Coo-Coo for CoCoRaHS: Participation in a Nationwide Meteorology Citizen Science Program

Adam M. Rainear

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Coo-Coo for CoCoRaHS

Participation in a Nationwide Meteorology Citizen Science Program

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B.S. in Meteorology
B.A. in Journalism
M.A. & Ph.D. in Communication

From Southern NJ

My “first” weather event: Hurricane Floyd

My impactful weather event: Sandy

My favorite: tropical systems and blizzards
Agenda

- Overview of Citizen Science
  + Why do we need it?
- Learning through science participation
- What is CoCoRaHS?
- My planned study
Citizen Science

6 ways to be a Citizen Scientist

- **Watch for Whales**
  
  Share your whale sightings so scientists can track their population trends.

- **Geocache for a Good Cause**
  
  Gather field notes, photos, and GPS data at bench marks for location and height data.

- **Track the Tides**
  
  Report local water levels and flood impacts to help NOAA better understand and communicate about future floods.

- **Fight Harmful Algal Blooms**
  
  Collect water quality data that helps NOAA respond to harmful algal blooms.

- **Monitor Marine Debris**
  
  Record the type and amount of debris on your beach to help scientists tackle the challenge of marine debris.

- **Be a Sanctuary Steward**
  
  Pitch in at a local marine sanctuary or estuarine research reserve.

[Oceanservice.noaa.gov/citizen-science]
Citizen Science

“A method of mobilizing and democratizing the scientific process akin to how individuals are mobilized in democratic processes”

- Irwin, Citizen Science: A study of People, Expertise, and Sustainable Development
Akin to the democratic process

Citizen science to the field of (a given) science

= 

Public engagement to the field of politics/political science

It’s our path to engagement, understanding, and literacy around a topic

(and it may be a better one than relying on news media/social media)
Scientists - Why citizen science?

- Scientists NEED large amounts of data
  - Often hard to collect
  - Or deep in the weeds and muddy
  - Or not enough collection sites
  - Disrupts “normality”
- And engagement space with the public (and not one on TikTok!)
- Often asked to act as both researcher and advocate
Public –
Why citizen science?

• The public often wants to feel involved on things
  + Become engaged in meaningful collection, projects, processes
  + More interest in exploration, knowledge, learning
  + Help to increase literacy
  + Upholds “normality”

• And engagement space with scientists (and not in a press conference, through the media, etc.)
Might be the most important factor

Participants learn best methods for “helping” the environment

Internet/smart phones afford us new opportunities (low barrier to entry, cheap)

Often can be done individually, but comes together collaboratively

Communicative component/forming a network
Participant Motivations

• What makes someone WANT to participate in a (volunteer) science project?
  + Former space (me in weather)
  + Teaching others (kids, students, etc.)
  + Boredom (hobby, something to do, something drawing you outdoors)
  + Helping the environment (cleaning, learning more, tracking, being sustainable, etc.)
  + Socialization!
  + Recognition
  + Democracy/upholding true scientific method
What makes a strong program?

- Level of participation aligns with participants daily activities
- Data collection should align with strengths in population
- Attracting participants through strong goal development (alignment)
- Social factor
- Reasonably frequency, duration
- Recognition
Merlin Example

- In 2023...eBird recognized these achievements
  + Advancing understanding of bird populations (150+ journal articles; almost 1000 total all time)
  + Able to model abundance and range maps for 2400+ species and trends for almost 900
Also forces technology development
Building connection

• Young Birders Event
• NYT Summer Birding Project
• Content partners
• International collaborations w/ other observatories
• Informal (and formal) communication with each other about science
About CoCoRaHS

- **Community Collaborative Rain, Hail, and Snow Network**
- Non-profit run through Colorado Climate Center (@ CSU)
- Began in 1998
- Volunteers in all 50 states, Canada, PR, Virgin Islands, and Bahamas
- Over 10,000 daily weather observations

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**Reports received today 3/27/2024 as of 8:25 AM EDT**

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**Reports received today 3/27/2024 as of 10:56 AM EDT**

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About CoCoRaHS

• **Community Collaborative Rain, Hail, and Snow Network**

• Local level organization is often run through a state’s climate office
  + In NJ: run through Rutgers and the NJSCO
  + They handle local communication, clarifying errors, data issues, local presentations, recognition, minor trainings, etc.

• Data is used to inform current AND future weather information

• Local participants (“observers”) report their information and it is often used by NWS
A Home Setup
Finding info as general public
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<th>Station #</th>
<th>Station Name</th>
<th>Creation Date</th>
<th>First Obs Date</th>
<th>Last Obs Date</th>
<th>Days of Activity</th>
<th>% of Days Covered by Precip Obs</th>
<th>Daily Obs Count</th>
<th>Multiday Obs Count</th>
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Observer level

Viewing Station: NJ-CN-39 : Cherry Hill Twp 1.6 WNW

Station Overview

Recent Precip Accumulations Go to Precip Summary

Today: 0.00"  
Month-To-Date: 7.78"  
Year-To-Date: 15.66"

26 of 27 days covered by obs  
77 of 87 days covered by obs

Station Activity

Period of Record
May 1, 2023 - Mar 27, 2024

Observation Counts

Daily Precip 281  
Multi-day Precip 4

Condition Monitor... 0  
Significant Weather 0

Pct of Days covered by Precip Obs  
89%

Hall 0  
Total Obs 285

Recent Precip Go to Precip Calendar

February 2024 - March 2024

Legend

No Obs  
NA  
Zero  
Trace  
0.01 - 0.09"  
0.10 - 0.24"  
0.25 - 0.99"  
1.00 - 1.99"  
2.00 - 3.99"  
4.00 - 40.00"

Station Information

Station Number: NJ-CN-39  
Station Name: Cherry Hill Twp 1.6 WNW

Creation Date: May 1, 2023  
Country: USA

State: New Jersey  
County: Camden

Longitude: -75.114338
What do I want to know?

- Do observers/participants learn from participating in CoCoRaHS?
- Do they have higher levels of science literacy/knowledge than general public?
- What are the primary motivations for participating?
- Are there communicative/social desires in participating?
- Do people care about where and how the data is used?
Motivation for Volunteering

• Motivation for Volunteering (Adapted from Alender 2016)
• Please indicate your level of agreement with the following set of statements (7-pt Likert - Strongly Disagree to Strongly Agree):
  I want to help enhance the environment.
  I want to help the community.
  I want to get outside or connect with nature.
  I want to contribute to scientific knowledge.
  I want to learn more about water quality.
  I want to do something physically active.
  I want to learn new skills or knowledge.
  I want to have fun.
  I want to help this organization do more for less money.
  I want to engage with other people.
  I want to enhance my reputation in my community.
  I want to advance my career through gained experience and networking.
Social Motives

- **Social/Communication Motivations** (Adapted from Alender 2016)
- Please indicate your level of agreement with the following set of statements (7-pt Likert ranging from Strongly Disagree to Strongly Agree):
  
  - I like learning from others with more experience than me.
  - I like sharing my experience, knowledge, and expertise with others.
  - I want to interact with like-minded people.
  - I want to spend time with family or friends.
  - I want to meet new people.
Thank you!

Questions?

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