

CoCoRaHS QA/QC Update 2024

STEVE HILBERG
COCORAHS PROJECT MANAGER

DANI TALMADGE
COCORAHS QC

WERA 1012 Annual Meeting, June 10-11, 2024



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
 - ▶ Training aids (one pagers) are available
 - ▶ Submitting multi-day reports
 - ▶ Snow data entry
 - ▶ Significant Weather Reports



Quality Assurance

Frequent Ticket Report

- ▶ Implemented “frequent offender” report to provide a “heads up” to state and regional coordinators
- ▶ Any station with five or more QC tickets in a three-month period is listed
- ▶ Report is generated each month
- ▶ Monitor future observations and possible QC tickets



Quality Assurance

The Data Correction Form

- ▶ Implemented with the Data Explorer to provide observers with a means to request corrections to data

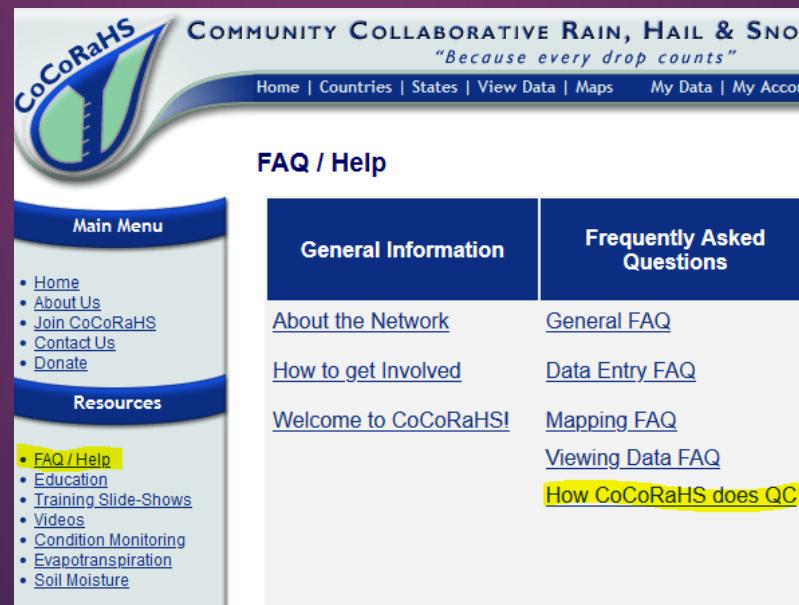
Please use the [data correction form](#) if you have a data correction that cannot be made by editing an existing report.

- ▶ Has been used to request corrections to everything from lat/lon to daily/multi-day observations
- ▶ Accessed from “My Account” page
- ▶ About 300 correction requests have been submitted since September 2023



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 with a red header bar. The main content area has a white background. At the top, there is a logo for "Community Collaborative Rain, Hail & Snow" with the tagline "Because every drop counts". Below the logo, there is a navigation bar with links: Home, Countries, States, View Data, Maps, My Data, and My Account. On the left, there is a sidebar with a "Main Menu" and "Resources". The "Main Menu" includes links to Home, About Us, Join CoCoRaHS, Contact Us, and Donate. The "Resources" section includes links to FAQ/Help, Education, Training Slide-Shows, Videos, Condition Monitoring, Evapotranspiration, and Soil Moisture. The main content area is titled "FAQ / Help" and contains two columns: "General Information" and "Frequently Asked Questions". Under "General Information", there are links to About the Network, How to get Involved, and Welcome to CoCoRaHS!. Under "Frequently Asked Questions", there are links to General FAQ, Data Entry FAQ, Mapping FAQ, Viewing Data FAQ, and How CoCoRaHS does QC. The "How CoCoRaHS does QC" link is highlighted with a yellow box.



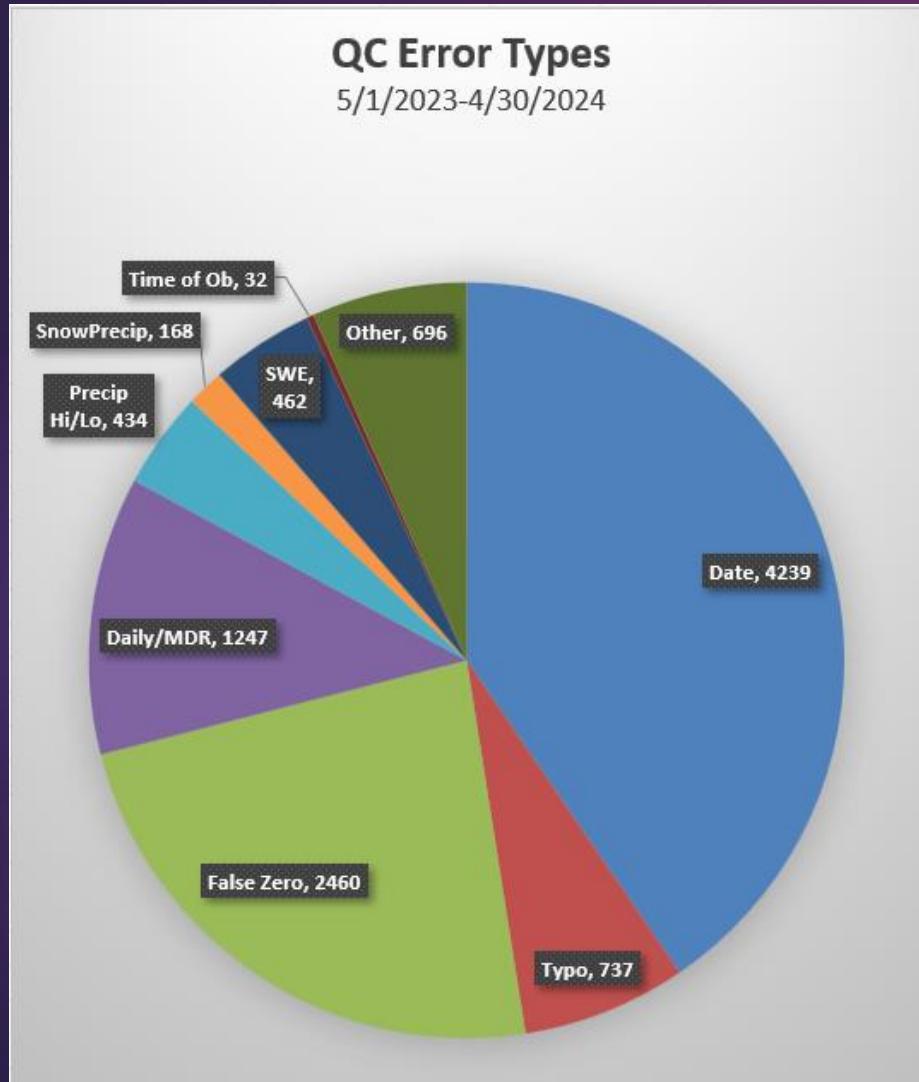
Data Quality Control

Big Issues

- ▶ 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



Change from 2022-2023

Error Type	Change
Date	+22%
Typo	-34%
False Zero	+32%
Multi-day/Daily	+12%
Precip Hi/LO	0%
SnowPrecip	-34%
SWE	-36%
Time of Ob	-70%
TOTAL TICKETS	13%

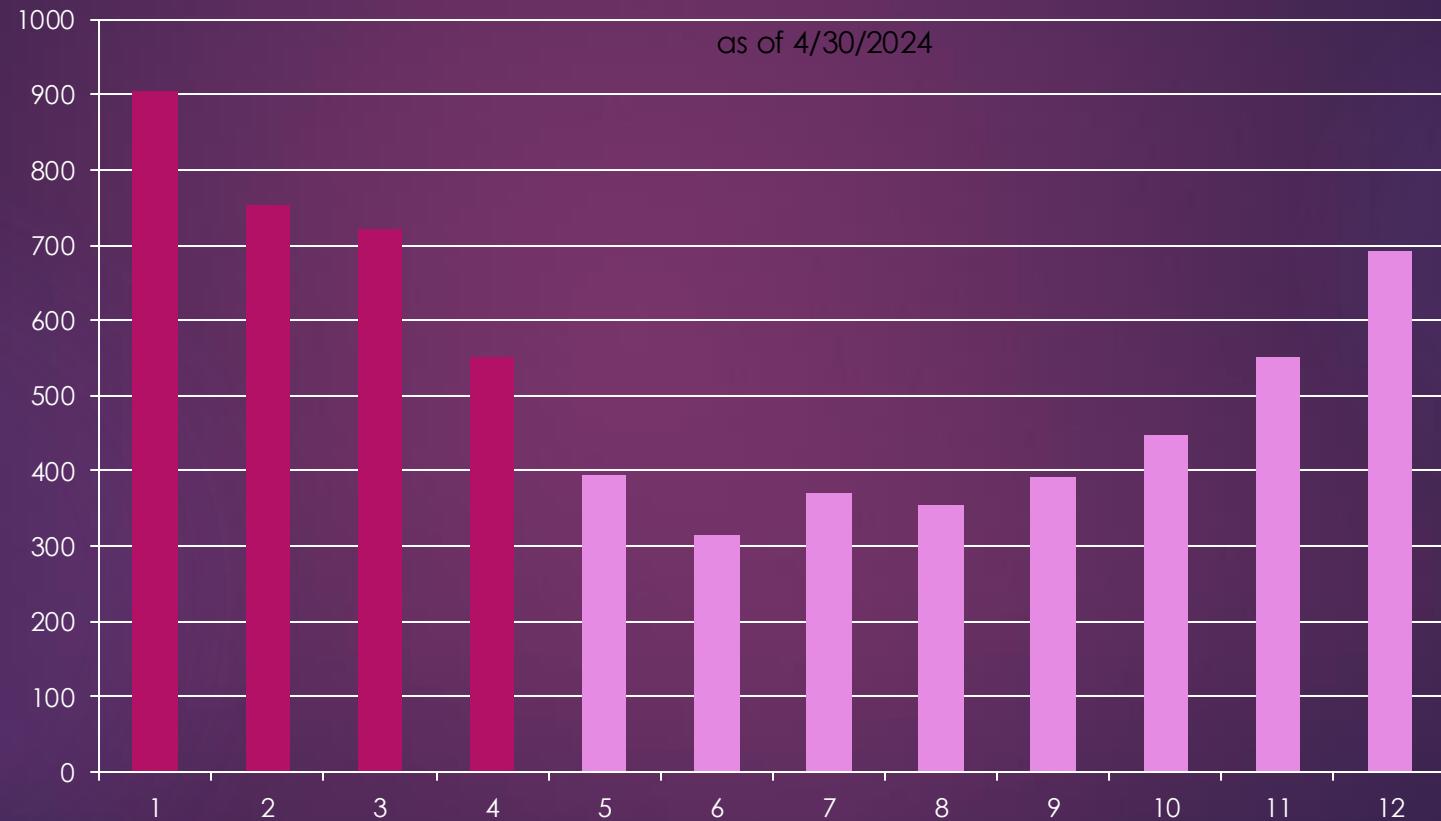


Data Quality Control

- ▶ 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
 - ▶ Hard to say if Multi-Day button has made a difference
- ▶ Many time of ob errors are likely undetected and underreported

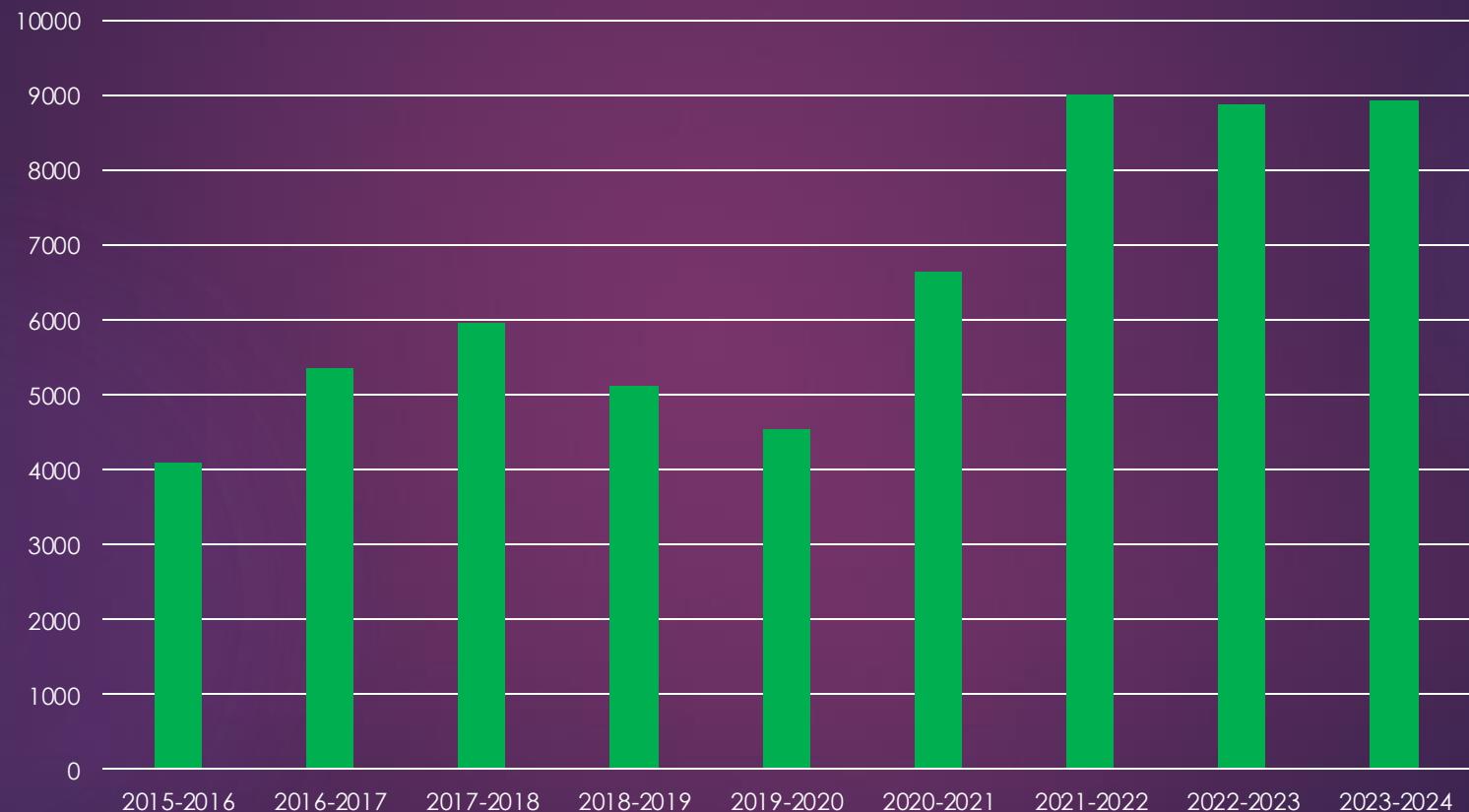


Average QC Tickets by Month 2015-2024



QC Ticket Total

May through April



Annual QC Tickets

2015-2024



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 (but not for long)
 - ▶ Observers will restore erroneous values thinking they forgot to enter something because they don't readily see their notes (where we indicate the error)



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
 - ▶ Update of online training in progress
- ▶ Re-design the QCTS so it is easier to use and integrated with the CoCoRaHS database (in the planning stages)
- ▶ More webinars for coordinators on QC
 - ▶ Specifically, how we determine if an observation is an error – the process



...and the next Potential Challenge

Snow Fields — Set Snow fields to zero



A New Version of CECA

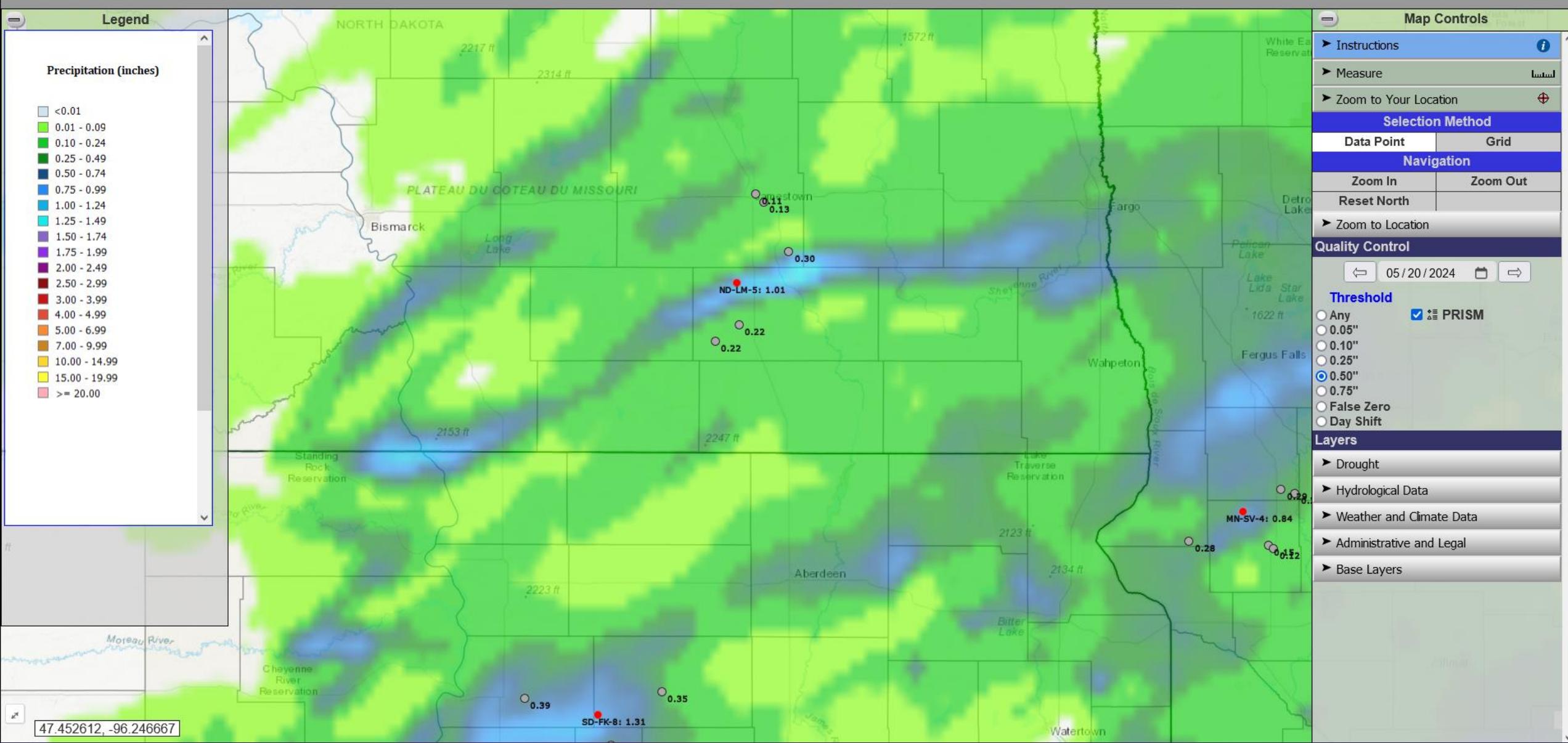
CoCoRaHS Error Checking Assistant

- ▶ Developed by Tony Bergantino, Wyoming State Coordinator
- ▶ New version, currently in “pre-alpha” is map based
- ▶ New, faster server in place and files are being migrated
- ▶ A PRISM precip layer will be available for past data





Water Resources Data System & State Climate Office



Thank you!

