Tsunami early warning in the Mediterranean: current and potential contributions of seismic information

Anthony Lomax (1), Alberto Michelini (2), and Stefano Lorito (2)

(1) ALomax Scientific, Mouans-Sartoux, France (anthony@alomax.net), (2) Istituto Nazionale di Geofisica e Vulcanologia (INGV), Via di Vigna Murata, 605, 00143 Roma, Italy

Effective tsunami early warning after an earthquake in the Mediterranean basin is made difficult by the short distances and tsunami travel-times between earthquake/tsunami source regions and coast lines at risk. For tsunami hazard and risk assessment worldwide, seismic monitoring and analysis currently provide the majority of information available within the first tens of minutes after an earthquake. In the future, information from multi-sensors buoys, GPS, airborne and space systems, real-time tsunami forecasting, citizen devices, and other technologies, along with improvements in seismic monitoring and analysis procedures will help to increase the coverage, rapidity and reliability of tsunami warning.

Here we examine the current and potential future contributions of seismic networks and analysis procedures to tsunami early warning in the Mediterranean basin. We discuss and asses the timing and reliability of established and newly proposed seismic methods to determine rapidly the location, magnitude, moment-tensor, faulting geometry and tsunami potential of earthquakes in the Mediterranean area. We consider a broad context, including present and future seismic network coverage, the constraints of short distances between source and risk zones, and the hazard from moderate size earthquakes. We examine real-time, evolutionary presentation of seismic information, along with prior and non-seismic information, for use within decision systems for tsunami warning.