



New data for assessing fault activity in the easternmost portion of the Gondola Fault Zone (Adriatic Sea, Italy)

D. Di Bucci (1), D. Ridente (2), U. Fracassi (3), E. Campiani (2), F. Foglini (2), F. Trincardi (2), and G. Valensise (3)

(1) Dipartimento della Protezione Civile, Via Vitorchiano 4, 00189 Roma, Italy (daniela.dibucci@protezionecivile.it), (2) Istituto di Scienze Marine (Geologia Marina), CNR, Via Gobetti 101, 40129 Bologna, Italy, (3) Istituto Nazionale di Geofisica e Vulcanologia, Via di Vigna Murata 605, 00143 Roma, Italy

The Gondola Fault Zone is a 70 km-long, E-W striking, poly-phased structure of regional extent that dissects the southern Adriatic continental shelf and slope. Recent studies supplied clear evidence for activity of the Gondola Fault Zone from the Middle Pleistocene up to recent times, although with rather low slip rates (vertical slip rates up to 0.18 mm/a). The activity has been documented by means of very high resolution seismic lines (Chirp sonar) acquired in the past few years by Italy's CNR (National Research Council) on a very dense grid over the southern Adriatic Sea. Some active fault strands, in the order of 10-20 km length, rupture up to the Holocene, including the seafloor. Middle Pleistocene to present day activity has been demonstrated along the westernmost 50 km of the fault zone.

The investigated fault network strongly suggests to be the result of right-lateral reactivation of the strike-slip fault system at the core of the Gondola Fault Zone. It has been suggested that the latter is part of a regional strike-slip system straddling a critical sector of the Adriatic foreland from east to west. Such system, named the Molise-Gondola shear zone (MGsz), includes (from east to west) the Gondola Fault Zone (off shore the Gargano Promontory), the Mattinata Fault (i.e., the Gargano Promontory itself), the source area of the 30 July 1627, M 6.7 earthquake, and the source area of the 31 October-1 November 2002 Molise earthquakes (M 5.8).

We analyzed high resolution seismic lines corresponding to the remaining easternmost 20 km of the Gondola Fault Zone. Based on these new data, we demonstrate that also this part of the fault zone is characterized by recent and present tectonic activity, accompanied by spectacular mud volcanoes that affect the seafloor topography.