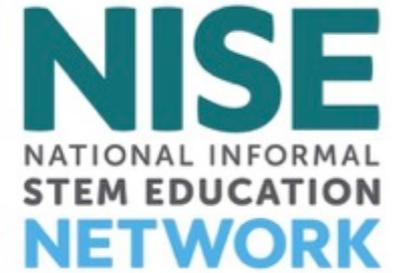


# NISE Net Online Workshop

## Learn More About the 2020 Explore Science: Earth & Space Toolkit

*Tuesday, September 10, 2019*



***Welcome!***

**Today's presenters are:**

- **Brad Herring**, Museum of Life and Science, NC
- **Frank Kusiak**, Lawrence Hall of Science, CA
- **Darrell Porcello**, Children's Creativity Museum, CA
- **Christian Wong**, Hawaii Science and Technology Museum, HI
- **Katherine Hunt**, Ingram Planetarium, NC
- **Karen Pac**, Imagine Nation, CT



As we wait to get started with today's discussion, please:

**Introduce yourself!** Type your name, institution, and location into the Chat Box

**Questions?** Feel free to type your questions into the Chat Box at any time throughout the webinar or use the raise your hand function in the participants list and we'll unmute your microphone.

**Today's discussion will be recorded and shared on nisenet.org at: [nisenet.org/events/online-workshop](https://nisenet.org/events/online-workshop)**

# Online Workshop Overview



Credit: Frontiers of Flight Museum

- Explore Science: Earth & Space 2020 Toolkit
  - Application Overview
  - Toolkit Overview
  - Requirements
  - Collaboration
- NISE Net Partner Events Share-out
- Upcoming Professional Development Opportunities
- Q/A

# Explore Science: Earth & Space Toolkit

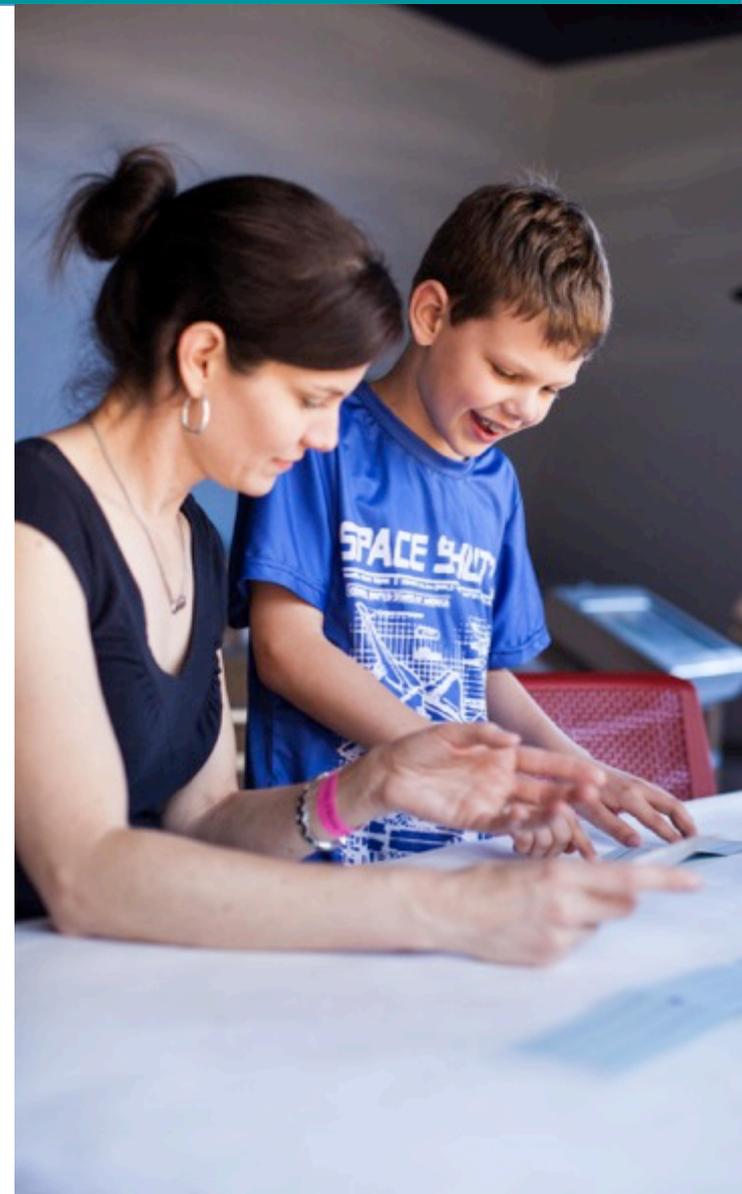


# Earth and Space Project

## GOALS

Engage public and professional audiences in learning about Earth and space sciences

Encourage new and strengthened partnerships among national and local organizations that support informal and lifelong learning



# STEM Focus



## **Disciplinary**

- Heliophysics
- Earth science
- Planetary science
- Astrophysics

## **Cross-disciplinary**

- Science, technology, and society
- Forces and energy

# Learning Framework



Experience Earth and space **PHENOMENA** and explore science findings.

Use the scientific **PROCESS** and reflect on science as a way of knowing.

**PARTICIPATE** in the scientific community and identify as a science learner.

# Design



## Overall:

- Inviting, appealing, and engaging
- Compatible with the exhibition design

## Materials and maintenance:

- Safe for visitors of all ages
- Easy to, set up, clean up, and store
- Consumables are inexpensive and readily available

## Accessibility:

- Universal Design approach
- Bilingual English and Spanish

## Design principals:

- Engaging
- Authentic
- Current
- Relevant



# Target Audiences



## **Public:** Informal and lifelong learners

- Museum audiences
  - Families with children ages 4-10
  - School groups K-6
  - Other museum visitors
- Underserved audiences
  - Museum visitors
  - Offsite programs



## **Professional:** Informal educators

- Museum educators
- Educators in out of school settings

# Contents



All necessary materials to engage the public, provide professional development, and build partnerships:

- **STEM educational resources**, including hands-on activities, videos, and media
- **Professional resources** for planning, implementation, and staff training

The 2020 toolkit will ship in two parts this year!

- **Toolkit Part A:** will include a set of hands-on activities
- **Toolkit Part B:** will include a collaborative Moon game and hands-on activities on the science behind the Moon



# TOOLKIT APPLICATION



# Explore Science: Earth & Space 2020 toolkit

**One application due November 1, 2019**



**Part A –  
350 shipping  
January 2020**



**Part B –  
350 shipping  
August 2020  
\*includes immersive  
Moon game**

# Toolkit Eligibility



The physical toolkit is designed for informal science education public events and outreach. To be eligible to receive a physical toolkit, organizations must be:

- Located in the United States
- Public informal science outreach and education institutions such as:
  - science museums and science centers,
  - children's museums,
  - natural history museums,
  - public planetariums and observatories, and
  - NASA visitor centers

*Please note that K-12 schools, afterschool programs, libraries, parks, and astronomy clubs are not eligible to receive physical toolkits. Consider downloading a digital toolkit if your organization does not meet eligibility criteria. Digital toolkits will be available for download in February 2020 at [nisenet.org/earthspacekit](https://nisenet.org/earthspacekit)*

# Application Process



## Application link

Applications must be submitted online using SurveyGizmo by November 1, 2019.

- <http://www.nisenet.org/earthspacekit-apply>

## Selection process

A total of 350 toolkits will be awarded through a competitive award process.

# Partner Expectations



- **TOOLKIT PART A: Spring 2020 event**
  - Hold a **public engagement event** using Part A of the toolkit. Public events can be stand-alone events OR toolkit activities can be incorporated into an existing STEM public engagement event **during March - May 2020.**
- **TOOLKIT PART B: Fall 2020 public engagement**
  - **Engage the public** using Part B of the toolkit including the immersive Moon game. Public engagement offerings can be stand-alone OR you can incorporate into existing regular STEM programming on-site or off-site **during September 2020 - January 2021.**

# Partner Expectations



## Additional suggestions *(not required but encouraged)*

- Attending professional development online workshops for informal science educators
- Collaborating with local experts
- Collaborating locally to reach underserved audiences
  - <http://www.nisenet.org/collaboration-guide>
- Complete the NISE Net Annual Partner Survey

# Using Your Toolkit All Year Long



**Celestial events:** Meteor showers, lunar eclipses, full moons, planetary events, and more

**Earth and space science events:**

- World Water Day, March 22, 2020
- Earth Hour, March 28, 2020
- Global Astronomy Month, April
- Yuri's Night, April 12, 2020
- Earth Day, April 22, 2020
- National Environmental Education Week, week of Earth Day
- Astronomy Day (Spring), May 2, 2020
- Astronomy Week (Spring), April 27-May 3, 2020
- World Oceans Day, June 8, 2020
- Asteroid Day, June 30, 2020
- International Observe the Moon Night, October 5, 2019, September 26, 2020
- Astronomy Day (Fall), September 26 2020
- Astronomy Week (Fall), September 21 - 27, 2020
- World Space Week, October 4-10, 2020
- Earth Science Week, October 13-19, 2019; October 11-17, 2020

# Stay Connected

**NORTHEAST** – Ali Jackson - Sciencenter, Ithaca, NY

Northeast: NY, VT, NH, ME, RI, CT, and MA

Mid-Atlantic: PA, NJ, MD, DC, DE, OH, and WV

**SOUTHEAST** – Brad Herring - Museum of Life and Science, Durham, NC

Southeast: VA, NC, SC, KY, TN, LA, MS, AL, GA, FL, and Puerto Rico

South: TX, AR, and OK

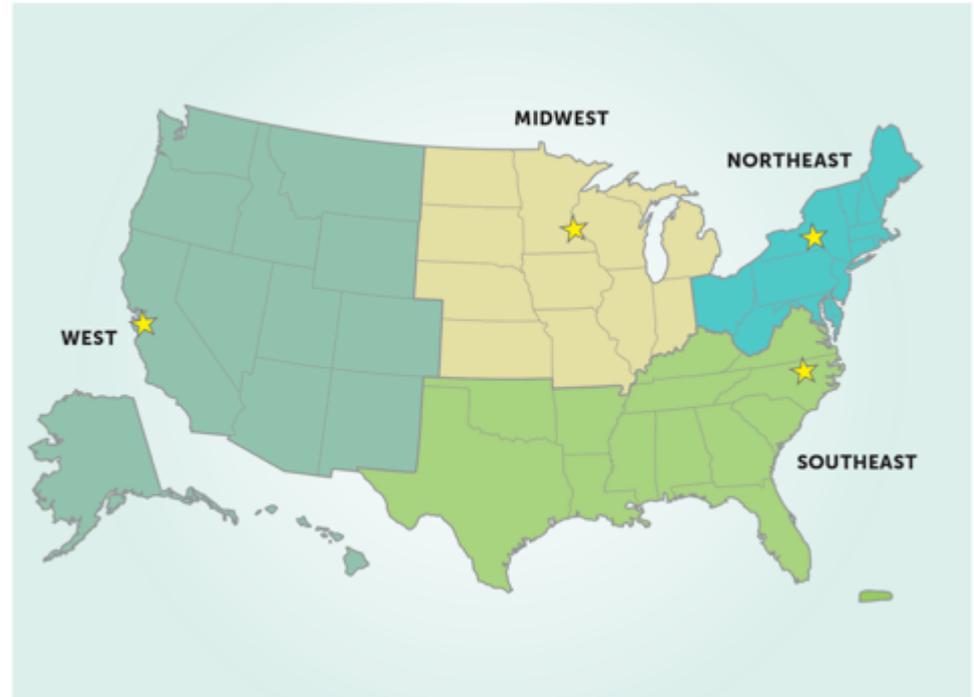
**MIDWEST** – Christina Leavell - Science Museum of Minnesota, St. Paul, MN

ND, SD, NE, KS, MN, IA, MO, WI, IL, MI, and IN

**WEST** – Frank Kusiak - UC Berkeley Lawrence Hall of Science, Berkeley, CA

Southwest: CA, NV, AZ, and HI

West AK, WA, OR, ID, MT, WY, CO, UT, and NM



**COLLABORATION**

# Solar System Ambassadors



Dedicated and qualified volunteers around the country that you can contact in advance to interact with your audience.

Use the directory to find an ambassador near you!

URL: <https://solarsystem.jpl.nasa.gov/ssa>

Questions about the program: Kay Ferrari

[kay.a.ferrari@jpl.nasa.gov](mailto:kay.a.ferrari@jpl.nasa.gov)

# Astronomy Clubs and Ambassadors



ASTRONOMY CLUBS IN YOUR AREA



This website uses GeoP2 JavaScript from MaxMind.

📍 club with upcoming events   📍 Night Sky Network member club

Find astronomy clubs near you!

URL: <https://nightsky.jpl.nasa.gov>

Questions about the program:

<https://nightsky.jpl.nasa.gov/contact.cfm>



Find Astronomy Ambassadors

URL: <http://aas.org>

Go to the Education > Outreach > Astronomy Ambassadors

# Tips for Collaborating



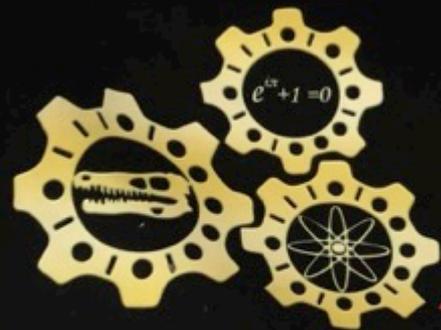
Whether you're contacting an SSA, NSN club, or your local university, keep the following in mind:

- Schedule way in advance! (Minimum: a month ahead)
- Be precise with:
  - When
  - Where
  - How long
  - Audience to expect: not only numbers, but demographics and special needs.
  - Type of event: will it be outside, private, public, ticketed, a small/large part of a larger event.
  - Ask what they need, materials and support (tables, chairs, projectors, etc).
  - You may want to do a walk-through a week or two before.
- At the event:
  - Make sure they have parking and know who to contact when they arrive!
  - Make sure they have all the support materials ready for them (tables, chairs, etc)
  - If you can, have a volunteer do crowd control if it's a big event.
  - Communicate any safety concerns/emergency procedures for your building.
  - Make sure they have water, snacks, and breaks if they're there for an extended amount of time.

# **PARTNER SHAREOUT**

# UNLEASH THE INNOVATOR IN EVERY CHILD





# Hawaii Science & Technology Museum

*Unleash The Innovator In Every Child*

**Www.HawaiiScienceMuseum.Org**





# Science Camps!





# After School Programs

Partnership with Big Island Invasive Species Committee

# STARS Video



# Eruption Video 1



# Eruption Video 2



# Eruption Video 3





# Kilauea Eruption Recovery Project

NISE Partnership

# Science Night Video



# NISE

NATIONAL INFORMAL  
STEM EDUCATION  
NETWORK

## NISE Toolkits!!!!

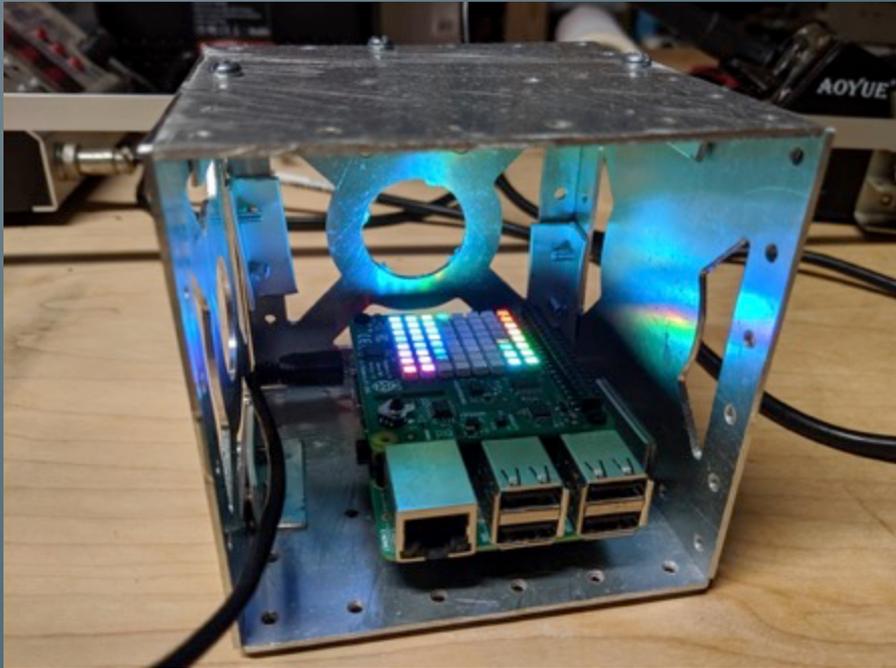
Hide & Seek Moon

Pocket Solar System

Stomp Rockets!



# Research and Development



**NISE**  
NATIONAL INFORMAL  
STEM EDUCATION  
**NETWORK**



Follow Us On:

Twitter: @HawaiiScience

Instagram:

@HawaiiScienceMuseum

[www.hawaiisciencemuseum.org](http://www.hawaiisciencemuseum.org)

**SUSTAINABLE  
FUTURES**

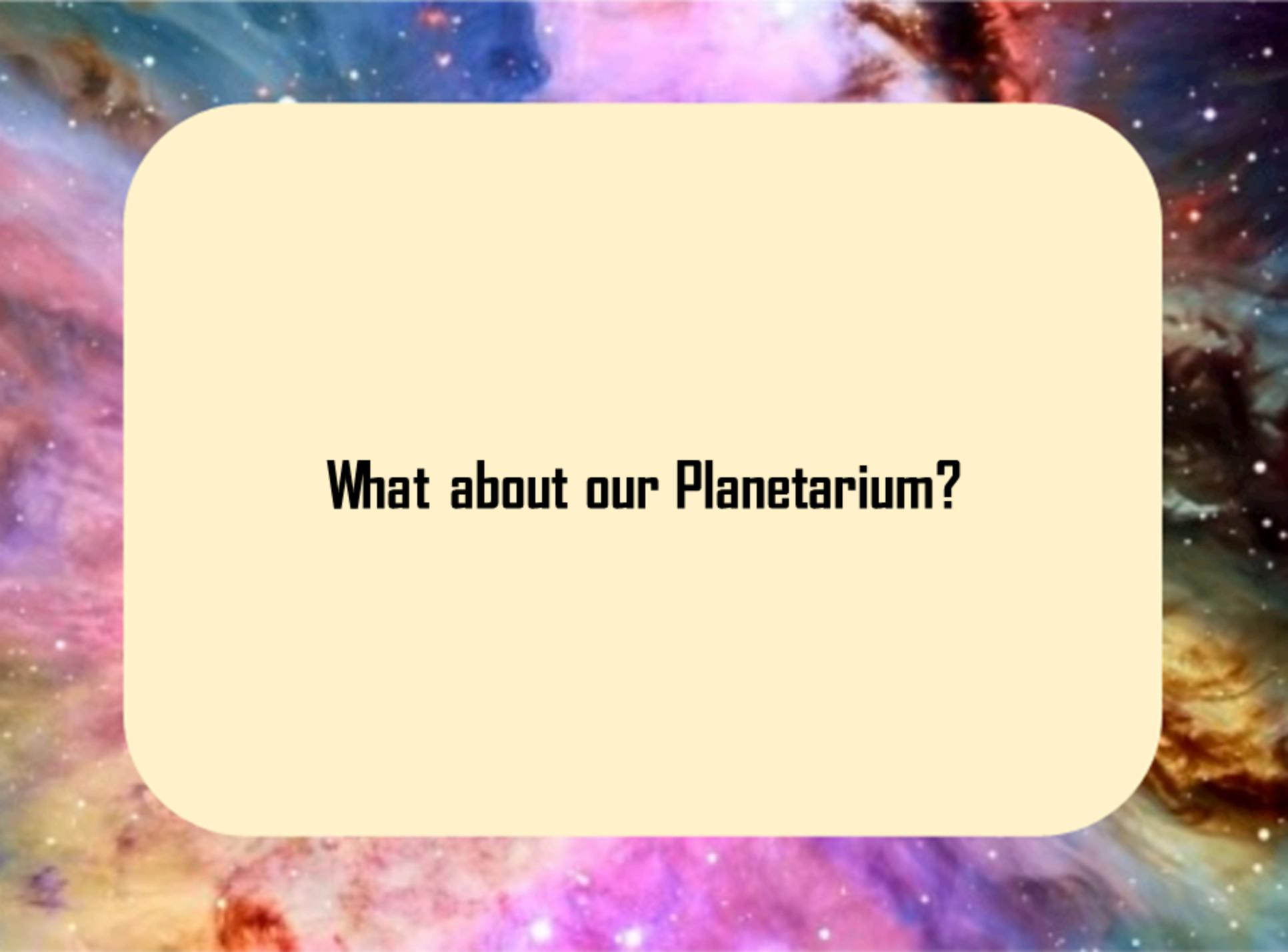


# **Planetarium Earth and Space Kit “Hack”**

Katherine (Kat) Hunt, Ingram Planetarium  
Sunset Beach, NC

# How We Had Been Using Kits





**What about our Planetarium?**

# Integrating Kits Into Planetarium Programs

## What would that look like?

How should we integrate the kits into dome programs?

- Combine Multiple Kits with Overlapping Concepts
- Target Kits with Graphic and Kinesthetic Activities.
- Explore Kits That Could Benefit From Dome Visuals

How can we enable other domes to replicate program?

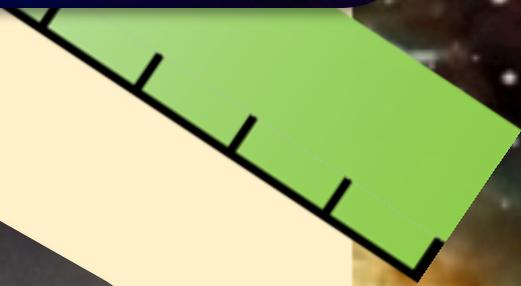
- Visualization Prompts That Translate Across Dome Types
- Include A Script or Talking Points
- Include Conversation Prompts for Audience Participation

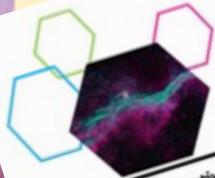


[2017 Earth and Space – Imagining Life](#)  
[2017 Earth and Space – Ice Orbs](#)  
[Night Sky Network – Life in the Extreme](#)



KG





## Facilitator Guide - Planetarium Extension

# Imagining Life Under the Dome

### Paired with Ice Orbs and Imagining Life

#### Learning Objectives

- If life exists elsewhere in the universe, it could look very different from life on Earth.
- Life on Earth comes in an amazing variety of forms.
- Ocean worlds may be the most likely places to discover life beyond Earth.
- Scientists think that ocean worlds have ice-cold frozen exteriors, and warmer, liquid interiors.
- Some astrobiologists are studying ocean worlds for evidence and signs of life.
- Astrobiologists use our knowledge about life on Earth to make predictions about what life might be like elsewhere in the universe.

#### Make it interactive and audience driven!

- Here are some possible prompts for discussion in the program.
  - How important is it to find life in the rest of the universe?
  - What is our responsibility to alien environments and life forms? Could we contaminate other worlds with microbes from Earth? How could we prevent that from happening?
  - If we do find extraterrestrial life, should we bring it back to Earth? Could it live here? Would you want it for a pet? What if it got out into the wild and disrupted the ecosystem by destroying species native to Earth?

#### Difficult Concepts - Do You Believe in Aliens?

With this activity, it may be important to remind participants that we haven't found life or signs of life anywhere else in the whole universe. Some people have had experiences, heard about events, or seen popular media that suggest extraterrestrial creatures exist and have even visited Earth. Scientists have not validated these accounts, so the current scientific opinion is that no "aliens" have been found or have been in our system. Do you expect that life exists beyond Earth and that one day we

#### Primary Points are Talking Points, Secondary Points are Suggested Visualizations

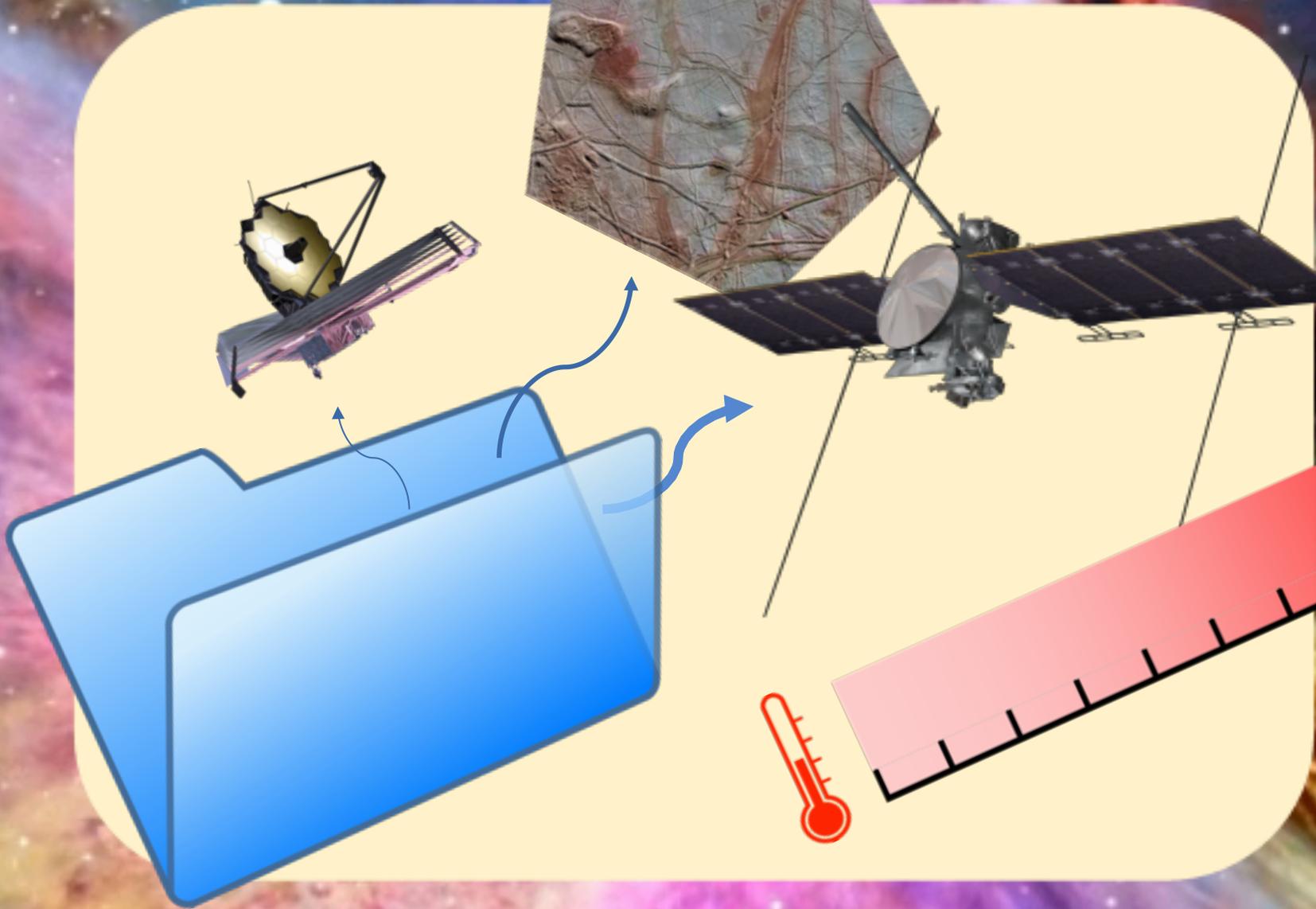
- TRAPPIST - 1 System has three Goldilocks Planets in the Habitable Zone.
  - Show visualization of TRAPPIST 1 System.
- James Webb Telescope to look for Oxygen, Methane, and Water Signatures on Exoplanets.
  - Use model of James Web with Sun in background.

#### Show Outline

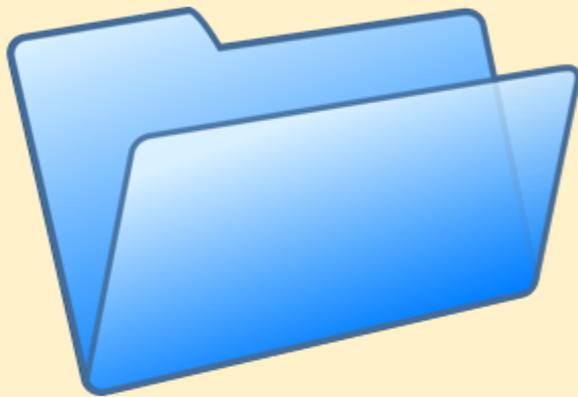
#### Primary Points are Talking Points, Secondary Points are Suggested Visualizations

- TRAPPIST - 1 System has three Goldilocks Planets in the Habitable Zone.
    - Show visualization of TRAPPIST 1 System.
  - James Webb Telescope to look for Oxygen, Methane, and Water Signatures on Exoplanets.
    - Use model of James Web with Sun in background.
  - Challenges of Confirming Life, TRAPPIST - 1 is 39 LY Away.
    - Label TRAPPIST - 1 and Sun in Galaxy Model.
    - Model Europa with Jupyter in background.
    - Show close up of surface.
    - Model Enceladus with Saturn in background.
    - Presence of liquid water oceans in some moons would be strong candidates for life.
  - Europa Clipper will use Variety of Instruments, such as an ice penetrating radar to confirm ocean.
    - Show Europa Clipper Model against Europa.
  - Moons with atmospheres like Titan are other interesting candidates for life.
    - The drone like Dragonfly mission is designed to explore the surface of Titan in great detail.
    - Show Extremophile slides with Earth in background.
  - Astrobiology is an interdisciplinary field at the intersection of planetary science and biology.
    - Visual of Biology and Planetary Science.
    - Astrobiologists investigate the evolution of life on the planet and attempt to identify possible signatures of life outside Earth.
  - Life in the Extreme Activity from NIGHT Sky Network.
    - Show Condition Bars in sequence.
    - Earth is our only data point for life, but that doesn't mean life can't have evolved in other environments elsewhere.
- Visualize fictional Planet  
Life Activity  
• some house lights with nice background and pass out activity sheets and other necessary  
• such as clip boards and colored pencils.





# Full Planetarium Kit Extension



## Includes:

- Atm4 File for SciDomes
- Curated Images and Models
- Image Reference Sheet
- Planetarium Facilitator Guide
- Digital Activity Files

# Making The Most Of Your Kits with Young Children

Karen Pac – Atelierista/Studio Education  
Manager

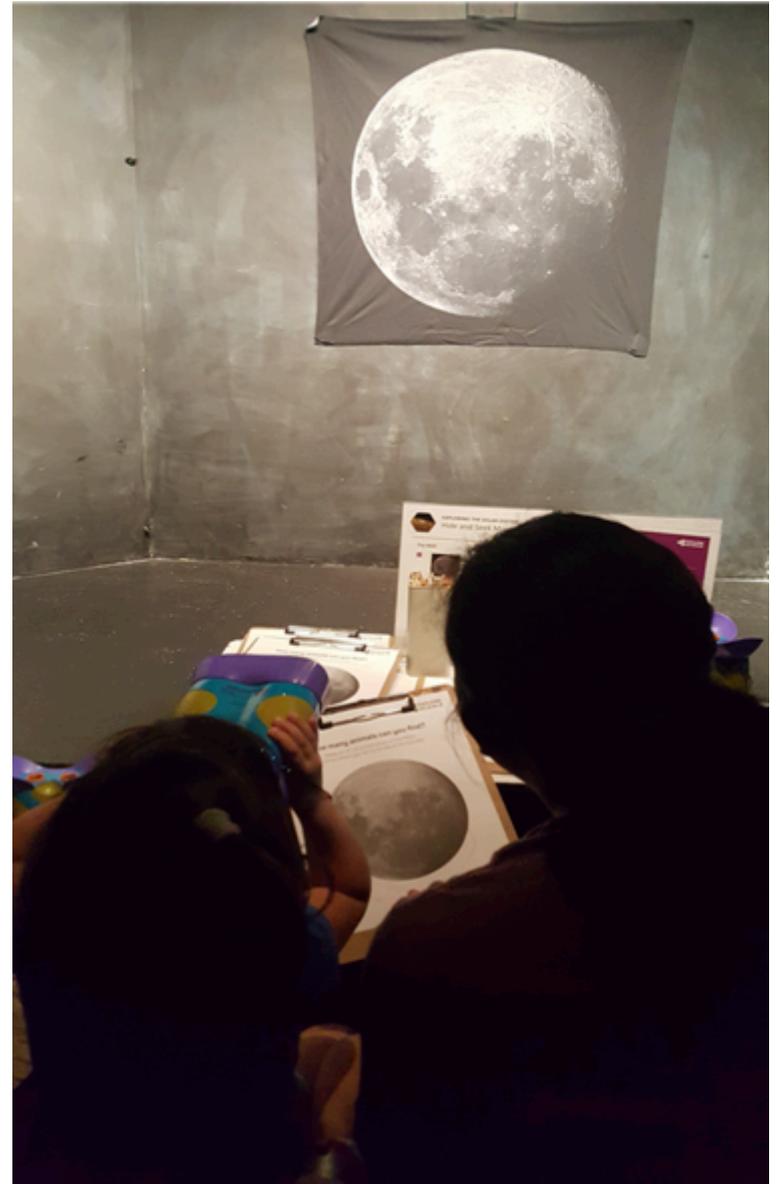
Imagine Nation, A Museum Early  
Learning Center  
Bristol, CT



Introduction Language is on a young child's level – “When we read Goodnight Moon or hear about the cow jumping over the moon, what is that moon they are talking about?”



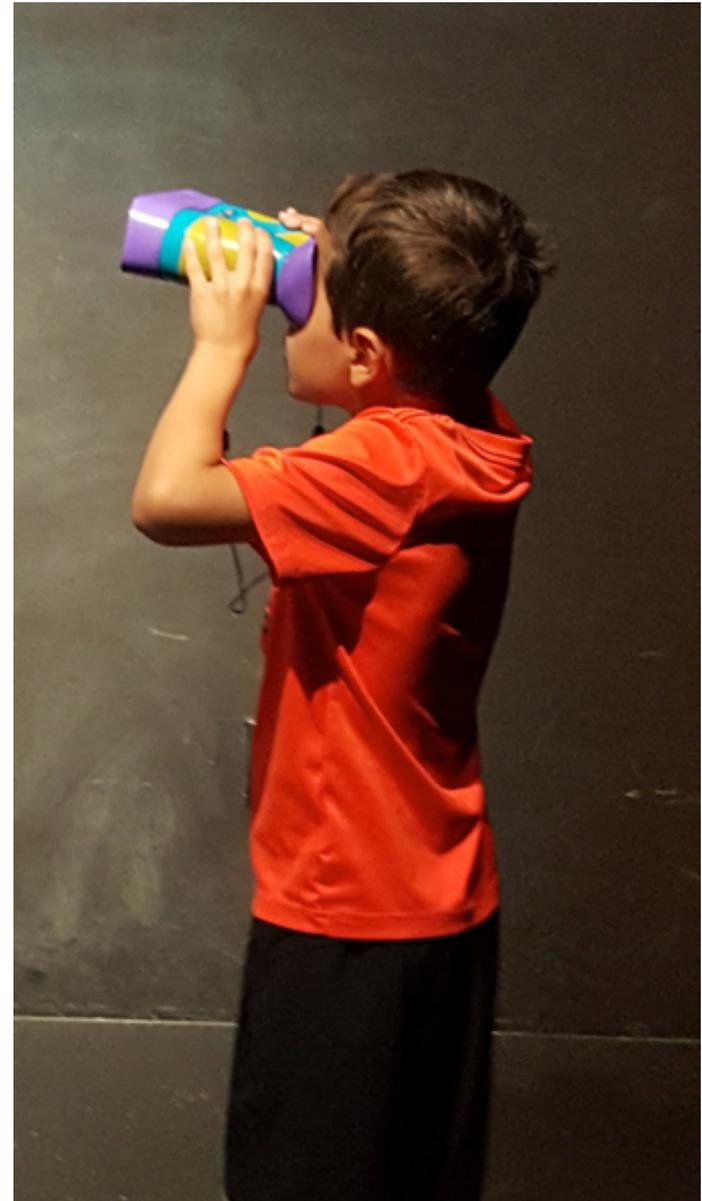
# Hide and Seek with the Moon

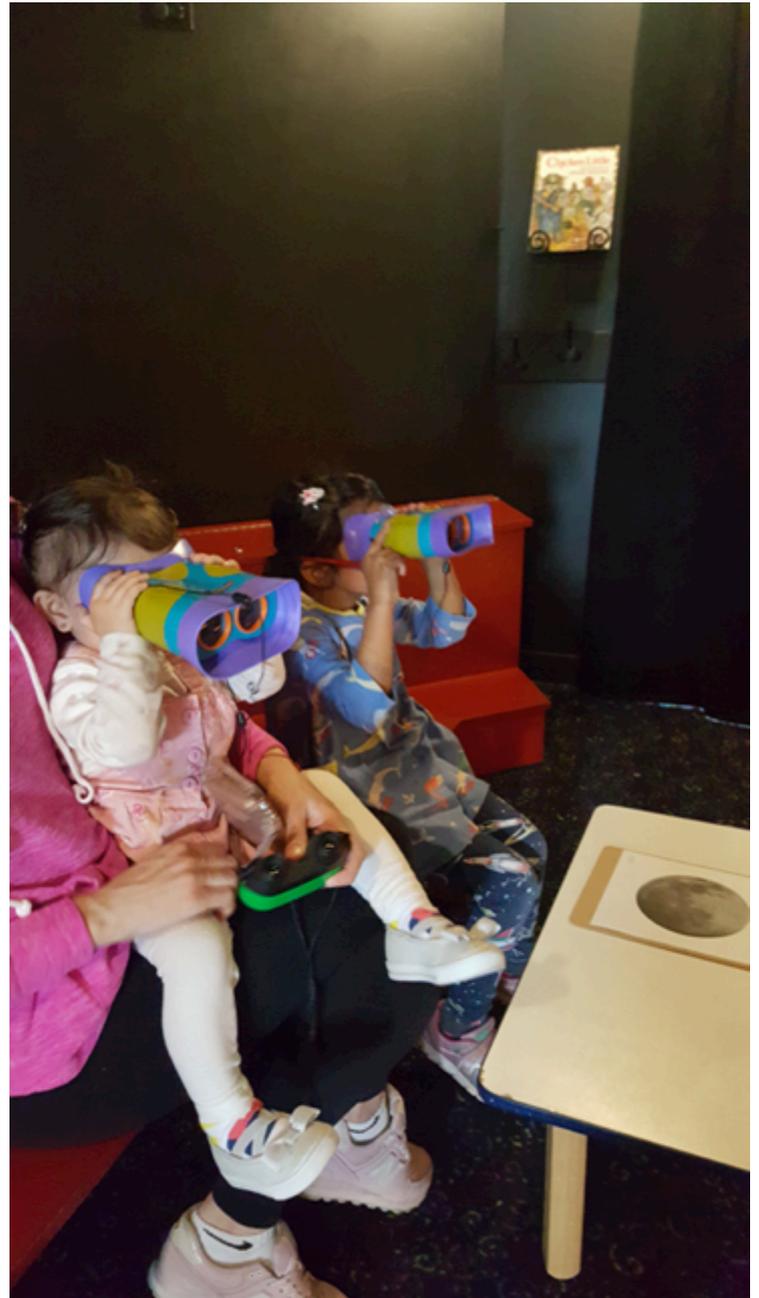


Exploring what they do know and going from there- “Where is the moon?” “How do we get there?” “What do we study about the moon and why?” “Well you are a very impressive group, you know that Astronauts go there and learn about what it’s made of, today you get to learn about the tools they use and you can use some too!”



# Hide and Seek with the Moon







Materials in kits can be used by children of all ages though the younger the child, be mindful of equipment and safety. Be sure that your group understands that portion before moving on.



Young children we have used the kits with have benefited from the hands on portions, they are learning by experimenting and moving forward in stages.



# Temperature Mapping





# Library Collaboration on Astronauts







# Craters





# Stomp Rockets





# Activity Ideas

- Provide 30 to 45 minute museum workshops throughout the day, each focusing on a different kit
- Create a theme for a day combining kits
- Create a Home School Day focused on Science
- Collaborate with Preschool Teachers to use kits as classroom lessons to supplement Science curriculum
- Provide outreach opportunities for schools, libraries, and parks and recreation



# PROFESSIONAL DEVELOPMENT

# Upcoming Online Workshops



## **Empowering Girls in Science Through Growth Mindset and the New Girl Scout Space Science Badges**

Tuesday, October 8, 2019

2pm-3pm Eastern / 11am-12pm Pacific

## **Online Workshop: Programming for Audiences with Special Needs**

Tuesday, November 19, 2019

2pm-3pm Eastern / 11am-12pm Pacific

**Learn more at [nisenet.org/events](https://nisenet.org/events)**

# ASTC & GLPA



ASTC 2019 Conference, hosted by Ontario Science Center, September 21-24, 2019 in Ontario, CA

- Booth in Exhibit Hall
- Sessions
- Partner Happy Hour and Breakfast

<https://www.nisenet.org/events/astc/astc-annual-conference-2019>



2019 Great Lakes Planetarium Association (GLPA) Conference, October 23-26, 2019 in Toledo, OH

- Booth in Exhibit Hall
- Come say hi!

<https://glpa.org/2019>



The screenshot shows a Ryver forum interface. On the left is a dark blue sidebar with navigation options: 'Museum Alliance @BradHerring' (with a dropdown arrow), 'Search', 'Notifications', 'Task Stream', 'Personal Tasks', 'FORUMS' (with an up arrow), 'Planetarium Shows' (with a red notification icon), 'General Conversation', 'Explore Science: Earth & S...' (highlighted in blue), 'Apollo 50th Conversations', 'Tasks and Requests', 'TEAMS' (with a red notification icon), and 'PEOPLE' (with a dropdown arrow). The main content area has a dark background and is titled 'Explore Science: Earth & Space Toolkits' with a NISE logo. It features two tabs: 'CHAT' and 'TOPICS' (which is selected and underlined). Below the tabs is a list of five topic cards, each with a red pushpin icon, a title, a description, and a user profile picture with a message count. The topics are: 1. 'Extending the Earth & Space Online Workshop Conversations' by Brad Herring (3 replies, 28 days ago). 2. 'Earth & Space toolkit - suggestions for hacking or extending the activities' by Christina Leavell (3 replies, 29 days ago). 3. 'Learn More about the NISE Network' by Christina Leavell (1 reply, 29 days ago). 4. 'Introductions' by Brad Herring (5 replies, 29 days ago). 5. 'Ryver Quick Start Guide' by Jeff Nee (1 reply, created Jun 7).

Extending the Online Workshop conversation via the Museum Alliance's Ryver online forum. Sign up here: <https://museumalliance.ryver.com/application/signup/guests/TGcXfWsrarSC7I>

**Questions?**

# Get Involved

Learn more and access the  
NISE Network's online digital resources  
[nisenet.org](http://nisenet.org)

**Subscribe to the monthly newsletter**  
[nisenet.org/newsletter](http://nisenet.org/newsletter)



**Follow NISE Net on social networking**  
[nisenet.org/social](http://nisenet.org/social)



# Thank You



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