

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

**9:00 am – 12:00 PM (EST)**

**October 18, 2007**

*Rm. 3M-3, FERC Building  
888 First Street, NE, Washington, DC 20426*

**AGENDA**

1. Welcome and Introductions
2. Review and Approval of Agenda
3. Approval of Minutes from July 26, 2007 Meeting
4. Status of Action Items from July 26, 2007 Meeting
5. Further Amendment to Executive Order 12866 on Regulatory Planning and Review
6. Presentation of “Overview of Hydrologic Research at NSF” by Dr. Douglas James, National Science Foundation (*Presentation followed by Q&A for about 0.5 hrs*)
7. Update on Hydrologic Frequency Analysis Work Group
8. Update on Satellite Telemetry Interagency Work Group
9. Hydrologic and Hydraulic GIS Applications Work Group
10. Update on Hydrologic Modeling Work Group
11. Proposal for Extreme Storm Work Group
12. National Hydrologic Information System (HIS) development and SOH effort
13. Current Events within Hydrologic Communities
  - “National Academy of Science Disaster Workshop: Recovering from Disaster” by Gene Stallings, NHWC
  - “S&T Water Availability and Quality Report” by Ted Engman, NASA
  - Report on NWS Hydrologic Managers Conference by Tim
14. Announcements and Q&A on Business Reports from Member Organizations
  - NWS’ Update Report on Flood Inundation Mapping Project
  - “*The SOH CONNECTIONS*” Newsletter Editor’s Report
15. Recognition and Other Business
16. Election Results and Transition to New Chair and Vice-Chair
17. Plans for Next Meeting

*Adjournment*

**SUMMARY OF MEETING**  
(Prepared by Stephen Blanchard, USGS)

**PARTICIPANTS**

Martin Becker	Defenders of Property Rights (DPR)
Stephen Blanchard	Geological Survey (USGS)
Chris Cook	Nuclear Regulatory Commission (NRC)
Mike Eberle	Bureau of Land Management (BLM)
Ted Engman	National Aeronautics and Space Administration (NASA)
Don Frevert	Bureau of Reclamation (BOR) ( <i>by phone</i> )
Mary Greene	Office of Surface Mining (OSM)
David Goodrich	Agricultural Research Service (ARS) ( <i>by phone</i> )
Claudia Hoeft	Natural Resources Conservation Service (NRCS)
Victor Hom	National Weather Service (NWS)
John Hunter	Army Corps of Engineers (USACE)
Douglas James	National Science Foundation (NSF)
Joseph Krolak	Federal Highway Administration (FHWA) ( <i>by phone</i> )
Carol Lewis	Geological Survey (USGS)
Samuel Lin	Federal Energy Regulatory Commission (FERC)
William Merkel	Natural Resources Conservation Service (NRCS)
Thomas Nicholson	Nuclear Regulatory Commission (NRC)
Eugene Stallings	National Hydrologic Warning Council (NHWC)
Bob Swain	Bureau of Reclamation (BOR)
Nebiyu Tiruneh	Nuclear Regulatory Commission (NRC)
Will Thomas	Association of State Floodplain Managers (ASFPM)
David Wells	Environmental Protection Agency (USEPA)
Don Woodward	American Forests (AF)

## **Meeting Highlights**

Sam Lin called the meeting to order at 9:00 AM (EST).

### **1. Welcome and Introductions**

Sam Lin welcomed everyone to the meeting. Each person introduced themselves and their organizational affiliation. A total of 23 individuals participated, with 3 of the 23 participating by phone.

### **2. Review and Approval of Agenda**

The meeting agenda was approved as listed above.

### **3. Approval of Minutes from July 26, 2007 Meeting**

The minutes were approved with a minor change to item 11 to note that Tom Nicholson agreed with Martin Becker regarding the need for a minimal quality assurance standard for data in the HIS.

### **4. Status of Action Items from July 26, 2007 Meeting**

**Action:** Agencies representatives are to look over the Executive Order and see how it is being implemented in their agency.

**Action:** Sam Lin and Steve Blanchard will put the Executive Order on the agenda for the October 2007 meeting for further discussion.

*This action is completed; the Executive Order is on the agenda for today's meeting.*

**Action:** The members of the SOH are to circulate the charter for the new GIS Work Group within their organization and seek members from their organization for the Work Group. Names of those interested in membership are to be submitted to William Merkel.

*This action is completed; a report will be provided during today's meeting under agenda item #9.*

**Action:** Steve Blanchard will take the lead, for the time being, on developing a Work Group for the purpose of collaborating with CUAHSI on HIS. A proposal for the Work Group would be brought back to the next meeting for consideration.

*This action is on the agenda for today's meeting.*

## **5. Further Amendment to Executive Order 12866 on Regulatory Planning and Review**

Martin Becker asked each Federal Agency representative if they knew of any action being taken in their agency regarding this Executive Order. Each agency representative reported that they were not aware of any action.

## **6. Presentation of “Overview of Hydrologic Research at NSF” by Dr. Douglas James, National Science Foundation** *(Presentation followed by Q&A for about 0.5 hrs)*

Doug James provided a handout that used bullet points to summarize the Hydrologic Research being conducted at NSF. Doug then went through each of the points on his handout to provide additional information. The handout is included as Attachment 1.

## **7. Update on Hydrologic Frequency Analysis Work Group**

Will Thomas reported that the testing for the Expected Moments Algorithm (EMA) and Bulletin 17B procedures was underway. On August 9, 2007, Will Thomas provided Tim Cohn, USGS, and John England, BOR, a description of the testing approach that was developed by the data subgroup of the HFAWG. This approach described testing procedures for observed data from 80 long-term gaging stations as well the use of simulated data. A spreadsheet describing the data for the 80 gaging stations and a spreadsheet summarizing six theoretical frequency curves for Monte Carlo simulations were also provided. On August 15, 2007, Will Thomas updated the entire HFAWG as to the status of testing and provided the entire work group the testing procedures. The plan is to complete the first round of testing prior to the next Subcommittee on Hydrology (SOH) meeting (January 24, 2008) and to have a meeting of the entire HFAWG to discuss the testing results.

Bob Swain, BOR, asked about the schedule for completing a revised Bulletin 17C. Will Thomas reported that the testing and evaluation, revisions to Bulletin 17B and approval and review by SOH, ACWI, and OMB would take about a year. Therefore, it would likely be 2009 before a revised Bulletin 17C could be completed.

Tom Nicholson, NRC, asked if a report could be given at the next SOH meeting about the status of the EMA and Bulletin 17B testing. Will Thomas indicated that he would be prepared to report on the testing results at the January 2008 SOH meeting.

Sam Lin, FERC, asked about the limits of application of Bulletin 17B procedures. Will Thomas reported that Bulletin 17B is used to estimate flood discharges up to the 500-year event for bridge and culvert design, scour computations, and floodplain mapping.

Will Thomas reported that Jerry Stedinger, Cornell University, and Veronica Griffis, Michigan Technological University, wrote an editorial for the ASCE Journal of Hydrologic Engineering. This editorial provides a summary of recent flood frequency research and provides motivation for the testing that was just undertaken by the HFAWG. Although the editorial was reviewed by several members of the HFAWG, the views and opinions in the editorial are those of the authors and not the HFAWG. This editorial will be added to the HFAWG web site and clearly stated that the views and opinions are those of Drs. Stedinger and Griffis.

## **8. Update on Satellite Telemetry Interagency Work Group**

Not in attendance; nothing reported

## **9. Hydrologic and Hydraulic GIS Applications Work Group**

The workgroup was formally approved at the SOH meeting in July 2007. William Merkel reported that since that time, 9 members have volunteered to participate. They represent a wide spectrum of federal agencies. However, certain key agencies are not represented. Members from these agencies would be welcome.

A web site for the workgroup was set up which links to the web site of the SOH. In addition to a list of members and organizational charge (charter), teleconference minutes are posted. Detailed information on the new Workgroup can be accessed from the web site: <http://acwi.gov/hydrology/h2gisa/>. Information on additional activities will be posted periodically.

At the first teleconference of September 26, 2007, members introduced themselves and the charge was discussed. The first activities of the workgroup will be information gathering concerning GIS application which have been developed and are open to public distribution. Coordination with other GIS-related committees will be planned.

The next teleconference will be held November 5, 2007.

## **10. Update on Hydrologic Modeling Work Group**

Don Frevert reported that a request for proposals to host the 2010 Joint Federal Interagency Conference was sent out for consideration by about eight cities in June and proposals were received from three cities – Reno, Las Vegas and Orlando. Among those cities responding, there appear to be four viable facilities in Reno (the Silver Legacy, the Peppermill, the Nugget and the Atlantis), one in Las Vegas (the Riviera) and one in Orlando (the Wyndham). Other facilities had one or more disqualifications in their responses such as excessive hotel room rates, excessive charges for meeting rooms and unworkable charges or terms for food and beverage service. Site visits to the Reno and Las Vegas facilities are planned for the week of December 10<sup>th</sup> and to the Orlando facility in mid January.

A recommendation for a site will be formulated after completion of the site visits - hopefully in late January. A general announcement of the conference will be circulated once a contract is signed with the hotel – hopefully near the end of February.

Proceedings from the 1998, 2002 and 2006 Federal Interagency Hydrologic Modeling Conferences have been uploaded to a USGS web address. Steve Markstrom is working with Doug Glysson to get the proceedings linked to the Subcommittee on Hydrology website. Proceedings from the 1993 Workshop on Hydrologic Modeling Needs for the 1990's have not yet been uploaded. This will be a priority for 2008.

## **11. Proposal for Extreme Storm Work Group**

Bob Swain presented a proposal for an Extreme Storms Work Group. The Proposal is provided as Attachment 2. In summary, the Proposal recommends:

- Form a new work group under the SOH. Solicit membership from Federal/state agencies, universities (e.g. Bill Cotton, CSU; Jim Smith, Princeton), and others with expertise in hydrometeorology.
- Perform a literature review. Investigate improvements to methodologies (NRC, 1988; NRC, 1994; NRC, 2005; Cotton et al., 2001) and data collection techniques.
- Develop a detailed scope of work/plan of study, and determine the necessary funding requirements to accomplish the work. Develop a long term plan to update the extreme storm catalog and HMRs for estimating PMP. Consider use of new technologies for storm analysis and data collection and dissemination. List possible approaches for acquiring funding to implement the plan.
- Consider sponsoring an extreme storm workshop or specialty conference

A draft Charge for an Extreme Storms Work Group is provided as Attachment 3.

**Decision:** The SOH decided to pursue the formation of a Extreme Storm Work Group

**Action:** Bob Swain would take the lead on drafting an Extreme Storm Work Group charge (charter) and bring it back to the SOH for consideration.

## **12. National Hydrologic Information System (HIS) development and SOH effort**

Steve Blanchard reported that he did not have time to work on this effort over the past several months and did not think he could take on the lead role in forming such a potential group now that he was going to be Chair of the SOH. Steve had talked with David Goodrich (ARS) about him possible taking the lead role to form a work group. David agreed to take the lead on this effort.

**Action 1:** Steve Blanchard would provide the SOH with a copy of the MOU between the USGS and the CUAHSI HIS group for developing a daily values data sharing system.

**Action 2:** David Goodrich will work on developing a Work Group for the purpose of collaborating with CUAHSI on HIS. A proposal for the Work Group would be brought back to the next meeting for consideration.

### **13. Current Events within Hydrologic Communities**

- “National Academy of Science Disasters Workshop: Recovery from Disaster” by Gene Stallings, NHC

Gene represented the National Hydrologic Warning Council (NHC) at the National Academies Disasters Roundtable 21: Recovery from Disaster on October 17, 2007 at the Keck Center in Washington, D.C. Over 100 participants attended the Roundtable. The mission of the Roundtable is to facilitate and enhance communication and the exchange of ideas among scientists, practitioners, and policy-makers concerned with urgent and important issues related to natural, technological, and other disasters. Roundtables are convened three times a year in Washington.

Highlights from the Roundtable are that recovery from disasters is a complex and challenging process that involves all sectors of a community as well as outside interests. In many cases, it is not even clear if and when recovery has been achieved because of varying stakeholder goals for that community. For example, with some warning the community returned to what is considered its pre-disaster status while other communities want it to undergo change to realize a vision in which advances are made in risk reduction and other areas.

Dr. William Hooke, Chair of the Roundtable Steering Committee opened the Session by requesting a moment of silence in honor of Geographer and Hazard Research Pioneer Gilbert White on the anniversary of his death. A brief film on his life and times concluded the Roundtable.

- “S&T Water Availability and Quality Report” by Ted Engman, NASA

Ted wanted to make everyone aware of the recently released Subcommittee on Water Availability and Quality report titled “A Strategy for Federal Science and Technology to Support Water Availability and Quality in the United States.” The report is available online in electronic form at URL:

<http://ostp.gov/nstc/html/Fed%20S&T%20Strategy%20for%20Water%2009-07%20FINAL.pdf>

- Report on the National Weather Service biennial Hydrologic Program Managers Conference by Timothy Helble.

The NWS conducted the third conference at the National Weather Service (NWS) Training Center, July 10-13, 2007. The four-day event hosted nearly 200 participants and featured presenters from the hydrologic community both inside and outside of the Federal government. Keynote presenter Vickie Nadolski, Acting Deputy Assistant Administrator for Weather Services and Acting NWS Deputy Director, described the NWS Leadership Transition. Gary Carter, Director of the Office of Hydrologic Development and NOAA's Hydrologic Program Manager, expanded on one of the conference goals, "Understanding the national plan to improve and expand hydrologic services and its relationship to broader NWS activities." Among the many presentations were talks provided by NWS personnel as well as external partners from the U.S. Geological Survey (Steve Blanchard), Federal Emergency Management Agency (Rick Nusz), the Army Corps of Engineers (Jerry Webb), National Drought Mitigation Center (Brian Fuchs), the National Hydrologic Warning Council (Kevin Stewart), and the Public Works Department, from Overland Park, KS (Dan Miller). Special thanks to the ACWI SOH members who participated.

#### **14. Announcements and Q&A on Business Reports from Member Organizations**

##### Agricultural Research Service – David Goodrich

Nothing to report

##### American Forests – Don Woodward

Nothing to report

##### Association of State Floodplain Managers – Will Thomas

Nothing to report

##### Bureau of Land Management – Mike Eberle

Nothing to report

##### Bureau of Reclamation – Don Frevert

Commissioner Robert Johnson has announced the appointments of two new regional directors: Lorri Gray to fill Mr. Johnson's former position as Regional Director of the Lower Colorado Region in Boulder City, Nevada and Larry Walkoviak to replace the retiring Rick Gold as Regional Director of the Upper Colorado Region in Salt Lake City, Utah.

The Management for Excellence initiative continues within Reclamation with a targeted completion of December, 2007. More information on Management for Excellence can be found at: <http://www.usbr.gov/excellence/>

##### Corps of Engineers – Jerry Webb

The Corps of Engineers released the Draft Engineer Technical Letter 1110-2-570, "Certification of Levee Systems for the National Flood Insurance Program (NFIP)." for a 30 day review. The ETL can be found on HEC's website at:

<http://www.hec.usace.army.mil/misc/files/>.

Originally, the 30-day review period was to have ended on Oct 12th. The review period has now been extended to the end of October.

Defenders of Property Rights – Martin Becker  
Nothing to report

Federal Emergency Management Agency – Max Yuan  
Nothing to report

Federal Highways Administration – Joe Krolak  
Nothing to report

FERC – Sam Lin  
FERC conducted the dam security inspection of Conowingo and Muddy Run Pumped Storage projects in Maryland in last September. Both projects are listed among the Department of Homeland Security (DHS) list of the top 100 most critically important dams in the United States. FERC has 30 dams in the top 100. FERC has contracted a Physical Security Specialist with expertise in dam site security to lead the security inspection. At the same time FERC used the inspection as a training venue for their engineering staff.

Forest Service – Jean Thomas  
Nothing to report

National Aeronautic and Space Administration – David Toll  
Nothing to report

National Hydrologic Warning Council – Gene Stallings  
The 22<sup>nd</sup> Conference and Exposition of the ALERT Users Group will be convened on May 6th – 9th, 2008 at Palm Springs, California. The theme is the Role of Real-Time Hydrologic Monitoring for Integrated Flood Warning, Water Quality, and Watershed Management Programs. Abstracts and biographies must be submitted by February 1, 2008 to Mr. George Wilkins at [gwilkins@pacific-rem.com](mailto:gwilkins@pacific-rem.com) as a MS WORD attachment.

Nuclear Regulatory Commission – Tom Nicholson  
Nothing to report

Natural Resources Conservation Service – Claudia Hoeft  
Nothing to report

National Science Foundation – Doug James  
Nothing to report

National Weather Service – Victor Hom

NOAA NWS Flood Inundation Map Libraries - The National Oceanic and Atmospheric Administration's (NOAA) National Weather Service (NWS) and National Ocean Service's Coastal Services Center (CSC), in partnership with FEMA, USGS, and NCFMP (North Carolina Floodplain Mapping Program) will provide the first series of Advanced Hydrologic Prediction Service (AHPS) flood inundation map libraries on 22 October 2007. These new libraries will be accessible via the Internet for 17 locations in North Carolina. The flood inundation maps which comprise these libraries will provide information on the spatial extent and depth of flood waters in the vicinity of NWS river forecast locations. Combined with river observations and NWS river forecasts, inundation maps will enhance the communication of flood risk and provide decision-makers additional information, needed to better mitigate the impacts of flooding and build more resilient communities. Users will be able to display flood inundation maps for forecast river levels ranging from minor flooding through the largest observed flood on record. These flood inundation maps and associated geospatial data (e.g., shapefiles) will be accessible through NOAA NWS's AHPS webpage at:

- <http://www.weather.gov/ahps/>

Direct links to NWS flood inundation map libraries will be available at:

- <http://www.weather.gov/ahps/inundation.php>

A user's guide for the flood inundation map web interface is available at:

- [http://newweb.erh.noaa.gov/ahps2/inundation/inundation\\_mapping\\_user\\_guide.pdf](http://newweb.erh.noaa.gov/ahps2/inundation/inundation_mapping_user_guide.pdf)

NOAA is developing inundation libraries for 30-35 additional river forecast locations in the Gulf Coast area using Hurricane Katrina Supplemental resources. FEMA is assisting NOAA on this project by facilitating coordination with FEMA Regional Offices, state, and regional map modernization partners to access existing Flood Insurance Study data. These data are crucial building blocks of map inundation libraries. These new Gulf Coast libraries will be made available during FY2008 through the AHPS web portal. An important NOAA initiative is to create federal guidelines, consistent with FEMA's "Guidelines and Specifications for Flood Hazard Mapping Partners" to produce high-quality, standardized flood inundation libraries. The NWS and USGS are working on a document that will be presented to Advisory Committee on Water Information (ACWI) Subcommittee on Hydrology (SOH) in the fourth quarter of FY2008. For more information about NOAA activities, please contact:

Victor Hom, NWS National Inundation Mapping Services Leader (301-713-0006 ext. 173; [victor.hom@noaa.gov](mailto:victor.hom@noaa.gov)).

Office of Federal Coordinator of Meteorology - Provided a presentation on NOAA's Freshwater Forecast and Warning Services to the Committee for Environmental Services, Operations and Research Needs (CESORN) of the Office of Federal Coordinator for Meteorology (OFCM). The presentation was given in support of a special session focused on hydrometeorological requirements, research, products, and services. CESORN plans to form a Joint Action Group (JAG) to conduct a Crosscutting Assessment of Federal Agency Hydrometeorological Products, Services, and Supporting Research. Prior to the formation of the JAG, CESORN agreed to review the charter of the Advisory Committee on Water Information (ACWI), as well as the charters for ACWI's SOH's to assure there will be no duplication of effort.

Office of Surface Mining – Mary Greene  
Nothing to report

U.S. Environmental Protection Agency – David Wells

As part of EPA's response to regulate green house gas emissions, EPA's Office of water was asked to evaluate the impact to water quality from increasing corn production for ethanol production. EPA intends to model the change in loadings to surface water for nutrients and sediments in the Upper Mississippi watershed. Using the Presidential ethanol production goals, EPA will evaluate the impacts for the years 2012, 2017 and 2022. They also plan to develop one or two case studies to look at the effects at a local level and if possible compare the results to water quality criteria.

U.S. Geological Survey – Steve Blanchard

The USGS recently published a new report titled “Water Budgets: Foundations for Effective Water-Resources and Environmental Management” USGS Circular 1308. The report is available electronically at URL: <http://pubs.usgs.gov/circ/2007/1308/>

Two new USGS Fact Sheets has been published explaining the basics of the USGS Streamgaging Program. The Fact Sheets are:

- “The USGS Streamgaging Program” USGS Fact Sheet 2005-3131 available electronically at URL: <http://pubs.usgs.gov/fs/2005/3131/>
- “From the River to You: USGS Real-Time Streamflow Information” USGS Fact Sheet 2007-3043 available electronically at URL: <http://pubs.usgs.gov/fs/2007/3043/>

“The SOH CONNECTIONS” Newsletter Editor’s Report

- Mary Greene (OSM) will now serve as the editor of the newsletter and Claudia Hoeft (NRCS) will serve as the associate editor.
- The next newsletter will be issued in December. Mary and Claudia will send out a call for submittals. Please send your submittals to Claudia with a CC to Mary.
- Sam Lin: The issued newsletter has increased the Subcommittee’s external publicity and visibility while enhancing its internal networking. Public awareness is one of the SOH’s functions defined by the terms of Reference. The Subcommittee’s newsletter is also an effective means. It is encouraged to prepare a short article sent to the newsletter editors with simple, fundamental concepts on currently hydrology related topics, new technology, or policies each agency practices.

The SOH Web Page:

- Sam Lin: It is suggested that in the future the SOH’s web site may provide links to other hydrology related groups’ web sites to extend the Subcommittee’s horizon in information sources.

## **15. Recognition and Other Business**

Sam Lin presented Certificates of Recognition to:

- Donald Frevert - Chair of Hydrologic Modeling Work Group and Chief Editor of “The SOH Connections” Newsletter – “For successful leadership and dedication to

fulfill the subcommittee's purpose as the above Chair and Chief Editor for the period October 1, 2006 to September 30, 2007"

- Carol Lewis - Information Specialist, USGS – “For dedicated efforts in maintaining and updating the subcommittee's web site for the period of October 1, 2005 to September 30, 2007.”
- William Merkel - Chair of Hydrologic & Hydraulic GIS Applications Work Group – “For initiating and leading the above group in an effort to benefit the Hydrology & Hydraulics GIS user and developer community.”
- Mary Greene - Assistant Editor of “The SOH Connections” Newsletter – “For dedicated efforts in the publication of the above newsletter for the period of October 1, 2006 through September 30, 2007.”
- Eugene Stallings - Representative of National Hydrologic Warning Council – “For actively sharing information at each meeting on current events within the hydrologic community for the period of October 1, 2006 through September 30, 2007.
- Wilbert O. Thomas, Jr. - Chair of Hydrologic Frequency Analysis Work Group - “For continued leadership to drive the revision of Bulletin 17B “Guideline for Determining Flood Flow Frequency” and promoting public awareness for the period of October 2, 2006 through September 30, 2007.”
- Justin F. Smith - Dam Safety Engineer, FERC – “For commendable volunteer support of the Chair of the subcommittee while serving its members for the Period of October 1, 2005 through September 30, 2007.”
- Tammie Baker - Visual Information Specialist, FERC – “For commendable design work for the Subcommittee's creative poster and newsletter additions and other supportive work for the period of October 1, 2005 through September 30, 2007 .”

On behalf of Toni Johnson and ACWI, Carol Lewis (USGS) presented Sam Lin with a certificate of appreciation “for your many contributions to the Advisory Committee on Water Information as Chair and Vice-Chair of the Subcommittee on Hydrology from 2003 through 2007. Your professionalism in providing structure and guidance to the Subcommittee has led to significant productivity and accomplishments which have strengthened both the Subcommittee and the Advisory Committee. Your active participation and strong leadership have set a high example.”

On behalf of the USGS, Steve Blanchard presented a plaque to Sam Lin “In recognition of Dr. S. Samuel Lin's dedicated service and exceptional leadership as Chairman and Vice-Chairman of the Advisory Committee on Water Information's Subcommittee on Hydrology 2003 -2007.”

## **16. Election Results and Transition to New Chair and Vice-Chair**

Steve Blanchard, the current vice-chair, will serve as the Chair of the SOH for the next 2 years effective following this meeting. Mary Greene (OSM) was elected to the Vice-Chair of the SOH and will serve, effective following this meeting, for the next 2 years.

## **17. Plans for Next Meeting**

The next meeting will be at the Main Interior Building (MIB) from 9 AM to 12:00 PM.  
The address of the MIB is:

Department of the Interior  
1849 C Street, N.W.  
Washington DC 20240

Meeting room and conference call information will be provided prior to the meeting.

**HYDROLOGIC SCIENCE at the NATIONAL SCIENCE FOUNDATION**  
**L. Douglas James – October 18, 2007**

Hierarchy - NSF/GEO/EAR/HS

Program Structure – Five Components

1. Core Programs
2. Science and Technology Centers
3. Cross Program Interfacing
4. Special Competitions
5. Consortia - CUAHSI

Funds universities primarily

Allows supplemental funding for collaborating Federal agencies

Money cannot go to support salaries of Federal employees

Core Program – Support for fundamental research on hydrologic processes.

For Hydrology, average proposal is for \$100k/yr

Example Topics

Partitioning and tracking direct runoff

- Interaction with soil moisture storage.
- Scaling hillslope processes (role of macropores).
- Distributed modeling associated with variable source areas.
- Integration between runoff and atmospheric models.
- Flow through channel alluvium

Groundwater fluxes and transport

- Recharge locations and timings
- Movements of pollution plumes, heterogeneous aquifers
- Transport of colloids with associated pollutants
- Scientific support to enable groundwater remediation

Erosion and sedimentation

- Natural channel scour and deposition.
- Sediment transport by hydrologic events.
- Interactions between vegetation and channel flow

Aquatic Biogeochemistry

- Biogeochemical processes in streams, lakes, & aquifers
- Roles of water-element interactions in chemical cycling

Evapotranspiration

- Interaction between vegetation and soil moisture
- Integrating over a heterogeneous land surface.

Science and Technology Centers – average of \$4m/yr for 10 years

Competition about once every three years

SAHRA – Univ. of Arizona – Hydrology in Semi-Arid Lands

Salinity loading along rivers

Water extractions by xerophytes and phreatophytes

NCED – Univ. of Minnesota – Earth Surface Dynamics

Reshaping of lands and stream channels through time

Preservation of riverine resources

Cross Program Interfacing – shared funding for core proposals

Hydrology regularly shares with:

Environmental Biology

Geomorphology

Geochemistry

Geography – GIS

Climate and Meteorology

Special Competitions

Occasional Announcements – Watch NSF Web Page

Coupled Carbon and Water Cycles

Geo-Mathematics

Environmental Geochemistry and Biogeochemistry

Water and Watersheds

Occasional “Dear Colleague” Letters

- Describe opportunities to use current announcements.
- Current letter describes supplemental GEO funding of shared proposals.

CUAHSI – Consortium of Universities for Advancement of Hydrologic Science

An incorporated organization of over 100 member universities.

Visionary Dominant Objective

WATERS Network – Instrumented field sites to support research  
in Hydrology and Environmental Engineering

Watersheds in the order of 50,000 km sq

Inter-Agency Cooperation Essential

Operation and Maintenance

Field Technical Personnel

On-Going Supporting Activities

Observatory Test Beds – Field testing of design issues

Critical Zone Observatories – Larger scale field testing

Hydrologic Information System – David Maidment

Hydrology Measurement Facility – John Selker

Applications of Geophysics in Hydrology – Rosemary Knight

Synthesis Activities – M. Sivapalan & C. Vorosmarthy

ACWI  
Subcommittee on Hydrology

**Proposal for Extreme Storms Work Group**

DRAFT  
October 9, 2007

**Issue**

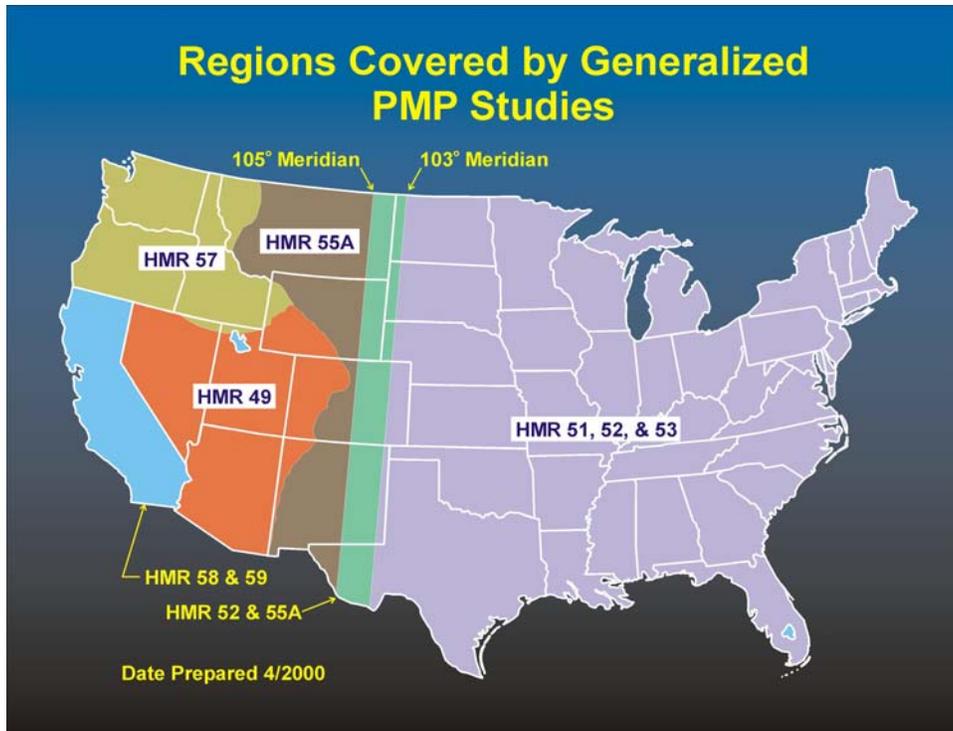
Storm-based precipitation is one of the major inputs to rainfall-runoff models, and is the dominant forcing variable that causes extreme floods. Data and methods for estimating extreme storms, up to and including the Probable Maximum Precipitation (PMP), are currently lacking. Currently, there is no mechanism in place within Federal Agencies to routinely collect, analyze, and archive extreme storm data that is useful for runoff modeling. In addition, there are no procedures in place to update storm data sets, methodology, and reports that are used to develop generalized PMP estimates. For example, the most recent PMP report was published in 1999 (Corrigan et al., 1999) and used data up to February 1986. Thus, extreme storms that caused major floods such as January 1997 in California, February 1996 in Oregon, January 1995 in Pennsylvania and rainfalls from Hurricanes Andrew (1992), Katrina (2005), Floyd (1999) are not well-documented and not part of any storm catalog (e.g., USACE 1945-) or data set useful for flood estimation.

Improved extreme storm estimates, including probability estimates of storm properties, can be used for dam safety assessments, risk analysis, and understanding extreme flood processes. We seek the approval of the Subcommittee on Hydrology, and subsequently the Advisory Committee on Water Information, to proceed with the proposed plan to form a new technical working group on Extreme Storms as described below.

**Background**

The basis for extreme storm rainfall estimates and PMP in the United States is depth-area duration (DAD) studies of notable extreme storms (e.g., USACE, 1945-; USWB, 1946). For at least the past 50 years, the U.S. Army Corps of Engineers, Bureau of Reclamation, and National Weather Service (and others) have jointly collaborated in collecting and analyzing storm rainfall data and publishing DAD data. These agencies have also collaborated in developing and improving PMP techniques. Hansen (1987) provides a review and summary of the PMP methods that are in current use.

The DAD data and PMP methods are used to provide "generalized" PMP estimates over large regions of the United States (Figure 1). The PMP estimates are published in Hydrometeorological Reports (HMRs) (Table 1).



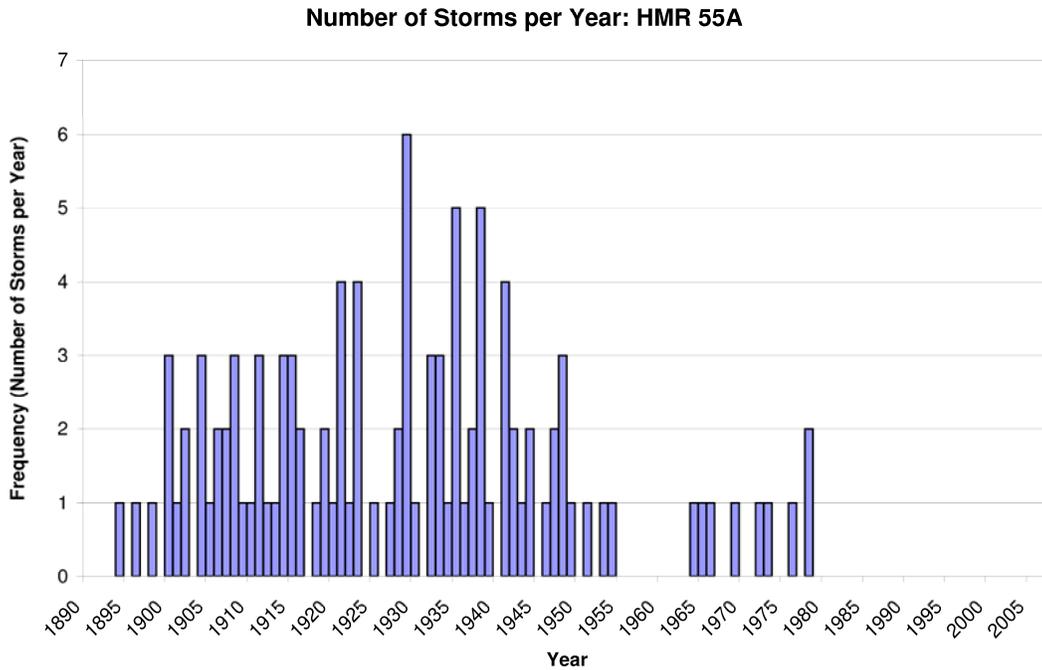
**Figure 1. Regional coverages of generalized PMP reports in the United States.**

**Table 1: Status summary of Hydrometeorological Reports**

HMR No.	Publication Date	Latest Storm Used	Comments
49	1977	Sept. 3-7, 1970	see HMR 50 (Hansen and Schwarz, 1981) for storm info; 1983 Prescott, AZ storm exceeds PMP (Levenson, 1985?)
51	June 1978	June 19-23, 1972	Replaced HMR 33 (1956)
55A	June 1988	Aug. 1-4, 1978	Replaced HMR 55 (1985) and TP 38 (1960)
57	October 1994	Dec. 24-26, 1980 (general) Aug. 16, 1990 (local)	Replaced HMR 43 (Nov. 1966)
59	February 1999	Feb. 14-19, 1986	Replaced HMR 36 (Oct. 1961)

Other than the storms used in the HMRs, little to no storm data have been collected and analyzed. The data in Table 1 indicate that there is a definite need for storm data collection. There is also a lack of major storm data within an existing HMR (Figure 2, HMR 55A). There are several limitations noted in the HMRs on providing space-time estimates of PMP, especially within orographic areas. Unlike the procedures in HMR 52

(Hansen et al., 1982), there are no methods for spatially and temporally distributing PMP over a watershed for locations other than the eastern United States.



**Figure 2. DAD data considered in developing PMP (HMR 55-A), expressed as number of storms per year. Note the lack of data in the 1960s and post 1978.**

### Problem Statement and Need

The hydrometeorological reports that form the basis for generalized probable maximum precipitation estimates rely on data that does not include the large storms that have occurred in the last 20 to 40 years. This creates a need to supplement these reports with expensive site-specific analyses to incorporate the largest storms that have occurred in a particular region. The extreme storm catalog should be expanded to include recent storms, and the HMRs should be updated to include the latest data.

An updated storm catalog is required to estimate the rainfall magnitude and spatial and temporal storm characteristics for various watersheds throughout the United States. Many agencies are using this information to develop extreme storm rainfall estimates for risk assessment and to determine the maximum flood potential at a particular location. Most of the storm information included in the extreme storm catalog was derived from published sources and supplemented with bucket survey information. Bucket surveys were used to get better definition of the rainfall magnitudes near the storm centers. Budget constraints have eliminated collection of bucket survey data in the past 20-30 years. Recent advances in use of radar reflectivity data should be examined as a source of information to supplement published rainfall data to expand the extreme storm catalog.

Many recent precipitation studies have used computer models to examine extreme storms. The HMRs use storm transposition and maximization techniques for determining generalized PMP estimates. These techniques should be compared against available computer modeling approaches that have been more recently developed. The advantages and disadvantages of each approach should be considered to determine the most appropriate approach for use in estimating extreme floods and to estimate the uncertainty in the estimates.

## **Impacts and Applications**

The proposed studies impact extreme flood estimates and assessments for dams, nuclear power plants, levees, and other high-hazard structures within the United States. The investigations also complement ongoing rainfall frequency studies and mapping efforts by the National Weather Service. Without these studies, engineering planning and design costs will increase due to the need for site-specific studies because generalized approaches are outdated.

## **Conceptual Approach**

1. Form a new working group under SOH. Solicit membership from Federal/state agencies, universities (e.g. Bill Cotton, CSU; Jim Smith, Princeton), and others with expertise in hydrometeorology.
2. Perform a literature review. Investigate improvements to methodologies (NRC, 1988; NRC, 1994; NRC, 2005; Cotton et al., 2001) and data collection techniques.
3. Develop a detailed scope of work/plan of study, and determine the necessary funding requirements to accomplish the work. Develop a long term plan to update the extreme storm catalog and HMRs for estimating PMP. Consider use of new technologies for storm analysis and data collection and dissemination. List possible approaches for acquiring funding to implement the plan.
4. Consider sponsoring an extreme storm workshop or specialty conference.

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## ***Draft Charge for Extreme Storms Work Group***

November 9, 2007

### **I. Sponsorship:**

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

### **II. Purpose, applicability, and scope:**

- A. Purpose.** The overall goal of the Hydrometeorology Work Group is to review and investigate improvements to methodologies and data collection techniques used for the development of design precipitation estimates for large storms up to and including the probable maximum precipitation (PMP). The Work Group will develop a detailed scope of work/plan of study, and determine the necessary funding requirements to update the extreme storm catalog and Hydrometeorological Reports (HMR) for estimating PMP. The attached proposal thoroughly describes the problem and issues that the Work Group should address.
- B. Applicability.** Hydrometeorology studies impact extreme flood estimates and assessments for dams, nuclear power plants, levees, and other high-hazard structures within the United States. Without these studies, engineering planning and design costs will increase due to the need for site-specific studies because generalized approaches are outdated.
- C. Scope.** The Work Group will promote cooperation among agencies on development of design storm studies and facilitate information transfer amongst the agencies and to the public.

### **III. Membership:**

- A. The Work Group shall have open membership from Federal/state agencies, universities, the private sector, and others with expertise in hydrometeorology.
- 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 two year terms ending December 31. The Vice Chair will then become Chair, and the members will elect a new Vice Chair to replace the Chair. 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 terminates their association with the work group 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. Meetings and Procedures:**

- A. The Work Group will meet at least two times a year and more frequently as designated by the Chair – particularly as the conference approaches. 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 SOH 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 SOH 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 SOH has the authority to terminate the Work Group in consultation with the SOH. At least 60 days notice must be provided in advance of termination.

**VI. Authority:**

The Work Group reports to the SOH of ACWI that operates under the Federal Advisory Committee Act. The Work Group will be subject to the direction of the SOH and will report activities to the SOH during their quarterly meetings.

Approved by the Subcommittee on Hydrology

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Steve Blanchard

Date

Chair, Subcommittee on Hydrology