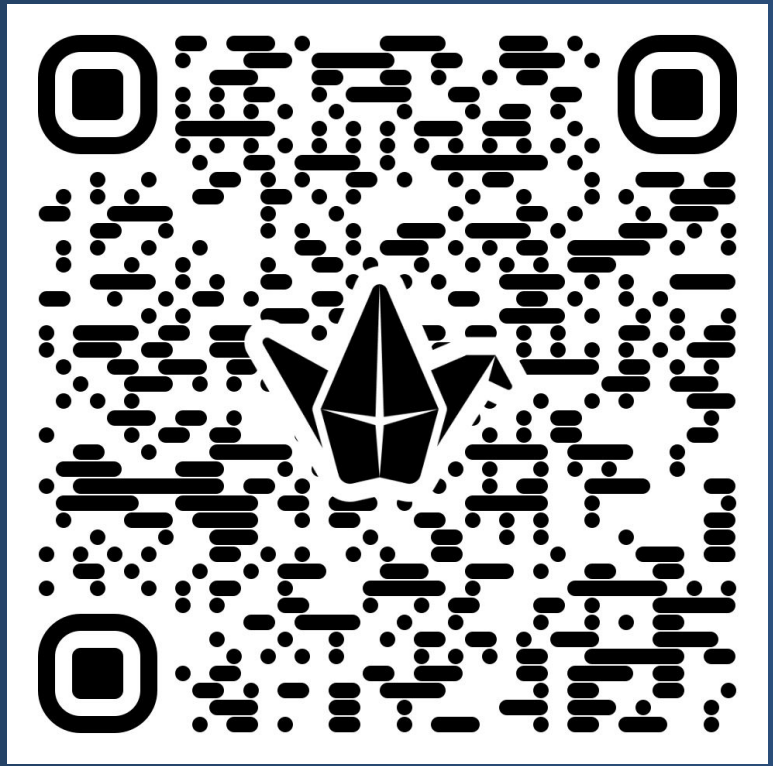
GLOBE Observer

Celebrating the Community and Legacy of GLOBE Observer

GLOBE Learning Session
September 24, 2025



teach.link/GOLegacy

Join the conversation on Padlet!

Respond to prompts throughout the presentation.

Ask general questions in Column 6.

GLOBE Observer

the app of THE GLOBE PROGRAM

Download on the App Store

GET IT ON Google Play

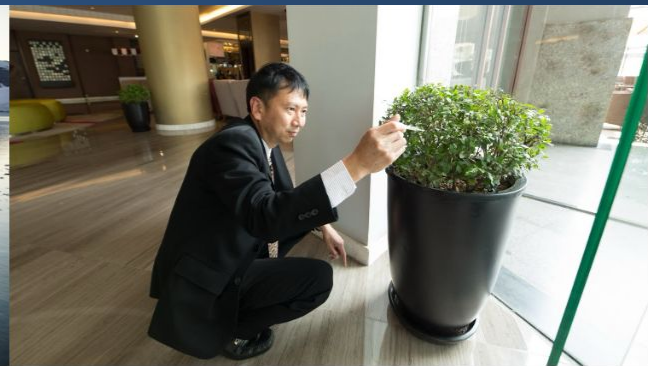
Holli Kohl
Project Coordinator

Credit: Los Angeles Public Library

GLOBE Observer's Legacy Grew Out of Partnership

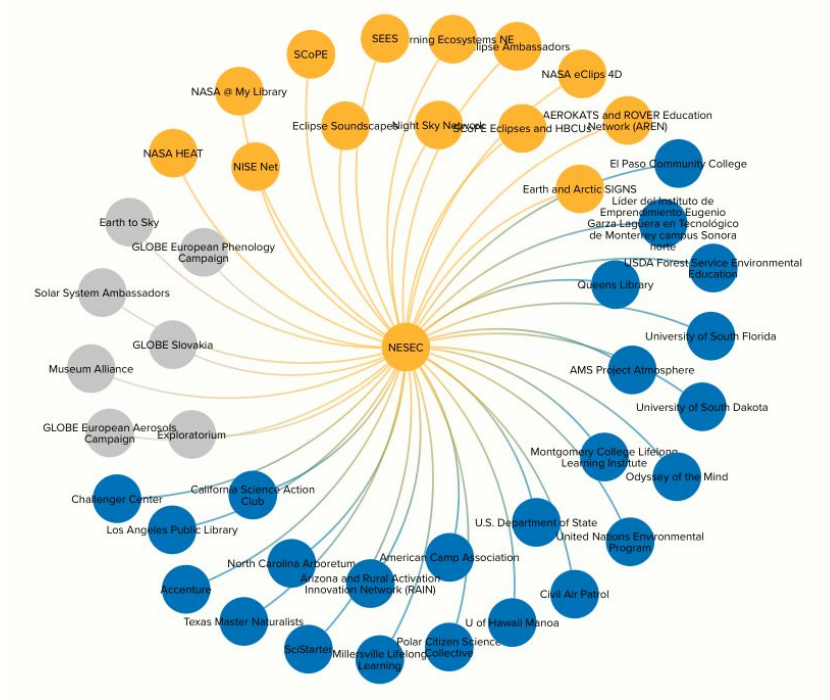

Credit: Jana Tappa


Credit: Allison Cusick



Evaluation Perspective on Partnerships

- Partners are key to engaging people across the country and world with GLOBE Observer.
- Our collaborations are most successful when partners share goals and bring complementary expertise and when educational resources are effectively **“remixed”** by partners to fit their needs.
- GO has partnerships with a variety of organizations. Generally sparked by a specific interest, (e.g. the 2017, 2023, and 2024 eclipses) then often these partnerships grow and expand beyond the initial spark.



Heather Fischer
External Evaluator

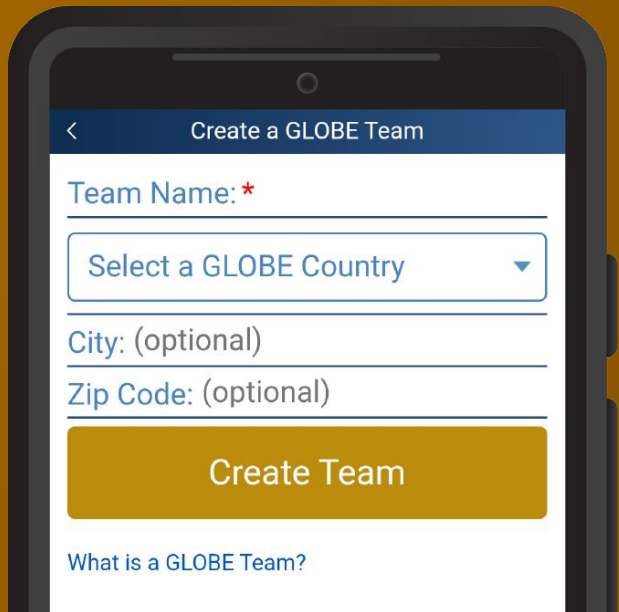
GLOBE Teams

Developed in part out of a partnership with Accenture, an international technology and management consulting firm.

- Employee volunteer program
- Operates in 120 countries with good overlap with GLOBE
- Wanted a volunteer opportunity that everyone in the organization could support equally: GLOBE Clouds

Holli Kohl
Project Coordinator

Marilé Colón Robles
Clouds Science Lead



accenture Dashboard Request

Wanted a dashboard to track individual participation in a group initiative to compare participation across Accenture countries. Their requirements:

- Need to see number of people on a team
- Ability for them to build a leaderboard based on individuals'
  - Observation type
  - Observation quantity
  - Observation dates
- Want to filter by date or date range to "start competition" or define an observation period
- Get data by team so they can add to individual records on their side and reward participation

GLOBE Teams: Concept in place for Museums on a limited basis

- Define Date Period
- See total number of members
- See team activity at a glance
- See individual observations
- See data site observations
- Download data by team in ADAT
- Private or open team

Fueled multi-year Accenture partnership and enabled many other activities. **Currently 3,678 GLOBE teams!**

ACC Argentina
Argentina
Year Created: 2019

Data Site Locations
Data Period: Jan 01, 2019 - Sep 22, 2025 Update

Current Members	200
Biometry - Tree Heights	76
Biometry - Trees	76
Biometry - Vegetation Covers	76
Clouds	1483
Mosquito Habitat Mapper	1

Civil Air Patrol and Teams

The Civil Air Patrol (CAP) is the volunteer auxiliary of the U.S. Air Force. The 2025 Aviation Weather Mission (AWM) was a collaboration between the CAP and NESEC.

- Four 4-hour observation periods from April to July 2025
- Collected atmospheric observations including airport conditions, information about commercial aircraft
- Used the GLOBE Observer app's clouds tool to report cloud cover and contrail types.

CAP Aviation Weather Mission

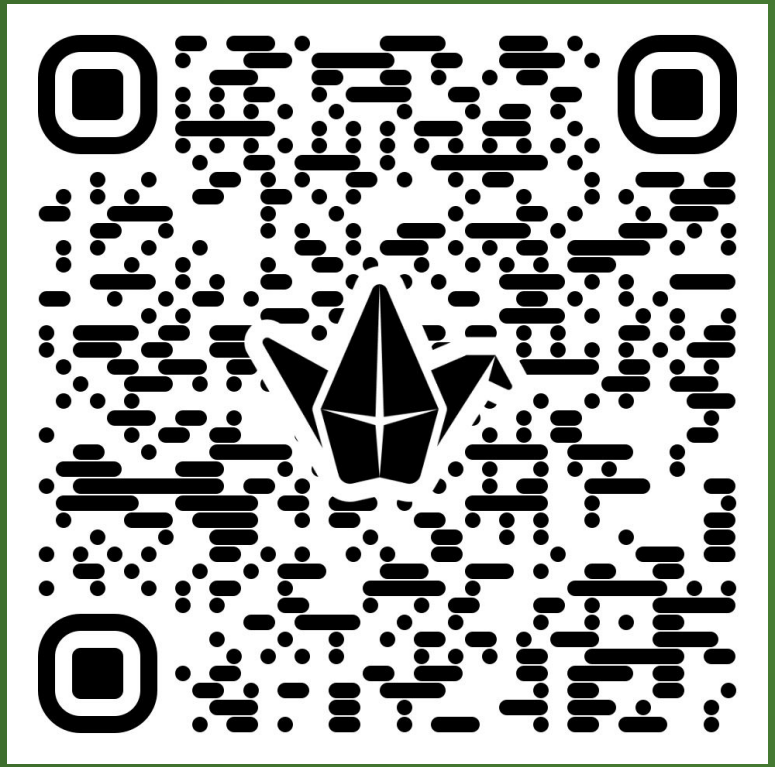
12 April 2025 – 2,700 Observations

10 May 2025 – 4,000 Observations

14 June 2025 – 1,700 Observations

12 July 2025 – 1,500 Observations

Civil Air Patrol squadrons (groups) had four stations, with two of them using the app. The group leaders wrote down GLOBE IDs in their data sheets so that we could track which observation went with each group.



teach.link/GOLegacy

What's a creative way you've used GLOBE Teams?

What non-traditional community partnerships has GLOBE Observer and/or GLOBE Teams enabled you to develop?

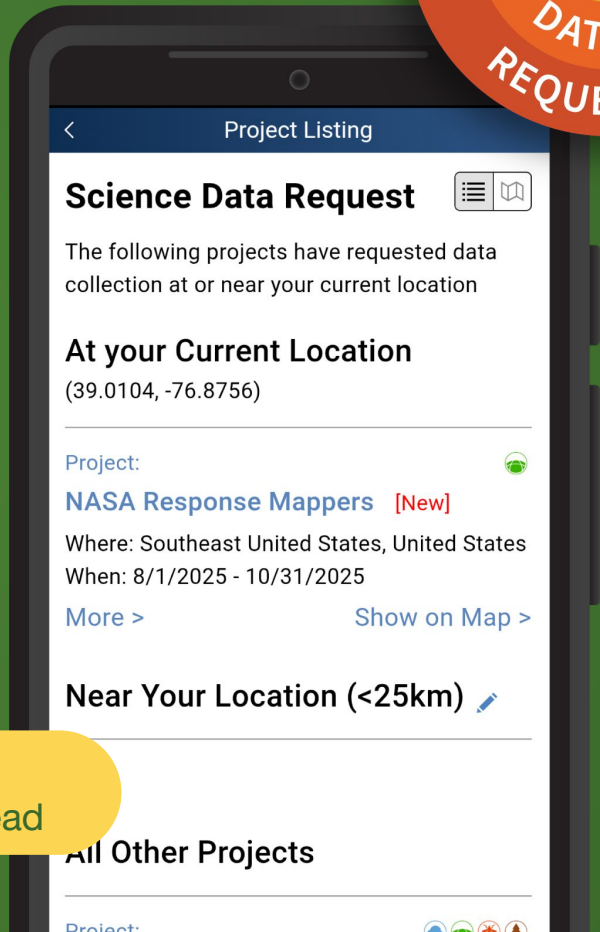
Respond in Columns 1 and 2.

Geofenced Data Requests

- Originating Partners: Lewis and Clark National Historic Trail and Dixie National Forest
- Overview of geofenced data request
- Benefiting partners: A Few Example Geofencing Projects
  - NASA Moon Trees Quest: A Partnership with the Artemis Mission, NASA Next Gen STEM, and the USDA Forest Service
  - NASA Response Mappers: A Partnership with the NASA Disasters Team

Kristen Weaver
Deputy Coordinator

Brian Campbell
Trees Science Lead

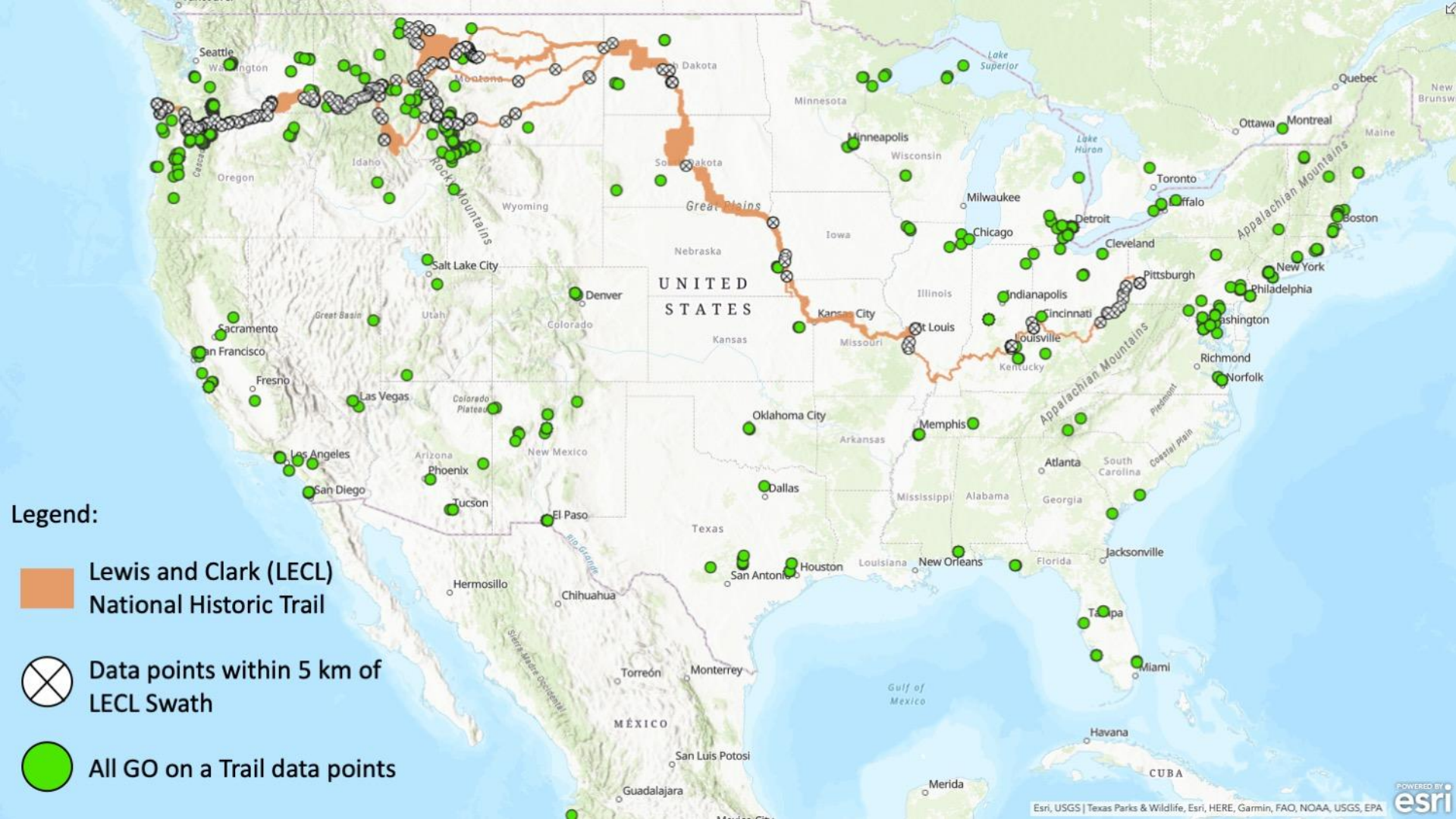


GO on a Trail Lewis and Clark National Historic Trail



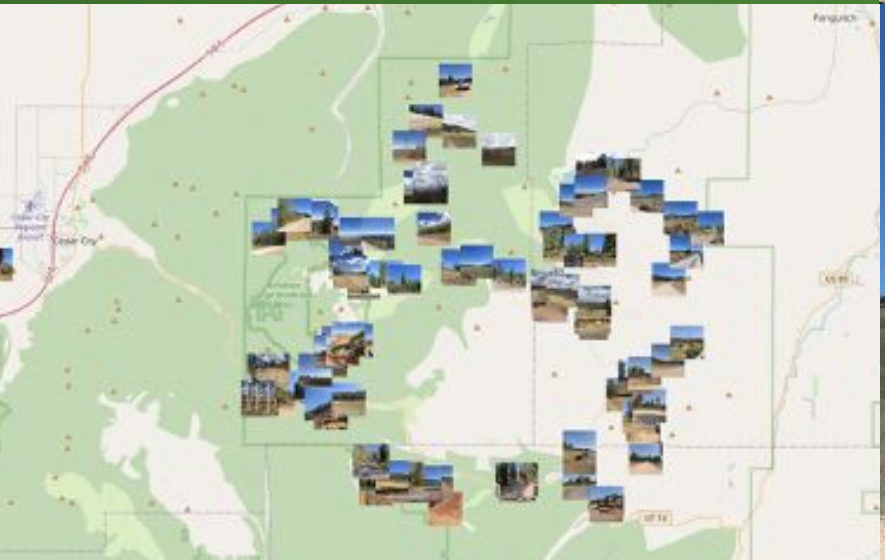





Legend:
Lewis and Clark (LECL) National Historic Trail
Data points within 5 km of LECL Swath
All GO on a Trail data points
Seattle
Montana
Dakota
Minnesota
Minneapolis
Wisconsin
Lake Superior
Quebec
Ottawa
Montreal
Maine
Idaho
Oregon
Rocky Mountains
Wyoming
Great Plains
Iowa
Nebraska
Chicago
Milwaukee
Detroit
Toronto
Buffalo
Cleveland
Boston
New York
Philadelphia
Pittsburgh
Appalachian Mountains
Salt Lake City
Denver
UNITED STATES
Illinois
Indianapolis
Cincinnati
Louisville
Kentucky
Missouri
Kansas City
St Louis
Great Basin
Utah
Colorado
Kansas
Sacramento
San Francisco
Fresno
Las Vegas
Colorado Plateau
Oklahoma City
Memphis
Arkansas
Richmond
Norfolk
Piedmont
Coastal Plain
Atlanta
South Carolina
Georgia
Mississippi
Alabama
Arizona
New Mexico
Phoenix
Los Angeles
San Diego
Tucson
El Paso
Dallas
Texas
Houston
San Antonio
Louisiana
New Orleans
Florida
Jacksonville
Tampa
Miami
Hermosillo
Chihuahua
Rio Grande
Sierra Madre Occidental
Torreón
Monterrey
Gulf of Mexico
MÉXICO
Havana
CUBA
San Luis Potosi
Guadalajara
Merida
Esri, USGS | Texas Parks & Wildlife, Esri, HERE, Garmin, FAO, NOAA, USGS, EPA
POWERED BY esri

Dixie National Forest Repeat Photography

Dixie National Forest led an effort to recreate historic photos with the GLOBE Observer app.



DATA REQUEST

Project Listing

Science Data Request

The following projects have requested data collection at or near your current location

At your Current Location

(42.4487, -79.3388)

Project:
Eyes on the Landscape - GLOBE Annual Meeting [New]

Where: SUNY Fredonia Campus, United States
When: 7/14/2024 - 7/19/2024

More > Show on Map >

Near Your Location (<25km)

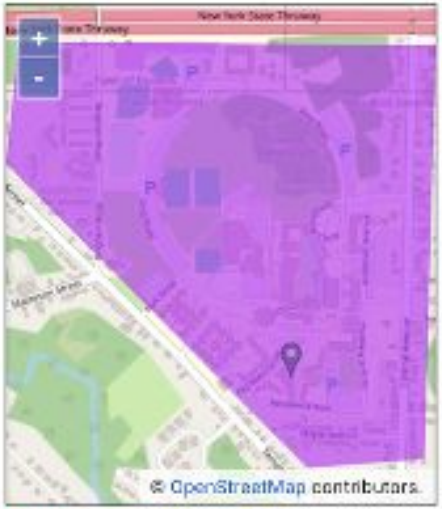
None

All Other Projects

None

Map

Data Collection Areas



Project Key

At your Current Location
(42.4487, -79.3387)

Eyes on the Landscape - GLOBE

Project Details

Project:

Eyes on the Landscape - GLOBE Annual Meeting

Where: SUNY Fredonia Campus, United States

Protocols:
Land Cover
Trees

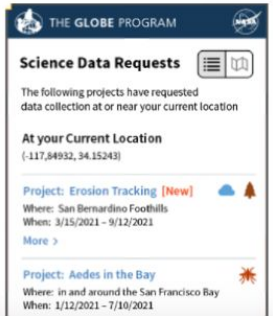
When: 7/14/2024 - 7/19/2024

What: While attending the 2024 GLOBE Annual Meeting, help the GLOBE partnership at SUNY Fredonia develop an ongoing data set of campus biota. We are especially interested in collecting observations of the wood lot at the center of campus. The observations can serve as a baseline for phenology and other seasonal observations. In addition, repeat tree height observations by different data collectors of the same tree allows us to compare the data points and assess the accuracy of the estimates generated by the app in different circumstances. And if we have tree species and circumference measurements along with height, connections can be made to carbon storage and the Carbon Cycle protocol.

Why: This project will allow us to develop a case

Requesting Data Collection in the Observer App

The GLOBE Observer app includes a mechanism (a geofen en they open the app that clouds, mosquito habitat, land cover, trees d at or near their location. Each data request provides specific instru s well as information about the research or community project the



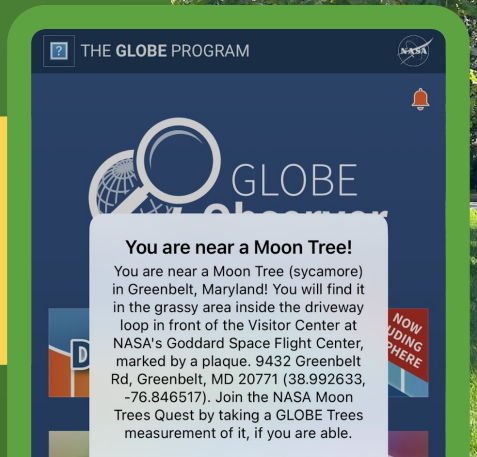
Sample Requests

Example 1: A scientist asks volunteers to routinely submit observations of mosquito habitats in Oklahoma City and Norman, Oklahoma, through the months of June, July, and August to determine when mosquitoes are breeding (when the most larvae are present) and if harmful invasive species are moving into the metro region. Several habitat sites are identified throughout the two cities and volunteers are asked to report on mosquito activity at the sites throughout the summer. The outcome of this project is anticipated to be a scientific publication that could support a mosquito control plan.

Moon Trees Quest

GLOBE Observer, in collaboration with NASA Next Gen STEM and the USDA Forest Service, invited GLOBE Program volunteers to join the NASA Moon Trees Quest for Apollo 14 Moon Trees and related tree species. This activity was part of a collaborative STEM Engagement initiative to inspire the Artemis generation.

NASA Moon trees were trees grown from seeds taken into orbit around the Moon, initially by Astronaut Stuart Roosa on Apollo 14 in 1971, and later by the unmanned Artemis I spacecraft in 2022.

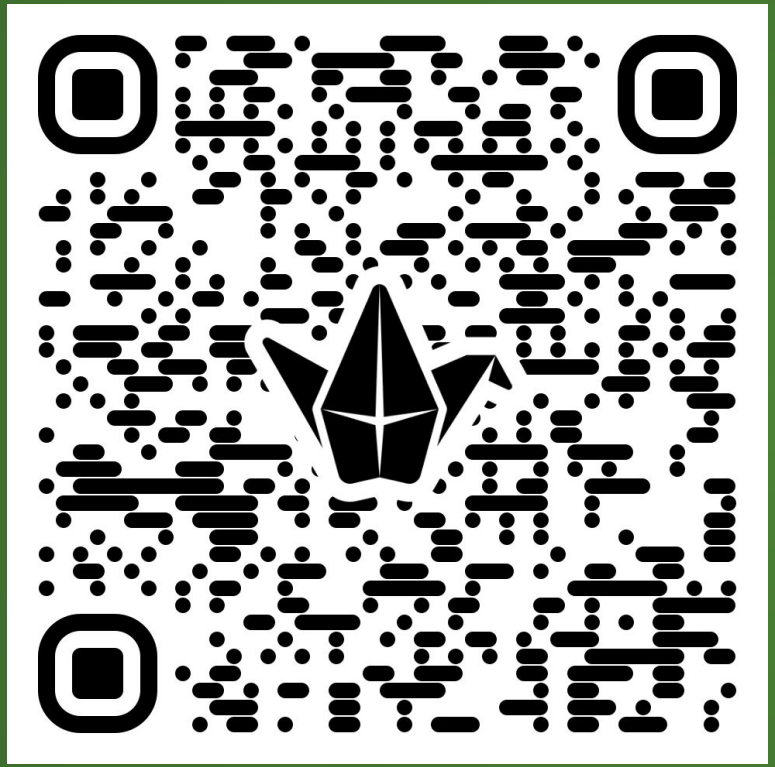


NASA Response Mappers

01 August to 31 October 2025

The NASA Disasters Response Coordination System provides a variety of data products to emergency managers to help in disaster response efforts and decision making. They established this pilot project to determine the utility of GLOBE Land Cover observations in disaster response and recovery. To accomplish this, NASA Disasters are requesting regular observations during the peak hurricane season when hurricane awareness is higher.

Data collection is requested in areas in the south and southeast of the United States, including the states of Texas, Louisiana, Mississippi, Alabama, Tennessee, Kentucky, Georgia, Florida, North Carolina, South Carolina and Virginia, as well as Puerto Rico and the U.S. Virgin Islands.



teach.link/GOLegacy

How might the data request function support your implementation of GLOBE?

What issues or questions do you have that might impede your use of data requests? What support might you need?

Respond in Columns 3 and 4.

Resources for Informal Educators

Heather Mortimer
Graphic Designer

Cassie Soeffing
Science Educator

Peter Falcon
Science Educator

Informal educators, such as librarians, camp counselors, museum interpreters, and park rangers, can reach much larger audiences than our team can alone.

Credit: Edwige Moses

Credit: Jana Tappa

Elementary GLOBE

A Learning Activity for
What's Up in the Atmosphere?
Exploring Colors in the Sky

Why (Not) So Blue?

Purpose

- To help students understand that aerosols in the atmosphere have an effect on sky conditions, including sky color and visibility.
- To provide students the opportunity to become more familiar with the classification categories for daytime sky color and visibility.

Overview

Students will make a prediction about how drops of milk will affect color and visibility in cups of water representing the atmosphere. They will observe a series of 5 cups of water, each with increasing amounts of milk, representing aerosols. They will observe and record how sky color and sky visibility change depending on the increased aerosols. Students will discuss how increasing amounts of aerosols in Earth's atmosphere can affect the sky's condition and appearance.

Student Outcomes

Students will make and record observations for sky color and sky visibility using a set of classification categories. Students will notice and be able to describe a pattern in the experimental setup: when the aerosols in the atmosphere increase, sky visibility diminishes and sky color becomes more milky and less blue.

Time

- One 45 minute class period

Level

Primary (most appropriate for grades K-8)

Materials

Per Group

- Blue paper
- 5 Clear cups per group of students (suggested 4" tall with 2" diameter base)
- Water
- Milk or liquid coffee creamer (very little is needed: only about 10 drops of each per group of students)
- 1 Eye Dropper
- 1 Stirring Utensil
- 1 Copy *Why (Not) So Blue? Student Activity Sheet*
- Elementary GLOBE storybook: *What's Up in the Atmosphere? Exploring Colors in the Sky*
- Copies of, or access to the webstory: *Become an Atmosphere Observer*
- Optional Resource: S'COOL Sky Conditions Poster

Activity Updated July 13, 2015

Why (Not) So Blue?
Aerosols in the Atmosphere

*Learners will make a connection between the presence of **aerosols** in the atmosphere and sky color and **visibility**. They will predict how varying drops of milk or creamer will affect the color and visibility in cups of water, representing the atmosphere. Each group will observe and record how sky color and visibility change with increased amounts of aerosols.*

Purpose

The purpose of this activity is to help learners understand that aerosols in the atmosphere have an effect on sky conditions, including sky color and visibility. Learners will become more experienced with classifying daytime sky color and visibility.

Time

30 minutes

Materials

- ☐ An age-appropriate book about aerosols in the sky, such as *What's Up in the Atmosphere? Exploring Colors of the Sky*
- ☐ Blue paper
- ☐ 5 clear cups (suggested size: 4" tall with 2" diameter base)
- ☐ Water
- ☐ Milk or liquid coffee creamer
- ☐ Eye dropper/pipette
- ☐ Stirring utensil

Safety

Have a roll of paper towels on hand for this activity and have space in between seating to avoid spills.

What to Do

Toolkit for Informal Educators

The toolkit is organized by protocol, including:

- Resource Library
  - Activities
  - Book Lists
  - Videos
  - Presentations
  - Printables and Promotional Materials
- Quick Facts
- Tips and Troubleshooting

observer.globe.gov/toolkit

Audience Guides

Audience guides provide resources and information tailored to particular settings, such as libraries and camps.

Mosquito Habitat Mapper Resources

Resources designed to fill gaps, build understanding, and practice skills needed to take observations.

Partners adapt and combine resources for different audiences.

Example from the NC Arboretum ecoEXPLORE program.

ecoEXPLORE water

eco EXPLORE™ an initiative of The NC Arboretum

Water Challenge 5: Mission Mosquito

Help scientists find and map mosquito habitats!

Materials:

Clear Plastic Bottle, Scissors & Tape, Plastic Netting, Rubber Band, Water, Small Rocks & Smartphone

Brainstorm:

If you spend time outside, then you likely recognize the itchy feeling of a mosquito bite. But did you know that these annoying flying insects spend most of their life in *WATER*?

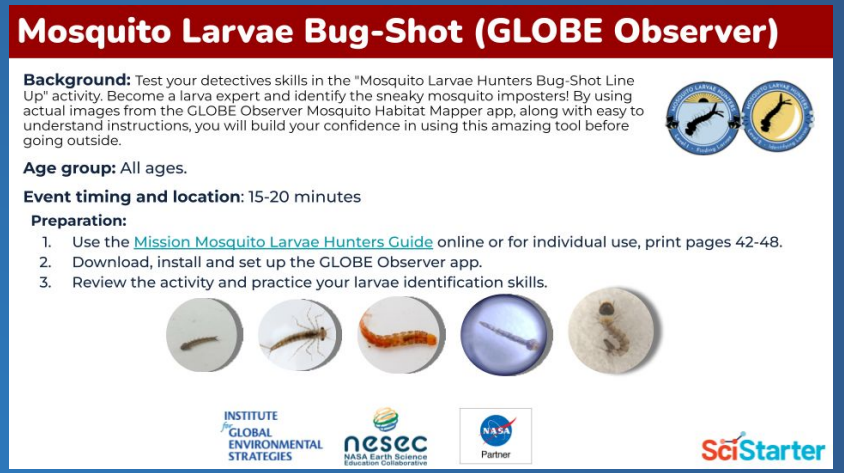
Which of the following pictures do you think show habitats for mosquitoes? Can you find any of these on a walk outside?

Image credits: Mosquito Habitats and Hideouts Bingo, Institute for Global Environmental Strategies https://strategies.org/wp-content/uploads/2020/05/2-Hideouts-30-Bingoboards.pdf

SciStarter Recipe Cards

Recipe cards are templates and guides designed to help libraries and other organizations plan and implement citizen science events for their communities. These "recipes" offer step-by-step instructions and resources, including activity ideas.

Examples from SciStarter Event Recipe Cards.



Mosquito Larvae Bug-Shot (GLOBE Observer)

Background: Test your detectives skills in the "Mosquito Larvae Hunters Bug-Shot Line Up" activity. Become a larva expert and identify the sneaky mosquito imposters! By using actual images from the GLOBE Observer Mosquito Habitat Mapper app, along with easy to understand instructions, you will build your confidence in using this amazing tool before going outside.

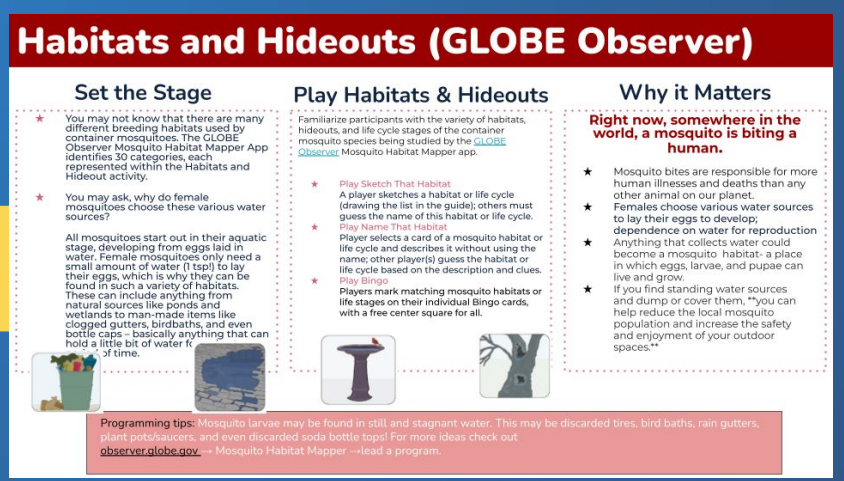
Age group: All ages.

Event timing and location: 15-20 minutes

Preparation:

1. Use the Mission Mosquito Larvae Hunters Guide online or for individual use, print pages 42-48.
2. Download, install and set up the GLOBE Observer app.
3. Review the activity and practice your larvae identification skills.

INSTITUTE for GLOBAL ENVIRONMENTAL STRATEGIES · nesec NASA Earth Science Education Collaborative · NASA Partner · SciStarter



Habitats and Hideouts (GLOBE Observer)

Set the Stage

- You may not know that there are many different breeding habitats used by container mosquitoes. The GLOBE Observer Mosquito Habitat Mapper App identifies 30 categories, each represented within the Habitats and Hideout activity.
- You may ask, why do female mosquitoes choose these various water sources?

All mosquitoes start out in their aquatic stage, developing from eggs laid in water. Female mosquitoes only need a small amount of water (1 tsp!) to lay their eggs, which is why they can be found in such a variety of habitats. These can include anything from natural sources like ponds and wetlands to man-made items like clogged gutters, birdbaths, and even bottle caps - basically anything that can hold a little bit of water f… of time.

Play Habitats & Hideouts

Familiarize participants with the variety of habitats, hideouts, and life cycle stages of the container mosquito species being studied by the GLOBE Observer Mosquito Habitat Mapper app.

- Play Sketch That Habitat
  A player sketches a habitat or life cycle (drawing the list in the guide); others must guess the name of this habitat or life cycle.
- Play Name That Habitat
  Player selects a card of a mosquito habitat or life cycle and describes it without using the name; other player(s) guess the habitat or life cycle based on the description and clues.
- Play Bingo
  Players mark matching mosquito habitats or life stages on their individual Bingo cards, with a free center square for all.

Why it Matters

Right now, somewhere in the world, a mosquito is biting a human.

- Mosquito bites are responsible for more human illnesses and deaths than any other animal on our planet.
- Females choose various water sources to lay their eggs to develop; dependence on water for reproduction
- Anything that collects water could become a mosquito habitat- a place in which eggs, larvae, and pupae can live and grow.
- If you find standing water sources and dump or cover them, **you can help reduce the local mosquito population and increase the safety and enjoyment of your outdoor spaces.**

Programming tips: Mosquito larvae may be found in still and stagnant water. This may be discarded tires, bird baths, rain gutters, plant pots/saucers, and even discarded soda bottle tops! For more ideas check out observer.globe.gov → Mosquito Habitat Mapper →lead a program.

Stories Trees Tell

This activity connects young students to the importance of trees and how they impact our lives. Students essentially become trees and mark their tree rings based on their age.

Educational Output:
Students learn about "dendrochronology", or the study of tree data from ring growth.

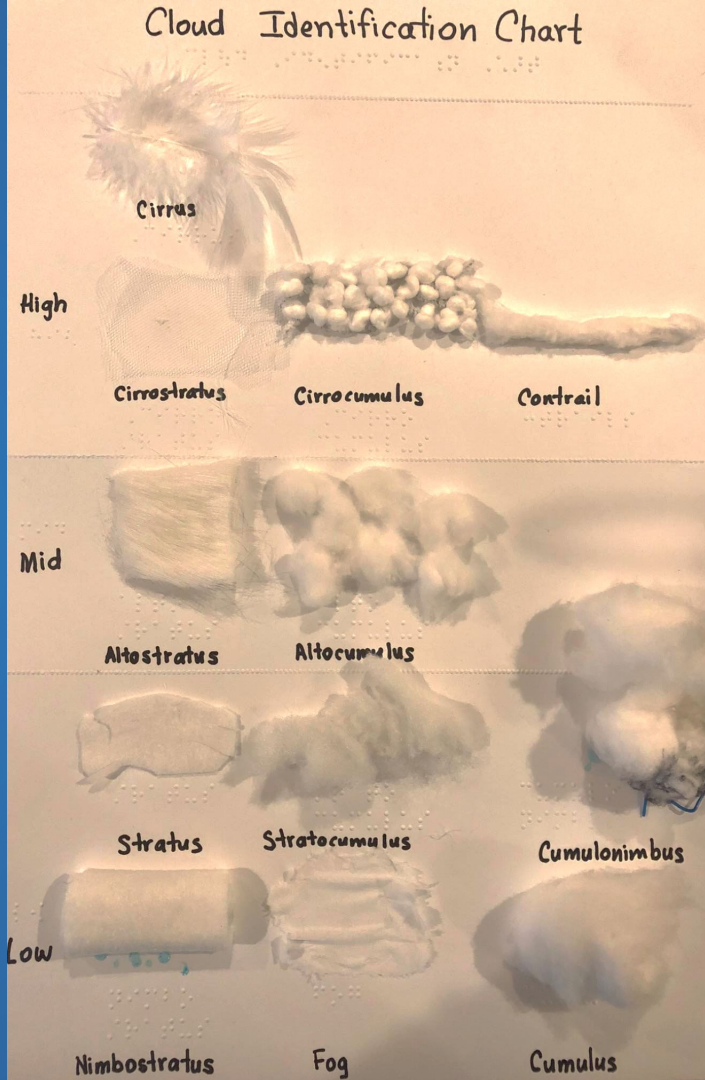
Credit: Camp Discovery

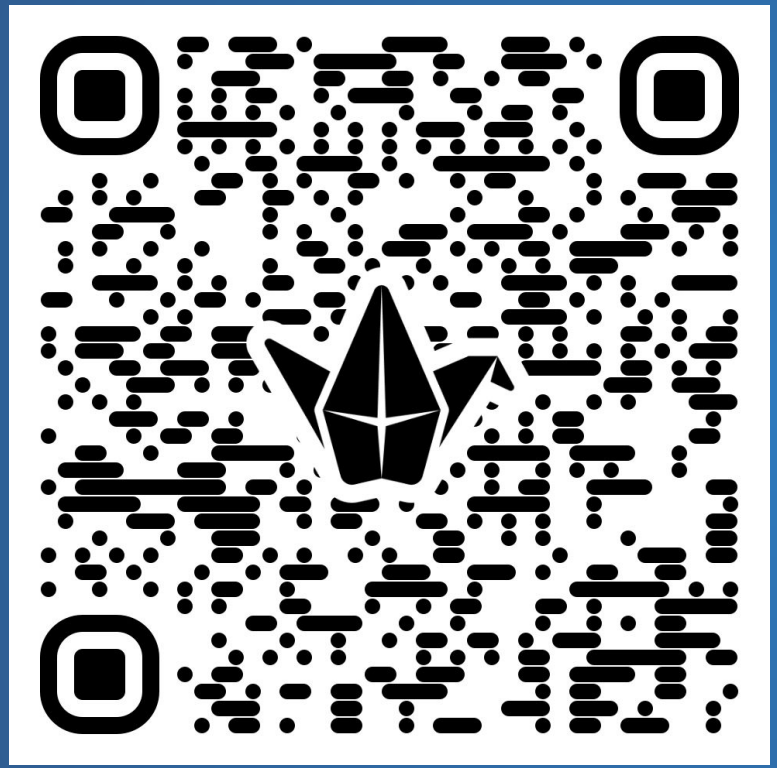
Touching the Clouds

This tactile activity provides a mental representation of each cloud type; students create a tactile cloud ID chart using common items like feathers, cotton balls, soft fabric, tissue, etc.

Educational Output: Students learn common cloud types, shape and texture.

This activity was designed by Naudia Graham for learners who are blind or visually impaired.





What is your favorite GLOBE Observer activity? Why?

Respond in Column 3.

Audience Specific Guides

- Originating partners: 4-H and Girl Scouts
- Overview of audience guides: The GLOBE Observer team developed a series of guides to help informal educators using the app with specific audiences.

Theresa Schwerin
PI, NASA Earth Science Education Collaborative

Tina Harte Ballinger
GLOBE Goes to Camp Project Lead

Audience Guides

Do you work with one of the groups below? Check out our guides for specific audiences.

- Girl Scouts
- 4H [PDF]
- Camps
- Libraries

Resources for Libraries

Why Public Libraries?

Existing community presence and resource, free and open access to all, support lifelong learning, and one of the most visited institutions in the U.S. (IMLS, 2025).

How?

Several rounds of field testing, evaluation, and incorporating feedback into our approach.

- **2017 Earth Day** – GLOBE Clouds packets to 100 libraries, 29 states.
- **2019 GLOBE Observer Toolkit Field Test** with **7 libraries**
- **2020 Summer Science Library Kits: Mosquito Habitat Mapper**. >8,800 take and make bags distributed to 49 library partner sites who distributed through food banks, curbside pickup, local schools, shopping malls, etc.
- **2023 and 2024 Solar Eclipses Library Kits: >**100 libraries received toolkits with resources and equipment to take GLOBE Eclipse Obs.
- **2025 NUBE Cloud Game:** >300 libraries have received for programs.

LaSalle Public Library


San Francisco Public Library

Some insights from our work with libraries

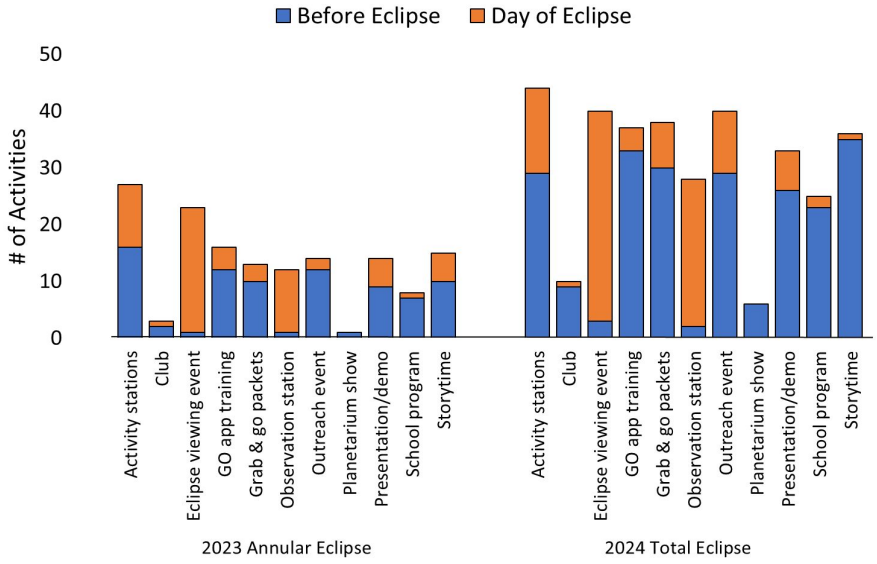
Libraries are using **GLOBE in a wide range** of programs

Libraries typically **plan programs several months in advance.**

Libraries **can incorporate GLOBE in existing programs** (summer reading/learning, after school clubs, citizen science month/program, hurricane preparedness, photography club, etc.)

NASA Connection is a big motivator for participation

Librarians need **resources that are flexible/easily adaptable, models of how libraries have used GLOBE**



From OSU Evaluation Report on GLOBE Eclipse Libraries for the 2023 and 2024 solar eclipses. This graph shows the number of activities, types of programs, and whether these were held before the eclipse or on eclipse day.

Library Guides

Sample Library Programs

Following are programs created and suggested by our partners that can serve as inspiration to create additional library programs. The examples mix and match resources from the GLOBE Observer Toolkit for Informal Educators where we've collected hands-on activities, videos, booklists, and promotional materials.

Programs by protocol

Clouds Programs | Mosquito Programs | Land Cover Programs | Trees Programs

Format: Library Name, Program Name, Audience, Length, Program Description, Activities Used, Supplemental Resources

Also points to information on library or other sites

Neighborhood Land Cover Walk

For this program, we taped the land cover guide to the back of a clipboard …then put the clipboards in a 5-gallon bucket along with a stopwatch and some pencils. The reason we used buckets while taking our walk was…took much longer because our participants were also making impromptu cloud observations…

(LaSalle Public Library)

Camp Guides

Camps across the United States applied to become part of the GLOBE Goes to Camp pilot starting in 2019. With feedback from camp directors and facilitators, the GLOBE Goes to Camp team developed camp guides for each of the GLOBE Observer tools focused around GLOBE data collection and sequenced with learning activities that were adapted to meet the needs of camp settings.


GSFC
JPL
LaRC
IGES
DIS
OSU

GLOBE Observer Contributors

NASA Goddard Space Flight Center
Holli Kohl
Kristen Weaver
Trena Ferrell
Brian Campbell
Heather Mortimer
Dorian Janney
Agnes Conaty
Helen Amos
Jeannie Allen
Tassia Owen
Jessica Mo
Siddharth Jasti
Naudia Graham
Allison Swann
Matthew Starke

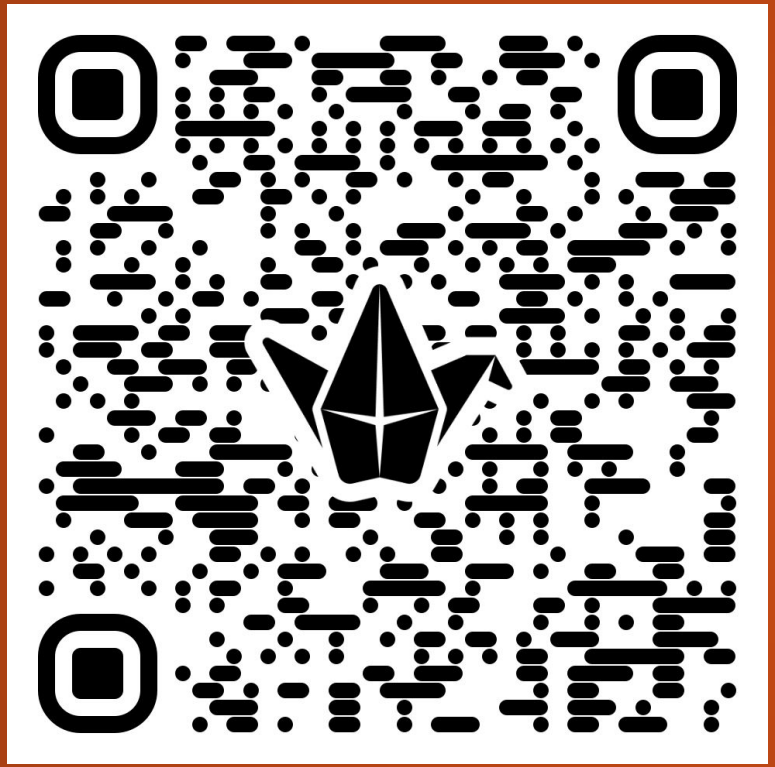
NASA Langley Research Center
Lin Chambers
Jessica Taylor
Marilé Colón Robles
Tina Rogerson
Barbara Buckner
Ashlee Autore
Rosalba Giarratano
Tina Ballinger
Sarah McCrea
Brant Dodson
Ann Martin
Angie Rizzi
Logan Butler
Kevin Ivey
Ryan Moore
Cayley Cruickshank

Jet Propulsion Laboratory
Peter Falcon
Rachel Zimmerman Brachman
Susan Callery
Erika Podest

Institute for Global Environmental Strategies
Theresa Schwerin
Russanne Low
Cassie Soeffing
Andrew Clark
Liz Burke

Oregon State University
Heather Fischer
Matthew Nyman
Martin Storksdieck
Peder Nelson
Nancee Hunter

GLOBE Data and Information System
Lisa Dallas
David Overoye
Cornell Lewis
Joseph Wieclawek
Dixon Butler
Autumn Burdick
Tessa Clougherty
Angelina Tsai
Harman Smith
Adarsh Ravindran
Ashwin Ravindran
Andrew Clifford
Bryan Littlefield
Elizabeth Johnson
Sean Graham
John Schimmels



teach.link/GOLegacy

Thanks for joining us today!

Submit questions in Column 6 on Padlet.