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Our message



One of our biggest achievements in 2023 was development of a Competence framework for teaching climate change in schools. This framework is the bedrock of all the teaching activities of our Academy and is articulated in four areas:

- *Values and attitudes* to motivate and engage the learner;
- *Scientific inquiry* and skills needed in scientific practices, such as working with climate data and in acquiring climate related information from different sources of information;
- *Creativity* and related abilities to design new solutions, imagining possible sustainable futures;
- *Action* competence brings competence to real life.

CLIMADEMY partners: PANEPISTIMIO KRITIS - UNIVERSITY OF CRETE (UOC- Greece-Coordinator), ALMA MATER STUDIORUM - UNIVERSITA DI BOLOGNA (UNIBO- Italy), UNIVERSITAET BREMEN (UBREMEN- Germany), REGIONAL DIRECTORATE OF PRIMARY AND SECONDARY EDUCATION OF CRETE (RDPSEC-Greece), ELLINOGERMANIKI AGOGI SCHOLI PANAGEA SAVVA SA (EA-Greece), HELSINGIN YLIOPISTO (UH- Finland), FONDAZIONE GOLINELLI (FG-Italy). Associated partners: LICEO SCIENTIFICO TATALE ALBERT EINSTEIN (Italy), OBERSCHULE FINDORFF BREMEN (Germany)

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Finnish Hub: A field course at Hyttiälä Station

At the Hyttiälä Forest Field Station, located in the Finnish CLIMADEMY Hub, there has been active engagement during the fall and winter seasons. The station has hosted visits from student groups, teachers, and sustainability project partners. Throughout the year 2023, science education activities at Hyttiälä Hub have reached a total of 157 teachers or teacher students and 1,057 students or pupils.

As a new initiative, the University of Helsinki organized a three-day field course at the Hyttiälä Forest Field Station in November

2023 for physics, chemistry, and mathematics teacher students. The program included both new learning experiences and their practical application. The course aimed to equip students with useful tools for future teaching, taking into account the challenges posed by the climate crisis. Students had the opportunity to attend expert lectures related to the Hyttiälä Forest Field Station and the SMEAR II research station (Station for Measuring Ecosystem-Atmosphere Relations). Tuomo Nieminen, University Lecturer, discussed atmospheric aerosols and Pauliina Schiestl-Aalto, University Researcher, spoke about Finland's forests and climate change. Juho Aalto, University Researcher, and Teemu Matilainen, Laboratory Engineer, presented the SMEAR II research forest.

Under the guidance of doctoral researcher Peitsa Veteli, students worked on an OpenData task based on SMEAR II research data. Additionally, students learned about Hyttiälä's science education from Reetta Matilainen, project



Lectures by researchers Pauliina Schiestl-Aalto and Tuomo Nieminen © Reetta Matilainen



A visit to the SMEAR II research station © Reetta Matilainen

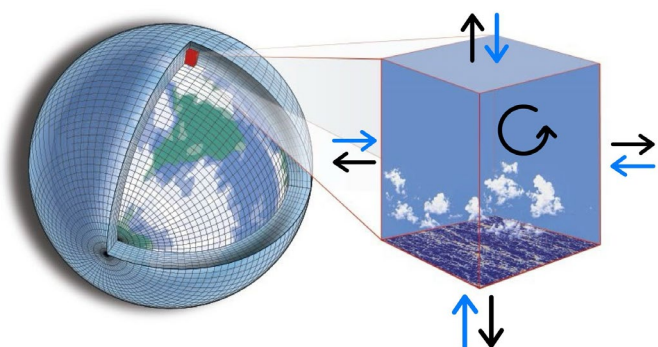
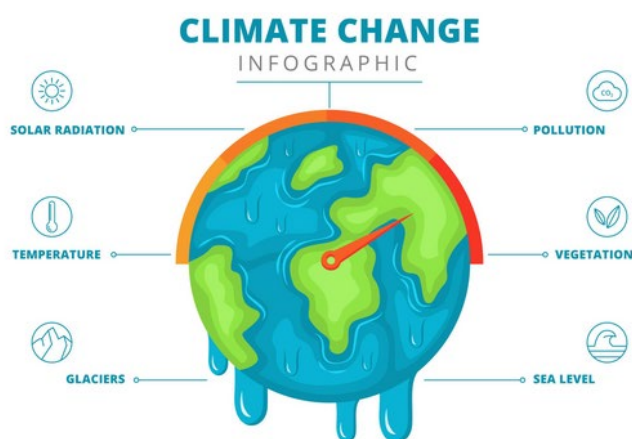
coordinator.

The field course aimed to familiarize future science teachers with university research stations and the available open data that can be utilized in teaching. Of course, the course also included activities such as sauna, spending evenings by the bonfire, exploring the forest, and enjoying the unique natural environment of Hyttiälä. The goal is to make this teacher student course an annual event, fostering close and continuous collaboration between future science teachers and field research stations in the natural sciences.

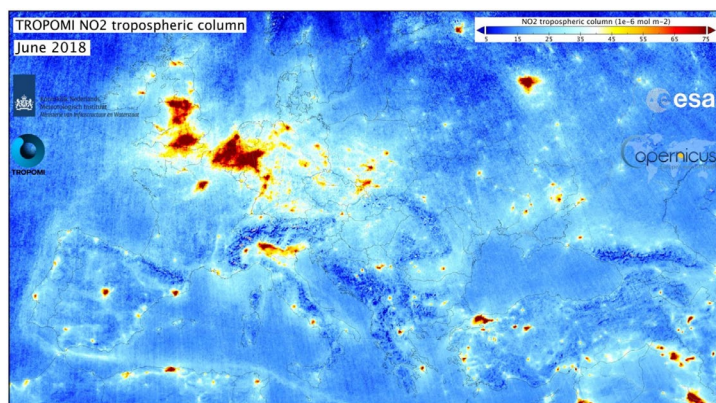
German Hub:

In 2023 the German HUB led a number of training sessions for the participant teachers. These sessions covered a broad spectrum of subjects regarding climate change and the tools the scientific community implements in order to study this complex issue. Specifically, three training sessions were developed and implemented on fifteen students representing six different school. All sessions took place at the University of Bremen home of the German HUB.

Air pollution and its consequences were discussed during the first session, which took place in February 2024 and was intended to serve an introductory session for the participants. The second session, also in February, familiarized teachers with satellite data and how to use them in the classroom. The third and final session took place in March 2024 and provided insight into how climate models work and their importance in the study of climate change. All sessions were designed to introduce teachers to two basic tools (satellite observations and modeling) for studying climate change and its impacts.



Conceptual image: A global atmospheric model separates the atmosphere in grid boxes. Inside its grid box, the impact of transport, emissions, chemistry, deposition on atmospheric composition is calculated by the model.



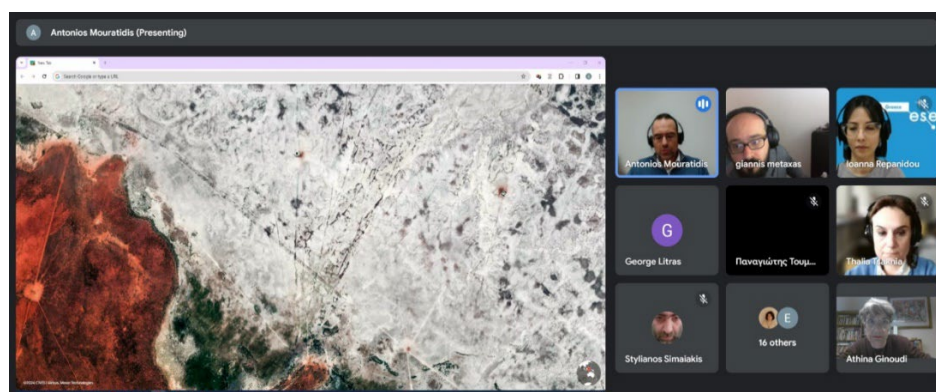
Tropospheric column of NO₂ as retrieved from observations by the TROPOMI sensor on the Sentinel 5p satellite

Greek Hub:

In September 2023, the second group of teachers has been selected and attached in sub-groups of five to the first co-designers' teachers who have joined CLIMADEMY early 2023. The Greek teachers, co-designers, together with their 'apprentices' teachers have met for a one-day workshop at the locations of the University of Crete in Heraklion. In a friendly environment, the aims of the Teachers Academy have been reviewed and the progress made by the co-designer teachers in developing new targeted material based on the educational model developed in CLIMADEMY. A number of STEAM projects developed by the teachers have been presented and discussed.



Finally, in March 2024 the Greek Hub organized an online training workshop in collaboration ESERO for the exploitation of the EO Browser, a web tool for satellite data visualization, for teaching purposes.

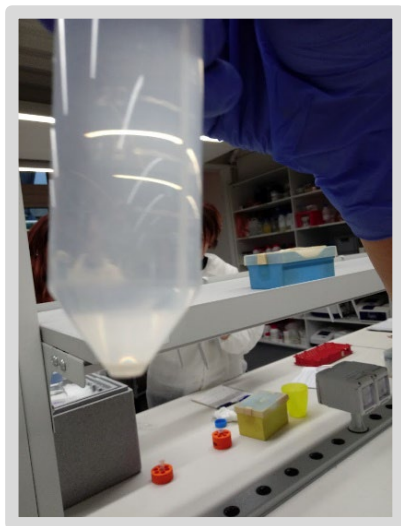


Italian Hub: Proceeding in training the teachers

In school years 2023-24 and 2024-25, the purpose of the Italian Hub of CLIMADEMY is to train 2,000 in-service and aspiring teachers from secondary schools across the country through:

- workshops and in-person and online courses in Italian;
- exchanges with a network of teachers and researchers from all over Europe with whom to share and enrich their experiences, through a shared online platform called CLAUDI;
- international summer schools and winter schools in English held both in Italy and at European project partners.

Aiming to combine the consolidation of basic scientific skills (on drivers, impacts and mitigation measures) with an active, constructivist and STEAM pedagogical approach, CLIMADEMY will be developed around some prevailing thematic clusters:



- future literacy;
- uncertainty and complexity;
- data literacy;
- storytelling;
- civic education and active citizenship (agency).

Contents and activities are designed and conducted in collaboration with 12 co-designer teachers from Liceo Scientifico e Musicale "A. Einstein" in Rimini; Scuola delle Idee (STEAM secondary school) in Bologna; Istituto Tecnico Agrario Chimico Scarabelli Ghini in Imola; Liceo Leonardo da Vinci in Casalecchio di Reno; Istituto di Istruzione Superiore "Baracca" in Forlì.



Conferences Participation

As CLIMADEMY progresses as a teacher networking and professional development project, several of the CLIMADEMY partners have presented their findings at international scientific conferences. At these conferences, we not only had the opportunity to share our findings on climate change teacher education, but also to receive valuable feedback from the scientific community on our project outcomes and development. Scientific posters of the first results of CLIMADEMY (e.g. database of teaching materials on climate change drivers, adaptation and mitigation, competency framework, activities) were presented by CLIMADEMY partners at the following conferences:

- The ESERA (European Science Education Research Association Conference) in Cappadocia in 2023 with about 250 participants.
 - The Teachers' Climate Change Forum (TCCF) in Hyytiälä, Finland, in October 2023
 - The FERA Conference in Vaasa in October 2023
 - The Atmosphere and Climate Competence Center Annual Science Conference (ACCC) Conference in Finland in October 2023
 - CLIMADEMY also participated in the one-day Erasmus + Teacher Academies meeting in Brussels in November 2023, where its mission and activities were presented and discussed in order to develop synergies with other academies, to learn about best practices in academies, to promote collaboration, to encourage networking between academies and to highlight links with relevant policy priorities of ERA.
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Outreach activities

We were able to communicate CLIMADEMY's aims and implement the teachers training activities through many outreach activities in order to broad the project's impact

- FG and the Research Group in Didactics and History of Physics at the UNIBO organized an [online](#) meeting on September 19, 2023 to present to Italian teachers, trainers and education stakeholders the opportunities and resources of CLIMADEMY, the European project in which they are partners.
- FG organized a 4-part [online](#) course in October and November 2023 that values data as a cognitive tool of phenomenological reality (*data science*) but also of the unique and personal reality of each subject (*data humanism*). The topic of the course was air quality understood as the qualitative and quantitative assessment of pollutants in the atmosphere.
- Between December 2023 and April 2024 FG organized 7 [meetings](#), 3 hours each, about the perspectives on teaching/learning about climate change. These meetings involved imagining scenarios, developing action skills, and reflecting on the process of change. The goal was to adapt the inter-multi-transdisciplinary and multi-dimensional nature of the topic to disciplinary curricula.
- In December 2023 the Greek Hub organized a training event for teachers aimed at educating them on how to enroll in KA Erasmus + projects. This event aided teachers in how to write a successful Erasmus+ KA1 School Education Learning Mobility.
- In January 2024 CLIMADEMY was presented by the Greek Hub in the e-Technology lab at Belgium during the event "Teach with Earth from Space workshop"
- In February 2024 the four Erasmus+ Teacher Academies under the sustainability pillar came together to share their experiences so far and highlight the possibilities for collaboration between the projects. The network meeting was organized by the Greek and involved presentations and discussions on each project's unique perspective and innovative methodology on enhancing sustainability education in Europe brought to light opportunities to learn from and work with each other. Of the main points of joint discussion among the project representatives was how best to capitalize on each other's experiences and successes, as well as possibilities to sustain the outcomes of the projects beyond their individual completions.



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