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Imaging of fluid migration through the Campi Flegrei hydrothermal system

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We obtained a spatial and temporal characterization of volumetric strain sources at Campi Flegrei caldera, from 1995 to 2008, through the inversion of a DInSAR dataset. The inversion technique consists in a tomographic imaging of the strain sources assuming a continuous spatial distribution.
The first result is the observation of positive strain sources (expansion) migrating upward in 2000 and 2006. We associate them with ascending batches of fluids through the Campi Flegrei hydrothermal system. Fluid batches seems to be injected along the supposed caldera rims and subsequently migrate upward and toward the center of the caldera. The injection points of these two episodes differs.
We have also identified, in 1997, an injection episode which was not recognized before. This batch did not reach the surface and probably dissipated by diffusion and lateral advection without producing significant ground uplift.
Our findings agrees with results of other geophysical and geochemical studies. They suggest a new framework for the modelling of Campi Flegrei hydrothermal system and for the interpretation of data recorded by the multiparametric monitoring networks on the caldera.