



An updated seismicity map of the Sicily Channel through improved seismic networks on the Maltese islands and Central Mediterranean.

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The Sicily Channel, bordered by the Sicilian and Tunisian coastlines, the Sicily-Malta escarpment to the east, and the Maghreb thrust front to the west, is a tectonically interesting region, encompassing a NE-directed extensional process superimposed on the NW-directed thrust of Africa onto Europe. The extension is bathymetrically represented in the form of deep NW-SE oriented grabens in the sea floor, reaching a depth of over 1000 m. The nature of the rifting process is still controversial. The grabens have been investigated from the geophysical and geological aspects, but poorly studied in terms of active seismicity, which is usually referred to as sparse or insignificant in the scientific literature. Since 1995, a MedNet station WDD on the island of Malta has been used in single-station mode to monitor seismic activity, particularly south of the islands, and augment the seismic catalogue provided by the Italian networks. Since 2015, the Malta Seismic Network, consisting of 6 broadband stations, and complemented by real-time data from Central Mediterranean seismic networks, has increased the earthquake location capability in the region and enhanced the recording and location of smaller events close to the islands. A number of methodologies have been applied to obtain better constraints on earthquake location and mechanism. Here we present an updated seismicity map, including moment tensor solutions for the more energetic events, and show that the Sicily Channel grabens, together with associated transfer and connecting faults, exhibit a considerable level of seismicity, with some sections being more seismically active. The results are discussed in terms of tectonic interpretations that have been proposed for the Sicily Channel Rift. Real-time monitoring of earthquakes in the Central Mediterranean is supported by the project SIMIT-THARSY (Interreg V-A Italia-Malta Operational Programme 2014-2020).

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