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# An improved workflow to efficiently compute local seismic probabilistic tsunami analysis (SPTHA): a case study for the harbour of Ravenna (Italy)

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We present a refined methodological procedure for computationally efficient local SPTHA based on regional SPTHA. The adopted procedure extracts from the regional SPTHA the most impacting tsunami sources at the investigated site, and reconstructs hazard curves on high-resolution topobathymetric models based on a reduced set of inundation simulations. This procedure enhances the original workflow for local SPTHA quantification described by Volpe et al. (2019), applying some significant upgrades to simplify its application and improve the accuracy of the results. In particular, the description of local sources has been refined through a more detailed discretization of the natural variability (aleatory uncertainty), eventually reducing the epistemic uncertainty. Then, a more efficient filtering procedure, based on the strategy proposed by Williamson et al. (2020), is adopted to select a subset of scenarios to be modelled at high resolution, eventually reducing the epistemic uncertainty introduced by this selection. This allows to perform only coarse-grid simulations after the regional source filtering and local source refinement, and then combine coarse-grid results with fine-grid topography. Overall, the resulting method simplifies the original one, improving accuracy and decreasing uncertainty. The newly developed procedure is applied to an illustrative case study for the harbour of Ravenna (Northern Adriatic Sea, Italy).