

# CoCoRaHS QA/QC Update 2024

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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
  - ▶ 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

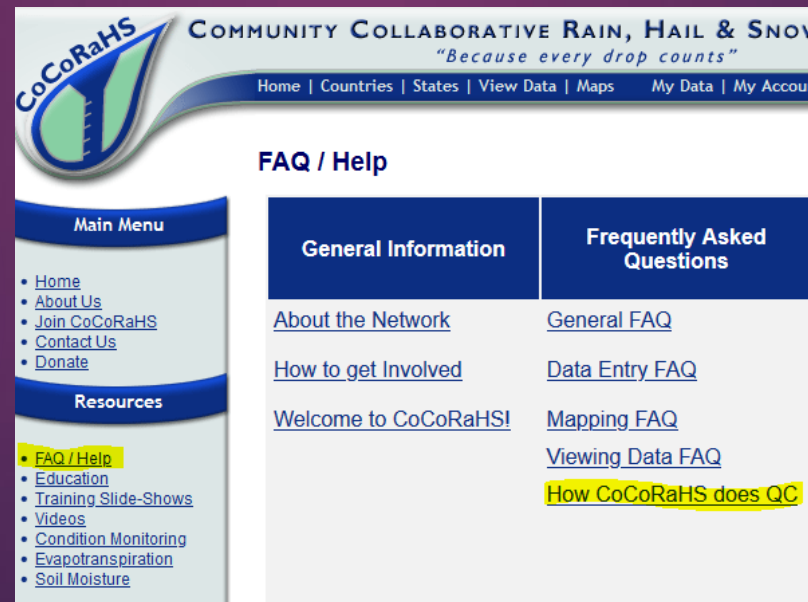
Please use the [data correction form](#) if you have a data correction that cannot be made by editing an existing report.

- ▶ 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.



# 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.

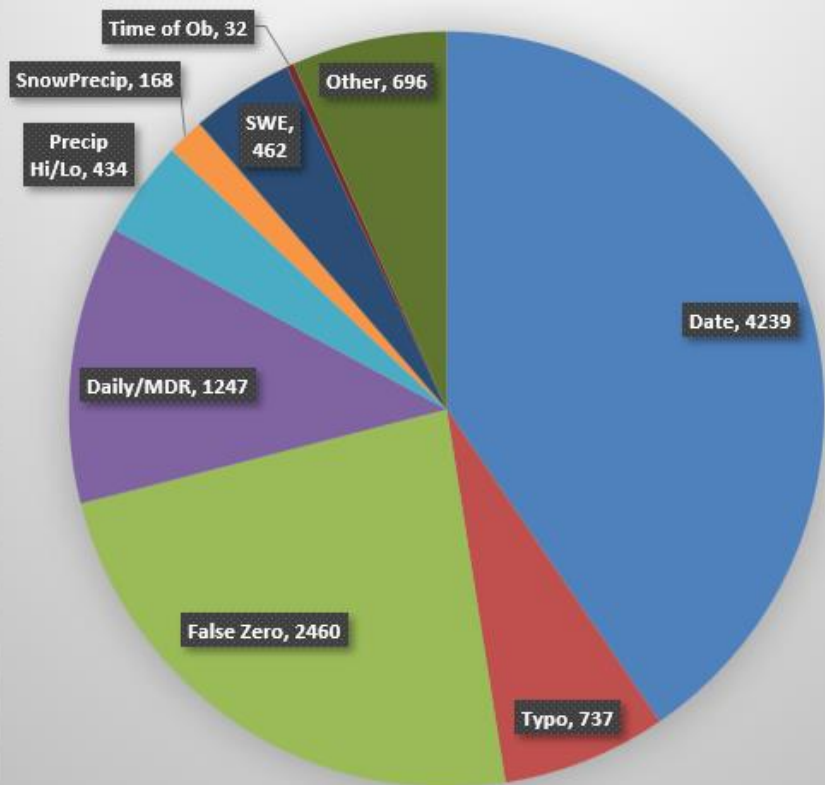




# Data Quality Control

## QC Error Types

5/1/2023-4/30/2024



## 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%

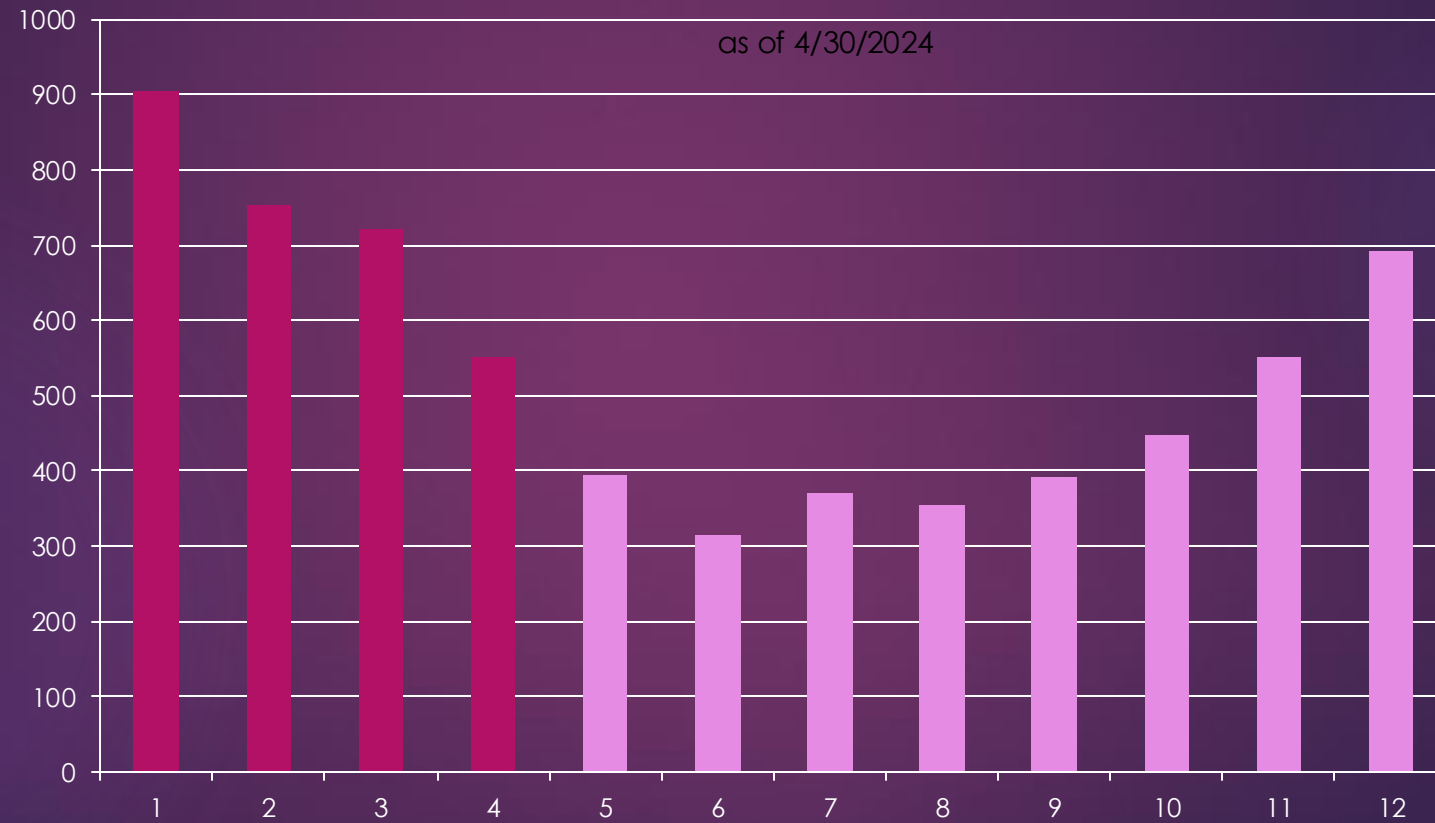


# Data Quality Control

- ▶ 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

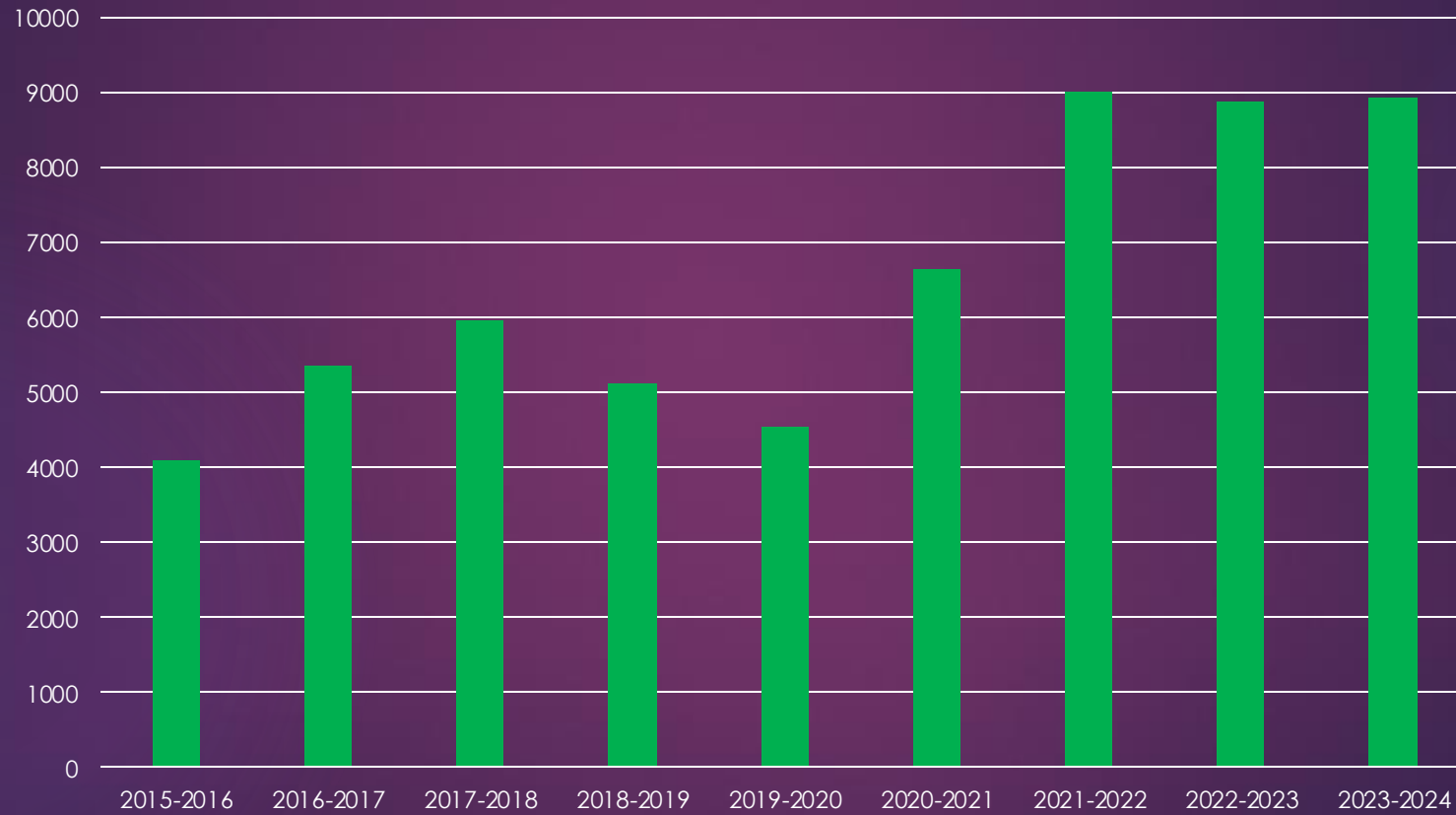


## Average QC Tickets by Month 2015-2024



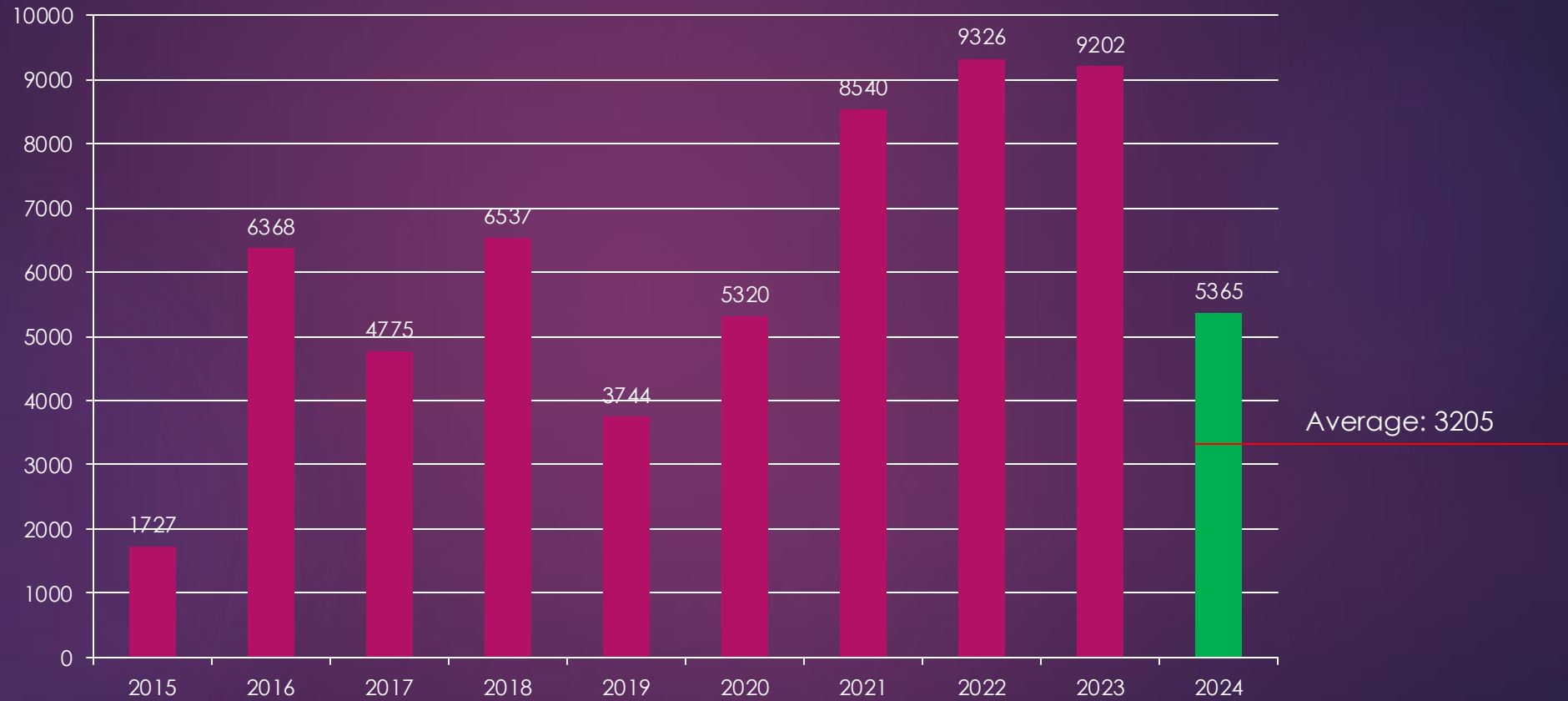
# QC Ticket Total

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

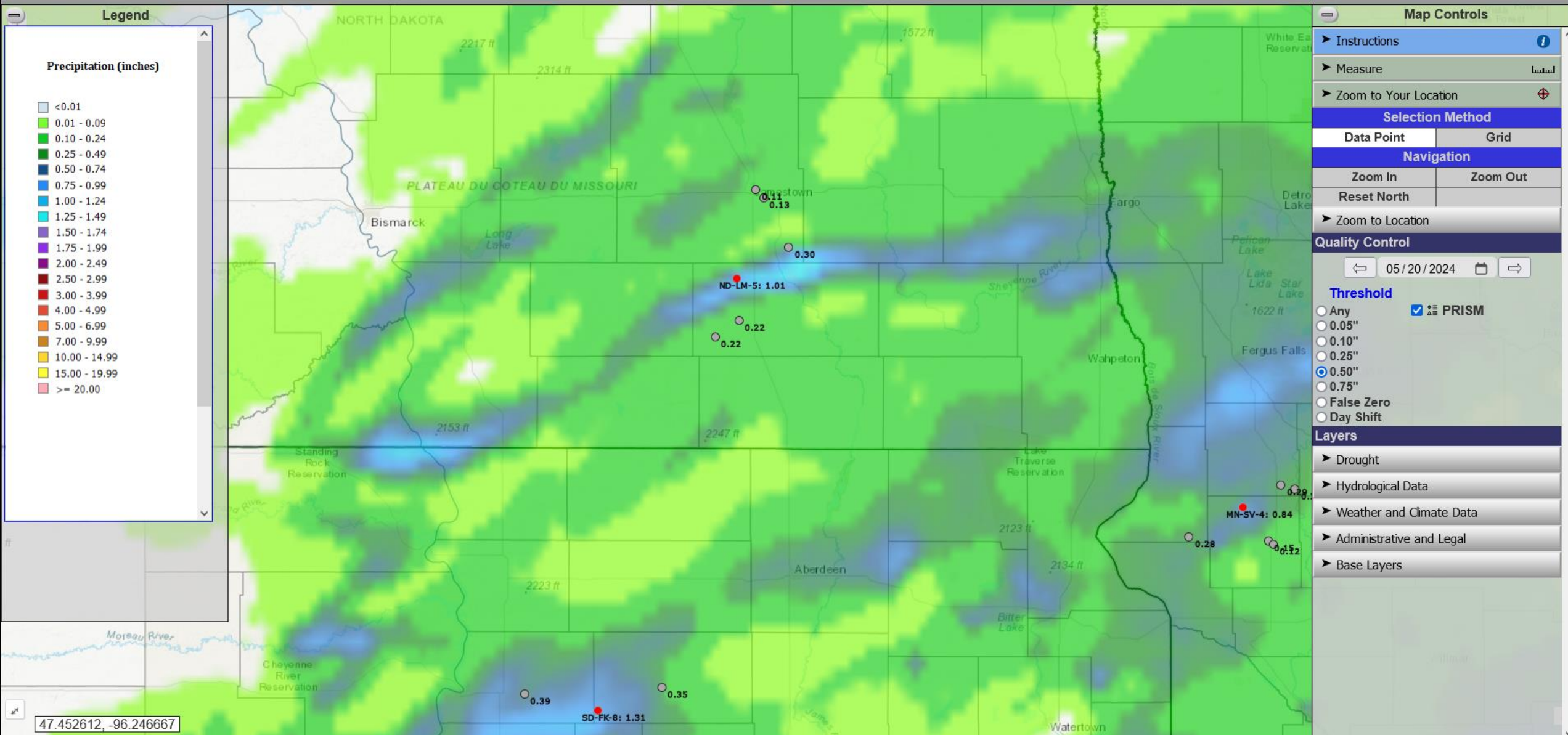




# Water Resources Data System & State Climate Office



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Thank you!

