

Carbon Uptake Working Group teleconference 5/18/12 Summary of Discussion and Action Items

Introductory remarks

Mike Patterson provided a brief history of OCB-CLIVAR interactions and background on how WGs work.

Introductions of WG members

WG members introduced themselves, describing their research background and interests of relevance to the WG goals and objectives.

Science discussions

Current status and existing projects (Ocean C):

- Efforts underway by model development groups (e.g., Matt Long, John Dunn) in getting simulations done and documented.
 - Through the C4MIP group, a special issue of J Clim is to look at various aspects of C cycle across CMIP5 archive (broader than just oceans).
 - The C4MIP Wiki at CCCMA (<http://ar5carbon.wikispaces.com/>) does not provide much on ocean C.
 - At Ocean Sciences, Emily Shuckberg (UK) presented on Southern Ocean C uptake; results were inconclusive.
 - IPCC AR5 deadline for submission of articles to refereed journals is July 31, 2012. The WG does not have a goal to complete a paper by this deadline.
 - Curtis Deutsch's group has examined O₂ in available ESMs. Documentation of how different models are constructed is difficult to access. Updated documentation of the model construction/structure would be helpful.
 - The CMIP5 archive contains data from ~8-10 models (GFDL data sets available, new NCAR CESM experiments may not yet be posted in CMIP5 protocol).
 - For ocean model intercomparisons, it would help to have local model developers involved.
- **Action Item: Check on status of CMIP5 archive and determine who is assembling figures for AR5 (Sabine? Frielingstein?).**

Ideas and guidelines for potential new analyses activities/experiments:

- Models to potentially include:
 - GFDL (2 versions)
 - NCAR
 - IPSL (2 versions; contact Laurent Bopp)
 - MPI (2 different resolutions; **Ken Caldeira may be able to identify appropriate contact**)
 - CCCM (contact Jim Christian)

- JAMSTEC (**Shang-Ping Xie will identify contact**)
 - Hadley Center (contact Chris Jones)
 - Australia (**Matt Long will identify contact**)
 - Newcomers? (e.g., China, Russia)
 - The main issue will be getting other models involved. Minimum of six models should be sufficient.
- **Action Item: WG members contact lead PIs at modeling centers above, inform them of WG purpose and plans, indicate that their data may be used, and request primary paper documenting model and model results.**
- Refine scope of analysis
 - Bridge between bgc and physics
 - Focus on both model vs. model intercomparison and model vs. data analyses.
 - Given our broad expertise (bgc+ physics) what can we do that is of most value for community?
 - Impacts of physical biases on C/bgc-fluxes (O₂ in tropics too low, O₂ ventilation in 50°S region too low – implications for anthro CO₂ biases?)
 - Tracers to tease apart physical circulation vs. bgc/biological processes (CFCs, C14, age tracers) – papers: Matsumoto (OCMIP); Katsumi (age tracers), Khatiwala (RECCAP manuscript in preparation)
 - In a non-anthro CO₂ world, what does ocean CO₂ uptake look like? What is climate sensitivity? – e.g., Friedlingstein paper*
 - Should examine paired simulations with and without feedbacks. CMIP5 protocol allows examination of feedback strength as function of climate change.
 - Interior C measurements (full depth hydrography) could be useful too (CLIVAR Repeat Hydro archive, RECCAP)
- **Action Item: Scott will check on CLIVAR archive and report back.**
- Need to establish who is doing what. A literature review would help inform the work of the WG.
- **WG members send articles to Jennifer Mays on above scientific and technical topics to set up bibliography for WG on WG webpages.**
- Need clear metrics to determine what is wrong with C fluxes.
 - CMIP5 has feedback between physical climate and C cycle. Can we establish a metric for that feedback? Friedlingstein metric approach (see above*) – experiments in CMIP5 protocol
 - Large ongoing analysis of physics in models – e.g., strength of overturning circulation, etc. The WG should avoid duplication of existing efforts. Again, the WG needs a literature review and background check of work already underway on CMIP5 archive.

Technical issues:

- Standardized vs. unstandardized elements of models – one charge for group might be to **develop/share a set of tools to facilitate model comparisons**
- Scripts to perform re-gridding of general fields (**Curtis is happy to share**)

Conclusions:

First in-person meeting

- To constrain costs, the meeting should be held in conjunction with another large meeting, e.g., Fall AGU in December; ASLO in February; AAAS in February. As soon as AGU sessions are announced in early June, the WG can decide if this is the best option.
- This would allow plenty of lead time to pull together analyses.
- OCB and CLIVAR can book meeting rooms and cover core WG member travel (not contributing/international travel).

Website and e-list

- CLIVAR office sets up webpages for WG to share info. Cannot serve large data sets (can provide list and links though). Can password protect info.
- **Action Item: Jennifer will send link to WG webpages to everyone after call.**
- Is setting up a website/wiki site for exchange of materials, analyses, references, etc. possible?
- Ocean Carbon Uptake WG e-list has been set up (accompanying website with archived messages).
- Readytalk system can be used to show a few slides to stimulate discussion at the beginning of teleconferences.
- **Action Item: Jennifer will send out URL and e-list info.**

Next teleconference

- Schedule for last week of June.
- **Action Item: Jennifer will doodle poll WG for dates/times for next telecom.**
- **Action Item: Mike/Heather will work with Curtis to merge notes and send out summary to group.**

Action Items in red.