GLOBE Family Science
Opportunities and Resources

NESEC NASA Earth Science Education Collaborative
**NESEC Goal:** Enable broad participation in authentic NASA Earth STEM experiences for lifelong learners.

**GLOBE Observer**
- Citizen Scientist Observations
  - Clouds
  - Mosquito Habitats
  - Land Cover
  - Trees
  - Eclipse (2017, 2019)

**Student Investigations with NASA**
- Air Quality (U.S.)
- Clouds with Satellite Match
- GLOBE Mission Mosquito
- Trees Around the GLOBE

**The GLOBE Program**

**Strategic Partnerships & Collaborations**
- Engage external partners and collaborators to provide content and expertise; co-develop, field test, and disseminate resources, engage audience. (e.g., libraries, camps, scouts, 4-H, Smithsonian, parks, Oscher LifeLong Learning Institute, SciStarter)

**NESEC partners and collaborators deliver NASA Earth science to greater audiences (international, national, regional, local)**
Three ways to participate:

1. At-Home Activities
2. Weekly Videos with NASA Scientists and GLOBE Educators
3. Taking Cloud Observations (safety first!)
GLOBE and GLOBE Observer Community

Follow GLOBE on social media

Learn more about the 2020 Community Cloud Challenge:

NASA Featured News
Scientist Blog
Challenge Homepage
Ways to Participate: 1. At-Home Activities

The cloud activity tracker will help you keep a log of how you participate in the challenge.

- **Learn** about clouds
- **Create** with clouds
- **Engage** with the cloud observer community
- **Observe** clouds
Ways to Participate: 2. Weekly Videos

Each **Thursday at noon ET** on NASA Earth Facebook account https://www.facebook.com/nasaearth

Each video will feature a *science topic* with a *NASA scientist* and a *featured activity* with a *GLOBE educator*

**Week 1: Satellite Matches to GLOBE Cloud Observations**
https://youtu.be/SqV7m58CTQ8
Ways to Participate: 2. Weekly Videos

Science Topics

Week 2: What is Citizen Science?

Week 3: Clouds and Weather from 22,000 miles away

Week 4: Clouds and Earth’s Climate

Week 5: Aerosols and Air Quality

Week 6: Impact of Your Observations in Research
Ways to Participate: 2. Weekly Videos

At-Home Activities

Week 2: Cloud Cover Estimation
Week 3: Cloud in a Jar (Cloud Cookery)
Week 4: Cloud Clues (Opacity)
Week 5: Up In The Air (Aerosol Catcher)
Week 6: Cloud Fun (Nature Journal)

nesec NASA Earth Science Education Collaborative
Ways to Participate: 3. Taking Cloud Observations (Optional)

SAFETY FIRST!

The safety of the community is the most important, so for this challenge, taking cloud observations is optional.

Help by submitting clouds, dust, haze or smoke observations to GLOBE using any of GLOBE’s data entry tools including the clouds tool on the GLOBE Observer mobile app.
Promising Practices for Engaging Families in STEM

Tip 1: Make STEM activities easy and materials accessible so that parents can repeat them at home.

Tip 2: Connect STEM with what families are already engaged in.

Tip 3: Give families resources to take away.

https://stemnext.org/promising-practices/
PROTOCOLS

Atmospheric conditions can have an important impact on the types of plants and animals that live in a particular area as well as soil formation. The atmospheric measurements collected by GLOBE students are important to scientists studying weather, climate, land cover, phenology, ecology, biology, hydrology, and soil. Click a protocol name for more information.

Clouds

Observe and report which types of clouds are visible, how much of the sky is covered by clouds, and the opacity of clouds. Also report sky and surface conditions. Each observation is matched to satellite data of clouds taken about the same time and location. Cloud observations can be taken at any time! This Protocol is designed to be flexible and fit into your schedule, classifying, observing, and reporting cloud observations when it works for you. If you observe while a satellite is overhead, you can then receive an email from NASA comparing your observations to satellite data.

Time Requirement

- 15-20 minutes per observation

Grade Level

- Lower Primary: K-2
- Upper Primary: 3-5
- Middle: 6-8
- Secondary: 9-12

View Protocol
NASA GLOBE Clouds Family Guide

Children learn about science through exploration, play, and building curiosity by observing the natural world around them.

Cloud observations can be a fun thing to do as a family. NASA is interested in citizen scientists of all ages reporting the clouds they see. NASA is interested in volunteers of all ages to collect scientific observations. With NASA GLOBE Clouds, you and your family can become these volunteers or citizen scientists and report observations of clouds you see in the sky. NASA has a number of satellites orbiting the Earth and collecting data about clouds. Satellites only see the top of the clouds while you see the bottom. By putting these two vantage points together we get a much more complete picture of clouds in the atmosphere.

Learn more from NASA Scientists

Jessica Taylor (watch video) and Maríle Colón Robles (NASA EO Kids).

You and your family can become citizen scientists by making observations of your environment and submitting the data to NASA through the GLOBE Observer app. Scientists can use your data to help interpret NASA satellite data.
Record Cloud Observations in a Science Journal

Sentence starters:

- Looking at my sky I notice . . .
- I wonder why the clouds in my sky appear to . . .
- I notice that the clouds in my sky are . . .
Discuss Questions about Clouds as a Family

- Looking up, what do you see? (Remember to never look directly at the sun.)
- Do you see different shapes of clouds or are they similar?
- How would you describe the different clouds that you see? (Examples: fluffy, puffy, layered, wispy, etc)
- Do some clouds appear to be higher in the sky than others?
- Can you see through any of the clouds in your sky? (Example: are they more transparent or more opaque?)
More Family Resources
Theresa Schwerin and Cassie Soeffing
New Resources for Home

Mosquito Investigation Notebook
https://strategies.org/mosquito-notebook

Science notebook with guided investigations for investigations related to GLOBE Mosquito Habitat Mapper

Companion guide for parents/caregivers

New investigations planned with tips for parents (~bi-weekly in August & September)
New Resources for Home

Family Phenology Fun
https://strategies.org/products/family-phenology-fun/

Introduces the concept of phenology and includes an activity to encourage sustained observations around the home.

What is phenology?
Phenology is the study of cyclic and seasonal events in the lives of plants and animals—how those events are influenced by climate. This activity investigates the phenology of mosquitoes.

How do I get started?
- Download the app for free on Android or iOS from the GLOBE Observer site, observer.globe.gov.
- Register to participate.
- Get a thermometer to be able to measure the air temperature.

Do I need to be an expert on mosquitoes?
No. But here are the basics: mosquitoes are sensitive to environmental conditions such as air temperature. Even without an invitation, mosquitoes will move right into your home! Once there, a female mosquito will look for a place to lay her eggs. She only needs a ½” deep source of standing water. Think about where she might find that bit of water; where should you look for larvae? Possible sites include under sinks (due to water dripping from leaks), unused floor drains common in laundry rooms or basements, shower drains in bathrooms that are rarely or never used, and in sump pump pits. For a list of other locations, download the entire activity here: https://www.globe.gov/web/mission-mosquito/overview/resources

Preface: December 2020. Courtesy: Andrew Clark, USGS.
New Resources for Home

Simplified Activities

- One-sheet activities
- Do not require special equipment
- Draft page for family science includes these four activities + suggestions for parents

For all of these resources we need feedback!
Are you interested in providing feedback on these activities?

We’re looking for GLOBE colleagues to try these at home and send us feedback

Sign up at: https://bit.ly/familyresourcesreview

Questions? Contact: Theresa Schwerin, theresa_schwerin@strategies.org

Thank you!