

RECONSTRUCTING LATE HOLOCENE PALEOFLOODS ALONG THE MIDDLE TENNESSEE RIVER AND EXPLORING LINKS WITH CLIMATE AND LAND USE

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Abstract: Sediment stored in floodplains and low alluvial terraces along the middle Tennessee River reflects flood frequency and magnitude during the past ca. 2800 years. This study uses the stratigraphy, sedimentology, and geochronology of three alluvial terraces to infer past flooding and explore links with climate change and anthropogenic land-use practices. Four sites located on different geomorphic landforms adjacent to the Tennessee River preserve records of at least 11 major flood events from 2780 ± 185 BP to 100 ± 10 BP. Buried soils at three sites are older than ca. 1380 BP and suggest a relatively recent period of landscape stability compared to buried soils formed on a natural levee which suggest landscape stability prior to 2780 ± 185 BP. Each site has clear evidence of distinct flood deposits following periods of stability, however, depositional units within the natural levee suggest a more complete record over a longer time interval. Differential preservation of flood events across landforms is likely due to differences in elevation, distance to the river channel, hydraulics, sedimentation rates, vegetation, and weathering. Despite these differences, each site retains flood deposits and highlights the importance of increasing the spatial resolution of sampled locations in order to build a more robust paleoflood history.