Update on Measuring and Explaining Change Activities

Joel Blomquist, USGS, jdblomqu@usgs.gov
Scott Phillips, USGS, swphilli@usgs.gov

USGS
science for a changing world

STAR Project: Measure and Explain Water-Quality Change

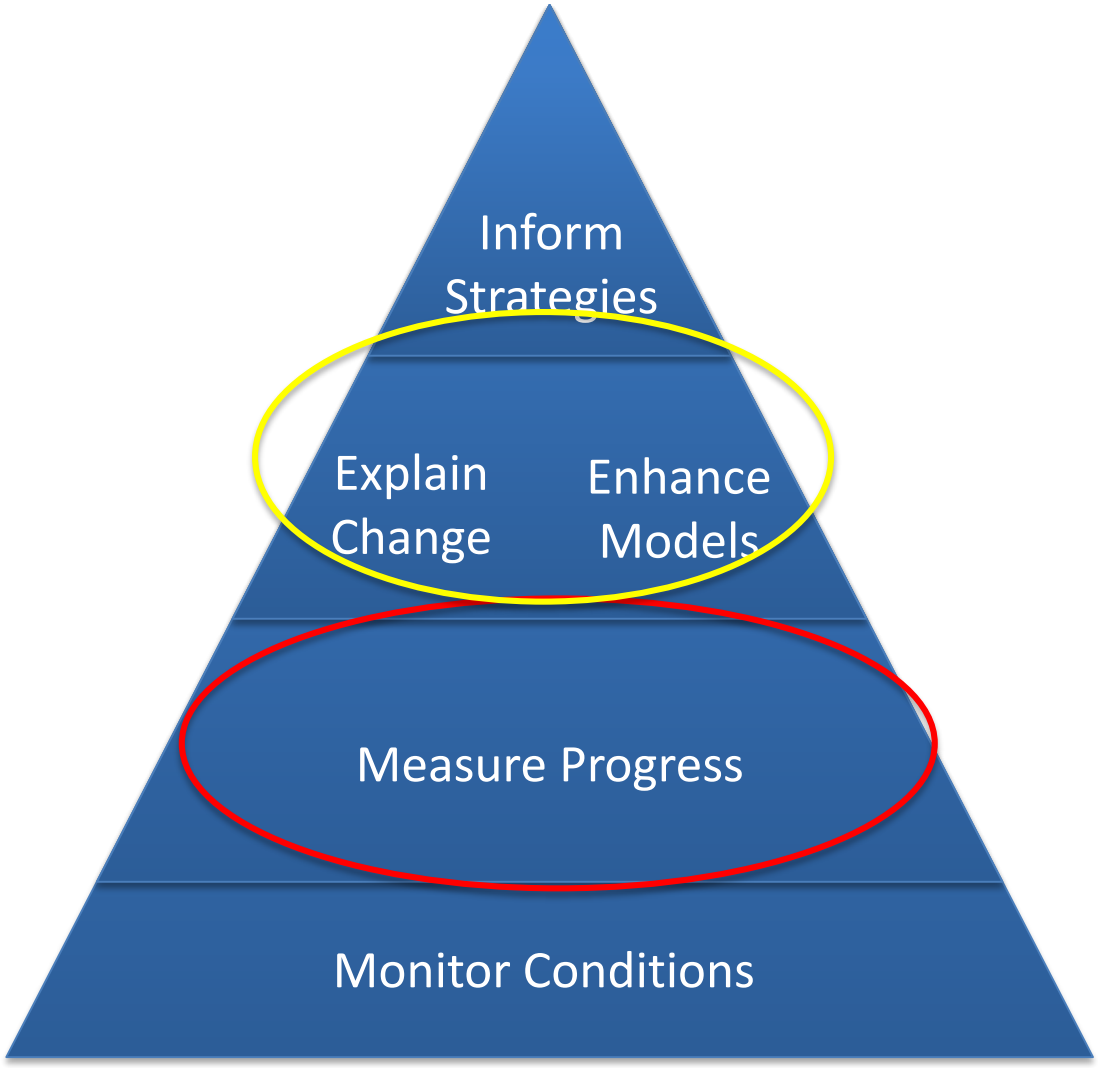
Workplan Elements

1. Measure progress
   - Trends

2. Explain water-quality changes
   - Sources, land change
   - Management practices

3. Enhance CBP models

4. Inform management
   - WIPs
   - Implementation
   - Meeting outcomes



STAC Recommendations

For the 2017 Midpoint Assessment:

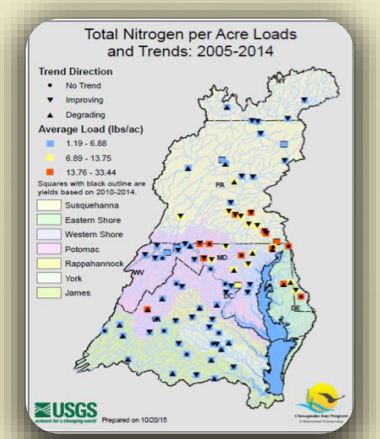
- GAMS estuary – WRTDS watershed
- Report Uncertainty
- Use findings from current projects
- Apply selected analytical approaches In pilot watersheds
- SPARROW to inform WSM
- Make WSM data accessible

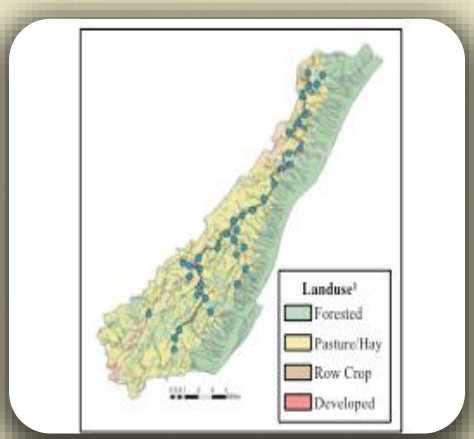
Longer-Term Enhancements for Explaining Trends by 2025:

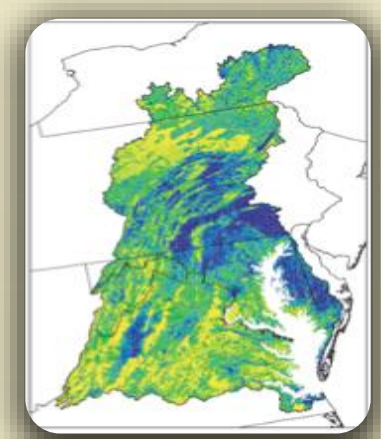
- apply statistical techniques
- Improve BMP data
- Implement continuous monitoring
- additional parameters to link landscape to water quality;

USGS science for a changing world

Building Blocks for Trend Explanation







Data

- Monitoring
- Trend analysis
- Land Use
- Ag Sources
- BMP
- Wastewater
- Deposition

Processes

- Hydrology
- GW models
- Small Watersheds
- Reservoir Studies
- Sediment Budgets
- Sediment lags
- Phosphorus Studies
- BMP studies

Integration

- Correlation
- SPARROW models
  - Decadal
  - BMP
  - Delta
  - Nitrogen Dynamic
  - Phosphorus Dynamic
- SEM Models
- CB WSM

Watershed Model Components

Delivered Load from a land use =

Avg No BMP Nutrient Load

+

Sensitivity * Change in Inputs

*****

Land to water

*****

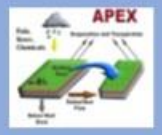
BMPs

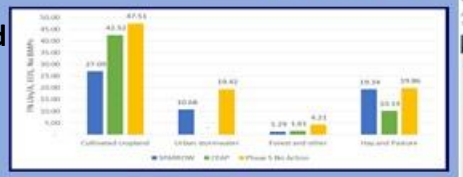
*****

Stream Delivery

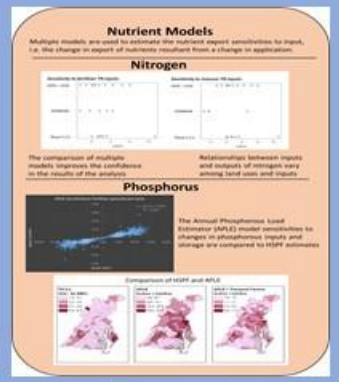
*****

River Delivery

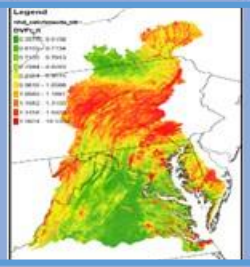




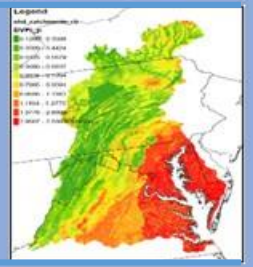
Science Inputs



SPARROW

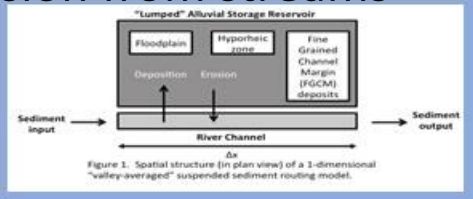


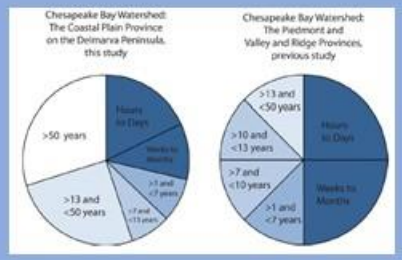
Ground -water models

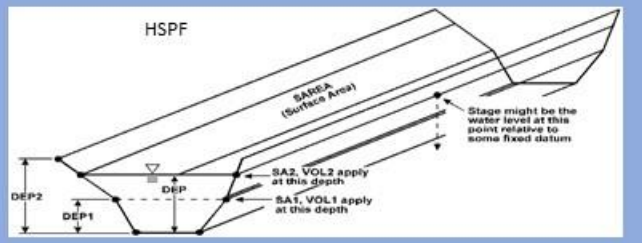


Effect of BMPs

Sediment erosion from streams







Watershed Synthesis Topics

- Influence of Susquehanna reservoirs on loads to the Bay
- Explaining trends at RIM sites and basins
- Factors affecting yields and trends in the watershed
- Influence of groundwater on surface-water trends
- Sediment sources, transport, delivery
- Coordinate efforts with estuary investigators

USGS
science for a changing world

Next Steps

- Finalize ITAT-jurisdictional technical team
  - Get feedback on current results/synthesis topics
  - Support jurisdictional analysis
  - Discuss approaches to support MPA/WIP
  - First meeting Sept 2106
- Share attainment results on August 22nd
- Consider desired topics for October face-to-face meeting

USGS
science for a changing world