



Shape analysis of probability distribution functions in relation to UK Holocene radiocarbon dated fluvial units

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Flood frequency records are important to place current flooding events into a long-term perspective. To achieve this, geomorphological evidence from fluvial depositional environments can be used. Organic material, which can be radiocarbon dated, can provide evidence that can be interpreted as dated flood events. In the UK, there is a collection of radiocarbon dated fluvial units dated for the Holocene has been used to create a flood frequency record. Previously, the flood frequency record for the UK has been criticised because of the uncertainties associated with summed probability distribution plots. There are factors that can affect the shape of a probability distribution function: the number of dates in total, the temporal distribution of dates, the radiocarbon laboratory error value and the geomorphological location of the sample however it is unknown how each of these factors influence the shape of the probability distribution curve created using the UK database. This study examines to what extent these factors influence the shape of a PDF in relation to the UK database of radiocarbon dated fluvial units. This study reports the results of a statistical analysis of 745 radiocarbon dates for reconstruction of flood frequency.