

2/3/16 OCB-SSC Teleconference

Participants: A. Barton, H. Benway, M. Brzezinski, K. Buck, A. Burd, M. Church, B. Jenkins, N. Lovenduski, D. McGillicuddy, S. Neuer, M. Roman, D. Siegel, D. Steinberg, A. White, M. Zawoysky

Action items in red

OCB PROJECT OFFICE UPDATE

Incoming SSC members

Welcome to incoming SSC members Anton Post (URI), Laurie Juranek (OSU), Dennis McGillicuddy (WHOI), and Andrew Barton (Princeton Univ./NOAA GFDL, early career representative). New members can get more acquainted with OCB by looking at our website (www.us-ocb.org), which includes information about OCB scientific priorities, leadership (SSC has its own page where you can find the charge, terms of reference, SSC minutes, etc.), previous and upcoming activities, funding opportunities, travel support, and a calendar of OCB-relevant events.

Vice-chair election (please refer to OCB SSC Terms of Reference for details)

- A new SSC vice chair is elected from within the existing SSC every two years – the vice-chair spends 2 years in the vice chair position, followed by 2 years in the chair position (when another vice-chair is elected)
- Two SSC members on the ballot for the vice-chair position; **Benway will circulate an electronic ballot with vice-chair nominees to all SSC members**
- **SSC members please [submit your vote for vice-chair to the Project Office by email](#)**

NSF Biology of the Biological Pump workshop (Feb. 19-20, 2016, New Orleans)

- Workshop to explore NSF investments to complement NASA EXPORTS
- Participant list and draft agenda available on [workshop Google Drive](#)
- Plenary session to kick off workshop, followed by 1-hour small group brainstorming sessions to distill priorities (on five different topics) and a funding priority exercise at the end
- NASA EXPORTS Update (Siegel)
 - Science Definition Team has been assembled and implementation plan being developed for EXPORTS field campaign with detailed cost breakdown
 - Implementation plan will be released for public comment around time of OCB summer meeting (will have community discussion at the summer meeting); plan will be finalized in early Fall 2016 (will not require review panel)

- Relevant funding opportunities via NASA ROSES 2015 (EXPORTS and PACE cal-val data set development, proposals due early March 2016) and ROSES 2016 (proposals due late 2016, EXPORTS activities to begin in 2017)

OCB at 2016 Ocean Sciences Meeting

- **SSC members attending Ocean Sciences: Please sign up for a 1-2 hour shift at the OCB exhibit booth**
- Town Hall Meeting - [*The Future of Ocean Biogeochemical Time-Series*](#) - Feb. 24 at 6:30 pm in Ernest N. Morial Convention Center, 225-227

NSF RENEWAL PROPOSAL

- Funding to be provided a little under what we requested; split between NSF Chemical and Biological Oceanography
- Data course did not review well: NSF would rather consider this as a stand-alone proposal/activity (other potential avenues of support include EarthCube, OOI, etc.); data course removed from proposal
- Summer workshop has gotten too large (compared with an AGU meeting/session), too expensive, and the focus too broad: Need to find a way to sharpen the focus and reduce the numbers to enable more participant interaction - potential options include:
 - More focus in the agenda, 1-2 overarching themes per meeting rather than 4-5 broad topical areas
 - Shorter meeting (3 days instead of 4?)
 - Different season (summer on Cape Cod is expensive)
 - Participants pay more of their own costs (hotel, starting this year)
 - Explore smaller group formats during the meeting that facilitate more interaction among participants and seed collaborations and formulation of ideas to inspire new proposals and projects - SSC members agreed that this has always been and should remain the primary purpose of the summer meeting
 - Continue to provide early career support and activities throughout the meeting
 - Given that dates have been set and planning for the 2016 workshop has already begun, new summer meeting formats will be discussed and gradually implemented over a longer time frame
- OCB SSC has gotten too large – will try to pare down SSC to ~15 members over the next funding cycle
- SSC also asked to reconsider necessity of all OCB SSC subcommittees – ocean acidification, ocean fertilization, ocean time-series committee; reduce size or move to ad hoc system

WORKSHOP CO-SPONSORSHIP REQUEST

The SSC discussed an unsolicited workshop co-sponsorship request “Predictability of US West Coast Ecosystems Based on ENSO Forecasts.”

OCB SUMMER 2016 WORKSHOP

SSC members discussed ideas for plenary themes at the 2016 OCB Summer Workshop. Emerging science themes include:

- **Session to tie in key aspects of carbon cycling and biological pump, including new community initiatives (NASA EXPORTS, NSF Biology of Biological Pump workshop)**
 - Scaling up submesoscale processes (e.g., M. Omand, S. Henson, D. Bianchi)
 - Dissolved organic matter, particle and microbial dynamics, vertical migration, quantifying and predicting export flux
 - PACE mission carbon cycle science capabilities (J. Werdell)
 - Avoid too much overlap/repetition with biological pump session at 2014 OCB workshop
- **BioArgo update and SOCCOM (Southern Ocean Carbon and Climate Observations and Modeling) science results** (K. Johnson proposed to SSC)
- **Indian Ocean session** (Wiggert proposal to SSC; Lomas willing to co-chair with Wiggert)
- **Stoichiometry and higher trophic levels**
 - [IMBER IMBIZO II session on elemental ratios and community structure at low trophic levels and impacts on higher trophic levels](#) (2010) = good starting point (**Steinberg and Roman will work together to flesh this out a bit more**)
- **Special session on integrating ocean and policy** – needs a champion/leader in order to be effective/successful
 - Ask writing/authorship of IPCC to give ppt on that process – how to get consensus for drafting a big policy document and how to communicate to the press about it (C. Field, IPCC chair)
 - Communication training on how to convey important OCB-relevant messages to public and policy makers through different media (e.g., ocean acidification fact sheet, anthropogenic carbon slide deck)
 - Engage media and communication training entities (e.g., Alan Alda Institute, Metcalf Institute for Environmental Reporting, COMPASS)
- **Other ideas submitted by community that haven’t been discussed in detail:**
 - **Blue carbon** (coastal carbon science plan to be released soon)
 - **Marine ecosystem thresholds, transitions and regime shifts: Theory, detection, impacts and management** (new session idea pitched to SSC member Barton since SSC teleconference)

- **Ocean carbon uptake and storage** - air-sea flux, modeling advances, latest version of SOCAT, etc.

3/16/16 OCB-SSC Teleconference

Participants: A. Barton, H. Benway, M. Brzezinski, K. Buck, A. Burd, M. Church, B. Jenkins, M. Lomas, N. Lovenduski, S. Neuer, A. Post, D. Siegel, B. Van Mooy, M. Zawoysky

Action items in red

OCB PROJECT OFFICE UPDATE

NSF Biology of the Biological Pump workshop (Feb. 19-20, 2016, New Orleans) - Adrian

- Workshop to explore NSF investments in biological pump science to complement NASA EXPORTS
- ~36 attendees - participant list and other meeting documents available on [workshop Google Drive](#)
- KJ Technique – a small group exercise used to distill priorities; exercises yielded 3 broad/overarching research areas
- Workshop Outcome = white paper to help NSF with internal planning and potential coordination with EXPORTS
- Timeline: Organizers hoping to complete first draft by mid-April, then to meeting participants for comment, then to broader community for comment (ppt at OCB for feedback), then deliver to NSF by late summer/early fall

Important OCB SSC Dates

Please get these dates/times on your calendars, including the summer workshop and SSC meeting in Woods Hole.

- April 12 (Tues.) 2 pm (EDT) - OCB SSC teleconference
- May 18 (Wed.) 2 pm (EDT) - OCB SSC teleconference
- June 14 (Tues.) 2 pm (EDT) - OCB SSC teleconference
- July 13 (Wed.) 2 pm (EDT) - OCB SSC teleconference (if needed)
- July 25-28, 2016 - OCB Summer workshop (Woods Hole, MA)
- July 28 or 29 (timing TBD) - OCB SSC meeting (in person) after summer workshop
- August 1-4 (the week after OCB, if interested) - Joint GEOTRACES/OCB workshop on internal cycling of trace elements in the ocean (Palisades, NY) – Burd now on GEOTRACES SSC, **Benway will add him to planning discussions**

OCB at 2016 Ocean Sciences Meeting

- Thank you SSC members for assistance with OCB booth!! We added >100 new names to the email list and handed out a lot of materials. Benway also presented a poster on OCB in an ocean carbon session, so we got the word out in many ways!
- Town Hall Meeting on [The Future of Ocean Biogeochemical Time-Series](#) - well attended (90-100), got some good pointed feedback on potential coordination efforts, OTC scheduling a teleconference in latter half of March to discuss next steps

TRAVEL SUPPORT REQUESTS

The SSC reviewed OCB travel support requests and there was consensus to provide travel support for the following two workshops:

IMBER ClimECOS (August 2016 - Natal, Brazil)

International Symposium on Deoxygenation of the World Oceans (November 2016 – Goa, India)

Benway will contact PIs with SSC decisions on travel support

OCB SUMMER 2016 WORKSHOP

GENERAL COMMENTS/IDEAS

- Community sharing presentations – give meeting participants ~5 mins of air time (+ time for Qs or discussion) to talk about a new project, idea, etc. (these would be scheduled in advance and might occur at the end of a relevant plenary session (just before going into poster sessions))
- Integrating small group formats when appropriate
- Fun interactive debate or skit around a science topic/question – topics raised include:
 - Autonomous observing assets at time-series
 - Sediment trap types/deployment
 - Ocean fertilization experiments
 - Integration of biogeochemistry and molecular techniques/measurements to better understand biogeochemical/carbon cycling processes
- Other agenda items: Agency updates (NSF, NASA, NOAA), partner program updates (do we want to keep including these?), student presentations and early career activities

SCIENCE THEMES/PLENARY TOPICS

Session 1. Ocean Carbon Fluxes and the Biological Pump (full day)

- Need to avoid too much repetition of 2014 OCB biological pump plenary session
- Aim for 80% science-20% programmatic
- Maybe kick off this session with NASA PACE science talk on “the next generation of satellite ocean color capabilities” that will improve our ability to quantify carbon fluxes associated with the biological pump (J. Werdell, GSFC)

Morning session – EXPORTS science and implementation (Chairs: D. Siegel, A. White?)

- Emphasis on process, kick off with relevant science talks that follow 3 overarching questions in EXPORTS science plan:
 1. Processes in euphotic zone
 2. Processes in twilight zone
 3. Predictability
- EXPORTS SDT implementation plan rollout – brief presentation and community feedback session

Afternoon session – New directions and approaches (Chairs: A. Burd, S. Neuer?)

- Need to decouple from EXPORTS, since scientific scope of EXPORTS has already been decided (i.e. EXPORTS science plan is final)
- Short series of talks on biocomplexity of biological pump – i.e. biological processes that may be important with regard to the function of the biological pump (based on discussions at NSF Biology of the Biological Pump workshop in Feb. 2016) – e.g., mixotrophy, parasitism, allelopathy
- 1-2 talks (perhaps from early career/postdocs identified by K. Johnson?) on new scientific findings (carbon uptake/cycling and biological pump) from SOCCOM’s (Southern Ocean Carbon and Climate Observations and Modeling) deployment of bio/bgc-Argo floats

Session 2. Recent Advances in Quantifying Ocean Carbon Uptake (half day)

- Chair: Lovenduski
- Focus on new and exciting work going on in the ocean $p\text{CO}_2$ and CO_2 flux community:
 - New version of SOCAT
 - New approaches for estimating interannual variability in CO_2 uptake using interpolated data (e.g., [Rodenbeck](#) and [Landschutzer/Gruber](#) approaches)
 - New ensemble modeling approaches that estimate the time of emergence in ocean carbon uptake trends, given background natural variability (e.g., [McKinley et al. 2016 Nature paper](#))
- Community sharing presentation on new carbon uptake/cycling process study *Carbon Hot Spot* (Kuroshio extension) just before poster session

Session 3. The Indian Ocean – Monsoon-Driven Biogeochemical Processes (half day)

- Chairs: Lomas and Wiggert

Session 4. Integrating Ocean Science and Policy (full day?)

This entire session needs a bit more fleshing out to make it coherent – seems disjointed at present!

Morning session – Science in the policy spotlight (Chair?)

Short series of science talks (4-5?) on one or more **timely OCB-relevant topics that are in the policy spotlight**

- **Marine ecosystem thresholds and regime shifts** – maybe include a talk on Eastern boundary upwelling systems as analogs for future warming/climate change (interplay between interannual-decadal climate indices, biogeochemistry (CO₂, OMZs, etc.) and ecosystems (plankton, fisheries, etc.)
- Degradation and/or loss of **blue carbon systems** and associated **carbon sequestration** potential
- **Rapidly changing Arctic** – this could be good spot for community-sharing ppt on Arctic-COLORS (Arctic-COastal Land Ocean inteRactions) - proposed field campaign on land-ocean interactions in a rapidly changing Arctic coastal zone, and assess vulnerability, response, feedbacks and resilience of coastal ecosystems, communities and natural resources to current and future pressures

Afternoon session – Science communication and policy (Chairs: Jenkins, Post)

- Writing/authorship of IPCC to give ppt on process of consensus building for drafting a big policy document and how to communicate to the press; possible speakers include Chris Field (Carnegie Inst.) and Ken Denman (UVic)
- Communication training entities like Alan Alda Inst., COMPASS, Metcalf Inst., someone from WHOI Communications

Session 5. Stoichiometry and higher trophic levels (half day)

- Chairs: Steinberg, Roman (neither present on the teleconference so no decisions made)
- [IMBER IMBIZO II session on elemental ratios and community structure at low trophic levels and impacts on higher trophic levels](#) (2010) = good starting point
- Note that if we include this in addition to the above sessions (as written), **the meeting will need to be 4 full days in order to accommodate other activities and updates**
- Steinberg and Roman will follow up with Heather about whether to pursue this session this year

NEXT STEPS

Before the April teleconference, all session chairs should start developing session plans, identifying potential plenary talk topics, and reaching out informally (email is fine) to potential speakers (Benway will follow up with formal invitation letters later). We provide full travel support for speakers. Please consider an appropriate balance of

career stages, gender, etc. when identifying speakers for your session. Feel free to discuss session plans with Benway and/or use the ocb-ssc@whoi.edu email list.

4/12/16 OCB-SSC Teleconference

Participants: A. Barton, H. Benway, M. Brzezinski, K. Buck, A. Burd, L. Juranek, B. Jenkins, J. Mathis, D. McGillicuddy, S. Neuer, M. Roman, D. Siegel, M. Zawoysky

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OCB PROJECT OFFICE UPDATE

1. Spring OCB Newsletter

http://www.us-ocb.org/publications/OCB_NEWS_SPRING16.pdf

2. Important OCB SSC Dates

Please get these dates/times on your calendars, including the summer workshop and SSC meeting in Woods Hole.

- May 18 (Wed.) 2 pm (EDT) - OCB SSC teleconference
- June 14 (Tues.) 2 pm (EDT) - OCB SSC teleconference
- July 13 (Wed.) 2 pm (EDT) - OCB SSC teleconference (if needed)
- July 25-28, 2016 - OCB Summer workshop (Woods Hole, MA)
- July 28, 2016 (afternoon) - OCB SSC meeting (in person) after summer workshop

3. GEOTRACES/OCB Meeting

- August 1-4, 2016 (Palisades, NY)
- Agenda elements
 - Kick off with three overarching 101-style plenary talks on modeling, physics, biogeochemistry
 - Three themed science sessions with 4 short talks each (1 model/synthesis, 3 data-based): 1) biological uptake and TEI bioavailability, 2) abiotic cycling and scavenging, including particulate and dissolved speciation, 3) export, recycling, and remineralization
 - Working group discussions on each science theme
 - Most speakers have been invited and have confirmed
- To view draft workshop documents, contact Benway

4. Ocean Time-series Committee

Ocean Sciences Town Hall Meeting

Town Hall presentations highlighted the following coordination efforts in support of ocean time-series:

- Best practices activities (Bermuda time-series methods workshop, international biogeochemical sensors training workshop)
- Scientific efforts across multiple time-series (IGMETS)
- Observing networks (OceanSITES)
- Capacity building (NANO) efforts

Feedback received at town hall

- *Strengthening the time-series network* - Find ways to forge collaborations between groups/time-series (PhDs, postdocs); co-fund observational and modeling work; develop portal of education/outreach materials to share across sites; identify/prioritize observational gaps and plan for future time-series sites
- *Important to let science drivers lead* - Science questions must guide our coordination efforts
- *Data sharing/accessibility* – incentivize data sharing by providing citation guidelines and encouraging publication of data (e.g., *Earth System Science Data*); encourage PIs to work with their respective national data centers or alternative data mgmt. entities when national data centers not available
- *Working with/augmenting what we have* – need to leverage/augment existing platforms/assets
- Overall very positive feedback from agencies (Rice, NSF)
- See write-up in spring OCB newsletter on time-series town hall overview and outcomes

Next Steps

The group discussed a potential publication (possible journals include *Eos* and *TOS*) that describes a scientific vision for the US-funded time-series in light of new scientific questions and technological advances that have emerged since the time-series were first established a couple decades ago. This might be helpful as the time-series sites are seeking renewal funding. While NSF has indicated that they do not want to see significant changes in the current suite of measurements being made at the time-series sites (and flat funding is likely), this paper would focus more on how to leverage the core suite of measurements (from the US sites and other sites in the global network) to address these new science questions. **OTC members and time-series PIs will continue these discussions on next teleconference (April 18, 2016). Benway/Neuer will continue to keep the SSC updated on OTC discussions and plans.**

OCB SUMMER 2016 WORKSHOP

Benway distributed a draft agenda prior to the SSC teleconference. Session chairs gave updates on their sessions and SSC members provided feedback.

EXPORTS session – Siegel/Estapa

- Bontempi intro on science plan
- Predictability talk – Will invite Scott Doney
- Euphotic – Will invite Mary Jane Perry
- Twilight Zone – Will invite Adrian Martin
- Implementation plan – Dave Siegel
- Group discussion/Q&A
- Werdell – PACE talk? (Siegel has invited, awaiting response)

Biology of Carbon Export session – Burd/Passow

- Sieracki intro on biopump workshop/NSF perspective (draft workshop report should be available to public before summer workshop)
- Three 25-30-minute talks
 - Food webs (Grieg Steward on viruses, Ryan Hechinger on parasitism, Holly Moeller on mixotrophy)
 - DOM-POM continuum (Pedro Verdugo, Monica Orellana)
 - Spatiotemporal (Andrew McDonnell, Melissa Omand)
- 15 min. discussion at end

Ocean Carbon uptake – Lovenduski/Long

- Trying to be as inclusive/comprehensive as possible (Observations-models, global-regional scales, open-coastal ocean, etc.)
- Difficulty identifying domestic speakers for some topics
- Physical processes talk – i.e. how does anthropogenic carbon get subducted (physical pathways)? Will likely be given by a European
- Matt Long on C uptake in CMIP models
- Ocean C uptake on paleo time scales – SSC suggested Bob Anderson (LDEO)
- Coastal ocean C uptake – SSC suggested Wei-Jun Cai (UDel), Ray Najjar (Penn)
- Carbon Hot Spot community sharing ppt (**Benway in contact with speakers Andrea Fassbender and Stuart Bishop**)

Science Communication – Jenkins/Post

- Jenkins/Benway teleconference with COMPASS tomorrow (Wed.) to discuss further
- Alternative to COMPASS = Alan Alda Center
- More of a stakeholder/policy focus next year (Post)
- **Benway/Jenkins will report back to SSC after discussing w/COMPASS**

Indian Ocean - Lomas/Wiggert

- **Benway just gave them the go ahead yesterday to use 3.5 hours for their session, so will get update on speaker status soon and report back to SSC**

OCB Ocean Film Festival - Benway

- Intro by OCB scientists (Steinberg, Ducklow, Schofield, Muller-Karger)
- Open to public as an outreach event (would need larger auditorium)
- Panel discussion/Q&A (20-30 mins) after?

Marine ecosystem thresholds – Barton/Mathis/John

Sent invitations to:

- Philip Boyd (UTas) - climate and microbes (confirmed)
- Rebecca Ash (Princeton) - fish and plankton, trophic mismatches and potential for regimes shifts (confirmed)
- Carrie Kappel (NCEAS) – covering wide range of ecosystem shifts (invited)
- Jacqueline Grebmeier (UMCES) – polar ecosystems/regime shifts (invited)
- Other possible suggestions from SSC: Representation of west coast ENSO/ecosystems workshop OCB is co-sponsoring (Ohman contact)? Patricia Yager (UGA) - biogeochemistry>ecosystems, Arctic and Antarctic focus

General discussion

- There will be a registration fee this year to offset participant hotel costs
- Will try to keep costs low for early career (travel support, reduced registration)

6/14/16 OCB-SSC Teleconference

Participants: H. Benway, K. Buck, A. Burd, L. Juranek, N. Lovenduski, J. Mathis, D. McGillicuddy, M. Roman, D. Steinberg, M. Zawoysky

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OCB PROJECT OFFICE UPDATE

1. Important OCB SSC Dates

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- **July 13 (Wed.) 2 pm (EDT)** - OCB SSC teleconference (if needed)
- **July 25-28, 2016** - OCB Summer workshop (Woods Hole, MA)
- **July 28, 2016 1:30-5 pm (EDT)** - OCB SSC meeting (in person) after summer workshop

2. Summer OCB Newsletter

Joint GEOTRACES/OCB issue, targeting late June/early July release

3. OCB Partner Activity

[Biogeochemical cycling of trace elements within the ocean: A synthesis workshop](#)
(August 1-4, 2016, Palisades, NY)

4. OCB Workshop Co-Sponsorship

[Forecasting ENSO Impacts on Marine Ecosystems of the US West Coast](#) (August 10-11, 2016, San Diego, CA)

5. OCB Project Office hire

Project office staff and SSC leadership will begin reviewing applications (24 received) the latter half of June

6. New OCB Workshop Report

OCB [workshop report on trait-based approaches to ocean life](#) published

OCEAN ACIDIFICATION SUBCOMMITTEE (OCB-OA) UPDATE (Jeremy Mathis)

Benway, Mathis and OCB-OA co-chair Kim Yates (USGS) had a teleconference with agency representatives from NSF (Hedy Edmonds, David Garrison) and NOAA (Libby Jewett) to discuss the continuing role of OCB-OA and potential interest in another OA PI meeting. Given the success of the 2015 PI meeting and NSF's continuing investments in OA research, NSF would welcome another PI meeting in 2017 but it needs to come out of the existing OCB Project Office budget (renewal proposal that was just funded). Benway suggested an upper limit of \$75K and perhaps a more focused OA PI meeting targeting a couple of specific sub-topics and NSF was receptive to that. OCB SSC would need to approve of this expenditure of OCB funds. Jewett suggested that OCB-OA could provide scientific/academic input to a newly emerging OA information exchange that is being organized by the Interagency Working Group on OA (IWG-OA). Further discussion will take place at the July SSC meeting in Woods Hole with agency representatives present.

OCB SUMMER 2016 WORKSHOP UPDATES

General

- 180 registered, 36 on wait list
- Twitter handle: #OCB2016 (@US_OCB)
- Working on live chat/messaging so those webcasting can participate in discussion
- [Poster abstracts](#) page to open soon
- [Workshop agenda](#)

Monday

- Networking lunch (assigned tables)

- Student presentations

Tuesday

- Agency updates
- Communication session with COMPASS representatives on Tues. afternoon:
Large group in Redfield to do a general communication training, smaller group in separate room will do social media-focused training
- Tuesday early career lunch gathering – would like at least 5-6 members of the SSC – we will cordon off tables under the tent for this, maybe 3-4 tables with 1-2 SSC members each? **SSC volunteers: Adrian, Kristen, Debbie, Dennis, Mike, Laurie**
- Program manager reception for students/postdocs
- Film festival –Antarctic Edge LTER film (Steinberg introduce) + CARIACO (Muller-Karger introduce) (~2 hours of film followed by brief Q&A)

Wednesday

- EXPORTS SDT lunch gathering with early career (postdocs, junior faculty) (tables under the tent will be cordoned off)
- Wednesday COP-21 session

Thursday

- In lieu of programmatic updates (from partner programs), we will have open discussion about OCB (workshops/activities, science foci, etc.)
- SSC meeting Thursday afternoon starting at 1:30 pm (Smith conference room)
- Arctic-COLORS meeting Thurs. afternoon (2-5:30, Redfield Auditorium) and Friday (8:30-3, Clark 507)

OCB JULY SSC MEETING AGENDA

- **2016 workshop recap** – what worked and what didn't?
- Discuss ideas for **future OCB summer workshops** with agency representatives:
 - Reduce scope and introduce focused themes for summer workshops, which might stimulate new smaller group activities/tangible outcomes
 - Use an imbizo (IMBER) model with 3-4 concurrent workshops on linked themes
 - Alternating venue?
 - Alternating format/approach – e.g., alternate large interdisciplinary meeting like we do now vs. smaller focused OCB sub-discipline or imbizo approach
- **Next OCB Activity Solicitation:** Identify potential content/foci (or keep broad) (target an early Fall 2016 release, proposal preparation in September-November, decisions made by end of CY16)
- **Ocean Acidification Subcommittee:** Discussion of a 2017 PI meeting and roles for OCB OA subcommittee

- ***Ocean Time-series Committee*** – Outline for OTC publication
- Review of travel support requests
- ***NOAA underway pCO₂ program review*** (Tedesco)
- NSF program manager report on ***North Atlantic-Arctic DCL outcomes*** and discussion of how OCB can facilitate transatlantic collaborations/proposals
- ***New IOC committee on ocean deoxygenation*** (Levin, Roman, EU scientists) – Consequence of climate change, changing biogeographic boundaries (Sept. mtg at Royal Society in London)

7/25/16 OCB-SSC Meeting

Participants: A. Post, B. Van Mooy, J. Mathis, L. Juranek, A. White, M. Brzezinski, L. Lorenzoni, B. Miller, K. Buck, H. Benway, K. Buck, C. Suchman, R. Murray, D. Garrison, M. Roman, D. Steinberg, N. Lovenduski, D. Rice, B. Jenkins, S. Doney, S. Neuer, A. Burd, H. Benway, K. Tedesco, M. Lomas (phone), M. Church (phone), H. Edmonds (phone), M. Sieracki (phone)

Guests (agenda item 1 only): M. Patterson (phone), L. Talley

Action items in red

External Review of US GO-SHIP Program

Mike Patterson (US CLIVAR Project Office) shared with the SSC and guest scientist (and US Repeat Hydrography PI) Lynne Talley a potential plan for the US CLIVAR and OCB Project Offices to jointly organize an external review of the [US GO-SHIP Program](#) for the period of 2003-2016. He presented a draft terms of reference and charge for an external review committee and a detailed timeline for completing the review that involves preparation and delivery of a report to US CLIVAR and OCB scientific leadership by June 2017. Talley indicated that a shift to later timing might work better, given that the program has just received its next round of renewal funding and will not submit the next proposal until 2020, at which point a review prepared in 2016/2017 might be outdated. Talley and other SSC members commented that the program is funded for data collection and archival only, and that much of the critical research and synthesis work that leverages the program's observations is done separately by members of the community. Patterson assured that this review would not just focus on the production of data sets but also provide a broader perspective of how our respective communities utilize these data. Talley also indicated that it would be helpful if the review also addresses the effectiveness of the current funding structure (NOAA/NSF) for the program. SSC members agreed that a constructive evaluation of the program with regard to its importance for supporting research efforts in our respective communities would be useful but agreed that later timing (perhaps 2018/2019) would be better. Tedesco indicated that NOAA Climate Observations Division is in the process of

reviewing major observational programs, so if US GO-SHIP is targeted for review in the coming years, a document like this would be very useful. **Benway will inform Patterson of SSC recommendations on the timing of this review.**

CDIAC

NOAA (Tedesco) has coordinated short-term (part of 2017) support from various sources to continue CDIAC Ocean Data Management Project. However, Rice indicated that a concise statement on behalf of OCB and other relevant communities (addressed to no one in particular) on the value of CDIAC to the US and international carbon research communities would be appropriate. **The OCB Project Office and SSC members will begin working on this. Benway will need SSC members to help.**

NOAA Underway $p\text{CO}_2$ Program review

The NOAA Climate Observations Division (COD) is coordinating a review of the NOAA Underway $p\text{CO}_2$ Program. Tedesco is seeking input on behalf of the US (OCB) and international (IOCCP = biogeochemical GOOS) communities on the program. She has requested that the OCB SSC prepare a short (few pages) summary documenting any potential concerns and/or statements of support concerning this observing program. Potential review questions include:

- What is the scientific merit (the appropriateness of the scientific implementation approach and methods of the work) to date? Is the work producing an important high quality time series and/or information critical to understanding climate variability in the region?
- Are all elements of the proposed future observing strategy clearly motivated? Were other options/strategies considered?
- Feasibility. Please address both major strengths and weaknesses regarding the probability of success in achieving the project's scientific goals and objectives.
- How widespread are the data being used? Specifically, how are the data being used/likely to be used to improve analyses, models, and/or predictions? Are they used for assessments of change and its impacts? What are the prospects for progress in these areas if the project continues?
- Can the technology advanced in this project be utilized elsewhere to study similar environments?
- In a resource-constrained COD program how important do you judge implementation of the proposed next phase to be?
- Is the observing effort sufficiently mature and advanced in readiness/fitness of purpose to be sustained longer as a pilot or to become a mature project? How so, or why not?
- Given improved knowledge via the project, how valid are the project goals over the next 5-10 years? Are there other goals that should be considered because of more urgent and critical needs?

- How well are the activities coordinated with other NOAA activities and goals, or leveraged with other international efforts? Are there other opportunities or potential areas of coordination that are being overlooked? Have our international and interagency partnerships benefited from this project? What is the potential for continuing or increasing partnerships? Are we interacting with other communities affected by these projects?
- Have the publications resulting from this project's efforts proven the need for continued funding?
- Overall, in what areas have the PIs been most successful in improving the knowledge of their region?

The SSC has received the **draft expanded outline** prepared by Wanninkhof and Sutton, which is expected to be complete by mid-September. NOAA COD will convene a panel of six scientists in mid-November 2016, so the **OCB SSC statement should be submitted by the end of October**. **Tedesco will also distribute NOAA COD's Strategic Plan**. **SSC members Lovenduski, Church, Jenkins (at sea), and Burd agreed to assist with this document. Other assistance would be welcome.**

2016 Summer Workshop Recap and Ideas for Future Workshops

- Vibrant early career community at this meeting, positive feedback on early career activities, they enjoyed having access to program managers (PMs) and big names in their field
- Location worked well, shuttles ran well (plus WHOI shuttle was convenient)
- Much better auditorium than Clark 507
- Posters much better – having an AM poster session was good
- Impressive number of early career participants giving talks (better organized, higher quality talks), also good gender balance for most sessions
- Need more instructions to session chairs and **better time keeping** – use signage to keep speakers on target, also perhaps fewer talks per session
- Venue change promoted more mingling (tent placement, lunch line, bus trips, outside meetings at nearby coffee shops, etc.)
- How to build sustained relationships to entrain these early career participants into our community for the long term? Formation of groups occurring organically; they'll reacquaint at other big meetings; maybe convene OCB receptions/cocktail hours at big national meetings like AGU/OSM
- In future, have PMs prepared to brief the early career folks on early career scientist funding opportunities; many seemed to enjoy smaller group breakdowns but would be good to get feedback from folks on whether they prefer the old vs. new format
- **Agenda was too crowded** –make sessions shorter (3-4 talks), need more free time for participants to mingle and discuss new ideas informally

- Shouldn't combine posters with welcome reception (many didn't go to Monday evening poster sessions, just wanted to socialize) – maybe have welcome reception and film festival on first night as icebreaker/social event
- Good mix of process- and regionally focused talks
- Power presentations (e.g., tick tock sessions at OSM) – 5 slides in 5 minutes to rejuvenate at end of day – e.g., COMPASS elevator training; maybe have early careers organize/lead a tick tock session
- COMPASS training - not as well attended as anticipated (from registration entries); also, **2 hours was too short**, maybe move to a longer time slot, perhaps a full day before/after the workshop
- One of the things participants love about the workshop is that it is highly interdisciplinary and brings different groups together by having different (not connected) themes, rather than an overarching topic, so doing thematic summer workshops might not be well received
- While we can't let it get bigger (venue cannot accommodate), there is a limit to how small it can get without losing value
- COP21 discussion great – lack of oceans in final document disturbing, even difficult sell in IPCC process, consider bringing in journalists, policymakers, etc. at future meetings
- Increase registration fee to cover higher percentage of hotel room costs and eliminate some of the registration fee waivers (session chairs), keep reductions for students and postdocs
- Great to have newly emerging programs present (like EXPORTS, biopump, AC, etc.)
- **Benway will distribute workshop survey results to SSC**

Ocean Acidification Subcommittee

2017 OA PI Meeting

OCB OA co-chair Mathis shared with the SSC NSF's interest in a Fall 2017 OA PI meeting, which would need to come from existing OCB funds (targeting ~\$70-75K for this event, on par with cost of a scoping workshop). Rather than a broad OA PI meeting as in the past, this meeting will focus on a specific subtopic of OA/multistressor research (e.g., molecular biology, adaptation, etc.). The PI meeting would be planned by the OCB OA Subcommittee. Out of that meeting, OCB OA subcommittee members will develop a report on the state of that particular area of OA science to deliver to NSF. Attendance will be by PI choice (unlike the SEES OA program, core-funded proposals do not require PIs to include travel support for these PI meetings). Rather than separate NSF and NOAA meetings (as in 2015), we will try to integrate NOAA- and NSF-funded OA research more effectively at this meeting.

OCB OA Subcommittee Membership and Roles

This subcommittee has been inactive since the 2015 PI meeting, and is in need of a membership rotation. Agency representatives also highlighted the need to revisit this subcommittee's charge/terms of reference, which was drafted in 2008 when OCB was a key leadership body for OA science in the US (now there are other entities such as the Interagency Working Group on OA (IWG-OA), NOAA OA Program, etc.). **Benway and Mathis will revisit the charge and terms of reference and revise as needed.** Once the subcommittee has been reconstituted with new members, they will begin planning discussions for the 2017 PI meeting. **Benway and Mathis will keep the OCB SSC apprised of any further developments.**

Regarding other future roles for OCB OA, there is currently an information portal that is under development by the IWG-OA, and it was recently suggested that the OCB OA could contribute to that activity. However, NSF representatives made it clear that NSF is already investing in information sharing via BCO-DMO and mirroring with other data management/archival entities, and that OCB OA should prioritize those efforts and think about how we can make them more effective. NSF representatives also suggested that finding ways to better publicize newly (NSF-)funded OA research would be helpful.

Ocean Time-series Committee (OTC)

Neuer updated the SSC on discussions that took place at OTC meetings during the OCB workshop:

OTC Membership

- Current membership coming up on 3 years in early 2017, time to bring on new members; will be soliciting nominations from OCB community later this year; current members may serve another term but need to be re-nominated
- Need new chair, as Neuer rotates off end of CY16 – TOR indicates that it's optimal if chair of OTC is also on OCB SSC for continuity, but since there are no current members who are on the SSC, Benway and time-series PIs (Lomas, Church) who are actively engaged w/OTC on a regular basis can provide that common thread between the OTC and the SSC

Report on Meeting with NSF on 7/27 (Neuer, Benway)

NSF provided background on CARIACO science and logistical challenges that led to the decision to discontinue funding, but detailed conversations about the award itself should only take place between the PIs and NSF. NSF provided the following required criteria for a time-series that in large part determine sustainable, long-term funding of time series:

- Continuous data stream that is freely and easily accessible to the community
- Open access (ships, PIs) to support ancillary projects (major leveraging point)
- Data collected at time-series can be used to address science questions of interest/relevance to oceanographic community

Neuer expressed concern on behalf of the time-series community about the need to continue international collaborations in more logistically challenging countries. NSF program managers indicated that there are several mechanisms in place at NSF to pursue these types of international collaborations and that Venezuela is a unique case. The discontinuation of US funding for CARIACO represents an opportunity for Venezuela to take the lead in maintaining the time-series and work internally to facilitate international collaborations and non-Venezuelan PI/ship access to this region. The discontinuation of CARIACO time-series funding does (should) not signify the end of science being conducted there. NSF encourages PIs to submit proposals to continue to do compelling science there.

In a broader discussion, NSF program managers encouraged the OTC to connect with other types of time-series, including the LTER program (Benway will make contacts with new LTER communication/coordination office at NCEAS) and OOI and find ways to cross-pollinate in order to maintain a broader vision of ocean time-series observations and networks. The OTC need not redefine its charge/focus to accommodate these other programs, but stronger connections will benefit and inform OTC activities and products and facilitate leveraging of these observing assets by the broader ocean science community. OTC members need to be aware of new developments (e.g., new LTER sites in 2017) and scientific activities associated with these observing networks, and identify ways to connect and complement their efforts. Agency representatives indicated that incorporating this broader ocean observing perspective into the OTC publication would make it a more effective “visionary” document.

New OTC publication

OTC members discussed the scope of the paper in the context of where it would be submitted. Several options are on the table for a potential journal venue, including

- *Oceanography*: Audience = broader oceanographic community; would allow longer, more detailed article
- *Eos*: Audience = broader earth science community; would require shorter, more succinct article with less substantive scientific content
- *Science Perspectives* or *Nature Climate Change News & Views*: Broad scientific audience, highest impact

The article should tell a story using substantive examples and/or demonstrations of scientific insights from time-series, but also provide a grander vision of how these ocean time-series fit into a broader global ocean observing framework (next OceanObs meeting in '19), including (as suggested by agency representatives) links to complementary observing efforts (e.g., OOI, LTER, etc.). NSF representatives also mentioned the Continuous Plankton Recorder (CPR) time-series as another potential activity to take into consideration in the time-series network. **The next OTC teleconference is scheduled for September 7.**

Next OCB Activity Solicitation

SSC members discussed scope and potential foci for the next OCB activity solicitation, to be released in Fall 2016. Proposals would be due in late Fall, with SSC review and selection of proposals for funding by end of CY16. The SSC recommended keeping the solicitation open and broad (with explicit guidelines for proposal preparation) much as the last solicitation released in 2014, but highlighting recent activities or planning documents (coastal carbon synthesis, North Atlantic-Arctic, Time-series methods, SOLAS-OCB intersection, biological pump, etc.) that have developed momentum and are ripe for further development. Roman highlighted a new IOC working group on ocean deoxygenation that might be worthy of OCB attention as well. **Benway will draft a solicitation and send to SSC for comment.**

DeVries request to have OCB host OCIM workshop

Benway received a request from Tim DeVries (UCSB) about a letter of collaboration for an NSF proposal that involves OCB hosting a short add-on workshop on the OCIM model in conjunction with a future (2019) OCB workshop. There was unanimous support among OCB SSC members to provide a letter of collaboration for the proposal. **Benway will notify and work with DeVries to provide the letter.**

Travel support requests

No travel support requests were received for the July review.

9/29/16 OCB-SSC Meeting

Participants: A. Barton, H. Benway, A. Burd, M. Church, M. Lomas, N. Lovenduski, D. McGillicuddy, S. Neuer, M. Zawoysky

Action items in red

OCB PROJECT OFFICE UPDATE

New OCB hire

The OCB Project Office has just hired a **new Communications Officer Mai Maheigan**. She will start her position on 11/7/16. Mai completed her MS in Biology in 2007 (CSU, Northridge; advisor: Peter Edmunds) and has research experience in coral ecology, marine biology, and wildlife conservation. She has held leadership positions in the field of communication for several organizations, including the Farallones Marine Sanctuary Association and more recently, the Coral Reef Alliance. She brings a wealth of experience and expertise in strategic communications and science writing and will be an excellent addition to the OCB team.

Recent Workshops

Talks and webcast footage now posted from [2016 OCB summer workshop](#) and the GEOTRACES/OCB synthesis workshop [Biogeochemical cycling of trace elements within the ocean](#)

OCB activity solicitation

- Due **December 1**
- Benway has circulated solicitation to the following email lists: ocb-all, time-series network, North Atlantic-Arctic workshop, and recent GEOTRACES/OCB Biogeochemical cycling of trace elements within the ocean workshop
- Benway receiving regular emails and inquiries related to solicitation, so we can expect an appreciable number of proposals

Biology of the Biological Pump White Paper

Final white paper [Towards a transformative understanding of the biology of the ocean's biological pump: Priorities for future research](#) now available

OCB nomination reminders

Submit for [OCB Scientific Steering Committee](#) by October 31 and [OCB Ocean Time-series Committee](#) by October 21

SSC considerations:

- Rotating off: Brzezinski, Buck, Burd, Mathis, Neuer, Roman – only bring on 3 new members (downsizing)
- Need IMBER representative (Roman rotates off) since OCB = IMBER home in US
- Need GEOTRACES (trace metals) representative (Buck rotates off): Bob Anderson has submitted a couple of nominations

OCB at ASLO 2017

- Engaged a lot of people at OCB booth during OSM2016 - added 160 new names to OCB email list
- Perhaps skip ASLO Aquatic Sciences (Hawaii) and attend OSM2018 (Portland, OR)
- 2017 workshop advertising – exhibit booth is \$600-700, OCB SSC help staff booth
- **Benway will discuss further with Project Office staff and make a final decision**

OCB Ocean Time-series Committee (OTC) Update (Neuer)

Membership rotation

- Rotating off: Neuer, Dunne, Perry
- Next teleconference 10/25 to discuss new OTC nominees (3 members rotating off), will likely grow committee by a few members
- At least one international member, possibly two
- After new members elected, will elect new chair (Neuer rotates off)

New publication

- OTC has prepared and submitted a short, high-profile correspondence to *Nature* on the importance of sustained time-series for monitoring ocean and climate change

2017 OCB WORKSHOP

OCB SSC members first discussed 2017 OCB workshop dates. There are logistical conflicts for the normal OCB week in July and it's considerably less expensive to have the meeting during the off-season (i.e. not July or August), so the SSC was considering either a late June meeting or a fall weekend meeting (Sept. 29-October 2, 2017) that overlapped one day with [IMBER IMBIZO V](#) (Oct 2-6, 2017, Woods Hole, MA). Given potential fall teaching conflicts for OCB attendees, SSC members decided to keep the summer OCB workshop with dates in the latter half of June. However, there is strong interest in also convening a joint activity at the IMBIZO, which **Benway (and perhaps 1-2 interested SSC members) will work with the IMBER International Project Office and SSC in the coming months to plan.** SSC members also discussed ways to facilitate ample participation by members of the US OCB community in IMBER IMBIZO V such as travel support, webcasting, etc.

SSC members discussed potential thematic plenary session topics for the June OCB workshop:

- **Deoxygenation** – e.g., [Global Ocean Oxygen Network \(GO2NE\)](#), recent travel support for Bess Ward deoxygenation workshop, recent review papers on expanding OMZs
- **Stoichiometry and higher trophic levels** (Steinberg and Roman) – considered for 2016 OCB but agenda too crowded
- **Deep sea, sedimentary exchange** (mentioned in OCB 2016 survey results)
- **Coastal ocean exchanges and drivers** (sea level rise, etc.) – NSF coastal SEES, LTERs = strong outreach/social science component (mentioned in OCB 2016 survey results)
- **Linking modern and paleo-ocean studies** (mentioned in OCB 2016 survey results)

- **Applying -omics approaches to decipher ocean biogeochemical processes** (mentioned in OCB 2016 survey results)
- Could also **merge many of the topics above** into a single plenary session
- **Submeso- and mesoscale dynamics/processes** – new insights/papers (data and models), how do submeso and mesoscales interact? Physical oceanographic/hydrodynamics questions, biophysical interactions? Span from meso (eddies) to submeso fronts/patches? McGillicuddy willing to help organize
- **Ecological and biogeochemical implications of transient ocean warming events** (e.g., recent strong El Niño event, North Pacific warming event of 2010, recent warming event in Ross Sea, etc.) – Barton willing to help organize

Benway will circulate compilation of previous OCB topics by year to assist with SSC planning. Once June dates have been selected, the OCB Project Office will send an email to the OCB community with next year's dates and also requesting ideas from the OCB community for plenary session topics. Benway will also follow up with IMBER IPO.

11/3/16 OCB-SSC Meeting

Participants: A. Barton, H. Benway, M. Brzezinski, K. Buck, M. Church, B. Jenkins, L. Juranek, M. Lomas, N. Lovenduski, J. Mathis, D. McGillicuddy, S. Neuer, M. Roman, D. Siegel, D. Steinberg, A. White, M. Zawoysky

Action items in red

UPDATES AND REMINDERS

- [OCB activity proposals](#) due December 1 - these proposals will be discussed on **December 8 OCB SSC teleconference at 1 pm (EST)**
- Due to high costs and budgetary constraints, OCB will not attend/have booth at ASLO 2017, but WILL attend Ocean Sciences 2018
- **Fall OCB Newsletter** will be published some time in November
- [EXPORTS Implementation Plan finalized](#)
- **2017 OCB Workshop** - June 26-29, 2017 (Woods Hole, MA)

OCB OCEAN TIME-SERIES SUBCOMMITTEE

- **OTC election** – received several nominations, awaiting one more ballot to finalize election results, will soon be announced to OCB community via email/web
- **New *Science* e-Letter** - Hunter-Cevera *et al.* (2016) *Science* paper on the Martha's Vineyard Coastal Observatory published two weeks ago – OCB Ocean Time-series Committee and time-series scientists published an e-Letter, available at <http://science.sciencemag.org/content/354/6310/326.e-letters>

OCB OCEAN ACIDIFICATION SUBCOMMITTEE

Benway has had a dialog with NSF and NOAA program managers regarding the OCB SSC subcommittee on ocean acidification (OCB-OA). OA has been a major focus of OCB for a long time. After significant agency investment in OA research projects and coordination efforts, OA has developed its own momentum (scientific, programmatic) in the US. We've made great strides in building and strengthening the OA community and charting new research directions. There is a formal [NOAA OA Program](#) and an [Interagency Working Group on OA](#) (IWG-OA). We've seen the emergence of regional OA networks in the US (C-CAN, NECAN, SECAN, etc.) and abroad (Latin American Ocean Acidification Network). OA has also gained a tremendous foothold in the nonprofit world (Ocean Conservancy, NRDC, etc.). On the international front, entities like the OA International Coordination Centre (OA-ICC) and the Global Ocean Acidification Observing Network (GOA-ON) are greatly expanding the OA research and observing efforts, including OA training courses in developing countries. OA research will continue for the long-term, and OCB will always maintain an interest in OA and associated carbon cycle dynamics and ocean chemistry changes (and its SSC membership/expertise will reflect that). However, NSF has indicated that a formal OA subcommittee of the OCB SSC is no longer needed. They have requested that OCB organize one final PI Meeting to document the outcomes of agency investments in OA research. We anticipate that this will be a multi-agency PI meeting to encourage collaboration and exchange of ideas and the final job of the existing OCB-OA subcommittee will be to identify potential members of an organizing committee for this final PI meeting. Benway will be convening a teleconference with current OCB-OA members and NSF and NOAA Program Managers to discuss the scientific breadth of the PI meeting and identify potential scientists to serve on an organizing committee. **Benway and Mathis will continue to keep the OCB SSC updated on new developments.**

2017 OCB WORKSHOP

On the September teleconference, OCB SSC members brainstormed the following potential thematic plenary session topics for the June OCB workshop:

- **Deoxygenation** – e.g., [Global Ocean Oxygen Network \(GO2NE\)](#), recent travel support for Bess Ward deoxygenation workshop, recent review papers on expanding OMZs
- **Stoichiometry and higher trophic levels** (Steinberg and Roman) – considered for 2016 OCB but agenda too crowded
- **Deep sea, sedimentary exchange** (mentioned in OCB 2016 survey results)
- **Coastal ocean exchanges and drivers** (sea level rise, etc.) – NSF coastal SEES, LTERs = strong outreach/social science component (mentioned in OCB 2016 survey results)
- **Linking modern and paleo-ocean studies** (mentioned in OCB 2016 survey results)
- **-omics** (mentioned in OCB 2016 survey results)

- Could also **merge many of the topics above** into a single plenary session
- **Submeso- and mesoscale dynamics/processes** – new insights/papers (data and models), how do submeso and mesoscales interact? Physical oceanographic/hydrodynamics questions, biophysical interactions? Span from meso (eddies) to submeso fronts/patches? McGillicuddy willing to help organize
- **Ecological and biogeochemical implications of transient ocean warming events** (e.g., recent strong El Niño event, North Pacific warming event of 2010, recent warming event in Ross Sea, etc.) – Barton willing to help organize

SSC members expanded the discussion to include topics that had been submitted by members of the OCB community over the past 6 weeks. A couple of regionally focused sessions (Southern Ocean, Gulf of Mexico) were proposed, but SSC members thought that a more process-focused approach would engage more community interest.

Emerging ideas include:

- **Our Autonomous Future** – highlight new engineering capabilities, link with Sari Giering’s proposed optics capabilities session; NAKFI Deep Blue Sea Conf next week
- **Carbon fluxes in coastal wetlands** – there have been many new developments here, and recent North American coastal carbon science plan highlights coastal wetland fluxes as a huge unknown; this topic also mentioned in survey results
- **Approaches and challenges for linking marine biogeochemical models with the omics revolution** – not enough work on this yet to have a full plenary session - only Hood/Coles - maybe wait a year or two for full plenary, or do small group session? Could also broaden to include trait-based modeling and update community on that front; also new EDGE program at NSF (“move beyond transcriptomics”)
- **Stoichiometry and higher trophic levels** – haven’t talked about how stoichiometry transfers across trophic levels (have really only focused on nutrients and phytoplankton); compound-specific biogeochemistry that incorporates food quality and **lipids** (also suggested as topic)
- **Submeso- and mesoscale dynamics/processes** –merge SSC idea with Fassbender idea (McGillicuddy/Fassbender co-chair?)

JOINT IMBER/OCB ACTIVITY AT IMBER IMBIZO (OCTOBER 2017)

Benway, Zawoysky, and SSC members Jenkins, Roman, and Buck joined the first organizing teleconference of IMBER IMBIZO V on November 1. The IMBIZO will include the following three concurrent workshops (~40 participants each):

- ***Critical constraints on future projections of marine systems*** (Organizers: Laurent Bopp and Eric Galbraith)
- ***Metabolic diversity and ecosystem processes in a changing ocean*** (Organizers: Gerhard Herndl and Tatiana Rynearson)

- **Management Strategy Evaluation: Achieving Transparency in Natural Resource Management by Quantitatively Bridging Social and Natural Science Uncertainties** (Organizers: Ingrid van Putten and Cisco Werner)

The structure of the IMBIZO typically involves a morning of keynote plenary talks (one per workshop), followed by concurrent workshops, with ample opportunities for the participants of the three workshops to come together (poster and plenary sessions, fun activities like debates, afternoon teas, meals, etc.). Since the IMBIZO is in the US this year (at WHOI), OCB SSC members supported the idea of a joint activity (on the September teleconference). The consensus from the IMBER IMBIZO teleconference for the IMBIZO timing was as follows:

- **Sunday 10/1/17:** Early career-focused day (IMBER is hoping for OCB input on potential early career activities)
- **Monday 10/2/17 to Thursday 10/5/17:** IMBIZO
- **Friday 10/6/17:** IMBER/OCB joint activity on Friday 10/6

IMBER has a much stronger representation of social sciences at its meetings and in its network. A possible topic for a one-day joint activity that was discussed is the **loss of ecosystem services with climate change** (e.g., changing nitrogen and carbon cycles, increased deoxygenation, loss of biodiversity, changing food webs, fisheries impacts, multiple stressors framework, etc.). However, IMBER SSC members on the call encouraged us to **think beyond science talks**: For example, what are the socioeconomic implications of these losses and what scientific and engineering tools do we have to mitigate these losses and improve predictive capacity (e.g., improving model projections)? The next IMBIZO organizing teleconference will be in late January 2017. In the meantime, Zawoysky and Benway will continue to work with IMBER IPO on meeting logistics.

SSC Feedback:

- Better to do on Monday? Benway follow up with IMBER IPO
- IMBER was formerly a program of IGBP but now is under the umbrella of FUTURE EARTH (which requires strong social-natural sciences connection)
- Interested SSC contributors to this joint session: Susanne Neuer, Matt Church, Mike Roman
- **Benway will initiate email discussion w/interested SSC members and possibly a short teleconference prior to next SSC teleconference**

OCB TRAVEL SUPPORT REQUEST

SSC members discussed travel support requests and decided to provide \$10K of support for early career scientists attend the Chemical Oceanography Gordon Research Seminar and Conference in July 2017. **Benway will inform PI of SSC decision**

OCB 2016 ELECTION

SSC members discussed this year's slate of SSC nominees (17 total) in light of pending expertise gaps.

General comments:

- Notable expertise gaps: CO₂ system chemistry, tie to NOAA, trace metal biogeochemistry and tie to GEOTRACES, coastal C cycle
- Would be helpful in future to more explicitly highlight impending expertise gaps prior to nomination/election process
- Goal is to elect up to 5 new members to bring SSC member total to 15 (effort to downsize the SSC), not counting *ex officio* members
- Siegel (*ex officio*)- EXPORTS SDT leadership role has ended, so Siegel will rotate off at end of calendar year 2016; NASA will compete the leadership of the EXPORTS Project and once selected (early to mid-2017), that scientist will be brought onto SSC as *ex officio* member for duration of EXPORTS

SSC Voting Instructions:

To vote, SSC members must send their top 5 (tier 1) nominees plus 2 alternate (tier 2) nominees to Benway (hbenway@whoi.edu) by **Thursday, November 10**. Benway will tally the votes, discuss results with SSC leadership, and circulate short list for SSC and agency approval.

12/15/16 OCB SSC Teleconference

Participants: S. Doney, D. Steinberg, A. Burd, H. Benway, M. Zawoysky, A. Barton, M. Brzezinski, K. Buck, M. Church, B. Jenkins, L. Juraneck, M. Lomas, D. McGillicuddy, M. Roman, D. Siegel, A. White, M. Maheigan

Action items in red

UPDATES AND REMINDERS

- [December eNews](#) – OCB has transitioned to an eNews format for sharing information via email; **send all community announcements for the eNews to ocb_news@whoi.edu**
- [Fall OCB Newsletter](#)
- [Letter regarding Carbon Dioxide Information Analysis Center \(CDIAC-Oceans\) transition](#)
- **NOAA pCO₂ program review – Benway will receive and circulate document for SSC review in late December**
- OCB welcomes new OTC members Matt Church (Univ. Montana), Stephanie Henson (National Oceanography Centre), Naomi Levine (Univ. Southern

California), David “Roo” Nicholson (Woods Hole Oceanographic Inst.), Oscar Schofield (Rutgers Univ.), Heidi Sosik (Woods Hole Oceanographic Inst.), and Angel White (Oregon State Univ.). OTC members Richard Lampitt (National Oceanography Centre) and Michael DeGrandpre (Univ. Montana) will serve a second term

- NSF [Dear Colleague Letter](#) regarding integration with EXPORTS
- NASA EXPORTS moving forward - solicitation has been prepared, awaiting approval

OCB OCEAN ACIDIFICATION SUBCOMMITTEE TELECONFERENCE

The OCB-OA Subcommittee and agency representatives discussed the need for another ocean acidification PI meeting. There was consensus that prior to proceeding with any meeting planning, we should query a cross-section of OA PIs (from multiple agencies) regarding their interest in participating in another PI meeting. This will take the form of a short online survey. Benway is working on gathering PI information and drafting a survey for distribution in the coming weeks. If a PI meeting does go forward, the group agreed that it would be more valuable to bring together OA PIs funded by different agencies (i.e. not just NSF), including NSF (mechanistic), NOAA (regional impacts), USGS (OA as a coastal hazard), etc. to get a more complete picture of how OA research in the US is evolving. Given all of the other recent US and international meeting opportunities for presenting OA science, the group thought that this meeting should aim for a synthesis of what we’ve learned from previous rounds of agency investment in OA science and use this to set a course for future OA research, and the gaps identified in this synthesis activity could be addressed via the new OA implementation plan developed by the Interagency Working Group on OA (IWG-OA). They also thought that meeting participants should take some time to identify constructive ways to move OA research forward at regional, state, and national levels in light of upcoming political changes. The group discussed many possible formats but converged on the idea of having an OA synthesis PI meeting in conjunction with the next Ocean Sciences Meeting (February 2018 in Portland, OR) to reduce travel costs and enable broader participation, including a limited # slots for junior scientists (new voices in the community) who might otherwise be unable to attend (not funded OA PIs and/or insufficient travel funds). However, this would need to be a fairly short (1-2 days) meeting to avoid burnout. Benway will keep the SSC informed of future developments.

SUMMER WORKSHOP 2017

Ecological and biogeochemical impacts of natural climate perturbations (Barton)

- Broader framework (not just warming)
- Natural variability often >> anthropogenic impacts on biogeochemistry and ecology
- ENSO, PDO, ocean heat waves (blob), etc.

- Have talks focused on ecology (lower and higher trophic levels) followed by talks on biogeochemistry (C export, pH and pCO₂, O₂, nutrients (N, P, Fe))

SSC feedback:

- There will be a workshop focused on blob on west coast
- Structure by basin instead since difficult to draw a hard line between ecology and biogeochemistry
- Incorporate talks on ecological theory (NSF funding 3 new LTERs) – e.g., roles of long term change vs. pulse changes on ecosystem structure
- Consider other non-equilib phenomena – e.g., low S anomaly off east coast, cold pool in middle Atlantic that affect fish migrations, etc.
- Some phenomena affect multiple basins (e.g., ENSO) so would be interesting to have comparative talks
- Speaker suggestions: Mark Ohman, Emmanuel DeLorenzo, Andy Pershing, Nate Mantua, Joe Needoba (bgc sensors, blob, OHSU), ecological theorist (not necessarily a marine scientist...worked well for traits workshop), Mick Follows or Stephanie Dutkiewicz, Curtis Deutsch on modeling variability along west coast and associated O₂ dynamics, **McGillicuddy suggested links to sub/mesoscale short term/higher frequency events (e.g., eastern Atlantic, SE Pacific) and will send Andrew speaker suggestions**

Stoichiometry and higher trophic levels (Roman/Steinberg)

- Potential topics include role of food quality (trophic upgrading – bridging gaps between microbes and higher trophic levels), why stoichiometry matters for carbon cycling, mixotrophy, importance of stoichiometry for biopump, connection to fisheries production; applicability of trait based approaches (functional groups)?
- Potential speakers: Jim Elser (intro talk on ecological stoichiometry), zooplankton and biopump, food quality (Flynn, Mitra, Anderson); get perspective of freshwater/estuary scientists who've done a lot in this realm; mix of modeling and obs talks, but keep focus on higher trophic levels

SSC feedback:

- Speakers: Mike Lomas, Adam Martiny, Joshua Weitz (impact of viruses on export/stoich, too low on food chain?)
- Terrestrial ecology parallels?
- Growth rate hypothesis – trophic dynamics in freshwater vs. open ocean systems
- Focus on places in ocean where Redfield doesn't hold true (e.g., OMZs) and how that affects food web processes
- Stoichiometric plasticity – consider other limiting elements (Si, Fe, etc.)

Our autonomous future (Siegel)

- ½ day session on thinking outside box, beyond technology that already exists – e.g., *in situ* experimental robotic systems, collaborative AUVs, etc.
- Recent Kavli conference might provide fodder (can get report out from organizer D. Karl)
- Potential speakers suggested: Dana Yoerger (WHOI) on mesobot, Chris Scholin (MBARI) on autonomous molecular sensors, Melissa Omand (URI) on small inexpensive tools, Andrew David Thaler (open source CTD, underwater towed camera system), Herndl/Reinthal (CTD-based measurement of bacterial production/respiration)

Submeso- and mesoscale dynamics and biophysical interactions (McGillicuddy)

- Working with Andrea Fassbender to organize session
- Scope to be broader than just WBCs to include all regions of high EKE and examine feedbacks on C export
- ½ day, coupled with Barton's session?
- Coverage of obs, models and theory
- Potential speakers: Adrian Martin, Marina Levy (just spoke at 2015 workshop!), Peter Franks, Melissa Omand, Amala Mahadevan

SSC feedback:

- Process study talks: Low O₂ eddies in eastern Atlantic process study (GEOMAR group - Fiedler), SE Pacific eddy processes (Stramma, Altabet)
- Coupling to Barton session makes sense but where to draw line on natural climate variability (time/space)?

Carbon fluxes in coastal wetlands (Benway)

Benway already shared email from session organizers with SSC members; **send feedback to Benway for organizers**

NEXT STEPS:

Session organizers should start identifying topics/speakers in the next month, aiming for ~½ day session (or up to 2/3 day if scientifically feasible).

SMALL FUNDING REQUEST

SSC members discussed a ~\$5-10K request for support for a *Best Practice Guide for conducting Multiple Stressor experiments on marine biota* but consensus has not yet been achieved. This will be revisited in January.

OCB ACTIVITY PROPOSALS

SSC members discussed 7 OCB activity proposals that were received. SSC comments on the proposals have been omitted here and are reserved for SSC members and proposal PIs only. Funded activities will be announced in early 2017.