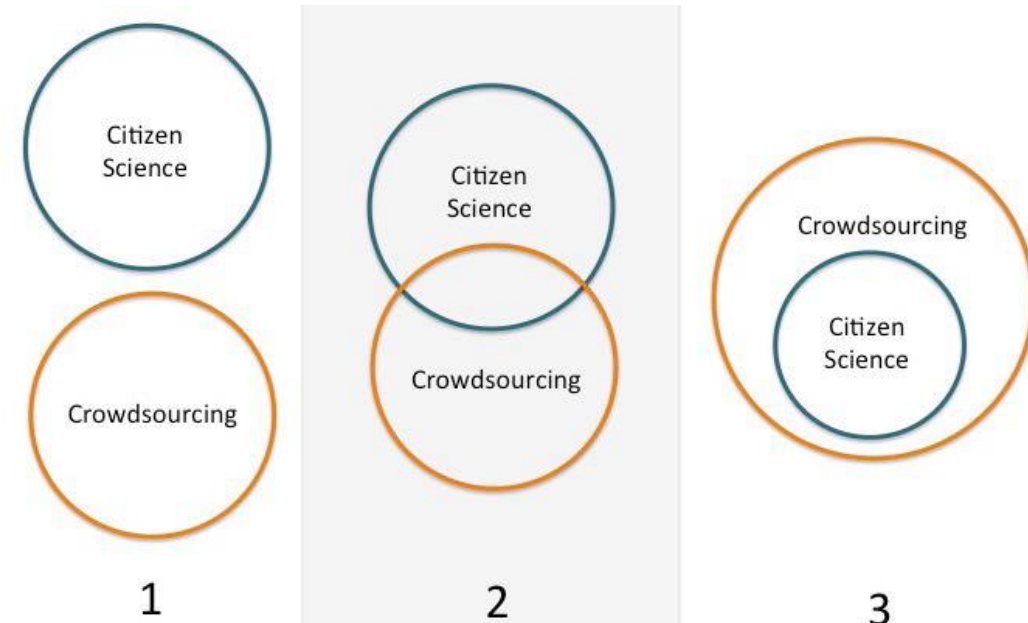


Federal Community of Practice for Crowdsourcing & Citizen Science (CCS) and the Federal CCS Toolkit

Sophia B Liu (USGS) and Ruthanna Gordon (IARPA)
CCS co-organizers

What is Citizen Science and Crowdsourcing?

- “In **citizen science**, the public participates **voluntarily** in the scientific process, addressing real-world problems in ways that may include formulating research questions, conducting scientific experiments, collecting and analyzing data, interpreting results, making new discoveries, developing technologies and applications, and solving complex problems.”
- “In **crowdsourcing**, organizations submit an open call for **voluntary** assistance from a large group of individuals for online, distributed problem solving.”



[Wilson Center Citizen Science and Crowdsourcing Metadata Workshop Summary](#)

Other Related Terms

- Science 2.0
- Collaborative mapping
- Wikinomics
- Extreme citizen science
- Geographic citizen science
- Geocollaboration
- Map Hacking or Map Hacks
- Neogeography
- Participatory sensing
- Ubiquitous cartography
- Mashup
- Collaboratively contributed geographic information
- Geographic World Wide Web
- GeoWeb or GeoSpatialWeb
- Involuntary geographic information
- Volunteered Geographic Information
- Public participation in scientific research
- Ambient geographic information
- User-generated content
- Contributed Geographic Information

Recent Federal Policies on CCS



EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY POLICY
WASHINGTON, D.C. 20502

September 30, 2015

MEMORANDUM TO THE HEADS OF EXECUTIVE DEPARTMENTS AND AGENCIES

FROM: John P. Holdren *JPH*
Assistant to the President for Science and Technology and
Director of the Office of Science and Technology Policy

SUBJECT: Addressing Societal and Scientific Challenges through Citizen Science and
Crowdsourcing



IN THE SENATE OF THE UNITED STATES

Mr. COONS introduced the following bill; which was read twice and referred
to the Committee on _____

A BILL

To harness the expertise, ingenuity, and creativity of all people to contribute to innovation in the United States and to help solve problems or scientific questions by encouraging and increasing the use of crowdsourcing and citizen science methods within the Federal Government, as appropriate, and for other purposes.

OSTP Holdren Memo on CCS

- Outlines principles that agencies should apply in order to ensure future use of CCS in a way that is appropriate and leads to greatest value and impact.
- Directs agencies to take two specific steps to advance appropriate application of CCS:
 - 1) Identify an agency coordinator for citizen science and crowdsourcing projects; and
 - 2) Catalog agency-specific citizen science and crowdsourcing projects on a government-wide online database and website — to be developed by the General Services Administration (GSA) — in order to make these projects easier for the public to discover, to help improve collaboration within and across agencies, and to reveal opportunities for new projects.
- Recommends agency actions to build capacity for citizen science and crowdsourcing.
- Provides, in the Appendix, examples of successful completed and ongoing applications of citizen science and crowdsourcing at Federal agencies.

Community

www.citizen science.gov/community

Hosted by GSA,
maintained by CCS

Toolkit

www.citizen science.gov/toolkit

Maintained by the CCS
with support from
Wilson Center and GSA

Catalog

www.citizen science.gov/catalog

Maintained by Wilson
Center with support from
GSA and Coordinators

Federal Community of Practice for Crowdsourcing and Citizen Science (CCS)

Mission Statement:

As affiliates of federal agencies, we seek to expand and improve the U.S. government's use of crowdsourcing, citizen science and similar public participation techniques for the purpose of enhancing agency mission, scientific and societal outcomes.

- Established in July 2013
- Active listserv with 49 federal agencies and over 250 members
- Monthly meetings with guest speakers
- Opportunities to work on federal CCS efforts

Federal Crowdsourcing and Citizen Science Toolkit

[HOME](#) [HOW TO](#) [CASE STUDIES](#) [RESOURCE LIBRARY](#) [LAW AND POLICY](#)

Welcome!

Crowdsourcing and citizen science help federal agencies to innovate, collaborate and discover. In this toolkit, you will learn how to design and maintain projects. You can also read through case studies and access additional resources related to communities that practice crowdsourcing and citizen science.

What Is Crowdsourcing?

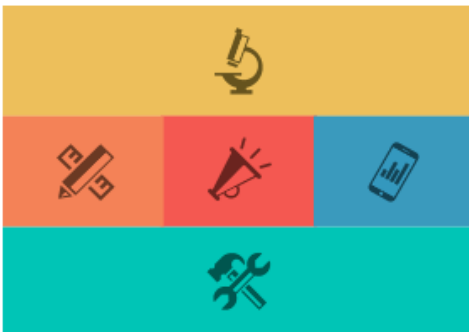
Crowdsourcing involves an open call for volunteers to provide information or help solve a particular problem. A large group of either unknown or trusted individuals (“the crowd”) responds.

What Is Citizen Science?

Citizen science involves voluntary public participation in the scientific process to form research questions, conduct scientific experiments, collect and analyze data, interpret results, make discoveries, develop technologies and applications, and solve complex real-world problems.

Featured Case Studies





How To: Step by Step

This toolkit shows five basic process steps for planning, designing and carrying out a crowdsourcing or citizen science project. At each step, you'll find a list of tips you can use to keep your project on track. [See the process steps](#)



Case Study Overview

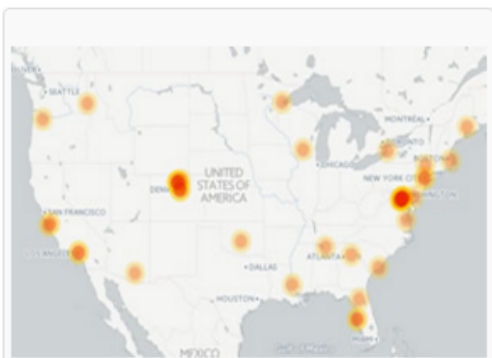
Case studies in this toolkit serve as models and provide success stories and challenges to consider while planning a project. You can browse through agency case studies to get ideas for a project of your own. [Browse case studies](#)



Resource Library

The resource library provides a list of all resources in this toolkit which you can browse through by category. You can also find resources within each of the process steps in the "How To" section of the toolkit. [View resources](#)

Map of Federal Crowdsourcing and Citizen Science Projects



Database of federal crowdsourcing and citizen science projects courtesy of the Commons Lab.

Federal Crowdsourcing and Citizen Science Community

The Federal Community of Practice on Crowdsourcing and Citizen Science (CCS) meets monthly to share lessons learned and develop best practices for designing, implementing, and evaluating crowdsourcing and citizen science initiatives. [Learn more about the CCS](#)

Other Innovation Communities

- [Challenges and Prizes](#)
- [OpenGov](#)
- [Ideation CoP](#)
- [DigitalGov](#)
- [Data.gov](#)
- [SocialMedia CoP](#)

[Learn about these communities](#)

Key Components of the Federal CCS Toolkit

The purpose of the Federal Crowdsourcing and Citizen Science Toolkit, as one of the tools in the **Innovation Toolkit**, is to "help further the culture of innovation, learning, sharing, and doing in the federal citizen science and crowdsourcing community."

- **How To – Process Steps**
- **Case Studies**
- **Resource Library**
- **Legal and Policy**



What's in the Toolkit: 5 Step Process

- ① **Scope Out Your Problem**
- ② **Design a Project**
- ③ **Build a Community**
- ④ **Manage Your Data**
- ⑤ **Sustain and Improve**



Step 1 – Scope Out Your Problem

1. Problem details – How to:

- Identify priority goals
- Articulate why this problem matters for your mission
- Lay the foundations for solid project design

2. Tools – How to:

- Understand what crowdsourcing and citizen science can accomplish
- Pick the methods best suited to your problem

3. Stakeholders – How to:

- Pitch to the people who will provide key support and approval
- Find and partner with organizations that can strengthen your project



Step 2 – Design a Project

1. Project Objectives – How to:

- Clearly identify and break into discrete tasks
- Design workflows and check validity

2. Existing Projects – How to:

- Find the best models for your project
(by goal, subject matter, intended scale/size, agency organization)

3. Resources for Outreach – How to:

- Plan for community management
- Design apps for data collection
- Use social media for outreach

4. Funding – How to:

- Estimate required resources and staffing
- Account for scale and timeline
- Budget for different stages of project's lifecycle



Step 3 – Build a Community

1. Participant Training – How to:

- Choose between live, video, or online tutorial, and best practices for each
- Answer questions and improve design/instruction
- Focus on goals and remind participants WHY they are important

2. Community Management – How to:

- Involve community in project design
- Create shared tasks
- Make use of peer training and group leaders
- Take advantage of badging, spotlights, forums/discussion boards, and workshops



Step 4 – Manage Your Data

- 1. Determine metrics for your project**
- 2. Set up usable data frameworks**
- 3. Review metrics and reporting from other Citizen Science projects**
- 4. Support data validation and peer review**



Step 5 – Sustain and Improve

- 1. Adapt to cycles of participation**
- 2. Solicit feedback from your participants**
- 3. Sustain your project funding**
- 4. Evaluate the quality of your data**
- 5. Evaluate your participants' engagement**
- 6. Build flexibility into your project**
- 7. Plan for project completion**



What's in the Toolkit: Case Studies



Over a dozen case study examples from across government illustrate best practices for designing projects, overcoming barriers, and measuring outcomes.

Each case study includes:

- Project Overview
- Description
- Challenges and how they were overcome
- Project benefits and outcomes
- Illustrations of specific “how to” tips
- Contact information



What's in the Toolkit: Resource Library



Aggregated articles, reports, videos, and project links to help you dive deeper into the topics that interest you most.

Disclaimer: The toolkit provides external links to resources as a convenience to users. The appearance of the links in the toolkit does not constitute endorsement by the federal government of the linked websites or of the information, products or services contained in them.



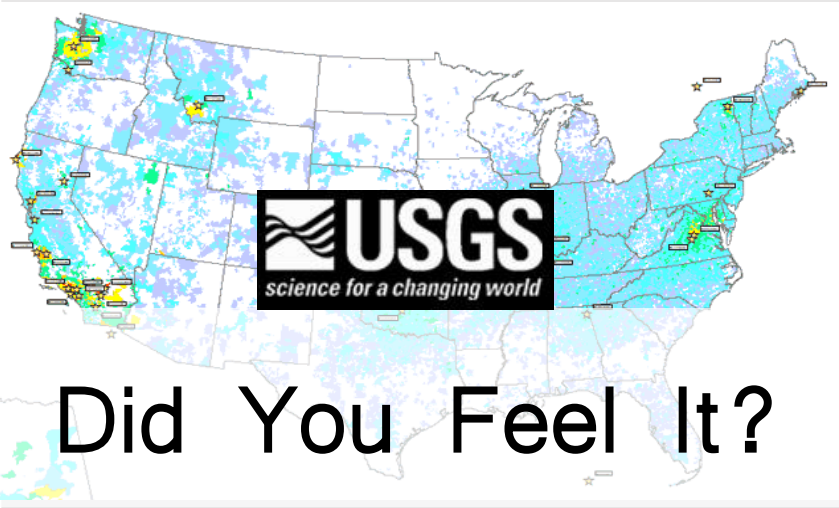
What's in the Toolkit: Legal and Policy

Legal issues affecting federal practice of CCS:

- Administrative, legal and ethical frameworks
- Ethical and legal aspects of health-related citizen science
- Disaster response and humanitarian assistance
- Integrating volunteer-collected data with government datasets
- Intellectual property and crowdsourcing



Federal CCS Catalog



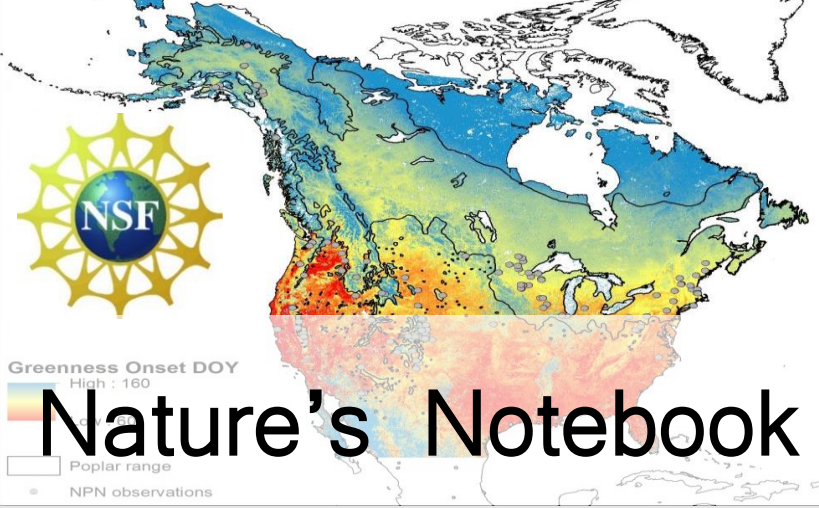
USGS
science for a changing world

Did You Feel It?



NATIONAL ARCHIVES

Citizen Archivist Dashboard

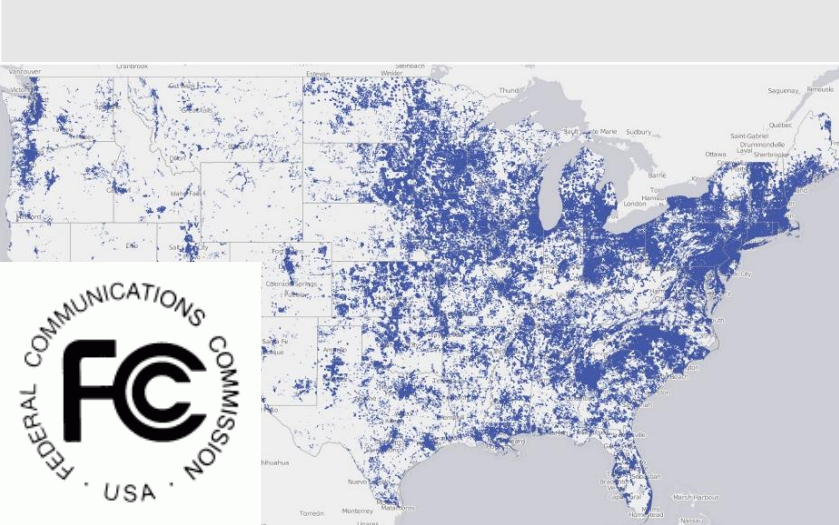


NSF

Greenness Onset DOY
High: 160

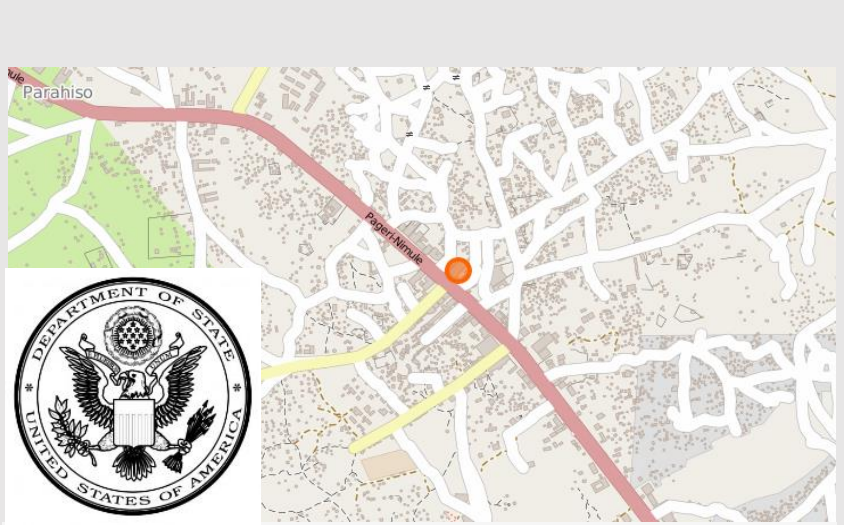
Poplar range
NPN observations

Nature's Notebook



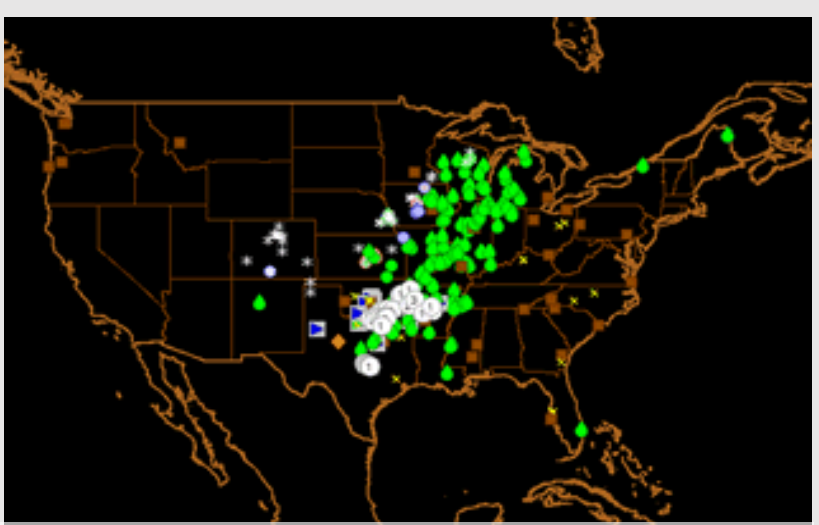
FEDERAL COMMUNICATIONS COMMISSION
FCC
USA

Measuring Broadband America



DEPARTMENT OF STATE
UNITED STATES OF AMERICA

MapGive



NOAA **mPING**

Database of federal crowdsourcing and citizen science projects

FIND PROJECTS: ⓘ

FILTER BY: ⓘ

PROJECTS

104

AGENCIES

20

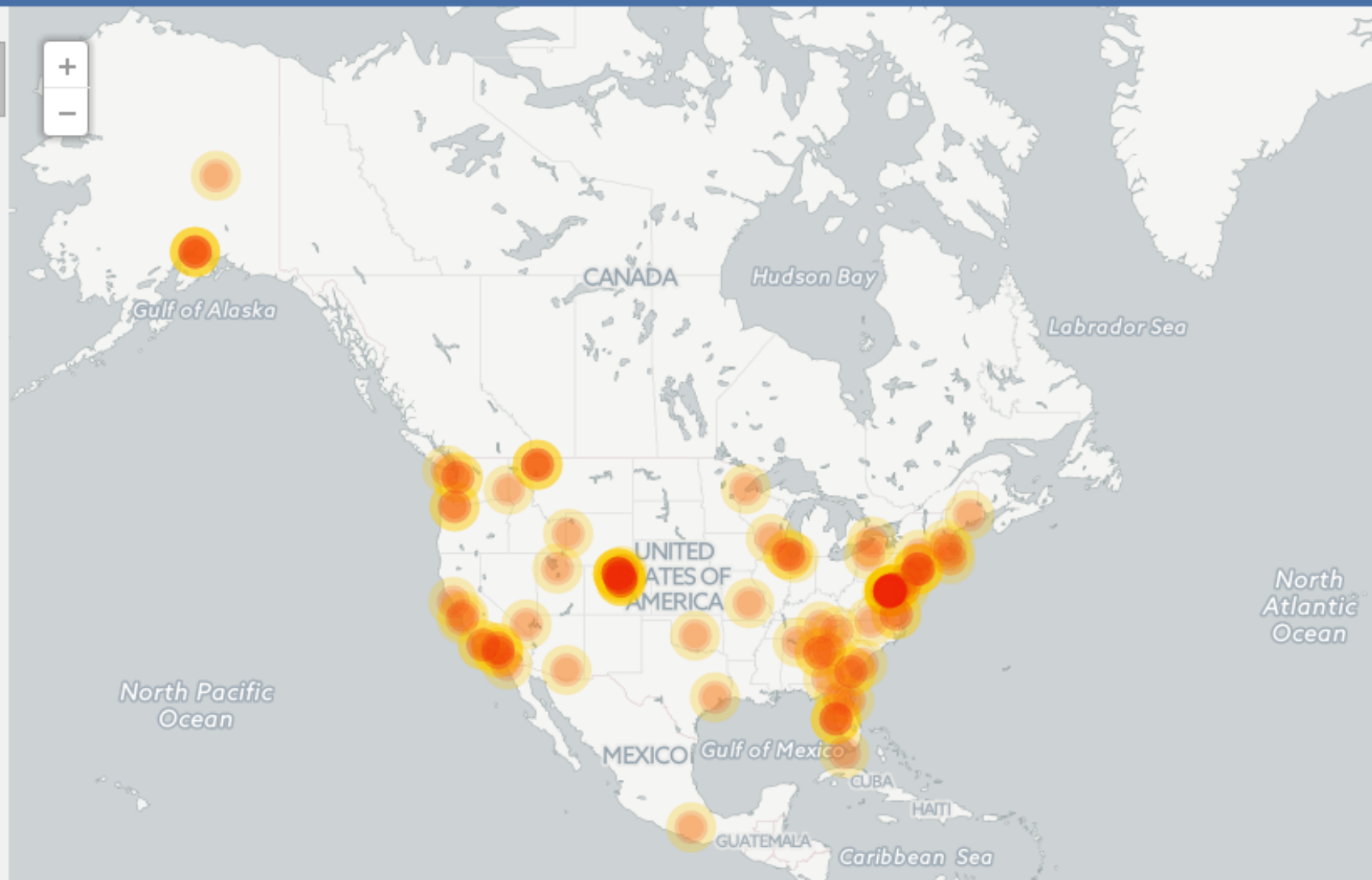
[Advancing Energy Efficiency in Buildings](#)
by Department of Energy (DOE)

[Alaska Volcano Observatory Citizen Network Ash Collection and Observation Program](#)
by U.S. Geological Survey (USGS)

[Aurorasaurus](#)
by National Aeronautics and Space Administration (NASA), National Science Foundation (NSF)

[Citizen Archivist](#)
by National Archives and Records Administration (NARA)

[Coastal Observation And Seabird Survey](#)



CitizenScience.gov

Community

www.citizenscience.gov/community

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Ruthanna Gordon:

Ruthanna.Emrysgordon@iarpa.gov

Crowdsourcing & Citizen Science at OSTP

Jenn Gustetic: Jennifer_L_Gustetic@ostp.eop.gov