

Seismological analyses in the Calabrian Arc region (south Italy): investigating the northern edge of the Ionian slab

Orecchio, B. ; D'Amico, S. ; Neri, G. ; Presti, D. ; Totaro, C.


A joint evaluation of seismotomography models, hypocenter distribution and focal mechanism solutions has been performed in the northern Calabria region, where the lateral edge of the Ionian slab may be located. The recent history of the Ionian subduction process marked by gravity induced south-eastward retreating of the lithospheric slab and progressive detachment of its deepest portions has led to a present configuration characterized by an in-depth continuous slab only beneath the central sector of the Calabria Arc. Recent investigations have indicated the southern edge of the Ionian slab in northeastern Sicily and relative offshore and have also highlighted that the signatures of the northern slab edge are less clear with respect to the southern one. Our investigation aims to better define this poorly recognized region of northern slab edge by means of a seismological study focused on the wide area proposed for its location (corresponding to the northern Calabria area and running from central Calabria to southern Apennines). By using a recently developed shallow-to-intermediate 3D velocity model we located the earthquakes occurred in this region between 1997 and 2012. We also selected the available high-quality focal mechanisms and integrated them with original solutions obtained by applying the Cut and Paste waveform inversion method to the events of the last decade. The joint evaluation of seismic velocity structure, hypocenter locations and focal mechanism solutions allows us to better define the lithospheric units configuration and to properly relate it with the seismic activity so furnishing also new insights onto the kinematics at the northern edge of the Ionian slab.

Publication: American Geophysical Union, Fall Meeting 2013, abstract id. T33B-2621

Pub Date: December 2013

Bibcode: 2013AGUFM.T33B2621O

Keywords: 8170 TECTONOPHYSICS Subduction zone processes;
7230 SEISMOLOGY Seismicity and tectonics

 Feedback/Corrections?