



Open source modeling for risk assessment of multiple flood sources

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Losses caused by hydro-meteorological hazards have been growing globally during the last decades and are expected to increase in the future due to global change. Adaptation planning needs consistent and reliable information about risks and associated uncertainties, as well as appropriate tools and services to support comprehensive flood risk assessment and management. This requires a more comprehensive view to flood sources, pathways and impacts, for instance the consideration of flood damage caused by combined fluvial and pluvial flooding. A consistent assessment of flood risk is an important basis for concerted adaptation planning and unlocking synergies of flood prevention measures.

This contribution demonstrates the application of the Oasis Loss Modelling Framework (Oasis LMF), an open source software, to multi-source flood risk assessment. The Oasis LMF defines a standard for risk assessment that can provide ground-up loss estimates and financial damage of disaster events or event scenarios for risk assessment and adaptation planning. It enables a plug and play of hazard, vulnerability, damage and exposure, policy claims and financial models. It is shown how novel probabilistic multi-variable vulnerability models are implemented to the LMF standard and how this supports adaptation planning. The implementation is showcased for fluvial flood risk assessment in the German part of the Danube, and combined fluvial and pluvial flood risk assessment in the city of Budapest.