# Empowering Climate Change Education Through Remote Sensing Technology: Transforming Student Awareness into Action — The LAP/AUTh Research Lab

**Konstantinos Michailidis**[1], Maria-Elissavet Koukouli[1], Katerina Garane[1], Daphne Parliari[1] and Dimitris Balis[1]

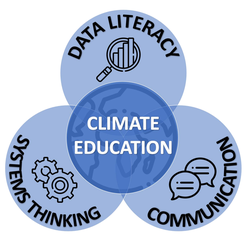
[1]Laboratory of Atmospheric Physics, Aristotle University of Thessaloniki, Thessaloniki, Greece / Contact: komichai@physics.auth.gr

EGU General Assembly
Vienna, Austria & Online | 27 April–2 May 2025

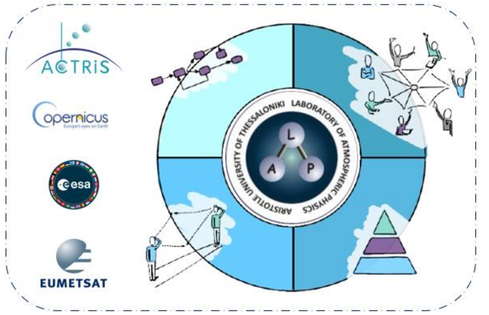
## Introduction & Scope of the Study

Raising awareness and understanding of climate change among younger generations is essential for building a sustainable future. The Laboratory of Atmospheric Physics (LAP; https://lapweb.physics.auth.gr/) at the Aristotle University of Thessaloniki (AUTh), Greece, actively contributes to this mission by designing and implementing innovative educational activities focused on atmospheric processes and climate change. Leveraging its long-standing expertise in the last four decades in atmospheric monitoring and remote sensing, LAP aims to transform complex scientific knowledge into accessible and engaging learning experiences for school students. The location and continuous operation of the lab make it unique in the field of Atmospheric Remote Sensing throughout Southeastern Europe and the Mediterranean. Through interactive workshops, hands-on experiments, data-driven projects, and the use of real-time environmental measurements, students are not only informed but also empowered to explore and understand key climate concepts. This active engagement fosters critical thinking, environmental responsibility, and a deeper connection with science.

- **In this direction and given that experiential learning is the most effective way to learn, our main goal is to turn awareness into action by promoting the teaching of climate change through modern educational practices.**


## Data Resources - The Laboratory of Atmospheric Physics (LAP)





- LAP is well-positioned to act as a regional hub for advancing scientific knowledge and developing innovative climate solutions.
- By integrating cutting-edge research facilities—such as lidar system, sun photometers, and air quality sensors—into school-level learning, LAP bridges the gap between academic research and public understanding.
- LAP is actively involved in network activities related to particularly ACTRIS, which provide authoritative ground-based and satellite-derived datasets on atmospheric composition and key climate indicators.
- These tools, combined with the use of open-access satellite data from well-established sources such as ESA, EUMETSAT data centre and Copernicus monitoring service offer students direct exposure to real-world climate monitoring practices.

## Methodology

- A carefully designed environment that uses multimedia and multi-sensory activities to attract interest and promote understanding of specific topics.
- Develop hands-on exercises, simulations, and educational applications to foster active learning.
- Designed courses combine theoretical knowledge / practical exercises, enabling users to gain experience with real-world data effectively.

## Implementation

- Students have an interactive hands-on learning experience on using remote sensing data to explore atmospheric phenomena and dynamics.
- Offering guided lab visits and interactive experiments.
- Access to technical documentation for data services, user-friendly interfaces that simplify access to complex data for non-specialist audiences.

## Expected outcomes & Scientific impact

- Combating Misinformation and Strengthening Critical Thinking.
- Enhanced student awareness and engagement with real-world climate issues, air quality issues and their implications for health and the environment.
- By bridging the gap between research and education, LAP/AUTh helps create a new generation of climate-conscious citizens.

**Acknowledgments:** This educational and research-driven initiative acknowledges the invaluable support of European Research Infrastructures, particularly the Copernicus Programme and the Aerosol, Clouds and Trace Gases Research Infrastructure (ACTRIS). The innovative study utilizes high-quality, open-access Earth Observation and atmospheric composition datasets provided by Copernicus services, ESA and EUMESAT satellite plarforms and ground-based observational networks coordinated by ACTRIS.