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STORET User Call Minutes
April 27, 2017
12:00 Noon – 1:00 PM EST

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Presenters

Name	Organization
Dwane Young	USEPA OWOW
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Agenda Topics

Introduction
- On the last call, we demoed the data retrieval package using the R interface. The retrieval package is used heavily in the Data Discovery Tool.
  - USGS continues to update it and will be demonstrating it today.
- Due to technical difficulties, the meeting started about 15minutes late

Data Retrieval Package
- Laura demonstrated R-Studio, an environment you can run the R language in. It is a popular environment.
- dataRetrieval is an R Package that is available on CRAN.
  - If you are not an R user, you will need to download R
  - https://owi.usgs.gov/R/dataRetrieval.html#1 is a good place for documentation and a 1hr long tutorial about using the package.
- How do I install dataRetrieval?
  - You can install the repository using install.packages("dataRetrieval")
    - That will install the package on your computer. You do not need to install it every time.
    - After downloading/installing the package you will need to open the library.
    - You can install the latest version using Github.
      - On the Github site, you can view documentation on development, bugs, etc.
      - On the Github page there is an issues page. Users can report issues/questions.
    - You can also install using some of R-Studio's features.
- After installation, what does it do?
  - It can be used to discover, access, retrieve and parse water data.

- It takes the data that could be in a difficult format (because of multiple sources), and it spits out a very user friendly table.
- To use the dataRetrieval package, you need to open the library
  - Library(dataRetrieval)
  - You can view the functions in the documentation of the package.
  - There are many read____ functions to get data from NWIS or WQP.
  - There are several what____ functions. They are helpful if you want to know what data is available.
  - There is a user guide for how to do the dataRetrieval Queries.
- How do you download data?
  - Help files can be loaded by adding "?" before a function.
    - The help page will give you a description of the function, the usage, and the function arguments (ex. siteNumber, parameterCd, or startDate)
    - Laura recommended using the examples at the bottom of the help file.
  - Laura pre-ran a readWQPqw function and demonstrated the results. Using a site number and parameter for all time.
    - One of the things the package does, is it puts the data in a uniform output.
    - Now using R, you can do an assortment of things to the data (ex. Chart, statistical analysis, etc.)
    - The difference between readWQPqw and readWQPdata?
      - readWQPdata allows for a list of arguments (ex. Bounding box options)
- What if I want to know what data is available, without getting the data?
  - What_data will give you a table of counts of results.
  - Allows you to see what data is available.
  - Ex. whatWQPmetrics will give you information on available metrics
- There is an online tutorial has further instructions on what you can do with the data once you get it into R (https://owi.usgs.gov/R/dataRetrieval.html#1).
- Questions
  - Is there a dashboard or user interface to help build these R queries?
    - There isn't, however, going to the Water Quality Portal itself, you can generate a URL of a query. You can use url_wqp to import that data you developed in that WQP query.
      - There isn't a GUI.
  - Is there danger in updating R to the latest version?
    - That's a hard question. Laura is a fan of updating packages because she likes to fix the issues one at a time with every update, instead of fixing bugs from updates for a long period.

- She does recommend updating the dataRetrieval library. There are important updates, such as http addresses, that could break the entire library if it is an old version.
- The packages that dataRetrieval uses are very standard packages, and when they make changes it is a big deal in the community. They also try to be backwards compatible.
- The library also can handle zip files. This greatly increases the performance/speed of retrieval (parameter: "zip=TRUE"). It only helps in the really big queries. There is overhead in the zipping process.