Air Directors Meeting

March 25, 2013 10AM – 2PM

http://www.chesapeakebay.net/calendar/event/19335/

MINUTES

Air - Water Nitrogen Exchanges: An Introduction – Linker

Attachment A

Basin-to-basin, nitrogen-to-phosphorus, and air-to-water exchanges in the Chesapeake TMDL promote efficient watershed management and provide appropriate credits to reductions in nitrogen loads delivered to the Bay. The exchanges were described with emphasis on the air-to-water nitrogen exchanges.

Discussion and Questions

- **ACTION:** Air to water exchanges and communicating upcoming programs:
  - For example, The Tier 3 Fuel Rule could be a potential reduction, but the Rule won't be implemented until 2017 and air-water exchange credit would only be available when the program is implemented.

An Aggregate Air-Water Exchange – Dennis

Attachment B

Robin updated the group on refinements made to the state and sector analysis of NOx transport throughout the Chesapeake watershed, tidal Bay, and region and the development of an aggregate air-water exchange.

Discussion and Questions

PRESENTATION SUMMARY

- Now seeing a potential for significant load reductions using an aggregate approach
  - Makes sense to work at the watershed level.
  - Makes sense to use total state-level NOX emission reductions.
  - Makes sense to combine NOX emission reductions across states.
- See if the states can combine or share efforts on this.
- States seem to like knowing their effect on watershed deposition in other states.
- States seem to like knowing how other state emissions are effecting deposition in their state.
- Working at the state and aggregate air reduction level may be a viable approach that is worth pursuing.

- **ACTION:** Offline discussions need to begin with the states to determine specific information on the specific reductions in NO_x emissions that were made above and beyond the estimated 2020 Air Allocation Scenario,

- **Question:** How are we calculating and managing air deposition increasing into account? For example the expansion of the hydrofracking industry in the mid-Atlantic region and the increase in NOx emissions from drilling and operations.
    - Decision: We'll bring this question to the decision makers, but this group will recommend that increases in air emissions as well as decreases should be taken into account in the air-water exchanges to be consistent with other management actions in the Chesapeake Bay Program..

Decision Rules in Air-Water Exchanges – Linker

The decision rules that could be applied to the air-water exchanges such as a reset at 2017 with new CMAQ scenarios, the accounting of only actual implemented programs in the exchange, the exchange done periodically for all emissions in the Chesapeake watershed on approved data sets, the exceptions of court ordered additional reductions, the use of CMAQ exchange functions, and other potential decision rules were discussed.

Discussion and Questions

- Through the Air Director's Meeting, the Modeling Workgroup, and the Water Quality Goal Implementation Team (possibly the Management Board and Principles Staff Committee), we'll work to come up with an air-water exchange procedure that will account for nitrogen emission reductions above and beyond what we've already accounted for in the Chesapeake TMDL. This includes State management programs that go above and beyond what is already accounted for, as well as new national programs (such as the proposed Tier 3 Fuel Rule). Must be clear that only implicated actions/programs will be counted. Planned implementation will not be included in the reduction calculations.

- Bi-annual accounting
    - We may want to set up this bi annual timeframe to work with the Milestones.
        - Allows us to monitor progress in new NO_x reductions.
    - Would we have to set up a new baseline every two years?
        - The once every 2 year procedure will need to avoid double-counting of emission reductions. The baseline of the assessment could change over time. The first baseline, perhaps done in 2013, will be emission reductions above and beyond what's accounted for in the 2010 TMDL. The next assessment, perhaps done in 2015, will be what is above and beyond the 2013 assessment.
            - Inventory check is already done every 3 years (the last one was done in 2011 and the next is in 2014).

- At the 2017 Midpoint Assessment, the new bidirectional CMAQ and updated scenarios that would include the latest State SIPs and national program changes would replace previous air-water exchanges (to avoid double counting and to use an improved simulation system). The next assessment of new air-water exchanges following the 2017

Midpoint Assessment would be on the ongoing 2-year milestone schedule, i.e., 2019. How EPA addresses air transport (CAIR/CSAPR) needs to be taken into account.

DISCUSSION SUMMARY

- This group will come up with a procedure to gather the information on implementation that the states have taken above federal level programs. The information will be aggregate to the state level coinciding with the 2 year milestones. Must consider the baseline assessment, increases in air deposition, and CAIR.

Simulation of Bidirectional Ammonia with CMAQ – Bash
Attachment C

Jesse Bash, the lead nitrogen modeler of EPA's Atmospheric Modeling and Analysis Division, will describe a new version of CMAQ that will be used for the 2017 Midpoint Assessment and the advantages of the new version for nitrogen chemistry in general and for ammonia transport and fate in particular.

Discussion and Questions

CURRENT AND FUTURE RESEARCH

- Field measurements and modeling to better understand soil nitrification processes and N cycling in natural systems.
    - Are these processes important to air-quality as well as climate?
    - Expand soil geochemistry to include organic N mineralization and soil nitrification processes
        - Improve geochemistry in natural systems
        - Couple N2O and NO fluxes with land use management
- Modeling and measurements at animal facilities to develop better mechanistic NH3 emission estimates
    - Compensation points in water bodies
    - Couple CMAQ with meteorological, biogeochemical, and hydrological models
        - Develop tools for robust system analysis of future climate/emission scenarios

CONCLUSIONS

- CMAQ with bidirectional NH_3 exchange:
    - Represents the state-of-the-science of NH_3 air-surface exchange
    - Improved NH_x wet deposition and NH_4^+ and NO_3^- evaluation
    - Connects land use and agricultural management practices to ambient air-quality and acid and nutrient deposition
- Satellite observations, monitoring networks, and intensive NH_3 measurements integrated with modeling is improving process based NH_3 emission estimates
    - Allowed for robust case study evaluations
    - Necessary to identify modeling and measurement needs
- For the Chesapeake Bay Domain:
    - Reduces dry deposition by ~46% (Reduced N) & ~16% (Total N)
    - Increased direct N dry deposition to water bodies by ~

PARTICIPANTS

Last Name	First Name	Email	Affiliation
Aburn	Tad	gaburn@mde.state.md.us	MDE
Bash	Jesse	Bash.jesse@epa.gov	EPA Region 3
Dalmasy	Dinorah	ddalmasy@mde.state.md.us	MDE
Dennis	Robin	Dennis.Robin@epa.gov	EPA Region 3
Dowd	Michael	michael.dowd@deq.virginia.gov	VA DEQ
Esher	Diana	esher.diana@epa.gov	EPA Region 3
Kiss	Mike	Michael.Kiss@deq.virginia.gov	VA DEQ
Kumar	Sunil		
Linker	Lewis	linker.lewis@epa.gov	EPA/CBPO
McNally	Dianne	McNally.Dianne@epamail.epa.gov	EPA Region 3
Mirzakhalili	Ali	ali.mirzakhalili@state.de.us	
Orden	Dean Van		
Pruzinsky	Amanda	apruzinsky@chesapeakebay.net	CRC/CBPO
Rutkowski	Mary Jane	Mrutkowski@mde.state.md.us	
Schmitt	Ellen	schmitt.ellen@epa.gov	EPA Region 3
Sherwell	John	JSHERWELL@dnr.state.md.us	MDNR
Stumpf	Kristen		
Warren	Laura		
Wellard	Erin		EPA Region 3