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Updating of the Italian Tsunami Catalogue for southern Italy with special emphasis on the reconstruction of the 1908 Messina Straits tsunami effects

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In the frame of the Project S1 entitled "Analysis of seismic potential in Italy for the evaluation of the seismic hazard", financed within the agreement between the Italian Civil Protection Department and the National Institute for Geophysics and Volcanology, we undertook a systematic revision of the Italian Tsunami Catalogue in its portion relative to Calabria and Sicily. We searched for new primary sources containing information on the historical tsunamis that hit the area of interest, and we re-examined the already known documents with the goal of improving our knowledge on selected historical events. Major attention in the analysis is devoted to the 28 December 1908 tsunami due to the abundance of data and documents with respect to other events, because of its relevance in the Italian earthquake and tsunami history and also in relation to the 100-year anniversary of the event that was celebrated two years ago. A careful revision of the numerous available historical documents combined with the results of the studies published in the last few decades allowed us to determine on a site-by-site basis the way the tsunami attacked the Calabria and Sicily coasts. We setup a GIS database where the reconstructed data on earthquake-tsunami delay time, first tsunami arrival polarity, run-up height and inundation depth have been overlaid on geo-referenced maps. The major benefit is the possibility to combine a general view of the tsunami effects at a regional scale with the inspection of the variability of the effects themselves at very local level. The database is being integrated in the general GIS database that is one of the main results of the European Project called TRANSFER (Tsunami Risk And Strategies For the European Region), co-ordinated by the Department of Physics of the University of Bologna. In that database, it is possible to compare the historical data for the 1908 tsunami with the results of the numerical simulations which have been performed by different partners in TRANSFER and which are briefly presented in this work in terms of inundation maps.