Greek and Turkish coastlines have been exposed to devastating tsunamis in the past. The first historical report of coastal inundation by tsunamis refers to the eruption of the Thera volcano in the eastern Mediterranean. It is posited this volcanic tsunami as the primary agent for the demise of the Minoans in Crete. However, his hypothesis was not favored now because of differences in the relative dating of the eruption with the destruction of the palaces. Now, it is believed that demise of the Minoans is around 1620BC. But, most likely, the tsunami destroyed the Minoan marina and ships and flooded their fields and warehouses precipitating the demise of the Minoans.

Today, both countries have densely populated shorelines with substantial touristic activities and critical infrastructures. Thus, the establishment of a tsunami propagation database in the Aegean Sea can help to build a capacity to develop for both long- and short-term tsunami-forecasting capabilities in the region. Potential tsunamiigenic sources can be used to develop pre-computed tsunami scenario databases that can be used for long-term studies including inundation mapping for the tsunami prone coastal zones, probabilistic studies; or short-term, i.e. real-time, forecasting.

The National Oceanic and Atmospheric Administration of the United States (NOAA)’s Center for Tsunami Research (NCTR) at Pacific Marine Environmental Laboratory (PMEL) developed tsunami propagation database covering the world oceans. NCTR’s tsunami propagation database is based on propagation results from 100 x 50 km² fault planes with a slip value of 1 m referred to as tsunami unit sources. Subduction zones and known faults are modeled as sets of unit sources, while the linearity of tsunami propagation in the open sea allows scaling or combination of the pre-computed propagation results from tsunami unit sources to generate a desired seismic scenario. We follow NCTR approach to developed propagation database for the Aegean Sea. We consider the Hellenic Arc subduction zone and other seismic faults and historical tsunami events compiled from the tsunami catalogues for the Aegean Sea. We placed 100 x 50 km² sources covering subduction zones, while adopted 50 x 25 km² sources for local faults (Figure 1).

We calculated tsunami propagation for all unit sources using MOST model (Titov et al., 1997), which is validated and verified extensively based on Synolakis et al. (2008). We used the Community Modeling Interface for Tsunamis (ComMIT), which is a rich graphical interface to a pre-computed tsunami scenario database and to MOST model (Titov et al., 2011) for inundation calculation. ComMIT is designed for ease of use, requires minimal hardware and allows dissemination of results to the community while addressing concerns associated with proprietary issues of bathymetry and topography.

We created the tsunami propagation database for the Aegean Sea and employed the propagation database for inundation mapping; two towns, one in each country using ComMIT. We will discuss development of tsunami propagation database for the Aegean Sea and the inundation results.

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