



Continuous borehole strain observations at italian volcanoes

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Since spring 2004 a research project has been developed in Italy to install borehole Sacks-Evertson strainmeters (dilatometers) aimed to improve monitoring systems of the Italian volcanoes. 6 borehole dilatometers have been installed around Campi Flegrei and Vesuvius during 2004-2005 (Scarpa et al., 2007) and two dilatometers have been installed on Stromboli volcano during 2006.

Relevant strainmeter data have been collected and analyzed at the three instruments installed at Campi Flegrei. During the 2004-2006 miniuplift episode, which was characterized by 4 cm of maximum vertical displacement, an anomalous strain was released during summer 2006, in correspondence of anomalous CO₂ release and increase of displacements measured by tiltmeters and GPS transducers. The strain episodes preceded the seismic activity by few month as also observed during the 1982 last large uplift episode.

On Stromboli volcano, an extensive phase of activity occurred in February–April 2007 and significant data have been recorded at the two borehole dilatometers during the initial phase of activity and a larger explosion occurred on March 15. Data processed on Mt. Vesuvius show no relevant trend of strain due to its quiescent state. Modeling of the recorded activity has been performed in order to understand the mechanism of the processes occurring on these three active volcanic areas.