GLOBE
Global Learning & Observations to Benefit the Environment
globe.gov and observer.globe.gov
@NASAGO

Citizen Science Data Quality: The GLOBE Program

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Helen Amos, helen.m.amos@nasa.gov
Travis Andersen, andersen@ucar.edu
Global Learning & Observations to Benefit the Environment (GLOBE)
GLOBE by numbers

Since 1995

- 50+ environmental parameters
- 122 countries
- 41,000 schools
- 200,000 citizen scientists
- 271,000 account holders
- 195 million measurements

23rd GLOBE Annual Meeting, Detroit, Michigan, USA, July 2019
Research applications of GLOBE data


39 million observations since 2017 +450,000 of which from Mobile App

GLOBE data are available to everyone: globe.gov/globe-data

GLOBE Program
Who is collecting data?

Teachers & Students

Citizen Scientists
How are data collected and entered?

Automated Stations & Loggers  Manual  Mobile app
Data are collected using standardized protocols

### Hydrosphere
- Alkalinity
- Conductivity
- Dissolved Oxygen
- Macroinvertebrates
- Mosquitoes
- Nitrate
- pH
- Salinity
- Water Temperature
- Water Transparency

### Biosphere
- Biometry
- Tree Height
- Carbon Cycle
- Green Up
- Green Down
- Land Cover
- Lilac Phenology
- Pheno. Gardens

### Pedosphere
- Bulk Density
- Particle Size Dist.
- Particle Density
- pH
- Soil Characterization
- Soil Fertility
- Soil Moisture
- Soil Infiltration
- Soil Temperature
- Frost Tube

### Atmosphere
- Aerosols
- Clouds
- Air Pressure
- Precipitation
- Relative Humidity
- Surf. Temperature
- Air Temperature
- Water Vapor

View GLOBE protocols: [globe.gov/do-globe/globe-spheres](globe.gov/do-globe/globe-spheres)
Participants must complete training before contributing data

In-Person

Online

In the app

globe.gov/get-trained
Technical documentation

User guide released July 2019

To help scientists and researchers understand, access, and use available GLOBE data.

PDF available
globe.gov/globe-data/globe-data-user-guide
When protocols for collecting data are well written, instruments are of good quality, and range checks are put into place then the data collected is that of “research grade data” (Lawless and Rock 1998)

What kinds of data have to be quality controlled?

Discrete data
Example: air temperature

Photos

North

South

Up

East

West

Down

Manual: Dundaga Secondary School, Latvia

globe.gov
QA/QC: recent exploratory work

Blurry photo detection

Repeat photo detection

Email intervention

Credit: K. Arica, H. Amos, E. Podest, M. Colón Robles, T. Rogerson
QA/QC: recent exploratory work

Credit: M. Starke, H. Amos, M. Colón Robles, T. Rogerson
Summary

GLOBE is a worldwide community of students, teachers, scientists, and citizen scientists.

GLOBE’s quality assurance is multi-faceted: standardized protocols, training, range & logic checks on data.

GLOBE data are freely available to everyone at globe.gov/globe-data
Upcoming virtual training on Jan 23

GLOBE
Global Learning & Observations to Benefit the Environment
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GLOBE Data Fundamentals: Training 1

January 23, 2020

Questions? help@globe.gov

Register here: http://bit.ly/GLOBE-Data
Stay connected with GLOBE

Join our listserv for scientists and researchers using GLOBE data
https://lists.nasa.gov/mailman/listinfo/go-sci

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Download the app!
Thank you!

helen.m.amos@nasa.gov