

The MEDiterranean SUPersite Volcanoes (MED-SUV) Project: an overview

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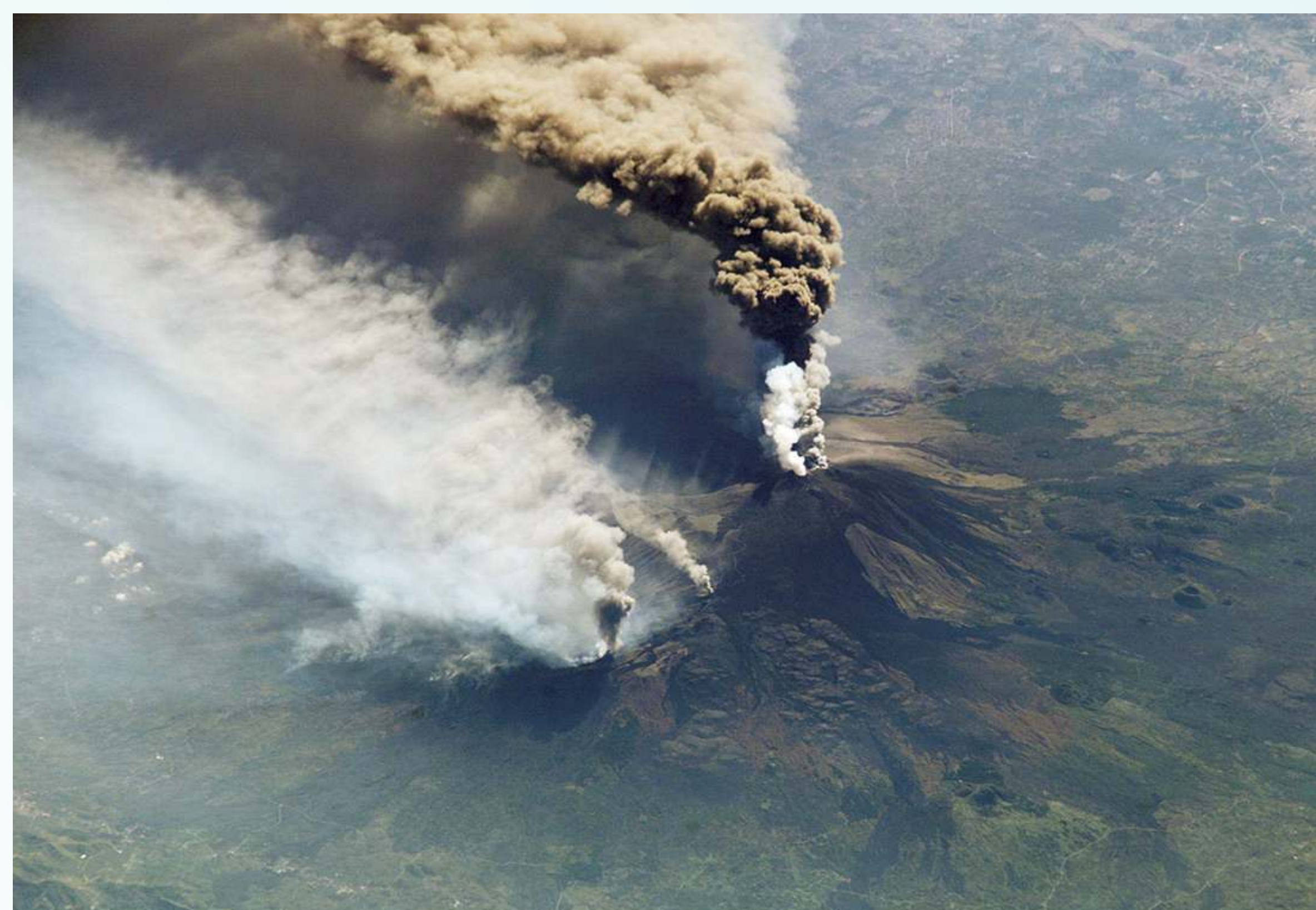
A Collaborative EC-FP7 project
Submitted to the call: ENV.2012.6.42
Long-term monitoring experiment in geologically active regions of Europe prone to natural hazards: the Supersite concept.
Duration: 3 years
Starting date: 1 June 2013
Costs: 6 M€
Web-Site: <http://med-suv.eu/>



Campi Flegrei



Vesuvius



Mt Etna

Earth Observations and In-situ data

High Hazard and Risk

GROUP ON EARTH OBSERVATIONS

Supersite Initiative

Objectives of the project

MED-SUV applies the rationale of the Supersite GEO initiative to Campi Flegrei/Vesuvius and Mt. Etna to reduce the volcanic risk, improving the understanding of the underlying geophysical processes by **integration and sharing of in-situ and Earth Observation (EO) data sets** and implementation of new instrumentation and volcano monitoring systems.

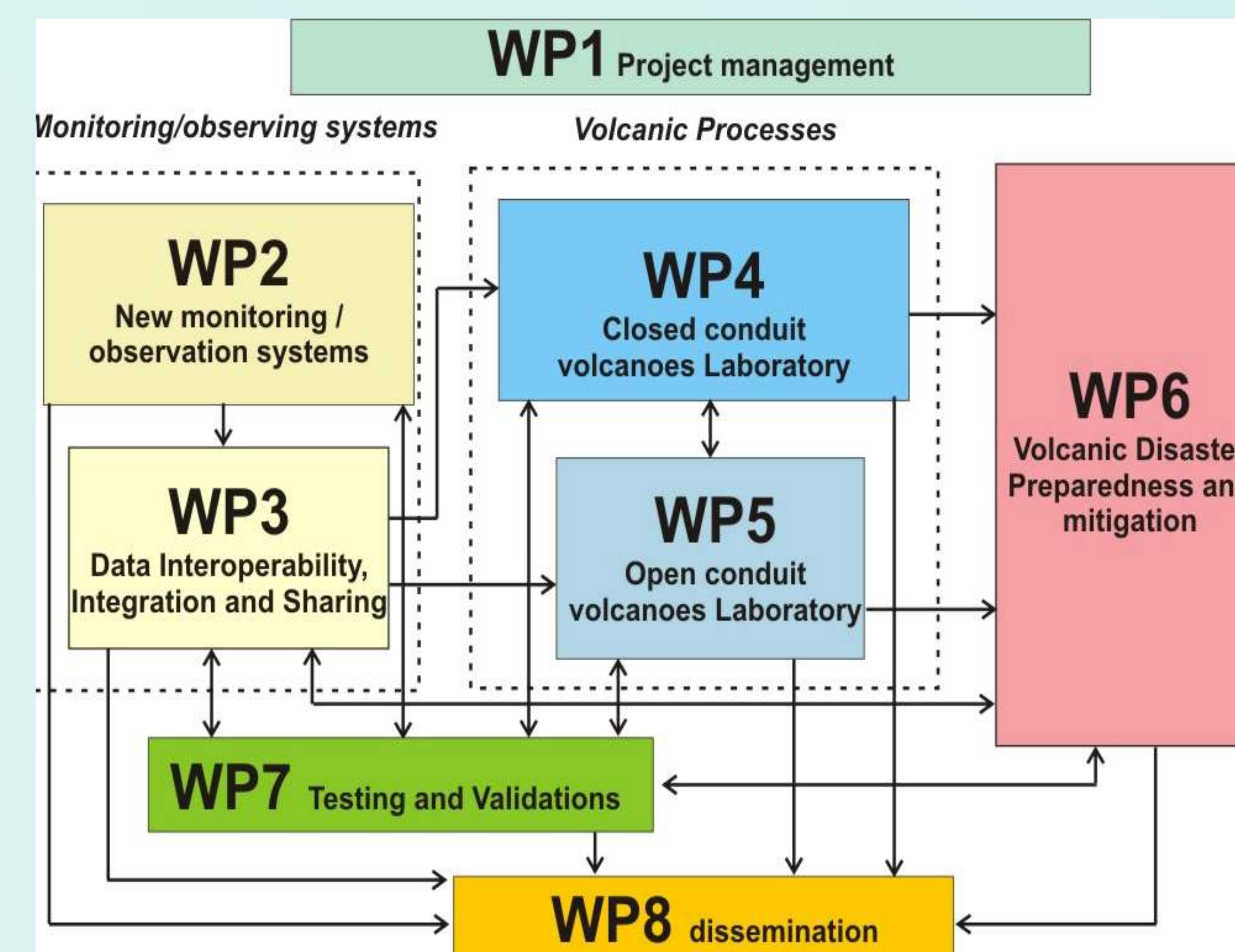
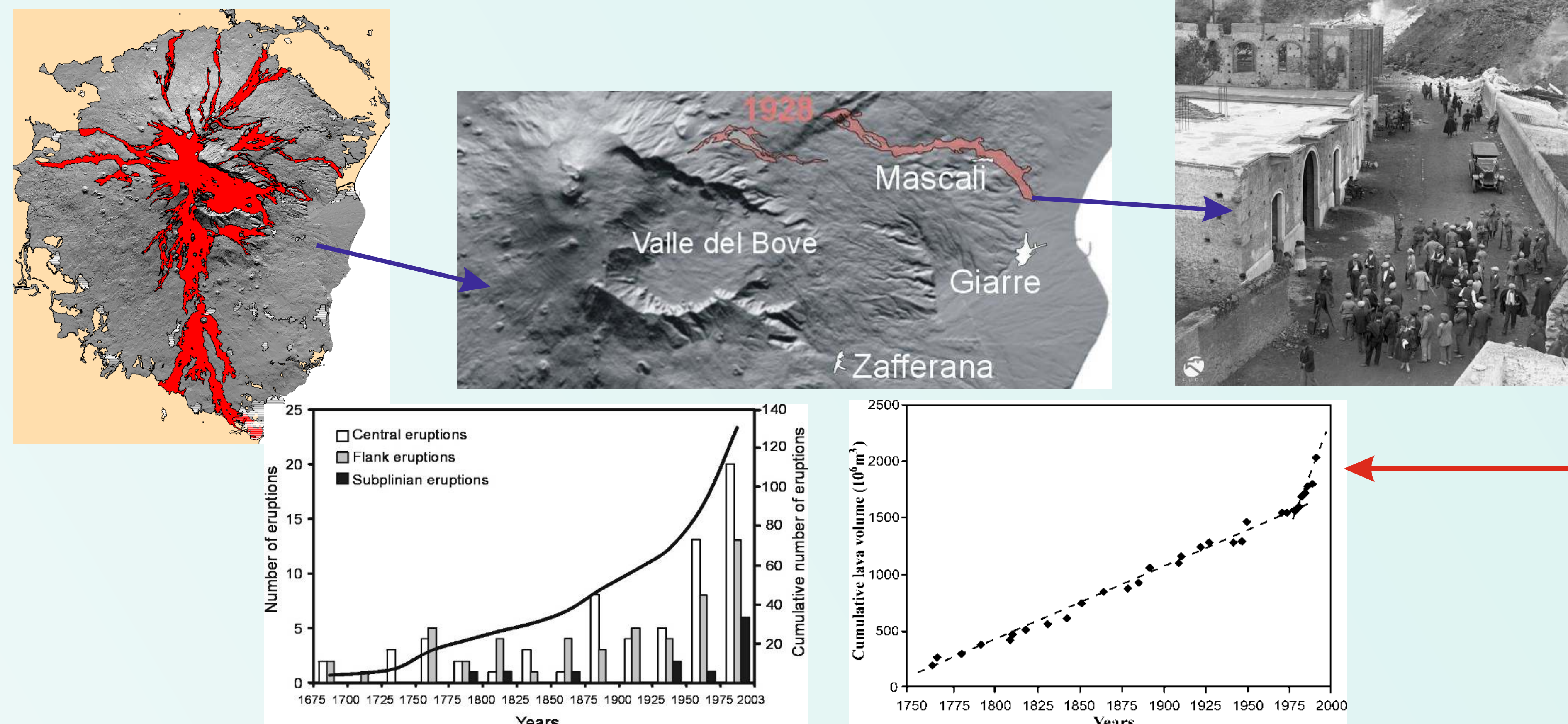
*Campi Flegrei, Vesuvius and Mt. Etna can be considered, altogether, a **Cluster of Supersites** in the centre of the Mediterranean area*

The MED-SUV project will exploit the large remarkable and unique data set on the Cluster of Italian Supersites to gain new insights into the internal dynamics of the volcanoes, and provide answers to the following questions:

- 1- Are the current EO and In-situ observations detailed and accurate enough to capture signals which reflect the internal dynamics and/or eruptive phenomena? How is it possible to improve the quality of these signals?
- 2- What are the expected effects of magma ascent on the stress/strain field (and vice versa)?
- 3- How well can we predict the place and time of an eruption or volcanic unrest?
- 4- How may we optimise the functioning of the chain from observations to end-users during an eruptive Event?
- 5- How are the project outcomes “exportable” to other active volcanoes?

Project activities:

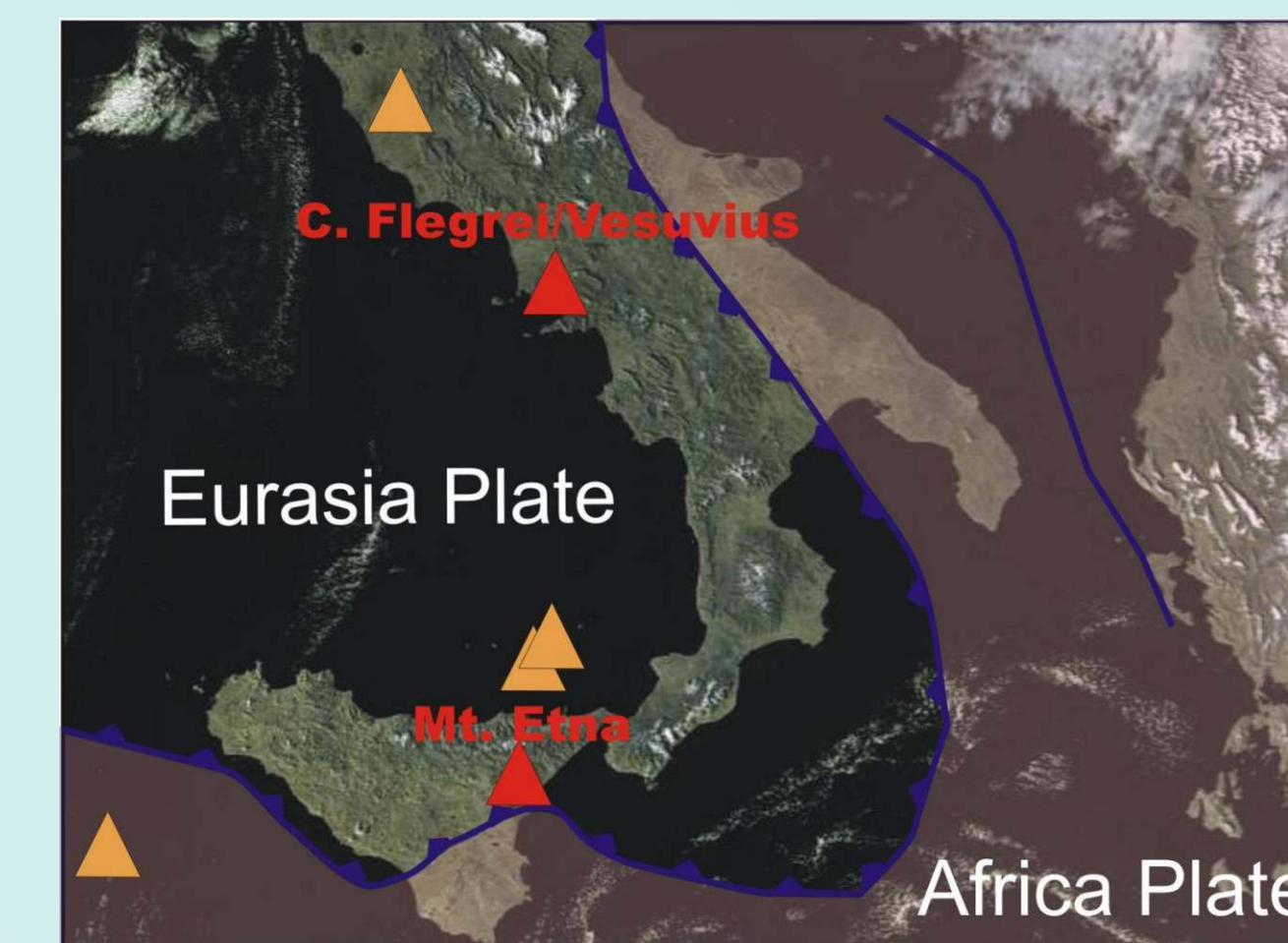
1. Development of the next generation of geomonitoring/ observing systems (WP2, WP3),
2. Characterisation of the volcanic processes by cutting-edge data analysis and modelling (WP4, WP5),
3. Strategies for volcanic disaster preparedness and mitigation (WP 6),
4. Test and validation of the project outcomes (WP7),
5. Dissemination (WP8).



Interaction between volcanoes and society

Example of Mt. Etna flank eruptions:
58 lava flows since 1669

Example of bradyseism at campi Flegrei



This complex geodynamic context of the central Mediterranean reflects in two different eruptive behaviours:
- open conduit (Mt. Etna)
- close conduit (Vesuvius and campi Flegrei)
The eruptive behaviours encompass almost the entire spectrum of threatening volcanic phenomena;
The long-term available monitoring data sets, both In-situ and EO, relevant to pre-, syn- and post-eruptive phases guarantee that the outcomes of the project will be applicable demonstrators for other European/worldwide volcanic areas;
The presence of populated areas foster the development of cutting-edges In-situ monitoring systems and background EO missions for a long time (since the 80s).

Main Outcomes:

- WP1.** Data Policy, Strategies for long-term sustainability
- WP2.** Prototypes of an automated TSX system; FBG sensors; data-logger; system for optimization and image processing
- WP3.** New methods for integrating EO and in-situ data (ground deformations, SO₂ flux, etc.); E-Infrastructure for data sharing,
- WP4.** Parametrization of geochemical/geophysical signals, cutting edge models of interaction between magmatic and hydrothermal systems
- WP5.** Parametrization of geochemical/geophysical signals, TOMO-Etna experiment, global and local-scale cutting-edge models.
- WP6.** Short-term hazard assesment tools; guidelines for hazard preparedness and awareness
- WP7.** Pilot phase on Supersite volcanoes; transfer to/from Azores and Piton de la Fournaise.
- WP8.** Web-Site, videos

