



## **Marine geo-hazard in the Campi Flegrei coastal area (Eastern Tyrrhenian sea)**

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The Campi Flegrei (i.e. “burning plains”) are located on the eastern Tyrrhenian margin, an area characterized by active tectonics and volcanism since the Pleistocene. It is a densely urbanized coastal zone, including the bay of Pozzuoli, Procida and Ischia islands, where documented human activities have been developing for more than two thousand years. In the Pozzuoli area two major periods of eruptive volcanic activity occurred from 10.0 to 8.0 ky B.P and 4.5 to 3.7 ky B.P. These periods were followed by the September 1538 Monte Nuovo eruption. Numerous monogenic volcanoes formed close to the shoreline and volcanic debris interpreted as submarine counterpart of subaerial flow and surge, has been detected offshore.

The most recent volcanic activity on Ischia island starts around 10.0 ky B.P. to which associates several eruptive centres mostly located in the western sector. The last eruption dates back to Arso flow in 1302. Nevertheless the landscape of Ischia is dominated by Mount Epomeo in the central part of the island, which is the highest peak (788 m). It is a volcano-tectonic structure that raised above sea level between 33 and 28 ka BP, due to the intrusion of magma at shallow depth. In the Campi Flegrei, magma-related activity is testified by extensive hydrothermalism, and recent episodes (1883 on Ischia, and 1970-71 and 1982-84 on Pozzuoli coast) of shallow seismicity and ground deformation, exceeding rates of 100 cm/year in the years 1983-1984. Volcanic and volcano-tectonic activity mainly associate with inferred resurgent calderas whose uplift have caused mass wasting phenomena, faulting and erosional activity both on land and at sea.

Major geohazard features resulting from marine geophysical and sedimentological investigations include (1) extensive landslide deposits and associated hummocky topographies off Ischia volcanic island, (2) seafloor instabilities in the form of creep/slump, channelled sediment flow and deep sedimentary fan, (3) superficial faulting (i.e. displacing the seafloor) in the bay of Pozzuoli and (4) erosional morphologies and forms at the canyon heads and the shelf break. Moreover, numerous volcanic bank and pyroclastic structures have been detected off the bay of Pozzuoli and Ischia island, both in the shelf area and deeper waters. These information have been mapped with the aim to recognize, compare and classify hazard-bearing processes active at seafloor in the Campi Flegrei coastal area: a basic approach for assessing and managing risk related to geological processes.