

2024 UNITED STATES GLOBE PARTNER YEARBOOK

Northeast and

Mid-Atlantic Region

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.

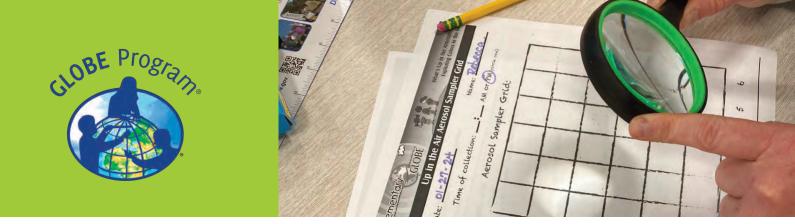
There were a few superstar reporters! Most notably:

- 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)

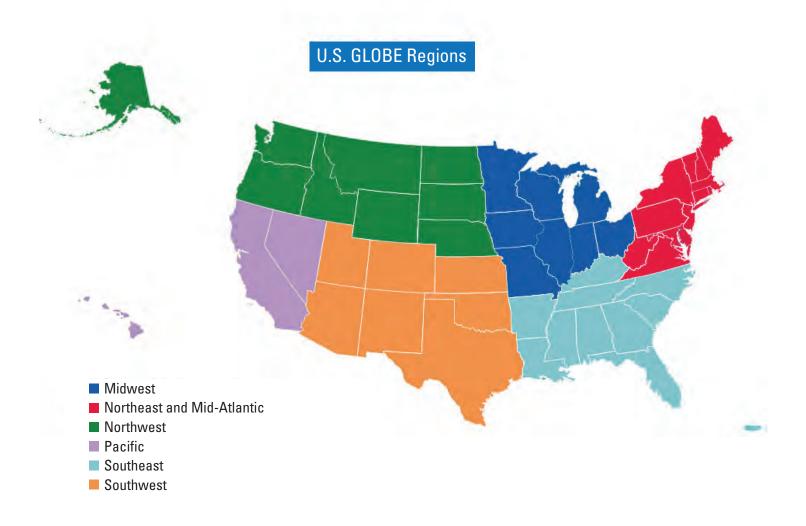






U.S. GLOBE REGIONS

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

NORTHEAST AND MID-ATLANTIC REGION

The U.S. GLOBE Northeast and Mid-Atlantic region is comprised of Delaware, District of Columbia, Connecticut, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia.

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. <u>Read a summary of the 2024 GLOBE Northeast and Mid-Atlantic SRS</u>.

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 <u>"Satellites and Remote Sensing" NARM</u>.



OTHER GLOBE NEWS

- <u>New Jersey GLOBE Partnership Takes the First Steps with Dr. John Francis, Planetwalker:</u> <u>"From South Jersey to South Africa"</u> (Institute for Earth Observations)
- Boston University AquaROVER Design project (Boston University)
- <u>New Hampshire Students Help Create the Earth Around Us Water Tent</u> (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

Partnership Coordinator:

Robin Lea rlea@gmri.org

Team Members:

Meggie Harvey mharvey@gmri.org

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 STEM 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, nationally, 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)

Institute for Global Environmental Strategies Institute for Global Environmental Strategies Partnership Page (GLOBE) GLOBE Partner since 2017

Partnership Coordinator:

Team Members:

Cassie Soeffing cassie_soeffing@strategies.org 703-312-0824 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)
- <u>HCS science teacher leaders trained in using GLOBE protocols for student data collection and sharing with NASA</u> (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 jrevels@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 Ioanable 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:

- <u>Students make space their destination at Fairmont State summer camp</u> (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 <u>Program</u>" (AGU poster)

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





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

<u>University of Washington Bothell</u> 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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Find a complete copy of the 2024 U.S. GLOBE Partner Yearbook.