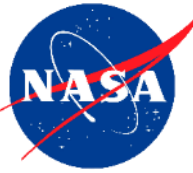




National Aeronautics and  
Space Administration



# OFFICE OF STEM ENGAGEMENT OVERVIEW

**MIKE KINCAID**

ASSOCIATE ADMINISTRATOR  
FOR STEM ENGAGEMENT



**INSPIRE - ENGAGE - EDUCATE - EMPLOY**  
The Next Generation of Explorers

# TAKING YOUR QUESTIONS



Ask Questions Using:

**arc.cnf.io**

Don't forget to vote responses up!



INSPIRE - ENGAGE - EDUCATE - EMPLOY  
The Next Generation of Explorers













# NASA's STEM ENGAGEMENT ENTERPRISE

## Vision

We immerse students in NASA's work, enhance STEM literacy, and inspire the next generation to explore.

## Mission

We engage students in NASA's mission

## FOCUS AREAS



Create **unique opportunities** for students to contribute to NASA's work in exploration and discovery.



Build a **diverse future STEM workforce** by engaging students in authentic learning **experiences** with NASA's people, content and facilities.

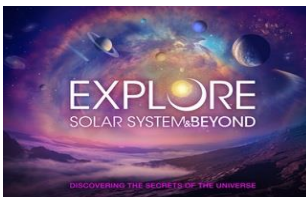


Strengthen **understanding of STEM** by enabling **powerful connections** to NASA's mission and work.



# NEW ARCHITECTURE ENABLING STUDENT OPPORTUNITIES & CONTRIBUTIONS

## NASA MISSION DIRECTORATE DRIVERS & REQUIREMENTS



## FOCUS AREAS

Evidence-based strategies

Rigorous planning



Integrated operational model

Create unique opportunities for students to contribute to NASA's work.

Build a diverse future STEM workforce by engaging students in authentic learning experiences.

Strengthen understanding by enabling powerful connections to NASA's mission and work.

Strategic, balanced portfolio

NASA-unique learning experiences



Student contributions to NASA's work in action

SCALABILITY TO MAGNIFY NASA'S REACH AND IMPACT

K-Elementary School



Middle School



High School



Undergraduate



Graduate



BENEFICIARIES OF NASA'S  
STEM ENGAGEMENT PORTFOLIO

# WE HEARD YOU

## New AA Feedback

### *National Space Grant Meeting North Dakota, September 2017*

- Improve communication between NASA and Space Grant
- Enhance efficiency and responsiveness from NASA
- Increased advocacy for SG within NASA
- Build on the uniqueness that each state brings to NASA/SG
- Enhanced relations with NASA and MDs (particularly for those states w/o NASA Centers)
- Use SG as a resource to communicate the NASA message
- Select/deploy our interns to improve the national workforce
- Provide sustainable/multi-year funding

Space Grant Feedback Session		Space Grant Feedback Session		Space Grant Feedback Session	
What does Space Grant want from NASA? (Question #1)		What are the NASA-Space Grant shared needs? (Question #2)		What can Space Grant offer NASA? (Question #3)	
Communication	31	Convert One Way Street Reporting promoting white paper twitter Different ways of thought Tell us when you come to the state; Use us as a resource	28	Bring the voice and face of NSG including its centers without NASA centers	18
Acknowledge we are NASA in our states	25	Diverse STEM Aware and educated citizens workforce	25	Too many resources across the country	22
Efficiency and responsiveness	16	Continuity and sustainability of mission funding	24	Individual state focus: We know what each of our states need and can contribute	19
Increased advocacy for SG within NASA	14	Interns workforce development and student placement	15	Diversity of educational approaches presents innovation	18
Enhanced communication with noncenter states	11	NASA State understand respect needs	13	National Advocacy for NASA	16
Finding stability and opportunity	11	Mutual effective communication	12	Reduces many barriers of nation and pipeline	11
Identify PoCs at centers	10	More stakeholders beyond academia and government	7	Standards for some ideas and network for spreading ideas	9
Break down silos	8	Transparent and retrievable reporting	6	Healthcare national network	6
Enhanced intern program	5	Industry Workforce Nationwide	6	Industrywide workforce development	6
NASA high level communication	4	Continuity/Sustainability	4	Development of high-tech workforce	6
Clarity on three		Stable consistent go		Create better links between universities and NASA centers through internship and seed grants	7
Rational for any		Shared values/Share		Enduring yet adaptable infrastructure	5
Integrate us with		Effective engagement		Individual state focus	5
Option for orgs		Awareness knowledge		Harmonize connections between NASA and stakeholders	5
More transparent		Mutual Support Share		Use very large networks about large-scale collaboration programs	4
		Effective spending		Knowledge leverage leverage	4
		Nationwide buyin		Network	4
		Workforce develop		Thinking outside the NASA box	2
		Nationwide buyin		Diversity of thought Geography	2
		Effective access to		Sustainable connections and funding	2
				Direct connection with the students how ways the students ask whatever does NASA want we request tell NASA	2



**INSPIRE - ENGAGE - EDUCATE - EMPLOY**  
The Next Generation of Explorers

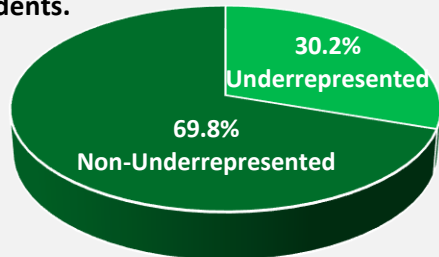


# FY18 NASA STEM ENGAGEMENT PERFORMANCE ASSESSMENT

## Internships, Fellowships and Other Higher Education (HE) Awards

8,005

In Fiscal Year 2018, NASA provided 8,005 internships, fellowships and other higher education (HE) awards to 7,357 higher education students across all institutional categories and levels. These significant awards provided a total of over **\$32M** in direct financial support to higher education students.



**30.2%** of higher education awards were made to racially or ethnically underrepresented student participants, compared to 24.5% for the national average of STEM degree enrollees.

Additionally, **39.5%** of the Agency's higher education internships and fellowship positions were filled by women.

## Research and Development



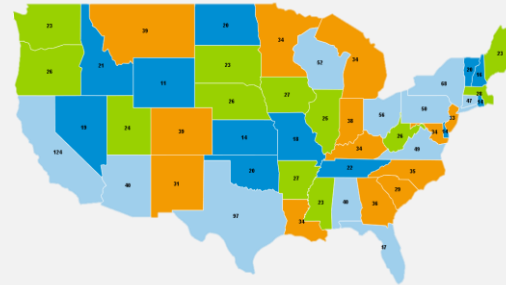
NASA's performance in providing opportunities for learners to contribute to NASA's aeronautics, space, and science missions and work technical paper is assessed across peer-reviewed publications and presentations directly resulting from research funded by NASA STEM Engagement grants and awards to higher education institutions.

1,374

Space Grant, MUREP, and EPSCoR grantee and awardee institutions reporting 1,374 peer-reviewed publications and technical papers and presentations in FY 2018.

## Collaborators

1,695



NASA's Office of STEM Engagement collaborators are funded and unfunded and located in all 50 states, DC, GU, PR, and VI. Collaborators include: government agencies, industry, formal and informal education institutions including museums, science centers, planetariums, and youth-serving organizations, non-profit, and other education organizations. Collaborators extend the reach of NASA STEM engagement opportunities by supporting the execution of an opportunity. In FY 2018 OSTEM collaborated with 1,695 institutions and organizations.

## Leveraging Partnerships and Network to Broaden the Reach of NASA STEM Engagement Investments

50+

states & territories

Competitive Grants and Cooperative Agreements Awarded to **95** Education Institutions located in all **50** States, the District of Columbia, Guam, Puerto Rico, and the Virgin Islands.

## Engaging Students in NASA Missions

827,257\* Students participated in NASA STEM engagement activities

## Training STEM Educators to Engage the Next Generation of STEM Researcher and Explorers

182,601\* Educators participated in NASA STEM engagement training activities

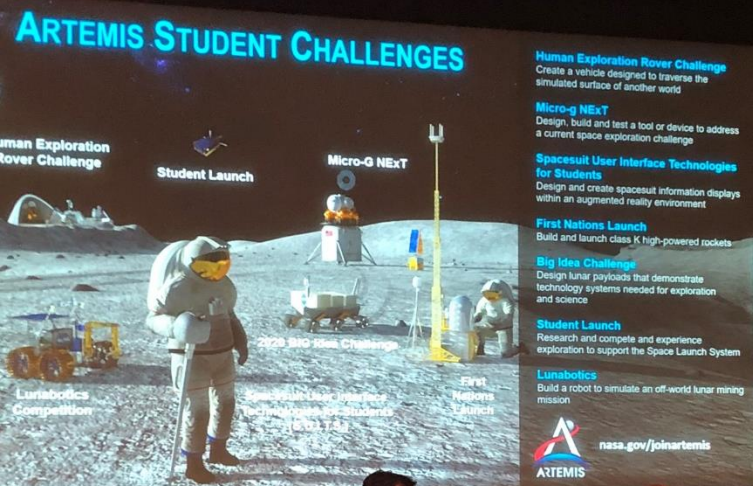


**INSPIRE - ENGAGE - EDUCATE - EMPLOY**  
The Next Generation of Explorers



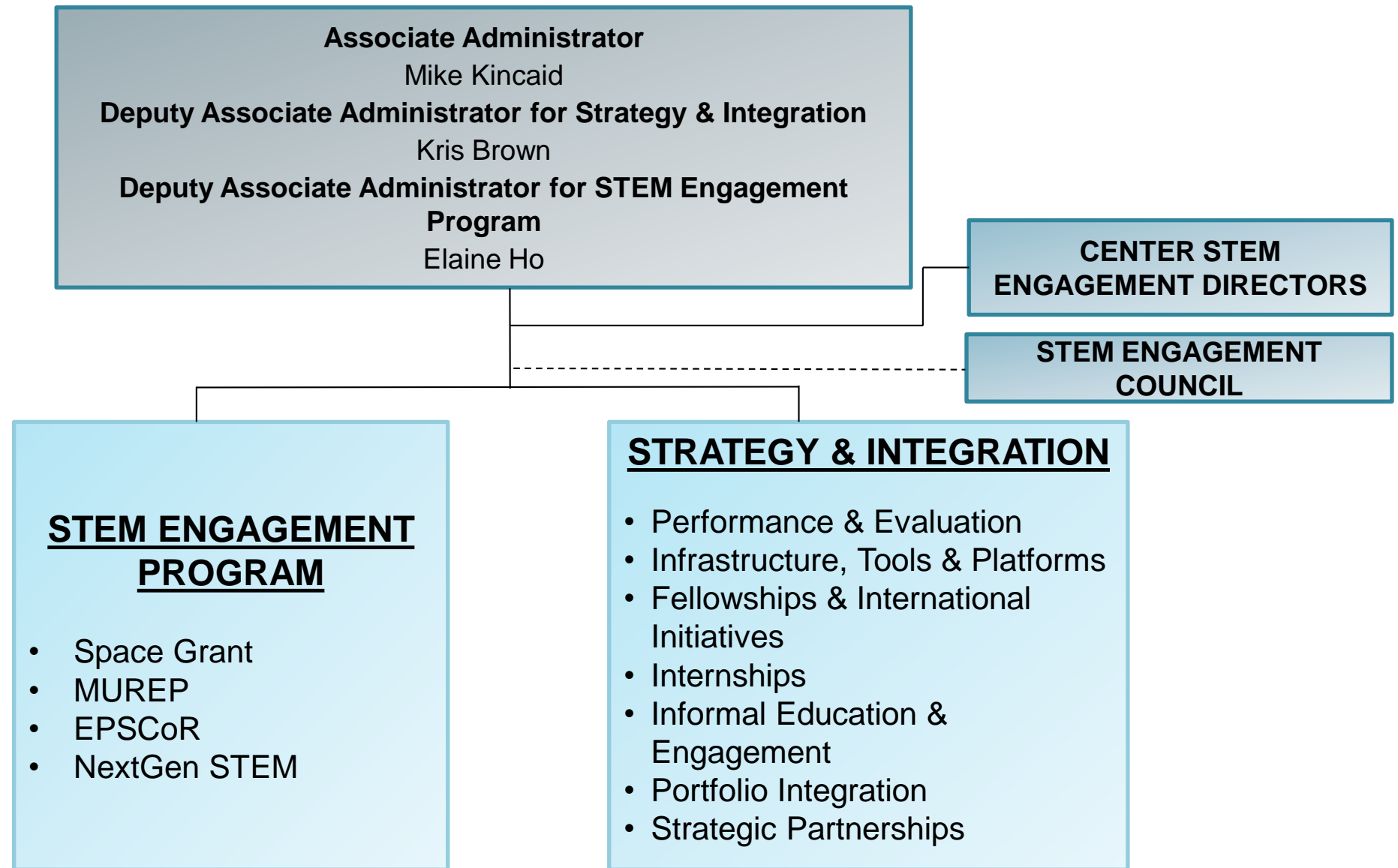
<http://stem.nasa.gov>







# NASA OFFICE OF STEM ENGAGEMENT ORGANIZATIONAL CHART AS OF FEBRUARY 21, 2020





# OSTEM SUMMIT 2020



**INSPIRE - ENGAGE - EDUCATE - EMPLOY**  
The Next Generation of Explorers

# MEGA PI 2019: WE HEARD YOU!

*"Not really time for discussion and interaction."*

*"I would have welcomed more unstructured networking time, especially on the second day"*

*"The visit to NASA GLENN took excessive time and was not necessarily tied to new topics being presented."*



*"Not having many opportunities to talk to other project managers as well as your own."*

*"I wish there could be more time for lunch chat – I know we had a fairly packed schedule, but 1-hour lunch with extensive conversations didn't feel enough!"*



**INSPIRE-ENGAGE-EDUCATE-EMPLOY**  
The Next Generation of Explorers



# WHAT DOES THIS MEAN FOR YOU?

---

## OSTEM SUMMIT GOALS

- Sharing best practices around increasing diversity, forming effective partnerships, and teaming
- Opportunities for individual project meetings
- Interactive sessions and dedicated space that promotes networking, collaboration, and integration.

# OSTEM SUMMIT DETAILS

**Who:** All OSTEM PIs plus one staff member, per awardee

**What:** Project and OSTEM meeting with specific PI communities

**When:** August 10 – 13, 2020

**Where:** Langley Research Center

**Why:** We look forward to convening the PIs across all OSTEM projects to foster greater collaboration. Website will be live by early April 2020





# NOTIONAL OSTEM SUMMIT SCHEDULE

Monday  
(LaRC)

Tuesday  
(LaRC & HRCC)

Wednesday  
(HRCC)

Thursday  
(HRCC)

8am

10am

12 noon

2pm

4pm

6pm

8pm

8am

10am

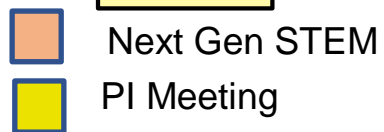
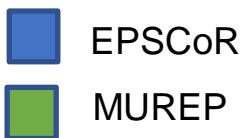
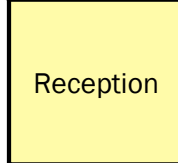
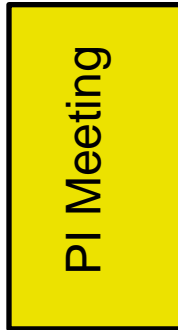
12 noon

2pm

4pm

6pm

8pm



# NEXT STEPS

---

## Mid-March:

OSTEM will reach out to all awardees and invite you to provide feedback to us on what things would you be interested in for Wednesday/Thursday's PI Meeting

## Feedback:

Short survey that OSTEM will use to inform activities and details





# TAKING YOUR QUESTIONS



Ask Questions Using:  
**arc.cnf.io**  
Don't forget to vote responses up!



**INSPIRE - ENGAGE - EDUCATE - EMPLOY**  
The Next Generation of Explorers

# MISSION DIRECTORATE SUCCESSES



Over \$1M  
investment from  
STMD and  
OSTEM



Artemis Student  
Challenges  
represent a 50-50  
cost share between  
HEOMD and  
OSTEM with up to  
\$2M in awards



VASGC lead pilot to  
bring Consortia  
together with NASA  
Aeronautics experts  
that touched the  
entire Nation



Continued  
collaboration with  
NASA's OGC that  
focuses on Space  
Law with interns at  
3 NASA Centers in  
Summer 2020



**INSPIRE - ENGAGE - EDUCATE - EMPLOY**  
The Next Generation of Explorers

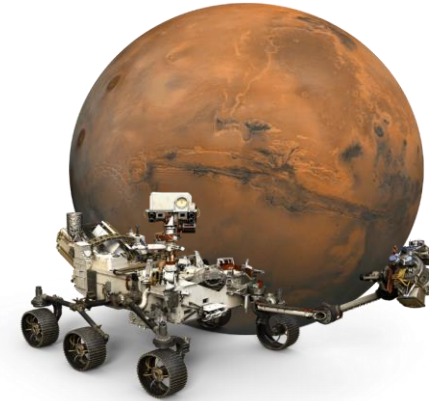


# FY20 #NASASTEM PRIORITIES

Engage students in challenges and competitions to address mission questions as NASA prepares for the Artemis program



ISS is in the classroom! Using STEM on Station content, let students engage in ISS research to deliver the excitement of science and technology to students.



Lessons and activities that use the vantage point of space to understand and explore our home planet for the 50<sup>th</sup> Anniversary of Earth Day.



Develop a toolkit of resources and content that includes engineering challenges, coding, digital badging, virtual reality and more!



Immersive virtual experiences, lessons and activities in advance of the launch and landing of Mars 2020 rover.





# ARTEMIS STUDENT CHALLENGES

**Human Exploration  
Rover Challenge**

**Student Launch**

**Micro-G NExT**

**2020 BIG Idea Challenge**

**Lunabotics  
Competition**

**Spacesuit User Interface  
Technologies for Students  
(S.U.I.T.S.)**

**First  
Nations  
Launch**

## **Human Exploration Rover Challenge**

Create a vehicle designed to traverse the simulated surface of another world

## **Micro-g NExT**

Design, build and test a tool or device to address a current space exploration challenge

## **Spacesuit User Interface Technologies for Students**

Design and create spacesuit information displays within an augmented reality environment

## **First Nations Launch**

Build and launch class K high-powered rockets

## **Big Idea Challenge**

Design lunar payloads that demonstrate technology systems needed for exploration and science

## **Student Launch**

Research and compete and experience exploration to support the Space Launch System

## **Lunabotics**

Build a robot to simulate an off-world lunar mining mission

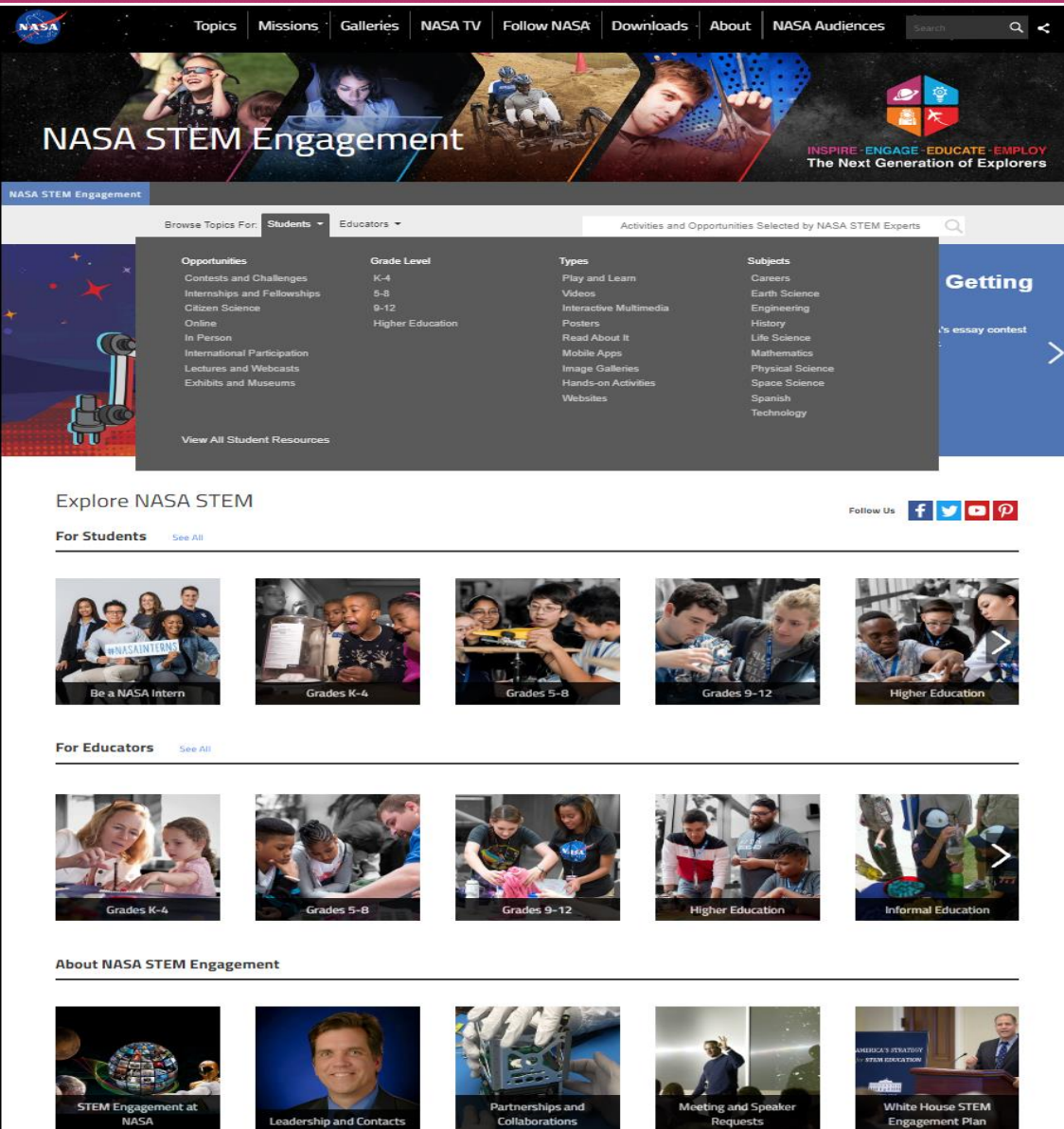


[nasa.gov/joinartemis](https://nasa.gov/joinartemis)





# NOTABLE MILESTONES: NASA STEM ENGAGEMENT ON THE WEB



## Implemented a New Website for NASA's STEM Engagement Enterprise

### • New Super Search Engine

- Allows students, educators and families to **more readily find opportunities to engage with NASA**
- Users can **filter and sort content** based on audience, opportunities, date or location, grade, subject, and resource type
- Existing content collections have also been **expanded to include topics for students**

### • Improved look, organization and navigation

- Allows content offerings to be sorted and grouped for **students and educators by grade appropriateness or by relevant themes or topics**

[stem.nasa.gov](https://stem.nasa.gov)



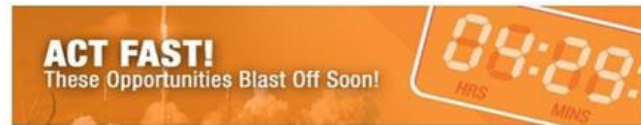


# NASA EXPRESS



INSPIRE • ENGAGE • EDUCATE • EMPLOY  
The Next Generation of Explorers

Check out the latest NASA opportunities for the education community



## Small Steps to Giant Leaps: Sound Effects

**Audience:** Educators of Grades K-12  
**Event Date:** Aug. 6 at 6:30 p.m. EDT  
**Contact:** [barbie.buckner@nasa.gov](mailto:barbie.buckner@nasa.gov)

Join the [NASA STEM Educator Professional Development Collaborative](#) at Texas State University for a free 60-minute webinar. Explore NASA's newly released "Sound Effects" activity, which teaches students about the principles of sound, specifically how to amplify and reduce volume. Learn how students will be able to construct a speaker to amplify sound and how they can be challenged to find a solution to reduce the perceived sound volume. Review the history of X-Planes and NASA aeronautical research while looking forward to the future of NASA aeronautics innovation. Online registration is required.



## GLOBE Webinar: See a Dust Storm? Submit Your Photos With GLOBE Observer

**Audience:** All Educators  
**Webinar Date:** Aug. 6 at 1 p.m. EDT  
**Contact:** [cassie\\_soeffling@strategies.org](mailto:cassie_soeffling@strategies.org)

Do you live in an area that has dust storms? The Global Learning and Observations to Benefit the Environment Program (GLOBE) team would like you to photograph dust events in your area and submit your photos using the [GLOBE Observer app](#).



## GLOBE Mission Mosquito Webinar: Mosquito Science Engagement—Use Zika Zine in Your Outreach

**Audience:** All Educators and Informal Educators  
**Webinar Date:** Aug. 21 at 2 p.m. EDT  
**Contact:** [cassie\\_soeffling@strategies.org](mailto:cassie_soeffling@strategies.org)

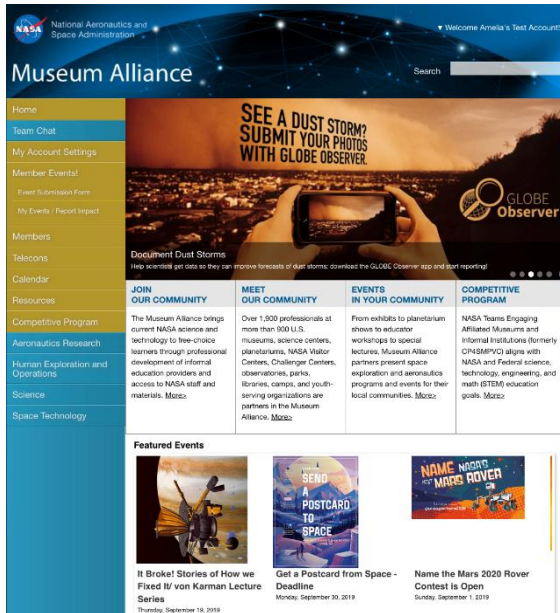
Join the Global Learning and Observations to Benefit the Environment Program's (GLOBE) Mission Mosquito team for a free webinar to discuss and share outreach ideas. Dr. Lisa Gardner from the University Corporation for Atmospheric Research will present her cartoon series, "Zika Zine," and discuss effective science communication techniques. Library partners are especially encouraged to attend. Registration is required. <http://bit.ly/Buzz-CS8>



Subscribe to NASA EXPRESS:  
[nasa.gov/stem/express](http://nasa.gov/stem/express)

# NASA's MUSEUM ALLIANCE: CONNECTING INFORMAL EDUCATORS WITH NASA

An active community of practice, providing informal educators access to NASA resources to help them engage students and youth worldwide.

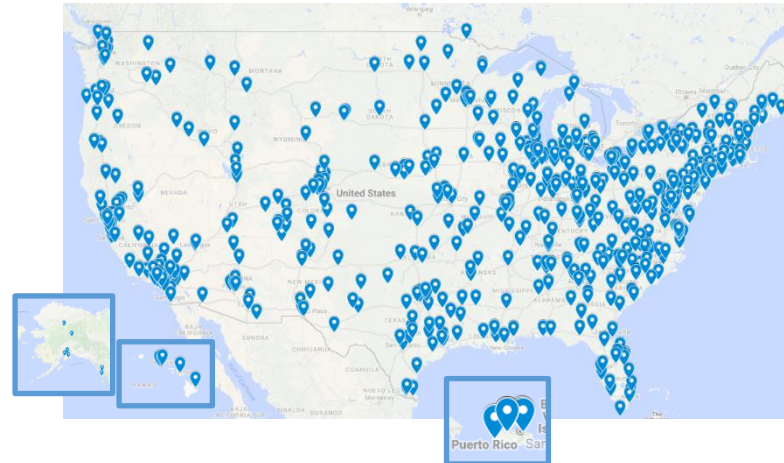


## Platforms

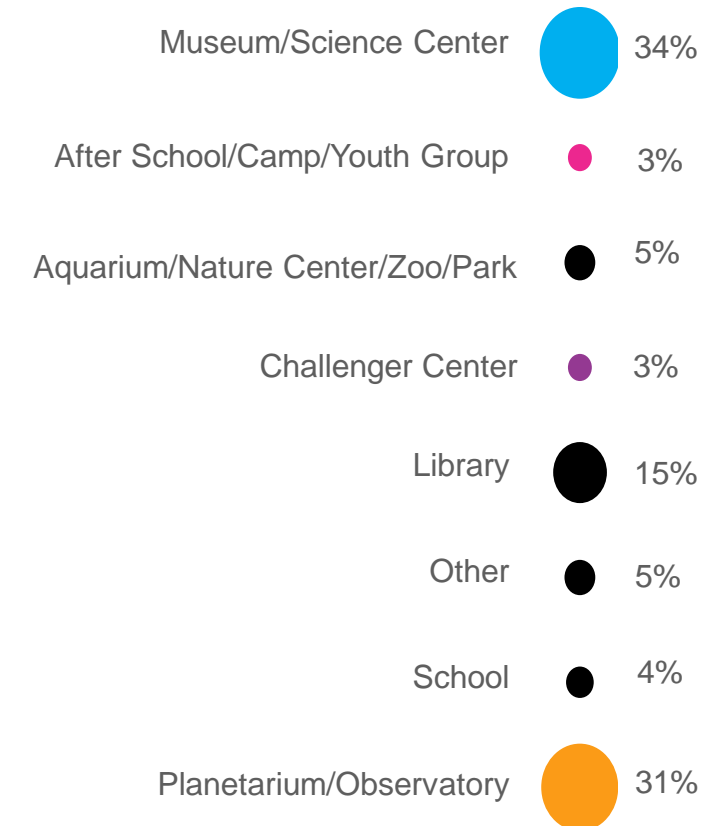
- Member **website** and **online forum**
- **Calendar** of mission events, deadlines, etc.
- Regular live **briefings** by NASA experts
- Direct **assistance** to members

## Membership

- All **50** states, plus D.C. & Puerto Rico
- **38** countries
- **2300+** professionals
- **1200+** organizations (1071 U.S.)



## Membership Breakdown



<http://informal.jpl.nasa.gov>



# #BeAnASTRONAUT



## ≡ DO YOU HAVE WHAT IT TAKES TO #BeAnAstronaut?



- ✓ U.S. citizen
- ✓ Master's degree in STEM field
- ✓ Two years related, professional experience
- ✓ Pass NASA astronaut physical

**Don't Qualify?**  
Here's how to get involved:

- [intern.nasa.gov](https://intern.nasa.gov)
- [stem.nasa.gov/artemis](https://stem.nasa.gov/artemis)
- [nasa.gov/explorestemcareers](https://nasa.gov/explorestemcareers)
- [nasa.gov/stem/express](https://nasa.gov/stem/express)
- [nasa.gov/astronauts](https://nasa.gov/astronauts)



**INSPIRE - ENGAGE - EDUCATE - EMPLOY**  
The Next Generation of Explorers

# GET SOCIAL WITH NASA STEM

FOLLOW US ON YOUR FAVORITE NETWORK



NASA STEM FOR STUDENTS



NASA STEM



NASA STEM



@NASASTEM

#NASASTEM



INSPIRE - ENGAGE - EDUCATE - EMPLOY  
The Next Generation of Explorers



# WE HEARD YOU

## New AA Feedback

### *National Space Grant Meeting North Dakota, September 2017*

- ✓ Improve communication between NASA and Space Grant
- ✓ Enhance efficiency and responsiveness from NASA
- ✓ Increased advocacy for SG within NASA
- ✓ Build on the uniqueness that each state brings to NASA/SG
- ✓ Enhanced relations with NASA and MDs (particularly for those states w/o NASA Centers)
- ✓ Use SG as a resource to communicate the NASA message
- ✓ Select/deploy our interns to improve the national workforce
- ✓ Provide sustainable/multi-year funding

Space Grant Feedback Session		Space Grant Feedback Session		Space Grant Feedback Session	
What does Space Grant want from NASA? (Question #1)		What are the NASA-Space Grant shared needs? (Question #2)		What can Space Grant offer NASA? (Question #3)	
Communication	31	Convert One Way Street Reporting promoting white paper twitter Different ways of thought Tell us when you come to the state; Use us as a resource	28	Bring the voice and face of NSG including to states without NASA centers	18
Acknowledge we are NASA in our states	25	Diverse STEM Aware and educated citizens workforce	25	Too paper intensive across the country	22
Efficiency and responsiveness	16	Continuity and sustainability of mission funding	24	Individual state focus: We know what each of our states need and can contribute	19
Increased advocacy for SG within NASA	14	Interns workforce development and student placement	15	Diversity of educational approaches permits innovation	18
Enhanced communication with noncenter states	11	NASA State understand respect needs	13	National Advocacy for NASA	16
Finding stability and opportunity	11	Mutual effective communication	12	Reduce many corners of nation and pipeline	11
Identify PoCs at centers	10	More stakeholders beyond academia and government	7	Standards for new ideas and network for spreading ideas	9
Break down silos	8	Disseminate and retrievable reporting	6	Rebuild national network	8
Enhanced intern program	5	Industry Workforce Nationwide	6	Industrywide workforce development	8
NASA high level communication	4	Continuity/Sustainability	4	Development of high-tech workforce	8
Clarity on three		Stable consistent go		Create better links between career ideas and NASA centers through internship and seed grants	7
Rational for any		Shared values/Share		Enduring yet adaptable infrastructure	5
Integrate us with		Effective engagement		Individual state focus	5
Option for orgs		Awareness knowledge		Harmonize connections between NASA and stakeholders	5
More transparent		Mutual Support Share		Use very large network about large-scale collaborative programs	4
		Effective spending		Knowledge leverage leverage	4
		Nationwide buyin		Network	4
		Workforce develop		Thinking outside the NASA box	2
		Nationwide buyin		Diversity of thought geography	2
		Effective access to		Sustainable connections and funding	2
				Direct connection with the students two ways the students ask whatever does NASA want we respond tell NASA	2



**INSPIRE - ENGAGE - EDUCATE - EMPLOY**  
The Next Generation of Explorers

# FRIDAY'S TOPICS

---

- Artemis Student Challenge Solicitation Update
- BIG Idea Challenge
- Status of Base and Augmentation Awards
- FY2021 Plans for Funding under CR
- Multi-Year Augmentation (Years 2-4)
- Evaluation Solicitation
- Reporting
- USIP
- NIF Update





# TAKING YOUR QUESTIONS



Ask Questions Using:  
**arc.cnf.io**  
Don't forget to vote responses up!



**INSPIRE - ENGAGE - EDUCATE - EMPLOY**  
The Next Generation of Explorers



# INSPIRE - ENGAGE - EDUCATE - EMPLOY

## The Next Generation of Explorers



# THANK YOU!





