



Questions & Answers Part 1

Please type your questions in the Question Box. We will try our best to get to all your questions. If we don't, feel free to email Amber McCullum (amberjean.mccullum@nasa.gov), Juan Torres-Perez (juan.l.torresperez@nasa.gov) or Britnay Beaudry (britnay.beaudry@nasa.gov).

Question 1: How/Where can Citizen Scientists publish non-academic Research Projects involving NASA's tools for public review, validation and support?

Answer 1: Highlights within projects can be featured in newsletters, there are ways citizen scientists can present at conferences (e.g. AGU posters) and symposia. GLOBE observer has blogs featuring projects that can become the basis for peer reviewed papers.

If you are doing non aca research projects, within the citizen science projects there are methods for subsetting information that can be published in scientific journals, the team just needs to ensure there is proper attribution.

Here are a few other options to consider:

- SciStarter.org and CitizenScience.gov both have areas on their website where project organizers can recruit for volunteers and more. Earthzine, although not peer reviewed, has great content.
- Citizen Science Practice and Theory - although this is peer-reviewed
- Here is a list of mostly peer-reviewed publications where NASA citizen scientists have been named co-authors:

<https://science.nasa.gov/citizenscience/publications>

Question 2: Is social media information such as text from Facebook, Twitter used as a data source to integrate with EO data for citizen science integration?

Answer 2: In many projects social media has been used as a recruitment tool. For some of the projects we will highlight, there are separate applications where citizen scientists input their information it not taken directly from their social media.

There are things to consider when crowdsourcing from social media. This can be useful



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useful when you need large numbers. But those posts are not consensual and you do not know if it is real (aka a “bot”).

Fresh Eyes on Ice, in Part 3, will go deeper into using social media to share observations to ensure quality, consent, and georeferencing. This project has allowed citizen scientists to post findings via Facebook, but there is always proper consent and attribution.

Question 3: Do you have any success stories related to citizen science projects being implemented? How is it being sustained?

Answer 3: Yes. We will showcase some successful projects for land and ocean purposes in the next two sessions. Stay Tuned! Same link, same time this Thursday and next Tuesday!

Some projects have become industries in and of themselves and can greatly inform science. eBird is a great example of a success story.

Question 4: Can a citizen scientist engage in the analysis of the data, like quantitative, qualitative or triangulation? Or are they restricted to only data collection?

Answer 4: There are a lot of CS projects where the citizens do the analysis of the data. Interpretation of photos (e.g. in Zooniverse - Snapshot Wisconsin). The project teams also consider the data lifecycle. Primary data collection can be expensive and time consuming, citizens can access remote sensing data and use to analyze their data, repetition of methods can help identify issues with data collection or verification.

Question 5: I've recently heard Citizen Science being referred to as Community Science. Is this a newer concept or is it regional? I'm currently in Seattle.

Answer 5: Community science: a community identifies a problem, and is community led. As we mentioned there are many terms used. There is often the use of C* science, which is used to represent the many forms of community and citizen science. Community science is generally driven by the community, where citizen science is driven by the researcher.

There is some sensitivity with the word citizen, but it is in the official language in funding. There is a diversity of definitions, and it is complex.



Question 6: Could you provide training on Python based satellite image processing for urban area mapping? What about extraction and analysis of PAR , LST and GPP for carbon sequestration?

Answer 6: Thank you for the suggestion and we will incorporate this into our evaluation of new topics. We do have trainings on urban mapping and settlements. Please see our [Online Resource Guide](#) for more information.

Question 7: What are the criteria for selection of citizens to choose for such professional data gathering, etc?

Answer 7: It varies by project. Bird banding has extensive training and certification needed. But in general, you want the Citizens to choose you. You don't want to choose them yourself, you want a random distribution and a broad recruitment process. You should also consider equitable space for citizen science. As we discussed there are often barriers to entry (time, resources, etc.). Front end assessment can help you identify the key voices that should be included, and include the community. There can be self selection too - some who are excited others are intimidated by engaging with NASA projects. Who sees themselves as a "scientist"

Question 8: Can a citizen scientist be involved in more than one project simultaneously?

Answer 8: Yes. We find once people get into these projects, they are attracted to other efforts. Many people use iNaturalist and eBird at the same time.

Question 9: Is this Citizen Science being funded by NASA?

Answer 9: YES!

Question 10: In your experience, what is the motivation for people to participate in data gathering, particularly xy coordinates? What should we bear in mind when trying to attract participation? I am planning data gathering for farmland use types.

Answer 10: Motivation is a big deal. Health applications, they know their data will be useful and will HELP the community in which they live. The act of collecting, or getting to know your environment, are also motivations. Interacting with people who are interested in similar topics as you.



Question 11: Is it possible to propose an existing project to NASA's DEVELOP program?

Answer 11: You can propose here:

<https://appliedsciences.nasa.gov/what-we-do/capacity-building/develop/partner>

Or email Juan Torres-Perez (juan.l.torresperez@nasa.gov)

Question 12: With regard to citizen Science how can its accuracy and transparency be increased in data management? Are there any international frameworks or standards that exist in this regard?

Answer 12: ISO (the International Organization for Standardization):

<https://www.iso.org/obp/ui/#iso:std:iso:19115:-1:ed-1:v1:en> - for data mgmt and archival. For acknowledgement - Two useful resources for acknowledgement here: first the [Transparency in Author Contributions in Science \(TACS\) Website](#) and second a paper by McNutt et al 2018. The guidelines given in [McNutt et al., 2018](#) can serve as guidelines for determining the level of contribution among citizen scientists.

Question 13: I live in a state of Brazil where there are a lot of landslides. Are there any citizen science projects or ideas to predict and prevent disasters?

Answer 13: NASA's Disaster Portal has historical and near real-time data which you can find here: [Disasters Practitioner Resources | NASA Applied Sciences](#)

Their tool for landslide data can be found here: [Disasters Practitioner Resources | NASA Applied Sciences](#)

Question 14: How can we find people for any citizen project?

Answer 14: If you're looking to recruit people to participate in a citizen science project, there are many options. You can post on social media (Facebook, Twitter, etc.), you can host community discussions, and you can use websites like SciStarter.org or CitizenScience.gov to look for volunteers.