

The Netherlands

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Organization and Number of Staff:

GLOBE Nederland, 6 staff

Funding by:

Grant embassy USA, school memberships, (local)government, water boards, Netherlands Space Organization.

Cooperating Organizations/Individuals:

- Research institutes: National Institute for Public Health and the Environment (RIVM), Wageningen University, National Meteorological Organization (KNMI), University of Amsterdam, Utrecht University, Netherlands Institute of Ecology (NIOO), STOWA.
- Environmental organizations: IVN, Vlinderstichting, Longfonds, Netherlands Space Organization, Pientere Tuinen.

- (Local) governments: Ministries of Environment and of Infrastructure and Water Management, 7 provinces, 25+ municipalities, and 7 water boards.

GLOBE Schools (what types, how many):

Approximately 120 secondary schools

GLOBE Areas you and schools focus on:

Air quality, (biological) water quality, microplastics, climate, GrowApp, soil literacy, Urban Heat Island Effect (UHIE), and research skills.

Number of Schools Reporting Data over Past Year:

We currently hardly work with data on globe.gov, but we work mainly with our own systems that we set up for “GLOBE research”: on air quality, water invertebrates, microplastics, GrowApp, and (a)biotic soil characteristics. This year, we revitalized the Urban Heat Island project, and students are now required to submit data on the globe.gov website. This will lead to more schools submitting data. We are also exploring ways to integrate GLOBE protocols into ongoing projects to encourage more data submission from schools.

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

1. Education

- Development of ‘Living Soil’ learning materials on the topic of soil literacy in cooperation with national centers of expertise, teachers and the province of Utrecht. Using ‘Sensoterra’ soil moisture and temperature sensors and protocols developed by citizen science expertise center ‘Pientere Tuinen’, and protocols developed by the Netherlands Institute of Ecology (NIOO), students can research soil characteristics and biodiversity.
- Revitalized the Urban Heat Island project with new learning materials, using the GLOBE protocol for surface temperature. In September and October 2024, we launched a campaign with 5 pilot schools, funded by Utrecht University. We are collaborating with a scientist from Utrecht University on nature-based solutions and are working to connect with UHIE GLOBE campaigns run by Kevin Czajkowski, who is aware of our plans.
- This year, together with several water authorities, Wageningen University and Research, NIOO, the Institute of Nature Protection Education (IVN), the Butterfly Foundation, and the knowledge institute for insects and other invertebrates we launched the "Aquatic Macroinvertebrate of the Year" campaign, featuring the caddisfly larvae. As part of this campaign, we developed new educational materials focused on teaching students about the caddisfly larvae.
- We massively expanded our air quality projects (Sniffer Bike and NO2) reach by joining forces with 30+ local, regional and national government agencies that joined the Dutch Clean Air Accord. Students at over 40 schools can now participate in the air quality projects (using >700 PM sensors and >500 NO2 sensors), and they get to present their findings to local government officials.
- Launched the microplastics project with Hellen Parkhurst secondary school and the Plastic Soup Foundation, funded by the U.S. Embassy. We developed lesson materials for the microplastics protocol from GLOBE Italy and organized two campaigns. We maintain contact with GLOBE Italy and Deakin University Australia to share data and plans.
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- We organize various online events with teachers and students to train teachers, share information, and offer a platform for teachers to share experience about a specific projects (microplastics, UHIE, NO2, PM). Often, a scientist from our extensive network joins these events.
- We participate in various big events attended by STEM teachers, where we share information about our projects, and we regularly conduct workshops to engage teachers and attendees.

2. **Science**

We collaborate with scientists and knowledge centers from the following projects:

- GrowApp: Arnold van Vliet, Wageningen University and Research
- NO2: National Meteorological Institute (KNMI)
- Particulate Matter: National Institute for Public Health and the Environment (RIVM)
- Plastic Soup: University of Amsterdam
- Water invertebrates: Wageningen University (which published a scientific article) and a consortium of partners (environmental organizations, scientists, waterboards)
- Urban Heat Island Effect: Utrecht University
- Living Soil: Netherlands Institute of Ecology (NIOO), RIVM

3. **Community**

- Organized a national Science Symposium at Wageningen University, attended by over 100 students and teachers.
- Hosted GLOBE NL Members Day at the University of Amsterdam.
- Participated in the Regional Meeting in Riga with four team members.
- Held several online meetings with GLOBE school coordinators to support GLOBE implementation at schools.
- We are actively connecting local government and secondary school students through our air quality research projects.
- We are collaborating with Ireland on the NO2 project and plan to organize an EE-event on air quality with different counties.

4. **Technology**

We are constantly upgrading our website.

5. **Communications**

Throughout the year, we appeared in several online and print newspapers, as well as teacher trade magazines, with interviews and project results. An article by the KNMI ranked among the top three most-viewed news articles of the year. We attended various teacher conferences and were invited to numerous government air quality workshops, symposia, and events.

Plans and Ideas for Next Year:

A selection of our plans for the coming year:

- Air quality: We plan to continue and expand cooperation with local and regional governments, develop materials for primary education students, and establish a student exchange program with GLOBE Ireland and (hopefully) other EE members.
- We aim to further develop our soil literacy materials, collaborating with Vereniging NLT (the NLT course development foundation) and founding partners
- Aquatic Macroinvertebrates: Next year, we plan to expand the project to include more water authorities and select a new theme for communication efforts, focusing on the experience and appreciation of water. Additionally, the scientist involved will reassess the calculation of the water quality score to provide a more accurate evaluation.
- UHIE: We will update our lesson materials with ideas from the teachers in the pilot. We also plan to collaborate with a student from Utrecht University researching nature-based solutions.
- We plan to expand the microplastics campaign with more schools participating in the Netherlands and further international cooperation.