The background of the entire page is a textured, brownish-tan color. Overlaid on this background is a stylized map of Italy. The map is composed of several overlapping, irregular lines in different colors: blue, green, pink, and black. These lines represent geographical features or boundaries, creating a complex, layered effect. The black line specifically traces the outline of the Italian peninsula.

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## The opening of Ischia Harbour (Southern Italy): history, geology and natural risk

STEFANO CARLINO (\*), ELENA CUBELLIS (\*), ILIA DELIZIA (\*\*), & GIUSEPPE LUONGO (°)

(\*) Istituto Nazionale di Geofisica e Vulcanologia – Sezione di Napoli, Osservatorio Vesuviano

(\*\*) Dipartimento di Storia dell'Architettura -Università di Napoli "Federico II"

(°) Dipartimento Scienze della Terra - Università di Napoli "Federico II"

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In this paper we examine recent and historical sources with a view to reconstructing the circumstances leading in 1854 to the opening of the natural harbour of Ischia, the execution phases of the works and the morphological changes arising (Fig.1). An active volcanic island, Ischia has since the late 17th century been a major European destination for spa treatment. It underwent a period of change after the harbour was opened up, which represented not only an outlet towards the mainland but also an important factor of social and cultural aggregation for the island. Our analysis also accounts of the geology of Ischia Harbour, the observations of the current state of the island and issues concerning the increase in volcanic and seismic risk resulting from urban expansion and the increase in tourism since the first half of the 20th century.

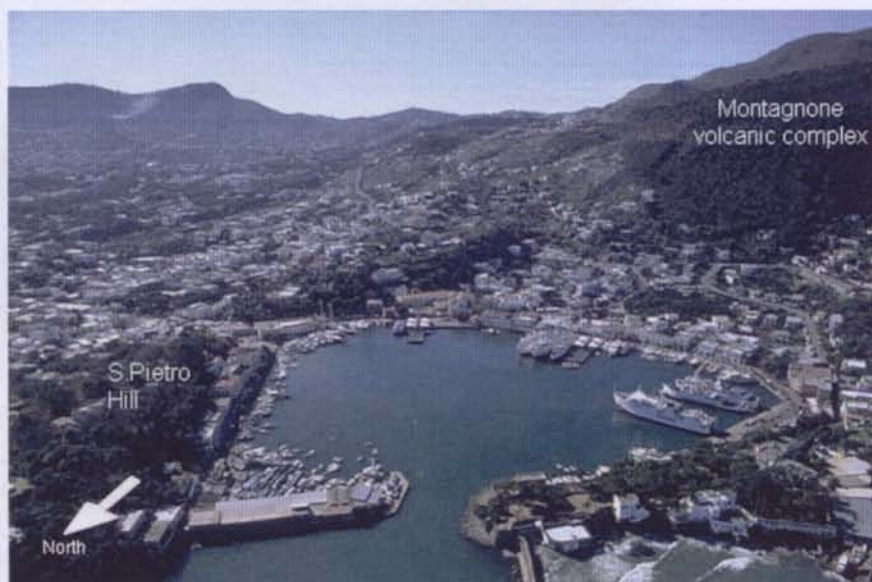


Fig. 1 - The Ischia Harbour

On 17 September 1854, under the initiative of the Bourbon Ferdinand II (1830-1859), King of the Two Sicilies, the opening of the new harbour of Ischia was celebrated. It has since become a major maritime port and marina in the Bay of Naples. The port constituted the fundamental element connecting the island and the mainland, providing easier access to the island and promoting the progressive growth of the local economy. In particular, occupying the site of the present-day harbour of Ischia was a lake close to the coastline, surrounded by low rises generated by recent volcanic activity. On the most southerly hill rose the house of Francesco Buonocore, chief court

physician, which had been built in 1735 on family land at the back of the central section of the lake. It was a country villa which captured the spa waters bubbling up and had thus become a house of health and well-being for nobles and dignitaries attached to the court of Naples who needed treatment.

The site had already been chosen by an earlier Bourbon king, Ferdinand IV, as a "royal delight" (1784), insofar as it was suitable for sating his passion for nature and for fishing in the lake. Later, in 1854, it was to come within the town-planning programmes of the northern side, carried forward by Ferdinand II, which led to the establishment and rapid development of Villa de'Bagni, the original name of the first settlement of Ischia Porto.

An ancient volcanic formation dating to the 4th century BC, the lake was perfectly suited to being converted into a harbour. Known as the *Lago del Bagno* or *de' Bagni* due to the presence of hot springs on its perimeter, it was almost circular and deep enough to provide clearance for small fishing vessels (Fig.2). Moreover, it was separated from the sea by a small isthmus: a narrow sandy dune on which marine vegetation was deposited during rough seas. Since time immemorial, the lake had been used for fish-farming, constituting one of the few sources of revenue for the local administration.



Fig.2 - First geological map of Ischia produced by Fonseca (1847), scale 1:25,000. The most recent lava flow and lava and scoria cones are represented in red-brown. Inset with a close-up of the Lago del Bagno zone.

The lacustrine basin, just like the rest of the island, was the product of volcanic activity which generated an extraordinarily complex landscape in continuous evolution. This is due to the island's geological history which has been distinguished by alternating explosive and effusive eruptions which have modelled a very variegated area, owing to the presence of many eruptive centres being partly destroyed or covered by subsequent volcanic activity, of deep valleys produced by erosion of pyroclastic top layers, of marine terraces and hills with sub-vertical walls, which testify to volcanic and tectonic processes on the island, especially active in the last 10,000 years, and with intense seismic activity in the past 800 years. The most recent eruption occurred in

1302, emitting a lava flow that affected the eastern side of Ischia, partly invading the area east of the harbour.

The set of historical available data, studies and reports are analysed herein to reconstruct the circumstances that led to the opening of Ischia Harbour, the execution phases and the resulting change in morphology. Our historical analysis include the description of the geology of the harbour, some considerations on the current state of the island and on issues relating to the increase in volcanic and seismic risk resulting from urban expansion and the increase in tourism since the early 20th century.

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