



## **Inflation-Intrusion-Deflation processes accompanying the 2008 Mt. Etna eruption imaged by GPS and DInSAR data**

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GPS and DInSAR data collected from July 2007 to July 2008 are analyzed in order to define the dynamics preceding and accompanying the onset of the eruption, on 13 May 2008. Some short and long-term comparisons have been performed on both GPS and radar data, covering similar time windows. Ground deformation patterns show a slight inflation visible on the upper western side of the volcano in the pre-eruptive long-term comparisons (from July 2007 to May 2008). The emplacement of the eruptive dyke has been imaged by DInSAR pairs, having temporal baselines of 2-3 months, and by comparing two GPS surveys carried out on the uppermost part of the volcano on May 6 and 13, i.e. few hours after the beginning of the eruption. The short-term GPS and DInSAR comparisons highlighted strong displacements localized on the summit area, quickly decreasing towards the middle flanks of the volcano; no significant ground deformation affected the volcano below about 1500 m asl. A preliminary analysis of DInSAR data, covering also a post-intrusion period, showed a clear anomaly in the fringe pattern, suggesting the presence of a depressurizing source localized beneath the upper south-western area. In order to image the geometry of the feeding system of the volcano during the months preceding and accompanying the onset of the eruption, data inversions were also performed.