

# Ground movement at Somma-Vesuvius from Last Glacial Maximum

A. Marturano, G. Aiello, D. Barra, L. Fedele, V. Morra

Relatore

**Aldo Marturano**

*INGV- Sezione di Napoli, Osservatorio Vesuviano*

Detailed micropalaeontological and petrochemical analyses of rock samples from two boreholes drilled at the archaeological excavations of Herculaneum, ~7 km west of the Somma–Vesuvius crater, allowed reconstruction of the Late Quaternary palaeoenvironmental evolution of the site. The data provide clear evidence for ground uplift movements involving the studied area. The Holocenic sedimentary sequence on which the archaeological remains of Herculaneum rest has risen several meters at an average rate of ~4 mm/yr. The uplift has involved the western apron of the volcano and the Sebeto–Volla Plain, a populous area including the eastern suburbs of Naples. This is consistent with earlier evidence for similar uplift for the areas of Pompeii and Sarno valley (SE of the volcano) and the Somma–Vesuvius eastern apron. An axisymmetric deep source of strain is considered responsible for the long-term uplift affecting the whole Somma–Vesuvius edifice. The deformation pattern can be modelled as a single pressure source, sited in the lower crust and surrounded by a shell of Maxwell viscoelastic medium, which experienced a pressure pulse that began at the Last Glacial Maximum. The model evidences an evolution of the plumbing system that passes through some stages characterized by upward source migration. As a consequence the long-term history of the volcano emerges as an important constraint on the strategy for surveillance, interpreting volcanic unrest and hazard valuation.

J. Volcanol. Geotherm. Res. (2012) pp. 24-35. doi: [10.1016/j.jvolgeores.2011.10.003](https://doi.org/10.1016/j.jvolgeores.2011.10.003)