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Geohazards in Naples Bay coastal area (Eastern Tyrrhenian Sea margin)

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Coastal risk is a serious problem in the populated areas of the Mediterranean coastline particularly where active faults and volcanoes occur. Our work gives a contribution to the geohazard evaluation of Naples Bay coastal area that is populated by more than one million of people.

The Naples Bay coastline displays a great variability due to the presence of faults, folds, volcanoes, fluvial mouths. The physiography of Naples Bay features a wide continental shelf that extends to water depths of 100-180 m. The shelf width varies from a maximum of about 20 km in the central bay to about 2.5 km off the islands of Capri and Procida. The northern area displays an irregular continental shelf which forms part of an extensive system of volcanic banks. In the central area, offshore of Vesuvius, the continental shelf is wider and covers an area of approximately 380 km^2. Two canyons, the Magnaghi Canyon and the Dohrn Canyon, cut the continental slope and terminate in the tyrrhenian basin.

This work was made by means of the stratigraphic and structural interpretation of strictly spaced seismic reflection profiles, cores data and the correlation with dated volcanic units of the Campi Flegrei and Vesuvius districts. Our main result is the detection of many coastal hazards along Naples Bay: (1) tsunami, associated to volcanic activity; (2) rapid uplift and subsidence of the coastal zones, associated to tectonic movements; (3) mass movements, associated to gravitational instability; (4) rapid seaward migration of the coastline, linked to the very high rate of sediment supply; (5) changes of coastal environments due to hydrodynamic processes.