

Earthquake preparatory phase

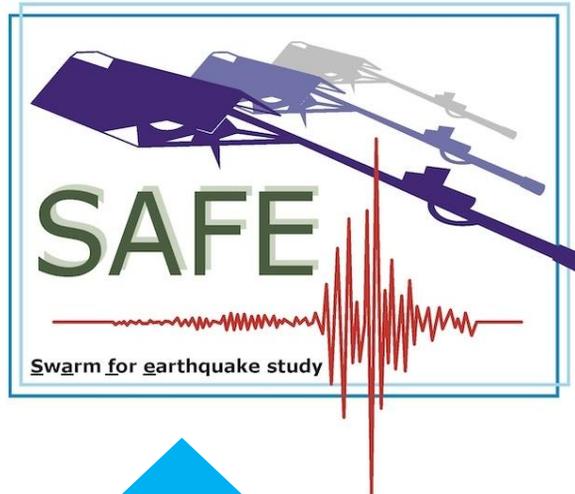
Earthquakes are among the most impressive natural phenomena frequently occurring on the planet.

Despite the amount of studies and data collected in decades, we know much better what happens after the earthquakes than the various and complex phenomena accompanying the preparatory phases before they occur.

Indeed, many case studies show that there might be some relevant geophysical and geochemical "anomalies" before earthquakes, but there is still no pragmatic approach, which may lead to an effective earthquake prediction.

Final conference

The SAFE Consortium will organize a scientific/technical Final Conference at the end of the project (19-20 Oct. 2016).

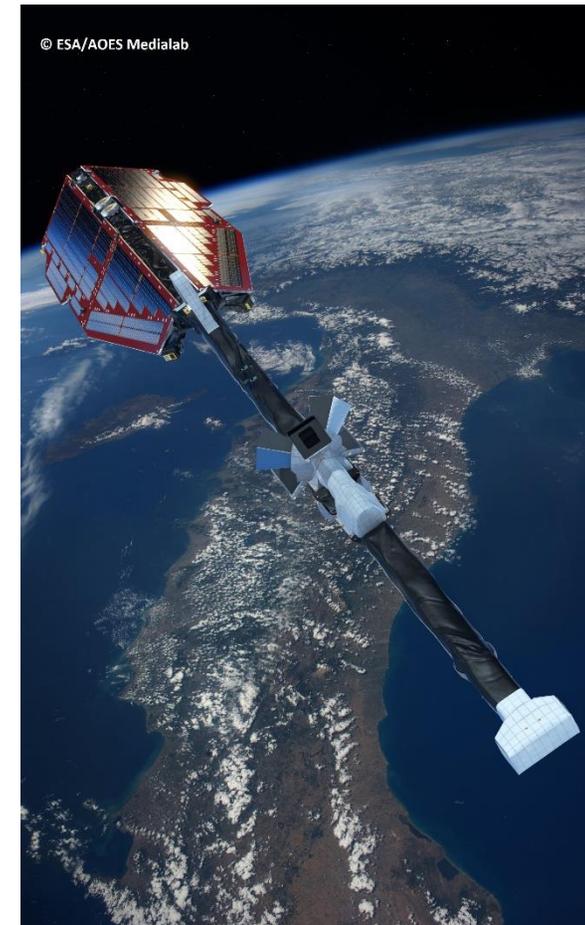


SAFE

SAFE is a European Space Agency (ESA) funded project under the STSE Programme.

<http://www.safe-swarm.ingv.it>

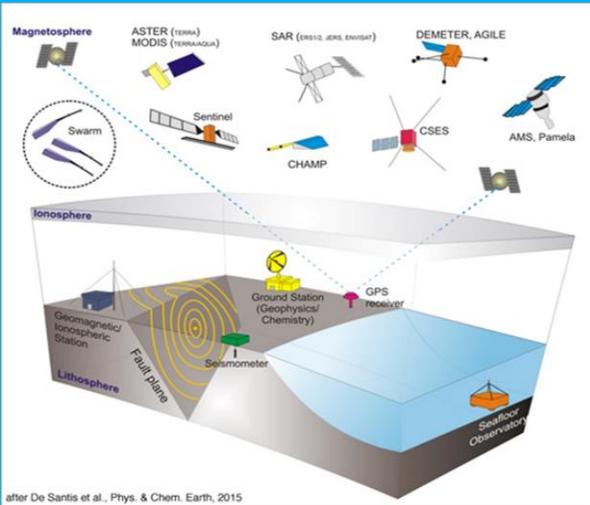
Project organization



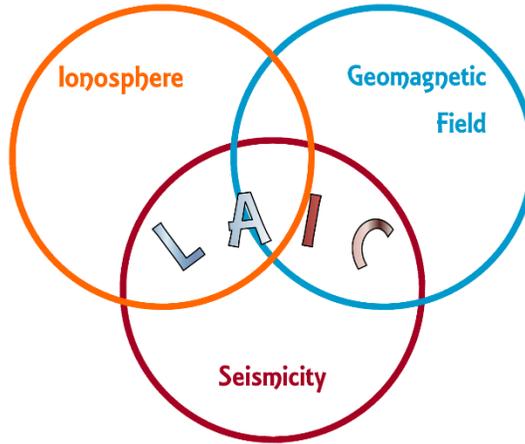
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Swarm for earthquake study

Investigating the phase preceding the great earthquakes



after De Santis et al., Phys. & Chem. Earth, 2015



The challenge

Earth is something more than the simple sum of its constituents: it is an interconnected system of geospheres, each interacting with the others. We cannot study one part alone without considering the rest: geosystemics aims at seeing the whole view of the planet to provide the best understanding of it and its functioning. In this perspective, Swarm satellites offer the unique chance to investigate the physical conditions of the medium in-between the lithosphere and the upper atmosphere. SAFE aims at applying the geosystemics approach to Swarm satellite data and products to study earthquakes: in particular, to explore the possible Lithosphere-Atmosphere and Ionosphere Coupling (LAIC) before large seismic events by the analysis of Swarm satellite data.

The SAFE opportunity

SAFE will open new frontiers in the approach to earthquake study capitalizing what has been already done so far, thanks to the cross-fertilization between different science fields and the multi-data exploitation. SAFE will allow a new way to look at the Swarm satellite data so to stimulate other scientists, not involved directly on this specific mission, to analyse the data outside their specific contexts.

The comprehension of the physics behind the preparation phase of earthquake would be a great advance in earthquake study.

SAFE will cross-check Swarm and seismic, geomagnetic and ionospheric ground-based data to look for anomalous pre-earthquake signals.



Fonte: Sito del Dipartimento della Protezione Civile - Presidenza del Consiglio dei Ministri

Potential stakeholders

Scientific experts dealing with the study of the preparatory phase of large earthquakes will be the principal users of the SAFE achievements. The potentialities of the Project results will be also presented to public and private stakeholders interested in developing new tools to identify any electromagnetic anomalies preceding intense seismic events.

- Academic Entities
- SMEs interested in software development
- SMEs interested in services development
- Public bodies dealing with Civil Protection

Lead scientist and contacts

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The Swarm satellite mission is an ESA mission and the contract of the project SAFE (Contract No. 4000116832/15/NL/MP) is being carried out under the [STSE \(Support To Science Element\)](#) Swarm + Innovation Program and funded by the European Space. Nevertheless, the view expressed herein can in no way be taken to reflect the official opinion of the European Space Agency.