Applications of TsunAWI: Operational scenario database in Indonesia, case studies in Chile

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The numerical simulation code TsunAWI was developed in the framework of the German-Indonesian Tsunami Early Warning System (GITEWS). The Numerical simulation of prototypic tsunami scenarios plays a decisive role in the a priori risk assessment for coastal regions and in the early warning process itself. TsunAWI is suited for both tasks. It is based on a finite element discretisation, employs unstructured grids with high resolution along the coast, and includes inundation.

This contribution presents two fields of applications.

In the Indonesian tsunami early warning system, the existing TsunAWI scenario database covers the Sunda subduction zone from Sumatra to the Lesser Sunda Islands with 715 epicenters and 4500 scenarios. In a collaboration with Geoscience Australia, we support the scientific staff at the Indonesian warning center to extend the data base to the remaining tectonic zones in the Indonesian Archipelago. The extentension started for North Sulawesi, West and East Maluku Islands.

For the Hydrographic and Oceanographic Service of the Chilean Navy (SHOA), we calculated a small scenario database of 100 scenarios (sources by Universidad de Chile) for a lightweight decision support system prototype (built by DLR). The earthquake and tsunami events on 1 April 2014 and 16 November 2016 showed the practical use of this approach in comparison to hind casts of these events.