



National Aeronautics and  
Space Administration

# SCIENCE ACTIVATION Primer

**Kristen Erickson & Lin Chambers**  
Science Engagement and Partnerships  
Science Mission Directorate, NASA Headquarters  
October 19, 2020

<https://science.nasa.gov/learners>



A young boy with light brown hair, wearing a light blue t-shirt and khaki shorts, stands on a rocky, reddish-brown surface. He is holding a glowing lantern with a bright blue light emanating from it, which depicts a full moon. To his left is a Mars rover, partially visible, with its various instruments and wheels. The background shows a dark, hazy horizon under a twilight sky. The entire scene is framed by a large, dark blue circular graphic element on the right side of the slide.

# Purpose

- To Provide an Overview of Science Mission Directorate
- To Provide Background and Operating Model of Science Activation
- Discussions

*“A scientist’s job is to ask questions. Children are born scientists, but somewhere along the way they lose it. We need to bring it back.”* Ramirez emphasized that STEM education allows us to build the *“human soft skills.”* Among these are curiosity, creativity, embracing failure, ability to use analogies and metaphors, problem-solving, and imagination. In particular, she emphasized the importance of *“making friends with failure.”* Explained Ramirez: *“Scientists fail all the time. We just rebrand it and call it data. Trial-and-error is a fancy way to say fail a lot.”*

Dr. Ainissa Ramirez

Yale University Associate Professor of Mechanical  
Engineering & Materials Science

July 28, 2015

# KEY SCIENCE THEMES\*

PROTECT AND  
IMPROVE LIFE ON  
EARTH AND IN SPACE

DISCOVER SECRETS  
OF THE UNIVERSE



SEARCH FOR LIFE  
ELSEWHERE

\*See [2020-2024 Science Plan](#)

# NASA Science Strategic Approach

## VISION

Lead a globally interconnected program of scientific discovery that encourages innovation, positively impacts people's lives, and is a source of inspiration

## MISSION

Discover the secrets of the universe

Search for life elsewhere

Protect and improve life on Earth and in Space

## VALUES

Excellence

Leadership

Integrity

Teamwork

Safety

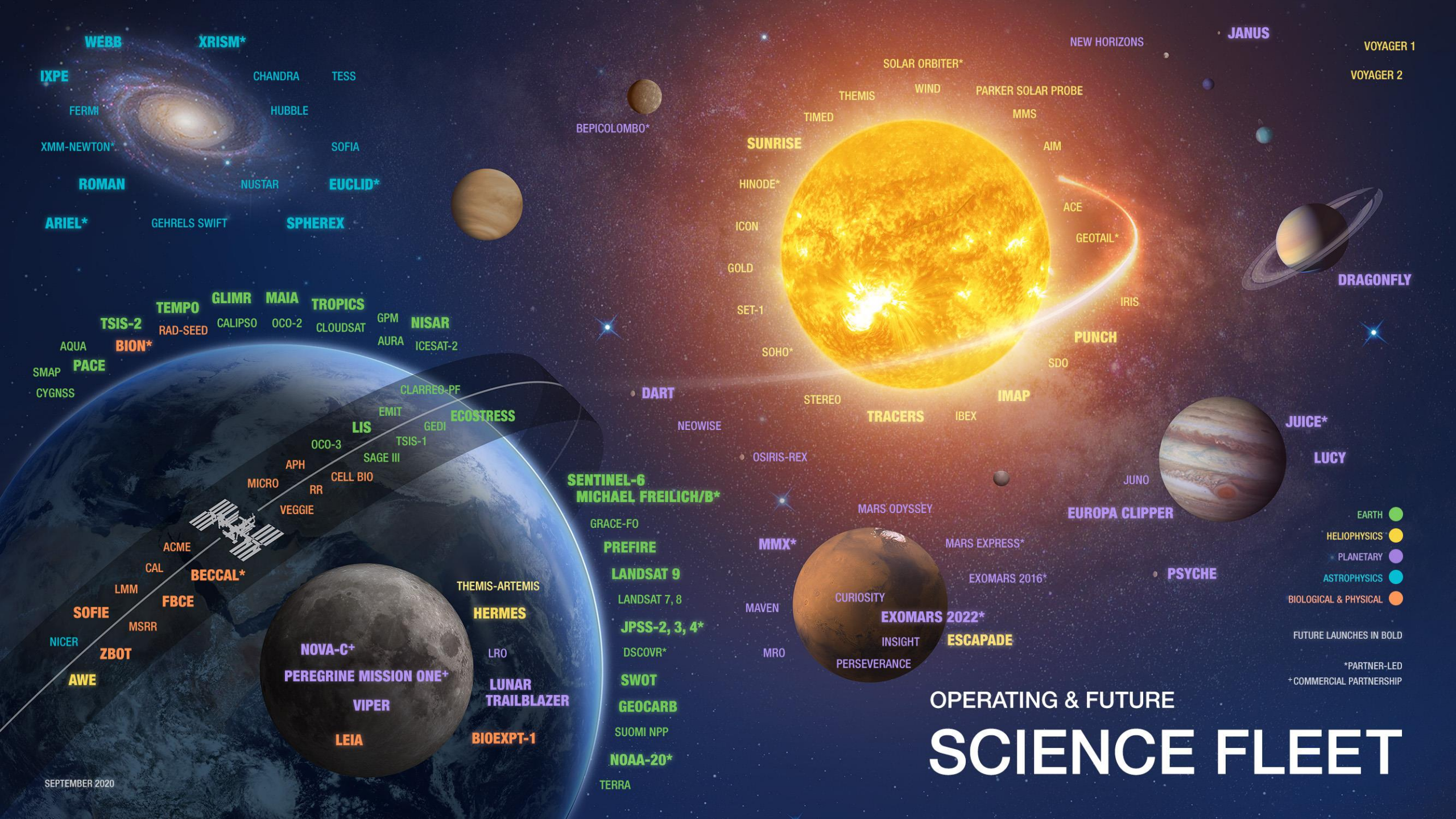
## PRIORITIES

Exploration and Scientific Discovery

Innovation

Interconnectivity and Partnerships

Inspiration



# OPERATING & FUTURE SCIENCE FLEET

- EARTH
  - HELIOPHYSICS
  - PLANETARY
  - ASTROPHYSICS
  - BIOLOGICAL & PHYSICAL
- FUTURE LAUNCHES IN BOLD
- \*PARTNER-LED  
+COMMERCIAL PARTNERSHIP

**WEBB** **XRISM\***

**IXPE** CHANDRA TESS

FERMI HUBBLE

XMM-NEWTON\* SOFIA

**ROMAN** NUSTAR **EUCLID\***

**ARIEL\*** GEHRELS SWIFT **SPHEREX**

**TSIS-2** **GLIMR** **MAIA** **TROPICS**

AQUA **BION\*** RAD-SEED CALIPSO OCO-2 CLOUDSAT GPM **NISAR**

SMAP **PACE** AURA ICESAT-2

CYGNSS

CLARREO-PF

EMIT **ECOSTRESS**

**LIS** GEDI

OCO-3 TSIS-1

APH SAGE III

MICRO RR CELL BIO

VEGGIE

ACME

CAL **BECCAL\***

LMM **FBCE**

**SOFIE** MSRR

NICER **ZBOT**

**AWE**

THEMIS-ARTEMIS

**HERMES**

LRO

**LUNAR TRAILBLAZER**

**NOVA-C+**

**PEREGRINE MISSION ONE+**

**VIPER**

**LEIA**

**BIOEXPT-1**

NEW HORIZONS

**JANUS**

VOYAGER 1

VOYAGER 2

SOLAR ORBITER\*

THEMIS WIND PARKER SOLAR PROBE

TIMED MMS

**SUNRISE** AIM

HINODE\* ACE

ICON GEOTAIL\*

GOLD IRIS

SET-1 **PUNCH**

SOHO\* SDO

**DART** STEREO **TRACERS** IMAP

NEOWISE IBEX

OSIRIS-REX

JUNO **JUICE\***

**LUCY**

**EUROPA CLIPPER**

**PSYCHE**

MARS ODYSSEY

MARS EXPRESS\*

EXOMARS 2016\*

**MMX\*** **EXOMARS 2022\***

MAVEN CURIOSITY **ESCAPADE**

MRO INSIGHT PERSEVERANCE

**SENTINEL-6**

**MICHAEL FREILICH/B\***

GRACE-FO

**PREFIRE**

**LANDSAT 9**

LANDSAT 7, 8

**JPSS-2, 3, 4\***

DSCOVR\*

**SWOT**

**GEOCARB**

SUOMI NPP

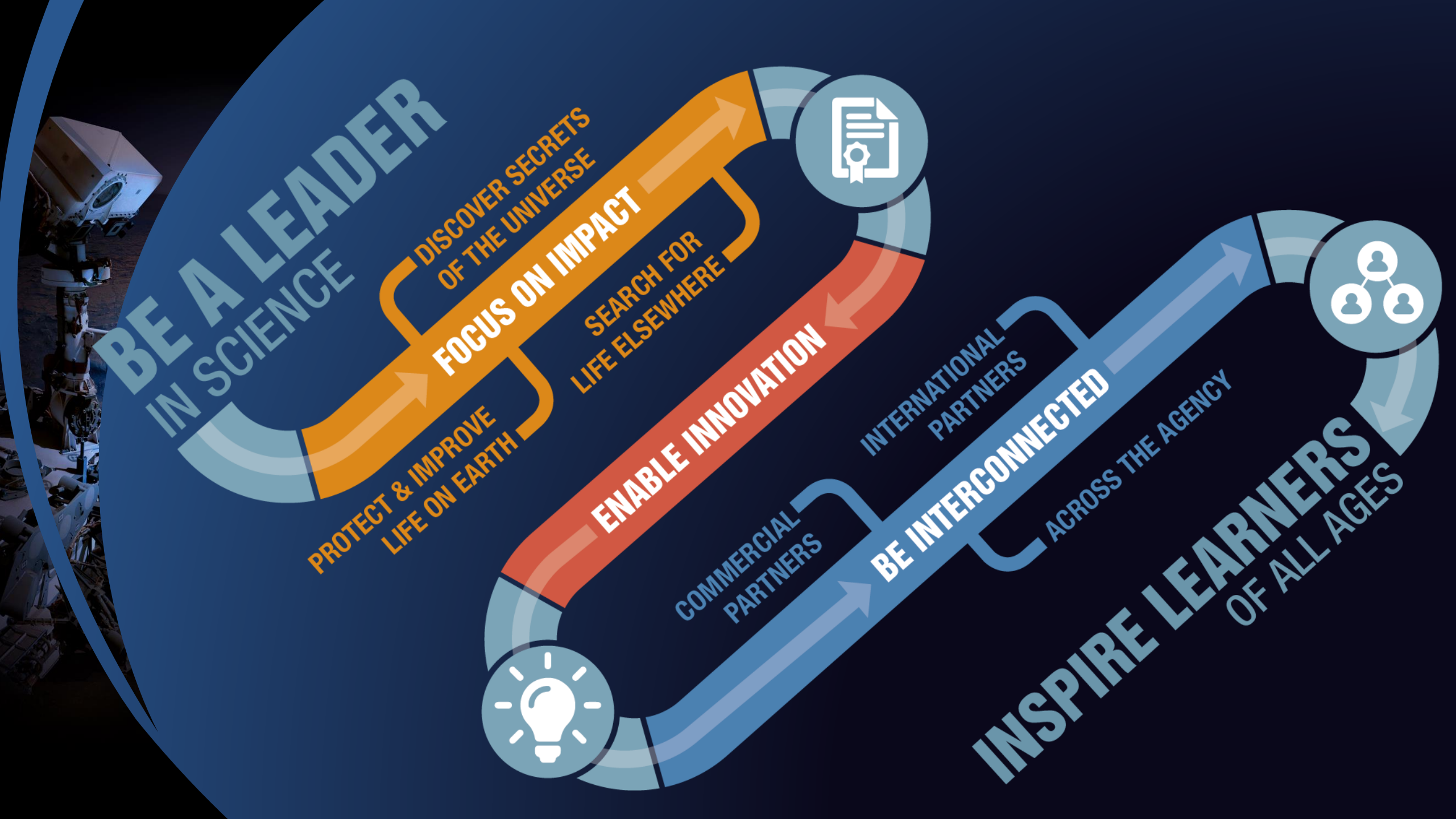
**NOAA-20\***

TERRA



# Science Activation Summary

- Baseline in November 2016, this collaborative model leverages over 220 partnerships through network of science and community-based institutions using “multiplier effect” across U.S. to achieve objectives
- 27 Competitively-selected awardees enables NASA science experts and content to engage more effectively and efficiently with learners of all ages
- Each agreement uses independent evaluators to validate performance; new community of practice established
- Volunteer networks, such as Solar System Ambassadors and Night Sky Network, mobilized across the U.S.
- National Academies assessment completed in 2019
- Annual SMD funding \$46M for Science Activation activities (includes citizen science)



# BE A LEADER IN SCIENCE

PROTECT & IMPROVE  
LIFE ON EARTH

DISCOVER SECRETS  
OF THE UNIVERSE

FOCUS ON IMPACT

SEARCH FOR  
LIFE ELSEWHERE



ENABLE INNOVATION

COMMERCIAL  
PARTNERS

INTERNATIONAL  
PARTNERS

BE INTERCONNECTED


ACROSS THE AGENCY



INSPIRE LEARNERS  
OF ALL AGES





- 
- The culture of science and disciplined pursuit of answers to questions are directly aligned with the skills necessary to succeed now and in the future. The NRC (2007, 2009) identifies the following as part of “21 Century Skills”:
    - Solve complex problems
    - Think critically about tasks
    - Effectively communicate with people from a variety of different cultures
    - Work in collaboration with others
    - Adapt to rapidly changing environments and conditions for performing tasks
    - Effectively manage one’s work
    - Acquire new skills and information on one’s own
  - All Four Decadal Surveys recommend the continued involvement of NASA Science in STEM and Literacy

# 2019 Program Assessment

- NASEM Board on Science Education (BOSE)
- 14 committee members with broad expertise
- 158-page [report](#)
- 15 conclusions
- 7 1/2 recommendations



**Bottom line: Validated Science Activation Model**



### Color Key

Green - underway

Gold – ROSES call & extension process

Blue – planned future work

## NASEM Recommendations

1. NASA SciAct should go through a **visioning process** that brings the portfolio up to date with current research on learning and design, the new Federal STEM plan, and evidence-based approaches to broadening participation. This process should also consider how SciAct fits within and contributes to the larger STEM education ecosystem, and should provide the foundation for developing actionable and measurable portfolio goals.

2. SciAct should articulate how it expects that the portfolio will leverage NASA assets, how partnerships and networks will be built, and how these actions will lead to desired, **measurable outcomes**.

3. SciAct must consider whether the development of a **coordinated learning network** of awardees across its portfolio is a program priority. If it is a priority, then the program must provide the necessary infrastructure to support a more active network of projects. At the very least, SciAct needs to develop more systematic mechanisms for projects to share best practices and learn from successes and failure.

4. SciAct should use the opportunity provided by Phase Two to reflect on the current portfolio within the context of the new vision, goals and logic model. This process should **critically review and guide existing projects, be explicit about the rationale and criteria for including new projects**, and consider how best to integrate them into the existing portfolio. One important area for consideration is how to ensure that **underserved communities** receive more focused attention in the next phase of the program.

5. SciAct should deepen its commitment to **broadening participation** by using evaluation measures that go beyond counting numbers of individuals who represent specific groups. In order to do this, SciAct must identify ways that the portfolio as a whole could draw upon and implement evidence-based strategies for broadening participation.

6. SciAct should build ongoing opportunities for **dialogue with NASA Science Mission Directorate's missions and scientists**.

7. SciAct should create an **independent mechanism to obtain ongoing, real time advice** from individuals with expertise in learning and design, the larger policy context of STEM education, partnering with local communities, broadening participation in STEM, and science content relevant to the missions of NASA's Science Mission Directorate. Among other responsibilities, these experts should inform the new visioning and planning process.

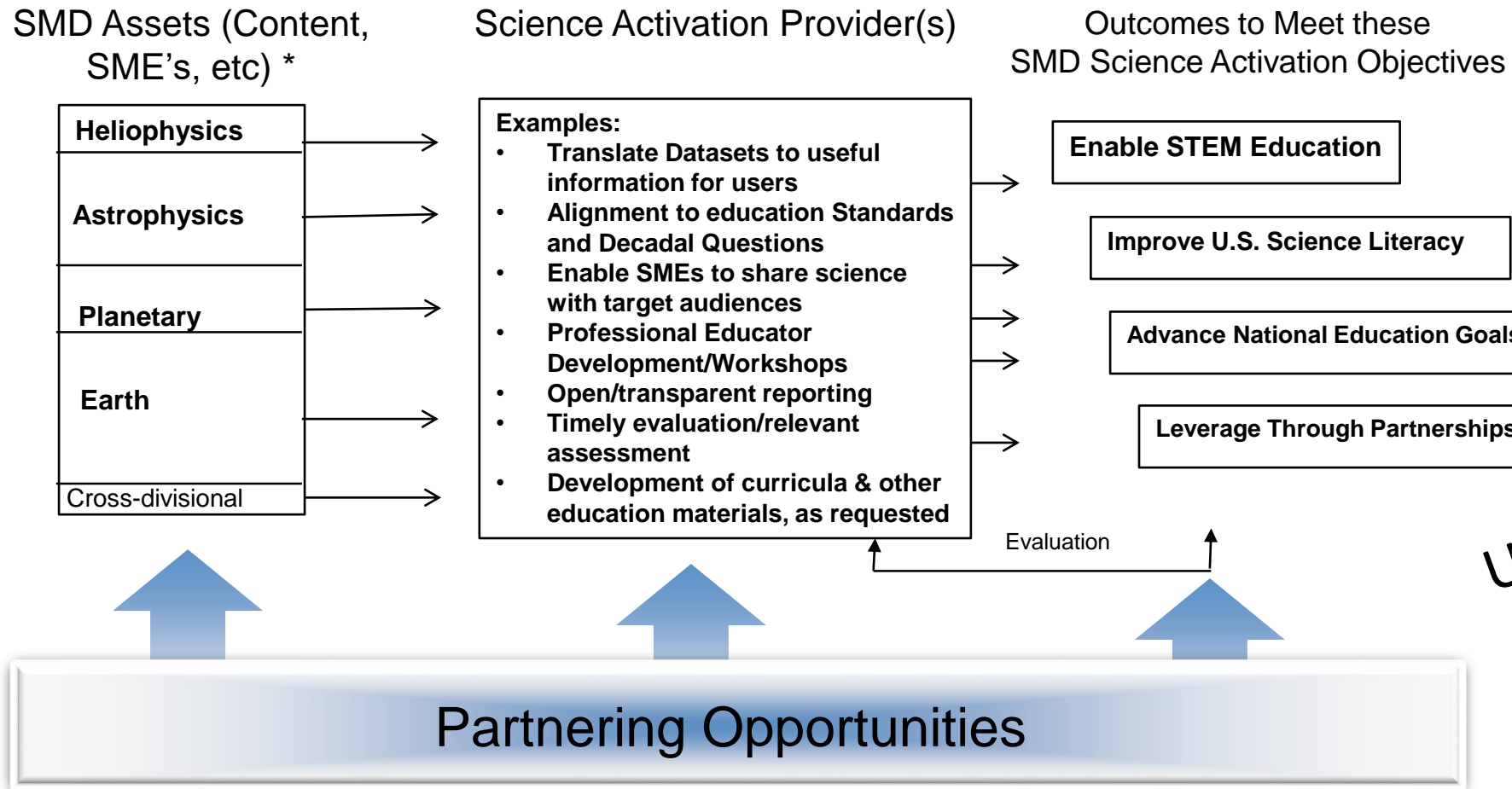
7a. With input from these experts, SciAct should consider whether and how a **portfolio-level evaluation** could strengthen the focus of the program and ensure that projects in the portfolio are effectively meeting overarching SciAct program goals and objectives.

Science Activation  
Desired Outcome  
*To further enable NASA  
science experts and content  
into the learning environment  
more effectively and  
efficiently with learners of all  
ages.*

Unchanged since 2015



# SMD Science Activation Model



Unchanged since 2015

\* Divisions responsible for science content datasets, Infrastructure/Tools (e.g. Eyes, GSFC Visualizations), SME selection, and enabling flight opportunities

# SCIENCE ACTIVATION DESIRED OUTCOME/VISION STATEMENT:

To further enable **NASA science experts and content** into the learning environment more effectively and efficiently with learners of all ages.

## OBJECTIVES:

## Mid Level Objectives:

### Enable STEM Education

Inspire participants' interest in **STEM** and the development of their identities as science learners.

Provide opportunities for participants to engage with the disciplinary content related to **NASA science and engineering**.

Increase number of and frequency with which **NASA SMD assets** are used by learners across the US.

### Improve U.S. Scientific Literacy

Advance participants' understanding of the process of doing science using **NASA SMD assets**.

### Advance National Education Goals

Increase participation in learner-centered experiences based on **NASA SMD assets**.

Increase the diversity of participants reached by **Science Activation** through intentional, inclusive programming.

Engage participants in learning experiences that promote development of skills for **STEM** careers.

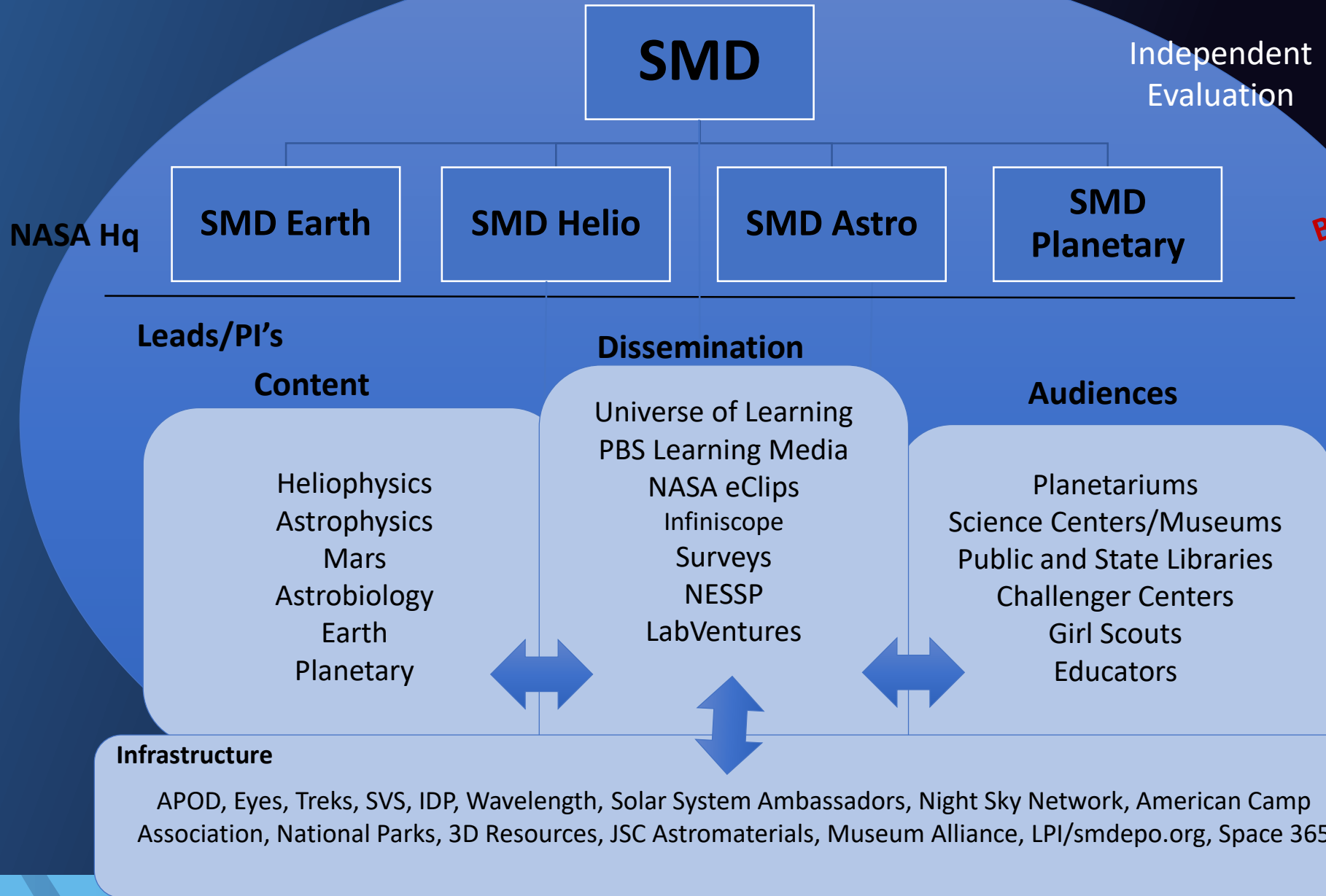
### Leverage Efforts through Partnerships

Leverage internal mechanisms to support sharing and learning across the **Science Activation** portfolio.

Utilize external partners to leverage reach and effectiveness of the **Science Activation** portfolio.

**NASA SMD assets** = science content and data, space and airborne platforms, and scientific and technical personnel.

# 2020 SMD Collective Relationships



*BPS Coming in 2021!*

# Science Activation Across the Nation

By the Numbers\*



**52** exhibits  
developed and distributed  
to curated organizations



**4600** libraries  
participating in summer reading,  
"Universe of Stories". 88 to receive  
extensive science content



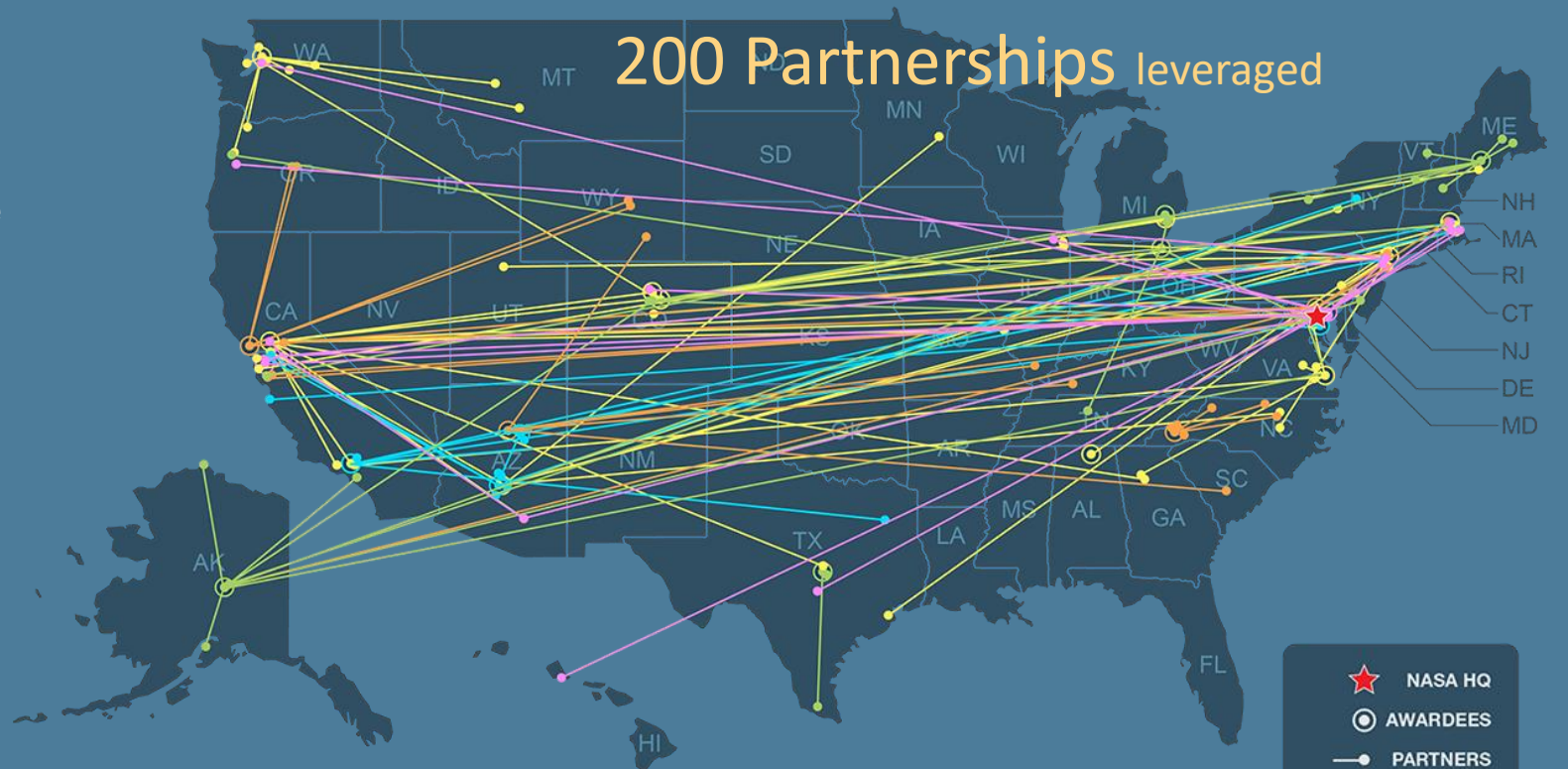
**350** hands-on Toolkits  
developed and distributed to  
science centers and museums



**421** subject matter experts



**1.9 million** registered educators  
Received 197 digital Earth and Space resources through  
PBS LearningMedia



**200 Partnerships** leveraged

- ★ NASA HQ
- AWARDEES
- PARTNERS

ASTROPHYSICS  
EARTH  
HELIOPHYSICS  
PLANETARY  
CROSS DIVISION

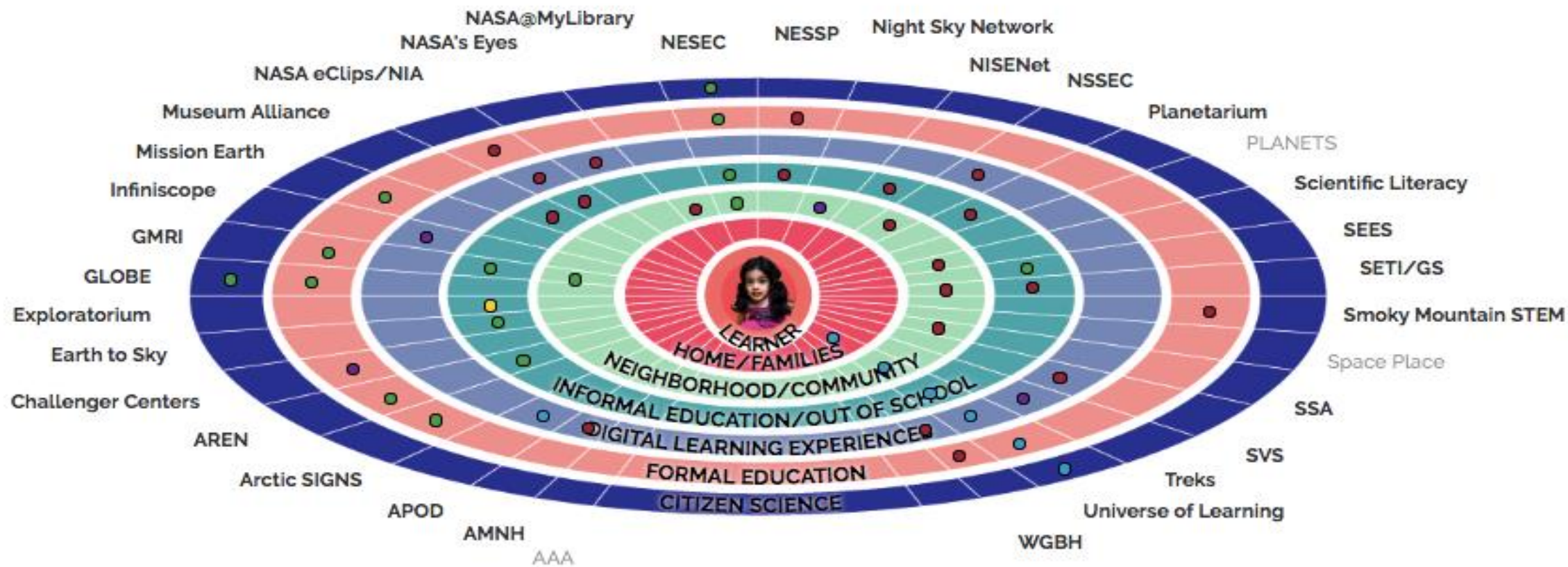
\* Through April 2019



● Universe    
 ● Solar System    
 ● Sun    
 ● Earth    
 ● All Science

# Science Activation Ecosystem

<https://science.nasa.gov/infographic>



# A Reminder About Infrastructure...

As identified on page 1 of ROSES E.6, the following infrastructure items are “out of scope” and funded separately:

- [3D Resources](#)
- [Astrocamp](#)
- [Astronomy Picture of the Day](#)
- [Astromaterials](#)
- [Citizen Science](#)
- [Earth to Sky](#)
- [GLOBE Program](#)
- [Lunar and Planetary Institute](#)
- [Museum Alliance](#)
- [NASA Solar System Treks](#)
- [Eyes on Earth, Solar System, Universe](#)
- [Night Sky Network](#)
- [Space Grant](#)
- [SpacePlace](#)
- [Scientific Visualization Studio](#)
- Other NASA Communications Infrastructure to include web and social media sites.

In addition, Sally Ride Internships (\$140K/yr) is a programmatic element

Estimate for SMD costs are about \$6M/year. Infrastructure items are reviewed and confirmed annually.

Unchanged since 2015



## SciAct 2.0 Long-Term Vision

*By 2025, to increase learners' active participation in the advancement of knowledge*

# PI Guidance



# Map of SciAct 2.0

3 EPSCOR States (AK, ME, \*OK)



### **Selected for Negotiations Leading to New Awards:**

- NASA's Neurodiversity Network (N3): Creating Inclusive Informal Learning Opportunities Across the Spectrum: Lynn Cominsky, *Sonoma State University*
- NASA SMD Community of Practice for Education (SCoPE): Meenakshi (Mini) Wadhwa, *Arizona State University*
- The NASA Community College Network: Simon Steel, *SETI Institute*
- Cosmic Storytelling with NASA Data: Tools for Exploring Data Science: Alyssa Goodman, *President and Fellows of Harvard College*
- The Eclipse Soundscapes Citizen Science Project): Henry Winter, *ARISA Lab L.L.C.*
- SciAct STEM Ecosystems to Broaden Participation in Authentic STEM Learning: Connecting Subject Matter Experts, Communities, and Learners of All Ages ("SciAct STEM Ecosystems"): Rae Ostman, *Arizona State University*
- STEM Pathways for Native Americans: Bridging Native Knowledge of Earth and Sky with Traditional STEM Programming through the "Native Earth | Native Sky" Program: Kathryn Gardner-Vandy, *Oklahoma State University*
- Student Airborne Science Activation for MSI (SASA): Charles Gatebe, *Universities Space Research Association*
- Planetary Resources and Content Heroes (ReaCH): Andy Shaner, *Universities Space Research Association*



# Role of the Members of Our Collective

- PI's: At least 25% of your time
- All: You are not only representing your Institution, but NASA
- You are Knowledge Experts
- Leaders of your effort. Responsibility to *first* accomplish project
- Also, responsibility to provide feedback to us at NASA Hq and strengthen the “connections” of the Collective
- Thoughtful, strategic, adaptive
- Independent Evaluators – Are our Ground Truth!
- If PIs transition, it is your responsibility to capture knowledge and pass along to successor



# Alignment Within

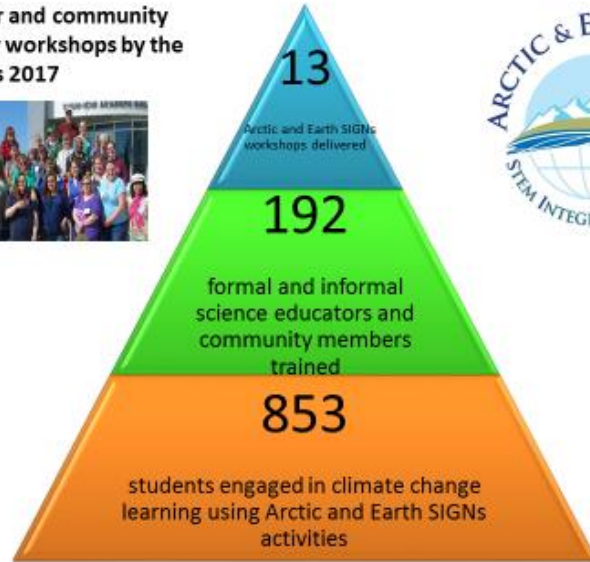
- Tools include Statements of Collaboration between Institution and SMD Program Officer
- Logic Models
- Evaluation Plans, monitored by Independent Evaluators
- Monthly and Annual reporting
- Scorecard to PIs
- Working Groups
- Face-to-Face sessions
- Statements of Cross-Collaboration





# Impact Examples

## Educator and community member workshops by the numbers 2017



## 2017 STEM Science Activation Meeting Impact of Eclipse Box program

NNX16AB90A, Reaching for the Stars: NASA Science for Girl Scouts

PI: Edna Devore (SETI Institute); Evaluators: Wendy Friedman, Kristin Bass & Ruchita Patel



Enabled 91 of GSUSA's 112 councils to either develop unique space science programs, or embed eclipse-related activities into existing offerings.

71 Councils reporting Dec '17



*We really loved the boxes...it made it SO much easier to plan such a specialized event taking place amid all our other outdoor programs.*

- GS staff survey respondent

Ongoing efforts by more than 60 Council will increase numbers of girls engaged in Sun, Earth, Moon activities by 10 - 20,000.

## Evidence-based Highlight

Sharing the Science with Learners (of any age)  
using NASA Science Assets

2017 Toolkit  
Reach  
Reported May, 2017

250  
Toolkits

4,535 Event  
volunteers

324,140 Public  
reached

\*Institution types

- Museum (science / technology, children's, art, history, natural history)
- Planetaria
- NASA Visitor Centers
- Colleges / universities
- Other

\*Subjects included

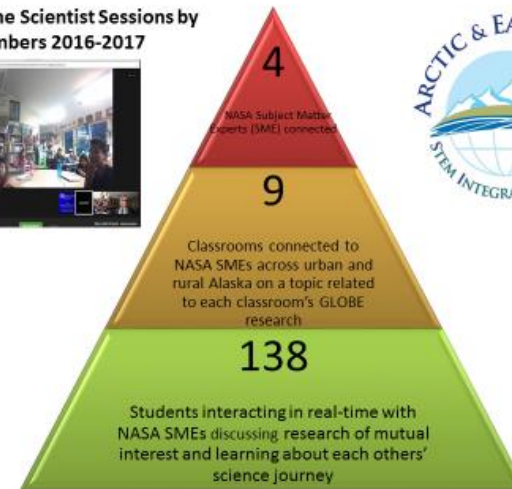
- Museum / informal education professionals
- Students (high school, undergraduates, graduate)
- Earth and space enthusiasts and amateur astronomers
- Earth and space professionals from a college / university
- Pre K-12 educator professionals
- Science outreach professionals from a college / university
- Other

\*Underrepresented audiences reached

- Girls
- Low-income / lower socio-economic status
- Racial and ethnic minorities / communities of color
- Rural communities
- Other

NNX16AC67A, SEISE, PI: Paul Martin, Evaluators: Museum of Science, Boston and Science Museum of Minnesota (Kallmann et al)

## Meet the Scientist Sessions by the numbers 2016-2017



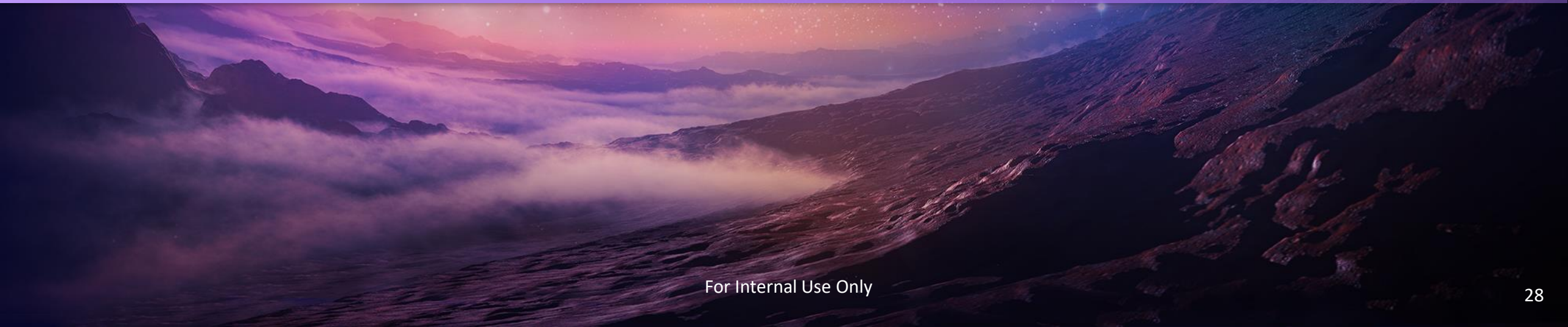
# Look Ahead

- Join [smdepo.org](http://smdepo.org) if you haven't already
- October Monthly Review
- Science Activation Annual Review (virtual)  
November 9-13
  - You and your team welcome to attend.  
Within -90 days of award start date
  - Contact Lin, if have any questions
- January 2021 Kick-off Meeting (dates TBD)
- Plans due 60 days afterwards

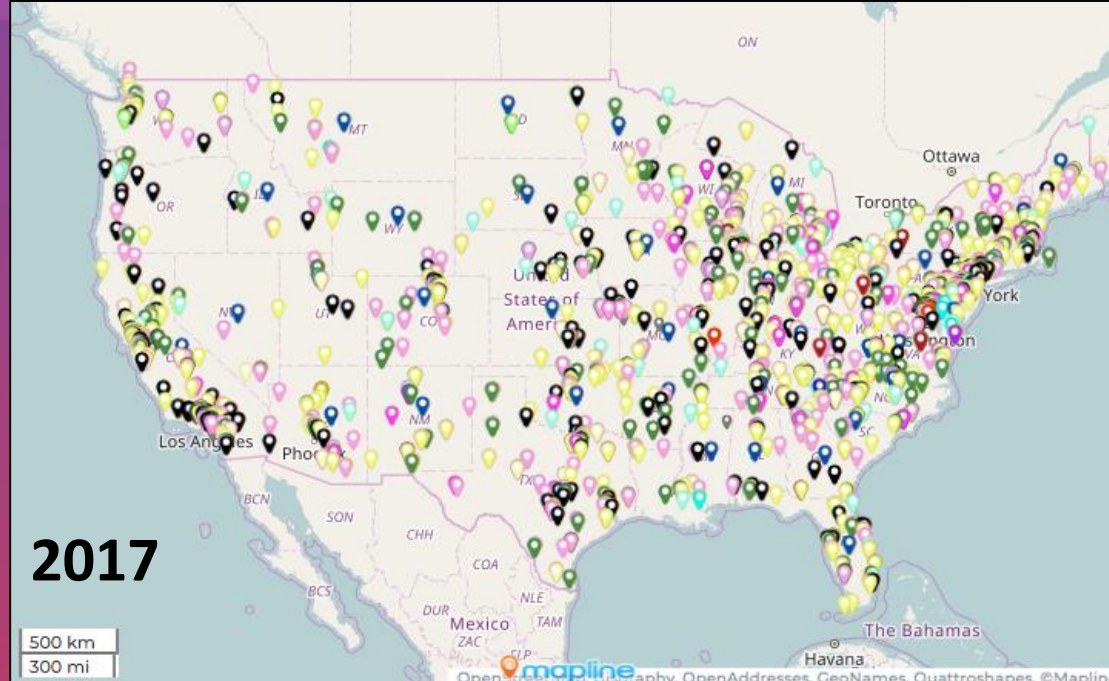
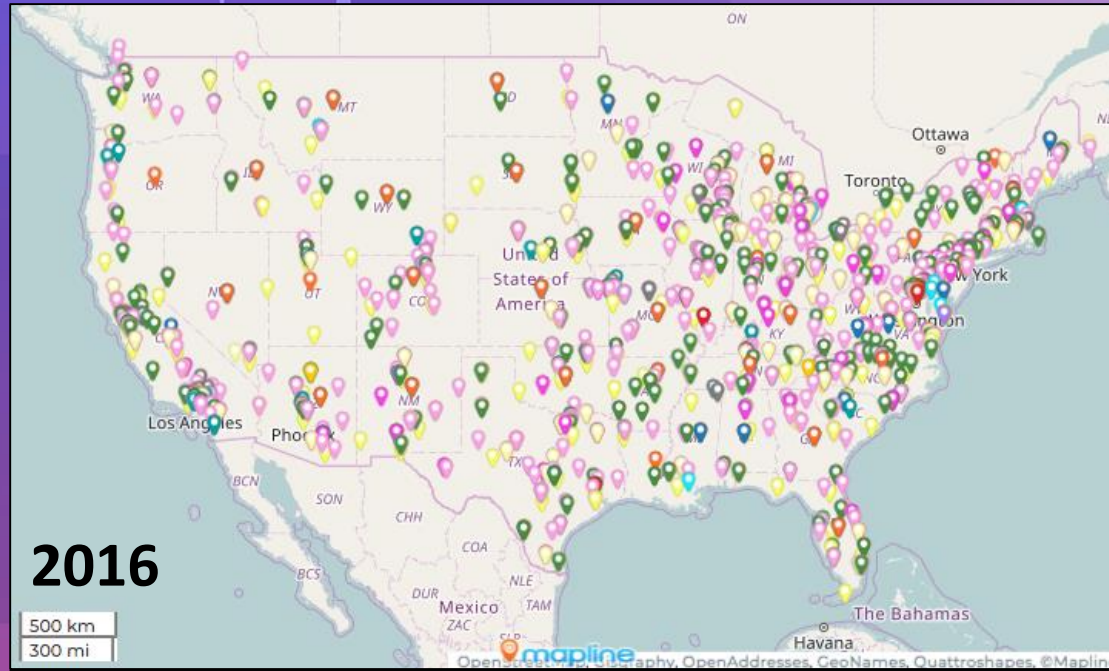





















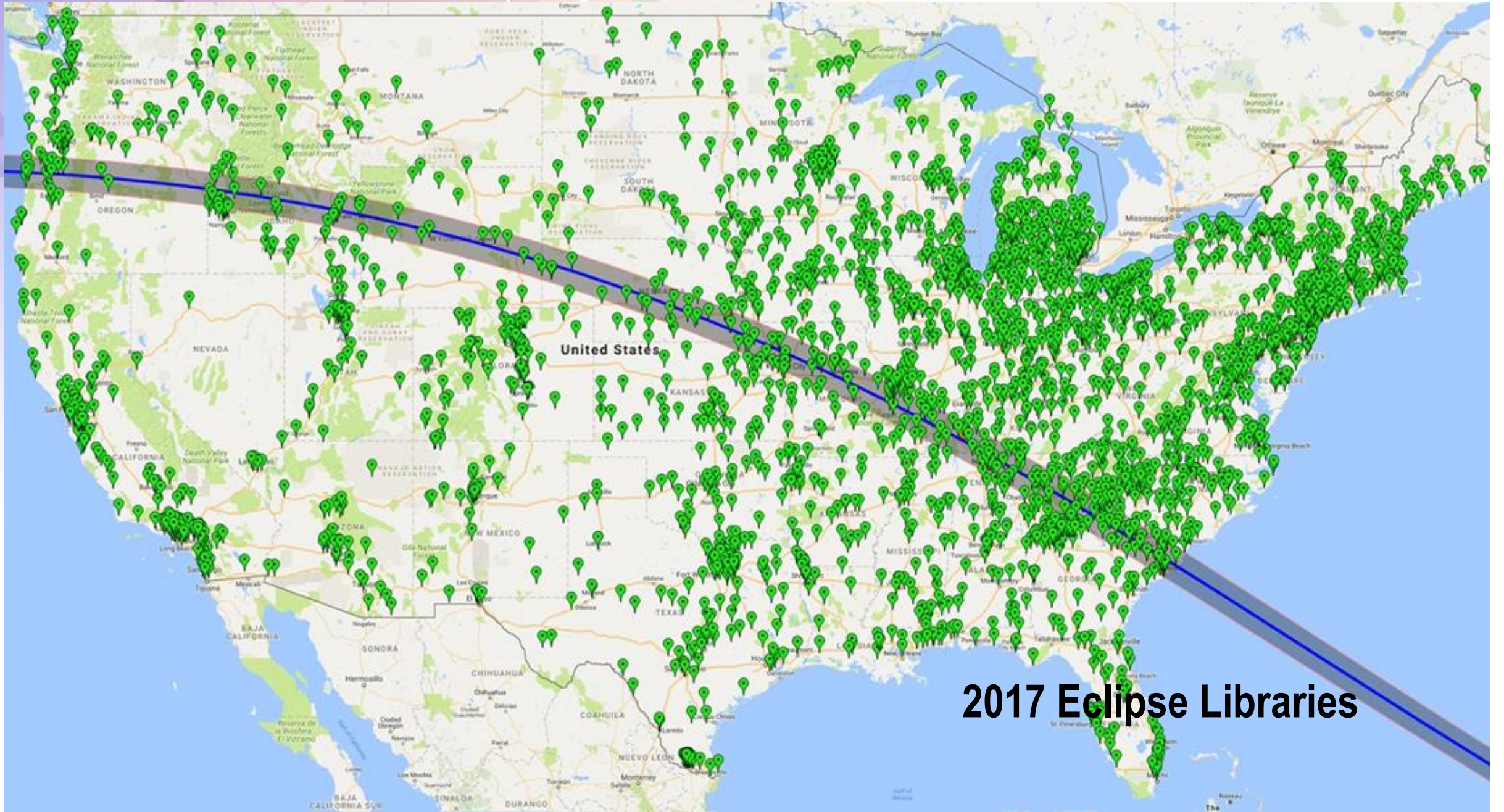
# Back-Up (Maps, Alignments, 2.0 Awardees, and Acronyms)



# Reach Maps

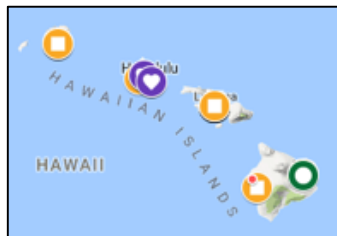
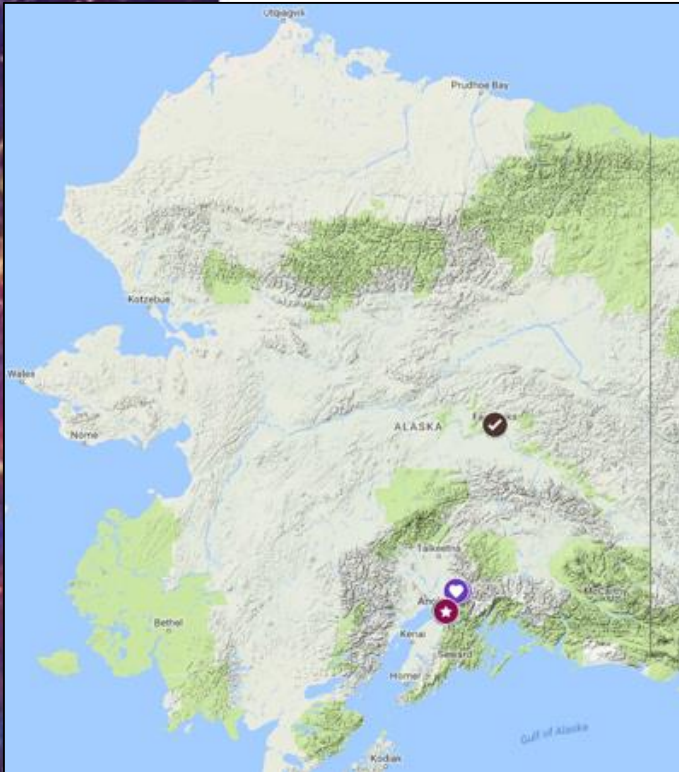



-  AAA-SETI (2016)
-  Aggregated Organizations (2016)
-  AREN PROJECT (2016)
-  Challenger Center NASA CAN (2018)
-  Heliophysics Citizen Science (2016)
-  Museum Alliance Institutional Members (2018)
-  NAML Partner Libraries (2018)
-  NAML Partner State Libraries (2018)
-  NESEC (2016)
-  Night Sky Network (2016)
-  NISE Network Museum Partners (2016)
-  NSSEC (2016)
-  Planet CAN (2016)
-  Reaching for the Stars: NSGS (2016)
-  Smokey Mountain STEM (2016)
-  Universe of Learning, STSci (2016)
-  Viewspace (2016)




**2017 Eclipse Libraries**


# NASA's Universe of Learning Reach Map





 UoL Institutions & Partners

 ViewSpace


 Science Olympiad

 Informal Learning Network

 MicroObservatory

 AstroViz

 Girls STEAM Ahead with NASA

 Science Briefing

# Alignment Between SMD and Agency Activities

- SMD's STEM-related activities align with the agency's 2018 Strategic Plan
  - Objectives 1.1, 3.3 and 4.1
- Aligns with the new STEM engagement framework
  - Authentic Experiences
- All Science Activation awards are evidence-based, contribute to science literacy and advance national goals
- For Science Activation, our experts, content, and authentic experiences are what we uniquely contribute into the education ecosystem.
  - New GPRAMA metrics established each year

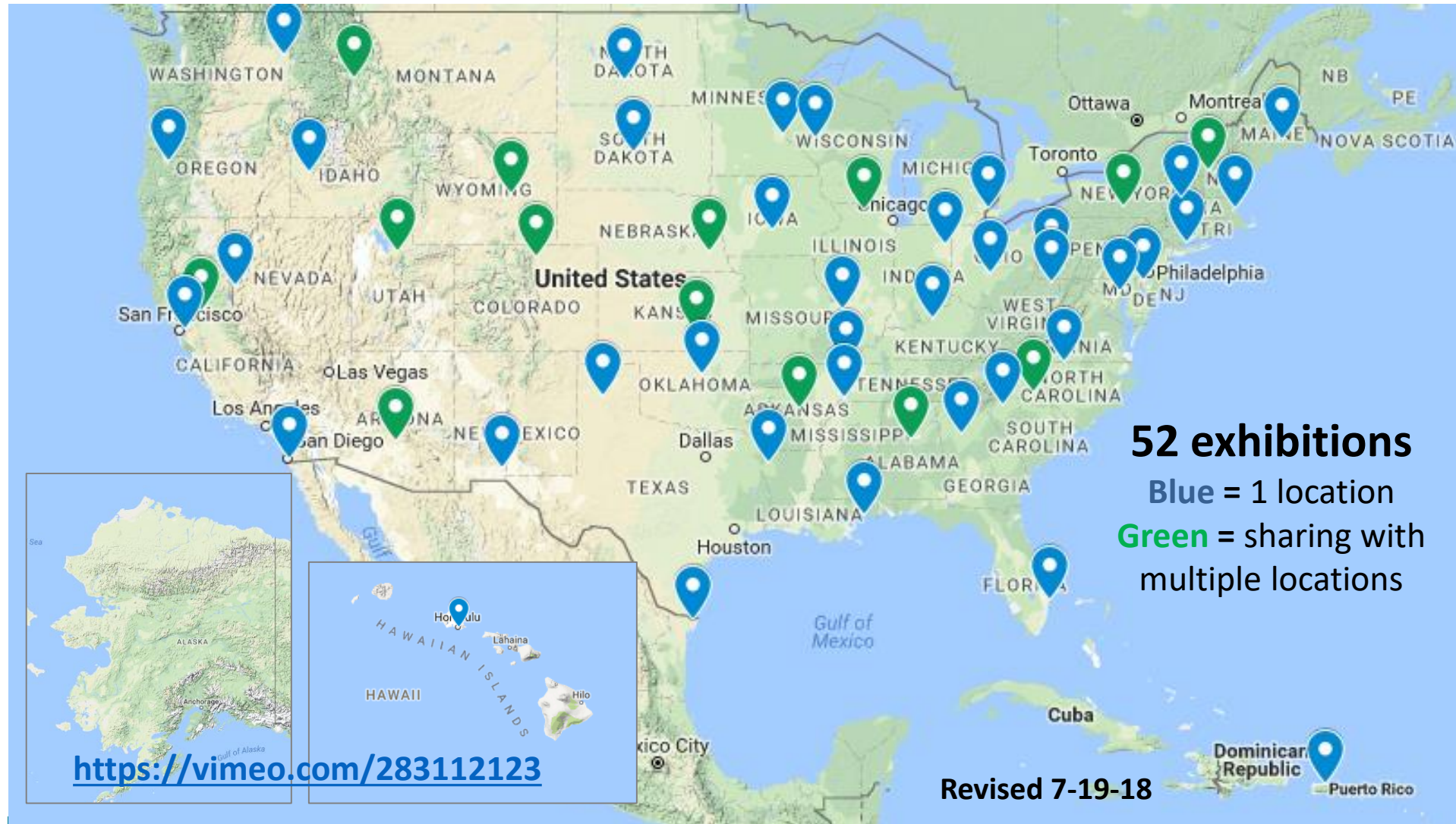
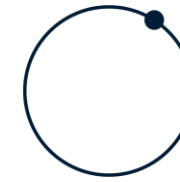


# Alignment Between SciAct and 2018 Federal Co-STEM

## Goals for American STEM Education:

- Build Strong Foundations for STEM Literacy
- Increase Diversity, Equity, and Inclusion in STEM
- Prepare the STEM Workforce for the Future

<u>Pathways</u>	<u>Objectives</u>	<u>NASA</u>
Develop & Enrich Strategic Partnerships	Foster STEM ecosystems that unite communities	SciAct
	Increase Work-Based Learning through Educator-Employer Partnerships	
	Blend Successful Practices from Across the Learning Landscape	SciAct
Engage Students Where Disciplines Converge	Advance Innovation and Entrepreneurship Education	
	Make Mathematics a Magnet	
	Encourage Transdisciplinary Learning	SciAct
Build Computational Literacy	Promote Digital Literacy and Cyber Safety	
	Make Computational Thinking an Integral Element of All Education	
	Expand Digital Platforms for Teaching and Learning	SciAct
Operate with Transparency & Accountability		SciAct



## **Selected for Negotiations Leading to Extensions to Existing Agreements:**

- OpenSpace: An Engine for Dynamic Visualization of Earth and Space Science for Informal Education and Beyond: Rosamond Kinzler, *American Museum of Natural History*
- Real World, Real Science: Using NASA Data to Explore Weather and Climate: Leigh Peake, *Gulf of Maine Research Institute*
- Smoky Mountains STEM Collaborative: Bridging the Gaps in the K-12 to Post-Secondary Education Pathway: Matt Cass, *Southwestern Community College*
- Navigating the Path of Totality: Robert Semper, Exploratorium
- PLANETS (Planetary Learning that Advances the Nexus of Engineering, Technology, and Science): Joelle Clark, *Northern Arizona University*
- Impacts and Feedbacks of a Warming Arctic: Engaging Learners in STEM using NASA and GLOBE Assets: Elena Sparrow, *University of Alaska, Fairbanks*
- Mission Earth: Fusing GLOBE with NASA Assets to Build Systemic Innovation in STEM Education: Kevin Czajkowski, University of Toledo
- AEROKATS and ROVER Education Network (AREN): Andy Henry, *Wayne County Intermediate School District*
- NASA SMD Exploration Connection: Ariel Anbar, *Arizona State University*
- NASA Earth Science Education Collaborative: Theresa Schwerin, *Institute for Global Environmental Strategies*
- NASA eClips 4D Multi-Dimensional Strategies to Promote Understanding of NASA Science: Design, Develop, Disseminate and Discover: Shelley Spears, *National Institute of Aerospace Associates*
- NASA's Universe of Learning: An Integrated Astrophysics STEM Learning and Literacy Program: Denise Smith, *Space Telescope Science Institute*
- NASA Space Science Education Consortium: Through the Eyes of NASA to the Hearts and Minds of the Nation: C. Alex Young, *NASA Goddard Space Flight Center*
- NASA@ My Library: A National Earth and Space Science Initiative that Connects NASA, Public Libraries and their Communities: Paul Dusenbery, *Space Science Institute*
- NASA Space and Earth Informal Science Education Network (SEISE-Net): Paul Martin, *Arizona State University*
- STEM Enhancement in Earth Science: Margaret Baguio, *University of Texas, Austin*
- Northwest Earth and Space Sciences Pipeline (NESSP): Robert Winglee, *University of Washington, Seattle*
- Airborne Astronomy Ambassadors (AAA): Dana Backman, *SETI Institute*

# Acronym List

ACE	Advanced Composition Explorer	GeoCARB	Geostationary Carbon Cycle Observatory
AETC	Aerosciences Evaluation and Test Capabilities	GEOTAIL	Japan/NASA mission to study Earth's magnetotail
AIM	Aeronomy of Ice in the Mesosphere	Gehrels Swift	Neil Gehrels Swift Observatory
AO	Announcement of Opportunity	GLOBE	Global Learning and Observations to Benefit the Environment
APMC	Agency Program Management Council	GOES series	Geostationary Operational Environmental Satellites
Aqua	Earth Observing Satellite mission for atmospheric dynamics	GOLD	Global-scale Observations of the Limb and Disk
ARC	Ames Research Center	GPM	Global Precipitation Measurement
ARTEMIS	Acceleration, Reconnection, Turbulence and Electrodynamics of the Moon's Interaction with the Sun	GPRAMA	Government Performance Results Act-Modernization Act of 2010
ASTRO-H (JAXA)	Facility-class X-ray mission	GRACE-FO	Gravity Recovery and Climate Experiment-Follow On
Aura	Earth Observing Satellite for atmospheric chemistry	HEOMD	Human Exploration and Operations Mission Directorate
BepiColombo	Joint ESA/JAXA mission to Mercury; NASA is contributing the Strofio instrument	Hinode (JAXA)	Mission to study energy transport and release in the solar atmosphere
BPR	Baseline Performance Review	HST	Hubble Space Telescope
CALIPSO	Cloud-Aerosol Lidar and Infrared Pathfinder Satellite Observations	Hubble	Hubble Space Telescope
CECR	Construction and Environmental Compliance and Restoration	IBEX	Interstellar Boundary Explorer
Chandra	Chandra X-ray Observatory	ICESat-2	Ice, Clouds and land Elevation Satellite-2
CLARREO-PF (ISS)	Climate Absolute Radiance and Refractivity Observatory-Pathfinder	ICON	Ionospheric Connection Explorer
CLPS	Commercial Lunar Payload Services	IDIQ	Indefinite delivery/indefinite quantity
CMC	Center Management Council	IMAP	Interstellar Mapping and Acceleration Probe
CoF	Construction of Facilities	InSight	Interior Exploration using Seismic Investigations, Geodesy, and Heat Transport
CREAM (ISS)	Cosmic Ray Energetics and Mass experiment on ISS	IRB	Independent Review Board
CYGNSS	Cyclone Global Navigation Satellite System	IRIS	Interface Region Imaging Spectrograph
DART	Double Asteroid Redirection Test	IRT	Independent Review Board
Dawn	Discovery mission to visit asteroids Vesta and Ceres	ISS	International Space Station
DoD	Department of Defense	IXPE	Imaging X-Ray Polarimetry Explorer
DPMC	Directorate Program Management Council	JAXA	Japanese Space Agency
DRIVE	Diversify, Realize, Integrate, Venture and Educate Initiative	JCL	Joint Confidence Level
DR&T	Directed Research and Technology	JPL	Jet Propulsion Laboratory
DSOC	Deep Space Optical Communications	JPSS	Joint Polar-orbiting Satellite System
EP	Episode	JPSS 2	Joint Polar Satellite System (2nd in the series)
EPD	Educator Professional Development	JUICE (ESA)	Jupiter Icy Moons Explorer
ESA	European Space Agency	Juno	New Frontiers mission to Jupiter
Euclid (ESA)	ESA visible/near infrared survey mission	JWST/Webb	James Webb Space Telescope
Europa Clipper	Mission to Jupiter's moon	KDP	Key Decision Point
ExoMars 2016	European Space Agency's (ESA) Exobiology on Mars program	Kepler	Kepler Space Telescope to detect extrasolar planets
ExoMars 2020 (ESA)	Mars rover mission. NASA is contributing the MOMA instrument	LADEE	Lunar Atmosphere Dust and Environment Explorer
FEMA	Federal Emergency Management Agency	LAGEOS	Laser Geodynamics Satellite
Fermi	Fermi Gamma-ray Large Area Space Telescope Spectroscopic Terahertz Observatory	Landsat	Land imaging satellite
FY	Fiscal Year	LDEP	Lunar Discovery and Exploration Program
GDC	Geospace Dynamic Constellation	LEO	Low Earth Orbit
GEDI (ISS)	Global Ecosystem Dynamics Investigation	LLO	Low Lunar Orbit
GEO	Geosynchronous Earth Orbit	LRD	Launch Readiness Date
		LRO	Lunar Reconnaissance Orbiter

# Acronym List

LSST	Large Synoptic Survey Telescope	SCAP	ARC Shared Capabilities Assets Program
Lucy	Discovery mission to six Jovian Trojan asteroids	SciAct	Science Activation
MAIA	Multi-Angle Imager for Aerosols	SDO	Solar Dynamics Observatory
Mars Express (ESA)	Mars orbiter lander mission	Sentinel-6A/B	Sentinel Space Telescope
Mars Odyssey	Mars orbiter	SE&P	Science Engagement and Partnerships
Mars Rover 2020	Next robotic science rover of Mars Exploration Program	SET-1 (ISS)	Space Environment Testbed
MAVEN	Mars Atmosphere and Volatile Evolution	SMAP	Soil Moisture Active/Passive
MetOp-C	Polar orbiting meteorological satellite	SMD	Science Mission Directorate
MIDEX	Medium-class Explorer	SMEX	Small Explorer
MMS	Magnetospheric Multiscale	SOC	Solar Orbiter Collaboration, with ESA
MMX	Mars Moons eXploration	SOFIA	Stratospheric Observatory For Infrared Astronomy
MOXIE	Mars Oxygen ISRU Experiment	SOHO	Solar and Heliospheric Observatory
MRO	Mars Reconnaissance Orbiter	SORCE	Solar Radiation and Climate Experiment
MSL	Mars Science Laboratory (Curiosity)	Spitzer	Spitzer Infrared Space Telescope
MSR	Monthly Status Review / Mars Sample Return	SRB	Standing Review Board
NE	Northeast	SSCG	Scope and Subject Category Guide
NEO	Near-Earth Object	SSERVI	Solar System Exploration Research Virtual Institute
NEOWISE	Near Earth Object Wide-Field Infrared Survey Explorer	STEM	Science, Technology, Engineering, and Math
New Horizons	New Frontiers mission to fly by Pluto and into the Kuiper Belt	STEREO	Solar Terrestrial Relations Observatory
NExT-C	NASA Evolutionary Xenon Thruster (NEXT) Commercial	STMD	Science and Technology Mission Directorate
NGO	Nongovernment Organizations	Suomi NPP	Suomi National Polar-orbiting Partnership
NICER (ISS)	Neutron-star Interior Composition Explorer experiment on ISS	SWFO	Space Weather Follow On Program
NISAR	NASA-ISRO Synthetic Aperture Radar Satellite	SWx	Space Weather
NOAA	National Oceanic and Atmospheric Administration	Swift	Gehrels Swift Gamma-ray Burst Explorer
NSF	National Science Foundation	SWOT	Surface Water Topography
NuSTAR	Nuclear Spectroscopic Telescope Array	TEMPO	Tropospheric Emissions: Monitoring of Pollution
OCO-2	Orbiting Carbon Observatory-2	Terra	Earth Observing System mission for land, ocean, and clouds
OCO-3 (ISS)	Orbiting Carbon Observatory-3	TESS	Transiting Exoplanet Survey Satellite
OpPlan	Operational Plan	THEMIS	Time History of Events and Macroscale Interactions during Substorms
Opportunity	Mars Exploration Rover-B	TIMED	Thermosphere, Ionosphere, Mesosphere Energetics and Dynamics
OSTM/Jason-2	Ocean Surface Topography Mission with France	TRL	Technology Readiness Level
OSIRIS-REx	Origins-Spectral Interpretation-Resource Identification-Security-Regolith Explorer	TROPICS	Time-Resolved Observations of Precipitation structure and storm Intensity with a Constellation of SmallSats
OSTP	Office of Science, Technology and Policy	TSIS (ISS)	Total Solar Irradiance Spectrometer
PACE	Pre-Aerosol, Clouds, and ocean Ecosystem	TWINS	Two Wide-Angle Imaging Neutral-Atom Spectrometers
Psyche	Discovery mission to asteroid 16-Psyche	USFS	U.S. Forest Service
QuikSCAT	Quick Scatterometer for ocean winds measurement	USGS	U.S. Geological Survey
RFP	Request for Proposals	Van Allen Probes	Formerly Radiation Belt Storm Probes
RHESSI	Reuven Ramaty High Energy Solar Spectroscope Imager	Voyager	Missions to the outer planets
ROSES	Research Opportunities in Earth and Space Science	WFIRST	Wide-Field Infrared Survey Telescope
RPS	Radioisotope Power Systems	Wind	Mission to measure energetics of the solar wind
SAGE III (ISS)	Stratospheric Aerosols and Gas Experiment III	XRISM	JAXA's X-Ray Astronomy Recovery Mission
SBIR	Small Business Innovation Research	XMM-Newton (ESA)	X-ray Multi-mirror Mission
SC	Science Centers		



**Welcome to the Journey!!  
Questions?**