# Survey Results

Polled participants of November, 2014 kickoff meeting

Questions:

1. What motivated your participation in the ITAT?
2. Briefly describe your expertise
3. What type of ecosystem(s) do you work in?
4. Do you work in a specific location or locations?
5. What type of experimental, analytical, or numerical tools do you use?
6. Please suggest 1-3 topics that are timely and could be the emphasis of group synthesis and collaborative study (topical groups)

# Survey Results

**Motivations:**

- Invitation by a trusted colleague
- Experience and interest in trend analysis and use of CBP data and related datasets
- Interest in regional and interdisciplinary collaboration
- Desire to use our (local, specific) dataset to explain reasons for observed trends
- Engaging in this work is a good test of my modeling tools
- Fits with my ongoing research projects and professional activities
- I hope that this group will promote a more mechanistic approach to trend analysis
- To help carry out the Midpoint Assessment of the TMDL with enhanced explanation and reporting of monitoring information

- My boss made me

# Survey Results

**Expertise:**

- Estuarine systems
- Watershed hydrology
- Ecology (benthic, marine, SAV, ecosystem metabolism, interdisciplinary, estuarine)
- Biogeochemistry, nutrient transport processes
- Empirical data synthesis and comparative ecology
- Natural resource planning and management
- Geospatial analysis and assessments (land use, land cover, socioeconomic)
- Statistical analysis, programming, and methods development
  - Bayesian, geography & epidemiology, drinking water contaminants, hydrologic, SAS, R, etc.
- Water quality monitoring and data management
- Remote sensing of vegetation cover and air pollution
- Modeling:
  - Numerical
  - Highlight
  - Watershed, estuarine, reservoir
  - 1-D estuary
  - Hydrodynamic
  - scalar
- Applying science to inform decision-making
- Science communication and integration

# Survey Results

**Ecosystems/Locations:**

- Estuaries, lagoons, tidal creeks, coastal and marine, open ocean
- Streams and rivers, small- and large-watershed scale
- Marshes/wetlands
- Landscape/land use (urban/suburban, agricultural, forested, disturbed systems and disturbances, vegetation cover)
- Agricultural production systems
- York River, Lynnhaven, Cherrystone, Harris Creek, West/Rhode Rivers,
- Bay-wide
- Watershed-wide
- Potomac River basin
- Patuxent River/river basin
- Maryland (western and eastern shores)
- Virginia
- Washington metropolitan region
- Choptank River
- Patapsco River

# Survey Results

**Specific tools:**

- Flow-weighted composite storm sampling
- Discrete sampling,
- lysimeters
- Wet laboratory chemistry
- Mesocosms. chemostats
- Biogeochemical models, mass balance computations
- Time series analysis
- Continuous discharge modeling
- Metabolic incubations
- CBP Watershed Model
- EGRET
- WRTDS
- ROMS
- Lumped parameter and groundwater models
- Hybrid individual-based/systems models
- Data assimilation techniques
- SPARROW
- Kendal, CA, PCA, GAM, multivariate regression, GLMs
- MAF analysis, functional diversity trait analysis
- HSPF, CE-QUAL-W2, WASP
- GIS data visualization
- R, SAS, Primer-E, PERMANOVA, Brodgar
- B-IBI and applications

# Survey Results – Topical Groups

3 general categories:

1. Over-arching categories / ITAT Goals
2. Topics for ITAT meetings
3. Specific projects for topical working groups?

# 1. Over-arching Categories/ITAT Goals

Making the links between watershed activities to nontidal water quality to tidal waters quality

- Relationships between anthropogenic stressors and water quality
- Better explaining factors affecting water-quality response.
- Linking non tidal trends to Bay health

**Improving modeling tools so that they capture the monitoring data trends**

- Understanding and improving modeling tools (for load estimation and for watershed modeling)
- Improving and applying tools for characterizing trends (in sources and in loadings)

**Use our evaluation of trends in monitoring data to inform management practices**

- Apply results to inform implementation of management practices
- Supporting the MPA

*Goal: "Integrative" publications on trends that demonstrate "real" progress in Bay/watershed restoration ("success stories")*

# 2. ITAT Meeting Topics: *From Survey*

(1) Phosphorus Patterns and Trends in the watershed and receiving waters

(2) Comparison of alternative techniques for trend analysis. --*WRTDS to ESTIMATOR summary, WRTDS to GAMs, GAMs to SK*

(3) Uncertainty and geographic consistency in trends and load estimates

(4) Examination of trends and patterns in the shallow water data

(5) Estuarine response to nutrients and climate change / climate v. nutrients

(6) Linking nutrients and water quality to living resources/higher trophic levels

(7) Improving our knowledge, understanding, archiving, and sharing of watershed data (land use, BMPs, physiography, nutrient loads, etc.)

- *Linking BMPs directly to receiving water response*

# 3. *Structure* for topical working groups

**NCEAS and SESYNC models:**
"Successful proposals identify a significant research question that is at a critical point where it could uniquely benefit from the collation and synthesis of existing data, as well as the collaboration and analysis by an interdisciplinary working group."

**Characteristics of a successful working group:**

- 12-18 individuals
- A diversity of participants
- Facilitator can be helpful for planning and running the first meeting
- *Iterative working meetings* (**2-4 meetings, 3-5 days in duration, over a period of 1-2 years**) focused on data analysis and synthesis
- One designated technical liaison to engage partners on data entry and organization, database development, statistical analysis, modeling, and metadata development and distribution
- Members in a position to lead new actions based on new knowledge (what would this mean for our groups? Publications? Tangible input to management strategies?)

# (4) Next Steps

(1) All-Hands-On Meeting in May with a theme

(2) Determine how to select topical projects/working groups

e.g., Establish criteria, selection process, expectations:

- Topical projects must have the potential to generate clear outcomes to support explaining the relation of changes in water quality to anthropogenic factors

(3) Plan for products

- Peer-reviewed publications
- Generate clear recommendations for management
- Brief reports/white papers