



Ground deformation analysis at Campi Flegrei (Southern Italy) by CGPS and tide-gauge network

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Campi Flegrei caldera is located 15 km west of the city of Naples, within the central-southern sector of large graben of Campanian Plain and it is an active volcanic area marked by a quasi-circular caldera depression, formed by an huge ignimbritic eruption occurred about 37000 years ago. This caldera was generated by several collapses produced by strong explosive eruptions (the last eruption occurred in 1538 build an about 130 m spatter cone called Mt. Nuovo). Campi Flegrei area periodically experiences significant deformation episodes, with uplift phenomena of more than 3.5 m in 15 years (1970 to 1984) which caused the temporary evacuation of about 40000 people from the centre of Pozzuoli.

The deformation field obtainable by CGPS and tide-gauge stations plays an important role for the modelling and interpretation of volcanic phenomena, as well as for forecasting purposes.

The structural complexity of the Campi Flegrei area, together with the evidence of a strong interaction between magmatic chamber and shallow geothermal system, calls for a detailed characterization of the substructure and of processes of magma-water interaction.

The incoming experiment of deep drilling in the area, down to about 4 km, will give detailed structural and physical constraints able to resolve the intrinsic ambiguities of geophysical data, and in particular geodetic ones.

In this work we describe the recent ground deformations in Campi Flegrei area by means of GPS technique and tide gauge stations, discussing the possible interpretations also in the light of further constraints likely coming from the next CFDDP (Campi Flegrei Deep Drilling) deep drilling experiment.