



Tools for Automated Data Analysis (TADA)

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Water Data Integration Branch

EPA Office of Water

TADA Team

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TADA Working Group (~100 volunteers)

Outline

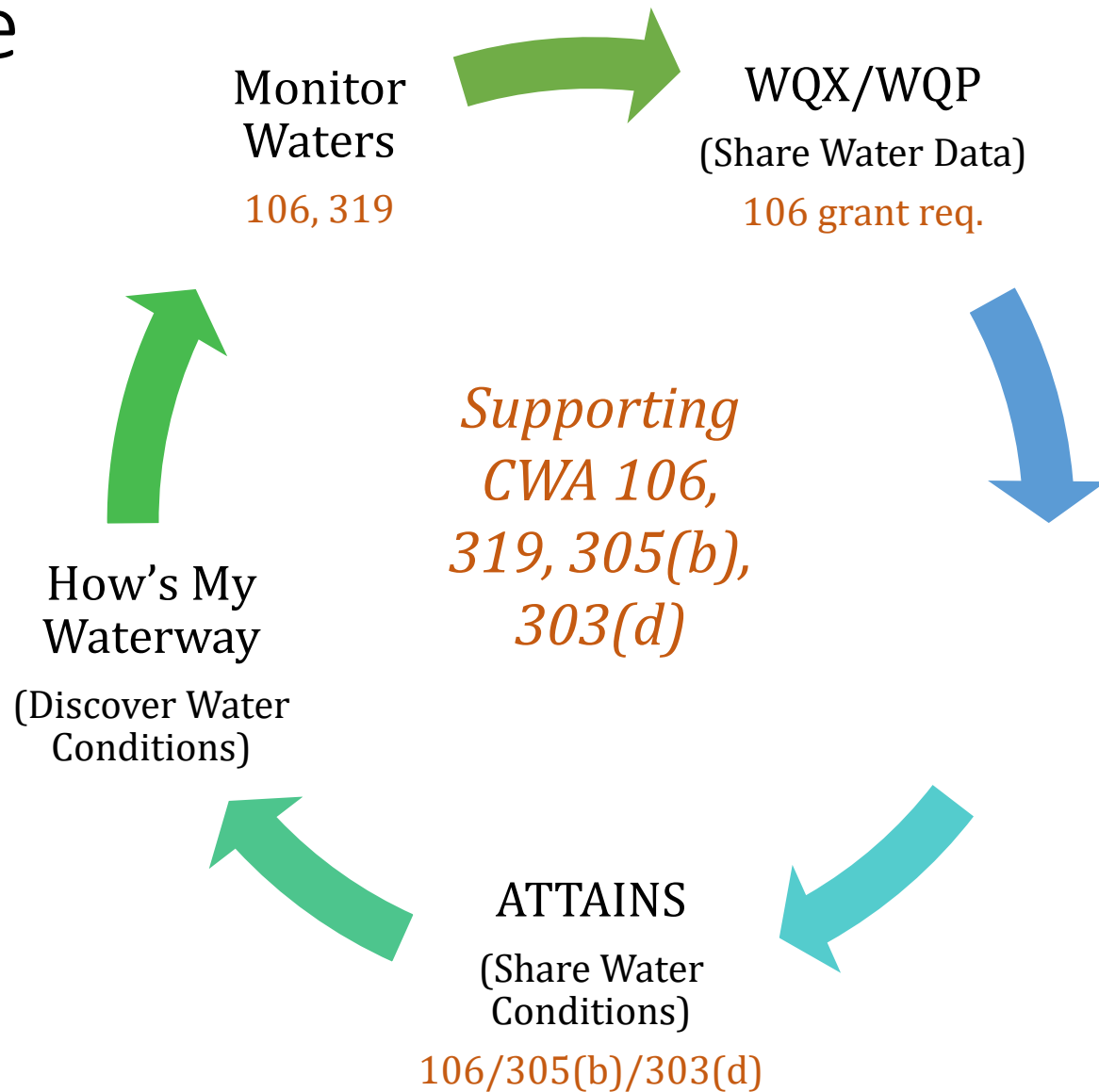
- Presentation (~15 min)
 - Need for tools
 - TADA overview
 - Module 1
 - Vision
- Hands-on/Q&A (~75 min)



EPA Water Data Integration Branch (WDIB) Products Supporting the Clean Water Act

Internet of Water Principles (Data Standards and Interoperability)

- Water Quality Data (WQX/WQP)
- Hydrography (NHDPlus)
- Assessment Decisions (ATTAINS)



Reusable 

Interoperable 

Accessible 

Findable 

"Serves as a hub for an open-source water quality community"

- **Working Group Mission Statement:** To share and develop **R code** for evaluating and visualizing **WQP** data more efficiently through collaboration and open-source programming. This includes working together to find commonalities in assessment processes across the nation, creating flexible tools that can be easily customized to work within existing workflows, supporting each other in learning R, and ensuring products will be accessible to organizations most in need.



Broader Impacts

Centralized tools (like TADA and HMW) have potential to greatly reduce total government costs

- State and tribal agencies
- EPA regions
- EPA HQ
- USGS, other federal agencies
- Applicable even beyond water

Improving data equity

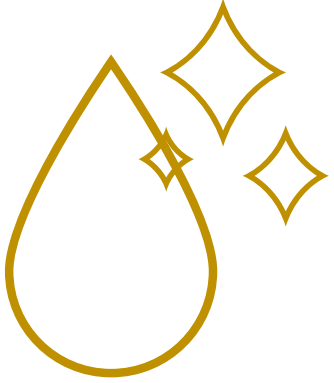
- TADA makes the WQX QAQC service available on the WQP side
- Organizations can use TADA to help find and address data quality issues and then fix them in WQX/WQP

Well received by enthusiastic, engaged user community (open source/collaborative effort from start = more use product)

More efficient assessments may lead to more entities reporting on time, or more waters being assessed!

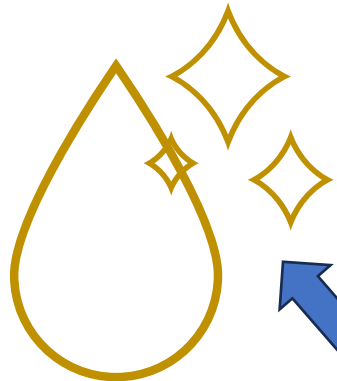
TADA Vision

QC'd data

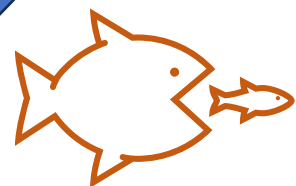


TADA Vision

QC'd data



Assign beneficial uses

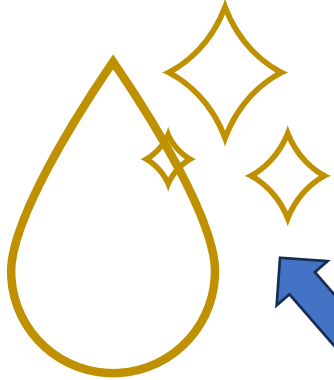


Assessment unit overlay with monitoring locations

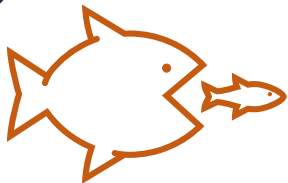
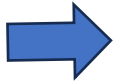
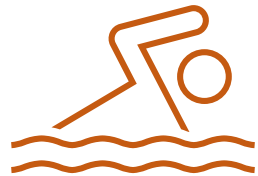


TADA Vision

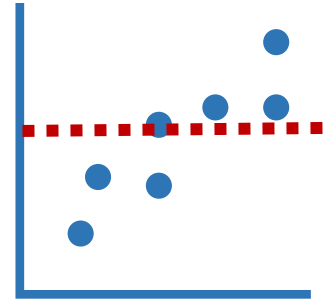
QC'd data



Assign beneficial uses



Assessment unit overlay with monitoring locations



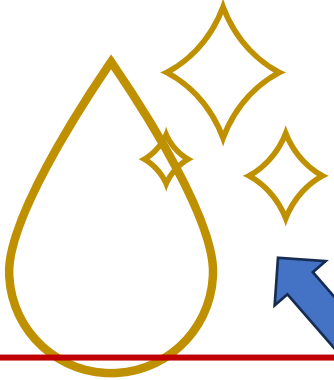
Beneficial uses determine numeric criteria used

Assessment methods guide impairment decisions based on:

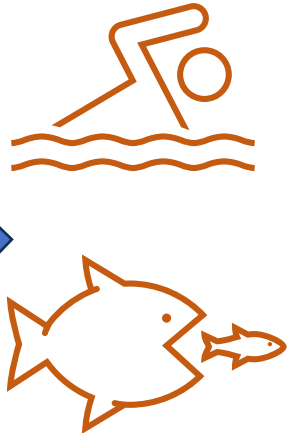
- Period of record
- Aggregated measurements
- Frequency
- Duration
- Magnitude
- Season
- Correction factors
- Covariates
- Site-specific criteria

TADA Vision - Modules

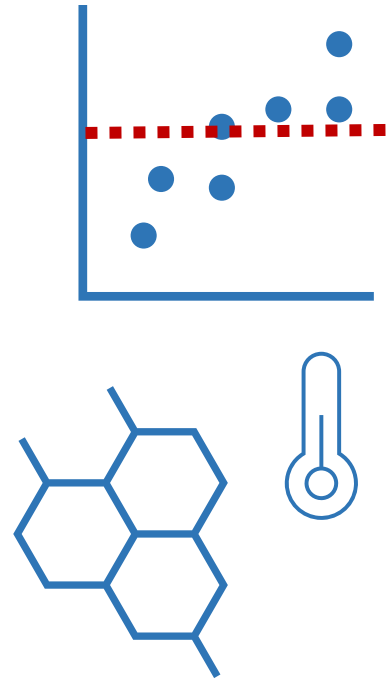
QC'd data



Assign beneficial uses



Assessment unit overlay with monitoring locations

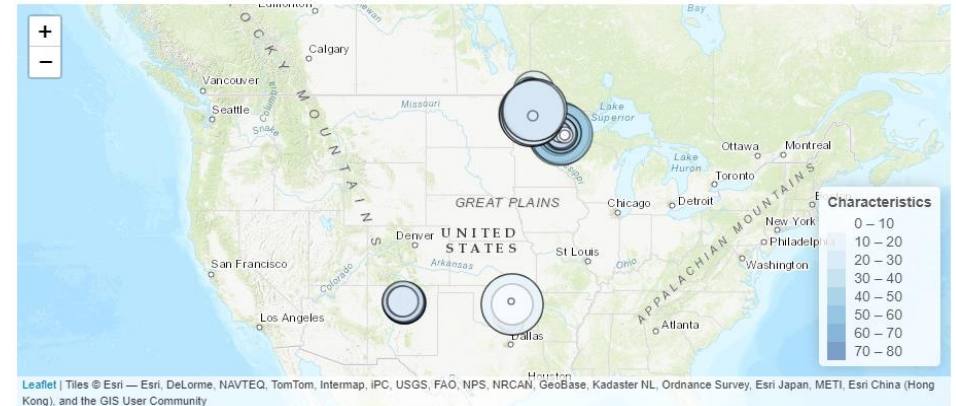


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TADA Vision - Modules



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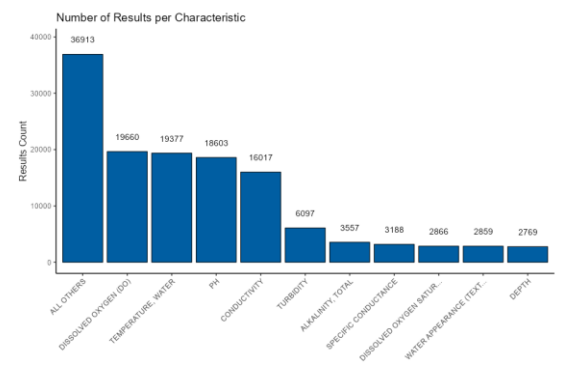
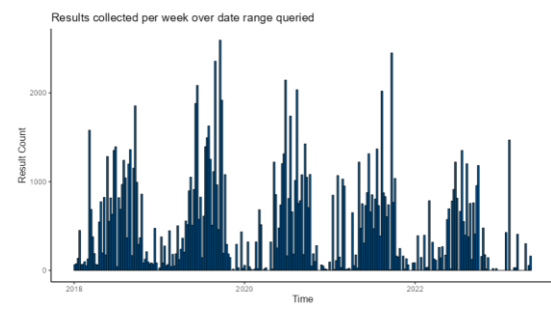
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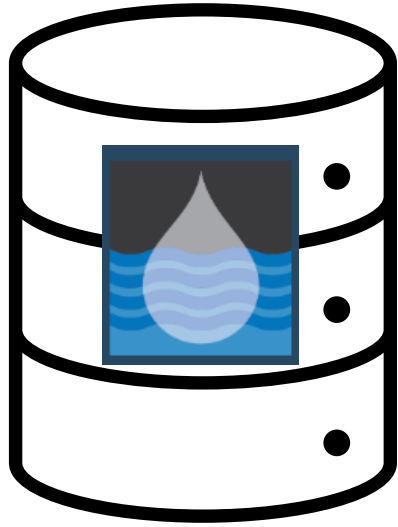
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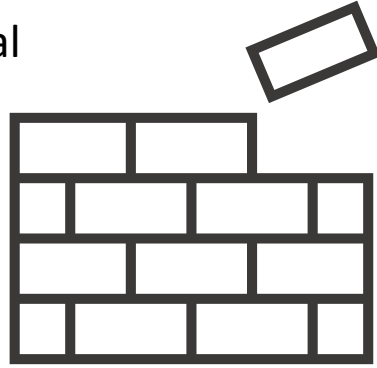
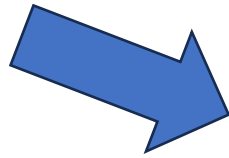
Visualization/
Review,
Exploration,
Customization



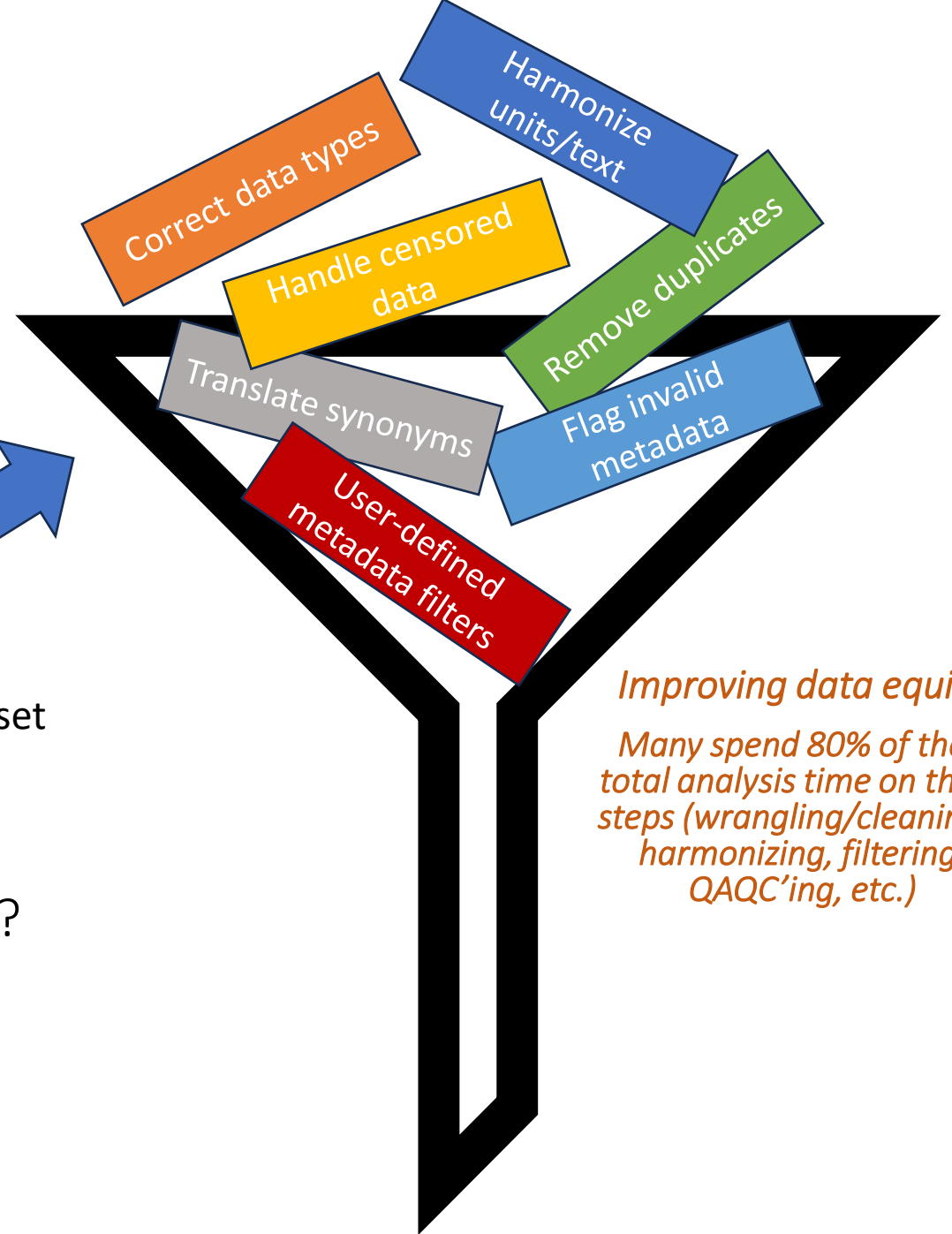
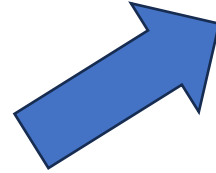
Module 1



USGS's
dataRetrieval
functions



Constructing a unified dataset
containing key metadata

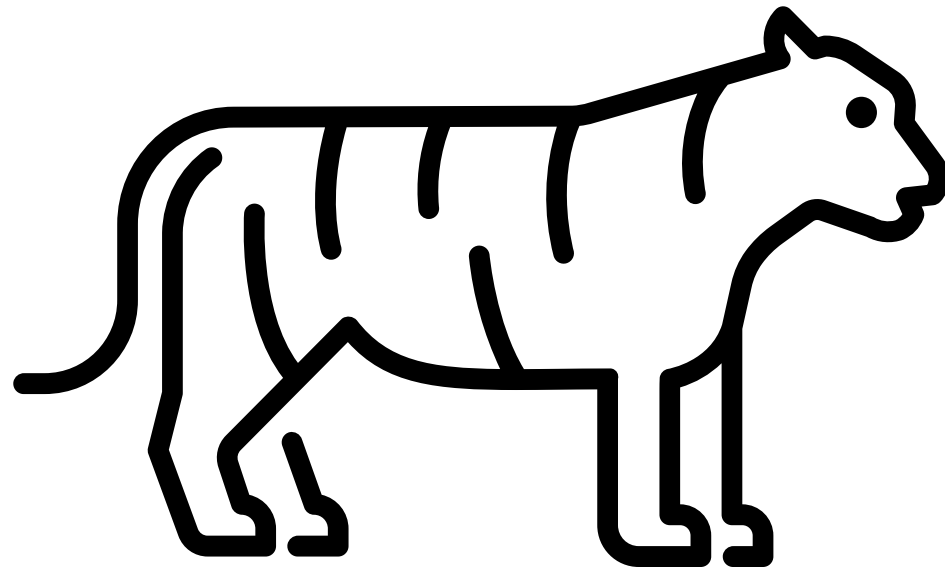


Improving data equity
Many spend 80% of their total analysis time on these steps (wrangling/cleaning – harmonizing, filtering, QAQC'ing, etc.)

Are the data of sufficient quality for my analysis?

What harmonization and formatting steps are needed to use the data?

Hands-on/Q&A time



Hands-on/Q&A time

Helpful Links

- EPA TADA Website: <https://www.epa.gov/waterdata/TADA>
- TADA R package GitHub: <https://github.com/USEPA/TADA>
- TADA Shiny GitHub: <https://github.com/USEPA/TADAShiny>
- TADA GitHub Reference/Vignette Page: <https://usepa.github.io/TADA/>
- RShiny Resources: [https://nalms.shinyapps.io/Shiny for Water Resources/](https://nalms.shinyapps.io/Shiny%20for%20Water%20Resources/)

FOR TODAY'S TRAINING:

- Vignette:
<https://usepa.github.io/TADA/articles/TADATrainingShepherdstown.html>
- Bug Form: <https://forms.gle/PoTCXEeVAaTnEgLS6>
- Feedback Form: <https://forms.gle/MACieQUCqsqywMLY7>

Thank you!

Please fill out the feedback form
located here:

[https://forms.gle/MAcieQUCqsqyw
MLY7](https://forms.gle/MAcieQUCqsqywMLY7)

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