Scientific, Technical Assessment and Reporting (STAR) Team "Business" Meeting
January 22, 2015
10:00AM – 1:30PM
Joe Macknis Memorial Conference Room (Fish Shack)

Conference Line: 1-866-299-3188 code 4102675731
Adobe Connect: https://epa.connectsolutions.com/star/
Event webpage: http://www.chesapeakebay.net/S=0/calendar/event/21555/

AGENDA

10:00 AM **Welcome, Introduction, and Announcements** *(Bill Dennsion – STAR Co-Chair, UMCES)*

- Introduction to the new STAR analyst Mindy Ehrich.
- A call for papers for the GSA Conference which will be held in Baltimore November 1-4 will go out in March.
- The Ecological Society of America's centennial meeting will be held in Baltimore August 9-14, abstracts are due by February 26.
- DNR RFP has been sent out focusing on the long-term monitoring of stream restoration projects that are currently in place or are planned to be implemented – funds are available through the Chesapeake Bay Trust, MD Trust Fund, & EPA long term funds available.
- Peter – There are ongoing publications regarding cyanobacteria that concern increased risk to drinking water tying in climate change, harmful algal blooms, and a broader look at smaller systems directly impacting local drinking sources. U.S. EPA 2014 summary of HAB interests and issues is available at http://www2.epa.gov/nutrient-policy-data/cyanohabs-news-2014 . A good recent synthesis of research papers "Cyanobacteria: Impacts of climate change on occurrence, toxicity and water quality management" is published in the journal *Water Research, Vol 46 (5),* April 2012.
- Long term water quality trends for MD Coastal Bays are beginning to look positive with decreases in both nitrogen and phosphorous. There is a cautious optimism that a response to agricultural BMPs may be coming to fruition, after prolonged lag times.

10:15 AM **STAR Workgroups 2015 Workplans**
Leadership of the workgroups/teams under STAR presented and discussed their 2015 workplans and/or the five major priorities of the workgroup for the year.

- **Integrated Monitoring Networks Workgroup** *(Peter Tango) (link)*
  - **Discussion**

1. Be in the room when the Alliance of the Chesapeake develops their plan to use the EPA RFP for citizen science monitoring. (WQ Standards attainment, healthy watersheds, streams).
2. An Alliance representative should be in the Integrated Monitoring Networks WG.
3. BASIN III will continue to involve STAC, and the WG should also include a STAC presence.

a. How do we monitor what was outlined in the outcomes?
b. How do we identify and use resources partnership resources?
    i. MD Trust Fund may be a good source of funding.

- **Data Integrity Workgroup** *(Bruce Michael and Mary Ellen Ley) (link)*
    - **Discussion**

1. Consider doing an Executive Summary Tri-fold product of the QA/QC document, STAR can provide assistance.
2. **ACTION:** Add the intention of the DIWG evaluation of laboratory and field program data quality from the BASIN process into the BASIN Report. (Lea)
3. The new Co-Chair is Cindy Johnson from VADEQ.
4. Consider adding the evaluation of data quality for outcomes in the BASIN III process.
5. **ACTION:** Present the guidance used for WQ sampling and analysis and QA/QC of WQ data to the other GITs working to assist in development of new monitoring programs.

- **Status and Trends Team (formerly Indicators)** *(Jennifer Gundersen) (link)*
    - **Discussion**

1. Currently there are 47 indicators that are still active and 7-8 have been archived and are being revised to develop a new indicator.
2. Team that meets to reconcile with the new outcomes, bring the communications people into the group.
3. **ACTION:** March – April bring in a focus group of Goal Team Coordinators/ Communications folks/ Evaluating WQ Trends group/ science group (12 people) to go through the indicators and make cuts.
4. Figure out the target audience, determine who uses the indicators.

- **Climate Change Workgroup** *(Zoe Johnson and Mark Bennett)*
    - **Discussion**

1. The workgroup spent a lot of time inviting a far reaching representation to the kick-off meeting in mid-December.
2. The Workgroup drafted the Management Strategies for the Climate Resiliency Outcomes of the new Watershed Agreement.
3. There is uncertainty as to when the new Climate Change Coordinator will be hired.
4. A reformulation of the workgroup will be necessary once the management strategy draft is completed.
5. There is interest in submitting a Climate Resiliency proposal for a STAC Workshop, although the focus is still being identified. There is still uncertainty with some GITs regarding the relationship of support and guidance from the workgroup in their management strategies.
6. There is a tremendous need for this WG to consider how we want to involve and collaborate more with a growing number of partners and efforts in the region, including

identifying resources currently in place. The role of the workgroup in the future could include vetting established resources in the region to determine what needs can be met. A focus on a network, tools, monitoring needs, and other outcomes is essential.

- **Explain Ecosystem Condition and Change: Water Quality Trends Team** *(Jeni Keisman, Joel Blomquist and Jeremy Testa)*
    - **Discussion**

Directions:

1. Hold topical workshops – focus group on a topical synthesis, and get a publication out of the workshop.
2. Communicate the importance of trends in WQ and how changes in trends may relate to annual WQ standards attainment.
3. Note: The productive generation of papers generally relies on a maximum group of 12 diverse participants meeting in-person over multiple days.

- **Information Management & GIS Support** *(John Wolf) (link)*
    - **Discussion**

1. It is important to simultaneously consider the visualization process when thinking about new indicators.
2. Several data visualization tools are being developed and STAR needs to determine what tools would be most useful and should be made available to the workgroup.

- **Modeling Workgroup** *(Lee Currey, Dave Montali, and Lew Linker) (link)*
    - There was no in-person presentation and discussion for the Modeling WG. A presentation outlining the goals of the workgroup can be found by clicking on the link above.

11:45 AM **General Questions and Concerns for STAR Leadership**

- Emphasis on creativity with the goal of avoiding meeting fatigue.
- ChesapeakeStat to be presented at the February STAR Meeting
- Potential chairs for the Integrated Networks WG include Ken Moore and Pete Kleinman.
- To generate ideas for Chair for Status & Trends WG? – Team effort (Peter, Mindy, Jennie, Catherine – weekly meetings)
- IAN Chesapeake Bay Story: http://chesapeakebaystory.umces.edu/
    - Feedback should be sent to Bill Dennison
- STAR submitted STAC Proposals
    - IAN Seminar Series (Bill D. & Lea R.) --
    - Climate Change (Zoe J. & Mark B.)
    - BASIN III (Scott, Peter, Mindy)
    - Friedrichs plus Monitoring Smarter, not more (Nick Nidzieko – Horn Point Lab – Bill Dennison)

12:00 PM **Lunch** (provided by UMCES)

12:30 PM IAN Seminar Presentation and Q&A

Global, National, and Local Trends of Nitrogen Use Efficiency in Agriculture

Eric A. Davidson, University of Maryland Center for Environmental Science, Appalachian Laboratory

Abstract:

More than half of the people in the world are nourished by crops grown with synthetic nitrogen (N) fertilizers. However, more than a billion people are still undernourished, and global population will increase by 2-3 billion by 2050, which means that demand for N fertilizers is likely to grow. Unfortunately, unintended adverse environmental and human health consequences of reactive N escaping agricultural fields are occurring as groundwater contamination, eutrophication of freshwater and estuarine ecosystems, atmospheric pollutants related to nitrogen oxides and ammonia gas emissions, and accumulation of the potent greenhouse gas and stratospheric ozone depleting substance, nitrous oxide. An alternative to increasing fertilizer-N use proportionately to the increase in food demand is to improve nitrogen use efficiency (NUE) in agriculture. I will present preliminary results from an analysis of trends in NUE from 1961 to 2011 for 129 countries, demonstrating the importance of both crop mix and policy. In the USA, NUE is gradually increasing while harvest yield also increases, although considerable room for improvement remains, such as better coordination among conservation and retail communities. Retailers and crop advisors are usually farmers' most trusted sources of information, so their engagement is crucial for NUE improvement efforts. An example of a partial success story in Nebraska illustrates the importance of tailoring regulatory and outreach approaches to local conditions, administered by local units. A relatively simple benchmarking system for tracking NUE progress is proposed.

Biography:

Dr. Eric Davidson joined the University of Maryland Center for Environmental Science's Appalachian Laboratory as its new director in the new year. An ecologist, soil scientist, and biogeochemist, Davidson was formerly Executive Director of the Woods Hole Research Center in Massachusetts, where he had worked as a scientist since 1991. The Appalachian Laboratory, one of four University of Maryland Center for Environmental Science laboratories located across the state, is dedicated to the study of terrestrial and freshwater ecosystems. Dr. Davidson will lead a cadre of more than 30 faculty, research associates, staff, and post-doctoral fellows working to better understand the environment. Davidson's research career has focused on how human changes to the land affect carbon and nitrogen in soil, water, and air. He is also interested in the interfaces of science, policy, and education, and has published on ecological economics and human alteration of global cycles of essential nutrients for all lifeforms, including humans. His research has taken him to the Brazilian Amazon Basin and to forests and farms across North America.

He is President-elect of the American Geophysical Union, a 62,000-member scientific society. He has served as the North American Center Director of the International Nitrogen Initiative and as a senior editor of the scientific journal, *Global Biogeochemical Cycles*. He is a fellow of the American Association for the Advancement of Science and has been named as a Highly Cited Researcher by the Institute for Scientific Information.

Davidson has held positions as senior scientist at Woods Hole Research Center, as National Research Council Associate at the NASA Ames Research Center, and as Post-Doctoral Research Associate in Soil

Microbiology at the University of California, Berkeley. He earned his doctorate in forestry at North Carolina State University.

Discussion:

- The survey showed that extension agents were low on the list of the parties with whom farmers are most engaged and take advice and exemplifies how information is being delivered. It seems that the completion of a similar survey in the Chesapeake Bay area would help to better identify how the science on Bay Restoration is being communicated to managers.
- A certification for extension agents interacting and dealing with farmers may be a better approach to improved communication of knowledge.
- What approaches is France taking to cause the nitrogen surplus trend?
    - France started with practices a lot worse than the United States. Throughout the 1970s and 1980s France was subsidizing fertilizer, and were also dumping food at sea. European regulations throughout the 1990s helped to continue the drive towards greater efficiency.
    - Other research not outlined in this presentation has shown a clear correlation between the trajectory of nitrogen use efficiency in the country and the ratio of surpluses to the cost of fertilizer.
- China and India have been strongly focused on food security, providing an explanation for their greater fertilizer subsidies.
- One of the reasons that crop yield has gone up in Nebraska is because of hybrid corn, several GMO's and irrigation. One can manage N more efficiently by selecting specific genotypes and using water more efficiently.
- One of the biggest challenges facing farmers is the necessity to apply more N than the plant needs, but how much more to achieve complete uptake. Is this an interaction between economics and policy, because companies want to sell more fertilizer to make more money, or are there incentives for being more environmentally responsible?
    - Returning business is more important than overselling fertilizer on a single occasion. There are other products that the fertilizer companies can sell beyond the fertilizer (i.e. slow-release fertilizer, information like that in nutrient management plans, etc.).
    - Application of N also depends on the crop.
- Can the phosphorus problem in the Chesapeake be compared as a similar issue?
    - Phosphorus builds whereas Nitrogen does not, therefore phosphorus does pose a greater threat. However, the mechanism for cutting back is very similar to N, as it is an agricultural economics problem to be solved.
- The Nitrogen Before Christmas – Poem Erick will circulate

1:30 PM Adjourn