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26Al - 10Be cosmogenic nuclide isochron burial dating in combination with luminescence dating of two Danube terraces

Stephanie Neuhuber (1,2), Sandra Braumann (1), Christopher Lüthgens (1), Markus Fiebig (1), Philipp Häuselmann (3), and Jörg Schäfer (4)

(1) Institut für Angewandte Geologie, BOKU, Vienna, Austria (stephanie.neuhuber@boku.ac.at), (2) Department für Geodynamik und Sedimentologie, Universität Wien,Vienna, Austria, (3) Institut Suisse de Speleologie et de Karstologie, La Chaux-de-Fonds, Switzerland (praezis@speleo.ch), (4) Lamont-Doherty Earth Observatory, Columbia University, Palisades, New York, USA (schaefer@ldeo.columbia.edu)

The Quaternary sediment record in the Vienna Basin is influenced by two main factors: (1) the tectonic development of a pull apart basin along a sinistral strike slip fault system between the Eastern Alps and the West Carpathians and by (2) strongly varying sediment supply during the Plio- and Pleistocene. From the Late Pannonian (8.8 Ma) onward a large-scale regional uplift (Decker et al., 2005) controls terrace formation in the Vienna Basin.

The main sediment supply into the Vienna Basin originates from the Danube, and subordinately from tributaries to the south such as Piesting, Fischa, Leitha and from the north by the river March. Today the Danube forms a large floodplain that is bordered to the north by one large Pleistocene terrace, the Gänserndorf Terrace that is situated 17 m above todays water level. Farther to the east a smaller terrace, the Schlosshof Terrace, reaches 25 m above todays water level. These terrace levels are tilted by movement of underlying blocks (Peresson, 2006).

Both, the Schlosshof and Gänserndorf terraces consist of successions of up to 2 m thick gravel beds with intercalated sand layers or -lenses that may locally reach thicknesses up to 0.8 m. At each terrace one gavel pit was selected to calculate the time of terrace deposition by luminescence dating in combination with 26Al/10Be cosmogenic nuclide isochrone dating (Balco and Rovery, 2008). Five quartz stones from the base of each terrace were physically and chemically processed to obtain Al and Be oxides for Acceleration Mass Spectrometry. Sand samples for luminescence dating were taken above the cosmogenic nuclide samples from the closest suitable sand body.

Decker et al., 2005. QSR 24, 307-322
Peresson, 2006 Geologie der österreichischen Bundesländer Niederösterreich 255-258
Balco and Rovey, 2008. AJS 908, 1083-1114

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