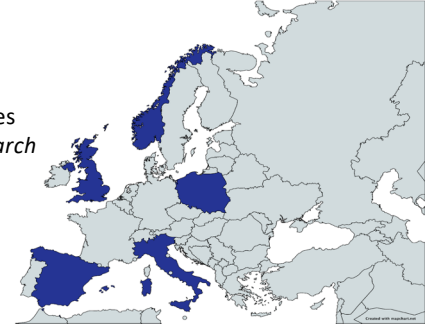




This project has received funding from the European research infrastructures (including e-Infrastructures) under the European Union's Horizon 2020 research and innovation programme under grant agreement No 101017501



## Using the EOSC services in Geohazard research

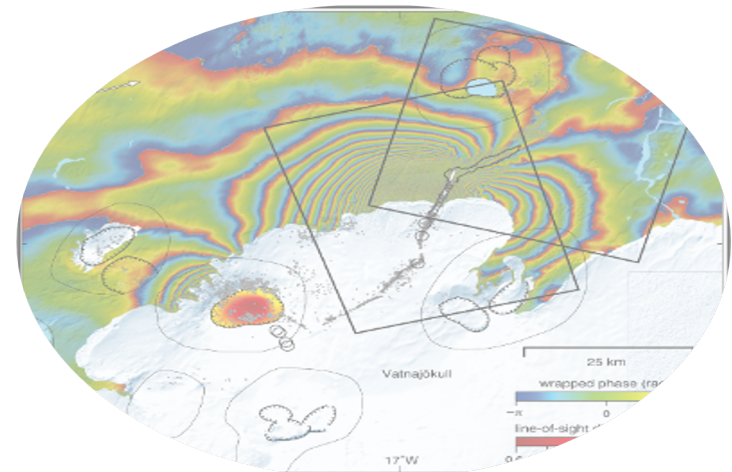
*Manage and preserve the research work, make it available  
and discover new knowledge*



**Elisa Trasatti**

**INGV Team**

Francesca Silverii, Dario Stelitano, Christian Bignami,  
Luca Merucci, Stefano Salvi



# Reliance overview

- RELIANCE is contributing to the EOSC Exchange with a set of services for
  - open, efficient, and cross-disciplinary management of the research lifecycle in support of FAIR and Open Science
- RELIANCE services
  - manage the research lifecycle as a first-class entity
  - enhance the discovery of and access to research data, including large EO datasets (Copernicus)
  - extract relevant knowledge from scientific text

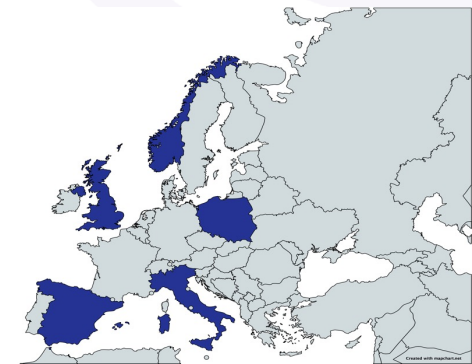
## Reliance Services Research Object Management Platform



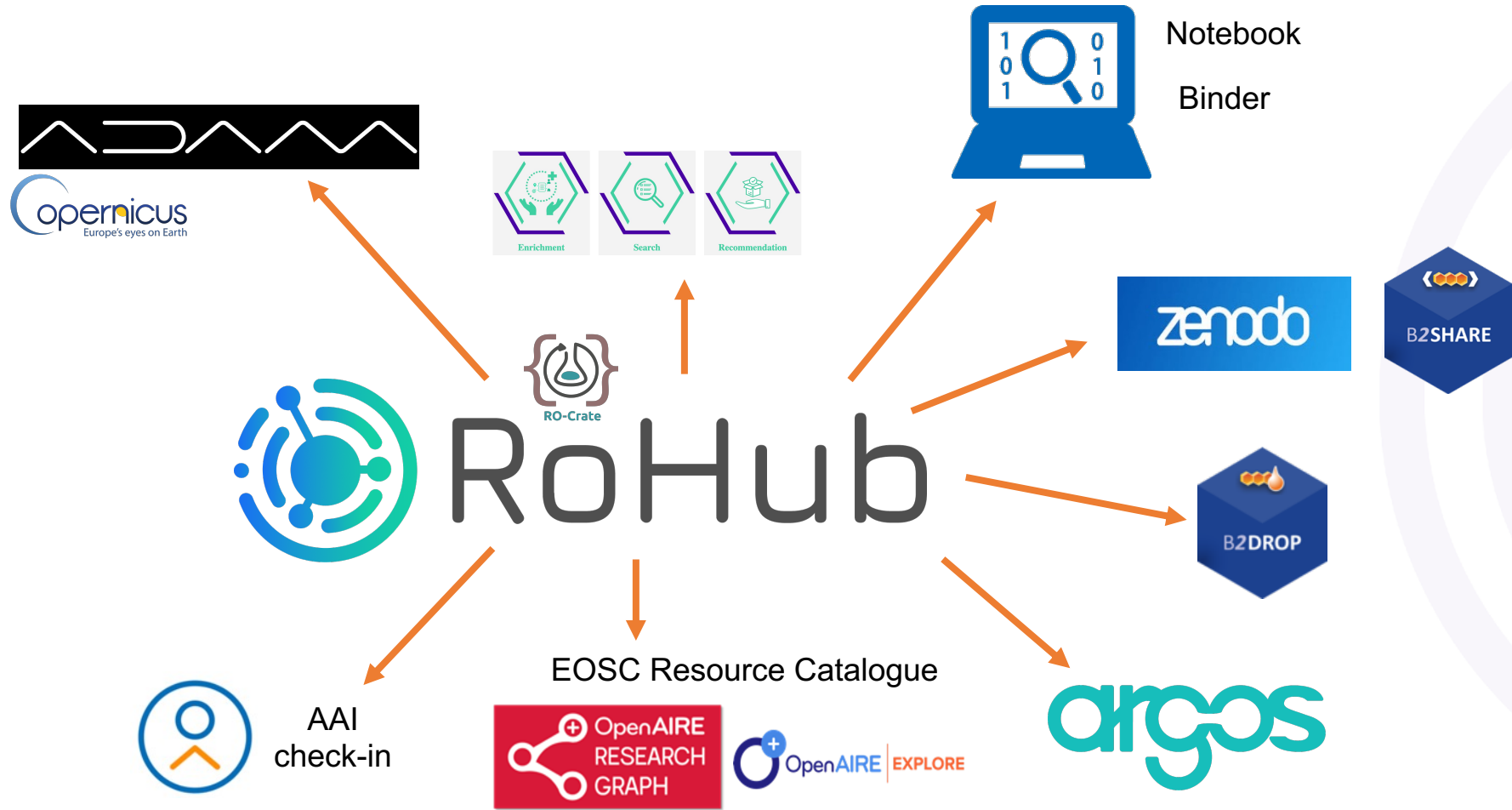
## Advanced Geospatial Data Management Platform



## Text Mining Services

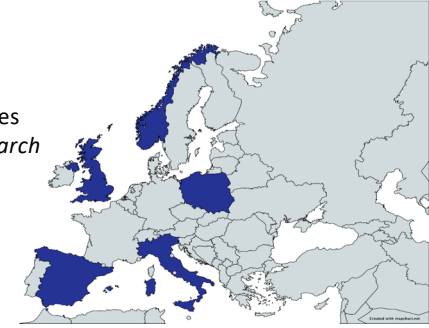


# Exchange services

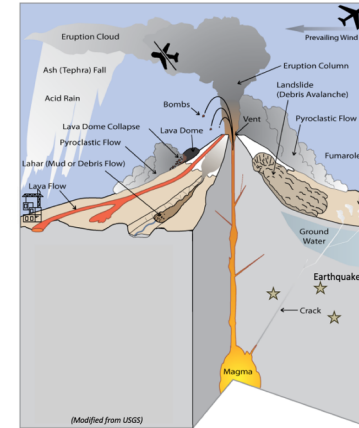
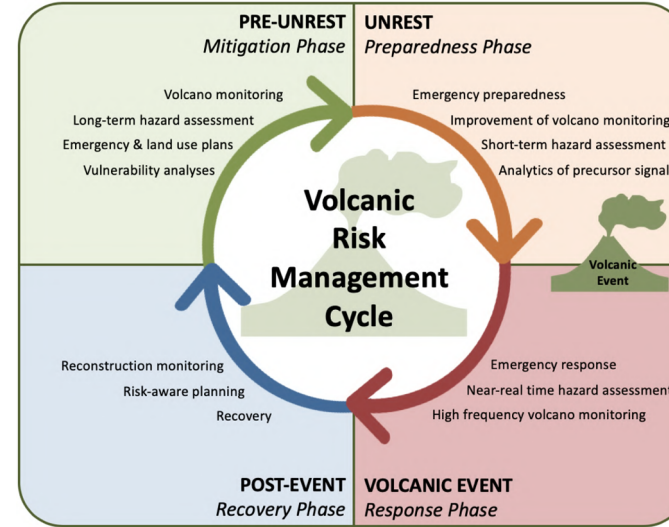




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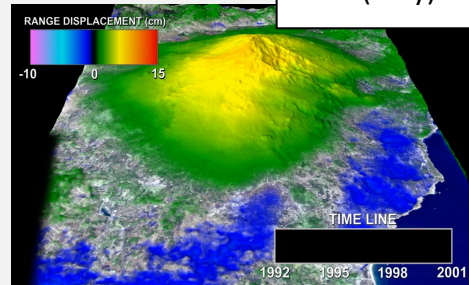
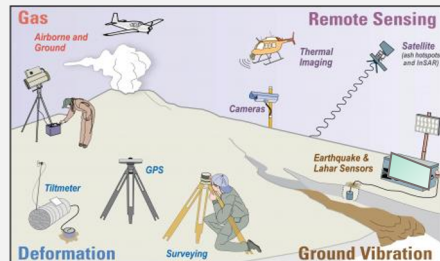


# Geohazard Community



## Mitigation and Preparedness phase

Volcanic hazards definition to prevent consequences of large eruptions

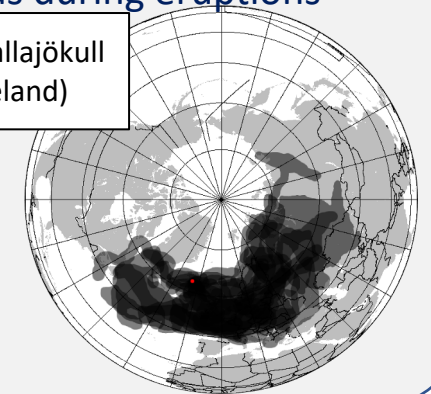


## Emergency phase

High-impact volcanic hazards during eruptions



Eyjafjallajökull (Iceland)





# Overview

Collaborate with other researchers  
<https://reliance.rohub.org/>



**Public** **Manual** **Live** **Data-centric Research Object**

**EARTH SCIENCES**  
**InSAR ground velocity map and deformation time series of Askja Volcano - Iceland**  
 Christian Bignami  
 Contributed by elisa.trasatti@ingv.it  
 Published by Istituto Nazionale di Geofisica e Vulcanologi...

Overview Content Assessment Enrichment Activity Life cycle Relations Impact

This is a preliminary output of multi-temporal InSAR application based on LICSBAS method and Sentinel-1 data

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Christian Bignami  
 Creator

COMPLETENESS: 100%

DISCOVERED METADATA: 0

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**GEOSCIENCES** **EARTH RESOURCES AND REMOTE SENSING**  
**ICELAND**

TOOLBOX

- metadata
  - Reference point for LICSBAS in KML format ( 1Kb )
  - List of the used images ( 3Kb )
  - Jupyter Notebook used to process SAR data based on LICSBAS m... ( 6118Kb )
  - Final connection graph ( 1165Kb )
  - Askja mean ground velocity map from LICSBAS processing ( 48Kb )
- raw data

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# Overview

**Public** **Manual** **Live** **Data-centric Research Object**

## EARTH SCIENCES

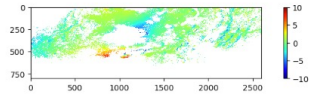
### InSAR ground velocity map and deformation time series of Askja Volcano - Iceland

Christian Bignami

Contributed by elisa.trasatti@ingv.it  
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Creator

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- File size

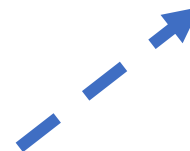
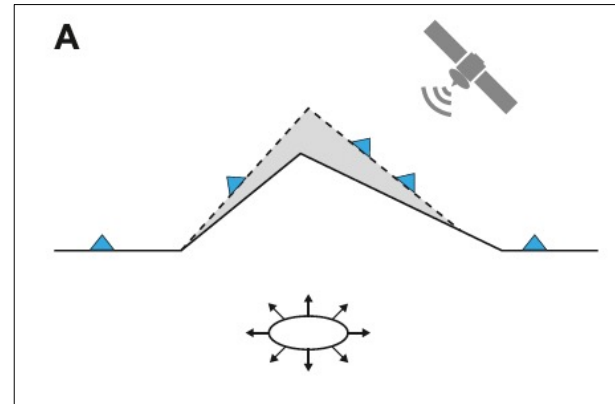
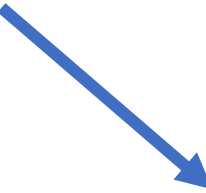
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LOCATION: Area 1

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  - List of the used images (3Kb)
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### Occupants- Behavior and Spatial Implications of Riverfront Residential in Yogyakarta, Indonesia

[Open access](#) 27 May 2011 Type: publication 17 Downloads 13 Views

Author names: Hastuti, Santorini

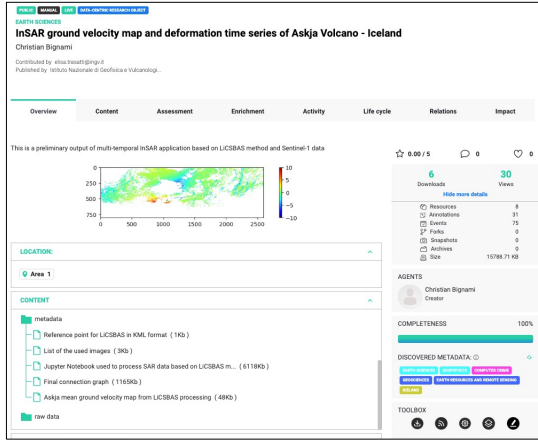
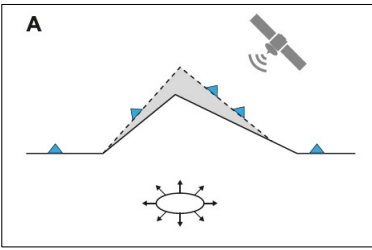
DOI: 10.5281/zenodo.1330671 10.5281/zenodo.1330670

The urbanization phenomenon in Yogyakarta Special Province, Indonesia, encouraged people move to the city for getting jobs in the informal sectors. They live in some temporary houses in the three main riverbanks: Gadjahwong, Code, and Winongo. Triggered...

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# Overview

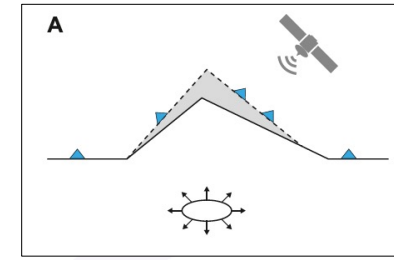
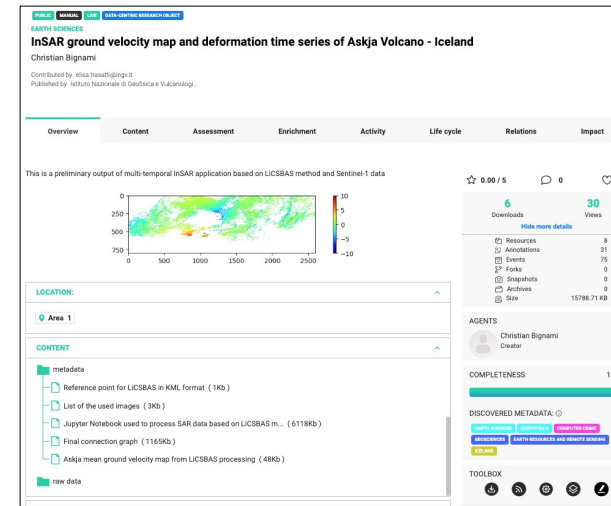
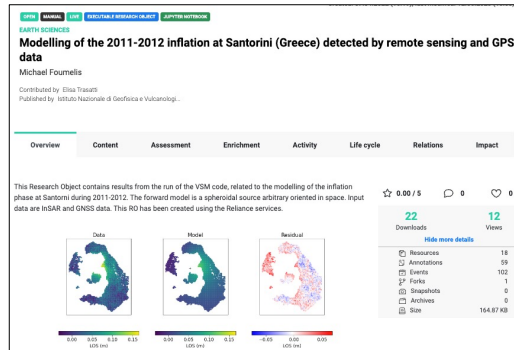



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# Overview







Volcanic and Seismic source Modelling

## Copernicus data analysis and modelling of the volcanic activity at Santorini (Greece) using the RELIANCE Services

This notebook contains results based on the Copernicus ENVISAT data and GNSS data of the unrest phase at Santorini (Greece) during March 2011 - March 2012. It contains details on geodetic data modelling of the volcanic source using the VSM tool. The ENVISAT data are provided in the descending orbit. Cumulative uplift on Nea Kameni reached almost 9 cm Line of Sight at the end of the observation period, while the maximum deformation of 14 cm Line of Sight was observed at Cape Sikiros NNW of Fira.

This notebook demonstrates the use of **EGI Notebook** and the **ROHub APIs** to document a complete scientific process (from input data to results) with the creation of a **Research Object**.

**VSM - Volcanic and Seismic source Modelling** is a Python code to perform inversions of geodetic data.

**Code** <https://github.com/EITras/VSM>

**License** E. Trasatti - INGV (elisa.trasatti@ingv.it), covered by GNU-GPL License <https://github.com/EITras/VSM/blob/main/license.lic>

**References**

Monitoring Santorini volcano (Greece) breathing from space, by M. Fomoules, E. Trasatti, E. Papageorgiou, S. Stramondo, I. Parcharidis  
Geophys. J. Int., 2013. <https://doi.org/10.1093/gji/ggs135>. Full text <https://academic.oup.com/gji/article/193/1/161/747252>

**Install libraries**

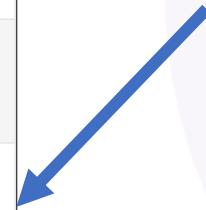
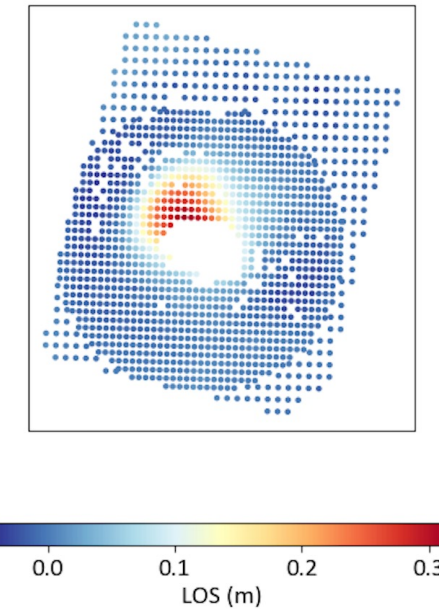
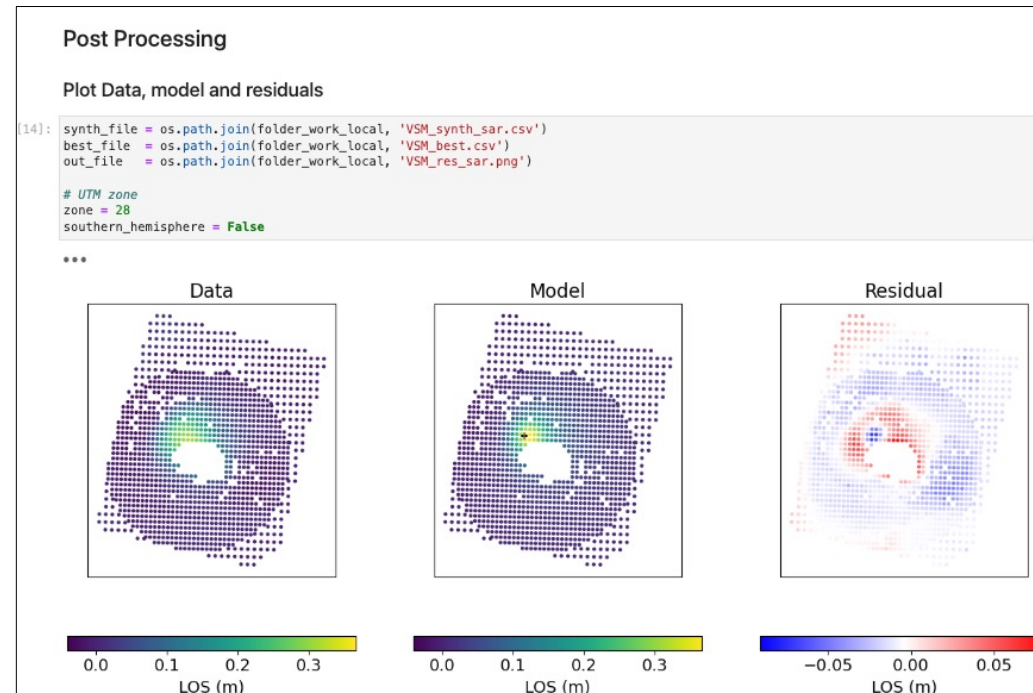
```
import sys
!(sys.executable) -m pip install -r /home/jovyan/datahub/Reliance/Environments/ingv_reqs.txt
```

Requirement already satisfied: astropy in /opt/conda/lib/python3.10/site-packages (from -r /home/jovyan/datahub/Reliance/Environments/ingv\_reqs.txt (line 1)) (5.2.2)

Requirement already satisfied: riowarray in /opt/conda/lib/python3.10/site-packages (from -r /home/jovyan/datahub/Reliance/Environments/ingv\_reqs.txt (line 2)) (0.14.1)

Requirement already satisfied: corner in /opt/conda/lib/python3.10/site-packages (from -r /home/jovyan/datahub/Reliance/Environments/ingv\_reqs.txt (line 3)) (2.2.2)

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*Research Lifecycle Management technologies for  
Earth Science Communities and Copernicus users in EOSC*

# Thanks for your attention

Elisa Trasatti

[elisa.trasatti@ingv.it](mailto:elisa.trasatti@ingv.it)



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