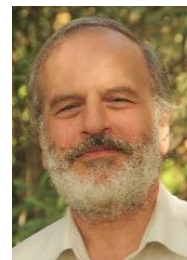


# Malta

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## **Organization and Number of Staff:**

None of the two persons running GLOBE Malta are in full-time employment with GLOBE. The CC is a full-time professor at university and GLOBE related work is done above his workload. The Deputy CC is a class teacher who has been officially granted 3 weekdays to specifically promote GLOBE in schools and support teachers.

## **Funding by:**

GLOBE Malta does not receive any specific funds. GLOBE is supported by the Directorate for Learning and Assessment Programmes (Ministry for Education and Employment) and the Centre for Environmental Education & Research (University of Malta). The US Embassy, HSBC Bank (Malta) and Europe Direct Gozo also support GLOBE Malta by purchasing scientific equipment and sponsoring events.

## **Cooperating Organizations/Individuals:**

A researcher from the Institute of Earth Systems (University of Malta) is directly supporting 10 schools in a project about weather observations. The NGO Nature Trust – FEE Malta promotes GLOBE investigations during activities related to the Eco-Schools and LEAF programs

## **GLOBE Schools (what types, how many):**

Total number of schools: 55. The schools are from the State, Church and Independent Sectors and are distributed thus: Primary schools (5 -11yrs): 30; Middle Schools (11-13yrs): 3; Secondary Schools (13-16yrs): 15; Post-Secondary Schools (16 – 18yrs): 3; University: 1; and Field Study Centres: 3.

## **GLOBE Areas you and schools focus on:**

**Atmosphere** (Air Temperatures, Barometric Pressures, Cloud Observations, Precipitations, Relative Humidity, Surface Temperatures);

**Earth as a System** (Green Up/Green Down);

**Hydrology** (Mosquito Habitat Mapper, Water Temperature, Water pH);

**Land Cover** (Biometry Trees, Vegetation Covers, MUC, Photos);

**Soil** (Soil Temperatures, SMAP Soil Moisture)

## **Number of Schools Reporting Data over Past Year:**

25

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

### **1. Education**

- Introduction of undergraduate students following the BSc Science for Education & Communication to GLOBE
- In-school training sessions for students and teachers of new GLOBE schools
- Various lessons to show how GLOBE can be integrated into the normal classroom schedules.
- A series of fieldwork sessions and accompanying tutorials about how to use the trees tool on the GLOBE Observer App to gather data about trees with students from 8 schools.
- Developed, in **collaboration with the Girl Guides movement**, a badge curriculum with GLOBE program for Brownies and Guides. Using the GLOBE protocols, the brownies and guides sections will have a GLOBE badge based on different modules. These modules fit mostly into the non-formal program of the Girl Guides curriculum.
- An online professional development session organised by a GLOBE School to share good practices.
- A GLOBE teacher and a GLOBE student gave a presentation at the webinar 'All About the European Phenology 2022 Spring Tree Campaign with Student Research Presentations from Across the GLOBE Europe and Eurasia Region'. The webinar was organised as a part of Trees Around the GLOBE Student Research Campaign.
- GLOBE Students and Teachers shared their investigations with the GLOBE community during then 2021 Virtual Meeting of the Europe and Eurasia GLOBE Region.
- Organisation of **monthly meetings with Peter Falcon (Jet Propulsion Laboratory, NASA)** to explore the best ways to promote international collaboration.
- Participation in the **Project Maleth - Save the planet** during which students sent messages about the need to take care of our planet on board a bio-cube that reached the international space station. For more details visit:  
<https://www.facebook.com/Spaceomix/videos/255105919837601>

### **2. Science**

**GLOBE Phenology Autumn Campaign 2021:** The campaign was active between September and December 2001. Students from 4 schools continued observing and gathering data from the same tree they had observed during the Spring Campaign. They successfully completed the Autumn Campaign and received a certificate.

**GLOBE Tree Reporters Challenge:** As part of the European Autumn Phenology Campaign, from October 22 to November 19, 2021 students from 8 GLOBE countries took the role of GLOBE Program Tree Reporters and 'interviewed' trees in their neighborhood. A total of 13 entries from GLOBE Malta were submitted to the Europe and Eurasia GLOBE Regional Office. The best videos and posters were presented to the international community during the webinar Our Autumn with Trees. More information about the Challenge is available here:  
<https://www.GLOBE.gov/web/malta/home/news/-/newsdetail/14028/do-you-know-that-trees-can-tell-stories-tree-reporters-challenge>.

**European Spring Phenology Campaign 2022:** The campaign was active between February and June 2022. Students had to choose and observe a tree from buds to leaves and upload their measurements into the GLOBE database. Following the success of the previous year there was an increase in schools participating in this campaign. Eleven schools from Malta and Gozo observed trees as they woke up after their winter sleep. Besides observing and measuring leaf growth of the Mulberry Tree growing in their school garden, GLOBE students from a school extended the activity by squeezing mulberries and making refreshing popsicles.

**Volunteer Weather Observer Programme:** this is a continuation of the UM Citizen-Science Project in local schools. Dr Charles Galdies from the Institute of Earth Systems, University of Malta is the mentor and coordinator of this pilot project. A total of ten educators from primary and secondary State, Independent and Church schools were selected and are monitoring and recording rainfall data.

**Urban Heat Island Effect Campaign:** Running in October, December and March, the campaign was focused on looking at the impact of urbanisation on the Earth's surface temperature and how the surface temperature changes the dynamics of the Earth's atmosphere. Students from eleven schools collected surface temperature readings using an Infrared Thermometer sponsored by HSBC Malta. During March, Post-Secondary Students started gathering data on the urban heat island effect. They also teamed up and involved a group of Polish students, who visited their school on an Erasmus+ project, in data collection. As a follow-up, the Polish students decided to engage in GLOBE in their home country.

**Air Temperature Data Challenge:** On 25th March 2022, GLOBE Malta students joined other students around the world and collected Air Temperature (AT) data. The challenge consisted of a one-day AT collection followed by a series of activities focused on visualizing and connecting worldwide air temperature data.

**International collaboration with Ireland:** GLOBE Malta, in collaboration with GLOBE Ireland, supported the Air Quality campaign for the first time. The GLOBE Air Quality Campaign is a citizen science project to assess traffic-related air pollution at schools. The campaign provided a collaborative platform for schools to share their research and insights. This educational project was designed to: (i) raise awareness about air pollution through a practical investigation; (ii) collect accurate data that was used in students' research projects; (iii) share knowledge with the participating school community; and (iv) showcase the potential of citizen science to gather unique datasets and insights into our environment.

In October 2021, students from 2 Maltese GLOBE Schools, in collaboration with 2 school from Ireland measured nitrogen dioxide (NO<sub>2</sub>) - a principal pollutant from car exhaust emissions - at three locations around their schools. Schools were provided with the necessary equipment and guidance to carry out nitrogen dioxide measurements.

**International collaboration with Israel – 3rd edition:** 'For the Sea' is a GLOBE project focusing on marine litter which brought together 4 GLOBE schools from Malta and Israel. The collaboration between Gozo (Malta) and Israel brought together students, teachers and representatives from U.S. Embassy and the GLOBE Program. It provided a unique learning experience where students and teachers, besides contributing to scientific research, were exposed to different cultures, languages, and traditions.

A Maltese primary school and another one from Israel worked on a scientific collaboration about marine life. The Maltese school carried out a beach fieldwork during which they observed and measured weather parameters and sea water conditions. The session ended with a clean-up and the students had the opportunity to analyse litter using a digital microscope.

GLOBE students from a Maltese secondary school collaborated with a school in Israel carried out an outdoor class activity at the beach during which they used the GLOBE Atmosphere and Hydrosphere protocols. The Eco-Schools Committee and Form 3 biology students had an outdoor STEAM session at the bay. They also carried out a litter survey, did a clean-up and created beach artwork. The Deputy CC assisted the students and gave a detailed insight on the geography of the bay and how the data collected is used by NASA scientists.

GLOBE students also had a **training session with the Deputy CC on how to use the Clouds tools on the GLOBE Observer App**. The students downloaded the App on their devices and joined the

GLOBE team created by their teacher through the GLOBE website. They also had a follow up activity of their fieldwork at the bay during which they analysed microplastics using a handheld digital microscope provided by Digital Education, Malta.

**International GLOBE collaboration through eTwinning:** GLOBE students from a GLOBE School participated in an eTwinning project focusing on the importance of trees. Using the tree tool in the GLOBE Observer app they collected tree height measurements and invited their collaborating partners from Turkey, Greece, and Italy to do the same. The Deputy CC provided the necessary training to the eTwinning teachers. During this outdoor STEM activity students gathered a total of 70 biometry tree measurements collected from across Malta, Greece and Turkey. (See: <https://youtu.be/m5ZbgrkQDSU>). The Deputy CC created a GLOBE team on the GLOBE website and all observations were automatically marked on a map. This collaboration and activity were commended by The GLOBE Program and a tweet was uploaded on Twitter which then retweeted by the US Embassy.

**GLOBE Tree Challenge in collaboration with Esplora Interactive Science Centre and the US Embassy:** The challenge was open to students and teachers of all levels, informal educators and the general public. It aimed at encouraging participants to collect data and learn about trees.

**GLOBE Cooling Down Students' Investigation:** 19 Maltese schools took part in the GLOBE Cooling Down Students' Investigation which explored the Urban Heat Island Effect (UHIE) in Malta. The schools suggested immediate action to counter the lack of trees and high urbanisation that give rise to this phenomenon.

In November 2021, GLOBE Malta and the Education for Sustainable Development (ESD) Program at Xrobb I-Għaġin launched an ambitious scientific investigation which gave the students the opportunity to enjoy meaningful time outdoors and be involved in data collection. In this STEM project, students had to use an infrared thermometer to collect nine temperature readings from homogeneous surfaces for 5 days monthly throughout the scholastic year.

Besides generating new scientific data about the Urban Heat Islands Effect, this citizen science investigation provided students with the opportunity to think critically about their surroundings and develop a sense of belonging to an international science community that contributes valuable environmental scientific data. The activity also introduced schools to the GLOBE Program. Indeed, some of the teachers involved registered their schools with the GLOBE Program, successfully completed the online training and are now new, promising GLOBE teachers.

**GLOBE International Virtual Science Symposium 2022:** This year, GLOBE Malta had six research reports submitted for the IVSS, two of which were done through national and international collaboration:

- (i) Are there any [differences between surface temperature readings](#) across the Maltese Islands?
- (ii) An investigative study on [air quality at St Michael School](#)
- (iii) [A Journey to the Underworld](#) ();
- (iv) [Measuring the Air Quality](#) (the amount of Nitrogen Dioxide) in three different areas around our school
- (v) [Save our Seas](#) by reducing your use of Plastics
- (vi) An [international comparative study of nitrogen dioxide](#) levels recorded at schools in Malta and Ireland

**GLOBE Water Bodies Challenge by Europe and Eurasia Implementation Office:** 9 Maltese schools participated in the 2nd edition of the GLOBE Water Bodies Challenge. Through this challenge 2 schools, were introduced to the GLOBE Program and are now new GLOBE Malta schools. The students had fieldtrips to different water bodies in the Maltese Islands and shared their findings with the GLOBE Europe and Eurasia community on the Water Bodies Challenge Padlet GLOBE

Water Bodies Challenge (padlet.com). All schools have been awarded a certificate and a virtual badge. The best entries, 3 from Malta, were presented on 8th June during the Water Bodies Show.

### **3. Community**

GLOBE student Benjamin Copperstone from St Michael School was selected as one of the new **GLOBE Student Vloggers** for 2022-2023. See the video here.:

[https://www.youtube.com/watch?v=EPpsHTDoYhw&list=PLfpnkASII\\_Nb5QSSHnVOJlugNnp2weyNF&index=60](https://www.youtube.com/watch?v=EPpsHTDoYhw&list=PLfpnkASII_Nb5QSSHnVOJlugNnp2weyNF&index=60)

Hannah Vella was selected as one of the **GLOBE Student Vlogger Alumni Mentors** for 2022/23. She will create vlogs and also train and mentor the new cohort of vloggers.

### **4. Technology**

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

### **5. Communications**

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

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

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

### **Plans and Ideas for Next Year:**

Continue negotiations with the Ministry of Education to upgrade the current status of the Deputy CC to a full-time post

Continue exploring possibilities for more joint investigations involving schools from other GLOBE countries.

Organize a Science Fair in Gozo during which students present their research and findings following the Air Quality Campaign 2022-2023