



THE GLOBE PROGRAM

Europe and Eurasia 2023 Country Reports



GLOBE Program

Europe and Eurasia Region Coordination Office



The GLOBE Program Europe and Eurasia Region Coordination Office

The GLOBE Program network is represented by Region Coordination Office (RCO) in each of the world's region. The Europe and Eurasia RCO fosters the program in 45 countries with over 5400 schools and 48 000 citizen scientists. The office is located in Prague, Czech Republic and hosted by TEREZA, Educational Centre.

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Special thanks for the cooperation in the year 2023 belong to

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- Marcella van Steenbergen (Deputy Country Coordinator, Netherlands)
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Europe and Eurasia Region Meetings

2023 GLOBE Regional Meeting for Europe and Eurasia

October 16 - 20, 2023, Riga, Latvia

Online meetings of Country Coordinators and Deputy Country Coordinators

Meeting No.1, December 8, 2022

Focus on topics: “How did I put into practice what I learned at Regional Meeting in Omiš” and “What is my plan to implement it into practice”

Meeting No.2, January 26, 2023

Focus on: Updates on planned events and activities in 2023; news in the region and countries

Meeting No.3, March 8, 2023

Focus on: Earth Day events in countries – planning and sharing

Meeting No.4, May 4, 2023

Focus on: Discussion on activities to strengthen GLOBE in our region to occur sometime in 5-year period.

Meeting No.5, June 15, 2023

Focus on: Regional Meeting in Riga, Latvia - information and Q&A

Meeting No.6, September 13, 2023

Focus on: Upcoming Regional Meeting in Riga, Latvia; Updates for the next half-year

Meeting No.7, November 20, 2023

Focus on topics: “How coordinators plan to implement what they learned in Riga” and “Coming campaigns, conferences and other events across our region”

Belgium

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Organization and Number of Staff:

Funding by:

Ministry of Education

Cooperating Organizations / Individuals:

Science College Overbach, Germany

GLOBE Schools (what types, how many):

Secondary schools (4)

GLOBE Areas you and schools focus on:

Hydrology, Climate

Number of Schools Reporting Data Over Past Year:

Program Implementation, International Cooperation in GLOBE Network, and Activities over Past Year (categorized by GLOBE Strategic Plan 2018-2023 Goals):

1. Education

- Presenting the GLOBE Program at our science fair and distribution of research materials
- training of new teachers in Riga Latvia (founded by the ministry) and online

2. Science

We do not have scientists or universities in the German speaking Community. We hope working together with GLOBE Germany on that part.

3. Community

Extension of the Collaboration with GLOBE Germany. We are planning a teacher training for all German speaking countries and certify new trainers with the help of GLOBE Switzerland.

4. Technology

5. Communications

All GLOBE communications are transmitted by email to the schools and interested teachers.

Plans and Ideas for Next Year:

- Do finally the GLOBE training
- Get 2 more secondary schools to participate in GLOBE
- Start with 1 school at least in a climate project (flooding resilience)
- Launch a project for primary schools about clouds and rainfall

Croatia

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Organization and Number of Staff:

Education and Teacher Training Agency is in charge of the GLOBE Program implementation. There is only one person involved (Mrs. Lydia Lugar), but it has several (8 – 20) external collaborators who participate in the implementation of different activities and decision making. Those are GLOBE mentors and trainers, as well as regional coordinators and members of the State committee for the National GLOBE Science Fair and GLOBE school competition.

Funding by:

Ministry of Science and Education; Education and Teacher Training Agency

Cooperating Organizations / Individuals:

National Meteorological Service, Faculty of Science / Department of Biology, Technical school Daruvar, Alumni association ZNAM

GLOBE Schools (what types, how many):

Totally there are 417* schools listed.

Most of our organizations are public schools – 60% primary and 30% secondary schools, we also have **20 kindergartens** and just **few other educational organizations**, like environmental education centers.

GLOBE Areas you and schools focus on:

Croatian schools are mostly focused on Atmosphere / clouds, temperature, precipitation, phenology but also on other GLOBE areas.

Number of Schools Reporting Data Over Past Year:

85

Program Implementation, International Cooperation in GLOBE Network, and Activities over Past Year (categorized by GLOBE Strategic Plan 2018-2023 Goals):

1. Education

In Croatia, we tried to enhance **the implementation of GLOBE** measurements, research activities and the use of GLOBE database **in regular teaching of the subjects Science (Early Science), Geography, Biology, Chemistry, Physics and some other subject areas**. Following that, we published the guide „GLOBE in Curriculum“, available on our web site <http://globe.hr>, which highlights the connections between curriculum outcomes and the GLOBE content.

Education and Teacher Training Agency organizes **GLOBE workshops twice each year**. One is initial GLOBE training and is open to all teachers. The other is an advanced training for teachers who already joined GLOBE. Its focus is on learning activities, inquiry-based learning and research project work. All training workshops are **free of charge and participants receive a certificate of participation**, which is important for their professional development. They are under no obligation to actually implement GLOBE after they are trained. The consequence is that out of big number of listed GLOBE schools, relatively small percent of schools is actively reporting their measurements and observations. Although this seems like a weak point in the system, we believe that teachers trained in GLOBE tend to improve and modernize their teaching, which is a big aim of GLOBE implementation.

Croatia has **3 GLOBE mentor trainers and 24 GLOBE trainers**. Several of Croatian trainers were invited to guide the training in Slovenia, as Slovenia did not have their own trainers. Croatian mentors were also engaged in observing two Slovenian trainer candidates, which was completed in mutual satisfaction.

2. Science

Science is the framework of all GLOBE activities and especially of students' research projects which are the part of **National GLOBE Science Fair and Competition**, that takes place in May each year. The guidelines for developing a research projects are published in **National Competitions Guide for Schools**. There are several steps in project development and the first one is the short presentation of the main idea, the aim, research question(s) & hypothesis and methods to be used. Based on delivered research plans, the State committee assigns a mentor to each school. At the beginning, mentor, who is the scientist or expert in given field of research makes sure that school team proceeds in right direction, according to scientific principles. In next steps, mentor's role is changed to the reviewer of the science report. Finally, if the project report reached the quality to be presented at National Fair, members of the State committee make the judgement in order to highlight most successful projects, good in science and properly written to be published on Croatian GLOBE web site.

We have several scientists and experts who are promoting GLOBE science in described way, as well as by participation in above mentioned advanced trainings. In 2023 there were **7 scientists and experts participating as mentors and reviewers for GLOBE Science Fair**.

3. Community

Country coordinator (and deputies) doesn't have the means to visit all GLOBE schools or even to communicate with all GLOBE educators regularly. Therefore, we have **7 regional centers** located in experienced GLOBE schools. Their role is to promote GLOBE in local community, to help the beginners or those who have a problem and to enhance the communication with country coordinator and state committee. Regional coordinators are very important in our GLOBE implementation model. For their activities they receive a small funding from the Education. **Regional centers organize regional meetings and trainings** three times each year as well as **regional GLOBE Fair**. That is where the most active GLOBE schools are selected for National Level

of GLOBE Fair and Competition. Regional committees have common criteria for scoring the schools.

Many GLOBE schools participate in **Erasmus+ projects** and GLOBE appears to give good bases and the content for international collaboration. For example, in 2023, two Croatian schools (from Zadar and Omiš) were hosting GLOBE teams from Slovenia. In October the representatives of 3 Slovenian schools visited 4 active and experienced Croatian GLOBE schools with the aim of **job shadowing activity**.

In last year 9 kindergartens joined GLOBE community. It happened after a big workshop for kindergarten educators, organized by Education and Teacher Training Agency, included GLOBE workshop in the program, as the example and the tool for early science education

4. Technology

GLOBE Observer is great help for GLOBE teams and is very much used in GLOBE schools.

GLOBE website is huge and rich with contents, so not many teachers research the web on their own. Noticing that, in last year we tried to show some Learning activities in mentioned workshops, which rose great interest among teachers, but that effort is far from enough. So, plenty is still to be covered.

5. Communications

Online communication makes participation possible for all GLOBE members and candidates, but they all recommend face to face meetings. On the other side, face to face meetings are more demanding for schools (time and travel funding) and it appeared last year that they were not visited as much as we expected.

Great help in communication with schools are **Croatian Regional centers, our web site and FB.** Regional GLOBE office gives great help with solving the problems that might appear and in coordinating and harmonizing international activities.

Plans and Ideas for Next Year:

- Clearing of GLOBE data base – deactivate schools that did not report for 5 or more years
- Participation in CCY campaign and local EE campaigns; Organize local activities for the CCY campaign together with US Embassy
- Organize traditional two GLOBE training workshops and GLOBE Science Fair & Competition

** I am not sure if those numbers are correct, because the School status report doesn't show Not yet reporting category any more. Last Status report (checked a month ago) showed 185 organizations as Not yet reporting.*

In any case the percentage of Not yet reporting schools is too big, as well as the percentage of schools that Have reported in the past. That is the reason for clearing the data base and deactivate schools that haven't been active for more than 5 years.

Czech Republic

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Organization and Number of Staff:

TEREZA Educational Centre is a professional non-governmental non-profit organization fostering environmental and science education in the Czech Republic. We play a significant role in the international Global Learning and Observations to Benefit the Environment (GLOBE) Program network since 1995. TEREZA has over 20 employees. There are **currently 5 people working for GLOBE country coordination office plus three people working for RCO for Europe and Eurasia.**

Funding by:

- **Grants:** State Environmental Fund of the Czech Republic, Ministry of Education, Youth and Sports, Ministry of the Environment, Prague City Hall, U.S. Embassy Prague.
- **Fundraising:** Donations by SC Johnson and Bonatrans groups.

- **Own resources:** schools pay 80EUR per school per year; other paid services: workshops, online courses, selling publications.

Cooperating Organizations/Individuals:

Apart from the GLOBE Program network, TEREZA is a member of Foundation for Environmental Education (FEE). Within the GLOBE Program we collaborate with **various organizations**, such as U.S. Embassy in the Czech Republic, Czech Hydrometeorological Institute, Faculty of Science Charles University, Institute of Botany of the CAS, and others. We also maintain close cooperation with **15 members of the Czech GLOBE Scientific Board** and **20 GLOBE mentor-teachers**.

GLOBE Schools (what types, how many):

110 registered schools, about 2/3 elementary schools and 1/3 high schools or leisure-time centers.

GLOBE Areas you and schools focus on:

Czech schools are focused on all essential GLOBE areas (Atmosphere, Hydrology, Soil, Phenology, Biometry and Land Cover). During the reporting period our schools were actively involved in the European Phenology Campaign. During Autumn 2022 we launched our own Soil Challenge focused on school investigations of soil in the connection with climate change issues.

Number of Schools Reporting Data over Past Year:

Around 10 school are reporting data regularly.

Program Implementation, International Cooperation in GLOBE Network, and Activities over Past Year (categorized by GLOBE Strategic Plan 2018-2023 Goals):

1. Education

We organized „**My Friend Tree**“ **Spring Phenology Challenge** in which schools explored green-up phenology observations and looked for connections between phenology and climate change. In Autumn we organized „**Soil is not Dirt**“ **Pedology Challenge** focusing on soil research in combination with GLOBE measurements and climate change.

We developed Czech education materials for school microplastics investigations followed by practical workshops for teachers and students from 7 Czech schools which were equipped by filter kits for microplastics sampling.

2. Science

We collaborate with **Czech GLOBE Scientific Board** (15 active members) who are helpful in developing and editing methodical materials, giving trainings, webinars, and others. Together with scientists we have been working on Microplastics project and organizing the 2023 GLOBE Student Conference (Faculty of Sciences, Charles University in Prague) and several webinars or workshops for teachers. In May 2023 we held a **webinar with Brain Campbell (NASA)** for schools and the wider public.

3. Community

At the end of May we organized **2023 GLOBE Student Conference** with participants from Slovakia, Netherlands, Ireland, Malta and Georgia, under the auspices of US Embassy in Prague. **About 40 school projects were presented** at the conference.

GLOBE country coordinators and four Czech teachers participated in the **2023 Regional Meeting in Riga** where they actively presented their success stories at the GLOBE market, and gave lecture about inquiry-based science education for elementary school teachers and GLOBE coordinators.

4. Technology

We have used **microplastics filter kits** at several schools successfully. We have more improved several online products for schools – **seven-week long online course of IBSE**, webinars with experts on various topics, etc.

5. **Communications**

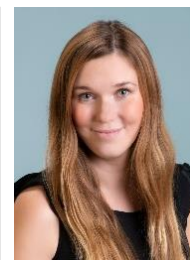
We launched a **new communication strategy of the program** – we developed a **new program website** www.badatele.cz, and became very active on social media. We boosted our Facebook communication and public relations. We **published two articles** about 2022 Autumn Climate Challenge and 2023 GLOBE Conference in Prague in the Stars and STEM Stories section of the website www.globe.gov.

Plans and Ideas for Next Year:

- Organize a **“Climate under the magnifying glass” campaign** for schools in Spring 2024.
- Organize 2024 GLOBE Students Conference in Mělník on the Earth day 2024.
- Develop a set of inquiry-based lessons and activities on climate change.
- Support air quality school investigations, especially aimed at PM10 and PM2,5.
- Continue with microplastics investigations at schools.
- Create a brand-new video course focused on IBSE for teachers and other educators.
- Submit and launch a new Erasmus+ project with partners from other GLOBE countries.
- Support phenology observations through European Phenology Campaign.
- Represent the Czech Republic at as many other meetings of the Europe and Eurasia Region as possible.

Estonia

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Organization and Number of Staff:

- MTÜ GLOBE Eesti, 3 members of the Board, Project Manager
- Tech support
- Accountant
- Ministry of Education and Research GPO - Liia Varend
- Team of volunteers (15 people)

Funding by:

- Republic of Estonia Ministry of Education and Research
- U.S. Embassy in Tallinn, Estonia
- Schools, Local municipalities
- City of Tartu
- Private sponsors

Cooperating Organizations/Individuals:

- Republic of Estonia Ministry of Education and Research
- U.S. Embassy in Tallinn, Estonia
- University of Tartu
- Tallinn University
- MTÜ Klubi EGEEA-Tartu
- AHHAA Science Centre

GLOBE Schools (what types, how many):

- 70 public schools have joined the GLOBE program
- 70 schools have reported data
- 25 schools have reported data during last 12 months
- 50 schools involved in different activities during the year 2023

GLOBE Areas you and schools focus on:

- Atmosphere: Air Temperatures, Barometric Pressures, Cloud Observations, Precipitations, Relative Humidities, Snowpacks, Surface Temperatures
- Earth as a System: Green Up/Green Down
- Hydrology: Alkalinities, Conductivities, Dissolved Oxygens, Nitrates, Salinities, Transparencies, Water pH, Water Temperatures

- Land Cover: Biometry Trees, Graminoid Biomasses, MUC, Photos, Vegetation Covers
- Soil: Fertilities, Layer Descriptions, Soil Moisture via Sensors, Soil pH, Soil Temperatures
- GLOBE IVSS

Number of Schools Reporting Data Over Past Year:

25

Program Implementation, International Cooperation in GLOBE Network, and Activities over Past Year (categorized by GLOBE Strategic Plan 2018-2023 Goals):

1. Education

EG1. GLOBE materials are part of curricula in Estonia (science, geography, biology, physics, maths)

EG2. We have 15 trainers in Estonia. Our trainers speak Estonian, Russian and English. We have two mentor trainers who speak Estonian and Russian.

EG3. 8 research projects in GELE Estonia (140 participants involved).

11 research projects submitted to GLOBE IVSS 2023

EG4. Stories in school blogs, local newspapers.

2. Science

SG1. 12 scientists and STEM professionals were involved in GLOBE Estonia Learning Expedition. 6 research projects supervised by scientists.

SG2. Schools from different regions participate in the GLOBE program. The network covers Estonia. 4 schools have received honor rolls.

SG4. 11 research projects in GLOBE IVSS 2023

3. Community

CG1. 7 new GLOBE schools joined the network.

CG2. More than 30 schools participated in GLOBE Estonia Learning Expedition, including schools from other GLOBE countries in Europe. Teams were formed of students from different schools. 10 presentations were made based on the data collected. Some research projects will be sent to GLOBE IVSS.

CG3. Learning Days project to engage Ukrainian students, who have come to Estonian schools, in learning about Estonian nature and support their integration.

CG4. Visit from Astronaut Nicole Aunapu Mann, initiated by our GLOBE students sending a message to her into space. She visited Estonian GLOBE students and teachers across the country.

4. Technology

TG1. 25 schools are reporting the data, 4 schools have received honor rolls throughout the year.

TG2. GLOBE website is used by GLOBE schools (data sheets, materials)

TG3. GLOBE Observer App was used during the GLOBE Estonia Learning Expedition and Collaboration Days, apps are used in schools.

5. Communications

CMG1. GLOBE FB and Instagram are introduced to GLOBE Schools.

GLOBE Estonia launched its YouTube @globeesti

CMG2. GLOBE star about Collaboration Days

CMG3. Stories in Estonian Media,

Plans and Ideas for Next Year:

- GLOBE Estonia **Learning Expedition August 12th to 15th**
- Participating in GLOBE IVSS
- GLOBE Research projects support program
- GLOBE Earth Day celebration
- GLOBE Board Game Development with Students
- Hiking/Learning Days for students continues

Finland

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Organization and Number of Staff:

Funding by:

Finnish National Board of Education (OPH), University of Helsinki

Cooperating Organizations/Individuals:

Finnish National Board of Education (OPH), Embassy of the United States, Finnish Meteorological Institute

GLOBE Schools (what types, how many):

Utajärvi Upper Secondary School, Kuokkalan koulu, Viikin Normaalikoulu (University of Helsinki), teachers from about 10 schools have taken part in continuing education that cover GLOBE protocol areas

GLOBE Areas you and schools focus on:

Atmosphere

Number of Schools Reporting Data Over Past Year:

1

Program Implementation, International Cooperation in GLOBE Network, and Activities over Past Year (categorized by GLOBE Strategic Plan 2018-2023 Goals):

1. Education

Teachers Climate Change Forum (TCCF) <https://www.helsinki.fi/en/science-education-and-academic-outreach/teachers/teachers-climate-change-forum> enables communicating with and among teachers, sharing best practices and providing tools to facilitate student learning

2. Science

TCCF brings together STEM professionals who share best practices in science and education research and providing information to teachers working in schools. University of Helsinki is a partner in Climate change teachers academy (CLIMADEMY) is a EU project launched in 2023
<https://climademy.eu/>

3. Community

TCCF enables meeting of teachers and free discussions with colleagues and experts. The CLIMADEMY aim at building and supporting of a teacher networks on climate change education

4. Technology

5. Communications

Plans and Ideas for Next Year:

The Teachers Climate Change Forum will be organized in autumn 2024 and it is open internationally. The CLIMADEMY project is launched and it will open a moodle based Climate auditorium for sharing of climate change teaching and learning materials.

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Organization and Number of Staff:

3

Funding by:

CNES

Cooperating Organizations/Individuals:

Ministry of National Education and Youth

GLOBE Schools (what types, how many):

Primary and secondary (from 6 to 18 years old) schools, around 35 classes enrolled.

GLOBE Areas you and schools focus on:

Atmosphere and hydrology

Number of Schools Reporting Data Over Past Year:

Around 25 schools have made measurements, but not everybody report on GLOBE.

Program Implementation, International Cooperation in GLOBE Network, and Activities over Past Year (categorized by GLOBE Strategic Plan 2018-2023 Goals):

1. Education

- To raise awareness on air quality.
- To start a new project on hydrology linked to a new satellite SWOT.

2. Science

- To carry on **NO2 campaign**
- To carry on atmospheric **aerosol measures** with Calitoo
- To gather GLOBE France teachers for **training on air quality once a year**
- To participate to the organization (off line) of a European pilot event on Air Quality
- To start a **new project in hydrology**

3. Community

4. Technology

5. Communications

- Exchange between Ireland schools and French schools.
- Participation to a **European pilot event to share AQ measurements and results**

Plans and Ideas for Next Year:

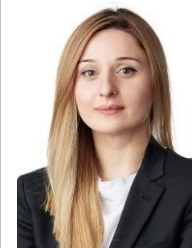
- To carry on activities on air quality and aerosols
- To begin activities on sky quality
- To propose DIY sensors on PM2.5 and PM10 (long term activity)

Georgia

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Organization and Number of Staff:

CENN, 60 employees

Funding by:

Austrian Development Cooperation

Cooperating Organizations/Individuals:

Ministry of Education and Science of Georgia

GLOBE Schools (what types, how many):

Both public and private schools have been involved in the program in 2023, **12 schools** across Georgia.

GLOBE Areas you and schools focus on:

Georgian schools focused on the Biosphere and Cloud Protocol

Number of Schools Reporting Data Over Past Year:

3 schools actively continue to upload data obtained as a result of their observations over the past year. Moreover, Georgian schools have been active in the international environment – joining the European Phenology Campaign, Water Bodies Challenge, **attended to Student Conference in the Czech Republic** and Summer school of Remote Sensing in the Czech Republic.

Program Implementation, International Cooperation in GLOBE Network, and Activities over Past Year (categorized by GLOBE Strategic Plan 2018-2023 Goals):

1. Education

Schools carried out the cloud protocol.

2. Science

According to the guidelines, the students' cloud observation data are uploaded to the portal and become part of the scientific information. Local situational data is also exchanged at the global level.

3. Community

Georgian schools have been active in the international environment – joining the European Phenology Campaign, Water Bodies Challenge, attended to Student Conference in the Czech Republic and Summer school of Remote Sensing in the Czech Republic.

4. Technology

5. Communications

Plans and Ideas for Next Year:

We are beginning to implement next protocol - Green-Up / Green-Down. As of January 2024, relevant materials are being translated

Germany

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Organization and Number of Staff:

GLOBE-Deutschland e.V. - 5 members of staff

Funding by:

members and sponsors

Cooperating Organizations/Individuals:

- NUA – Natur-und Umweltschutzakademie NRW
- Klimawoche Bielefeld
- Heinz-Nixdorf-Museum Paderborn
- Naturkundemuseum Paderborn

- Bildungsinitiative OWL
- Science College Jülich-Overbach
- NABU – Naturschutzbund Deutschland

GLOBE Schools (what types, how many):

- About 300 schools – most of them are sleeping
- About **20 active schools**: Elementary schools, secondary schools, gymnasiums

GLOBE Areas you and schools focus on:

The focus for GLOBE data was on hydrology and atmosphere protocols.

Number of Schools Reporting Data Over Past Year:

About 20 schools reporting data in different workshops and training situations. There are less than ten schools reporting continuously.

Program Implementation, International Cooperation in GLOBE Network, and Activities over Past Year (categorized by GLOBE Strategic Plan 2018-2023 Goals):

1. Education

During the trainings and workshops, **we focused on two points**: 1. We wanted to show students the way to get precise data and develop project from these first results; 2. We wanted that students learn to live and feel with nature by developing ideas for art, writing stories about trees and find out tree history.

2. Science

For our **project “Tree stories”** we took data about trees with students and we invited two scientists, a historian and a specialist for international development of forests for lectures and discussions.

For better understanding of hydrological problems, we showed **the development of the Lippe river by lectures and exhibitions**, because this river has been extremely dirty and is now an example for renaturalization.

3. Community

In our projects (Tree stories and Tributary River Lippe) we **help students of different nationalities to cooperate** in our wonderful park area together with the German students to learn to know their new home and area. We had discussions about our results and nice meeting at the end of both projects: Focus was on a good evaluation of the projects.

4. Technology

For the projects we organized two groups: one group with modern mobiles working with Data, one group had to take data with traditional instruments. So, students had the possibility to compare the correctness of the results.

They have put the data all at once into the GLOBE data entry when the discussion was finished. After all some very interested students started to develop an online information for the group about the projects` development.

The partner schools in general offer very modern electronic equipment for the presentations and for taking data in the surrounding.

5. Communications

The GLOBE projects in our area (Tree stories/ Tributary Rivers) are part of a public discussion in the local newspapers.

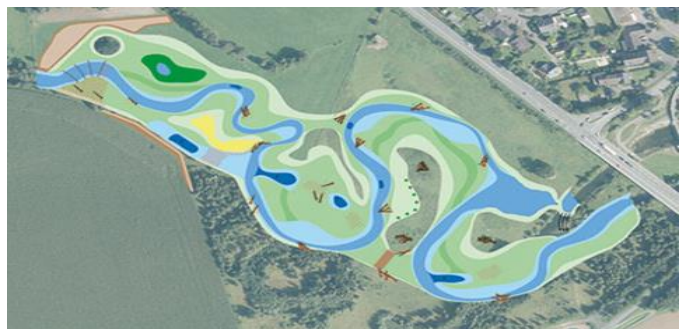
We have intense discussions with some German organisations for environmental education working with similar goals for education as we do.

We meet monthly to discuss new developments; the way we do our projects and the way we communicate within the GLOBE community.
For our meetings we invite members of the local universities and a high amount of interested partners in our area.

Plans and Ideas for Next Year:

- We will pass the **responsibility for country coordinating to the Science college Overbach** and to **Annika Loevenich as country coordinator**. The new center for GLOBE.gov may be visited online <https://sciencecollege.de>. The place and the people are experienced in Mint, STEM and in environmental education. We look forward to the start of the new center for GLOBE in Germany and to a wonderful cooperation.
- We want to **restart an Erasmus project “Tributary Rivers in Europe”**, which we wanted to organize in the time before the pandemic.
- We will **involve the public in Paderborn** (schools and groups of young people outside school) to work with GLOBE protocols by cooperation with the Museum of Natural History.

Have a look on Science College Overbach and at the tributary river Lippe after renaturation in Paderborn



Greece

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Organization and Number of Staff:

National and Kapodistrian University of Athens - 4 staff members

Funding by:

National and Kapodistrian University of Athens

Cooperating Organizations/Individuals:

Foundation for Research and Technology, National Observatory of Athens

GLOBE Schools (what types, how many):

Primary and secondary education + schools through teachers' accounts: 40

GLOBE Areas you and schools focus on:

Atmosphere, Hydrology, Urban environment, Earth as a System

Number of Schools Reporting Data Over Past Year:

5

Program Implementation, International Cooperation in GLOBE Network, and Activities over Past Year (categorized by GLOBE Strategic Plan 2018-2023 Goals):

1. Education

Implemented along with 7 more GLOBE partners in the European Union, an **educational project** based on several GLOBE concepts. The objective of the project was to **study cities as urban ecosystems**. Open course material was prepared on the link of SDGs to cities (more information at www.pulchra-schools.eu)

2. Science

Implementation of the project "Science in the City"; the project explores cities as urban ecosystems
Climate change impacts; Understanding mitigation and adaptation

3. Community

Several local community events; seminars to schools, open schooling activities, demonstration actions

4. Technology

Integration of Earth Observation based Land Use/Land Cover change module to the educational platform for the schools

5. Communications

Newsletter, promotion of material through social media

Plans and Ideas for Next Year:

- Deactivate schools that consistently do not contribute to GLOBE activities.
- **Link Globe – Greece to the Climate Academy**, a virtual forum for awareness raising of the young generation on climate change impacts as well as on climate change mitigation and adaptation

Ireland

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Organization and Number of Staff:

GLOBE is coordinated in Ireland by the Environmental Education Unit of An Taisce. An Taisce is an Environmental NGO with approximately 70 full-time staff. There were 3 team members (not all full time) working on GLOBE during the Oct 2022 to Oct 2023 year.

Funding by:

Ireland's Environmental Protection Agency (EPA) is currently funding GLOBE Ireland

Cooperating Organizations/Individuals:

GLOBE Ireland partners with The Environmental Protection Agency, working closely with the EPA citizen science and air quality teams. GLOBE also collaborates with local authorities, teacher organizations, scientists, and relevant subject matter experts in Ireland.

GLOBE Schools (what types, how many):

The GLOBE program in Ireland works with Primary schools (ages 4-12) and Secondary schools (ages 12-18) across the country. **Over 400 schools registered for GLOBE Ireland campaigns/pilot campaigns during the year**, highlighting the growing interest and engagement of schools in citizen-science, outdoor learning, climate-related investigations, and action-based solutions to environmental challenges. As of, October 2023 there are **123 Fully Trained GLOBE Educators and 1100 GLOBE Observers** in Ireland

GLOBE Areas you and schools focus on:

GLOBE Ireland works across the Atmosphere (Weather, Climate, Air Quality), Biosphere (Green-up, Green-down, Tree measurements), Hydrosphere (Water temperature, pH, nutrient pollution, and ecological sampling)

Number of Schools Reporting Data Over Past Year:

In Ireland, many of the GLOBE schools participate in a non-GLOBE nitrogen dioxide protocol, data was reported at a national level by over 200 schools using this protocol. In the past year, 32 schools have reported 265,717 total observations directly to GLOBE, 8 of these schools reported via an automatic upload from their school weather stations.

Program Implementation, International Cooperation in GLOBE Network, and Activities over Past Year (categorized by GLOBE Strategic Plan 2018-2023 Goals):

1. Education

An objective of the GLOBE Ireland team is to raise awareness and understanding around key environmental topics and themes, particularly **air quality, water quality, biodiversity, climate change and sustainability**, and how they are interlinked.

During the year, we provided:

- Educational resources to support learning and participation in our campaigns
- Teacher Training
 - o Empowering teacher training that focuses on inquiry-based outdoor learning, where participants can experience the value of connecting with nature and the environment, using GLOBE protocols and relevant environmental themes
 - o Online 'Continuous Professional Development' Training using GLOBE protocols and other themes
 - o Online training on campaign participation
- Student Engagement and Training
 - o Student-focused webinars where subject matter experts and education specialists join to listen to student presentations
 - o Student workshops on themes of weather, rivers as ecosystems, tree observations
 - o Student presentation webinars and in-person events where students present their projects to an audience and get feedback.
 - o International collaboration by linking up schools and setting up an introduction call.

2. Science

In 2023-2024, GLOBE Ireland coordinated **citizen science campaigns on air quality, phenology** (seasonal tree observations), **weather and climate, and rivers as ecosystems** (water quality, river system habitats and biodiversity). The team developed new collaborations with experts, scientists, and local authorities to deliver fulfilling, relevant, and meaningful citizen-science experiences to teachers and students across Ireland.

3. Community

The GLOBE Ireland community **continues to grow** due to many factors, primarily due to an **increase in staff members** which allows for more time spent promoting GLOBE, developing, and coordinating campaigns and building relationships with Teachers. As a result, there are more opportunities for schools to engage with different GLOBE spheres and themes, resulting in an **expansion of our teacher network to over 1,000 teachers**. There is also a growing appetite for citizen-science in Ireland. Newly established or rekindled collaborations with universities, Green Schools teams, local authorities, and local experts have all helped the team create meaningful citizen-science experiences.

In May 2023, we held our first in-person student sharing and prize-giving event since 2019. **Over 100 students and teachers joined us in Dublin for an inspiring morning of student presentations and an award ceremony**, the winning projects submitted to GLOBE Ireland can be viewed here: [@globe ireland | Linktree](#). The event was also attended by the Director General of the Irish Environmental Protection Agency (EPA), Laura Burke and senior EPA managers, local authority

CARO (Climate Action Regional Office representatives and LAWPRO (Local Authority Waters Programme) representatives.



GLOBE Ireland has facilitated **multiple successful and rewarding international collaborations** between Irish schools and GLOBE France, GLOBE Malta, GLOBE Israel, and GLOBE Netherlands schools over the past year

4. Technology

We encouraged participants to use the **GLOBE Observer App and GLOBE website** to add observations and collected data to the **GLOBE database**. We also use **ArcGIS dashboards and maps** for gathering and sharing non-GLOBE protocol observations.

5. Communications

The GLOBE program in Ireland regularly communicates with schools via **newsletters, social media, webinars and email**. Our social media audience continues to grow across **Twitter, Facebook, and Instagram** platforms. We use communication platforms to recruit new schools, promote GLOBE campaigns, connect with campaign participants and encourage collaboration between GLOBE Ireland and the greater GLOBE community.

Plans and Ideas for Next Year:

- Coordinate national air quality campaign (nitrogen dioxide) in autumn 2024.
- Develop and coordinate a pilot campaign on air quality (Particulate Matter) for autumn 2024.
- Further development of GLOBE campaigns based on successful pilot outcomes on water quality, weather and climate, and phenology.
- Promote and facilitate collaborations between Irish schools and international GLOBE schools.
- Strengthening and expansion of the network of teachers and teaching organisations in Ireland.
- Provision of teacher training programs (in-person and online) on GLOBE.
- Engagement and promotion of the work of GLOBE Ireland within the international GLOBE community.
- Continue to work with the GLOBE Implementation Office to develop the NO₂ investigation as an official GLOBE protocol.

Italy

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Organization and Number of Staff:

ASSOCIAZIONE GLOBE ITALIA

2 Country Coordinators and 6 Staff

Funding by:

European, National, Regional and from private foundations, calls for proposal, Municipalities and schools' own budget.

Cooperating Organizations/Individuals:

GLOBE ITALIA Association, set up with the aim of supporting the GLOBE ITALY School Network with training courses, activities, events and materials. The implementation of GLOBE in the school network is shared by:

- LABTER-CREA located in Mantova, focused on functions as coordination, information and communication, web management, event promotion and management
- IISS Malignani – BASSA FRIULANA located in Cervignano del Friuli, focused on testing the use of GLOBE protocols in primary and middle schools, promoting the use of GLOBE protocols in high schools' projects, event promotion and management

GLOBE Schools:

Comprehensive School, including Primary and Junior High Schools – 34, Senior High Schools - 71

GLOBE Areas you and schools focus on:

- Hydrosphere (16 reported in the past, 3 currently reporting)
- Atmosphere (36 reported in the past, 9 currently reporting)
- Soil (2 reported in the past, 0 reporting)
- Land Cover (9 reported in the past, 7 currently reporting)
- Earth as a System (6 reported in the past, 3 currently reporting)
- MUC (6 in the past, 3 currently reporting)

Number of Schools Reporting Data over Past Year:

6 Junior High Schools + 9 Senior High Schools

Program Implementation, International Cooperation in GLOBE Network, and Activities over Past Year (categorized by GLOBE Strategic Plan 2018-2023 Goals):

1. Education

"School Generation on the move with GLOBE" Project

The project was designed by the GLOBE Italia APS Association to educate teachers of **30 schools from 6 Italian regions** (Friuli Venezia Giulia, Lombardy, Tuscany, Campania, Sicily and Sardinia) in mission, methodologies and the scientific practices of the GLOBE Program came second in the ranking of the "Sustainability and Ecological Transition" section of Ministry of Education call and had been awarded a loan of 100,000.00 euros. The Project **included an online training course for at least 60 teachers** of schools of all levels related to monitoring of the spheres of the planet with a focus on Climate Change and an integration of microplastics monitoring, online webinars for students, regional events and national event. The course will allow at least 60 new Italian GLOBE Teachers to be certified.

2. Science

SLE-GO Science Learning Expedition Gorizia-Nova Gorica, 20-21 April 2023

The expedition offered (*in the first day*), **200 students, researchers and citizens** an immersive exploration experience using Science glasses. The project's **mission is to inspire people at the IT-SLO border to know and take care of their environment and facilitate engagement useful for learning and suggesting new partnership possibilities.** The exploratory activities used protocols and Apps developed by GLOBE. (The description of the expedition continues in the Community Section)

MINCIO Project 33rd edition

The 33rd edition has been carried out with a significant increase in the number of classes and stations monitored: for a total of **17 classes and 16 monitored stations.** High values of AMPA, a Glyphosate metabolite, were found in all the investigated stations.

MICROPLASTICS MONITORING OF THE WATER OF RIVER MINCIO, SOME ITS TRIBUTARIES AND THE RIVER PO" 2nd edition

It has been the second **systematic scientific research on the presence of microplastics** in the Mincio river, in three of its tributaries and in the Po river. Altogether, **6 schools, 21 classes, 22 teachers and 423 students participated in the project, 26 study sites were monitored.** The sampling in 6 of the 12 sites on the Mantova Lakes was done in the central stream from a boat and not from the shore: as the students had hypothesized, the number of microplastics was significantly lower than those identified in the shore sampling. A gallery of hundreds of images of microplastics was produced.

INTERNATIONAL MICROPLASTICS MONITORING CAMPAIGN, MARCH-MAY 2023

36 Teachers from 29 schools took part in the Campaign, of which 3 from Czech Republic, 7 from Croatia, 2 from Estonia, 1 from Ireland, 1 from Slovakia, 20 from Italy, 2 from Taiwan. Schools produced a high number of Data Sheet concerning the situation of their water bodies, as well as, precious Image Galleries, posters, video, summary reports, etc. All these materials were uploaded to the Deakin University Cloudstore.

[OCEAN MATTERS: Safeguarding our Oceans Project](#)

In the project, managed by TERI, the Indian Institute for Energy and Resources, DEAKIN University and GLOBE Italia play the role of the Microplastics Monitoring Protocol trainers. The organizers had planned the **6 webinars for teachers of 3 cities of the West Coast of India: Mumbai, Goa and Mangalore**. The meetings of Mumbai and Goa had been realized in 10-11/2022, the meetings of Mangalore were carried out in 11-12/2022. Due to Indian school holidays and the pressing commitments of the new year, not many teachers were able to upload the collected data to the Cloudstore. To help teachers upload data TERI is developing specific tutorials, built in collaboration with the MMP Team. In any case, the collaboration with TERI is very rewarding.

[RIO SCHOOL Project](#)

The project was carried by IS Strozzi and ITET Mantegna. IS Strozzi **monitored the traditional chemical parameters foreseen by the GLOBE and GREEN projects** with the addition of the monitoring of microplastics.

[3. Community](#)

[WitS: Climate Change and Archaeological Heritage; a Conference in Aquileia \(UD\) Dec. 2, 2022](#)

The project #Where is the Science? supported by the FV Region **draws the attention of students and citizens to the problems of the Lower Friulian Plain linked to climate change, examining in particular the issue of the rising levels of the Adriatic Sea**. The rise of brackish waters, together with the surface waters that flow abundantly in the area and the groundwater, generates possible risk scenarios also for the archaeological assets of the UNESCO site of Aquileia.

[Rivers in Spring, the International World Water Day in Mantova, 22 March 2023](#)

After two years of online editions, the event finally returned in person on the Lakes of Mantua, with its **3000 participants**. There was a new addition to the event format: **a national online live broadcast** in Italian managed by Lorella Rigonat, GLOBE Italy CC and Graziella Mocellin, webmaster of GLOBE Italia **and a live international online event managed by Alessandra Sutti and Stuart Robottom of DEAKIN University, Australia**. The management of three different methods for the same event constituted a complex organizational challenge, overcome by the important and widespread collaborations obtained from the community.

[SLE-GO Science Learning Expedition Gorizia-Nova Gorica, and Earth Day 20-21 April 2023](#)

The **expedition of 200 students and researchers**, from high schools in FVG and Slovenia, carried out investigations on environmental issues at 6 stages located in Gorizia and the surrounding hills in the cross-border area. The field activities were followed from Piazza Vittoria in the city of Gorizia. The event also involved **participants of the GLOBE Europe-Eurasia network from the Czech Republic, Croatia and Slovenia, and researchers from Deakin University (Australia)** connected remotely.

<https://www.youtube.com/watch?v=QLKvh1sIXOo>

The next day, the event opened with a **Land Art at the Transalpina Station**. From here over **1230 participants** created a long multicolored thread that physically and visually ran through Gorizia and Nova Gorica, symbolically overcoming the border with science. Then, the student explorers of the first day together with local bodies, associations and schools **celebrated EARTH DAY 2023 with a theme "Invest in our planet"**, demonstrated through exhibits, games, interactive laboratories and treasure hunt ". <https://www.youtube.com/@GlobeItalia-it/featured>

In November 11, The SLE-GO project concluded with an artistic event-show: "Science Learning Expedition GO meets #Laiselasience830" Journey of History Science Territory Music, testifying to the journey made with schools, scientists and researchers, citizens. <https://www.globeitalia.it/sle-go/news/634-sle-go-2023-evento-conclusivo-immagini-e-rassegna-stampa.html>

[Read the horizon, write the future](#)

New Local school network – ISIS Bassa Friulana in cooperation with Associazione GLOBE Italia and the local University propose at the FVG Regional Educational Office a new project to develop STEM with focus on climate change, innovative pedagogical approaches and use of technologies in teaching.

October 2022-June 2023: **66 classes with 1050 students from primary to high schools participated with laboratory at school and outdoor developed to be included in the curriculum.** As part of the project, a Summer School was organized from 14.06.23 to 16.06.23 where researchers guided the students' work, such as prof. Maurizia Sigura and prof. Marco Contin of UNIUD-DISA, Dr. Gabriele Cagnolini of Italia Nostra and the volunteers of the GLOBE ITALIA Association.

Promoting and Creating GLOBE Areas in Friuli Venezia Giulia: a way to create or develop urban spaces that connect people in a healthy environment and innovations for social and environmental benefit

1. Parco Pradulin, a new GLOBE area

Within the "PULCHRA Project: Regenerating Urban Space to connect People in a Healthy Environment", classes of ISIS Bassa Friulana in Cervignao del Friuli, got authorized from the local administration to **redevelop an unused and partly degraded green area and transform it into a GLOBE area.** They proposed to create a connected OPEN-LAB / a co-managed School-Park to promote understanding of the climate change impact, to develop knowledge regarding the city as an urban ecosystem and facilitate the participation of citizens of all ages in scientific discovery, to contribute to the growth of an aware, innovative and participatory community.

2. Bosco Brussa Natural Park: another GLOBE Area

The Bosco Brussa Natural Park, managed by the voluntary association of the same name, has reached an agreement with the GLOBE Italia APS Association to **adapt it to the GLOBE Area, with the installation of specific GLOBE signage.** Using the instructions and instrumentation made available by the GLOBE Italia APS Association and with the assistance of the volunteers of the Bosco Brussa Association, students and citizens will be able to detect parameters of atmosphere hydrosphere, pedosphere, and vegetation. This is a practical and effective way to involve schools and communities on environmental problems.

MINCIO AND MICROPLASTICS MONITORING OF THE WATER OF RIVER MINCIO, SOME ITS TRIBUTARIES AND THE RIVER PO Projects

A good number of partners was involved in the project: Deakin University, Università Politecnica delle Marche, Università di Parma, Municipal Administrations of Curtatone, Rodigo and Roncoferraro, Agriturismo La Montina, Associazione Amici della Vallazza, Pro Loco Rivalta su Mincio, Mantova Diving Club, Stancari family in Massimbona, etc.

Project MINCIO and Rivers in Spring belong to the River Mincio Contract, a political-environmental negotiation involving **more than 60 stakeholders:** Regional, Provincial, Local bodies plus a number of non-profit associations to sparkle community actions aimed at redeveloping the river basin in a sustainable way. With the adhesion to the River Mincio Contract, GLOBE Italia, through LABTER-CREA, assists **schools to become components of participatory processes that improve the river and its territory.**

Microplastics Monitoring Campaign, March-May 2023

During the Campaign, schools created posters documenting the activities carried out, the results of the investigation and the probable consequences on the environment and health. With posters and equipment, the **schools organized interventions in their schools, other schools, their communities and shopping centers.** In this way they have made a great contribution to the MMP dissemination and to the broader awareness of the microplastics spread in the spheres of the planet.

GLOBE Annual Meeting, Denver, Colorado (July 2023)

Deakin University, (A. Prof. Alessandra Sutti, Ing. Stuart Robottom), LABTER-CREA and GLOBE Italy (Prof. Sandro Sutti) carried out **a lightning presentation and a symposium, structured in a panel and in a miniworkshop on Microplastics Monitoring Protocol Trial,** in collaboration with GLOBE E-E RCO (Mrs Lenka Kleger), the University of California Berkeley (Mrs Tracy Ostrom, , the State University of San Francisco (Dr Matt Ferner and Prof. Edward Carpenter, the "father of microplastics studies in the

Ocean"). Contact has been established with NASA (Dr Amy Chen) to discuss the possible organization of an international workshop focused on the MP.

GLOBE E-E RCO Meetings

Globe Italy took part in all the monthly GLOBE E-E meetings.

GLOBE at the Suzzara Science Festival (October 26-29)

Associazione GLOBE Italia and LABTER-CREA, which are part of the Scientific Committee of the Science Festival, proposed two lectures and an activity. Among the readings it is worth mentioning the online one by **Dr John T Reager of the Jet Propulsion Laboratory, NASA, who spoke about the change in the ongoing water cycle**, induced by climate change, and future water availability scenarios with focus on Europe and Italy. The activity consisted of **two Teacher Training Meetings on Phenology and the carbon cycle** by Lorella Rigonat and Graziella Mocellin for teachers of primary and secondary schools in Suzzara.

4. Technology

We have good reasons to hope an improvement of the entering of data by schools thanks to the use of Apps. Many GLOBE Observers are active in our country.

5. Communications

GLOBE Italia is using **YouTube, Facebook, Telegram, Twitter** to disseminate the action of the network and to connect schools and citizens. The edition of WWD and SLE-GO EARTH DAY are available on GLOBE YouTube and Facebook.

A fortnightly newsletter is sent to schools-teachers and people registered in GLOBE Italy and, in particular moments, even more times in a week. Many newspaper articles and local TV have covered this year actions. The links to press review and social media can be found on www.globeitalia.it

Plans and Ideas for Next Year:

Microplastics Monitoring Campaign 2024 - GLOBE schools in Italy will be invited to use the microplastics protocol mentioned before, along with the traditional GLOBE Hydrology measurements.

A **Workshop online** focused on Microplastics Monitoring Protocol to negotiate with NASA and NOAA the submission of the protocol for consideration, **in collaboration with the University of California Berkeley and the State University of San Francisco.**

A workshop in-person in San Francisco Bay, in collaboration with the University of California Berkeley, the State University of San Francisco, NASA, NOAA etc.

We plan to realize, in presence the following activities:

- 34th edition of Mincio Project
- 24th edition of Rivers in Spring, WWD
- 6th edition of RIO School Project
- 4th edition of Microplastics Monitoring of Mincio River, some of its tributaries and the Po River
- 22st edition of At school on the river
- 13th edition of Earth Day
- 2nd edition of Science Learning Expedition

Kyrgyz Republic

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Organization and Number of Staff:

GLOBE Kyrgyz / 3 staff

Funding by:

At the expense of various sponsors

Cooperating Organizations/Individuals:

- NABU in the Kyrgyz Republic
- Kyrgyz National University
- Embassy of the United States in Kyrgyz Republic
- Osh State University

GLOBE Schools (what types, how many):

Secondary Schools / 60

GLOBE Areas you and schools focus on:

- Atmosphere
- Hydrosphere
- Biosphere

Number of Schools Reporting Data Over Past Year:

7 schools

Program Implementation, International Cooperation in GLOBE Network, and Activities over Past Year (categorized by GLOBE Strategic Plan 2018-2023 Goals):

1. Education

Several times, we have organized **online seminars with the participation of scientists**. For example, one biologist (Mr. Zhumabaev Kubanych.) made a presentation of his scientific results on the topic: Snow leopard of the Tien Shan. What's nice is that after the presentation they are still in cooperation.

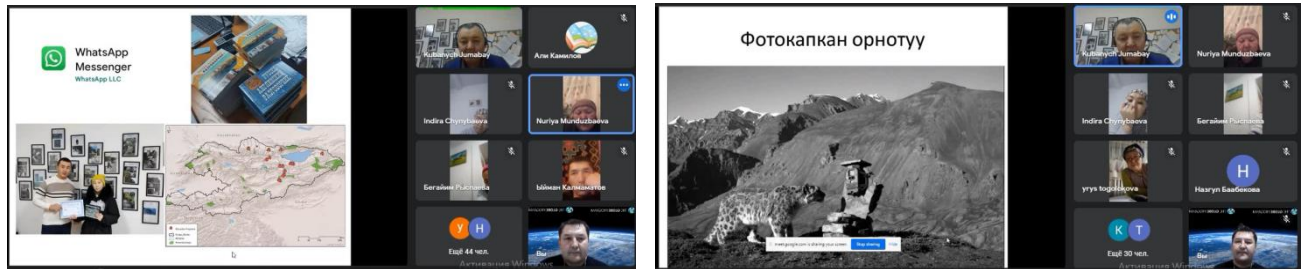
The next online seminar was on the topic of soil: **Soil is the mirror of nature**. This presentation was made by Prof. Tenirberdiev Nurbek.

2. Science

We don't have any serious scientific work yet. But we recognise the importance of the science part of the GLOBE program and hope there will be scientific results in the future as well.

3. Community

The number of GLOBE schools is 60 that have undergone training. The GLOBE community is growing for the better every year. **Our community consists not only of teachers and students, but also of scientists.** Nowadays, many scientists are open to collaboration between school teachers and students.



4. Technology

n/a

5. Communications

Three times we organized an online meeting with scientists from the country. They met scientists, exchanged ideas, and most importantly, GLOBE teachers began to receive the necessary information and data from them.



Plans and Ideas for Next Year:

- Regular online seminars for teachers and students. They will be organized to support post-GLOBE training.
- GLOBE Student exhibition for Earth Day 2024
- Organize a GLOBE summer school. This school will involve scientists, teachers and students.
- Open a special Geosite at a school in Bishkek. Devices will be purchased and installed.

Latvia

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Organisation and Number of Staff:

Children's Environmental School is a non-governmental organisation (NGO) for the environment and education. The GLOBE coordination team includes 1 country coordinator, 1 Deputy CC, 5 trainers, and 1 event organiser for large events.

Funding by:

Coordination of the GLOBE program is funded by the Ministry of Education and Science based on a delegation agreement. Additional activities are supported by grant projects from different foundations and private donations. Respective municipalities support school participation.

Cooperating Organizations/Individuals:

Embassy of the United States of America, University of Latvia, Ministry of Education and Science, municipalities.

GLOBE Schools (what types, how many):

In Latvia, there are 45 public schools registered in the GLOBE database, 22 are reporting (within the past 3 months) or have reported data. There are 46 fully trained GLOBE educators.

GLOBE Areas you and schools focus on:

From schools that are reporting or have reported in the past:

- Atmosphere: 22
- Earth as a System: 12
- Hydrology: 11
- Land Cover: 7
- Soil: 6

Most schools focus on more than one area; some have tried all areas; some focus on just one, atmosphere, or two, usually atmosphere and hydrology, areas. **The atmosphere is the most popular area to start with for new schools**, as it is or is perceived as the most uncomplicated.

Number of Schools Reporting Data Over the Past Year:

1: Malpils Secondary School

Program Implementation, International Cooperation in GLOBE Network, and Activities over Past Year (categorised by GLOBE Strategic Plan 2018-2023 Goals):

In 2023, schools in Latvia are struggling with post-Covid challenges, teachers had to catch-up with delays because of the pandemic and distant learning periods. In addition, schools are busy with adjusting to the new curriculum reform, and most of active teachers (including those doing GLOBE) are involved in the development of new teaching materials required by the new curriculum. In the result, teachers are overworked and not enthusiastically responsive to GLOBE activities. Taking all that into account, this year **we have focused on developing supporting materials aimed at helping teachers to integrate GLOBE into their everyday curriculum**, as detailed in the following subsections.

1. Education

We invited schools to participate in GLOBE campaigns and related webinars, including **European Phenology Campaign and the Earth Day 2023 event GLOBE for All: Connecting Our Community**. We have prepared an **overview of GLOBE protocol links with Latvian national education curricula topics to encourage teachers to use GLOBE protocols for teaching curricula content**. It has been submitted for publication in the largest teaching material e-repository.

Four new teachers registered with GLOBE this year, and we tried to organise an introductory training workshop online. Unfortunately, we got no response and thus the workshop didn't happen. But one of the new teachers, working at a school already participating in the GLOBE program, completed eTraining, thus doubling the number of e-trained GLOBE teachers in Latvia.

One teacher with three of her students participated in the GLOBE Regional Learning Expedition in Tartu, Estonia, from August 7th to 10th. She shared her experience on her school's Facebook page.

On March 19th til 21st, the **Country Coordinator participated in the GLOBE Trainers and Mentor Trainers Meeting in Prague, Czech Republic**. Participants shared their experience with GLOBE trainings, got acquainted with the new GLOBE Trainer and Mentor Trainer certification process and Data Literacy activities.

On May 15th, we successfully organised an **informative and discussion workshop for Latvian GLOBE Trainers**, sharing experience gained in the Prague Meeting.

2. Science

We invited students to participate in International Virtual Science Symposia 2023 and to attend GLOBE Student Virtual Conference 2023.

3. Community

We hosted GLOBE Europe and Eurasia Regional Meeting in Riga, Latvia, October 16th till 20th, in an excellent cooperation with the GLOBE Implementation Office (GIO), Regional Coordination Office (RCO), the Embassy of the United States of America in Latvia and the Ministry of Education and Science of the Republic of Latvia. Five Latvian teachers participated; two were supported by the RCO and three by GLOBE Latvia from raised private donations.

The country coordinator also participated in **Europe and Eurasia Region monthly meetings for country coordinators**.

We met online with one Latvian school interested in joining GLOBE, and as the result, one teacher registered an account in the GLOBE database.

We had an **online meeting with GLOBE Estonia and GLOBE Lithuania to plan a joint project supporting GLOBE activities in Baltic countries**.

4. Technology

Since Latvian translation of the GLOBE Observer app was added to the October 2023 update, we have been rechecking translation and planning a translation of the yet untranslated content that has been added to the app after we completed and submitted our first translation.

5. **Communications**

We sent **monthly newsletters** to GLOBE teachers, informing them about relevant and actual GLOBE news and events.

We published information about GLOBE activities on **our website and social media pages** and accounts.

We promoted GLOBE program activities and experience, as well as the Regional Meeting, at the **largest national conference for science teachers in Latvia**, organised by the University of Latvia.

Plans and Ideas for Next Year:

There is much uncertainty about 2024 due to schools trying to manage the fallout of the COVID-19 pandemic, the Russia-Ukraine war, and implementing the national curriculum reform. Nonetheless:

1. **Education**

We will develop a **new GLOBE teacher training program** and get it certified by the Latvian education system authorities. It will motivate teachers to participate in our workshops by allowing them to add it to their mandatory professional development.

We will encourage schools to **use GLOBE to teach their regular curriculum**.

We will continue to invite and encourage schools to participate in GLOBE campaigns and try to adapt some in Latvian for schools that cannot participate in international events because of language issues.

2. **Science**

We will **continue to translate GLOBE materials into Latvian**. To align with The Year of Climate and Carbon Campaign, in 2024, we will work on the **Carbon Cycle protocols and learning activities**.

We will organise a **teacher training workshop** introducing Latvian teachers to the carbon cycle, in cooperation with experts involved in the YCC Campaign.

We will review and update the GLOBE protocols we had translated at the beginning of our participation in the GLOBE program. Updated protocols will be published in the Latvian country page on the GLOBE website (globe.gov).

3. **Community**

The GLOBE Annual meeting will be organised in one of the project schools in October 2024.

During this event, GLOBE Games and workshops about using the GLOBE Carbon Cycle protocols and learning activities will be organised.

4. **Technology**

We will review and update the Latvian translation of the **GLOBE Observer app**, including the content that is not currently translated, and **promote the use of the App in data collection**.

5. **Communications**

We will continue communication with schools through monthly newsletters.

We will continue to publish information about GLOBE activities on our website and social media pages.

We will continue to promote the GLOBE program in public events like science teacher conferences, according to Covid-19 pandemic-related conditions.

Lithuania

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Organization and Number of Staff:

Lithuanian Centre of Non-formal Youth Education. There are 129 employees in total, 1 of them is working with GLOBE.

Funding by:

Ministry of Education, Science and Sport

Cooperating Organizations/Individuals:

Embassy of U.S in Vilnius.; Vilnius University

GLOBE Schools (what types, how many):

33 in total, some are more active than others, mostly progymnasiums and gymnasiums

GLOBE Areas you and schools focus on:

Atmosphere, Earth as a System, Hydrology, Land Cover, Soil

Number of Schools Reporting Data Over Past Year:

18

Program Implementation, International Cooperation in GLOBE Network, and Activities over Past Year (categorized by GLOBE Strategic Plan 2018-2023 Goals):

1. Education

During the annual scientific conference, we had a **guided tour to the Vilnius University's Museum of geology**. The most important part was that students not only get an interesting excursion, but this is the university's museum in which students are actually studying geology every day. We hope that this experience could have been an inspiration for GLOBE students to choose study geology or other branch of nature sciences and maybe learn the whole museum by heart for their exams!

2. Science

At the end of the year, every year we have an **Annual students conference**. During the conference, students present their research done while participating in GLOBE just the same way as real scientists would do. This is a great way to practice working with scientific data and methods from the very beginning to the end. After learning the quarantine lectures, we had the first hybrid conference with some participants participating remotely.

This year we made **connections with the recently opened Vilnius University's Observatory**. This is a historical observatory (almost 100 years old), so it's being used by real scientists anymore, but an amazing place for students to get familiar with space and science. We hope for amazing collaborations in the future!

3. Community

We are very proud to have our first (and actually, one of the strongest) homeschooled team of six students and a mom/teacher!

This year Lithuania made **connections with GLOBE Netherlands**, as one of their teachers was traveling and while staying in Lithuania, visited GLOBE school and coordinating organization. Later he joined our scientific conference and participated in some other international projects ("Plastic Pirates Go Europe!") too.

The youngest students and their teachers were honored by being invited to the U.S. Ambassador's residence to commemorate International Pollinators Month and World Bee Day. They had a chance to talk with an ambassador, held a drawings exhibition, and participated in the education of the Ambassador's beekeeper taking care of his bees and collecting the honey. It was the most beautiful GLOBE close of the school year so far!

Representatives of the organization had been given the honor to participate in **the 4 of July celebration of the U.S. Embassy**, where had a chance to make connections with a lot of organizations and interesting people for further collaboration.

4. Technology

This year's conference was the first one with international participants and lecturers who were reading their research live through zoom on the big screen. The audience was giving them questions, and they were responding in real-time. Because some students were very young, live translation was provided both ways (also the first time).

The same went with lectures of foreign guests. We decided to prerecord lectures in case to avoid possible technical issues. Now those are published and can be watched again by anyone interested.

5. Communications

As always, teachers are getting **newsletters** with both the news from the local GLOBE community; and with short translations together with original GLOBE newsletters for further reading. The most important news and teacher achievements are being shared on **social networks**.

Participation in **Europe and Eurasia country coordinators meeting** was very productive as a way to stay in touch with other coordinators, to get inspired by so many good practices examples, and also to get a lot of very useful experiences during various trainings.

Plans and Ideas for Next Year:

- To make a Facebook group - as suggested by NASA outreach specialist during country coordinators meeting 2023.
- To collaborate with Vilnius University STEAM center and Vilnius University Observatory. To make virtual badges physical for students who earn them.

Malta

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Organization and Number of Staff:

Neither of the individuals overseeing GLOBE Malta is employed full-time by GLOBE. The Country Coordinator (CC) holds a full-time professorship at a university, and GLOBE-related tasks are undertaken beyond the scope of his regular duties. The Deputy Country Coordinator (Deputy CC) is a classroom teacher officially allocated three weekdays to actively advocate for GLOBE in schools and assist teachers.

Funding by:

GLOBE Malta operates without dedicated funds. Instead, it receives backing from the Directorate for Learning and Assessment Programmes (Ministry for Education, Sport, Youth, Research and Innovation and the Centre for Environmental Education & Research (University of Malta). Additional support comes from the US Embassy, HSBC Bank (Malta), and Europe Direct Gozo, which contribute by acquiring scientific equipment and sponsoring events for GLOBE Malta.

Cooperating Organizations/Individuals:

A researcher affiliated with the Institute of Earth Systems at the University of Malta is actively involved in directly assisting 9 schools in a project focused on weather observations. Furthermore, the non-governmental organization (NGO) Nature Trust – FEE Malta actively encourages GLOBE investigations in conjunction with activities associated with the Eco-Schools and LEAF programmes.

GLOBE Schools (what types, how many):

Total number of schools: 49. The schools are from the State, Church and Independent Sectors and are distributed thus: Primary schools (5 -11yrs): 30; Middle Schools (11-13yrs): 3; Secondary Schools (13-16yrs): 10; Post-Secondary Schools (16 – 18yrs): 2; University: 1; and Field Study Centres: 3.

GLOBE Areas you and schools focus on:

- Atmosphere (Air Temperatures, Barometric Pressures, Cloud Observations, Precipitations, Relative Humidities, Surface Temperatures);
- Biosphere (Green Up/Green Down, Biometry Trees, Vegetation Covers);
- Hydrosphere (Water Temperature, Water pH, Alkalinity, Conductivity, Transparency, Dissolved Oxygen);
- Pedosphere (Soil Temperatures, SMAP Soil Moisture)

Number of Schools Reporting Data Over Past Year:

31

Program Implementation, International Cooperation in GLOBE Network, and Activities over Past Year (categorized by GLOBE Strategic Plan 2018-2023 Goals):

1. Education

Integrated GLOBE into academic programs, we offer study units for the BSc Science for Education & Communication and the Masters in Teaching & Learning.

Conducted in-school **induction training sessions for students and teachers** of new GLOBE schools.

Conducted various lessons demonstrating how GLOBE seamlessly aligns with and enhances normal classroom schedules, illustrating its practical application in various educational contexts.

Presented the work done on Urban Heat Islands through GLOBE during the EduChange intensive 7-day field course in Malta. EduChange is a European funded project that aims to promote innovative teaching methods such as short educational clips, e-learning platform, multimedia online maps, and gamification. Attendees from the Netherlands, the Czech Republic, Norway and Malta were also given an overview of the GLOBE Program, the GLOBE Observer App and the Surface Temperature Field Campaign.

Visited several schools and led fieldwork sessions with students from seven schools. During the fieldwork student were taught how to measure tree height, to explain why tree height measurements are important and how to use the trees tool on the GLOBE Observer App.

2. Science

European Autumn Phenology Campaign 2022: The campaign was active between September and December 2002. Students from **3 schools** continued observing and gathering data from the same tree they had observed during the Spring Campaign. They successfully completed this Campaign and received a certificate.

European Spring Phenology Campaign 2023: Took place in Europe between February and June. Students from **10 schools** (3 of which 3 were new to the campaign) observe their tree growing from buds to leaves after its winter sleep and upload their measurements into the GLOBE database.

Urban Heat Island Effect Campaign: The campaign which runs in October, December, and March, is focused on looking at the impact urbanisation has on the Earth's surface temperature and how the surface temperature changes the dynamics of the Earth's atmosphere. The students' observations of surface temperature and atmospheric parameters contributed to a vast dataset accessible to scientists worldwide, facilitating the study of the urban heat island effect. **Twelve schools** from Gozo and Malta collected surface temperature readings using an Infrared Thermometer.

Volunteer Weather Observer Programme: Dr Charles Galdies from the Institute of Earth Systems, University of Malta, is the mentor and coordinator of this pilot project. A total of **ten educators** from primary and secondary State, Independent and Church schools have been selected and are recording and monitoring rainfall data.

Collaboration projects:

- **with Europe Direct Gozo:** Eleven schools participated in a year-long **campaign focused on improving air quality.** Schools were provided with the necessary equipment and guidance to carry out nitrogen dioxide measurements.
- **with Xrobb I-Għaġin ESD Programme and Ambjent Malta: The project, I Start as a Seed,** involved webinars about soil and the relation between soil, animals, plants and trees. Students carried out simple soil experiments and seed-sowing. A total of 864 students and 75 educators from 18 primary schools participated in outdoor learning sessions about the benefit of trees, the human impact on trees; and how to use the GLOBE Observer App to observe and report what's on land and in the sky.

- **with [GLOBE Ireland](#) and [GLOBE Israel](#)**: students took 5 **surface temperatures** of 3-4 different surfaces (concrete, bare soil, natural grass and artificial turf) together with **cloud observations** over 4 weeks in March 2023.

GLOBE Cooling Down Students' Investigation: Following the success of the first edition of the GLOBE Cooling Down Students Investigation by GLOBE Malta and the Xrobb I-Għaġin Outdoor ESD Program, the second edition **provided a communication channel between schools and local councils**. Students shared their research from the GLOBE Student Investigation and projects related to tree inventories with two mayors. They also explored justice issues related to the built environment and proposed related actions to bring about change within the schools and the local community. The students together with the mayors **explored the issue of urban heating and how local communities can be more sustainable**.

GLOBE International Virtual Science Symposium 2023: This year GLOBE Malta had **7 research reports submitted** for the IVSS, two of which involved national and international collaboration. (i) *Clean Air Matters: A Study on the State of our Atmosphere*; (ii) *The State of Our Sea: A Comprehensive Study of Marine Parameters*; (iii) *Can a tiny island in the Middle of the Mediterranean have Air Pollution?*; (iv) *How can we improve air quality at our school and its surroundings?*; (v) *The Impact of Surface Material on Temperature Variations*; (vi) *Comparing pH levels and surface sea water temperatures at two sites in Sliema*; and (vii) *Air Detectives: Exploring Air Quality at St Francis School, Victoria*.

GLOBE Water Bodies Challenge by Europe and Eurasia Implementation Office: Eleven schools participated in the 4th edition of the GLOBE Water Bodies Challenge. The students had fieldtrips to different water bodies in the Maltese Islands and shared their findings with GLOBE Europe and Eurasia community on the Water Bodies Challenge Padlet. All schools were awarded a certificate and a virtual badge.

3. Community

GLOBE student Gabriel Grech from Sacred Heart Minor Seminary, Victoria, Gozo was selected as one of the **new vloggers** for 2023-2024. Benjamin Copperstone from St Michael School was selected as one of the **GLOBE Student Vlogger Alumni Mentors** for 2023-2024.

The Deputy CC was nominated and elected member of **GLOBE Europe and Eurasia Regional Board**.

The Deputy CC served as a **judge for IVSS 2023**.

The Deputy CC was awarded the US Embassy award in recognition of her contribution to enhancing the relations between the US and Malta through The GLOBE Program.

4. Technology

The Deputy CC GLOBE Malta provides personalized support for teachers during their e-Training, while adding sites, inputting and visualizing data on GLOBE website.

5. Communications

Communication with GLOBE schools and teachers was maintained through **e-mail and one-to-one school-based meetings** by the Deputy CC.

Showcasing and promoting the work of the participating schools through regular updates of the **GLOBE Malta Facebook page** (with 1.2K followers to date) and the Malta Page on the GLOBE website.

The GLOBE Program and the students' investigations were disseminated through **newspaper articles and features on popular TV & Radio programmes on the national channel**.

Managing the GLOBE Malta stand at Foundation for Environmental Education (FEE) fest 2023 during which visitors were introduced to the GLOBE program.

Celebrating GLOBE's 28th birthday and Earth Day: The U.S. Embassy Valletta, Malta, GLOBE students from five GLOBE schools and representatives from the Green Diplomacy Network came together to show their support for environmental protection and joined in a community clean-up event in Sliema. Former NASA Chief Scientist Dr Jim Green and Sliema Mayor Mr John Pillow, joined in singing Happy Birthday GLOBE!

Participating in the **GLOBE Science Fair at Villa Rundle Gardens, Victoria** during which students presented their research in the Europe Direct Gozo – GLOBE Malta Air Quality Campaign. Students participated in a panel discussion where they exchanged ideas and opinions on how to tackle air pollution. The event also included a GLOBE birthday celebration.

The Deputy CC was one of the panelists during the Eastern Regional Council Annual General Meeting about 'Creating Liveable Cities!' on 3rd June 2023. She shared how students are engaged in data collection to better understand city dynamics, urban temperature, and air quality and how this empowers them to act in promoting sustainable cities and communities.

Plans and Ideas for Next Year:

- Continue engaging in discussions with the Ministry of Education to elevate the current position of the Deputy Country Coordinator (Deputy CC) to a full-time role.
- Continue actively exploring opportunities for further collaborative investigations, involving schools from other GLOBE countries.

Netherlands

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Organization and Number of Staff:

GLOBE Nederland, 5

Funding by:

Grant embassy USA, school memberships, (local)government, water boards

Cooperating Organizations/Individuals:

Research institutes: National Institute for Public Health and Environment (RIVM), Wageningen University, National Meteorological Organization (KNMI), University of Amsterdam, Utrecht University, NIOO, STOWA

Environmental organizations: IVN, Vlinderstichting

(local) governments: ministry of environment, province of Utrecht, province of Noord-Holland, several municipalities and 7 waterboards

GLOBE Schools (what types, how many):

Secondary schools, ±120

GLOBE Areas you and schools focus on:

Air quality, (biological) water quality, climate, GrowApp, research skills

Number of Schools Reporting Data Over Past Year:

We currently hardly work with data on globe.gov, but we work mainly with our own systems that we set up for “GLOBE research”: air quality, water invertebrates and GrowApp

Program Implementation, International Cooperation in GLOBE Network, and Activities over Past Year (categorized by GLOBE Strategic Plan 2018-2023 Goals):

1. Education

We developed learning materials for our new project “**Sniffer Bike**” where **students measure air quality with a sensor on their bike**. In the province of Utrecht we finished one pilot with 4 schools, and have expanded the pilot to 12 schools in the school year 2022-2023. In the province of Noord-Holland we started a pilot with 6 schools and in the municipality of Rijswijk with 2 schools.

Organization of a **national Science Fair for students at the Wageningen University**. Teams of upper forms students presented their GLOBE research for a jury of scientists. The winning team won a trip the Seal Centre Pieterburen for their microplastics research.

Microplastics project in the Netherlands, together with Hellen Parkhurst secondary school and the Plastic Soup Foundation. We received **funding from the U.S. Embassy to develop lesson materials for the microplastics protocol developed by GLOBE Italy**.

NO2 measuring with Palmes tubes campaign with KNMI

2. Science

We work together with scientists for the following projects:

- **GrowApp**: Arnold van Vliet, Wageningen University
- **NO2**: National Meteorological Institute (KNMI)
- **Particulate Matter**: National Institute for Public Health and the Environment (RIVM)
- **Plastic Soup**: University of Amsterdam
- **Water invertebrates**: Wageningen University, who published a scientific article and a consortium of partners (environmental organisations, scientists, waterboards)

3. Community

- Organisation of a national Science Symposium for students at the Wageningen University.
- Participation in the Regional Meeting in Riga with 4 team members.
- Several online meetings with GLOBE school coordinators to help implement GLOBE at schools.

4. Technology

We are constantly upgrading our website

5. Communications

We were in the national newspaper with our Snifferbike project and several projects were in **national and local newspapers and magazines for teachers**. Participation in multiple teacher conferences, specifically for Chemistry, Biology and Geography teachers.

Plans and Ideas for Next Year:

- We have a big plan together with the ministry of environment to roll-out the Snifferbike project across the country with participation of many local governments and order 1.000 sensors for 100+ schools.
- The NOx project using Palmes diffusion tubes together with the RIVM and KNMI is also included
- We continue the microplastics project and have new campaigns for GrowApp and water animals.
- We are also working on a new project about UHIE

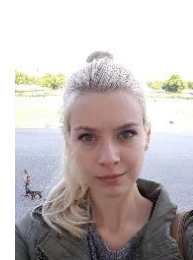
Many plans!!!

Republic of North Macedonia

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Organization and Number of Staff:

Ministry of Environment and Physical Planning, Staff - CC and DCC

Funding by:

Ministry of Environment and Physical Planning

Cooperating Organizations/Individuals:

Ministry of Education and Science, Faculty of Civil Engineering, Faculty of Forestry (University "St. Cyril and Methodius, Skopje), Peace Corps

GLOBE Schools (what types, how many):

Until now, we have included 33 schools, 12 secondary schools and 20 primary schools, 1 kindergarten, 103 globe observers.

GLOBE Areas you and schools focus on:

Atmosphere, Phenology, Hydrosphere, Pedosphere and GLOBE at night.

Number of Schools Reporting Data Over Past Year:

19 schools

Program Implementation, International Cooperation in GLOBE Network, and Activities over Past Year (categorized by GLOBE Strategic Plan 2018-2023 Goals):

1. Education

This year we are organizing for the first time a **three-day basic training for the GLOBE protocols** for new teachers. We have **41 new teachers** that applied. Also, **two-day advanced teacher training** will be held for teachers that already passed the basic protocol training. This training will last from 05 – 07 December 2023.

We can say for 2023 that in the past three months we have 17 active reporting schools and 2 schools that have reported in the past.

From an educational point of view, this year we had the **GLOBE program approved as a teaching program for free optional subjects for students in the sixth grade**. This program is available online for any teacher that wants to implement it.

This year we had **two teacher trainers attending a training for teachers in Prague, Czech Republic.**

Also, for the first time we had **three teachers participating in the GLOBE annual regional meeting for Europe and Euroasia in Riga, Latvia.**

The benefits that we are seeing are numerous as this program is implemented in competitions, presentations, experiments where teachers and their students apply for. Teachers use the GLOBE data and previous measurement results in other projects that are implemented together with international schools under the cooperation with the ERASMUS+ program

2. Science

New equipment, instruments and chemicals are obtained from the state budget by the Ministry of Environment and Physical planning necessary for effective implementation of activities and trainings for the professors and students, which will be distributed in December and/or January.

3. Community

We attended a **Bazaar for green skills for greener future as part of EUGreenWeek** where we **presented the GLOBE program** to students and teachers.

We are organizing a **three-day theoretical and practical training** for all the protocols including globe at night where we will have around **80 participants.**

Also, we organized an **event for Earth Day** where students and teachers attended with their own **poster presentations on what GLOBE means to them**, how are they using the protocols in regards to natural sciences etc. On that day every participating school received an infrared thermometer and the most active schools for 2022 also received a gardening kit. We had **representatives from the US Embassy and an opening speech was made by our Minister.** This event was **covered also in the news.**



GLOBE Bazaar for green skills(left); Earth day (center and right)

4. Technology

Students in their research often use **mobile phones with various applications and tools** to develop skills such as communication, archiving, photography, change tracking, computation and more. The Turn on the Night Kit from Laser Classroom is also used to implement one of the protocols.

5. Communications

The GLOBE Program in North Macedonia now has a social media **page on Facebook** where news, updates and accomplishments are posted for the wider public eye.

<https://www.facebook.com/globenorthmacedonia>

We are also active through a **Viber group with all the GLOBE schools in North Macedonia.** They receive regular updates on activities and campaigns through the group and through regular e-mail communication.

Plans and Ideas for Next Year:

For the following 2024 **through the US Embassy an NGO was awarded a grant (\$24.000)** for promoting the GLOBE program under the **project name EcoSTEM GLOBE: Empowering Environmental Education in North Macedonia.**

This project will strive to continue the program and expand it to even more new schools (at least five are intended under this project) and to obtain new equipment. Also, it is intended with this project to create a web site that will serve as a focal point to find all information related to GLOBE on a national level. Another training is planned to be organized for teachers as well.

As a Ministry, we will continue to support the program financially and administratively in the following 2024.

Also, we hope that schools will reach out to schools from other countries and **an international cooperation will be established** in the upcoming year.

GLOBE
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ГЛОБАЛНО УЧЕЊЕ И НАБЉУДУВАЊЕ ВО ПОЛЗА НА ЖИВОТНАТА СРЕДИНА

Portugal

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Organization and Number of Staff:

University of Coimbra

Funding by:

GLOBE Portugal is currently funded by the Earth Observation Laboratory of the University of Coimbra

Cooperating Organizations/Individuals:

GLOBE Schools (what types, how many):

GLOBE Areas you and schools focus on:

Number of Schools Reporting Data Over Past Year:

Program Implementation, International Cooperation in GLOBE Network, and Activities over Past Year (categorized by GLOBE Strategic Plan 2018-2023 Goals):

1. Education

In 2023, GLOBE Portugal made **significant strides in solidifying its presence and impact throughout the country**. With a dedicated focus on **reaching out to underrepresented communities**, the organization successfully engaged hundreds of students through immersive lectures and hands-on activities conducted in various schools nationwide.

Continuing its commitment to enhancing educational resources in Portuguese, GLOBE Portugal dedicated efforts to review and **develop materials, aiming to bridge gaps in both space and STEM education**. An essential facet of the program involved intertwining scientific knowledge with other disciplines such as arts and humanities, fostering a holistic approach to learning.

The **appointment of Margarida Anastácio as Deputy Director** has notably strengthened the program, contributing decisively to its growth and expanded influence within the country. Notably, the **establishment of the GPM Mentorship Education Track**, co-led by GLOBE Portugal, facilitated successful **connections between scientists from the Goddard Space Flight Center and European educators**. The ongoing second edition of this initiative signifies its success and the program's commitment to further expansion.

Looking ahead, the program plans to integrate this initiative with another significant endeavor, **GLOBE AGRO, spearheaded by GLOBE Portugal**. GLOBE AGRO, kickstarted in the Summer of 2023 at a dedicated workshop, **is tailored to provide specialized training and activities for vocational schools focusing on agriculture and forestry**. This initiative is set to become the cornerstone program of GLOBE Portugal in 2024, showcasing its dedication to practical, customized educational experiences.

The traveling exhibit 'Stories of a Changing World' continued to captivate diverse audiences while generating valuable educational activities as it toured the country. Efforts are underway to expand and enrich these activities, ensuring their continued impact.

Despite facing challenges in training Portuguese-speaking educators due to the structure of traditional GLOBE activities, the program allocated resources to initiate **in-person training sessions conducted by certified GLOBE trainers**. This proactive approach underscores the commitment to overcoming obstacles and enhancing the program's effectiveness in the region.



Figure 1. Students at a GLOBE Portugal lecture in Lisbon.

2. Science

The program in Portugal conducted an **extensive review of available materials in Portuguese**, emphasizing domains requiring scientific support for the creation of new content. To ensure the quality and relevance of these materials, **an advisory board consisting of esteemed scientists and science managers was established**, providing invaluable guidance and setting priority areas.

A significant focus was placed on developing tailored solutions that complement existing materials while addressing specific gaps in earth observation and atmospheric sciences. These efforts have resulted in the **creation of innovative resources that cater to land cover and atmospheric science objectives**, significantly bolstering the program's offerings.

The inaugural year of the program, under new management and a revised strategic plan, predominantly involved exploratory activities in the science domain. Notably, an **upcoming course at the University of Coimbra**, centered on integrating the GLOBE experience into STEM education, has been approved and awaits scheduling, signifying a promising step forward in educational initiatives.

Furthermore, the introduction of atmosphere-related materials and earth observation resources into school curricula has been greatly facilitated by the **GLOBE@Agro initiative**. This collaboration has added significant momentum to the program's efforts, amplifying its impact within educational institutions across the country.

3. Community

The program is currently **focused on school-oriented activities**. Even though we recognize the importance of communities, the second year of the new coordination under the Strategic Plan now in force, did not include an important community outreach component.

The GLOBE AGRO thematic package will support an expansion of community outreach activities. We will also seek collaborations with other GLOBE coordination offices to seek funding to design and implement impactful activities.

4. **Technology**

The program did not focus on technology-related activities in the past year. However, the advanced visualization and data discovery solutions being considered, and described earlier, have strong technological components.

5. **Communications**

The program focused on fostering **B2B meetings to cultivate a robust network of partners** dedicated to supporting the implementation of activities within schools and various organizations.

Additionally, the centerpiece of communication was the **Exhibit 'Stories of a Changing World', accompanied by its virtual counterpart**. Originally attracting hundreds of visitors at its inaugural location, the exhibit debuted in Torres Vedras in 2023, marking the commencement of the initiative's itinerary phase.

The online component comprises a comprehensive story map mirroring the entire exhibit's content, catering to a global audience with materials presented in English. Furthermore, an **upgraded website is slated to launch at watersheds.online, scheduled for Q1 of 2024, offering an enriched experience for users**.

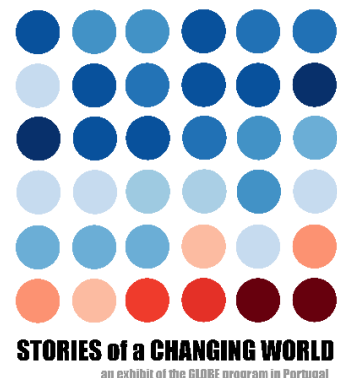


Figure 2 and 3: The exhibit Stories of a Changing World, currently in Torres Vedras.

Plans and Ideas for Next Year:

1. Strengthening Core Leadership:

Expand the leadership team, ensuring diverse representation and expertise within the program's coordination.

2. Expansion and Recruitment:

Focus on recruiting new schools and educators in line with the Strategic Plan objectives, aiming to expand the program's footprint across Portugal, with a focus on the GLOBE AGRO initiative.

3. Thematic Alignment and Trans-Atlantic Relations:

Review thematic areas to align the GLOBE experience in Portugal with the country's educational and scientific priorities, emphasizing the enhancement of trans-Atlantic relations and water equity.

4. Collaboration with Scientists for Resource Development:

Collaborate closely with scientists to develop relevant educational materials, specifically targeting areas such as earth observation, atmospheric science, and land cover studies.

5. Scaling and Completion of Ongoing Activities:

Prioritize scaling and completing existing activities already underway in multiple schools, ensuring their successful implementation and completion. Review progress and apply lessons learned from programs like the GPM Mentorship Education Track.

6. Educator Training and Connection Building:

Intensify efforts to train educators as trainers, empowering them to disseminate GLOBE-related knowledge more effectively. Strengthen ties with other GLOBE countries to foster collaboration and knowledge sharing and secure competitive funding.

7. Emphasis on Diversity, Equity, and Inclusion:

Place a central focus on activities that promote diversity, equity, and inclusiveness within the program, ensuring equal access and participation for all stakeholders.

8. Strategic Plan as the Guiding Document:

Continue utilizing the Strategic Plan as the cornerstone guiding document for the design, implementation, and evaluation of all new initiatives and activities.

This plan leverages the program's strengths, such as its collaboration with scientists, provides a framework for new activities like GLOBE@Agro, and the successful 'Stories of a Changing World' exhibit, while addressing challenges like training Portuguese-speaking educators and enhancing materials for STEM education. It aims to expand the program's impact, foster inclusivity, and align with national priorities, ultimately enhancing GLOBE Portugal's influence within the educational landscape.

Slovakia

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Organization and Number of Staff:

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16 internal employees from which 2 full-time employees are involved in GLOBE above their regular work agenda.

Funding by:

- Embassy of the United States of America
- Small grants from local private foundations
- Interreg Slovakia-Austria
- Norway Grants Fund for Regional Cooperation

Cooperating Organizations/Individuals:

- Slovak Hydrometeorological Institute,
- Matej Bell University Banská Bystrica,
- Comenius University Bratislava
- Embassy of the United States of America
- Czech GLOBE team – TEREZA NGO
- Peter Falcon NASA
- Protected areas around Slovakia

GLOBE Schools (what types, how many):

33 Primary schools and 12 Secondary schools, 3 other educational institutions

GLOBE Areas you and schools focus on:

Atmosphere, Biosphere, Hydrosphere

Number of Schools Reporting Data Over Past Year:

5 – in 2023

Program Implementation, International Cooperation in GLOBE Network, and Activities over Past Year (categorized by GLOBE Strategic Plan 2018-2023 Goals):

1. Education

Educational materials, presentations, and ideas for activities for all schools involved in GLOBE were provided by our website www.globeslovakia.sk. **Carbon Cycle methodology including worksheets was translated into Slovak language** and **Carbon Cycle poster was elaborated** and is available to teachers in pdf version. One **practical hydrobiological outdoor training** in Bratislava for teachers was organised in March 2023. **Two-day online introductory GLOBE training for teachers** was organized in September 2023, involving 9 new schools in the GLOBE program. **Regular monthly webinars** were organised to discuss scientific topics and school measurements, as well as to keep the communication with teachers lively.

2. Science

Our GLOBE schools participated in the **Phenology Campaigns**. **Two two-day capacity building seminars for teachers** were organized in quarters of US Embassy libraries in Banská Bystrica and Košice, **dedicated to IBSE and outdoor learning**. These seminars allow teachers from different regions to participate.

Climate change´ topic was introduced to teachers at these seminars through different lectures (also scientist from Slovak Hydrometeorological Institute). We also practically tested the newly purchased CO2 probes. We organised the second webinar for GLOBE schools in **cooperation with scientist Peter Falcon from NASA** in order to popularize science in Slovak schools and introduce the practical use of entered data into the international database NASA.

3. Community

Personal seminars have once again confirmed the **importance of face-to-face meetings**. This helped us to enhance the cordial relationship within our GLOBE community in Slovakia which we consider as an essential part of implementation of the program at schools.

Our **schools also attended the GLOBE Conference in Czech Republic in May 2023**. Primary school pupils together with secondary school students successfully presented their observations and joined the practical workshops.

We celebrated the second year of GLOBE Program in Slovakia at **online conference in June 2023**. 14 student teams presented their activities, discussed their observations with scientists from our Scientific Board and had a chance to see the variability of GLOBE measurements and activities at other GLOBE schools in our country.

4. Technology

The GLOBE Observer App and GrowApp continue to be used by teachers and students. **Consultations with schools were held to overcome the English language barrier and technical issues** when entering the data into the GLOBE database.

GLOBE tools for hydrology and meteorology were introduced to teachers and provided for all new member schools. **Calitoo photometers and CO2 probes were purchased** and are available to schools for rent at American Centre Libraries of US Embassy.

5. Communications

We regularly attend **CC meetings of Europe and Eurasia Region** to learn about the ongoing events and to communicate our activities.

Plans and Ideas for Next Year:

- Look for new funds to cover the running of the GLOBE program in Slovakia (e.g. Erasmus+ for underprivileged students),
- Focus on Land Cover and/or Pedosphere theme,

- Organise capacity building seminars for teachers in Spring and Autumn in quarters of US Embassy libraries (the new one in Žilina as well), dedicated to IBSE, climate change, peatlands and other topics,
- Motivate and provide additional support to schools to raise number of data entry,
- Encourage teachers to participate on international meetings, e.g. through Erasmus cooperation,
- Strengthen and stabilize the GLOBE team in Slovakia and find a stable donor of the Program,
- Organise **historically first GLOBE Games in Slovakia** 😊

Slovenia

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Organization and Number of Staff:

Country coordinator and deputy country coordinator, supported by their organizations (Centre for School and Outdoor Education and the Ecoschool Program) and **a team of four GLOBE teachers** that have taken on additional organizational tasks (translation and quality of materials, purchasing and logistics of equipment, communication and promotion).

Funding by:

Ministry of Education of Slovenia provides core funding, additional funding is provided by **various projects**. In 2023, these projects were: a project financed by the US Embassy in Ljubljana, an Erasmus+ partnership project with GLOBE Croatia schools, a national project connected to Climate Change education, and an Erasmus+ teacher training mobility project.

Cooperating Organizations/Individuals:

The **Ministry of Education of Slovenia** has charged the **Centre for School and Outdoor Education (CŠOD)** with coordinating the GLOBE program in Slovenia. CŠOD in turn formed a partnership with the **Ecoschool Program in Slovenia** to ensure a quicker implementation of the GLOBE Program in Slovenian schools. The Ministry has also formed an advisory group to oversee the GLOBE Program implementation in Slovenia. An active cooperation with the **US Embassy in Ljubljana** is established.

GLOBE Schools (what types, how many):

Slovenia is finishing its second year of GLOBE, and we have already registered **58 GLOBE schools and other educational organizations** (from 41 in 2022), of which **29 are primary schools** (from 25 in 2022), meaning students aged 6 to 14, **17 are secondary schools** (from 15 in 2022), meaning students aged 15 to 19, **9 are kindergartens** (from 0 in 2022), meaning pre-school children, **one is the Centre for School and Outdoor Education** with its 25 outdoor learning centers throughout Slovenia, and **two are informal education organizations** (from 0 in 2022).

GLOBE Areas you and schools focus on:

All GLOBE Areas. By 2023, we have held trainings for all GLOBE spheres and teachers carry out activities from different areas. We continue to focus on GLOBE international campaigns and have again taken part in several international GLOBE events this year. Additionally, there has been a marked interest in Elementary GLOBE activities in Slovenia in 2023.

Number of Schools Reporting Data Over Past Year:

32 schools have reported data in 2023, along with several citizen scientists.

Program Implementation, International Cooperation in GLOBE Network, and Activities over Past Year (categorized by GLOBE Strategic Plan 2018-2023 Goals):

1. Education

63 GLOBE teachers (new and existing) attended the **two live trainings** in Slovenia with trainers from GLOBE Slovenia and GLOBE Croatia (live), the GLOBE Europe and Eurasia Regional Office (online) and NASA (online). Several teachers also finished the **e-training program** on the GLOBE website.

The **second GLOBE Trainer** in Slovenia, Jasmina Mlakar, successfully finished the certification process in 2023.

By end of 2023, Slovenia has a total of **152 trained GLOBE educators** and **two certified GLOBE trainers**.

The first **16 protocols with accompanying materials** were translated into Slovenian in 2021 and have undergone language and expert review in 2022 (Atmosphere – 5, Hydrosphere – 7, Pedosphere – 1, Biosphere – 3) and are available for Slovenian GLOBE teachers to use with their students. In 2023, additional materials connected to the protocols were translated and shared with teachers.

2. Science

GLOBE Slovenia has not yet established a connection with scientists in Slovenia, but **NASA scientists** have participated in several of our events, and we are in contact with **scientists from Australia** that are working on the proposed Microplastics protocol.

We had a **visit from NASA scientist, Brian Campbell**, from 23rd to 27th November 2022. Brian presented several times on different topics connected to GLOBE to Slovenian students (a lecture at the Center of Space Technologies Herman Potočnik Noordung) and Slovenian teachers (lecture and workshops at the international conference Forest and Climate Change in Bohinj, Slovenia).

3. Community

The **GLOBE community in Slovenia is getting stronger**, with some GLOBE teachers continuing their work with students and some starting it for the first time in the school year 2023/2024. We have several citizen scientists interested in the program and using the GLOBE Observer mobile app.

In addition to the Country Coordinator and Deputy Country Coordinator, a **growing number of teachers is becoming active in the global, regional and cross-border GLOBE activities**, connecting GLOBE Slovenia to the wider GLOBE community:

- Slovenian teachers have been active in several **international GLOBE campaigns**, including the Spring and Autumn European Phenology Campaigns, the Water Bodies Challenge and the Year of Climate and Carbon.
- Three Slovenian schools participated in the two-day **Earth Day learning expedition** organized by GLOBE Italy in Gorizia and Nova Gorica (Italy-Slovenia border).
- A group of teachers and students, including the Deputy Country Coordinator, have participated in the **GLOBE Learning Expedition in Estonia**.
- The Country Coordinator has participated in the **regional meeting for Europe and Eurasia** in Riga, Latvia.
- School to school **cooperation between Croatian and Slovenian GLOBE teachers** that has started in November 2021 has continued in 2023 and resulted in several international mobilities connected to two Erasmus+ projects.

Additionally, the GLOBE Country Coordinator for Slovenia, Zoran Petrov, continues to serve as a **member of the GLOBE Regional Board for Europe and Eurasia**.

4. **Technology**

GLOBE Slovenia continues using **online tools** (Zoom, MS Teams, Padlet etc.) for most of our coordination work, as this approach allows us to quickly connect different parties and lower our environmental footprint, so we will keep using it in the future.

We continued with procurement of **equipment for GLOBE Program implementation** and in 2023 purchased numerous additional devices and distributed them to GLOBE schools.

Of note is the 2023 purchase of 10 **Davis weather stations**, of which two have successfully been set up and are already reporting to the GLOBE database, while 8 will be set up in the near future.

5. **Communications**

Most activities of GLOBE Slovenia connected to communications were aimed at further **presenting the GLOBE Program in Slovenia**. Notable activities include:

- presenting the GLOBE program at the **yearly Ecoschool meeting**,
- presenting GLOBE at the **yearly training for all CŠOD teachers**,
- meeting with the **US Embassy** in Ljubljana representatives and the regional US Embassy delegation for science to present GLOBE activities in Slovenia,
- **developing a webpage** for CŠOD projects where we will be able to feature GLOBE and distribute GLOBE materials in Slovenian language,
- featuring the GLOBE Program at the November 2022 **international conference “Forest and Climate Change”**,
- **lecture by NASA expert Brian Campbell** at the Center of Space Technologies Herman Potočnik Noordung,
- **online lecture by NASA expert Dorian Janney** about precipitation data and the Water Story and Tree Story initiatives,
- presenting the GLOBE Program at several other meetings and conferences in Slovenia,
- presenting the GLOBE Program through **webpages and social networks of the country coordinator (CŠOD)** and their partners (Ecoschool program, GLOBE schools).

Plans and Ideas for Next Year:

In 2024, our plans are:

- to successfully **implement and improve GLOBE activities** in existing and new Slovenian GLOBE schools, as this will be the third school year in which the GLOBE program is carried out with students in Slovenia,
- to **motivate more teachers** to become GLOBE teachers and further **increase the number of GLOBE schools** in Slovenia,
- to carry out **several training events**, both live and online, for Slovenian GLOBE teachers,
- to carry out the **first GLOBE national conference** in Slovenia, where teachers will be able to present their work,
- to enable Slovenian GLOBE teachers to attend **trainings and other GLOBE events in other countries**,
- to establish **further cross-border cooperation** between schools in Slovenia and schools in neighboring countries (Croatia, Italy),
- to **support schools that wish to connect** with other schools in the wider GLOBE community,
- to start building **connections with scientists in Slovenia** in connection to GLOBE,
- to **continue translating** GLOBE protocols and other GLOBE materials into Slovenian,
- to **acquire more equipment** for GLOBE schools in Slovenia,
- to **actively contribute** to the further development of the GLOBE international Community,
- and to **further promote** the GLOBE program in Slovenia.

Switzerland

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Organization and Number of Staff:

GLOBE Switzerland is organized as an association (NGO) with a national implementation office situated in Berne, the capital of Switzerland. At the office in Berne three staff members work part time (at 60% to 80%). In addition, GLOBE Switzerland has seven regional offices implementing the GLOBE program in 3 languages (German, French, and Italian). The regional implementation is done by mandates to Teacher Education Universities (part time jobs of 10% to 20%) and allows to have direct access with the GLOBE activities to students' courses.

Funding by:

GLOBE Switzerland has major funding by the Swiss Federal Office of Environment. Additional funding for events and R&D projects comes from private foundations, US Embassy, other Swiss Federal Offices and sponsors.

Cooperating Organizations/Individuals:

GLOBE Switzerland has close cooperation with **all regional Teachers Education Universities**, some with and some without mandates. In addition, we cooperate with Swiss Federal Research Institutions, with universities and Federal Institutes of Technology for R&D projects, for science outreach, and for citizen science projects. Close collaboration exists with the Swiss Academy of Science and with different national environmental education programs.

GLOBE Schools (what types, how many):

After a close check of all GLOBE schools in Switzerland (236), inactive schools were contacted for a follow-up. Some primary, secondary, and high schools left the GLOBE program mainly due to retirement of teachers – therefore we have 164 active schools left. Most of the schools are public, some are private ones. Like each year, a few new schools were joining the program.

However, far more schools in Switzerland use the GLOBE offers without being part of the GLOBE school network and often without entering data. The most often mentioned reason for not being part and not entering data is lack of time.

GLOBE Areas you and schools focus on:

Atmosphere, Hydrosphere, Biosphere, Pedosphere, and Earth as a System. Complementary to international protocols, national offers on agriculture (biodiversity and climate change), phenology and water quality are very often implemented.

Number of Schools Reporting Data Over Past Year:

14

Program Implementation, International Cooperation in GLOBE Network, and Activities over Past Year (categorized by GLOBE Strategic Plan 2018-2023 Goals):

1. Education

In **numerous GLOBE introductory trainings and workshops** for in-service and pre-service teachers, future multipliers in all regions of Switzerland could be reached by the national implementation office and by the seven regional offices. The training units were carried out by trainers and our regional experts who are employed at the Universities of teacher Education. In addition to workshops **more than 300 individual consultations of teachers were carried out** as in the last year before or while they were implementing GLOBE offers. In 2023, three Mentor Trainer and five Trainer were officially approved.

2. Science

We are steadily working on our national GLOBE offers in collaboration with partners of teachers' education and with scientific partners. In addition, we have **close collaboration with the Swiss Federal Office of Environment** to develop science education offers adapted to their needs. In 2023, our collaboration was focused on **the following partners from science:**

- **ETH Zurich:** Training course for young scientists to accompany school classes in their research projects on farms on biodiversity and climate change.
- **ETH Zurich, Swiss Academy of Science and Research Institute of Organic Agriculture:** consultation for teachers on science outreach for the two topics biodiversity and climate change.
- **Swiss Federal Institute for Forest, Snow and Landscape Research WSL:** Common projects on phenology in forests and forest pests.
- **Botanical Garden of the University of Berne:** Training course for citizens and public relations for topics around phenology.
- **Swiss Federal Office of Meteorology and Climatology:** Common project on phenology.
- **Lucerne Teachers Education University:** Common R&D project on development of offers for Education on Sustainable Development

3. Community

With the newly mandated Zurich Teacher Education University a very important region of Switzerland can adequately be reached with the GLOBE Program. Many schools and teachers have been informed on possibilities and offers of GLOBE Switzerland.

4. Technology

We steadily work on our offers, restructure **our GLOBE website** (in three languages), and make it more user-friendly.

In the area of phenology, we are working on the **introduction of temperature and humidity probes (air and soil) to measure the microclimate** in observed plants. These data are now included to our phenology WebApp.

5. Communications

Three to five times a year the national implementation office sends a newsletter to Swiss teachers' network. Each time, the newsletter contains the most important information coming from international program and points out activities, campaigns and training opportunities. If necessary, target groups are contacted by direct mailings. We **regularly promote selected offers on social media.**

Plans and Ideas for Next Year:

Over the next year, we are focusing on action orientation in a **R&D project**. We want to move from research and understanding to action with all our offers. This is part of the Swiss goals in Education in Sustainable Development.

We will launch the **2nd Swiss GLOBE Contest in April 2024 with a closing National Students Conference on June 13, 2025**. All information about the Contest and the Conference can be found here: https://www.globe-swiss.ch/de/Aktuell/GLOBE_Contest/

Ukraine

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Organization and Number of Staff:

The National Ecological and Natural Science Center of the Ministry of Education and Science of Ukraine is a leading educational institution in the field of ecology, biology and natural science in Ukraine, a component of the extracurricular education system for gifted and motivated students. NENC has also been the national coordinator of the GLOBE program in Ukraine since 1999. GLOBE is part of the national program of integration into the European and global educational space.

The coordination office of GLOBE in Ukraine employs: a program coordinator and 2 representatives of the coordinator, however, the center has the opportunity to involve other people during the organization of events or competitions.

Funding by:

Ministry of Education and Science of Ukraine

Cooperating Organizations/Individuals:

The Ministry of Education and Science of Ukraine, the Ministry of Environmental Protection and Natural Resources of Ukraine, the Ukrainian Hydrometeorological Center, the State Space Agency of Ukraine, the Palladin Institute of Biochemistry of the National Academy of Sciences of Ukraine, the Institute of Botany named after Academician of Kholodny National Academy of Sciences of Ukraine, Taras Shevchenko Kyiv National University, Kyiv-Mohyla Academy National University, public organizations, etc.

GLOBE Schools (what types, how many):

679 schools and educational institutions are registered on the website, in connection with the fact that on 24.2.2022 a terrorist country occupied the territories of Ukraine and military operations are currently continuing, there are about 20 active participating schools as of November, participation in the Program in the last 5 months GLOBE is becoming more active. The GLOBE network in Ukraine

includes not only institutions of general secondary education, but also institutions of extracurricular education.

GLOBE Areas you and schools focus on:

The **most popular areas** among Ukrainian GLOBE students are:

- **Soil:** Soil moisture by gravimetry, soil moisture by SMAP;
- **Atmosphere:** air temperature, barometric pressure, cloud observations, precipitation, relative humidity, snow cover, surface temperature;
- **Phenology:** (GreenUp/GreenDown), tree biometry

Some teachers conducted measurements of hydrology (dissolved oxygen, nitrates, transparencies, water pH, water temperature) and land cover.

Number of Schools Reporting Data Over Past Year:

16

Program Implementation, International Cooperation in GLOBE Network, and Activities over Past Year (categorized by GLOBE Strategic Plan 2018-2023 Goals):

1. Education

We registered new GLOBE teachers, provided them with training support We added new schools to the existing accounts of trained GLOBE teachers, as teachers moved across the territory of Ukraine to safer regions. We also provided assistance to GLOBE schools.

2. Science

25 teachers are registered in the GLOBE Program. Scientific data were collected and entered on the site: **37 teachers and students conducted 61517 observations in phenology, atmosphere, climate, land cover.**

Teachers and students from Ukraine took an active part in the Phenological Campaign (Spring-Autumn). As part of the autumn phenology campaign, we held the All-Ukrainian **photo contest "Ukraine Yabluneva 2023" and the annual "GLOBE Calendar 2024" contest**, the jury is currently working and the results are being summarized.

3. Community

25 new teachers were involved in the GLOBE Program

4. Technology

During this period, 16 schools contributed scientific data

5. Communications

There are constant consultations and clarifications for community members, we keep people informed about news and events, for this we created the **GLOBE community in Viber**. We introduce news about the program through **our website www.nenc.gov.ua/globe**, where information is regularly covered - about webinars, zoom conferences, regional meetings, etc., the website also covers information about competitions held by NENC, in within the framework of the international program

Plans and Ideas for Next Year:

NENC is preparing an **online meeting of GLOBE Ukraine teachers in December 2023** to share experiences (practical skills of education seekers, plans for the new academic year). The results of the European regional meeting in Riga will also be summarized (deputy coordinator Ilona Mikhalchuk's report). In the new academic year, we plan to **participate in the European phenological campaign** (Spring-Autumn).

On the occasion of the **25th anniversary of the GLOBE program** in Ukraine in 2024,

we plan **to hold the following events:**

- GLOBE Marathon 2024;
- GLOBE Games 2024;
- Seminars and trainings for teachers (once every 2 months).

As part of the European phenological program, we will hold an **All-Ukrainian online photo contest** (Spring-Autumn).

Participation in other GLOBE events. Translation of GLOBE materials for teachers.

Attract new teachers and schools to the GLOBE Program.



THE GLOBE PROGRAM

Europe and Eurasia 2023 Country Reports

GLOBE Program Europe and Eurasia Region Coordination Office

