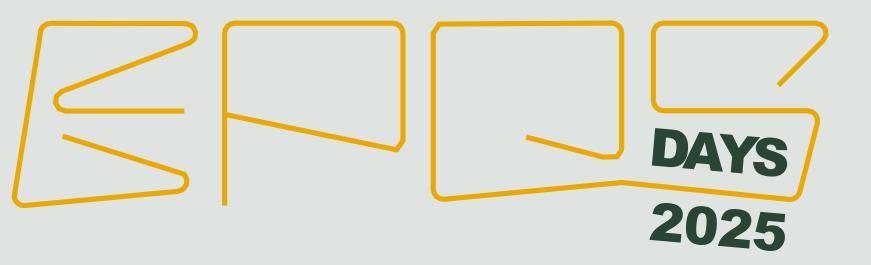


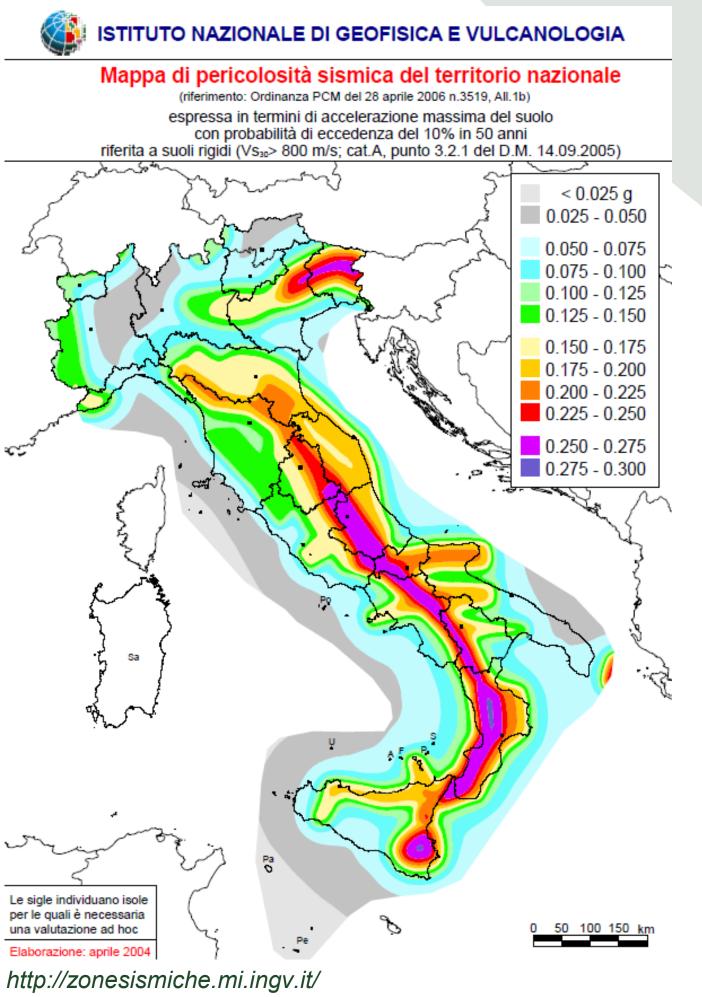
## **Multiscale, Multi-hazard** assessment from field-based and remote sensing data



PhD: Pietro Marincioni, UNICAM. Supervisor: Tiziano Volatili, UNICAM.

#### **AIM OF THE STUDY**

Multi-hazard study and evaluation, STITUTO NAZIONALE DI GEOFISICA E VULCANOLOGIA on the focusing relationship between earthquakes and effects secondary (such as landslides) at different scales. The final aim of this project is the development of techniques that constitute a base, as all-inclusive possible of the elements of as natural risk forecasting, for urban development and prevention; To produce digital and paper maps that are complete, that highlight con-causality relationships in a clear and readable manner and that streamline the amount of material to be used for possible future local Le sigle individuano isole per le quali è necessaria una valutazione ad hoc projects.



# **STUDY FRAMEWORKS**

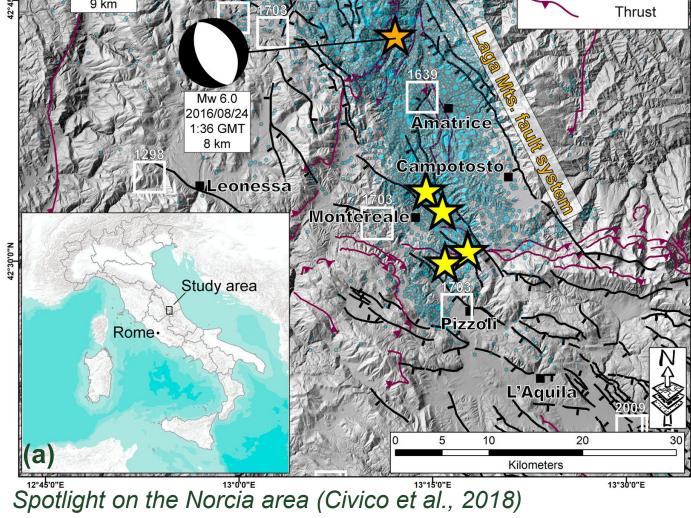
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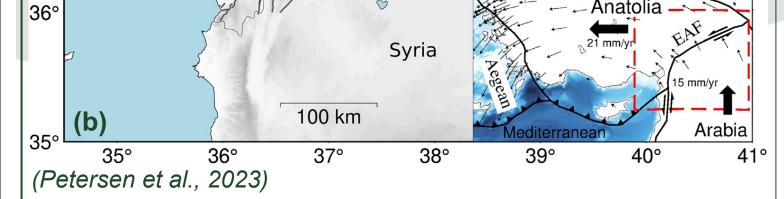
3 - 3.9

- Normal Fault System - CAFS (6.0<M<7.0)

- Transcurrent Fault System - EAFZ





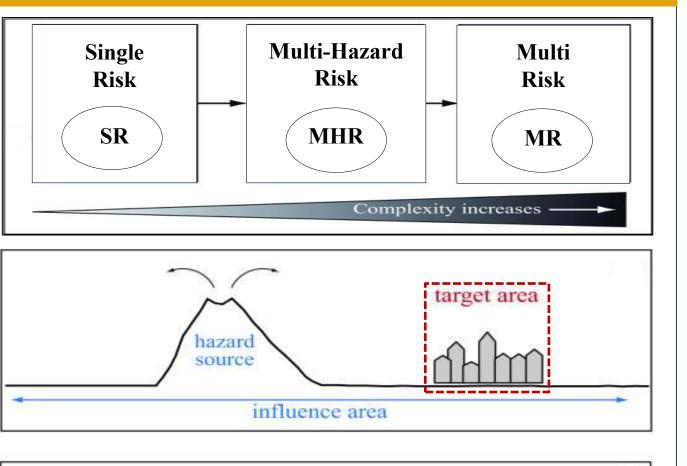


(a) The 2016–2017 central Italy seismic sequence as recorded by the INGV Italian National Seismic Network for the time-period 24 August 2016 through 23 January 2017. Stars indicate the mainshocks of the sequence. The white-dashed box encloses the area of the Main Map. (b) Map of the study region showing fault systems and major earthquakes (orange circles) along the East Anatolian fault zone (EAFZ). The first 2023 earthquake ruptured the main segments of the EAFZ (magenta), the second the Sürgü-Misis fault zone (SMFZ; cyan). Red stars show mainshock epicenters. The 2020 Mw 6.8 Elazığ-Sivrice earthquake (green star) occurred northeast of the 2023 mainshocks.

## MULTI-HAZARD OVERVIEW

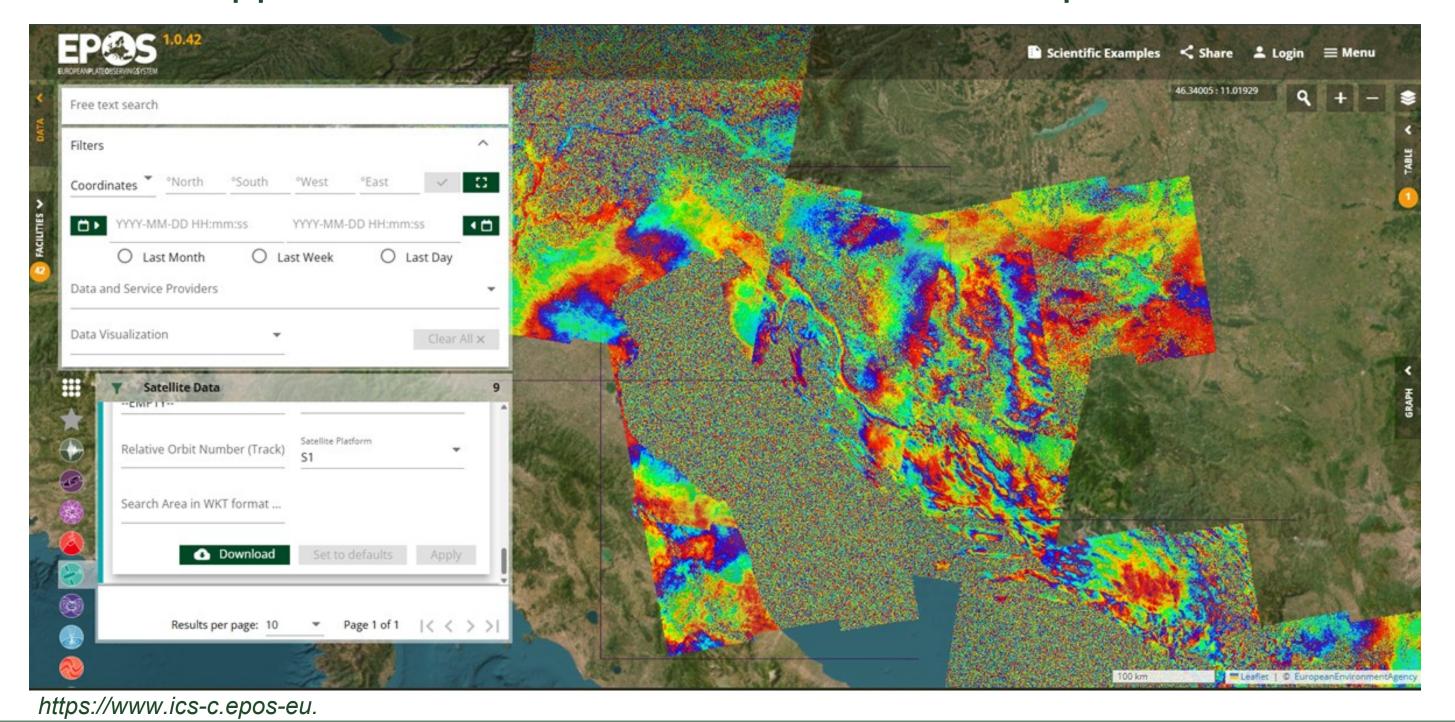
It assesses multiple source hazards interact that may occur and (cascading effect) in a single area. This transition implies a shift from the "hazard-centered" perspective that characterises the single-hazard assessment as a "territorialcentered" one.

Cascading hazards is the additional

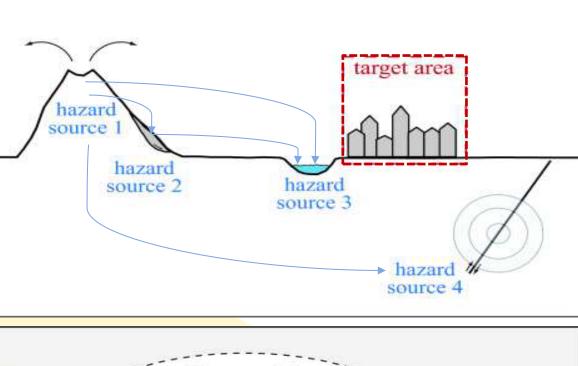


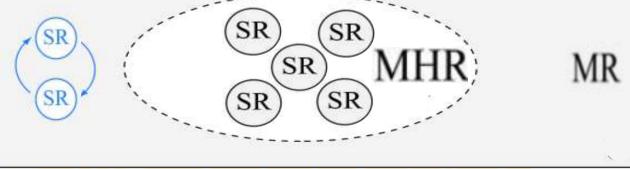
#### **WORK PRINCIPLES**

The initial phase of the study involves the collection and analysis of state-of-the-art data from multiple seismological, satellite, and geological databases. Specifically, the collection of InSAR data is to serve as the primary metadata for the preliminary assessment of earthquakes and landslides. This will be managed with GIS software and other applications that utilise the DInSAR technique.



loss caused by secondary events triggered by a primary event. Cascading effects can result from interactions at the hazard level (a primary event modifies the probability of a secondary event) or at the vulnerability level (an event modifies the response of exposed elements to subsequent hazards).

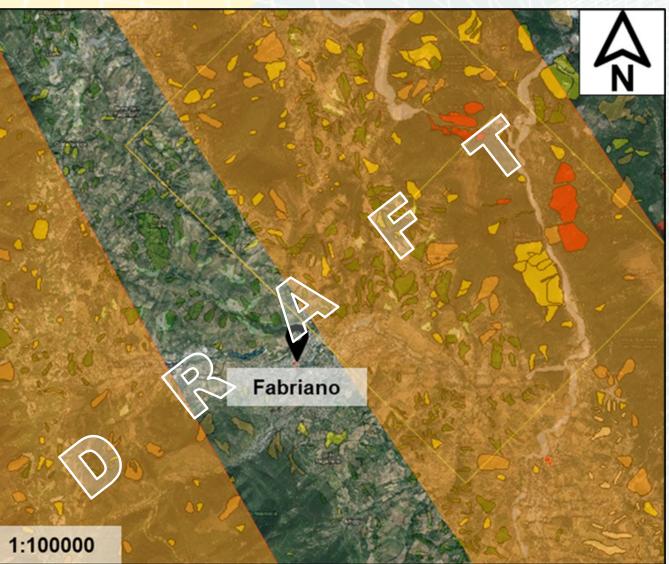




(Gasparini et al., 2014)

## EXPECTED RESULTS AND FURTHER DEVELOPMENT

Following an initial phase of data collection through national and international databases, it is planned to move on to a preliminary modelling phase. The possible mechanisms that may concatenate



#### WHY EPOS?

The EPOS platform, along with its affiliated research centers, has the potential to serve as a valuable resource for this research, given the wide range of data and topics it encompasses.

It is recommended that consideration be given to including even maps or metadata relating to various forms of natural hazards.

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in a multi-hazard analysis will be reconstructed. Subsequently, the input of fieldmeasured data will facilitate the refinement and correction OT potential mechanisms that have Draft of a possible result of the integration of seismic and been generalised in the study. This will enable the establishment of algorithms or procedures for future implementation.

geomorphological data. The seismogenic sources have been taken from the DISS database of the Italian National Geophysical Institute (INGV), and the vector landslides/culminations have been collected through the online viewer of the Italian Ministry of the Environment. - https://diss.ingv.it/mapper/ - http://www.pcn.minambiente.it/viewer/

- http://zonesismiche.mi.ingv.it/

- http://www.pcn.minambiente.it/viewer/

- https://diss.ingv.it/mapper/

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