



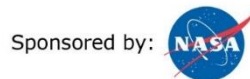
GLOBE Program

Bara Semerakova

GLOBE Program

Europe and Eurasia Coordination Office

TEREZA, Educational Center, Czech Republic



Implemented by:  UCAR

A worldwide 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 GLOBE PROGRAM

Global Learning and Observations to Benefit the Environment

www.globe.gov



Implemented by:  UCAR

1995

GLOBE Program launched

2022

127 countries
38 000 schools

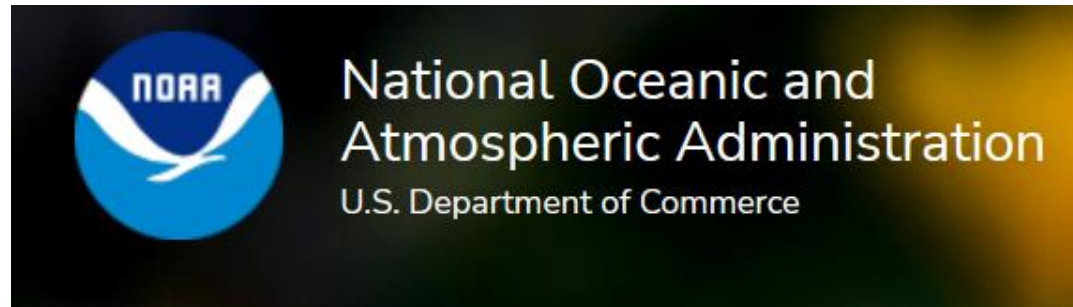
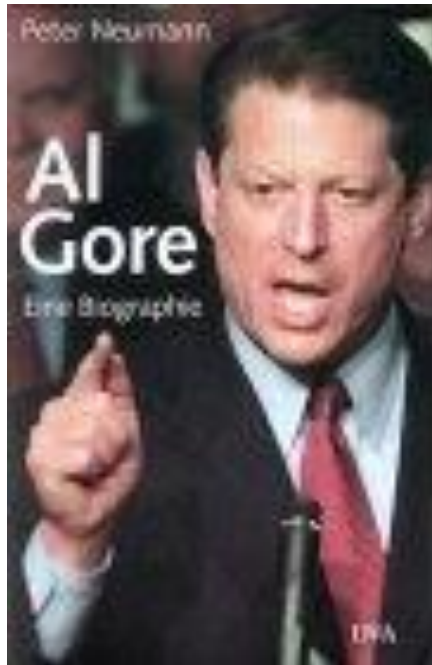


- Africa
- Asia and Pacific
- Europe and Eurasia
- Latin America and Caribbean
- Near East and North Africa
- North America

6 Region Coordination Offices



Launched in USA by
NASA, NOAA, NSF in 1995





GLOBE Implementation Office (GIO)

- based in Boulder, Colorado, USA
- sponsored through a NASA cooperative agreement award to the University Corporation for Atmospheric Research (UCAR).

The GLOBE Program

Global Learning and Observations to Benefit the Environment

Sponsored by:



Supported by:



Working Groups:

- Education
- Evaluation
- Technology
- Science
- Diversity, Equity and Inclusion

Europe and Eurasia



45 countries

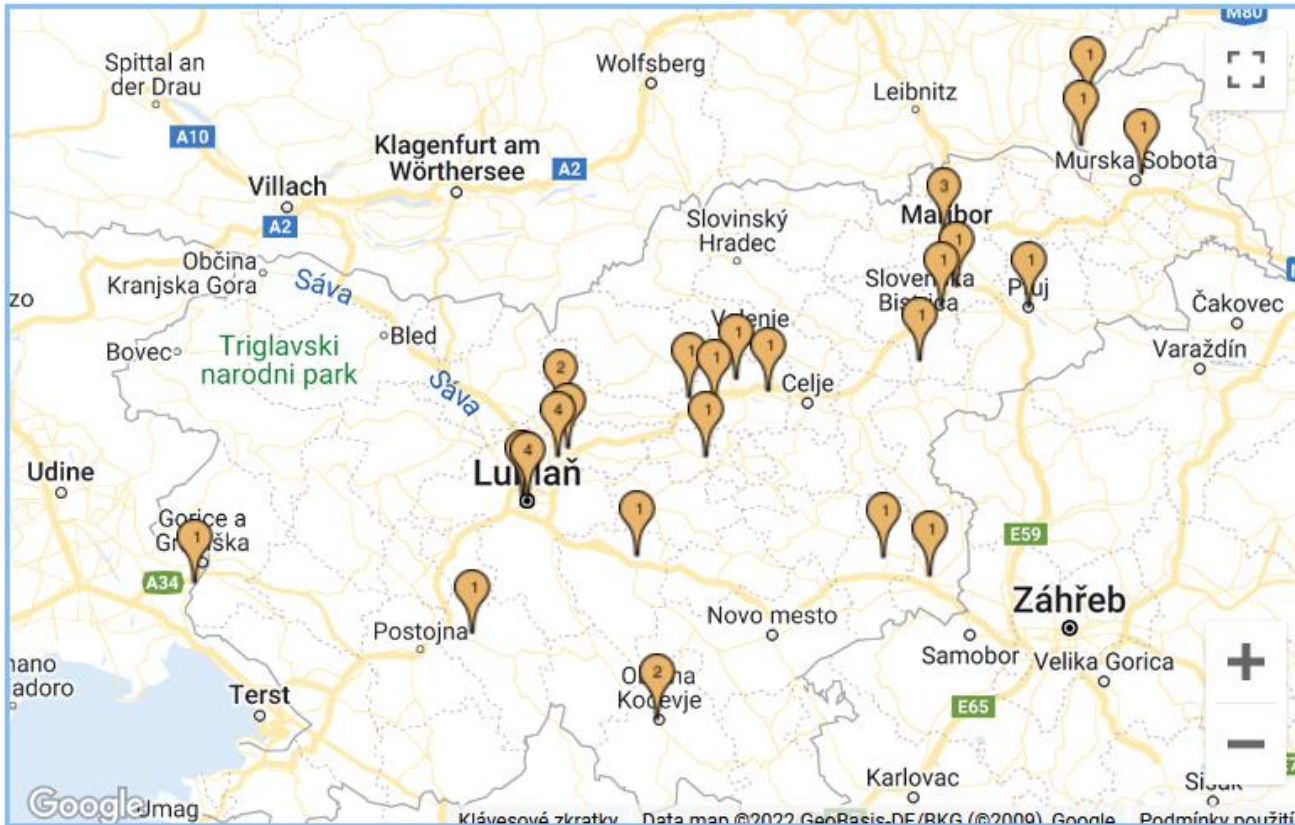


Slovenia

Year Joined: 2020

Contact Us

School Locations



- 36 Schools
- Biotehniška šola Maribor
 - Center šolskih in občinskih dejavnosti
 - EKONOMSKA ŠOLA MURSKA SOBOTA
 - Gimnazija in srednja šola Kočevje
 - Gimnazija in srednja šola Rudolfa Maistra Kamnik
 - Gimnazija Jožeta Plečnika Ljubljana
- * Not on map, no lat/long

What is your motivation to be part of the GLOBE Program network?

How GLOBE is done at schools



- ✓ Students monitor the environment following GLOBE protocols (= standardized methods of observations and measurements)
- ✓ Observations can be selected based on the school conditions (if there is vegetation, river or lake nearby, what is the students age etc.)
- ✓ You can always start with observations that are easy to do and that do not require any special equipment



Scientific Research Process



Observe
Nature

Pose
Questions

Pose New
Questions

Develop
Hypothesis

Present
Findings

Plan
Investigation

Document
Conclusions

Analyze
Data

Assemble
Data



Students do science

observe
a natural
phenomenon

pose
questions

develop
their
hypothesis

make own
investigations
and generate
results

results are visualised,
analysed, discussed,
compered

hypothesis is
confirmed or
rejected

**Communicate their
study and take
action to improve
the environment**



Student Skills

- ✓ Planning a research
- ✓ research question and hypothesis
- ✓ data collection and analysis
- ✓ fieldwork
- ✓ sampling methods
- ✓ increase awareness of the human impact on environment
- ✓ action skills
- ✓ presenting and communication
- ✓ teamwork
- ✓ ICT skills
- ✓ English language



What students explore



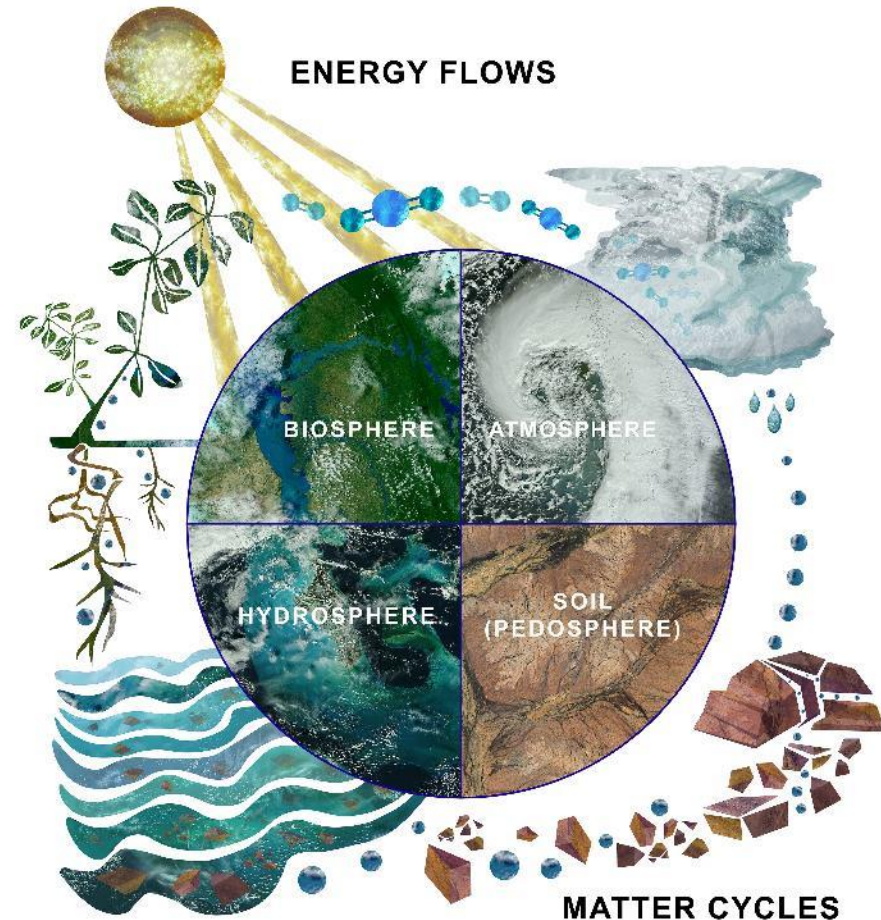
- ✓ Atmosphere
- ✓ Hydrosphere
- ✓ Biosphere
- ✓ Pedosphere

Local scale

- Environment around the school
- Attention to the place where they live
- Active citizenship

Global connections

- Planet is a complex system
- Most actual global environment issues (climate change, droughts, water pollution)



Atmosphere

- A) Weather and atmospheric phenomena
 - B) Air Quality
-
- ✓ Clouds
 - ✓ Precipitation – rain, snow
 - ✓ Relative humidity
 - ✓ Barometric pressure
 - ✓ Air temperature
 - ✓ Surface temperature
 - ✓ Aerosols



Science in Arts



The students practiced types of clouds by creative work

(source Mirit Eynan, Romema Nigunim school, Haifa, Israel)



Hydrosphere

- A) Water Bodies and surroundings
- B) Water Quality
 - ✓ Water Temperature and pH
 - ✓ Transparency
 - ✓ Conductivity
 - ✓ Bioindicators - microinvertebrates
 - ✓ Dissolved Oxygen
 - ✓ Nitrates
 - ✓ Alkalinity

Biosphere

- A. Trees changing over the seasons - phenology
 - B. Biometry
 - C. Land Cover
-
- ✓ Buddburst and Green Up
 - ✓ Leaf Color Change and Green Down
-
- ✓ Tree height and circumference
 - ✓ Canopy cover
 - ✓ Ground cover
 - ✓ Biomass and carbon storage
-
- ✓ Land Cover – GLOBE Observer App



Pedosphere

Learning about the soil diversity and soil characteristics

- ✓ Soil temperature
- ✓ Structure and texture
- ✓ Consistency
- ✓ Color
- ✓ Humidity
- ✓ Organic matter (roots)
- ✓ Infiltration



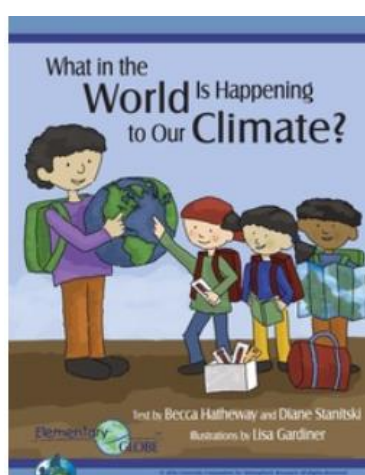
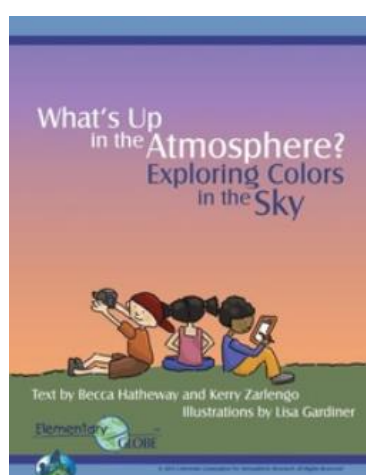
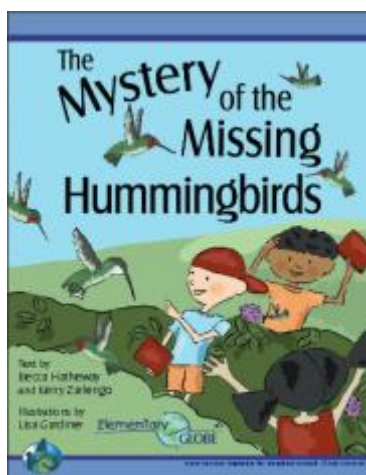
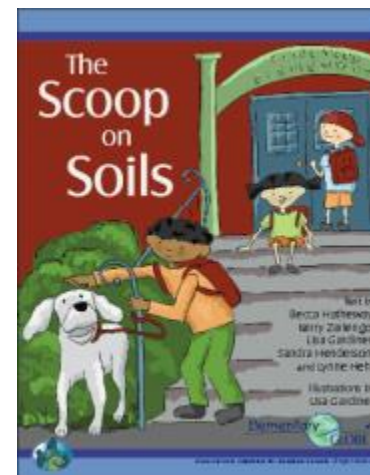
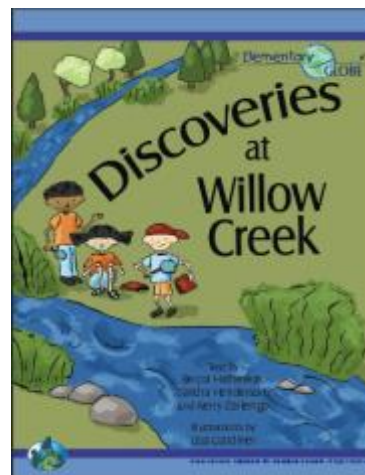
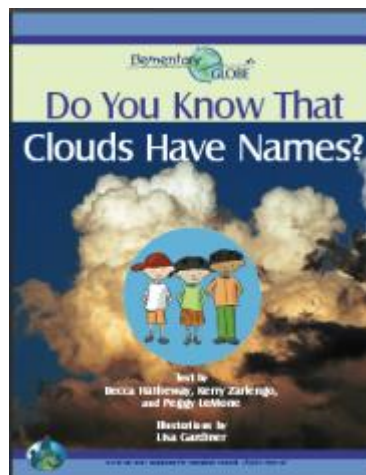
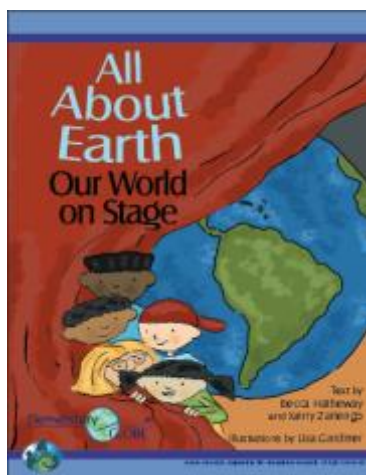
Which area of the GLOBE Program you want to start with? Why?

- ✓ Atmosphere
- ✓ Hydrosphere
- ✓ Biosphere
- ✓ Pedosphere



GLOBE is for all school levels

Elementary GLOBE for the youngest





GLOBE offers

- ✓ Tips for hands on learning both outdoors and indoors
- ✓ Tools/Equipment and DIY manuals
- ✓ Teacher trainings
- ✓ Webinars for teachers and students
- ✓ Collaboration with other schools
- ✓ Collaboration with scientists
- ✓ Teacher's Professional Development
- ✓ Technology: GLOBE Observer App, Visualization tool
- ✓ Access to more than 200 million scientific data
- ✓ Teachers Guide to the 4 GLOBE areas



Choose your protocol:

Clouds

Mosquito
Habitat Mapper

Land Cover

Trees



Visit the GLOBE Website

Visit the Observer Website

Sponsored by:



Supported by:

GLOBE Observer



- ✓ for schools and interested citizen scientists
- ✓ a way to collect data to track changes in the environment in support of Earth system science research, and interpret NASA and other satellite data
- ✓ <https://observer.globe.gov/>

International GLOBE



- ✓ Schools upload data to the **worldwide database** guaranteed by NASA
- ✓ **Access to the datasets and graphs** from schools all around the world
- ✓ **Student research projects** presented at international level
- ✓ **Cultural Exchange and making friendships**
- ✓ **GLOBE campaigns and challenges**



GLOBE Campaigns and Challenges

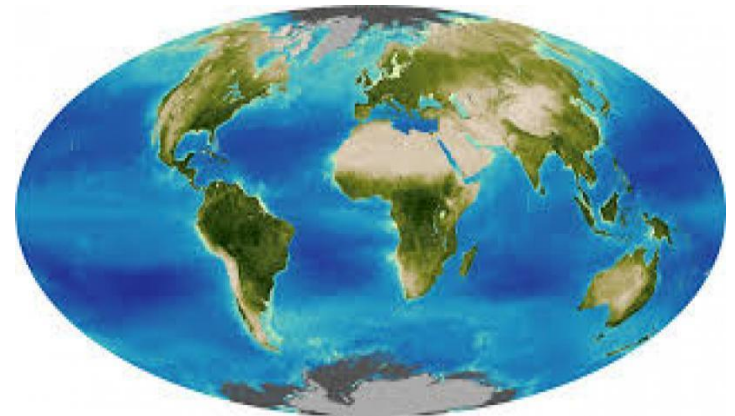
- Organized in a specific time of the year
- Focused on 1 topic (Clouds, Trees...)
- Campaign community: teachers, students and scientists from many countries
- Special learning opportunities (webinars, contests)
- Some of them linked to NASA satellite missions

Trees around the GLOBE

Urban Heat Islands

Data Challenge = intensive observation period when students are encouraged to collect specific type of data (height of trees, cloud cover, etc.).

Mostly done through the mobile app. The most active students (school) are highlighted and receive a badge.



European Phenology Campaign

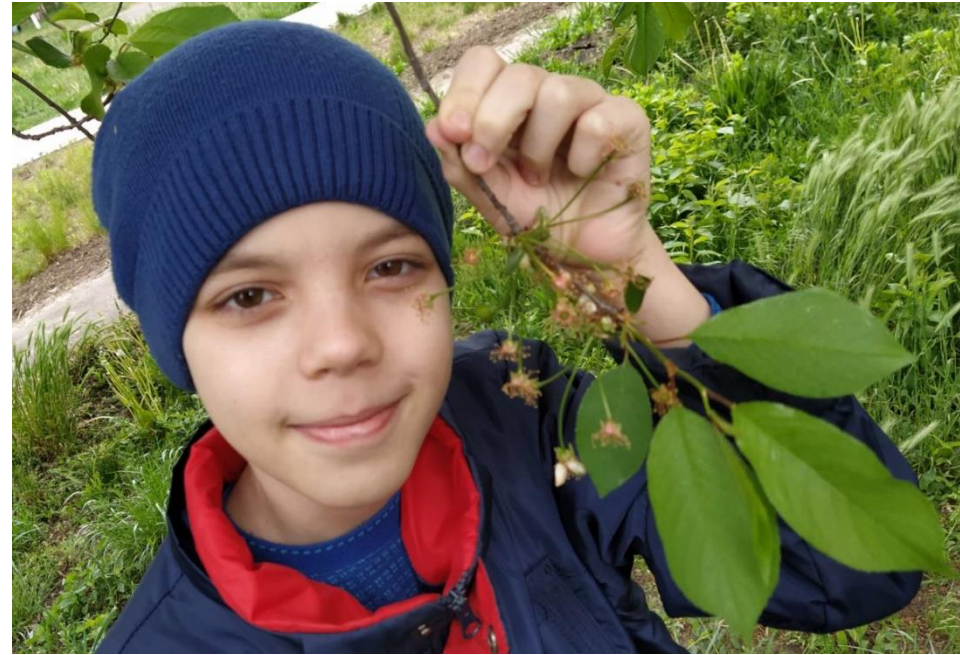
Organized by Europe and Eurasia RCO

180 school teams from 22 countries

Campaign goals

- Learn about nature in nature
- Share results and cooperation among schools
- Collect phenology data for student projects and for scientists

www.globe.gov/web/european-phenology-campaign



Sour cherry



Small-leaved lime



Hazel



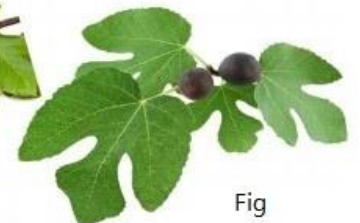
Penduculate oak



Silver birch



Beech



Fig

Spring (Green Up)

Students observe budburst and greening up in spring...



Autumn (Green Down)

....and leaf color change and leaf fall off in autumn

Get inspired

https://padlet.com/ee_region_globe/d7ruqbr3kjs7rd2o

padlet

Europe and Eurasia Globe • 25 dnf

European Phenology Campaign - Inspiration from GLOBE Schools


Get inspired by student activities and research projects

KLONOVAT SDÍLET

Videos

+

We learned to love nature around us



YouTube


Meet students from 5th grade of Elementary school Banija, Karlovac, Croatia and find out, what all they have learned during spring observations.

2

Padlets

+

2022 Spring Collaboration




Padlet • zrinka klarin

European Phenology Campaign 2022

Padlet board used for collaboration of Elementary school Šime Budinić Zadar, Croatia and ČŠOD, Slovenia filled with interesting information about the schools and their activities.

1


Birch collaboration group



Wakelets

+

Oak Collaboration group



wakelet.com

The teams from Ukraine, the Czech Republic and Croatia were connected by the observation of the same tree species - oak. They shared their results via an online noticeboard.


2

A year with trees in Osijek

Book Creators

+

Virtual book of spring observations



Program GLOBE

Primary school Luhačovice

read.bookcreator.com


In their beautiful online book, a team from the Primary School Luhačovice captured budburst and unfolding of leaves as well as cooperation with partners.

1

Presentations

+

Spring 2021 at Česká Třebová, Czech Republic



globe

European Phenology Campaign

spring 2021

Česká Třebová, Czech Republic

In which lessons you can do phenology? Can students enter data? This and a lot more in the presentation by Česká Třebová High School.


1

Spring in Kovel, Ukraine

Articles

+

Cooperation within the European Phenology Campaign



THE GLOBE PROGRAM

Cooperation within the European Phenology Campaign

Elementary School Vladin Virovitica, Croatia organized a meeting with two other schools. They exchanged experiences, studied a birch tree, and used GrowApp.

1



Water Bodies Challenge

- Organized by Europe and Eurasia,
- started on World Water Day – March 22
- Get inspired: https://padlet.com/ee_region_globe/izxa2uiwjxtwgkeo

GLOBE Water Bodies Challenge

Dear teachers and students, this is an online board for you to post photos, videos, short tweets and links to what you do in 2022 GLOBE Water Bodies Challenge. There are several categories (columns) below to which you can post. You Please keep the posts short and write your school name and country to the post. Click on + to add a new post. If you have any questions, you can always contact us on ee.region.globe@gmail.com

A story of my favourite lake, river, sea or spring.

+

Anonym 6 měsíčů

photo of the day of sampling
ISIS "G. D'Annunzio"

Přidat komentář

We observed the Water Body surroundings with GLOBE protocols and GLOBE Observer App

+

Irena Chlebounova 6 měsíčů

Archbishop Grammar School in Prague, Czech Republic

How we organized an awareness campaign or Clean Up Day

+

Laura Cettolo 6 měsíčů

Brignoli High School,
Science Under18 Festival,
Monfalcone, Italy

Anything else that relates to GLOBE Water Bodies Challenge

+

Anonym 6 měsíčů

SIC Brežice, Slovenia

Video • 01:27

Ples

Our students learned dance about river and mill

Přidat komentář

International Collaboration





GLOBE INTERNATIONAL VIRTUAL SCIENCE SYMPOSIUM

- a way for students from all GLOBE countries to showcase their research projects
- judges and feedback
- Deadline for submitting projects is 10 March 2023
- <https://www.globe.gov/news-events/globe-events/virtual-conferences>

Europe and Eurasia Student Virtual Conference



showcase your work and meet other
students, teachers and scientists

28 -29 NOVEMBER AT 2-4:30 PM CET, ZOOM

Find more at



GLOBE Student Vloggers



- **12 GLOBE students** (two from each GLOBE region)
- they have been creating weekly vlogs for everyone to enjoy
- https://youtube.com/playlist?list=PLfpnkASII_Nb5QSSHnVOJlugNnp2weyNF



Welcome to the GLOBE family!





Thank you!

Bara Semerakova

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