

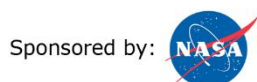


THE GLOBE PROGRAM

Europe and Eurasia 2020 Country Reports



GLOBE Program
Europe and Eurasia Region Coordination Office



Implemented by:  UCAR

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 44 countries with close to 5000 schools and 36 000 citizen scientists. The office is located in Prague, Czech Republic and hosted by TEREZA, Educational Centre.

Contact: ee.region.globe@gmail.com

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Special thanks for the cooperation in the year 2020 belong to

Members of the Board Europe and Eurasia

- Laura Altin - Chair (Country Coordinator, Estonia)
- Anthony Purcell – Co-Chair (Country Coordinator, Ireland)
- Sanja Klubicka (Deputy Country Coordinator, Croatia)
- Karl Schneider (Organizer for Higher Education Students and University-School Networks, Germany)
- Maaïke Vollebregt (Deputy Country Coordinator, Netherlands)

Members of Working Groups (WG)

- Diana Garasic – WG Education (Country Coordinator, Croatia)
- Constantinos Cartalis – WG Science (Country Coordinator, Greece)
- Laura Altin – WG Technology (Country Coordinator, Estonia)
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Europe and Eurasia Region Meetings

2020 GLOBE Virtual Regional Meeting for Europe and Eurasia
October 26 - 29, 2020, Online

Online meetings of Country Coordinators and Deputy Country Coordinators

Meeting No.1, March 24, 2020

Focus on: GLOBE tips for on-line learning

Meeting No.2, April 23, 2020

Focus on: Celebration of 25th anniversary of the GLOBE Program on-line, Earth Day news from regions.

Meeting No.3, May 28, 2020

Focus on: Implementation of the program in countries, introduction of GLOBE Slice newsletter, Update on 2020 Regional Meeting and the Annual Partner Meeting.

Meeting No.4, June 25, 2020

Focus on: International collaboration within GLOBE network, preparation for the GLOBE Virtual Meeting.

Meeting No.5, September 15, 2020

Focus on: Preparation for the on-line edition of 2020 Regional Meeting. Launching the new Certification process of Trainers/Mentor Trainers.

Meeting No.6, November 25, 2020

Focus on: Follow up on the 2020 Regional Meeting. Support of a school collaboration – plans for next year.

Croatia

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Organization and Number of Staff:

Country coordinator (in retirement), person in charge for GLOBE in Education & Teacher Training Agency and 7 regional coordinators recruited from GLOBE schools

Funding by:

Ministry of Science and Education, local authorities and schools

Cooperating Organizations/Individuals:

Faculty of Science/ Department for Biology, University of Zagreb, National Meteorological Service

GLOBE Schools:

299 schools (less than half is active): mostly primary schools (age 10-14), then 2 kindergartens and more than 50 secondary schools

GLOBE Areas you and schools focus on:

All GLOBE areas

Number of Schools Reporting Data over Past Year:

Approximately 100 schools have reported over 2020

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

1. Education

After Europe and Eurasia Meeting in Trieste, where several Croatian teachers participated, there was no face to face GLOBE training. Four university students – preservice teachers – were trained at the Department for Biology, University of Zagreb. Several new teachers from different parts of country finished e-training. New national GLOBE web site was established: Croatian translations of basic GLOBE protocols were added, as well as additional materials produced for GLOBE trainings in the past. New web site address is <http://globe.hr>

During the summer we finished verification of GLOBE Observer App translation to Croatian, we had three reviewers working on that. We are waiting for the finalization from NASA team! It will be great news for Croatian participants because many of them are still not quite familiar with using the app in English.

2. Science

Unfortunately, our science team lost one of the supporting members Zorana Sedlar, who passed away in 2020. Because of Corona pandemic, national GLOBE conference is going to be different – without presentations of research projects. Therefore, our scientists were not engaged as mentors for students, as usual.

3. Community

It seems like more and more people, especially teachers are familiar with GLOBE. I think that good words spread in community. Most likely, it also has to do with curricular reform which promotes research work – inquiry-based teaching, the development of skills. The whole curriculum, with orientation towards competences and with crosscurricular topics, such as Sustainable Development, ICT, Citizenship, Individual and Social Development and others are changing perspective in which GLOBE makes more sense. We had incorporated GLOBE in the curriculum of subject Science – meaning that students should investigate the properties of water, air and soil applying GLOBE protocols. And in several text books it is described how to do it.

4. Technology

In last 2 years there have been great increase in ICT literacy in Croatian Educational System. It started with curricular reform and teacher professional development workshops which were organized mostly on-line. There were few face-to-face meetings, but online trainings proved to be most efficient. Teachers were forced to use various tools in order to fulfil requirements and stay updated. Many of them really discovered new possibilities, especially in communication with students – having regular feedback about students' learning. Corona Lock Down increased necessity for the use of ICT even more. It has no direct connection with GLOBE, but the development of teachers and students' skills is in favor of GLOBE

5. Communications

We communicate on GLOBE Croatia Facebook and it was quite successful when there was a call for celebration of the Earth Day and GLOBE Birthday, also for students' videos and for 2020 Regional Meeting. But there is even more efficient tool for communication: 7 regional GLOBE coordinators who are in communication with GLOBE schools regularly.

Plans and Ideas for Next Year:

Plans depend on Corona situation, but also on funding, which seems to be more and more problematic as far as governmental funding is required. Both reasons lead to decision to organize small groups trainings on regional level (until now we had most of the trainings at national level – we are small country). That means that we need more GLOBE trainers, as well as GLOBE mentors. We shall propose several teachers who have the competences for GLOBE trainers to submit the trainer candidate application and start the procedure.

Also, there are 3 persons already prepared to become mentors: Marina Grčić – Atmosphere, Renata Matoničkin-Kepčija – Hydrology and myself, Diana Garašić, for the field of Biosphere, including Phenology, and Pedosphere.

Czech Republic

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Organization and Number of Staff:

TEREZA is the leading NGO in the field of environmental and science education for schools in the Czech Republic. Almost 1000 schools are involved in 3 international programs we coordinate: GLOBE, Eco-Schools and LEAF. In total, TEREZA educates around 150,000 children and collaborates with 6,000 teachers.

We are country coordinator of the GLOBE program since 1995. Since 2012 we have been hosting a Region Coordination Office (RCO) of the GLOBE Program for Europe and Eurasia area. The staff of RCO supports countries in implementation of the GLOBE Program on national level and assist to international collaboration of schools and GLOBE partners.

TEREZA has over 20 employees and dozens of volunteers around. There are currently four people working in the GLOBE country coordination office plus three people working in the Region Coordination Office for Europe and Eurasia.

Funding by:

- State Environmental Fund of the Czech Republic, Ministry of Education, Youth and Sports, Prague City Hall and U.S. Embassy Prague
- European Funds: PULCHRA Project, Visegrad Fund
- Schools pay €70, - per school per year, newcomers pay €140, - a year

Cooperating Organizations/Individuals:

TEREZA is a member of Foundation for Environmental Education (FEE).

Within the GLOBE Program we collaborate with various organizations: U.S. Embassy in the Czech Republic, Czech Hydrometeorological Institute, Faculty of Science Charles University, European Space Education Resource Office (ESERO), Institute of Botany of the Czech Academy of Science and others.

We also maintain close cooperation with 16 members of the Czech GLOBE Scientific Board, 20 GLOBE mentor-teachers and dozens of volunteers.

GLOBE Schools:

125 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 focus on all GLOBE areas (Atmosphere, Hydrosphere, Soils, Biosphere).

During the school year 2019/2020 we developed the Theme of the Year called "Pixel of Water" which was focused on "Drought" as a big environmental problem caused by climate change, the topic was connected with remote sensing investigations.

Our schools are actively involved in the European Phenology Campaign.

Number of Schools Reporting Data over Past Year:

Around 15 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

The second Czech version of the GLOBE Teacher's Guide with updated Protocols was finished and disseminated among teachers. As a supportive action we organized webinars on the Hydrology, Land Cover and Phenology protocols.

We organized two days of Summer school for the team of GLOBE Mentors in order to help them develop advanced skills so as they could support other GLOBE teachers in respective regions. We also trained three new mentors – the GLOBE Mentors Team presently consists of 20 members.

2. Science

Czech GLOBE Scientific Board currently consists of 16 members who are helpful in developing and organizing the theme of the year, revising methodical materials, lecturing trainings and webinars, giving feedbacks to student's scientific project etc.

In cooperation with GLOBE scientists we launched big European project "PULCHRA – science in the city" exploring Cities as urban ecosystems.

We want to attract young people to science by compiling new publication about young scientists who are connected to the GLOBE Program (e.g. absolvents).

3. Community

In the schoolyear 2019/2020, teachers from 20 new Czech schools were trained in the GLOBE methodology and welcomed into the GLOBE family.

Unfortunately, we had to cancel our big community event GLOBE Games 2020 in May. As an alternative we prepared Student Virtual Conference on November 26, where students were able to present the projects they worked on last year and consult with scientists. We also invited the newly involved GLOBE schools to the virtual conference so that they could be inspired.

We started close collaboration with European GLOBE community through PULCHRA project and new Visegrad project called Young Scientists for Central Europe - thanks to this project, we can help Slovakia start the GLOBE program in their country and also establish close cooperation between Czech, Polish and Slovak schools.

4. Technology

Pandemic of Covid-19 caused that we – as much as a lot of Czech teachers – have made a huge advance in our technological skills. We developed on-line versions of our consultations, workshops and trainings. We are preparing long-time on-line courses and webinars or on-line student conference.

Schools are interested in using learning apps and on-line gadgets more than previous years.

Apart from usual GLOBE instruments a couple of school have tested new instruments for measuring the air quality inside schools within the one-year project called "What is in the air?"

5. Communications

Our office regularly communicates with schools via regular newsletters, information webinars (so called GLOBE Café) and by email. Furthermore, we try to communicate GLOBE and IBSE methods outwards through social media, specialized journals and also mainstream media such as Czech Television or Radio.

Plans and Ideas for Next Year:

Manage Visegrad project **Young Scientists for Central Europe** which is based on the GLOBE European Phenology Campaign in cooperation with GLOBE partners from Slovakia and Poland.

Manage **“Science Reporters”** within the European project **PULCHRA** and support involved schools.

Organize international **GLOBE Games 2021 in Zbiroh**, May 27 – 30, 2021.

Organize **2021 GLOBE Europe and Eurasia Regional Meeting** together with **PULCHRA Partners Meeting** in collaboration with Faculty of Science Charles University in Prague, September/October 2021.

Theme of the Year 2020/2021 **“Green light for greenery”** in connection with chosen City Challenge of the PULCHRA project.

Organize **student virtual conference** and **workshops for teachers** or their on-line alternatives.

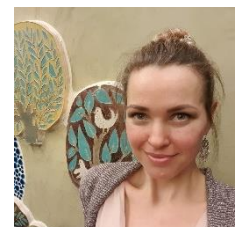
Conduct **evaluation of the GLOBE program in the Czech Republic** led by external experts from Masaryk University in Brno.

Estonia

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Organization and Number of Staff:

MTÜ GLOBE Eesti is coordinating organization and the number of staff is 3 people
Ministry of Education and Research GPO – Imbi Henno

Funding by:

Republic of Estonia Ministry of Education and Research
Estonian Research Council
Environmental Investment Centre
US Embassy in Tallinn
Schools and local municipalities

Cooperating Organizations/Individuals:

Republic of Estonia Ministry of Education and Research
U.S. Embassy in Estonia
University of Tartu
Tallinn University
Estonian University of Life Sciences
MTÜ EGEA-Tartu

GLOBE Schools:

90 public schools have joined the GLOBE Program

GLOBE Areas you and schools focus on:

Atmosphere: Air Temperature, Barometric Pressure, Cloud Observations, Precipitation, Relative Humidity, Snowpack, Surface Temperature

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

Number of Schools Reporting Data over Past Year:

20 schools

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, math)
- EG2. We have 13 trainers in Estonia. Our trainers speak Estonian, Russian and English.

EG3. 7 research projects in GLE Estonia (about 90 participants involved).

EG4. Stories in school blogs, local newspapers. GLOBE star about GLOBE Estonia Learning Expedition 2020

2. **Science**

SG1. 5 scientists were involved in GLOBE Estonia Learning Expedition. 7 research projects supervised by scientists.

SG2. Schools from different areas participate in the GLOBE program

SG4. 11 research projects on national contest and GLOBE Expedition using GLOBE data.

3. **Community**

CG1. 3 new GLOBE schools joined the GLOBE program

CG2. Project GLOBE Klass+ involving 8 GLOBE schools in Estonia. The purpose of the project is to test new sensors and develop research projects between GLOBE schools. GLOBE Estonia Learning Expedition involved participants from 20 schools.

4. **Technology**

TG1. 10 research projects using data from GLOBE database.

5. **Communications**

CMG1. GLOBE Estonia Facebook page, #GLOBEEesti.

CMG2. GLOBE Star about the GLOBE Estonia Learning Expedition (October 2020)

CMG3. Project Cool Geography Lesson. The aim is to introduce GLOBE activities to Estonian Schools – 35 schools involved in 2019/2020 school year.

Plans and Ideas for Next Year:

- GLOBE 25 Conference
- GLOBE Estonia Learning Expedition
- GLOBE Earth Day celebration
- GLOBE research project's contest
- GLOBE Klass+ collaboration project among Estonian schools;
- Collaboration with MTÜ EGEA-Tartu – Cool Geography Lesson (visiting schools and introducing VR opportunities in GLOBE)

Finland

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Organization and Number of Staff:

2 members

Funding by:

No separate funding for GLOBE activities. Country coordinator and assistant CC are allowed to use some of their working time for GLOBE activities.

Cooperating Organizations/Individuals:

Researchers at the University of Helsinki

GLOBE Schools:

All types primary and secondary schools, 154 schools registered but only one is actively reporting data.

GLOBE Areas you and schools focus on:

Atmosphere, Hydrology, Earth as a system, Land Cover and Soil

Number of Schools Reporting Data over Past Year:

2

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

1. Education

Climate University (<https://blogs.helsinki.fi/climateuniversity/>) plans online high school course on basics of climate change.

Introducing GLOBE to biology, chemistry and geography teacher students by using GLOBE materials and apps. We had two seminars for teacher students in October. Covid-19 situation changed a lot plans for 2020 and we were not able to carry out the planned activities

2. Science

3. Community

4. Technology

5. Communications

Plans and Ideas for Next Year:

GLOBE Café for teachers in in March. The purpose of the café is to introduce GLOBE App programs (Grow app and GLOBE Observer app) to interested teachers. The aim is to find a group of teachers in the Helsinki area who we can support and help with GLOBE materials. Similarly, teachers could support each other and share experiences.

We continue to introduce GLOBE to student teachers and we encourage them to use GLOBE materials during their practice lessons.

France

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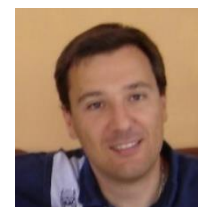
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Organization and Number of Staff:

CNES (Centre National d'Etudes Spatiale); 1 person in CNES + 7 teachers

Funding by:

CNES

Cooperating Organizations/Individuals:

GLOBE Schools:

mainly Middle schools (69), some High schools (47) and few primary schools (18)

GLOBE Areas you and schools focus on:

Atmosphere / hydrosphere

Number of Schools Reporting Data over Past Year:

43 (13 for this year's Measurement Campaign)



GLOBE France



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

1. Education

- We organized 1 teacher training in early October in Clermont Ferrand (*about 40 teachers*)
- A videoconference of student research presentations via Zoom was organized in June

2. Science

Air Quality: Air Quality Campaigns in 2019 et 2020: autumn Campaign was held but few measurements were done due to weather and spring Campaign was cancelled due to lockdown and Nitrogen dioxide with Ireland was also postponed.

Hydrology: we just started this topic, studying water quality and water cycle (precipitation, soil humidity...)

3. Community

4. Technology

After the development of the sunphotometer Calitoo and the Black Carbon equipment, the next step will be the building of small sensors at school: to measure PM2.5 and PM10 (in connection with High school curriculum) and the building of a network of Calitoo called **Calinet** (*Calitoo data overlaid on satellite data*)

5. Communications

Plans and Ideas for Next Year:

- Extend the Air Quality Campaigns to PM10, PM2.5 and NO2 – *in cooperation with Ireland*
- We will organize a video contest on **'How is the air quality in my School and what can we do?'**
- We plan to start a **Satellite image of the week** session

Georgia

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Organization and Number of Staff:

CENN, 60 employees

Funding by:

Cooperating Organizations/Individuals: Ministry of Education, Science, Culture and Sport of Georgia

GLOBE Schools: Not yet recruited for the program

GLOBE Areas you and schools focus on: Georgian schools will focus on Biosphere

Number of Schools Reporting Data over Past Year: N/A

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

1. **Education**
2. **Science**
3. **Community**
4. **Technology**
5. **Communications**

To officially open the GLOBE program in Georgia, a Memorandum of Cooperation was signed online on April 22, 'Earth Day' between the Ministry of Education, Science, Culture and Sport of Georgia, represented by Minister, Mikheil Chkhenkeli, and CENN, represented by Executive Director Nana Janashia.

The participants of the online conference were welcomed by Ambassador Plenipotentiary of the Republic of Austria in Georgia, Arad Benko, who discussed the importance of the implementation of the GLOBE Program in Georgia: *"The ADC has been supporting environmental awareness raising for youth for five years. The data and information management system, as well as the informal education modules (of which many are online) of the GLOBE program will greatly contribute to building the capacities of beneficiary schools. The GLOBE Program is an international science and education program that provides students and the public worldwide with the opportunity to participate in data collection and the scientific process. We believe that students will improve their understanding of the Earth's system and the global environment. Environmental awareness concerns all areas of the economy and the society. The youth are Georgia's future and the future of Georgia depends on them,"* said Ambassador Benko later to GEORGIA TODAY when asked about the importance of the new education opportunities in Georgian Schools.

The GLOBE Program will be implemented with the financial support of Austrian Development Cooperation (ADC) within the scope of the project - Promoting Sustainable Forest Management for Climate Resilient Rural Development in Georgia.

Plans and Ideas for Next Year:

To involve at least 10 schools countrywide in GLOBE program

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Organization and Number of Staff:

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Funding by:

Schools and their supporting partners, local enterprises and private organisations (sponsors)
Engagement Global (NRW)



Cooperating Organizations/Individuals:

- City of Paderborn and Bad Lippspringe
- Engagement Global (NRW)
- NABU (Naturschutzbund Deutschland)
- NUA (Natur-und Umweltakademie NRW)
- Max-Planck-Institut für Meteorologie
- Wuppertal Institut für Klima und Umwelt
- ESERO
- Umweltbildungsinitiative OWL
- Umweltnetzwerk Paderborn
- IVWK (Internationaler Verband Westfälischer Kinderdörfer)



GLOBE Schools (what types, how many):

Schools from primary schools to gymnasium:

we have about 50 active schools, not all of them have good electronical equipment or are able to work during this year because of the Corona pandemic.

GLOBE Areas you and schools focus on:

Actually, we focus on hydrology, atmosphere and landcover.

We observe plants and trees in our climate garden, where we grow vegetables as well.

Number of Schools Reporting Data over Past Year:

About ten schools, most schools have technical problems or closed workshops because of Corona.

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

1. Education

- A. GLOBE-Deutschland enjoys the advantage of the improvement of the GLOBE e-training modules. More and more new members use GLOBE online and enter the program by e-learning. This is a very helpful way of getting in touch with GLOBE in times of Corona.
- B. The students of the active GLOBE groups are all used to work with the GLOBE website and the GLOBE protocols. Even after the first weeks of restrictions in schools because of the Corona infection the students tried to go on taking data.
After some weeks most of them were tired of online lessons and stopped to cooperate with the weather clubs. Actual clubs in schools are forbidden until Corona is stopped.
- C. In the beginning of the year 2020 a new project was started by some students called "Only a Tributary River"? Some German schools want to cooperate to find out the quality, the importance and the development of the LIPPE, a tributary river of the Rhine. They already started a proposal and some water investigation. They opened an E-twinning page to cooperate internationally.
- D. In the first months of 2020 some students developed a project for cooperation with Ghana schools. The topics were atmosphere and air quality measurements done with a help of Calitoo instrument. The project was accepted, but interrupted by the Corona pandemic.
- E. GLOBE – Deutschland is now part of the "Paderborner Naturschule", a pedagogical cooperation of all organisations of environmental education in Paderborn.

2. Science

- A. Our projects will be accompanied by the help of the satellite pictures we get from NASA and from ESERO as well. We want to train our students to work with the Earthkam Mission to create their own pictures.
- B. An invitation for cooperation for scientists from Ruhr - Universität Bochum and Universität Paderborn will be part of our project meetings "Simply a Tributary River?" and "Climate change in Ghana and Germany"

3. Community

- A. GLOBE – Deutschland is now member of the Westfalian Community "Paderborner Naturschule" The Westfalian organisations of environmental education cooperate and offer in a website their programs: www.paderborner-naturschule.de
- B. The Project "Only a Tributary River?" has been accepted as an e-twinning project on the e-twinning website. We cooperate with four countries: Croatia, North Macedonia, Czech Republic. I am happy to see that this basic group has not been destroyed by the Corona Pandemie.

The River project had prepared a meeting in Bad Lippspringe with lectures, workshops for young researchers, new teacher trainings and cooperation between Westfalian schools and the partners from abroad.

D. We have been in close contact with GLOBE Ghana during all the year. We prepared a meeting in Oyoko/Ghana with an all-Ghana teacher training and the preparation of a project with students to compare data from Oyoko and Paderborn for aerosols and for atmosphere. There is a close connection between Ghana and Westfalia.

4. **Technology**

A. GLOBE – Deutschland is an organisation communicating mainly online. The leading members meet monthly, the meetings of all members take place online too. Even the participating students meet online during the year 2020.

B. Most of the groups are taking data with electronic weather stations which give their data not only to the schools but also to different organisations and communities. F.e. gives the weather station of Gymnasium Schloß Neuhaus Paderborn to the Westfalian Weather Network as well. The students use the GLOBE apps, the Calitoo, and they are used to cooperate online with their partners in Germany and abroad.

5. **Communications**

A. This year, GLOBE – Deutschland became a “e.V.”, an officially accepted club.

B. GLOBE – Deutschland became a member of the “Paderborner Naturschule”, a Westfalian network for research and education in questions of environment.

C. GLOBE-Deutschland started a new partnership with NABU - Naturschutzbund Deutschland.

D. GLOBE – Deutschland developed a project of cooperation with GLOBE – Ghana, which was accepted and funded by ENGAGEMENT GLOBAL NRW and supported by the IVWK (Internationaler Verband Westfälischer Kinderdörfer).



Plans and Ideas for Next Year:

A. We complete to do our project in cooperation with GLOBE Ghana, that is a teacher training for GLOBE in Oyoko (Ghana) and an intense cooperation taking data of atmosphere and aerosols in cooperation with German schools

B. We want to reorganize the meeting of students, teachers and scientist in Bad Lippspringe with students from Westfalian schools and from our partner countries to work on our new Erasmus project. We want to combine lectures, workshops and trainings.

C. We will again develop the proposal for our new Erasmus project „Only Tributary River?” and **we search for more partners from all GLOBE countries!**



Germany (University of Cologne)

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Organization and Number of Staff:

University of Cologne has around 5800 staff members

Funding by:

State of North Rhine-Westphalia, Third party funds (EU-H2020, RheinenergieStiftung BMEL, BMU, EU-EFRE, project funding but no specific GLOBE funds

Cooperating Organizations/Individuals:

PULCHRA Partners, Local / regional school network of University of Cologne

GLOBE Schools:

New school participants in PULCHRA, CUBiK, Waldklima Project are informed and trained in GLOBE approaches: 6 new schools from Junior High to High school

GLOBE Areas you and schools focus on:

The method of science, climate and water research, climate change mitigation and participation

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):

- Education**
no GLOBE specific classes for pre-service teachers since 2019
- Science**
GLOBE specific research in the frame of 3 research projects at international (PULCHRA), national (WaldKlima) and local (CUBiC) level
<https://geographie.uni-koeln.de/en/research/working-groups/hydrogeography-and-climatology/research-projects/research-projects>
- Community**
several climate excursions using GLOBE protocols to explore the climate character of urban areas
- Technology**
development of smartphone and sensor technologies as well as experiments to understand protocol based environmental monitoring and experiment based climate research
<https://geographie.uni-koeln.de/oeffentlichkeit/buergerwissenschaften-mit-smartphones/app-uebersicht>
low cost air quality and soil moisture sensor development
- Communications**
TV interview about Smartphone applications in community based environmental research / citizen science
UoC website: <https://geographie.uni-koeln.de/en/outreach/globeuzk-science-education-for-pre-service-teachers-and-schools>

Plans and Ideas for Next Year:

With the end of the GLOBE@UoC project funded by the University of Cologne and the leave of Dr. Andreas Thiemer who has accepted a teacher position at the Wartburgschule Eisenach the support of GLOBE at Univ of Cologne in terms of dedicated education programs has ended. Funding thus is limited

to related research projects of PULCHRA, CUBiK and Waldklima. Special classes on GLOBE approaches are not possible any more, instead these approaches are integrated into other teacher education classes. Students who have participated in previous GLOBE classes at UoC are now joining the workforce and establishing the programs at their schools. The future activities will be related to maintaining and developing these networks and support young teachers in their endeavor to implement GLOBE at their schools.

The DataTool developed by Andreas Thiemer will be maintained further.

In the context of above-mentioned projects new school networks are in the process of being established. These schools will be equipped with DAVIS weather stations and will be reporting weather data. Utilizing this approach will provide an incentive for these schools to start GLOBE at their school.

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Organization and Number of Staff:

National and Kapodistrian University of Athens, 4 members of staff

Funding by:

National and Kapodistrian University of Athens

Cooperating Organizations/Individuals:

National Observatory of Athens, Foundation for Technological Research, Technical University of Crete Ministry of Environment, Ministry of Culture, meteo.gr, several University Professors and Researchers, etc.

GLOBE Schools:

Primary and Secondary

GLOBE Areas you and schools focus on:

Climate Change, Urban Environment

Number of Schools Reporting Data over Past Year:

Measurements are made; reporting inertia

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

1. **Education**
New technologies in education
2. **Science**
[Link to the Pulchra project: Science in the City](#)
3. **Community**
Schools' visits
4. **Technology**
Use of Earth Observation for environmental monitoring
5. **Communications**
Schools' scientific support

Plans and Ideas for Next Year:

[Concentrate to the urban environment: Continue cooperation with the PULCHRA project:](#)
[Introduce the SDGs](#)

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. The organization has approximately 65 full-time staff and this includes:

- 1 Full-time GLOBE DCC Officer
- 1 Part-time GLOBE CC Manager

Funding by:

Ireland's Environmental Protection Agency (EPA) is currently funding GLOBE. The EPA has approved an extension of their partnership with An Taisce for a 3-Year period (2020 to 2022), to continue GLOBE activities and to launch a new large-scale citizen-based air quality project, *Clean Air Together*. This new large-scale project will begin with a pilot launch in 2020 and will be followed by a large-scale project in Dublin 2021. The project will engage hundreds of Irish students, teachers, and members of the public in hands-on air quality measurements.

Cooperating Organizations/Individuals:

The Environmental Protection Agency is the lead strategic partner for GLOBE in Ireland and is an active member and contributor to the program. The GLOBE program in Ireland works closely with the EPA citizen science and air quality teams

GLOBE Schools (what types, how many):

The GLOBE program in Ireland works with Primary (ages 4-12) and Secondary (ages 12-18) schools, although most participating GLOBE schools are Secondary schools. One hundred Irish schools have registered with the GLOBE Air Quality Campaign since 2019, with approximately 50 schools actively participating in the 2020 campaigns. There are 71 Fully Trained GLOBE members, 69 GLOBE pre-training candidates and 543 GLOBE Observers in Ireland.

GLOBE Areas you and schools focus on:

The Primary focus of GLOBE Ireland is the Air Quality Campaign, which is run in partnership with the EPA air quality and citizen science teams. The Air Quality Campaign runs twice a year, once in the spring and again

in the autumn. GLOBE Ireland has also promoted GLOBE Atmosphere and Biosphere protocols to schools and students participating in the Air Quality Campaign.

Number of Schools Reporting Data over Past Year:

In Ireland, the majority of the GLOBE schools participate in the NO₂ protocol, which is not currently a GLOBE protocol, however data was reported at a national level by over 50 schools. In the past academic year, 7 schools have reported data directly to GLOBE.

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

1. Education

During 2019-2020 academic year, the GLOBE program in Ireland supported over 60 teachers with measuring ambient nitrogen dioxide levels on their school grounds. Teachers were provided with educational resources, related to air quality, to aid lesson planning and encourage inquiry-based learning. Schools were encouraged to introduce students to the scientific method through hands-on learning and meaningful data collection.

New educational resources were designed using GLOBE and Irish-specific content to encourage teachers of Transition Year (TY), mid-secondary school level, students to take part in GLOBE. The TY resources focus on the atmosphere and biosphere. Teachers are encouraged to access GLOBE e-training and take part in the Atmosphere and Biosphere protocols, such as Clouds, Precipitation, Aerosols, and Green Up/Green Down and the Carbon Cycle protocols.

2. Science

The Irish EPA provided scientific guidance relating to the Air Quality Campaign. GLOBE schools benefitted hugely from the active involvement of EPA staff in many aspects of the program over the year. The Air Quality Campaign, in particular, has benefited immensely from the support and active participation of the EPA Citizen Science and Air Quality teams. Three Irish schools, The Kings Hospital, Larkin Community College and Dunboyne Senior Primary School, submitted excellent Air Quality reports to the GLOBE International Virtual Science Symposium (IVSS) in March 2020. Two of the schools received four stars and qualified for a stipend draw and the other project received three stars. The schools received high praise from GLOBE science judges for 'excellent research' and for conducting 'important work for the good of the community'.

3. Community

Due to restrictions associated with the covid-19 pandemic, the GLOBE program was unable to have an in-person event to celebrate the end of the AQ campaigns of 2019/2020. Instead, on May 21st, GLOBE held a virtual online event to celebrate the successful completion of the 2019/20 campaigns. We were delighted to be able to celebrate the achievements of the teachers and students that worked so hard during the year. Over 45 people attended the virtual event, including teachers and students that took part in the AQ campaign, along with GLOBE Director, Tony Murphy, the Irish Environmental Protection Agency (EPA) Director General, Laura Burke, EPA representatives from the Citizen Science and Air Quality teams and Michael-John O'Mahony, Director of the Environmental Education Unit (EEU) of An Taisce. Five students and two teachers made presentations about their AQ campaign research. One student, Faye O' Carroll, from Dunboyne Senior Primary school, made a short video about [Dunboyne's AQ campaign](#) which was shown at the event, the video has since been published on EPA social media to showcase student achievements and highlight the GLOBE program. Speaking at the event, Laura Burke, the Director General of the EPA said: 'We are delighted to support GLOBE...having citizen scientists doing additional monitoring (of air quality) complements EPA's own monitoring, giving us more information to further refine our work'. NASA scientist, Michael J Garay, presented a really interesting and topical presentation on 'Tracking COVID-19 from Space: What We Can and Cannot Do and Why It Matters'. The full video of the event can be viewed on the [GLOBE Ireland](#) webpage.

4. Technology

GLOBE was delighted this year again to be able to use the EPA visualisation website, developed by the EPA Analytics team. This allowed campaign participants to view nitrogen dioxide results in map and/or graph format. NO₂ data could be viewed over multiple campaigns and schools could clearly compare their

schools' results to other schools nearby and with similar aspects. It was particularly useful for students to be able to interact with this site independently from their homes during school closures.

5. **Communications**

The Irish GLOBE program has developed its social media presence with the addition of a [GLOBE Twitter profile](#) and [Facebook page](#). The purpose of the social media presence is to promote GLOBE campaigns, connect with AQ campaign participants and encourage collaboration between GLOBE Ireland and the greater GLOBE community. These new communication channels will be tested during the 2020/21 academic year. The program also regularly communicates with schools via regular newsletters, webinars and by email.

Plans and Ideas for Next Year:

The following are the main objectives of the new academic year:

- Promote and offer the GLOBE Air Quality campaigns (NO₂) in 2020-2021.
 - organize two AQ measurement periods, at national level, one in the autumn and the other in spring for contrast and comparisons.
 - Look for ways to scale the program, particularly the recruitment and training of new teachers.
- Support the joint EPA/An Taisce Clean Air Together (CAT) project as part of the Education and Awareness work package.
 - Identify synergies between the GLOBE program and CAT project
- Promote and encourage schools to take part in the GLOBE atmosphere and linked biosphere protocols
- Identify opportunities to participate in international and regional GLOBE campaigns and projects
- Develop ideas and potential opportunities for a new national campaign based on the GLOBE protocols and supported by the EPA
- Work with the EPA to support objectives of the Citizen Science and Air Quality teams through the GLOBE Program
- Continue to work with the GLOBE Implementation Office to develop the NO₂ investigation as an official GLOBE protocol
- Develop and test social media channels for GLOBE communications and dissemination purposes
- Support the PULCHRA project through school recruitment, generation of educational activities and school visits. Five schools from the greater Dublin area have registered to begin the 'Science in the City' (PULCHRA) project with support from Horizon 2020 funding. PULCHRA is a consortium of eleven European partners linked to the GLOBE network. The EEU is the Irish representative and intends using the 'Science in the City' model to provide additional support and resources to participating schools to help develop their GLOBE programs and campaigns. We will focus on the theme of air quality as the challenge for PULCHRA 2020-2021 academic year, but rather than just focusing on a specific campaign period, the project will provide ongoing support to these specific schools throughout the year and encourage engagement with local communities. The project will explore the open schooling concept through the theme 'Cities as urban ecosystems', in view of creating new partnerships in local communities to foster science education for all citizens. Schools, in cooperation with other stakeholders will become agents of community well-being, encompassing the natural environment, the built environment and the socio-economic environment in cities.

Israel

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Organization and Number of Staff:

Ministry of Education - 5 members

Funding by:

Ministry of Education, Ministry of Environmental protection

Cooperating Organizations/Individuals:

GLOBE Schools (what types, how many):

344

GLOBE Areas you and schools focus on:

Atmosphere, phenology, biosphere

Number of Schools Reporting Data over Past Year:

285

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

1. Education

Developing and supporting activities for teachers and trainers, inquiry-focused and based on Earth system science and Science Technology, Engineering and Mathematics (STEM) educational need, especially activities that GLOBE students can learn by digital platforms. During the Covid-19 lockdown in Israel (march-April, 2020), we filmed and broadcast a lesson in the National Broadcasting System of Israel about cloud exploration, and how scientific observation can be conducted even when in quarantine at home, using the GLOBE OBSERVER application.



Communicating with teachers, sharing best practices and providing tools to facilitate student learning and collaboration with the broader GLOBE community:

We have a "WhatsApp" group of 80 GLOBE teachers all over Israel. We share ideas, practices and knowledge. Once a week the globe team give a short, but inspiring new ideas to the teacher's community. in addition, the GLOBE team (4 regional coordinators), visit the globe school, once a month, and provide the teachers Pedagogical training.

2. Science

We are collaborating with the Israeli center for citizen science (TCSS- Taking Citizen Science to School, Technion, A science and technology research university. Researchers from TCSS are involved with the GLOBE teachers training, sharing best practices in science and providing information to teacher and students.

As partners of the U.S. Embassy in Israel, we had the honor of inviting Ms. Aisha Bowe, an aeronautical engineer and entrepreneur, as the key note for the annual event of the program (150 participants).

Bowe was an Aerospace Engineer for six years at the NASA Ames Research Center. She gave a motivational talk about pursuing your dreams and not conforming to others' expectations.



3. Community

Four main topics we dealt with:

- a) Training for – 30 new GLOBE teachers at the Science Teachers Training Center in Shlomi. For three days the teachers learned and developed pedagogical tools for scientific inquiry, teachers learned about atmosphere and biosphere.



- b) Israel -Jordan collaboration - During January, a delegation from Jordan arrived to visit Israel. we had a meeting with Ms. Salma Al Zubi, NENA Regional Coordinator (Near East and North Africa Region of the GLOBE Program) at the beautiful Valley Of Springs, Edden farm, Israel.



- c) Earth Day – On Earth Day we held a national conference to mark the 25th anniversary of the GLOBE Program. It was a digital, on-line conference, with more than 150 participants. At the conference, we presented the summary work of GLOBE students. The schools were invited to design and produce a photo that would define the school's activities in a creative way. The photo included three components: GLOBE Program, school name, and the state of Israel - 19 schools presented the national finals photos. The judging committee was attended by members of the GLOBE community in Europe.





d) A collaborating project between Malta & Israel

Commemorating 25 years of The GLOBE Program:

Israel – Malta: Scientific, Cultural, Social Cooperation – with Malta. Students from Malta, and Israel, studied the cultural characteristics of the two countries during the year, the phenology of the fig tree, and the Maltese and Hebrew languages. They:

1. Did activities as explained in the Spring Campaign on GLOBE website.
2. Prepared a poster chart about the Fig Tree. They labeled the parts of the tree in English, Maltese and Hebrew.
3. They took photos of Fig Tree and share data via email, Skype calls and create a timeline on Fig Tree poster chart. Photos that showed the stages of leaf growth.
4. Recorded daily temperature and rainfall during March, April and May.
5. prepared and shared a traditional recipe using the fruit of the fig tree.
6. On 11th February we celebrated Tu Bishvat, by Skype call. Students from primary schools sang a song about trees/nature in own language while students from secondary schools read a blessing in English and Maltese. An olive tree, which symbolises peace, and a fig tree presented as a gift and will were planted in the school ground after call. Plaques to commemorate event were placed around trees.
7. End of February –the schools Registered in the European Phenology Campaign



A collaborating project between Malta & Israel Celebrating 25 years of
The GLOBE Program 2020
the European Phenology Campaign

In cooperation with ESTH & Public Affairs Departments, US Embassy
Malta & Israel : TU' Bishvat planting celebration

Gozo College Middle School, Victoria(via skype call) and Mosenson high School, Hod Hasharon

Tuesday ,february 11th , 2020
10:00-12:00 a.m.
Mosenson Youth Village, Hod Hasharon.

Hani Peleg, National Coordinator for sustainability Education
Refaela Babish, Country Co-ordinator for Israel



4. Technology

- A) Within the Ministry of Education's educational portal, we have set up a page for the GLOBE Program. This page contains all the information for GLOBE teachers in Israel, publication of our activities, conference and teacher seminar competitions, registration forms and more <https://pop.education.gov.il/sustainability-education/sustainability-education-programs/globe-program-environmental-education/>



b) We have trained teachers to use of the GLOBE app, have increased the use of platforms and technological tools to continue the research and monitoring of data even when we all stay at home due to lockdown and students are learning at home.

5. Communications

We have a new GLOBE Israel page at the social network Facebook



Plans and Ideas for Next Year:

In the upcoming year, we will deepen the knowledge of the teachers in the scientific inquiry. We will have two teacher trainings for 70 new teachers. We plan to deepen and expand the collaborative learning between schools from different sectors of Israel, and between students from Israel and students around the world.

We will increase the data collecting and measurements that schools make by increasing the use of the GLOBE app.

Italy

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Organization and Number of Staff:

ASSOCIAZIONE GLOBE ITALIA
2 Country Coordinators and 6 Staff

Funding by:

US Milan Consulate Grant, 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 – 32, Senior High Schools - 69

GLOBE Areas you and schools focus on:

- Hydrosphere
- Atmosphere
- Soil (few)
- Land Cover (few)
- Earth as a System (1)
- MUC (1)

Number of Schools Reporting Data over Past Year:

Due to COVID-19 the number of activities on the field were drastically reduced and only the schools with automatic stations for measurement reported and uploaded data

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

1. Education

Last school year begun with a strong involvement of GLOBE ITALIA staff in trying to rebuild the national school network contacting authorities, scientists and US Embassy representatives. The result was the GLOBE Europe and Eurasia Country Coordinators and International Teacher Training Workshop (21-25 oct 2019, Trieste) that was inserted in pre-ESOF events. This could have led to further involvement in ESOF, but the pandemic made it impossible.

GLOBE Italia, through Labter-Crea Mantova, joined ASviS (Italian Alliance for Sustainable Development), that aims to increase the knowledge and the importance of 2030 Agenda for Sustainable Development. Through ASviS the initiatives of GLOBE Italia school network can have greater visibility on a national basis

2. Science

MINCIO Project 30th edition-the 30th anniversary of the Project and 25th anniversary of the GLOBE Program were planned, but due to pandemic only Self-training of high school students, Meetings of the Mincio Park and Labter-Crea with schools and Training (TUTORING) of Junior High School students were realized (November 2019 - 23 February 2020); then schools got closed. <https://www.labtercrea.it/pm-2020/pm-2020.htm>

RIO SCHOOL Project- 3rd edition. The final meeting of the Project took place on October 29, 2019 at Santa Maria della Vittoria (restored deconsecrated church) with the presentations of the results obtained by the classes and those of the Lombardy Regional Environmental Protection Agency (ARPA) and Health Protection Agency (ATS). Bacteriological pollution of the Rio in stations 5, 6, 7 and 8 was confirmed both by the results of the schools and from those of ATS. Actions realized: Preliminary agreements and school sampling campaigns for 2020, Project opening meeting held on 8 February 2020 with subsequent inspection of the classes in the sampling stations on the Rio, first monitoring campaign carried out by the classes of ITET Mantegna on 18.02.2020, The same classes did the second campaign on 20.10.2020, just a few days before the second lockdown <https://www.labtercrea.it/progetto-rio-2020/progetto-rio-2020.htm>

RIO School Project was the source of inspiration for Labter-Crea and GLOBE Italy to propose the RIVERS IN TOWN Project in 2020 Virtual Regional Meeting GLOBE E-E Rivers in Town Project Presentation.

PULCHRA Project (Horizon 2020) - GLOBE Italy collaboration with scientists of Udine University in the project to develop new teaching school methodologies is going on and has revealed very useful. Six Italian schools are participating and the focus of teachers and students is on Green Space as a Laboratory for Scientific Green Experiences for the Community.

GLOBE Italy- MICROPLASTICS protocol. - The Protocol, conceived by two Australian researchers from Deakin University in Geelong, Victoria Australia and tested on the Island of Elba (June 2019) in collaboration with representatives of Labter-Crea and GLOBE Italia, was presented at the Science Market of the Globe EE Regional Meeting and Training in Trieste (21-25 October 2019).

In the summer of 2020 Labter-Crea and GLOBE Italia performed approximately 50 samplings of waters of rivers, lakes, seas and mountain streams in Northern Italy. The filters obtained from the filtration of the samples were examined under an optical microscope and the recorded results, along with the filters, were transmitted to Australia, where they were validated at the Institute for Frontier Materials of Deakin University. Finally, Deakin University, Labter-Crea and GLOBE Italia started the drafting of the Protocol. Deakin also made the video **Microplastics Monitoring Protocol**, presented at the 2020 Virtual Regional Meeting GLOBE E-E (26-29 October 2020).

3. Community

Rivers in Spring, World Water Day 2020 in Mantova, 20th edition – Official theme of the event: Water and Climate Change. The event - already organized with 60 workstations foreseen and about 80 scientific, artistic, recreational, sustainable mobility activities- could not take place because of the outbreak of pandemic

Earth Day 9th edition – 50th anniversary of Earth Day and 25th Anniversary of GLOBE Program. Due to pandemic and consequent lock down GLOBE Italia decided to keep the traditional public event

on 22 March 2020, but to transform it into a virtual one. A webinar was organized "HUMANS, THE EARTH AND COVID-19", made up of a scientific part, in which scientists made short presentations centered on COVID-19 (causes and consequences), and a celebrative one with interactive interludes and a Q&A part. The three presentations by Dr. Michael Garay -JPL della NASA (Pasadena, USA), by Dr. Moreno di Marco - Dipartimento di Biologia e Biotecnologie of La Sapienza University in Roma and by Dr. Eugenio Gervasini -Joint Research Centre of European Commission in Ispra (VA), after the editing of Ing. Marco Faggioli, (GLOBE Italia Media Group), are available on Globe Italia-YouTube and Globe Italia Facebook. They are considered useful from a scientific viewpoint and are accompanied by the Q&A of webinar. Participants were about 500 and the webinar ended with a Virtual Land Art.

#School on the river 4.0 – celebrated on 5 June 2020 WORLD Environment Day. Because of pandemic the traditional event was transformed into an example of integrated learning, including outdoor scientific activities such as explanation of protocols and related water analysis, data collection and their discussion with the help of experts. All of this was broadcasted live on YouTube and other social networks.

Read the horizon, write the future: teacher training-GLOBE Italy has joined together STEM enhancing, focus on climate change, innovative pedagogical approaches and use of technologies in teaching. GLOBE Italy in cooperation with ISIS Bassa Friulana, during a teacher training, has experimented the "CHALLENGE BASED LEARNING" as a working method to build in students' scientific bases and active citizenship, in order to face the increasing environmental issues. During teacher training, teachers themselves engaged in a hackathon whose challenge was to plan a teaching path about climate change to realize in their schools

GLOBE PROGRAM Presentation at Accademia Nazionale Virgiliana in Mantova (February 5, 2020) Lorella Rigonat presented the GLOBE Program in the afternoon session of a conference on climate change organized by the Academy in collaboration with Labter-Crea on 5 February 2020.

4. **Technology**

There are still critical issues for entering data on the site and the pandemic did not allow to improve the situation. Anyway, there we have good reasons to hope in improvement of the entering of data by schools thanks to the use of Apps, because about 2800 Globe observer 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 virtual 10th edition of EARTH DAY and #School on the river 4.0, the 21th edition of School on the River 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 Campaign- GLOBE schools in Italy will be invited to use the microplastic protocol mentioned before, along with the traditional GLOBE Hydrology measurements. Accessibility of Protocol to students and citizens was tested at festivaletteratura 2020. (GLOBE Europe-Eurasia pages).

Rivers in town- starting from Rio Project, realized in Mantua by Labter-Crea with GLOBE schools, a new proposal was launched: to implement a "Rivers in TOWN" project of cooperation among schools interested in the study.

PULCHRA Project (Horizon 2020)- six Italian schools are directly involved in the project and will use GLOBE protocol for Surface Temperature. Possibly other schools will be involved in the measurement campaign, even though they do not participate directly in the PULCHRA project

We plan to realize, in presence if pandemic will allow it or virtually if not, the following activities:

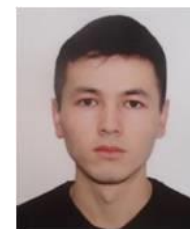
1. 31th edition of Mincio Project
2. 21th edition of WWD
3. 3rd edition of RIO School Project
4. 22st edition of At school on the river
5. 10th edition of Earth Day

Kyrgyz Republic

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Organization and Number of Staff:

KG GLOBE, staff: 3 persons

Funding by:

Sponsoring, U.S. Embassy, Kyrgyz National University

Cooperating Organizations/Individuals:

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

GLOBE Schools:

Secondary schools, High schools (40)

GLOBE Areas you and schools focus on:

- Atmosphere
- Hydrosphere
- Biosphere

Number of Schools Reporting Data over Past Year:

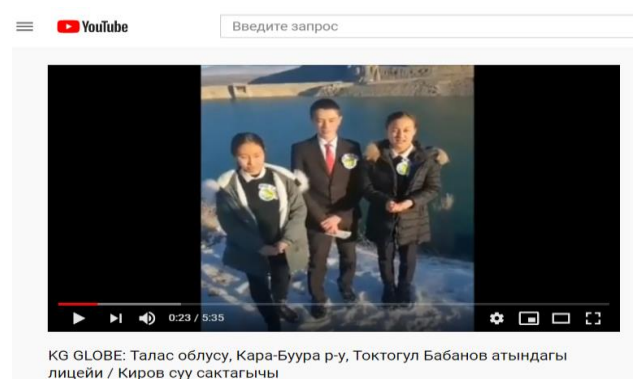
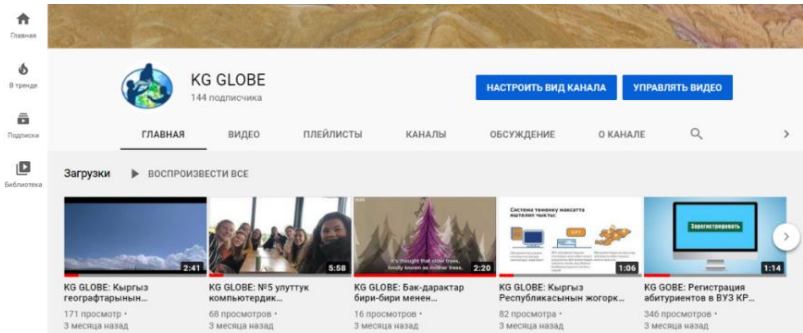
5 (regularly collecting data, but without entering to the website)

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

1. Education

We organized a competition on the theme "The Nature of My Little Homeland" among schools. But we didn't meet because of the pandemic, we organized remotely with video exchanges. You could see some of pictures bellow:

Please visit to the „KG GLOBE“ youtube channel:



2. **Science**

n/a

3. **Community**

n/a

4. **Technology**

n/a

5. **Communications**

Our students visited the Netherlands GLOBE school in order to exchange experiences, 15-25 November, 2019. Schoonhoven, Netherlands

<https://www.youtube.com/watch?v=mBdi70ye63A&feature=youtu.be>

Plans and Ideas for Next Year:

- GLOBE implementation in Primary Education
- Training of teachers
- Supplying GLOBE schools with meteorological instruments

Republic of Latvia

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Organization and Number of Staff:

Children's Environmental School is a Non-governmental organisation (NGO) for environment and education. For GLOBE there are 1 country coordinator, 1 Deputy CC, 2 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 delegation agreement. Additional activities are supported by grant projects of different foundations, including the Embassy of the USA in Latvia. Respective municipalities support school participation.

Cooperating Organizations/Individuals:

Embassy of the United States of America, University of Latvia, Nature Conservation Agency, Institute for Environmental Solutions, municipalities.

GLOBE Schools (what types, how many):

In Latvia, there are 31 public schools with people received GLOBE training. 2 new schools have joined GLOBE in 2020.

GLOBE Areas you and schools focus on:

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

- Atmosphere: 21
- Earth As a System: 12
- Hydrology: 11
- Land Cover: 7
- Soil: 6

Most schools focus on more than one area; some has tried all areas; some schools 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 most uncomplicated.

Number of Schools Reporting Data over Past Year:

6

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

1. Education

One workshop for teachers organised, covering Latvian expedition to Antarctica, Urban Protocol Bundle and organisation of GLOBE Summer Expedition 2020 (cancelled due to Covid19 pandemic).

Information about GLOBE educational materials and mobile apps was included in the collection of resources for distance learning due to Covid19 pandemic – <http://videsskola.lv/macibu-materiali/88-materili-mjmcba?start=6>.

2. Science

3. Community

Schools were informed about GLOBE 25th Anniversary and encouraged to participate. We collected Historical photos for retrospective video presentation made by GIO.

One GLOBE school, Dundaga Secondary school, participates in PULCHRA project funded by Horizon 2020.

4. Technology

Secured funding from the Embassy of USA for translating GLOBE Observer App into Latvian.

5. Communications

Monthly newsletters were sent to GLOBE teachers, informing about relevant and actual GLOBE news and events.

GLOBE was presented in the discussion about motivating students to learn natural sciences held by Latvian Association of Employers at December 16th Year 2019 and workshop about citizen science held by the Ministry of Education and Science at August 28th Year 2020.

Plans and Ideas for Next Year:

There is much uncertainty about 2021 due to Covid19 pandemic. Nonetheless:

- We will continue to inform schools through monthly newsletters.
- We will continue to translate GLOBE materials into Latvian.
- We will provide schools with monthly virtual consultations about GLOBE.
- We will try to attract new schools to join the GLOBE program by participating in different public events (concerning COVID19 restrictions) and presenting results that have achieved and opportunities available.

Lithuania

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Organization and Number of Staff:

Lithuanian Centre of Non-formal Youth Education. There are 153 employees in total, 6 of them are working in the department of Nature and Ecology education, 1 of them is working with GLOBE.

Funding by: Ministry of Education and Science

Cooperating Organizations/Individuals: U.S. Embassy in Lithuania

GLOBE Schools: 31 schools, mostly progymnasiums and gymnasiums

GLOBE Areas you focus on: Atmosphere, Earth as a System, Hydrology, Land Cover, Soils

Number of Schools Reporting Data over Past Year: 19

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

1. Education

We planned to start a series of seminars about GLOBE for new teachers to join and for already participating to improve. Sadly, these plans were ruined in the middle of the planning process because of quarantine. We planned to make good practice sharing between teachers, meetings with climate scientists and excursions to professional climate stations as well as reception in U.S. Embassy in Lithuania. Even if these plans were ruined, I hope it will happen next year.

2. Science

Every November we have a scientific students conference. In this conference students not only present their work, but also have interesting meetings and educations with experts from various natural sciences fields. We had one (probably the biggest) conference in November 2019 with over 90 participants, and we are planning one conference on ZOOM in November 2020.

3. Community

This year we hadn't any physical event for GLOBE participants (but many of them are also participating in other projects, so some of them had met, but not as a GLOBE). Anyway, we are still communicating virtually and one more school joined us.

4. Technology

Because of the pandemic situation all participants are forced to switch to more remote forms of work. We are trying to more actively use different apps like iNaturalist for environment observation as participating different events with real nomination while staying remote. Also, I see more activity on reporting data. Quarantine possibly encouraged it.

5. Communications

As every year, teachers are still getting from CC a newsletter (every week, sometimes a bit less). They also actively participate in Facebook page. Although "GLOBE program Lithuania" does not have many followers and does not work as expected, we are successfully using "[LMNŠC Gamtinio ir ekologinio ugdymo skyrius](#)" fb page, which covers all activities of our department.

Plans and Ideas for Next Year: We hope that the virus will not ruin summer camp and we will be able to have it properly. We also plan to make a series of seminars happen, sooner or later, maybe the next year.

Malta

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Organization and Number of Staff:

There is no full-time person employed to work on GLOBE. Promoting GLOBE rests mainly on the CC and the Deputy CC. The Deputy CC is a class teacher who has been officially granted 3 weekdays to specifically promote GLOBE in schools and support teachers. GLOBE related work carried out by the CC is done over and above his workload at university.

Funding by:

The Directorate for Learning and Assessment Programmes - Ministry for Education and Employment; the Centre for Environmental Education & Research - University of Malta; and the US Embassy support GLOBE Malta. HSBC Bank (Malta) sponsors GLOBE Starter Packs containing scientific equipment that enable schools carry out investigations.

Cooperating Organizations/Individuals:

A researcher at the University of Malta has funded a pilot project about weather observations in 10 schools. GLOBE investigations are also supported by the NGO Nature Trust – FEE Malta through their Eco-Schools and LEAF programmes.

GLOBE Schools (what types, how many):

Total number of schools: 46. The schools are from the State, Church and Independent Sectors and are distributed thus: Primary schools (5 -11yrs): 22; Middle Schools (11-13yrs): 3; Secondary Schools (13-16yrs): 15; Post-Secondary Schools (16 – 18yrs): 3; and Field Study Centres: 3.

GLOBE Areas you and schools focus on:

Atmosphere (Air Temperatures, Barometric Pressures, Cloud Observations, Precipitations, Relative Humidity, Surface Temperatures); **Earth as a System** (Green Up/Green Down); **Hydrology** (Mosquito Habitat Mapper); **Land Cover** (Biometry Trees, Vegetation Covers, MUC, Photos); **Soil** (Soil Temperatures)

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

School-based teacher training sessions were organized to introduce beginning teachers to the GLOBE program and how to integrate it with the Eco-Schools programme. During one of these sessions the GLOBE Starter Pack (sponsored by HSBC Malta) was launched.



Organised a Biosphere Protocol training (Green-Up and Green-Down) session during a Learning About Forest (LEAF) teacher training seminar.



Conducted GLOBE workshops with Girl Guides that included: nature walks with Guides and two workshops at a local bay with Guides and Rangers.

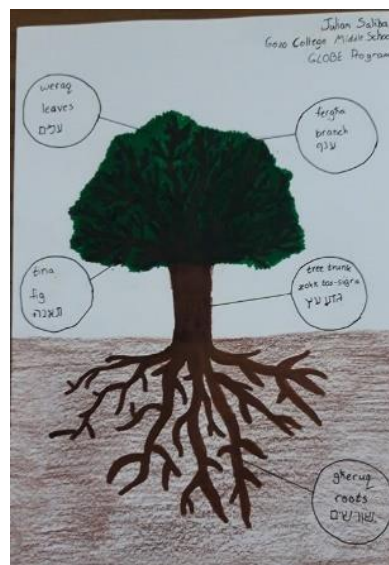
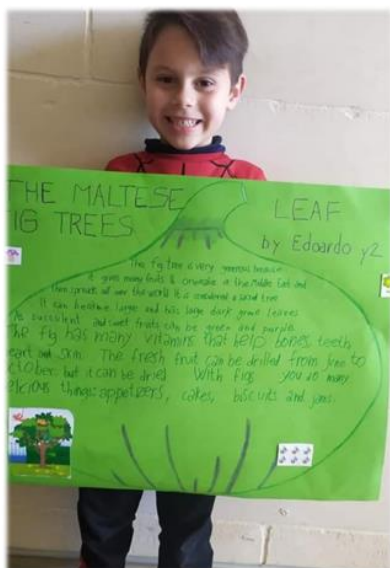
GLOBE Malta set up a space on the official Ministry of Education platform Teleskola (<https://teleskola.mt/the-globe-program/>) to support schools during the COVID-19 lock down.

Delivered an online lecture, through MS Teams, to introduce university students following the BSc in Science for Education & Communication to GLOBE

Students were invited to share their GLOBE experience of collaborative project between different countries during a webinar organised by Mr Brain Campbell: **Trees around the GLOBE Campaign**. Students also shared good practices during two webinars organised by eTwinning Malta and the Digital Literacy Centre.

2. Science

Four schools participated in the **Phenology Autumn Campaign 2019**, during which they continued observing tree colour changes of the same tree they monitored in the Spring Campaign. They successfully completed the campaign and received a certificate. During the **Phenology Spring Campaign 2020**, students from 10 schools selected a tree, observed its growth from buds to leaves and uploaded their measurements into the GLOBE database. All completed the set activities and were awarded virtual badges, certificates and honor rolls. During school lockdown, students from four schools explored the historical and cultural aspects of fig trees and created related presentations, artwork and recipes. Their work was showcased on the GLOBE website as an inspiration for other GLOBERS (<https://www.globe.gov/.../european-phen.../overview/get-inspired/>).



A researcher from the Institute of Earth Systems, University of Malta is the mentor and coordinator of the **Volunteer Weather Observer Project** - a pilot Citizen-Science project run by the university in primary and secondary State, Independent and Church schools. Ten educators are participating in the project and have received the necessary training on how to collect and upload data on the GLOBE database.

The collaboration project between two schools from Malta and another two schools from Israel brought together students, teachers and representatives from the US Embassy and The GLOBE Program. It provided a unique learning experience to engage in scientific discovery and become familiar with different cultures, languages and traditions. On 11th February 2020, the GLOBE CC of Israel and Malta's Deputy CC coordinated a video conference with the participating schools to celebrate The GLOBE Program's 25th Anniversary by planting two trees (a fig tree and an olive tree) symbolizing peace, in their respective school grounds honoring this international friendship. On 25th May, students, teachers, and country coordinators from both states met to celebrate the conclusion of the four-month long collaboration

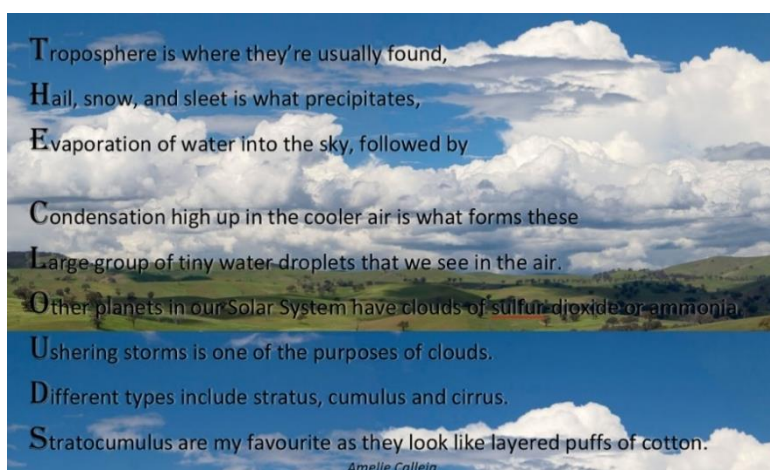
investigating spring tree changes observations and activities. <https://www.globe.gov/news-events/globe-stars/starsdetail/globe/to-celebrate-globe-s-25th-anniversary-schools-in-malta-and-israel-reach-beyond-national-boundaries-in-collaborative-video-conference>

Let's Get Global ... on Cloud 9. Following their cloud observations, students from a primary school got familiar with the GLOBE Observer App, and started uploading observations on GLOBE's database. A GLOBE team was formed and the students got so involved and fascinated to see their data being compared with the readings by the overpassing satellites, that they decided to up-scale their activity by involving all students and adopt a whole-school approach making The GLOBE Cloud Observations a school-wide project. This project is a star story on GLOBE website <https://www.globe.gov/news-events/globe-stars/starsdetail/globe/primary-school-in-malta-begins-whole-school-journey-with-the-globe-program>

GLOBE Investigations: (a) Marine Litter: This international collaboration was done through eTwinning and with the assistance of Ms. Claudia Caro Vera. The Deputy CC offered training sessions to introduce GLOBE to a teacher from Turkey and another one from Italy who have since then become GLOBE teachers. The purpose of this study was to investigate the effects of marine litter, especially plastic, on sea water conditions – particularly sea water temperature and sea water pH levels. The project was submitted for the International Virtual Science Symposium (IVSS) and received four Badges.

(b) The pH and amount of rain together with temperatures during winter in an urban area of Malta. Students collected, observed and recorded rainfall, rainwater pH level and air temperature during winter. They compared it with previous years and analysed if there was a change in amount of rainfall throughout the years and any trends in temperature readings. The project was submitted for the International Virtual Science Symposium (IVSS) and received three Badges.

The Cloud Challenge. To celebrate Earth Day, International Environment Day and the 25th anniversary of the GLOBE Program, GLOBE Malta, the US Embassy and the Malta Embassy in Washington, D.C. organized a joint project to highlight US and Maltese collaboration to better understand the Earth systems and the global environment. The project involved participants recording their research and developing creative ways in which to present their findings. Participants made their observations solely from their garden, yard, roof, balcony or window due to COVID-19 restrictions. 108 students from 9 schools participated and presented their individual projects to highlight their observations of cloud formations. <https://www.globe.gov/news-events/globe-stars/starsdetail/globe/globe-malta-cloud-challenge-brought-people-together-during-difficult-times>



Turtle Nest Site Observations & new International Collaboration with Costa Rica.

Students collected data from the turtle nesting sites using an Infra-Red thermometer and data loggers to measure sand temperature at a depth of 20cm and 80cm, surface temperature, air pressure, humidity and air temperature. They also observed and recorded cloud type and cover through the GLOBE Observer App. Costa Rica and Malta came together to further investigate turtle nests. Through The GLOBE Program students collected and compared data and investigated whether different environmental conditions and climate change are affecting turtle nests. The students also prepared a video documenting their investigation.



3. **Community**

Setting up and managing a GLOBE Stand during the FEE Fest – a fair visited by around 900 visitors comprised of students, teachers and parents.

GLOBE Malta was involved in a turtle release at a local bay during which it gave a presentation about GLOBE activities and presented the data collected by the students to the Minister for the Environment and Minister for Gozo. GLOBE students were also involved in monitoring turtle nesting sites, reporting sky conditions using the GLOBE Observer App and inviting NGO volunteers to engage as Citizen Scientists through the same App. The students adopted an injured turtle as a follow up.



4. **Technology**

GLOBE Malta provided 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.

Showcasing and promoting the work of the participating schools through regular updates of the GLOBE Malta Facebook page 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 programs on the national channel ... including a feature on the evening news bulletin.

The Cloud Challenge campaign was also feature on The Mayor.EU website - the European Portal for cities and citizens aimed at enhancing the understanding and cohesion between European Union citizens, the local authorities and EU institutions. (https://www.themayor.eu/en/maltese-children-draw-inspiration-from-clouds?fbclid=IwAR2eKPT8SI5KNYILFWZFyRHeO4nNyYC-ruXRakns2sDbJd54oVfcJjifM_M).

Plans and Ideas for Next Year:

Finalisation of the discussions with the Malta Girl Guides Association to identify criteria for setting up a GLOBE Badge that Guiders could aspire to achieve.

This year's collaboration with GLOBE Israel will involve: (a) 4 schools (2 from each country) observing Fig Trees through the Phenology Campaign; and (b) sharing of Cloud observations between the two countries.

A repeat of the joint project between GLOBE Malta, the US Embassy and the Malta Embassy in Washington, D.C. The aim is to make this collaboration a yearly event on GLOBE Malta's calendar.

A joint project with the Europe Direct Information Centre (EDIC) in Gozo, which is one of the main tools of the European Commission to engage with citizens on EU-related topics at local and regional level.

The project will involve the sowing of indigenous plants: Each school and/or class will choose and sow a different indigenous plant/shrub/tree species, learn about the earth as a system and what the plant needs to grow, observe and record its growth and carry out research about the plant/shrub/tree species. The participating schools will be invited to share their work during an Earth Day celebration and will be given a tree to plant in their school grounds.

Poland

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Organization and Number of Staff:

GLOBE Program in Poland is coordinated by UNEP/GRID-Warsaw Centre (www.gridw.pl/en), established on 17 September 1991 as a member of the GRID (Global Resource Information Database) global network developed by the United Nations Environment Programme (UNEP) to foster sustainable management of natural resources. Officially registered as an NGO, we cooperate with many national and international partners – local authorities, educational entities and companies implementing CSR (Corporate Social Responsibility) policies. Our organisation is well recognized as an important node of environmental and science education in Poland. There are more than 20 experts working at the Centre right now and a group of external collaborating scientists, experts in pedagogy, etc.

Funding by:

Last year GLOBE in Poland was mainly supported by UNEP/GRID-Warsaw's own resources. This time no external funding was available (grants or support from business partners).

Cooperating Organizations/Individuals:

GLOBE implementation in Poland is supported mainly by the Scientific Board (team of scientists from the University of Warsaw, Warsaw University of Life Sciences, Institute of Geophysics of Polish Academy of Science, etc.) and group of external experts (for example experts in pedagogy, etc.) cooperating with the Country Coordinator.

GLOBE Schools (what types, how many):

There are 200 GLOBE schools registered in Poland, both primary (students aged 7-15) and secondary (students aged 16-19). However, last year only about 40 were active – making observations and measurements, reporting data or taking part in the proposed GLOBE activities/projects.

GLOBE Areas you and schools focus on:

Most of the GLOBE schools in Poland are involved in the atmosphere research, particularly cloud observations (249 Science Honor Rolls at level III in atmosphere and 32 in clouds). More and more schools are also getting engaged in the biosphere investigations, phenology in particular (right now we have 66 schools holding Science Honor Rolls at level III in this field). All GLOBE sub-projects implemented at the national level in the past few years were mainly focused on those areas.

Number of Schools Reporting Data over Past Year:

21 schools

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

1. Education

- GLOBE-based activities were included in the educational materials – learning modules, lesson scenarios etc. – of the several different projects incl. „Urban Science – Integrated Learning for Smart Cities“ (co-funded from Erasmus+) and PULCHRA (funded by H2020) fund);
- 5 new GLOBE teachers trained during online, dedicated training covering atmosphere, biosphere and hydrosphere protocols;

2. Science

3. Community

- 5 new schools joined GLOBE in Poland;

- Polish schools took part in the European Phenology Campaign, incl. international collaboration with other European schools
- 3 Polish schools were awarded by GIO for their participation in cloud observations, tree height measurements and phenology observations;

4. Technology

- 21 schools were reporting data to the GLOBE system;

5. Communications

- GLOBE Program was promoted to the pre-service teachers and science teachers during series of the dedicated webinar organized in the Urban Science project;

Plans and Ideas for Next Year:

In the next year we would like to:

- get more stable financing for GLOBE Program to support schools, including purchase of the measuring equipment and teacher trainings;
- get more schools involved in school-to-school projects at the international level,
- update/refresh our national website,
- develop new training models for teachers/students, incl. update of GLOBE Teachers' Guide with all protocols.

Republic of North Macedonia

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Organization and Number of Staff:

Ministry of Environment and Physical Planning, 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)

GLOBE Schools (what types, how many):

Until now, we have included 29 schools, 15 secondary schools and 14 primary schools, 93 GLOBE observers

GLOBE Areas you and schools focus on:

Atmosphere, Phenology Green up, Green down protocols and GLOBE at night

Number of Schools Reporting Data over Past Year:

Only one school

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

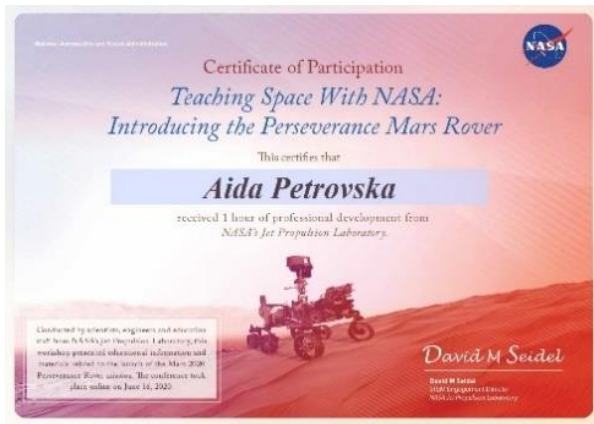
1. Education

Despite the official reporting by only 1 school this year, we would note that other schools were involved in specific activities related to the GLOBE Protocols, but unfortunately under the circumstances, they did not report continuously in the formal database. For example, the "Orde Chopela" High School in Prilep conducted measurements in accordance with the water protocols, but did not manage to officially report. The current Covid19 crisis has resulted in unprecedented organizational changes for the schools, which is and will be reflected in the shortcomings for the implementation of the GLOBE Program.

The good news is that despite the problems in 2020, a new primary school from Bitola has joined the Globe family.

2. Science

Nevertheless, because of the Covid19 circumstances, some teachers have taken the time available at home to further build their capacities and taken online capacity building classes. Depending on the item related to the teachers, some were involved in training provided by NASA and other were involved in international projects.



3. Community

Currently, we are exploring opportunities for online contribution to the community, and we are exploring outreach tools that could be beneficial to the community.

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

For the first time, this year, some of our teachers were virtually attending the 2020 GLOBE Annual meeting in July, having the opportunity to connect to the other GLOBE teachers via the AttendeeHub application.

Plans and Ideas for Next Year:

We would like to emphasize that just recently, our new Minister has held a meeting together with the US Ambassador in Skopje, at which the GLOBE Program was discussed, and assurances were given on both sides that there will be strong support for the further planning and implementation of the GLOBE activities. Also, we have provided our Minister with briefing material and presentations related and we expect that in 2021 we will receive support for the implementation of the activities. Additionally, we hope that in 2021 we will build stronger relations with partners outside of the Ministry, which together with us will coordinate the Program more efficiently, as well as attempt to find external funding and other financial support.

Russia

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Organization and Number of Staff:

Southern Federal University (Russia) Remote Sensing Monitoring and Geoinformation Technologies Center

Funding by:

GLOBE schools

Cooperating Organizations/Individuals:

Russia Ministry of Higher Education and Science

GLOBE Schools:

Secondary and High Schools, 108

GLOBE Areas you and schools focus on:

Land Cover, Atmosphere, Hydrology

Number of Schools Reporting Data over Past Year:

No

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

1. Education

We have been studying to communicate distantly by using Microsoft Teams videoconference software

2. Science

New direction of GLOBE Program development – wider use the remote sensing satellite monitoring data. We have Remote Sensing Monitoring and Geoinformation Technologies Center in Southern Federal University (Russia) with antenna and invite students from all Rostov-on-Don schools to work with Antenna equipment and software distantly

3. Community

We have a group of experts – 10 GLOBE teachers in Rostov-on-Don, who works with us to shape and develop the program. We have been meeting distantly once per two months.

4. Technology

There is a description of software MultiSpec in GLOBE Teachers Guide, which is used for analysis of Landsat satellite images in Land Cover activities. We show to students distantly how to download Landsat-8 images from USGS archive and how to use geoinformation technologies to download vector objects – roads, rivers and even buildings from Open Street Map site for free

5. Communications

We try to use Russia Federal University network to implement GLOBE in all Russia Federal Districts.

Plans and Ideas for Next Year: Country coordinator Feodor Surkov plans participate as a trainer at the GLOBE Teacher Training in Osh, Kyrgyz Republic at the nearest future.

Slovak Republic

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Organization and Number of Staff:

Daphne Institute of Applied Ecology, 11 internal employees

Funding by:

Embassy of the United States of America

Cooperating Organizations/Individuals:

Slovak Hydrometeorological Institute,
Matej Bell University in Banska Bystrica,
Ministry of the Environment,
Embassy of the United States of America

GLOBE Schools (what types, how many):

Primary schools – 11 and Secondary schools - 4

GLOBE Areas you and schools focus on:

Atmosphere, Biosphere, Hydrosphere

Number of Schools Reporting Data over Past Year:

0 (we started Globe only in September 2020)

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

1. Education

GLOBE Slovakia website was launched in September 2020. Globe materials in area Atmosphere and Hydrosphere were translated into Slovak language and distributed to member schools. Educational tools and resources are accessible to the GLOBE Community around the whole country. One teacher training took place for 30 teachers and 9 NGO members. The NGO members are interested in becoming consultants/trainers, therefore an extra day of training was devoted to them in September 2020.

2. Science

Teachers established first GLOBE teams at their schools and undertook first activities/investigations. The participation and collaboration of scientists and STEM professionals with the GLOBE team and schools started. First data were recorded and put in GLOBE database. Teachers have been encouraged to start student projects focused on environmental awareness and contributing to environmental benefits. The Ministry of Environment offered to provide consultancy and help in local air pollution projects.

3. Community

The GLOBE community has been established in Slovakia, including schools and scientific institutions from all around the country. Schools were encouraged to create and support their local GLOBE networks, involving various groups of stakeholders. GLOBE members in Slovakia joined the European Phenology campaign and formed cooperating subgroup with schools from Poland and Czech Republic.

4. Technology

The GLOBE Slovakia website has been developed, delivering information and materials to inspire and engage the GLOBE community. Educational tools and equipment in accordance with GLOBE international requirements have been purchased and provided to schools for their investigations. The GLOBE data systems were introduced to member schools and the active and regular use of these data systems (data collection, data entry, visualizations) were encouraged.

5. Communications

Absolutely professional help was provided by Dana Votapkova and Bara Semerakova from the Europe and Eurasia Region Coordination Office during the establishment of GLOBE Slovakia as well as during the first months of its operation. Without them the start of GLOBE in Slovakia would not be possible. They also flexibly adjusted GLOBE training to online form (in extremely short time) and provided it in very high quality, what was very much appreciated by Slovak teachers and the GLOBE team. We also got great support from GLOBE Czech Republic, thanks to what we were able to prepare Slovak methodological materials in a very short time (over summer). We are very glad for these amazing experiences within the international GLOBE Community. The principles of communication within the Slovak GLOBE Community were established also with great support from Dana and Bara. Thanks to them we can learn from experiences of GLOBE countries all around Europe and also elsewhere.

Plans and Ideas for Next Year:

- We plan to raise funds and increase the number of schools in GLOBE community in Slovakia.
- We will finish the methodological materials in area of Biosphere – print them and make them available for schools.
- We will maintain good quality cooperation with schools.
- We plan to have first Slovak GLOBE trainers for the areas of Atmosphere, Hydrosphere and Biosphere.
- We plan to support schools in organizing projects and participating at GLOBE Games in Czech Republic.
- We will organize monthly online webinars to support teachers and students in their investigations.
- The online training in use of GLOBE data systems is planned to be organized for Slovak schools in autumn/winter 2020.

Switzerland

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Organization and Number of Staff:

Association GLOBE Switzerland: National implementation office in Bern (4 persons part time), regional GLOBE implementation by mandates to 5 Universities of teacher Education and 1 regional expert (10-20% FTE each).

Funding by:

Federal Office of Environment. Project funding: Foundations

Funding of Trainings: Free trainings for all interested schools, funded by the performance mandate of Federal Office of Environment.

Cooperating Organizations/Individuals:

Members of [GLOBE Switzerland Association](#) grouping Universities of Teacher Education and Scientific Institutions like University departments, Swiss Parks and diverse NGOs in environmental education and museums. GLOBE is integrated in teaching programs of at least 10 Universities of Teacher Education (FHNW, Luzern, St. Gallen, Thurgau, Graubünden, Zürich, Zug, SUPSI/DFA, HEP BEJUNE, Bern).

GLOBE Schools (what types, how many):

218 schools, most of them are public schools, among of them 6 Universities of teacher Education with many preservice teachers (students).

GLOBE Observer App: 675 Citizen Scientists registered

Phaenonet (Schools and Citizen Scientists): 900 users, individuals and 9 classes

River project (national and international links): 130 Users

GLOBE Areas you and schools focus on:

Atmosphere (GLOBE protocols and projects on Climate Change CCESO), Hydrology, Bioindication in rivers, Phenology (international and national offers), Soil, Landcover, Invasive Neophytes, Agriculture, Elementary GLOBE, GLOBE at Night, international GLOBE campaigns

Number of Schools Reporting Data over Past Year:

International: 12 schools

National GLOBE projects: PhaenoNet (9 classes), Bioindication River (15 classes, 2 graduate work, 1 bachelor thesis), Agriculture/LERNfeld (20 classes)

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, many future multipliers in all regions of Switzerland could be reached through seven Universities of teacher Education. The training units are carried out by our regional experts who are employed at the Universities of teacher Education and also by the national GLOBE office and are based on the GLOBE offers.

Due to the current corona situation, many trainings were transferred virtually. Nevertheless, education workshops for teachers and students of pedagogic universities took place: 6 soil, 7 bioindication and hydrology and 3 weather workshops.

A chance arose that we were able to take over several students for a GLOBE traineeship and a bachelor. These contacts also took place virtually. The students worked on contents for our website, they had to develop didactical material based on the GLOBE offers.

2. **Science**

Thanks to our national project developments, we can strengthen GLOBE's cooperation with partners from environmental research and environmental administration here in Switzerland. The GLOBE model is regarded as the starting point here, both the partners from education and research (science outreach) benefit from each other, and the offers thus become of higher quality. Unfortunately, it's much more difficult to find scientists willing to participate internationally.

CCESO Climate Change Education and science outreach (an initiative of GLOBE Switzerland). Within the framework of this project for the development of teaching material, offers conforming to the curriculum were developed on the basis of the GLOBE objectives in cooperation with 4 teacher training colleges (3 languages) and with the **OCCR** Oeschger Centre for Climate Change Research. The cross-level materials (all school levels) are strongly based on the latest IPCC reports in terms of subject matter, but offer didactically high-quality teaching and learning opportunities appropriate to the subject and level. The results of the project are currently published on GLOBE Switzerland and on [education 21](#) (D, F, I), the national education platform for sustainable development. A follow-up project has been launched this year for the mountain/alpine regions (region Davos). The model of CCESO has convinced the Forest Division of Federal Office for the Environment too. GLOBE has now the lead to build up an analogue project in the area of forest contents, this together with scientists and educators.

LERNFELD - Agriculture

With "LERNfeld", school classes explore the topics of biodiversity and climate change directly on a farm close to school. They practice scientific methods accompanied by young researchers. The pupils discuss and analyse their own results together with the farmer's wife, the farmer and the young researchers. They can also record the results in a database and visualize them on a Swiss map in WebGIS. In this way, this offer promotes MINT and digital skills. GLOBE is represented in this project by the soil and atmosphere protocols.

PhaenoNet-MeteoSwitzerland

The offer "PhaenoNet" offers pupils and interested private persons the opportunity to observe seasonal changes in plants. The collected data can be reported and presented nationally at PhaenoNet or internationally (GLOBE protocols are part of observation guides). This service thus promotes MINT and digital skills. Since in Switzerland all phenological data collected for about 50 years are available, the effects of climate change on vegetation can be analysed.

Wassernetz.ch / Reseau deau.ch

Wassernetz is the result of cooperation between the three environmental education organisations Naturama, Pro Natura and GLOBE Switzerland. The educational network on the subject of water is supported by other partners from research and education. Its aim is to bring schools with learning opportunities to rivers and still waters so that they can explore and research the subject of water. In addition, teachers are to be trained in the implementation of the offers in joint further training courses.

Stork researcher:

The original idea of this project was the re-adaptation of Elementary GLOBE in phenology. Hummingbirds are relatively rare here in Switzerland ☺, so we thought about transferring the story to another migratory bird. In the end, the stork was selected and a project was launched that would not only affect primary but also secondary education. Here, too, research partners were involved: Swiss Ornithological Institute Sempach, Birdlife and Storch Switzerland. In this way, the correctness of the technical and scientific contents could also be guaranteed. The migratory behavior of storks has changed considerably in recent years, so that pupils can use the research material provided and evaluated to investigate numerous issues (migratory behavior, climate change, landfills, technical aspects of transmitters, etc.). Due to the success of the first version for primary school level an additional offer for secondary schools has been developed. All materials have been produced with the help of scientists and are translated into [French](#).

3. **Community**

Internationally, GLOBE Switzerland has participated like in the past years in the judging of several IVSS projects.

Twice a year the responsible persons from the different Swiss regions (GLOBE Team) met on one day and discussed the implementation of GLOBE. The lively exchange is important for the synchronisation of all activities, and one topic is always discussed in depth together in the sense of further training.

In August 2020 the team met for a classic GLOBE Training (Soil and River) to refresh the use of protocols and to exchange experiences (team day).

A month after the training and team day a covid-conform GLOBE workshop was hold for 11 teachers, all from different schools. The experiences made during team day were a secure base to guarantee a successful workshop for the attending teachers.



We would have found the funds to invite 5 motivated teachers to participate to annual conference in Croatia (Erasmus plus). As the conference has been cancelled due to corona we hope to be able to keep the interest and the funds for next year.

4. **Technology**

For still have been working on our new [GLOBE website](#), in three languages (German, French, Italian). It's not just about restructuring the website to make it more user-friendly, it's also about revising and updating the content. It was decided to divide our offers into two main themes: climate and biodiversity.

Also new control files (Thematic offer at a glance), fact sheets on the GLOBE protocols/contents and didactic aids for lesson planning are made available to teachers. We have put a lot of material back in order to keep the website as clear as possible. The translation work requires a lot of resources.

We have made translations and a lot of promotion for GLOBE Observer.

Communications

Three to four times a year the GLOBE office sends a newsletter to the GLOBE network. Each time, the newsletter also contains the most important information from the international programm and points out activities, campaigns and training opportunities. If necessary, target groups are contacted directly (levels, topics).

The presence of GLOBE Switzerland in the social media has been strengthened (Facebook, Instagram).

Plans and Ideas for Next Year:

Regional reinforcements, more data input, more active participation of GLOBE schools in the international network (e.g. IVSS) or generally development of specific GLOBE research projects and input to www.globe.gov.

Ukraine

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Organization and Number of Staff:

National Ecology and Nature Center of Ministry of Education and Science of Ukraine is a leading educational institution in the field of ecology, nature and science in Ukraine, a component of the system of extracurricular education for gifted and motivated school students. Also, NENC is the national coordinator of the GLOBE program in Ukraine since 1999. GLOBE is a part of a program of national integration into European and world educational space.

There are two people working in GLOBE coordination office in Ukraine, however the center has capacity to include other people during organization of events or competitions. Also, there are active regional educational institutions which participate in the program development. We have 4 active regional coordination centers (Rivne, Chernivtsi, Ivano-Frankivsk).

Funding by:

Main funding: Ministry of Education and Science of Ukraine.

Cooperating organizations/individuals:

Ministry of Education and Science of Ukraine, Minor Academy of Sciences of Ukraine, Ukrainian Hydrometeorological Center, State Space Agency of Ukraine, Palladin Institute of Biochemistry and others.

GLOBE schools (what types, how many, etc.):

There are 567 schools and educational institutions registered on the website, actively participating schools – about 50. The GLOBE network in Ukraine includes not only secondary schools, but also regional environmental education centres that are part of system of after-school education in Ukraine.

GLOBE areas you and schools focus on:

The most popular areas among Ukrainian GLOBE students is Phenology (GreenUp / GreenDown), as well as Atmosphere (Air Temperature, Cloud observations, Barometric Pressures, Precipitations, Relative Humidity, Surface Temperatures). Some teachers have made measurements of Hydrology (Dissolved Oxygens, Nitrates, Transparencies, Water pH, Water Temperatures) and Land Cover (Water Temperatures, Water pH).

Number of Schools Reporting Data over Past Year:

29

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

The main focus of the last year was on involved new teachers to the program, training and support for existing GLOBE teachers and schools as well as translates of protocols and instructions. This year Ukrainian teachers were active in European Phenology Campaign (20 schools have got Honour Rolls in Phenology). Within the framework European Phenology Campaign Ukrainian schools were active cooperate with another schools. Both teachers and students participated in GLOBE webinars.

There is total amount of 73 108 data entries and 42 Honour Rolls for the period 10/2019 – 10/2020.

In the spring of 2020 work began on project "GLOBE. Ukrainian Clouds Atlas" which will be completed in December.

During the year, an upload of the content for the Ukrainian GLOBE website was going on.

Plans and ideas for next year:

- Conducting traditional annual events (annual seminar for teachers, GLOBE Games 2021).
- Participating in European Phenology Campaign and others.
- Conducting regional workshops in active regions.
- Translating GLOBE materials for teachers.





Europe and Eurasia
2020 Country Reports

GLOBE Program Europe and Eurasia Region Coordination Office



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