

**MEETING OF
ADVISORY COMMITTEE ON WATER INFORMATION'S (ACWI'S)
SUBCOMMITTEE ON HYDROLOGY (SOH)**

**9:00 AM – 12 Noon
January 7, 2010
Conference Room 4916
U.S. Department of Agriculture
1400 Independence Ave., S.W.
Washington, DC 20250**

FINAL MINUTES

AGENDA

1. Welcome and Introductions Mary Greene
2. Review and Approval of Agenda Mary Greene
3. Approval of Minutes from October 8, 2009 Mary Greene
4. Status of Action Items from October 8, 2009 Meeting Mary Greene

Skip Presentation (Presentation followed by Q&A - total 30-40 min.) – for ACWI Discussion
5. National Hydrologic Information System (HIS) development and SOH effort and status of a new Water Data Work Group under SOH David Goodrich
6. Update on Hydrologic Modeling Work Group Don Frevert
7. Update on Hydrologic Frequency Analysis Work Group Will Thomas
8. Update on Hydrologic and Hydraulic GIS Applications Work Group William Merkel
9. Update on Extreme Storms Work Group Tom Nicholson
10. Current Events within Hydrologic Communities All
11. Announcements and Q&A on Business Reports from Member Organizations All
 - “*The SOH CONNECTIONS*” Newsletter Editor’s Report
 - Claudia Hoeft (USDA) Editor and Richard Raione (NRC) Co-Editor
12. ACWI 2010 Annual Meeting – February 10-12, 2010 Mary Greene
 - Potential Topics
 - Over View of all Work Groups
 - JFIC
 - Proposed Data Exchange Work Group
 - Extreme Storms – Overview & Statement of Need
 - Potential Presenters
 - Other
13. Plans for Next Meeting – April 2010 Mary Greene

Adjourn

SUMMARY OF THE MEETING

Prepared by Claudia C. Hoeft, USDA - NRCS

PARTICIPANTS

Martin Becker	Defenders of Property Rights (DPR) (<i>by phone</i>)
Robert Boyd	Bureau of Land Management (BLM)
Richard Cuenca	National Science Foundation (NSF)
Michael Eberle	Bureau of Land Management (BLM)
Ted Engman	National Aeronautics and Space Administration (NASA)
Dave Goodrich	USDA Agricultural Research Service (ARS)
Mary Greene	USDA – NRCS – National Water and Climate Center (NWCC)
Claudia Hoeft	USDA Natural Resources Conservation Service (NRCS)
Victor Hom	National Oceanic and Atmospheric Administration (NOAA/NWS)
John Hunter	U.S. Army Corps of Engineers (USACE)
Douglas James	National Science Foundation (NSF)
Joseph Krolak	Federal Highway Administration (FHWA)
Sam Lin	Federal Energy Regulatory Commission (FERC)
Robert Mason	U.S. Geological Survey (USGS)
William Merkel	USDA Natural Resources Conservation Service (NRCS)
Tom Nicholson	Nuclear Regulatory Commission (NRC)
David Raff	Bureau of Reclamation (USBR)
Richard Raione	Nuclear Regulatory Commission (NRC)
Nancy Steinberger	Federal Emergency Management Agency (FEMA)
Kevin Stewart	National Hydrologic Warning Council (<i>by phone</i>)
Will Thomas	Association of State Floodplain Managers (ASFPM)
David Wells	Environmental Protection Agency (USEPA)
Don Woodward	American Forests
Max Yuan	Federal Emergency Management Agency (FEMA) (<i>by phone</i>)

1. Welcome and Introductions

Mary Greene

Mary Greene, Chair of SOH, welcomed members to the first meeting of the SOH in 2010 at the United States Department of Agriculture's South Building in Washington, D.C. There were a total of 24 people who participated in the meeting; 20 in person and 4 who called in to teleconference. Claudia Hoeft provided some brief information on the USDA South Ag Building. Originally intended to house offices and laboratories, the building, which was completed in 1936, was the largest office building in the world until the completion of the Pentagon. The building is approximately 460 feet by 944 feet with 7 stories and 4500 rooms. It is widely held that the building's architect made a name for himself by designing prisons, however at the time, Louis A. Simon was with the Federal Office of the Supervising Architect.

2. Review and Approval of Agenda

Mary Greene

Approved with no changes.

3. Approval of Minutes from October 8, 2009

Mary Greene

Approved pending the following addition: Tom Nicholson, NRC, will send more information from the Extreme Storms Working Group. He will provide this information Mary and/or Claudia. Once it is incorporated, there will be a one-week review period before the minutes are posted to the web-page.

4. Status of Action Items from October 8, 2009 Meeting**Mary Greene**

All action items were complete, with the exception of number 6) *Member agencies are asked to look for volunteers who might be willing to serve as vice-chair for the Hydrologic Modeling Work Group and step up to the chair's position at the end of 2010.* Member agencies are asked to again consider this action item as no volunteers have yet stepped forward.

Presentation

There was no presentation in order to leave time for a discussion of SOH information to present at the upcoming ACWI meeting.

5. National Hydrologic Information System (HIS) development and SOH effort and status of a new Water Data Work Group under SOH**David Goodrich**

David Goodrich submitted a Draft Terms of Reference (attached) for a new work group to tentatively be titled, "Hydrologic Information & Water Web Services Work Group" for consideration by SOH members. It is proposed to model this work group after the "Hydrologic Modeling Frequency Work Group" in regards to the Terms of Reference. At this point, no formal coordination with other agencies has been established.

There were many questions and much discussion regarding this proposed work group, including the following:

- a) What is the purpose of the work group (Joe Krolack, FHWA)
 - To inform the standards development groups of the types and formats of data that is needed by federal agencies and users of data.
 - To make sure international standards encompasses the types and formats of data in order to develop more uniform web-services in a unified framework.
- b) What is the product of this group? (Dave Raff, USBR)
 - A summary of the types of information that agencies use and/or collect, along with requirements of describing data - associated with meta-data descriptions. Make sure that standards groups are aware of U.S. needs.
- c) Would this be a federal liaison to CUAHSI? (Dave Raff, USBR)
Concerns about overlap? (David Wells, EPA)
 - Many agencies already work individually with CUAHSI. David Maidment would like to work with this group as opposed to individual agencies.
- d) Is there a benefit of David Maidment working with this group without funding?
 - Looks like ESRI would be willing to stand up a lot of this information on their portals. That takes this into a private sector initiative.
- e) Has David Maidment developed standards for metadata? How do we know that data coming out of this "system" is reliable/accurate/correct...? Maidment is working on a statement addressing this issue. Shouldn't that be accomplished before the work group is formally established? (Martin Becker, DPR)
- f) Comments on specific proposals in the draft terms of reference (Martin Becker, DPR):
 - Section IV A. Recommend a minimum of 2 meetings a year instead of 3 meetings a year (first sentence).
 - Section IV C. Recommend rewriting the first sentence to read, "*The Work Group will conduct business in an open fashion by discussing and attempting to resolve issues by recognizing the legitimate interests and diverse views of the Work Group members.*"
- g) The name of the proposed work group is given as Hydrologic Information and Water Web-Services Work Group. Could this be narrowed? Perhaps to Water Data Work Group? This may better play into ACWI discussions, particularly if it is felt it would be beneficial to co-sponsor this work group with other ACWI subcommittees as is mentioned on page 5. (Sam Lin, FERC).

If it is decided that the work group is best co-sponsored by several Subcommittees, SOH should present the case to ACWI to determine the best process and develop a single terms of reference to cover all four subcommittees with an interest in this topic. (Mary Greene, NRCS)

If this is the case, it works most effectively if one Subcommittee takes the lead. (Don Woodward, AF)

This would be a good topic for the ACWI meeting in February. Identify why SOH feels this is important and how this can be addressed. Recommend that ACWI approve at the next meeting. (Tom Nicholson, NRC)

Mary should talk with other Subcommittee chairs prior to the ACWI meeting to gauge their interest. (Wil Thomas, ASFPM)

The terms of reference could be more specific and not so open ended. It would be better to identify what products will be delivered with specific deadlines and a trigger for termination of the work group. (Dave Raff, USBR)

One specific task for the work group would be to look at standards and make sure those are delivered to CUAHSI (David Maidment). Need to know quality level of the data! Also need to have an understanding of the products coming out. (Martin Becker, DPR)

National Science Foundation (NSF) has tasked CUAHSI with looking at how to make data distribution operational for any interested users in the hydrologic community. (Richard Cuenca, NSF)

I am forwarding information on the ESRI proposals to the Subcommittee members. (Dave Goodrich, ARS)

Next steps:

- (1). Fill out (flesh out?) terms of reference for the next SOH meeting in April with a focus on:
 - Identifying what portion of this for which the SOH can be responsible.
 - Limit this work group to point time series data
 - Contacting other federal agencies that have had individuals working on this issue.
 - Victor Hom to identify some folks at NWS who are working on similar projects.
 - Tom Nicholson suggested each agency identify the need for this. It will be important to focus on the need.
 - Review the OGC/WMO Hydr Domain Working Group Paper
- (2). Mary will contact the Subcommittee chair to gauge their interest and what to present to ACWI.
 - David Goodrich could be available to present information to ACWI over the phone.
- (3) Present the proposal to establish the work group to ACWI at the February meeting.

6. Update on Hydrologic Modeling Work Group

Don Frevert

Don Frevert was unable to attend this meeting or call in, but he did send a report that was not copied for the group (attached to the minutes). In short, the preparations for JFIC are moving forward. In total, there will be 132 oral presentations for FHMC and 132 oral presentations for FISC. Final papers are due March 1, 2010.

A VICE-CHAIR IS NEEDED to assume the chair position after the JFIC. It would actually be best to bring on two people right now (who will be at JFIC). Don Frevert can provide a "job description" The work group terms of reference are on the subcommittee web-site which describes what the work group does.

7. Update on Hydrologic Frequency Analysis Work Group

Will Thomas

Will Thomas reported that the Hydrologic Frequency Analysis Work Group (HFAWG) met on November 19, 2009 at the office of Michael Baker, Jr. in Alexandria, VA. Fifteen people attended the meeting in person and six people attended through a Conference Call/Live Meeting. Will indicated the purpose of the meeting was to discuss the testing to date of the Expected Moments Algorithm (EMA) and comparisons to Bulletin 17B techniques. An incomplete draft report titled "Expected Moments Algorithm and Bulletin 17B Flood Frequency Comparisons for Evaluating Potential Changes to Bulletin 17B" that describes the testing was distributed to work group members one week prior to the November 19 meeting. The testing involves applying EMA techniques and Bulletin 17B techniques at 82 long-term gaging stations and comparing the flood frequency estimates.

Will indicated that the scope of the EMA-Bulletin 17B testing was revised at the November 19 meeting and discussed the following action items from the meeting:

- Perform split-sampling analyses at 5 long-term gaging stations that have low and high outliers and the record length exceeds 60 years. Nancy Steinberger, FEMA, will perform these analyses.
- Perform Monte Carlo simulations using two different mixtures of log Pearson Type III distributions. Tim Cohn, USGS, and Beth Faber, USACE, will perform these analyses.
- Provide information on EMA to practicing engineers to test the user friendliness and reproducibility of the EMA approach. The Ventura County, CA Watershed Protection District offered to test the EMA techniques on selected watersheds in Ventura County, CA.
- Summarize Monte Carlo simulations from previously published papers. John England, USBR, will summarize these results in the draft report cited above.
- Summarize frequency results for Bulletin 17B and EMA analyses previously performed at gaging stations with many nonexceedances, measurement error, multiple thresholds and interval data. John England, USBR, will summarize these results in the draft reported cited above.
- Review the draft report “Expected Moments Algorithm and Bulletin 17B Flood Frequency Comparisons for Evaluating Potential Changes to Bulletin 17B” and provide comments to John England. All HFAWG members should provide comments to John as soon as possible.

Will reported that the next meeting of the HFAWG was scheduled for March 2010 and that the above action items should be completed by the next meeting.

Will’s report generated the following discussions.

David Raff, USBR, asked if there was a timeline for completing the EMA-Bulletin 17B testing and Will responded that there is no defined timeline. The plan is to complete the testing as soon as possible given the resources available. David commented that there should be a deadline set on making a decision about EMA. Don Woodward, American Forests, and Will recognized that it was important to complete the EMA testing as soon as possible. Robert Mason, USGS, noted that the HFAWG was at a critical stage and stressed that USBR needs to make John England available for the next couple of months to complete the testing. David countered that USGS needs to make Tim Cohn, USGS, available also. Will commented that both John and Tim need to concentrate on this testing because the HFAWG has some momentum as a result of the November 19 meeting and there are several action items to complete before March, 2010.

David also asked if there was an established criteria for voting on issues and Will responded that the Terms of Reference for the HFAWG spells out the criteria for voting on issues if needed. David asked the specific questions:

- Who will be voting? Response: All interested members of the HFAWG.
- When will the voting occur? Response: Voting will occur if consensus cannot be reached on certain issues.
- What will be voted on? Response: If a vote occurs, it will be on whether EMA is incorporated into the revised version of Bulletin 17B.

David commented that there was a lot of software available for performing flood frequency analyses and asked what software was being testing and approved. Will commented that the HFAWG was not testing specific software but testing the basic computational procedures in the Expected Moments Algorithm. The EMA procedures that are being tested will be described in the report “Expected Moments Algorithm and Bulletin 17B Flood Frequency Comparisons for Evaluating Potential Changes to Bulletin 17B” and any agency or organization could then include these procedures in their program. For Bulletin 17B only the USGS and USACE programs were identified as being available. Will commented that the USACE HEC-SSP and USGS PeakFQ were the only Bulletin 17B computational programs on FEMA’s acceptable models list for Flood Insurance Studies. For the future it is assumed that USACE and USGS will continue to be the primary agencies for maintaining programs that perform Bulletin 17B computations but this would not prevent any other agency from developing their own program.

Joe Krolak, FHWA, offered to identify some State DOT engineers to apply and test the EMA software. Will indicated that was a good idea and he would follow up with Joe on his offer.

8. Update on Hydrologic and Hydraulic GIS Applications Work Group **William Merkel**

Written Report submitted by: William Merkel January 7, 2010

The overall purposes of the Work Group are to transfer technology among agencies and those outside of government and to promote communication among agencies with respect to use of GIS in water resources issues.

Dr. Vijay Singh maintains a list of hydrologic model contacts at Texas A&M University (TAMU). The web site for this is <http://hydrologicmodels.tamu.edu/>. The Bureau of Reclamation has funded a CESU agreement with Texas A&M for \$20,000. The GIS applications in hydrology and hydraulics are now included in the web site.

Over the coming months, the graduate student assigned to the project will search for more GIS applications to include on the web list, expand the questionnaire and make enhancements to the web site.

Involvement with the upcoming 4th Federal Interagency Hydrologic Modeling Conference (June 2010 in Las Vegas, NV) includes an oral presentation. The presentation will cover the activities and progress of the work group.

The ESRI Federal User Conference is scheduled for February 17-19, 2010 at the Washington DC Convention Center. Registration is free to federal employees. Registration is available at the web site www.esri.com. Click Events at the top of the screen.

9. Update on Extreme Storms Work Group **Tom Nicholson**

The last meeting of the work group was on December 11, 2009. They have been reviewing the need for a strategy for national methodology on establishing extreme storm determinations. John England has been working on a PMP update for South Carolina.

Nancy Steinberger, FEMA, shared that FEMA (James Demby) has \$1.9M for research related to dam safety. There will be a research needs workshop in March or April at FEMA. The Extreme Storms Work Group should consider putting something together on updating PMP for the nation. Victor Hom, NWS, mentioned that ICODS meets next week and will ask James Demby for information on examples of projects funded in the past.

Tom Nicholson reported that Doug Clemetson, USACE, is putting together a storm database for the Upper Missouri River using USACE funds to hire a graduate student.

10. Current Events within Hydrologic Communities **All**

Tom Nicholson, NRC, reported on the National Academy of Sciences, committee on Hydrological Sciences workshop on Global Change and Extreme Hydrology. The first day was devoted to discussing flooding issues, the 2nd day to discussing drought issues. There was much discussion on the veracity of global models for making operations decisions and the need for resources to look at PMP and ways of estimating extreme precipitation events; and how to integrate different models to different scales. There are issues regarding drought susceptibility with data needs at the observational/operational/ and decision making levels. There needs to be a bridge for spanning the gap between operations and decisions. There is also a workshop scheduled in Boulder next week on Non-Stationarity which will be sponsored by the Corps of Engineers and other agencies. Many of the same people will likely be at that workshop as were at the NAS workshop.

Victor Hom, NWS, reported that the CHIPS model (Community Hydrologic Prediction System) is being used in four river forecast centers already. Victor also provided an NOAA NWS Business Report which is attached to these minutes.

Sam Lin, FERC, reported that over 2600 FERC dams have SOP. NWS should contact dam owners and operators for information on operations.

11. Announcements and Q&A on Business Reports from Member Organizations All

- *"The SOH CONNECTIONS" Newsletter Editor's Report* Claudia Hoeft, NRCS, Editor
Claudia introduced Richard Raione, NRC, as the new Co-Editor. Claudia requested that newsletter submissions be sent to either her or Richard by March 26, 2010.
- *NOAA NWS Business Report*
Submitted by Victor Hom, NWS January 2010

(1) Numerical Snow Modeling Enhancements

During the first quarter of FY10, the NOHRSC (National Operational Hydrologic Remote Sensing Center) began enhancing the numerical snow modeling by implementing advancements from NASA's LIS (Land Information System) version 6 and the NOAA model into real-time analyses for snow over Alaska. Information about NOAA's activities with NASA is available at (<http://wmp.gsfc.nasa.gov/>). Comprehensive snow observations, analyses, data sets and map products for the Nation is available through (<http://www.nohrsc.nws.gov/>). Please contact Don.Cline@noaa.gov or John.Halquist@noaa.gov for more info.

(2) New Precipitation Frequency Data

The Hydrometeorological Design Studies Center (HDSC) of NOAA National Weather Service's Office of Hydrologic Development has just published *NOAA Atlas 14 Volume 5: Precipitation-Frequency Atlas of the United States, Selected Pacific Islands*. These estimates, associated information, and documentation are available through the Precipitation Frequency Data Server (<http://www.nws.noaa.gov/oh/hdsc>). Please contact Geoffrey.Bonnin@noaa.gov or Sanja.Perica@noaa.gov for any additional questions.

12. ACWI 2010 Annual Meeting – February 10-12, 2010

Mary Greene

- Potential Topics
 - Over View of all Work Groups
 - HFAWG (2-3 slides)
 - H&H GIS (2-3 slides)
 - Extreme Storms (5-6 slides)
 - JFIC
 - Proposed Data Exchange Work Group
- Potential Presenters
 - Mary Greene, NRCS, SOH Chair
- Other
 - Typically SOH has 30 minutes for its presentation

13. Plans for Next Meeting – April 2010

Mary Greene

Thursday, April 29, 2010

Claudia Hoeft, NRCS, will send information on location and dialing in prior to the meeting.

SUBCOMMITTEE ON HYDROLOGY

DRAFT TERMS OF REFERENCE FOR

HYDROLOGIC INFORMATION & WATER WEB SERVICES WORK GROUP

I. Sponsorship:

The Hydrologic Information Systems Work Group (Work Group) is a working group of the Subcommittee on Hydrology (Subcommittee) of the Advisory Committee on Water Information (ACWI).

II. Purpose, scope, applicability, and functions:

- A. **Purpose.** The overall goal of the Hydrologic Information Systems Work Group is to effectively promote the sharing of hydrologic information and promote open standards to effectively share and disseminate hydrologic information via the internet with an extensible structure to support as-yet unknown functions and capabilities.
- B. **Scope.** The Work Group coordinates the input of agencies collecting and storing hydrologic information on the types of data they collect and how to best describe and represent this data and information so that comprehensive and inclusive national and international standards for sharing and transmittal of this data can be accomplished with web-based services.
- C. **Applicability.** The Work Group will identify technical experts in its respective agencies with expertise in web services and databases (see VI). The Work Group will act as a focal point for the expert sub-group to strive to identify the types and attributes of hydrologic data collected and required by the US Water Agencies and partner responsible for collecting and utilizing said data and communicate this information via its technical expert sub-group to non-profit, international, voluntary consensus standards organizations. The group will cooperate with a work group from the FGDC/ACWI Spatial Water Data Subcommittee and other SOH subcommittees focused on water related web-based information services (NWQMC – Water Quality, Groundwater, Sedimentation).
- D. **Function.** The Work Group will promote cooperation among agencies and their international counterparts, where possible, to aid the development of water web service standards to facilitate cost-effective, and consistent well documented methods to publish, disseminate, and ingest hydrologic data with the essential metadata to accurately describe this data.

The Work Group will be subject to the direction of and will report activities to the SOH of ACWI.

III. Membership:

- A. The Work Group shall have a membership open to governmental agencies, non governmental organizations as well as private sector entities and individuals.
- B. During meetings the Chair will announce and the group will act on new membership applications received at least two weeks prior to the meeting.
- C. The Chair and Vice Chair will be selected from among the members. The Chair and the Vice Chair will serve three year terms ending December 31 of the year of their membership. The Vice Chair will then become Chair and the members will elect a new Vice Chair to replace the Chair in another four years. Also, the Vice Chair will serve in the absence of the Chair. A special election will be held if either the Chair or Vice Chair terminate their association with the Subcommittee before their terms expire.
- D. Members are expected to attend, in person or by teleconference, all meetings of the Work Group. If a member does not attend at least 50 percent of the meetings in any calendar year, the Chair may remove the member from the rolls. A member can be reinstated by informing the Chair of their desire to renew their participation in the Work Group.

IV. Meeting and Procedures:

- A. The Work Group will meet at least three times a year and more frequently as designated by the Chair. The Chair will determine the dates, times, and locations of the meetings in consultation with the members. The Chair will be responsible for announcing meetings 2 months in advance and distributing agendas and information about meetings to all members at least 2 weeks in advance of the meetings.
- B. Members of the Work Group will receive no pay, allowances, or benefits from the Subcommittee or the ACWI. All travel expenses will be borne by the individual member organizations.
- C. The Work Group will conduct business in an open fashion by discussing and attempting to resolve all issues through consensus and by recognizing the legitimate interests and diverse views of the Work Group members. If complete agreement cannot be reached on a specific issue, then the following procedures will apply:
 - 1. A consensus will exist unless one or more members request a vote.
 - 2. Once a vote is requested, the Chair will poll the voting members. An affirmative vote of a majority of the members present will constitute approval of a motion. Two-thirds of the members will constitute the quorum necessary for a formal vote. Each member except for the Chair may cast one vote. In the event of a tie, the Chair will cast the deciding vote. The chair will record how the votes were cast.
 - 3. The Chair will sign and forward to the Chair of the Subcommittee decisions of the Work Group that are proposed advice, guidance or recommendations intended for implementation. Members may prepare minority reports and provide them to the Chair within 3 weeks of a decision. Such minority reports will be forwarded along with majority reports.
- D. Meetings of the Work Group will be open. Each meeting will include time for individuals who are not members to make statements or to have written statements distributed during the meeting.

E. The Chair will prepare and distribute minutes with action items of Work Group meetings to members and to the Chair of SOH.

V. Termination:

The Chair of the Subcommittee has the authority to terminate the Work Group in consultation with the Subcommittee. At least 60 days notice must be provided in advance of termination.

VI. Subordinate groups:

For assistance in conducting its business, the Work Group may establish task groups for a specific purpose and time period with approval of Subcommittee. Such groups will gather information, conduct research, analyze relevant issues and facts, and draft proposed position papers and recommendations for deliberation by the Work Group. These groups will be established by the Chair and will have the balanced perspectives and knowledge necessary to perform their assigned functions. Representatives that serve on subordinate groups may include persons that are not members of the Work Group, but that provide knowledgeable and interested individuals needed to carry out the assigned tasks. All subordinate groups will serve for the time necessary to complete the action for which they were formed. The Work Group will review the status of subordinate groups each year and terminate those that have completed their assignments.

VII. Authority:

The Work Group will work under the Subcommittee as part of the Water Information Coordination Program mandated by OMB Memorandum No. 92-01, dated December 10, 1991. The Work Group reports to the Subcommittee of ACWI that operates under the Federal Advisory Committee Act (FACA). The Work Group is not separately chartered under FACA.

Dates of Approval: Subcommittee on Hydrology (SOH) and Advisory Committee on Water Information (ACWI)

(Signed/Date)

Wendy E. Norton

Mary Greene

Claudia Hoeft

Executive Secretary, ACWI

Vice-Chair, SOH

Vice-Chair, SOH

Issues to Consider – Points of Discussion:

Do we endorse or sign-on to working with the The Hydrology Domain Working Group of the Open Geospatial Consortium (OGC) ?

Background (edited from information provided by David Maidment): The [Open Geospatial Consortium, Inc.](#) (OGC) is a non-profit, international, voluntary consensus standards organization that is leading the development of standards for geospatial and location based services. Through member-driven consensus programs, OGC works with government, private industry, and academia to create open and extensible software application programming interfaces for geographic information systems (GIS) and other mainstream technologies. Adopted specifications are available for the public's use at no cost.

The Hydrology Domain Working Group (DWG) is a domain working group in the OGC. It brings together interested parties to develop and promote the technology for greatly improving the way in which water information is described and shared. This working group is hosted by the OGC and co-chaired by a representative from the World Meteorological Organisation's (WMO) Commission for Hydrology (CHy). The Hydrology DWG will coordinate efforts with other earth science DWGs (Meteorology, Oceans, etc) through the Earth System Science DWG.

The purpose of the Hydro DWG is to provide a venue and mechanism for seeking technical and institutional solutions to the challenge of describing and exchanging data describing the state and location of water resources, both above and below the ground surface. The path to adoption will be through OGC papers and standards, advanced to ISO where appropriate, and also through the World Meteorological Organization's (WMO) and its Commission for Hydrology (CHy) and Information Systems (WIS) activities. While CHy has the recognized mandate to publish and promote standards in this area, OGC contributes to the process with its resources and experience in guiding collaborative development among disparate participants in a rapidly evolving technological environment. The OGC Hydrology DWG will provide a means of developing candidate standards for submission to ISO and for adoption by CHy as appropriate.

We need some mechanism within the US to ensure that our views are appropriately focused and communicated to this emerging international open source data standards effort. ACWI and its subgroups are likely one of the best mechanisms to accomplish this. A possible task for this work group is to help define the User Requirements and Use Cases for WaterML 2.0 (i.e. formalize the functions which this language is expected to perform to meet the needs of US water mission agencies and partners.

The Co-Chairs of the OGC/WMO Domain Working Group in Hydrology are Ilya Zaslavsky from the San Diego Supercomputer Center (David Maidment's colleague from the CUAHSI HIS effort), David Lemon from CSIRO Land and Water in Australia, and Ulrich Looser, from the Global Runoff Data Center in Koblenz, Germany, who represents the WMO in this work.

For more information see:

http://external.opengis.org/twiki_public/bin/view/HydrologyDWG/WebHome

How might this SOH Work Group interact or work with other SOH and ACWI subgroups?

David Maidment spoke to the FGDC/ACWI Subcommittee on Spatial Water Data about water web services and the role that that Subcommittee might play in interacting with other components of ACWI concerned more with water observations data, such as the SOH. He suggested to the Spatial Water Data Subcommittee that geospatial layers of observation sites should be considered part of the nation's geospatial information infrastructure for water, just like any other layer, such as the river network, water bodies, watersheds, etc.

ACWI ostensibly contains four committees that deal with point observations (NWQMC for Water Quality, Groundwater, Hydrology, and Sedimentation). These groups would determine how best to organize their observations data and web services. The Subcommittee on Spatial Water Data should see that geographic descriptions of the observations sites are consistent among all the forms of water observations (ie water quality, hydrology, groundwater, sedimentation). In this sense, geography "Brings things together". David Briar (USGS) is leading an effort to publish a set of geospatial web services which will provide observation site information for the National Water Information System.

The Subcommittee on Spatial Water Data (Co-Chairs: Bob Pierce, USGS; Tod Dabolt, EPA) are cognizant of the activity of OGC in this area and consider OGC to be more an organization that sets standards. But it is important that input from the US concerning our hydrologic information and web service needs go into the OGC/WMO Hydrology Domain Working Group to ensure that they are covered by these standards.

Note: Bob and Tod with others were instrumental in setting up the Hydrology Domain Working Group with WMO.

Perceived Role of Technical Expert Subgroup:

From Nate Booth (USGS) who is working with the OGC/WMO Hydrology Domain Working Group (HDWG) on a groundwater interoperability experiment between the US and Canada:

Nate's idea is that the OGC/WMO HDWG is where the technical expertise is concentrated for standardizing water web services structural development, and it doesn't make sense for ACWI to be duplicating that effort, but rather ACWI might look at the OGC/WMO Hydrology Domain Working Group as a kind of technical consultant. ACWI would facilitate input from US water mission agencies and their collaborators at the state and local level to help to define the requirements for water web services development as the need is perceived by them.

This would parallel the effort internationally at the OGC/WMO level on WaterML where the WMO Commission for Hydrology is the point of connection with the "hydrology domain sciences" in mediating WaterML design with the Europeans, Australians, etc. We in the US need to have some focal point to ensure that our viewpoint is heard collectively in that discussion and we need also to achieve a consensus among our own water data people as to best approaches that we should use.

Should this Work Group help promote/facilitate Data Interoperability Experiments?

Currently there is a joint Groundwater Interoperability Experiments effort led by Nate Booth (USGS) and Geological Survey of Canada, led by Boyan. Its goals are to advance the design of the Water Markup Language (ML) v.2 schema, to see how Groundwater data fit into existing OGC services, and to advance groundwater data exchange between the US and Canada. Maidment alerted Nate and Boyan to the groundwater data standards work undertaken by the ACWI Subcommittee on Groundwater, led by Chuck Job of EPA.

Peter Fitch, CSIRO Land and Water in Australia, is proposing a parallel surface water interoperability experiment. Should the US participate in this? Demonstrating the interoperability of surface water observations data derived from the US water mission agencies would be a significant accomplishment.

There is also talk of having a third interoperability experiment in Water Quality. This would be instructive since water quality has characteristics different from physical hydrology data. As the results of these interoperability experiments are assembled, a clearer path forward for a common water web services data structure should emerge for GW, SW, and WQ.

For more information on proposed Surface Water Interoperability Experiment see:
http://external.opengis.org/twiki_public/bin/view/HydrologyDWG/SurfacewaterInteroperabilityExperiment

The OGC/WMO Hydrology Domain Working Group Paper of Interest:

“Harmonising Standards for Water Observation Data - Discussion Paper”

http://external.opengis.org/twiki_public/bin/view/HydrologyDWG/HarmonisationReport

Action Items:

1. Member agencies are asked to look for volunteers who are willing to serve as chair and as vice-chair for the Hydrologic Modeling Work Group. These individuals will be expected to step into these roles at the end of 2010. Please contact Don Frevert who can provide further information on duties and responsibilities.
2. Update the minutes from the October 8 meeting with additional information from Tom Nicholson. Finalize after a one-week review period.
3. Fill out (flesh out?) terms of reference for the next SOH meeting in April.
4. Mary will contact the Subcommittee chair to gauge their interest and what to present to ACWI.
5. Present the proposal to establish the work group to ACWI at the February meeting.
6. Submit Newsletter items to Claudia Hoeft, NRCS, and/or Richard Raione, NRC by March 26, 2010.
7. Work Group Chairs provide slides to Mary for use in the ACWI presentation in February.