

Monitoring recent geodynamical activity at Campi Flegrei, Italy

Roberto Scarpa¹, Francesca Bianco², Paolo Capuano¹, Mario Castellano², Luca D'Auria²

¹Dipartimento di Fisica, Universita' di Salerno, Italy, ²Osservatorio Vesuviano, Istituto Nazionale di Geofisica e Vulcanologia, Italy

E-mail: Roberto.Scarpa@sa.infn.it

After some centuries of subsidence, following the last Monte Nuovo 1538 eruption, the Campi Flegrei caldera has shown unrest episodes of activity since at least 1950. The first uplift episode dates back in the period 1950-1952 and amounted to 73 cm, without any report or record of seismic activity. In the period 1970-1972 and during 1982-1984 two strong inflation episodes occurred, the first accompanied by moderately low seismicity, with only few events felt by residents, whereas the second has been accompanied by relatively intense swarms of VT earthquakes, reaching up to magnitude 4. The seismic activity caused alarm in the population and a spontaneous nightly evacuation of part of the city of Pozzuoli (44.000 residents). Since this last episode, subsidence has been recorded for several years, interrupted by some small mini-uplift episodes, with a duration of several weeks, all accompanied by seismic swarms of low magnitude VT events. In recent years some high sensitivity instruments have been installed to detect slow earthquake transients and other mechanical/temperature low intensity precursory signals. Since late 2004 another moderate uplift is occurring at very small rate, amounting to about 1-2 cm/yr, showing the occurrence of clear LP events. This uplift is different from the past mini-uplifts due to its duration. This work summarizes all seismic and ground deformation data and models proposed to interpret these phenomena, suggesting possible scenarios for detecting precursors of future eruptive activity in the area.