

2024

UNITED STATES

GLOBE

PARTNER YEARBOOK

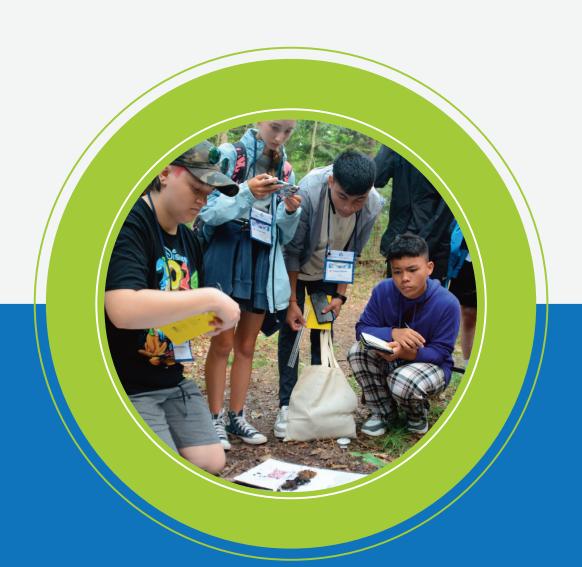


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ABOUT THE GLOBE PROGRAM

GLOBE History

Announced in 1994 and launched in 1995, the Global Learning and Observations to Benefit the Environment (GLOBE) Program is a science and education program that focuses on advancing Earth systems science through data collection and analysis.

More than 268 million measurements have been contributed to the GLOBE science database, creating useful, standardized, research-quality data that support informal and professional scientific exploration.

After nearly 30 years, thousands of youth, educators, and citizen scientists in 127 countries have participated in the GLOBE Program to learn about their local community in the context of the broader world. GLOBE serves learners of all ages who are enthusiastic about Earth science locally and globally through authentic learning using GLOBE technology, tools, and resources.

With the support of NASA and the federal agencies that sponsor GLOBE, namely the National Oceanic and Atmospheric Administration (NOAA), the National Science Foundation (NSF), and the U.S. Department of State, GLOBE engages everyone in purposeful data collection, building STEM skills and tomorrow's STEM workforce.

For more information, visit www.globe.gov.

The GLOBE Vision

A worldwide community of students, educators, scientists and citizens working together to better understand, sustain and improve Earth's environment at local, regional and global scales.

The GLOBE Mission

To increase awareness of individuals throughout the world about the global environment, contribute to increased scientific understanding of the Earth and support improved student achievement in science and mathematics.

The GLOBE U.S. Coordination Office

The GLOBE U.S. Coordination Office supports a diverse group of 100 experienced and committed GLOBE Partnerships to create a strong, self-sustainable framework for training and responsive support for every GLOBE learner in the country. The office works with the U.S. Partner Forum to contact and provide support for every Partner in the country on a personal basis and through a regional model.

In 2024, the GLOBE U.S. Coordination Office (or "U.S. GLOBE") was supported through a sub-award from the GLOBE Implementation Office. Headquartered at the Leitzel Center at the University of New Hampshire, U.S. GLOBE is managed by Jennifer Bourgeault, U.S. Country Coordinator; Haley Wicklein, U.S. Assistant Country Coordinator; Alicia Carlson, Outreach and Communications Lead; Jodi Haney, Trainer/Mentor Trainer and Partner Sustainability Lead; and Eleanor Jaffee, Outside Evaluator.



GLOBE Partnerships

U.S. GLOBE Partners facilitate the implementation of the GLOBE Program in their state or service area. Partners support educator professional development, student inquiry, and research on the environment.

Each U.S. GLOBE Partnership must have a formal affiliation with an institution of higher education, a school district, a state department of education or a recognized informal education organization (501(c)(3)) such as STEM learning centers, museums and foundations that can sustain the implementation of GLOBE in their communities.

New and prospective GLOBE Partners must demonstrate the capacity to recruit, train, and mentor educators in their service area. Their efforts must focus on capacity-building, program sustainability, and youth inquiry and research.

- View a list of <u>current U.S. GLOBE Partners</u>
- Learn more about how to <u>Become a GLOBE Partner</u>

New U.S. GLOBE Partnerships

The GLOBE U.S. Coordination Office welcomed one new GLOBE Partnership in 2024: PA Virtual Charter School in King of Prussia, Pennsylvania. We look forward to working with them to expand GLOBE's reach in the United States!

GLOBE is sponsored by the U.S. National Aeronautics and Space Administration (NASA) and supported by the National Science Foundation (NSF), National Oceanic and Atmospheric Administration (NOAA) and the United States Department of State.



The material contained in this document is based upon work supported by a National Aeronautics and Space Administration (NASA) grant or cooperative agreement. Any opinions, findings, conclusions or recommendations expressed in this material are those of the author and do not necessarily reflect the views of NASA.



The GLOBE U.S. Coordination Office is based at the Leitzel Center at the University of New Hampshire.





U.S. GLOBE NEWS HIGHLIGHTS

The following highlights were posted on the <u>U.S. GLOBE news page</u> in 2024. The full stories are available from the linked titles. The complete list for 2024 can be found in the Appendix on page 64.

<u>U.S. Partners Share Solar Eclipse Activities:</u> The GLOBE U.S. Coordination Office asked GLOBE Partners to share their experiences during the April 8 total solar eclipse. Four Partners responded with their activities leading up to the eclipse, including interviews and presentations, and well as their experiences leading programs on the day of the eclipse.

A "Sunspotter" projection device provides a view of a solar eclipse by projecting an image of the sun onto a flat white sheet of paper.



GLOBE and Dr. John Francis Invite Educators and Students to Take a Planetwalk: Dr. John Francis, a friend of GLOBE, is on a 6,000 mile journey to walk across the continent of Africa, from Cape Town to Cairo. Dr. Francis is a well-known environmental educator who stopped riding in motorized vehicles and stopped speaking for 17 years after witnessing an oil spill in the San Francisco Bay, California, USA. While the GLOBE community can't all join Dr. Francis in Africa, they are finding ways to join him in solidarity in their own communities.

Dr. John Francis walks with a stick along a beach in South Africa, the ocean behind him.



U.S. GLOBE NEWS HIGHLIGHTS continued

<u>2024 GLOBE Annual Meeting Highlights: U.S. Partners:</u> The 2024 GLOBE Annual Meeting was held July 15-18 at the State University of New York at Fredonia and hosted by long-time U.S. GLOBE Partner Mike Jabot. The meeting was organized and facilitated by the outgoing GLOBE Implementation Office (GIO) at the University Corporation for Atmospheric Research (UCAR). More than 200 attendees from 31 countries gathered on the SUNY Fredonia campus throughout the week and joined in the field trip to Niagara Falls on the third day. Several U.S. GLOBE Partners received travel funding support from the GLOBE U.S. Coordination Office through UCAR/GLOBE Implementation Office Grant and Cooperative Agreement No. NNX17AD75A. They provided reports of their experiences and take-aways.



2024 GLOBE Annual Meeting participants gathered outside on the SUNY Fredonia campus, with more than 150 people in the photo.





2024 U.S. GLOBE ACTIVITIES

U.S. GLOBE Office activities in 2024 supported Partners, educators, and students. The major activities included:

- U.S. Student Research Symposia
- North American Regional Meeting
- Mini-grants
- Watercoolers
- North American Phenology Campaign

STUDENT RESEARCH SYMPOSIA

U.S. GLOBE coordinates annual regional Student Research Symposia (SRS) for educator and student teams, supported with funding from NASA (grant 80NSSC18K0135) and Youth Learning as Citizen Environmental Scientists (YLACES).

In April and May 2024, middle and high school students from around the United States came together at five regional SRS to share the results of research they conducted in their local communities. They used GLOBE protocols and data in their research and prepared posters to share their results with peers and STEM professionals.

In total, 430 people (educators, STEM professionals, students and others) attended the 2024 SRS, including 264 students who presented 95 projects.

Aside from their presentations, students participated in a variety of science activities. Many practiced GLOBE protocols, listened to scientists talk about their research and careers, explored the local environment, and learned about programs of study at the hosting locations.

More information about each regional SRS can be found in later sections or through this 2024 SRS summary.

2024 NORTH AMERICAN REGIONAL MEETING

The 2024 North American Regional Meeting (NARM) was held virtually over three days, October 15–17, for three hours each day. Amy Chen, the GLOBE program officer at NASA, and Rebecca Lewis and Becky Boger from the new GLOBE Implementation Office opened the meeting with welcomes, highlights, and updates on GLOBE activities.

Ninety-eight people registered for the free meeting. Over the three days, 90 of those people attended, making it the most well-attended virtual NARM in the GLOBE Program's history. Forty-eight people attended all three days.

The first day consisted of concurrent workshops to build skills. The second day featured GLOBE Partners sharing their work and accomplishments through lightning talks. The third day focused on professional learning around grant writing and communications. Read a summary of the 2024 NARM.

2024 U.S. GLOBE ACTIVITIES continued

U.S. GLOBE PARTNER MINI-GRANTS

Beginning in July 2023, the GLOBE U.S. Coordination Office began soliciting proposals from U.S. GLOBE Partners through a mini-grant program. Two mini-grants were awarded in 2024, including:

- Project-Based Learning templates to support student research using GLOBE, NASA, and NOAA data.
- A week-long summer camp for high school students to collect measurements using GLOBE protocols in hydrology, surface temperature, trees, and land cover and work on mini projects.

A summary of all mini-grants can be found on the GLOBE Mini-Grants Awards Padlet.

U.S. GLOBE WATERCOOLERS

The U.S. GLOBE Watercoolers are virtual learning, discussion, and networking opportunities for GLOBE educators and Partners that model the idea that informal gatherings around water coolers at work can lead to valuable exchanges of information and new collaborations. In 2024, U.S. GLOBE community members presented at 13 Watercoolers with 76 unique attendees. Presentations covered a wide range of topics including NASA Worldview, the Dirty Soil citizen science project, a GLOBE atmosphere group for West Virginia educators, and connecting state standards to GLOBE.

Recordings of Watercoolers can be viewed on the <u>U.S. GLOBE Watercoolers YouTube playlist</u>.

NORTH AMERICAN PHENOLOGY CAMPAIGN

In collaboration with GLOBE Canada, the GLOBE U.S. Coordination Office encourages educators, students, and citizen scientists to make leaf green-down and green-up observations through the North American Phenology Campaign. The campaign is based largely on the successful European GLOBE Phenology Campaign.

In spring 2024, observers measured leaf budburst and green-up and entered 1,746 measurements into the GLOBE database. In fall 2024, observers measured leaf green-down using the GLOBE Color Guide and GLOBE Observer app and entered 1,695 measurements into the GLOBE database.





U.S. GLOBE PARTNERSHIP ACTIVITIES: BY THE NUMBERS

U.S. GLOBE Partners reach a wide audience through their events and activities. This year, we asked them to report the numbers, including:

- Youth reached
- Youth-centered events
- Educators reached
- Educator-centered events

The graphic shows the cumulative reports of the 29 Partnerships that reported on at least one of the categories. We had some high numbers of engagement this year, due in part to the 2024 total solar eclipse.

There were a few superstar reporters! Most notably:

- Wayne RESA (Mich.) reported reaching 75,000 youth (they provided solar eclipse glasses to many schools in Detroit).
- Los Angeles Public Library (Calif.) reported reaching 3,480 youth and 980 educators.
- South Dakota Discovery Center reported reaching 800 educators.

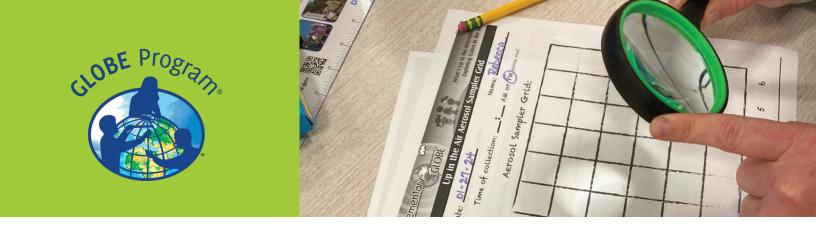
U.S. GLOBE BY THE NUMBERS (2024)





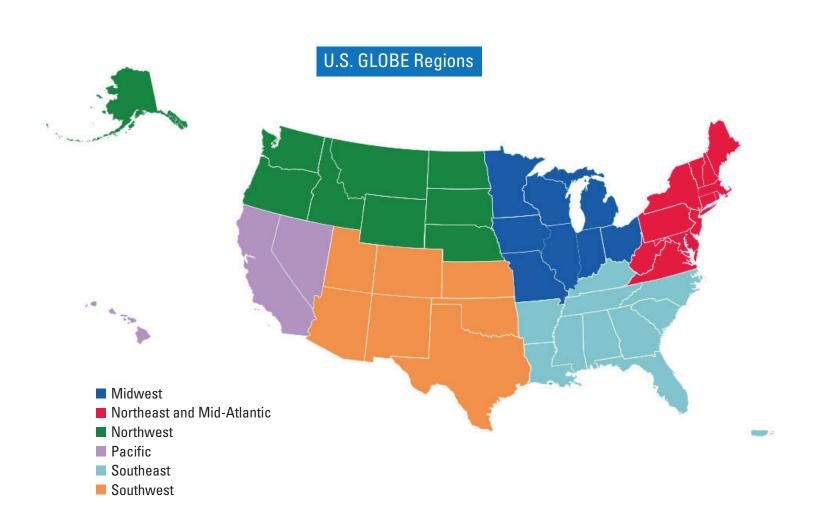






U.S. GLOBE REGIONS

The U.S. is divided into six GLOBE regions. Each region has one representative on the U.S. Partner Forum, who works closely to guide the future of GLOBE in the United States.



A map showing six regions of the United States, indicated by color. Dark blue: Midwest; Red: Northeast and Mid-Atlantic; Green: Northwest; Purple: Pacific; Light blue: Southeast; Orange: Southwest.

U.S. GLOBE REGIONS continued

MIDWEST REGION

Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, Wisconsin

NORTHEAST AND MID-ATLANTIC REGION

Delaware, District of Columbia, Connecticut, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, West Virginia

NORTHWEST REGION

Alaska, Idaho, Montana, Nebraska, North Dakota, Oregon, South Dakota, Washington, Wyoming

PACIFIC REGION

California, Nevada, Hawaii

SOUTHEAST REGION

Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico Territory

SOUTHWEST REGION

Arizona, Colorado, Kansas, New Mexico, Oklahoma, Texas, Utah



SRS SUMMARY

The 2024 GLOBE Midwest Student Research Symposium (SRS) was held at the Toledo Zoo and Aquarium in Toledo, Ohio, from May 6-8. More than 70 students from four states attended to present their research to each other and STEM professionals. Read a summary of the 2024 GLOBE Midwest SRS.

Here are some examples of student projects from the Midwest SRS.

- Assessing Ground Freezing Depth Variability During an El Nino Winter: A Frost Tube Approach, Crestwood High School (MI)
- What is the Effect of Light on the Change of Leaf Color?, Clippert Academy, (MI)
- Nitrate Measurements of Lake Jimmerson, Garrett High School (IN)

Midwest Partnerships that supported student and educator teams attending the SRS include Xcite Learning/ BGSU/ Toledo Zoo (who coordinated and hosted), University of Toledo/GLOBE Mission Earth, NASA Langley Research Center, Wayne RESA, and the University of Wisconsin-Madison.

GLOBE NEWS HIGHLIGHTS

In April, GLOBE educator Julie Houck coordinated an in-person North American Regional Meeting (NARM) workshop in Defiance, Ohio. Twenty-two GLOBE Partners and educators attended the meeting to practice GLOBE protocols and learn from each other. Read a summary of the <u>NARM in Defiance, Ohio</u>.

GLOBE educator Joe Carstensen shared his approach to keeping students engaged while collecting data and presenting their findings in a news story. Read more about Joe's approach in <u>A Love Letter to the GLOBE Website: Using GLOBE's Digital Tools for Student Engagement.</u>

GLOBE Mission Earth led a student field day at Earth Heart Farms for 350 Northwest Ohio K-12 students in October. Students collected GLOBE data and investigated the flora and fauna on the property. Read a summary about the student field days at Earth Heart Farms.



PARTNERSHIPS

Read about the activities and accomplishments of the following Midwest Region GLOBE Partnerships in this section.

- Grand Valley State University, Michigan
- Wayne RESA, Michigan
- University of Toledo, Ohio
- Xcite Learning/NWO@BGSU/Toledo Zoo, Ohio
- University of Wisconsin Madison, Wisconsin

Other Midwest Region Partnerships are listed in the Appendix.

MICHIGAN



GRAND VALLEY STATE UNIVERSITY

Grand Valley State University GLOBE Partnership page

GLOBE Partner since 1998

Partnership Coordinator:

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Team Members:

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About the Partnership: GLOBE at GVSU focuses on three primary audiences: K-12 students, in-service educators, and pre-service educators. At the Annis Water Resources Institute, K-12 students are immersed in place-based education field trips that use GLOBE protocols to help them gather information about their place. For students grades 4-12, this can include a cruise aboard the W.G. Jackson or D.J. Angus, which are GVSU's research and education vessels. During a cruise experience, students are the scientists conducting water quality analyses and gathering data about weather conditions.

2024 Highlights: Thousands of students cruise aboard the D.J. Angus and W.G. Jackson each year. This experience can be life-changing, as for some students it is not only their first experience on a boat, but it can be their first time seeing themselves as a scientist. Sampling protocols on cruises are modeled after GLOBE Hydrosphere and Atmosphere protocols.

Areas of Expertise: In-service professional development, Programming for students, Elementary GLOBE, Pre-service educators, GLOBE in undergraduate classrooms, Science research, Citizen science, Informal science

Funding: Grand Valley State University

Audiences: Elementary school students, Middle school students, High school students, Undergraduate students, Pre-service educators, PreK-12 educators, Life-long learners, Graduate students



MICHIGAN

WAYNE RESA

Wayne RESA GLOBE Partnership page

GLOBE Partner since 1998

Partnership Coordinator:

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Team Member:

Lisa Ogiemwonyi ogiemwl@resa.net

About the Partnership: The AEROKATS and ROVER Education Network (AREN) is a NASA program that helps GLOBE members collect data through low-cost kite-based crafts (AEROKATS) and remotely controlled aquatic and land vehicles (ROVERs). It introduces educators and students to NASA technologies and practices — including in-situ and remotely sensed Earth observations — in authentic, experiential learning environments.

2024 Highlights:

- Provided eclipse glasses to over 50,000 students in the Metropolitan Detroit area.
- Provided direct AEROKATS and TerraROVER trainings to educators across the United States

Areas of Expertise: In-service professional development, Programming for students, Pre-service educators, GLOBE in undergraduate classrooms, Engineering, Citizen science, Informal science

Cooperating Organizations: University of Toledo, NASA, local school districts

Funding: NASA Award

Student Research Support: Provide support to students through the Wayne RESA partnership. Financial, consulting, communications with the GLOBE office

Audiences: Elementary school students, Middle school students, High school students, Undergraduate students, Pre-service educators, PreK-12 educators

OHIO



UNIVERSITY OF TOLEDO

University of Toledo GLOBE Partnership page

GLOBE Partner since 2002

Partnership Coordinator:

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About the Partnership

The University of Toledo (UT) leads the efforts of <u>GLOBE Mission Earth</u> (GME), a collaborative of institutions across the U.S. working to increase involvement in GLOBE. GME incorporates multiple interdisciplinary collaborations and offers GLOBE training and support for educators. Dr. Kevin Czajkowski, Geography Professor at UT and Principal Investigator of GME, also serves as lead scientist on the GLOBE Urban Heat Island Effect (UHIE) Surface Temperature Intensive Observation Period.

2024 Highlights:

- Professional development: At <u>Earth Heart Farms</u>, UT engaged educators and students in land restoration and conservation using GLOBE protocols to monitor ecological changes on an 80-acre former farm.
- Student outreach: UT actively works with the <u>NASA SEES High School Virtual Internship Program UHIE</u>, Air Quality Initiative, and Solar Eclipse groups; <u>Upward Bound High School Training Program</u>; the <u>GLOBE Kids Club</u> virtual program for students in grades 3-5.
- In collaboration with the Tennessee State University GLOBE Partnership, UT held a summer internship program for pre-service educators, focusing on GLOBE protocols.
- Student symposia: UT hosted a local Student Research Symposium at The Toledo Zoo in partnership with Xcite Learning and Project Prairie, with 354 students from 12 schools who showcased 95 research projects. The GLOBE Midwest Regional SRS hosted 70 students from Indiana, Michigan, Ohio, and Wisconsin, showcasing 36 student research projects.

Areas of Expertise: In-service professional development, Programming for students, Elementary GLOBE, Pre-service educators, GLOBE in undergraduate classrooms, Engineering, Education research, Science research, Citizen science, Informal science

Cooperating Organizations: NASA Langley Research Center (LaRC); AREN Project; Arctic and Earth SIGNs Project; Palmyra Cove Institute for Earth Observations; WestEd/UC Berkeley; Tennessee State University; Boston University.

Funding: NASA Cooperative Agreement Notice (CAN) #: NNX16AC54A

Publications and News

- See the complete list of publications and presentations on the University of Toledo Publications and Presentations page.
- GLOBE Mission Earth news page

Student Research Support: UT offers ongoing support to educators and students in preparing and submitting student research projects. Educators upload student projects to the GME Student Research page. GME provides suggestions for edits and improvements.

Audiences: Elementary school students, Middle school students, High school students, Undergraduate students, Graduate students, Pre-service educators, Life-long learners, PreK-12 educators



OHIO

XCITE LEARNING/NW0@BGSU/THE TOLEDO ZOO

Xcite Learning/BGSU/Toledo Zoo GLOBE Partnership page

GLOBE Partner since 2000

Partnership Coordinator:

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Team Members:

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About the Partnership: Our collaborative partnership engages in educator professional development, K-12 student programming, pre-service educator training, and collaborative federal grant activities to promote GLOBE in the region.

2024 Highlights:

- Four-week STEMM Summer Camp Program for K-4 grade students at Waterville Primary School, Waterville, Ohio. The focus of this program was to lead students through a project-based learning (PBL) experience to answer the question, "How does our prairie help our garden grow?" GLOBE protocols were used to study the atmosphere and soil, and a Purple Air device was installed to investigate air quality. The STEMM Camp included the Earth Beneath Our Feet Soil Tent Program this year. This was the third year of this camp.
- In May 2024, 385 K-12 grade students presented research at our third annual Local GLOBE in the Prairie Student Research Symposium (SRS) held at the Toledo Zoo and Aquarium. Eighty-seven students from four states participated in the Midwest SRS the following day. At the Midwest SRS, students presented their research, collected and reported on data collected at the zoo, had an overnight "Zoo Snooze" filled with engaging activities and behind-the-scenes tours in the zoo's aquarium, and experienced career talks and keynote presentations by subject matter experts.
- Thirteen middle school science educators from Washington and Sylvania Local Schools earned GLOBE Educator certification after a three-day professional development series focusing on GLOBE in the Prairie and project-based learning (PBL). Gold standard PBL units were developed using Al and included the use of GLOBE protocols to guide student investigations.

Areas of Expertise: In-service professional development, Programming for students, Elementary GLOBE, Pre-service educators

Cooperating Organizations: Local schools; The University of Toledo/GLOBE Mission Earth

Funding: Small grants (YLACES and others); local school professional development funds

News Stories

- Local students present Project Prairie Initiative results at Toledo Zoo (WTOL)
- Toledo Zoo hosts student research symposium (The Blade)

Student Research Support: We work with educators at professional development events to build their confidence in leading student research. Then we meet with individual educators and their students to mentor the projects throughout the academic year.

Audiences: Elementary school students, Middle school students, High school students, Undergraduate students, Pre-service educators, PreK-12 educators, Life-long learners

WISCONSIN



UNIVERSITY OF WISCONSIN-MADISON

University of Wisconsin-Madison GLOBE Partnership page

GLOBE Partner since 1999

Partnership Coordinator:

Michael Notaro mnotaro@wisc.edu 608-261-1503

About the Partnership: Dr. Notaro leads GLOBE educator professional development workshops for K-12 educators in Wisconsin. He runs GLOBE-inspired STEM camps for autistic middle and high school students. He applies GLOBE to encourage a more diversified STEM field

2024 Highlights:

- Three GLOBE-inspired STEM camps for autistic youth were run by Dr. Notaro: The Sky's The Limit STEM Camp in Beloit, Wisconsin; Nature's Navigators STEM Camp in the Wisconsin Dells; and Zoo Explorers Sensory-Friendly Mini Camp in Madison.
- Through the Wisconsin Rural Partnerships Institute, Dr. Notaro is integrating GLOBE into K-12 schools across Adams, Juneau, and Jackson Counties in Wisconsin in support of greater resilience for rural communities.
- Dr. Notaro provided GLOBE training and climate 101 training to K-12 educators, environmental organization staff, DNR staff, and environmental center staff in Milwaukee.

Areas of Expertise: In-service professional development, Programming for students, Elementary GLOBE, Science research, Citizen science, Informal science

Cooperating Organizations: Welty Environmental Center; Upham Woods Outdoor Learning Center; Henry Vilas Zoo; Beloit College; Van Wiepz Consulting; Wisconsin schools

Funding: National Science Foundation GEOPAths program; Wisconsin Idea Collaborative Grant; Read Coakley Foundation

Publications and Presentations: See the complete list of publications and presentations on the <u>University of Wisconsin-Madison Publications and Presentations page</u>.

News Stories:

• Expanding climate science through hands-on learning (University of Wisconsin-Madison)

Student Research Support: Dr. Notaro partners with the School District of Beloit, which has sent numerous students to the Midwest GLOBE Student Research Symposium during the past couple of years.

Audiences: Elementary school students, Middle school students, High school students, Undergraduate students, Pre-service educators, PreK-12 educators





SRS SUMMARY

In 2024 the Northeast and Mid-Atlantic Student Research Symposium (SRS) was held at Berks Nature in Reading, Pennsylvania, from May 3-4. Sixty-four students from nine schools across the Northeast/Mid-Atlantic region conducted research to answer a question about the environment. Read a summary of the 2024 GLOBE Northeast and Mid-Atlantic SRS.

Here are some examples of student projects from the Northeast and Mid-Atlantic SRS.

- Onondaga County River Quality, APW Jr/Sr HS (NY)
- Does idling in rural New Jersey affect air quality?, Reading Fleming Intermediate (NJ)
- Clouds in a Lake-Effect Snowstorm, Gowanda CSD (NY)

Northeast and Mid-Atlantic Region Partnerships that supported student and educator teams attending the SRS include NASA Goddard, Institute for Research in Science Teaching (SUNY Fredonia), Palmyra Cove, and NASA Langley.

GLOBE NEWS HIGHLIGHTS

The in-person North American Regional Meeting (NARM) workshop held in Palmyra, New Jersey, on March 5 and 6, 2024, brought together stakeholders from various sectors whose focus or work is directly related to satellites and/or remote sensing. Together they learned and discussed opportunities to enhance the GLOBE Program. Participants included educators, scientists, policy makers, and students from around the Northeast. Read a summary of the "Satellites and Remote Sensing" NARM.



OTHER GLOBE NEWS

- New Jersey GLOBE Partnership Takes the First Steps with Dr. John Francis, Planetwalker: "From South Jersey to South Africa" (Institute for Earth Observations)
- Boston University AquaROVER Design project (Boston University)
- New Hampshire Students Help Create the Earth Around Us Water Tent (Leitzel Center at the University
 of New Hampshire)
- Going Global in West Virginia with GLOBE (Katherine Johnson NASA IV&V ERC)
- GLOBE and STEELS Standards in Pennsylvania (Berks Nature)
- <u>Summer Camp Focused on Sustainability and Sustainable Development Goals with GLOBE</u> (West Virginia University Department of Geology and Geography)
- GLOBE Expands Its Reach in Massachusetts (Leitzel Center at the University of New Hampshire and others)

PARTNERSHIPS

Read about the activities and accomplishments of the following Northeast and Mid-Atlantic Region GLOBE Partnerships in this section.

- Gulf of Maine Research Institute, Maine
- NASA Goddard, Maryland
- Boston University School of Education, Massachusetts
- Global STEM Center, Massachusetts
- Leitzel Center at the University of New Hampshire, New Hampshire
- Institute for Earth Observations, New Jersey
- Institute for Research in Science Teaching, New York
- Queens College, New York
- Berks Nature, Pennsylvania
- Institute for Global Environmental Strategies, Virginia
- NASA Langley, Virginia
- Katherine Johnson NASA IV&V ERC, West Virginia
- West Virginia University Department of Geology and Geography, West Virginia

Other Northeast and Mid-Atlantic Region Partnerships are listed in the Appendix.

MAINE



GULF OF MAINE RESEARCH INSTITUTE

Gulf of Maine Research Institute GLOBE Partnership page

GLOBE Partner since 2020

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Catherine Bursk cbursk@gmri.org

Leigh Peake Ipeake@gmri.org

About the Partnership: The Gulf of Maine Research Institute (GMRI) develops resources that support educators to embed GLOBE protocols within a curriculum sequence that emphasizes changes in the Gulf of Maine watershed ecosystems. GMRI collaborates with others in the GLOBE network and enables informal science institutions to use GLOBE as a resource to implement citizen science with their patrons, as well as leveraging a network of science and technology centers, through their NASA Science Activation project.

2024 Highlights:

- Introduced GLOBE tree height protocol as part of the "Leveraging NASA to support locally relevant investigations" workshop at the Learning Ecosystems Northeast Summit with over 80 educators from organizations and schools in the region.
- Presented a workshop about Nature Note with GLOBE educators at the 2024 Massachusetts Climate Change Challenge Conference
- Incorporated GLOBE into several community science and data-focused learning experiences focused on tree health and ecosystem stewardship, including our Ash and Hemlock Stewards program and the PLACES Summer Institute.

Areas of Expertise: In-service professional development, Informal science, Science research, Citizen science, Other: Facilitating networks of educators and local learning communities to support STEM teaching and learning

Cooperating Organizations: Maine State Library; Maine Cooperative Extension/4-H

Funding: NASA Science Activation

Audiences: Elementary school students, Middle school students, High school students, PreK-12 educators, Pre-service educators



MARYLAND

NASA GODDARD

NASA Goddard GLOBE Partnership page

GLOBE Partner since 2005

Partnership Coordinator:

Todd Toth todd.e.toth@nasa.gov 717-414-1822

Team Members:

Trena M Ferrell, PhD, trena.m.ferrell@nasa.gov Brian Campbell, brian.a.campbell@nasa.gov Dorian Janney, dorian.w.janney@nasa.gov Kristen Weaver kristen.l.weaver@nasa.gov Holli Kohl, holli.kohl@nasa.gov

About the Partnership: The NASA Goddard GLOBE Partnership provides resources to schools, educators, and citizen scientists in our 11-state region. We offer program support to integrate GLOBE into school curricula, webinars to provide additional training, answers to specific problems, and, if possible, face-to-face in-school support. We offer an equipment loan program for new GLOBE schools and students preparing for the Student Research Symposia.

2024 Highlights:

- The Trees Around the GLOBE Student Research Campaign completed its sixth year in 2024, with 12 webinars with participants from 64 countries. Participants from all six GLOBE regions contributed more than 37,000 tree height, land cover, and greenings (spring green-up and fall green-down) observations from more than 11,000 global sites.
- We conducted a GLOBE workshop at the Baltimore Watershed Public Charter School located in western Baltimore County.
 This school is the first of its kind in the state of Maryland where students experience environmental and arts integrated project-based learning.
- Presented the use of GLOBE to meet newly adopted Pennsylvania Integrated Standards for Science in collaboration with the Waynesboro Area School District and Lincoln Intermediate Unit 12.

Areas of Expertise: In-service professional development, Programming for students, Elementary GLOBE, Pre-service educators, Informal science, GLOBE in undergraduate classrooms, Engineering, Education research, Science research, Citizen science

Cooperating Organizations: NOAA; U.S. Department of State; Peace Corps; 4-H; University of Maryland; Fulbright Teachers for Global Classrooms Program

Funding: NASA

Student Research Support: We provide GLOBE training, equipment and protocol-related activities to aid students involved in research.

Audiences: Elementary school students, Middle school students, High school students, Undergraduate students, Graduate students, Pre-service educators, PreK-12 educators, Life-long learners

MASSACHUSETTS



BOSTON UNIVERSITY SCHOOL OF EDUCATION

Boston University GLOBE Partnership page

GLOBE Partner since 2013

Partnership Coordinator:

Peter Garik garik@bu.edu 617-353-4735

Team Members:

Sara Feit, sfeit@bu.edu Don DeRosa, donder@bu.edu Caleb Farny, farny@bu.edu Bruce Anderson, brucea@bu.edu

About the Partnership: The GLOBE Mission Earth-Boston University team currently partners with the Providence Public School District in Rhode Island and with the Boston Public School District. We hold professional development workshops, host professional learning communities, and work with educators to bring data-focused explorations to their learners.

2024 Highlights:

- Workshop: Connecting with Nature Through Outdoor Classrooms in Urban Areas, presented at the National Science Teaching Association conference in Denver, Colorado, on March 23. The workshop emphasized the use of GLOBE investigations at the elementary level for urban schools.
- Hybrid GLOBE workshop with Providence Public School educators, July 2024.
- Presentation: Students and Citizen Scientists Collecting and Sharing Climate Data with GLOBE.
- Abstract: Presented at the Southern New England Meteorological Conference, October 26, in Canton, MA.
- Poster: Using Place-Based Environmental Science Investigations to Support Literacy and Mathematics Skills for Underperforming English Language Learner Students in a High-Need Urban District. Presented at the Fall Meeting of the American Geophysical Union Conference, December 10, Washington, D.C.

Areas of Expertise: In-service professional development, Programming for students, Elementary GLOBE, Education research, Informal science, Other: atmosphere, biosphere, and hydrosphere protocols

Funding: Mission Earth: Fusing GLOBE with NASA Assets to Build Systemic Innovation in STEM Education, subcontract from the University of Toledo with NASA funding from Science Activation 2.0

Audiences: Elementary school students, Middle school students, High school students, Life-long learners, PreK-12 educators



MASSACHUSETTS

GLOBAL STEM EDUCATION CENTER

globalstemcenter.org

GLOBE Partner since 2014

Partnership Coordinator:

Larisa Schelkin larisa.schelkin@globalstemcenter.org

Team Members:

Mrs. Donna Sroka, donnasroka@outlook.com Melissa Tata, Melissamtata@gmail.com Carolyn Madzar, carolynmadzar@gmail.com Verna Frasca, vfrasca1@gmail.com Patricia Boyd, patnboyd@gmail.com Mary Knight, mary.knight.atwork@gmail.com

About the Partnership: Our GLOBE Partnership engages lifelong learners, high school students, and educators by providing comprehensive educational experiences and professional development in environmental sciences. We partner with schools, non-profits, and community organizations to offer hands-on learning through protocols in atmosphere, biosphere, and more, enhancing STEM education and global awareness. Our collaborations include initiatives with NASA and participation in events like the UN General Assembly, fostering a community committed to environmental stewardship and academic excellence.

2024 Highlights:

- The Center devoted its efforts to supporting and maintaining relationships with our partner schools and developing professional development programs for educators. We continued recruiting new GLOBE members, reaching out to schools and nonprofit organizations, making new connections, and presenting virtually to school committees, superintendents, school principals, and university faculty. We welcomed a new school to our GLOBE partnership and are happy to work with Whitinsville Christian K–12 School in Whitinsville, Massachusetts.
- GLOBE protocols taught included: Atmosphere: air temperature, precipitation, clouds and contrails, relative humidity, surface temperature; Biosphere: biometry, trees, and Hydrosphere investigation.
- In partnership with GLOBE Partner Mike Jabot from SUNY Fredonia, we are developing an online educator professional development resource on teamwork skills.
- We presented at the American Association of Colleges and Universities in Washington, D.C., and at the 27th Annual Colloquium on International Engineering Education at the University of Rhode Island.
- Congratulations to GLOBE educator James Gorman from Nipmuc Regional High School for being recognized as the 2024 Massachusetts STFM Teacher of the Year.

Areas of Expertise: In-service professional development, Programming for students, Citizen science, Informal science

Funding: Private funding via Global STEM Education Center, Inc 501(c)(3) nonprofit

NEW HAMPSHIRE



LEITZEL CENTER AT THE UNIVERSITY OF NEW HAMPSHIRE

UNH GLOBE Leitzel Center page

GLOBE Partner since 2004

Partnership Coordinator:

Haley Wicklein haley.wicklein@unh.edu

Team Members:

Jennifer Bourgeault, jen.bourgeault@unh.edu Alicia Carlson, alicia.carlson@unh.edu Beth Young, beth.young@unh.edu

About the Partnership: The New Hampshire Leitzel GLOBE Partnership works with formal and informal educators throughout New Hampshire to bring high-quality GLOBE activities and data collection opportunities to youth. This is done primarily through the Earth Around Us Tent program, which combines hands-on science activities centered around an Elementary GLOBE storybook and a pop-up tent with immersive murals depicting students' observations of their local soil or water ecosystems. The New Hampshire team also brings university scientists and graduate students into GLOBE programming as subject matter experts.

2024 Highlights:

- Debuted and piloted the Water Tent to select GLOBE educators. An Implementation Guide was created, and the tent will be available for educators to borrow in spring 2025.
- Partnership team members presented on GLOBE at six professional conferences: New Hampshire Environmental Educators, New Hampshire Science Teachers Association, Upper Valley Teaching Place Collaborative, Geological Society of America, Massachusetts K-12 Climate Change Challenge Conference, and at the GLOBE Annual Meeting.
- The Earth Around Us Tent program reached over 4,800 youth with visits to schools and environmental organizations and through an expansion to summer camp programming.

Areas of Expertise: In-service professional development, Programming for students, Elementary GLOBE, Citizen science

Cooperating Organizations: USDA Forest Service, New Hampshire school districts, New Hampshire Environmental Educators, Seacoast Science Center

Funding: GLOBE Mission Earth; USDA Forest Service

News Stories:

- New Hampshire Students Help Create the Earth Around Us Water Tent
- GLOBE Expands Its Reach in Massachusetts

Student Research Support: The New Hampshire GLOBE team supports educators throughout New Hampshire in facilitating student research, including data entry support, protocol training, and classroom implementation.

Audiences: Pre-school students, Elementary school students, Middle school students, Graduate students, PreK-12 educators



NEW JERSEY

INSTITUTE FOR EARTH OBSERVATIONS

Palmyra Cove Institute for Earth Observations

GLOBE Partner since 2011

Partnership Coordinator:

John Moore mr.moore.john@gmail.com 856-829-1900

Team Members:

Mason Kramer, mkramer@bcbridges.org Debbie Viggiano, dviggiano@bcbridges.org John Gallant, johngallant4781@hotmail.com

2024 Highlights:

- Hosted an in-person North American Regional Meeting that underscored the critical role of satellites and remote sensing
 and addressing environmental challenges within the GLOBE community at large. Through collaborative efforts and a shared
 commitment to science and sustainability, participants reaffirmed their dedication to empowering the next generation of
 Earth system scientists.
- Presented at the IEEE Integrated STEM Education Conference (ISEC), Princeton University. ISEC is known for featuring cutting-edge research and experiences with integrated approaches to the study of science, math, and technology through experiences and activities based on engineering and other design disciplines.
- Presented at the SmallSat Education Conference, NASA KSC. The SmallSat Education Conference provides hands-on training for educators and students, networking opportunities with industry experts, and insights from exhibitors and vendors.

Areas of Expertise: In-service professional development, GLOBE in undergraduate classrooms, Engineering, Education research, Science research, Citizen science, Informal science

Cooperating Organizations: GLOBE Mission Earth; Rowan College at Burlington County; NASA Goddard; Satellite Educators Association; US Naval Academy; Joint Base McGuire -Dix-Lakehurst

Funding: Burlington County Bridge Commission; GLOBE Mission Earth; NJ Space Grant Consortium

Publications and Presentations:

- EEE Xplore: "A3 Sat: Using CubeSats to Inspire the Next Generation of STEM Professionals"
- SmallSat Education Conference: "GLOBE Satellites in Education Team: Creating the Next Generation SmallSat Mission Specialists"
- AMS Annual Meeting: "Engaging Pre-College Students in the New Space Ecosystem: Acquire Analyze Apply Using CubeSats (A3Sat)"
- International Astronautical Federation: "The A3Sat Emulator: A Catalyst in Disruptive CubeSat and Space Technology Education"

News Stories:

• New Jersey GLOBE Partnership Takes the First Steps with Dr. John Francis, Planetwalker: "From South Jersey to South Africa"

Student Research Support: IEO has partnered with Riverside Middle School in developing a year-long educational program for all students grades 6–8. Cinnaminson WaterFest: all 6th graders in cooperation with the NJ DEP Watershed Ambassadors.

Audiences: Elementary school students, Middle school students, High school students, Undergraduate students, PreK-12 educators, Life-long learners

NEW YORK



INSTITUTE FOR RESEARCH IN SCIENCE TEACHING— SUNY FREDONIA

Institute for Research in Science Teaching GLOBE Partnership page

GLOBE Partner since 2014

Partnership Coordinator:

Michael Jabot jabot@fredonia.edu

About the Partnership: The focus of the Institute for Research in Science Teaching (IRST) has been the infusion of GLOBE into classrooms across our region through our ongoing partnerships, which grows from the use of GLOBE in our pre-service educator education program and having the trained pre-service educators serve as "ambassadors of GLOBE" in classrooms. In particular, this infusion serves as a way for schools to meet an increased use of performance-based assessments.

2024 Highlights:

- We have expanded our work with pre-service educator education and the role that GLOBE can play in developing content knowledge and how to engage young scientists in their classrooms to do authentic science. Our work has taken on a particular focus around climate education, and we have expanded our partnerships in climate education regionally, and internationally.
- We have been very fortunate to receive funding to expand the reach of IRST through the establishment of the Vincent Colasanti Centre for Earth Observations and Boundary Layer Science.
- We continue to partner with Larisa Schelkin and the Global STEM Education Center to support the UNITAR Science Diplomacy Program as well as taking part in the UN General Assembly Science Forum. The expansion now includes classroom-based partnerships with educators and their students around the world.
- We continue to expand our regional network of schools around GLOBE. This includes atmospheric data collection (including snow and frost-tube protocols) and our outreach with the Soil and Water Tents.
- Hosted the 2024 GLOBE Annual Meeting.

Areas of Expertise: In-service professional development, Programming for students, Elementary GLOBE, Pre-service educators, GLOBE in undergraduate classrooms, Engineering, Citizen science, Science research, Education research

Cooperating Organizations: GLOBE Mission Earth; AREN Project; GLOBE Teams Project; GLOBE Satellites and Education Team; NOAA B-WET; New York State Department of Environmental Conservation; USDA Forest Service; National Science Foundation; Open Street Map Foundation; YouthMappers; Take Action Globally

Publications and Presentations: See the complete list of publications and presentations on the IRST Publications page.

Student Research Support: Support educators for the Northeast and Mid-Atlantic Student Research Symposium.

Audiences: Elementary school students, Middle school students, High school students, Undergraduate students, Graduate students, Pre-service educators, PreK-12 educators



NEW YORK

QUEENS COLLEGE

Queens College GLOBE Partnership page

GLOBE Partner since 2000

Partnership Coordinator:

Peter Schmidt peter.schmidt@qc.cuny.edu 516-510-4451

Areas of Expertise: In-service professional development, Programming for students, Elementary GLOBE, Pre-service educators, Citizen science, Informal science

Cooperating Organizations: New York City Department of Education; STEM NYC; American Museum of Natural History

Funding: City University of New York; Past projects were funded by federal grants from NASA, NOAA, EPA

Audiences: Elementary school students, Middle school students, High school students, Undergraduate students, Graduate students, Pre-service educators, PreK-12 educators, Life-long learners

PENNSYLVANIA



BERKS NATURE

Berks Nature GLOBE Partnership page

GLOBE Partner since 2014

Partnership Coordinator:

Michael Griffith michael.griffith@berksnature.org (610-372-4992)

Team Members:

Beckey Seel Allison Mackley

About the Partnership: Berks Nature leverages the GLOBE Program to provide hands-on field trip experiences for students, fostering environmental education through direct engagement. We also offer professional development for educators to integrate GLOBE into their classrooms effectively. Additionally, our citizen science water quality program utilizes GLOBE for comprehensive data collection and analysis, empowering community involvement in environmental monitoring.

2024 Highlights:

- We hosted professional development trainings for educators, offering them valuable opportunities to enhance their knowledge and skills in environmental education. These sessions focused on incorporating GLOBE protocols and hands-on learning into the classroom, ensuring that educators felt confident using the program's resources to engage students.
- We developed a crosswalk that ties GLOBE protocols to the new Pennsylvania STEELS Standards. By aligning these protocols with state standards, we made it easier for educators to incorporate GLOBE into their everyday lessons, ensuring that they met curriculum goals while providing students with authentic, hands-on science experiences.
- We ran a year-long GLOBE citizen science camp. This monthly camp provided children with the opportunity to actively participate
 in real-world scientific research by gathering water quality data and conducting environmental observations. Through engaging,
 hands-on activities, kids learned about the importance of environmental stewardship while developing critical thinking and data
 analysis skills.
- We collaborate with a variety of local volunteer organizations to help implement GLOBE in our community. These partnerships allow us to engage in hands-on environmental education and water quality monitoring while supporting local conservation efforts. Additionally, we work with programs like the Penn State Master Water Stewards, which provides expert knowledge and resources for water quality initiatives. We also partner with the Berks County Intermediate Unit, which oversees all the schools in the county, to ensure that GLOBE protocols are integrated into the broader educational framework.

Areas of Expertise: In-service professional development, Informal science, Science research, Citizen science, Other: Facilitating networks of educators and local learning communities to support STEM teaching and learning

Cooperating Organizations: Local volunteer organizations: Angelica Creek, Tulpehocken Creek, Maiden Creek, and Hay Creek Watershed Associations; Penn State Master Water Stewards; Berks County Intermediate Unit; local schools and educators.

Funding: GLOBE U.S. Coordination Office mini-grant

Student Research Support: We hosted a Student Research Symposium (SRS) in May and made sure to advertise it to all local schools, ensuring a wide reach and engagement with educators. This event helped introduce the GLOBE program to a broader audience, offering valuable opportunities for hands-on learning and professional development. By reaching out to schools throughout the community, we were able to involve a diverse group of educators in integrating GLOBE into their curriculum.

Audiences: Pre-school students, Elementary school students, Middle school students, High school students, Undergraduate students, Graduate students, Pre-service educators, PreK-12 educators, Life-long learners



VIRGINIA

INSTITUTE FOR GLOBAL ENVIRONMENTAL STRATEGIES (IGES)

<u>Institute for Global Environmental Strategies</u> Institute for Global Environmental Strategies Partnership Page (GLOBE)

GLOBE Partner since 2017

Partnership Coordinator:

Cassie Soeffing cassie_soeffing@strategies.org 703-312-0824

Team Members:

Theresa Schwerin, theresa_schwerin@strategies.org Rusty Low, rusty_low@strategies.org Andrew Clark, Andrew_clark@strategies.org Brianna Lind, Brianna_lind@strategies.org

About the Partnership: Our Partnership centers on supporting GLOBE Observer outreach and participation within the GLOBE community, with a focus on GLOBE Observer Mosquito Habitat Mapper and GLOBE Observer Land Cover. We do this through supporting monthly community webinars, creating educational resources for use by GLOBE educators, maintaining a <u>Mission Mosquito campaign website</u>, and providing two-way conversation through our Mighty Network Space (GLOBE Mission Mosquito and Student Research).

2024 Highlights:

- 1 peer-reviewed publication
- Webinar presentations to the community
- Supported NASA SEES Earth System Explorers virtual high school 8-week internship
- Engaged 47 high school students resulting in 8 International Virtual Science Symposium (IVSS 2024) projects
- Regional award for student IVSS project: A Random Forest Analysis of Remote Sensing Driven Mosquito Habitat Prediction in West Africa. Two team members attended the 2024 GLOBE Annual Meeting in Fredonia, NY.

Areas of Expertise: In-service professional development, Programming for students, Elementary GLOBE, GLOBE in undergraduate classrooms, Science research, Citizen science, Other: Life-long Learning

Cooperating Organizations: University of South Florida; GLOBE Africa; GLOBE Kenya; GLOBE Ghana; GLOBE Madagascar; GLOBE Brazil; GLOBE Latin America and Caribbean (region); South Dakota and Hawaii Osher Lifelong Learning Institutes; Harris County, TX, Precinct 4 Biologic Control Initiative; SciStarter; Unique Mappers Network; Project Learning Tree/Wet/Wild; North Carolina Arboretum

Funding: NESEC

Student Research Support: In 2024, 47 students submitted 8 projects to the IVSS and 8 abstracts/posters to AGU Bright STaRS.

Audiences: Elementary school students, Middle school students, High school students, Undergraduate students, Graduate students, PreK-12 educators, Life-long learners

VIRGINIA



NASA LANGLEY

NASA Langley GLOBE Partnership page

GLOBE Partner since 2013

Partnership Coordinator:

Jessica Taylor jessica.e.taylor@nasa.gov

Team Members:

Angie Rizzi, Tina Ballinger, Marile Colon Robles, Rosalba Giarratano, Tina Rogerson, Barbie Buckner, Kristen Duprey

About the Partnership: The NASA Langley Partnership creates pathways for all to engage in the GLOBE Program, envisioning a worldwide community working together to better understand, sustain, and improve Earth's environment at local, regional, and global scales. We support the GLOBE community in their efforts to contribute to science and support learners.

2024 Highlights:

- The GLOBE Eclipse 5-week webinar series engaged educators from across the country in their own investigations about atmospheric impacts of the solar eclipse. The webinar series boosted educators' confidence in engaging in science practices within their classrooms (see publication below).
- Through a collaboration with the Civil Air Patrol, more than 400 teams with over 3,000 cadets and over 1,000 senior members collected air temperature, clouds, wind, and precipitation for a total of four hours before, during, and after the eclipse (see news story below).
- Partnering with the National Institute for Aerospace, we delivered training in collecting GLOBE data to Virginia's Region 2 school
 districts including Chesapeake Public Schools, Hampton City Schools, Newport News Public Schools, Portsmouth Public Schools,
 and the York County School Division (see news story below).

Areas of Expertise: In-service professional development, Programming for students, Elementary GLOBE, Science research, Citizen science, Informal science

Cooperating Organizations: Civil Air Patrol, National Institute of Aerospace, American Camp Association

Funding: NASA

Publications:

GLOBE Eclipse Workshop Engages Educators in Earth Science Research (Bulletin of the AAS)

News Stories:

- GLOBE Eclipse and Civil Air Patrol: An Astronomical Collaboration (NASA Science)
- HCS science teacher leaders trained in using GLOBE protocols for student data collection and sharing with NASA (Hampton City Schools)
- Educators Bring Student Teams to GLOBE Research Symposia (NASA Science)

Audiences: Elementary school students, Middle school students, High school students, Life-long learners



WEST VIRGINIA

KATHERINE JOHNSON NASA IV&V EDUCATION RESOURCE CENTER

Katherine Johnson NASA IV&V ERC webpage

GLOBE Partner since 2002

Partnership Co-Coordinators:

Joshua Revels irevels@fairmontstate.edu (304-367-8436)

Todd Ensign todd.ensign@ivv.nasa.gov (304-367-8438)

About the Partnership: The Katherine Johnson NASA Independent Verification & Validation (IV&V) Program's Education Resource Center (ERC) conducts educator trainings across West Virginia. Each training certifies users to borrow classroom kits containing GLOBE equipment to perform data collection for the GLOBE Program. Check out an updated listed of loanable kits in the ERC's Loan & Learn Catalog and request a GLOBE educator training.

2024 Highlights:

- The 2024 Destination Space Summer Camp for High School students involved a 5-day camp experience focusing on the topics of weather and climate. Complimenting the field trip experiences to the National Weather Service, the WV Department of Environmental Protections, West Virginia Geological and Economic Survey, and West Virginia University's Geospatial Lab, campers implemented GLOBE data collection procedures (i.e. Relative Humidity and Surface Temperature) and built a personal automated weather station. Additional activities included the investigation of model ice core samples and graphing the water mass concentration provided by NASA's GRACE mission as well as keynote presentations from Dr. DeWayne Cecil and Dr. Kevin Czajkowski.
- Leveraging the resources gathered from the 2023 GLOBE mini-grant, the West Virginia Science Educators Association engaged in a preconference session about the GLOBE Atmosphere Focus Group and were trained to use NASA IV&V's loanable automated weather station and classroom kits for GLOBE protocols. There was a celebration of project submissions for the 2024 International Virtual Science Symposium (IVSS) and challenge for the group to engage in more projects.
- Partnering with Fairmont State University, the graduate course Elementary Earth & Space Science Literacy enabled 12 of West Virginia's K-5 educators to receive certification on GLOBE: Atmosphere and Heating Things Up! kits. Educators immersed science and literacy by including picture books in the design of their lessons, which were implemented in their classes in the 2023-24 academic year. Kindergarten educators selected the books "Clouds" (Anne Rockwell & Frane Lessac) and "Air is All Around You" (Franklyn Branley & John O'Brien); third grade educators selected the books "What Will the Weather Be?" (Lynda Dewitt & Carolyn Croll) and "Sunshine Makes the Seasons" (Franklyn Branley & Michael Rex).

Areas of Expertise: In-service professional development, Programming for students, Elementary GLOBE, Pre-service educators, Citizen science

Cooperating Organizations: Fairmont State University; Katherine Johnson NASA IV&V Education Resource Center

Funding: NASA West Virginia Space Grant Consortium; GLOBE U.S. Coordination Office; Fairmont State University Katherine Johnson NASA IV&V Education Resource Center

News Stories:

- Students make space their destination at Fairmont State summer camp (Times West Virginia)
- Fairmont State Receives Grant for Science Literacy Workshop (Fairmont State University)

Audiences: High school students, Pre-service educators, PreK-12 educators

WEST VIRGINIA



WEST VIRGINIA UNIVERSITY, DEPARTMENT OF GEOLOGY & GEOGRAPHY

West Virginia University GLOBE Partnership page

GLOBE Partner since 2023

Partnership Coordinator:

Nektaria Adaktilou nektaria.adaktylou@mail.wvu.edu 304-694-3424

About the Partnership: The main focus of the West Virginia University GLOBE Partnership is to share GLOBE with undergraduate and pre-service educators through GLOBE campaigns and initiatives, including the <u>Urban Heat Island Intensive Observation Period</u> and air quality initiatives. Another focus of the partnership is working with high school students from underrepresented communities.

2024 Highlights:

- Collaborated with the Health Sciences and Technology Academy at WVU to organize a week-long camp for West Virginia high school students that focused on learning about how GLOBE can support learning and action in Sustainable Development Goals, with a focus on clean water, life on land, and sustainable cities and communities.
- Presented GLOBE and GLOBE Mission Earth at the Sustainability Colloquium Series for WVU faculty and undergraduate and graduate students.
- Introduced GLOBE to the Friends of the Deckers Creek with the intent of developing a partnership with the organization that does education outreach in West Virginia.

Areas of Expertise: In-service professional development, GLOBE in undergraduate classrooms, Education research, Science research, Informal science

Cooperating Organizations: Health Sciences and Technology Academy at WVU; Friends of the Deckers Creek

Funding: GLOBE U.S. Coordination Office mini-grant

Publications and Presentations:

• From Concept to Creation: Evaluating Student Project Presentations with a Rubric Developed in the GLOBE Mission Earth Program" (AGU poster)

Audiences: Middle school students, High school students, Undergraduate students, Graduate students, Life-long learners





SRS SUMMARY

In 2024 students from the U.S. GLOBE Northwest Region attended the Pacific and Northwest Student Research Symposium (SRS), held at the NASA Jet Propulsion Lab in Pasadena, California, from May 10-11. Students presented 22 research projects to each other and STEM professionals. Read a summary of the 2024 GLOBE Northwest SRS.

Here are some examples of student projects from the Northwest SRS.

- Dissolved Oxygen and Fish and Wildlife Habitat in Gravel Pit Ponds, Aniak Junior Senior High School (AK)
- Are Higher Temperatures Causing Fires on the Flathead Reservation?, Ronan Middle School (MT)
- How does the water erosion of the Mendenhall River bank affect the biomass in relation to carbon sequestration?, Thunder Mountain High School, Sealaska Heritage Institute (AK)

Northwest Partnerships that supported student and educator teams attending the SRS include the University of Alaska Fairbanks.

GLOBE NEWS HIGHLIGHTS

In May, GLOBE Partner Anne Lewis of the South Dakota Discovery Center hosted an in-person North American Regional Meeting (NARM) workshop at Badlands National Park. The 12 participants used GLOBE hydrosphere protocols. Read a summary of the NARM at Badlands National Park.



OTHER GLOBE NEWS

- <u>Students Add to GLOBE Data While Learning About Ocean Science and Sailing from Japan to Palau!</u> (University of Alaska Fairbanks)
- GLOBE Observer Connect: Collecting GLOBE Data at Sea (29 August 2024) (University of Alaska Fairbanks)
- YLACES Awards a YES Medal to GLOBE's Dr. Elena Sparrow (University of Alaska Fairbanks)

PARTNERSHIPS

Read about the activities and accomplishments of the following Northwest Region GLOBE Partnerships in this section.

- University of Alaska Fairbanks, Alaska
- South Dakota Discovery Center, South Dakota

Other Northwest Region Partnerships are listed in the Appendix.

ALASKA



UNIVERSITY OF ALASKA FAIRBANKS

University Of Alaska Fairbanks Partnership Page (GLOBE)

GLOBE Partner since 1996

Partnership Co-Coordinators:

Elena Bautista Sparrow, ebsparrow@alaska.edu (907-474-7699) Katie Villano Spellman, klspellman@alaska.edu (907-474-1554)

Team Members:

Training Point of Contact: Christina Buffington, eesousa@alaska.edu Co-Training Point of Contact: Tori Brannan, tlbrannan@alaska.edu Emily Sousa, eesousa@alaska.edu Cheryl Williams, cherylann99645@gmail.com

About the Partnership: The University of Alaska Fairbanks (UAF) Partnership engages in climate education focusing on issues important to local communities. UAF supports Alaska schools, teams, and projects by providing professional development, GLOBE supplies and equipment, and travel support. The Partnership connects students with scientists and Indigenous knowledge holders, matching expertise with the subject matter focus of student projects.

2024 Highlights:

- UAF engaged 480 informal and formal educators and community members in professional development workshops. Approximately 1,500 youth
 were engaged in climate learning using Arctic and Earth SIGNs (STEM Integrating GLOBE and NASA) and GLOBE activities.
- UAF and GLOBE Grandma helped educators and students participate in GLOBE's North American Fall Phenology Campaign and Year of Climate and Carbon Campaign.
- Co-hosted the Fresh Eyes on Ice Student Research Symposium (SRS) in Fairbanks in April and supported four student teams at the GLOBE Pacific and Northwest Regional SRS in May.
- UAF's Buffington and Williams joined the Ocean Policy Research Institute of Sasakawa Peace Foundation on a cruise from Japan to Palau using GLOBE protocols (see the news story on Northwest Region pages).
- Katie Spellman was an invited keynote speaker at the 2024 GLOBE Annual Meeting.

Areas of Expertise: In-service professional development, Programming for students, Elementary GLOBE, Pre-service educators, GLOBE in undergraduate classrooms, Education research, Science research, Citizen science, Informal science, Other: braiding multiple knowledge systems

Cooperating Organizations: Association of Interior Native Educators; NASA Science Activation Science Mission Directorate; NASA Citizen Science; NASA Langley Office of STEM Engagement; National Weather Service; Sealaska Heritage Institute; U.S. Fish and Wildlife Service; Fairbanks Soil and Water Conservation; Key organizations at UAF.

Funding: Arctic and Earth SIGNs NASA Cooperative Agreement; Bonanza Creek LTER Project; Winterberry Project NSF Award; Fresh Eyes on Ice NSF Award and NASA Cooperative Agreement

Publications: See the complete list of publications and presentations on the University of Alaska Fairbanks Publications and Presentations page.

News Stories:

- Gulkana study brings Girls On Ice to international stage (Alaska Native News)
- December, January BLaST Scientist of the Month (UAF student)

Student Research Support: Arctic and Earth SIGNs and Fresh Eyes on Ice projects support students in entering their research in the GLOBE International Virtual Science Symposium and SRS.

Audiences: Pre-school students, Elementary school students, Middle school students, High school students, Undergraduate students, Graduate students-service educators, PreK-12 educators, Life-long learners



SOUTH DAKOTA

SOUTH DAKOTA DISCOVERY CENTER

South Dakota Discovery Center GLOBE Partnership page

GLOBE Partner since 2015

Partnership Coordinator:

Anne Lewis annelewis@sd-discovery.org

About the Partnership: The South Dakota Discovery Center integrates GLOBE into its professional development program, enriching the program's significance and relevance. GLOBE equips K-12 educators with hands-on, place-based learning and research opportunities about water, watersheds, and Earth systems so students can explore the world in exciting ways. The South Dakota Discovery Center also leverages GLOBE in its work braiding STEM with Indigenous ways of knowing and uses GLOBE as part of a long-range water quality study in Badlands National Park.

2024 Highlights: The South Dakota Discovery Center hosted a GLOBE in-person North American Regional Meeting (NARM) workshop May 21-23 in Badlands National Park (see the news story on Northwest Region pages). This was not your usual NARM as the entire experience was an immersive field experience.

The twelve participants used GLOBE hydrology protocols to contribute to an ongoing research study of Sage Creek, explored aquatic macroinvertebrates using MacroBlitz – a GLOBE adjacent project to support the freshwater macroinvertebrate protocol – and developed a richer understanding of Indigenous Ways of Knowing through presentations with an Indigenous elder, Lakota star stories planetarium presentation and group discussion.

The NARM was held mostly outdoors except for the final discussion session. Participants camped at a primitive campground (no electricity or running water). Meals were provided by an experienced outfitter. Buffalo (*Bison bison*) were a constant presence.

Areas of Expertise: In-service professional development, Informal science, Elementary GLOBE

Funding: South Dakota Space Grant Consortium; South Dakota Department of Agriculture and Natural Resources with pass through funding from US EPA Region 8.

Audiences: Undergraduate students, Pre-service educators, Life-long learners







SRS SUMMARY

In 2024 the Pacific and Northwest Student Research Symposium (SRS) was held at the NASA Jet Propulsion Lab in Pasadena, California, from May 10-11. Students presented 22 research projects to each other and STEM professionals. Read a summary of the 2024 GLOBE Pacific SRS.

Here are some examples of student projects from the Pacific SRS.

- Measuring Nitrogen & Phosphorus Soil Depletion Rates in Relation to the Presence of Plants, Skyline High School (CA)
- Weather's Effect on Contrails, John Adams Middle School (CA)
- The Effects of Environmental Factors on Mosquitos, Assurance Learning Academy (CA)

Pacific Region Partnerships that supported student and educator teams attending the SRS include Elkhorn Slough National Estuarine Research Reserve, WestEd/UC Berkeley, and NASA Jet Propulsion Laboratory.

GLOBE NEWS HIGHLIGHTS

In February, 14 GLOBE community members attended the Pacific North American Regional Meeting (NARM) workshop. This two-day event was focused on providing Trainer candidates with opportunities to demonstrate GLOBE atmosphere and hydrosphere protocols. Read a summary of the <u>Pacific Region NARM</u>.



OTHER GLOBE NEWS

• GLOBE is Adopted at Two National Estuarine Research Reserves in California (Elkhorn Slough National Estuarine Research Reserve)

PARTNERSHIPS

Read about the activities and accomplishments of the following Pacific Region GLOBE Partnerships in this section.

- Elkhorn Slough National Estuarine Research Reserve, California
- Los Angeles Public Library, California
- WestEd/UC Berkeley, California
- University of Nevada Reno, Nevada

Other Pacific Region Partnerships are listed in the Appendix.

CALIFORNIA



ELKHORN SLOUGH NATIONAL ESTUARINE RESEARCH RESERVE

Elkhorn Slough NERR

GLOBE Partner since 2016

Partnership Coordinator:

Peggy Foletta peggyfoletta@gmail.com 559-970-9467

Team Member:

John Haskins john@elkhornslough.org

About the Partnership: Elkhorn Slough National Estuarine Research Reserve (NERR), located in Monterey Bay, California, is part of a system of 30 NERR sites in the United States. Elkhorn Slough NERR has created engaging field trip options that include GLOBE-based mini-investigations using GLOBE protocols in hydrosphere, atmosphere, and biosphere. Educators participate in GLOBE workshops every year and are offered support in their efforts to implement GLOBE at their sites. Elkhorn Slough NERR continues to increase the reach of GLOBE around Monterey Bay.

2024 Highlights:

- Elkhorn Slough NERR conducted its sixteenth GLOBE onsite workshop for Grades 5-12 formal and informal educators from July 10-11, and one train-the-trainer session at the Reserve.
- GLOBE Trainer Peggy Foletta uploaded <u>GLOBE water quality protocol videos</u> to YouTube to help anyone who would like to visualize how these protocols are carried out. Also included is background information about the protocol.
- GLOBE trainer Peggy Foletta partnered with the San Francisco NERR scientist Matt Ferner and Nico Janik of the WestEd/UC
 Berkeley GLOBE partnership to conduct a GLOBE educator training at San Francisco NERR's Tiburon Center, June 17-18, for
 San Francisco area educators. NERRs are ideal settings for GLOBE trainings. Matt and Peggy continue to encourage other
 NERRs to include GLOBE trainings at their locations around the country.
- The California Strong consortium collaborated on conducting a GLOBE train-the-trainer as part of an in-person GLOBE North American Regional Meeting hosted by the Office of Outdoor and Environmental Education for the Los Angeles Unified School District. Peggy Foletta was one of the trainers at the event.
- Peggy Foletta guided students at the 2024 GLOBE Annual Meeting through an investigation of Lake Erie water quality. She helped them come up with an investigative question and taught them how to conduct Hydrosphere protocols.

Areas of Expertise: In-service professional development, Programming for students, Elementary GLOBE, Citizen science, Informal science

Cooperating Organizations: Elkhorn Slough Foundation; Monterey Bay Aquarium; Pacific Grove Museum of Natural History; Monterey County Office of Education; Santa Cruz County Office of Education; Monterey Bay Aquarium Research Institute; Moss Landing Marine Labs; Western Flyer Foundation

Funding: NOAA; California Department of Fish and Wildlife; Elkhorn Slough Foundation

Student Research Support: Elkhorn Slough NERR has worked with several local teams that attended or submitted projects at virtual SRS. Having held two SRS at our site, we hosted several more student projects and our scientists were reviewers and keynote speakers at these events.

Audiences: Elementary school students, Middle school students, High school students, Undergraduate students, Graduate students, PreK-12 educators, Life-long learners



CALIFORNIA

LOS ANGELES PUBLIC LIBRARY

Los Angeles Public Library GLOBE Partnership page

GLOBE Partner since 2018

Partnership Coordinator:

Vivienne Byrd, vbyrd@lapl.org (213-228-7552)

About the Partnership: The Los Angeles Public Library's (LAPL) Neighborhood Science initiative collaborates with GLOBE to enhance environmental and Earth literacy by providing free programs and loanable kits. Through this initiative, local residents are empowered to engage in scientific research through hands-on data collection in their own neighborhoods, fostering both education and awareness at the community level. LAPL plays a crucial role in encouraging community members to learn at their own pace and contribute meaningfully to global scientific efforts.

2024 Highlights: In 2024, the Neighborhood Science (NeiSci) initiative at the Los Angeles Public Library successfully established a training program for the Los Angeles Unified School District's Climate Education Literacy Champions. Additionally, LAPL engaged an audience of 700 principals and administrative staff during an introductory webinar on NeiSci, laying the groundwork for a broader integration of environmental literacy across the district.

LAPL's NeiSci initiative also resonated on national and international platforms through conference presentations:

- 2024 American Library Association Annual Conference in San Diego
- 2024 Southern California Linux Expo (on the theme of open data/open science)
- Librarians in Response webinar as part of the International Federation of Library Associations, focusing on "Bridging Citizen Science and Sustainable Development Goals"

These presentations highlighted LAPL's innovative approach to offering loanable kits that equip participants to explore locally relevant environmental concerns and contribute data using the GLOBE Observer app, showcasing how libraries can serve as pivotal community hubs for citizen science.

We also presented to South Korean school librarians and pre-service librarians from the University of British Columbia to discuss the GLOBE program and NeiSci kits, inspiring them to replicate our model.

Vivienne Byrd volunteered with an academic librarian in Malaysia to introduce academic and public librarians across five provinces on starting participatory science programs. This initiative sparked enthusiasm among Malaysian librarians for joining the GLOBE community and advanced discussions about integrating Malaysia into the GLOBE network.

Areas of Expertise: In-service professional development, Programming for students, Elementary GLOBE, Citizen science, Informal science

Cooperating Organizations: NASA Jet Propulsion Lab; University of Southern California; University of California Los Angeles; Institute for Global Environmental Strategies; Natural History Museum of LA County; LA Sanitation and Environment; LA Department of Water and Power; LA Recreation and Parks; LA Unified School District

Funding: Library Foundation of Los Angeles and LA City budget allocated for STEAM Enhancement fund.

Publications and Presentations:

- 2024 LAUSD Climate Literacy Webinar Slides
- 2024 Libraries in Response Webinar Slides (request access)

Audiences Pre-school students, Elementary school students, Middle school students, High school students, Pre-service educators, PreK-12 educators, Life-long learners

CALIFORNIA



WESTED/UC BERKELEY

WestEd/UC Berkeley GLOBE Partnership Page

GLOBE Partner since 2011

GLOBE Mission Earth webpage

Partnership Co-Coordinators:

Svetlana Darche sdarche@wested.org 415-203-4181

Tracy Ostrom tostrom@berkeley.edu

Nico Janik njanik@wested.org

Team Members:

Robin Montoya, rmontoy@wested.org
Matt Silberglitt, msilber@wested.org
Melissa Rego, mrego@wested.org
Jonathan Boxerman, jboxerm@wested.org
Burr Tyler, btyler@wested.org

About the Partnership: The WestEd/UC Berkeley GLOBE partnership works with formal and informal educators interested in inspiring their learners to engage with their communities. We provide professional learning opportunities for educators and work with learners directly. We aim to support students' career development by providing opportunities for students to interact with working scientists and other STEM professionals.

2024 Highlights: We continue to collaborate with the California Strong Earth System Science Team. In 2024, the collaborative partners completed several joint projects.

- Elkhorn Slough National Estuarine Research Reserve, NASA Jet Propulsion Laboratory, and WestEd/UC Berkeley completed an international GLOBE collaboration guide.
- The team completed a series of GLOBE trainings for Solar System Ambassadors. The trainings began in summer 2023 and provided ambassadors with an opportunity to learn more about integrating GLOBE in K-12 classrooms.
- The San Francisco Bay NERR worked intensively with WestEd/UC Berkeley to refine a microplastics protocol. It also hosted a GLOBE training in concert with the Elkhorn Slough NERR and WestEd/UC Berkeley partnerships.

Areas of Expertise: In-service professional development, Programming for students, Engineering, Education research, Other: Career Technical Education and Work-Based Learning

Cooperating Organizations: GLOBE Mission Earth; The New Mexico Public Education Department; California Strong; WestEd PLACES project; American River Conservancy; Chabot Space and Science Center

Funding: NASA Science Activation Cooperative Agreement for GLOBE Mission Earth

Publications and Presentations: See the complete list of publications and presentations on the <u>WestEd/UC Berkeley Publications and Presentations page</u>.

Student Research Support: We support educators and prepare students for the GLOBE Pacific Regional Student Research Symposium (SRS). Every year we work with educators to take a group of learners to the SRS to present their research posters. In 2024, we co-hosted the SRS with the NASA Jet Propulsion Laboratory in Pasadena, California.

Audiences: Elementary school students, Middle school students, High school students



NEVADA

UNIVERSITY OF NEVADA RENO

University of Nevada Reno GLOBE Partnership page

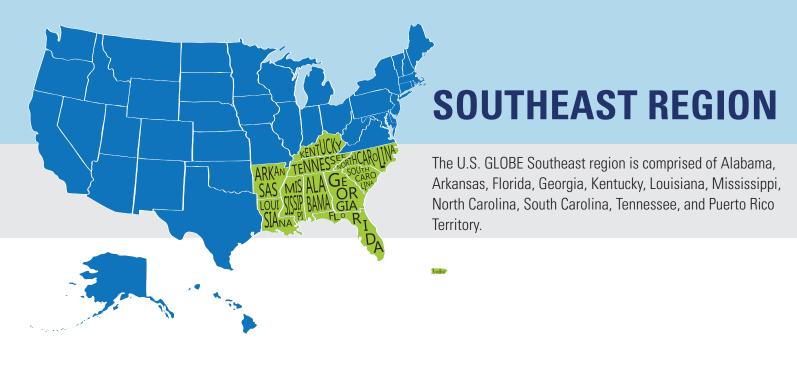
GLOBE Partner since 2012

Partnership Coordinator:

Megan Beckam mbeckam@unr.edu

Areas of Expertise: Pre-service educators

Audiences: Pre-service educators, Elementary school students



SRS SUMMARY

Nineteen student scientists gathered on April 5 and 6, 2024, at the INFINITY Science Center in Pearlington, Mississippi, for the U.S. GLOBE Southeast Student Research Symposium. The students traveled to the symposium with educators and chaperones from Alabama, Louisiana and Mississippi. Read a summary of the 2024 GLOBE Southeast SRS.

Here are some examples of student projects from the Southeast SRS.

- Pearl River Pollution, Bayou View Middle Schools (MS)
- WATT'S UP? Measuring Solar Energy by Clouds in Rural America, St. Helena Parish Schools (LA)
- Investigating the Effects of Automobile Emissions on the Sequestration of Carbon in Oak and Pine Trees,
 Opp High School (AL)

Southeast Region Partnerships that supported student and educator teams attending the SRS include AMSTI and INFINITY Science Center.

GLOBE NEWS HIGHLIGHTS

Alabama was once a highly active state in The GLOBE Program, with over 970 participating schools. After the retirement of the Partnership Coordinator in 2019, participation in GLOBE declined. The Alabama Math, Science, and Technology Initiative (AMSTI) has been working to re-build their GLOBE training team and provide sustainability for the Partnership. Read more in The Re-Establishment of GLOBE in Alabama.



OTHER GLOBE NEWS

• North Carolina Educators Study Climate and the Earth as a System Using GLOBE (University of North Carolina Charlotte)

PARTNERSHIPS

Read about the activities and accomplishments of the following Southeast Region GLOBE Partnerships in this section.

- AMSTI, Alabama
- University of South Florida, Florida
- University of West Georgia, Georgia (USA)
- INFINITY Science Center, Mississippi
- Elizabeth City Community College, North Carolina
- University of Tennessee at Chattanooga, Tennessee

Other Southeast Region Partnerships are listed in the Appendix.

ALABAMA



AMSTI

AMSTI GLOBE Partnership page

GLOBE Partner since 2006

Partnership Coordinator:

Keri Richburg keri.richburg@alsde.edu

About the Partnership: The Alabama Math, Science, and Technology Initiative (AMSTI) is the professional learning arm of the Alabama State Department of Education. We utilize GLOBE to help us train math and science K-12 educators in hands-on science and mathematics learning.

2024 Highlights: AMSTI held two GLOBE Hydrosphere workshops:

• March 2024 in Weeks Bay, AL 25 attendees

• October 2024 in Florence, AL 25 attendees

Areas of Expertise: In-service professional development, Pre-service educators

Audiences: PreK-12 educators



FLORIDA

UNIVERSITY OF SOUTH FLORIDA

USF Community Engagement

GLOBE Partner since 2007

Partnership Coordinator:

Teresa Greely greely@usf.edu 727-553-3921

Team Member:

Makenzie Kerr burrowsm@usf.edu

About the Partnership: We focus on professional opportunities for educators and STEM graduate students, and citizen science for K–12 students and community groups. Most environmental monitoring is learning how to use science tools, including GLOBE atmosphere and hydrosphere protocols. Each summer we use GLOBE protocols to take atmospheric and hydrology data during our 3-week program called the Oceanography Camp especially for Girls (OCG).

2024 Highlights:

- In 2024, we initiated conversations with our city leadership to continue our NOAA B-WET program beyond the grant cycle. The program includes elementary students collecting cloud observations and surface temperatures and Elementary GLOBE training for educators. Our request is for five years of sustained funding to provide outdoor, coastal field trips for 750 young scholars and 50 educators annually.
- During the 2024 OCG, 30 teens and 15 mentors collected atmospheric and hydrology data throughout the Tampa Bay and within the Gulf. They collected data on nutrients, salinity, oxygen, pH, water and air temperature, clouds, and wind speed.
- Dr. Teresa Greely, as a Fulbright specialist, partnered with Antigua to develop a series of oceanography programs for high school and college students. She has included GLOBE in the planning and connected GLOBE leadership with the Ministry of Education in Antigua to initiate a new GLOBE country.

Areas of Expertise: In-service professional development, Programming for students, Elementary GLOBE, Citizen science, Informal science

Funding: NOAA

Audiences: Elementary school students, Middle school students, High school students, Undergraduate students, Graduate students, PreK-12 educators, Life-long learners

GEORGIA



UNIVERSITY OF WEST GEORGIA

University of West Georgia GLOBE Partnership page

GLOBE Partner since 2001

Partnership Coordinator:

Randa Harris rharris@westga.edu 678-839-4056

About the Partnership: The State University of West Georgia will undertake responsibility for recruiting GLOBE schools, training GLOBE educators and mentoring GLOBE students throughout northwest Georgia.

Areas of Expertise: In-service professional development, Pre-service educators, Science research



MISSISSIPPI

INFINITY SCIENCE CENTER

INFINITY Science Center

GLOBE Partner since 2015

Partnership Coordinator:

Donna Torres dtorres@visitinfinity.com 228-324-1574

Team Member:

Steven Cruthirds educator1@visitinfinity.com

About the Partnership: INFINITY Science Center educates and informs its visitors on the importance of collecting environmental monitoring data for NASA scientists. Through educating the general public in the use of the GLOBE Observer app and informing and training classroom educators on how to bring meaningful environmental research to their classroom, INFINITY is striving to inspire a more environmentally responsible populous.

2024 Highlights:

- INFINITY Science Center hosted the 2024 U.S. GLOBE Southeast Student Research Symposium.
- INFINITY Science Center was represented at the 2024 GLOBE Annual Meeting in Fredonia, NY. The GLOBE Annual meeting provided insight and information about programs offered through other partners that INFINITY Science Center can implement to bring a better understanding to the changes in our environment. Connections and conversations throughout the annual meeting have been instrumental in a renewed focus within INFINITY Science Center's programming.
- Steven Cruthirds, an INFINITY Science Center GLOBE educator, presented a lightning talk for the 2024 Virtual North American Regional Meeting titled "Increasing Engagement with Video for Small Organizations." INFINITY Science Center uses videos shared on YouTube to promote our programs. Steven created a video on how use the GLOBE Observer app to collect cloud information.

Areas of Expertise: In-service professional development, Programming for students, Elementary GLOBE, Citizen science, Informal science, Education research

Cooperating Organizations: Local school districts across the Mississippi Gulf Coast

News Stories:

• <u>Students Present GLOBE Research at INFINITY Science Center with NASA ASTRO CAMP Community Partners Team</u> (NASA Science, April 6)

Funding: Private donations from INFINITY Science Center supporters as available; U.S. GLOBE Office Partner Travel Funding

Student Research Support: INFINITY Science Center serves as a resource hub for educators interested in participating in student research. We offer assistance in creating research guestions, reviews of projects and general support.

Audiences: Elementary school students, Middle school students, High school students, Undergraduate students, PreK-12 educators, Life-long learners

NORTH CAROLINA



ELIZABETH CITY STATE UNIVERSITY

Elizabeth City State University

GLOBE Partner since 2019

Partnership Co-Coordinators:

Linda Hayden haydenl@mindspring.com

Sheryl Bradford sbradford@ecsu.edu 252-335-3697 (Bradford)

Team Members:

Lonisha Whidbee, lowhidbee953@gmail.com Jennifer Podrasky, JPODRASKY@ecpps.k12.nc.us

About the Partnership: The Elizabeth City State University (ECSU) Partnership has chosen to focus activities on enhanced learning of hydrology and atmospheric protocols while assisting pre-service and in-service educators in understanding these protocols. ECSU assists educators to become certified as GLOBE-trained educators through eTraining and in-person training.

2024 Highlights:

- Four students participated in the ECSU summer 2024 program. Each completed Hydrology and Atmosphere GLOBE protocol certification. In addition, participants were required to:
 - 1. Submit 2 data sets to the GLOBE database.
 - 2. Complete all GLOBE Assessments for Hydrology and Atmosphere.
 - 3. Watercoolers: Participate in and report on 2 past Watercooler events.
 - 4. Join the U.S. GLOBE Community mailing list.
 - 5. Join and contribute to our U.S. Program Educators Facebook Group.
- 2024 ECSU GLOBE pre-service educator training closing luncheon was held on Friday November 1 in Elizabeth City. We awarded
 the Dr. Maurice Powers GLOBE Pre-service Educators Award, which included a \$250 honorarium and certificates. Students spoke
 on their GLOBE Atmosphere and Hydrology training experience.
- Students in the STEM Club Elizabeth City Pasquotank Public Schools (ECPPS) River Road Middle School created a presentation titled "Today's news is about monitoring Earth's Atmosphere."

Areas of Expertise: In-service professional development, Elementary GLOBE, Pre-service educators, GLOBE in undergraduate classrooms, Informal science

Cooperating Organizations: STEM Club Elizabeth City Pasquotank Public Schools (ECPPS)

Funding: IEEE-Geoscience and Remote Sensing Society (GRSS) Chapter #03191; ECSU STEM Operations Program (Dr. Sheryl Bradford, manager)

Audiences: Middle school students, Undergraduate students, Pre-service educators



TENNESSEE

UNIVERSITY OF TENNESSEE AT CHATTANOOGA

University of Tennessee at Chattanooga GLOBE Partnership page

GLOBE Partner since 2016

Partnership Coordinator:

Deborah McAllister Deborah-McAllister@utc.edu 423-425-5376

Team Members:

Peggy Moyer Dot Finch

About the Partnership: The University of Tennessee at Chattanooga Partnership provides educator professional development for STEM content and pedagogy for an audience of pre-service and in-service educators.

2024 Highlights:

• Professional development sessions presented selected activities from the Elementary GLOBE Air Quality and Climate storybooks. Participants received a kit of materials to take to their schools. Participants also completed training in the Clouds protocol and became certified as GLOBE educators.

Areas of Expertise: In-service professional development, Elementary GLOBE, Pre-service educators, Education research, Citizen science, Informal science

Funding: Tennessee Space Grant Consortium

Audiences: Pre-service educators, PreK-12 educators







SRS SUMMARY

In 2024 the Southwest Student Research Symposium (SRS) was held May 3-4 at All Saints' Episcopal School in Fort Worth, Texas, with over 70 attendees. GLOBE students and educators traveled from Kansas, New Mexico and Texas to share their research during a poster session. Read a summary of the 2024 GLOBE Southwest SRS.

Here are some examples of student projects from the Southwest SRS.

- Water Quality in Our Community, Mescalero Apache School (NM)
- The Effects of a Solar Eclipse on Abiotic and Biotic Factors, All Saint's Episcopal School (TX)
- Soil Sampling Effect of population density on pollution, UT Tyler University Academy Tyler (TX)

Southwest Region Partnerships that supported student and educator teams attending the SRS include University of Texas at Tyler, Texas STEM Coalition, and NASA Langley Research Center.

GLOBE NEWS HIGHLIGHTS

The GLOBE U.S. Coordination Office interviewed GLOBE student Caydence, who spent the 2022 summer interning with the STEM Enhancement in Earth Science (SEES) summer internship program. Read more about <u>Caydence's SEES internship</u>.



PARTNERSHIPS

Read about the activities and accomplishments of the following Southwest Region GLOBE Partnerships in this section.

- Fort Hays State University, Kansas
- El Paso Community College, Texas
- Texas STEM Coalition, Texas
- University of Texas at Tyler, Texas

Other Southwest Region Partnerships are listed in the Appendix.

KANSAS



FORT HAYS STATE UNIVERSITY

Fort Hays State University GLOBE Partnership page

GLOBE Partner since 2005

Partnership Coordinator:

Paul Adams padams@fhsu.edu 785-628-5344

About the Partnership: GLOBE at Fort Hays State University (FHSU) partners with faculty to provide professional development workshops on GLOBE related topics. We also support GLOBE data collection efforts related to GLOBE at Night and GLOBE Observer.

2024 Highlights:

- FHSU, through the Kansas NASA Space Grant, sponsored a Wind Energy Workshop in the fall of 2024 for middle school educators. The GLOBE team collaborated on the workshop to share GLOBE activities related to clouds and wind to develop a global perspective on wind and its potential as an alternative energy source.
- GLOBE Partner Paul Adams collaborated with an online astronomy course for college students to introduce the students to GLOBE at Night as an example of citizen science. The students in the class, many of whom are nontraditional students, indicated that they involved family and friends with the project.

Areas of Expertise: In-service professional development, Elementary GLOBE, Pre-service educators, GLOBE in undergraduate classrooms, Citizen science

Cooperating Organizations: FHSU Science and Mathematics Education Institute.

Funding: External grants, when available, are used to support activities.

Audiences: PreK-12 educators, Life-long learners



TEXAS

EL PASO COMMUNITY COLLEGE

El Paso Community College GLOBE Partnership page

GLOBE Partner since 2019

Partnership Coordinator:

John Olgin jolgin@epcc.edu 915-383-5934

Team Members:

Dr. Adriana Perez Dr. Olienka de La O Fernandez

About the Partnership: We promote environmental education, awareness, and research to academic institutions and the international community. We promote GLOBE protocols and use of the GLOBE Observer app.

2024 Highlights:

- Participated in an in-person North American Regional Meeting workshop (California) to become a GLOBE Trainer (in progress).
- Engaged with AmericaView in promoting art and science, along with utilizing STELLA technologies.

Areas of Expertise: Programming for students, Pre-service educators, GLOBE in undergraduate classrooms, Education research, Science research, Citizen science, Informal science

Cooperating Organizations: La Nube Science Museum; El Paso Community College; Tornillo Independent School District; University of Texas at El Paso; AmericaView; Texas STEM Coalition; Texas Park and Recreation; Gene Roddenberry Planetariums

Funding: El Paso Community College

Publication:

GLOBE and My NASA Data Collection, Visualization and Analysis through Concept Mapping

News Stories:

- El Paso College and NASA partner for solar eclipse viewing, cultural talk (CBS4)
- Community Conversations: EPCC professor discusses total eclipse, safe viewing practices (KFOX14, video)
- Dr. John Olgin is LIVE nationally on Telemundo (EPCC News, Instagram photo)
- Inside EPCC: Earth Science Day (EPCC TV)
- Visiting Professor Discusses Satellite Imagery in Art (EPCC.edu)

Audiences: Elementary school students, Middle school students, High school students, Undergraduate students, Pre-service educators, Graduate students, PreK-12 educators, Life-long learners

TEXAS



TEXAS STEM COALITION

Texas STEM Coalition GLOBE Partnership page

GLOBE Partner since 2019

Partnership Coordinator:

Michael Odell mrlodell@gmail.com

Team Members:

Joe Ferrara Kristian Fischer

About the Partnership: The Texas STEM Coalition GLOBE Partnership provides a venue for recruiting, training, follow-up, and dissemination of the GLOBE Program across Texas. Specifically, the annual Texas STEM conference includes a GLOBE focused strand to promote GLOBE and student environmental research. The coalition also provides GLOBE educators with a venue to present their GLOBE activities during the conference.

2024 Highlights:

- Supported the GLOBE Southwest Student Research Symposium in Fort Worth, Texas.
- 2024 Texas STEM Conference offered sessions on Elementary GLOBE.
- Provided eclipse glasses statewide.

Areas of Expertise: In-service professional development, Elementary GLOBE, Education research

Cooperating Organizations: University of Texas Tyler GLOBE Partnership; All Saints Episcopal School Fort Worth

Funding: Volunteers

Student Research Support: Provided support to schools including poster printing for SRS

Audience: Life-long learners



TEXAS

UNIVERSITY OF TEXAS AT TYLER

UT Tyler webpage

GLOBE Partner since 2005

Partnership Co-Coordinators:

Teresa Kennedy tkennedy@uttyler.edu 903-566-7132 Michael Odell modell@uttyler.edu

Team Members:

Kristian Fischer, Ent-ze Chong, Jason McGregor, Tim Kennedy

About the Partnership: The University of Texas at Tyler is responsible for recruiting, training and mentoring educators in GLOBE activities and facilitating student research in schools across East Texas. Students take GLOBE measurements at their schools on the UT Tyler campus. The Partnership focuses on training pre-service and in-service educators and facilitating student research at the UT Tyler University Academy Lab Schools in Tyler, Palestine, and Longview.

2024 Highlights:

- GLOBE pre-service training workshops for all UT Tyler elementary educators and secondary science educators.
- Integration of GLOBE into the UTeach Research Methods Course required of all secondary STEM education majors.
- Completion of the 100K Strong CLIMA grant with Argentina.
- Continued participation and support of the GLOBE Southwest Student Research Symposium.
- Provided GLOBE equipment to the University Academies including new Davis automated weather stations.

Areas of Expertise: In-service professional development, Elementary GLOBE, Programming for students, Pre-service educators, GLOBE in undergraduate classrooms, Education research, Citizen science, Informal science

Cooperating Organizations: Texas STEM Coalition Partnership; University Academy Lab Schools

Funding: 100KStrong Grant (Partners of the Americas); local support

Publication:

• UT Tyler gave 7 presentations at workshops and conferences. View a list on the <u>UT Tyler (GLOBE) Publications and</u> Presentations page.

News Stories:

- UT Tyler Partners with Argentina University on Climate Research
- UT Tyler partners with Argentina university on climate research (CBS19)
- Tyler students conduct research on bacteria linked to lung disease (KLTV)

Student Research Support: Partnership staff work with students at the University Academies for Empower Fridays where students work on GLOBE research projects.

Audiences: Elementary school students, Middle school students, High school students, Undergraduate students, Graduate students, Pre-service educators, Life-long learners

PARTNERSHIP AREAS OF EXPERTISE

| Partnership | State | In-service PD | Programming for students | Elementary GLOBE | Pre-service educators | GLOBE in undergraduate classroor | Engineering | Education research | Science research | Citizen science | Informal science | 0ther |
|--|----------------|---------------|--------------------------|------------------|-----------------------|----------------------------------|-------------|--------------------|------------------|-----------------|------------------|--|
| AMSTI | Alabama | Χ | | | Χ | | | | | Х | Х | |
| University of Alaska Fairbanks | Alaska | Χ | Х | Χ | Χ | Χ | | Χ | Χ | Χ | Χ | Braiding multiple knowledge systems |
| Elkhorn Slough National Estuarine Research Reserve | California | Χ | Х | Χ | | | | | | Χ | Χ | Systems |
| Los Angeles Public Library | California | Χ | Χ | Χ | | | | | | Χ | Χ | |
| WestEd/UC Berkeley | California | Χ | Х | | | | Χ | Χ | | | | Career Technical Education and work-based learning |
| University of South Florida | Florida | Χ | Χ | Χ | | | | | | Χ | Χ | Work buscu lourning |
| University of West Georgia | Georgia | Χ | | | Χ | | | | Χ | | | |
| Fort Hays State University | Kansas | Χ | | Χ | Χ | Χ | | | | Χ | | |
| Gulf of Maine Research Institute | Maine | Χ | | | | | | | Χ | Χ | Χ | Facilitating networks to support STEM learning |
| NASA Goddard | Maryland | Χ | Х | Χ | Χ | Χ | Χ | Χ | Χ | Χ | Χ | |
| Boston University | Massachusetts | Χ | Х | Χ | | | | Χ | | | Χ | Atmosphere, biosphere, and hydrosphere protocols |
| Global STEM Education Center | Massachusetts | Χ | Х | | | | | | | Χ | Χ | |
| Grand Valley State University | Michigan | Χ | Х | Χ | Χ | Χ | | | Χ | Х | Χ | |
| Wayne RESA | Michigan | Χ | Х | | Χ | Χ | Χ | | | Χ | Χ | |
| INFINITY Science Center | Mississippi | Χ | Х | Χ | | | | Χ | | Χ | Χ | |
| University of Nevada Reno | Nevada | | | | Χ | | | | | | | |
| Leitzel Center at the University of New Hampshire | New Hampshire | Χ | Х | Χ | | | | | | Х | | |
| Institute for Earth Observations | New Jersey | Χ | | | | Χ | Χ | Χ | Χ | Χ | Χ | |
| Queens College | New York | Χ | Х | Χ | Χ | | | | | Χ | Χ | |
| Institute for Research in Science Teaching | New York | Χ | Х | Χ | Χ | Χ | Χ | Χ | Χ | Χ | | |
| Elizabeth City State University | North Carolina | Χ | | Χ | Χ | Χ | | | | | Χ | |
| University of Toledo | Ohio | Χ | Х | Χ | Χ | Χ | Χ | Χ | Χ | Χ | Χ | |
| Xcite Learning/Bowling Green State University/Toledo Zoo | Ohio | Χ | Х | Χ | Χ | | | | | | | |
| Berks Nature | Pennsylvania | Χ | Χ | Χ | | | | | | Χ | Χ | |
| South Dakota Discovery Center | South Dakota | Χ | | Χ | | | | | | | Χ | |

PARTNERSHIP AREAS OF EXPERTISE continued

| Partnership | State | In-service PD | Programming for students | Elementary GLOBE | Pre-service educators | GLOBE in undergraduate classrooms | Engineering | Education research | Science research | Citizen science | Informal science | 0ther |
|---|---------------|---------------|--------------------------|------------------|-----------------------|-----------------------------------|-------------|--------------------|------------------|-----------------|------------------|--------------------|
| University of Tennessee at Chattanooga | Tennessee | X | | Х | Х | 0 | | Х | 0) | Х | X | 0 |
| El Paso Community College | Texas | | Χ | | Х | X | | Х | X | X | X | |
| Texas STEM Coalition | Texas | Х | | Χ | | | | Х | | | | |
| University of Texas at Tyler | Texas | Х | Χ | Χ | Χ | Χ | | Χ | | X | X | |
| Institute for Global Environmental Strategies | Virginia | Х | Χ | Χ | | Х | | | Χ | Χ | | Life-long learning |
| NASA Langley | Virginia | Х | Χ | Χ | | | | | Х | Χ | Х | |
| Katherine Johnson NASA IV&V Education Resource Center | West Virginia | Х | Χ | Χ | Х | | | | | Χ | | |
| West Virginia University, Department of Geology & Geography | West Virginia | Х | | | | Х | | Х | Х | | Х | |
| University of Wisconsin - Madison | Wisconsin | Х | Χ | Χ | | | | | Х | Х | Х | |



U.S. GLOBE 2024 NEWS ROUND-UP

These articles were posted on the <u>U.S. GLOBE news page</u> in 2024. The full stories are available from the linked titles.

JANUARY TO MARCH

- Caydence P. Finds SEES Internship "Incredibly Rewarding"
- 14 October 2023 Annular Eclipse Round-up
- January 2024 Updates to U.S. Partner Forum
- New Jersey GLOBE Partnership Takes the First Steps with Dr. John Francis, Planetwalker: "From South Jersey to South Africa"
- Recapping the Pacific In-Person North American Regional Meeting

APRIL TO JUNE

- Wildlife Biologist Ready to Answer Phenology Questions
- Students Present GLOBE Research at INFINITY Science Center
- "Satellites and Remote Sensing" NARM Summary
- U.S. Partners Share Solar Eclipse Activities
- U.S. GLOBE Students Contribute 50 Projects to IVSS
- Camp Counselors Gather for GLOBE Goes to Camp Conference
- Defiance, Ohio, Hosts In-Person NARM
- GLOBE Students Present Research at Jet Propulsion Laboratory
- Northeast/Mid-Atlantic Students Showcase Environmental Research at Berks Nature
- Boston University AguaROVER Design project
- Midwest Students Present Research at Toledo Zoo and Aguarium
- All Saints' Episcopal School Hosts Southwest Students' Research
- Students Share Research at U.S. GLOBE Student Research Symposia
- New Hampshire Students Help Create the Earth Around Us Water Tent
- Going Global in West Virginia with GLOBE



U.S. GLOBE 2024 NEWS ROUND-UP continued

JULY TO SEPTEMBER

- GLOBE and STEELS Standards in Pennsylvania
- The Re-Establishment of GLOBE in Alabama
- 2024 GLOBE Annual Meeting Highlights: U.S. Partners
- GLOBE's North American Regional Meeting at Badlands National Park
- Summer Camp Focused on Sustainability and Sustainable Development Goals with GLOBE
- N is for Nube: Top 5 Must-Have English-Spanish Resources About Clouds
- N is for Nube: Los 5 mejores recursos en inglés y español sobre las nubes
- North Carolina Educators Study Climate and the Earth as a System Using GLOBE
- GLOBE is Adopted at Two National Estuarine Research Reserves in California
- A Love Letter to the GLOBE Website: Using GLOBE's Digital Tools for Student Engagement
- GLOBE and Dr. John Francis Invite Educators and Students to Take a Planetwalk

OCTOBER TO DECEMBER

- Student Field Days at Earth Heart Farms Fall 2024!
- If You Build It (to Be Fun and Engaging), They Will Come (to NARM)
- GLOBE Expands Its Reach in Massachusetts
- U.S. GLOBE Office Shares GLOBE at North American Association for Environmental Education Conference





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Haley Wicklein, U.S. Assistant Country Coordinator; Jodi Haney, Trainer/Mentor Trainer and Partner Sustainability Lead; Jennifer Bourgeault, U.S. Country Coordinator; Alicia Carlson. Outreach and Communications Lead; Eleanor Jaffee, Outside Evaluator



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