



# CITIZEN SCIENCE

APRIL MONTH

ONE MILLION ACTS OF SCIENCE

## Citizen Science and the Solar Eclipse: Harness the Power of Your Community!

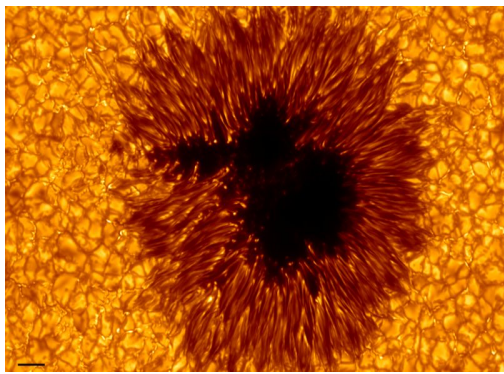


# Agenda

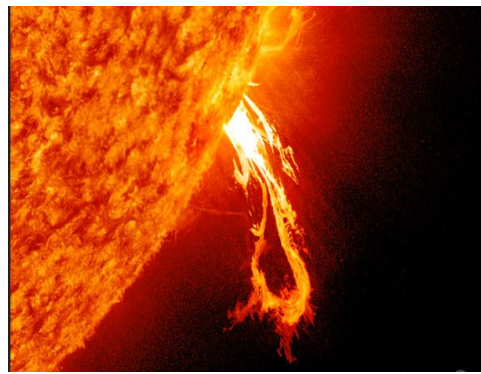


- Introduction/Icebreaker
- Overview of Eclipse Resources from STAR Net
- What is Citizen Science? Who counts? Who does it?
- Eclipse Citizen Science
- Citizen Science Programming Ideas
- Citizen Science Month
- Q&A

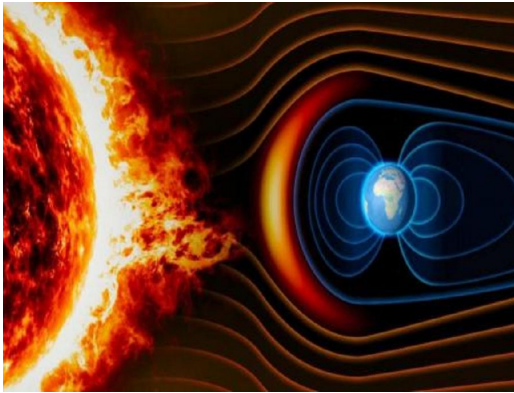




**Sunspot:** (relatively) cool, calm, and collected; embracing change and transition



**Solar Prominence:** showy and bright, while also feeling grounded and connected



**Coronal Mass Ejection:** powerful and influential; ready to mess things up!



**Sun's Corona:** Gassy and Sassy. You won't let anybody's shadow dim your light.



**What  
solar  
feature  
do you  
feel like  
today?**

# Eclipse Resources from STAR Net

## Professional Development



- [Virtual Trainings](#)
  - Recordings on the STAR Net YouTube channel
  - Topics include citizen science, preparing for eclipse day, eclipse books and authors, programming ideas, and more
- In-person workshops
  - Upcoming: Illinois, Nevada, Virginia, Hawaii, American Samoa

# Eclipse Resources from STAR Net

## Get Connected



- [SEAL Group on the STAR Net Community site](#)
  - Registration and join request required
  - Talk with other librarians planning for the eclipse
  - Connect with scientists and subject matter expert volunteers for in-person and virtual programming
  - Keep up to date with SEAL and STAR Net
- Solar Science Circulation Kits
  - Telescopes, books, activities
  - Contact your state library for circulation info



# Eclipse Resources from STAR Net

## Programming Resources

- [SEAL Collection on the STEM Activity Clearinghouse](#)
- STAR Net YouTube channel ([@STARNetLibraries](#))
  - Webinar recordings
  - [Eclipse music playlist](#)
  - [STEAM Strategies Videos](#)
- [Blog posts on the STAR Net community site](#)
  - [Bilingual and Spanish Eclipse Resources](#)
  - [Getting Started with SEAL](#)
  - [Explaining Eclipses to Little Kids](#)
  - [Make Your Own Eclipse History Exhibit](#)

# What is citizen science?

A global movement that enables people from all walks of life to **collaborate** with scientists by participating in **real scientific research**.

It's how people can make an impact on issues they care about!

[scistarter.org/citizen-science](https://scistarter.org/citizen-science)

# The National Citizen and Community Science Library Network



A growing network of libraries and other community-based organizations dedicated to engaging their communities in citizen science managed by Arizona State University, SciStarter and the National Girls Collaborative Project.

Sign-up at [scistarter.org/library-network](https://scistarter.org/library-network)





# Citizen Science Month

**ONE MILLION ACTS OF SCIENCE**

*We aim to make a collective impact of One Million Acts of Science where our goal is to collectively generate over one million data points to featured projects.*

# What counts as an act of science?

- Attend or host an online or in-person event
- Join a project to play games that accelerate medical research
- Analyze online images to help make discoveries
- Share pictures of nature to help scientists spot biodiversity trends
- Use your smartphone to monitor your environment



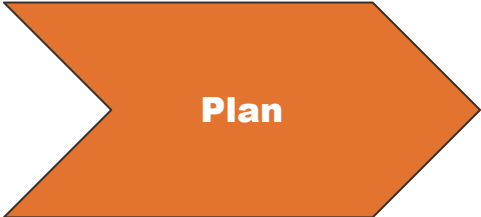
# Sign up to participate!



- **For Participants** - Participate in at least one citizen science project or event on [SciStarter.org](https://SciStarter.org) between April 1 - April 30, 2024
- **For Event Hosts and Organizations** - Host and promote an event or program in April and add the event/program to [SciStarter.org/add-event](https://SciStarter.org/add-event)
- **Reply to our survey**, by May 15, 2024, with the estimated # of Acts of Science you/your community performed and name(s) to appear on the [CitizenScienceMonth.org](https://CitizenScienceMonth.org) website and on your digital certificate for helping us reach One Million Acts of Science!



# Planning for Citizen Science Month





# Prepare



## Online, Self-guided Training Tutorials

- Foundations of Citizen Science
- Libraries as Community Hubs for Citizen Science
- Others

*Receive a Digital Badge!*

**[SciStarter.org/training](https://SciStarter.org/training)**

## Monthly Live Webinars

- Relevant topics like pollinators, STEM, summer reading
- Speakers with examples of programs in action

**[SciStarter.org/library-events](https://SciStarter.org/library-events)**

## Guides and Turnkey Resources

- Event guides
- Kit building guides
- Promotional materials (bookmarks, rack cards, fliers)
- Facilitator slides for programs

**[SciStarter.org/library-resources](https://SciStarter.org/library-resources)**

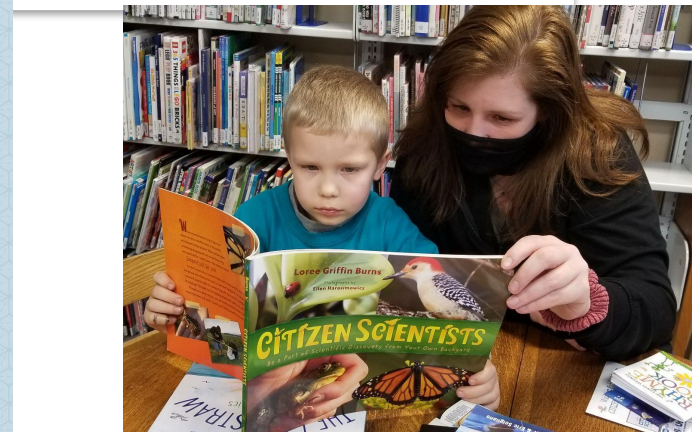


# Sparking Interest

Book Displays, Inquiry Posters, Rack Cards, Book Clubs



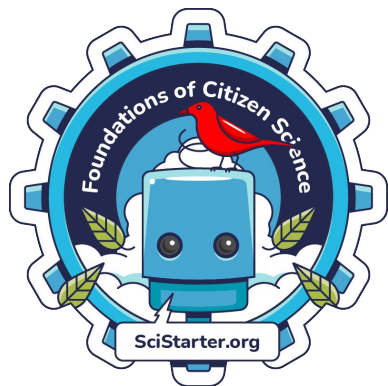
A collage of promotional resources for Citizen Science at libraries. It includes a "CHECK IT OUT! CITIZEN SCIENCE AT YOUR LIBRARY" sign, social media tiles for "This is Citizen Science" featuring Felipe &amp; Ana and Ezra and Anastasia, a "CHECK IT OUT! CITIZEN SCIENCE AT YOUR LIBRARY" rack card, and buttons and stickers. The text "RESOURCES FOR YOUR LIBRARY!" is prominently displayed at the bottom.



Promotional Resources  
<https://scistarter.org/library-promotional-resources>



# Promote the training!



## [SciStarter.org/training](https://SciStarter.org/training)

Online, interactive module  
created by instructional designers  
at Arizona State University.



## [SciStarter.org/library -training](https://SciStarter.org/library-training)

Part 2 for library facilitators



Slides and speaker's notes to  
facilitate an introduction to citizen  
science event. Cobrand or adapt to  
fit your needs.

# Plan



# Prompting citizen science engagement during the 2024 Eclipse



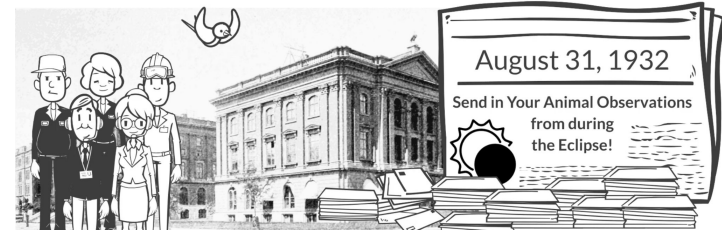




Collect & analyze observations and sound data from the October 14, 2023, annular eclipse and the April 8, 2024, total solar eclipse to help us understand the impact of solar eclipses on various U.S. ecosystems.

### Observations on the Behavior of Animals during the Total Solar Eclipse of August 31, 1932

Author(s): William Morton Wheeler, Clinton V. MacCoy, Ludlow Griscom, Glover M. Allen and Harold J. Coolidge Jr.



**FREE** **Online**



**APPRENTICE**  
**(Online Eclipse Learning)**

Learn about solar eclipses via free online learning and earn a certificate of completion.


**FREE** **ANY Location**



**OBSERVER**  
**(Eclipse Day Activity)**

During the 2023 annular eclipse or the 2024 total eclipse path, go outside and observe with all of the senses available to you. Then share these observations with the ES team via the ES website!

**Equipment Required** **70%+ Eclipse Path**



**DATA COLLECTOR**  
**(Eclipse Week Activity)**

Collect data using an AudioMoth Recorder along or near (70%+) the 2023 annular eclipse path or the 2024 total eclipse path. Then share the data with the ES team by mailing the MicroSD card and submitting location info online!

**FREE** **Online**



**DATA ANALYST**  
**(Online Data Activity)**

Analyze sound data in 2024 and 2025 alongside scientists on the ES website. **(Coming end of 2024)**



Partner

# Eclipse Soundscapes - Observer

**Background:** This NASA Science Activation project is focused on the following science question: How does life on Earth, specifically wildlife, respond to eclipses? Participants will observe during the eclipse and then submit their observations on the project website about whether or not they noticed changes in animal behavior and sounds during the total solar eclipse. You do not need to be on the eclipse path. Solar eclipses can be multi-sensory experiences! We hope to receive observations about what people hear, see, feel, etc.

**Age group:** All ages, children 13 and under will need an adult to help submit data

**Event timing and location:** In or out of the path of totality, anywhere in North America.

## Preparation:

1. Review the project protocol & [Take the 15-30 minute training](#)
2. Gather materials.
  - [Observation worksheet](#)
  - Eclipse glasses



# Program Description

## Set the Stage

- Introduce the concept of citizen science using Foundations of Citizen Science facilitator [slides](#) and [guide](#).
- Have participants create accounts on [SciStarter.org](#).
- Direct participants to <https://scistarter.org/eclipse-soundscapes> to view the instructions for the project.
- Educate your audience about Solar eclipses. There are many resources for this. For resources connected to Soundscapes, visit <https://eclipsesoundscapes.org/>.

## Collect Data

- Perform a practice round with your patrons prior to optimal eclipse setting. I.e. prior to totality or the highest % of coverage based on your location
- Pass out fresh observation data sheets and writing utensils and/or encourage recording devices (easily done with a smartphone) to those who will record verbal observations.
- Notify the participants when you are about to enter optimal eclipse experiencing setting. Assist participants in collecting data as needed.

## Take Action

- Debrief! What did everyone experience? What changes did you sense?
- Encourage participants to take their observations (via the worksheet or recording devices) and submit them via the Eclipse Soundscapes project website:

<https://eclipsesoundscapes.org/bserver/>

If you have a computer lab, you can have them submit observations before they leave.



### Eclipse Soundscapes Observer Survey - Webform Example

8. What is your observation start time?

Observation Stop Time: \_\_\_\_\_

My time zone is \_\_\_\_\_



**Sound Observations:**



Home > Lead a Program > Eclipse

Share

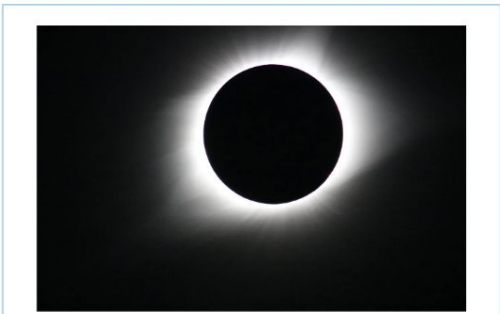
# GLOBE Eclipse

- Getting Started
- Clouds >
- Mosquito Habitats >
- Land Cover >
- Trees >
- Eclipse**
- Guides >
- Recursos en español

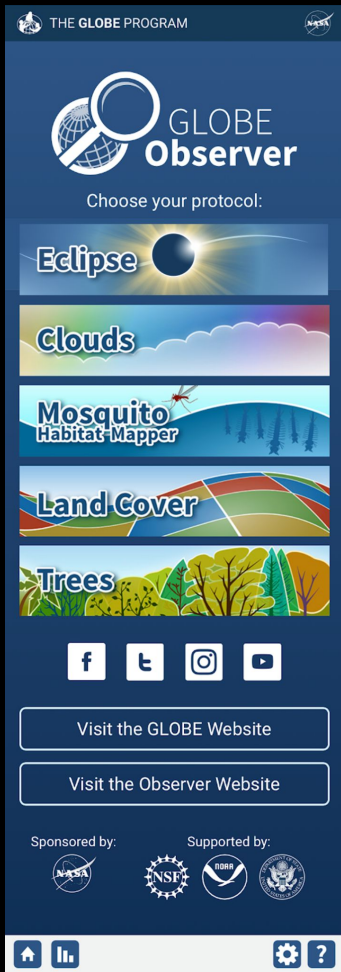
Citizen scientists contributed over 8  
20,000 clouds observations during t  
hundreds of additional observations  
and thousands of observations for t  
will next be active in the GLOBE Observer app for the total solar eclipse in April 2024. In  
the meantime, you can analyze eclipse data with your participants or start preparing for  
an upcoming solar eclipse.

measurements and nearly  
ss North America, as well as  
0 eclipses in South America,  
ber 2023. The Eclipse tool

Analyze Eclipse Data



[Learn more about the upcoming solar eclipse on the NASA Eclipse page.](#)



# GLOBE Eclipse

One of 5 projects volunteers can do using the GLOBE Observer app.

Energy from the Sun warms our planet, and changes in sunlight can also cause changes in temperature, clouds, and wind. What happens when the Sun is blocked by the Moon during an eclipse?

## GLOBE Eclipse Library Kit (Virtual Kit)

Links to resources to support your program

- Sky Windows
  - Science Storybook: Do You Know that Clouds Have Names?
  - GLOBE Eclipse card with pinhole
- + Online activities, resources, videos, and promotional resources for the eclipse and beyond.



# How to Use the GLOBE Eclipse Tool

*Note: Before the day of the eclipse, you should download the app, create an account, and complete the tutorials for Land Cover and Clouds.*

1

**Open the Eclipse tool.**  
Tap the Eclipse button under "Choose your protocol."



[observer.globe.gov](https://observer.globe.gov)

2

**Enter your settings.**  
Select your thermometer type, choose between Celsius and Fahrenheit, and turn Measurement Alarms on or off. Location is set automatically.



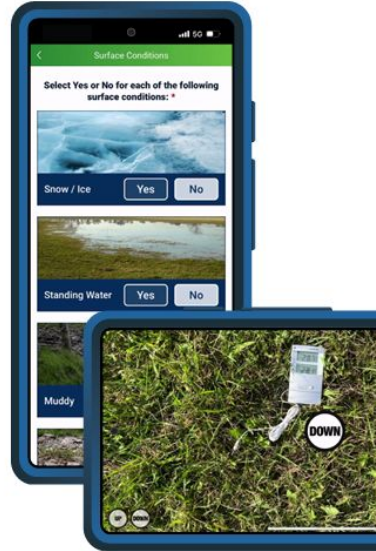
*If you turn Measurement Alarms on, you will get a notification when it is time to take your next observation.*



*After entering your settings, the app will prompt you to observe the land cover.*

3

**Document your site.**  
Use the Land Cover tool to document your observation site. You will report the surface conditions and then take photos in each direction. Include your thermometer in one of the photos.

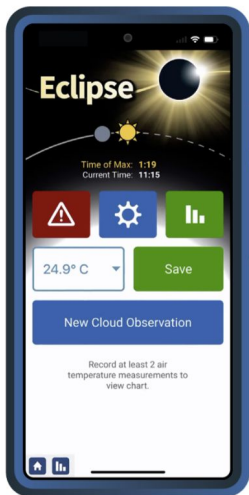


Continue to analyze the land cover

Skip analysis and save my photos

*Analyzing the land cover is optional. You may also choose to do this step later.*

- 4 Measure the air temperature.**  
Enter your first temperature measurement and tap “Save.”



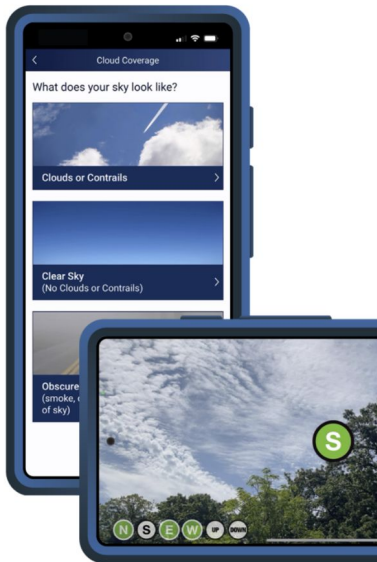
*The app will prompt you to take air temperature measurements every 5 to 10 minutes.*

Next Observation:  
4 mins 45 secs

Enter Data Now

*Remember to take a break during maximum eclipse to enjoy this incredible experience!*

- 5 Observe the clouds.**  
Use the Clouds tool to observe the sky. You will report sky conditions, cloud cover, and cloud opacity; identify the cloud types; and take photos of the sky in each direction.




*Observe the clouds every 15-30 minutes or any time you notice a change.*

New Cloud Observation

- 6 Share your observations!**  
As you take observations, the app will generate a graph of your data.



 *Remember to send in your observations after the eclipse!*

*Share your graph on social media by tapping “Share Graph.”*

Share Graph

*After the eclipse, you can view your data from the “My Observations” page.*

# GLOBE Eclipse Display Resources

- GLOBE Eclipse Tabletop signs
- GLOBE Atmosphere one-pager
- How-To Guide
- GLOBE Eclipse Poster
- Elementary GLOBE Storybook: Do you know that clouds have names?
- GLOBE Eclipse graphic assets
- NASA's Solar Eclipse Map





# Other projects on Eclipse Day and marketing materials.

[SciStarter.org/eclipse](https://SciStarter.org/eclipse)

Printable fliers with info on eclipse citizen science projects



**SunSketcher™**

Planning to experience the 2024 Total Solar Eclipse from the darkness of totality? Share your observations with NASA researchers to accelerate research about our sun!

**What will you do and Why?**  
Use a mobile app to photograph the eclipse within the path of totality. By collecting this data during the Total Solar Eclipse on April 8th, you will help researchers determine the sun's shape with better precision.

**Materials Needed:**

- A smartphone
- The SunSketcher mobile app
- Eclipse glasses to safely observe

**Ages:** Middle School +

**Get started!**  
Download the SunSketcher App



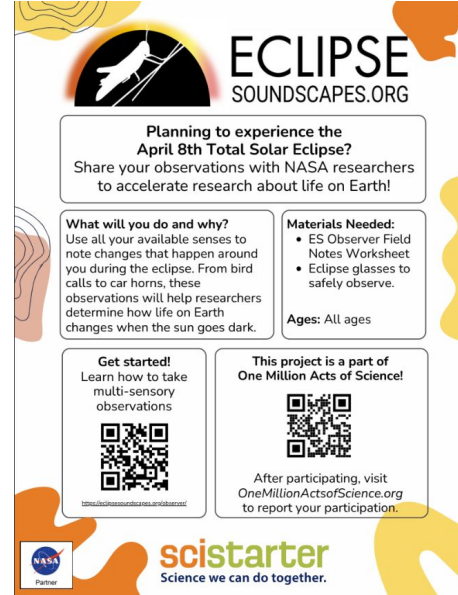
<https://sunsketcher.app/download/aha>

**This project is a part of One Million Acts of Science!**



After participating, visit [OneMillionActsOfScience.org](https://OneMillionActsOfScience.org) to report your participation.

 **scistarter**  
Science we can do together.



**ECLIPSE**  
SOUNDSCAPES.ORG

Planning to experience the April 8th Total Solar Eclipse? Share your observations with NASA researchers to accelerate research about life on Earth!


**What will you do and why?**  
Use all your available senses to note changes that happen around you during the eclipse. From bird calls to car horns, these observations will help researchers determine how life on Earth changes when the sun goes dark.

**Materials Needed:**

- ES Observer Field Notes Worksheet
- Eclipse glasses to safely observe.


**Ages:** All ages

**Get started!**  
Learn how to take multi-sensory observations




<https://eclipsesoundscapes.nasa.gov/start.html>

**This project is a part of One Million Acts of Science!**



After participating, visit [OneMillionActsOfScience.org](https://OneMillionActsOfScience.org) to report your participation.

 **scistarter**  
Science we can do together.

# Programming Ideas

## Daytime Star Party

- Check out the step-by-step guide on the STAR Net YouTube channel
- Pair citizen science with hands-on activities, crafts, and/or guest speakers

## [Heliophysics Big Year](#)

- Hold events before and after eclipse
- NASA solar science programming all year round

## STEM Activity Clearinghouse

- 500 vetted activities for informal learning environments
- Library-specific guides and how-tos
- [SEAL Collection](#)

## Projects *during* the eclipse

- iNaturalist
- GLOBE Observer:  
Eclipse
- Eclipse Soundscapes



# Projects *before* and *after* the eclipse ([SciStarter.org/eclipse](https://SciStarter.org/eclipse))

**Aurorasaurus:** Submit sightings and classify relevant tweets about auroras.

**Citizen CATE:** Make observations of the inner and middle solar corona.

**Citizen Weather Observer Program:** Contribute your weather data and check the data quality of others.

**Do-It-Yourself Relativity Test:** Measure the gravitational deflection of starlight.

**Eclipse Ballooning Project:** Students will conduct high-altitude balloon flights.

**Eclipse Megamovie:** Share photos you take of the sun during the eclipses so scientists can stitch them together to create an expanded view of the Sun's atmosphere.

**Globe at Night:** Measure the night sky brightness.

**HamSCI:** Are you a Ham radio operator? Help us better understand Earth's ionosphere.

**iNaturalist:** Take photos of biodiversity and upload to iNaturalist.

**ISeeChange:** Share reports of changes in your local environment.

**Solar Active Region Spotter:** Identify active regions of the sun, online.

**Solar Jet Hunter:** Join the hunt for solar jets — enigmatic bursts of energy from the Sun.

**The Sungrazer Project:** Find comets in our solar system, online.

# Citizen Science Month Webinar

Join SciStarter and STAR Net  
**Tuesday April 17th 2024**

Explore citizen science and your library all year long!

Registration link available soon at  
<https://www.starnetlibraries.org/development/webinars/>

# Participate



## ONE MILLION ACTS OF SCIENCE

*We aim to make a collective impact of One Million Acts of Science where our goal is to collectively generate over one million data points to featured projects.*



# Add & Promote Your Event



A screenshot of the SciStarter website's "Event Finder" page. The page has a dark blue header with the SciStarter logo and navigation links like "log in", "sign up", and "Quick Navigate". Below the header is a navigation bar with links for "Donate", "Libraries", "Trainings", "@Girl Scouts", "Dashboard", "Projects", "Events", and "Partner Gateways". The main content area is titled "Event Finder" and includes a search bar with "search" and "map" tabs. There are radio buttons for "Events anywhere", "Only online events", "Near my current location", and "At a location". Below these are two date input fields, one set to "2023-04-01" and the other to "2023-05-01". A dropdown menu for "What type of event?" is set to "Select one or more event types". There are "clear form" and "find events" buttons. The event results are displayed in a grid. The first event is "Citizen Science Twitter Conference 2023" with a date range of "03/31/2023 to 04/01/2023" and the location "Anywhere on the planet". The second event is "Track monarch butterfly migration with Journey North" with a date range of "04/01/2023 to 04/30/2023" and the location "Online only". There are also two partially visible event cards at the bottom.

[SciStarter.org/events](https://SciStarter.org/events)

- Help people learn about your event
- Help us measure collective impact
- Access to ASU evaluation tools and data

Two promotional banners for Citizen Science Month. The top banner has a light blue background on the left with the "CITIZEN SCIENCE MONTH" logo. On the right, a dark blue box contains the text "You can make an impact!" and "Learn how your contributions can lead to new discoveries." To the right of this box, the text "GET STARTED! Find local events and projects to turn your curiosity into impact. CitizenScienceMonth.org" is displayed. Below this text are logos for SciStarter, ASU, and the Citizen Science Association. The bottom banner has a light blue background with the text "Turn your curiosity into impact" in a large, bold, dark blue font. Below this is "THIS IS CITIZEN SCIENCE" in a smaller, bold, orange font, followed by "Learn more at CitizenScienceMonth.org". On the right side of the banner is a photograph of a woman, Veronika, at a kitchen sink. Below the photo, the text "VERONIKA: Joining a national survey of pipe materials to help ensure safe water for all. #CitizenScience" is displayed.



# Upcoming Webinars & Opportunities



## CSM Event Facilitator Support Meetings

March 13

12PM Pacific | 3PM Eastern

## Community Driven Science Adventures(s) at Your Library this Summer!

March 27

12PM Pacific | 3PM Eastern

[SciStarter.org/library-events](https://SciStarter.org/library-events)





# Thank you!

# Questions?

How might you participate in citizen science month this year?

Where do you need more support?

Type your questions in the chat!

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