

2024 UNITED STATES GLOBE PARTNER YEARBOOK

CLOBE Program.

www.globe.gov/web/united-states-of-america

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 <u>www.globe.gov</u>.

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 current U.S. GLOBE Partners
- 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

<u>Planetwalk:</u> 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. <u>Read a summary of the 2024 NARM</u>.

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 <u>GLOBE Mini-Grants Awards Padlet</u>.

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.S. GLOBE Watercoolers YouTube playlist.

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 <u>North American Phenology Campaign</u>. 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.

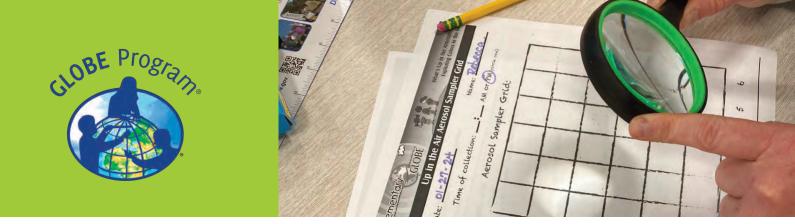
There were a few superstar reporters! Most notably:

- 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)

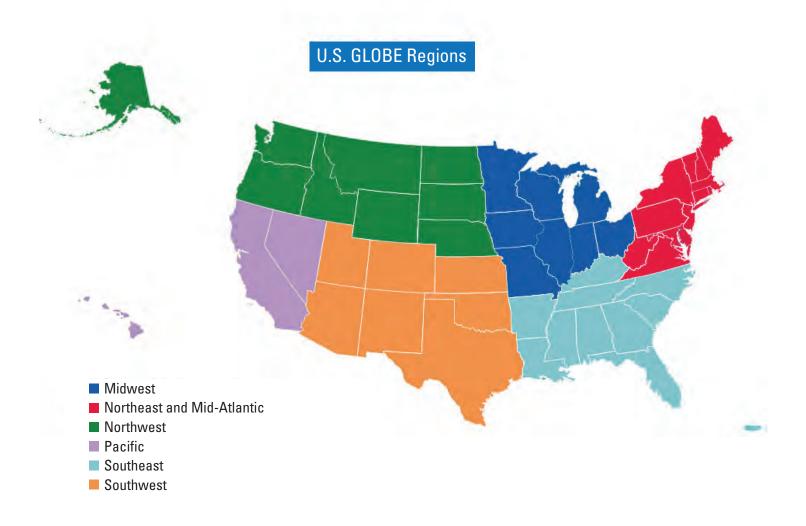






U.S. GLOBE REGIONS

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

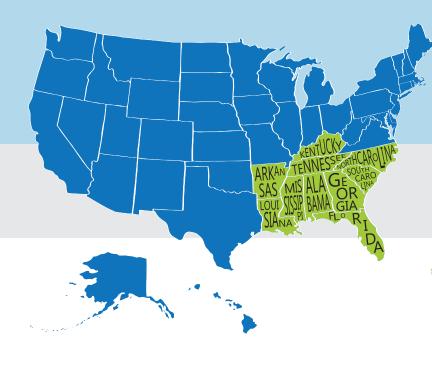
California, Nevada, Hawaii

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



SOUTHEAST REGION

The U.S. GLOBE Southeast region is comprised of Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, and Puerto Rico Territory.

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. <u>Read a summary of the 2024 GLOBE Southeast SRS</u>.

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 <u>The Re-Establishment of GLOBE in Alabama</u>.



OTHER GLOBE NEWS

• <u>North Carolina Educators Study Climate and the Earth as a System Using GLOBE</u> (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 questions, 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





U.S. GLOBE 2024 NEWS ROUND-UP

These articles were posted on the U.S. GLOBE news page 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
- <u>New Jersey GLOBE Partnership Takes the First Steps with Dr. John Francis, Planetwalker: "From South Jersey to South Africa"</u>
- Recapping the Pacific In-Person North American Regional Meeting

APRIL TO JUNE

- Wildlife Biologist Ready to Answer Phenology Questions
- <u>Students Present GLOBE Research at INFINITY Science Center</u>
- "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 AquaROVER Design project
- Midwest Students Present Research at Toledo Zoo and Aquarium
- 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



2024 CURRENT U.S. GLOBE PARTNERSHIPS

Alabama

AMSTI (pg. 48) Keri Richburg keri.richburg@alsde.edu

Alaska

<u>University of Alaska Fairbanks</u> (pg. 36) Dr. Elena Sparrow ebsparrow@alaska.edu (907) 474-7699

Arizona

Biosphere 2 Dr. Kevin Bonine kebonine@email.arizona.edu

Northern Arizona University

Mansel A. Nelson mansel.nelson@nau.edu

Arkansas

<u>Arkansas Partnership for STEM Education</u> Keith Harris krharris@ualr.edu

<u>University of Arkansas</u> Lynne H. Hehr Ihehr@uark.edu

California California Academy of Sciences/ Science Action Club Mauna Dasari mdasari@calacademy.org

<u>Central San Joaquin Valley Partnership</u> Leigh-Ann Olsen Iolsen@kingsburghigh.com

Elkhorn Slough National Estuarine Research Reserve

(pg. 42) Peggy Foletta peggyfoletta@gmail.com (559) 970-9467

Los Angeles Public Library (pg. 43)

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

Los Angeles Unified School District

Henry Ortiz henry.ortiz@lausd.net

NASA Jet Propulsion Laboratory

Peter Falcon pcfalcon@jpl.nasa.gov

New Education Options

Bo Lebo bolebo@duck.com

WestEd/UC Berkeley (pg. 44)

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

Colorado

<u>CIRES Education Outreach</u> Jonathan Griffith Jonathan.Griffith@colorado.edu

<u>Metropolitan State University of Denver</u> Janelle Johnson jjohn428@msudenver.edu

<u>UCAR Center for Science Education</u> Julie Malmberg malmberg@ucar.edu

Connecticut <u>Talcott Mountain Science Center</u> John Pellino jpellino@tmsc.org

Florida Florida Agricultural and Mechanical University Dr. Katherine Milla

Katherine.milla@famu.edu

<u>University of South Florida</u> (pg. 49) Teresa Greely greely@usf.edu (727) 553-3921

WeatherSTEM by Ucompass.com, Inc. Edward Mansouri emansouri@weatherstem.com

Georgia

<u>Center for Sustainable Communities</u> Garry Harris gharris@htsenterprise.com

SOSSI – Saving Our Sons & Sisters International LLC

Chuck Barlow Jr info@iamsossi.org

<u>University of West Georgia</u> (pg. 50) Randa Harris rharris@westga.edu (678) 839-4056

Illinois

Illinois State University Dr. Do-Yong Park dpark@ilstu.edu

Northern Illinois University Nathan Stansell nstansell@niu.edu

Western Illinois University

Dr. Redina Herman rl-herman@wiu.edu

Indiana

Purdue University Steven Smith mrsmith@purdue.edu

lowa

<u>Iowa Academy of Science</u> Marcy Seavey marcene.seavey@uni.edu

Kansas

Fort Hays State University (pg. 58) Paul Adams padams@fhsu.edu (785) 628-5344

Kansas State University Kimberly Staples kstaples@ksu.edu

Louisiana College of Education, University of New Orleans

Diane Maygarden dmaygard@uno.edu

Southeastern Louisiana University Deborah Dardis deborah.dardis@selu.edu

Xavier University of Louisiana

Morewell Gasseller gasseller2001@yahoo.com

Maine

<u>Gulf of Maine Research Institute</u> (pg. 20) Robin Lea rlea@gmri.org

Maryland

<u>Arlington Echo Outdoor Education Center</u> Eoin O'Neill eoneill@aacps.org

Earth Networks Anuj Agrawal aagrawal@earthnetworks.com

<u>NASA Goddard Space Flight Center</u> (pg. 21) Todd Toth todd.e.toth@nasa.gov (717) 414-1822

Massachusetts Boston University School of Education (pg. 22) Peter Garik garik@bu.edu (617) 353-4735

Global STEM Education Center, Inc. (pg. 23)

Larisa Schelkin larisa.schelkin@globalstemcenter.org

Michigan

<u>Grand Valley State University</u> (pg. 12) Amanda Syers syersam@gvsu.edu (616) 331-3792

Northern Michigan University

Mitchell Klett mklett@nmu.edu

Wayne RESA (pg. 13) David Bydlowski davidbydlowski@me.com (734) 306-9508

Minnesota

<u>Concordia Language Villages</u> Denise Phillippe phillipp@cord.edu

<u>Gidakiimanaani- wigamig (Our Earth Lodge) -</u> <u>Nat'l Cntr for Earth-surface Dynamics</u> Holly Pellerin pell0078@umn.edu

Hamline University Dr. Brian Haskell haskell@umn.edu

Wilderness Inquiry

Mary Mallinger mary@wildernessinquiry.org

Mississippi

INFINITY Science Center (pg. 51) Donna Torres dtorres@visitinfinity.com (228) 324-1574

University of Mississippi

Dr. Debby Chessin dchessin@olemiss.edu

University of Southern Mississippi

Dr. Sherry Herron sherry.herron@usm.edu

Montana

Salish Kootenai College Anthony Berthelote anthony_berthelote@skc.org

Stone Child College

Douglas Crebs douglas_crebs@hotmail.com

Nebraska

<u>STEM Education at Glacier Creek Preserve</u> Ashlee Dere adere@unomaha.edu

Nevada

Nova77 STEM Workshop Partner Ping Wang pingwang@nova77.org

<u>University of Nevada, Reno</u> (pg. 45) Megan Beckam mbeckam@unr.edu

New Hampshire <u>Leitzel Center at the University of New Hampshire</u> (pg. 24) Haley Wicklein haley.wicklein@unh.edu

New Jersey

Institute for Earth Observations (pg. 25) John D. Moore mr.moore.john@gmail.com (856) 829-1900

New Mexico

<u>New Mexico Public Education Department</u> Shafiq Chaudhary shafiq.chaudhary@state.nm.us

New York

Institute for Research in Science Teaching (pg. 26) Dr. Michael Jabot jabot@fredonia.edu

<u>Queens College</u> (pg. 27) Peter Schmidt peter.schmidt@qc.cuny.edu (516) 510-4451

North Carolina

<u>Elizabeth City State University</u> (pg. 52) Sheryl Bradford sbradford@ecsu.edu (252) 335-3697

Southwestern Community College

Matthew Cass mcass@southwesterncc.edu

<u>University of North Carolina at Charlotte</u> Alisa Wickliff abwickli@uncc.edu

North Dakota

<u>University of North Dakota</u> Dr. Matt Gilmore gilmore@atmos.und.edu

Ohio

NASA AESP Glenn Research Center Susan Kohler susan.m.kohler@nasa.gov

University of Toledo (pg. 14)

Dr. Kevin Czajkowski kevin.czajkowski@utoledo.edu (419) 530-4274

Xcite Learning/NWO@BGSU/The Toledo Zoo (pg. 15)

Jodi J. Haney jhaney3@mac.com (419) 350-8469

Oklahoma

Southeastern Oklahoma State University Katheryn Shannon kshannon@se.edu

Southeastern Oklahoma State University -

McCurtain County Campus Dr. Cathy Stewart Lightsey clightsey@se.edu

The University of Tulsa

Dr. David Brown david-brown@utulsa.edu

Oregon

<u>Alder Creek Community Forest</u> Jim Proctor jproctor@lclark.edu

College of Earth, Ocean, Atmospheric Sciences (CEOAS)

Peder Nelson peder.nelson@oregonstato.edu

Pennsylvania

Berks Nature - The Nature Place (pg. 28) Michael Griffith michael.griffith@berksnature.org (610) 372-4992

Legacy Bridges STEM Academy, Inc. Joi Spraggins dripi@legacybridges.academy

PA Virtual Charter School

Shaikha BuAli sbuali@pavcsk12.org

<u>SciStarter Science for Citizens, LLC</u> Hined Rafeh hined@scistarter.com

Puerto Rico <u>University of Puerto Rico, Mayaguez Campus</u> Dr. Juan Lopez Garriga lopezj@uprm.edu

South Carolina <u>Clemson University</u> Dr. Cynthia Minchew Deaton cdeaton@clemson.edu

South Dakota South Dakota Discovery Center (pg. 37) Anne Lewis annelewis@sd-discovery.org

Tennessee <u>Tennessee State University</u> Dr. David Padgett dpadgett@tnstate.edu

University of Tennessee at Chattanooga (pg. 53)

Dr. Deborah McAllister deborah-mcallister@utc.edu (423) 425-5376

Texas

<u>El Paso Community College</u> (pg. 59) John Olgin jolgin@epcc.edu (915) 383-5934

ESC Region 05 - Silsbee Conference Center - TRC

Roxanne Minix-Wilkins rminix-wilkins@esc5.net

Texas Southern University Dr. Obot Ekwere obot.ekwere@tsu.edu

<u>Texas STEM Coalition</u> (pg. 60) Michael Odell modell@uttyler.edu <u>Texas Tech University - CISER – TRC</u> Brett Mosley Brett.Mosley@ttu.edu

<u>The University of Texas at Tyler</u> (pg. 61) Teresa Kennedy

tkennedy@uttyler.edu (903) 566-7132

Vermont

<u>Shelburne Farms</u> Joan Haley jhaley@shelburnefarms.org

Virginia

Institute for Global Environmental Strategies (pg. 29) Cassie Soeffing cassie_soeffing@strategies.org (703) 312-0824

<u>NASA Langley Research Center</u> (pg. 30) Jessica Taylor jessica.e.taylor@nasa.gov

<u>Science Systems and Applications, Inc.</u> (SSAI) Holli Riebeek Kohl holli.kohl@nasa.gov

Virgin Islands St. Croix Foundation/ Virgin Islands Department of Labor Dr. Michelle D. Peterson mpeters@uvi.edu

Washington

University of Washington Bothell Dr. Blakely Tsurusaki btsuru@uw.edu

West Virginia

Katherine Johnson NASA IV&V Education Resource Center (pg. 31) Josh Revels jrevels@fairmontstate.edu (304) 367-8436

West Virginia University Department of Geology

and Geography (pg. 32) Nektaria Adaktilou nektaria.adaktilou@mail.wvu.edu (304) 694-3424

Wisconsin

<u>University of Wisconsin – Madison</u> (pg. 16) Michael Notaro mnotaro@wisc.edu (608) 261-1503

At-Large

<u>National Wildlife Federation – Eco-Schools USA</u> Jennifer Hammonds HammondsJ@nwf.org From the bottom of our hearts, our office would like to emphatically shout "THANK YOU" to all the Partners at the 100 Partnerships across the U.S. who are making GLOBE happen in their communities through trainings, programming, providing equipment and resources, and supporting the research of youth, educators, and citizen scientists!



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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