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Tsunami in the Mediterranean: assessment of impact and strategies for mitigation

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The Mediterranean basin is theatre of tsunamis, which is not surprising since all the tectonic processes for tsunami generation are active in the region: coastal and submarine seismogenic zones, coastal and island volcanoes, unstable submarine margins. Most tsunami activity is concentrated in southern Italy and along the Hellenic Arc subduction zones, which means that the Mediterranean countries most affected by tsunamis are Italy, Greece and Turkey. Tsunami research has progressed very much in recent years, also as a consequence of the increased attention raised by the large tsunami of the 2004 in the Indian Ocean which attracted interest and funds. What is clear is that importance of studying tsunamis in the Mediterranean was overlooked for a long time, which lead to an underestimation of the related hazard and risk.

Gathering of historical information lead to the compilation of tsunami catalogues that extend back for several centuries and also include events of Greek and Roman civilisation, and that, complemented by the outcome of paleotsunami studies, provide a good and sometime a sound basis for tsunami hazard evaluations. However, the assessment of tsunami impact, on the coast, that is the estimate of the damage that a single big tsunami can provoke (deterministic problem), and further, the estimate of the damage that tsunamis are expected to produce in a given period of time (probabilistic problem) are still unsolved issues. They have not been conducted systematically for the whole coasts of the Mediterranean, but only for some limited spots in the frame of specific projects and with a variety of methods. The same considerations hold also for the elaboration and implementation of strategies for the mitigation of the tsunami effects.

This paper will highlight the results of the most recent studies on the impact of tsunamis of different origins in the Mediterranean region, and will further analyse the main factors that have limited so far the extensive application of such research to all the coasts of the basin that are expected to be under severe tsunami threat.

One of the most promising approaches in terms of possible scientific, technical and social synergies is the view that sees coastal inundation studies, including assessment and mitigation, as complementary contributions within a multidisciplinary research (or even within a unique discipline) that focus on the problems of the coastal zone, irrespective on the strict cause of the inundation (tsunami, storm surge or waves, coastal subsidence, climate change). Advantages and disadvantages of such approach in view of the implementation of natural risk protection strategies will be discussed.