

How would a Solvency II regulated insurer against riverine flooding have fared during the past 7000 years? A hypothetical case study for NE Austria to inform risk modelling in the face of climate change.

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Knowledge about changes of flood occurrence patterns is important for risk estimation of the future. Robust and well-calibrated paleoflood records, derived e.g. from lake sediments, are excellent natural archives to investigate flood variability of the past and to use the data for further modelling. In this paper, we analyse a 7100 year summer flood record recovered from Lake Mondsee (NE Alps), using a statistical approach. We identify a point process of renewal type, with a significant change-point of the occurrence pattern around 350 AD, switching from the overlay of two mechanisms of event recurrences of 5 and 50 years before to 2 and 17 years after this change-point. This change-point approach enables a comparison to other flood records, and possibly to relate event frequencies to climatic conditions. We also highlight how lower temporal resolution of flood records can hamper the analysis of relations to climatic signals. Hence high-resolution records with robust chronologies and flood information (e.g. seasonality and event characteristics) are essential to improve the understanding of the interplay between climatic signals and flood occurrences, which is an important ingredient for proper risk estimation and risk management.