OUR PLANET FROM SPACE

COS CENTRO OSSERVAZIONI SPAZIALI DELLA TERRA

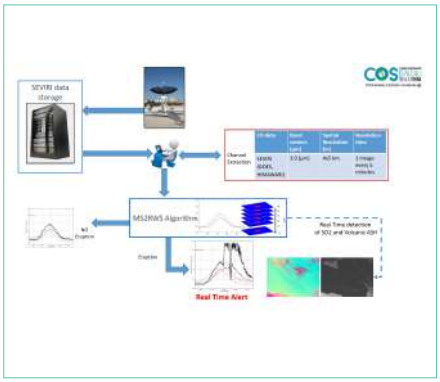
The INGV Earth Space Observation Center (COS) has been established in 2020 with the aim of linking and planning the activities of the Institute in the fields of space and aerospace, as well as to encourage the participation of researchers in designing and implementing services and products for scientific research and applications for other institutions and the society. In this area, INGV plays a particularly suitable role for cooperation with industrial and Institutional partners by providing a series of complementary activities.

graphic design Laboratorio Grafica e Immagini | INGV

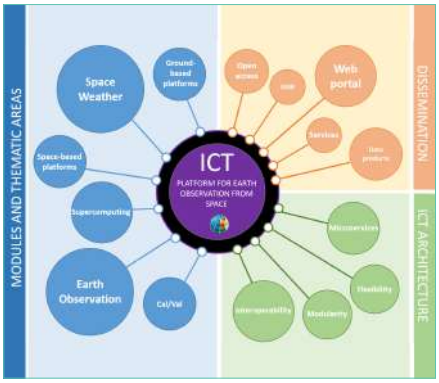
ISTITUTO NAZIONALE DI GEOFISICA E VULCANOLOGIA

Since the late 90s, INGV effectively contributes to the development of space technologies both in the Earth Observation sector (including all available space systems Optical, SAR etc.) and in the Global Navigation Satellite Systems (GNSS) sector allowing the INGV to play a role of excellence both for the study of satellite missions and for the development and supply of operational products for end-users. Actually COS coordinates the INGV activities in the space sector within the National Recovery and Resilience Plan (PNRR) both to strengthen the COS ICT infrastructure and to propose new research and technical developments for future space systems and services. COS also represents INGV at the Copernicus National User Forum by supporting the identification of user requirements to develop next generation of products and services based on EO data.

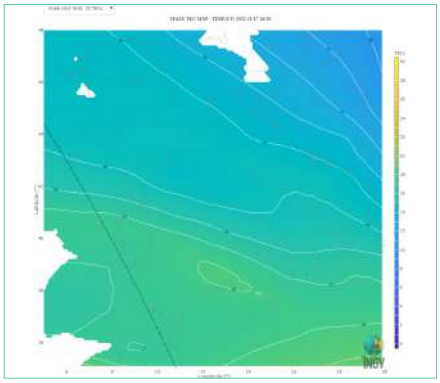
EO SECTOR: INGV competences deal with the acquisition, processing, analysis of satellite data (SAR and Optical) and their assimilation into geophysical models to support seismic, volcanic and environmental monitoring and surveillance services. INGV has also competence in acquiring airborne data including UAVs both for local monitoring purposes and to test new sensors which could be selected for future space missions. INGV ground based remote sensing systems are used to calibrate and validate satellite products. INGV multi-mission receiving systems provide data and services in near real time to monitor volcanic activities.
The INGV has developed since 2004,satellite data acquisition systems, which provide services in near real time, the systems are maintained and developed in relation to specific requests of Italian Civil Protection and other Operational Institutions and by means of scientific and technical activities within international initiatives and projects. INGV scientific expertise is also offered to support new space missions (SAR and Optics), as well as scientific studies are proposed by national and international Space Agencies, industries and other research bodies.



Algorithm for volcanic alert.



Concept of the "Platform for Earth Observation from Space".


Ionospheric weather over Italy.

SPACE WEATHER SECTOR: INGV carried out an important activity within the international consortium PECASUS (www.pecasus.eu) of which INGV has been a founding partner since 2018. PECASUS, designated by the International Civil Aviation Organization (ICAO), is one of the centers of excellence in charge of providing the surveillance services of space weather conditions required by the stringent civil aviation certifications and represents a virtuous example of how the coordination of technological development activities can be transformed into operational procedures of interest for the space and aerospace "stakeholders". INGV guarantees the supply of surveillance products round the clock, through the usability of processed data from its ionospheric and geomagnetic observatories, and by developing specific surveillance products as by recommendation of ICAO, with particular regard to Galileo, navigation and HF communication.

All the space-related INGV flyers are here!

CURRENT AND FUTURE CHALLENGES:

- very large development of new space missions (imaging,non-imaging)
- 50 years of earth observation data: new approach for data archive, data access, data mining
- better integration with ground networks
- improve the use of space technolgy and data to better understand earth phenomena including atmosphere-lithosphere and sun-earth interactions