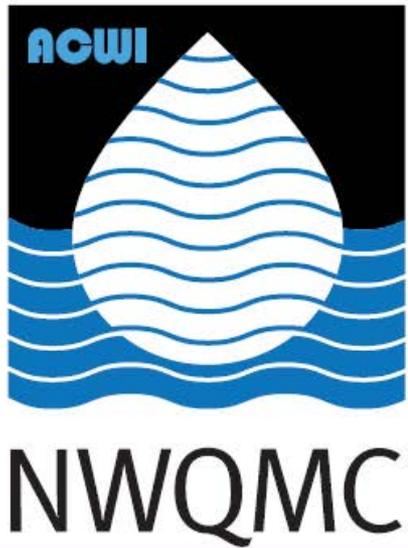


Water Quality Portal Update

2 Apr 2013

Nate Booth & Jim Kreft, USGS

Charles Kovatch, USEPA



NATIONAL WATER QUALITY MONITORING COUNCIL



Water Quality Portal

www.waterqualitydata.us



Search over **210 million water-quality data records** from States, Tribal Partners, USEPA, and USGS



FY13 Plans

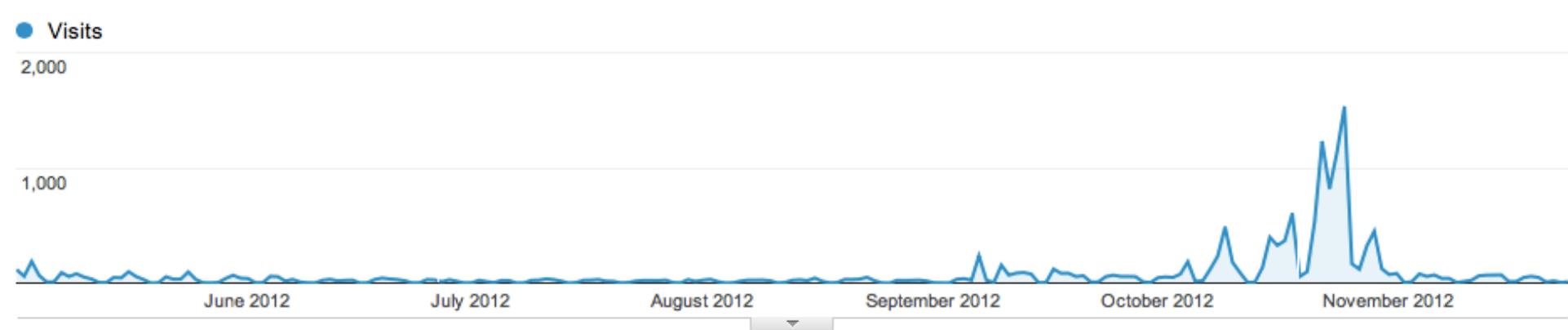
- Operations and Maintenance
- Outreach and Communication
- Add Additional Data Providers
- Map Display
- QA/QC checks
- Integration with NEMI
- Index monitoring locations with the National Hydrography Dataset

Operations and Maintenance

- User Support
- Database and Web Service Operations
- Software Updates and Bug Fixes
- Collecting Usage Statistics
- Coordinating with Source Systems

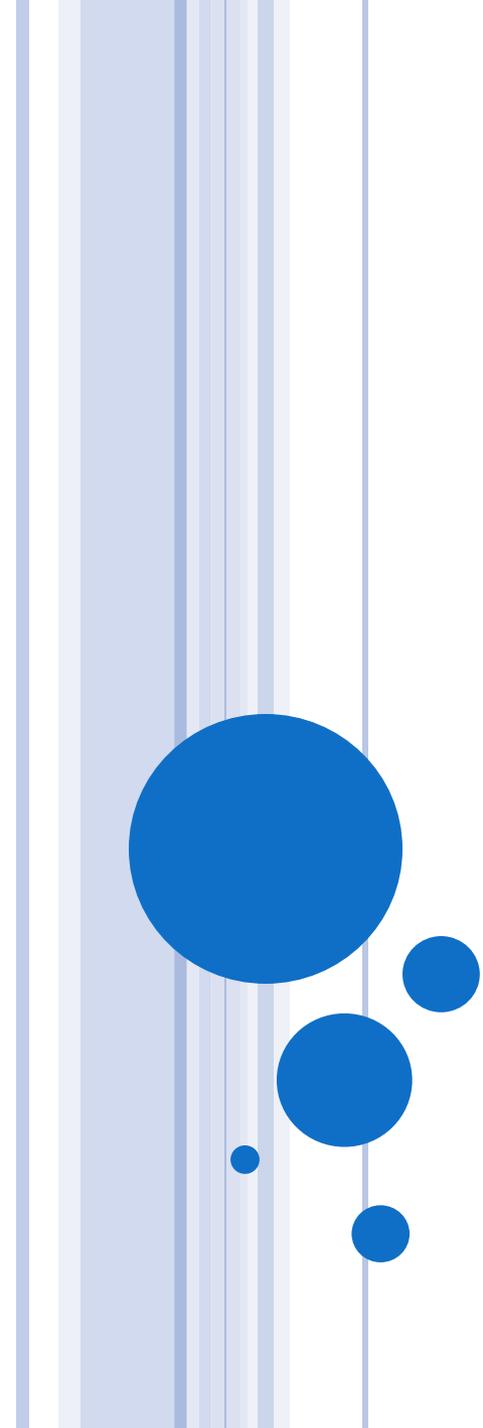
Portal Stats

- Usage: 20,000 visits (from 7800 unique visitors) since April launch
- ~50-100 visitors / day



Communications

- Article in Fall Council Newsletter
- EPA Watershed Academy Webinar: WQ Portal Demonstration (10/23/2012)
- NWQMC: CUAHSI HIS (1/9/2013)
- NSF Observations Data Model Workshop (3/12/2013)
- EPA Watershed Academy Webinar: Water Quality Exchange: A Tool for Tribes, Volunteer Monitors and Others to Share WQ Data (3/13/2013)



UPDATE: SHARING DATA VIA WQX

April 2, 2013

Charles Kovatch

U.S. EPA Office of Water

RESULTS SUMMARY – 04/02/2013

- 39 states and territories are submitting data using WQX
- 8 states submit >100,000 records annually
 - FL, WI, MN, NC, AL, TX, MD, AR
- 11 states submit 40,000-100,000 records annually
 - KS, IA, ND, NJ, IN, ME, DE, VT, MT, GA, PA
- 20 states submit <40,000 records annually
 - SD, AZ, SC, KY, NH, NY, MS, NM, MP, MI, HI, UT, VI, GU, MO, AS, NE, ID, OK, WY
- Make sure we are getting all of the water monitoring data
 - Some states have a smaller data sets due to a smaller monitoring program or fewer waters to monitor
 - Identify the challenges states are experiencing compiling data and sharing via WQX

RESULTS SUMMARY – 04/02/2013

- 17 states currently do not submit via WQX
 - CA, PR, AK, CT, DC, IL, LA, MA, NV, OH, OR, RI, TN, VA, WA, WV, CO
- We are working with the following states and tribes to address their data concerns
 - States: CO, OH
 - Tribes: 8 tribes in EPA Region 10 from OR and WA
- We have assigned 6 new ORG_IDs
 - 2 Tribes (MN, NM)
 - National Forest (MI)
 - 3 Local groups (NH, CO)

RESULTS SUMMARY 04/02/2013

- Seeking Council Assistance with states to:
 - Identify challenges with submitting data and potential solutions to ease the reporting burden for non-submitters
 - Validate state submitted water monitoring stations and data quantity levels
 - Help to increase data holdings on states with beach only data
- Establish sessions for meeting in 2014
 - Continuous monitoring data

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Climate-Hydrologic Information Sharing Pilot



What is it? An inter-disciplinary, inter-agency and international virtual observatory system for water resources information from observations and forecasts in the U.S. and Canada, building on current networks and capabilities, designed to support these functions:

- Hydrologic modeling for historical and current stream flow and groundwater conditions. Requires the integration of trans-boundary stream flow and groundwater well data, as well as national river networks (US NHD and Canada NHN) from multiple agencies. Emphasis on time series data and real-time flood monitoring.
- Modeling and assessment of nutrient load into the lakes. Requires accessing water-quality data from multiple agencies and integrating with stream flow information for calculating loads. Emphasis on discrete sampled water quality observations, linking those to specific NHD stream reaches and catchments, and additional metadata for sampled data.
- Collection and preservation of provenance, uncertainty measures, and other metadata throughout processing workflows.

Key objectives of these use cases are:

1. To link observations data to the stream network, enabling queries of conditions upstream from a given location to return all relevant gages and well locations. This is currently not practical with the data sources available.
2. To bridge differences in semantics across information models and processes used by the various data producers, to improve the hydrologic and water quality modeling capabilities.



Demo:
April 16,
2013

OGC announces Climate-Hydrologic Information Sharing Pilot Demo webinar

22 March 2013 – The [Open Geospatial Consortium \(OGC®\)](#) announced that it will demonstrate the results of the OGC [Climate-Hydrologic Information Sharing Pilot, Phase 1 \(CHISP-1\)](#) at a webinar to be held from 11:00 a.m. – 12:15 p.m. EDT on Tuesday, April 16, 2013. The public is invited to [register for the webinar](#). After the webinar, detailed CHISP-1 Engineering Reports will be made available to the public on the [OGC Public Engineering Report website](#).

CHISP-1 is prototyping an innovative inter-disciplinary, inter-agency and international virtual observatory system for publishing water resources information collected from observations and forecasts in the U.S. and Canada, building on current networks and capabilities. CHISP-1 is designed to support:

- Hydrologic modeling for historical and current stream flow and groundwater conditions. This requires the integration of trans-boundary stream flow and groundwater well data from the Canadian Groundwater Information Network and the US National Groundwater Monitoring Network, as well as national river network data from multiple agencies, including the US National Hydrography Dataset (NHD) and the Canadian National Hydrology Network (NHN). The demo focuses on cross-border communication about Souris River and Milk River water levels. The emphasis is on time series data and real-time flood monitoring.
- Modeling and assessment of nutrient load into the Great Lakes. This requires accessing water-quality data from multiple agencies and integrating the data with stream flow information for calculating loads. The emphasis is on discrete sampled water quality observations, linking those to specific NHD stream reaches and catchments, and additional metadata for sampled data.

CHISP-1 demonstrates how adherence to open service interface and encoding standards from the OGC in proprietary and open source software makes it possible to link hydrologic observations data to the stream network, enabling queries of conditions upstream from a given location to return data from all relevant gages and well locations. This has previously not been practical with the diverse data sources available.

CHISP-1 also provides a model approach for bridging differences in semantics across information models and processes used by various data producers, to improve hydrologic and water quality modeling capabilities.

The following organizations sponsored CHISP-1:

- GeoConnections (Natural Resources Canada)
- US Geological Survey (USGS)
- US Environmental Protection Agency (EPA)

The following participants provided standards-based technology solutions:

- Explorus Data Solutions Inc., Calgary, Alberta, Canada
- Geographic Information System Research Center, Feng Chia University (GIS.FCU), Taichung, Chinese Taipei
- Natural Resources Canada
- RPS-ASA, South Kingstown, Rhode Island USA

Data and web services were provided by the American Geosciences Institute, Environment Canada, the EPA, Natural Resources Canada and USGS.

OGC testbeds, pilot projects and interoperability experiments are part of the OGC Interoperability Program, a global, hands-on collaborative prototyping program designed to rapidly develop, test and deliver proven candidate spatial encoding and interface standards into the OGC Standards Program, where they are formalized for release as adopted OGC Standards.

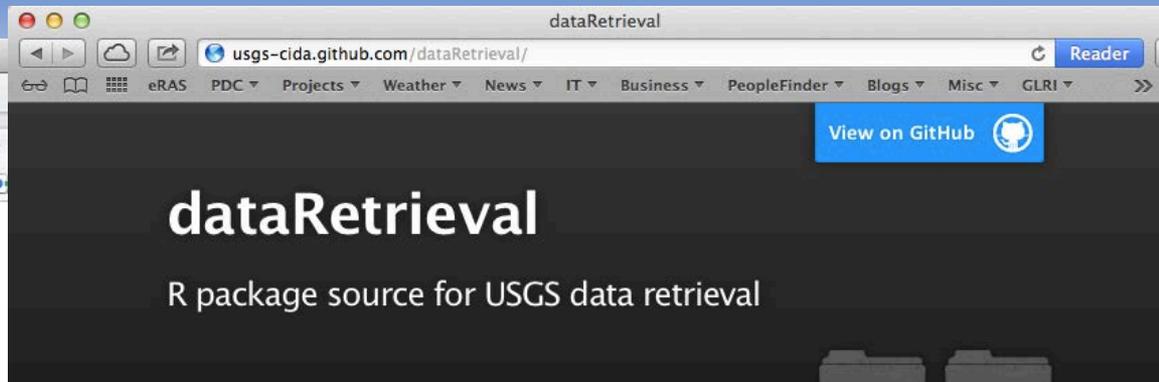
The CHISP-1 Demo Webinar is being produced in cooperation with [Directions Media](#).

The OGC is an international consortium of more than 480 companies, government agencies, research organizations, and universities participating in a consensus process to develop publicly available geospatial standards. OGC standards support interoperable solutions that "geo-enable" the Web, wireless and location-based services and mainstream IT. OGC standards empower technology developers to make geospatial information and services accessible and useful with any application that needs to be geospatially enabled. Visit the OGC website at <http://www.opengeospatial.org/contact>.

Models in R

```
1 library(dataRetrieval)
2 library(EGRET)
3
4 siteNumber <- '09522000'
5 ParameterCd <- '00631' #Nitrate
6
7 StartDate <- ''
8 EndDate <- ''
9
10 Sample <- getSampleData(siteNumber, ParameterCd, StartDate, EndDate)
11 StartDate <- as.character(min(Sample$Date))
12 EndDate <- as.character(max(Sample$Date))
13 Daily <- getDWDData(siteNumber, '00060', StartDate, EndDate)
14 INFO <- getMetaData(siteNumber, "00631", interactive=FALSE)
15 INFO$shortName <- INFO$station.nm
16 boxConcMonth()
17 |
```

```
Console ~/Downloads/
> ParameterCd <- '00631' #Nitrate
> StartDate <- ''
> EndDate <- ''
> Sample <- getSampleData(siteNumber, ParameterCd, StartDate, EndDate)
Warning message:
In reshapeWide(data, idvar = idvar, timevar = timevar, varnames = varnames,
multiple rows match for USGSCode=00631: first taken
> StartDate <- as.character(min(Sample$Date))
> EndDate <- as.character(max(Sample$Date))
> INFO <- getMetaData(siteNumber, "00631", interactive=FALSE)
> INFO$shortName <- INFO$station.nm
> boxConcMonth()
> |
```



Introduction

The dataRetrieval package was created to simplify the process of getting hydrologic data in the R environment. It has been specifically designed to work seamlessly with the [EGRET package](#): Exploration and Graphics for RivEr Trends (EGRET)

Download and Installation Options

The easiest way to install the dataRetrieval package is to first install the package 'devtools', along with a set of LaTeX tools, and anything else required to build R packages. Those tools can be found [here](#) for a Mac, or [here](#) for Windows. Carefully follow the directions on the Windows page, and note that you need to install Rtools, as well as [MikTeX](#).

Once you have the required tools for building R packages, you can simply type the following commands in R to build the dataRetrieval package on your system:

```
install.packages('devtools') #if not already installed
library('devtools')
```

Once that is installed, you can use the function `install_github` to install this package directly from





Questions?

Nate Booth
nlbooth@usgs.gov

Charles Kovatch
Kovatch.Charles@epa.gov