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Observatory response to a volcanic crisis: the Campi Flegrei simulation exercise

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In Febraury 2014 a simulation exercise was conducted at Campi Flegrei, Italy, in order to test the scientific response capabilities and the effectiveness of communication with Civil Protection authorities. The simulation was organized in the frame of the EU-VUELCO project, and involved the participation of the Osservatorio Vesuviano of INGV (INGV-OV) corroborated by other INGV scientists involved for their specific competencies; and the Italian Civil Protection, which was supported by an expert team formed by selected experts from the Italian academy and by VUELCO scientists from several EU and Latin American countries. The simulation included a previously appointed group of four volcanologists covering a range of expertise in volcano seismology, geodesy, geochemistry, and with experience both on the Campi Flegrei system and on other volcanic systems and crises in the world. The duty of this 'volcano team' was that of producing consistent sets of signals, that were sent to INGV-OV at the beginning of each simulation phase. In turn, the observatory response was that of i) immediately communicate the relevant observations to the Civil Protection; ii) analyze the synthetic signals and observations and extract a consistent picture and interpretation, including the analysis and quantification of uncertainties; iii) organize all the information produced in a bulletin, that was sent to the Civil Protection at the end of each simulation phase and that contained, according to national established agreements, a) the information available, and b) its interpretation including forecasts on the possible medium-short term evolution. The test included four simulation phases and it was blind, as only the volcano team knew the evolution and the final outcome; the volcano team was located at the INGV buildings in Rome, far from INGV-OV in Naples and the Civil Protection Dept. still in Rome, and with no contacts with any of them for the entire duration of the simulation. In this presentation we shortly review the whole simulation exercise focussing on the observatory response; we discuss the team organization at INGV-OV and the interaction set up between the different technical and scientific components; illustrate the evolution of the crisis commenting on the capability of the observatory to provide consistent interpretation and useful information; discuss the relevant issue of communication with Civil Protection authorities; and comment on the relevance of such exercises in order to optimize and test the response capabilities and the communication procedures at volcano observatories.