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A tsunami warning system for the Mediterranean: an utopia that could be implemented in a short time

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After the Indian-Ocean tsunami the world has changed and there is a widespread recognition that tsunamis are not only a lethal patrimony of the Pacific Ocean. That tsunamis can attack catastrophically in several parts of the world was certainly known to the specialists, but it was not common knowledge in the decisional circles where strategies of allocation of financial resources are decided and subsequently implemented. The tragedy has shown that a tsunami warning system in operation in the Indian Ocean could have saved tens of thousands of lives. The question arises if these systems can be implemented in other areas of the globe. We point out that the Mediterranean sea is one of such areas and that it is a good candidate for a tsunami warning system protecting the coast of the European, African and Asian countries.

The Mediterranean sea has a long history of tsunami attacks, as was shown by the European tsunami databases resulting from the European Union projects GITEC and GITEC-TWO and their subsequent revisions and updates. In the Mediterranean there is the potential for the generation of large tsunamis affecting the entire basin or a large part of it, and in addition there is the potential for the generation of tsunamis produced in the near-shore zone that can have local catastrophic effects. Both sources have to be handled by an efficient tsunami warning system. Here we propose the implementation of a system that is based on a hierarchy of subsystems: local warning units, at a very local level (e.g. municipality, district), regional warning units at an intermediate level (province, region, nation), and a global warning system at the higher level covering the whole Mediterranean. All these subsystems are constituted by elements to monitor the sources (earthquakes or others), by marine sensors to monitor the tsunami waves, and by efficient modules of data transmission, of tsunami detection, of alert management,

etc.

The technology to implement this three-level system is not an obstacle. And the time needed for the implementation of the basic backbone can be shortened by exploiting the existing resources. Here we propose to use as the initial skeleton of the global warning system the broadband seismic network MEDNET, that is managed by the INGV, Rome, Italy and is formed by more than 20 seismic stations covering the whole area of interest, and has demonstrated efficiency and promptness in earthquake location and magnitude determination. The network has to be integrated by further seismic stations and by the marine component (that is coastal and offshore tsunami gauges), and has to be properly linked and coordinated with regional and local sub-systems.