This multi-temporal study utilized cross-checking with written documents to assess the preservation of flood marks and involved uncertainties. Found to be a valuable source of information, flood marks can help to verify the modelled flood hazard maps, if interpreted carefully.

A critical evaluation of present flood hazard maps in Southwest Germany using epigraphic marks and historical written data
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Methods

- Archives and data research: historical documents on flood events, (early-)instrumental data, FHM
- Mapping of flood marks & cross-checking with documentary evidence in 3 communities in the middle and upper catchment
- GIS-analysis

Results

More than 60 marks mapped or checked related to 14 floods in 1824—1991. The preservation is rather limited due to construction, weathering, etc. A comparison between mapped marks and historical documentation disclosed occasional flaws in the documents and relocation of ~30 % of the preserved marks. Flood mark position and relative height is nevertheless mostly in accordance with FHM flooding depths, particular for more recent events. Exceptions represent extreme floods along tributary rivers, major ice-jam floods and (local) river construction effects.

Conclusion

The Kinzig catchment contains an outstandingly high number of flood marks. Yet, many documented marks are not preserved any more or have been modified or relocated. Therefore, the available written documents are an invaluable source. Both the high agreement of flood marks and FHM and the plausible exceptions point to the undeniable value of flood marks. Yet, the 19th century flood frequency is relatively high posing the question of whether the FHM might still underestimate flood hazard.

Motivation

Flood marks can increase public risk awareness and can thereby create a collective risk memory. They also represent a valuable source of information on historical flood events which may help to achieve a more comprehensive flood risk management. However, flood marks provide relatively rudimentary information and can be affected by various errors sources.

Sources


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