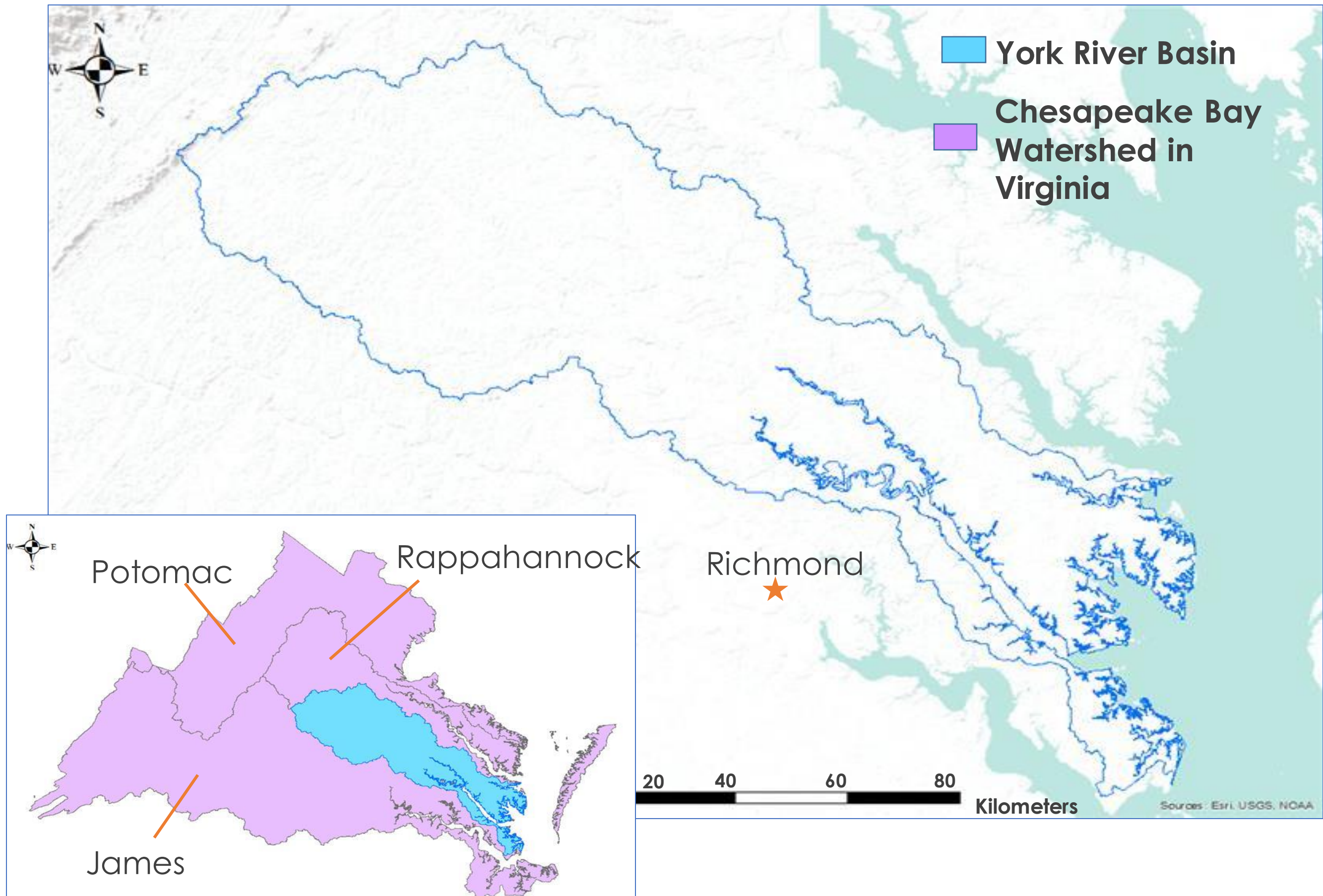
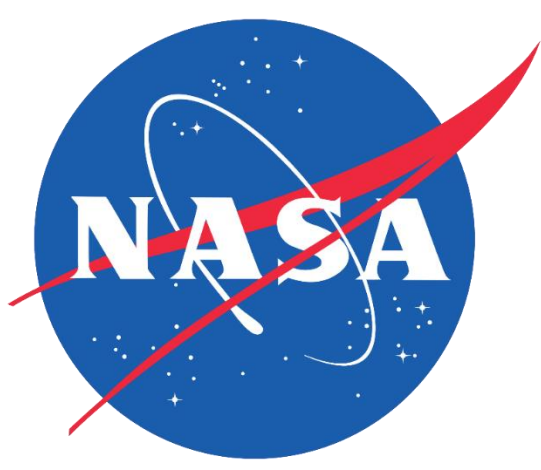




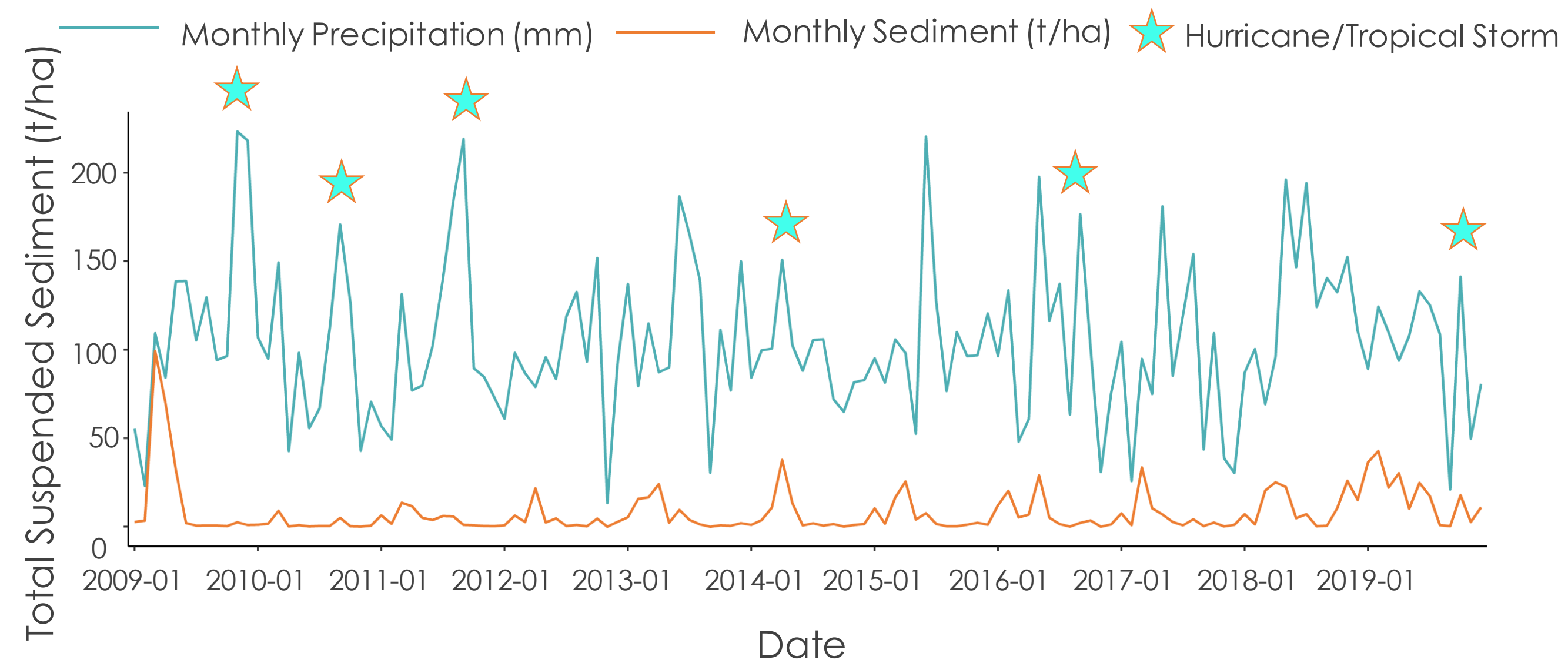
Examining Turbidity and Sediment Dynamics in the Chesapeake Bay



Did You Know?

- The Chesapeake Bay is the largest estuary in the U.S. It covers a total area of **11,600 sq km**.
- The fishing and shellfish industries generate **billions of dollars** annually.
- The Bay could accumulate a predicted amount of **\$130 billion** yearly in its restored state.
- Aquatic grasses** are vital to the Bay's ecosystems. They **filter sediment**, create habitats, and provide protection from flooding.

Sediment and Precipitation 2009–2019



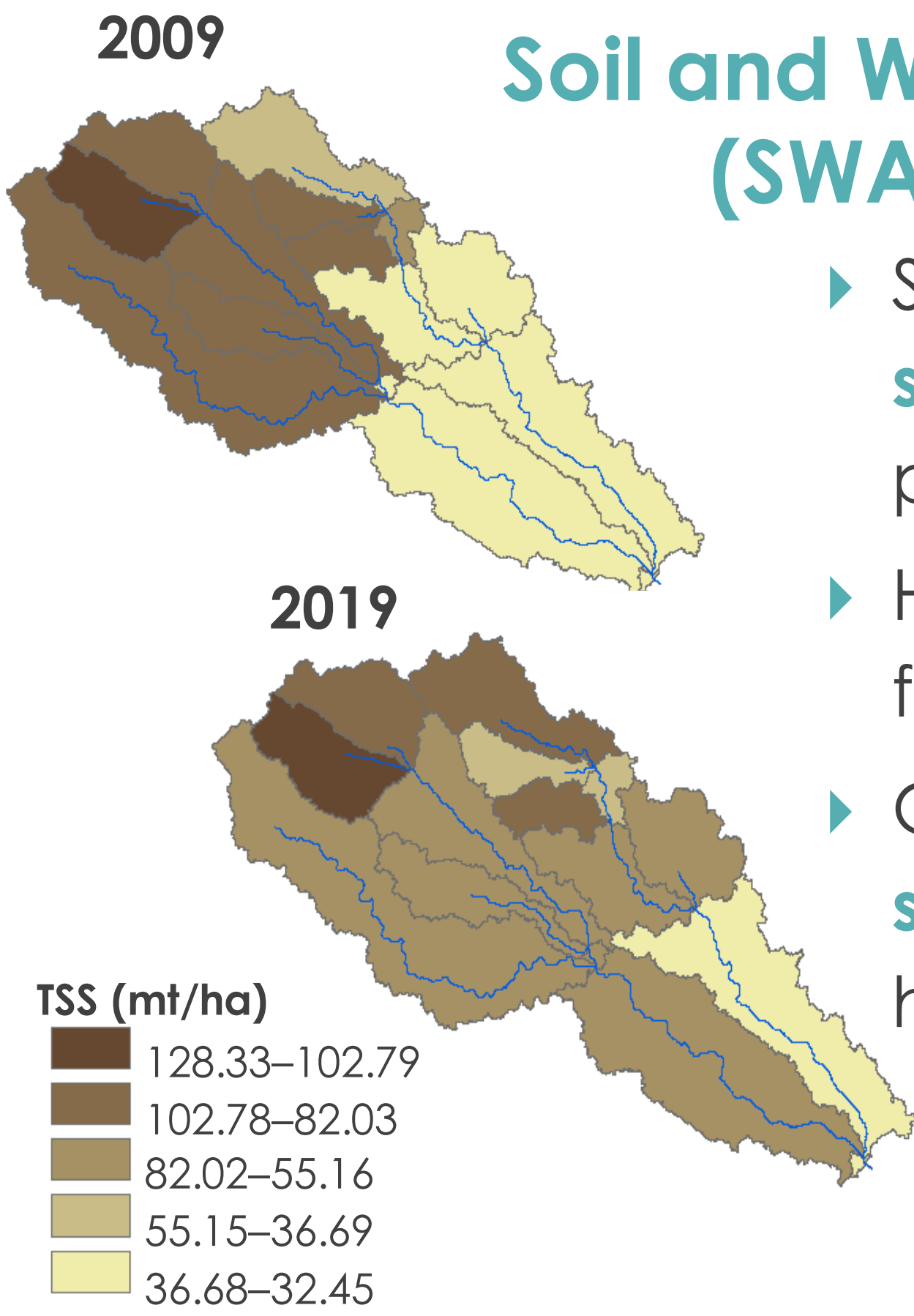
Earth Observations



Methodology

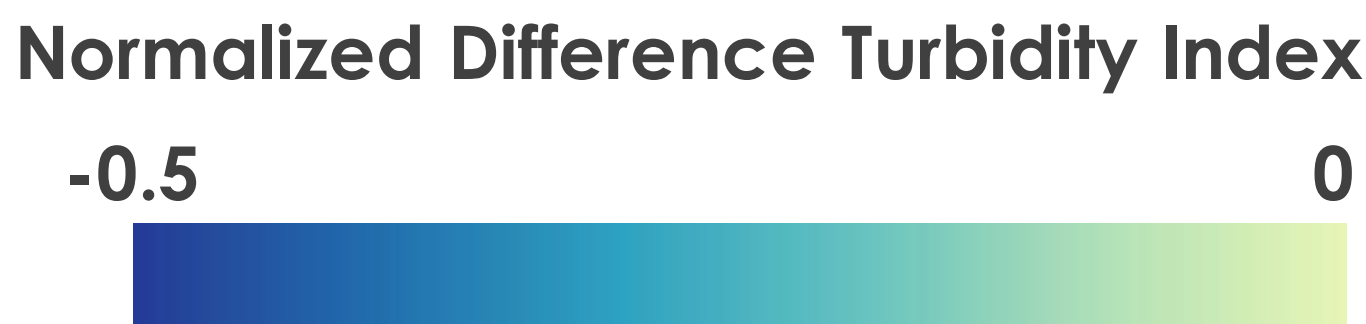
- SWAT**
 - Land cover + weather + soil + digital elevation model
 - Annual sedimentation 2009-2019
- ORCAA**
 - Google Earth Engine (GEE) JavaScript API analysis
 - Monthly median turbidity from 2009-2019 using the Normalized Difference Turbidity Index (NDTI)
- Results**
 - Analyze sediment and turbidity dynamics
 - Compare to precipitation levels

Soil and Water Assessment Tool (SWAT) Model Results



- Slight **increase in sedimentation** over the study period
- Highlighted **target areas** for future management
- Greater total **suspended sediment (TSS) loads** in the headwaters of the York River
- Steeper slope, more agriculture: increase **riparian buffer zones**

Optical Reef & Coastal Area Assessment (ORCAA) Tool Results



Greater sediment levels **threaten water quality**, increasing the need for management techniques like **riparian buffers**

Team Members



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Chesapeake Bay Water Resources