Space weather in Italy

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ISTITUTO NAZIONALE
DI GEOFISICA E VULCANOLOGIA

SWICo
Space Weather Italian Community

Italy's national space weather group

What it is

SWICo brings together academics, researchers and technologists from universities and research institutes, agencies and industries, across all the disciplines of space weather.

Collaboration, training and knowledge transfer across space weather —
from the Sun to the Earth.

Purpose

Two domains

Research

Advancing science and technology across space weather, from the underlying physics to applications.

Training

Education, specialisation and professional qualification in the fields the group covers.

From research to users

01 Scientific collaboration and joint projects, in Italy and abroad

02 Doctoral programmes, advanced courses and seminars

03 Shared instruments and services: observing networks, forecasting

04 Knowledge transfer to users, congresses and public outreach

The fields

From the Sun to the ground

- Solar Physics
- Interplanetary Space Physics
- Earth Magnetosphere Physics
- Upper Atmosphere
- Geomagnetism
- Planetary Space Weather
- Technological and Biological Impacts
- Instrumentation

The numbers

The community today

2014

year of foundation

150+

members across academia, research and industry

44

member institutions across Italy

20

cities, from Trento to Catania

Across the country

Where the community works

From solar telescopes to radio telescopes, from geomagnetic and ionospheric observatories to modelling groups.

Member institutions as listed on swico.it. National bodies with several sites are shown at each site that takes part.



The sites

44 institutions, 20 cities

PERUGIA
University of Perugia

ROME
ASI
CNR-ISC
INAF-IAPS
INAF Rome Observatory
INFN-Roma2
INGV
Air Force General Staff
NEXT
Sapienza University
Serco
Telespazio
University of Tor Vergata

RENDE
University of Calabria

PADUA
CNR-IFN
University of Padua

TURIN
ALTEC
INAF Observatory
Politecnico di Torino

PISA
INFN
University of Pisa

MATERA
e-GEOS

CATANIA
INAF Observatory
University of Catania

TRIESTE
ICTP
INAF Observatory

FLORENCE
CNR-ISC
University of Florence

URBINO
University of Urbino

FRASCATI
INFN-LNF

BARI
CNR-ISTP
Planetek Italia
University of Bari

CAGLIARI
INAF Observatory

TRENTO
FBK
University of Trento

MILAN
CNR-IFN
INAF-IASF

GENOA
CNR-SPIN
University of Genoa

L'AQUILA
INGV
University of L'Aquila

NAPLES
INAF Capodimonte

PALERMO
University of Palermo

What it does

The life of the community

01 European Space Weather Week 2026 — this week, in Florence

02 Coming in 2027: school “Operational Space Weather: Understanding, Monitoring, Forecasting and Impacts”, L'Aquila

03 School on heliospheric plasma physics in the multipoint-mission era, L'Aquila, May 2026

04 National congresses hosted by the Italian Space Agency, 2022 and 2024

05 The Franco Mariani Prize for young graduates in space weather

06 SoHe workshops of the solar and heliospheric community, fifth edition 2025

07 International schools of space science of CARA — Consorzio Area di Ricerca in Astrogeofisica, L'Aquila

08 Frontiers in Italian Studies on Space Weather — Rendiconti Lincei

09 Survey of Italian modelling capabilities, delivered to ESA in December 2025

SWICo
Space Weather Italian Community

www.swico.it

Scan to visit

Visit the SWICo stand at ESWW2026!

Come and meet us to learn more about our activities and explore the information and materials available.

The Space Weather at INGV

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INGV is well known in Italy for seismic and volcanic monitoring, carried out in cooperation with the Civil Protection Department.

Its activities also include environmental research.

INGV has a long tradition of geomagnetic and ionospheric research and monitoring, which has led to strong expertise in Space Weather.

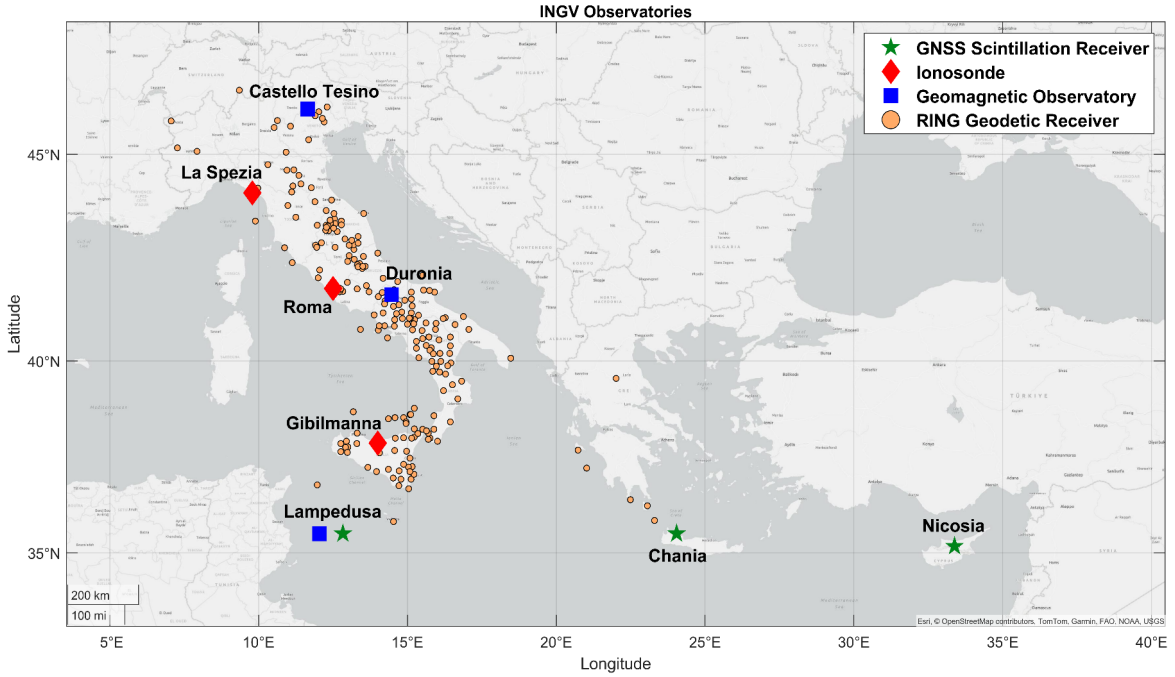
INGV Space Weather monitoring

Ionospheric monitoring

Networks of ionosondes and GNSS receivers track ionospheric disturbances and scintillations.
They ensure continuous, near-real-time monitoring of ionospheric conditions, allowing to identify phenomena that can affect HF radio communications, positioning based on GNSS systems and other global satellite constellations.

Geomagnetic monitoring

Observatories in Italy and Antarctica monitor magnetic field variations linked to solar activity, These measurements ensure continuous, near-real-time monitoring of magnetospheric disturbances associated with solar activity and represent a fundamental component in characterising Space Weather conditions.



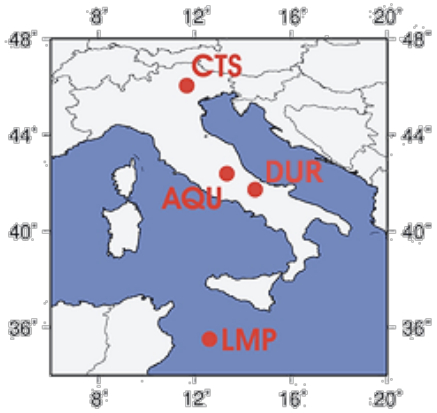
INGV observatories and measuring stations which acquire data useful for Space Weather purposes in the Mediterranean area.

The Italian Geomagnetic Observatories in Italy and in Antarctica

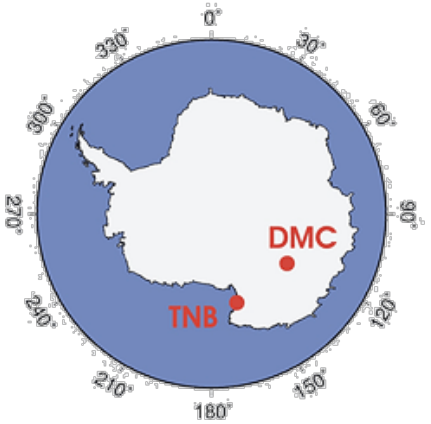




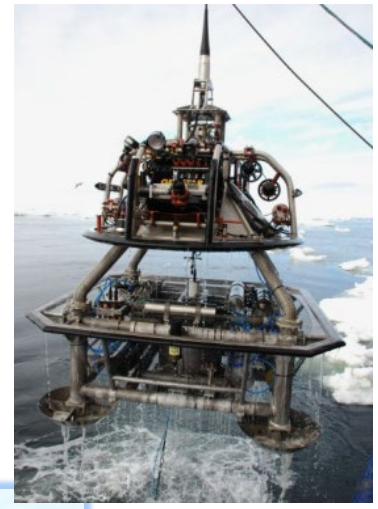






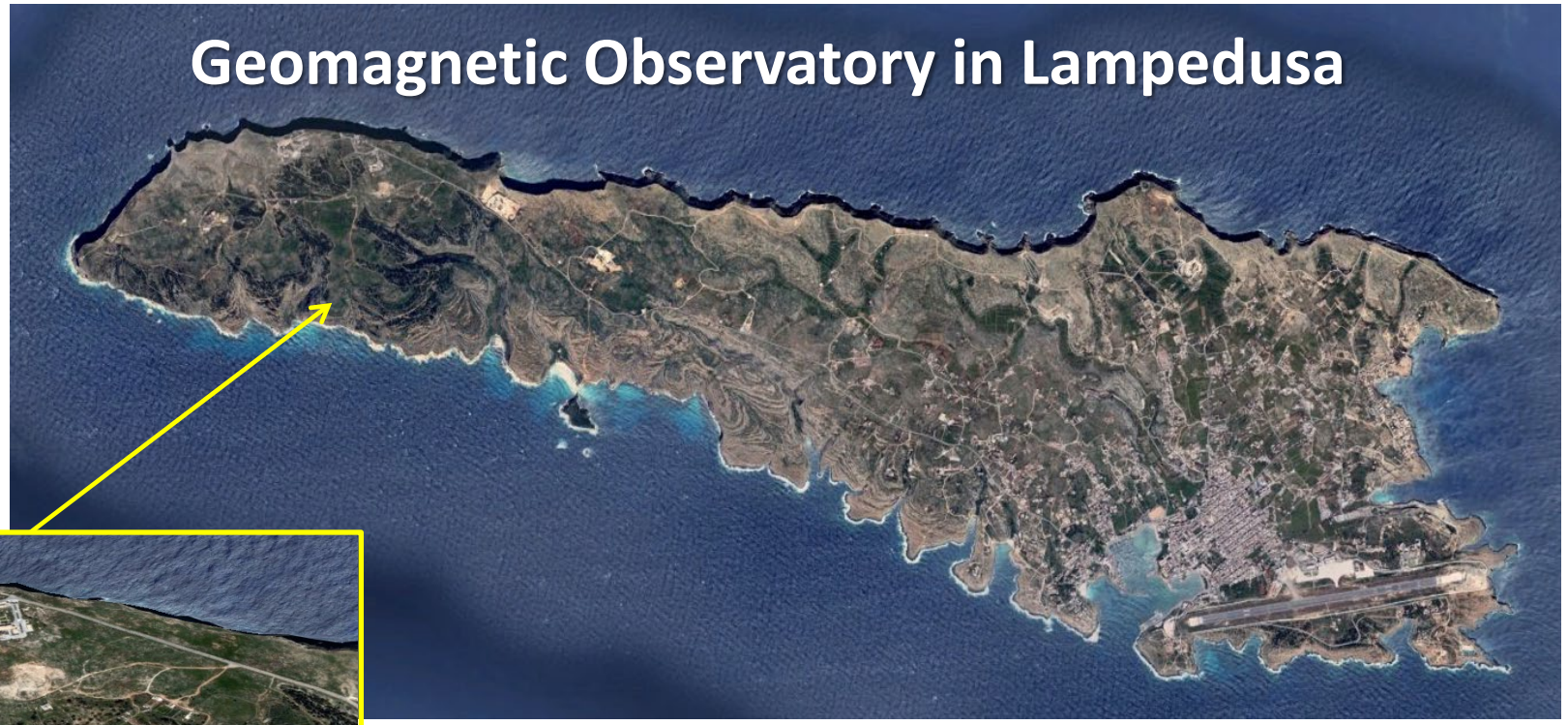








Geomagnetic Observatory in Lampedusa









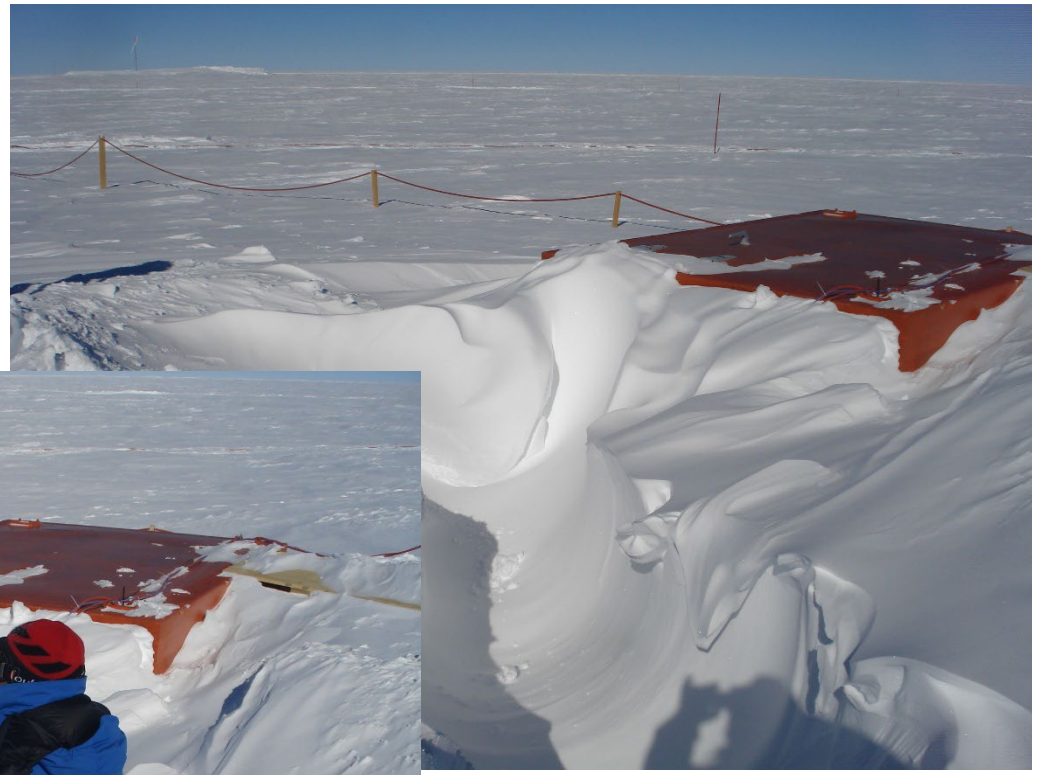


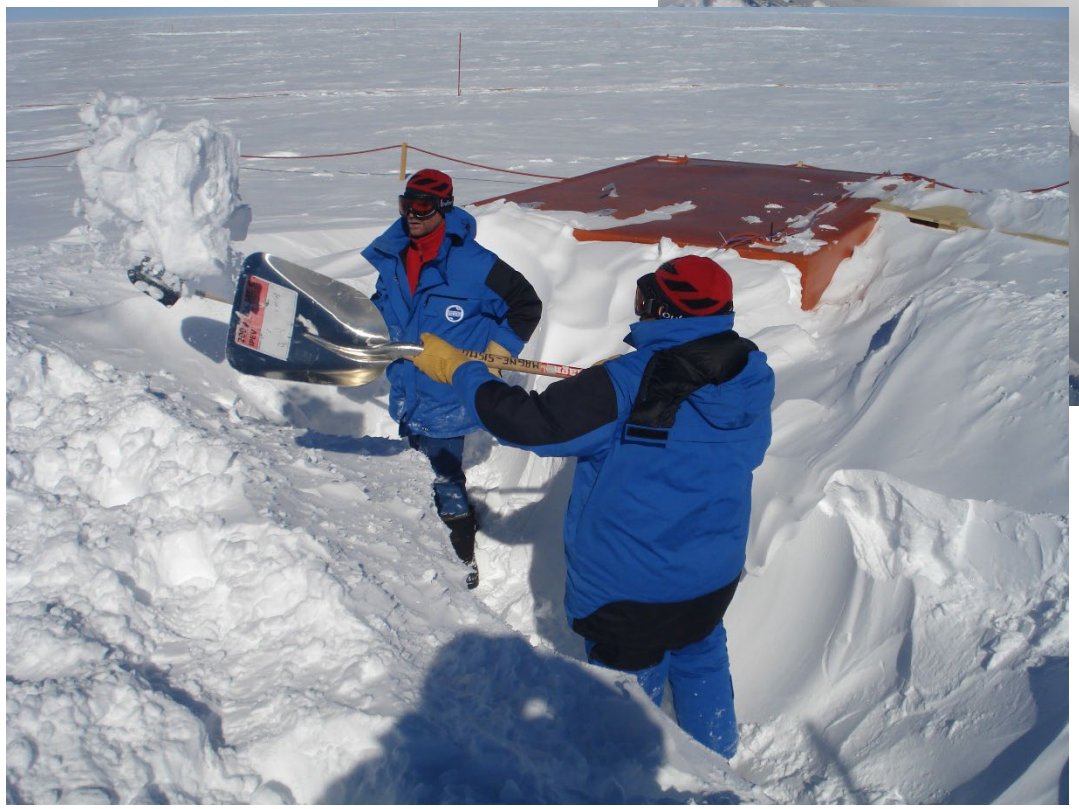


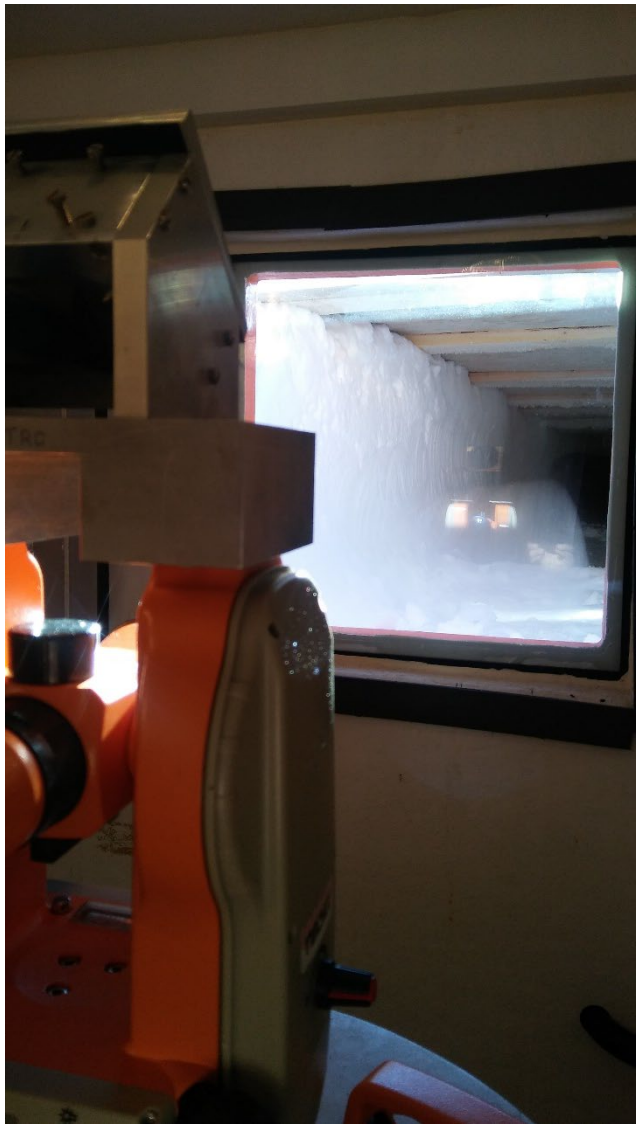




A pillar rooted on a floating basement (DMC, Concordia – Antarctica)







INGV Space Weather services and products

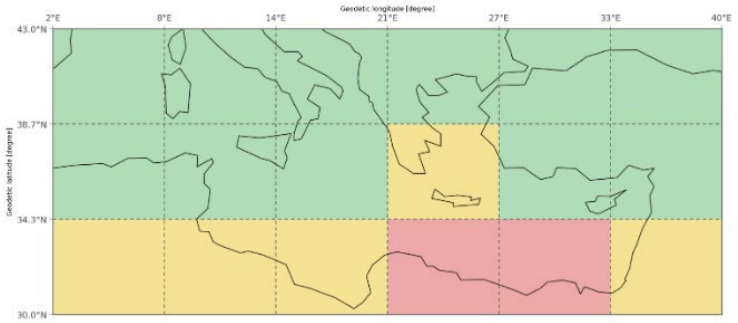


Pecasus.eu

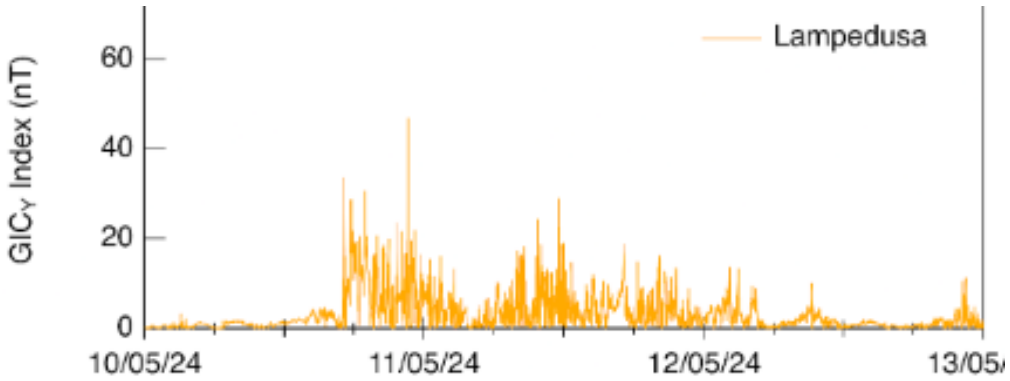
INGV's role in the global service for aviation:
Member of the **PECASUS consortium**, which provides space weather advisories for civil aviation as part of the global service coordinated by the **International Civil Aviation Organization (ICAO)**.
INGV's contribution: ionospheric data and products for HF communications and GNSS signals.

Participation in the Space Weather Service Network (SWESNET), a European network providing Space Weather information and services to European Space Agency (ESA).

Examples:



Alert for GNSS signals disturbances



Induced electric currents over Italian territory

INGV Space Weather services and products

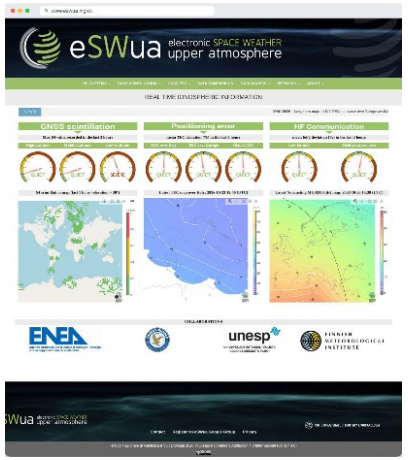
Space Weather Portals

Open access to data and products on the ionosphere, geomagnetism and satellite navigation

eSWua

Open ionospheric data for satellite navigation and HF radio communications, with real-time data access

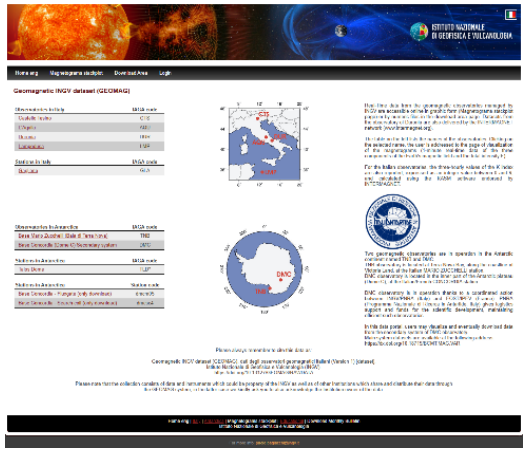
eswua.ingv.it



GeoMag

Geomagnetic data from observatories in Italy and Antarctica

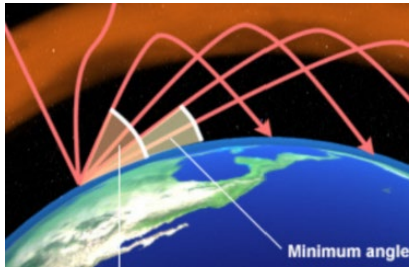
geomag.rm.ingv.it



IonoNET

A network of oblique ionosondes for HF radio links

iononet.ingv.it



PAGINA

Pan-Arctic GNSS signal monitoring: over 30 high-rate monitoring stations

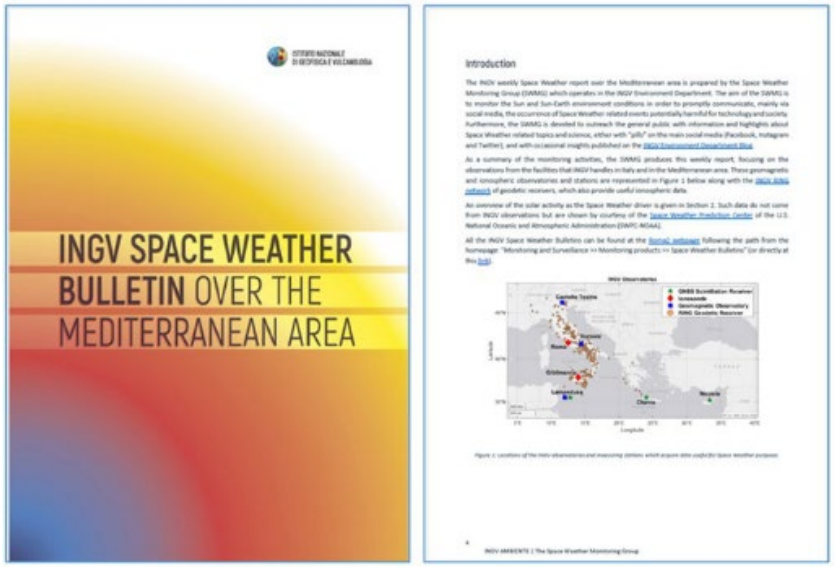
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INGV Space Weather services and products

Space Weather Bulletin

INGV researchers compile and interpret the week's observations to understand space weather events and their potential impacts on services.



doi.org/10.13127/swx/bulletin

You can also visit our poster, **"Bridging Science and Society: The INGV Space Weather Bulletin for the Mediterranean Area as an Educational and Outreach Tool"**, in **session OTH4** at ESWW2026.

Join us in L'Aquila (Italy) in May 2027 for a Space Weather school.

From physical foundations to operational forecasting, with lectures and hands-on sessions.

We look forward to welcoming you!

Explore the previous edition of the school (2024): www.astrogeofisica.it/oswf

CONSORZIO AREA DI RICERCA IN ASTROGEOFISICA

UNIVERSITA' DEGLI STUDI DELL'AQUILA

DSFC

ISTITUTO NAZIONALE DI GEOFISICA E VULCANOLOGIA

INAF ISTITUTO NAZIONALE DI ASTROFISICA

INTERNATIONAL SCHOOL ON

OPERATIONAL SPACE WEATHER: UNDERSTANDING, MONITORING, FORECASTING AND IMPACTS

10-14 May 2027

L'Aquila-ITALY

SCHOOL RATIONALE

This school invites participants to explore Space Weather from its physical foundations to operational forecasting and societal applications. Spanning the solar–heliospheric, magnetospheric and ionospheric domains, the programme connects scientific understanding of the Sun–Earth environment with the protection of space assets and critical services, economic risk reduction and emerging opportunities in the Space Economy. Exchanges between research and operations (R2O and O2R) will provide a unifying perspective throughout the school.

Lectures will be paired with hands-on laboratory sessions and practical applications, enabling participants to connect physical processes with observations and forecasting challenges. Topics will include solar radio emissions and their links to eruptive phenomena, exploring how measurements from new instruments can support Space Weather monitoring and forecasting. [Career-oriented sessions will address the skills sought by research institutions, monitoring and forecasting centres, and industry, alongside effective approaches to education and science communication].

The school welcomes PhD students and early-career researchers in space physics, planetary sciences, aerospace engineering and related disciplines, as well as early-career professionals from monitoring agencies and relevant industries. It offers an opportunity to develop practical skills, exchange ideas and discover pathways into a field where scientific advances meet pressing societal needs.



GENERAL INFORMATION

The School will be held in L'Aquila at the Università degli Studi dell'Aquila.
Applications, including a brief curriculum vitae, are due before 21 February, 2027.
See the website https://www.astrogeofisica.it/ for details.

The fee of 1000 Euro **includes board and lodging** in shared double rooms at nearby hotels and B&Bs. Some financial support will be available for a limited number of students on request.
Applications will be evaluated by the Board of Directors of the School. All applicants will be notified by e-mail.

BOARD OF DIRECTORS

Domenico Di Mauro (Istituto Nazionale di Geofisica e Vulcanologia, Italy) domenico.dimauro@ingv.it
Stefania Lepidi (Istituto Nazionale di Geofisica e Vulcanologia, Italy) stefania.lepidi@ingv.it
Yana Maneva (Royal Observatory of Belgium) yana.maneva@oma.be (TBC)
Mauro Messerotti (Istituto Nazionale di AstroFisica, Italy) mauro.messerotti@inaf.it

LOCAL ORGANIZING COMMITTEE

Giulia D'Angelo (University of L'Aquila, giulia.dangelo4@univaq.it)
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Anna Rita Leone (School secretariat); **Mirko Piersanti** (University of L'Aquila, mirko.piersanti@univaq.it)

SCHOOL SECRETARIAT c/o Dipartimento di Scienze Fisiche e Chimiche, Università L'Aquila (Italy). **Email:** info@astrogeofisica.it

The School is primarily supported by: Consorzio Area di Ricerca in Astrogeofisica, Università degli Studi dell'Aquila, Istituto Nazionale di Geofisica e Vulcanologia (INGV), Istituto Nazionale di AstroFisica (INAF),

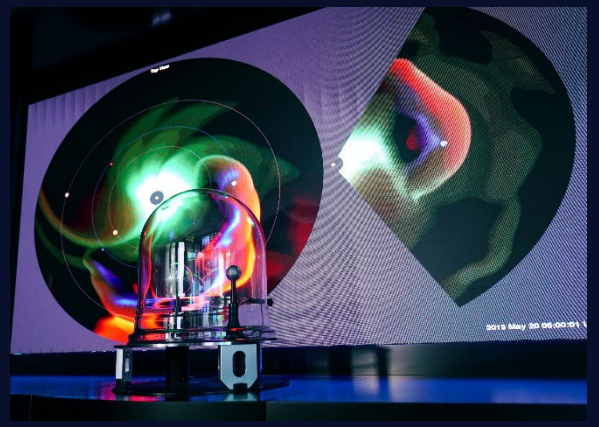
INGV

STORM SPACE WEATHER **MONITORING ROOM**

The newly opened monitoring room





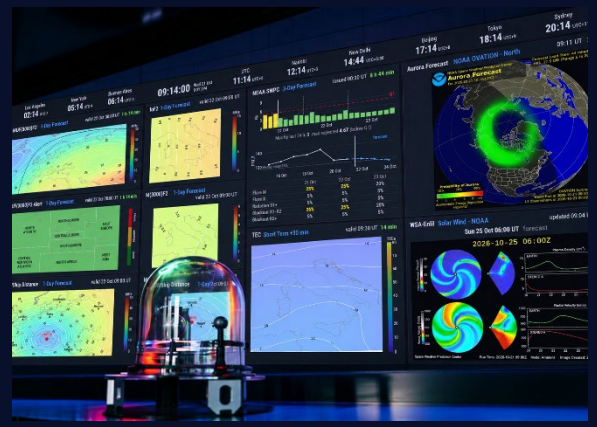








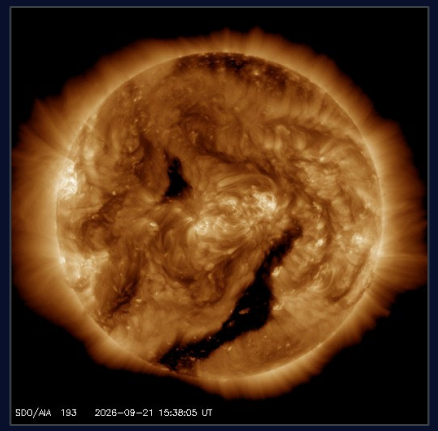




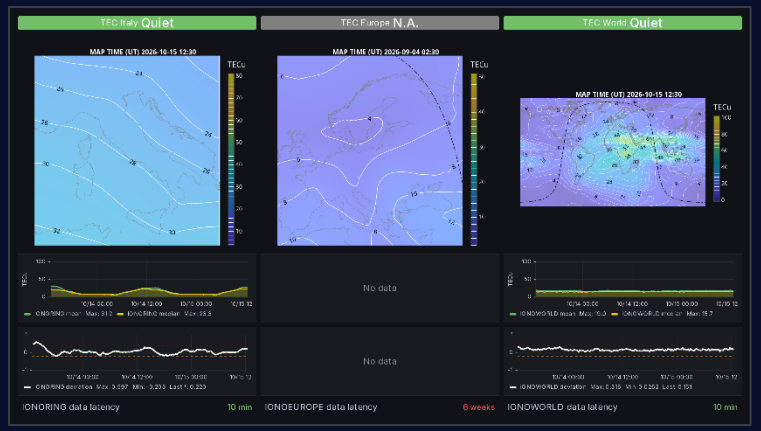
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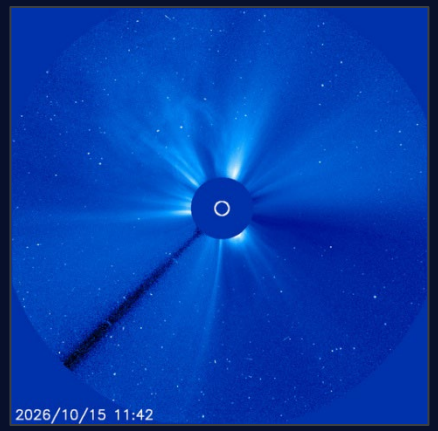
STORM SPACE WEATHER **MONITORING ROOM**

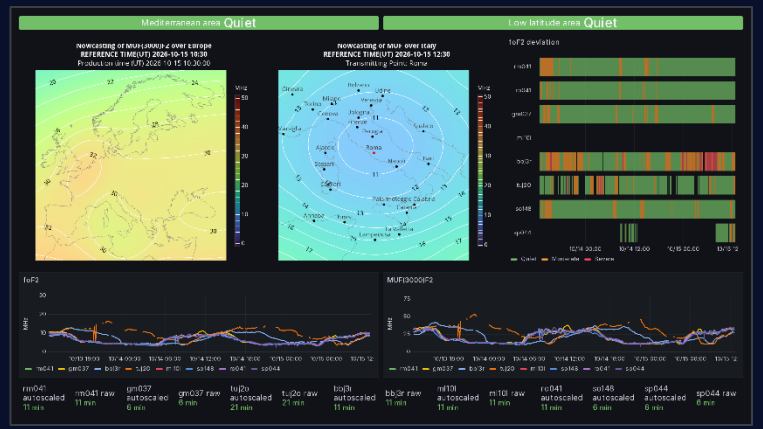
In real time: the Sun, the Earth's Magnetic Field and the Ionosfere

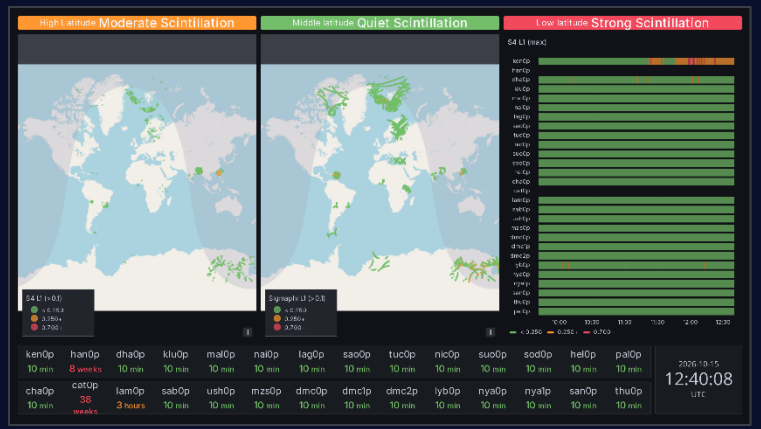












THANK YOU for your ATTENTION

Questions? Before the next solar storm arrives...



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