ACWI
Streamflow Information Collaborative (SIC)
Tuesday, July 09, 2019
10:00 am Central

Phone: 1-855-547-8255 (toll free), Access Code 74449#
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WEBEX: https://global.gotomeeting.com/join/882470341

Call Purpose:
- Presentation:
  Streamflow Uncertainty
- Update on streamflow related activities

Agenda:
- Approval of agenda – additions/deletions
- Approval of previous minutes
- Streamflow Uncertainty presentation
- Info exchange – streamflow information related activities

Attendees:
Sandy Eberts (USGS Co-Chair), Sue Lowry (Co-Chair), Craig Miller, Dave Goodrich, Doug Curtis, Frank Kugel, Mark Fuhrmann, Gaby Garcia, Jan Janowicz, Julie Kiang (speaker), Terry Kenney, Kyle Blasch, Tom Littlepage, Kristen McSwain, Michele Eddy, Philip Paitz, Ben Pratt, Richard Antoine, Richard Rockel, Roberts Mason, Jennifer Shourds, James Williams, Shuhai Zheng, Joseph Kanney

Business Portion:
Approval of agenda – additions/deletions: Agenda approved
Approval of previous meeting minutes: Minutes from 05/14/2019 were adopted

The new USGS ACWI Coordinator, Kristen McSwain, was introduced.

Presentation:
Streamflow Uncertainty
by Julie Kiang, Chief, Analysis and Prediction Branch, Water Resources Mission Area, USGS

Julie Kiang is the Chief of the Analysis and Prediction Branch within the Water Mission Area of the U.S. Geological Survey. She leads a group of hydrologists that conduct research and training on topics such as understanding hydrologic change, extending limited flow information to ungaged locations, and quantifying hydrometric uncertainty. Prior to joining the USGS, she was a water manager for the Washington, D.C. metropolitan area, focusing on drought management and long-term water supply planning. She has also been a consultant to water suppliers in the western U.S. She holds a B.S. in Civil and Environmental Engineering from Stanford University, an S.M. in Civil and Environmental Engineering from the Massachusetts Institute of Technology, and a Ph.D. in Hydrology and Water Resources from the Massachusetts Institute of Technology.

Summary:
Providing information on streamflow uncertainty is an acknowledgment that discharge (streamflow) at gaging stations is not perfectly known. Information on uncertainty can be used to

improve decisions, models, and operational methods. Measurements, ratings, and stage (water level) time series all contribute to streamflow uncertainty. Currently, the USGS only provides qualitative assessments of streamflow uncertainty to the public but would like to be able to provide more quantitative assessments of uncertainty that are repeatable. The USGS has been estimating discharge measurement uncertainty associated with the velocity-area method and ADCP moving-boat method. Others around the world are also working on discharge measurement uncertainty. The USGS also is working on quantifying rating curve uncertainty. A rating curve uncertainty experiment was conducted on the Isere River at Grenoble, France—a location with a stable channel and long period of record. The rating curves for the seven methods that were compared were similar, but the uncertainty bounds were different. The contrast was the largest at the high and low flow ends of the curves. Results of the experiment show that differences in uncertainty can be traced back to assumptions. Thus, careful description of assumptions behind uncertainty methods is needed. A goal is to develop an objective calculation of uncertainty that can be automatically applied to thousands of real-time streamgages so that different people will come up with the same estimate of uncertainty. Next steps related to discharge measurement uncertainty include incorporating uncertainty into the USGS NWIS database and continuing collaboration with other to develop and test methods. Next steps related to stage-discharge rating uncertainty include more testing of select methods at USGS sites. A stage uncertainty project is expected to kick-off in fall 2019.

Discussion Following Presentation:

Terry Kenney (USGS) will be leading the stage uncertainty project. He mentioned that he is also working on stream temperature data uncertainty. There was some discussion on how to communicate streamflow uncertainty and whether or not confidence intervals are the best way to do so. Kyle Blasch (USGS) noted that there can be a difference between real-time and final, published streamflow uncertainty estimates and that many people use streamflow data the first day it is available. This is particularly true during emergencies. Robert Mason (USGS) encouraged everyone to present streamflow uncertainties. Ben Pratt (Susquehanna River Basin Commission) said that his group has talked about how to address uncertainty. It was agreed that presenting uncertainty to the public would be challenging and that many end users may not make use of the information. Robert pointed out that uncertainty in hurricane tracks is communicated by mapping multiple possible tracks, providing some confidence in predictions especially where predictions overlap. Sue Lowry (ICWP) asked if the SIC could make some recommendations to encourage the various entities that collect streamflow data (beyond the USGS) to quantify the uncertainty in their streamflow data.

Next SIC Meeting:

August 13, 2019, 10:00 central.