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Holocene silt-clay overbank sedimentation between climate change and human activity within the fragile loess-covered Weiße Elster catchment in Central Germany

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The role of climatic or human forcing for Holocene silt-clay overbank sedimentation in Central Europe has been debated for decades. To date, former studies were often limited by rather low chronological resolutions of the fluvial stratigraphies, and especially by records of human activity in the studied catchments with rather fragmentary spatial and chronological resolutions.

Within the frame of an interdisciplinary geoarchaeological project carried out in the Weiße Elster catchment in Central Germany, using drill cores, geophysical measurements, sedimentological and micromorphological analyses as well as numerical dating along three transects, we build up a highly resolved record of fine-grained fluvial sedimentation along the middle river reach. Complementarily, based on archaeological data stored in local area files of the State Offices of Archaeology as well as on historical and onomastic data, we build up a catchment-wide record of human activity from the Early Neolithic period until the High Middle Ages with a so far unprecedented high spatial and chronological resolution in Central Europe. Comparing these geomorphologic and archeological/historic datasets with highly resolved paleoclimatic records allows a large step forward in understanding the intricate interplay of the Holocene geomorphodynamics with climate changes and human activity with an exceptional spatial and chronological resolution. So far, first results demonstrate a significant impact of climatic events such as the Little Ice Age on river activity that were linked with fine-grained sedimentation also after the start of intensive human activity in the catchment since the Early Neolithic period ca. 7.5 ka.

