



Chesapeake Bay Program

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December 1, 2008

Dear Dr. Larry Reiter:

This is to acknowledge the essential assistance provided to the Chesapeake Bay Program (CBP) by the Community Multiscale Air Quality (CMAQ) modeling team. The Chesapeake Bay Program relies on an integrated modeling system of airshed, watershed, estuary, and living resource models in order to provide information to decision-makers working to find cost effective, equitable, and achievable approaches to restoration of the Chesapeake. The CMAQ Model is a key component of our assessment of the restoration actions needed.

Atmospheric deposition of nitrogen is a major load to the Chesapeake, estimated to be a quarter of the total nitrogen load delivered from the watershed to the Bay. Direct atmospheric deposition to the Bay's tidal waters further raises the atmospheric deposition load to about a third of the Bay's total nitrogen load. Since 1992, the Chesapeake Bay Program has relied on the Regional Acid Deposition Model (RADM) and the Extended RADM to provide estimates of atmospheric dry deposition of nitrogen as well as management scenarios of nitrogen emission controls. This decade and a half of support has been key to our success in estimating nitrogen loads to the Chesapeake.

To achieve the Bay water quality standards of dissolved oxygen, chlorophyll, and water clarity, which were designed to protect living resources, reductions of all nitrogen load sources are necessary. These nitrogen load reductions have been characterized as E³, or everyone, doing everything, everywhere to reduce nitrogen loads from point, nonpoint and air sources. Being able to correctly characterize the air loads gives decision-makers needed information on to relative size of the different load sources, and the relative costs of control.

An example of the importance of the CMAQ modeling can be found in the 2003 CBP Allocations of nutrient reductions. These reductions called for about a 50% decrease in nitrogen loads from the high-water mark of nutrient loads in the mid-1980s, reducing the average annual nitrogen load to about 175 millions of pounds. The six States of the Chesapeake Bay Program were close to resolution of the division of loads, but could only reach resolution of allocations down to 183 million of pounds of nitrogen. It was the assistance provided first by the Extended RADM, and later by CMAQ, which was able to estimate that an additional eight millions of pounds nitrogen would be provided by the Clear Skies Initiative (which later evolved into the Clean Air Interstate Rule (CAIR) and with the recent court action will be further modified). This knowledge of planned atmospheric nitrogen reductions allowed EPA managers to "adopt" the "orphan" eight million pounds of nitrogen needed to close the deal on the 2003 CBP Allocations. Without the support of both the Extended RADM and CMAQ's analysis of CAIR, the Chesapeake Bay Program would have had considerable difficulty in developing plans which would allow us to meet the Bay water quality standards mandated by State and Federal law.

The CMAQ Model continues to provide key support to the Bay Program as we move forward to assess management actions needed to meet water quality standards in the year 2030 despite the continued high growth in the region. Most recently the Community Multiscale Air Quality modeling team has provided key information on the influence each of the watershed states has on the nitrogen loads delivered to the Bay. This information created the basis for a management decision rule for allocating state emission reductions that are beyond the national rules to watershed deposition reductions that can count as state allocation reduction credits. The essential nature of this information goes far toward answering the decision-makers three key questions of 1) "What are my loads?" 2) "How do they compare with other loads?" and 3) "What can be done to control them?".

This is only the most recent contribution that the CMAQ team has made to our work and we thank you for this long and fruitful assistance and collaboration.

Sincerely,



Lewis C. Linker
CBP Modeling Subcommittee Chair

cc: Dr. S.T. Rao

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www.chesapeakebay.net