



Training event “Atmospheric Remote Sensing observation: labs maintenance and methods” Introduction and logistics








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IR0000032 – ITINERIS, Italian Integrated Environmental Research Infrastructures System
(D.D. n. 130/2022 - CUP B53C22002150006) Funded by EU - Next Generation EU PNRR-
Mission 4 “Education and Research” - Component 2: “From research to business” - Investment
3.1: “Fund for the realisation of an integrated system of research and innovation infrastructures”



ITINERIS - Italian Integrated Environmental Research Infrastructures System

- **7 Partners**       
- **22 Research Infrastructures working in the domain environmental and included in the PNIR (National programme of research infrastructure)**
- **Budget: 155,2 ML Euro**
- **Period: 1 November 2022 – May 2025 (shifted to October 2025) + 10 years of operativity**

PIANO NAZIONALE DI RIPRESA E RESILIENZA (PNRR) MISSIONE 4, COMPONENTE 2, INVESTIMENTO 3.1 “Fondo per la realizzazione di un sistema integrato di infrastrutture di ricerca e innovazione”, Project code IR0000032

ITINERIS objective



❑ Create the national RI hub for scientific research in the environmental field

- providing access to digital services, data and resources
- offering support to the country to address environmental problems

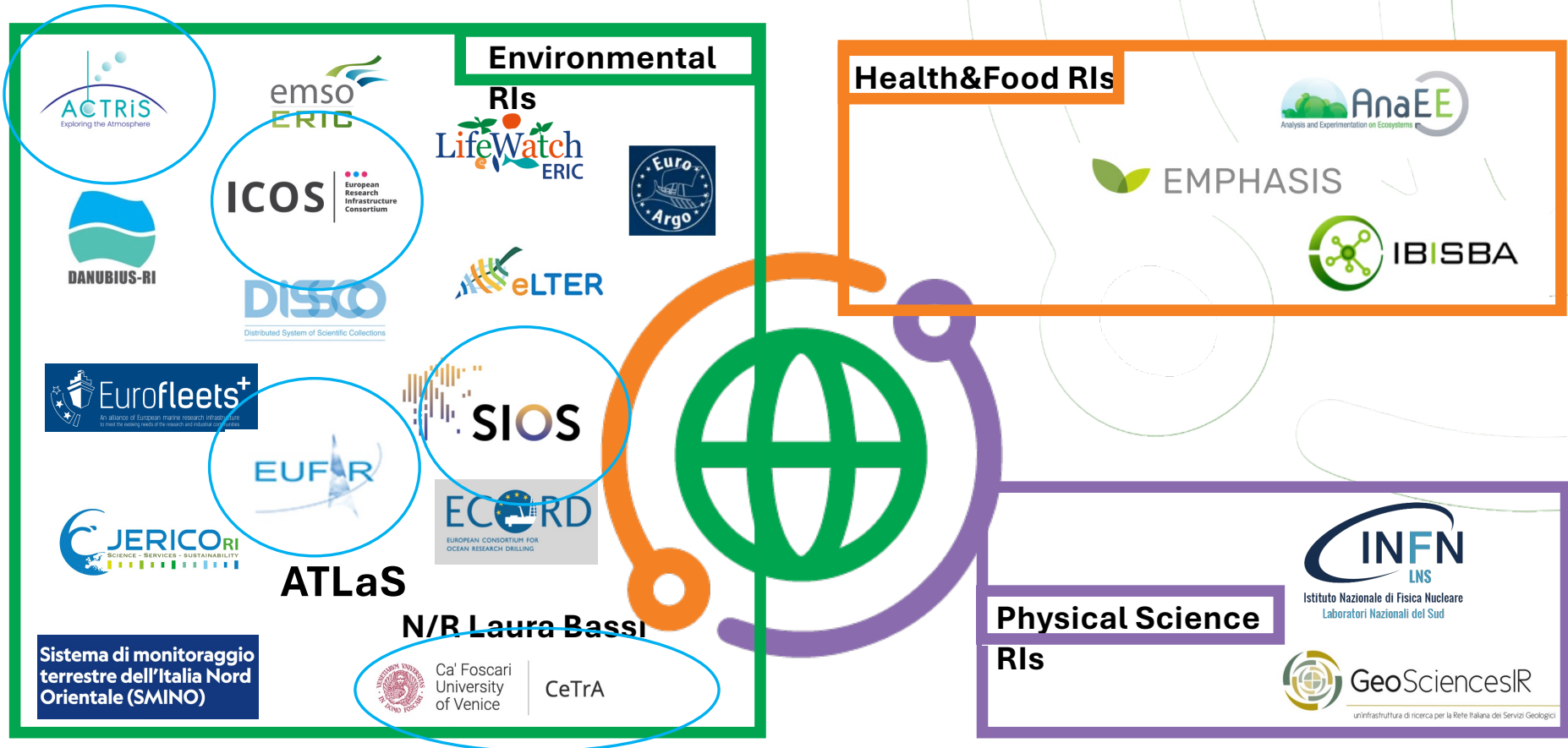
❑ Develop research across the various environmental domains and beyond

- Using pre-existing data and resources
- Developing new, even synergistic, products

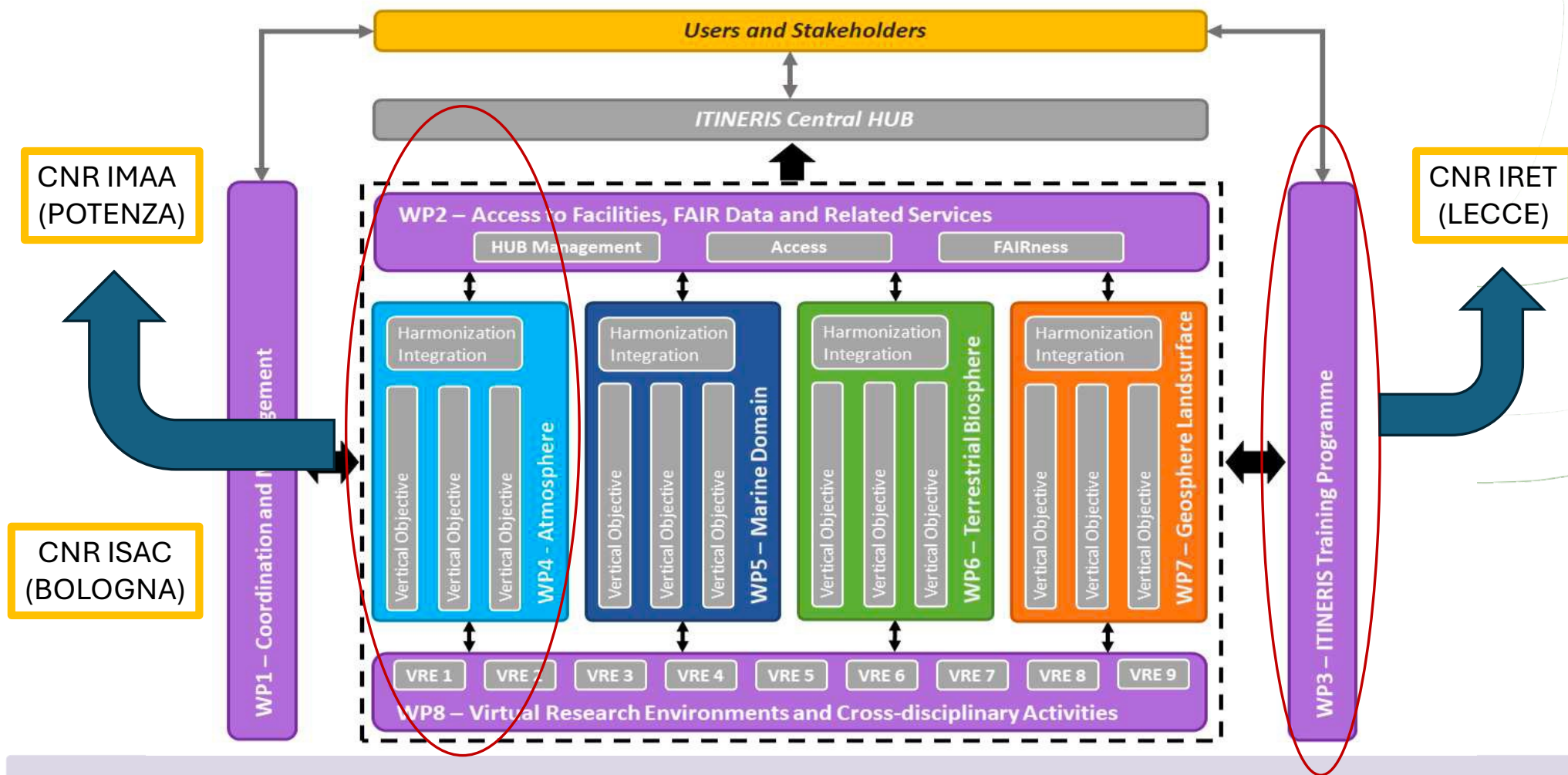
Italy is a particularly sensitive area from an environmental point of view: a critical point for climate change, it is one of the most populated areas in Europe, and it is a structurally fragile territory surrounded by the Mediterranean Sea.



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ITINERIS trainings



Training event “Atmospheric in situ data acquisition, processing, and submission.”



Day 1 – 14 July 2025

Teaching modality : frontal teaching

Location: Sala tern

Day 1: 14 of July

Time	Duration	Training Module - Topic	Speaker
09:00-09:30	0.30 m	Registration	
9:30-10:00	0.30 m	Welcome and Logistics EARLINET & ACTRIS overview	Gianluca Di Fiore (CNR IMAA) Aldo Amodeo (CNR IMAA)
10:00-11:00	1h	Lidar principle, Lidar Optics 1	Michael Haimerl (LMU)
11:00-11:30	0.30 m	<i>Coffee Break</i>	
11:30 -12:30	1h	Lidar principle, Lidar Optics 2	Michael Haimerl (LMU)
12:30-13:00	0.30m	<u>Telecover test</u>	Michael Haimerl (LMU)
13:00-14:00	1h	<i>Lunch Break</i>	
14:00-15:00	1h	Rayleigh fit test	Aldo Amodeo (CNR IMAA)
15:00-16:00	1h	Zero bin test and Trigger delay and dark measurements 1	Livio <u>Belegante</u> (INOE)
16:00-16:30	0.30m	<i>Coffee Break</i>	
16:30-17:30	1h	Zero bin test and Trigger delay and dark measurements 2	Livio <u>Belegante</u> (INOE)

Training event “Atmospheric in situ data acquisition, processing, and submission.”



Day 2 – 15 July 2025

Teaching modality : frontal teaching and hands-on

Location: Sala tern & CIAO

Day 2: 15 of July

Time	Duration	Training Module - Topic	Speaker
09:00-11:00	2h	Polarization calibration and GHK correction	Nikolaos Siomos (LMU/WMO)
11:00-11:30	0.30m	Coffee Break	
11:30-13:30	2h	Fluorescence Lidar theory and technique	Jens Reichardt (DWD)
13:30-14:30	1h	Lunch Break	
14:30-16:00	1.30h	Hands on in the lab (preparation of the measurements, laser, signal levels, maintenance of laser and optics, QA tests)	Michalis Mytilinaios (CNR IMAA) Giuseppe D'Amico (CNR IMAA) Livio Belegante (INOE) Nikolaos Siomos (LMU) Michael Haimerl (LMU)
16:00-16:30	0.30m	Coffee Break	
16:30-17:30	1h	Hands on in the lab (preparation of the measurements, laser, signal levels, maintenance of laser and optics, QA tests); Fluorescence lidar	Michalis Mytilinaios (CNR IMAA) Giuseppe D'Amico (CNR IMAA) Livio Belegante (INOE) Nikolaos Siomos (LMU) Michael Haimerl (LMU)

Training event “Atmospheric in situ data acquisition, processing, and submission.”



Day 3 – 16 July 2025

Teaching modality : open air activity and hands-on

Location: Sala tern

Day 3: 16 of July

Time	Duration	Training Module - Topic	Speaker
09:00-11:00	2h	Visit to CIAO and ICOS	
11:00-11:30	0.30m	<i>Coffee Break</i>	
11:30-13:00	1.30h	Test analysis and discussion. Use of ATLAS	Michalis Mytilinaios (CNR IMAA) Livio Belegante (INOE) Nikolaos Siomos (LMU) Michael Haimerl (LMU) Aldo Amodeo (CNR IMAA)
13:00-14:00	1h	<i>Lunch Break</i>	
14:00-15:30	1.30h	Test analysis and discussion	Michalis Mytilinaios (CNR IMAA) Livio Belegante (INOE) Nikolaos Siomos (LMU) Michael Haimerl (LMU) Aldo Amodeo (CNR IMAA)
15:30-16:00	1.30h	<i>Coffee Break</i>	
16:00-17:00	1h	Final exam	

Training event “Atmospheric in situ data acquisition, processing, and submission.”



Day 3 – 16 July 2025

Teaching modality : open air activity and hands-on

Location: Sala tern

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Training event “Atmospheric in situ data acquisition, processing, and submission.”



Livio Belegante (INOE)



Nikolaos Siomos (LMU)



Michael Haimerl (LMU)



Jens Reichardt (DWD)

Training event “Atmospheric in situ data acquisition, processing, and submission.”



Aldo Amodeo (CNR IMAA)



Michail Mytilinaios (CNR IMAA)



Giuseppe D'Amico (CNR-IMAA)

Use of the training platform & certificates



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https://training.itineris.cnr.it/en/user

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This course explores Earth's climate system, using modern monitoring methods to detect and address climate change

[Read more](#)



Atmospheric standardized observations: Methods and maintenance in observatories – In-Situ

This course covers in-situ atmospheric measurement techniques for researchers at National Facilities, open to advanced students and ACTRIS/ICOS professionals

[Read more](#)



Climate change and air quality: challenges and objectives for the atmospheric research

This course equips researchers with the atmospheric science knowledge to tackle climate change and urban air pollution

[Read more](#)



Atmospheric in situ data acquisition, processing, and submission

This course teaches data handling for ACTRIS and ICOS aerosol measurements for the in-situ data

[Read more](#)



Atmospheric Remote Sensing observation: labs maintenance and methods

This course aim is to give teach how to run standardized remote sensing observations of atmospheric aerosols

[Read more](#)



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This course aims to give each how to run standardized remote sensing observations of atmospheric aerosols

Atmospheric Remote Sensing observation: labs maintenance and methods

Course Participants Grades Competencies

Introduction Collapse all



This course is aimed at providing the knowledge to manage the laboratorial activities confidently and autonomously, for Remote Sensing Atmospheric Standardized Observation. Lectures give an overview of the techniques and methodologies, operative procedures recommended for Remote Sensing long-term measurements of aerosol. The training course is open to: students from final year of Master to Postdoc level; engineers, technologists and scientists.

It provides the main information on technics and methodologies for atmospheric ground-based remote sensing observations, and standard operative procedures to autonomously maintain high quality, accessible, well documented, and traceable Remote Sensing measurement data and data product.

Location: CNR-IMAA
Address: C.da Santa Loja, Tito Scalo, 85050, Potenza Basilicata, Italy

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Use of the training platform: exam and feedback survey



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Remote Sensing Theory

Hands on

Final exam

[Example](#)



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English

GD



Atmospheric Remote Sensing observation: labs maintenance and methods

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This course aim is to give teach how to run standardized remote sensing observations of atmospheric aerosols

[atmospheric_standardized_observation_remote_sensing](#) / [Final exam](#) / [Example](#)



Example

Example

Attempt quiz

Grading method: Highest grade

Grade to pass: 1.00 out of 10.00

◀ Agenda

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Example

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Question 1
Not yet answered
Marked out of 1.00
[Flag question](#)

Where are you from?

- a. Brasil
- b. Congo
- c. Japan
- d. Italy

[Clear my choice](#)

Finish attempt ...

Agenda

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Quiz navigation

Finish attempt ...

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This course aim is to give teach how to run standardized remote sensing observations of atmospheric aerosols

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Example

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Summary of attempt

Question	Status
1	Answer saved

[Return to attempt](#)

[Submit all and finish](#)

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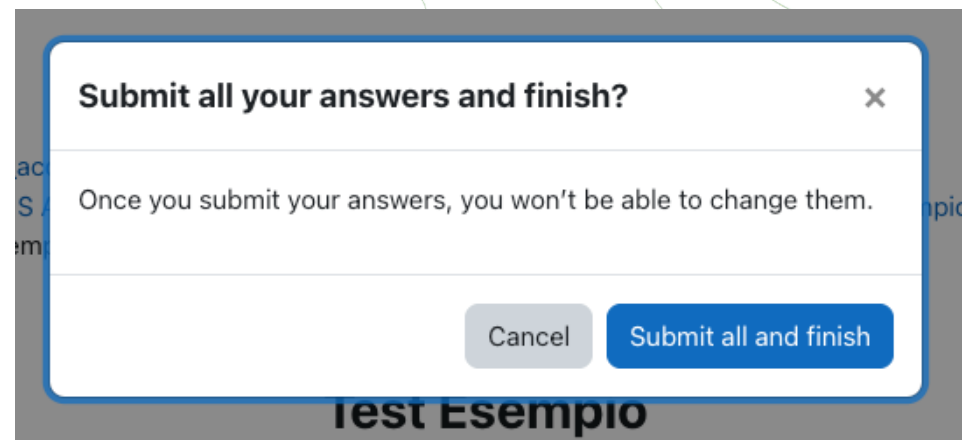
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Use of the training platform

PAY attention warning messages appear on top of the page!!!

NOTE: tests are not visible yet!



Use of the training platform

atmospheric_standardized_observation_remote_sensing / Final exam / Example



Example

Status	Finished
Started	Friday, 11 July 2025, 1:44 PM
Completed	Friday, 11 July 2025, 1:45 PM
Duration	1 min 9 secs
Marks	1.00/1.00
Grade	10.00 out of 10.00 (100%)

Question 1

Correct

Mark 1.00 out of 1.00

[Flag question](#)

Where are you from?

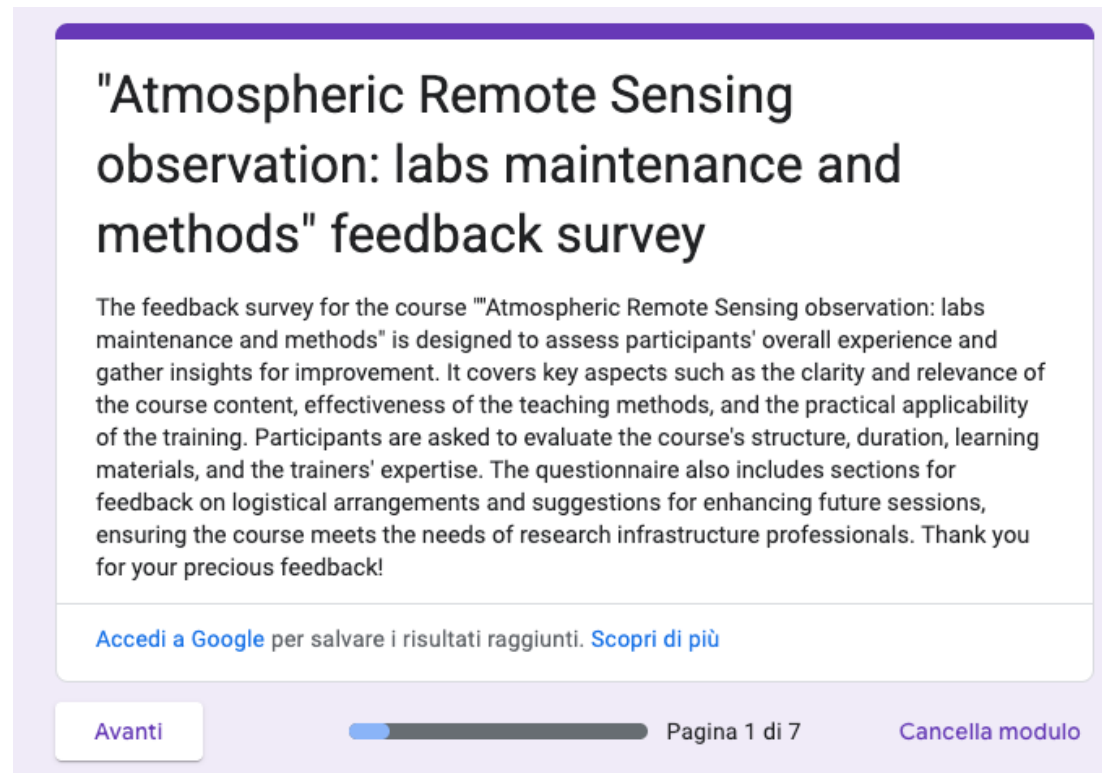
- a. Brasil
- b. Congo
- c. Japan
- d. Italy ✓

Your answer is correct.

The correct answer is: Italy

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Feedback survey



"Atmospheric Remote Sensing observation: labs maintenance and methods" feedback survey

The feedback survey for the course "Atmospheric Remote Sensing observation: labs maintenance and methods" is designed to assess participants' overall experience and gather insights for improvement. It covers key aspects such as the clarity and relevance of the course content, effectiveness of the teaching methods, and the practical applicability of the training. Participants are asked to evaluate the course's structure, duration, learning materials, and the trainers' expertise. The questionnaire also includes sections for feedback on logistical arrangements and suggestions for enhancing future sessions, ensuring the course meets the needs of research infrastructure professionals. Thank you for your precious feedback!

[Accedi a Google](#) per salvare i risultati raggiunti. [Scopri di più](#)

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Feedback survey:

- The link will appear on the platform
- To be filled after the course
- It will be anonymous
- It will collect feedback on both teaching and logistical aspects

Some questions might not be applicable for on-line students. Just skip them!

Certificates

If you pass the Exam you will receive the certificate of achievement.

[Click on view the certificate!](#)

The certificate will be signed by the WP3 coordinator prof. Basset



If you answer the feedback survey you will receive the certificate of attendance

[Click on view the certificate!](#)

The certificate will be signed by the WP3 coordinator prof. Basset

Welcome to CNR - IMAA



The Institute of Methodologies for Environmental Analysis (IMAA) belongs to the Department of Earth System Sciences and Technologies for the Environment of the National Research Council (CNR). Since its beginnings, IMAA's research activities have been aimed at developing and integrating "Earth Observations" technologies from satellites, aircraft and ground for studying geophysical and environmental processes.

CIAO = CNR-IMAA Atmospheric Observatory



CIAO <https://ciao.imaacnr.it>



CIAO is one of the most advanced atmospheric observatory in Europe and Mediterranean Region



A formal commitment of CNR and Italy assures CIAO activities for the **next 20 years** (at least)

CIAO

CNR IMAA Atmospheric Observatory



CIAO <https://ciao.ima.cnr.it>



Aerosol Remote Sensing – since 2000

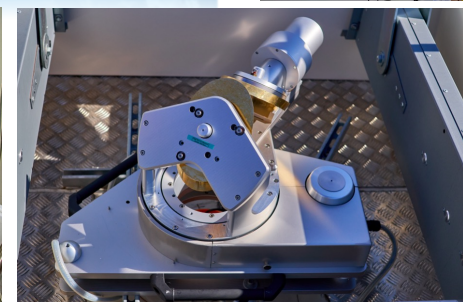
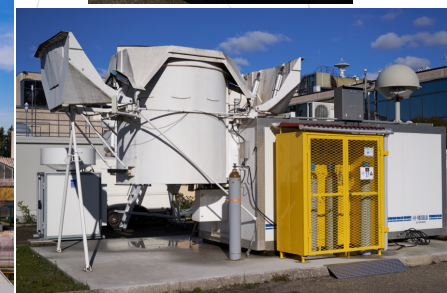
Clouds Remote Sensing – since 2005

Radiosounding – since 2000

Trace gases Remote Sensing – under implementation

Aerosol in situ – since 2023

Trace gases in situ - under implementation



CIAO <https://ciao.ima.cnr.it>

European Research Infrastructures



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European Research Infrastructures are facilities that provide resources and services for the research communities to conduct top-level research and foster innovation in their fields.

- Great scientific equipment or set of instruments.
- Scientific collections, archives and structured information.
- Electronic infrastructures (e-infrastructures).
- Any other entity of a unique nature necessary for research.

Physical, Remote, Virtual



ACTRIS



ICOS
European
Research
Infrastructure
Consortium

CIAO's involvement in Central Facilities

Head Office - Service and Access Management Unit (SAMU)

CIAO coordinates Services and Access provision for the entire ACTRIS

Data Centre - ACTRIS Aerosol REmote Sensing data centre unit (ARES)

CIAO is responsible for centralized processing, provision and access of (meta)data, traceability and quality control of the data for the whole ACTRIS aerosol remote sensing component

Centre for Aerosol Remote Sensing - Aerosol high-power lidar (CARS-AHL-CNR)

CIAO participates in lidar system quality assurance activities, intercomparison campaigns and testing of lidar components



CIAO Visit – Focus on ICOS POT station

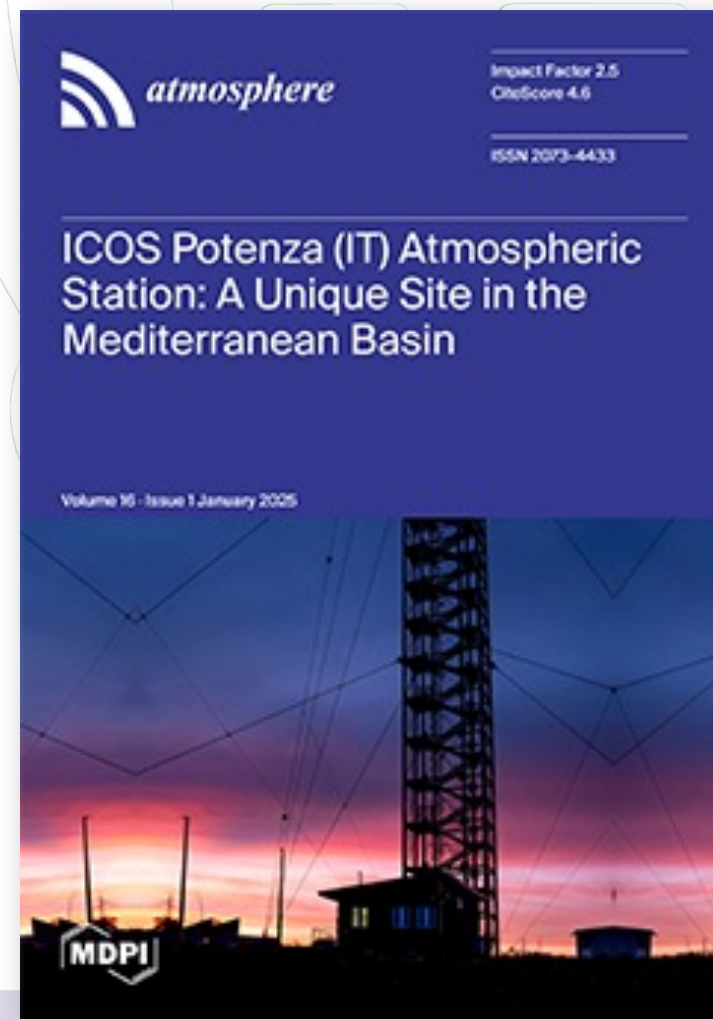
Wednesday, 16 July at 9:00

*ICOS continental atmospheric station in the
Mediterranean Basin.*



***Strategic observational point** for climate change
investigation in this fragile area*

*ACTRIS collocation offers possibilities for **synergistic
advanced studies** for atmospheric investigation*





THANKS!

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