

Tidal synthesis efforts 2016-2018: Lessons Learned

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STAC conference call

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Synthesis for Explaining Trends in Water Quality

Goals: Original proposal

- ✓ significant research question
- ✓ critical point
- ✓ collation and synthesis of existing data
- ✓ collaborative analysis
- ✓ interdisciplinary research team

Goals: Original RFP

Major work elements in RFP:

1. To analyze water-quality trends in the Bay and its watershed,
2. To explain the factors affecting water-quality trends in Bay and its watershed,
3. To enhance CBP models using the improved understanding of trends, or
4. To inform management strategies to improve water quality.

Original proposal: Successful synthesis team

- A designated, accountable team leader
- Up to 10 individuals in a highly collaborative environment
- A diversity of organizations and career stages
- Iterative working meetings (2-3 meetings, 5 days total, over a period of 12-18 months)
- Members in a position to lead new actions based on new knowledge (Publications; tangible input to management strategies)
- A topic relevant to understanding the impacts of management actions on water quality, where
- sufficient data and personnel exist to support rapid synthesis with direct links to management implementation
- Clearly defined outcomes to support explaining the relation of changes in water quality to anthropogenic and/or natural factors

Original proposal: What happened?

ONE proposal.

Reasons:

1. Didn't read the email
2. Not enough time
3. Not enough funding

Potomac Watershed Synthesis

Novel statistical approaches to integrate water quality trends in the rivers and estuaries of the Potomac River basin.

Lead Investigator: Lora Harris

Additional participants: Rebecca Murphy, Keith Eshleman, Robert Sabo, Dong Liang, Hal Walker

Key questions:

- Has the fundamental way the Potomac estuary functions changed with decreases in point sources (WWTP upgrades) or atmospheric deposition? What factors impact nutrient, dissolved oxygen, and chlorophyll-*a* concentrations in various regions of the Potomac estuary?
- What are the trends in non-tidal water quality and how are they connected with tidal water quality, and how big a role does climate play?

Only one proposal: What to do?

1. Do one ourselves
 - Jeremy Testa (UMCES) agreed to do a synthesis of recent insights into estuarine functioning if provided some seed funds by his institution
2. Look for other efforts to leverage
 - SAV synthesis
 - Water Clarity STAC workshop

Tidal Trends Synthesis Efforts: Plans

Potomac Synthesis	SAV Synthesis	Water Clarity Synthesis	Water Quality Synthesis
Project Lead: <ul style="list-style-type: none"> Lora Harris (UMCES) 	Project Leads: <ul style="list-style-type: none"> Bill Dennison (UMCES) JJ Orth (VIMS) 	Project Leads: <ul style="list-style-type: none"> Jeni Keisman (USGS) Carl Friedrichs (VIMS) 	Project Lead: <ul style="list-style-type: none"> Jeremy Testa (UMCES)
Additional Participants (5): <ul style="list-style-type: none"> Rebecca Murphy (UMCES) Keith Eshleman (UMCES) Robert Sabo (UMCES) Dong Liang (UMCES) Hal Walker (EPA) 	Additional Participants (11): <ul style="list-style-type: none"> Jonathan Lefcheck (VIMS) Cassie Gurbisz (SESYN/SMCM) Michael Hannam (SERC) Jeni Keisman (USGS) J. Brooke Landry (MD DNR) Kenneth Moore (VIMS) Rebecca Murphy (UMCES) Christopher Patrick (TAMU CC) Jeremy Testa (UMCES) Donald Weller (SERC) David Wilcox (VIMS) 	Additional Participants (20): <ul style="list-style-type: none"> R. Batiuk J. Blomquist G. Brush C. Buchanan J. Cornwell D. Dauer C. Gallegos M. Lane R. Llanso S. Lyubchich K. Moore R. Murphy G. Noe JJ Orth E. Porter L. Sanford P. Tango J. Testa M. Trice Q. Zhang R. Zimmerman 	Additional Participants (10) <ul style="list-style-type: none"> Lora Harris (UMCES) Walter Boynton (UMCES) Paul Bukaveckas (VCU) Joel Blomquist (USGS) Keith Eshleman (UMCES) Renee Karrh (MD DNR) Michael Lane (VA DEQ) Slava Lyubchich (UMCES) Jeni Keisman (USGS) Rebecca Murphy (UMCES)
Planned Face-to-Face Meetings: <ul style="list-style-type: none"> 2016 June 2016 Nov 	Planned Face-to-Face Meetings <ul style="list-style-type: none"> 2016 July 2016 Sept 2017 Jan 2017 May 	Planned Face-to-Face Meetings: <ul style="list-style-type: none"> 2017 February 2017 May 	Planned Face-to-Face Meetings <ul style="list-style-type: none"> 2017 Jan 2017 April
ITAT Conference Call – June 2017	ITAT Face-to-Face – December 2017		

Tidal Trends Synthesis Efforts: What Happened

Potomac Synthesis

Face-to-face meetings:

- February 2016 at CBPO Annapolis (1 day)
- June 2016 at IAN Annapolis (1 day)
- December 2016 at IAN Annapolis (1 day)

Conference calls

- 2-3 calls from Oct 2016 to June 2017

Emails:

- Leader-group emails every 1-2 months;
- more frequent small-group emails

SAV Synthesis

Face-to-face meetings:

- July 2016 at IAN Annapolis (2 days)
- Sept 2016 at UMCES CBL (2 days)
- January 2017 at IAN Annapolis (2.5 days)
- May 2017 at IAN Annapolis (2.5 days)
- Numerous SAV Fact Sheet Mini-meetings at IAN Annapolis (1-2 days each)

Conference calls:

- infrequent

Emails:

- Leader-group emails every 1-2 months;
- more frequent small-group emails

Water Clarity Synthesis

Face-to-face meetings:

- February 2017 at UMCES-CBL (2 days)
- May 2017 at O'Callaghan Annapolis (2 days)

Conference calls

- September 2016
- November 2016
- January 2017 (2)
- March 2017
- April 2017

Emails:

- Leader-group emails sporadic;
- more frequent co-chair emails

Water Quality Synthesis

Face-to-face meetings:

- January 2017 at UMCES CBL (2 days)

Conference calls

- February 2017

Emails:

- 11 Leader-group emails between November 2016 and December 2017
 - 4 were update emails
 - 7 were logistical and "please respond" emails.
- Multiple additional small group white paper emails.

Tidal Trends Synthesis Efforts: Resources

Potomac Synthesis:

Funding:

- for up to 5 days of meetings

People:

2 institutions

- 1 senior faculty
- 1 mid-level career faculty (>80 hrs)
- 3 early career faculty
- 1 grad student/postdoc (not synthesis-dedicated)

In-Kind Time:

“about 80 hours for most of us; more for Robert, Rebecca and me”

SAV Synthesis:

Funding:

- 1 post-doc
- Funding for up to 5 days of meetings
- Orth and Dennison supplemented meeting funds

People:

7 institutions

- 4 senior faculty
- 3 mid-level career
- 4 early career faculty/postdocs
- **1 synthesis-dedicated postdoc**

In-Kind Time:

A LOT of Orth’s time. Additional participants donated many hours of time for meeting attendance, analysis, writing, and review.

Water Clarity Synthesis:

Funding:

- STAC funding for 2 meetings
- Some of Keisman’s time
- \$8-10K dedicated to analysis

People:

10 institutions

- 10 senior faculty
- 5 mid-level career
- 4 early career/postdoc
- CRC logistical support

In-Kind Time:

- Significant analysis and writing time for Friedrichs, Zhang, Testa, Lyubchich, Blomquist
- Additional donated hours of time for meeting attendance and report writing and review.

Water Quality Synthesis:

Funding:

- Funding for up to 5 days of meetings
- \$8-10K for analysis (about 1 month of technician time)

People:

7 institutions

- 4 senior faculty
- 4 mid-level career
- 3 early career faculty
- *No postdocs or grad students*

In-Kind Time:

Additional donated hours of time for meeting, analysis, and writing time

Tidal Trends Synthesis Efforts: Products

Potomac Synthesis

Publications:

- Manuscript *in preparation*

Presentations:

- CERF November 2017
- STAC workshop December 2017
- **2 more...**

SAV Synthesis

Publications:

- Orth et al. Bioscience 2017
- Lefcheck et al. Global Change Biology 2017
- Lefcheck et al. PNAS 2018
- 50+ SAV Fact Sheets
- Dennison et al. *in prep*

Presentations:

- WQGIT
- VA DEQ
- STAC workshop
- ChesRMS
- **More?**

Water Clarity Synthesis

Publications:

- Zhang and Blomquist STOTEN 2018
- Testa et al. 2018 *in prep*
- STAC workshop report in prep
- Hope to produce one or two journal articles

Presentations:

- STAC workshop December 2017
- ChesRMS session June 2018

Water Quality Synthesis

Publications:

- White paper delivered to CBPO
- Hope to produce a journal article

Presentations:

- STAC workshop December 2017

Tidal Trends Synthesis Efforts: Lessons Learned

What made the SAV synthesis effort so productive:

- 2 senior faculty who had been through the process before
 - Knew what was necessary for maintaining momentum (lots of emails; Bioscience paper early on)
- A dedicated postdoc
- Critical mass – but not too big
- Participants with a history of collaboration
- 3 previous SAV technical syntheses
- Were already planning to do it
- **JJ made this a top priority that has taken up a substantial portion of his time**

“this funding gave us an extra nudge that made the meetings better”

Tidal Trends Synthesis Efforts: Lessons Learned

What challenges were faced by the Potomac and Water Quality efforts?

- **Funding, funding, funding: no dedicated postdoc**
- Leaders were adding this project on to their regular work schedules. It was a new project that they took on rather than a planned front-and-center effort
- Less prior experience with the synthesis model
- Participants had less common history of this type of collaboration
- Critical mass – Potomac too small? Water clarity too big?

“In the future, I'm not sure I would do this without 6 months minimum support for a full-time tech or post-doc. I think the workgroup/workshop team model is great, but there needs to be support for a dedicated, capable person for an extended period.”

“It has been a real challenge to get the manuscript done because of lack of dedicated time on this. I hope that... that going forward a model is considered where that kind of support is offered to help make these more productive and less stressful.”

Tidal Trends Synthesis Efforts: Lessons Learned

What were a few extra advantages that the Water Clarity effort had?

- More in-kind funding. This project is an important component of my work (although I have other projects that slowed it down)
- CRC logistical support for meeting and conference call planning
- Luck: we happened upon a highly-motivated postdoc at the right stage of his career
- **However** one of the most valuable products of this workshop is in danger of not getting published due to lack of funding and time.

Tidal Trends Synthesis Efforts: One last thought

Synthesis can mean different things to different people! What kind of product are you looking for?

- A review of existing knowledge that hasn't been done before, with emergent insights.
- A new integrated analysis, not so much a review.
- Both