



## **The geomorphic response of fluvial systems to Holocene climatic variability and human impact**

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The geomorphic response of fluvial systems to Holocene environmental change is typically viewed as complex. This is due to the spatial and temporal complexities of river system controls such as vegetation cover, sediment supply and the magnitude and frequency of extreme events, as well as the non-linear response of rivers. The application of simple laws governing fluvial system behaviour has been hindered by such complexities, and in particular uncertainties concerning the relative roles of climate and human drivers of change. In this talk I will present empirical data from over 10 years' research to address the climate versus human debate. This research has included empirical studies on: a) the geomorphic effectiveness of Little Ice Age floods in the alpine Lake Annecy catchment; b) the response of lowland floodplains in southwest England to a millennium of tin mining activity; and c) magnitude and frequency of Holocene floods in Spain. Palaeoflood research has indicated the sensitivity of extreme floods to Holocene climatic variability, however sites such as the upper Guadalentín basin (SE Spain) also show the increasing geomorphic response of floods due to human induced landscape instability. Such sedimentary records provide the potential to decipher the relative roles of climatic variability and human impact on fluvial system response.