Integrated Approach for Assessing and Communicating Progress toward the Chesapeake Bay Water-Quality Standards

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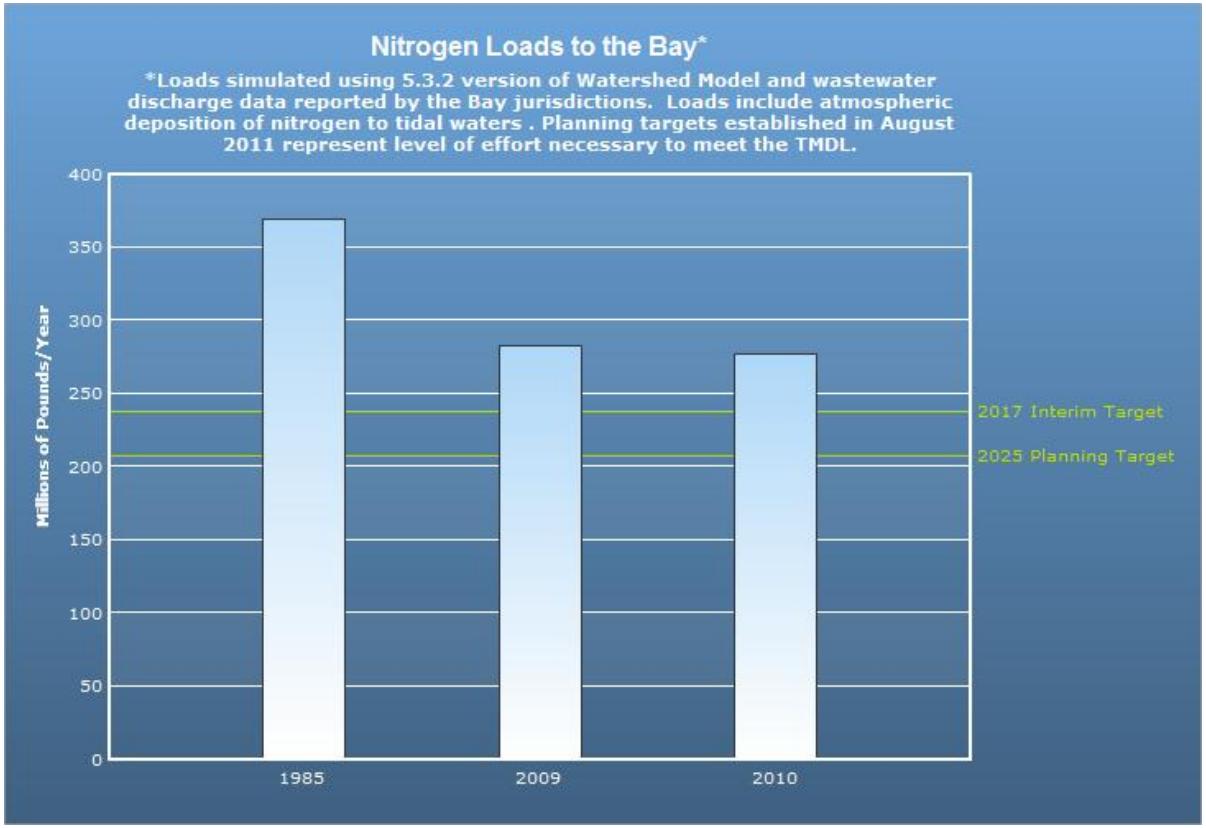
Telling the water-quality story

- How are practices being implemented for the TMDL improving water quality?
- Integrated approach:
  - Practices implemented (TMDL)
  - Nutrients/sediment in watershed
  - Attainment of standards
- WQ GIT-STAR interactions
  - Improve communication
  - Coordinate reporting
- Current information and planned improvements

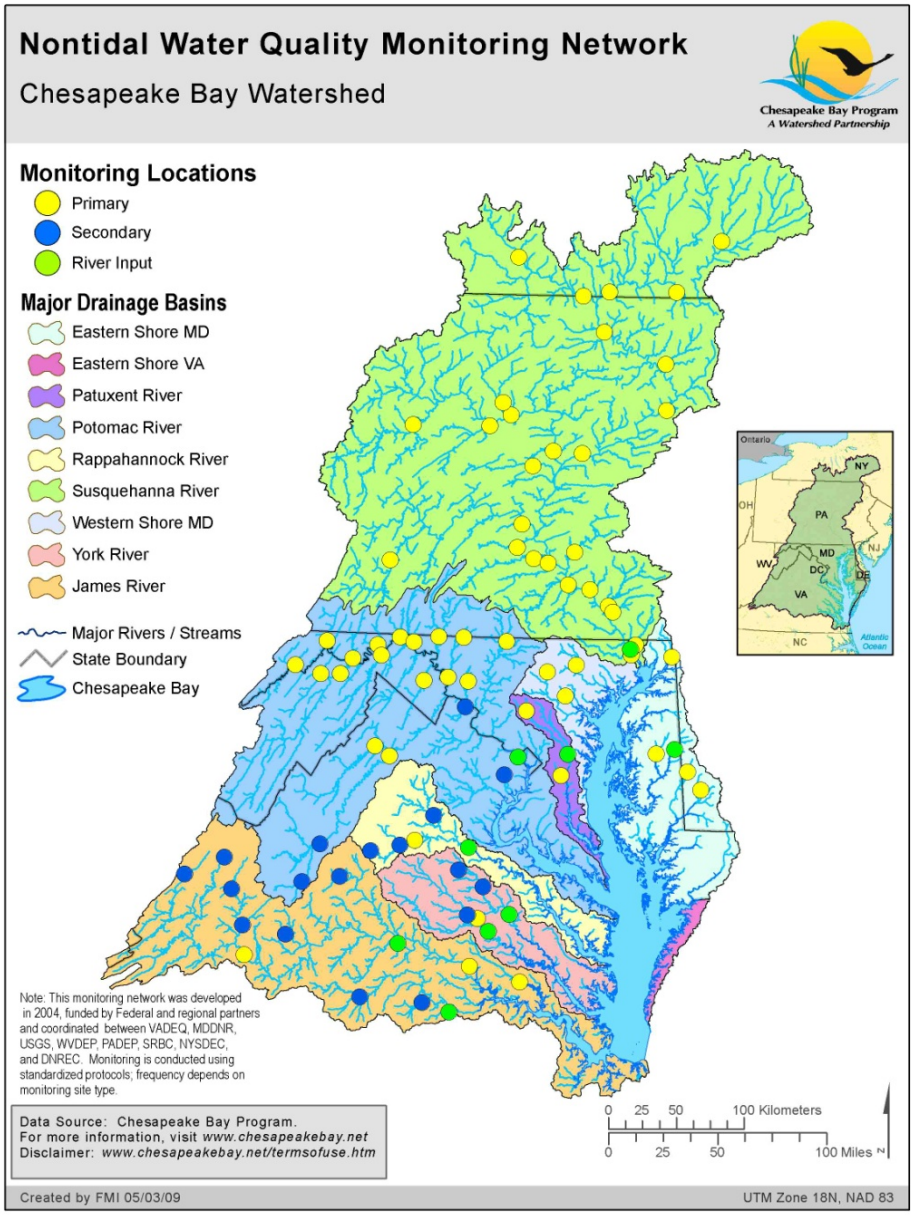
TMDL-Reporting of BMPs

- BMPs implemented
- Projected load reductions (progress runs)
- Annual reporting and 2-year milestones
- Improved BMP reporting and verification



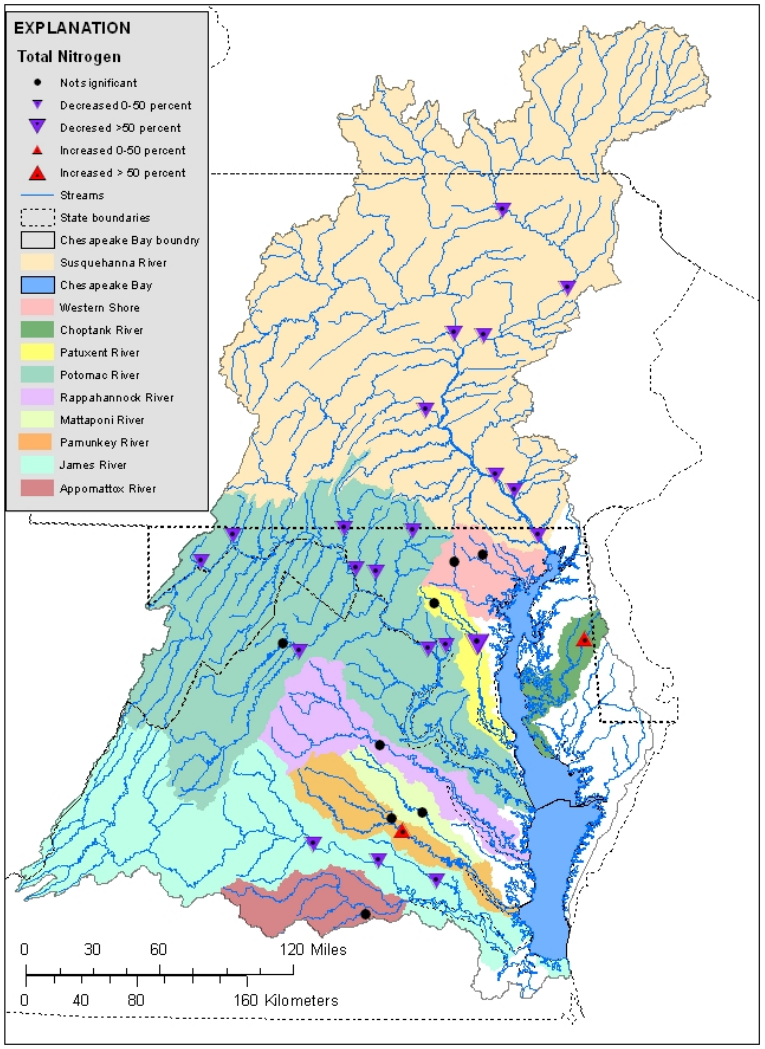
CBP Nontidal Monitoring

- Nutrients and sediment
- Network
  - Long-term sites
  - Adding stations
- Trends
  - Long term and 10 year
- Loads
  - To the Bay
  - Yields in watershed



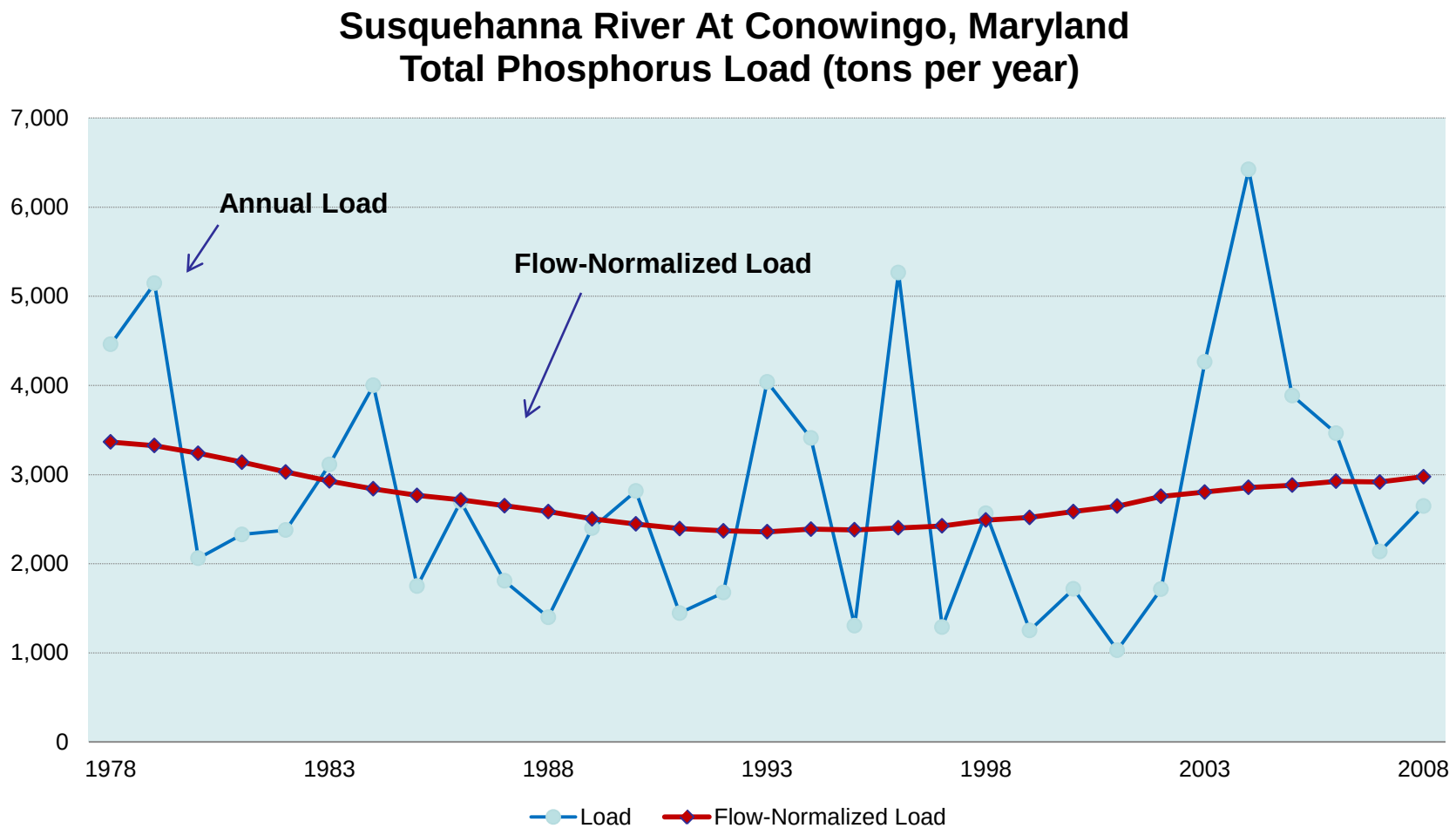
Trends: Nutrients and Sediment

- Trends
  - 1980's-2010
  - 2000-2010
  - Flow adjusted concentrations
- Nitrogen
  - LT: 2/3 of sites improving trends
  - 10 year: half with improving trends or no trends
- Phosphorus
  - LT: 70 percent improving
  - 10 year: 1/3 improving, most no trends
- Sediment
  - LT 30 percent of sites improving, 8 degrading
  - 10 year: 3 sites improving, 9 degrading, most no trend
- New approach for loads over time

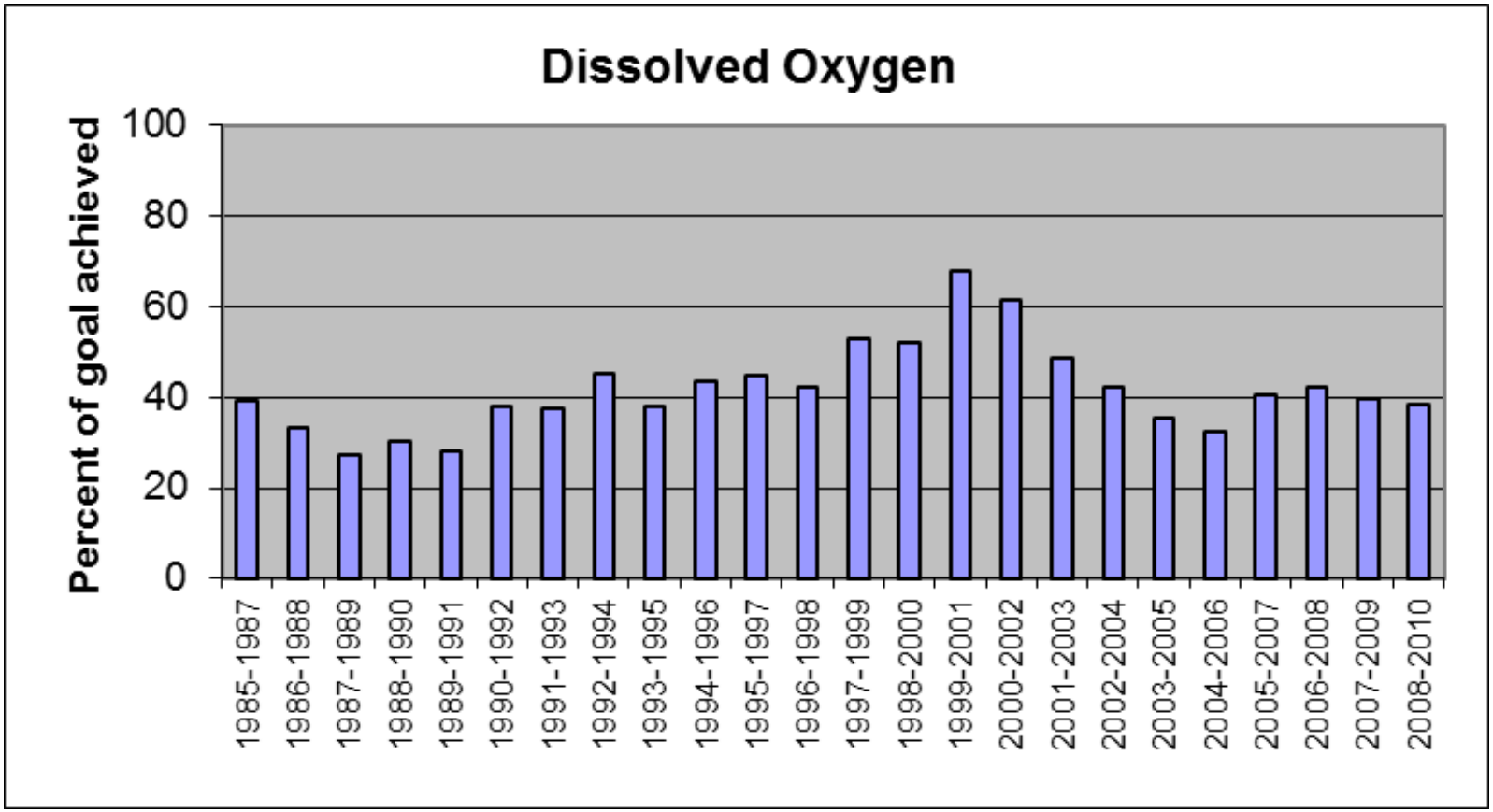


Flow-adjusted trends for total nitrogen for 31 sites in the Chesapeake Bay Watershed, 1985-2010.

New Technique: Change in Load



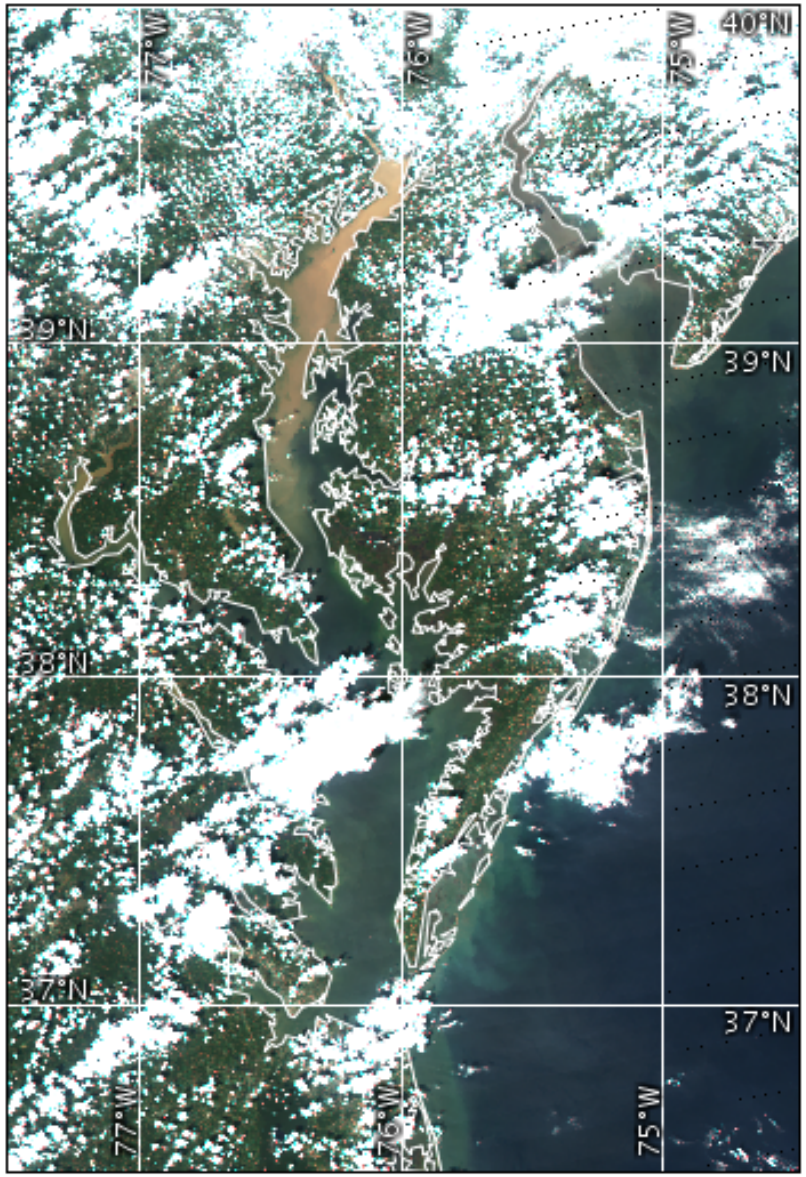
Water-Quality Standards



- DO, clarity, chl-a in progress toward standards
- DO: 38%, Clarity: 18%, Chl-a: 22%
- Enhanced assessments

Tidal Enhancements

- DO monitoring- NOAA CBIBS
- Remote sensing
- Assessments of segments

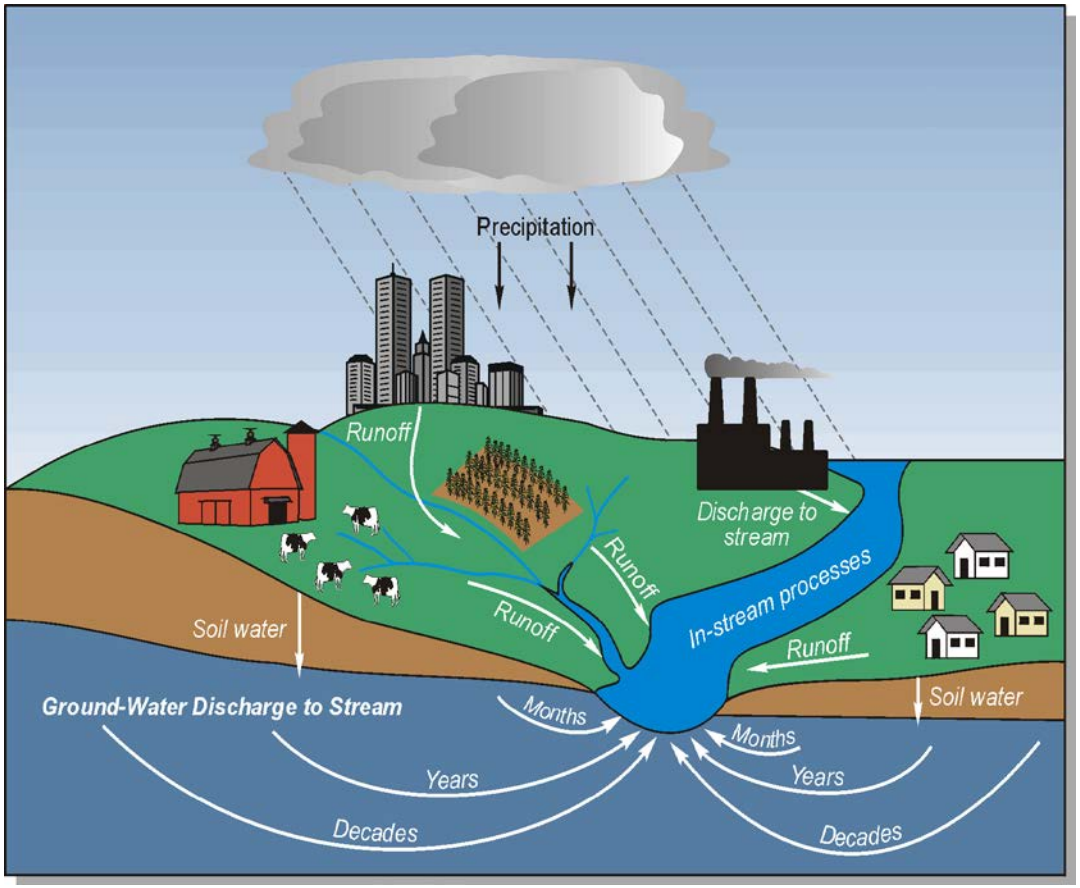


Data courtesy of:
USDOC/NOAA/NESDIS
CoastWatch

Satellite:
AQUA
Sensor:
MODIS
Date:
2011/09/11 JD 254
Start time:
18:05:00 UTC
End time:
18:10:00 UTC
Projection type:
MAPPED
Map projection:
0.28 km/pixel
MERCATOR
Latitude bounds:
35 N -> 41 N
Longitude bounds:
79 W -> 73 W

“Lag times” and water quality

- Management actions
  - Implementation
  - Reaching efficiency
- Watershed
  - Point sources
  - TN
    - Runoff
    - Ground water
  - TP and sediment
    - Storage
    - Storms and runoff
- Estuary
  - Seasonal to annual



Communicating the Story

- What can be provided now?
  - Progress toward milestones
  - Nutrient and sediment trends
  - Attainment of water-quality standards
  - Planned improvements for accountability

- Reporting opportunities in the future:
  - Annual updates
  - 2-yr milestones
  - 2017 evaluation
  - 2025 attainment of TMDL

Planned Improvements

- Improvements for integrated reporting:
  - Decision framework (WQGIT)
  - Expanded watershed monitoring (EPA/States/DC/USGS) and trends in loads (USGS)
  - Monitoring and Attainment of Standards (EPA/STAR/NOAA)
  - “Lag times” workshop (STAC)
  - Reports to explain water quality changes
    - “Lessons learned” report (STAR)
    - USGS/STAR: Eastern Shore (2013), Potomac (2015)

PSC Decisions/Next Steps

- Endorsed development of integrated approach to assess progress toward water-quality standards and relation to TMDL:
  - Progress in BMP implementation
  - Nutrient and sediment trends
  - Attainment of standards
  - Enhanced accountability
- Watershed trends and standards attainment for EC meeting package
- STAR (NTWG, TMAW, Modeling) need to work on approach and interact with WQGIT