

# CoCoRaHS QA/QC Update 2023

STEVE HILBERG  
*COCORAHS PROJECT MANAGER*

DANI TALMADGE  
*COCORAHS QC*



WERA 1012 Annual Meeting, May 16-18, 2023



# Data QA/QC

- ▶ Quality Assurance (QA)
  - ▶ The planned and systematic activities implemented in a quality system so that quality requirements for a product or service will be fulfilled.
- ▶ Quality Control (QC)
  - ▶ The observation techniques and activities used to fulfill requirements for quality.



# Quality Assurance

- ▶ Training and training materials
- ▶ Field checks on input forms
- ▶ Implement changes to forms, fields and instructions to minimize errors
- ▶ Follow-up with observers when errors are made



# Quality Assurance

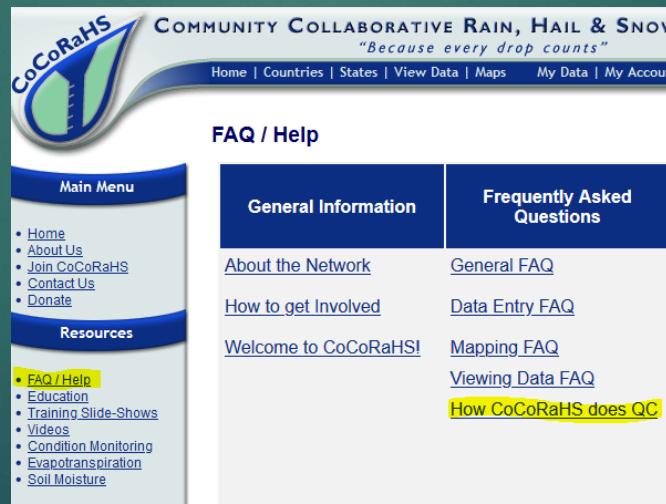
## Recent Changes

- ▶ New winter weather measurements training was introduced in the fall of 2022 to further clarify the types of winter weather measurements and how they should be reported.
- ▶ There was increased emphasis on the measurement and reporting of 24-hour Snow Water Equivalent.
  - ▶ Observations were QC'd
  - ▶ A limited number of observers, where 24-hour SWE = gauge catch, were contacted directly.
    - ▶ Asked if a core was taken and measured
    - ▶ Reminded of SWE definition (must be from core)
    - ▶ Sent links to instructional info
    - ▶ Will be increasing this effort in 2023-2024



# Overview of CoCoRaHS QA/QC

- ▶ The document "CoCoRaHS Data Quality Assurance and Quality Control" describes the automated and manual processes for QA/QC. This can be found in the FAQ/Help section of the web site. It also describes the quality controls checks by NCEI for GHCN-D precipitation data.



The screenshot shows the CoCoRaHS website's FAQ/Help page. The header features the CoCoRaHS logo and the tagline "Because every drop counts". The navigation bar includes links for Home, Countries, States, View Data, Maps, My Data, and My Account. The main content area is titled "FAQ / Help" and contains two columns: "General Information" and "Frequently Asked Questions". Under "General Information", links include About the Network, How to get Involved, Welcome to CoCoRaHS!, and a yellow-highlighted "FAQ / Help". Under "Frequently Asked Questions", links include General FAQ, Data Entry FAQ, Mapping FAQ, Viewing Data FAQ, and a yellow-highlighted "How CoCoRaHS does QC".



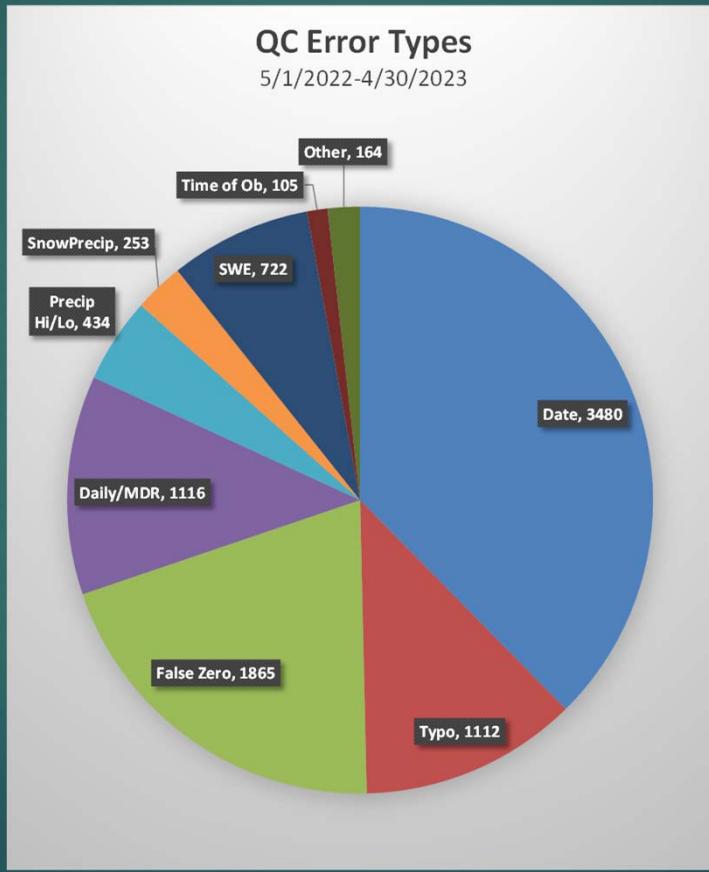
# Data Quality Control

## Big Issues

- ▶ 24-hour SWE errors
- ▶ Date errors
  - ▶ This is a regular occurrence with “collective” observations, i.e. observations that are called in or emailed to a central office, then input to CoCoRaHS.
    - ▶ Examples – FSA, SWCD, etc.
  - ▶ Often the contact person is not the observer. Observers have no real connection to CoCoRaHS
    - ▶ Not listed as the observer
    - ▶ Does not receive CoCoRaHS email, etc.



# Data Quality Control



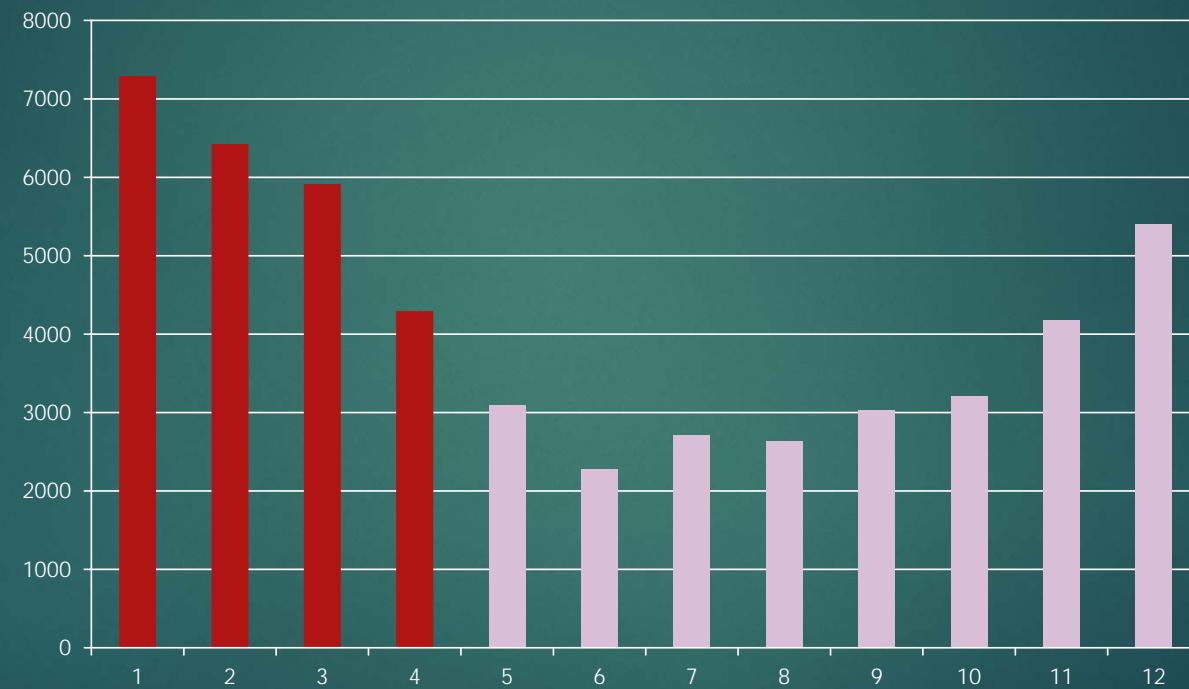
# Data Quality Control

- ▶ Date errors are common
  - ▶ Wrong date
  - ▶ Transposed reports
- ▶ Many False Zeroes relate to date errors and multi-day reports
- ▶ Multi-day totals entered as a daily report - still too many
- ▶ Many time of ob errors are likely undetected and underreported





## QC Tickets by Month 2015-2023



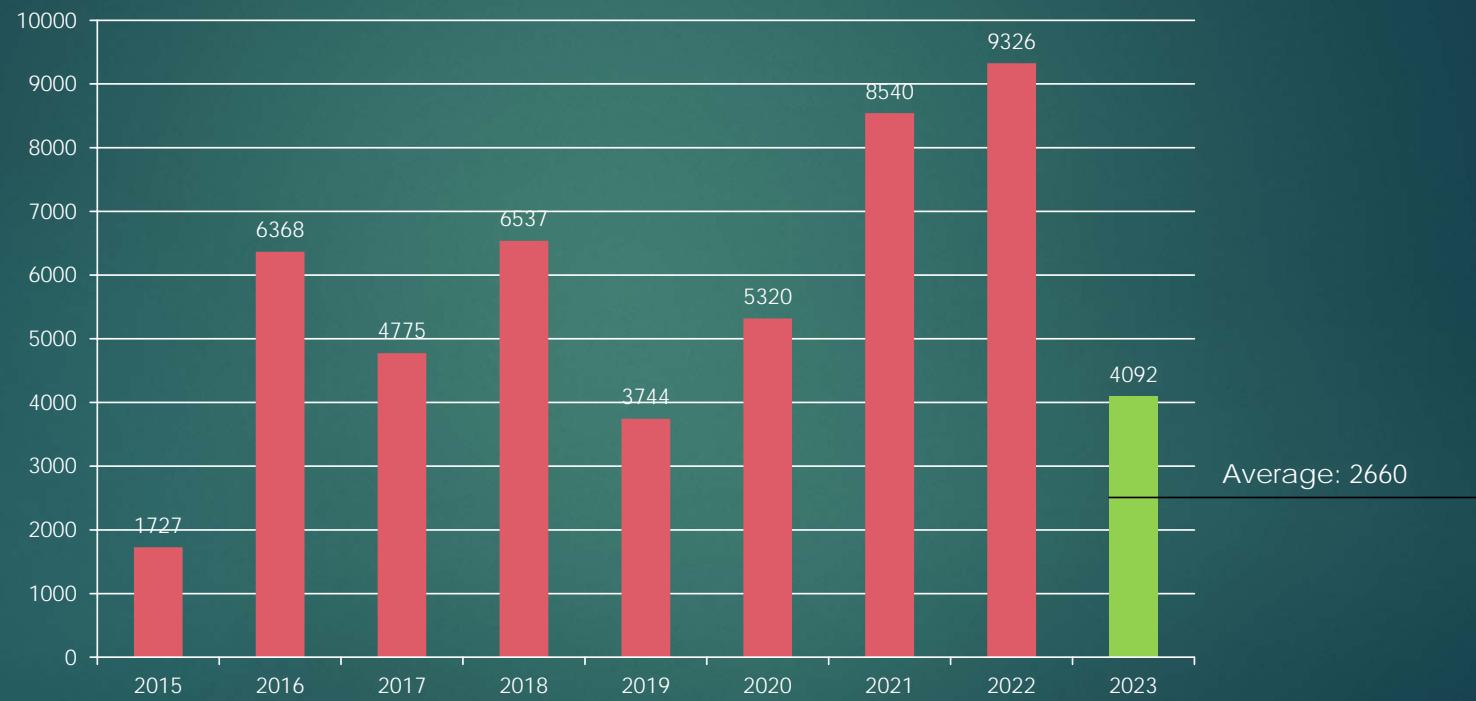
## QC Ticket Total

May through April



## Annual QC Tickets

2015-2023



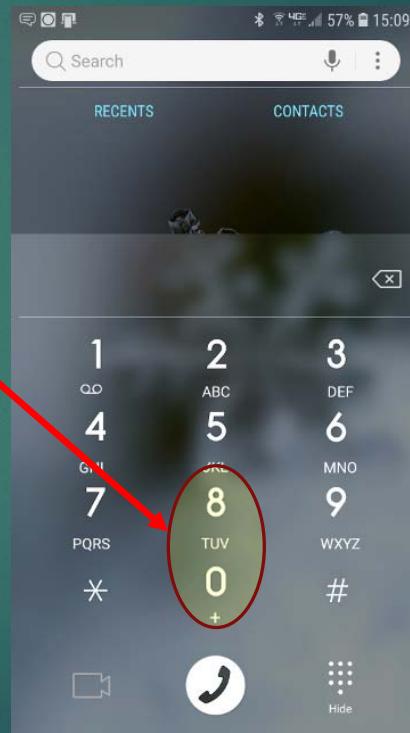
# QA/QC Challenges

- ▶ Keeping up – more observations = more potential errors
- ▶ The mobile app
  - ▶ Observer exposure to CoCoRaHS is limited to entering and editing precipitation observations
  - ▶ Observers will restore erroneous values thinking they forgot to enter something because they don't readily see their notes (where we indicate the error).
  - ▶ "New" types of errors, e.g. "crazy eights"



# The “Crazy Eights” Error

- ▶ Specific to the mobile app
- ▶ 0.08, and less frequently 0.80 or 8.00, in a field of zeros on the map
- ▶ This results from a "fat finger" entry using the mobile app
- ▶ Treated the same as typo error. Ob is corrected when obvious and observer notified



# QA/QC Challenges

- ▶ Enlisting coordinators to consistently help with QC
- ▶ Getting observers to respond to questions about their observations so they can be corrected or verified
- ▶ Designing and implementing input form QC checks that prevent errors without degrading the user experience on the web and mobile app
- ▶ Improving training materials (and delivery) to address the major sources of error
- ▶ Re-design the QCTS so it is easier to use and integrated with the CoCoRaHS database (in the planning stages)



Thank you!

