



## **Preliminary seismic evidences in the Ionian basin recorded at SN-1 seafloor observatory**

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From October 2001 to February 2002, the seafloor observatory Submarine Network-1 (SN-1) was deployed 25 km offshore the Eastern coast of Sicily. During this long-term mission, high quality seismic data have been collected. The dataset, including hundreds of events recorded by SN-1 three-components broad-band seismometer, has been compared to the bulletins of land networks.

We focused on the intense microseismicity activity, including about 250 low magnitude events, recorded only from SN-1 seismometer. The three-component recordings have been analyzed to focus on the seismicity of both tectonic and volcanic origin related to active structures in the Ionian Sea. The standard procedure to obtain accurate event locations, based on a large number of P and S arrival times for each event, could not be applied when using a single seismological station. On the other hand, accurate analyses of the wave-field are required to retrieve the necessary parameters for event locations. Epicentral distance is derived from differential travel times and from the assumption of an adequate crustal velocity model. Epi- and ipocenter determination is possible by the application of particle motion and polarization techniques. However, these locations will of course be rougher than those achievable with data from numerous and well distributed stations. Nevertheless, in areas lacking of homogeneous and dense station coverage, like marine basins in general and Ionian basin in particular, this approach can be applied to obtain some information on small events which are observed by only one station.

For most of the events, we observed a prevalently linear polarization, typical of P and S waves. They constitute a class of low magnitude earthquakes prevalently located in

correspondence of the South-East sector of Mt. Etna volcano and in the area of Western Ionian basin where some seismogenic structures have been identified. On the other hand, a few events presented an emergent first phase with planar polarization, typical of Raleigh waves. These events are likely associated to little submarine landslide phenomena. The azimuth distribution of the seismic signals associated to landslides seems to be prevalently concentrated in correspondence off-shore Southern Calabria.