You are Invited to Do NASA Science!

Join a NASA-sponsored citizen science project today! Through these projects, interested members of the public have made thousands of important scientific discoveries, including:

- Most of the known comets
- Hundreds of planets orbiting stars beyond our solar system
- Thousands of brown dwarf stars
- Zika virus-carrying mosquito larvae in Peruvian cemetery vases
- A new kind of aurora phenomenon named “STEVE” (Strong Thermal Emission Velocity Enhancement)

Use the QR code above to see all the current NASA citizen science projects

Students and informal learners, formal and informal educators, do NASA science every day, together with NASA scientists.

NASA’s citizen science projects will teach you everything you need to know as you go. As a volunteer, you can help scientists predict dangers like landslides and air pollution or track global climate change impacts on lake levels, kelp forests, and coral reefs. You can search NASA datasets for new worlds, asteroids, comets and secrets to life in space. Many people have made lasting friendships with each other and with scientists, been inspired to pursue science studies or careers, and co-authored papers through these projects.

Be prepared: NASA citizen science is the real thing. There are no guaranteed results, and sometimes the answers will remain unknown. But if you've been reading about groundbreaking discoveries made by others and you're ready to make some of your own, start with one of the projects below or visit our website at science.nasa.gov/citizen-science to see the complete list of projects. Citizenship not required.

Starter projects for science enthusiasts of all ages

Project Name (and link!)	*Research focus*	*Where it happens*	*Project activity*
Active Asteroids - Join the search for water-bearing asteroids that might explain how water got to Earth.	Asteroids	online	analyze images
Daily Minor Planet - Help discover new asteroids.	Asteroids	online	analyze images
Dark Energy Explorers - Identify distant galaxies to help measure dark energy when the universe was just ~2-3 billion years old.	Dark Energy	online	analyze visualized data
Backyard Worlds: Planet 9 - Search for new planets 9 in our Solar System and other rare planet-like objects.	Finding Planet 9	online	analyze visualized data
Snapshot Wisconsin - Identify wildlife in images captured by trail cameras.	Wildlife Tracking	online	analyze images

Are you an informal educator who wants to share science opportunities with a group? Check out the Toolkit for Librarians for some ideas, resources, and helpful templates.

NASA Citizen Science Learning Resources

(Access this file electronically here: https://bit.ly/4iXKPDw)

Use QR code above to access **this document** online

Looking for a hands-on, authentic STEM experience that will inspire your learners? Give your learners a chance to learn science by doing it alongside professional scientists! NASA's citizen science projects can help your students learn about space, the Sun, and the Earth. These projects support:

- Experiential, inquiry-based learning
- Learning about data
- Science identity
- Career building

NASA's citizen science projects can serve as elements of your curriculum, as extra credit experiences, or as science fair research opportunities. They can inspire informal learners too, providing an insider's view of today's cutting-edge research.

The table below lists projects that offer learning resources to facilitate participation of formal and informal learning audiences. Resources are summarized with the grade bands served, the topic areas (using Next Generation Science Standards (NGSS)[1] Disciplinary Core Idea Domains), and applicable standards to which the resources are reported to be aligned. Clicking on the project name (first column) will take you to a short description of the project's goals, the project activity, and links to the project website and its educational materials. If you have questions about a specific resource, please address them to the project leader.

All projects require internet-connected computers to participate. **GLOBE Observer projects** (numbers 3 - 6, below) require use of a mobile app, but do not require a cell signal in the field.

NASA Citizen Science Project	*K - 5*	*6-8*	*9-12*	*13-16*	*Standards Connections*
1. Community Collaborative Rain Hail and Snow (CoCoRaHS)	ESS	ESS	ESS		NGSS; Common Core; various
2. GLOBE Clouds - GLOBE Observer app.	ESS	ESS	ESS		unknown
3. GLOBE Trees - GLOBE Observer app.	ESS	ESS	ESS		unknown
4. GLOBE Land Cover - GLOBE Observer app.	ESS	ESS	ESS		unknown
5. GLOBE Mosquito Habitat Mapper - GLOBE Observer app.	ESS	ESS	ESS	ESS	unknown
6. Snapshot Wisconsin	ESS	ESS	ESS		Wisconsin Standards for Science (NGSS)
7. Growing Beyond Earth		LS	LS		Florida State Stds
8. The International Astronomical Search Collaboration (IASC)			ESS	ESS	unknown
9. Radio JOVE			PS	PS	NSES (1996)
10. Open Science Data Repository Analysis Working Groups			ESS	ESS	unknown
11. UNITE			ESS	ESS	NGSS

Primary NGSS DCI Domains: LS = Life Science PS = Physical Science ESS = Earth Space Science

[1] Next Generation Science Standards (NGSS) is a registered trademark of WestEd. Neither WestEd nor the lead states and partners that developed the Next Generation Science Standards were involved in the production of this product, and do not endorse it.

1. Community Collaborative Rain, Hail, Snow Network (CoCoRHaS)

Ease of Implementation: Easy

Science goal: Collect and share daily local data on precipitation.

Project Activity: Install a project-approved rain gauge ($30, scholarships available), learn how to read the gauge accurately, and report daily precipitation amounts via the CoCoRaHS website. Submitted data are also accessible on the website. Watch the CoCoRaHS for Schools video to learn more. Lesson plans for grades 3-5, with additional materials available for middle and high school, 4H teams, and more.

Curricular Resources: CoCoRaHS provides a collection of resources for educators, with lesson plans for teachers and resources for 4H teams. More information about alignment with Common Core and NGSS can be found here.

2. GLOBE Clouds - GLOBE Observer app.

Ease of Implementation: Easy

Science goal: Determine the impact of clouds on local weather and Earth's climate system. Images taken by citizen scientists on the ground are used in conjunction with satellite images from above to gain a more complete picture of clouds in the atmosphere.

Project Activity: Once you have downloaded the app and created an account, the Clouds tool will guide you through the observation process. Required data includes providing your location, reporting on overall cloud cover and surface conditions that can impact satellite observations. Optional (but very useful) data include cloud types, cloud opacity, sky conditions and visibility, then taking photos of what you see in the sky.

Curricular Resources: Resource Library (grades K-12); Pacing guides with recorded professional development webinars

3. GLOBE Trees - GLOBE Observer app

Ease of Implementation: Easy

Science goal: Monitor how much carbon is being stored in terrestrial ecosystems, and how this could change as patterns of drought, fire, and forest ecosystems shift in a changing climate. Tree height data from citizen scientists helps validate satellite data.

Project Activity: Once you have downloaded the app and created an account, the Trees tool will guide you through the observation process. Required steps include selecting a tree and using your device to measure the angle from the bottom to the top of the tree, walking to the tree and counting your steps (to determine the distance) and reporting on surface conditions. The app will use that information to calculate an estimate of the tree's height. Optional steps are taking a photograph of the tree and measuring the circumference of the tree.

Curricular Resources: Resource Library (grades K-12); Pacing guides with recorded professional development webinars

4. GLOBE Land Cover - GLOBE Observer app.

Ease of Implementation: Easy

Science goal: Map changes in the landscape to prevent future disasters, monitor natural resources, and collect information on the environment. Ground observations from citizen scientists can provide reference data to help scientists interpret satellite data, improving the accuracy of maps created from remote sensing data and other products.

Project Activity: Once you have downloaded the app and created an account, the Land Cover tool will guide you through the observation process. You will report on current surface conditions, then take photographs in all four cardinal directions, up and down. Optionally, you can classify the land cover in your photographs, telling us if it is grassland, a forest or an urban area, as well as compare your classification to a satellite land cover observation and note any differences.

Curricular Resources: Resource Library (grades K-12); Pacing guides with recorded professional development webinars

5. GLOBE Mosquito Habitat Mapper - GLOBE Observer app.

Ease of Implementation: Easy

Science goal: Monitor where mosquitoes and larvae have been observed in order to determine when outbreaks of disease such as malaria or dengue most likely will occur, or when chemical or other controls will be most effective.

Project Activity: Once you have downloaded the app and created an account, the Mosquito Habitat Mapper tool will guide you through the observation process. The main required element is to look for a possible mosquito breeding habitat (standing water or somewhere water could collect), and report if you see any mosquito larvae in the water. Optionally, you can sample and count the larvae and try to identify the mosquito type, both of which will require additional equipment.

Curricular Resources: Resource Library (grades K-12). Pacing guides with recorded professional development webinars.

Undergraduate resources developed with faculty from Shaw University.

6. Snapshot Wisconsin

Ease of Implementation: Easy

Science goal: Contribute to better wildlife and land management by monitoring wildlife year-round with a network of trail cameras hosted by volunteers. To learn how to host a trail camera in Wisconsin, visit the project web page.

Project Activity: Complete an in-project tutorial to learn how to identify animals and their behavior in trail camera-made images. Help identify animals (wolves, red fox, elk, etc.) in the thousands of images captured monthly by the Wisconsin-wide network of trail cameras. Contribute to data-driven wildlife management and research.

Curricular Resources: Snapshot Wisconsin offers Wisconsin Standards for Science-aligned lesson plans for all grades from kindergarten through high school. Visit their Education page to learn more and access links to resources. Note that the Wisconsin standards are based on the Next Generation Science Standards. (grades K -12)

7. Growing Beyond Earth (GBE)

Ease of Implementation: Moderate

Science goal: Develop technologies for growing food crops for long-duration missions into deep space.

Project Activity: Growing Beyond Earth (GBE) engages classrooms in research to identify and develop plants suitable for growth and consumption during space travel. The project challenges classrooms to conduct a series of plant growth experiments using equipment similar to the Vegetable Production System (Veggie) on the International Space Station.

Curricular Resources: Interested teachers (grades 6-12) will first need to complete the GBE Inquiry Form. Once accepted, teachers attend a mandatory training workshop, and Fairchild Tropical Botanic Garden will send all the materials necessary to construct the Vegetable Production System and start growing plants and running experiments. Curricular guide included. (grades 6-12)

8. International Astronomical Search Collaboration (IASC)

Ease of Implementation: Moderate

Science goal: Search recent images made by major observatories for previously unidentified asteroids.

Project Activity: Computers search data collected through the major sky survey telescopes for asteroids. Many are found this way, but many are missed. The IASC makes the data available for more careful manual observation. Thus far, student citizen scientists have discovered 1,500 main belt asteroids, including two earth threatening Near Earth Objects, seven trans-Neptunian objects, and one Jupiter family comet. Using special software, students will compare astronomical images for the purpose of discovering objects moving across the frames. This project trains participants to utilize the Astrometrica software to search for asteroids or trans-Neptunian objects (TNOs).

Curricular Resources: While no formal curricular resources are available, IASC provides software, ready-to-analyze data, and instructions on how to use in the high school classroom setting. Fill out the register form and submit as instructed to begin using IASC. (grades 9 and up)

9. Radio JOVE

Ease of Implementation: Moderate-Challenging

Science goal: Detect and analyze radio frequency signals emanating from the Sun, Jupiter, and galactic and terrestrial radio emissions to better understand magnetic fields and plasma environments.

Project Activity: Radio Jove invites individuals or groups (including schools!) to build a radio telescope from a kit (purchase required) to collect low-frequency (radio wavelength) emissions from the Sun, Jupiter, and terrestrial sources. The Radio Jove FAQ page and Joining In page provide information on radio astronomy. Radio Jove has partnered with the SunRISE Ground Radio Lab (GRL) project, which uses the Radio Jove telescope to make observations of the Sun to complement the SunRISE Mission. SunRISE Mission will use orbiting toaster-sized CubeSats to observe low radio frequency emissions to investigate how the Sun generates intense space weather storms.

Curricular Resources: Radio Jove offers Lesson plans (grades 9 and up). SunRISE GRL Training modules (high school) are also available on the Radio Jove website.

10. Open Science for Life in Space Analysis Working Groups

Ease of Implementation: Moderate-Challenging

Science goal: The Open Science for Life in Space Analysis Working Groups' mission is to enable reuse of multi-modal and multi-hierarchical fundamental space life science data to advance basic science, applied science, and operational outcomes for space exploration and knowledge discovery. In other words, these groups explore shared data from space missions to advance understanding of the impacts of space travel on life.

Project Activity: The Analysis Working Groups consist of volunteers engaged in two main activities: first, provide feedback on scientific standards that support reuse of data; second, mine and reuse Open Science Data Repository (OSDR) data to conduct scientific analysis, which often leads to peer-reviewed publications.

Curricular Resources: GeneLab for High Schools is a summer intensive internship for high school students. It provides an introduction to space biology and bioinformatics analysis methods. Continue reading for more details for the summer 2025 program. Teachers who have participated as interns alongside students have created curricular materials — units, worksheets, and supporting activities — to encourage introducing students to space biology using OSDR. Click here to navigate to the teacher-created lessons. GeneLab for Colleges and Universities Training Resources are also available.

11. UNITE

Ease of Implementation: Moderate-Challenging

Science goal: Join the worldwide Unistellar global network of amateur and professional astronomers working to document the timing of when exoplanets transit or pass in front of their star and briefly dim the star's light.

Project Activity: Use a programmable Unistellar telescope to observe newly discovered exoplanets and collect information about transits (passage in front of their home star) to help characterize the exoplanets' orbits. Coordinate with other citizen scientists and researchers around the globe to track and learn about these new worlds.

Curricular Resources: Unistellar College Astronomy Network (UCAN) Educational materials and Unistellar Science Labs developed for community college instructors are available online. Resources show students how to process their own telescope data using modern programming tools for a variety of different observations (e.g., eclipsing binary light curves, stellar spectra, and asteroid parallax astrometry). Additional resources for high school students can be found in the Unistellar Tours of the Cosmos website.

NOTE that a telescope is not required to use these resources. The Science Labs include stock data. The Educational materials include activities that do not require telescopes and optional activities to do with telescopes.