PROMISES, PROMISES

MODELLING DIRECTIONS AND INITIATIVES

MAJOR AREAS TO ADDRESS

- SHORELINE EROSION/SHALLOW WATER
- LIVING RESOURCES
- WQS ATTAINMENT
- POTOMAC TMDLs

WATERSHED MODEL

- PHASE 5.0
- PARTNERSHIP W/ MDE, ICPRB, USGS
- SEMI-TMDL MODEL

Elements of Phase 5:

• Will provide a coordinated system of watershed models which will integrate State TMDL and interstate Bay Program modeling and analysis.

• Increase segmentation by an order of magnitude to the approximate scale of 11 digit HUCs.

• Expand calibration period seven years to a complete 1984 to 2002 simulation.

• Increase calibration stations four fold.

• Threefold increase in land uses simulated.

Elements of Phase 5:

• Improved land use with annual changes tracked based on an improved RESAC land use data base of 2000 and 1990 land uses.

• Improved BMP simulation with accounting for hydrology effects, refined urban and agricultural BMPs, and annual changes in BMPs.

• Improved reach simulation with increased reach segmentation, refined reach characteristics, and simulation of all significant reservoirs in the watershed .

Old Vs. New Segments
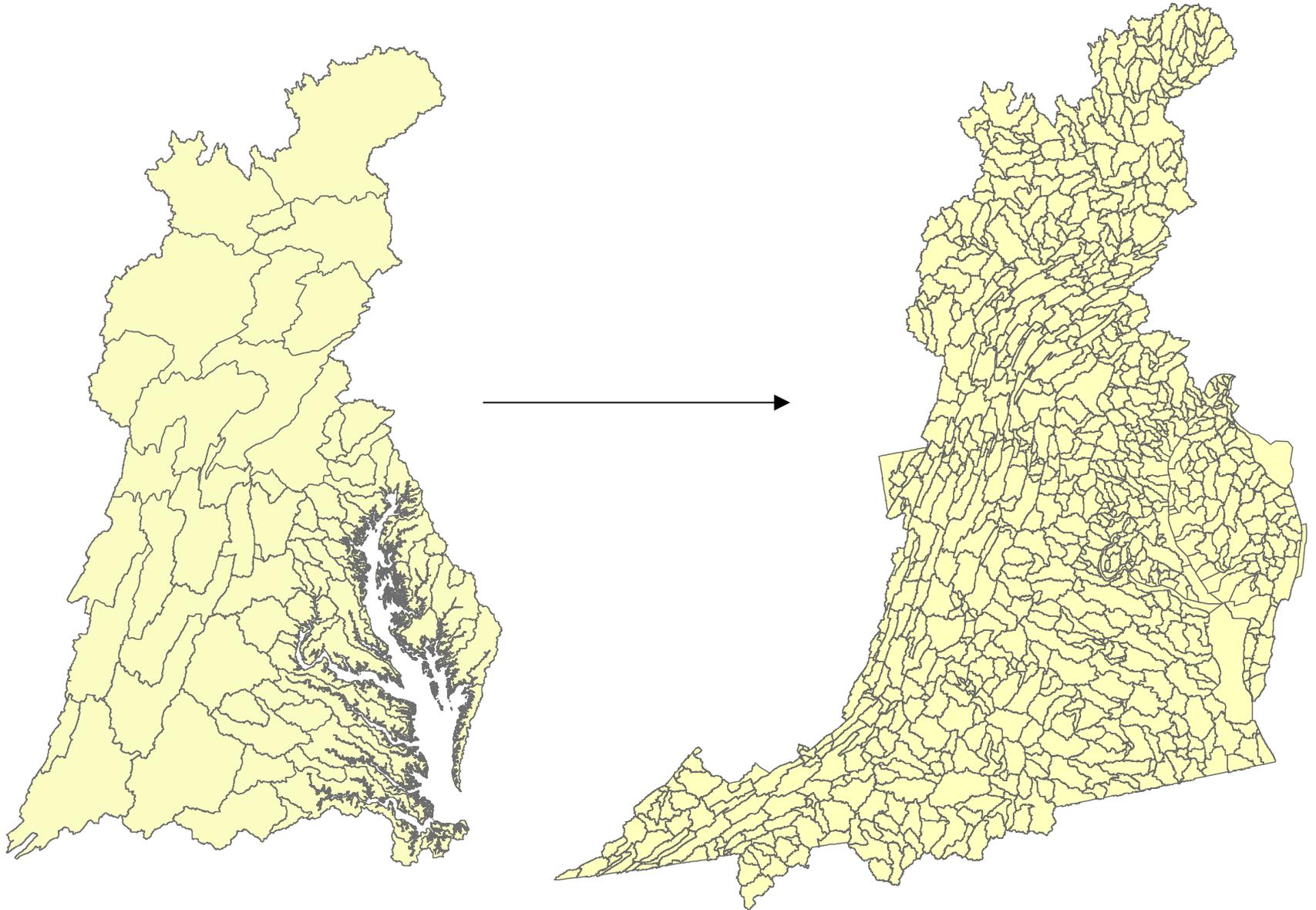
Air Models: $60K FUNDED

• Moving from RADM (Regional Acid Deposition Model) to the next generation air model CMAQ (Community Mesoscale Air Quality Model).

• Improved simulation of ammonia deposition.

• Nested grid capabilities.

• Same model used for air quality and water quality purposes allowing potential for improved coordination among air and water programs.

NOAA ECO ECO ECO

CORPS OF ENGINEERS CONOWINGO

COE SHORELINE EROSION

Low bank erosion in Maryland. Every acre of eroded land delivers approximately 22,000 pounds of nitrogen and 16,000 pounds of phosphorus into Maryland's coastal waters.

NEXT EFFORTS MAINBAY

1. Refinement of color, chlorophyll, and sediment light attenuation

2. Assessment of phytoplankton/sediment flocculation

3. Refined resolution of the Upper Bay with the goal of including the fine scale Patuxent, Choptank, Chester, and Patapsco grids if practicable.

4. Surface wave simulation with shallow water shear stress incorporated.

5.   Refinement of bottom boundary dynamics (1-10cm in vertical).

6.   Improved spatial and temporal scale of bank load inputs.

7.   Three sediment classes, interactive with living resources (SAV & filter feeders).

8.   Inclusion of Asiatic clams in benthic filter feeder simulation.

9.   Interactive wave\SAV simulation.

POTOMAC

TMDL LAND

- MD- NONTIDAL –NUTRIENTS
- MD – TIDAL NUTRIENTS, PCBS
- DC – pH, PCBS, PAH, CHLORDANE
- VA – pH, ?

1.   Refinement of Potomac grid including the Anacosita.

2.   Inclusion of three toxic substances.

3.   Simulation of pH-carbonate-phosphate processes.

4.   Refinement of algal speciation including

representation of the spring diatom bloom, species succession and *Microcystis*.

PARTNERS

- POTOMAC MODEL
- COE BALTIMORE
- COE WES
- DC
- MDE
- ICPRB
- EPA RGN3
- EPA CBPO
- VA DEQ

$$$POTOMAC$$$

- EPA R3 $825K(DC&MD)
- DC $1.5M
- MDE $400K
- VA DEQ $300K
- MWCOG $250K
- ICPRB $300K
- COE-BALT $2.5M-$3.8M

CONCLUSION

- CONTINUED IMPROVEMENTS IN WATERSHED MODEL'S ABILITY

- REFINEMENTOF TIDAL NEARSHORE PROCESS

- IMPROVED DO/ALGAE CALIBRATION

- MOVEMENT TOWARD TOP DOWN MANAGEMENT SIMULATIONS

- TOXICS CAPABILITY

- COORDINATION W/ TMDLS