

Subcommittee on Hydrology (SOH)

Report on 2015 Activities and Accomplishments

ACWI Annual Meeting

October 27, 2015

**Robert Mason, Chair
United States Geological Survey**

**Dr. Siamak Esfandiary, Vice-Chair
Federal Emergency Management Agency**

Subcommittee On Hydrology

Purpose

Improve the availability and reliability of surface-water quantity information needed for hazard mitigation, water supply and demand management, and environmental protection.

Activities

Quarterly Meetings, Workgroups, Workgroup Meetings, Announcements, Conferences.

Website

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



SOH Member Organizations

1. Agricultural Research Service (ARS)
2. Association of State Floodplain Managers (ASFPM)
3. BECKER
4. Bureau of Land Management (BLM)
5. Bureau of Reclamation (USBR)
6. Environmental Protection Agency (EPA)
7. Federal Emergency Management Agency (FEMA)
8. Federal Energy Regulatory Commission (FERC)
9. Federal Highway Administration (FHWA)
10. Forest Service (USFS)
11. National Aeronautics and Space Administration (NASA)
12. National Hydrologic Warning Council (NHWC)
13. National Science Foundation (NSF)
14. Natural Resources Conservation Service (NRCS)
15. NOAA National Weather Service (NWS)
16. Nuclear Regulatory Commission (NRC)
17. Office of Surface Mining (OSMRE)
18. Tennessee Valley Authority
19. U.S. Army Corps of Engineers (USACE)
20. United States Geological Survey (USGS)



SOH Workgroups

- Hydrologic Frequency Analysis Work Group (HFAWG)
- Extreme Storm Events Work Group (ESEWG)
- Hydrologic Modeling Work Group (HMWG)
- Satellite Telemetry Interagency Work Group (STIWG)

SOH Satellite Telemetry Interagency Workgroup (STIWG)

LySanias Broyles, Chair US Army Corps of Engineers (USACE)

Purpose, Goals, and Accomplishments:

- ☐ User group for the Geostationary Operational Environmental Satellite (GOES) Data Collection System (DCS).
- ☐ Advises NOAA National Environmental Satellite, Data, and Information Service (NESDIS) on matters concerning satellite data relay user requirements
- ☐ Undertakes projects to benefit the GOES DCS community
- ☐ Established new TOR in 2015
- ☐ Drafted new White Paper for preservation of DCS (see handout)

SOH Hydrologic Modeling Workgroup (HMWG)

- **Jerry Webb, Chair** US Army Corp of Engineers (USACE)
- **Claudia Hoeft, Technical Chair** 5th FIHMC, (USDA NRCS)

Purpose, Goals, and Accomplishments:

- ❑ Promote sharing of information on modeling tools and modeling systems in hydrology and water resources.
- ❑ Plans, organizes, and promotes the Federal Interagency Hydrologic Modeling Conference every four/five years and
- ❑ Engages in other modeling related activities as appropriate.
- ❑ **Held the 15th Federal SED-HYD Conference 4/19-23, 2015**
 - ❑ 350 people attended; 240 tech papers and extended abstracts were presented. 11 short courses

SOH Extreme Storm Events Workgroup (ESEWG)

- **Thomas J. Nicholson, Chair** US Nuclear Regulatory Commission (USNRC)
- **Marian E. Baker, Vice-Chair** US Army Corps of Engineers (USACE)

Purpose and Goals:

- ❑ Coordinate studies and databases for reviewing and improving methodologies and data collection techniques used to develop design precipitation estimates of large storm events up to and including the Probable Maximum Precipitation (PMP).
- ❑ Develop a detailed scope of work/plan of study, and
- ❑ Determine the necessary funding requirements to update the Catalog of Extreme Storms and Hydrometeorological Reports (HMR) for estimating PMP.



SOH Extreme Storm Events Workgroup (ESEWG)

Key Activities and Findings

- Workshop and Follow-up on Probabilistic Flood Hazard Assessment, January 29-31, 2013 in Rockville, MD
 - *See proceedings:*
<http://acwi.gov/hydrology/minutes/PFHAWorkshopProgram.pdf>
- ESEWG May 2014 Workshop and Follow-Up
 - *defined needed extreme precipitation products*
 - *collected feedback from Federal, State agencies, and member organizations of the ICODS and NDSRB on their user needs for Extreme Storm data and services, and*
 - *established ESEWG Proposal Writing Team (PWT)*
- Meeting on Uncertainty Analysis for Probable Maximum Precipitation Estimates, May 18, 2015
- Broad Recommendations from Scientists, Regulatory Agencies, and Dam Owners including 21 States and 8 Federal Agencies





Recommendations from Workshops and Meetings with Stakeholders

1. Coordinate Studies and Database

- ☐ Maintain and post active list of Extreme Storms Studies (such as PMP studies)
- ☐ Develop central repository for precipitation data collected by Workgroup organizations and foster data agreement with respective agencies.

2. Develop a detailed scope of work/plan of study

- ☐ Work with the ESEWG Proposal Writing Team (PWT) to complete detailed scope of work/plan of study

3. Determine the necessary funding requirements

- ☐ It is not clear what would be the next step after the necessary funding requirements are collected.
- ☐ Focus should be on priority #1, #2, and WG to draft recommended guidance for Extreme Storms Analyses and PMP for Extreme Storms Analyses and PMP in PMF/PFHA.

SOH Hydrologic Frequency Analysis Workgroup (HFAWG)

- **Will Thomas, Chair** Baker/ASFPM
- **John England, Vice-Chair**, US Bureau of Reclamation (USBR)

Purpose and Goals:

- ☐ recommend procedures to increase the usefulness of the current guidelines for Hydrologic Frequency Analysis computations,
- ☐ evaluate other procedures for frequency analysis of hydrologic phenomena, and
- ☐ forward draft papers and recommendations to the Subcommittee on Hydrology of ACWI for appropriate action.

SOH Hydrologic Frequency Analysis Workgroup (HFAWG)

- **Will Thomas, Chair,** Michael Baker International/ASFPM
- **John England, Vice-Chair,** US Army Corps of Engineers (USACE)

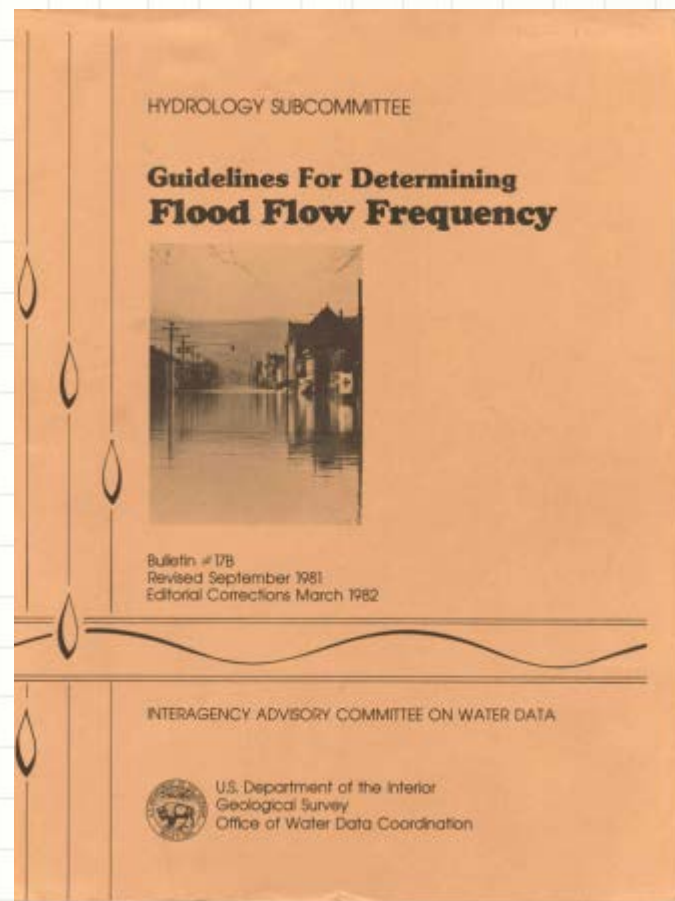
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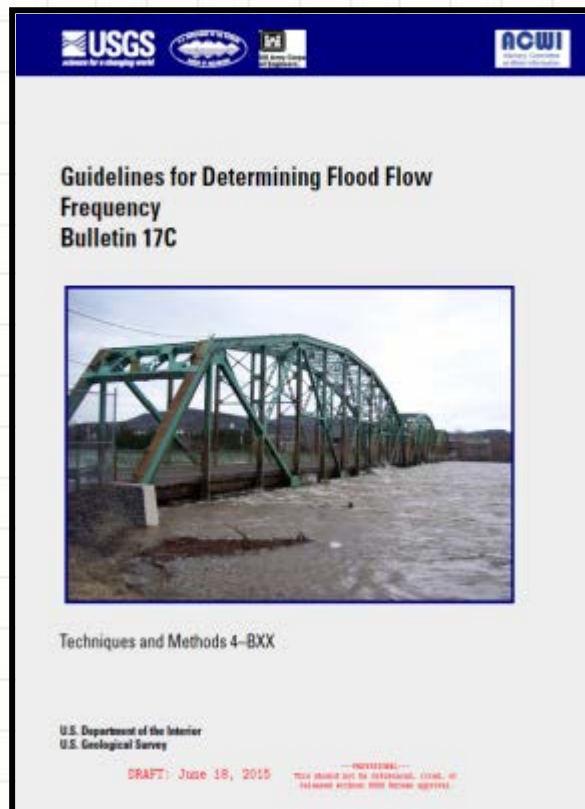
SOH Hydrologic Frequency Analysis Workgroup (HFAWG)

Updating Bulletin 17B Guidelines:

- ☐ Published in March 1982, based on research from 1960s and 1970s
- ☐ HFAWG is updating Bulletin 17B using pertinent research since 1982
- ☐ Incorporating new statistical procedures for analyzing historical floods and nonstandard flood data and adjusting for low floods
- ☐ http://water.usgs.gov/osw/bulletin17b/bulletin_17B.html



SOH Hydrologic Frequency Analysis Workgroup (HFAWG)



Guidelines for Determining Flood Flow Frequency Bulletin 17C

Improvements

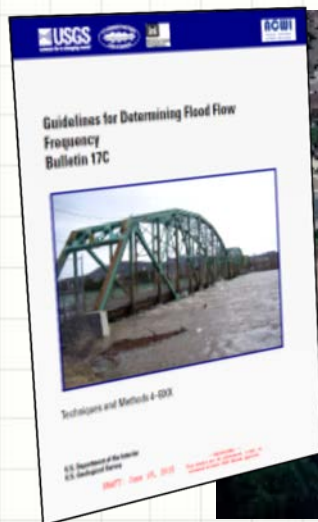
1. *Historical Information, Interval Data and Low and Zero flows*
2. *Low Outlier Identification*
3. *Confidence Intervals*
4. *Estimation of Regional Skew*
5. *Plotting Positions*
6. *Climate Change*
7. *Expected Probability*

SOH Hydrologic Frequency Analysis Workgroup (HFAWG)

Progress since August 2014 ACWI meeting

- * As discussed at the 2014 ACWI meeting, Bulletin 17C will be published as USGS Techniques and Methods Report
- * April 2015 – Provided first complete draft of Bulletin 17C to HFAWG members for their review
- * May 2015 – HFAWG meeting in Alexandria, VA, discussed draft Bulletin 17C and received comments from HFAWG members
- * June 2015 – Revised version of Bulletin 17C provided to SOH for review
- * July 2015 – Bulletin 17C was discussed in some detail at the July 23, 2015 SOH meeting, comments received from SOH members

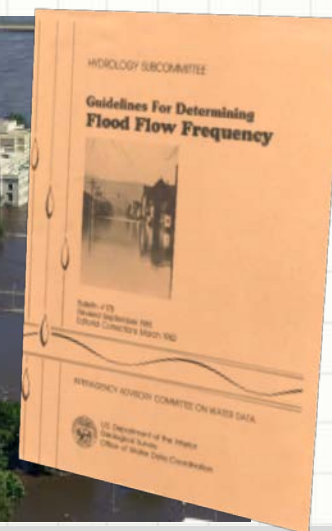
July 23, 2015 SOH Meeting Presentation on Bulletin 17C Will Thomas and John England



*St Vrain Creek, Lyons, Colorado
McConnell Drive at Hwy 36
September 2013 flood*



*Cedar Rapids,
Iowa 2008*



Guidelines for Determining Flood Flow Frequency -Bulletin 17C

SOH Hydrologic Frequency Analysis Workgroup (HFAWG)

Progress since August 2014 ACWI meeting

- USGS colleague review process
 - Three independent technical reviews completed
 - Very positive; no fatal flaws; some minor improvements recommended
 - HFAWG writing team addressing the review comments
 - Anticipate next draft by the end of October 2015, this version will be submitted for public comment through the ACWI/SOH

SOH Hydrologic Frequency Analysis Workgroup (HFAWG)

- Bulletin 17C is considered “influential science” by USGS and a Communication Plan has been prepared that describes:
 - Subject and purpose of the publication
 - Impact of dissemination
 - Details on the USGS review process and requisite experience of the reviewers
 - Information on a public comment period, 45-day public comment period will be announced by USGS Water Information Coordination Program through the Federal Register
- Bulletin 17C and supporting materials and software links will be posted on the SOH/HFAWG web site and public comments solicited

SOH Hydrologic Frequency Analysis Workgroup (HFAWG)

- **The Path Forward**

- HFAWG writing team will develop responses (spreadsheet) to public comments, circulate to SOH and post on web site when approved
- Bulletin 17C will be revised as appropriate based on public comment
- Obtain approval of ACWI before publication
- Software, examples, and training materials will be posted on the HFAWG web site
- Training course being planned for ASCE EWRI in 2016 in West Palm Beach, FL
- Additional outreach through other technical conferences



Proposal for Streamflow Information Collaborative Working Group

- Coordinate national streamflow information network priorities and needs.
- Identify areas for coordination, innovation, technical transfer, training, and leveraging of resources (including foundational datasets, data management systems, and scientific tools).
- Create cohesive messaging about the value, uses, economic benefits, and critical gaps in our Nation's streamflow information network.
- Develop effective mechanisms to “get the word out” (telling “our” story” (web portal, social media)).
- Increase engagement with the public, increase stakeholder interest and knowledge of streamflow information.

SOH References

- SOH Website - <http://acwi.gov/hydrology/index.html>
- SOH Quarterly Meetings - <http://acwi.gov/hydrology/minutes/index.html>
- SOH HMWG - <http://acwi.gov/hydrology/Hydro-Modeling/index.html>
- 2015 Joint Federal Interagency Conference - www.sedhyd.org/2015/
- SOH STIWG - <http://acwi.gov/hydrology/stiwig/index.html>
- SOH ESEWG – <http://acwi.gov/hydrology/extreme-storm/index.html>
- SOH HFAWG - <http://acwi.gov/hydrology/Frequency/>
- Bulletin 17B - http://water.usgs.gov/osw/bulletin17b/bulletin_17B.html
- PeakFQ - <http://water.usgs.gov/software/PeakFQ/>
- Bulletin 17C - <https://sites.google.com/a/alumni.colostate.edu/jengland/bulletin-17c>

Questions?