel and sand pockets, found north of Spitz at an altitude of about 350 m probably represent a coastal sedimentary environment. Further micro- and nannofossil analyses are in progress, and several samples have already been dated to the Early to Middle Miocene, and one to the Early Badenian.

Quaternary to Holocene sediments in the map of Matura et al. (1983) include loess, fluvial deposits of the River Danube and minor remnants of rockfall deposits, talus or debris fans. During the recent mapping, additional slope talus and solifluction deposits were added to the map. The distribution of aeolian loess must be reduced in favour of fluvial sediments on the valley floor. Fluvial gravels occur in several levels up to 330 m a.s.l. or 130 m above the recent Danube River. While the gravels of the lower fluvial levels are rich in limestone pebbles originating from the Northern Calcareous Alps, those more than 50 m above the recent level are mostly composed of quartz-rich lithologies with only a few pebbles of flysch sandstone and radiolarite. Interpretation of the age and provenance of the individual levels is ongoing.

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