



THE GLOBE PROGRAM

Europe and Eurasia 2019 Country Reports



GLOBE Program
Region Coordination Office Europe and Eurasia
Regional Meeting – Trieste, Italy
21.10.2019 - 25.10.2019

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 42 countries with more than 4800 schools and several thousands of citizen scientists. The office is located in Prague, Czech Republic and hosted by TEREZA, Educational Centre.

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Croatia

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Organization and Number of Staff:

Ministry of Science and Education signed the Agreement on GLOBE implementation in 1995. The task of teacher education was given to Education and teacher Training Agency, which is also in charge of organizing Annual GLOBE conferences (Science Fair and Survey competition). Education and Teacher training agency ETТА works closely with the Ministry, which appointed GLOBE country coordinator and the deputy. ETТА appoints GLOBE national comity each year with the task of organizing Annual GLOBE Students' Conference. There are approximately 25 members of the comity and their mandate lasts for 1 year. Country coordinator works closely with NGO ZNAM (Citizen Science Association), established by GLOBE alumni. So, there are many people involved, but at the level of daily operations there are mainly 4 people: CC and the deputy, Lydia Lugar as representative of ETТА and Vladimir Ribičić, the president of NGO ZNAM.

Funding by:

The Ministry isn't directly funding any GLOBE activity. The activities organized by ETТА are covered by its budget (coming from national budget). NGO ZNAM operates on voluntary bases, as well as country coordinator, but NGO is applying for tenders for different projects.

Cooperating Organizations/Individuals:

Besides the Ministry of Science & Education, ETТА, NGO ZNAM there are 7 GLOBE schools, which serve as regional centers and give great support for education, organization of Annual conferences, information and recruitment of new schools. Partners are also Faculty of Science, Department of Biology and National Meteorological Service and National Science Museum.

GLOBE Schools (what types, how many):

Croatia has over 200 GLOBE schools, but unfortunately not all of them actively reporting the data. There are more Primary schools included (students age 7 – 14, but in GLOBE are mostly engaged students of 12 – 14 age old), and less secondary (students age 15 – 18). There are different types of secondary schools – from Gymnasium (grammar schools) to technical and medical schools. Most successful are schools which can connect school subjects with GLOBE and for many vocational schools it might be the problem. Recently we have registered few kindergarten (children age 6 – that is preschool group).

GLOBE Areas You and Schools Focus on:

There is no special focus. Teachers are trained in all GLOBE areas, but most of them start with Atmosphere (Cloud cover). Recently most popular area is Phenology. Schools buy the equipment themselves, therefore protocols that doesn't require expensive equipment are mostly used.

Number of Schools Reporting Data Over Past Year:

There is variation in dynamics of data reporting over the year. Schools' activity rises in winter and especially in spring, while it almost dies in the fall. The obvious reason is Annual Conference which happens in May. Schools are selected for participation in the Conference on national level based on their activities in the last year and biggest number of points is received for reporting the data. So, as GLOBE Conference is getting closer, schools start to "wake up". In spring 2019 approximately 100 schools actively reported the data, but in last 3 months less than 40.

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

1. Education

There were 2 workshops in last year (organized in 2 groups: new teachers and experienced teachers), one in October 2018 and one in March 2019. Due to organizational and financial issues, we organize 1 or 2 days workshops, where participants can choose GLOBE area in which they want to get trained. Usually we combine Atmosphere and Land cover with Phenology and for other, more advanced group we offer Hydrology and Soil. Also, first group is mostly chosen by Geography and Biology teachers, and second by Chemistry/ Biology teachers. Participants are asked to look into e-training previously to the workshop. After workshop, we recommend attending regional meeting were new participants have more possibilities to practice data entry and the use of visualization system.

2. Science

GLOBE is cooperating with Faculty of Science and Science Museum, as well as with National Meteorological Service. Partners from that institutions are involved in Teacher Training and they are mentoring students' research projects while developing and are serving as judges on Annual Science Fair.

3. Community

GLOBE schools are mostly encouraged to get involved in addressing local environmental problems, to present their work in the community to get involved in local actions. Schools are also encouraged to participate in all events that GLOBE organizes (and participation brings points at qualifications for National Annual Conference).

4. Technology

Today all schools have internet connection and most of the students use smart phones – GLOBE Observer and GLOBE data Entry apps are easier to use. Many schools participate in European Phenology Campaign. Recently, the Ministry is supplying all students with tablets, as the contribution to National Curricular Reform.

5. Communications

Croatia is a small country, therefore communication within local GLOBE community is not a problem. Problem might be to communicate about GLOBE to the public. Each school was instructed to describe GLOBE on their web site and to reach local media in case of any GLOBE events.

Communication between schools on international level appears to be much more difficult, mostly because they don't feel comfortable communicating in foreign language. If communication within some campaign is encouraged and structured well, like in European Phenological Campaign, as well as in some GLOBE challenges, schools react much better. There are several schools that communicate with GLOBE scientists and partners regularly and obviously for teachers and students in those schools spoken English language is not a problem, as it still appears to be for many others.

Plans and Ideas for Next Year:

We shall try organizing future trainings based on GLOBE protocols bundling.

We already started to work on GLOBE implementation in National curriculum and we will continue to work on that topic.

Cyprus



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Organization and Number of Staff:

Funding by:

Ministry of Education, Culture, Sports and Youth.

Cooperating Organizations/Individuals:

GLOBE Schools (what types, how many):

27 Secondary Education.

GLOBE Areas You and Schools Focus on:

Atmosphere, Hydrology and Phenology.

Number of Schools Reporting Data Over Past Year:

14

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

Plans and Ideas for Next Year:

- Web training of teachers
- Globe Implementation in Primary education

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 900 schools are involved in 3 international programs we coordinate: GLOBE, Eco-Schools and LEAF. In total, TEREZA educates over 95,000 children and collaborates with 6,000 teachers. Let's not forget 5,000 parents we are connected with within the Go Outside program.

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 five people working in the GLOBE country coordination office or in partial GLOBE projects 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, U.S. Embassy Prague, European Space Agency, Bohemian Central Region
- CEZ Group – collaboration on the project “What is in the air?” – measuring the air quality inside schools
- Schools pay €70,- per school per year, newcomers pay €115,- for a school year

Cooperating Organizations/Individuals:

Apart from the GLOBE Program network, TEREZA is a member of Foundation for Environmental Education (FEE). General partner of the Eco-Schools program in the Czech Republic is IKEA Group.

Within the GLOBE Program we collaborate with various organizations, U.S. Embassy in the Czech Republic, Czech Hydrometeorological Institute, European Space Education Resource Office (ESERO), Institute of Botany of the CAS, The House of Children and Youth of the Capital City Prague – Station of Scientists and others.

Among the supporting individuals we need to highlight these persons:

- prof. RNDr. Bedřich Moldan, CSc. – Deputy director of the Environment Centre, Charles University, doyen of the Czech GLOBE Scientific Board;
- RNDr. Helena Knappová – Government Point of Contact for the GLOBE Program in the Czech Republic, Ministry of Education, Youth and Sports; and
- Mgr. Ing. Petr Holý – Environmental education coordinator for Prague, Prague City Hall.

We also maintain close cooperation with 15 members of the Czech GLOBE Scientific Board, 18 GLOBE mentor-teachers and dozens of GLOBE alumni or volunteers.

See also section “GLOBE Collaboration” below.

GLOBE Schools (what types, how many):

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

GLOBE Areas You and Schools Focus on:

Czech schools are focusing on all essential GLOBE areas (Atmosphere, Hydrology, Soil, Phenology, Biometry and Land Cover).

During the school year 2018/2019 we developed the Theme of the Year called “Wildlife school gardens” which combined elements of all GLOBE areas. Current school year we focus on the problem of water vs. drought in the connection with remote sensing observation within this Year’s Theme “Pixel of Water”.

Continuously we support teachers and students who are participating in phenology investigations through the European Phenology Campaign.

Number of Schools Reporting Data over Past Year: 15 schools

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

1. Education

In 2019, two Czech elementary schools submitted their scientific project for 2019 International Virtual Science Symposium:

- “Dependence of Amount of Precipitation According to Height above Sea Level” (Manesova Otrokovice Elementary School)
- “Is Dubnany Warm?” (Dubnany Elementary School)

Czech teacher Pavel Broza from Manesova Otrokovice Elementary School also attended the 2018 GLOBE Regional Training in Toulouse.

After more than ten years we started to revise the Czech version of the GLOBE Teacher’s Guide (Protocols) called GLOBE Manual. The second updated edition of this GLOBE centerpiece will encompass these changes and innovations:

- Updated protocols – according to the international GLOBE Teacher’s Guide.
- Opportunities to use the GLOBE Observer App.
- Links to published IBSE lessons related to protocols.
- Arguments why we measure and observe and how the GLOBE data can be used in the classroom.
- New chapter on „Remote Sensing“filling in the gap in the section of Land Cover.

In 2018/2019, selected chapters of the „Elementary GLOBE“ teachers guide were translated into Czech language and tailored to the needs of Czech schools. Czech version of the Climate Module was already published. Cloud Module and Soils Module are in the final editing process.

As every year we supported teachers by providing them Czech methodology and hands-on lessons on IBSE, and by organizing several trainings for teachers focused on IBSE methods in the GLOBE practice.

We have maintained close collaboration with GLOBE mentor/teachers (=GLOBE Mentors) so as they can support another GLOBE teachers in their regions through offering specific services (e.g. holding consultations, giving open IBSE lessons for teachers, giving lectures at educational conferences etc.).

2. Science

Currently 15 Czech schools are regularly entering the data to the GLOBE website. The most popular areas are Atmosphere, Hydrology and Phenology.

Czech schools have been active in the European Phenology Campaign.

We have been developing collaboration with Czech GLOBE Scientific Board which currently consists of 15 members. These members have been helpful in developing and organizing the theme of the year, revising the GLOBE Manual, giving feedbacks to student's scientific projects presented at the GLOBE Games 2019 and others.

Two members of Czech GLOBE Scientific Board Premysl Stych and Lenka Hajkova have been recently worked as Judges on the International Virtual Science Symposia.

3. Community

In the schoolyear 2018/2019, teachers from 16 new Czech schools were trained in the GLOBE methodology and welcomed into the GLOBE family.

Students and teachers from 2 Czech schools attended the 2018 GLOBE Learning Expedition in Ireland.

We organized 22nd GLOBE Games in Kadan where students from the Czech Republic, Estonia, Italy and Slovakia shared results of their GLOBE scientific projects based on their own inquiry during the Student scientific conference. About 250 students, teachers and volunteers listened to the opening speech of the Economic Officer of U.S. Embassy in Prague Mrs. Ariel Jahner. The same people had great fun in the research field game placed in the local environment of the National nature preserve Úhošť.

We organized two days of Summer school for the team of GLOBE Mentors in order to help them developing advanced skills so as they could support another GLOBE teachers in their regions. We also trained three new mentors – the GLOBE Mentors Team presently consists of 18 members.

GLOBE Collaboration:

Eco-Schools – GLOBE and Eco-Schools have been cooperated in developing new common methodology on the “Biodiversity of school yards and gardens” which combines Eco-School's Biodiversity topic with Earth system's observations and data collection.

Young Reporters for the Environment (YRE) – the pilot year of YRE international program were organized by TEREZA during 2018/2019. At present we are discussing possibilities how to integrate YRE into the practice of GLOBE and Eco-Schools programs.

Learning about Forest (LEAF) – hand in hand with the LEAF program we are developing methodology and hand-on lessons for teachers learning outdoors whether based on IBSE or not. Together we promote outdoor learning and collegial support of teachers in this topic.

European Space Education and Research Office (ESERO) – TEREZA is a member of ESERO Consortium in the Czech Republic, on this platform we collaborate mostly on themes of the year, we support teachers in doing Land Cover investigations and popularize learning about space.

4. Technology

Monthly we have provided registered teachers with the GLOBE newsletter. Readers could find the links to another friendly websites and campaigns in them.

As a complementary we started to work on the revision of the Czech GLOBE website globe-czech.cz in order to sort chapters and menus more logically and interlink this web with another websites, such as globe.gov, badatele.cz (Czech website about IBSE), mass4education.eu (website of the MASS project) etc.

Last year we decided to publish all methodical materials developed within the GLOBE free for download on the website globe-czech.cz in the section For Schools – all areas of GLOBE manual (GLOBE Teacher's Guide and Protocols), Czech versions of GLOBE Elementary, IBSE methodology etc.

In order to promote European Phenology Campaign we put special stress to highlight the globetree.eu website.

5. Communications

The monthly GLOBE newsletter is not only about news and information but it has also the aspiration to make the GLOBE community and identity stronger.

We provided not only Czech news but as a regional office international ones including the links to the Tony Murphy video letters to community.

We also provided international globe.gov web with news and events from Czech Republic, e.g. articles [“GLOBE Games 2019 in the Czech Republic”](#) (March 2019) or [“GLOBE Czech Republic Honors Three GLOBE Schools with “Czech GLOBE Star 2019” Award”](#) (July 2019).

In 2018/2019, we also finalized and released new video called [We Love Science: GLOBE Students team from Otrkovice, Czech Republic](#). This short movie we made in collaboration with our mentor-teacher Pavel Broža and his students shows clearly the implementation of the GLOBE Program at ordinary Czech school. You can see students be preparing to and experiencing of the GLOBE Games 2018 in Humpolec. The video is currently available on Youtube.

We developed new communication tool called GLOBE Café – inspirational meetings of school principals, teachers and scientists to promote nature investigations (biology) through the GLOBE program.

Plans and Ideas for Next Year:

Organize international **GLOBE Games 2020 in Zbiroh**, May 28 – 31, 2020.

Organize and run **Theme of the Year 2019/2020 “Pixel of Water”** which will focus on “Drought” as a big environmental problem caused by climate change, in connection with remote sensing investigations.

Participate actively in 2019/2020 European Phenology Campaign.

Deepen collaboration with **GLOBE Scientific Board** on specific scientific and educational topics.

Organize **5th Czech GLOBE STAR 2020** – by the end of January 2020, in collaboration with U.S. Embassy.

Organize **workshops for teachers** on the country level as well as in the regions.

Develop and pilot new type of **workshop about collaboration between school and local municipality** in order to deal with selected principles of Place Based Education and integrate them into GLOBE practice.

Organize series of the **GLOBE Café** sessions in various Czech regions in order to make science topics and the GLOBE Program attractive for as many teachers and school principals as possible.

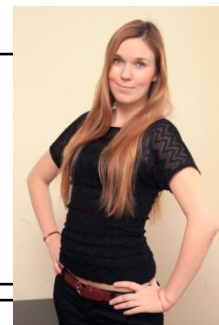
Set up **publication about scientists** who are **linked to the GLOBE Program** in order to support Science communication and popularize topics of science, biology or climate change.

Create new IBSE lessons on Elementary GLOBE topics in order to promote IBSE in the after-school care clubs.

Deepen collaboration with GLOBE mentors – organize three-day **Summer school for GLOBE mentors** and welcome at least two more teachers to the GLOBE mentors team.

Encourage the **collegial support of teachers** of schools that are involved in GLOBE in order to create strong teams of science teachers cooperating and learning from each other.

Estonia



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Organization and Number of Staff:

GLOBE is managed by MTÜ GLOBE Eesti

- 3 members of the Board (coordinator, assistant CC and assistant)
- GPO mrs Imbi Henno
- 11 trainers

Funding by:

- Estonian Ministry of Education and research;
- Environment Investment Centre,
- Embassy of the United States (small grant)
- Schools
- Local governments

Cooperating Organizations/Individuals:

- University of Tartu;
- University of Life Sciences in Estonia;
- Embassy of the United States in Estonia;
- Estonian Ministry of Education and research;
- Estonian Physical Society;
- EGEA-Tartu

GLOBE Schools (what types, how many):

- 24 active public schools (89 have joined the program)

GLOBE Areas You and Schools Focus on:

- Atmosphere, Hydrology, Pedosphere (Soils), Land Cover and Biometry, Phenology
- Developing: Hydrology, 360 photos, satellite image analysis, collaboration projects on using new technology (Vernier and sensors).

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

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

EG2. We have 11 trainers in Estonia. Our trainers speak Estonian, Russian and English. In collaboration with Grete from Lithuania we organized training in Tartu for Lithuanian teachers (13), regional trainings for Estonian teachers (9) new teachers involved.

EG3. 8 research projects in GLE Estonia (95 students involved).

EG4. Interview in national TV, 2 news in national newspapers, 5 stories in local newspapers

2. Science

SG1. 7 scientists were involved in GLOBE Estonia Learning Expedition. 8 research projects supervised by scientists.

SG4. 9 research projects on national contest using GLOBE data.

3. Community

CG1. 4 new GLOBE schools, 6 new GLOBE teachers from old GLOBE schools.

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. Latvian teachers and students and guest from Greenland participated in Estonian GLOBE Learning Expedition

4. Technology

TG1. 9 research projects using data from GLOBE database.

Testing VR and 360 for GLOBE protocols and learning activities.

5. Communications

CMG1. GLOBE Estonia Facebook page, #GLOBEEesti

CMG2. GLOBE news about the events (October 2019)

CMG3. Project Cool Geography Lesson. The aim is to introduce GLOBE activities to Estonian Schools – 30 schools involved in 2018/2019 school year.

Plans and Ideas for Next Year:

- GLOBE 25 celebration in collaboration with the US Embassy;
- GLOBE research projects contest;
- Collaboration with the embassy – celebrating the Earth Day, film program;
- GLOBE Klass+ collaboration project among Estonian schools;
- GLOBE Estonia Learning Expedition
- Collaboration with EGEA-Tartu – Cool Geography Lesson (visiting schools and introducing VR opportunities in GLOBE)

Finland

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Organization and Number of Staff:

Country Coordinator Taina Ruuskanen and Assistant CC Sirkka Staff

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 (what types, how many):

All types primary and secondary schools, 156 schools are registered but only one of them is active.

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: one

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/>) started planning online high school course on basics of climate change.
- Teachers Climate Change Forum international course, 5.-7.8. in Hyytiälä gathered over 20 international teachers.
- Introducing GLOBE to biology, chemistry and geography teacher students by using GLOBE materials and apps

2. Science

3. Community

- International collaboration included a visit at University of Helsinki by John Olgin, PhD Research Assistant Coordinator: Education Internship in the Physical Sciences (EIPS), Geological Sciences, University of Texas at El Paso (jolgin@utep.edu <http://www.geo.utep.edu/pub/olgin/eips.html>) in May. As well as a visit at University of Helsinki by a Dwight school delegation organized by Finnish Edita publishing in June. Both groups made school visits that were organized in other than GLOBE.
- Other see 1. Education

4. Technology

5. Communications

Plans and Ideas for Next Year:

GLOBE Café for teacher in November. 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 teacher students and also to the lecturer in biology didactics at the University of Helsinki.

France



GLOBE France



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Organization and Number of Staff:

CNES (Centre National d'Etude Spatiale): 1 + 5 (N.E.)

Funding by: CNES

Cooperating Organizations/Individuals:

GLOBE Schools (what types, how many):

- mainly Middle schools (67)
- some High schools (39)
- few primary schools (14)

GLOBE Areas You and Schools Focus on:

Atmosphere / hydrosphere

Number of Schools Reporting Data Over Past Year: 46 (15 for this year's Measurement Campaign)

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

1. Education

- We organized 4 teachers training this year: 1 during the last Globe Europe meeting which was held in Toulouse, 2 in the South East of France and 1 during the teacher workshop in September near Bordeaux (*about 60 teachers*)
- A student workshop with a presentation of Projects by the students was organized in Toulouse in May (*250 students*)

2. Science

- Air Quality:** we will go on with the Air Quality Campaigns, in conjunction with Margaret Pippins (US) and Sabrina Moore (Ireland)
- 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: measurements for PM2.5 and PM10 (in connection with High school curriculum)

5. Communications

Plans and Ideas for Next Year:

- We plan to extend the measurements possibilities during the Air Quality Campaigns: PM10 and PM2.5, NO2 – *in cooperation with Ireland*
- We would like to 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

Germany (GLOBE Deutschland)

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Organization and Number of Staff: GLOBE – Deutschland, staff: 6 persons

Funding by: Sponsoring

Cooperating Organizations/Individuals: Network Nature and Education in Westphalia with 10 participants

GLOBE Schools (what types, how many): primary schools, secondary schools, High schools (30)

GLOBE Areas You and Schools Focus on: Northrhine-Westphalia

Number of Schools Reporting Data Over Past Year: 20

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 Annual Meeting in Heinz-Nixdorf-Forum, Paderborn, with students' presentations about phenological topics, aerosols and water analysis.



b) Participation in the competition of ESERO, "Climate detectives" with the Phenological Studies on the base of intense observation of different plants in our climate garden by students.



c) Cooperation with Ghana on aerosols and atmosphere: preparation and cooperation agreement with GLOBE Ghana to organize a teacher training in Ghana in Oyoko (Westphalian Senior High School)

2. Science:

a) Lectures about scientific studies in the Arctic regions by scientist from University of Bielefeld in Heinz-Nixdorf-Forum (Professor Oliver Krüger)



b) Lectures about the analysis of satellite images with specialists from University of Bochum in Heinz-Nixdorf-Forum (Dr. Rienow, Frau Lindner)

3. Community:

a) Cooperation with Czech Republic, Ireland and Germany to develop an e-twinning project (Only a Tributary River?). This project is accepted by the European institutions and will be the base for an Erasmus School Project in 2019.



b) The Ghana-Germany cooperation shows ways of empowering our GLOBE community.

4. Communications:

a) Exhibition of projects and posters in "Klimawoche Bielefeld" in March 2019

b) Exhibition of projects and posters in „Schule der Zukunft" - Gemeinsam auf dem Weg zur Nachhaltigkeit" in Bad Lippspringe as a partner of the network of sustainability in Westphalia.

c) Edition of a newsletter (globe-deutschland.de) and a website with an offer to be active member of Globe.Deutschland

Plans and Ideas for Next Year:

1. Go on to develop the new E-twinning project to Erasmus School Project. The project title: "Only a tributary river? "We start with three countries: Germany, Czech Republic, Ireland and hope to find even more partners. We analyze the importance and the development of tributary rivers to their main river.
2. Organize the Germany – Ghana teacher Training in Oyoko (Ghana) and develop further plans for communication and cooperation with GLOBE Ghana.
3. Organize two international GLOBE meetings with workshops and teacher training in Bad Lippspringe in cooperation with the NABU (Naturschutzbund Deutschland) and the regional center of Sustainable Development. For this purpose, we will sign an agreement for one year first and start an initiative of national and international cooperation.
4. Take part in the Climate Week Bielefeld: exhibition, workshop for students, teacher training in the University of Bielefeld.
5. Work on the new "Paderborner Naturschule" with an offer of GLOBE workshops for students and teachers for Eastern Westphalia. We are part of an open offer in Eastern Westphalia for several workshops on topics of sustainable development.
6. Work on the new initiative to involve the institutions of teacher education in all German countries. For this purpose, we contact German institutions of teacher education in the different German countries.
7. Develop our website
www.globe-deutschland.de



Germany (University of Cologne)

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Organization and Number of Staff: University of Cologne, 5827

Funding by: State of North Rhine-Westphalia, Third party funds

Cooperating Organizations/Individuals: GLOBE Europe, GLOBE USA, Canada

GLOBE Schools (what types, how many):

increasing number of schools as teacher education students educated in schools enter their professional live and in the context of several projects (MASS, PULCHRA, RheinEnergieStiftung, CUBIC etc.)

GLOBE Areas You and Schools Focus on: Water, Atmosphere, Biosphere

Number of Schools Reporting Data Over Past Year: approx. 7

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

1. Education

3 M.Sc. Theses, 5 B.Sc Theses

Approx 160 student participants in several seminars, lectures, etc.

2. Science

Cooperation with: Mount Royal Univ. Calgary, Southern Connecticut State University (SCSU), USA, University of Toledo (UT), OH, USA, State University of New York / SUNY at Fredonia / Buffalo, USA, JPL / Pasadena, USA, National and Kapodistrian University of Athens, Griechenland, CUBIC-Project Cologne, PULCHRA Project EU-H2020, Waldklima

3. Community

Teacher Continuing education: Gymn. Frechen, GesSchule Kerpen, Weilheim, Otto-Hahn Gymnasium Berg. Gladbach, Abteigymnasium Pulheim-Brauweiler, Zentrum für schulpraktische Lehrerbildung in Düren

4. Technology

App development, Experiment development, Establish Learning, Exploring and Activity Paths (LEAPs) in Cologne on the subjects of water, climate and forests, Arduino low costs sensor development, GLOBE DataTool

5. Communications

Conferences: GLOBE Toulouse, Detroit, Trieste, Annual Winter Meeting Cologne, Globe Tutorials in German

Plans and Ideas for Next Year:

Research in Frame of PULCHRA and Citizen Science projects, Establishment of UNITE: University Network of Internationalization in teacher Education

Greece

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Organization and Human resources:

GLOBE Greece is supported by the University of Athens, an organization with wide scientific, educational and administrative capacities. The GLOBE Greece core team accounts four scientists supported by a small group of undergraduate students.

Funding by:

University of Athens (some schools cover partly their expenses)

Cooperating organizations/individuals:

Ministry of Environment, Municipality of Athens, National Observatory of Athens, Foundation for Research and Technology, Corallia innovation incubator, University of Cologne, BVS-Latvia, Tereza – Czech Republic, An Taisce – Ireland, Open University of Cyprus, KTH Sweden, University of Udine – Italy, Charles University, GRID-Warsaw.

GLOBE schools:

32 schools (23 in 2017, 29 in 2018). All types (primary, 12-15 and 15-18). Both public and private.

GLOBE areas:

Atmosphere, climate and hydrology. Emphasis is given to the urban environment (for instance Land Use/Land Cover, Land Surface Temperature-Urban Heat Island-Urban Microclimate, and Greenery).

Program implementation in the country and recent activities:

1. Education:
Training on the urban environment, mentoring for environmental applications, information on new educational products, link to the Copernicus Relay and Copernicus Academy of the European Commission, link to the Erasmus program in terms of school visits.
2. Community:
Implementation of the „Science in the City: Building Participatory Urban Learning Community Hubs through Research and Activation “– 1.5 mio. euros PULCHRA project (Horizon 2020) with a view to its linkage to the GLOBE Program.
3. Science
Participation to the Science Working Group of GLOBE, contribution to the reviewing process of the GLOBE protocols, co-preparation of two bundle protocols (urban and weather), editing of all bundle protocols, support of the International Virtual Science Symposium (IVSS) 2018.

Your plans and ideas for next year:

Implementation of the PULCHRA project. Reactivation of schools which have failed to stay active mostly in terms of data reporting, link and coordination of activities with Eco- Schools, pre-teacher GLOBE training at the University of Athens, expansion of the network of GLOBE scientists.

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 Officer
- 1 Part-time GLOBE Manager

Funding by:

Ireland's Environmental Protection Agency is currently funding a two-year GLOBE pilot programme in Ireland. This agreement has been extended to December 2019 and it is anticipated that a new period of funding will be agreed with the EPA from January. A small amount of funding was also received from the Department of Agriculture, Food and the Marine.

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 programme.

An Taisce is currently partnering with the Department of Agriculture piloting a GLOBE Soils project.

GLOBE has established a partnership with the School of STEM Education, Innovation and Global Studies and various members of faculty intend to incorporate GLOBE as a teaching resource within their teaching programmes for the 2019-2020 academic year at graduate and postgraduate levels. The EEU will deliver a

In addition, An Taisce has partnered with University College Dublin to pilot some air quality monitors via the GLOBE programme over the past year.

GLOBE Schools (what types, how many):

Primary and Secondary schools are actively participating in the GLOBE programme in Ireland. We are largely focusing on promoting the programme to Secondary schools There are approximately 154 teachers registered for GLOBE in Ireland, 56 have been fully trained, 44 have registered but not started the process and 54 new teachers are at various other stages in between.

GLOBE Areas You and Schools Focus on:

Due to the nature of funding and the relatively early stage of the GLOBE programme in Ireland, An Taisce has focused on the promotion of the Atmosphere elements of the programme to date. This includes protocols related to weather and climate (clouds, temperature, precipitation, barometric pressure) and aerosols. In December 2018 the EEU in partnership with the EPA and Department of Agriculture Food and the Marine launched a new GLOBE Soils project. The aim of the GLOBE Soils Project is to engage teachers and students from schools around Ireland in the investigation and analysis of soils and their characteristics.

Number of Schools Reporting Data Over Past Year: 24 Schools reported data in the past academic year (Sept 2018-June 2019)

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

1. Education

Schools that submitted a research project as part of the GLOBE Air Quality Campaign were invited to attend a GLOBE celebration event on May 10th in Dublin. A science communication workshop was facilitated by experts in the field to practice techniques for effective communication. Students were invited to take key aspects of their research project and practice sharing them with a non-expert audience. Everyone also took part in hands-on activities centred on soil, water, biodiversity and waste. The purpose of this workshop was to highlight that GLOBE enables schools to study various aspects of their local environment in a practical way and that this can be very engaging.

An Taisce delivered a GLOBE training day during DCU's in-service teacher training course to an estimated 29 teachers on 11th July and there may be more opportunities to deliver GLOBE training to pre-service student teachers at DCU over the next academic year.

2. Science

In December 2018 the EEU in partnership with the EPA and Department of Agriculture Food and the Marine launched a new GLOBE Soils project and invited interested teachers working on the Biodiversity theme of Green-Schools to take part. The aim of the GLOBE Soils Project is to engage teachers and students from schools around Ireland in the investigation and analysis of soils and their characteristics. Through collection of data and participation in the GLOBE programme students develop a better understanding of soils and have an opportunity to carry out various GLOBE Soil Activities to learn about the importance of soils.

3. Community

The GLOBE Country Coordinator for Ireland was elected to the GLOBE Europe Eurasia Board in November 2018 and as a result is working directly with the GLOBE Board and Regional Office which gives Ireland a direct platform for contributing to the strategic development of GLOBE on an International level. A current task of the Europe Eurasia Board is carrying out an evaluation study of GLOBE challenges and opportunities and these findings were presented at the GLOBE Annual meeting in Detroit last July.

The Evaluation Working group of GLOBE has shared validated surveys with the EEU that have been used to create this year's teacher survey. There is potential next year to survey the participating teachers and students before and after an intervention by using the questions developed by GLOBE.

Two students and a teacher from Larkin Community College, Dublin, were awarded a trip to the GLOBE Annual Event in Detroit in recognition of the excellent quality of their research project completed as part of the GLOBE Air Quality Campaign in Ireland.

4. Technology

As part of the GLOBE Air Quality campaign 31 schools deployed and sent their passive samplers for analysis to an approved laboratory in the UK out of the 34 participating schools. Together the schools collected ninety data points that were then aggregated to a database by the EEU. The database also included relevant contextual information about each school such as its location profile (e.g. city, town or rural) and the location of each tube in relation to traffic. The database was then shared with the participating schools, which were encouraged to analyze the data and complete a research project on air quality.

5. Communications

Against the backdrop of the spectacular Wood Quay Venue in Dublin, An Taisce and the EPA hosted the inaugural GLOBE Ireland Celebration event in May. The event was attended by 60 students and teachers from nine schools. A selection of the individual school posters is available online showing details of the schools' research and short video was produced to provide a flavour of the day.

The EEU is proactive in communicating its plans and results to the GLOBE community to encourage other countries to participate in the Air Quality campaign. The Air Quality Campaign has been promoted to the GLOBE community via Annual and Regional meeting presentations, GLOBE website, social media channels and newsletters.

Plans and Ideas for Next Year:

The EEU partnered with the EPA and other stakeholders in a proposal submitted under Horizon 2020. The aim of the Curious Noses Europe project was to demonstrate how large-scale citizen science can make a unique contribution to better air quality in Europe. The ambition was to capitalise on the transformative potential of citizen science for generating large-scale, high-quality and openly available NO₂ data sets, allowing for new research questions to be addressed as well as revealing policy-relevant insights. By empowering thousands of citizens in air quality monitoring, EU wide air quality research and policy could have been accelerated. Starting from the very successful Curieuzen Neuzen project, the aim of Curious Noses Europe was to scale up this approach to other EU cities, thereby addressing one of the key challenges of citizen science: scalability. The demonstration case in Ireland focused on comparison of campaign performance and reception in two cities (Dublin & Cork) and the inclusion of disadvantaged and vulnerable groups to highlight the social dimensions of air pollution. Unfortunately, the funding application was unsuccessful, however, it is planned to roll out this programme on a reduced scale in both Cork and Dublin. Details will be agreed during Q4 of 2019.

The vision of the GLOBE programme is to build a community of “students, teachers, scientists and citizens working together to better understand, sustain and improve Earth's environment at local, regional and global scales”. The EEU has been in contact with researchers at UCD (Dept. of Planning and Environmental Policy) and UCC (School of Chemistry & Environmental Research Institute) to develop such opportunities. It has recently been associated to a research proposal submitted by UCC as part of the EPA Research Calls 2019. The overall aim of the project is to identify the impact of agricultural ammonia emissions on air quality in Ireland and it includes a citizen science element. In cooperation with the EEU, diffusive samplers, will be distributed to approximately 10-20 schools geographically distributed across Ireland. They will be deployed by the schools in their respective locations over a 1 to 3-month period and provide average measurements of ammonia nationwide for selected periods. This will allow some degree of extrapolation of the results obtained and comparison between different regions. If this research proposal is successful, the EEU will be responsible for the coordination of the campaign with schools over the academic year 2020-2021 (this will include recruiting, training and supporting teachers throughout the project).

In September 2019 the EEU will initiate a new project called ‘Science in the City’ with support from H2020 funding achieved as part of a consortium of eleven European partners linked to the GLOBE network. The project will explore the open schooling concept in 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 agent of community well-being, encompassing the natural environment, the built environment and the socio-economic environment in cities.

The methodology is based on pilot themes (termed as City Challenges) which create know-how, build trust in the science approach based on the participants’ experience, facilitate the skilled use of tools and support community building as they are based upon the identity of the communities in which they take place. The EEU is currently exploring ideas and options for applying this approach and opportunities to link with GLOBE.

Under Science Foundation Ireland’s (SFI’s) Discover Programme call 2019, the EEU applied for funding to support the further growth and development of the GLOBE programme in Ireland. The project support would cover a two-year period, from January 2020 - December 2021.

SFI Discover funding of the GLOBE programme would facilitate the further extension and expansion of the programme to an increased number of schools via the STEM system. SFI Discover funding would facilitate a programme of expansion and development for GLOBE in Ireland and create opportunities to train and support teachers to deliver GLOBE in the classroom. This will ultimately afford more students the chance to participate in hands-on science research activities, get excited about Earth system science – and engaged in scientific discovery.

Notwithstanding the above opportunities for further growth and development of the overall GLOBE programme and specific projects and campaigns, based on the experience and learning from the pilot programme and informed by feedback received from participating teachers, it is proposed to:

- offer the Weather and Air Quality campaigns (NO₂) in 2019-2020. The autumn 2019 Air Quality campaign will be part of the European Environment Agency’s pan-European citizen science project focusing on NO₂ measurements.
- run them for a set period as this tends to focus teachers’ attention.
- organize two measurement periods, one in the Autumn and the other in Spring for contrast and comparisons.
- make them ‘consequential’ and incentivize and assist schools to analyse the data and produce a research project.

- foster discussions and collaboration among schools nationally and internationally.

The EEU will aim to engage thirty schools in the campaigns and prioritise teachers and schools who have previously participated in the programme. New teachers will be recruited to account for the inevitable turnover.

The EEU will continue to target STEM and Geography teachers in secondary school as the campaigns are a good fit (especially at Junior Cycle and for Transition Year) and their students can engage in all aspects of the campaign, including the research project.

In 2019-2020, the EEU would also strive to expand and broaden the GLOBE programme in Ireland. This would involve:

- looking for ways to scale the programme, particularly the recruitment and training of new teachers.
- develop age-appropriate activities for primary schools as part of the national Weather and Air Quality campaigns
- promote and encourage schools to take part in a relevant international GLOBE campaign such as the 'Phenology Campaign'.
- developing ideas for a new campaign based on the GLOBE protocols and supported by the EPA.

Israel

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Organization and Number of Staff:
Ministry of Education. 3 Facilitators .

Funding by:
Ministry of Education.

GLOBE Areas You and Schools Focus on:
Atmosphere & Climate , Hydrology ,SMAP, Plants Phenology .

GLOBE Schools (what types, how many): 83 Globe Schools.
65 Elementary schools, 17 Junior High Schools , 1 High Schools.

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

1. Education:

Opening a national workshop for new globe teachers.
A multicultural teacher meeting where science & culture meet together.
Recruiting new globe teachers for next year – Globe Meeting,
Where teachers, globe students from different schools present their projects or Globe curriculum implemented in their different disciplines at school .

2. Science:

Data collection and data entry into the GLOBE science database is critically important for Globe students and Globe teachers in Israel conducting scientific investigations. Therefore, best 21 Globe science investigations were selected in the Globe Annual Event. Last year, main Globe Science research were emphasized on plant phenology, water quality and urban heat in different areas across the country .

3. Community:

1. Each globe school has celebrated throughout the year "the Green Day"
So that students make different activities concerning the Globe Program for their community where parents were invited to this special event.

2. A collaborative learning was held among Globe schools from different sectors
Where they have compared data measurements / used to compare common plants across the country / have investigated a common scientific research which was published in each municipality or in public places to increase public awareness to take care on the environment . Furthermore, other schools had encouraged Globe citizens to take daily measurements and to plan globe evenings for the community to deal about environmental local issues.

4. Technology:

Last year 2018-2019 ,many schools have been supported by the Ministry Of Education and USA Embassy to purchase equipment for Globe workshops . Furthermore, globe students had built their own GLOBE instruments, such as thermometers , clinometers and globe corners where each student can improve a creative model concerning Globe topic such as greenhouse effect exhibition to the school community to motivate to be a part of the Globe program .

5. Communications:

Globe students have analyzed their data and have written their conclusions, which was put all together in a scientific poster. On the other side , globe teachers had taken part to join globe webinars and had used Globe data visualization to compare data and to communicate with teachers in different countries such as Ukraine , Czech Republic , Jordan and USA .Yet , Globe School students and teachers have presented their best student research projects and videos on the GLOBE Program during the Annual Meeting of GLOBE Program Israel that was held close to Tel Aviv on June 12th , 2019 .

The best 19 schools from the network of 140 GLOBE schools were pre-selected and invited to attend the meeting and awarding ceremony in the same time. They had the honor to talk to the distinguished guests from the Ministry of Education and the U.S. Embassy as well as to the students and teachers from other parts of the country.

GLOBE schools in Israel are motivated to do the research and collect data as in any other country, but there is a special aspect to it: They also focus on communication or even marketing of the GLOBE Program idea to their community. As the guests could see from the best videos presented, students took this challenge seriously. The best 7 short videos from the total 22 were selected and are posted online as “the best of GLOBE Israel”.

Plans and Ideas for Next Year:

- Recruiting more GLOBE schools in Israel and enhancing more schools for a collaborative study.
- Implementing a campaign of study, shared with the local authorities and giving the opportunity to Globe students to participate in citizenship actions.
- Building a network of globe students who have graduated from secondary school and have the desire and commitment to participate in the activities of the GLOBE Program at a higher level.

Italy

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Organization and Number of Staff:

GLOBE ITALY, 3 National Coordinators, 5 Staff

GLOBE ITALY school network management is shared between

- 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 functions as testing the use of globe protocols in primary and middle schools, promoting the use of Globe protocols in high schools projects, events promoter.

New: in August 2019 the GLOBE ITALIA Association was set up with the aim of supporting the GLOBE ITALY School Network with training courses, activities, events and materials

Funding by:

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

Cooperating Organizations/Individuals:

List of organizations cooperating with LABTER-CREA : Municipality of Mantova, Province of Mantova, Mincio Regional Park, Oglio Sud Regional Park, Lombardia Region, Lombardia Regional Environmental Protection Agency (ARPA), Lombardia Regional Agency for Agriculture and Forestry Services, Institute for Biometeorology – National Research Council, Joint Research Center of European Commission (Ispra, Varese, Italy), Istituto di Rilevamento Elettromagnetico, University of Parma.

List of organizations cooperating with IISS Bassa Friulana: Comune di Marano Lagunare, Comune di Torviscosa, Comune di San Giorgio di Nogaro, Comune di Carlino, ERSA Agenzia Regionale per lo Sviluppo Rurale, Università degli Studi di Udine - Dipartimento di Scienze AgroAlimentari, Ambientali e Animali; Centro per la Ricerca in Agricoltura e l'Analisi dell'Economia Agraria; Italia Nostra, Regione FVG direzione central ambiente ed energia – servizio disciplina idrico integrato; Unità Idrografica regionale; Università degli Studi di Trieste dipartimento di Matematica e Geoscienze, ARPA FVG S.O.S. Qualità acque marine e di transizione; Guardia Costiera - Direzione Marittima del Friuli Venezia Giulia; Protezione Civile Regione Friuli Venezia Giulia; ANA – Sezione Alpini Udine Gruppi di Muzzana del Turgnano e Palazzolo dello Stella; ANA - Sezione Alpini Palmanova Gruppi Palmanova, Torviscosa e Carlino Marano AUSER area Bassa Friulana; Azienda Agricola Mario Tonelli Carlino.

GLOBE Schools (what types, how many):

IC (Istituto Comprensivo, Comprehensive School, including Primary and Junior High Schools) n. 32
Senior High School n. 69

GLOBE Areas You and Schools Focus on:

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

Number of Schools Reporting Data Over Past Year: 7

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

1. Education

Last year has seen a strong involvement of GLOBE ITALIA staff in trying to rebuild the national school network contacting authorities, scientists and US Embassy representatives and preparing the upcoming GLOBE Europe and Eurasia Country Coordinators and International Teacher Training Workshop (21-25 oct 2019, Trieste)

GLOBE Italia, through Labter-Crea Mantova, joined ASviS (Italian Alliance for Sustainable Development), whose aim is to raise the awareness of the Italian society, economic stakeholders and institutions about the importance of the 2030 Agenda for Sustainable Development. The knowledge of Agenda 2030 will allow teachers and students of the schools of the GLOBE ITALIA network to frame their research in the broader framework of the United Nations' goals; on the other hand, through ASviS the initiatives of GLOBE Italia school network will have greater visibility on a national basis.

2. Science

Inside **MINCIO Project** chemical / bacteriological investigation on the waters of the Mincio, Goldone and Osone rivers took place.

Labter-Crea acted as a coordinating element of the whole project, while ARPA (the Lombardia Regional Environmental Protection Agency) provided a real consultation for analytical instrumentation and evaluation of data collected by students during the survey. The SAVI Laboratori&Service company provided an extremely valuable collaboration to examine the water samples of the 12 stations, providing certified results for the analysis of Nitrates, Phosphates, Chlorides, Sulfates, Glyphosate (the most used pesticide in the world). The REPORT 2019 ON THE STATE OF THE WATERS OF MINCIO, GOLDONE AND OSONE was drawn up on the basis of the monitoring. The analytical results, evaluated according to the European legislation, can be seen at <http://www.labtercrea.it/pm-2019/pm-2019.htm>

Progetto RIO Scuole 2a ed. (RIO Project for Schools 2nd edition) is the section, reserved to schools, of the wider RIO Project, which intends to redevelop, in an environmental and architectural sense, the historic water canal that crosses the city of Mantua, once at the center of the city's life. 5 Water quality monitoring campaigns were carried out, from March 1 to April 26, 2019 by 3 Senior High Schools (IS Strozzi, ITET Mantegna and IS Fermi in Mantova in School-Work Alternation system in agreement with the Le Pescherie Foundation by Giulio Romano and in collaboration with ARPA Lombardia and ATS Valpadana. In Summer and Spring season 2018 and Summer 2019 further supplementary water quality monitoring campaigns were carried out by ARPA Lombardia and ATS Valpadana to collect data on a longer period of time and have and make a better evaluation of the ecosystem. The results, at: <http://www.labtercrea.it/progetto-rio-2019/progetto-rio-2019.htm>

IIS Cavazzi Pavullo participated in the Soil Surface Temperature Campaign. Students participated in GLOBE Games in the Czech Republic in May, where they presented own instruments in Mini Maker Faire

ISIS Brignoli Gradisca realized Chemical-physical and biological analysis and monitoring of water; analysis and monitoring of atmospheric parameters; observation and analysis of plant communities (biometrics and land cover) in collaboration with Trieste University made the analysis of the hypogean flows of Lake Doberdò by tracing with sodium fluorescein.

GLOBE Italy collaborates with scientists of Udine University to create teaching school methodologies to develop the PULCHRA Project (Horizon 2020)

3. Community

“EU policies and The European Commission’s science and knowledge service” Seminar approached World Water Day Mantova with researchers from Joint Research Centre, Ispra (VA) 11 march 2019

"GLOBE -Digital connections for citizen science laboratories, Apps and platforms for teaching" workshop in national event #Futura Trieste #PNSD 11 February 2019

Rivers in Spring, World Water Day 2019 in Mantova, 19th edition - „LEAVING NO ONE BEHIND: HUMAN RIGHTS AND REFUGEES“- since 2001 celebrates the World Water Day in Mantova. From 2017 it constitutes an Action of the Mincio River Contract, the participated path of construction of the negotiated planning agreement, that aims to design a better future for the Mincio river; more than 60 organizations and associations are involved in it, Labter-Crea is among them. New prestigious partners in environmental research (CNR-IBIMET FI, Joint Research Center of the European Commission in Ispra, Biodiversity National Center of Bosco Fontana, etc.) offered noteworthy proposals while historical partners, such as the University of Parma, ARPA Lombardia and ERSAF Lombardia, were present at full size. The event has featured scientific-environmental education laboratories, water excursions for sampling, analysis, artistic performances (musical, theatrical, etc.) aimed at the defense of water and other natural resources and the diffusion of renewable energies and energy saving. It is the largest Italian event and one of the largest in Europe, with its 3.000 overall participants, especially from schools of all levels. <http://www.labtercrea.it/gma-2019/gma2019.htm>

MINCIO Project: Chemical / bacteriological investigation on the waters of the Mincio, Goldone and Osone rivers (29th edition). It constitutes a sub-action among those of Action 9 of the River Mincio Contract (RMC), which plans environmental education activities on the theme of water quality with the local population (adults, schools, farmers etc) in RMC. <http://www.labtercrea.it/pm-2019/pm-2019.html>

Also the Progetto RIO Scuole 2a ed. (RIO Project for Schools 2nd edition) takes part in the River Mincio Contract, as part of the more ambitious **Progetto RIO**, which involves many public and private stake holders of the town in a in a long-term environmental challenge. The water quality monitoring results are presented in a public meeting, whose images can be viewed at: <http://www.labtercrea.it/progetto-rio-2019/progetto-rio-2019.htm>

A SCUOLA SUL FIUME XX edizione (To school on the river, 20th edition) and Earth Day VIII Ed.: On April 30th, more than 1400 students and teachers of Junior and Senior High Schools in cooperation with public agencies worked together in Marano Lagunare (UD).

It is the 8th edition for Earth Day and the XX edition for A scuola sul Fiume, the event that represents the occasion to connect the experiences of schools, organizations and associations that develop environmental and scientific education projects online for the protection of the planet and water as a resource. A blue line for water guides participants through the territories studied in twenty years of activity with the A scuola sul fiume network. The different river environments are one of the focus of the exhibition(56 exhibit) together with climate change and the goals of the 2030 Agenda for sustainable development. A hackathon will involve students from different schools (target 15-16-year old – tutor 18-19 years old) in finding solutions to a challenge on these issues that will be assigned on the day of the event. During this event, experienced students of secondary schools tutored younger or inexperienced students.

Checklist and ecological landscape are compiled according to some protocols provided by international environmental education project (GLOBE Project www.globe.gov, Act 4 Rivers project www.act4rivers.net). <http://www.globeitalia.it>



The final Land Art at the EARTH DAY 2019 in Marano Lagunare (Udine, Friuli Venezia Giulia)

4. Technology

There are still critical issues for entering data on the site but several schools are gathering data on the field with a certain systematicity. The apps are tested by a small number of students but we imagine a great spread after the international seminar in Trieste next October.

5. Communications

GLOBE Italia is in Facebook, Telegram, Twitter to disseminate the action of network and connect schools and citizens.

We send a newsletter to schools-teachers and the people registered in GLOBE Italy on average with fortnightly frequency or for particular moments, more times in a week.

Many newspaper articles and local TV have covered this year's actions. The links on press review www.globeitalia.it

Plans and Ideas for Next Year:

1. International Teacher Training Workshop GLOBE Trieste 23-25 Sept 2109, in collaboration with GLOBE EUROPE EURASIA and the GIO, in the ambit of pro ESOF 2019
2. We are planning to have 5 Italian GLOBE schools participating in PULCHRA Project
3. A Microplastics in the Hydrosphere draft Protocol and related Learning Activities (LA) will be developed by GLOBE ITALIA in collaboration with the Institute of Frontier Materials, Deakin University; Geelong, VIC, Australia; Protocol and LA will be submitted to NOAA for approval
4. 30th edition of Mincio Project
5. 20th edition of WWD
6. 3rd edition of RIO School Project
7. 21st edition of At school on the river
8. 9th edition of Earth Day
9. International hackathon for GLOBE Students in Italy (earth day)
10. Recently the GLOBE ITALIA association was established with the aim of supporting the activity of the GLOBE Italy Team and the national network schools. For next year we intend to bring the operation of the Association up to speed.



RIVERS IN SPRING, WORLD WATER DAY 2019 in Mantova (Lombardia)

Kyrgyz Republic

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Organization and Number of Staff:

KG GLOBE, staff: 3 persons

Funding by:

Sponsoring

Cooperating Organizations/Individuals:

- NABU in Kyrgyz Republic
- Kyrgyz Ministry of Education and Science
- Kyrgyz National University
- Embassy of the United States in Kyrgyz Republic

GLOBE Schools (what types, how many):

Secondary schools, High schools (40)

GLOBE Areas you and schools focus on:

- Atmosphere
- Hydrosphere
- Biosphere

Number of Schools Reporting Data Over Past Year:

7 (regularly collecting data, but without entering data)

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

In February 2019, with the aim of reactivating The GLOBE Program in the Kyrgyz Republic, the Europe and Eurasia Regional Coordination Office and the GLOBE Kyrgyz Country Coordinator, organized a pivotal teacher training at the Kyrgyz National University in Bishkek.



Plans and Ideas for Next Year:

- GLOBE implementation in Primary Education
- Training of teachers

Latvia

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Organization and Number of Staff:

Children's Environmental School is a Non-governmental organization (NGO) for environment and education. For GLOBE there are 1 country coordinator, 1 assistant CC, 2 trainers, and 1 event organizer for large events.

Funding by:

coordination of 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. School participation is supported by respective municipalities.

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. It is so because some teachers have changed schools, and so new schools are added, and some teachers have applied but not shown any activity.

GLOBE Areas You and Schools Focus on: From schools that are reporting or have reported in the past:

- Atmosphere: 20 schools
- Earth as System: 12 schools
- Hydrology: 10 schools
- Land cover: 6 schools
- Soil: 6 schools

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 easiest.

Number of Schools Reporting Data over Past Year: 5

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

1. Education

One workshop for teachers and students organized, covering the development of student research project to prepare for participation in GLOBE IVSS. Workshop organised in cooperation with the University of Latvia.

Another workshop for teachers planned for November, to start planning the Summer Learning Expedition 2020.

2. Science

One school continue collaboration with the University of Latvia to develop their student research project aiming to investigate air quality in their city in relation to distance from the port.

3. Community

On the year 2019 one new school joined the GLOBE program and plan to start investigations this school year.

In Latvia, there are 132 GLOBE Observer users (Citizen Scientists), untrained.

On May 28th, Malpils Secondary School hosted a group of teachers from the United Kingdom for Erasmus+ course on science education at primary school.

On August 3rd to 5th, Latvian teachers and students participated in the Estonian GLOBE Learning Expedition at Lake Peipus.

4. Technology

5. Communications

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

Plans and Ideas for Next Year:

- Monthly newsletters will be continued.
- We will organize a Summer Learning Expedition.
- We will try to engage Latvian GLOBE schools in PULCHRA project launched on September 2019 together with several other GLOBE countries, as well as try to use this project as a platform to attract new schools to GLOBE program.
- We will organize field trips to different research institutions, i.e., weather stations, observatories etc.
- We will try to attract new schools to join the GLOBE program by participating in public events and presenting results that have been 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 department of Nature and Ecology education, 1 of them is working with GLOBE.

Funding by: Ministry of Education and Science, U.S. Embassy in Lithuania

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

GLOBE Schools (what types, how many): 30, mostly progymnasiums and gymnasiums

GLOBE Areas You and Schools Focus on: Atmosphere, Earth as a System, Hydrology, Land Cover, Soil

Number of Schools Reporting Data Over Past Year: 12

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

1. Education

During annual camp 2019, students and their teachers met many people who are professionals in many different nature science and environmental fields. They also visited University of Klaipėda, their laboratories and museums and get vision of how they could fit here after graduating school.

2. Science

Every November we have students conference. During conference, students present their researches done while participating in GLOBE just the same way like real scientists do. This is great way to practise working with scientific data and methods from the very beginning to the end. One conference was held in November 2018, and one is coming in November 2019.

3. Community

This year we had GLOBE trainings in Estonia. 11 new schools joined the program and are very enthusiastic. We spent 4 days together so some teachers become very close and now are communicating to each other by internet.

Country coordinator also wrote letters to all registered citizen scientists. Some of them were also very enthusiastic, one was even a teacher and decided to join with his students.

4. Technology

During GLOBE trainings in Estonia, teachers get familiar with GLOBE app. Using app looks more easy to major part of the teachers than computer version.

5. Communications

Teachers are receiving weekly newsletter. Some of this newsletter are about general GLOBE news, some about local events. Teachers who started communicating after trainings are also sharing information to each other by themselves.

Plans and Ideas for Next Year:

As every year we are planning annual conference and annual camp. If everything will work, we will do GLOBE trainings again but for more participants this time.

Malta

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Function: Country Coordinator

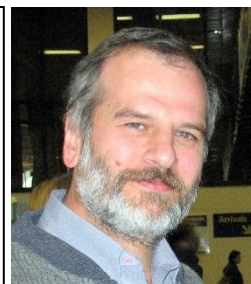
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It needs to be pointed out that although Malta has been registered in GLOBE since 2007, the 2018-19 scholastic year marked the year when a renewed effort to promote GLOBE in schools was initiated. Most of the achievements below are the direct result of these efforts.

Organization and Number of Staff: There is no full-time person formally employed to work on GLOBE. Promoting GLOBE rests mainly on the CC and his Assistant. This is done over and above their respective workloads in their respective institution.

Funding by: Support for initiatives is offered by the Directorate for Learning and Assessment Programmes - Ministry for Education and Employment; the Faculty of Education - University of Malta; and the US Embassy. We are currently concluding discussions with a local bank who agreed to sponsor scientific equipment to GLOBE schools.

Cooperating Organizations/Individuals: A researcher at the University of Malta has funded a pilot project about weather observations in 10 schools.

GLOBE Schools (what types, how many): Total number of schools: 31 (almost all of them have registered in GLOBE for the first time). The schools are from the State, Church and Independent Sectors and are distributed thus:

Primary schools (5 -11yrs): 15; Middle Schools (11-13yrs): 3;
Secondary Schools (13-16yrs): 8; Post-Secondary Schools (16 – 18yrs): 3; and Field Study Centres: 3.



GLOBE Areas you and schools focus on: on Atmosphere (Air Temperatures, Barometric Pressures, Cloud Observations, Relative Humidities, Surface Temperatures); Earth As a System (Green Up/Green Down); Hydrology (Mosquito Habitat Mapper); Land Cover (MUC, Photos)



Number of Schools Reporting Data Over Past Year: 5 schools carried out 309 observations

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

1. Education

Organised a workshop with Girl Guides participating in a Sea Scientist Camp. Participants explored a beach and investigated the effects of climate change on marine organisms and coastal areas.

Organised meetings throughout the year with geography teachers, science teachers and Heads of Schools in Gozo, to introduce them to GLOBE and familiarize them with the various learning opportunities offered by the program.

Organised a face-to-face workshop by Ms Claudia Caro Vera (27-28 May) introducing and training teachers to the Mosquito and the Phenology Protocols.



2. Science

Students attending Gozo College, Middle School participated in the Urban Heat Island (UHI) campaign where they took surface temperature readings during the months of December and March. With the data collected and uploaded on GLOBE website they carried out an investigation about '*The effects of Trees on Urban Temperature*' which was submitted for the International Virtual Science Symposium (IVSS). The investigation was awarded 3 virtual badges, received good feedback from the judges and was recognized as a GLOBE Star Story.



Four schools participated in the European Phenology Campaign. Each school observed a fig tree and successfully completed the campaign. They also submitted a video each for the Video Contest and earned virtual badges. Photos of each Fig Tree were also uploaded on the GROW App. Moreover, students at Gozo College Middle School investigated why some fig trees in Malta are dying with their presentation being featured on the GLOBE website to inspire other participants.

3. Community

Community outreach through the GLOBE program included the following activities: (i) a climate action fun walk held in March following investigation by students; and (ii) as part of Earth Day celebrations students participated in a nature walk and visited a bee farm. They observed the natural habitat and recorded air temperature, UV, Humidity and made cloud observations using GLOBE Observer App.

Participated in the following activities as part of our community outreach efforts: (i) the Science in the Citadel annual event at Victoria Gozo in April; and (ii) the international Outdoor Classroom Day on 23rd May during which students conducted activities using the GLOBE Observer App in a public garden. The activity was coupled with an eTwinning project.

4. Technology

Provided support for teachers during their e-Training, while adding sites, inputting and visualizing data on GLOBE website.



5. Communications

We set up a Facebook page GLOBE Malta (shown below) to showcase and promote the work of the participating schools. Communication with GLOBE schools and teachers was maintained through e-mail, the GLOBE website and one-on-school-based meetings.



We promoted The GLOBE Program and students' investigations through newspaper articles and on a popular local TV programme on the national channel.

Plans and Ideas for Next Year:

- Launch of a PR campaign about the opportunities offered by GLOBE to schools (various subjects), scientists and citizens.
- As from the 2019-20 academic year students following the following programmes will be trained in GLOBE: (i) BSc Science for Education & Communication - graduates tend to proceed to becoming science teachers or science communicators; and (ii) Masters in Teaching and Learning (Science) – graduates become science teachers.
- Plans are underway to work on an eTwinning project entitled Act of Blue that will adopt the Oceans and Seas protocol and involve one school from Turkey and one from Spain.

Netherlands



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Participating schools:

80 secondary schools from everywhere in the country have a paid membership.

Funding by:

Program funding:

- 75 schools pay €300,- per year for regular membership.
- 5 GLOBE Science Schools pay €1.450 annually for individual support and implementing of a cross disciplinary learning trajectory science and GLOBE.
- Participating in the Science Fair costs €250,-
- Our sponsor Avantes had its 25th anniversary and asked guests to support GLOBE as a present. We received €4.000,-

Project funding:

- Prins Bernhard Cultuurfonds: GrowApp
- Ministry of water: national water animals investigation
- Plastic Soup Foundation: plastic soup challenges

Cooperating organizations and GLOBE areas (protocols):

GLOBE protocols:

- **Weather** and **aerosols** together with *Dutch Royal Meteorological Institute (KNMI)*:
- **Water** together with *Wageningen University*
- **SMAP** with *RIVM*
- **Urban Heat Island** with *University of Toledo (Dr. Kevin Czajkowski)*

Non-GLOBE protocols (developed by Dutch institutes):

- **Soil** together with *National Institute for public Health and the Environment (RIVM): 'living soil'*.
- **GrowApp** (www.growapp.today) with *Wageningen University*
- **Water animals** (www.waterdierjes.nl) with *Wageningen University*
- **Light investigation** with *Milieu Centraal*
- **Plastic Soup**: with *Plastic Soup Foundation*



Organization and number of staff

- Board existing of 9 people coming from both science and education backgrounds, coming together 4 times a year.
- Expert group of experienced teachers and GLOBE scientists are responsible for learning materials and training of teachers
- Group of ambassadors including director of National meteorological institute, director Institute for Public Health and environment and Rector Magnificus Wageningen University helps us shape the program with at an annual strategic meeting
- Daily coordination is done by:
 - Matthijs Begheyn, Country Coordinator (0,6 FTE) program coordination, development and strategy

- Marcella van Steenberg (0,3 FTE) school contact person working on good personal relations with teachers and helping them on day to day basis

Plans and ideas for next year:



Particulate Matter campaign

On Earth Day 22 April 2020 we will organize the 25th anniversary of GLOBE and launch a campaign to investigate Particulate Matter with high school students. The campaign is currently being developed in cooperation with the National Institute for Health and Environment. Students will measure PM with relatively cheap sensors. We will connect the project to the existing GLOBE aerosols measurements.

Urban Heat Island

We will participate in the [Urban Heat Island campaign](#) that is organized by Dr. Kevin Czajkowski of the University of Toledo

Special activities last year:

Plastic Soup Challenges

We developed [14 challenges](#) for secondary schools to investigate the role that we have related to the plastic soup in the oceans.

GLOBE Science Fair

We organized the [GLOBE Science Fair](#) for the fourth time. Students presented their research to scientists and to each other in English.



GrowApp

The GrowApp www.growapp.today gives students the opportunity to follow the development of a tree during the year by taking pictures that are automatically combined into a *time lapse* movie. In 2018 and 2019 has been updated. It is used around the world and in the European phenology campaign: www.globe.gov/web/european-phenology-campaign

Water animals investigation

The website www.waterdiertjes.nl that we launched in 2018 gives a color grade to your water quality based on the animals that you catch. In 2019 we have continued the campaign and attracted new partners that use the website for their Citizen Science water investigation activities.



Republic of North Macedonia

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Organization and Number of Staff:

Ministry of Environment and Physical Planning

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), Hydrobiological Institute-Ohrid.etc)

GLOBE Schools (what types, how many):

Until now, we have included 28 schools, 15 secondary schools and 13 primary schools, 56 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: 3

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

In the process of the program implementation, we continue to encounter financial problems for regular activities under the program and for supply of new equipment. But, all enrolled schools remain very enthusiastic for their work and continue to use the available equipment. Despite the constraints, a couple of actions and activities have been noted in relation to reporting data for several protocols.

1. Education

Presentation by the Deputy National Coordinator and Assistant GLOBE Program at "Christian Todorovski Karpos" Primary School to students and teachers in elementary classes. The presentation explains what the GLOBE Program is, what activities are being implemented, the benefits of participating in the program and the opportunity for active involvement in GLOBE Program.



For teachers and students in the "Dimitar Miladinov" Elementary School in Skopje the GLOBE Program is the inspiration for many eTwinning projects. They communicate with many colleagues, teachers and students from Europe in sharing experiences and good practices. Also, they have excellent collaboration with schools in India in the field of environment.



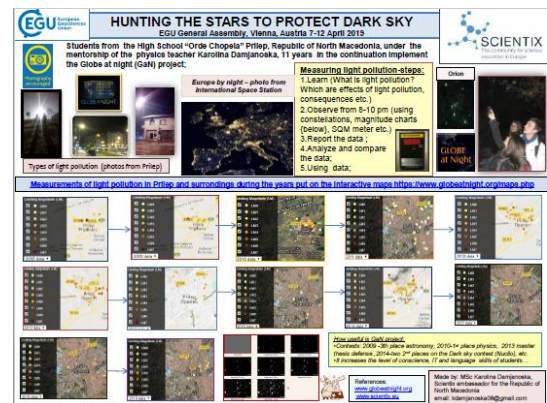
"Goce Delcev" High School in Valandovo has constant cooperation with the teachers working with the youngest population, preschool age, children 4-5 years, ie with the children from the kindergarten "Kalinka" - Valandovo. In this context, they are constantly given educational lectures on the atmosphere and are given flyers tailored to their age.

The students in "Orde Chopela" High School in Prilep, continuously for 11 years in succession under supervision of physic teacher Karolina Damjanoska, perform activity within the international educational project "Globe at Night" (GaN). This year they presented the poster of their participation at the EGU GIFT workshop, in front of the colleagues and students in the school.

2. Science

"Dimitar Miladinov" Elementary School joined an international initiative that invites projects, organisations and schools across Europe and around the world, to celebrate careers and studies in the fields of Science, Technology, Engineering and Mathematics (STEM), especially in STEM Discovery Week and STEM education practices. Students regularly conduct experiments in the field of natural sciences.

Poster presentation in at the General Assembly on European Geoscience union in Vienna in April 2019 on the EGU 2019 GIFT workshop – the link is: (<https://www.egu.eu/education/gift/workshops/27/egu-general-assembly-2019-gift-workshop/>) by the physics teacher Karolina Damjanoska. The title of the poster presentation was "Hunting the stars to protect dark sky". The presentation was very successful. For more than four hours, she explained about light pollution and Globe at Night to many interested participants. She also established contacts with people who know the problem of light pollution, but also there were many participants who were not familiar with it and they became very interested about Globe at night.



3. Community

Unfortunately, we still have little community influence, although we published a campaign for information on facebook and the official website of the Ministry. Most often the community is involved in activities to clean up illegal dumpsites and also plant trees.

This year, members of the Regional Association of Physicists – Strumica, joined in the activity to mark Earth Day. As part of this activity, an international award-winning video content competition with good and bad practices has been launched.

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

Usually all new program activities, received from the GLOBE Coordination Office, are forwarded by the national coordinator to all professors involved in the program.

The teacher Damjanovska communicated via mail with Connie Walker-director of Globe at Night and she was very satisfied with her work. Also the information about her work was published in the (online) globe at night newspaper for March 2019 (<https://www.globeatnight.org/newsletter/#adsa>).

Like every year, "Dimitar Miladinov" Elementary School has celebrated Peace Day by planting trees and campaigning for a cleaner and healthier environment, along with many countries around the world.



Plans and Ideas for Next Year:

For the next year, if we manage to secure financial sources, as allocation in the Budget of the Ministry for the purposes of the GLOBE Programme, we will be able to procure chemicals, instruments and other requirements necessary for uninterrupted performance of the activities. We will indeed make additional efforts to organize a country workshop for all GLOBE teachers, aiming to motivate our national participants in the GLOBE programme and reinvigorate the work and contribution of the GLOBE activities.

GLOBE schools will make efforts to involve more students in activities, strengthening cooperation between schools, continuation of the activities that are now being implemented, participation in international conferences and competitions with data from the GLOBE program and others.



ГЛОБАЛНО УЧЕЊЕ И НАБЉУДУВАЊЕ ВО ПОЛЗА НА ЖИВОТНАТА СРЕДИНА

Russia

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Funding by: GLOBE schools

Cooperating Organizations/Individuals: Russia Ministry of Education and Science

GLOBE Schools (what types, how many): 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

Country coordinator Fedor Surkov participated as a trainer at the GLOBE Teacher Training in Bishkek, Kyrgyz Republic on February 21-23.

2. Science

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



3. Community

We have in Rostov-on-Don a group of experts – 10 GLOBE teachers who works with us to shape and develop the program. We meet several times per year and work together on specific subjects.

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 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 Maps sources for free.

5. Communications

We are trying to use Russia Federal University network to implement GLOBE program in all Russia Federal Districts.

Plans and Ideas for Next Year:

Country coordinator Fedor Surkov plan participate as a trainer at the GLOBE Teacher Training in Osh, Kyrgyz Republic at the second part of November, 2019.

Switzerland

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

Cooperating organizations:

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 the teaching programs (STEM) of at least 10 Universities of Teacher Education (FHNW, Luzern, St. Gallen, Thurgau, Graubünden, Zürich, Zug, SUPSI/DFA, HEP BEJUNE, Bern).

General Funding by: Federal Office of Environment. Project funding: Foundations

GLOBE areas:

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

Funding of Trainings:

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

GLOBE Schools (what types, how many):

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

522 Citizen Scientists (GLOBE Observer App), PhaenoNet)

1328 Citizen Scientists (Phaenonet)

Number of Schools Reporting Data over Past Year:

International: 14

National GLOBE projects: PhaenoNet (12 classes), Bioindication River (10 classes), Agriculture/LERNfeld (31 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.

SWISE: On the national day for Swiss Science Education in March 2019 GLOBE could be present 2 workshops and a market stall. Around 450 teachers from all over Switzerland attend this annual education fair.

Practical examples are listed on our GLOBE Switzerland website.

2. Science

Thanks to our national project developments, we can strengthen GLOBE's cooperation with partners from environmental research and 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 preliminary projects are currently published on GLOBE Switzerland, and from 2020 there will also be an online dossier on [education 21](#), the national education platform for sustainable development.

[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 visualise them on a Swiss map in WebGIS. In this way, this offer promotes MINT and digital skills.

In 2019, 31 school classes, 24 teachers, 17 young researchers from ETH Zurich and universities and 24 farms took part. In addition, 50 teachers and 50 PHZH students were trained in the implementation of LERNfeld.

[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.

In 2019, 12 school classes, 12 teachers, 90 PHSG and PHZG students and around 200 citizens participated. In addition, around 30 communication officers of the cantonal environmental authorities were trained for PhaenoNet.

[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 readaptation 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.).

3. Community

Last year, eight new schools/teachers were registered internationally. All these teachers were trained according to the GLOBE requirements.

Internationally, GLOBE Switzerland has participated in the judging of six IVSS projects.

Twice a year the responsible persons from the different Swiss regions (GLOBE Team) meet on one day and discuss 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 the last year new cooperation with various actors could be established again. One example is the water network, which is operated jointly by GLOBE, Pro Natura (NGO), Naturama (museum) and Maison de la rivière. The aim is to exploit synergies in the field of water education. Each partner integrates its offers per se, but there is joint communication.

GLOBE Switzerland celebrated its tenth anniversary on 7 September 2019. More than forty people were present and carried out joint GLOBE research activities on a farm near Bern. The event showed that the national GLOBE network is very strong and dynamic. And it continues to grow.



GLOBE Team (Office and Regions)



Soil investigations



Which ringworms will we find?

4. Technology

With the help of the Pädagogische Hochschule Köln we have translated the GLOBE Observer App on clouds, mosquitoes and land cover into German. Thanks to the help of the GLOBE Technical Support the app was extended accordingly.

For over a year we 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 will be 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.

5. 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 program 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 (especially Facebook).

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 is an educational institution of the Ministry of Education and Science of Ukraine, a component of the system of extracurricular education for gifted and motivated school students. It is also a coordination centre for 155 regional educational institutions of environmental orientation. 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 centre 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):

There are 528 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 the non-formal education system in Ukraine.

GLOBE Areas You and Schools Focus on:

The most popular areas among Ukrainian GLOBE students is Phenology (GreenUp/GreenDown) and Atmosphere (Air Temperature, Cloud observations, Barometric Pressures, Precipitations):

- Ivano-Frankivsk (Ivano-Frankivsk City Environmental Station), Chernivtsi (Regional Ecology and Nature Center)

Local Lake Challenge, Trees Around, Land Cover, Using GLOBE Urban Heat Island Effect/Surface Temperature Field Campaign - Ivano-Frankivsk (Ivano-Frankivsk City Environmental Station)

Number of Schools Reporting Data Over Past Year:

Today, GLOBE in Ukraine includes about 50 existing schools and teachers from almost all regions of Ukraine. The total number of school reports - 129.

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

International Collaboration is carried out within the framework European Phenology Campaign:

1. Ivano-Frankivsk City Environmental Station cooperated with Shaab School, Israel; Anyksciai distr. Troskunai Kazys Inciura Gymnasium, Lithuania;
2. Dunaivtsi City Young Naturalists Station – with ZŠ a MŠ Pišť, Czech Republic;

3. Yarevysche Secondary School with ZS J.A.Komenskeho Prerov – Predmosti, Czech Republic;
4. Chernivtsi Regional Ecology and Nature Center for Youth – with Gimnazija Vukovar, Croatia.

Activities:

GLOBE Games Ukraine

1. Education

- Provided training and support for existing GLOBE teachers and schools;
- Engaged students and schools in GLOBE through events, competitions and campaigns.
- An annual GLOBE workshop for teachers was held.

2. Science

- the state of reservoirs and soils was investigated

3. Community

- Involved new teachers.

4. Technology

- The environmental monitoring was conducted through training of biology teachers

5. Communications

- Developed translated instructions.

Plans and Ideas for Next Year:

- Conduct annual activities on traditions (Annual Teacher Training Seminar, GLOBE 2020 Games).
- Participate in the European Phenology Campaign, the Tree around the GLOBE Campaign and others.
- to establish international cooperation between the GLOBE schools.
- involve more teachers in the organization of work within the Globe program.
- provide training for beginner teachers.
- To hold a competition for scientific works of participants of the international program Globe



THE GLOBE PROGRAM

Europe and Eurasia

2019 Country Reports

GLOBE Program Region Coordination Office Europe and Eurasia

Regional Meeting – Trieste, Italy

21.10.2019 - 25.10.2019