The Chesapeake Bay Watershed Data Dashboard



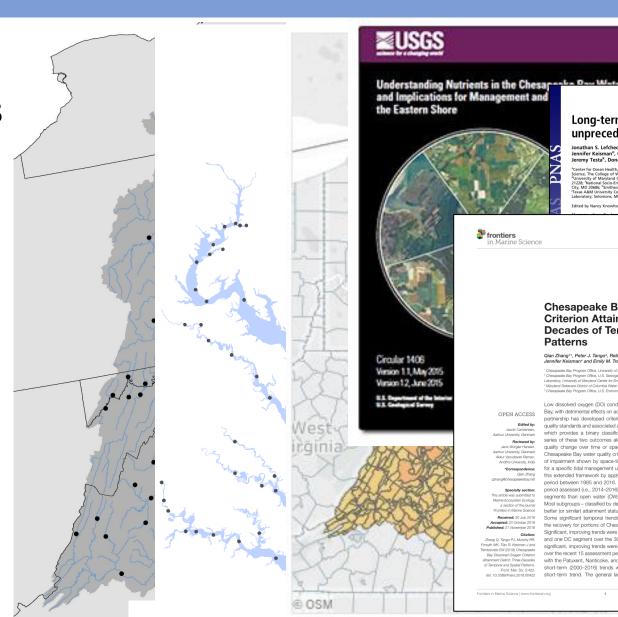
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US EPA Chesapeake Bay Program Office
Management Board Meeting
9/19/2019

What do 30 years of data look like?

Monitoring & Trends

Modeling & Tools

Research



Long-term nutrient reductions lead to the unprecedented recovery of a temperate coastal region

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Chesapeake Bay Dissolved Oxygen **Criterion Attainment Deficit: Three Decades of Temporal and Spatial**

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Patterns

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Low dissolved oxygen (DO) conditions are a recurring issue in waters of Chesapeake Bay, with detrimental effects on aquatic living resources. The Chesapeake Bay Program partnership has developed criteria guidance supporting the definition of state water quality standards and associated assessment procedures for DO and other parameters, which provides a binary classification of attainment or impairment. Evaluating time series of these two outcomes alone, however, provides limited information on water quality change over time or space. Here we introduce an extension of the existing Chesapeake Bay water quality criterion assessment framework to quantify the amount of impairment shown by space-time exceedance of DO criterion ("attainment deficit") this extended framework by applying it to Bay segments for each 3-year assessmen period between 1985 and 2016. In general, the attainment deficit for the most recen period assessed (i.e., 2014-2016) is considerably worse for deep channel (DC; n = 10) egments than open water (OW; n = 92) and deep water (DW; n = 18) segments Most subgroups - classified by designated uses, salinity zones, or tidal systems - show better (or similar) attainment status in 2014-2016 than their initial status (1985-1987). Some significant temporal trends (p < 0.1) were detected, presenting evidence or the recovery for portions of Chesapeake Bay with respect to DO criterion attainment. Significant, improving trends were observed in seven OW segments, four DW segments. and one DC segment over the 30 3-year assessment periods (1985-2016). Likewise significant, improving trends were observed in 15 OW, five DW, and four DC segments over the recent 15 assessment periods (2000-2016). Subgroups showed mixed trends. with the Patuxent, Nanticoke, and Choptank Rivers experiencing significant, improving short-term (2000-2016) trends while Elizabeth experiencing a significant, degrading short-term trend. The general lack of significantly improving trends across the Bay

t consistently studied and managed regions therefore presents a unique opportunity to f human activities on essential SAV habitat lation of the Chesapeake Bay watershed ha people, leading to changes in land use and tial nutrient and sediment runoff from pre rban and agricultural lands (15). From the 070s, tens of thousands of hectares of SAV est decline documented in over 400 v (16) ss of SAV and declines in the overall health bay led to unparalleled cooperation among , and scientific agencies, whose joint efforts ollution and subsequent loss of SAV as the two facing Chesapeake Bay (15). These agencies Bay as one of the few places on Earth where cal restoration at broad scales (15).

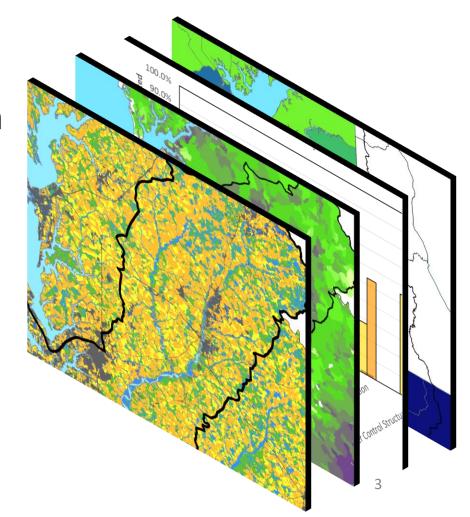
evaluate the relationship between nutrient using aerial surveys conducted from 1984 to emical monitoring data, historical information

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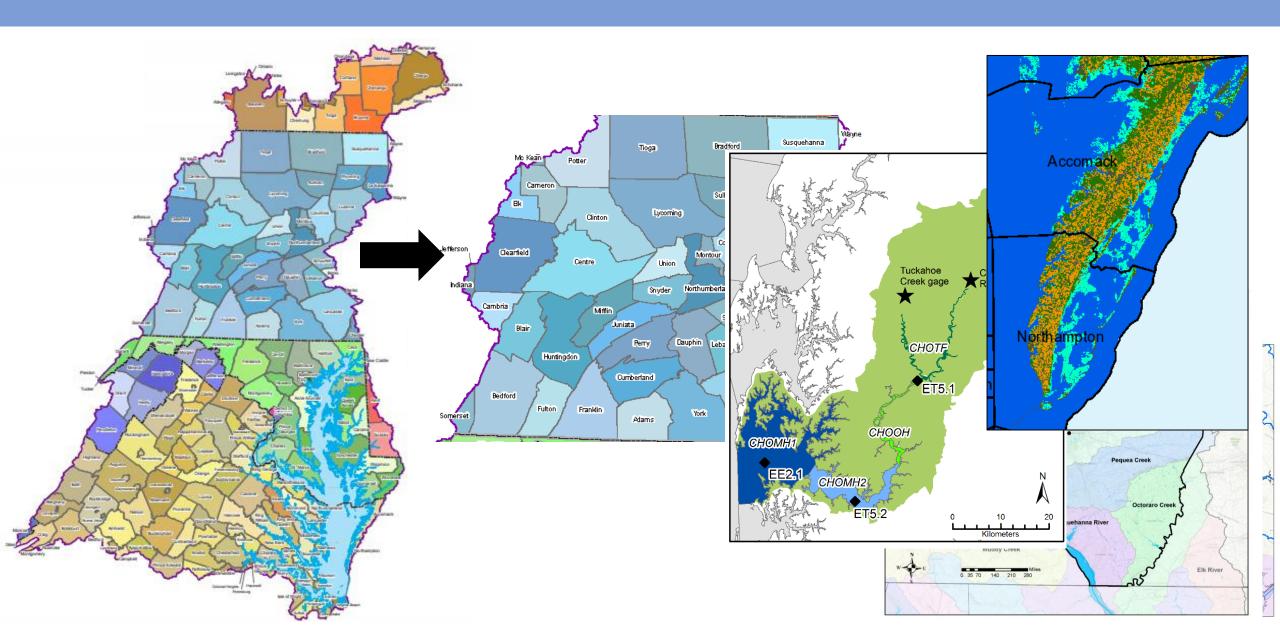
Understanding management implications

The challenge: new data & new expectations for managers

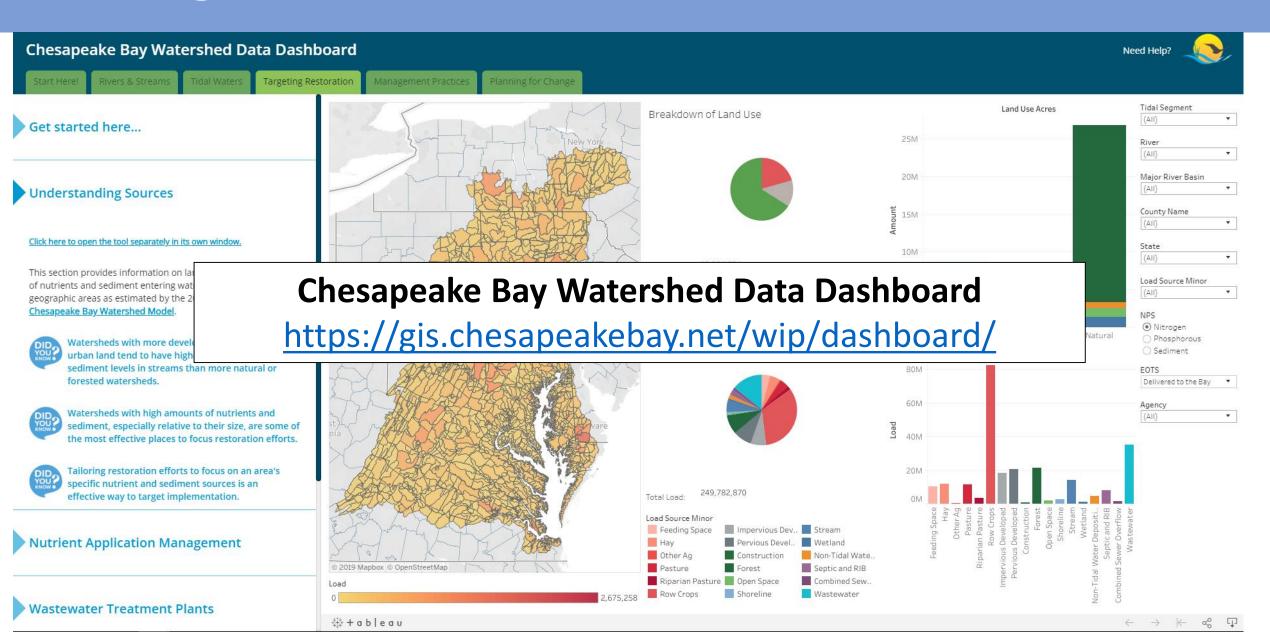
- Assess what's been working and what hasn't
- Develop "local area goals" at finer resolution
- Target/focus restoration efforts
- Plan for urban growth and climate change
- Co-benefits of nutrient and sediment reduction



Telling local stories to demonstrate utility of data



Making data accessible, understandable & usable



Making data accessible, understandable & usable

What is it?

The Chesapeake Bay Watershed Data Dashboard is an online tool that consolidates, visualizes and provides accessibility to data that can help guide water quality and watershed restoration planning.

Who should use it?

Anyone seeking information that can help guide their planning process for water quality and watershed restoration including:

- Local planners (e.g. municipality, soil conservation district, county, etc.)
- State planners
- Watershed organizations
- Non-profits

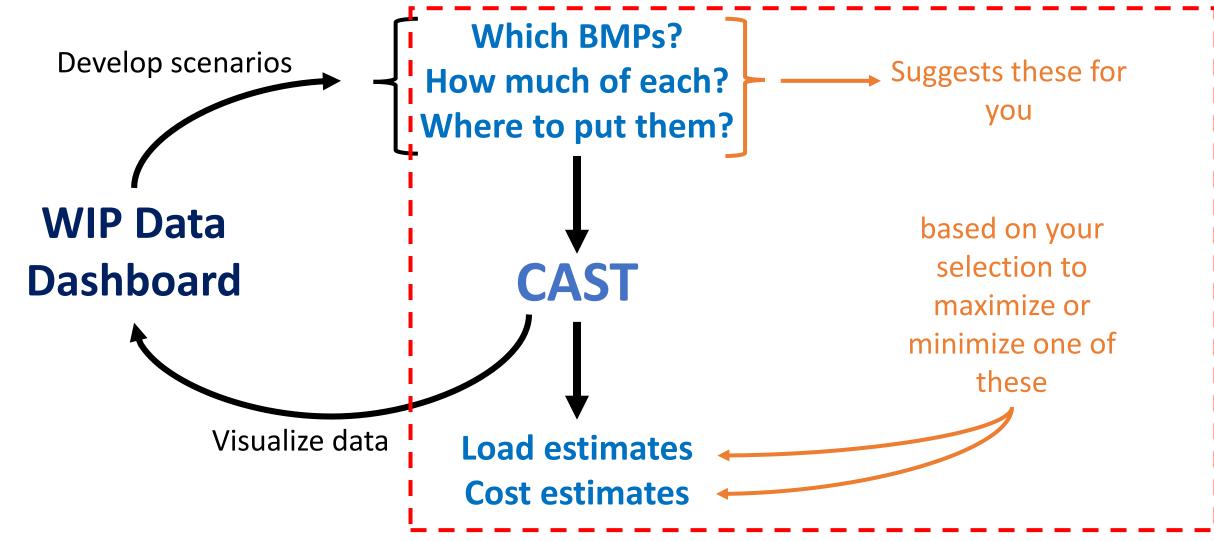
Making data accessible, understandable & usable

What can you do with it?

Some uses include but are not limited to:

- understanding local drivers of water quality
- targeting restoration efforts geographically, by sector or by practice
- identifying co-benefits of water quality restoration
- identifying cost-effective best management practices

Optimization Module



Example

Now we'll demonstrate how a local entity could use the dashboard to better understand local water quality and identify options for restoration.

Thank you! Emily Trentacoste trentacoste.Emily@epa.gov



