

Uncertainties in the palaeoflood record – interpreting geomorphology since 12 500 BP

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Recent floods in the UK have reinvigorated the national debate within academic and non-academic organisations of how we quantify risk and improve the resilience of communities to flooding. One critical aspect of that debate is to better understand and quantify the frequency of extreme floods occurring. The research presented in this study explores the challenges and uncertainties of using longer term palaeoflood data records to improve the quantification of flood risk.

The frequency of floods has been studied on short (under 100 years) and long-time (over 200 years) scales. Long term flood frequency records rely on the radiocarbon dating and interpretation of geomorphological evidence within fluvial depositional environments. However, there are limitations with the methods used to do this. Notably, the use of probability distribution functions of fluvial deposits dates does not consider any other information, such as the geomorphological context of material and/ or the type of depositional environment.

This study re-analyses 776 radiocarbon dated fluvial deposits from the UK, which have been compiled into a database, to interpret the geomorphological flood record. Initial findings indicate that even this large number of samples may be unsuitable for probabilistic methods and shows an unusual sensitivity to the number of records present in the database.