NISE Network Online Workshop

Celebrate Earth Day with NISE Net:

Activity Connections and How Visitors Can Contribute Local Environmental Observations to NASA Science

April 16, 2019

Welcome!

Today's presenters are:

- **Holli Riebeek Kohl**, NASA Goddard Space Flight Center, GLOBE Observer
- **Jeannie Colton**, Arizona State University
- **Emily Hostetler**, Museum of Science, Boston
- **Darrell Porcello**, Children's Creativity Museum

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 online at nisenet.org/events/online-workshop

Online Workshop Overview

5 min

NISE Network introductions

40 min

Holli Riebeek Kohl on GLOBE Observer & citizen science connections

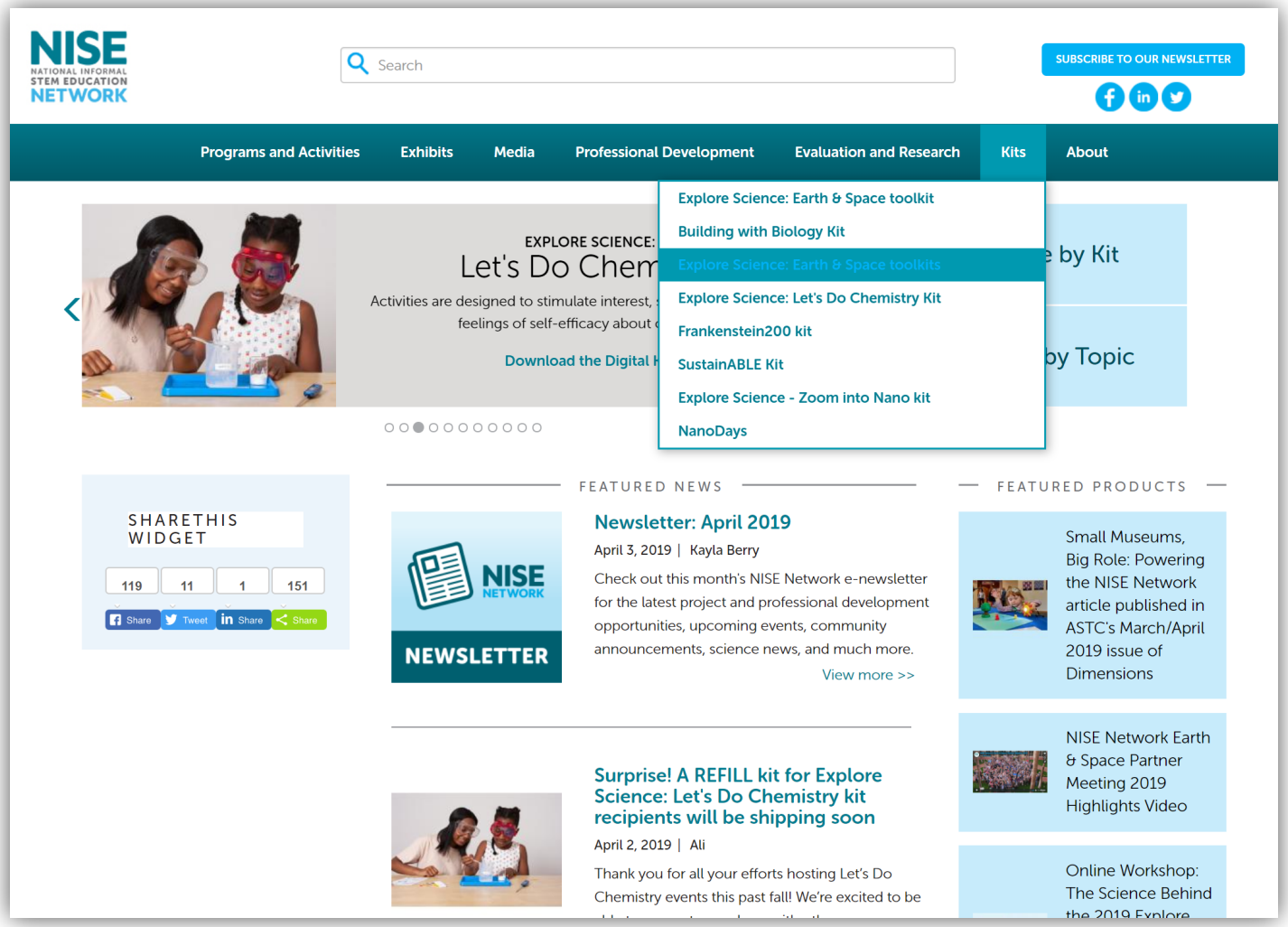
Jeannie Colton on Explore Science: Earth & Space toolkit activity connections

Emily Hostetler on Explore Science: Let's Do Chemistry kit activity connections

15 min

Q & A from our audience

Explore Science:
Earth & Space Digital Toolkits



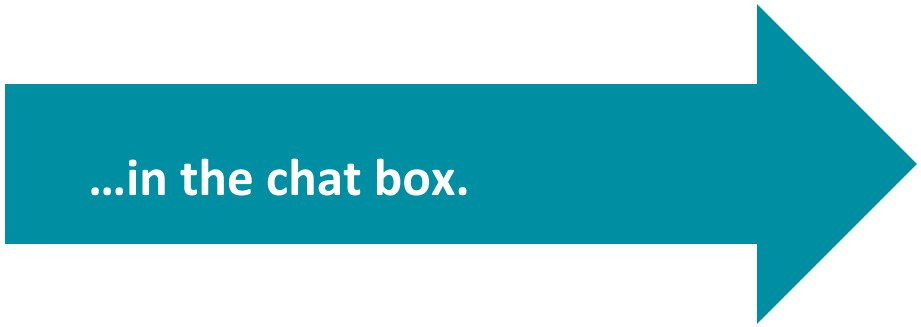
Download any Earth & Space digital toolkit:
http://nisenet.org/earthspacekit

Download the 2019 digital toolkit:
http://www.nisenet.org/earthspacekit-2019

Submit your questions…

We will be collecting your Questions in the chat window to your right throughout the talk.

We will go through these questions in the Q&A section of the webinar. Those we don't get to today we will reply over email.



Celebrate Earth Day with NISE Net: Activity Connections and How Visitors Can Contribute Local Environmental Observations to NASA Science

Image credit: NASA Photo / Jim Ross

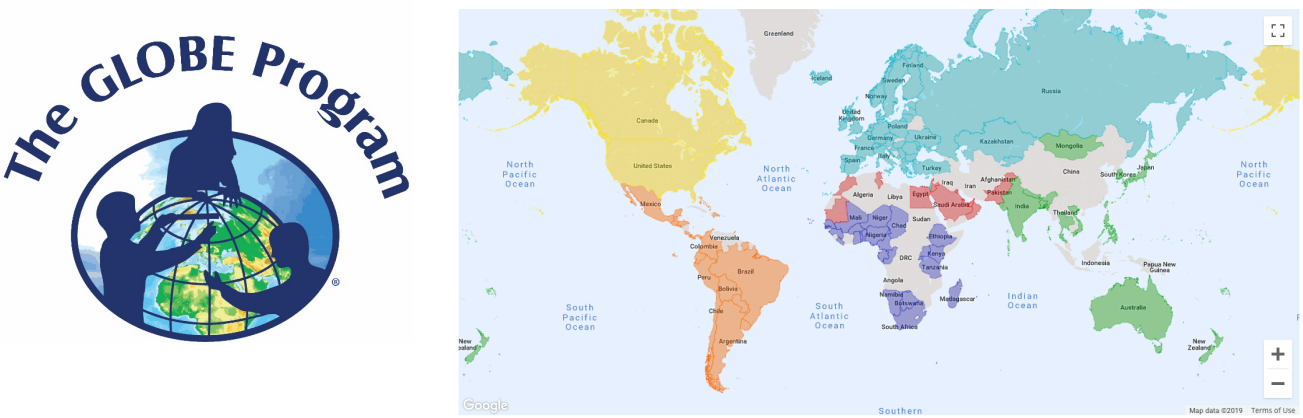
GLOBE Observer

Citizen Science Support of NASA Earth Science

Holli Kohl

Holli.kohl@nasa.gov

What is GLOBE and GLOBE Observer?



The Global Learning and Observations to Benefit the Environment (GLOBE) Program is an international science and education program that provides students and the public worldwide with the opportunity to participate in data collection and the scientific process, and contribute meaningfully to our understanding of the Earth system and global environment.

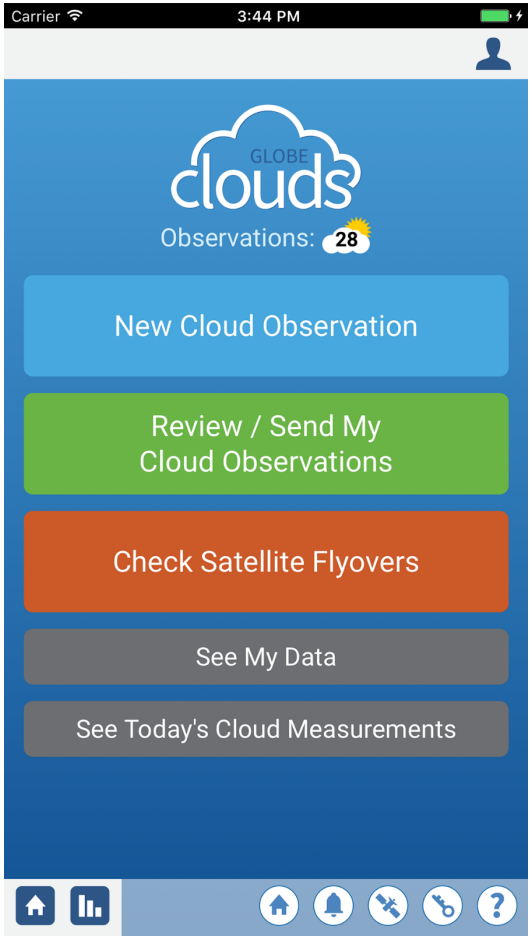
observer.globe.gov

Join GLOBE Observer as a Citizen Scientist

1. Download the app
2. Register with an active email address
3. Complete in-app training for each tool
4. Start making observations

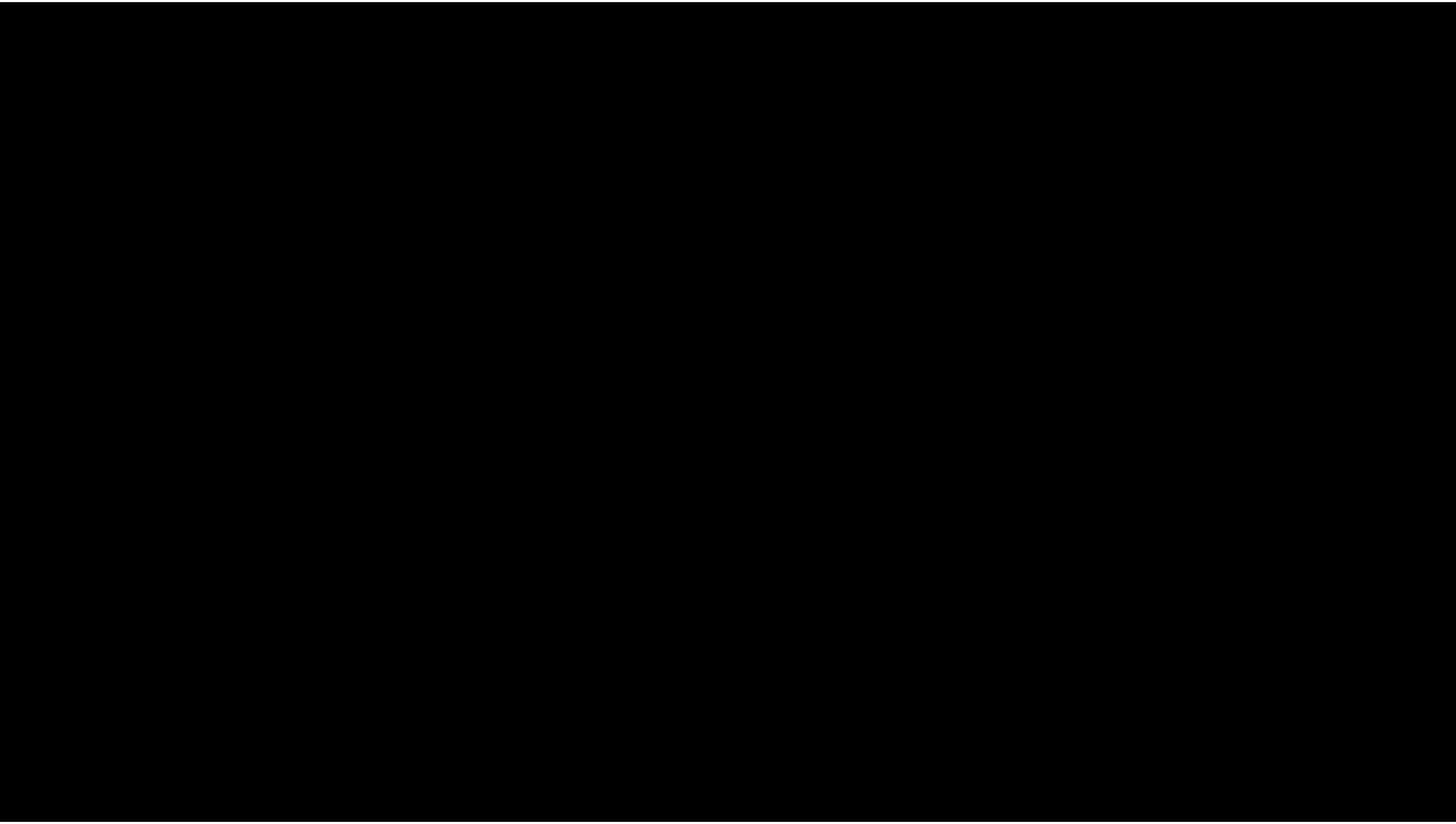
Can be used offline once you download and register. You will need cellular or wifi connection to send data.

observer.globe.gov



GLOBE clouds

- What does your sky look like? Clouds, no clouds, obscured view?
- Indicate percent of sky covered in clouds, sky color, and visibility
- Select cloud types, including contrails. Cloud types are determined by altitude, so this is divided into high, mid, and low level clouds
- Select cloud opacity
- Describe surface conditions (yes/no questions)
- Photograph the sky

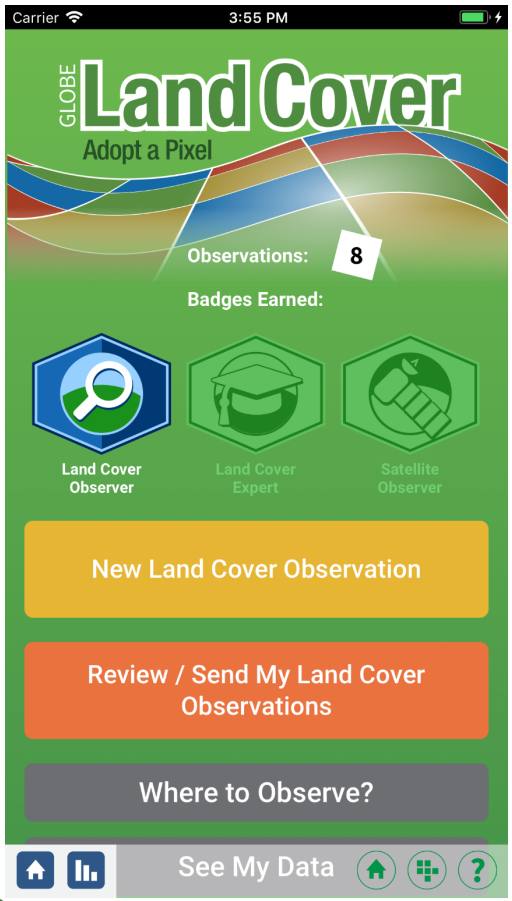


https://svs.gsfc.nasa.gov/13149

GLOBE mosquito habitat mapper

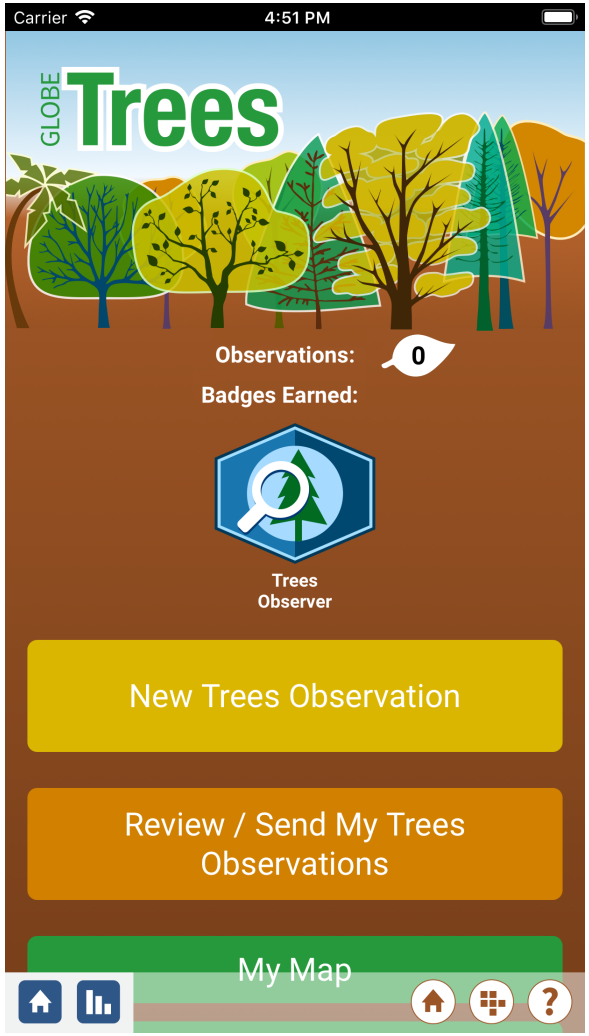
- Identify potential breeding habitat from menu
- Photograph the site
- Indicate if mosquito larvae are visible
- Sample and count the larvae
- Indicate if eggs, pupae, or adult mosquitos are nearby
- Photograph larvae with microscope lens
- Use decision key to identify larvae (optional)

observer.globe.gov



GLOBE Land Cover

- Set location
- Indicate surface conditions (yes/no)
- Photograph up, down, North, South, East, West
- Select land cover visible in North photo
- Estimate percent land cover for each land cover type
- Repeat for South, East, and West photos
- The app will calculate an overall land cover type for your location based on your input.
- Compare your land cover to satellite land cover. Indicate if the two are different and why.



- Indicate surface conditions (yes/no)
- In the camera tool, mark the base of tree and the top of tree
- Walk to the tree counting your steps
- Set your location
- Measure circumference of tree (optional)

https://www.youtube.com/watch?v=_pE26h4xlul

Toolkits for Informal Educators

TOOLKIT for INFORMAL EDUCATORS

Connect your organization's mission to real-world science by introducing visitors to GLOBE Observer, an app-based citizen science project. GLOBE Observer can be integrated into programming at museums, science centers, zoos and aquariums, parks, public gardens, libraries and more. Simply engage visitors with a smartphone or tablet, integrate GLOBE Observer into an existing talk or demo, or create a new cart or event centered around the app.

It's easy to get started with GLOBE Observer. Simply download the app, register for an account and plan your program using the resources included below. In this toolkit, you will find information, activities and resources for each of the app modules. In the Advanced section, you can find more information on topics such as organizing an event and becoming a GLOBE partner. Have a question? Contact us.

Choose Your Protocol

Advanced

GLOBE Partners

GLOBE Partners (Country Coordinators and U.S. Partners) facilitate the implementation of GLOBE in their country or within a service area of their country. Partners recruit GLOBE schools, as well as provide training opportunities and mentoring activities for GLOBE teachers to promote the teaching and learning of science, enhance environmental literacy and stewardship, and promote scientific discovery. In the U.S., nonprofit or governmental organizations, whose priorities focus on support of student inquiry and research about the environment, are invited to become U.S. GLOBE Partners.

Accessing, Using and Sharing Data

GLOBE data are all made freely available to everyone. Visualizing and retrieving data are the easiest way to explore GLOBE data. The capability provided includes various maps, graphs, and data tables. Users may download data for use in their own analysis systems.

An exhibit at the Wallops Flight Facility Visitor Center shows how people can get involved in NASA science through the GLOBE Program and GLOBE Observer.

GLOBE clouds

Resource Library Quick Facts Tips and Troubleshooting

Clouds don't just make rain; they help regulate the Earth's temperature by trapping or blocking the Sun's energy. NASA and other space agencies have a number of satellites orbiting Earth and collecting data about clouds. Combining this global view from above with ground observations of clouds and sky conditions from below helps scientists get a more complete picture of clouds in our atmosphere.

Lead a cloud observation hike and discuss the different types of clouds. Demonstrate how clouds are made and use a laser to show how satellites gather information on clouds. These are just a couple of ways that you can integrate GLOBE Observer into your organization's programming.

Featured Activities

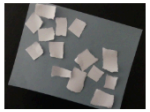
Cloud in a Bottle

Demonstrate how a cloud forms and investigate it using a laser.

Cloud Opacity

Categorize materials by opacity and understand why cloud opacity matters.

Cloud Cover



Create a cloud collage and ask your friends to guess the percentage of cloud cover.

Resource Library

Activities

Find activities to integrate into carts, demonstrations, classes and more.

Books, Videos and Presentations

Add books, videos and presentations to your program.

Printables and Promotional Materials

Promote your program with these resources and give visitors something to bring home.

Quick Facts

Do all clouds make rain? How do clouds affect my life? Prepare for your program or develop a script using these common questions.

Tips and Troubleshooting

Safety

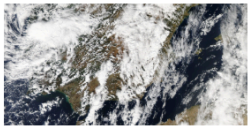
Remind participants that they should never look directly at the sun. Participants will be looking at the sky and their devices; be sure to choose a location with even ground and away from traffic and other hazards. If you must use a parking lot, try to block off an area for your program.

Clouds carry water over great distances. This water, in the form of precipitation, affects both land cover and mosquito habitat.

< Land Cover Mosquitoes >

Kristopher Bedka, NASA Langley Research Center, uses citizen science data to understand the accuracy of satellite-based cloud observations.

Read More



Aqua, an Earth-observing satellite, is named for the variety of data it collects about the water cycle. Enable flyover notifications in the app to find out when Aqua is overhead.

Read More

https://observer.globe.gov/toolkit

observer.globe.gov

Coming soon. . . .GLOBE Teams

Estimated release, April 22

observer.globe.gov

GLOBE Observer

Questions?

holli.kohl@nasa.gov

Land Cover (2019)

The movement of water over a landscape is a constant force of change. Different types of land cover interact with water moving over the landscape in different ways.

Extensions:

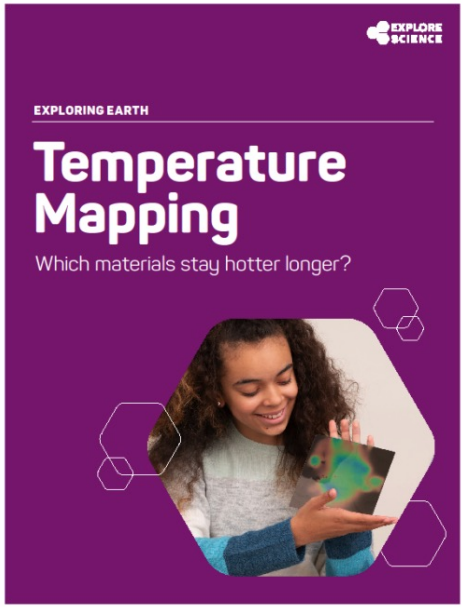
- Map Your Backyard worksheet
- Show local runoff/watershed images

Temperature Mapping (2019)

Earth is a constantly changing and dynamic system. Different types of land cover on Earth absorb or reflect energy from the Sun in different ways.

Extensions:

- Cool roof challenge
- Outside temp measurements
- Show local heat maps



Paper Mountains (2018)

The shape of the land and the pull of gravity both influence how water moves over Earth. NASA scientists use observations to make predictions about the future of our planet.

EXPLORE SCIENCE

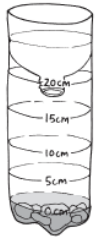
Make a Rain Gauge

SUPPLIES

- An empty, clean plastic soda or water bottle
- Rocks (stones or pebbles) for weight
- Tape
- A permanent marker
- A ruler

STEPS

1. Cut the top off the bottle about 5 centimeters (2 inches) down, and keep it.
2. Place some rocks into the bottom of the bottle, then turn the top upside down and place it back into the bottle and tape it in place.
3. Use the ruler and marker to draw lines in 5-centimeter increments on the bottle. This is how you will measure how much rain you collect.
4. Pour water into the bottle until it reaches the bottom line on the scale and label that "zero." Then, label the rest of the lines.
5. Put your rain gauge outside where it can collect water when it rains.
6. Every time you take a measurement, record the amount of rain, the time of day, and what the weather was like.



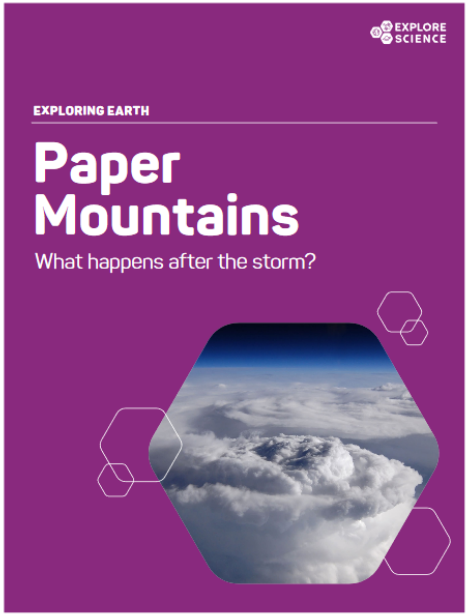
GLOBE Observer

Join a global community, become a citizen scientist. Your observations can help researchers working with NASA better understand Earth systems.

Learn more about the GLOBE Program and ways to participate in precipitation studies: **observer.globe.gov/training**

Extensions:

- DIY Rain gauge
- Show local watershed images



Investigating Clouds (2017)

NASA studies clouds to learn more about Earth's changing climate. We can study clouds both from the ground and by using space-based instruments.

Extensions:

- GLOBE Observer Citizen Science
- Investigating Clouds worksheet

Activities for Earth Day

from the

"Let's Do Chemistry" Kit

Emily Hostetler, Forum Education Associate

Museum of Science.

Cleaning Oil Spills with Chemistry

Participants will use spoons, cotton pads, and polypropylene particulate to problem-solve and try to clean up a miniature model "oil spill" made with vegetable oil and black paint.

<u>Real World Connections:</u>

- Oil spills are a real problem that affect our ocean ecosystems.
- Scientists have developed various methods to clean up oil spills, but one technique might not solve the whole problem, you may need to use a variety of methods to clean up a spill

<u>Tips & Tricks:</u>

- Keep materials on trays, and away from the oil.
- Facilitators & participants should wear gloves and change/remove gloves before refilling materials
- This can be an activity that can easily become facilitator heavy, instead of hands-on for the visitors. Make sure the facilitators feel comfortable with how the visitors can participate safely in the activity.

What's in the Water

Participants use tools to solve a mystery: what chemicals and compounds are in a sample of water. By investigating with a variety of tools and techniques learners understand how chemistry can help us explore, understand, and solve problems.

<u>Real World Connections:</u>

- Chemistry can be used to help us learn about water properties that can't always be seen, smelled, or tasted
- Some changes in water properties can negatively affect the organisms that live in it

<u>Tips & Tricks:</u>

- Use a sample of water from a local body of water or a live animal tank at your institution
- Compare samples from different bodies of water, or compare your sample to tap water
- This activity can be very simple which is great for accessibility. Facilitators should practice using good inquiry questions for deeper engagement with visitors

Nature of Dye

Participants create their own dyes and art while exploring how chemicals interact, and how these interactions can have real-world applications. Participants predict, observe, and share what they notice as they experiment with the dye.

<u>Real World Connections:</u>

- Have visitors think about how their foods and clothing are dyed and consider how different cultures may have dyed clothes before we had factories and chemical dyes
- Many things from the environment can be used as dyes - can you think of a time you ate or touched something that left a stain on your skin or clothes?

<u>Tips & Tricks:</u>

- Try to find some product packaging that has “carminic acid” or ”carmine” on the ingredients label. This is from the cochineal bug! The U.S. does not use carminic acid to dye foods, but many European countries do. The U.S. does use it for makeup products.
- Only use one bug per visitor, this will keep the activity less messy because of a less-intense color.

EXPLORE SCIENCE
Let’s Do Chemistry

Museum of Science.

Questions?

Our Next Workshops

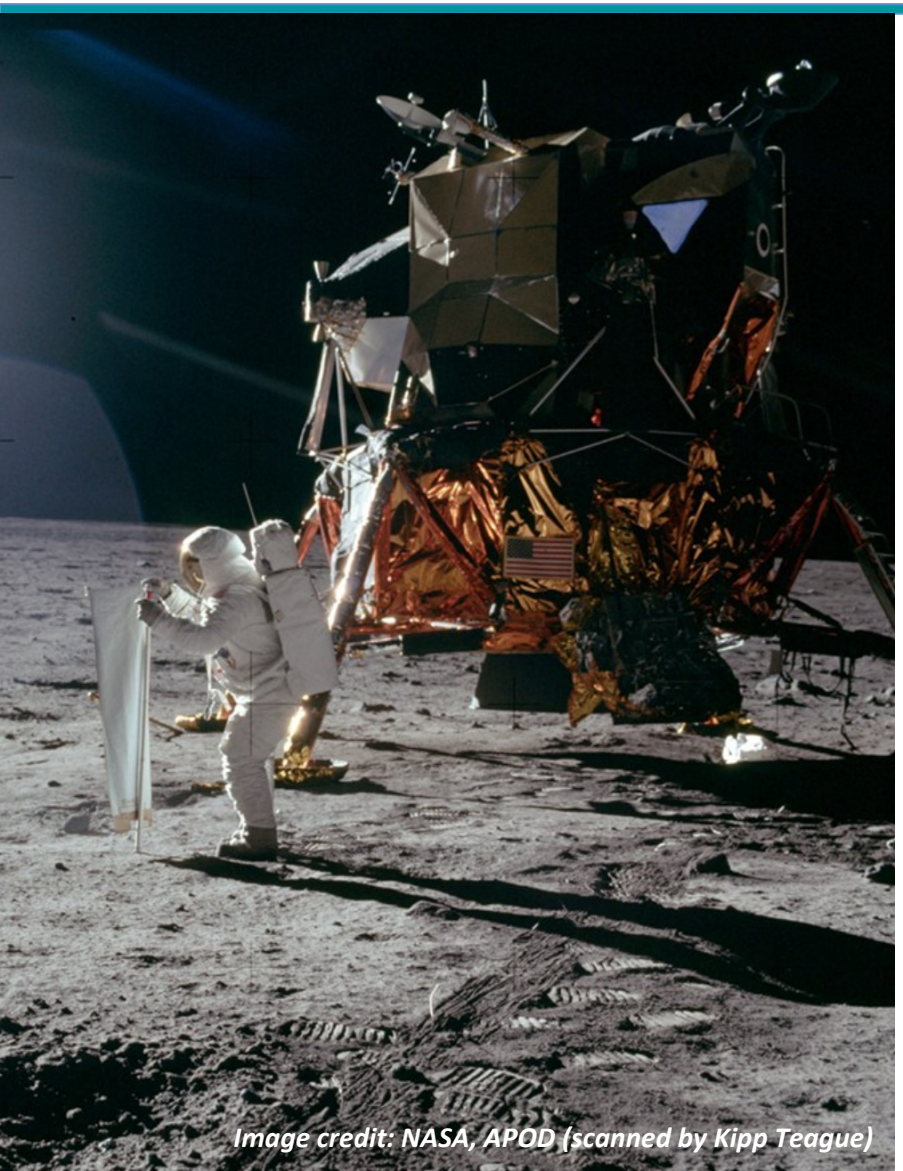


Image credit: NASA, APOD (scanned by Kipp Teague)

Stories & STEM: Explore the Power of Narrative to Engage Audiences and Enliven Hands-on Science Programs

Ali Jackson, Sciencenter
Keliann LaConte, Space Science Institute
Tara Cox, Franklin Institute
Anna Hurst, Astronomical Society for the Pacific

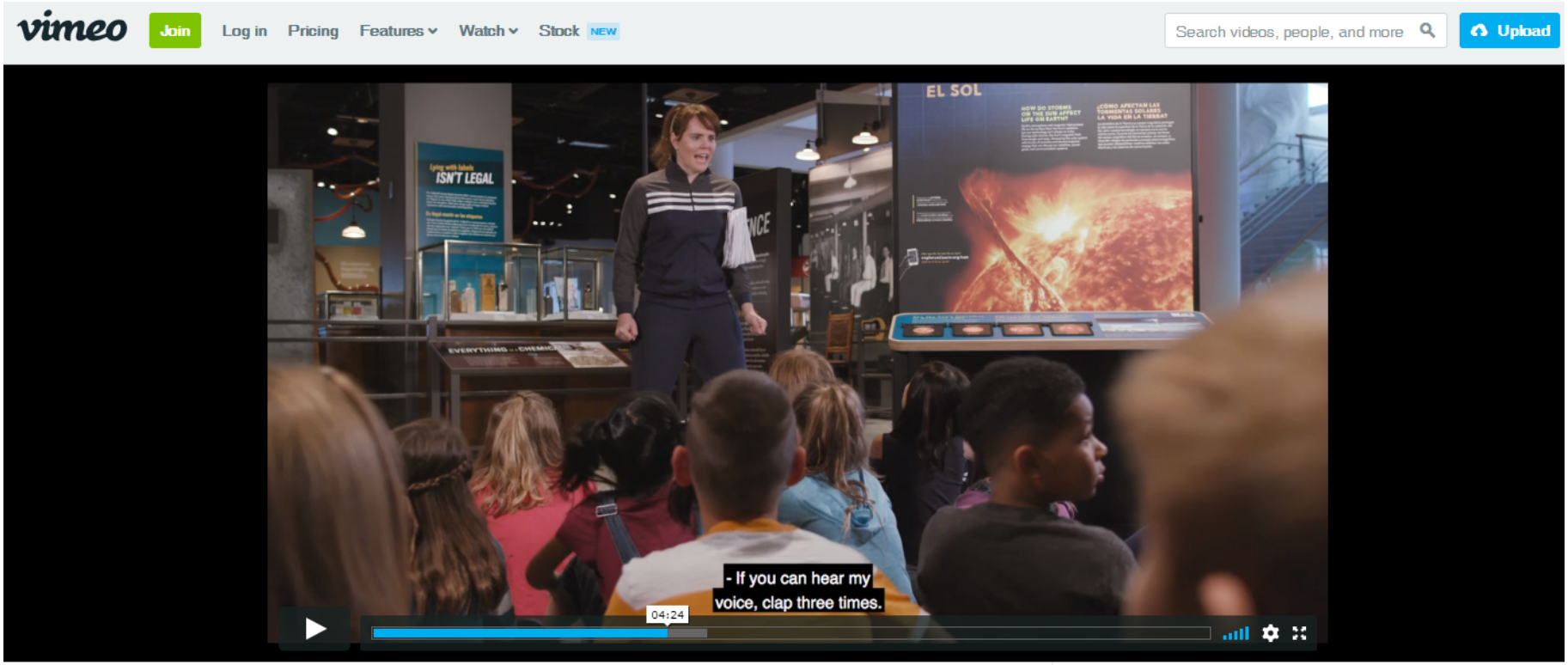
Tuesday, April 30, 2019
2-3pm ET / 11am-12pm PT

Big or Small, Make Your Apollo 50th Anniversary Celebration Events a Moonshot!

Brad Herring, Museum of Life & Science
Amelia Chapman, Museum Alliance
Andrew Shaner, Lunar and Planetary Institute
Darrell Porcello, Children's Creativity Museum
Rachel Quimby, EcoTarium
Ruth Watt, Saint Louis Science Center
Lucien Scott, Creative Discovery Museum

Tuesday, May 14, 2019
2-3pm ET / 11am-12pm PT

Edu-Cathalon Video



Edu-Cathalon: A facilitation strategies and best practices training video for engaging museum visitors in STEM related content

3 months ago | More

More from NISE Network

Autoplay next video

Edu-Cathalon: A f...

NISE Network

http://nisenet.org/catalog/educathalon-facilitation-strategies

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Thank You

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