





PEOS – A Digital Platform for Earth Observation and Natural Risk Management: Insights from the MEET Project (PNRR)

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COS - Centro Osservazioni Spaziali della Terra

2020

INGV activates Space Earth Observation Center (COS) in 2020

Main COS prerogatives:

- coordinates INGV's space activities in accordance with the strategy of the INGV Departments (Environment, Earthquakes, Volcanoes);
- encourages the participation of researchers in the development of services and products for research, institutional entities and society;
- represents INGV in national working groups or committees operating in the Space and Aerospace sector in Italy (MUR-Ministry of University and Research, COMINT (interministerial Committee for policies relating to space and aerospace), ASI-Italian Space Agency) and internationally (ESA-European Space Agency, EU-European Union, ICAO-International Civil Aviation Organization etc.)





The MEET Project

MEET is a project coordinated by INGV in collaboration with 8 excellences in Italian research and funded by PNRR

Istituto Nazionale

di Oceanografia e di Geofisica





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Consiglio Nazionale delle Ricerche

CNR-IREA, CNR-IGG



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Goal 1 Updating of observation networks and laboratories

Goal 2 Construction of two natural observatories (Pizzi Deneri and Sos Enattos)

Goal 3 New implementations of scientific instrumentation

Goal 4

Integration of the new resources at an international level, also through the implementation of the Italian Portal for Earth Sciences.





Università di **Genova**



The PEOS Platform (Goal 4)

PEOS: Platform for Earth Observation from Space (WP9)

PEOS is a platform of Earth Observation products, developed for natural hazard assessment and the mitigation of the effect on environment, climate and society





Space geodesy and SAR products





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Optical products



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Space Weather and LAIC



Calibration and Validation products



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The PEOS Platform







Conclusions

- MEET is a challenging Research Infrastructure project with several administrative and technological issues
- PEOS is designed to be a tool to improve quality, level and visibility of space-related products, particularly oriented on mitigation of impact of natural events
- Collaboration from national and international stakeholders is welcome in order to enhance the quality of the results and to be aligned with the requests from the society





Conclusions

Despite huge progresses, several parameters are still retrieved with low accuracy and all parameters need to be validated

Volcanic Products would significantly benefit from data acquired by new ASI-NASA missions as **MAIA**, **LUCE**, **SBG**, ASI **PRISMA** and ESA **EarthCare** both for products improvement and validation.

(Ash Particle Size Distribution, Ash Optical Properties, Ash Concentration, Volcanic Cloud Altitude & Thickness, Ash/SO₂/Ice Mass, Hot Spot Detection)

Space Weather Products would significantly benefit from data and products acquired by new space weather (SWX) satellite missions, such as ESA's **VIGIL**, which will provide novel insight into Solar Wind-Magnetosphere-Ionosphere coupling

Earthquake Products significantly benefit from data with high spatial resolution (2-3 meters) with the current ASI SAR systems (**COSMO-SkyMed** and **COSMO-SkyMed 2nd generation**). COSMO-SkyMed 2nd generation has also the fullpolarimetric mode that could improve meaninfully the development of new methods. About optical data, hyperspectral (damage

mapping) and multispectral (damage corrections, humidity, turbolence) imagery is still underutilized, and the spatial resolution is the main technological limitation.

For **monitoring purposes** it would be neccessary to have data with higher spatial and temporal resolution





Thanks for your



Platform for Earth Observation from Space



Platform for Earth Observation from Space si propone di realizzare una piattaforma comune di dati e prodotti di osservazione della Terra dallo spazio, uno sforzo importante e impegnativo in una delle discipline scientifiche più promettenti per la valutazione e la mitigazione dei rischi

PEOS è il Work Package 9 del MEET, progetto coordinato dall'INGV che permetterà di rinnovare, implementare e in alcuni casi creare nodi di monitoraggio per costituire reti di infrastrutture di ricerca adatte al futuro, in linea con gli standard europei e internazionali.



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