

CoCoRaHS QA/QC Update 2023

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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

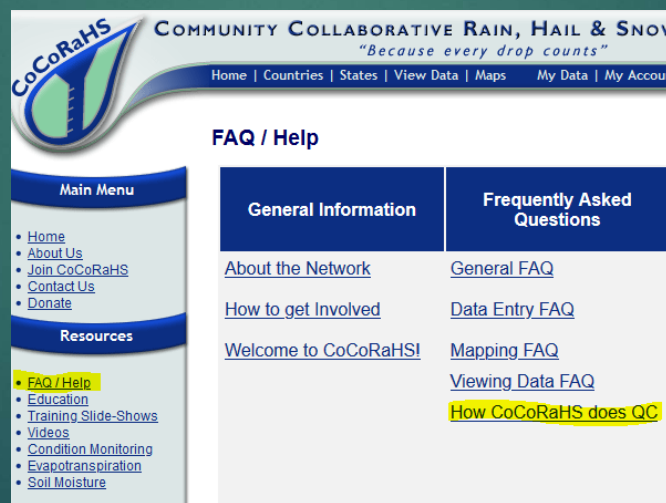
Recent Changes

- ▶ 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.



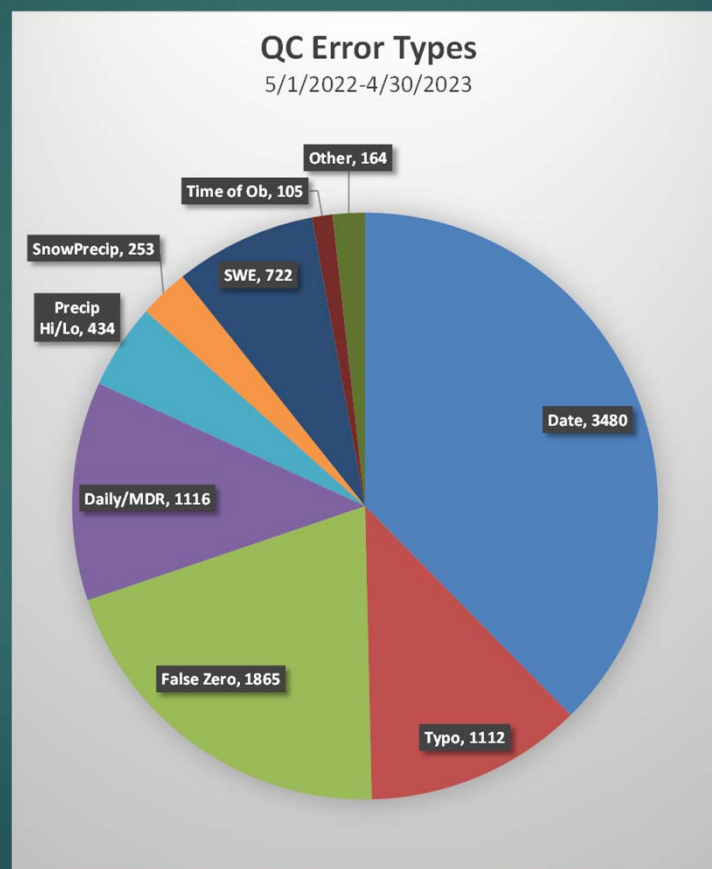
Data Quality Control

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

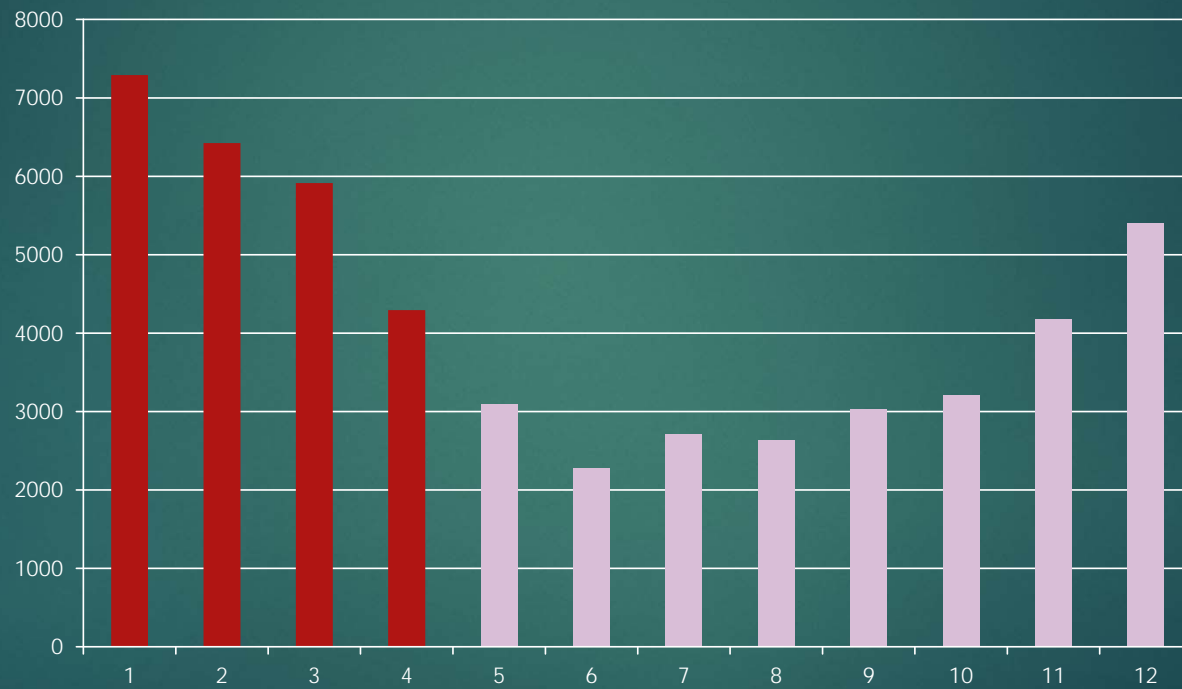


Data Quality Control

- ▶ 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

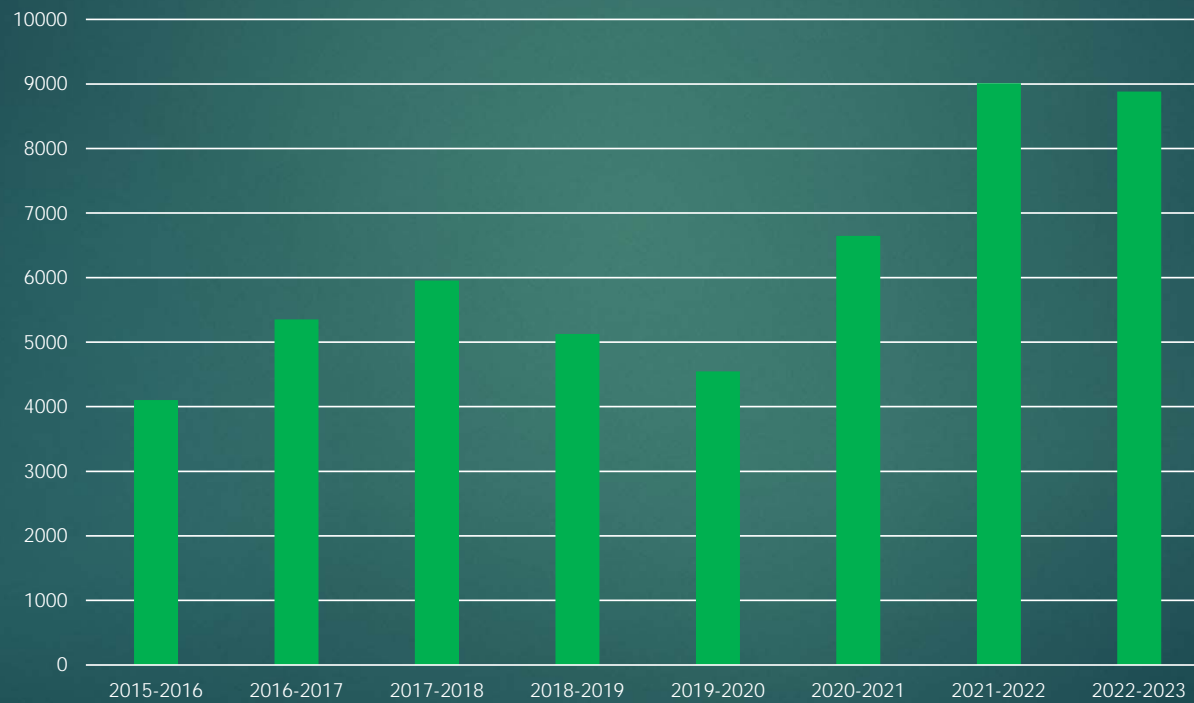


QC Tickets by Month 2015-2023



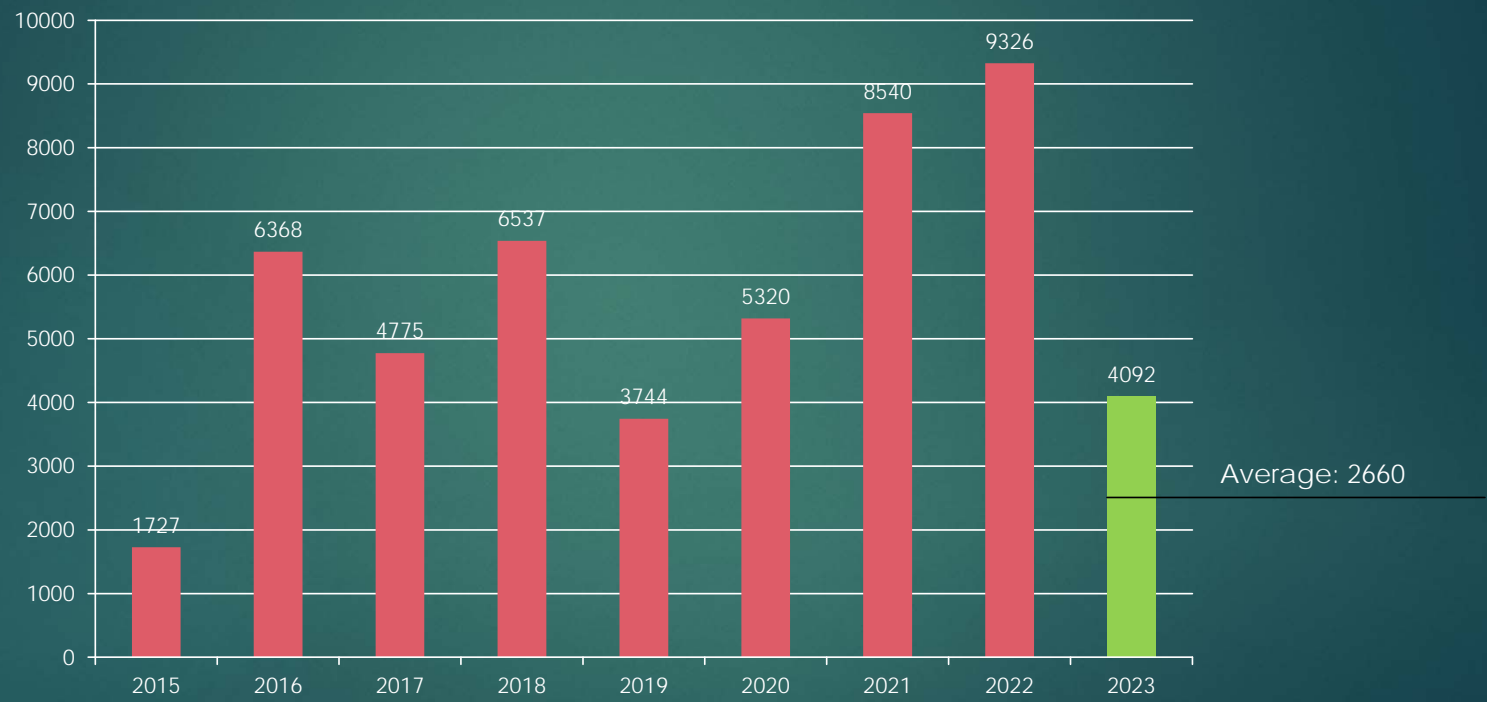
QC Ticket Total

May through April



Annual QC Tickets

2015-2023



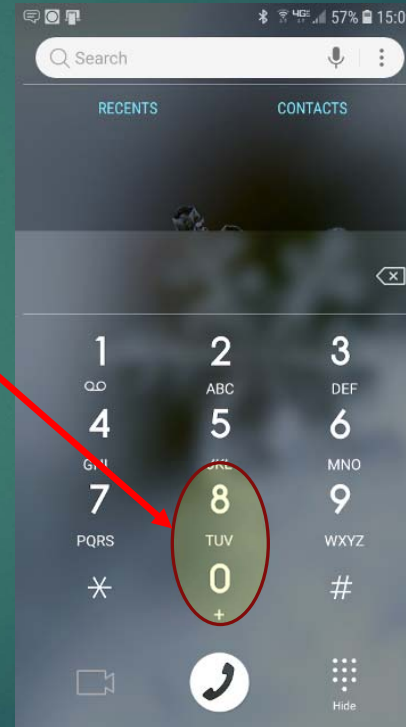
QA/QC Challenges

- ▶ 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!

