

Holocene landscape dynamics of the Ghaggar-Hakra floodplain, India: implications for the Indus Civilisation

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The area around the ephemeral Ghaggar-Hakra River system in India and Pakistan is associated with a dense concentration of Indus Civilisation archaeological sites. Giosan et al. (2012) have suggested that a decline, and ultimately cessation, of flow in this river system in response to the weakening of the Asian Monsoon was influential in the collapse of the Indus Civilisation around 4,000 years ago and palaeoclimatic studies in the region (e.g. Berkelhammer et al., 2012; Dixit et al., 2014; Leipe et al., 2014) have shown abrupt drying events during the mid-Holocene, which are superimposed onto a longer-term insolation driven decline in Asian Monsoon intensity. Further work is required to understand the dynamics of this river system during the Holocene and to assess the importance of changing landscape dynamics, as well as climatic variability, in the decline of the Indus Civilisation. This paper presents optically stimulated luminescence (OSL) dates from palaeochannel sediments and associated dune deposits in the Ghaggar-Hakra river system in Northwest India, with the aim of understanding late Quaternary geomorphological and palaeoenvironmental change. Reconstructing palaeoenvironmental variability will allow a comparison between the documented archaeological record of the Indus Civilisation and an absolute chronology of regional landscape dynamism. This comparison will also allow an insight into whether the mid-Holocene collapse and/or transformation of the Indus Civilisation can be correlated with geomorphological and/or climatic variability.

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