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The Vesuvius/Campi Flegrei Supersite: state of the art and future perspectives

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The Vesuvius/Campi Flegrei Supersite was established in April, 2014 with the aim of improving monitoring and knowledge of one of the areas with the highest volcanic risk worldwide, due to the strong urbanization of the city of Naples and surroundings, lying between two active volcanoes: Vesuvius on the east and Campi Flegrei on the west, this latter with a recorded uplift of about 35 centimeters from 2011 to date. Such deformation suggested to the Italian Civil Protection Department (ICPD) to move from the base (green) alert level to attention (yellow) level in the framework of the Campi Flegrei National Emergency Plan.
In the first 2014-2016 biennial period, relevant results were carried out by the Supersite Science Team, apart from the outcomes of the ESA-SEOM INSARAP (Sentinel-1 INSAR Performance Study with TOPS data) project. Results are mainly focused on InSAR (S1-A, CSK, TSX) data processing, exploiting both SBAS and PS Interferometry over the Neapolitan volcanoes, with generation of ground deformation time series and comparison between LOS/inverted (E-W, vertical) InSAR and geodetic data, these latter from the INGV-Osservatorio Vesuviano monitoring networks.
After the first biennial period, a detailed report on the Supersite activities has been submitted and approved by CEOS for satellite data provision for the next 2016-2018 period.
Besides the continuation of the work in progress, future steps will consist in a detailed InSAR study of Vesuvius, mainly in the upper coherent part of the volcano, in order to characterize the area of interest from the engineering geology point of view. Moreover, DLR is planning an airborne campaign with their F-SAR sensor over Campi Flegrei; the contribution from INGV-OV to this campaign will consist in validating InSAR measurements with continuous GPS (cGPS) data. The campaign will take place around May and then again in 2018.
With regard to the societal benefits of the current activities of the Supersite, the main stakeholders benefitting from the results are the ICPD and, on a locale scale, the Regional Civil Protection of the Campania Region, besides the different Municipalities. Surveillance Reports have been produced for the ICPD on six-months and annual basis, showing regular updates on the state of the Neapolitan volcanoes. On a mid-term scale, the outcomes of the Supersite will be exploited in terms of technical contributions to the ICPD in setting up the updates of the National Emergency Plans for Vesuvius and Campi Flegrei areas.