

Numerical ages of Paleo-Danube sediments at the Vienna Gate quantify Quaternary uplift

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The Vienna Gate marks the transition of the Danube's alluvial plain in the west (Tullnerfeld) into the extensional structure of the Vienna Basin. At this border, the Danube flows on top of a small (c. 2 km) segment of Penninic Flysch units before it enters the Vienna Basin to the east. Uplift is documented by fluvial terrace deposits at elevated positions located at about 15–35 m above the recent Danube riverbed. To quantify local uplift rates inside and outside of the Vienna Basin two locations close to the Vienna Gate were sampled for cosmogenic nuclide extraction, numerical age calculation, and uplift/incision rate calculation. Klosterneuburg is the western site and thus outside of the Vienna Basin Bounding Fault. Fluvial gravel was temporarily exposed in a construction pit. Fluvial gravel and cobbles of Seyring are located within the Vienna basin and are accessible in an active quarry. Sampling points are covered by loess (Seyring) or loess deposits are exposed close by (Klosterneuburg). Therefore, a varying thickness of cover sediments over time is highly likely, in particular for ages going back two or more glacial cycles. Consequently, the sampling strategy was to retrieve several samples at each location to calculate an isochron age using the pair of cosmogenically produced nuclides ²⁶Al and ¹⁰Be. During this investigation, 16 quartz cobbles were processed. At Seyring cosmogenic nuclide concentrations indicate large scale sediment reworking. For the sampling point at Klosterneuburg, a depositional age and incision/uplift rate could be calculated using the isochron approach.