

Volume 1, Issue 3, June 2007

Subcommittee on Hydrology Newsletterat <http://acwi.gov/hydrology/index.html>**In this Issue:**

Upcoming Meetings	p. 1
Welcome from the Chair	p. 2
About the Subcommittee on Hydrology	p. 3
Work Group Reports	p. 4
Public Awareness	p. 10
Latest News from Member Organizations	p. 14
Upcoming Conferences	p. 16
Editor's Corner:	p. 20

Upcoming Meetings:

- SOH - July 26, 2007 – FERC Building, Washington, DC

Welcome from the Chair

Those of you who were fortunate to be with us at the spring meeting will recall another extremely productive and beneficial event. More specifically, the SOH was visited by guest speakers, Dr. Margo Schwab (OMB) and Professor David Maidment (University of Texas) who delivered the presentations “Information Quality Act” and “Overview of CUAHSI Hydrologic Information System (HIS)”, respectively. Their presentations were on important topics to us and proved to be very informative and educational.

Dr. Schwab’s presentation reviewed the guidelines associated with the Information Quality Act and how important this issue is within the federal community to insure accurate reports. We will continue to discuss the “Further Amendment to Executive Order 12866 on Regulatory Planning and Review.” The question of interest to the Subcommittee is whether a revised version of Bulletin 17B falls within the jurisdiction of this Executive Order.



Dr. Margo Schwab OMB (standing), presenting at the April SOH meeting in Washington, DC.

Professor Maidment spoke on the networking potential of the hydrologic datasets available from various agencies and proposed many inspiring ideas. As a result, we all learned more about how putting the wealth of information currently available through the various agencies could support a synthesized water data system. It is our expectation, in coordination with Dr. Maidment’s efforts; we can further accomplish our function of surface water information management and sharing this for public awareness as defined in the Terms of Reference.



Dr. David Maidment (University of Texas) presenting at the April SOH meeting in Washington, DC.

The mission of this Subcommittee is to discover new ways to improve surface-water information’s quantity, quality and management. The Subcommittee continues to do this through its diverse professional support in the form of integration of experiences, knowledge, skills and abilities. As we strive to continue the successful implementation of this mission we see that the SOH participants are our strongest asset.

Thus far, the most significant accomplishments the Subcommittee has achieved are through its work groups. The work groups have been the engine of the SOH to reach many milestones in route towards our goals. For assistance in conducting its business, the Subcommittee may establish new work groups as needed down the road.

We carry on the heritage to pave the way for future generations. To increase the visibility of the subcommittee, we are currently working towards establishing a list of the SOH's previous chairs and vice chairs along with the history of SOH on our web site. This is also one of the steps in encouraging members to become more active in the Subcommittee's leadership roles (four-year commitment as vice chair and chair). Previous two time chair member Gene Stallings said in his email of 4/27/07 to vice chair Steve Blanchard,

"We are doing an incredible job in the SOH. We should be very proud. There is a lot of volunteerism in working times but that is so good." We all deserve this credit.

I very much appreciate members who have actively suggested and/or invited prestigious experts to present with the SOH on those topics of common interest to our group. I am also in debt to those who have committed themselves unselfishly to run or organize work groups. As an integrated part of this group, each member's contribution makes a difference in helping the Subcommittee to maintain its level of accomplishment and in striving to achieve more toward established goals.

Best regards,

Samuel Lin, Ph.D., P.E., D.WRE
Chair, The SOH

About the Subcommittee on Hydrology

The Purpose of the Subcommittee on Hydrology is "To improve the availability and reliability of surface-water quantity information needed for hazard mitigation, water supply and demand management, and environmental protection." All members who join the SOH share in and support this common purpose as a network to fulfill our mission as defined in the Terms of Reference. The subcommittee is currently chaired by Dr. Sam Lin of the Federal Energy Regulatory Commission. Dr. Lin can be reached by phone at (202) 502-8881 or by e-mail at ShyangChin.Lin@ferc.gov.



Steve Blanchard (l) U.S.G. and S. Sam Lin (r) F.E.R.C. , Co-Chair and Chair of the Subcommittee on Hydrology (SOH), at the January 2007 ACWI Meeting in Washington, DC.

Detailed information about the subcommittee can be found at:

<http://acwi.gov/hydrology/>

The Subcommittee on Hydrology reports to the Advisory Committee on Water Information that operates under the Federal Advisory Committee Act.

Work Group Reports

Work Group Updates:

The Subcommittee currently supports three active work groups and is in the process of adding a fourth. The active work groups focus on:

- Hydrologic Frequency Analysis
- Hydrologic Modeling and
- Satellite Telemetry
-

The fourth work group which is currently being formulated will focus on Hydrologic GIS Applications.

Hydrologic Frequency Analysis Workgroup

History of the Hydrologic Frequency Analysis Work Group and Previous Flood Frequency Work Groups

Introduction

This document provides a brief history of flood frequency work groups that have existed since the publication of Bulletin 17B, *Guidelines For Determining Flood Flow Frequency*, by the Hydrology Subcommittee of the Interagency Advisory Committee on Water Data in March 1982. The scope and accomplishments of each work group are highlighted. The activities of the current flood frequency work group, the Hydrologic Frequency Analysis Work Group (HFAWG), are briefly described.

Bulletin 17B Recommendations

Bulletin 17B identified a list of related topics (not ranked by priority) that needed future research and these topics are as follows:

1. Selection of distribution and fitting procedures.
2. The identification and treatment of mixed distributions.
3. The treatment of outliers both as to identification and computational procedures.
4. Alternative procedures for treating historic data.

5. More adequate computation procedures for confidence limits to the Pearson Type III distribution.
6. Procedures to incorporate flood estimates from precipitation into frequency analysis.
7. Guides for defining flood potentials for ungaged watersheds and watersheds with limited gaging records.
8. Guides for defining flood potentials for watersheds altered by urbanization and by reservoirs.

- The present work group should be abolished,
- A new work group should be formed to develop a series of pamphlets that would supplement Bulletin 17B,
- The report summarizing the questionnaire should be circulated to the Hydrology Subcommittee members for their information but not published for public dissemination.

The Bulletin 17B Work Group did not have the time or resources to pursue the above topics but felt they were important in improving flood frequency guidelines for both gaged and ungaged watersheds.

The general conclusion was that Bulletin 17B guidelines prescribe technically sound procedures, that no substantial problems within the scope of the guidelines have been identified that cannot be handled by means included in the guidelines, and that no breakthroughs in statistical practice have occurred to provide feasible, substantial, and clearly superior technical alternatives to the Bulletin 17B methodology.

December 1987 Report of an Ad Hoc Work Group

In February 1985, the Hydrology Subcommittee of the Interagency Advisory Committee on Water Data sent out a questionnaire to Federal agencies asking if there was a need to revise or refine Bulletin 17B. Responses were received from 118 individuals most of whom had more than 10 years of experience.

The Bulletin 17B skew map was cited as the most important problem. However, the Ad Hoc Work Group concluded that the skew map is optional and other regional skew values may be used, and therefore, the skew map does not materially detract from the usefulness of Bulletin 17B.

An Ad Hoc Work Group of the Hydrology Subcommittee consisting of the U.S. Army Corps of Engineers (USACE), Environmental Protection Agency (EPA), Federal Emergency Management Agency (FEMA), Soil Conservation Service (SCS), National Weather Service (NWS), Tennessee Valley Authority (TVA), U.S. Geological Survey (USGS), and the Bureau of Reclamation summarized the results of the questionnaire in a December 1987 report. The conclusions from the questionnaire were:

In the December 1987 report, the Ad Hoc Work Group recommended that, "a series of pamphlets be issued by the Hydrology Subcommittee to provide guidance for solving common major flood frequency analysis problems identified in the survey." A new work group should be formed to prepare the pamphlets. The top five topics recommended for the pamphlets were as follows:

- Bulletin 17B should not be revised at this time because the users have not identified substantial problems or new techniques that could be included in a revised Bulletin 17B,

- Regional skew,
- Detection and treatment of outliers,
- Mixed population analysis,
- Multi-station comparison,
- Watershed changes and time trends.

Other topics suggested by the Ad Hoc Work Group included:

- Partial duration analysis,
- Typical examples of using Bulletin 17B,
- Diagnostics and interpretation of analysis,
- Coincident frequency analysis.

Bulletin 17B Work Group (1989-99)

In August 1989, a new Bulletin 17B Work Group was formed consisting of the following Federal agencies: FEMA, TVA, NWS, SCS, USACE, and USGS. This work group selected the following four topics for pamphlets to supplement Bulletin 17B:

- Watersheds undergoing changes and time trends,
- Regional skew,
- Detection and treatment of outliers,
- Regulated watersheds.

Three of the four selected topics were consistent with the December 1987 report of the Ad Hoc Work Group. The fourth topic of regulated watersheds was added because of the perceived need for more consistent guidance. The following work was completed toward publishing pamphlets on the above topics.

Watersheds undergoing changes and time trends

A report entitled *Evaluating the Effects of Watershed Changes on the Flood Frequency Curve* was prepared by the work group and reviewed by the Subcommittee on Hydrology in April-May 1991 and again in January-February 1994. The report was never forwarded to the Interagency Advisory Committee on Water Data for approval because the Bulletin 17B Work Group could not reach a consensus on the value of this

pamphlet. With permission of the Bulletin 17B Work Group, Rick McCuen, University of Maryland, published a textbook in 2003 entitled *Modeling Hydrologic Change – Statistical Methods* that included the work group report plus several additional topics.

Regional Skew

The work group summarized the status of several generalized skew studies. In May 1990, the Wisconsin District of USGS sent the work group a proposal for *Developing Regional Skewness for the United States*. The study was proposed for a 3-year period with a total funding level of \$110,000. At that time (1990), the Federal agencies on the work group could not identify the needed funding and the study was never undertaken.

Detection and treatment of outliers

The work group funded a small study by Rick McCuen, University of Maryland, to perform research on detection and treatment of outliers. As part of this contract, a report entitled *Detection of Outliers in Pearson Type III Distributions* was prepared by Colleen Spencer (graduate student) and Rick McCuen that provided a new method for detecting outliers in a frequency analysis. The consensus of the work group was that the new method was not a significant improvement over the existing method in Bulletin 17B and therefore no changes in outlier detection were adopted. Colleen Spencer and Rick McCuen published the paper entitled *Detection of Outliers in Pearson Type III Data* in the ASCE Journal of Hydrologic Engineering in 1996 (Vol.1, pages 2-10).

Regulated Watersheds

Harold Kubik, USACE, prepared an outline of a report on regulated watersheds. With Harold's untimely death in January 1991, the work on this report came to a halt.

Other activities

The work group also funded a small study by Rich Vogel, Tufts University, in 1990-91 to study goodness-of-fit tests for determining if flood data fit the Pearson Type III frequency distribution. The culmination of this work was a paper entitled *Probability Plot Goodness-of-Fit and Skewness Estimation Procedures for the Pearson Type 3 Distribution* that was published by Vogel and McMartin in the December 1991 issue of *Water Resources Research* (Vol. 27, No. 12, pages 3149-3158).

Hydrologic Frequency Analysis Work Group (2000 - present)

The Terms of Reference of a new Hydrologic Frequency Analysis Work Group (HFAWG) were signed by the Subcommittee on Hydrology of the Advisory Committee on Water Information in December 1999. Unlike the previous work groups, the new work group consists of Federal and non-Federal participants. In January 2000, the HFAWG had their first meeting and undertook the following tasks as assigned by the Subcommittee on Hydrology:

- Develop a position paper on flood frequency analysis for ungaged watersheds,
- Develop a set of Frequently Asked Questions and Answers on Bulletin 17B,
- Develop guidance on flood frequency analysis for watersheds whose flood flows are regulated by upstream flood detention structures.

Status of the Original Charge to the HFAWG

A paper entitled *Evaluation of Flood Frequency Estimates for Ungaged Watersheds* was completed in August 2001 and posted on the HFAWG web site in

October 2002

(<http://acwi.gov/hydrology/Frequency>). This paper describes an approach for evaluating flood discharges estimated from regression equations and rainfall-runoff models and for judging the reasonableness of the flood discharges using a measure of uncertainty such as the standard error. Regional regression equations and rainfall-runoff models are the two most frequently-used approaches for estimating the magnitude and frequency of flood discharges for ungaged watersheds.

A list of *Frequently Asked Questions and Answers on Bulletin 17B* was prepared by the HFAWG and posted on their web site on September 29, 2005. The questions and answers provide additional guidance and clarification on procedures and terminology given in Bulletin 17B.

An outline of a report describing various approaches for frequency analyses for regulated watersheds has been prepared but the report has not been completed. This is still an outstanding task for the HFAWG to complete.

Plans to Update Bulletin 17B

In November 2005 the HFAWG developed a plan for updating Bulletin 17B. The major improvements in Bulletin 17B that will be evaluated include:

- Evaluate and compare the performance of the Expected Moments Algorithm (EMA) to the weighted-moments approach of Bulletin 17B for analyzing data sets with historical information.
- Evaluate and compare the performance of EMA to the conditional probability adjustment of Bulletin 17B for analyzing data sets with low outliers and zero flows,

- Describe improved procedures for estimating generalized (regional) skew,
- Describe improved procedures for defining confidence limits.

Within the last year, the HFAWG has developed an approach for evaluating and comparing the EMA approach to Bulletin 17B methods through the use of split sampling techniques and Monte Carlo simulations. The split sampling techniques will be applied to data from about 80 gaging stations whose record length is in the range of 75 to 100 years. The Monte Carlo simulations will include the Pearson Type III distribution, other alternative frequency

distributions and mixtures of distributions to test the robustness of the EMA and Bulletin 17B methods. The USGS and the Bureau of Reclamation are adding the latest EMA procedures to flood frequency programs used by their agencies and these programs will be used for the testing noted above. It is anticipated that the EMA – Bulletin 17B testing will begin this summer (2007).

Will Thomas
Michael Baker, Jr.
June 11, 2007

Hydrologic Modeling Work Group

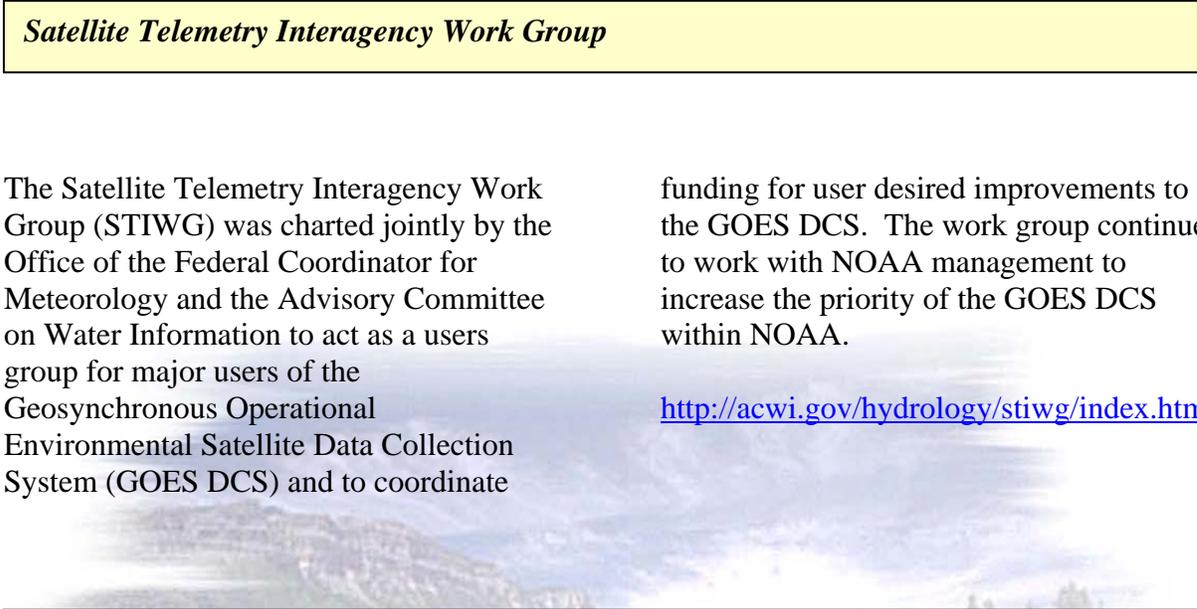
The Hydrologic Modeling Work Group met on May 1st to select officers to serve through the planned 2010 Joint Federal Interagency Conference. Don Frevert of the Bureau of Reclamation was elected chair and Steve Markstrom of the USGS was elected as vice-chair.

Planning for the 2010 Joint Federal Interagency Conference is in the preliminary stages and a list of eight potential locations has been compiled. Proposals will be sought from these locations and based on those proposals a short list of three or four locations will be selected for site visits. It is anticipated that proposals will be received in mid-August.

The format of the 2010 conference will be similar to the 2006 conference in that it will combine the fourth Federal Interagency Hydrologic Modeling Conference and the ninth Federal Interagency Sedimentation Conference.

The next meeting of the work group will be Tuesday July 17th.

Additional information on the activities of the work group can be obtained from Don Frevert. He can be reached by phone at (303) 445-2473 or by e-mail at dfrevert@do.usbr.gov

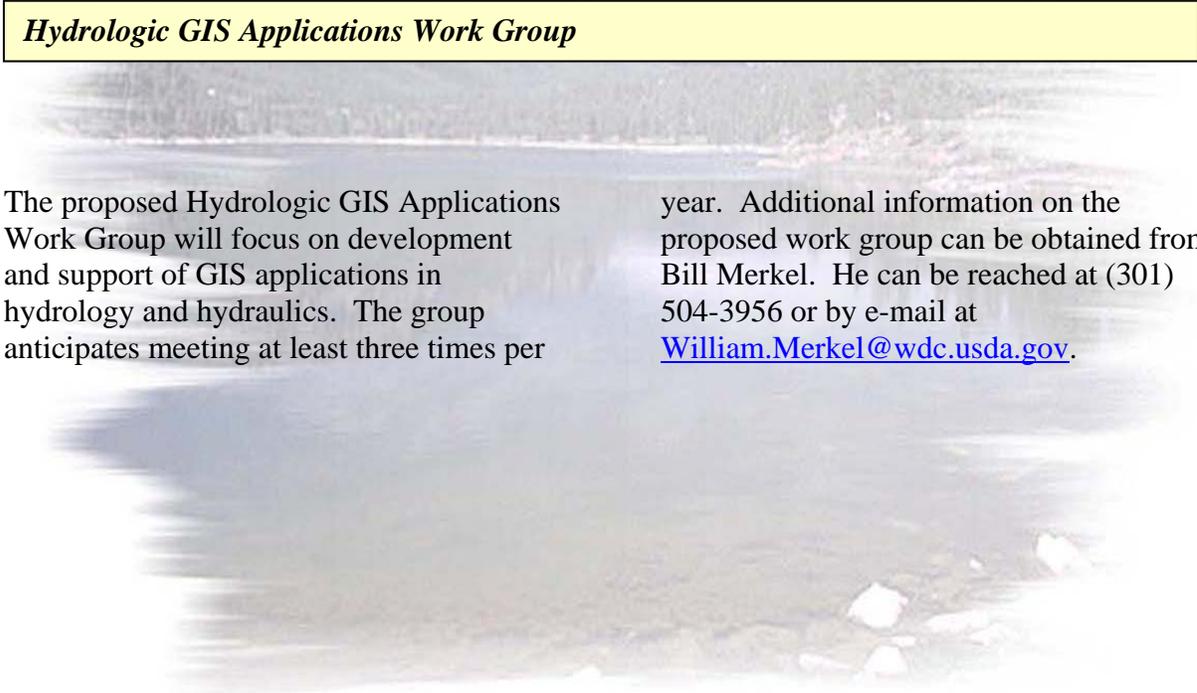


Satellite Telemetry Interagency Work Group

The Satellite Telemetry Interagency Work Group (STIWG) was chartered jointly by the Office of the Federal Coordinator for Meteorology and the Advisory Committee on Water Information to act as a users group for major users of the Geosynchronous Operational Environmental Satellite Data Collection System (GOES DCS) and to coordinate

funding for user desired improvements to the GOES DCS. The work group continues to work with NOAA management to increase the priority of the GOES DCS within NOAA.

<http://acwi.gov/hydrology/stiwg/index.html>

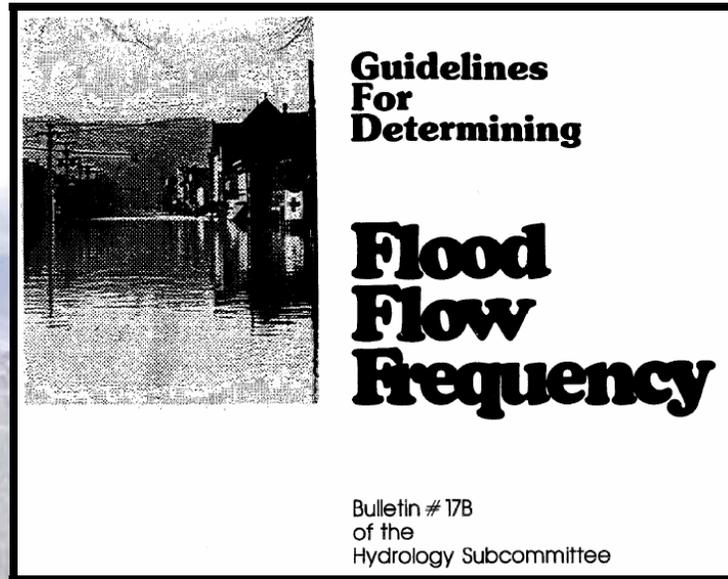


Hydrologic GIS Applications Work Group

The proposed Hydrologic GIS Applications Work Group will focus on development and support of GIS applications in hydrology and hydraulics. The group anticipates meeting at least three times per

year. Additional information on the proposed work group can be obtained from Bill Merkel. He can be reached at (301) 504-3956 or by e-mail at William.Merkel@wdc.usda.gov.

Flood Frequency Analysis: Bulletin 17 & Evolvement



Background Knowledge: Probability theory was developed to interpret the statistical attributes of sampling data. Statistical hydrology is about the prediction of the probability of a future hydrologic event (or variable) based on observed data. Appropriately defining the distribution function of a hydrologic variable is required to make pertinent probability statements. The normal distribution function provides a relatively reliable and easy means of assessing probabilities associated with such attributed random events. Unfortunately, many hydrologic events are not normally distributed, such as annual maximum flood events which are skewed. The skewness of a frequency distribution has a great effect on the shape and thus the values of the distribution, particularly in the extreme tail, which is of most concern in flood-risk estimation.

Base Method: Based on testing observed data, the log-transformation can remove

most of the skewness from the distribution. Thereby, the Log-Pearson type III distribution (i.e., Gamma distribution) was recommended as the base (i.e., standard) method for analysis of annual maximum flood series data, although other approaches may be used as justified. Bulletin 17 was therefore first published in 1976 and those standard procedures were adopted by most federal agencies for the consistency of using a uniform method nationwide. Bulletin 17A, published in 1977, revised Bulletin 17 to clarify that the historical adjustment should be applied before the weighting of skew. Bulletin 17B, published in 1982, initiated the following major changes: new procedures for the treatment of low outliers and weighting station and generalized skew, and revised guidelines for estimating generalized skew.

A generalized skew coefficient is estimated by pooling information from nearby sites in the same hydrologic region to improve the

accuracy of the skew coefficient estimated from a small sample at a specific gaging station.

Bulletin 17B Advancement: *Bulletin 17B* provides values of the generalized skew coefficient that have not been updated to reflect the 30 years of additional data that is now available. Flood frequency analysis and computational statistics have seen great advances to correctly analyze such spatial data since *Bulletin 17B* was published. A new technique such as the Expected Moments Algorithm (EMA) was developed. This method was shown to give improved estimates for the American River flood frequency analyses (Cohn et al., 1997). The EMA matches log space sample and population moments, and hence is consistent with *Bulletin 17B*. It makes more effective use of historical and paleoflood information than does the weighted moments method recommended by *Bulletin 17B* for use with historical information. Approximate confidence intervals (or limits) including the uncertainties in flood

data and skew coefficients are estimated by Monte Carlo simulation.

An Engine to Drive the Revision: The Hydrologic Frequency Analysis Working Group (HFAWG) developed a revision plan that was discussed with the SOH and approved by the SOH's parent committee, ACWI on January 12, 2006. To understand the details of the revision plan and keep track of the revision progress, please refer to the information reporting on the website <http://acwi/hydrology/Frequency/> or the "SOH CONNECTIONS" Newsletter.

According to the HFAWG's plan, its investigations will be completed in 2007; coordination, review and approval process to be completed in 2008. The USGS' PEAKFQ of Version 5.1 program will include updated EMA procedures.

Information compiled and submitted by Samuel Lin, Ph.D., P.E., D.WRE
Chair, The SOH.

Health of the Nation's Rivers May be Found at the Headwaters

Several USGS papers in the February 2007 - Volume 43 issue of the Journal of the American Water Resources Association (AWRA) explore the role that headwaters play in maintaining the physical, chemical, and biological integrity of downstream waters and the overall status and safety of the Nation's water supply. The findings have direct implications for the current national debate on what bodies of water, including headwater, intermittent, and ephemeral streams, fall under federal jurisdiction for protection under the Federal Clean Water Act (CWA).

AWRA journal editor, Kenneth Lanfear says that, "The science shows that compromised headwater streams can damage the integrity of downstream water supply and impact the ability of downstream waters to perform ecological functions." Lanfear hopes that this publication will assist policy makers in making wise, scientifically sound decisions regarding the protection of all bodies of water at federal, State and local levels.



JAWRA February 2007, Volume 43 Cover

Papers contributed by USGS scientists focus on water quality, chemistry, and the hydrologic and ecologic connectivity between headwater streams and downstream navigable waters. Specifically,

- Alexander and others apply a mass-balance watershed model to consider transport and transformations of water and nutrients throughout stream networks in the Northeast and find that significant quantities of the water and nitrogen in navigable waters originate from headwater areas.
- Winter and Izbicki show how understanding the interactions of ground water and surface water is fundamental to managing the chemical and biological characteristics of streams throughout their length.

- Triska and others report on the retention of dissolved inorganic nitrogen through four hydrologically connected zones in a headwater catchment of the Shingobee River in the Upper Mississippi River Basin and show the importance of wetlands, floodplains, and other areas of ground-water/surface-water connectivity to effective management strategies for nitrate.
- Freeman and others show that headwater alteration can reduce ecological integrity at large spatial scales, particularly where river systems are already affected by landscape changes and downstream modifications including dams, levees, and flow regulation. Linkages between headwaters and downstream ecosystems cannot be discounted when addressing large-scale issues, such as hypoxia in the Gulf of Mexico and global losses of biodiversity.
- Wipli and others outline small stream processes and pathways important to downstream communities, and show that while headwater streams provide downstream habitats with a multitude of ecosystem services, such as water, nutrients, and woody debris, the quality and timing of the delivery remains poorly understood.

Online access to the articles is at <http://www.blackwell-synergy.com/doi/full/10.1111/j.1752-1688.2007.00001.x>

The Journal of the American Water Resources Association (JAWRA) presents ideas derived from multiple disciplines woven together to give insight into critical water issues. JAWRA is published on behalf of the American Water Resources Association by Blackwell Publishing, which is the world's leading society publisher, partnering with 665 medical, academic, and professional societies. For more information, please visit www.blackwellpublishing.com/jawra . For more information on Blackwell Publishing, please visit www.blackwellpublishing.com or www.blackwell-synergy.com

For questions on the USGS articles, please contact the individual authors: Rich Alexander (ralex@usgs.gov; 703-648-6869), Tom Winter (tcwinter@usgs.gov; 303-236-4987), John Izbicki (jaizbick@usgs.gov; 619-225-6131), Frank Triska (fjtriska@usgs.gov; 650-329-4437), Mary Freeman (mary_freeman@usgs.gov; 706-542-1227), or Mark Wipfli (mark.wipfli@uaf.edu; 605-594-6943).

Information submitted by Toni M. Johnson, USGS.

Latest News from Member Organizations

US Forest Service



Douglas Ryan of the Forest Service's Stream Systems Technology Center and several of his colleagues have been working on a software tool called ICWater for use by water utility managers, incident

commanders and others to help with protection of the nation's drinking water supply. More information about ICWater can be found at:

http://www.stream.fs.fed.us/news/streamnt/pdf/SN_01_07.pdf

National Research Council's Committee on Hydrologic Science (COHS)

THE NATIONAL ACADEMIES
Advisers to the Nation on Science, Engineering, and Medicine

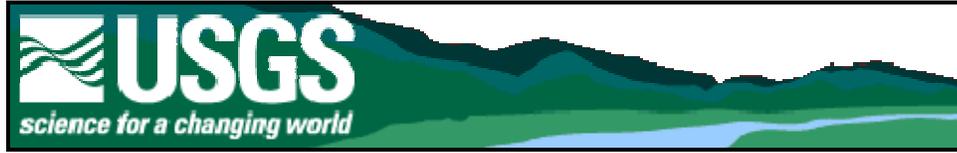
The Committee on Hydrologic Science (COHS) is a standing committee designed to address research and educational opportunities in the hydrologic sciences. COHS is oriented toward the scientific activity of U.S. federal agencies with programmatic interests in hydrologic research.

Its objectives are (1) To provide a venue for discussion of priority research topics in the hydrologic sciences; (2) To identify opportunities for development of new National Academies studies; (3) To provide

advice within the National Academies; and (4) To provide oversight of projects conducted under its auspices (COHS as presently constituted will not itself produce reports).

A senior staff member of the NRC, Dr. Will Logan who is responsible for the COHS will make a presentation at the July 26, 2007 meeting of the Subcommittee on Hydrology. The presentation will focus on potential areas of information exchange including current hydrologic science, applications and needs.

Funding for USGS Federal Streamgaging



Cooperative Water Program— A Partnership in the Nation's Water-Resources Program

In a year filled with budgetary challenges for many federal agencies, USGS Associate Director Robert Hirsch has reported a modest increase in funding for streamgaging. In a letter to the Interstate Council on Water Policy (ICWP), Dr. Hirsch noted (in part):

“Funding for the National Streamflow Information Program rose from \$13.9 million in Fiscal Year 2006 to \$16.2 million in Fiscal Year 2007, a 19 percent increase. These funds will add stability to the streamgaging network, allow us to reactivate some discontinued streamgages, and allow us to take additional steps to modernize streamgages and improve data processing and delivery. Of this increase, \$0.4 million will be going to the USGS-

wide multi-hazards initiative centered in Southern California.

“Funds for the Cooperative Water Program rose from \$62.8 million in Fiscal Year 2006 to \$64.3 million in Fiscal Year 2007, an increase of about 2 percent. This increase will help us keep up with increases in Federal pay scales and facilities costs. It may also help us stabilize the matching ratio and prevent further staff reductions.”

Hirsch attributed the improved level of support for the program to the continuing dialog and support that the ICWP and affiliated non-governmental organizations have provided to the USGS in general and to the National Streamflow Information Program and Cooperative Water Program in particular.

Bureau of Reclamation



Commissioner Robert Johnson has named Dr. Curtis Brown as Reclamation's new Director of Research and Development. Dr. Brown earned his PhD from the University of Colorado in 1981. He most recently served as the Manager of Reclamation's Platte River Environmental Impact Study Office.

In his new capacity, Dr. Brown will oversee a reevaluation of the Science and Technology Program's charter and a restructuring of its steering team. Known throughout Reclamation as a straight shooter and a highly competent manager, Dr. Brown is seen as an ideal choice to restore the national and international respect the program once enjoyed.

Upcoming Conferences

Rocky Mountain Hydrologic Research Center Annual Meeting

The 62nd annual meeting of the Rocky Mountain Hydrologic Research Center is scheduled to be held at the Wild Basin Lodge near Allenspark, Colorado on Friday, September 28th. The meeting provides an opportunity for scientists working in the Rocky Mountain region to

discuss their research in a relaxed, yet scientifically stimulating atmosphere. The meeting encourages interdisciplinary communication among professionals and students in the fields of hydrology, engineering, environmental science and water resources.

Some of the major topic areas include:

- Precipitation and Runoff in Mountain Watersheds
- Climate and Climate Change in the Western United States
- Floods in Urban Environments
- Paleohydrology and Paleoclimatology
- Hydraulics and Sediment Transport in Rivers
- Chemistry of Natural Waters
- Aquatic and Riparian Ecology
- Water Resources and Environmental Policy

More information on the meeting and a copy of the call for abstracts can be obtained from John Moody (jamoody@usgs.gov).

Technical Exhibition and Conference of the Water Environment Federation



The Water Environment Federation will hold its 80th annual technical Exhibition and Conference at the San Diego Convention Center October 13-17, 2007. Water quality related topics such as coastal issues, collection systems, contaminants,

disaster planning, facility operations and industrial issues will be discussed. Additional information on the conference can be found at:

<http://www.weftec.org/home.htm>

Jointly held ECOR-4 and EC-DNAPL-2 in Amsterdam, The Netherlands

The Second European Conference on Dense Nonaqueous Phase Liquids and the Fourth European Conference on Oxidation and Reduction Technologies for in situ Soil and Groundwater will be held on October 16th and 17th at the Mercure Hotel Amsterdam, the Netherlands.

Major topics include:

- Site Characterization (DNAPL, LNAPL and Other Organic Contaminants)
- Injection Equipment and Application Systems
- Technology Screening and Testing

- Modeling, Risk Assessment and Fractured Bedrock Consideration
- Monitoring and Performance Evaluation
- Economics of Oxidation and Reduction Technologies
- Regulatory Issues



Early registration is due by Friday, June 29, 2007.

Conference information can be found at:
<http://www.redoxtech.com/>

9th International Conference on Fluid Control, Measurements and Visualization



The 9th International Conference on Fluid Control, Measurements and Visualization (FLUCOME) will be held at Florida State University in Tallahassee, September 16-19, 2007. Primary theme areas for the conference include Flood Control, Fluid

Measurement and Visualization and Computational Fluid Dynamics.

More detailed information on the conference can be found at:
<http://www.eng.fsu.edu/flucome9/index.php>

Dam Safety 07 Conference



The Association of State Dam Safety Officials (ASDSO) will sponsor the Dam Safety 07 Conference in Austin, TX, September 9-13, 2007 at the Hilton Austin Hotel. The conference will cover a wide variety of aspects of Dam Safety

Engineering. Additional information on this and other ASDSO conferences can be found at the ASDSO website:

<http://www.damsafety.org/>

International Conference on Water Resources Management



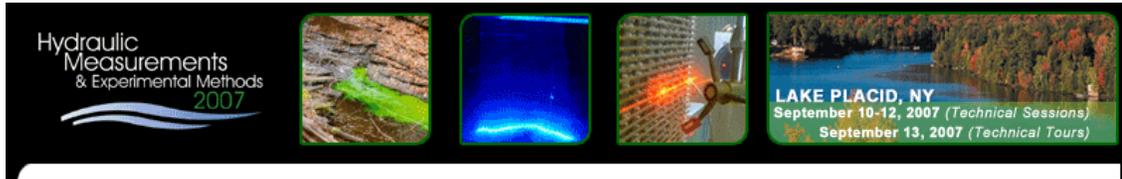
The International Association of Science and Technology for Development (IASTED) is hosting its second International Conference on Water Resources Management August 20-22, 2007 in Honolulu, Hawaii. Major theme areas of the conference will include Water Supply and Sustainable Use, Wasterwater

and Stormwater Management, Integrated Watershed Management, Pollution Prevention and Reduction in Industry and Issues in Implementing Environmentally Sound Technologies.

Other information about the conference can be found at:

<http://www.iasted.org/conferences/home-578.html>.

Third Conference on Hydraulic Measurements and Experimental Methods



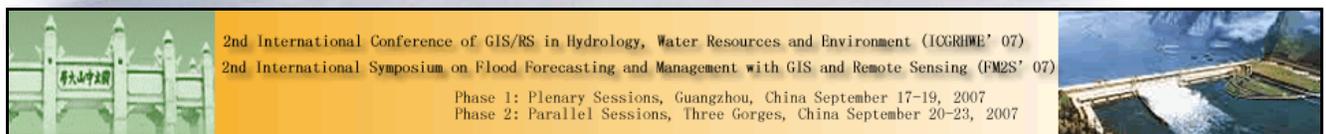
The American Society of Civil Engineers and the International Association of Hydraulic Engineering and Research are jointly sponsoring the Third Conference on Hydraulic Measurements and Experimental Methods September 10-13 in Lake Placid, New York. Major topical areas include Advances in Measurement Technology, Measurements for Fundamentals of Flow

Processes, Measurements of BioGeoPhysical Integrated Parameters, Experimental Methods and Data Analyses and Commercial Measurement Equipment.

Additional information on the conference can be found at the website:

<http://content.asce.org/conferences/HMEM07/abstract.html>

2nd International Conference of GIS/RS in Hydrology, Water Resources and Environment and the 2nd International Symposium on Flood Forecasting and Management with GIS and Remote Sensing



The 2nd International Conference of GIS/RS in Hydrology, Water Resources and Environment and the 2nd International Symposium on Flood Forecasting and Management with GIS and Remote Sensing will be held in Guangzhou and Three Gorges, China, September 17-23, 2007. The conference topics include Hydrology, Water Resources, Environmental Issues, GIS and Remote Sensing. Three

workshops on Precipitation Estimation and Forecasting, New Generation Flood Forecasting Methods; and Monitoring, Prediction and Mitigation of Water-Related Disasters will also be held during the conference.

More information is available at the conference website:

<http://www.hydroinfor.sysu.edu.cn>.

Editor's Corner:

Thank you to those who provided news & information for this issue of the newsletter, your efforts are greatly appreciated.

To submit articles for future issues, please contact:

Chief Editor:

**Donald Frevert – Bureau of Reclamation, Denver, Colorado dfrevert@do.usbr.gov
(303) 445-2473**

Associate Editor:

**Mary Greene – Office of Surface Mining, Denver, Colorado mgreene@osmre.gov
(303) 844-1400 x1438**

