

NISE Network Earth & Space Partner Meeting

Arizona State University February 13–15, 2019



Welcome

The National Informal STEM Education Network (NISE Network) is a community of informal educators and scientists dedicated to supporting learning about science, technology, engineering, and math (STEM) across the United States. The NISE Network community encourages STEM learning opportunities across the United States by bringing cutting-edge research to museum exhibits and programs, improving the practices of educators and scientists, and creating lasting, valuable relationships among individuals and organizations.

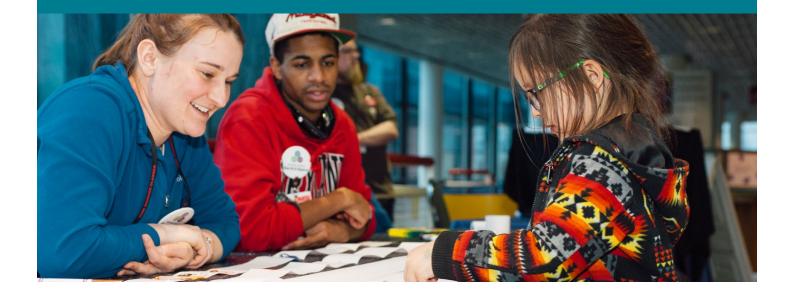
Meeting Goals

1. Participants will identify ways they can enhance their public engagement efforts related to Earth and space science by using NISE Network and NASA Science Activation products and resources.

2.Participants will increase their knowledge of Earth and space science content and develop skills related to informal STEM education.

3.Participants will learn strategies and opportunities to increase local collaborations with other organizations and with Earth and space science subject matter experts.

4. Participants will understand the goals, impact, and learnings of NISE Net's Earth & Space project and feel motivated to continue and increase their project-related work.



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Travel

MEETING HOTELS:

Tempe Mission Palms Hotel and Conference Center

(Meeting venue) 60 E 5th St, Tempe, AZ 85281 www.destinationhotels.com/tempe-mission-palms 480.894.1400

Residence Inn by Marriott Tempe Downtown/University

510 S Forest Ave, Tempe, AZ 85281 www.marriott.com/hotels/travel/phxtd-residenceinn-tempe-downtown-university 480.967.2300

TRANSPORTATION:

Tempe Mission Palms Hotel shuttle

Complimentary airport shuttle service is available between 5:30am and 10:00pm for the 10-minute or so ride to the hotel. After arriving at Sky Harbor Airport, please pick up your luggage at baggage claim, if needed, and call the Tempe Mission Palms Operator at 480.894.1400 to inform them of your terminal number. The hotel will provide directions on where to wait. Hotel vans are white with the hotel logo. Shuttles should arrive within 20 minutes. We will coordinate return shuttle service to the airport following the conclusion of the meeting. You can also arrange for this service at the front desk.

Taxi and ridesharing

Lyft, Uber, and other rideshare services are available at the Phoenix Sky Harbor Airport and in Tempe with service throughout the valley. Also, here is a list of recommended taxicab services:

Campus Cab	480.232.4511
Tempe Taxi Co.	480.406.5030
AZ Taxi Cab Co.	480.332.1192

Light rail

The valley's light rail system connects downtown Tempe with Sky Harbor Airport, downtown Phoenix, and west Mesa. The light rail stop closest to the meeting hotels is at Third Street and Mill Avenue. More information is available: www.valleymetro.org

Bus

Tempe's FLASH shuttle system runs Mon–Fri, 6:45 am–1:00 am, with buses every 10–15 min stopping at points around the periphery of the ASU campus. For a route map, visit: www.valleymetro.org/mapsschedules/flsh

The Orbit "Free Circulator Neighborhood" shuttle system runs more extensively throughout Tempe daily. Many of the routes come within a short walking distance to the meeting hotel at the "Tempe Transportation Center." A map showing the (appropriately named planetary!) routes can be found here: www.tempe.gov/home/showdocument?id=63756

Parking

Guests staying at the hotel may use the complimentary valet parking. Local attendees not staying at the hotel will be provided a code for metered parking.



On Your Own

ТЕМРЕ

ASU Meteorite Gallery

781 E. Terrace Road (ISTB4 Building, 2nd Floor) Monday–Friday, 9am–5pm, self-guided Admission: free www.meteorites.asu.edu/visit 480.727.6625 **20-minute walk from hotels**

ASU Art Museum at Nelson Fine Arts Center

51 E. 10th Street (SE Corner of Mill Avenue and 10th Street) Tuesday–Saturday, 11am–5pm, Thursday, 11am–8pm Admission: free *www.asuartmuseum.asu.edu/visit* 480.965.2787 **15-minute walk from hotels**

Tempe Center for the Arts

700 W. Rio Salado Parkway Tuesday–Thursday, 10am–6pm, Friday and Saturday, 11am–7:30pm Gallery admission: free *www.tempecenterforthearts.com/visit* 480.350.5679

20-minute walk from hotels Discount Lyft code: TCAFEB

PHOENIX

Arizona Science Center

600 E. Washington Street, Phoenix, AZ 85004 Monday–Sunday, 10am–5pm Admission: \$18 adults, ASTC members free *www.azscience.org/visit* 602.716.2000

Please note that the NISE Network Sun, Earth, Universe exhibition is currently on display!

Children's Museum of Phoenix

215 N 7th Street, Phoenix, AZ 85034 Monday–Sunday, 9am–4pm Admission: \$15 non-members *www.childrensmuseumofphoenix.org* 602.253.0501

Desert Botanical Garden

1201 N. Galvin Parkway, Phoenix, AZ 85008 Monday–Sunday, 8am–10pm or 11pm Admission: \$25 non-members *www.dbg.org* 480.941.1225

MESA

Arizona Museum of Natural History

53 N. Macdonald, Mesa, AZ 85201 Tuesday–Saturday, 10am–5pm Admission: \$12 adults *www.arizonamuseumofnaturalhistory.org* 480.644.2230

i.d.e.a. Museum

150 W. Pepper Place, Mesa, AZ 85201 Tuesday–Thursday, 10am–4pm, Friday–Saturday, 10am–6pm Admission: \$9 adults, 50% discount for ACM members *www.ideamuseum.org* 480.644.2468

BEYOND THE VALLEY

Meteor Crater (Winslow)

about a 3-hour drive from Tempe www.meteorcrater.com

Lowell Observatory (Flagstaff)

about a 2.5-hour drive from Tempe *www.lowell.edu*

Kitt Peak Visitor Center (Tucson)

about a 2.5-hour drive from Tempe www.noao.edu/kpvc/Prog

Oak Creek Canyon hiking (Sedona)

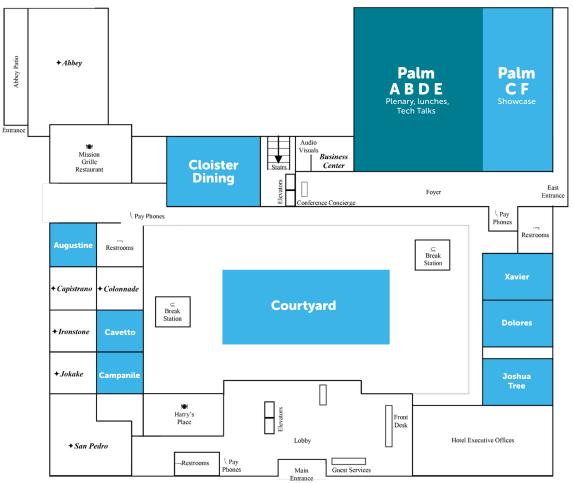
about a 2.25-hour drive from Tempe www.hikesedona.com/most-popular-hiking-trails

ASU Campus Map

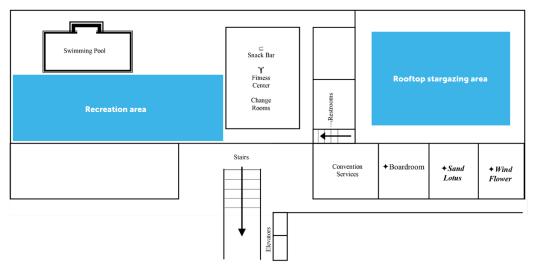


Conference Center Map





SECOND FLOOR



Agenda: Snapshot

	WEDNESDAY FEB 13	THURSDAY FEB 14	FRIDAY FEB 15
8:00 ам		Breakfast (Cloister Dining)	Breakfast (Cloister Dining)
8:30 ам		PLENARY Welcome, Introduction <i>Kristen Erickson</i> (Palm ABDE)	Welcome, Charge for the Day (Palm ABDE)
9:00 ам			
9:30 ам		PLENARY Jim Bell	PLENARY Big Stories
10:00 ам			
10:30 ам		Break	Break
11:00 АМ			
11:30 ам		CONCURRENT SESSION A	CONCURRENT SESSION C
12:00 рм			
12:15 рм		Lunch served (Cloister Dining)	Lunch served (Cloister Dining)
12:30 рм		REGIONAL HUB MEETINGS	LUNCH PLENARY
1:00 рм	Showcase setup (Palm CF)	(eat lunch in Palm ABDE)	(eat lunch in Palm ABDE)
1:30 рм		Break	Meeting concludes
1:45 рм			
2:00 рм		CONCURRENT SESSION B	
2:30 рм			
3:00 рм		Break	
3:30 рм	Registration open (Palm Ballroom Foyer)	NASA SCIENCE ACTIVATION SHOWCASE (Palm CF) and technology talks (Palm ABDE)	
5:00 рм		Break GROUP PHOTO AT 5:55 (courtyard)	
6:00 рм	Dinner served (Palm Ballroom)	Dinner served (Palm Ballroom)	
6:30 рм	DINNER PLENARY Lindy Elkins-Tanton	DINNER PLENARY Ed Finn	
7:45 рм	Networking reception and mixer (Courtyard)	Networking reception and mixer (2nd Floor recreation area)	
		Telescope viewing (Roof area)	

Agenda: Full

WEDNESDAY, FEBRUARY 13

Tempe Mission Palms Hotel, Plenaries in Palm Ballroom ABDE

3:00 – 6:00 pm	Registration open, Palm Ballroom Foyer
6:00 – 6:30 pm	Dinner served, Palm Ballroom
6:30 – 7:45 pm	DINNER PLENARY Paul Martin, <i>School for the Future of Innovation in Society, ASU</i> David Guston, <i>School for the Future of Innovation in Society, ASU</i> Lindy Elkins-Tanton, <i>School of Earth and Space Exploration, ASU</i> Space Initiatives at ASU
7:45 – 9:00 pm	Networking reception and mixer, Courtyard

THURSDAY, FEBRUARY 14

Tempe Mission Palms Hotel, Plenaries in Palm Ballroom ABDE

8:00 – 8:30 am	Breakfast, Cloister Dining
8:00 am – 3:00 pm	Showcase setup time (for showcase presenters only), Palm CF
8:30 – 9:00 am	PLENARY Welcome and Introduction Kristen Erickson, <i>NASA, Science Mission Directorate</i>
9:00 – 10:30 am	PLENARY Jim Bell, <i>School of Earth and Space Exploration, ASU</i> The Ultimate Interplanetary Travel Guide: A Futuristic Journey Through the Solar System
10:30 – 11:00 am	Break
11:00 am – 12:15 pm	CONCURRENT SESSIONS A Room: Xavier Programming for audiences with special needs
	Room: Dolores Effective facilitation techniques and strategies to have conversations with your audiences
	Room: Joshua Tree Getting the most out of your Sun, Earth, Universe exhibition
	Room: Campanile Getting the most out of your Explore Science: Earth & Space toolkits at your institution
	Room: Cavetto Programs and resources to engage teens and adults
	Room: Augustine Partnerships with youth-serving organizations
12:15 – 1:00 pm	Lunch served, Cloister Dining
12:30 – 1:30 pm	REGIONAL HUB MEETINGS (bring lunch from Cloister Dining)

1:30 – 1:45 pm Break

1:45 – 3:00 pm **CONCURRENT SESSIONS B**

Room: Xavier Working with teachers and schools to engage K–12 students in informal learning environments

Room: Dolores

Incorporating Earth and space science content into your summer camp

Room: Joshua Tree

Planning successful BIG events such as anniversaries, celebrations, and festivals

Room: Campanile

How to prepare and train event volunteers and staff

Room: Cavetto

Collaborating with experts: How to find and collaborate with Subject Matter Experts

Room: Augustine

Partnerships with community organizations and libraries

3:00 – 3:15 pm Break

3:15 – 5:15 pm NASA SCIENCE ACTIVATION SHOWCASE, Palm Ballroom CF NASA 10-MIN TECHNOLOGY TALKS, Palm Ballroom ABDE

- 5:15 5:55 pm Break until dinner
 - 5:55 pm Group photo, Courtyard
- 6:00 6:30 pm Dinner served, Palm Ballroom
- 6:30 7:45 pm **DINNER PLENARY** Ed Finn, *The Center for Science and the Imagination, ASU* Science and Imagination: A Blueprint for Better Futures
- 7:45 9:00 pm Networking reception and mixer, Courtyard Telescope viewing, 2nd Floor, roof area

FRIDAY, FEBRUARY 15

Tempe Mission Palms Hotel, Plenaries in Palm Ballroom ABDE

8:00 – 8:30 am	Breakfast
8:30 – 9:00 am	PLENARY Welcome, Charge for the Day
9:00 – 10:30 am	PLENARY Big Stories in Earth & Space Science Moderator: Darrell Porcello, <i>Children's Creativity Museum</i> Lin Chambers, <i>NASA Langley Research Center</i> Brian Day, <i>NASA Solar System Exploration Research Virtual Institute</i> Emily Law, <i>NASA Jet Propulsion Laboratory</i> Lou Mayo, <i>NASA Goddard Space Flight Center</i> Horace Mitchell, <i>NASA Goddard Space Flight Center</i> Theresa Schwerin, <i>Institute for Global Environmental Strategies</i> Denise Smith, <i>Space Telescope Science Institute</i>

10:30 – 11:00 am Break

11:00 am – 12:15 pm CONCURRENT SESSION C

Room: Xavier Engaging families and young children in Earth and space science content

Room: Dolores Partnerships in unusual places (places of worship, prisons, the beach, and canoes): Best practices, strategies, and resources for local partnerships

Room: Joshua Tree

Resources and strategies for engaging girls

Room: Campanile

Resources and strategies for engaging bilingual audiences

Room: Cavetto

A conversation about the needs and future of public engagement in Earth and space science

Room: Augustine

Making Earth and space science relevant to specific audiences and adapting to local needs

12:15 – 1:00 pm Lunch served, Cloister Room

12:30 – 1:30 pm LUNCH PLENARY (bring lunch from Cloister Dining)

1:30 pm Meeting Concludes



Featured Speakers



Jim Bell

Jim Bell is professor in the School of Earth and Space Exploration at Arizona State University and president of The Planetary Society, the world's largest public space advocacy organization. His research group at ASU primarily focuses on the geology, geochemistry, and mineralogy of planets, moons, asteroids, and comets using data obtained from telescopes as well as spacecraft missions to these worlds.

Bell is the plenary speaker Thursday morning: The Ultimate Interplanetary Travel Guide: A Futuristic Journey Through the Solar System

Do you dream of traveling to other worlds? Well, then, why not? Come with noted astronomer, planetary scientist, and interplanetary travel guide Professor Jim Bell on a predictive tour of what the solar system will have to offer in the year 2218. Hiking, sightseeing, photography, musical performances, fine dining, extreme sports, even citizen science research opportunities abound across our solar system, from Mercury through the gas giants and moons of the outer planets, and even beyond. How should you dress? What should you bring? What kinds of adventures can you expect? Let's find out!



Lindy Elkins-Tanton

Lindy Elkins-Tanton is director of the School of Earth and Space Exploration at Arizona State University, co-chair of the Interplanetary Initiative, and principal investigator of Psyche, selected in 2017 as the fourteenth mission in NASA's Discovery program.

Elkins-Tanton is the plenary speaker Wednesday evening:

Space Initiatives at ASU

The drive that humans have to explore is increasingly taking us to space. ASU is one of the university leaders in space exploration: right now we are involved in 17 active missions. Our faculty have contributed instruments to missions at the Moon, Mars, and asteroids, and we are leading missions to the Moon, to search for exoplanets, and to the metal world Psyche. Further, the ASU Interplanetary Initiative is working on defining and creating our human space future combining disciplines including policy, psychology, philosophy, sociology, science, and engineering. In this presentation I'll talk about the progress of the Psyche mission and the latest projects in research and education in the Interplanetary Initiative.



Ed Finn

Ed Finn is founding director of the Center for Science and the Imagination at Arizona State University and associate professor in the School of Arts, Media, and Engineering. He also serves as the academic director of Future Tense, a partnership between ASU, New America, and Slate Magazine, and a co-director of Emerge, an annual festival of art, ideas, and the future. Ed's research and teaching explore digital narratives, creative collaboration, and the intersection of the humanities, arts, and sciences.

Finn is the plenary speaker Thursday evening:

A Blueprint for Better Futures

Most people don't think about the future, or if they do, it is with anxiety or ambivalence. How can we change our relationship with the future and connect positive outcomes with our choices today? This talk will discuss the work of the Center for Science and the Imagination in designing and sharing visions of the future that are imaginative, inclusive, and inspiring.





Larry Bell is senior vice president for strategic initiatives at the Museum of Science in Boston. He is also a co-investigator of the NISE Network Earth & Space project and a member of the Network's executive group.

Bell is a master of ceremonies for the meeting.













Dave Guston

David H. Guston is professor and founding director of the School for the Future of Innovation in Society at ASU, where he is also co-director of the Consortium for Science, Policy & Outcomes. Professor Guston is widely published and cited on research and development policy, technology assessment, public participation in science and technology, and the politics of science policy.

Guston is extending a welcome from Arizona State University on Wednesday evening.

Paul Martin

Paul Martin is co-director of the Center for Innovation in Informal STEM Learning at Arizona State University. He is principal investigator of the NISE Network Earth & Space project and a member of the Network's executive group. *Martin is a master of ceremonies for the meeting.*

Catherine McCarthy

Catherine McCarthy is project leader at the Science Museum of Minnesota. She is a co-investigator of the Earth and space project and a member of the Network leadership team.

With the regional hub leaders, McCarthy is coordinating the concurrent sessions.

Rae Ostman

Rae Ostman is co-director of the Center for Innovation in Informal STEM Learning at Arizona State University. She is director of the NISE Network and a co-investigator of the NISE Network Earth & Space project.

Ostman is presenting during the concluding plenary at Friday's lunch.

Darrell Porcello

Darrell Porcello is director of STEM networks and partnerships at Children's Creativity Museum in San Francisco. He is a co-investigator of the NISE Network's Earth & Space project and a member of the leadership team.

Porcello is moderator for the plenary panel Friday morning.

Concurrent Sessions: A

Thursday, February 14, 11am – 12:15pm

ROOM: XAVIER

PROGRAMS & AUDIENCE ENGAGEMENT Programming for audiences with special needs	Max Cawley, Museum of Life and Science, Durham, NC* Marta Beyer, Museum of Science, Boston, MA Meagan Downey, Robinson Nature Center, Columbia, MD Carolyn Ng, NASA Goddard Space Flight Center (GSFC), Greenbelt, MD Meghan Schiedel, Terry Lee Wells Nevada Discovery Museum, Reno, NV
ROOM: DOLORES	
PROFESSIONAL DEVELOPMENT Effective facilitation techniques and strategies to have conversations with your audiences	Christina Leavell, Science Museum of Minnesota, Saint Paul, MN* Douglas Coler, Discovery Place Inc., Charlotte, NC Stephanie Long, Science Museum of Minnesota, Saint Paul, MN Sean Rooney, Oregon Museum of Science and Industry (OMSI), Portland, OR Josh Sarver, Center of Science and Industry (COSI), Columbus, OH Anika Taylor, The Bakken Museum, Minneapolis, MN
ROOM: JOSHUA TREE	
EXHIBITS Getting the most out of your Sun, Earth, Universe exhibition	Ethan Kruszka, Science Museum of Minnesota, Saint Paul, MN* Jason Craig, NASA Jet Propulsion Laboratory (JPL), Pasadena, CA Pody Gay, Discovery Network at Museum of Discovery, Little Rock, AR Emily Maletz, Emily Maletz Graphic Design, Portland, OR Tim Rhue, Space Telescope Science Institute (STScI), Baltimore, MD
ROOM: CAMPANILE	
PROGRAMS Getting the most out of your Explore Science: Earth & Space toolkits at your institution	Ali Jackson, Sciencenter, Ithaca, NY* Jacob Heck, Bootheel Youth Museum, Malden, MO Megan Norris, miSci Museum of Innovation and Science, Schenectady, NY Michael Rathbun, Discovery Center Museum, Rockford, IL Cailee Smith, ECHO Leahy Center for Lake Champlain, Burlington, VT Hever Velazquez, Science Museum of Minnesota, Saint Paul, MN
ROOM: CAVETTO	
PROGRAMS Programs and resources to engage teens and adults	Frank Kusiak, Lawrence Hall of Science, Berkeley, CA* Derrick Pitts, The Franklin Institute, Philadelphia, PA Hardin Engelhardt, Marbles Kids Museum, Raleigh, NC Brian Levine, American Museum of Natural History (AMNH), New York, NY Michael Roberts, Morrison Planetarium, Cal Academy, San Francisco, CA Lucien Scott, Creative Discovery Museum, Chattanooga, TN Marcos Stafne, Montshire Museum of Science, Norwich, VT
ROOM: AUGUSTINE	
COLLABORATIONS & PROGRAMS Partnerships with youth- serving organizations	Brad Herring, Museum of Life and Science, Durham, NC* Hadley Andersen, Bishop Museum, Honolulu, HI Rachel Carpenter, Children's Discovery Museum, Normal, IL Jason Hammond, Children's Museum of Houston, Houston, TX

(afterschool programs, scouts, Y's, 4-H, and more) Jason Hammond, Children's Museum of Houston, Houston, TX Diane LaFollette, Mid-America Science Museum, Hot Springs, AR

Concurrent Sessions: B

Thursday, February 14, 1:45pm – 3:00pm

ROOM: XAVIER

K-12 COLLABORATIONS & PROFESSIONAL DEVELOPMENT Working with teachers and schools to engage K–12 students in informal learning environments	Frank Kusiak, <i>Lawrence Hall of Science, Berkeley, CA</i> * Lindsay Bartolone, <i>Children's Creativity Museum, San Francisco, CA</i> Chloe Ducette, <i>Museum of Idaho, Idaho Falls, ID</i> Trudi Plummer, <i>Maine Discovery Museum, Bangor, MA</i> Becky Wolfe, <i>The Children's Museum of Indianapolis, Indianapolis, IN</i>
ROOM: DOLORES PROGRAMS Incorporating Earth and space science content into your summer camp	Ali Jackson, Sciencenter, Ithaca, NY* Katie (Kat) Burkhart, Carnegie Museum of Montgomery County, Crawfordsville, IN Sarajane Gomlak-Green, Buffalo Museum of Science, Buffalo, NY Joan Harper-Neely, National Institute of Aerospace, Hampton, VA Christine Shupla, Lunar and Planetary Institute (LPI), Houston, TX Rhea Waldman, South Dakota Discovery Center, Pierre, SD
ROOM: JOSHUA TREE	Christina Leavell, Science Museum of Minnesota, Saint Paul, MN*
Planning successful BIG events such as anniversaries, celebrations, and festivals	Paul Freiling, Saint Louis Science Center, Saint Louis, MO Deb Novak, New Mexico Museum of Natural History, Albuquerque, NM Keith Ostfeld, Children's Museum of Houston, Houston, TX Aaron Slonecker, Anchorage Museum, Anchorage, AK Nick Whites, WonderLab Museum of Science, Health and Technology, Bloomington, IN Kari Wouk, North Carolina Museum of Natural Sciences, Raleigh, NC
ROOM: CAMPANILE	
COLLABORATION & PROFESSIONAL DEVELOPMENT How to prepare and train event volunteers and staff	Catherine McCarthy, Science Museum of Minnesota, Saint Paul, MN* Emily Belle, Sciencenter, Ithaca, NY Alex Dour, Orpheum Children's Museum, Champaign, IL Susan Heilman, Museum of Science, Boston, MA Meghan Murray, Above & Beyond Children's Museum, Sheboygan, WI Calvin Uzelmeier, Rochester Museum & Science Center (RMSC), Rochester, NY
ROOM: CAVETTO	
COLLABORATIONS Collaborating with experts: How to find and collaborate with Subject Matter Experts	Darrell Porcello, Children's Creativity Museum, San Francisco, CA* Patricia Bresee, Kopernik Observatory & Science Center, Vestal, NY Amelia Chapman, NASA Jet Propulsion Laboratory (JPL), Pasadena, CA Kay Ferrari, NASA Jet Propulsion Laboratory (JPL), Pasadena, CA Katherine Kornei, Children's Creativity Museum, San Francisco, CA Brandon Lawton, Space Telescope Science Institute (STScI), Baltimore, MD Rimma Murta, Maui Science Center, Maui, HI Nick Spicher, Imagine Children's Museum, Everett, WA Vivian White, Astronomical Society of the Pacific (ASP), San Francisco, CA
ROOM: AUGUSTINE	
COLLABORATIONS Partnerships with community organizations and libraries	Brad Herring, Museum of Life and Science, Durham, NC* Stacey Forsyth, CU Science Discovery, Boulder, CO Anne Holland, Space Science Institute (SSI), Boulder, CO Allison Schwanebeck, Science Center of Iowa, Des Moines, IA Ray Vandiver, Discovery Lab, Tulsa, OK

* Concurrent session organizer

Concurrent Sessions: C

Friday, February 15, 11am – 12:15pm

ROOM: XAVIER

ROOM: AAVIER	
PROGRAMS Engaging families and young children in Earth and space science content	Emily Belle, <i>Sciencenter, Ithaca, NY*</i> Michelle Kortenaar, <i>Sciencenter, Ithaca, NY*</i> Gina Anderson, <i>The Children's Museum of Green Bay, Green Bay, WI</i> Dawn Baldwin, <i>Children's Museum of Science & Technology (CMOST), Troy, NY</i> Margaret Beswick, <i>Hawaii Children's Discovery Center, Honolulu, HI</i> Anne Drake, <i>Great Lakes Children's Museum, Traverse City, MI</i> Anna Hurst, <i>Astronomical Society of the Pacific (ASP), San Francisco, CA</i> Katie Julsrud, <i>Children's Museum of Eau Claire, Eau Claire, WI</i> Stephanie Kadam, <i>Stepping Stones Museum for Children, Norwalk, CT</i>
ROOM: DOLORES	
COLLABORATIONS Partnerships in unusual places (places of worship, prisons, the beach, and canoes): Best practices, strategies, and resources for local partnerships	Catherine McCarthy, Science Museum of Minnesota, Saint Paul, MN* Alan Brown, Sci-Port Discovery Center, Shreveport, LA Charlie Gibson, Michigan Science Center, Detroit, MI Derrick Pitts, The Franklin Institute, Philadelphia, PA Samantha Sands, Denver Museum of Nature & Science, Denver, CO
ROOM: JOSHUA TREE	
AUDIENCE ENGAGEMENT Resources and strategies for engaging girls	Kayla Berry, Museum of Science, Boston, MA* Angela Gaige, Milton J. Rubenstein Museum of Science & Technology (MoST), Syracuse, NY Pamela Harman, SETI Institute, Mountain View, CA Erin Hogeboom, National Girls Collaborative Project, Lynnwood, WA Lisa Hoover, Chabot Space & Science Center, Oakland, CA Karyn Knecht, Eugene Science Center, Eugene, OR Linda Shore, Astronomical Society of the Pacific (ASP), San Francisco, CA
ROOM: CAMPANILE	
AUDIENCE ENGAGEMENT Resources and strategies for engaging bilingual audiences	John Gordon, Science Museum of Minnesota, Saint Paul, MN* Marcie Benne, Oregon Museum of Science and Industry (OMSI), Portland, OR Susan Borland, Challenger Learning Center, Tallahassee, FL Kevin Dilley, Explora, Albuquerque, NM Felipe Pena, Children's Museum of Brownsville, Brownsville, TX Dan Steinberg, Princeton University, Princeton, NJ
ROOM: CAVETTO	
AUDIENCE ENGAGEMENT A conversation about the needs and future of public engagement in Earth and space science	Rae Ostman, Arizona State University, Tempe, AZ* Lin Chambers, NASA Langley Research Center, Hampton, VA Keliann LaConte, Space Science Institute, Boulder, CO Paul Martin, Arizona State University, Tempe, AZ Denise Smith, Space Telescope Science Institute (STScI), Baltimore, MD Theresa Schwerin, Institute for Global Environmental Strategies (IGES), Arlington, VA
ROOM: AUGUSTINE	
AUDIENCE ENGAGEMENT Making Earth and space science relevant to specific audiences and adapting to local needs	Darrell Porcello, Children's Creativity Museum, San Francisco, CA* Allison Anderson, Museum of Science, Boston, MA Jessica Burke, Discovery Center of Idaho, Boise, ID Mary Dussault, Harvard-Smithsonian Center for Astrophysics, Cambridge, MA Caitlin Ervin, University of Montana – spectrUM Discovery Area, Missoula, MT Zdanna King, Science Museum of Minnesota, Saint Paul, MN Laura Peticolas, Sonoma State University, Rohnert Park, CA

Showcase

1

OpenSpace/American Museum of Natural History

Carter Emmart American Museum of Natural History

Rosamond Kinzler American Museum of Natural History

Dive into craters to explore ancient ice on the Moon! Experience glowing blue sunsets on Mars! Observe the Sun's dynamic activity! Fly to the edge of the observable Universe! Take your audiences on these and other cosmic explorations with OpenSpace, a freely available opensource data visualization tool designed for presenting astronomical, planetary, and space science data from NASA and other sources in a range of settings including exhibitions, immersive theaters, and planetarium domes. Funded as part of NASA's Science Mission Directorate's Science Activation Collective and led by the Science Visualization Group at the American Museum of Natural History in New York City, a growing number of informal science institutions are using OpenSpace to present complex data with clear, compelling, dynamic, and engaging visualizations. Current ISI partners include California Academy of Sciences, Denver Museum of Nature and Science. North Carolina Museum of Natural Sciences, Houston Museum of Nature and Science. The Adler Planetarium, and The Exploratorium.

This software is updated frequently with new data sets and can be used to provide live interactive programs about NASA's exploration of the Solar System, including current missions to Mars and Pluto and historical missions such as Apollo and Voyager. A brief guide will be available with information about downloading and installing the software, basic navigation, tips and tricks, and exciting program ideas that leverage the unique visualization capabilities of OpenSpace.

www.openspaceproject.com

2 Infiniscope/Arizona State University

Ariel Anbar Arizona State University

Jessica Swan Arizona State University

Joseph Tamer Arizona State University

An open-education digital resource for educators of all types, providing a space to connect, create, and collaborate around digital learning experiences and compelling NASA visualizations.

www.infiniscope.org

3

Astronomical Society of the Pacific & NASA's Night Sky Network

Palm Ballroom CF

Anna Hurst Astronomical Society of the Pacific

Linda Shore Astronomical Society of the Pacific

Vivian White Astronomical Society of the Pacific

The mission of the Astronomical Society of the Pacific (ASP) is to increase the understanding and appreciation of astronomy to advance science literacy. Resources include books, training for formal and informal educators, and hands-on activities for a variety of audiences, from pre-K children to adults.

Administered by the ASP, NASA's Night Sky Network is dedicated to supporting informal astronomy enthusiasts in astronomy clubs across the US. Find out how to partner with these local experts to bring the awe of the night sky to your museum.

nightsky.jpl.nasa.gov www.astrosociety.org

4

NASA Earth Science Education Collaborative (NESEC)

Tina Harte

NASA Langley Research Center (LaRC)

Holli Kohl

NASA Goddard Space Flight Center (GSFC)

Rusty Low

Institute for Global Environmental Strategies (IGES)

Theresa Schwerin Institute for Global Environmental Strategies (IGES)

Jessica Taylor NASA Langley Research Center (LaRC)

NESEC is creating engaging, meaningful, and authentic STEM experiences and resources for educators and learners based on NASA Earth science that are delivered broadly through strategic collaborators and networks like NISE. NESEC is funded by NASA's Science Mission Directorate and is a partnership among four organizations: The Institute for Global Environmental Strategies (IGES) and the Earth Sciences at three NASA Centers: Goddard Space Flight Center, Langley Research Center, and Jet Propulsion Laboratory.

www.globe.gov/web/nasa-earth-science-educationcollaborative observer.globe.gov

Brian Day

NASA Solar System Exploration Research Virtual Institute

Emily Law

NASA Jet Propulsion Laboratory

NASA's Solar System Treks Project (SSTP) produces web-based interactive visualization and analysis tools that enable mission planners, planetary scientists, students, and the public to explore the surfaces of a growing number of planetary bodies as seen through the eyes of many different instruments aboard a variety of spacecraft. Views can be stacked and blended. Users can interactively fly over peaks and down into valleys in 3D mode; measure distances, heights, and depths of landforms; mark areas for output to 3D printers; and create paths for immersive viewing experience using VR goggles. While originally initiated for mission planning and science, this technology has demonstrated great benefits for STEM engagement and inspiration. As a component of NASA's STEM Activation Infrastructure, they are available as resources for NASA STEM Activation partners, and to the greater outreach and education community. As new missions are being planned to a variety of planetary bodies (including the first human missions to Mars), these tools are facilitating the public's understanding of the missions and engaging the public in the process of identifying and selecting where these missions will land.

trek.nasa.gov trek.nasa.gov/moon trek.nasa.gov/mars trek.nasa.gov/vesta trek.nasa.gov/ceres

6

NASA Space Science Education Consortium

Carolyn Ng NASA Goddard Space Flight Center

Lou Mayo

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The NASA Space Science Education Consortium (NSSEC) provides an exciting menu of products, programs, and tools to space science education. We will share some of them, including large-scale events (e.g., Eclipse 2017), data-intensive tools (Helioviewer), informal programs (Solarium, planetarium shows), citizen science (Aurorasaurus, Radio JOVE), out-ofschool time (Afterschool Universe, Family Science Night) and cross-cutting education technology.

Within NSSEC is a STEM Innovation Lab, which is a think tank for NASA scientists, engineers, and educators to explore and develop new ideas that will infuse educational technology into STEM (Science, Technology, Engineering, and Mathematics) activities, programs, and approaches. It also provides museums a platform to share their ideas, research, and results. Inside the lab is a variety of interchangeable exploration stations fitted with technologies typically found in many of today's 21st-century educational environments. By placing these stations in close proximity to each other, we encourage users to investigate how the technologies can be effectively blended together for greater impact and integration into NASA education programs and products. In this gathering we will showcase VR, 2D/3D printing, Eclipse Soundscape, and volumetric data display.

NSSEC partners with internal NASA teams as well as external organizations, including professional societies, community groups, universities, informal education venues, and minorityserving institutions. We desire to collaborate with museums and science centers to reach many more diverse populations, including people with physical disabilities.

www.steminnovationlab.org blogs.nasa.gov/stem-innovation-lab eclipse2017.nasa.gov science.nasa.gov/science-activation-team/ nasaspace-science-education-consortium

7

NASA's Museum Alliance

Amelia Chapman

NASA Jet Propulsion Laboratory

NASA's Museum Alliance is a free, active community of practice that provides informal educators access to NASA and its resources via:

- A member website of searchable resources, including a calendar of mission events, deadlines, and anniversaries
- Live and archived professional development teleconferences with NASA experts
- Personal assistance navigating NASA's extensive resources and events

The Alliance provides a platform for sharing your events and exhibits with NASA and its audiences, and advocates for informal education within NASA by providing a central nexus for feedback, requests, and communication between NASA content developers and informal educators.

Over two thousand professionals at more than a thousand museums, science centers, planetariums, Challenger Centers, observatories, parks, libraries, and youth-serving organizations are partners in the Museum Alliance.

informal.jpl.nasa.gov/museum

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Solar System Ambassadors

Kay Ferrari NASA Jet Propulsion Laboratory

The Solar System Ambassadors (SSA) program is a nationwide volunteer public engagement effort sponsored by NASA's

Science Mission Directorate and managed by NASA's Jet Propulsion Laboratory. SSAs are space enthusiasts from all walks of life who are asked to conduct and report four events annually where they share NASA's story in ways meaningful to their communities.

Ambassadors are chosen based on their exceptional communication skills and community connections. SSA training involves connecting Ambassadors with NASA scientists and engineers via webinars and telecons, providing them with the most up-to-date information and materials possible to share at their events. Ambassadors are encouraged to collaborate with members of other NASA-supported projects, including the Museum Alliance, Night Sky Network, NASA@ My Library, and the NISE Network.

Currently, there are 1,000 SSA volunteers in all 50 states, US territories, and US military bases and consulates overseas. Over the past 22 years, Solar System Ambassadors have reached almost 9.7 million people directly and more than 484 million people indirectly.

solarsystem1.jpl.nasa.gov/ssa

9 NASA's Eyes/NASA JPL

Jason Craig NASA/Jet Propulsion Laboratory

NASA's Eyes is a publicly available visualization system created by NASA JPL. Eyes allows users to virtually ride along with NASA missions, view and zoom in to realistic simulations of planets, moons, stars, and space objects studied by NASA scientists. The system is a downloadable program with daily selfupdating content from NASA featuring three museum-friendly versions: Eyes on Earth, Eyes on the Solar System, and Eyes on Exoplanets. In addition, the Eyes team is now creating web browser–based simulations that work on your mobile phone.

eyes.nasa.gov

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NASA eClips™/National Institute of Aerospace

Joan Harper-Neely National Institute of Aerospace

NASA eClips resources support standards-based instruction by increasing STEM literacy in formal and nonformal settings. The free video segments inform and engage students, through NASA-inspired, real-world connections.

NASA Spotlites are short (90–120 second), student-produced videos designed to debunk nationally recognized science misconceptions. From research to script, to screen, students build their own understanding of the science concept through creative video representations. The NASA Spotlite Design Challenge offers campers opportunities to collaborate creatively to produce science videos for other students.

NASA eClips Guide Lites focus on activities pulled from Educator Guides and are well suited for phenomenon-based science inquiry in nonformal educational settings. All Guide Lites are organized using the 5E learning model.

nasaeclips.arc.nasa.gov

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PLANETS

Lori Ann Rubino-Hare Northern Arizona University

Planetary Learning that Advances the Nexus of Engineering, Technology, and Science (PLANETS) is an interdisciplinary and cross-institutional partnership to develop and disseminate out-of-school-time (OST) curricular and professional development (PD) modules that integrate planetary science, technology, and engineering. Partners include the Center for Science Teaching and Learning at Northern Arizona University, the U.S. Geological Survey Astrogeology Science Center, and the Museum of Science, Boston.

www.eie.org/engineering-everywhere/curriculum-units

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SETI Institute

Reaching for the Stars: NASA Science for Girl Scouts NASA Airborne Astronomy Ambassadors

Pamela Harman SETI Institute

The SETI Institute (SI) is a 501 (c)(3) nonprofit scientific research institute headquartered in Mountain View, California. SI is a key research contractor to NASA and the National Science Foundation (NSF). The Institute conducts extensive education and outreach. The education programs listed below are funded by NASA SMD Sci Act cooperative agreements.

Reaching for the Stars: NASA Science for Girl Scouts (Girl Scout Stars) engages Girl Scouts and volunteers in NASA astrophysics and planetary science through new Space Science Badges, trainings, Girl Scout Astronomy Clubs, and summer camps. Girl Scout Stars disseminates STEM education–related resources, and fosters interaction between Girl Scouts and Subject Matter Experts (SMEs). The Space Science Explorer, Adventurer, and Investigator Badge Booklets for Daisies, Brownies, and Juniors, respectively, will be available for review with a few activity demos with online resources and Girl Scout Council information.

The NASA Airborne Astronomy Ambassadors (AAA) program is designed to measurably enhance student STEM achievement and engagement in selected school districts via professional development for high school science teachers. AAA participant professional development consists of training in astrophysics and planetary science content in webinar and face-to-face workshop formats, a curriculum unite, as well as a weeklong STEM immersion experience at NASA's science research aircraft facility in Palmdale, California. The SETI Institute will be recruiting school district partners for the next cycle this spring. Teachers from partner school districts with a signed MOU will submit applications this fall. Program description and timeline will be available for review.

www.seti.org/GirlScoutStars www.seti.org/aaa

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NASA@ My Library

Jaime Harold Space Science Institute

Anne Holland *Space Science Institute*

Keliann LaConte *Space Science Institute*

NASA@ My Library works with public and state libraries across the country to bring NASA science and exploration to patrons at these venues and their partner sites. NASA@ My Library includes a kit program, professional development and training opportunities, support for Community Dialogues, and a robust evaluation program. The project team will be showcasing items from their successful kit program and free Android apps. Learn about conducting Community Dialogues to work with your community on your programs. Get ideas for partnering with libraries in your community, especially during the 2019 summer celebration of space science and the 50th anniversary of the Apollo moon landing occurring at libraries across the nation.

www.starnetlibraries.org www.starnetlibraries.org/summer-of-space

14

NASA's Universe of Learning

Mary Dussault

Center for Astrophysics | Harvard & Smithsonian Center

Brandon Lawton

Space Telescope Science Institute (STScI)

Tim Rhue II

Space Telescope Science Institute (STScI)

Denise Smith Space Telescope Science Institute (STScI)

NASA's Universe of Learning creates and provides resources and experiences that enable youth, families, and lifelong learners to explore fundamental questions in science, experience how science is done, and discover the universe for themselves. Made of organizations embedded within NASA missions and that produce some of the most iconic science and imagery in the world, NASA's Universe of Learning uses its direct connection to the wonders of the cosmos and the experts behind the science to enable learning for people of all ages. NASA's Universe of Learning products and programs provide opportunities to explore current NASA Astrophysics themes in multiple ways, including authentic experiences using data and multimedia. Come experience a 360 degree fly-through of the Orion Nebula, explore the colors of visible and invisible light through ViewSpace, and search the heavens with robotic telescopes that you direct with our MicroObservatory. These and other interactive and immersive experiences allow for learners to make a personal connection to our universe.

www.universe-of-learning.org www.viewspace.org mo-www.cfa.harvard.edu/MicroObservatory

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LPI: Resources for Museums and Informal Education Venues

Christine Shupla

Universities Space Research Association (USRA) Lunar and Planetary Institute (LPI)

The Lunar and Planetary Institute has a variety of Earth and Space Science resources for museums and other out-ofschool-time venues, including small traveling exhibits, Explore hands-on activities, the Lunar and PlanetARy App, the latest planetary science news, and more.

www.lpi.usra.edu/education/out-of-school

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Northwest Earth and Space Sciences Pipeline

Tedrick Mealy NESSP

Northwest Earth and Space Sciences Pipeline (NESSP) is a collaborative NASA-funded STEM education program serving students, teachers, and their diverse communities throughout the Pacific Northwest. Our focus is to reach communities that are under-served and under-represented in STEM. This year we are holding a celebration of the 50th Anniversary of the Apollo 11 Moon landing through a drone and robot challenge called the Apollo Next Giant Leap Student Challenge (ANGLeS Challenge). Thirteen hubs around the nation have agreed to hold Regional Hub Challenges using NESSP's model, and teams that win at these challenges will earn the grand prize of a trip to Johnson Space Center in Houston, Texas! Full information, registration, and the Challenge manual will all be available at www.nwessp.org/apollo50 on February 1, 2019.

www.nwessp.org

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Gulf of Maine Research Institute

Jeff Bate

Gulf of Maine Research Institute

The Gulf of Maine Research Institute pioneers collaborative solutions to global ocean challenges. Located in Portland, Maine, GMRI is dedicated to the resilience of the Gulf of Maine ecosystem and the communities that depend on it. In service of this mission, we provide free, immersive, and authentic science education experiences for learners of all ages across Maine and beyond. Through a five-year, NASA-funded project, we and our collaborating partners are developing interactive ways in which learners can explore the local impacts of climate change through the lens of both global and local data. An essential aspiration of the project is to understand and create a model for how data-centric experiences developed in and for one place can be made applicable anywhere. Our goal is for learners in many locations to engage with a rich array of science and mathematics as they consider the connections between local science and global-scale processes, the evidence of a changing climate, and the ways human activity and climate intersect with natural systems.

What local climate story do you wish you could tell? What data sets do you need to tell it? We want to talk with and learn from science centers interested in developing highly localized, datarich engagements around climate change to better understand the challenges and opportunities involved.

www.gmri.org

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Scientific Visualization Studio/NASA Goddard Space Flight Center

Horace Mitchell

NASA Goddard Space Flight Center

The NASA Scientific Visualization Studio (SVS) works with NASA-affiliated programs and researchers to visualize their data for the purpose of communicating their goals and results in an exciting and accurate manner. All of the visual products created by the SVS and its partner groups are made available through its website and are completely free for use by the public. Although not strictly created for STEM education, SVS visualizations dramatically illustrate scientific concepts and discoveries in a way that bridges the gap between scientific knowledge and the real-world application of that knowledge. The SVS is also open to modifying existing visualizations so as to better fit the needs of external users.

svs.gsfc.nasa.gov

Parallel Technology Talks

During the Showcase: Palm Ballroom ABDE

These short talks will focus on setup and use of four popular technology platforms relevant to museum educators and visitors.

Open Space (3:15 and 4:15 pm)

Refer to Showcase 1 above. openspaceproject.com

Globe Observer App (3:30 and 4:30 pm) Refer to Showcase 4 above. observer.globe.gov

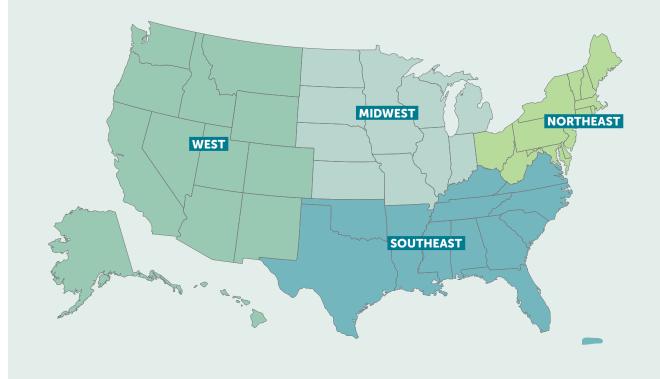
ViewSpace (3:45 and 4:45 pm)

Refer to Showcase 14 above viewspace.org

Solar System Treks (4:00 and 5:00 pm) Refer to Showcase 5 above trek.nasa.gov



Regional Hub Map



NISE NETWORK REGIONAL HUB LEADERS

The NISE Network community within the United States is organized around four "Regional Hubs" based on geographic proximity. Regional hubs facilitate partner interaction in the Network, help museum educators connect with scientists and each other, and provide support to institutions in their region. To get more involved with the Network, find your region on the map, and contact your Regional Hub Leader.



NORTHEAST

CT, DC, DE, MA, MD, ME, NH, NY, NJ, OH, PA, RI, VT, WV **Ali Jackson** Sciencenter, Ithaca, NY ajackson@sciencenter.org 607-272-0600 x144

SOUTHEAST

AL, AR, FL, GA, KY, LA, MS, NC, OK, SC, TN, TX, VA, Puerto Rico & US Virgin Islands Brad Herring Musseum of Life and Science, Durham N

Museum of Life and Science, Durham, NC brad.herring@lifeandscience.org 919-220-5429 x360

MIDWEST

IA, IL, IN, KS, MI, MN, MO, ND, NE, SD, WI Christina Leavell Science Museum of Minnesota, St. Paul, MN cleavell@smm.org 651-221-9434



WEST

AK, AZ, CA, CO, HI, ID, MT, NM, NV, OR, UT, WA, WY, American Samoa & Guam

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