



Responding to the PSC Request to Improve the CBP Monitoring Networks

Peter Tango, Scott Phillips, Lee
McDonnell, Breck Sullivan

STAR Presentation

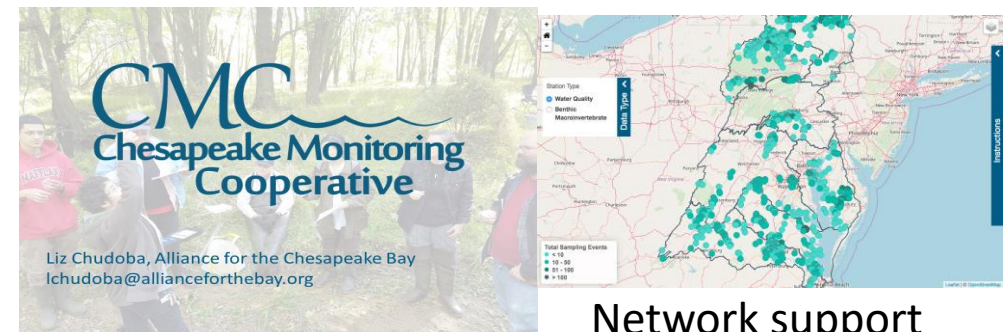
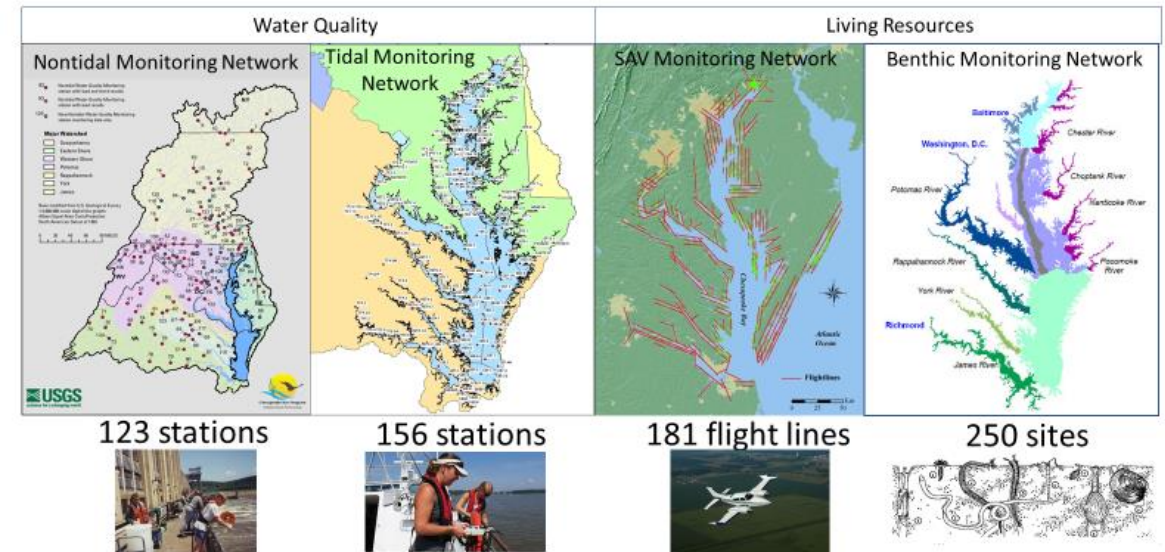
4/22/21

March 2021: Monitoring Presentation to the Principal Staff Committee



- Lee McDonnell provided monitoring presentation on March 2
- Help them better understand CBP budget and funding for monitoring
- *CBP World Class Monitoring Networks:*
 - Tidal water quality
 - Nontidal nutrients and sediment
 - SAV
 - Tidal Benthic organisms
 - Citizen Monitoring
- Current Funding:
 - CBP \$5M and partners >\$7M

CBP Partnership Monitoring Networks: Annual Monitoring



Network support

PSC request:

- In response to the status report, they requested information be provided on what is needed to improve the CBP monitoring networks, including:
 - (1) an overview of current status and threats to the networks, and
 - (2) what is needed to address the monitoring networks capacity shortfalls.

Opportunities and Benefits of PSC request

- Over a decade since the last CBP monitoring evaluation
- Address CBP Outcome: Standards Attainment and Monitoring Outcome
- Address selected monitoring needs of other CBP outcomes
- Consider new technologies and innovation
- Identify priority improvements and gaps

Through the 2014 Chesapeake Bay Watershed Agreement, the Chesapeake Bay Program has committed to...



Goal: Water Quality

Outcome:

Continually improve the capacity to monitor and assess the effects of management actions being undertaken to implement the Bay TMDL and improve water quality. Use the monitoring results to report annually to the public on progress made in attaining established Bay water-quality standards and trends in reducing nutrients and sediment in the watershed.



Process

9 months start to
finish

8 questions to
answer

Provide a short
synthesis to address
the questions, vision
going forward.

Process timeline and themes

[illegible]

Detailed needs – small bites, coming soon.

Teams/Groups	April 2021	May	June	July	Aug	Sept	Oct	Nov	Dec	2022
	SPRING Status and vulnerabilities of existing network			SUMMER – Innovation Assessment, Financials of Sustaining networks			FALL Evaluate limitations, Financials for adopting innovations, recommendations			Winter
NTN	Network support spreadsheet, vulnerabilities, financials, design options			Network revision proposals – BMP, climate, historical; financials of vulnerabilities next 5 years			Analysis innovation – target, timeline, investment. Formalize network & analysis revision recommendations			Consolidate recommendations, financials for PSC Presentation
CAP WG with DIWG	Tidal Mon program status, vulnerabilities, financials			Satellite SAV readiness, data management, QA needs	Satellite kd readiness, data management, QA needs	Satellite CHLA readiness, data management, QA needs	Cit Sci targets, expectations	STAC Wkshp: Knitting together innovations in and –		
Hypoxia Collaborative	Establish Team, kick-off mtg, provide Vision, input on stakeholder requirements, initial deployment targets			Network design, sampling design adjustment						
Cit Sci	Award of contract.			Tier 3 document			Review of Cit Sci data can			
Fish Forage/Black Duck/117e grants	Is Spring BIBI necessary?						Formalize recommendations and financials of existing and proposed modifications to program			
Fish Habitat	Dat			Monitoring network design, data management and QA needs			STAC Workshop panels support			
SAV	Track acquis			Prep for STAC Workshop – sharpen financial assessment			STAC Wrkp: AI options, AI progress to improve efficiencies, comparability of method outputs, document path and financials			
4-D Interpolator	Establish Team, provide Vision, stakeholder requirements,			Guidance and development phase with monthly updates			STAC Wkshp: Shaping development, envisioning products to address WQ Stds reporting needs, fish habitat needs			
Detailed plans, dates, homework assignment assistance planning is in progress here										
STAC Workshop	Pre-planning work		Planning and organizing phase				Early Themed Workshop meetings			Continue
STAR/WQGIT updates	Presentation prep		Input from all GITs	Presentation prep		Input from all GITs	Presentation prep STAC Workshop panels, meeting support as targeted		Early PSC material PPT and review	
PSC Presentation										X

Detailed plans, dates, homework assignment assistance planning is in progress here

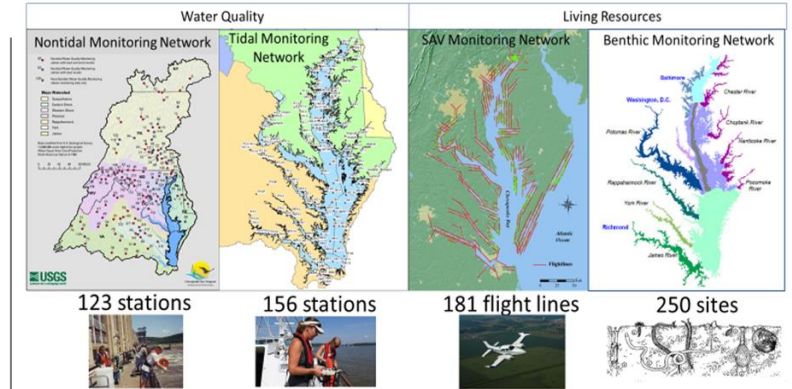
The questions...



8 Questions to address in this 9-month review

- **NETWORK STATUS?**
- **VULNERABILITIES?**
- **PROGRAMMING STRATEGY?**
- **INFORMATION GAPS TO FILL?**
- **MONITORING PROGRAM
OPTIONS TO FILL GAPS?**
- **WHAT INNOVATIONS ARE
AVAILABLE?**
- **WHO - PARTNERS FOR
ADDRESSING INFORMATION
GAP DATA & PROODUCTS?**
- **DETAIL ON FINANCIALS FOR
SUSTAINING AND GROWING
NETWORK TO MEET
INFORMATION NEEDS?**

CBP Partnership Monitoring Networks: Annual Monitoring



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- **PROGRAMMING STRATEGY?**
- **INFORMATION GAPS TO FILL?**
- **MONITORING PROGRAM OPTIONS TO FILL GAPS?**
- **WHAT INNOVATIONS ARE AVAILABLE?**
- **WHO - PARTNERS FOR ADDRESSING INFORMATION GAP DATA & PRODUCTS?**
- **DETAIL ON FINANCIALS FOR SUSTAINING AND GROWING NETWORK TO MEET INFORMATION NEEDS?**

- What is the status of the network (including number of stations, sampling frequency, funding partners for tidal assessment and nontidal stream flow and water-quality monitoring at stations) and current assessment methodologies as it pertains to its stated purpose?
- How have the networks and assessment needs of the CBP partnership changed over time past 5-10 years and what are future threats?
- What needs to be done to sustain the current networks (i.e., stop the loss of stations and number of stations to inflation over the past 5-10 years, address infrastructure challenges, manage the program databases), and what are the future benefits of doing so?
- What gaps need to be filled to improve the CBP monitoring network to meet the information and decision-support needs?
- How can existing monitoring data and information be used to address these gaps?
- What are some of the approaches that can be considered to improve the networks to address current and future management relevant data analysis products?
- How can other partners can help expand the monitoring capacity through adoption of existing data analyses beyond the traditional Clean Water Act 117e grant funded monitoring programs?
- Assign a financial need if necessary to each recommendation that addresses sustaining and growing the networks

See PSC-request white paper for question details

Actions: 8 Questions to address in this 9-month review

- **EXISTING NETWORK STATUS?**
- **Action** – Edit available summaries.

Example:

Chesapeake Bay Benthos Monitoring. The current Bay-wide benthic monitoring program, initiated in Maryland in 1984 and in Virginia in 1985, now consists of fixed and random site components (Weisberg et al. 1997; Dauer and Llansó 2003; Llansó et al 2003). The fixed site monitoring program has 53 stations traditionally sampled annually **in spring and summer** to monitor changes over time (trends). All fixed sites in Maryland and Virginia are sampled using three replicate bottom grabs. The probability-based, random strata sampling was initiated in Maryland in 1994. Since 1996, the probability-based sampling program has become the standardized approach in Virginia as well, providing for a Bay-wide regulatory assessment estimating impaired habitat conditions. The impairment assessment relies on approximately 200 sites sampled between July 15 and September 30 each year

Actions: 8 Questions to address in this 9-month review

- **VULNERABILITIES?**
- **Action** - States/USGS – use the already generally identified understanding on near term challenges provided annually in grants/IAGs. Add insights.

Example:

We just spent 3+ years addressing long-term funding needs to continue NTN operations at Conococheague Creek. New EPA support has been developed.

Example:

SAV program risks due to contractor ownership and unusual weather conditions promoted evaluations of alternative image sourcing.

Actions: 8 Questions to address in this 9- month review

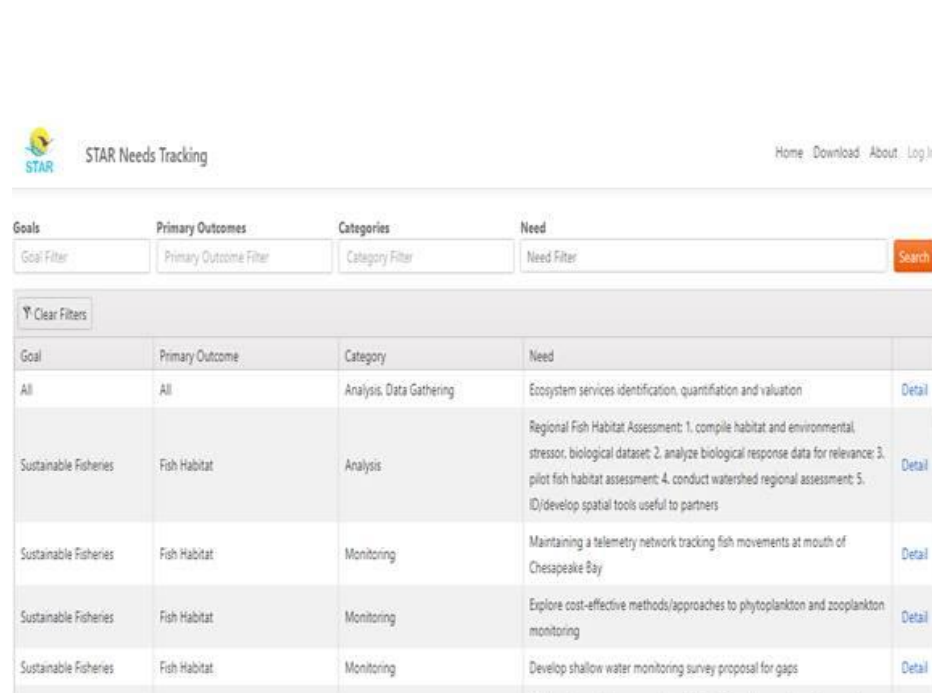
- **PROGRAMMING STRATEGY?**
- **Action** - What is the cost of sustaining existing operations the next 5 years – some insights already available.

Example:

117e grant/IAG 5-year cost projections often provide adaptations/reductions for working with level Federal and State funding as a resource for estimating costs to maintain existing operations.

Actions: 8 Questions to address in this 9-month review

- **INFORMATION GAPS TO FILL?**
- **Actions** – extract gaps highlighted in the CBP Strategic Science and Research Framework database



The screenshot shows the STAR Needs Tracking website. At the top, there is a logo for STAR and the text "STAR Needs Tracking". To the right, there are links for "Home", "Download", "About", and "Log In". Below the header, there is a search bar with four filters: "Goal Filter", "Primary Outcome Filter", "Category Filter", and "Need Filter". A "Search" button is located to the right of these filters. Below the search bar, there is a "Clear Filters" button. The main content area is a table with four columns: "Goal", "Primary Outcome", "Category", and "Need". The table contains five rows of data. The first row is a header row. The second row shows "All" for Goal, "All" for Primary Outcome, "Analysis, Data Gathering" for Category, and "Ecosystem services identification, quantification and valuation" for Need. The third row shows "Sustainable Fisheries" for Goal, "Fish Habitat" for Primary Outcome, "Analysis" for Category, and a detailed description of the Regional Fish Habitat Assessment for Need. The fourth row shows "Sustainable Fisheries" for Goal, "Fish Habitat" for Primary Outcome, "Monitoring" for Category, and "Maintaining a telemetry network tracking fish movements at mouth of Chesapeake Bay" for Need. The fifth row shows "Sustainable Fisheries" for Goal, "Fish Habitat" for Primary Outcome, "Monitoring" for Category, and "Explore cost-effective methods/approaches to phytoplankton and zooplankton monitoring" for Need. The sixth row shows "Sustainable Fisheries" for Goal, "Fish Habitat" for Primary Outcome, "Monitoring" for Category, and "Develop shallow water monitoring survey proposal for gaps" for Need. Each row has a "Detail" link to its right.

Goal	Primary Outcome	Category	Need	
All	All	Analysis, Data Gathering	Ecosystem services identification, quantification and valuation	Detail
Sustainable Fisheries	Fish Habitat	Analysis	Regional Fish Habitat Assessment: 1. compile habitat and environmental stressor, biological dataset; 2. analyze biological response data for relevance; 3. pilot fish habitat assessment; 4. conduct watershed regional assessment; 5. ID/develop spatial tools useful to partners	Detail
Sustainable Fisheries	Fish Habitat	Monitoring	Maintaining a telemetry network tracking fish movements at mouth of Chesapeake Bay	Detail
Sustainable Fisheries	Fish Habitat	Monitoring	Explore cost-effective methods/approaches to phytoplankton and zooplankton monitoring	Detail
Sustainable Fisheries	Fish Habitat	Monitoring	Develop shallow water monitoring survey proposal for gaps	Detail

Actions:
8 Questions to
address in this
9-month
review

- **MONITORING PROGRAM OPTIONS TO
FILL GAPS?**
- **Action** - Healthy discussions planned in many forums these next 6 months including STAC Workshop.

Example:

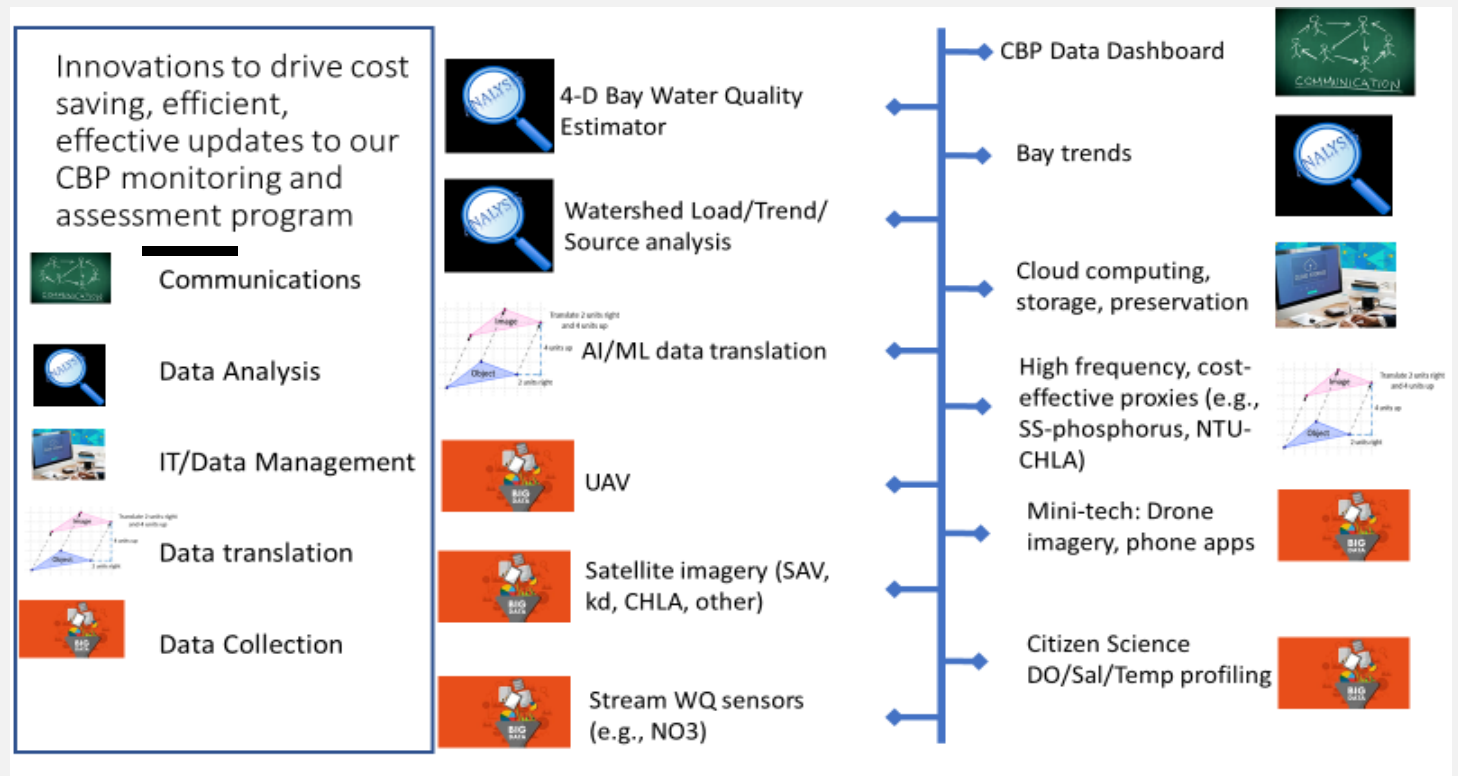
NTN considerations with NRCS-EPA-USGS partnership work

Example:

Strategic collaborations with Citizen Science engagements

Actions: 8 Questions to address in this 9- month review

- WHAT INNOVATIONS ARE AVAILABLE?:
- **Actions:** Discussion in many forums these next 6 months including STAC Workshop to discuss utility and readiness of innovations, their data, and their products.



Actions:
8 Questions to
address in this
9-month
review

- **WHO - PARTNERS FOR ADDRESSING INFORMATION GAP DATA & PROODUCTS:**
- **Action:** List. That should be obvious from answers from the previous question. Self explanatory.

Actions:
8 Questions to
address in this
9-month
review

- **DETAIL ON FINANCIALS FOR SUSTAINING AND GROWING NETWORKS TO MEET INFORMATION NEEDS?**
- **Action:** Reflect costs to address COLAs, new partners with available products, build out and maintenance of new networks, data management, QA, analysis, reporting.



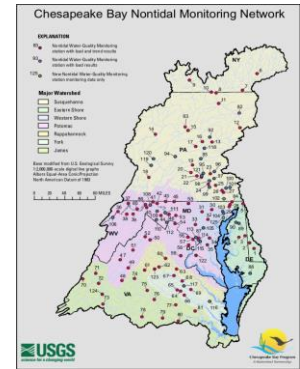
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Watershed loads

Nontidal Network

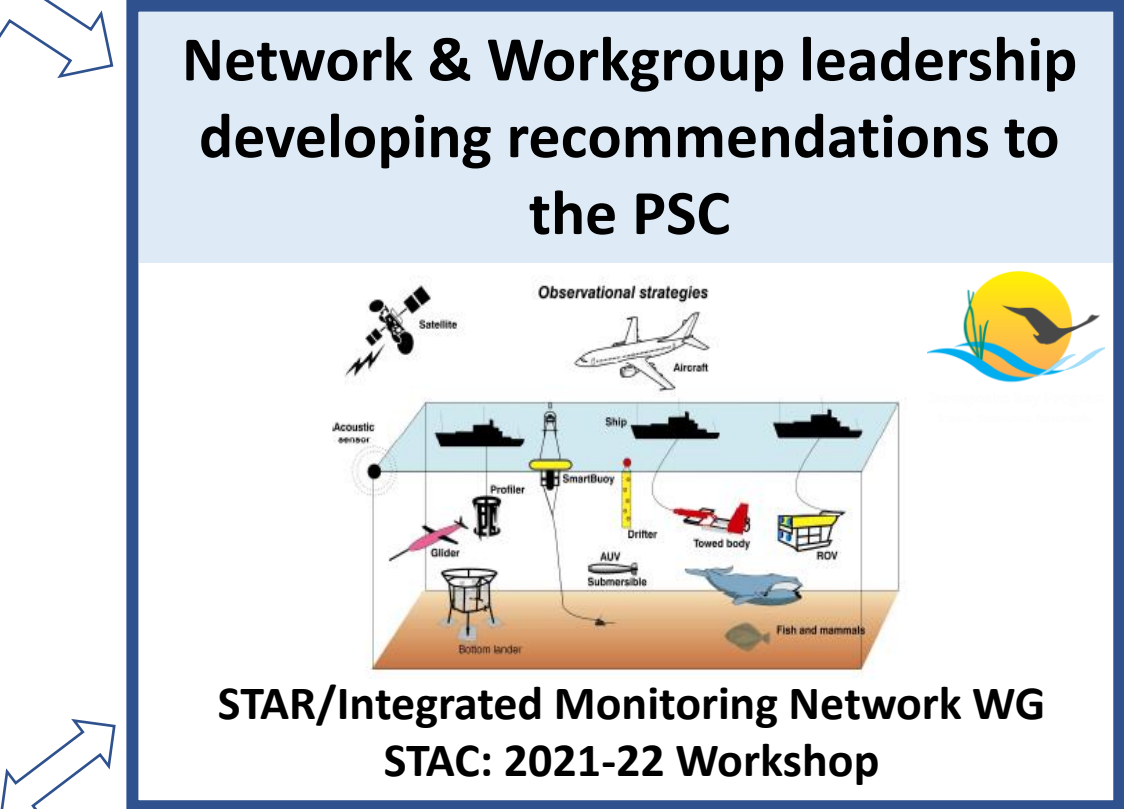
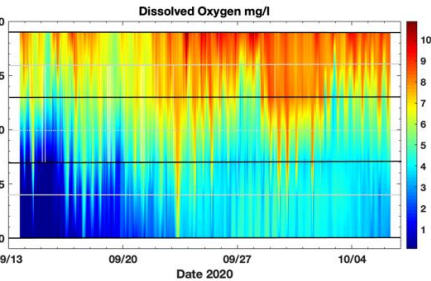
Lead – NTN WG
(Coordinator: Peter Tango)



Fish Habitat

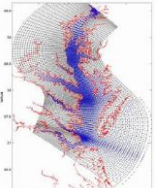
Tidal Network

Lead – Hypoxia Collaborative
(Coordinators: Bruce Vogt, Peter Tango)



Tidal Water Quality Standards/Habitat Analysis

4-D Water Quality Estimator Team



4D BORG
(Coordinators – Peter Tango, Rebecca Murphy)

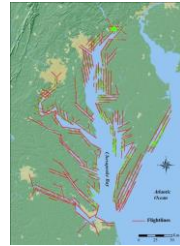


Living Resources - Tidal

SAV Network

Lead – SAV WG
(Chair – Brooke Landry)
Support by Citizen Science Network

Benthic network Lead – CAP WG
(Chair – Peter Tango)

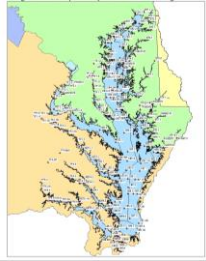


Water Quality Standards

Tidal Network

Lead – CAP WG
(Chair – Peter Tango)

Support: Citizen Science Network



Supporting group consultations

Data Integrity WG – All
Network update
considerations

Climate Resiliency WG
– All networks

Fish Habitat Action
Team – Tidal network,
Hypoxia Collaborative,
4D BORG links

Forage Fish Team –
Benthic Network

Black Duck Team –
Benthic Network

Healthy Habitats –
outputs of 4-D analysis

Modeling WG – 4D
water quality estimator

Water Quality GIT

STAR

STAC

2021-22 STAC Workshop on Advanced Monitoring Options and Recommendations

STAC
ACCEPTED



Peter Tango
USGS@CBPO
IMN WG Coordinator
DIWG Presentation 2 of 2
April 13, 2021


STAC Workshop Autumn 2021/Winter 2021-22



In closing:
9 Months to a concise issue and
recommendation summary with
financials. (December 2021).

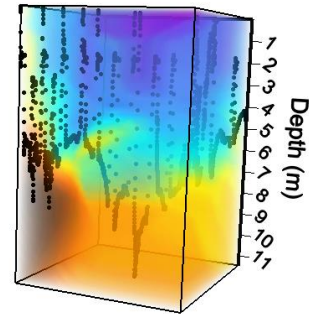
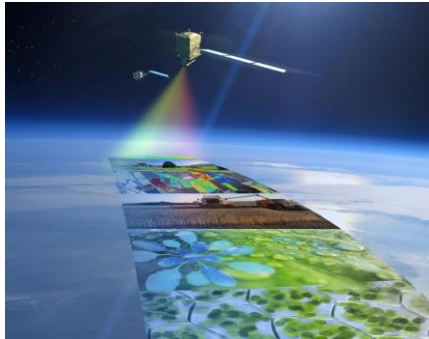
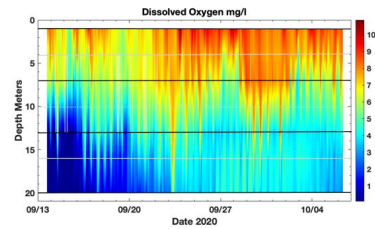
- Over a decade since the last CBP monitoring evaluation
- Address CBP Outcome: Standards Attainment and Monitoring Outcome
- Shared vision – coming to you, leveraging the process for addressing selected monitoring needs of other CBP outcomes
- Consider new technologies and innovation
- Identify priority improvements and gaps

Through the 2014 Chesapeake Bay Watershed Agreement, the Chesapeake Bay Program has committed to...

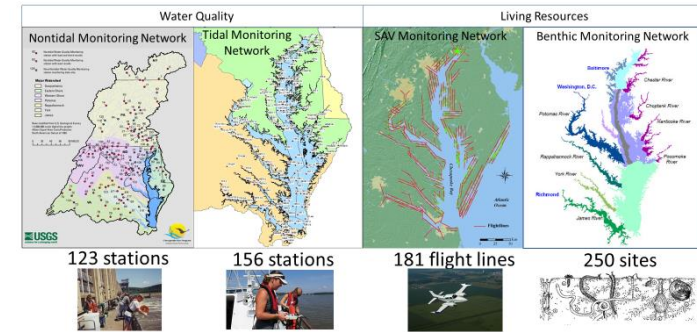


Goal: Water Quality
Outcome:
Continually improve the capacity to monitor and assess the effects of management actions being undertaken to implement the Bay TMDL and improve water quality. Use the monitoring results to report annually to the public on progress made in attaining established Bay water-quality standards and trends in reducing nutrients and sediment in the watershed.





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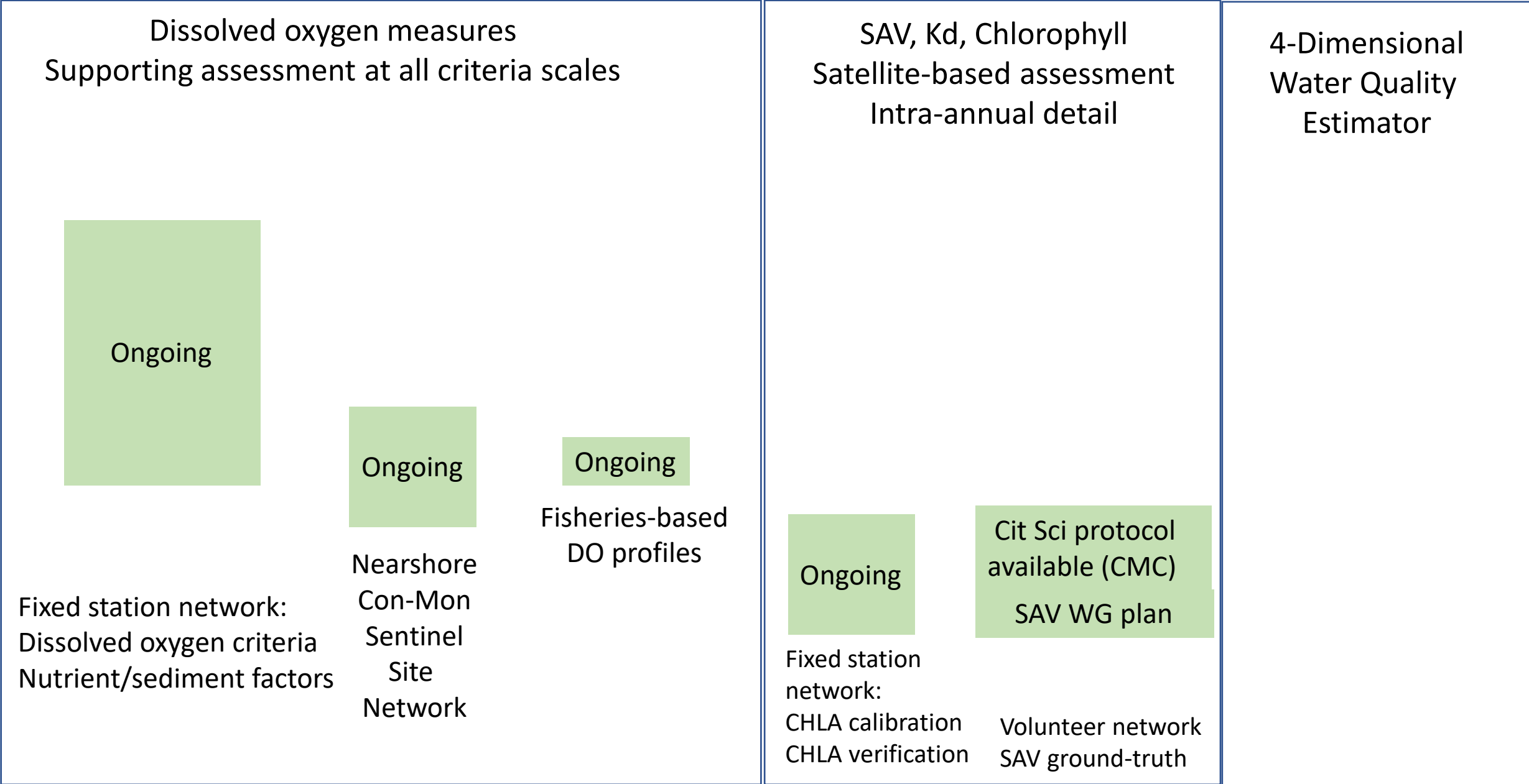


Thank you!

Q&A



The water quality standards assessment future is now



The water quality standards assessment future is now

