

2007 ACWI MEETING

SUBCOMMITTEE ON HYDROLOGY (SOH)

Annual Report: 2006 Achieved Progress 2007 Planned Activities

S. Samuel Lin, Ph.D., P.E.
Federal Energy Regulatory Commission
January 17, 2007
Herndon, Virginia

*****Opening Remarks**

Thank you for this opportunity to present what progress the SUBCOMMITTEE ON HYDROLOGY has achieved last year and what activities the SUBCOMMITTEE has planned for this year. Generally speaking, 2006 has been recognized as a productive and innovative year. 2007 is a year we plan to further extend the progress which we made last year.

*****Purpose Statement**

From the “purpose statement” defined in our charter, the “Terms of Reference,” the SUBCOMMITTEE’s overall goal is to improve surface-water quantity information in both availability and reliability for a variety of water resource engineering applications for either providing advantages or preventing disadvantages in our daily life. This overall goal binds all of our members together to execute this purpose that forms our SUBCOMMITTEE.

*****Implementation Mechanism**

To accomplish the defined purpose, this SUBCOMMITTEE’s members have practiced two approaches by (a) sharing valuable water related information through the meetings and activities, and (b) organizing working groups to accomplish tasks as needed. So we can keep up with changing technologies, science and programs between member organizations.

These two approaches have been successfully undertaken as a mechanism to fulfill our mission. The SUBCOMMITTEE “uses the past as a springboard, not a sofa” so that we will further enhance these two approaches down the road.

*****Meeting held Quarterly**

The SUBCOMMITTEE meetings remain effective ways for members to discuss issues of concern, recommend draft issue papers to the ACWI, share and exchange information, etc. The meeting is held quarterly on average in past years.

Last year we were fortunate to have met four times in January, March, July and October. Our March 31 meeting was held in Reno, NV in conjunction with 2006 Federal Interagency Joint Conference. The 1st meeting of this year was held last week at NASA/GSFC ([Goddard Space Flight Center](#)) in Greenbelt, Maryland. The meeting minutes have been posted on the SUBCOMMITTEE's web site for public information.

*****Present Officers**

Steve Blanchard and I are the co-chairs. Both terms extend through September 2007.

*****Current Member Organizations**

The SUBCOMMITTEE membership is a diverse group. In 2006 we gained two new member organizations, the NASA and OSM. Now the SUBCOMMITTEE includes representatives from over 16 federal agencies and 4 interest groups.

*****2006 Initiatives and Accomplishments**

As mentioned earlier, the mission of this SUBCOMMITTEE is to discover new ways to improve surface-water information's quantity, quality and management. We strive to continue successful implementation of this mission. Thus far, the most significant accomplishments the SUBCOMMITTEE has achieved are through the efforts within its working groups. Those accomplishments will be presented later.

However, the SUBCOMMITTEE cannot accomplish its purpose without its both components – working groups and individual members surging together. Therefore, starting in 2006 the SUBCOMMITTEE has also invested its efforts beyond its working groups' efforts by conceiving and undertaking important tasks as needed. This SUBCOMMITTEE has achieved the following five milestones in last year:

- **Membership Drive:** The SUBCOMMITTEE has increased diversity of views and technical resources by gaining two more organization members to join us.
- **Promoting Team Work and Networking:** The SUBCOMMITTEE has encouraged professional connections and integrated expertise among our members (e.g., proposing a "[Hydrology and GIS Application Interagency Working Group](#)"; also discussing another possible one, "[Collaborative Hydrologic Database Web Site](#)")
- **Constantly Providing Post-Meeting Activities:** The SUBCOMMITTEE has expanded opportunities through post-meeting activities including presentations and/or tours to gain

more information/knowledge than just what is presented during our scheduled meetings. (For example, Dr. Robert Livezey with NWS presented in our 7/27/06 meeting, “Recent Trends in Climate and Their Impact on Water Resources.”)

- **Continuing and Increasing Contacts with Other Committees:** The Subcommittee has encouraged members to attend and become involved with other committees’ or professional societies’ activities to share their expertise and then feedback to the SUBCOMMITTEE. (For example, the SUBCOMMITTEE invited Todd Dabolt with the EPA, the co-chair of “*Subcommittee on Spatial Water Data*” to present in our 10/26/06 meeting. Another example is that our members participated in National Research Council’s “*Committee on Hydrologic Science*” meeting on 3/20/06)
- **Publishing Quarterly Issued Newsletter:** The NEWSLETTER has highlighted advancements in hydrology and related conferences to improve technology transfer and information sharing and to benefit the professional development of our members. The 1st issue of our newsletter, “**The SOH CONNECTIONS**” was published last December.

As mutually beneficial, the members ask what the SUBCOMMITTEE can do for them; vice versa, the SUBCOMMITTEE asks what the members can do for it. Therefore, with a single purpose to pursue as a team, our members have a commendable desire to keep up efforts in partnership to achieve continuous progress to function as the roles defined by our charter.

***Current Working Groups

(1) Working groups

The SUBCOMMITTEE has three active working groups. They are:

Hydrologic Modeling Working Group (HMWG) (Chair: Donald Frevert (BOR)),

Hydrologic Frequency Analysis Working Group (HFAWG) (Chair: Will Thomas (Michael Baker, Jr.)),

and Satellite Telemetry Interagency Working Group (STIWG) (2006 Chair: Charles (Kaz) Kazimir; 2007 Chair: Bonnie Wyatt (FS)).

I would like to point out one special pleasant working experience with the ACWI Executive Secretary Toni Johnson. On 7/26 last year, Toni met with the representatives from the SUBCOMMITTEE and STIWG to discuss the STIWG’s draft issue paper, which outlines GOES Data Collection System (DCS) vulnerabilities. As a result, Toni gave us valuable advice. We greatly appreciate this kind of support that really assists us in confronting and resolving the issues we have and we believe the ACWI will continuously provide us with such support.

The SUBCOMMITTEE extended its congratulations and sincere appreciation to those outstanding chairs by awarding them with appreciation certificates for their recognized leadership and many accomplishments and contributions to the SUBCOMMITTEE. These three working groups’ annual reports will be briefed later, including their activity results, concerns/issues and plans/recommendations.

*****Hydrologic Modeling Working Group**

(1) Meetings

This working group has alternative face-to-face meetings and teleconferences based upon their work needs. This group has most recently held a face-to-face meeting on March 30 last year.

(2) 2006 Conference

The key milestone this group has achieved last year was successfully holding the 3rd Federal Interagency “Hydrologic Modeling Conference” jointly with the 8th Federal Interagency “Sedimentation conference” for April 2 through 6 in Reno, Nevada.

This Joint conference was attended by more than 600 participants from four sectors: Federal, State and Local Governments, Private Industry, Stakeholder Groups, and Universities or Research Institutes. There were approximately 250 technical presentations and 60 posters and 10 short courses on state-of-the-art technology. All sessions were well attended.

(3) Next conference

Following the success of 2006 Joint Conference, the next Joint Conference has been planned for 2010. The site selection process starts this month and will be finalized around September, this year.

There may be as many as six concurrent technical sessions: three on hydrologic modeling and three on sedimentation. Plans for special features would include: Poster Sessions, Demonstration Sessions, Short Courses, and Technical Field Trips.

(4) Proceedings

The proceedings from 1998, 2002 and 2006 Conferences and 1993 Modeling Workshop will be posted on a web site by February, 2007

*****Hydrologic Frequency Analysis Working Group**

In the 2006 ACWI’s annual meeting, the HFAWG’s issue paper got approval to proceed a study on the usage of expected moments approach. Now the HFAWG Chair, Will Thomas will present his group’s annual report.

(See **Attachment I, “HFAWG Annual Report Outlines”**)

*****Satellite Telemetry Interagency Working Group (STIWG)**

Now I will let the STIWG’s Representative Ernest Dreyer with USGS present their annual report including its proposed issue paper on GOES DCS vulnerabilities.

(See **Attachment II, “STIWG Annual Report Outlines”**)

*****Closing Remarks**

Thank you very much again for this opportunity to report on the SUBCOMMITTEE’s progress and planned activities.

Attachment I. “HFAWG Annual Report Outlines”

Background Information:

- Most Recent Meeting – October 23, 2006
- Work group formed in Dec. 1999 to address three main issues:
 - Preparing a list of “Frequently Asked Questions and Answers” about Bulletin 17B - Guidelines For Determining Flood Flow Frequency (Interagency Advisory Committee on Water Data, 1982)
 - Developing guidance for “Flood Frequency Estimates” for ungaged watersheds
 - Developing guidance for “Flood Frequency Analysis” for watersheds regulated by flood control structures
- List of “Frequently Asked Questions and Answers” on Bulletin 17B posted on the work group web site
- Paper entitled “Evaluation of Flood Frequency Estimates for Ungaged Watershed” posted on the work group web site <http://acwi.gov/hydrology/Frequency/>
- 29 of 43 Bulletin 17B references are on the USGS web site under the Office of Surface Water, USGS http://water.usgs.gov/osw/bulletin17b/bulletin_17B.html
- Ongoing Tasks:
 - Preparing a report on flood frequency techniques for regulated watersheds
 - Developed a plan to test new statistical procedures for Bulletin 17B and testing will begin soon

http://acwi.gov/acwi2006/slide.lib/Thomas_HFAWG-17B_4_ACWI06.doc

Benefit of Working Group:

Provides a forum for discussion of flood frequency analysis issues among experts throughout the country and a mechanism for developing improved techniques

Flood Frequency Research Needs:

- Procedures for ungaged watersheds and/or regulated watersheds
- Adjustments for watershed changes (urbanization) and treatment of nonhomogeneous flood data
- Mixed populations analyses
- Treatment of outliers, zero flows, historic and paleoflood data
- Comparative analyses to validate Bulletin 17B results
- Estimation of regional/generalized skew
- Alternative frequency distributions and fitting methods
- Improved procedures for determining confidence limits

Plans to investigate possible revisions to Bulletin 17B:

- Following plan discussed with Subcommittee on Hydrology (SUBCOMMITTEE) on January 12, 2006 – approval to proceed
- Proposed plan is research that can be accomplished in a reasonable time frame (one to two years) with limited resources

- Stay with fitting Pearson Type III distribution to logs of annual peak flows using a method of moments approach
- Plan presented as information to ACWI in January 2006, results of proposed research will be provided at future ACWI meetings
- Evaluate and compare performance of Expected Moments Algorithm (EMA) to the current Bulletin 17B procedures for analyzing samples with historic and paleoflood data, outliers and zero flows
- Testing on gaging station data (~80 samples) and review of comparisons in the published literature
 - Drainage areas range from about 1 to 7,500 square miles
 - Record lengths generally exceed 70 years
 - Nationwide geographic distribution
 - No regulation of annual peak flow records
- Recommend improved plotting position formula when historic data are available
- Describe and recommend improved procedures for estimating regional / generalized skew
- Bulletin 17B skew map will not be replaced at this time
- Describe improved procedures for defining confidence limits that include the uncertainty in the skew coefficient
- Describe confidence limit procedures for EMA if adopted
- Work will be accomplished by HFAWG members, no additional funding requested
- Investigations to be completed in 2007; coordination, review and approval process to be completed in 2008
- Product will be a new Bulletin 17C describing the new procedures
- Review and approval of new Bulletin 17C will be coordinated with the SUBCOMMITTEE, ACWI, and OMB with a public comment period

Attachment II. “STIWG Annual Report Outlines”

Background Information:

- Chartered jointly by the Office of the Federal Coordinator for Meteorology (OFCM) and the Advisory Committee on Water Information (ACWI).
- Reports to OFCM’s Committee for Environmental Services, Operations and Research Needs (C/ESORN) and ACWI’s Subcommittee on Hydrology.
- Acts as a user's group for major users of the GOES DCS. Advises NOAA/NESDIS of user requirements.
- Coordinates funding for user-desired improvements to the GOES DCS.
- Members include USBR, USGS, Corps of Engineers, BLM, Forest Service, NOAA, NPS, & Dept. of State.
- Met twice during 2006 (Sioux Falls, SD in May; Asheville, NC in Nov).

Major Activities in 2006:

- Generated a compressive issue paper outlining GOES DCS vulnerabilities & recommendations for STIWG agency needs of “A formally documented commitment and procedures” from NOAA/NESDIS for continued operation of the GOES DCS.
- Presented STIWG GOES DCS concerns in the issue to SOH and ACWI (Interim meeting).
- Briefed Western Governors Association of their dependency on GOES DCS for Fire Weather data retrieval and dissemination and the current associated vulnerabilities.
- SBIR for DCPI was awarded to Sutron Corp. The target objective is to provide a prototype receiver and a concept of operation to NOAA/NESDIS & GOES DCS users.
- STIWG started a discussion with manufacturers to jointly specify a Binary protocol standard and or other compaction methods to maximize efficiency of GOES DCS bandwidth.
- USGS & NOAA/NESDIS developed an agreement to transfer funds to USGS supporting the construction of the Emergency Data Dissemination Network (EDDN). The EDDN will provide another method to retrieve environmental DCP data during non-satellite related GOES-DCS outages at Wallops. The EDDN will utilize standardized and standard off the shelf public domain products that are readily available. The STIWG agreed to support ongoing O&M costs to sustain the operation EDDN at EROS.
 - The STIWG supports USGS recommendation to host the EDDN at the USGS’s Sioux Falls, SD EROS facility because of the geographic location and robust proven infrastructure for satellite data reception and processing. (LANSAT since 1970’s)
 - Implementing an interagency LRGS change coordination group and STIWG is investigating a more robust metadata schema and a centralized repository to aid in the decoding and sharing of transmitted data.
- Worked with GOES DCS program manager (Kay Metcalf) to identify and mitigate constraints and susceptibilities for the GOES DCS operation on current and future satellites.
- The STIWG continues to be concerned about GOES DCS vulnerabilities and are still working through our parent committees to:
 1. Address the criticality of the GOES-DCS for member agencies and others.
 2. Retain STIWG sponsoring committee’s support of the GOES DCS and their assistance to elevate the status and formalize management processes and agency commitments.
 3. Request guidance on ways to strengthen relationships with NOAA and become more involved in NOAA’s budgeting and strategic planning processes.