

Europe and Eurasia Country Reports

2015



GLOBE Program Region
Coordination Office
Europe and Eurasia

Regional Meeting –
Warsaw

22. 11. 2015 – 27. 11. 2015

Belgium

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Cooperating organizations: none

Participating schools: Königliches Athenäum Eupen (KAE); Robert Schuman Institut (RSI), Pater-Damian-Sekundarschule (PDS); Bischöfliches Institut Büllingen (BIB), all four (from 8 in total) secondary schools

Funding by: Ministry of Education of the German Speaking Community of Belgium

GLOBE protocols used in country: mainly atmosphere, aerosol measures, soil protocols, pH of water Protocols

Number of schools currently reporting data (2015): 2

Description of the program in your country and recent activities in 2015: participation of teachers in the GAC in Warsaw financed by the ministry of education

KAE: GLOBE is used in level 7-12 in geography and science classes, measuring of temperature, atmospheric pressure, air moisture, soil moisture and pH of water around their school and during excursions.

RSI: GLOBE is used in level 7-12 in geography classes and starts now with measuring of temperature, atmospheric pressure, air moisture, (material funded by the ministry of education), preparing a climate conference and starting aerosol measuring

Preparing cooperation with GLOBE Germany and GLOBE Netherlands for students and teachers

Croatia

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Cooperating organizations: Ministry of Science, Education and Sports of Republic of Croatia, Croatian Meteorological Institute, Faculty of Science in Zagreb – Department of Biology; OIKON – Institute for Applied Ecology.

Participating schools: 187

Funding by: Ministry of Science, Education and Sports, local government, several companies, schools, parents, EU funding (Comenius, Erasmus+).

GLOBE protocols: atmosphere, weather, water, soil, land cover, phenology, aerosols

Description of the program and recent activities:

Program GLOBE in Croatia had its 20-th birthday on April 13. We had celebration 6 month later November 13 (because in April there are many activities in schools and we prepare our traditional GLOBE Conference (Croatian version of GLOBE Games, which includes GLOBE research projects presentations and GLOBE competition – combination of the competitions in applied knowledge, skills in doing GLOBE protocols and orientation in unknown area with the help of the map and compass, as well as sport skills and physical condition. GLOBE games are funded by Ministry of Science, Education and Sports and organized by Education and Teacher Training Agency. In average, 40 – 45 GLOBE schools are represented by 3 GLOBE students and 1 teacher each.

In several last years, students who participated on GLOBE competition had some benefits (additional points) if they want to study Biology on Faculty of Sciences.

Great support in coordinating GLOBE in Croatia are regional GLOBE centres, which serve as help desks, provide additional trainings as well as the source of information for the schools in their region. They also organize regional conferences in March in the purpose of selecting the best schools for National Conference (GLOBE games). But besides selection, regional conferences has the purpose and opportunity to include all GLOBE schools in joint activities, to enable the meeting of teacher and students, and prepare their networking. We support joint school projects, which are the basis for twinning of the schools.

In May 2015. we had 18.th GLOBE Conference (GLOBE Games). On that occasion we interviewed the students about their impressions of GLOBE and how they perceive the benefit of participation. We made video film with the goal of evaluation. We also conducted pilot survey with teachers, but on small sample. The results will serve as the basis in development of main questioner for, we hope to do so, wide on-line survey, which would be easy for participants. But so far we learned that although implemented as extracurricular activity, GLOBE is well rooted and used by the number of school subjects (Geography, Early Science, Biology, Chemistry, Informatics – ICT, but much less in Math or Physics). Several secondary vocational schools could use GLOBE as the content for their teaching (meteorological technicians, ecological technicians).

Since Croatia had started Curricular Reform in spring 2015. there had been a lot of speaking about inquiry based learning- we hope that it will tide GLOBE even more with school curriculum.

Finally, this month we had Conference in celebration of 20-th GLOBE birthday in Croatia. It was great success since it drew attention of the authorities and lightened publicly GLOBE and work of GLOBE teachers and Students. We had the offer to publish GLOBE teachers' experiences as case stories in the National Newspaper – The Weekly Periodical for Schools.

Czech Republic



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Cooperating organizations: Faculty of Science, Charles University in Prague, Czech University of Life Sciences Prague, Czech Hydrometeorological Institute, Czech GLOBE Veterans

Participating schools: 130

Funding by: Guarantors: Ministry of the Education and Ministry of the Environment, Prague Municipality, schools, other. Still looking for partner

GLOBE protocols: atmosphere, hydrology, land cover, phenology, soil

Description of the program implementation in the country and recent activities (include a list of events you organized to celebrate 20th anniversary of GLOBE):

The GLOBE Program in the Czech Republic started in 1995 and we celebrate 20th anniversary this year. The official guarantors are the Ministry of the Environment and the Ministry of the Education. TEREZA Association is the national coordinator. TEREZA cooperates closely with GLOBE Scientific Board which consists of 11 Czech experts from different areas of science. These experts help with training workshops, developing new teaching materials, PR of GLOBE within universities, at GLOBE Games.

130 schools currently join the GLOBE Program in the Czech Republic; half of them are high schools. Every year we organize several training workshops for schools – some of them are also available for older students. New schools receive the basic equipment for their measurements at the first workshop. We also support schools with methodical materials for teachers and worksheets for students in Czech language.

Themes of the year:

2014/15 Focus to supporting teachers:

We decided to cooperate closely with group of GLOBE teachers via projects "GLOBE Explorers" and "Together with Scientist".

GLOBE Explorers - Goal of this project is to find new possibilities how to use GLOBE methods and steps of scientific research just during lessons. We developed new training activities and lessons together with GLOBE teachers (35 teachers participated), and prepare special workshops for them.

Together with Scientists - We support local cooperation among teachers and scientist or other experts in their region - experts will consult student's GLOBE projects. This topic was supported by workshop too. We also revitalized cooperation with Czech GLOBE Scientific Board - ask new members.

2015/16 "Landscape under magnifying glass"

Support for teachers who want to make some "inquiry based" research with students in their landscape. We prepared some training activities for developing researcher skills, lessons included all steps of scientific process and guide for their own student's projects using GLOBE protocols and data.

Training of GLOBE mentoring teachers

11 GLOBE teachers were trained during last school year as mentors and giving currently support to GLOBE teachers (mostly beginners) in different area - provide consultation, excursion in their school, workshops, sitting in on classes etc. It is great help in regions.

GLOBE Games (GG) - 20th Anniversary Celebration

18th Czech GLOBE Games (May 27-30) - with simple motto "I do GLOBE 20 years" took place in Prague and the team of TEREZA was preparing the event in cooperation with GLOBE primary school.

GLOBE Games hosted more than 45 teachers, 150 students, about 15 scientists and 22 guests from GLOBE Europe community.

We consider the GLOBE Games one of the most effective long-term methods of motivating students and teachers in developing GLOBE at their school. GG is a 4 day long meeting of GLOBE students and consists of these main parts:

- GLOBE conference where teams of students present their project to GLOBE community and both teachers and students take part in different workshops prepared by cooperating scientist. There is also special program for teachers.
- GLOBE field game where students teams explore the surrounding area, do measurements and team activities at study sites.



Aerosol Campaign - We equip 10 Czech schools with new photometers Calitoo to join European Aerosol Campaign. 2 Czech schools are involved in European project "Aerosols in Europe" led by Norway.

GLOBE Movement continues

We have started long term process of Czech GLOBE program transformation responding to results and evaluation from project Explorer. The heart of innovated program will be inquiry based methods more likely than measurements or observation. We are developing new materials for teachers - both for training of particular steps of scientific process and complete GLOBE lessons included whole scientific cycle.



ESTONIA



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Cooperating organizations: Embassy of the United States in Estonia; Estonian Physical Society, Estonian Ministry of Education and Research

Participating schools

Abja Gymnasium Adavere Comprehensive School Ahtme Gymnasium Ala Basic School Amari Comprehensive School Gustav Adolf Gymnasium Haademeeste High School Jogevea Gymnasium Johvi Gymnasium Kaapa Comprehensive School Kaina Comprehensive School Kardla Secondary School Keila School Keila Vene Gymnaasium Kilingi-Nomme Gymnasium Kivioli Vene Gymnaasium Koeru High School Kohila Gymnasium Kostivere Põhikool Kuressaare Gymnasium Lagedi Comprehensive School Lasnamae Common High School Lihula Gymnasium Lumanda Comprehensive School Miina Harma Grammar School Mooste Comprehensive School Muhu Comprehensive School Narva 6. School Narva Humanitaar Gymnaasium Narva Kesklinna Gümnaasium Narva Soldino Gymnaasium Narva Vanalinna Gymnasium Noo Comprehensive School Orava Põhikool	Peetri Basic School Pelgulinna Gymnasium Polva Common High School Rakke Gymnasium Rakvere Reaalgümnaasium Rapina Common High School Rongu Secondary School Saaremaa Common High School Saarepeedi Comprehensive School Salla Basic School Sillamae Kannuka Gymnasium Sillaotsa Basic School Sindi Gymnasium Surgavere Comprehensive School Suure-Jaani Gymnasium Taaksi Basic School Tabasalu Gymnasium Tallinna 21. School Tallinna Nomme Põhikool Tallinna Oismae Gymnasium Tallinna Oismae Vene Lutseum Tallinna Ranniku Gymnasium Tallinn Secondary Science School Tallinn Technical Secondary School Tartu Hiie School Tartu Kivlinna School Tartu Kristjan Jaak Peterson Gym. Tartu Slaavi Gymnaasium Tornimae Comprehensive School Turi Business Gymnasium Tyri Common High School Valga Comprehensive School Valga Gymnasium Valga Vene Gymnaasium
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Osula Comprehensive Paide Common High School Paide Gymnasium Palupera Primary School Parnu-Jaagupi Gymnasium Parnu Koidula Gymnasium Parnu Vene Gymnasium	Valgjarve Comprehensive School Viira Comprehensive School Viljandi Gymnasium Viljandi Paalalinna School Voore Comprehensive School Vormsi Basic School Võru Kreutzwaldi Gymnasium
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Funding by:

University of Tartu,
Self-financing,
Estonian Environmental Investment Centre,
Estonian Ministry of Education and Research
Embassy of the USA in Tallinn/US State Department (GLOBE Regional Learning Expedition)

GLOBE protocols used in country: Atmosphere, Hydrology, Soils, Biometry, Land Cover, Phenology + supportive protocols developed by scientists from the University of Tartu, CloudSat

Number of schools currently reporting data (2014+ 2015): Database is not working properly, but last time I made interim report, there were 18 schools

Description of the program in your country and recent activities in 2014/2015:

- Daily observations based on GLOBE protocols
- University initiated campaigns – Air quality, 4 periods per year
- Competition of students' research papers (annual), January to May. Terms and conditions are set by researchers from the Universities.
- GLOBE Expedition – GLOBE Estonia summercamp (annual), in cooperation with scientists from different universities in Estonia (University of Tartu, University of Life Sciences in Estonia, Tallinn University).
GLOBE Regional Learning Expedition – 3-6th of august, Nelijärve, 6 participating countries, supervisors from the US, representative from GLOBE regional desk.
- GLOBE Students' conference (annual, based on research papers), held in Rakke in september (2015), 2014 it was in Viljandi
- GLOBE Teachers' seminar (annual, reports, new courses), held in March in Tartu (measurements and protocols), 2nd on December in Tartu (research and papers)

Finland



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Cooperating organizations:

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

Participating schools: Viikin Normaalikoulu (University of Helsinki), Utajärvi Upper Secondary School, Kuokkalan koulu, Palokan Yläkoulu + teachers from about 20 schools have taken part in continuing education that cover GLOBE protocols

Funding by:

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

GLOBE protocols:

Atmosphere air temperature, RH, wind, snow depth, surface temperature

Description of the program implementation in the country and recent activities (include a list of events you organized to celebrate 20th anniversary of GLOBE):

University of Helsinki

- Fulbright distinguished teacher Ellen O'Donnell was in four months in Finland getting to know the Finnish elementary school science education system and was involved in planning GLOBE activities.
- Protocols of snow depth measurements and surface temperature were taught at continuing education courses.

Utajärvi and Kauhajoki schools

- delegation of one teacher and two students from both schools participated to GLOBE regional learning expedition in Nelijärve, Estonia

Viikki Teacher Training School of the University of Helsinki

- Presentations for lower and upper secondary school of GLOBE
- We tried to do again the snow depth measurement campaign, but again the lack of snow in Helsinki region made it a flop. Students were very disappointed.
- In September we had a nature day for 7th grades with GLOBE activities.
- In October the whole school participated to natural science week. This year is the international year of light and all the activities during the week had something to do with light.
- In December there is going to be a weather observation campaign between three GLOBE schools in Finland

France



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Funding organization: CNES (Centre National d'Etudes Spatiales)

Participating schools: 18 (for this year's measurement campaign), 55 Globe Schools (not all active)

GLOBE protocols: atmosphere : aerosols, weather, ozone, ...

Program and recent activities:

Globe France was started as a pilot project **11 years ago**, when CNES signed a memorandum of understanding with NASA; an extension of this agreement was signed 16th September 2010, again between CNES and NASA. In this framework:

- We develop Calisph'Air (<http://www.cnes.fr/web/CNES-fr/7167-calisph-air.php>) which focuses on the atmosphere (air quality and climate) using aerosol protocol, in connection with CALIPSO, IASI... satellite mission. We also developed our own sun photometers CALI that we lend to schools and now **CALITOO**.
- For elementary schools we developed the <http://www.schoolweather.net> project as a first step to approach Globe protocols. We also worked on clouds protocols and compared satellite data to pupils observations (clouds hunters project).

We have a group of 4 GLOBE *resources teachers* who help us shape development of the program; and train the newcomers.

Each year we organize a *teacher conference* at the beginning of the school year to make an assessment of the work that has been done, to prepare the coming year and welcome the new teachers. We participate to the 2 *measurement campaigns* during the school year and we organize a *student conference* at the end of the school year where students present their GLOBE research to the other schools and to scientists.

We developed a *web platform* to host data during the measurement campaign, in order to have teachers easily check and get the data from the others schools (<http://globe-france.org/data/>). This separate web platform allows us to welcome all the volunteers for the campaign measurements, even if they are not yet GLOBE teachers. The data from GLOBE teachers are either entered directly or transferred to the GLOBE database.

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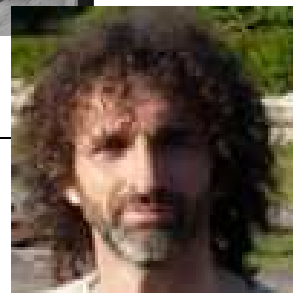
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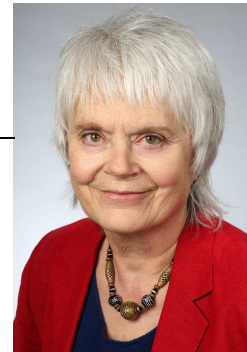


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Germany



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Cooperating organizations: Universität zu Köln
 MPI für Meteorologie Hamburg
 Institut für Klima - und Wetterkommunikation Hamburg
 Deutscher Wetterdienst Frankfurt
 Institut Flad Stuttgart

Participating schools: 50 schools active in communication working in different school projects
 10 schools put their data 2015 on the GLOBE website

Funding by: different sponsors such as local enterprises and banks

GLOBE protocols: atmosphere, hydrology, earth as system, phenology, land cover

Activities since Summer 2014

September 2014

GLOBE-Workshop for students (University of Cologne) held by Professor Karl Schneider and Anna Heyne-Mudrich (Thomas Beer, Sonja Drzensla)

Spring 2015

Preparation of a Erasmus(Comenius)-GLOBE Project CLIMP. The participating countries want to investigate the situation of schools and families and their attitudes towards the changes in politics and climate in the area of the former Iron Curtain. The project was accepted, but not financed by the Erasmus Agency. So we will start the project again this year in a similar way. We want to open the topic for more countries: basic idea is the question: frontiers in politics, in nature and in mind.

GLOBE - Deutschland takes part in the **European MASS - Project** (Motivate and Activate Students to Science) Leading German institution is the University of Cologne, GLOBE-Deutschland (Anna Heyne-Mudrich) cooperates in the workgroup about low achievers in sciences.

Earthday 2015

GLOBE – Deutschland celebrates the GLOBE-Anniversary in two different ways:

1. We collected interesting events of the 22nd of April.
Institut FLAD in Stuttgart offers the activities of Earthday on a wonderful website www.earthday.de
2. Some Schools took part in **balloon-competition** . We will know the winners at the end of the year.



3. The Weather Club of Gymnasium Schloß Neuhaus in Paderborn has the 20th anniversary too. That is the reason why the Gymnasium celebrated a **public opening of the new climate garden** financed by the city and some sponsors , based on the GLOBE protocols and GLOBE analysis.



4. GLOBE - Deutschland offers a national **competition** 2015 with some interesting prizes for the **Honour of GLOBE** . We collect presentations and films about the GLOBE activities 2015 till the end of the year from schools in Germany.
5. GLOBE - Deutschland was happy to take part in the **opening of the School Laboratory** belonging to the research station "**Pulheimer Bach**" cooperating with the University of Cologne.

1st of April 2015

GLOBE – Teacher Trainings are now part of the education of Geography teachers at the University of Cologne. It is the start of a closer cooperation between the University of Cologne and GLOBE-Deutschland.

November – February 2015/16

GLOBE-Deutschland (Anna Heyne-Mudrich) takes part in the seminar of the University of Cologne integrating the development of GLOBE and GLOBE Teacher Trainings into the regular curriculum of preservice geography teachers. By Professor Karl Schneider: the title is : **Experience, examples, and teaching approaches in the GLOBE Program.**



Greece

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Participating schools:

30 schools from Athens and regional Greece. One new entry from Athens.

Coordinated by:

University of Athens (Department of Environmental Physics)

Funding by:

University of Athens (man months devoted to the project + consumables) and the schools (for extra-curricular activities)

Cooperating organizations:

National Observatory of Athens

Foundation for Research and Technology

Various environmental NGOs

Description of the program and recent activities:

In 2015 and in addition to regular GLOBE activity taking place in schools:

We developed an educational module on the issue of **COOL CITIES**. Within this module, scientific data showing the changes in urban climate are included, information on the urban heat island is given, the role of materials in warming the cities is explained and measures for cooling the cities are discussed and explained. The module (ppt, an thermal infrared radiometer and demo regular and cool materials) was presented to schools. Students were asked to make their own measurements and link them to the type of material.

We linked GLOBE schools to the Comenius MASS project by informing teachers on the results of the project so far and stimulating the use of the findings in the daily school life.

We took advantage of a change in the curriculum in schools – as decided by the Ministry of Education –, namely that students at the ages of 15 and 16 years old, should undertake in groups of 10, projects to be completed within the same school year. A number of GLOBE schools did select environmental issues for their project and utilized their own measurements for the analysis. The University of Athens provided scientific guidance and support and

communicated research methods. The plan for the school year 2015-2016 is to act proactively, namely to suggest early in the school year, GLOBE teachers to promote GLOBE based environmental projects.

We motivated GLOBE schools with low activity to become active and informed them on potential cooperations with other GLOBE schools in Greece and abroad.

We supported GLOBE schools in their careers orientation events for their students, by presenting professions linked to the environment.

We informed GLOBE schools on cultural issues related to the environment and the landscape and on UNESCO's initiatives in reforming school curricula.

We developed, in cooperation with six other GLOBE countries, a proposal for the EU HORIZON 2020 in the thematic area "Motivating young boys and girls to science".

Plan for 2016-2017

An assessment of the schools' performance will be made by the end of the school year 2015-2016 and amendments in the school network will be promoted to the extent necessary.

A call for new school entries will be announced, subject to the allocation of funding and on the basis that schools will cover on their own the cost of measuring equipment.

Emphasis will be given to the topic "*Urban environment*", with specific consideration to GLOBE measurements for "air temperature", "land surface temperature", "humidity", "etc.

ISRAEL



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Cooperating organizations: Ministry OF Education, Ben & Jerry's company, Globisens Company .

Participating schools: 116 schools : 56 Elementary schools, 38 Junior High Schools , 2 High Schools.

Funding by: Ministry Of Education. USA Grant .

GLOBE protocols: Atmosphere & Climate , Hydrology & Plants Phenology.

Description of the program and recent activities:

116 Globe Israeli schools are actively joining the GLOBE program in Israel from different sectors: Jewish Sector , Arab Sector , Bedouin Sector , Druze Sector . The Globe Program in Israel helps different teachers in charge of activities connected with environmental education even those who are not specialists. Some are trained, the majority use methodological guides and protocols which, suggest problem-situations on the theme of the environment such as: How to protect nature and how to implement Globe according their demands. GLOBE improves student understanding of science because it involves them in performing real science - taking measurements, analyzing data, and participating in research in collaboration with scientists. GLOBE students contribute data for scientists to use in their research.

Main Events 2015 :

1.November 2014 , Globe National Workshop in Weizman Institute, where teachers and principals met face to face from different sectors to collaborate on a common research.

2.February , 2015 , Each globe school celebrate during the month "the Green Day"
So that students make different activities concerning the Globe Program for their community .

3. June the 10th ,2015 - The Israeli Globe Annual ceremony will be held among 25 best schools from different regions which are awarded for their science research campaign , others for their collaboration in the local level / international level others for entering the most data in the Globe website and mainly for 20th Globe Anniversary.



2015 Italy

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Participating schools: 73 schools are officially part of GLOBE program in Italy – 6 schools are actively working in the GLOBE Program at this moment, even not upload date.

GLOBE Italy is a local network of schools and scientific institutions. 73 schools are officially part of GLOBE program in Italy, but only few schools are regularly reporting data.

Some GLOBE schools co-ordinate local or regional networks of schools, and so the real number of schools working in GLOBE is larger than the apparent one. The networks are the following:

- PROGETTO TERRITORIO e BIODIVERSITA' network, Friuli Venezia Giulia - Regional School Network (about 30 schools including primary, middle and secondary schools) involved in hydrology, soil investigation and atmosphere investigation in Northern Italy, in collaboration with many scientific and environmental protection agencies. The project includes chemical and physical analysis and the use of bio-indicators in relation to environmental quality. The project lasts a whole school year

- Progetto MINCIO network of schools (3 Junior High Schools with 5 classes, 120 students 7 teachers and 1 Senior High Schools with 3 classes, 35 students and 6 teachers) investigating the waters of the Mincio watershed (Lombardia Region) in 9 monitoring stations, in collaboration with a number of local institutions and agencies (research, environmental protection, health protection). The chemical/bacterial results of Progetto MINCIO are integrated by the results of another project which investigates water macroinvertebrates of River Mincio and its tributaries: the Progetto MACROINVERTEBRATI is held by a school network made 4 Junior High Schools (8 classes, 184 students + teachers).

- Progetto MAGO, 1 Junior High School with 2 classes, 40 students and 4 teachers, assisted by Labter-Crea experts, monitoring the water quality of north-west area of River Mincio water basin, according with GLOBE Protocol, in connection with a movement of active citizens against water pollution used for irrigation, that damages agricultural crops and makes it unmarketable agricultural products quality of that territory. Also this project lasts the whole school year.

Funding by: regions, and private foundations through calls for proposal, municipalities and schools own budget. About 20.000 euro.

GLOBE protocols*:

Weather and aerosols,

Hydrology with E.T.P. Regional Laboratory of Hydrobiology of Friuli Venezia Giulia

Soil with CRA and University Department of Agriculture and Environmental Sciences (DISA) Udine

Phenology/land cover with CFR (Regional Forestry Group).

The protocols are not integrated in the national curricula but schools insert them in special activities called u.d.a. (a period full immersion, max two weeks of cross curricular teaching)

Cooperating organizations: Labter-Crea (Territorial Laboratory-Regional Center for Environmental Education) in Mantova, ISIS Malignani Cervignano del Friuli (UD), University Department of Agriculture and Environmental Sciences (DISA) Udine, E.T.P. – Regional Laboratory of Hydrobiology of Friuli Venezia Giulia, CFR (Regional Forestry Group).

Description of the program and recent activities:

From September 2015, ITT Malignani (with We're "I-N" aerosols) and IIS Cavazzi are working in "Aerosols in Europe" with a partnership with Norway schools and other 5 European Countries.

From December 2015 a special site call Environmental Observatory - STOP and HAVE A LOOK will collect the regional data from Globe schools; a special app has been developed to allow students to use smart phones on the field.

Conferences on COP21 in Mantova (October 2015)

29 and 30 October 2015 were organized two conferences entitled Understanding the climate negotiations: the stakes of COP21, the climate change conference

Speaker: Thomas Venturini, Associate Professor of Digital Humanities Dept at King's College London and coordinator of the MediaLab of Paris

The first one, 29 October at 21:00 at the Hall of Coats of Arms of the city of Mantova was organized for citizenship, for representatives of local authorities, companies, associations, etc.

The second one, October 30, 2015 at 10:00 was held in the Great Hall of the University of Mantova Foundation for students of the University and High Schools.

For the Prof. Venturini presentation: <http://www.labtercrea.it/cop21/conferenze-mantova-ottobre-2015/ClimateMantovaVENTURINI.ptx.pdf>

The **web site** www.globeitalia.it is undergoing renewal.

The River Mincio Contract. In December, or at the latest in January 2016 Labter Crea will sign the **River Mincio Contract**, the instruments of a negotiated planning, deeply interrelated to the strategic planning processes, that aim at the rehabilitation of the river basin. Is that the goal of proposing some solutions through a "re" - thinking about the problems of the area. The concept of the "re" is the basis of a strategic solutions, assumed to solve the problems born after a careful reading of the territory, through which it is essential the contribution of each entity Involved. At the moment, the Contract has been signed by the following bodies: Regione Lombardia and Regione Veneto, Mincio Park, 3 Provinces (Mantova, Brescia and Verona) and 34 municipalities located in these three provincial territories, Autorità di Bacino del Fiume Po, Agenzia Interregionale per il Po (AIPO), ARPA Lombardia, 3 Consortia for Land Reclamation, , Corpo Forestale dello Stato RNO Bosco Fontana, GAL Colline Moreniche del Garda and many no profit environmental organizations and associations. A draft of the Action Plan has been proposed in November 2014.

Two Italian scientists have entered in the GLOBE International Scientist Network (GISN): Gilberto Bragato, Dott. (Senior Researcher) Council for Research and Experimentation in Agriculture - Research Center for the Study of the Relationship between Plant and Soil (CRA-RPS) and Marco Contin, Associated Professor (Soil Scientist) Department of Agricultural and Environmental sciences, University of Udine (I).

EVENTS 2015* according to the GLOBE Hydrology, Land Cover, soil, aerosol, phenology protocols.**

WORLD WATER DAY

RIVERS IN SPRING (Fiumi di Primavera), the World Water Day Celebration in Mantova with the patronage of PADIGLIONE ITALIA of EXPO 2015 (Milan, May, 1 - October, 31).

March 20, 2015, more than 3000 children, students, teachers and citizens took part in the great event - Rivers in Spring - in Mantova, Northern Italy, to celebrate the World Water Day 2015 for the 15th time: people gathered on Mantova Lakes (Mincio River), to carry on scientific, naturalistic and artistic activities, or make footing and boat excursions, all activities in the environment to sensitize people to action in defence of it. The relation water-energy (the international theme proposed by UN WATER), the aware consumption of the natural resources and the access to water resources as a natural human right were some topics of the event.

In 55 workstations 57 activities were carried out by children of Elementary Schools, students from Junior and Senior High Schools, members of the various bodies of the regional system coordinated by Regione Lombardia and Mantova Province, volunteers of various groups of Civil Protection, volunteers of the Mincio Park and the Oglio Sud Park, experts of technical Reclamation, volunteers of ethnographic museums, the Club Alpino Italiano (CAI), the Mantova Diving Club, the Italian Federation of Sport Fishing, etc.



Istituto Superiore Bassa Friulana (ex ISIS Malignani), Cervignano del Friuli, the leading GLOBE school in Italy, took part in it monitoring the water quality of the Lower Lake according to Hydrology Globe protocol; the same school also presented its activities concerning **AGRIKNOWS**, an inter-regional project Italy-Slovenia, assessing the risk of groundwater pollution testing hexavalent chromium from the protocols GLOBE about soil.



Rivers in Spring 2015 opened the big project *ROOTS OF NUTRITION, from RiVERS IN SPRING to OLTREXPO*, proposed to Labter-Crea and Consorzio Oltrepò Mantovano (23 municipalities south of the River Po in the province of Mantova), in collaboration with the Municipality and Province of Mantova, Chamber of Commerce, Archaeology Superintendence of Lombardy, Mincio Park, Oglio Sud Park, TEA spa, Istituto Superiore della Bassa Friulana in Cervignano del Friuli (Udine) (the leading GLOBE School in Italy), Globe Italy, several schools and associations.

The project was in connection with the great EXPO 2015 in Milan *Feeding the Planet. Energy for Life* (May1, October 31 2015), with whom he shared theme and objectives.

During the event structures were inaugurated, created by the project and made available to schools and citizenship: the Revere Floating Mill, the Fields in boxes, the 5 Models of Leonardo's machines, the different Zones set up at the Museo Archeologico Nazionale di Mantova.

The **Revere Floating Mill**, a scale model 1: 1 of one of the about 350 floating mills operating on river Po from Cremona to the mouth of the river in the Adriatic sea until the early '900, is an example of utilization of renewable energy for nutrition from water stream. On the historical level it referred to the 12 Water Mills located on the Ponte dei Mulini (Mills' Bridge) in Mantova, extracting power from the head between the levels of water of the Upper Lake and the Middle Lake, destroyed the last World War; concerning the recovery of renewable energy, the presence of the Revere Floating Mill was connected to the small hydroelectric power plant called the Vasarina, recently opened in Mantua to exploit the leap water between the Upper Lake and the Middle Lake.

The transfer of the Floating Mill from Revere on the River Po to Mantova Lower Lake (a widening of the River Mincio) was an adventure, for the hydraulic problems associated with the different levels of the rivers Po and Mincio, which imposed a journey in stages, the use of the important means of river transport, complicated handling of gates, constant monitoring of levels the two rivers, the expectation of favorable conditions for full Po, and a strict coordination between the various units of intervention.



The **Fields in boxes**, placed on the right bank of the Lower Lake, near the Floating Mill, have been realized, according through sustainability criteria, by restructuring wooden boxes, previously used for the transport of metallic materials. A cereal crop or a culture of crop rotation has been implanted in each box, previously grown in a greenhouse. The Fields in boxes are the result of cooperation between Parcobaleno, an environmental education center, which bought the wood boxes, Istituto Superiore Strozzi, a Senior GLOBE School, which produced and cured crops, TEA spa that performed the carriage and Raffaello Repossi, a Labter-Crea designer, which added an element of interactivity to the box, describing the origins and characteristics of the hosted culture.

The **5 Models of Leonardo's machines**, made by Raffaello Repossi, were intended to show the ways to transfer energy in the processing of cereals.



At the Archaeological Museum Labter-Crea installed the following areas:

A **Laboratory Area**: used for activities with schools and citizens: didactic activities, the management of workshops for grinding cereals, bakery workshops, meetings of vegetarian cooking with organic vegetables, meetings dedicated to analyzing the properties of foods and beverages, etc.

A **Cereals' Area**: 12 stations, each devoted to a specific cereal, of which were exposed beans, flour and related food products trade or industrial companies, but all strictly organic.

An **Ambienti Area**: an exhibition of tools and objects used until the 50s of the '900 to process cereals from crops to food products in farmyard and in houses.

An **Energy Area**: an exhibition of 6 models of Water Mills used in the past for different purposes



This project ended October 31, 2015, coinciding with the closing of EXPO 2015 in Milan



Documents e images of the activities and people involved in the Project are available at the following web address:

<http://www.labtercrea.it/progetto-radici-2015/progetto-radici-alimentazione.htm>

EARTH DAY 2015 IN ITALY

Earth Day at Villa Manin, Passariano (Udine), April, 22 2015

On the 22nd of April 2015, to celebrate EARTH DAY and 20th Anniversary of GLOBE, a special event was organized by ISIS Bassa Friulana- Cervignano del Friuli, GLOBE Italy. Its network of primary and secondary schools and a number of local institutions were present. This event was connected with the one in Castiglione delle Stiviere (Mantova), which took place few days before.

This was the 5th edition of "Giornata della Terra" for GLOBE-Italy and the activities were connected with the EXPO theme : Feeding the planet, Energy for life.

This great event involved more than 1.558 people, including children, students, teachers and staff of institutions that have cooperated. It was organized in Villa Manin di Passariano near Codroipo (Udine).

A group of volunteers set up 63 workstations and prepared a canteen for 1600 people. In the gazebo workstations, high school students of ISIS Malignani in Cervignano del Friuli (Ud)*, ITAG Gradisca(Go)*, ITAG Spilimbergo (Ud), ITAG Cividale del Friuli (Ud), ITT Udine* , ITG Udine, ran workshops on four main topics: soil, air, water and food. (* = GLOBE schools)

Eventually, the land-art final action: in the exedra of the villa , all children and students arranged themselves so as to cover the shape of the word GLOBE 20 - 15. Impressive photos of the performance were taken from a tower of the villa and from a small drone. This concluded the "action" aimed at celebrating the 20th anniversary of GLOBE.

The event was followed by local and regional televisions and was later broadcasted in the news. The day activity was completed by a simple but significant Science Game. The participants received a GLOBE Certificate for celebrate the 20th anniversary of GLOBE.

Supported by Regione FVG-Regional Office for Education- Special Projects of Regione Friuli Board





For further information: <http://www.globeitalia.it/12-globe-italia-contenuti-globali/sala-stampa/113-gdt2015-villa-manin.html>

Earth Day at Parco Desenzani in Castiglione delle Stiviere (Mantova), 3rd edition, 18-19 April, 2015

The Earth Day in Castiglione delle Stiviere, with a format imported from the model invented by the network of schools of Friuli coordinated by Istituto Superiore della Bassa Friulana Friuli (ex ITIS Malignani) in Cervignano del Friuli, was held over two days: 18 and 19 April. The first day dedicated to schools, the second one to public bodies, associations, trades, companies.

THE SUSTAINABLE FOOD was the theme of the event, promoted and organized by the Municipality of Castiglione delle Stiviere, in collaboration with Labter-Crea and other public and private bodies. The event had the patronage of EXPO 2015, with whom was connected, sharing theme and objectives.

The values in the food, feed and nutrients of the typical products of Mantova, composting, food production and greenhouse effect, alternative energy, vertical gardens and biodynamic gardens, the chemical in foods are the main topics covered in the 25 stations set up under 3 large marquee tents, as well as during the conferences and actions taken in these two days.



To prepare the community to the event, which in three years has become the main social event of the Castiglione area, the town council had organized three evening meetings (7, 13 and 16 april).



More than 1000 students and teachers and about 1500 citizens had taken part in it.

Further information at: <http://www.globeitalia.it/13-globe-italia-contenuti-globali/sala-stampa/notizie/112-giornata-mondiale-della-terra-castiglione-d-st-mn-18-aprile-2015-ore-9.html>

PROGETTO MINCIO 25a edizione (Mincio Project, 25th edition): in April, River Mincio monitoring day in Mantova. About 175 students and teachers of Junior and Senior High Schools involved in the water quality testing in 9 monitoring stations distributed along the River Mincio from its origin from Garda Lake to its confluence into Po river. The tests will be made according to GLOBE and GREEN hydrology protocols. Other parameters like Escherichia coli were tested, as requested by the Italian law. Particular features: tutoring methodology, final Report presentation and dissemination among community.

A SCUOLA SUL FIUME 16a edizione (To school on the river, 16th edition): may 7th, more than 500 students and teachers of Junior and Senior High Schools (7 Globe schools) <monitored and studied the waters in east Friuli. Using GLOBE and GREEN protocols, Microinvertebrates and IFF (Indice di Funzionalità Fluviale, River Functionality Index) river Chemical/Bacterial parameters were investigated by students and teachers, in cooperation with public agencies. During this event, experienced students of secondary schools will tutor younger or inexperienced students.

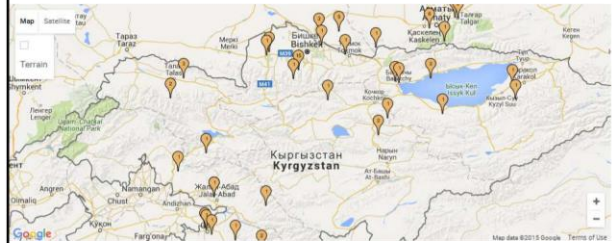
Kyrgyz Republic

Name: Venera Zhamanova

Function: Deputy Country Coordinator



Globe Partner schools



Kyrgyz National Computer Gymnasium



Students' Soil Research Campaign

Students of the National computer gymnasium in the process of investigating and researching soil from the Chui valley and Bishkek city and defining process of soil's PH and sharing with their expertise with friends from other schools.

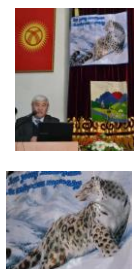


Student's research



Projects: Ecological celebrations and action

Save mountain tigers



Care of birds



Latvia



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Cooperating organizations: University of Latvia, Embassy of USA, National Centre for Education, Nature Conservation Agency, local municipalities

Participating schools: 22, active - 10

Funding by: Ministry of Education and Science, Embassy of USA, schools, parents, local municipalities

GLOBE protocols: atmosphere, hydrology, land cover, phenology, soil, aerosols (all are translated in Latvian). Seasons and Biomes project.

Description of the program and recent activities:

At present there are 22 schools, who are involved in GLOBE programme in Latvia. Only 5 are currently reporting data, 11 schools reported during whole year 2015. Students mostly do investigations during afterschool activities or project weeks, but some teachers use the project also in

science lessons. The most popular study area are atmosphere, hydrology, phenology. Some schools send pictures to Markus Eugster in the Seasons and Biomes project.

Year 2015 in the GLOBE Latvia.

1. The daily work in the project was performed in all project schools. Two workshops were organized for the project teachers – one on Land cover + Atmosphere (beginners), one Hydrology.
2. 2 GLOBE schools participated in the environmental education workshop during the XI Latvian Students Youth Song and Dance Festival in Riga. Creative activities, using GLOBE Land cover investigations were presented.



3. The students art competition was organized on Earth Day, devoted to the GLOBE Anniversary. 170 participants participated.
4. Earth Day celebration events were promoted in GLOBE schools. 3 schools organized special events and sent reports.
5. Deputy country coordinator and Rujiena Secondary school participated in the GLOBE Regional Learning expedition in Estonia.
6. The traditional GLOBE Games were organized October 28-29 in Mazzalve Primary School.
7. Information and presentations about GLOBE program possibilities were prepared and presented during the different events – Annual Conference of Environmental Educators Association and workshop for environmental educators coordinators in the National Centre for Education.
8. GLOBE Latvia is involved as partner in the EU LLP Multilateral project „Motivate and Attract students to Science”.

Lithuania



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Participating schools: 30 schools, 11 schools currently reporting.

Funding by: Ministry of Science and Education of the Republic of Lithuania, schools and parents.

GLOBE protocols used in country: Atmosphere, Earth as a system, Land cover, Hydrology, Soil protocols.

Number of schools currently reporting data (2015): 11 - 12

Description of the program in your country and recent activities in 2015:

The GLOBE Program in Lithuania was launched in 2002 when the Ministry of Science and Education of the Republic of Lithuania together with The Lithuanian Centre of Non-formal Youth Education started to coordinate this Program.

There are 30 schools who are involved in GLOBE program in Lithuania, 11 schools send reports regularly. 5 schools are in the process of becoming GLOBE school. Some GLOBE program schools use protocols and GLOBE methods in the process of formal education (in the class), other work at time afterschool. Schools have to buy equipment by them self. There are 450 Honor Rolls and 223,160 Data Entries received by Lithuanian schools.

Events and activities:

International GLOBE expedition in Estonia

Lithuanian group of ten participants (students and teachers) together with other GLOBE countries - Estonia, Latvia, Ukraine, Russia and Finland took part in the GLOBE Regional Learning Expedition (GRLE2015) in Estonia, Nalijarve. This event was held on 3-6 August.

During an event participants made presentations introducing the GLOBE activities and research in their countries. Also learning sessions based on GLOBE data sheets was organized. On day third students had exiting expedition and did fieldwork into the surrounding nature with different tasks and research questions. Also there were many other activities including GLOBE games, theater and excursions. Thanks to Estonian GLOBE team!

GLOBE program Summer Camp

GLOBE program Summer Camp was held on 2-5 July, 2015. Camp was dedicated for most active GLOBE program students from 12 Lithuanian schools. Some camp

workshops were related to GLOBE program Hydrology protocols, others – to different environmental subjects. One of the most popular workshop was about protected species and invasive species in Lithuania. We invited some lecturers from non-government institution and Research center who helped recognize species in nature and told more about measures and threats. Also other exciting activities were organized.

GLOBE teachers' training course

GLOBE teachers' training course was held on 9-10 October, 2015. The course took place in The Lithuanian Centre of Non-formal Youth Education and was dedicated to new teachers and the ones with a few years' experience.

18 participants had possibility of improving their skills in such topics as: Atmosphere and Climate: Air and Soil Temp, Clouds, Max; Min; Current Temperature, Precipitation, Site Definition, Surface Temperature; Earth as a System: Budburst, Green-down, Green-up, Phenological Garden; Land Cover and Biology: Biometry, Land Cover Classification. Also there were a lot discussions and practice how to send GLOBE data correctly, how to use the GLOBE program website in general, how to use GLOBE app. There were involved three trainers.

The annual Students' and Teachers' GLOBE program conference will be held on 5 December. The main aims of that conference will be to develop the knowledge of students in different fields of the environmental investigation, to familiarize with the possibilities of environment measures in the GLOBE program as well as improve collaboration between students and teachers. 50-60 participants from 15-20 schools are expected to involve.

Also 20th GLOBE program Anniversary we will mention.

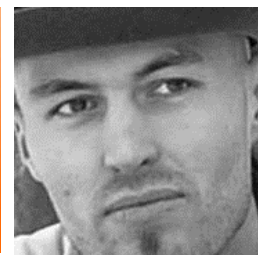
Collaboration project with partners

One Lithuanian school together with Ukrainian partners have participated the project "Studying the Seasons Together" since September, 2014. Purpose of project is to compare observations of the beginning and the end of plant growing season for species which are native in countries.

The project involves GLOBE students from Lithuania and Ukraine (from 2015 September - Latvian students as well) who observe the green-up and green-down of the plants which are native in these countries at the same time making the atmospheric observations. As a result, students must determine the beginning and end of the growing season for species they have studied and compare these figures as well as draw conclusions about the causes of differences / similarities in vegetation cycles. Thus, students have the opportunity to learn more about each other's observations as well as share their experience, gain new knowledge and work out plans for the future collaboration. Students are used standard GLOBE program protocols.

Netherlands

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Participating schools:

66 secondary schools from everywhere in the country have a paid membership

Funding by:

Program funding:

- Schools pay €280,- per school per year
- 1 small sponsors (€750 yearly)

Project funding:

- Training fee for course 'science education' with University Utrecht
- GLOBE Science School project (see below), funded by Prins Bernhard Cultuurfonds and 6 participating schools
- Phenology app, to be connected to database, funded by European Space Agency and ministry of environment
- Science Fair for bilingual schools, funded by institute for internationalisation (EP-Nuffic)

Cooperating organizations and protocols:

GLOBE protocols:

- **Weather** and **aerosols** together with *Dutch Royal Meteorological Institute (KNMI)*:
- **Water** together with Wageningen University

Non GLOBE protocols (developed by Dutch institutes):

- **Soil** together with *National Institute for public Health and the Environment (RIVM)*: 'living soil'. Students investigate living organisms in the ground and relate that to the respiration of the soil (amount of CO₂ exhausted) using the respiration kit developed by RIVM
- **Phenology** with *Wageningen University*: (using the national network www.natuurkalender.nl)



Description of the program and recent activities:

GLOBE Science School project

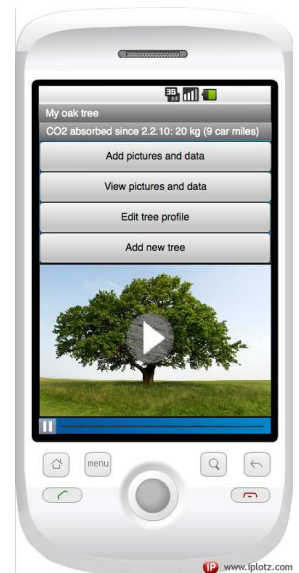
We did an investigation on what GLOBE could offer to schools in such a way that we really help them solving an issue that they have. The result was that 'learning to do research' is still not on the level that schools would like it. It is taught fragmentary with hardly a connection between subjects. Funded by a national donor we will now develop a GLOBE learning trajectory on 'doing science', 'sustainability' and 'internationalization'. With 6 schools (that each pay €3,000 from their school budget) we are doing a pilot project to implement the learning trajectory and start with a whole school cross-curricular GLOBE approach.

Phenology app

Last year I told you about the smartphone app that we will develop. The technical part will be funded by European Space Agency and the developing of the functional design and learning materials will be done by GLOBE Netherlands and funded by the ministry of environment.

This smartphone app will give 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 this way they contribute to science and learn how nature reacts to climate change.

Unfortunately, the process at ESA is very slow. They have expressed willingness to pay for the app, but the formalisation is taking a lot of time.



GLOBE birthday

We had an event at the Royal Netherlands Meteorological Institute (KNMI) where we celebrated 20 years of GLOBE with 100 teachers from all over the country and some special guests: US ambassador, famous weather presenter, Tony Murphy (beautiful video message).



Tony addressing the audience in a video message

Science Fair for bilingual schools

We have started a cooperation with the organization that certifies bilingual schools in the Netherlands. We will together organize a Science Fair at Wageningen University where students of secondary education will share their GLOBE results in English.

New website

We developed a new fresh looking website: www.globenederland.nl

New opportunities

We are currently talking with different partners to see if there are opportunities. A water project with local water boards, outreach with the phenology app with Disney, new app Trashhunter for investigation of litter and its relation to the Plastic Soup in the oceans.

Norway

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Cooperating organizations:

Ministry of Education, University of Oslo, University of Environment and Biology and Cicero

Participating schools: app 80.

Funding by: Ministry of Education

Activities in 2014

Most of the year 2014 has been used to come up with ideas for a new international GLOBE project involving European schools. In August 2014 we decided to start a new project called "Aerosols in Europe". This project is an ongoing European project. We want to join this project with 15 Norwegian schools collaboration with 15 other European schools.

The project timeline is as follows:

Autumn 2014

Invitation to schools in Norway

Spring 2015

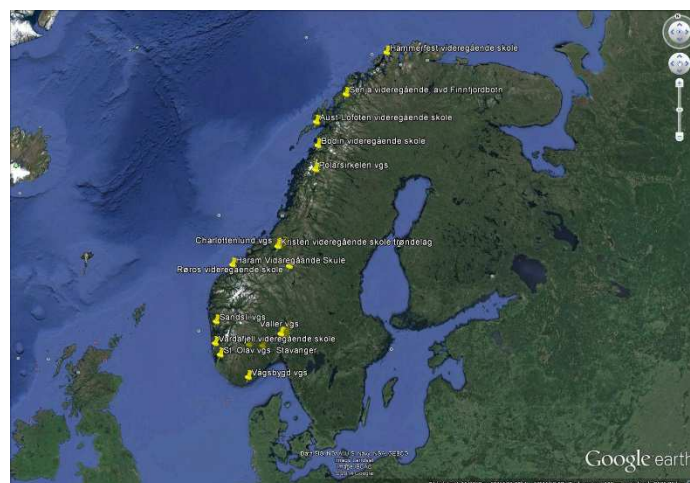
Workshop with Norwegian schools in Oslo March 5.

15 Norwegian had their first workshop in the project "Aerosols in Europe"



March-April: Measurements and project at the Norwegian schools

March 2015: Invitation to other European countries



Autumn 2015

International workshop September 16.–19. 2015, Nove Mesto in The Czech Republic.

Aerosols in Europe organized its first international workshop in Nove Mesto in The Czech republic September 16.–19. Our main goal having the workshop was to learn all about how and why to do aerosol measurements. Our two scientists Marianne Lund and Bjørn Samset gave excellent lectures about aerosols and climate change.

Our second goal at the workshop was to let the schools get to know each other and make plans for the future collaboration.

We would like to say a big thank you to GLOBE Regional Office (Bara, Dana and Ilona) for their great help in organizing the workshop.

All in all we were 53 participants from 25 schools from 6 countries.



See our [homepage](#) for more information

Karl Torstein Hetland

CC GLOBE Norway

Russia

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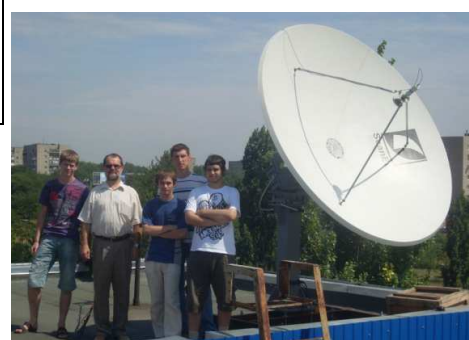
Skype: natalia.petkova21

Cooperating organizations: Russia Ministry of Education and Science

Participating schools: 108

Funding by: GLOBE schools

GLOBE protocols used in country: Atmosphere, Hydrology, Soil.



Description of the program in your country and recent activities in 2015:

New direction of GLOBE Program development – more wide using the remote sensing satellite monitoring data. Now 3D models of every GLOBE school can be constructed and shown on the Google Earth pages.

We are trying to use the Russian Federal University network to implement the GLOBE program in all Federal Districts of the Russian Federation. In Rostov-on-Don, we have a group of experts that consists of about ten teachers, who we work with to develop and organize the GLOBE program. Several times per year, the teachers work together on specific subjects concerned with the GLOBE scientific activities and results.



The **GLOBE** Program

Rostov-on-Don, Russia

Ребята МБОУ СОШ № 61 после уроков в школе занимаются экспериментальной работой в рамках международной программы «GLOBE»



Switzerland

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Website: www.globe-swiss.ch



Cooperating organizations: Members of [GLOBE Switzerland association](http://www.globe-swiss.ch) grouping Teacher Training Colleges and Scientific Institutions like University departments, Swiss Parks Network and a school book edition.

Registered schools: 171

General Funding by: Federal Office of Environment.

GLOBE protocols: atmosphere, hydrology, phenology, SAB; Elementary GLOBE, GLOBE at Night, SMAP.

Funding of Trainings: Workshop fees and general funding

Project funding:

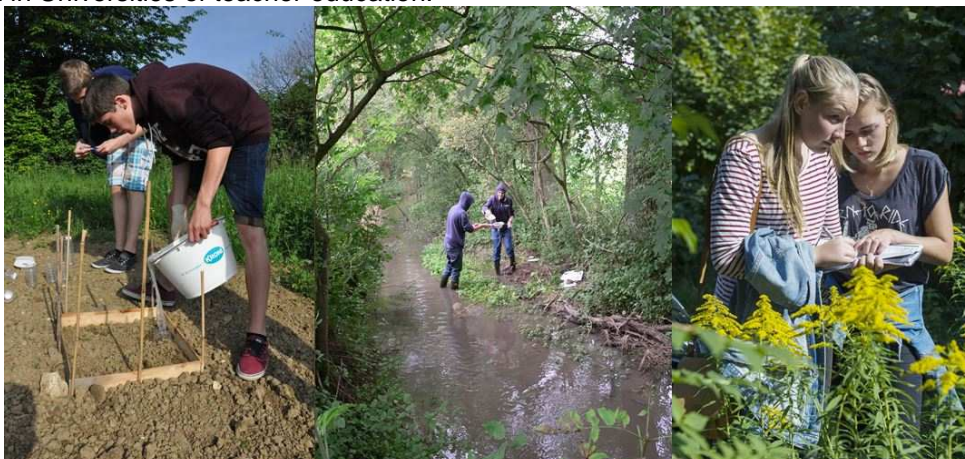
- LERNfeld: Agriculture in context climate change and biodiversity. Funded by 3 foundations and the Federal Office of Environment, Division Biodiversity (2014-2016). GLOBE protocols (soil) and non-GLOBE protocols.
- PhaenoNet: Phenology platform. With integrated GLOBE protocols and non-GLOBE protocols. Funded by Federal Office of Meteorology and Climatology and Federal Office of Environment (2014-2016)
- Planned: Climate Change and Science Outreach Project with partners from education and climate research. Common development of offers for all school levels.

Non GLOBE Protocols

Complementary national protocols (Biodiversity): Bioindication Makrozoobenthos and Landscape ecology (addition to intl. hydrology protocols) with [national database](http://www.infoflora.ch), Micro/Macrofauna, School pond, Invasive Neophytes (datas are sent to www.infoflora.ch where they are used by science). Selected protocols from project LERNfeld /Agriculture.

Development in Switzerland

We are strongly working on regional GLOBE centers Ticino, Romandie (French part), East and North of Switzerland and are developing regional centers. The regional GLOBE centers are now all integrated in Universities of teacher education.



National projects with links to international offer

GLOBE in context agriculture – [LERNfeld](#)

With the project LERNfeld GLOBE Switzerland intends to reinforce science outreach and education in context agriculture, climate change and biodiversity. Partners from science ([ETH Zürich](#), [Forum Biodiversität scnat](#)) and [teacher training institution PH FHNW](#) have been working since autumn 2013 on that topic. The main targets of the project are the elaboration of learning activities (including where useful GLOBE protocols), the organization of experiments in farm or school areas (for students) and the development of a concrete dialogue an collaboration between students from ETH Zürich (science) and the schools. The project is entitled LERNfeld, what means learning field. GLOBE Switzerland is the main coordinator of this process. At the moment we are starting with pilote phase with several schools, farmers and students from ETH Zürich.

Actual activities <http://lernfeld.globe-swiss.ch/lernaktivitaeten-zu-lernfeld?stage=Stage> . After pilote phase these activities will be revised by integrating the feedbacks from actors.

In LERNfeld a strong link to GLOBE soil protocols is assured.

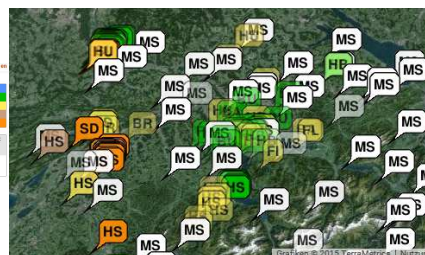
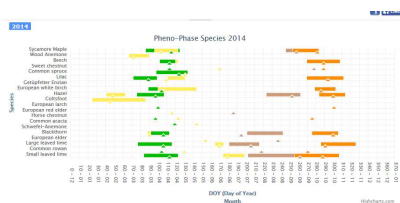
[PhaenoNet](#) – Explore the seasons. A citizen science project initiated by GLOBE Switzerland

PhaenoNet is an offer that we translated from german into French, Italian and English. Technical platform is going to be improved next year (new system). <http://www.phaeno.ethz.ch/globe/?lang=en>

In PhaenoNet GLOBE protocols budburst, green up and greendown are part of the observation instructions. As soon as possible we would like to be able to send datas collected with GLOBE protocols directly to GLOBE database.

In 2014 4000 datas were collected from 300 active users (24 schools with the students behind, approx. 320, then 40 students from preservice (teacher colleges), 160 Citizens, 63 professional observers from Federal Office of Meteorology and Climatology.

- Communication and trainings were adapted to each target group
- Teachers got didactic material and indications how to integrate observation activities into time-table, how to handle data entry with students, and where to get help from scientists if there questions rise by students etc. Most of the participating schools are part of GLOBE CH-network.
- To get citizens we had to make a larger communication in newspapers, radio-programs etc. to reach them. We invested quite a lot of time to win at example botanical gardens and regional science societies etc. as partners which now help us to win citizens. One pilote should start in Botanical Garden Berne that year with a fix observation station (*Corylus avellana*), open for public.
- MeteoSwiss Observers (professional phenological observers) were/are coached by MeteoSwiss
- Analyses of datas and communication of the results happens over a common newsletter (3-4 per year). For this newsletter we often need the help of scientists and experts. It is important to give feedback to users, but it takes a lot of time. We are working on a better analyse of datas at the moment, and hope to find more scientists helping us with support.



Ukraine

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Cooperating organizations: Ministry of Education and Science of Ukraine, Ministry of Ecology and Natural Resources of Ukraine, Ukrainian Hydrometeorological Center, State Space Agency of Ukraine

Participating schools: about 30 active GLOBE schools

Funding by: Ministry of Education and Science of Ukraine

GLOBE protocols:

Atmosphere (Air Temperature, Clouds, Precipitation)

Biosphere (Green-Up / Green-Down, Land Cover Classification, Biometry)

Less actively used: Hydrology and Soil Protocols.

Description of the program implementation in the country and recent activities (include a list of events you organized to celebrate 20th anniversary of GLOBE):

Ukrainian GLOBE Calendar 2015

Ukrainian GLOBE Calendar is a traditional contest that has been held since 2013. Last year 206 students from 83 educational institutions participated in the competition. Overall students have sent more than 1600 entries. The best pictures were highlighted in Ukrainian GLOBE Calendar 2015 and European "GLOBE at My School" Calendar.

Phenology Campaign "Cherry Ukraine"

In 2015 GLOBE Ukraine has held a Student Phenology Campaign called "Cherry Ukraine". The campaign lasted from February till May, 2015. The aim of the campaign was to engage students from Ukraine in investigation of the vegetation cycles of wild cherry (*Prunus cerasus*) and Nanking cherry (*Prunus tomentosa*). During three months the participants were observing budbursts of the cherry species, measuring solar noon temperature and reporting their data to the GLOBE database. Overall 686 students and 89 teachers from 70 schools and educational institutions from all over Ukraine participated in the campaign.

Teachers who had registered for the campaign had the opportunity to attend an online workshop where they had undergone training in GLOBE protocols on Atmosphere and Biosphere (Green-Up/Green-Down). After completing three different home tasks on featured topics 75 teachers received GLOBE Teacher Certificates.

Based on schools' reports an interactive map with students' data about the beginning of budburst in different parts of Ukraine was created. The map contains information about the location of the sites, names of the species and dates of their budburst, students who performed observations and the links to the schools' webpages on the GLOBE website for detailed information. So, the students had the

opportunity to investigate the vegetation cycles of wild cherry and Nanking cherry and research questions about their patterns.

As a result 38 schools received GLOBE Honor Rolls and the number of data entries have increased from 17 600 to more than 22 000 during four months.

4th Annual GLOBE Seminar-cum-Workshop for teachers

The event was taking place from 3 till 5 June, 2015 at Zakarpatskyi Regional Ecology and Nature Center (Uzhhorod, Ukraine). The meeting was attended by 16 representatives from 11 regions as well as local teachers. All attendees were trained in "Atmosphere", "Hydrology" and "Soil" protocols. Additionally, there was a training session on GLOBE web-site operation. Scientists from Zakarpattia Hydrometeorological Center, Uzhhorod National University and Carpathian Biosphere Reserve were scientific consultants at field practices. The participants also celebrated GLOBE 20th Anniversary. Members of children ecology videostudio of Zakarpatskyi Regional Ecology and Nature Center made a short video about the GLOBE Program which was aired at local TV-channel "Tysa-1".

Regional workshops

On the 4th of November, 2015 a regional GLOBE workshop for teachers was held in Rivne. More than 13 teachers attended a one-day workshop at Rivne Station of Young Naturalists. In Ukraine training system is based upon network of regional Ecology and Nature Centers. Teachers who received GLOBE training are invited to share their experience at regional meetings on the basis of Ecology and Nature Centers.

International cooperation

Three Ukrainian GLOBE Schools participated in two international projects "Studying Seasons together" (with Lithuania) and "Atmospheric observations week" (with Finland). In "Studying Seasons together" Project students from Ukraine and Lithuania compared observations of the beginning and the end of plant growing season for species which are native both to Lithuania and Ukraine. They also exchanged photos of the observed species. "Atmospheric observations week" was a collaboration of two groups of students from Finland and Ukraine who during one week performed different atmospheric observations using GLOBE Protocols and exchanged their results making conclusions about differences / similarities of weather in Ukraine and Finland at Skype meeting.