

REVISED DRAFT AGENDA
Water Resources Adaptation to Climate Change Workgroup of the
Advisory Committee on Water Information
January 14, 2016: 1:00 – 2:30 eastern

Call in Numbers:

USGS staff at Headquarters - x4848
Other USGS offices/DOI locations - 703-648-4848
Non-USGS locations (toll free) - 1-855-547-8255
Access code is: 53700#

When it is time to attend the meeting, please visit this link:

<https://usgs.webex.com/usgs/j.php?MTID=m2cb8fb9bd285c3fc8b4bd069b7a12538>

Attendees:

Jeff Peterson, Co-chair, EPA	Ben Chou, NRDC	Kelly Kryc, Nat'l Ctr for Wildlife Sci.
Paul Freedman, Co-chair, WEF	Deirdre Mason, ASDWA	Karen Metchis, EPA
Erica Brown, AMWA	Paul Wagner, USACE-IWR	Lorraine Koss, U.S. Water Alliance
Nancy Beller-Simms, NOAA	Brenna Mannion, NACWA	Marla Stelk, ASWM
Kristen Donahue, USGS	Jeff Manning, ACWA	Mike Block, NGWA
Mary Musick, GWPC	Nancy Turyk, NALMS	Wendy Norton, USGS
Paul Wiegand, NCASI	John Wells, ACWI-SWRR	

Presenters:

John Lenters, LimnoTech
Dan Isaak, U.S. Forest Service

I) Introductions and Agenda Review

II) Approval of Notes from Previous Meeting (see draft notes at
http://acwi.gov/climate_wkg/index.html)

III) Presentation: Climate Change and Lake Temperature; John D. Lenters, Ph.D., Senior Scientist, LimnoTech; see <http://laketemperature.org/> and
<http://onlinelibrary.wiley.com/doi/10.1002/2015GL066235/full>

- Presentation slides are available here:
http://acwi.gov/climate_wkg/minutes/index.html
- Impacts of changes in lake evaporation – illustrated by an example from the Great Lakes
- Lake Superior is experiencing rapid loss of ice and rapid warming; if warm years become the norm, we will lose more and more water to evaporation
- Global Lake Temperature Collaboration (involves GLEON)
- GLTC website; EOS publication
- What are the patterns, mechanisms, and impacts of global lake cooling?

- Lake warming/cooling trends are influenced by many factors: climate, air temp, changes in cloud cover and solar radiation, mean depth, latitude, etc.
- Reservoir Evaporation Workshop held by Colorado University at Boulder in October 2015
- Question: Some of the data in your report and presentation showed pretty small increments of warming; there must be a huge data set associated with these. Can you comment on the number of measurements that are intrinsic to this study? Answer: It depends a bit on the lake. One challenge we had was standardization of all the data. Some were measured daily, others bi-weekly, so we had to figure out a method to calculate 3-month means. We did some analysis to determine the level of uncertainty. Once you have 250+ lakes in the database, you can start to see the signal versus the noise.
- Question: You said the project is updating tools and techniques for measuring reservoir evaporation rates; is that ongoing, or is there more info available? Answer: Stannard Rock Lighthouse measurements are the type of direct measurements we want to have in other locations, but at most places we don't have direct measurements; thus, a lot of the methods used for estimation have 5%-40% error. Follow-up question: Are the tools and data you're using available online? Answer: This effort is a partnership with government and private organizations, and we're working with the Great Lakes Observing System to make near-real-time data available.
- Question: In Texas we have a lot of manmade lakes, and a lot of them have been declining due to vast demand caused by drought. How do you determine how much water is lost due to increased usage, rather than due to evaporation? Answer: What we have done in the Great Lakes is the full water balance of the system, measuring all the components as accurately as we can; once this is done, it should be possible to attribute the water loss to specific causes.
- Comment: It seems our ability to forecast evaporation may be more important than our ability to forecast withdrawals. We need to calculate water balance more effectively as we look at long-term trends in western reservoirs, and all across the U.S. We can liken the reservoir to an irresponsible water user who doesn't make efforts to conserve during times of drought.

IV) Presentation: Climate Change and Stream Temperature; Dan Isaak, U.S. Forest Service;

see: <http://www.fs.fed.us/rm/boise/AWAE/projects/NorWeST.html>
http://www.fs.fed.us/rm/boise/AWAE/projects/stream_temperature.shtml

- Presentation slides are available here: http://acwi.gov/climate_wkg/minutes/index.html
- A lot of this effort is a giant database compilation effort. This is a big job because there is no rhyme or reason to the way various organizations have collected data during the past few decades. The data sets contain lots of valuable information that is worth the effort of cleaning them up.
- Gaps in existing monitoring: we have data on many sites, but often those data only cover the summer months, and at most of the sites there is only 2-3 years of record. Only 1-2% of the sites have a longer-term record. In some parts of the country, we are now seeing greater emphasis on collecting full-year data sets.

- Some of the data sets are gigantic (tens of millions of data points for a single site over the course of a year, where data are collected hourly).
- Few groups have invested resources to organize the vast data sets that already exist. So we have built a database team that focuses specifically on this task.
- By the end of this year, we plan to have completed organizing the database and making it available on our website (<http://www.fs.fed.us/rm/boise/AWAE/projects/NorWeSt.shtml>).
- Question: Are you able to tag some of these sites as reference sites, versus disturbed river basins? Answer: Yes, we can classify the various watersheds according to a number of different factors. That helps us to tell whether we're seeing a climate-related signal rather than a result of changing land use.
- Question: You said that the warming is about 0.11° C per decade; is there a standard deviation around that number? What is your sense of the rate of increase over time (decades)? Also, from the viewpoint of ecological integrity, does this change constitute background noise or something bigger than that? Answer: There's a lot of heterogeneity even within one small region of the country, and snowpack in the mountains has a strong effect on temperature signals, so the rate of change may be double at lower elevations than it is at nearby high elevations. With respect to fish and other ecological health, there will be some unpleasant years like last summer, but in general we think the fish will be able to adjust/adapt during most years.

V) Workgroup Management Topics

- 2016 Workgroup Membership and Co-chairs
 - Thank you to all participants; we're delighted you're all still on board and active.
 - We want to give people the opportunity to reflect on whether you want to continue participating with the workgroup, or want someone else from your organization to take your place. **Please take some time to think about this and advise Jeff and Paul if you want to make a change.**
 - Are there other groups you think would be appropriate to participate? We have a little bit of space to bring on some new organizations that aren't currently part of the workgroup. Most of our recent focus has been on info sharing, so keep that in mind as you think about new organizations to bring on board.
 - The Co-chair positions were designed to be rotational, but rotation is not mandatory. Jeff and Paul have both really enjoyed being co-chairs, but they don't anticipate holding these positions forever, so please let them know if anyone (Federal or non-Federal) else is interested in being a co-chair. We would establish a Fed and non-Fed vice chair, and those people would be "trained" during 2016, and then take over at the end of the year. **Please give this some thought for a couple of weeks, and let Jeff and Paul know if you are interested.**
- Review and Discussion: Draft 2015 Workgroup Report to ACWI (see attached)
 - Membership list is out of date (**Action: Wendy will fix it**)

- This is a draft; **please send us your comments.** We will hold the report for 2 weeks, to allow members time to submit comments.
- We will shoot for the workgroup's final approval of the 2015 report to ACWI at our February meeting.
- Review and Discussion: Draft 2016 Workgroup Workplan (see attached)
 - Membership list is out of date (**Action: Wendy will fix it**)
 - This is a draft; **please send us your comments.** We will hold the report for 2 weeks, to allow members time to submit comments.
 - Should we include the vice chairs option you mentioned in the 2016 workplan? Yes, we probably should (on page 4).
 - Should we acknowledge the Paris Accords in our 2016 workplan? Yes, that's a good suggestion, and we should also recruit some experts on the adaptation components of the Accords to brief us at an upcoming meeting. ACWI's Sustainable Water Resources Roundtable also is interested in this, and that would be a good opportunity for our two groups to work together and possibly hold a joint meeting. We have tentatively reserved June 1-2 at the EPA building in Crystal City, VA, where we met before, if funds are available for travel.
 - **We will shoot for the workgroup's final approval of the 2016 workplan at our February meeting.**
- Final ACWI Climate Workgroup Memo Providing Input for Refresh of the *National Action Plan*; October 27, 2015 (see attached)

VI) Round Robin Reports from Workgroup Members (a brief highlight of your organization's activities related to climate change and water)

- New White House Report: Land Sector Carbon and Implementation of Priority Agenda on Climate Resilience of America's Natural Resources
- https://www.whitehouse.gov/sites/whitehouse.gov/files/documents/Climate_Change_and_Land_Sector_Report_2015.pdf
- New White House Report: Water Resource Opportunities for Water Technology https://www.whitehouse.gov/sites/whitehouse.gov/files/documents/Water_Resource_Challenges_and_Technology_Innovation_12_14.pdf
- USGS report: Water Temperature in Chesapeake Bay; <http://pubs.er.usgs.gov/publication/ofr20151207>
- New GAO Report: A National System Could Help Federal, State, Local, and Private Sector Decision Makers Use Climate Information; see <http://gao.gov/assets/680/673823.pdf>
- USDA report: Climate Change, Water Scarcity, and Adaptation in the U.S. Field Crop Sector; <http://www.ers.usda.gov/media/1951525/err-201.pdf>
- USDA report: Water Conservation Actions in Ogallala Aquifer; <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/newsroom/releases/?cid=NRCSEPRD414212>
- Climate Central; release of new assessment of State responses to climate risks: <http://statesatrisk.org/>

- Climate Central; report on heavy downpours by State:
<http://www.climatecentral.org/news/across-us-heaviest-downpours-on-the-rise-18989>
- National Park Service Report; Coastal Adaptation Strategies: Case Studies 2015;
<http://www.nps.gov/subjects/climatechange/upload/2015-11-25-FINAL-CAS-Case-Studies-LoRes.pdf>
- Local Community Climate Change Adaptation Training:
<http://web.mit.edu/tschenk/www/AdaptationCourse/index.html>
- New England Climate Adaptation Project: <https://necap.mit.edu/project-overview>
- EPA report: State and Local Guide to EPA Climate and Energy Program Resources;
http://www3.epa.gov/statelocalclimate/documents/pdf/slb_guide_to_program_resources.pdf
- EPA report: Evaluating Investments in Community Resilience: New Guide Explains How; <http://www.nist.gov/el/evaluating-investments-community-resilience-new-guide-explains-how.cfm>
- Report on Nutrient Reduction Benefits of Beaver Management;
http://www.bayjournal.com/article/leaving_it_to_beavers_communities_make_room_for_natural_engineers; and here is report:
<https://dl.sciencesocieties.org/publications/jeq/abstracts/44/5/1684>
- New report: Power-generation system vulnerability and adaptation to changes in climate and water resources;
<http://www.nature.com/nclimate/journal/vaop/ncurrent/pdf/nclimate2903.pdf>
- New EPA Region 1 New England Climate Change Website: <http://www.epa.gov/raine>
- New EPA Water Program Climate Website: <http://www2.epa.gov/climate-change-water-sector>
- EPA Climate Newsletter; subscribe here: <http://www2.epa.gov/climate-change-water-sector/climate-change-and-water-news>
- AMWA – International Water and Climate Forum:
<http://www.waterclimateforum.org/>
- Status and Trends of State Wetland Programs in the U.S. – <http://www.aswm.org/>

VIII) Adjourn