

# Federal Crowdsourcing Webinar Series

## Episode One

# Federal Crowdsourcing and Citizen Science Community of Practice (FedCCS)

**John McLaughlin**

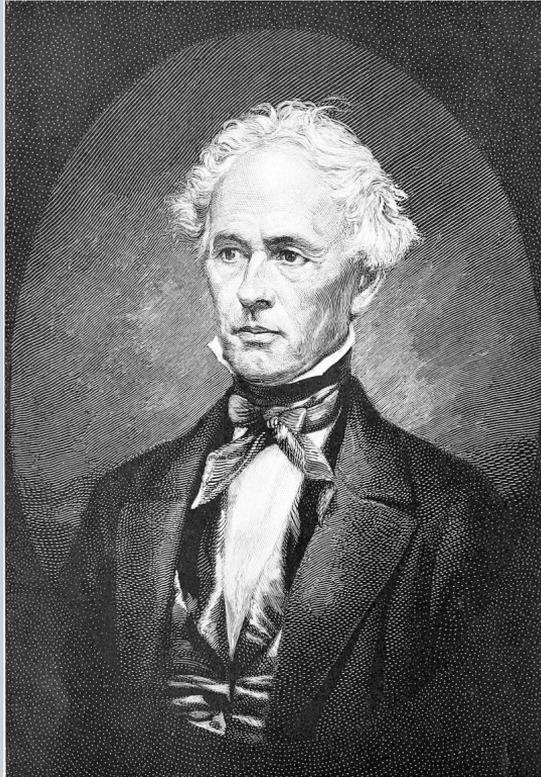
CitizenScience.gov Program Manager  
U.S. General Services Administration

**Sophia B Liu, Ph.D.**

Innovation Specialist, Crowdsourcing and Citizen Science Coordinator  
U.S. Geological Survey  
Co-Chair of FedCCS

# William C. Redfield (1789-1857)...

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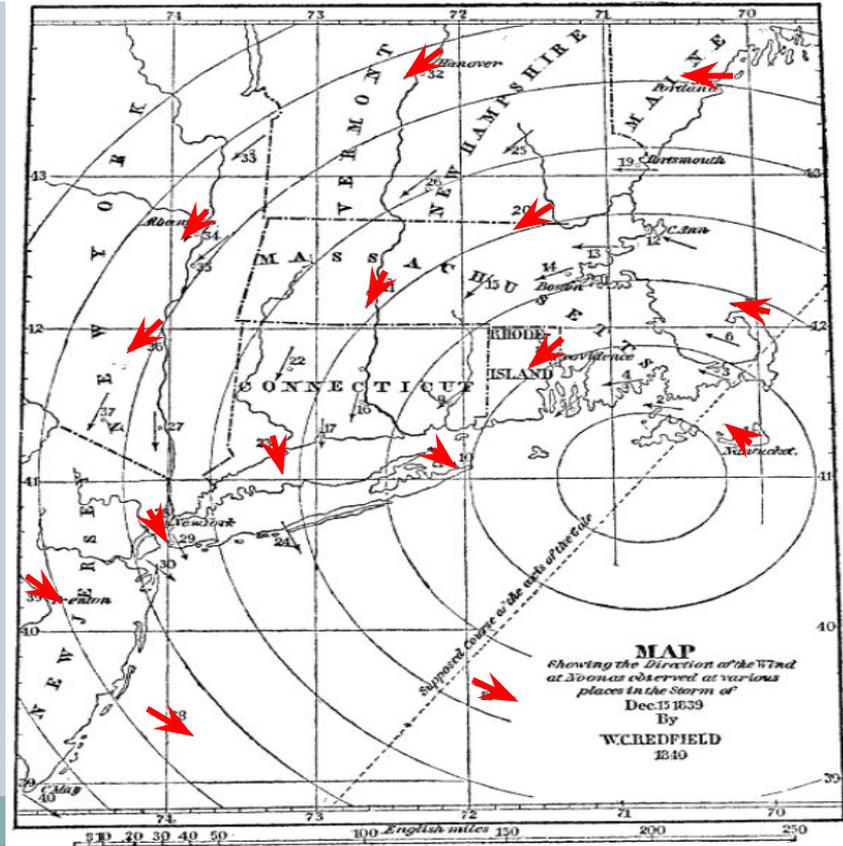
- A saddle maker, steamboat captain, and self-taught amateur meteorologist from Middletown, CT
- Noticed something interesting a few months after the New York Hurricane of 1821
- In 1831, he published his observations that trees had fallen northwestward in the eastern part of CT, and southeastward in the western part of the state

# Harnessed the Power of People

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- During a 1839 storm, Redfield drew from a network of observers that recorded wind direction at noon
- Helped prove existence of cyclonic storms

*Observations on the Storm of December 15, 1839*  
William C. Redfield  
*Transactions of the American Philosophical Society,*  
Vol. 8 (1843), pp. 77-82



# Definitions

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## ***In Citizen Science...***

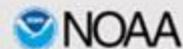
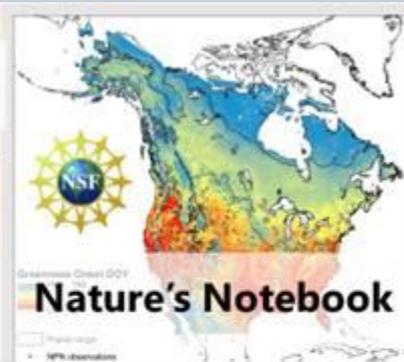
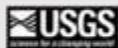
the public participates voluntarily in the scientific process, addressing real-world problems in ways that may include formulating research questions, conducting scientific experiments, collecting and analyzing data, interpreting results, making new discoveries, developing technologies and applications, 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.

# Tools with Many Applications

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# New Participation Pathways

6

**Identify**

Search: Species

**Forget-me-nots** (*Genus Myosotis*) OBSERVED: 06/06/2016 BY: JASONRGRANT Needs id

Val-de-Ruz, Neuchâtel, Switzerland

Jasonrgrant's identification 3m

**Forget-me-nots**  
Genus *Myosotis* Agree

Captive / cultivated  Reviewed  Comment  Agree

**Hairy Puccoon**  
*Lithospermum carolinien.* Agree

*Cotinus coggygia* Agree

*Arenaria serpyllifolia* Agree

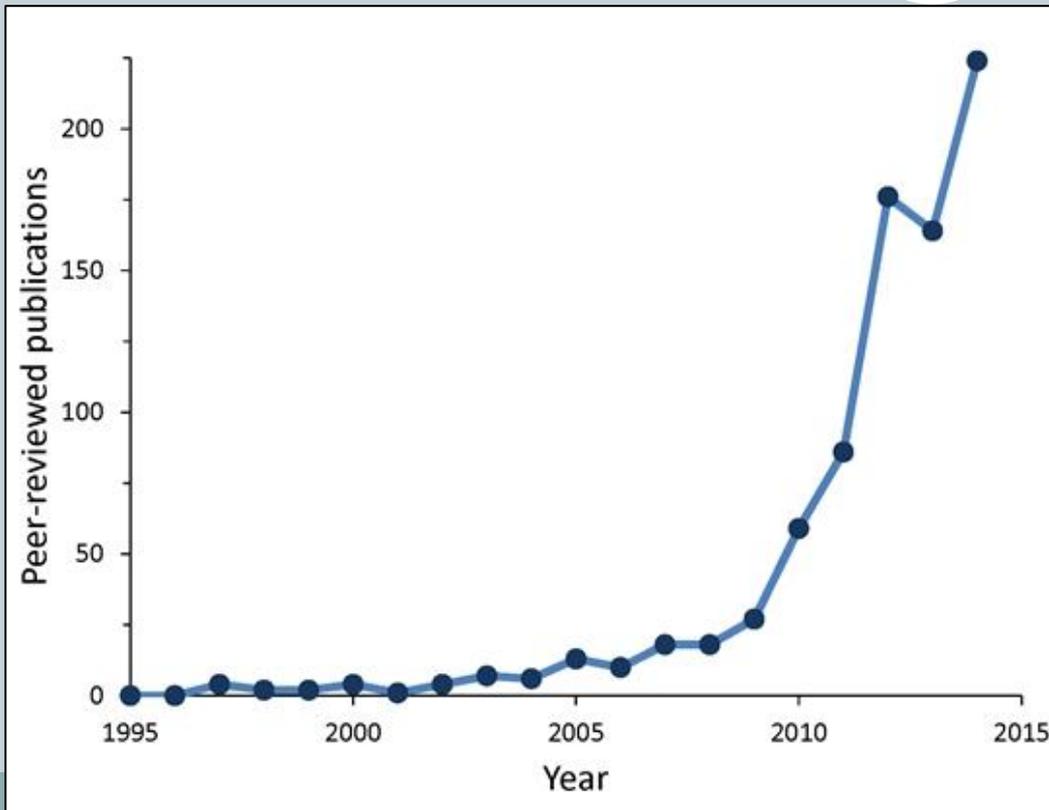
Genus *Hypericum* Agree

*Prunus laurocerasus* Agree

6 aguilita 71,873

# Field is Growing, Rapidly

7



*David Hanych, an NSF Program Officer, described the growth in this field as a “coming tsunami”*

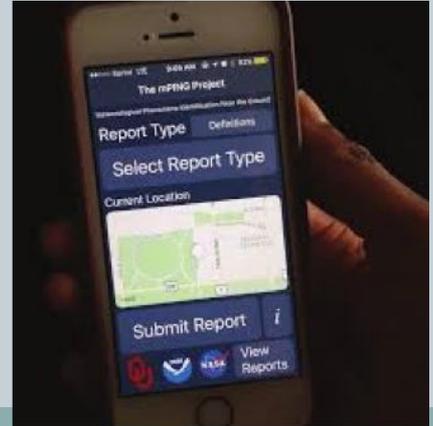
Results for a search of the Web of Science for the keyword “citizen science”

*McKinley et al (2015) Issues in Ecology 19.*

# Citizen Science Can...

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- Enhance scientific research
- Address societal needs
- Provide hands-on learning and increase STEM literacy



# Federal Community of Practice for Crowdsourcing and Citizen Science (FedCCS)

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- Grassroots community open to all federal staff
- Seeks to expand and improve the U.S. government's use of crowdsourcing and citizen science
- Over 370 members from 63 agencies
- Monthly meetings and listserve
- Learn more and join at [CitizenScience.gov](https://CitizenScience.gov)



# Key Milestones

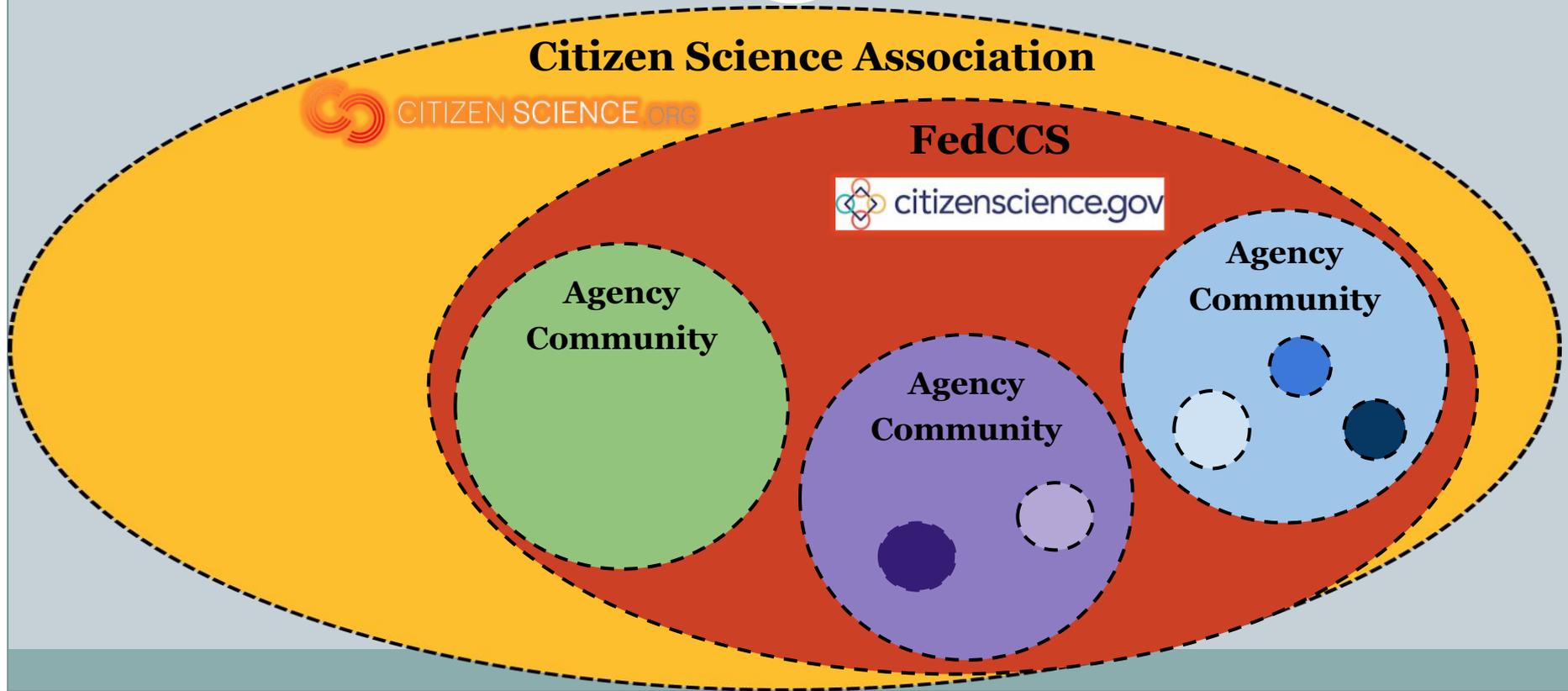
10

- **2013** - New Visions in Citizen Science event at Wilson Center
- **2014** - FedCCS officially established in January
- **2015** - OSTP memo and White House event on Accelerating Citizen Science
- **2016** - CitizenScience.gov site released, and growing!
- **2017** - Citizen Science & Crowdsourcing Act signed into law; Finalist for Harvard Ash Innovation award
- **2018** - Sharing Across Scales event at Wilson Center
- **2019** - First report to Congress on crowdsourcing and citizen science



# Tiered Layers of Communities

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# Report to Congress

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- Required by Crowdsourcing and Citizen Science Act
- White House Office of Science and Technology Policy is finalizing a report on Federal prizes and crowdsourcing and citizen science projects conducted during fiscal years 2017 - 2018
- FedCCS contributed details on over 80 project as well as broader agency practices that support them
- Likely release this Spring 2019

# Now Let's Explore...

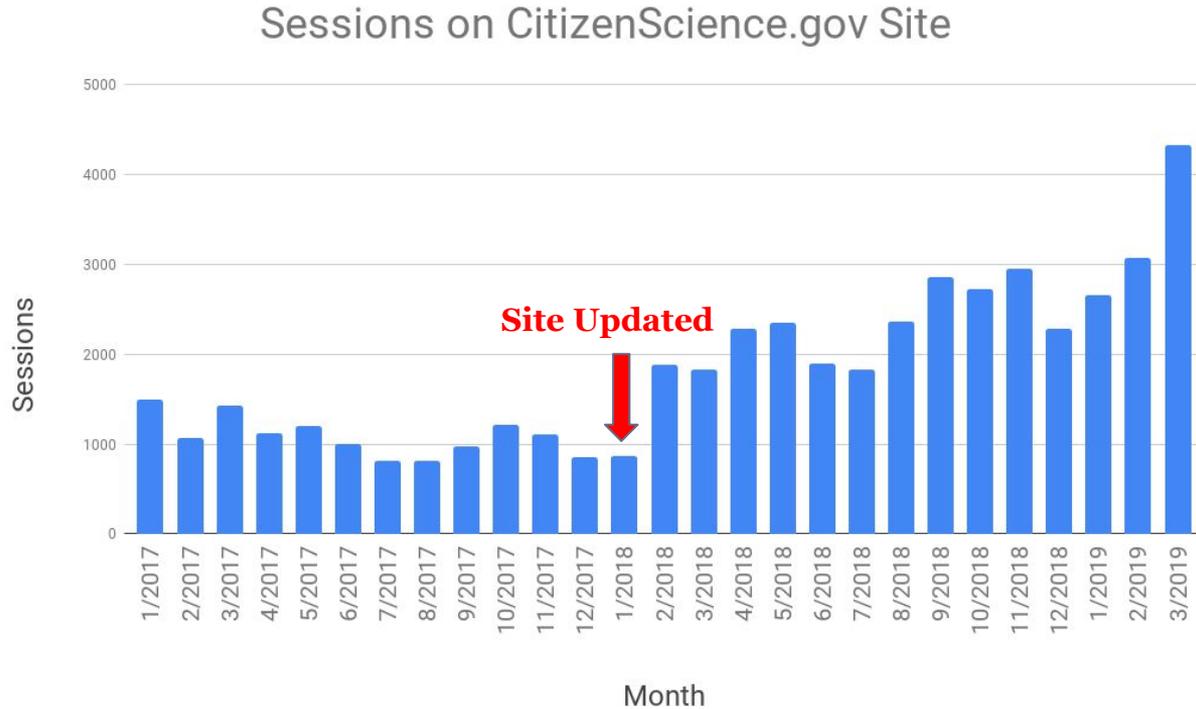
13

Resources developed by our FedCCS community available from CitizenScience.gov



# Usage is Growing

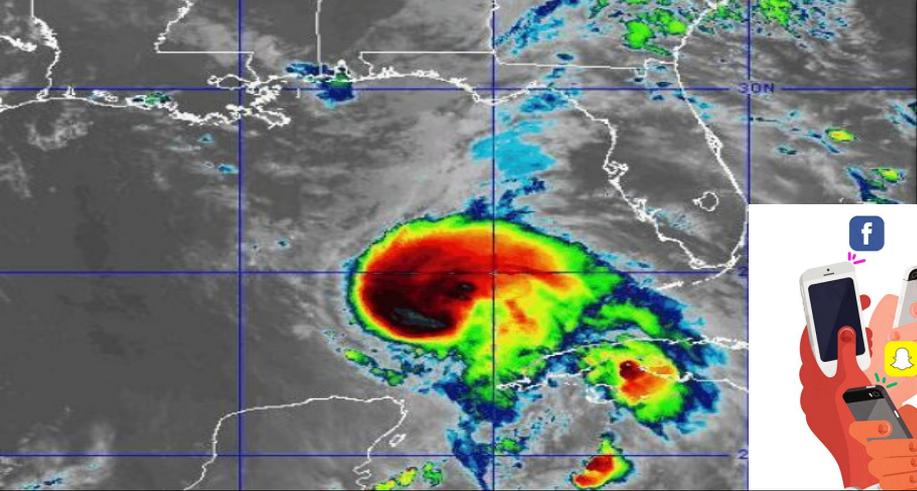
14



# Connect

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- Please follow us on Twitter at @FedCitSci
- We benefit from sharing lessons learned & best practices
- Looking for ways to collaborate with other communities
  - Designate representatives?
  - Ideas for specific partnership opportunities?
- Look forward to meeting more of you and learning about what you do!



# Hazard-related Citizen Science at USGS and Disaster-related Crowdsourcing at FEMA



**Sophia B Liu**

Innovation Specialist, Science and Decisions Center, U.S. Geological Survey  
Co-Chair of Federal Community of Practice for Crowdsourcing & Citizen Science (CCS)  
USGS CCS Coordinator and FEMA Crowdsourcing Unit Coordinator

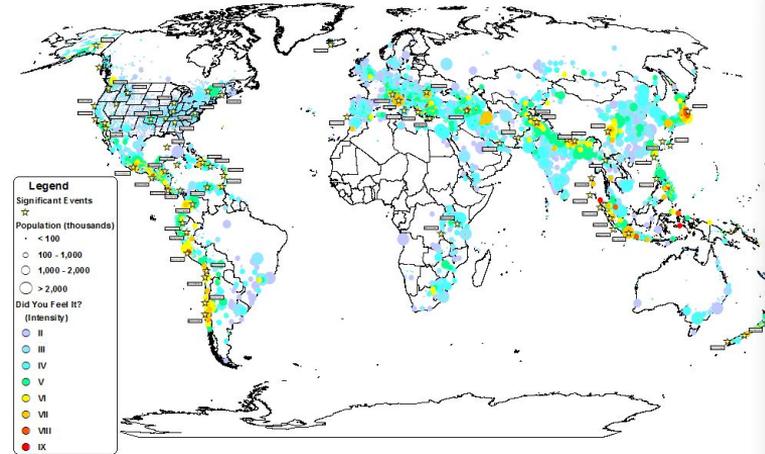


**@sophiabliu**

# USGS Did You Feel It? (DYFI)

4.5+ million DYFI reports since 1999

Did You Feel It?



~ 30 seconds to submit report



**Felt Report** OMB No. 1028-0048  
Expires 05/31/2018

Your location when the earthquake occurred

Choose Location

Did pictures on walls move or get knocked askew?

Not specified  
 No  
 Yes, but did not fall  
 Yes, and some fell

Did any furniture or appliances slide, topple over, or become displaced?

Not specified  
 No  
 Yes

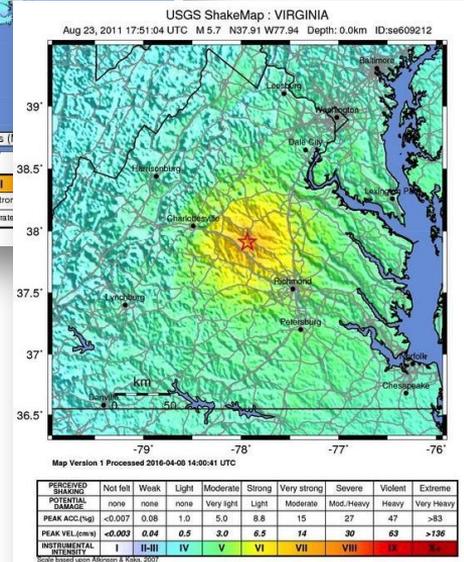
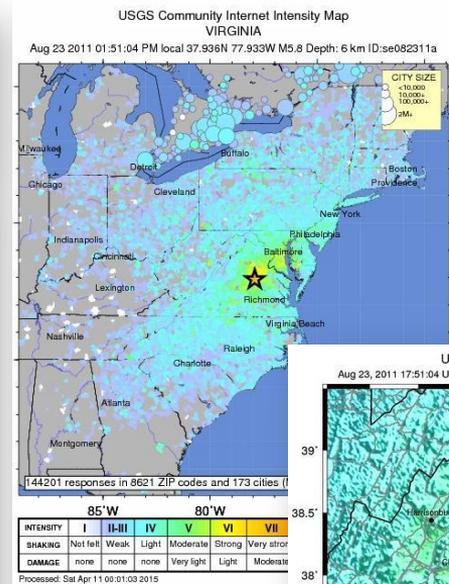
Was a heavy appliance (refrigerator or range) affected?

Not specified  
 No  
 Yes, some contents fell out  
 Yes, shifted by inches  
 Yes, shifted by a foot or more  
 Yes, overturned

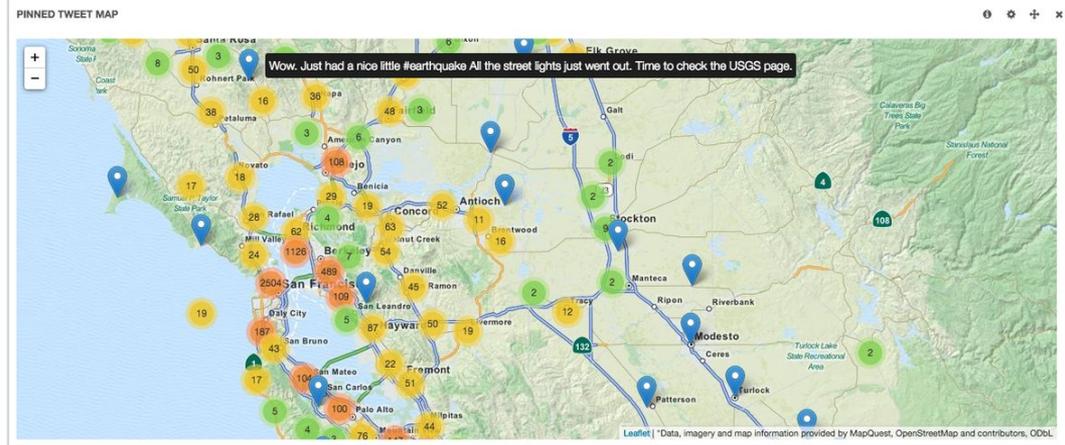
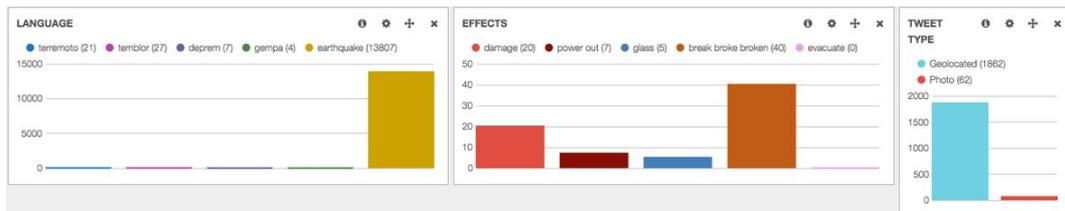
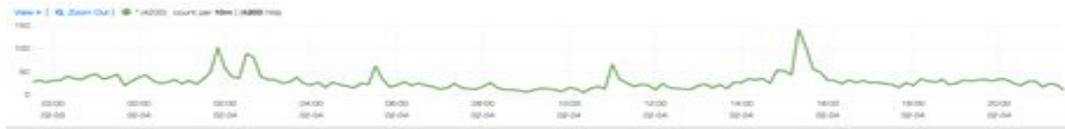
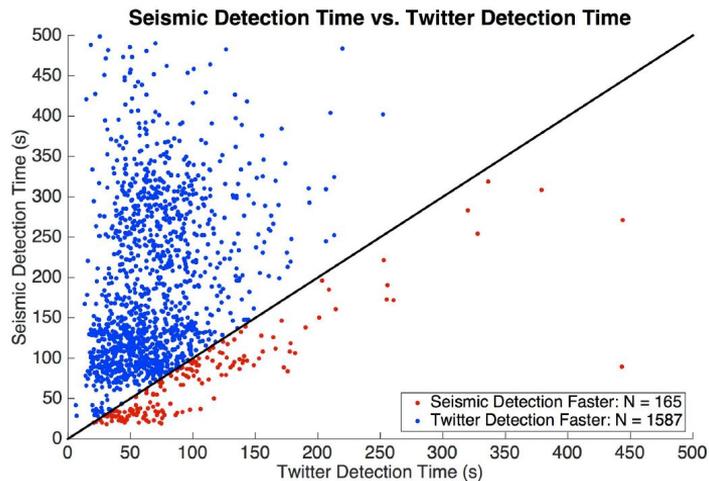
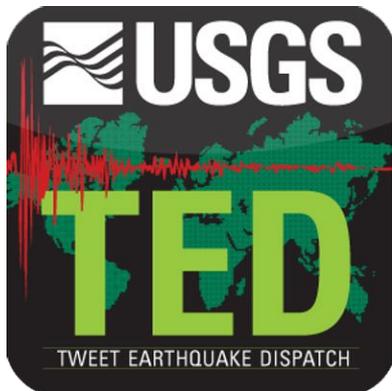
Were free-standing walls or fences damaged?

Not specified  
 No  
 Yes, some were cracked  
 Yes, some partially fell  
 Yes, some fell completely

Submit Cancel



# USGS Tweet Earthquake Dispatch (TED)



# USGS iCoast - Did the Coast Change?

- **Ground truth, validate, and enhance** USGS coastal erosion prediction models
- **Cost effective** way to classify large volumes of photos covering a wide area to enhance coastal hazard research and response to extreme storms
- **Educate the public** about coast vulnerability from extreme storms



**USGS**  
science for a changing world

USGS Home  
Contact USGS  
Search USGS

USGS iCoast - Did the Coast Change?

Administration Home Classify My iCoast Profile Help About Logout

PRE-STORM: Before Hurricane Sandy  
21 May 2010 at 1:52:23 EDT near Montauk, NY

POST-STORM: After Hurricane Sandy  
18 Nov 2012 at 12:34:09 EST near Montauk, NY

OSM Content Number: 1200-0109  
Expiration Date: 12/2025

**TASK 3: SPECIFY CHANGES TO COASTAL LANDFORMS**

What changes do you see in the POST-storm photo for each coastal change process?

Which coastal change process is most dominant in the POST-storm photo? (Choose one)

**Beach Erosion** (choose any that apply)

- Less Sand
- Dark Sand
- Beach Scarp

**Dune Erosion** (choose any that apply)

- Dune Scarp
- Levelled Dune
- Less Vegetation

**Overwash** (choose any that apply)

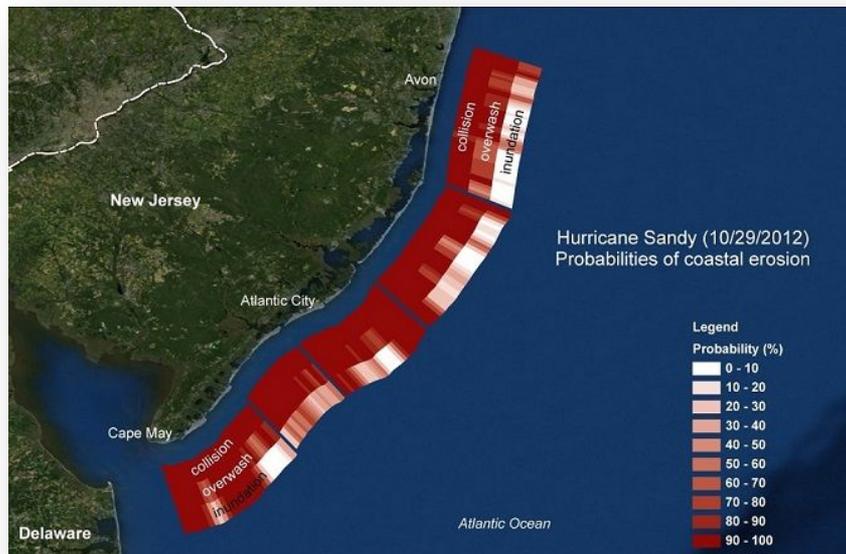
- Sand Inland
- Sand on Roads
- Sand in Marsh

**Inundation** (choose any that apply)

- Breach
- Standing Water
- Dead Vegetation

Beach Erosion Dune Erosion  
Overwash Inundation  
No Change

PREVIOUS TASK NEXT TASK Feedback



# FEMA Crowdsourcing Unit



# FEMA



# FEMA Crowdsourcing Unit Activations

## Activation #1 - Hurricane Maria

October 6 - 20, 2017

- 13 Coordination Calls and Reports
- 11 Crowdsourcing Products
- 6 Digital Volunteer Networks
- 5,700+ Volunteers
- 2 Hackathons
- \* Crowdsourcing Exchange Hackathon at FEMA HQ

## Activation #2 - Hurricane Lane

August 22 - 25, 2018

- 3 Coordination Calls
- 7 Crowdsourcing Products
- 6 Digital Volunteer Networks
- \* Monitored Waze, GasBuddy, RxOpen

## Activation #3 - Hurricane Florence

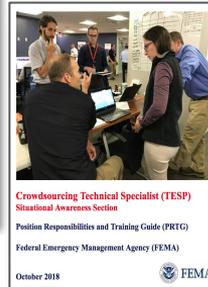
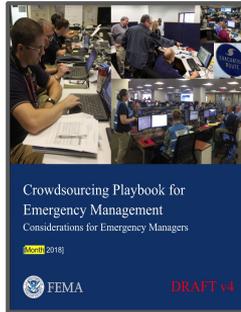
September 10 - 20, 2018

- 10 Coordination Calls
- 26 Crowdsourcing Roll-Ups
- 16 Crowdsourcing Products
- 8 Digital Volunteer Networks
- 8 Private Sector and other Partners
- \* Partnered with Private Sector thru NBEOC

## Steady State

November 2017 - August 2018

- ★ Participated in the **National Level Exercise** (May 3-8, 2018)
- ★ Developed **Crowdsourcing Playbook** for Emergency Management (Version 1)
- ★ Drafted Crowdsourcing Technical Specialist **Position Responsibilities and Training Guide**



## Activation #4 - Hurricane Michael

October 8 - 14, 2018

- 7 Coordination Calls
- 11 Crowdsourcing & Social Listening Reports
- 15 Crowdsourcing Products
- 8 Digital Volunteer Networks
- 9 Private Sector and other Partners
- \* Waze & GasBuddy integrated into FEMA GIS dashboards

# Hospital Status Map

<http://bit.ly/SBTF-hospitals>

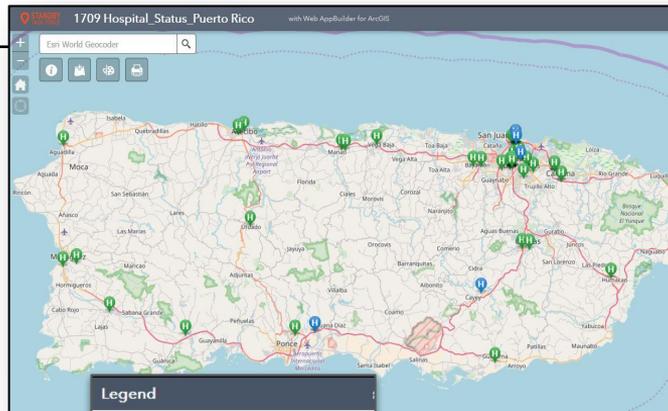


Standby Task Force (SBTF) was formed in 2010 to provide volunteer online digital responses to humanitarian crises.

**Goal: Status of 71 Hospitals in Puerto Rico**

**Outcome: In 36 hours with 55+ volunteers, SBTF updated 33 of 71 hospitals (whereas officials only had 30 of 71 hospitals) and then SBTF had 63 of 71 and 44 other health facilities using social media and other online channels to curate official and unofficial sources.**

***This was used to build hospital resupply plans, support volunteer medical groups, and prioritize resources.***



**Legend**

FEMA\_Lista de Hospitales\_status\_03Oct17 1900

- Closed
- Degraded (Generator)
- Grid Power
- Unknown

Hospital - Updated Status Information (Synthesised Report) - Incomplete

- H Open
- H Unknown

Name	Status	Status Source	Operational Notes
CENTRO MEDICO WILMA N. VAZQUEZ	Degraded (Generator)	DHS	Receiving generator; ER barely functioning; upper floors closed; Need water and food
HOSPITAL DOCTORS CENTER, MANATI	Degraded (Generator)	Team Rubicon	9x generator; need water; tetanus, antibiotics, function at or above capacity
MANATI MEDICAL CENTER DR OTERO LOPEZ	Degraded (Generator)	AFNORTH	Refrigerated truck needed, and fluids.
HOSP UNIVERSITARIO DR RAMON RUIZ ARNAU / HOSPITAL PSIQUIATRICO DE NINOS Y ADOLESCENTES	Degraded (Generator)	HHS	ASEM document notes HOSPITAL PSIQUIATRICO DE NINOS Y ADOLESCENTES is a wing within Ramon Ruiz.Fuel, food, water, staffing shortages; ED working as walk-in clinic; no clinical operations.
PUERTO RICO CHILDRENS HOSPITAL INC	Degraded (Generator)	ESF-8 LNO	FEMA scheduled delivery of new generator. Damage to 1 of 2 generators. Transferred all patients to Hermanos Menendez Hospital.

# Crowdsourcing Civil Air Patrol Imagery Analysis for Damage Assessment



<< Previous Image Submit Skip - New Image >>

## Mark the Image with Damage Assessments

FEMA: Image Analysis Training

Mark Buildings as Affected

Mark Buildings as Minor

Mark Buildings as Major

Mark Buildings as Destroyed

Remove All Marks on Image

In General, Impact is shown in Image

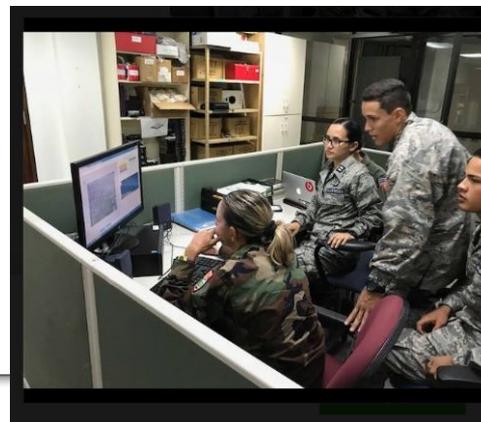
In General, No Impact in Images

### Image Info:

Event: CAP - Hurricane Irma  
Team: 17-1-5752  
Mission: A0011  
Photo Date: 2017-09-10 09:34:31  
Altitude: 491(m)



# FEMA



**Civil Air Patrol**  
Like This Page October 7

Civil Air Patrol Puerto Rico Wing members review #HurricaneMaria damage assessment photos using FEMA Federal Emergency Management Agency's crowdsourcing site, AOPA, your freedom to fly, Air Force Association, United States Air Force, Air Combat Command, Flying Magazine, General Aviation News, Plane & Pilot Magazine

Paul Wescott, Ricardo X. Torres, Herman Liboy and 283 others like this. Top Comments -

72 Shares 8 Comments

Civil Air Patrol Here's the crowdsourcing site -- <http://imageuploader.geoplatform.gov/#DamageReview>

**CAP Image Damage Assessment**

IMAGE/UPLOADER GEOPLATFORM GOV

October 7 at 5:55pm Edited

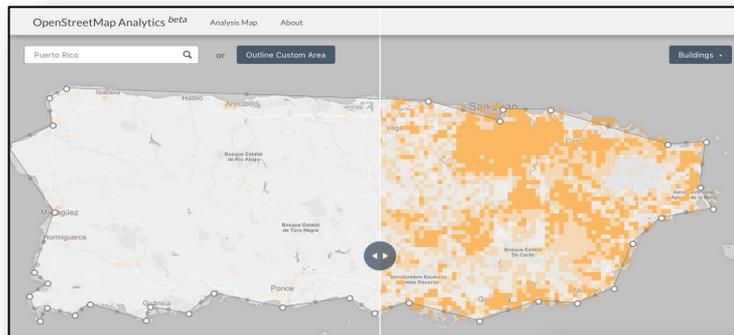
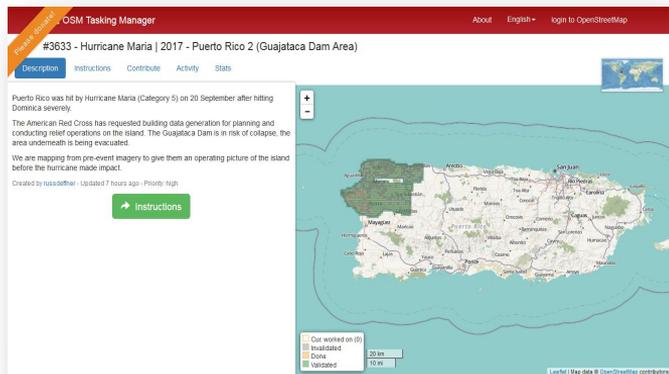
# Puerto Rico Buildings & Roads Base Map

<http://bit.ly/HOT-disasters2017>



Humanitarian  
OpenStreetMap  
Team

The Humanitarian OpenStreetMap Team (HOT) creates and provides free, up-to-date maps with the help of volunteer mappers during disasters around the world.



OpenStreetMap

Volunteers: **5,400+**, ~300 active daily  
Start & End Date: **9/23 - Ongoing**  
Buildings mapped: **1.4 million buildings**  
Roads mapped: **45,000+ km**



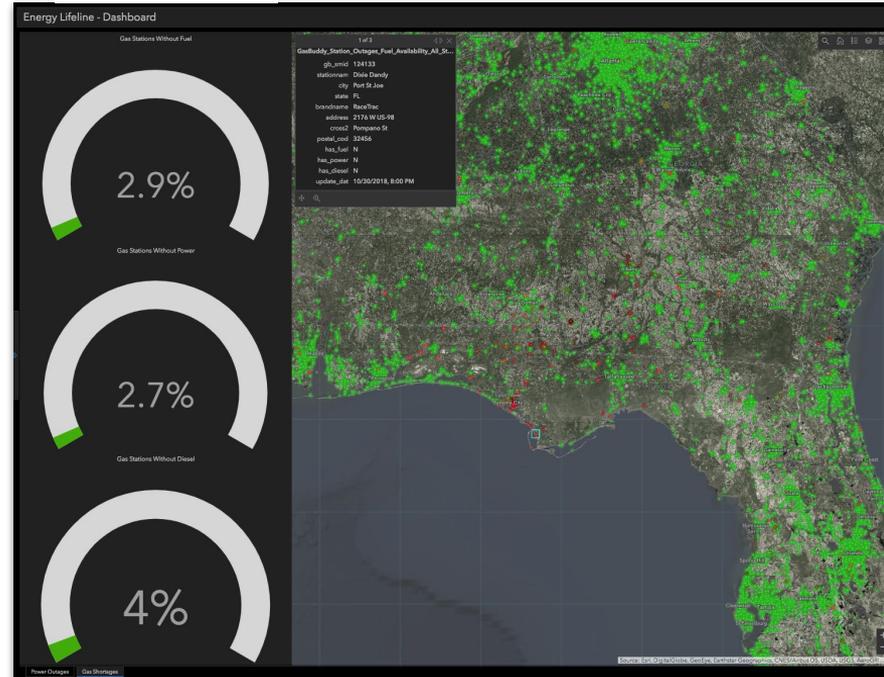
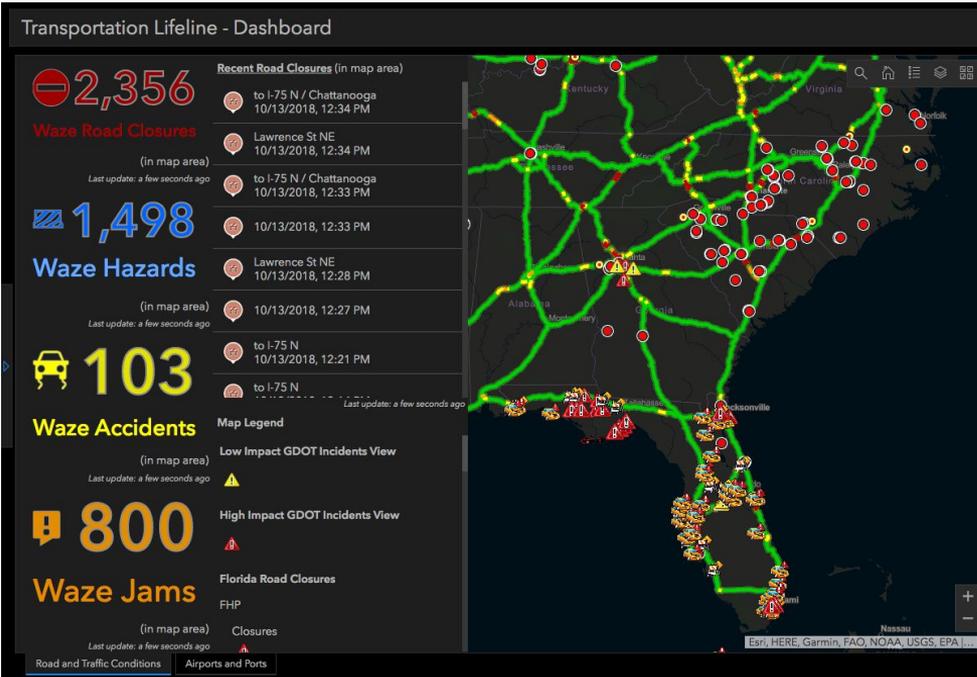
# Crowdsourced Data from Private Sector



USACE integrated Waze data into Trafficability Map

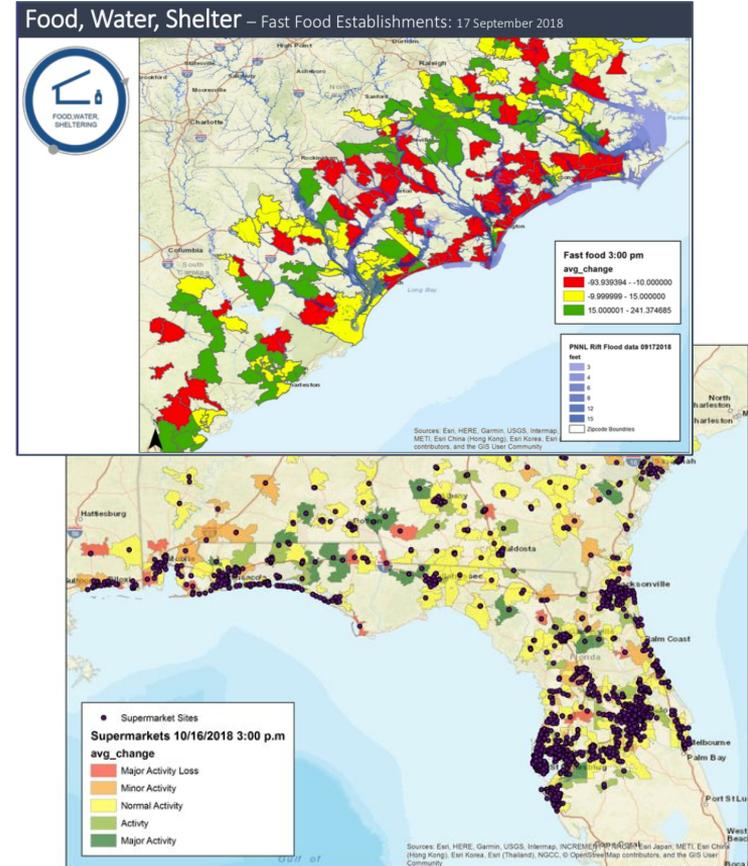
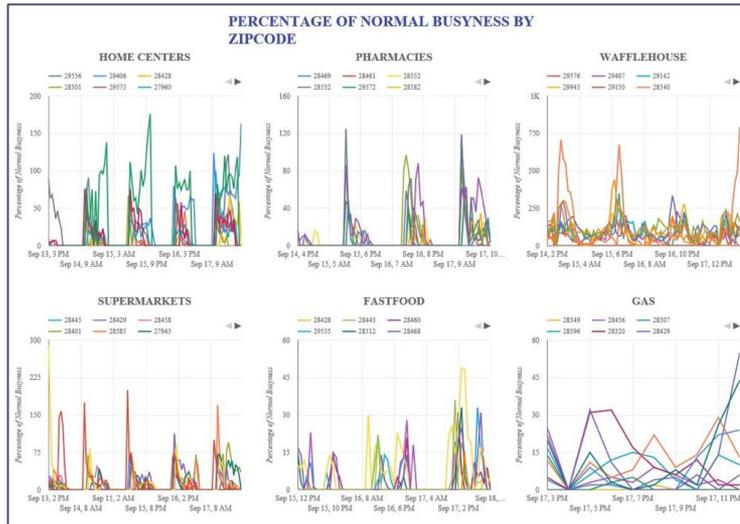
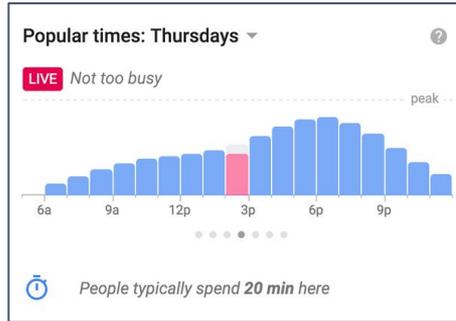
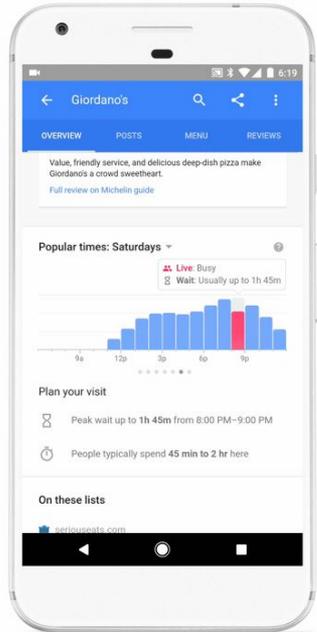


Department of Energy (DOE) integrates GasBuddy data into DOE Situation Reports

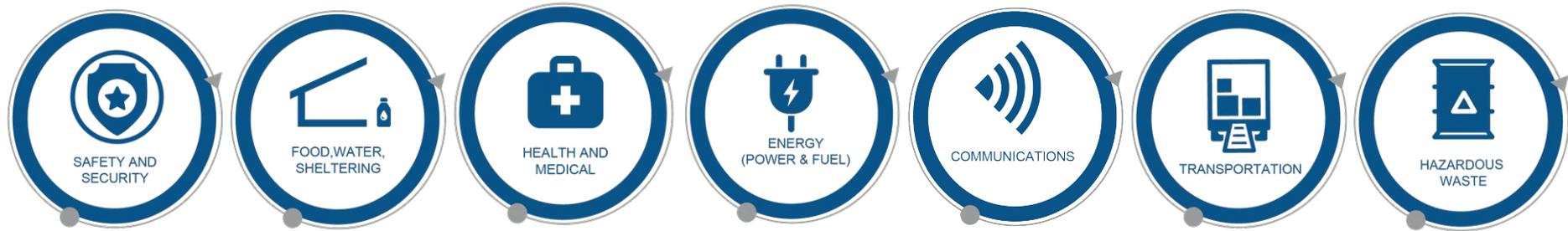


# Google Busyness Data

Impact to commerce indicating businesses that are open or closed with long or no wait times.



# FEMA's Community Lifelines



A sector that provides indispensable services that enable the continuous operation of critical business and government functions, and that would risk human health and safety or national economic security if compromised or not promptly restored

# Crowdsourcing Unit Map Journal - Hurricane Michael

<http://bit.ly/CrowdMichaelJournal>

### FEMA Crowdsourcing Unit - Hurricane Michael

- FEMA NRCC Crowdsourcing Unit
- 2018 Hurricanes Crowdsourced Photos
- CrowdSource Rescue - Requests and Offers
- NAPSG Joint SAR Activity
- CEDR Shelters Crowdsourced
- C4A MichaelResponse.org
- C4A Points of Distribution (POD)
- SBTF Medical Facility Status
- GasBuddy Fuel Availability & Station Outages
- Facebook Disaster Maps - Network Coverage
- Waze Alerts - Traffic & Road Conditions
- Crisis Cleanup - Recovery Work Orders

## CRISIS CLEANUP

Public: 800-451-1954, Extended to Nov. 2. Flyers & Info: Download.

### Visualize the Disaster in Real Time

Personal information has been hidden, and the location has been blurred to 400 meters.

The map displays the Southeastern United States, including parts of Tennessee, North Carolina, South Carolina, Georgia, Alabama, Mississippi, Louisiana, and Florida. Numerous circular markers with magnifying glasses are overlaid on the map, indicating specific locations of interest. A red tree icon is visible in the North Carolina region. A legend in the bottom left corner defines various symbols for disaster types and work order statuses.

Legend	
Muckout/Flood	Fire Damage
Tree/Wind	Ash Sifting
Tarps/Roof	Landslide
Tornado	Deferred Maint.
Debris	Other/Unknown
Mold Remed.	Rejected

Work Order Claim/Status	
Unclaimed	Assigned / Followup
Claimed by Org.	Completed
Unassigned	Out of Scope

#### Case #: Z13506

Name, Address, Phone Number are removed from the public map

Address: Carolina Avenue, Washington, North Carolina 27889

Work Type: Trees

Status: Open, unassigned

Map controls: Map, Satellite, Full Screen, Location, Zoom In, Zoom Out

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**SophiaLiu@usgs.gov**



**USGS**  
*science for a changing world*

**FEMA-Crowdsourcing@fema.dhs.gov**



**FEMA**

# Questions? Thoughts?

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# Upcoming Webinars in this Series

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- **May 14:** Challenge.gov, General Services Administration
- **June 11:** The Opportunity Project, U.S. Census Bureau
- **July 9:** Open Opportunities, Office of Personnel Management
- **August 13:** *History By the People*, Library of Congress

# Potential Connections to Other Communities



- **Accessibility:** Improve accessibility of CCS projects
- **APIs:** Making CCS data available as APIs
- **Blockchain:** Applying blockchain concept to CCS
- **Challenges & Prizes:** Incorporating prizes to CCS
- **Game Guild:** Incorporating gaming techniques
- **Gov Customer Experience:** Expanding public experience
- **MobileGov:** Creating mobile CCS projects
- **Multilingual:** Expanding CCS in other languages
- **Open Data:** Leveraging and creating open CCS data
- **OpenGov:** Leveraging open participation techniques
- **Plain Language:** Plain language to describe CCS projects
- **SocialGov:** Leveraging their shared resources
- **Video Production Pros:** Creating CCS videos
- **Virtual / Augmented Reality:** VR/AR CCS projects