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New chronological data for the timing of the Saalian- and Elsterian glacial cycle in Europe - studies on a key site within the type area

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The type area for the Elsterian- and Saalian glacial cycles is located in central Germany (Saxony, Saxony-Anhalt and Thuringia) where the gravel deposits of the rivers Saale- and Elster interfinger with tills and meltwater deposits of both glacial cycles in proximity to the maximum extensions of the Middle-Pleistocene Scandinavian ice-sheets in Central Europe.
The Elsterian- and Saalian glacial cycles, including the corresponding interglacial periods are also correlated with first human appearance in the area (see Haidle and Pawlik 2010).
Nevertheless, the timing of these glacial cycles is still unclear due to a lack of resilient chronological data on sediments representing the advance- and retreat of the glaciers. The Elsterian is defined to be terminated by the Holsteinian, but for the latter, a correlation to MIS 9 or 11 is still a matter of debate (e. g. Sirocko et al. 2006; Nitychoruk et al. 2007). Consequently, a correlation of the Elsterian to MIS 10 or 12 is possible.
Within the last decades, new luminescence dating techniques such as pIRIR-luminescence protocols or infrared-radiofluorescence dating made it possible to extent the datable age range and hence, it is now possible to establish reliable chronologies also for deposits beyond the last glacial-/interglacial cycle.
In the present study, we dated the quaternary sequence of Uichteritz (close to the Saale-river near Weissenfels, Saxony-Anhalt) using luminescence and infrared-radiofluorescence dating. The base of the quaternary layers consists of Elsterian sediments pre-dating the first Elsterian ice advance. This is evidenced mainly by the lithology, especially the absence of Nordic components in the composition of the gravel. Additionally, remains of the advancing Saalian ice sheet, represented by fluvial sediments from the Middle-Pleistocene river Saale, as well as till, glaciofluvial and glaciolacustrine sediments, cover the Elsterian succession. The upper part of the fluvial Elsterian sediments also includes a palaeosol (Bt-horizon, Meng & Wansa 2005), exposed below Saalian meltwater sediments and till.
Furthermore, the Middle-Pleistocene sediments yielded Lower/Middle Palaeolithic stone artefacts (Rudolph et al. 2005), probably representing the earliest human appearance in central Germany.
In conclusion, the sequence of Uichteritz has the potential to provide important new chronological data for the timing of the Elsterian and Saalian glacial cycles as well as the presence of humans in Central Europe.

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