

Subcommittee on Spatial Water Data

Meeting Details:

Date/Time: December 19, 2014, 1:00 - 3:00 PM Eastern Time

Location: Teleconference only (administered from USGS Headquarters, 12201 Sunrise Valley Drive, Reston, VA 20192)

Conference Line: (760) 569-6000 Code 1063271#

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Meeting number: 711 429 326

Shared document space:

<https://drive.google.com/open?id=0B877MDsx9pIFTmpocGE1d0M4TVE&authuser=0>

Agenda

All Times Eastern Time Zone

- 1:00 - 1:10 Introductions for new attendees
- 1:10 - 2:00 Work Group Reports
- 2:00 - 2:15 Continue OWDI Ideals discussion
- 2:15 - 2:45 Spill Response Use Case discussion
- 2:45 - 3:00 Membership roster; Adjourn

Attendees:

New (did not attend 8/28/14, 9/26/14, 10/24/14 or 11/21/14 meeting)

Alan Butler, BOR, rabutler@usbr.gov

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Julia Fields, USGS, jfields@usgs.gov

Dalia Varanka, USGS, dvaranka@usgs.gov

Kyle Cavalier, BOR, kcavalier@usbr.gov

Returning (attended 8/28/14, 9/26/14, or 10/24/14 meeting)

Alan Rea, Co-Chair, USGS, ahrea@usgs.gov

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Meeting Notes:

1:00 - 1:10 Introductions for new attendees

1:10 - 2:00 Work Group Reports

- **Technology Work Group Report**
Dave Blodgett
 - We've had a couple of calls since the November telecon, to discuss info flows and data needs from flooding interoperability experiment. There's lots of uncertainty on what data they need that the OWDI can make available as a test case; they already have existing systems and data sources that they already use, so it's not clear what OWDI can provide.
 - Perhaps we should focus on: how do we expect to advertise open data sets on the web; where is that catalog set up and how do we curate/maintain it?
 - We used NFIE as a conversation piece to help us look at the big picture/design for an open water web.
 - How do you find out that there's a gage on a particular stream? How do you connect water use information to the set-up features that it impacts? These are the types of questions we've been considering in the workgroup so far.
 - We also discussed metadata, provenance, and other items that we want to encourage the other work groups to look at as they do their own work on data sets.
 - We need to figure out what the Tech Work Group's contribution is to the wider SSWD and OWDI efforts.

- **NFIE Use Case Work Group**

Ed Clark

- No one on today's teleconference participated in this workgroup, but the workgroup submitted the report below, prior to the call. We will ask this workgroup for a verbal report during our next call.
- NWS RFC Data for NFIE-Rapid Instance: NWS and University of Alabama have finalized the design for a web-service of RFC forecast component time-series data. RFCs will send the time-series of inflow to the channel (INFW), Mean Areal Precipitation (MAP), and Adjusted Discharge (QINE), to a Stand-Alone instance of Flood Early Warning System (FEWS by Delft) running on UofA's system. This instance of FEWS will run the WaterML2 service for conversion, and SOAP API for data service. A WSDL will be made available. Work to do this is being supported by Office of Hydrologic Development, DeltaresUSA, and University of Alabama Department of Civil Engineering. TLDR: NWS forecast time-series data will be available as waterml2 via a SOAP service. Extent and update cycle will be commensurate with RFC operations.
- Work to register the NWS Forecast and Basin polygons to the NHDPlusV2 will be started in the coming month.
- NFIE-Hydro is running on UT-Austin's Stampede Supercomputing system. Currently this is a manually triggered testing phase with efforts underway to baseline forecast runtime, and output file size. Work between now and March 1 will establish the dataset that will be published via services and the definition of the services itself. This is a collaborative effort between NCAR and UT-Austin. Will work with Dave Blodgett's group team for guidance on this, but aim to demonstrate and instance of THREDDS with possible assistance from UNIDATA.
- A kick-off call was held by CUAHSI on Dec 10 introducing the Summer Institute to the CUAHSI community. Over 80 individual lines were connect to the webinar. CUAHSI will begin coordinating the call for proposal as well as a series of webinars throughout the Spring.
- Plan to engage the NFIE subteam in January for a formal meeting.

- **Drought Use Case Work Group Report**

Team: Angela Adams (lead), Camille Touton, Alan Butler, Kyle Cavalier, Allison Danner, Bret Bruce, Kernell Ries, Gabriel Senay, Ed Clark, Matt Rodell/Dave Toll, Cedric David, Charles Kovatch, Sara Larsen, Pat Lambert

The group met on 11/26. Discussed potential geographic location for use case, visualization options, types of data that would be desirable (for instance, WSWC would like to see consumptive use data), and team makeup. To help define the project scope, the group considered a face to face meeting in January. On 12/18, Angela presented information on the Drought Water Supply Tools Use Case to the Subcommittee on Water Availability and Quality; one result was a suggestion to include NLDAS info in the use case.

Tentative idea for initial use case tool is to locate it in the lower Colorado River area, and add information to the USGS California Drought visualization

(http://cida.usgs.gov/ca_drought/), expanding the scope of the visualization beyond California and including projected/forecasted information. A phone call with Nate Booth is scheduled to explore a BOR-USGS meeting in Nevada in January to further discuss this idea.

A team teleconference will be arranged in January to discuss the visualization idea and possible datasets to include. **The team would like to explore the potential of participating/holding concurrent meetings during the NFIE Summer Institute.**

ACTION: Get w/Marcelo S. on datasets they anticipate using for NFIE (chk for overlap w/Drought use case)

ACTION: Get w/Ed Clark on participating on the NFIE Summer Institute

- **NHDPlus Work Group (NFIE #2+3+4?) (WBDs also?)**
Tommy Dewald (lead), Al Rea, Karen Hanson, Kevin McNinch, Cindy McKay, Brad Cooper, Barb Rosenbaum, Steve Kopp, Dave Blodgett (absent)
The group met 12/17 for the first time. A geodatabase of the NHDPlus V2.1 data exists, and is up to date. Cindy and/or Barb will investigate flattening the data model to make it more amenable to web services. The idea the group is initially pursuing is to stand up general purpose web services using the flattened but full NHDPlus data model. Marcelo Somos (student of Dr. Maidment) will provide an example data package that looks like what they want for NFIE. Hopefully the flattened NHDPlus services will meet the needs of NFIE and be of more general usefulness as well.
- *Question:* How much thinner or more robust data requirements are coming from the other work groups, to help inform our decisions? We need to consider this in all the work groups. Are the other groups looking at data sets and data requirements yet? *Answer:* Drought group says no, but they'll look at how their requirements overlap with those of the NFIE workgroup.
- *Question:* Performance of web services? Can we define what the requirements are regarding this? Can this be defined by the Use Cases?
- **FEMA NFHL (NFIE #5)**
Paul Rooney
In terms of access to the NFHL:
 - You can download the full NFHL here: <https://content.femadata.com/FIMA/NFHL/>. The version there right now is a few months old. We will refresh it shortly.
 - There are also a variety of NFHL web mapping services. All the details on these are at: <https://hazards.fema.gov/femaportal/wps/portal/NFHLWMS>
 - Various users guides, tools and other helpful NFHL information is at: <http://www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/national-flood-hazard-layer-nfhl>
 - The other workgroups can review this info to determine if any of it meets their needs.

- **USGS Gages, Dams, and NWS Forecast Points (NFIE #6+7+8)**
Mike Tinker, Nancy Blyler, Al Rea, (others TBD)
 - There is a group in USGS working on a set of gage and dam locations linked to the NHDPlus V2 stream network and water bodies. Al Rea will recruit someone from that group to serve on this work group. The NWS forecast points are mostly a subset of the larger group of gages, but also include additional points that need to be indexed to NHDPlus.
 - Any more volunteers to work on this? **ACTION:** Nancy will find someone to work on the dams portion, while Al finds people to deal with the USGS portions and Ed finds someone to work on the NWS portions.
- **Water Use (Regional Water Supply)**
Sara Larsen, Brenna Mefford, Jeff Simley, **Add your name here or send email to Sara (saralarsen@wswc.utah.gov) or Al (ahrea@usgs.gov)**
Would like to solicit/recruit more members to this group to help figure out what datasets are available and where, and how these data fit into the use cases, also how they can be provided in an "open-data" and digital format, as opposed to reports, pdfs, etc. WSWC's WaDE will provide state agency-generated allocation, diversion, use, and return flows for western states (where the states have it) - have schema (format), but what about eastern states, spatial disparities and gaps, data quality disparities, methodology differences. Migration of these datasets into the NHD geofabric as linked features (events)? USGS Water Use as a web service/digital? (Pat? Karen H?) Statistical water use? Diversion data as a web service in NFIE (Cedric David, Jon Pollak)? Other federal agencies/academic groups that curate/generate these types of datasets? Water withdrawals in the spill response case?
- **All Use Cases and Data Sets -- General Notes**
 - A general point was raised that could apply to all workgroups: performance of web services and response times (what is a technology issue and what is not?). This might be most applicable to the application use cases (drought, chemical spill). In addition to defining data requirements, they should also define system performance needs.
 - We also need typical user stories that illustrate the ways users use the data under each particular use case.
 - Note that folders for each of our workgroups have been set up in the GoogleDrive (each meeting invitation includes a link to the Drive), so the workgroups will have a place to keep their materials that can be accessed by everyone.
 - *Question:* What's the expected outcome of the data set groups versus the use case groups? *Answer:* The purpose of the use cases is to identify what the data requirements are to settle these use cases (to help identify the highest priority data sources). The data set groups will focus on the individual data sets that were identified by each of the use case groups.

- If the data-focused groups could have a primary outcome, it would be a library of sources for the types of data, and perhaps an analysis of how that library is currently lacking in terms of openness/accessibility.
- NGDA intersection with OWDI? AI is trying to find out more.

2:00 - 2:15 Continue OWDI Ideals discussion

This item was deferred till the next teleconference, so we could move on to the next items.

2:15 - 2:45 Spill Response Use Case discussion

Members include: Bill Samuels, Leidos (lead), Tom Clifford - BLM, Rachel Carson - EPA, Chris Mickle - Cardno, Kernell Ries - USGS. Initial thoughts focus on three applications: CAMEO, ICWater, StreamStats. Below is a summary of each.

CAMEO is a system of software applications used to plan for and respond to chemical emergencies. Developed by EPA and the National Oceanic and Atmospheric Administration to assist front-line chemical emergency planners and responders, CAMEO can access, store, and evaluate information critical for developing emergency plans.

Users:

- Firefighters
- State Emergency Response Commissions (SERCs) and Tribal Emergency Response Commissions (TERCs)
- Local Emergency Planning Committees (LEPCs)
- Industry
- Schools
- Environmental Organizations
- Police Departments

Components:

- **CAMEOfm - Database and Information Management Tool** - a database application that includes eight modules (such as Facilities and Contacts) to assist with data management requirements under the Emergency Planning and Community Right-to-Know Act (EPCRA). Each year, facilities covered by EPCRA must submit an emergency and hazardous chemical inventory form to their LEPC, SERC, and local fire department. Most facilities submit a Tier II form, which contains basic facility identification information, employee contact information, and information such as storage amounts, storage conditions, and locations for chemicals stored or used at the facility. You can use CAMEOfm to store this information, by entering it manually or by importing a [Tier2 Submit](#) file (if the facilities and/or planners in your state use that program). CAMEOfm can also be used to navigate between ALOHA, MARPLOT, and the downloadable version of CAMEO Chemicals.

- **CAMEO Chemicals - Chemical Response Datasheets and Reactivity Prediction Tool** - an extensive chemical database with critical response information for thousands of chemicals. There are two primary types of datasheets in the database: chemical datasheets and UN/NA datasheets. Chemical datasheets provide physical properties, health hazards, information about air and water hazards, and recommendations for firefighting, first aid, and spill response. UN/NA datasheets provide response information from the Emergency Response Guidebook and shipping information from the Hazardous Materials Table (49 CFR 172.101). In addition to the information on the datasheets, you can also add chemicals to the MyChemicals collection to see what hazards might occur if the chemicals in the collection were mixed together. CAMEO Chemicals is available [online](#), as a [mobile website](#), and as a [downloadable version](#).
- **MARPLOT - Mapping Applications for Response, Planning, and Local Operational Tasks** - a mapping application. It allows users to "see" their data (e.g., roads, facilities, schools, response assets), display this information on computer maps, and print the information on area maps. The areas contaminated by potential or actual chemical release scenarios also can be overlaid on the maps to determine potential impacts. The maps are created from the U.S. Bureau of Census TIGER/Line files and can be manipulated quickly to show possible hazard areas.
- **ALOHA - Areal Locations of Hazardous Atmospheres** - an atmospheric dispersion model used for evaluating releases of hazardous chemical vapors. ALOHA allows the user to estimate the downwind dispersion of a chemical cloud based on the toxicological/physical characteristics of the released chemical, atmospheric conditions, and specific circumstances of the release. ALOHA can estimate threat zones associated with several types of hazardous chemical releases, including toxic gas clouds, fires, and explosions. Threat zones can be plotted on maps with MARPLOT to display the location of other facilities storing hazardous materials and vulnerable locations, such as hospitals and schools. Specific information about these locations can be extracted from CAMEO information modules to help make decisions about the degree of hazard posed.

ICWater (Incident Command Tool for Drinking Water Protection) provides real-time assessments of the travel and dispersion of contaminants in streams and rivers. It is structured around the RiverSpill model which has been enhanced to make use of the 1:100,000 scale National Hydrography Dataset Plus (NHDPlus).

Users:

- Water Utilities
- River Basin Commissions
- Federal, State and Local civil government (environmental and emergency response agencies)
- DOD

Components:

- **River network** - ICWater uses the NHDPlus river network for downstream and upstream tracing. According to the EPA (2005), the NHDPlusV1 is an integrated

suite of application-ready geospatial data sets that incorporate many of the best features of the NHD, NED and WBD. OCONUS version - uses river networks created from terrain (flows/velocities from rainfall, PET - geospatial stream flow model)

- **Flow and Velocity** - ICWater uses a relationship between river velocity and river flow (Leopold & Maddock 1953) to determine the real-time velocity from the measured (gauged) real-time flow. Real-time gauges are used to update the average reach flow to the current conditions. Gauges are selected based on their proximity to the contaminant release location. The calculations use the ratio of real-time velocity to long-term average velocity for extrapolation to river reaches not represented by the real-time gauge network. Conditions are based on the flow data from the USGS Current Water Data for the Nation (USGS 2013a).
- **Contaminant database** - A contaminant database is also included which identifies biological, chemical and radiological contaminants and their toxicities, decay rates, properties.
- **Source Term** - Point discharge (instantaneous and continuous release); non-point source (runoff from atmospheric deposition of contaminant) - user supplied deposition pattern or output from a model - coupled with rainfall data (uses elevation, land use and soil types to calculate rainfall-runoff relationships and overland flow)
- **Asset Database** - Drinking Water Intakes, Municipal and Industrial Dischargers, Gages, Dams, Schools, Hospitals, HAZMAT Sites (TRI, Risk Management Plan, RCRA, Superfund), Bridges, Rails, Roads, Pipelines, Fire, Police, Landfills, Mines, Political Boundaries
- **Output** - Downstream Tracing, Upstream Tracing, Breakthrough Curve
- **Recent Applications** - West Virginia chemical spill, Fukushima Nuclear Power Plant Incident

StreamStats (contributed by Kernell Ries)

Several USGS Water Science Centers have been talking with potential cooperators recently about adding time-of-travel functionality to StreamStats. As of now, none of the proposals that they have generated have been funded, but it is likely that at least one and maybe more of them will be funded this year. Any work that the USGS does on these studies should take into account whatever needs are identified by the spill response use case workgroup. The proposed studies would base the velocity computations on new equations that are in the final stages of development by Greg Schwarz, a statistician in the USGS NAWQA program. The equations will replace Harvey Jobson's 1996 equations. They will be developed from a dataset of time-of-travel (TOT) studies that is about 3 times the size of what Harvey used. Also, it has been proposed to assemble all of the TOT studies into a database, so that StreamStats users could see on the map where the studies have been conducted and retrieve information from the studies. Where studies have been done, then the velocity estimates used for spill response would be adjusted to reflect the data from the studies. How this would be done has yet to be determined.

2:45 - 3:00 Membership roster; Adjourn

ACTION: If your organization has not sent an email to Wendy Norton (wenorton@usgs.gov) stating that your organization wishes to participate on SSWD and naming a representative to the group, then your organization is not officially a member and will not be able to vote. So far we have three official members, which means we can't vote and we can't make any recommendations to ACWI, our parent committee. Please send Wendy an email stating that your organization would like to participate. Wendy or AI will send an email to the whole group, outlining this process.