



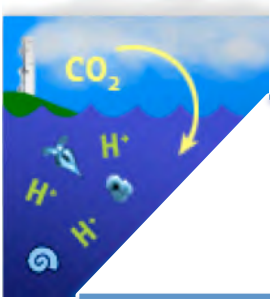
Breakout #2

Ocean acidification and society

Leader: Ed Miles

Rapporteurs: Ned Cyr & Moose O'Donnell

The consequences of ocean acidification will have a strong human impact if marine ecosystems change and offer different benefits/challenges to human communities. Deciding what to do about changing ocean ecosystems involves dialogue among user communities, policymakers, and researchers. What can the research community do to advance this portion of OA research?



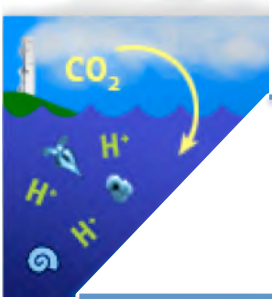
Reminders

Session Leader

- Introduce the rules of the session.
- Introduce the main items that will be discussed; prioritize the items to make sure these get covered
- Keep note of the time and try to cover the priority topics
- Call on participants and maintain control of the discussion
 - Each group member is entitled to opinions, even if no one else agrees - as long as it does not take hours to present!
 - Recognize disagreement; allow for some discussion, record the viewpoints, then move on. *Don't let disagreements turn into unnecessarily technical discussions*
- Reserve the last 15 minutes to summarize the main points with the group
- Remember, you're here to guide the discussion, not dominate it!

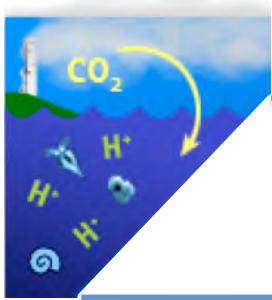
Session Rapporteurs:

- Take notes (preferably projected) so that all can follow
- Assist Session Leader in maintaining control of the discussion
- Summarize comments succinctly during the session; the notes should not be a word-for-word transcript but should rather capture and organize the main points
- Assist the Leader in noting the level of consensus within the group
- Work with the leader to put together summary presentation
- Provide presentation (and summary notes if possible) to workshop organizers



Ground Rules

- Please avoid speaking spontaneously; raise your hand and wait until you're called upon
- Please keep note of the time and the topics covered; avoid focusing too much on one item which will slow down the progress of the discussion
- Keep in mind the focus of the meeting:
 - increasing collaborations
 - Increasing the quality of the science
 - Future research directions
 - Improving OCB's role in supporting OA research
- If you are shy or wish to make a point outside of discussion, please feel free to make the point to the session leader privately or by written note.



Sample Questions

What science needs to be done (e.g. science that relates to strong human interests)

- Adaptation strategies
- Economic analyses
- Behavioral sciences, political science, etc.
- Other social sciences

How to facilitate and support that science through:

- Collaborations (cross-agency, agency-industry partnerships, cross-disciplines, policy world, international)
- Syntheses – what information is out there than can be used to estimate the impacts of OA
- Data management – what data are most important to collect? - links to other data centers or information outlets (e.g., economic and other societal data)
- Facilities?

How to communicate the science better

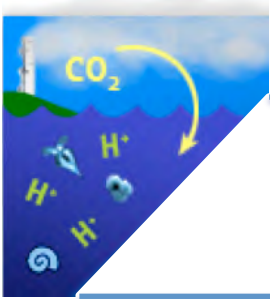
- Outreach activities – combining science questions
- Joining forces across projects (e.g. serving a common “broader impacts” goal through an OCB led project) – both for existing projects but also setting up something that future projects can propose to work with
- Setting up a communications team
- Engaging specialists (e.g., collaborations with SeaWeb/COMPASS; NGOs; National OA Program Plans to include foundations, etc.)
- Documentary films

Building capacity to advance the societal component of research

- Engaging representatives from multiple sectors of society
- The RUG model of European OA researchers?
- Other ideas?
- Agency-Foundation Collaborations

What actions should be done immediately to get this going?

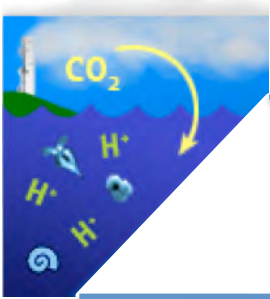
- Recommend new research directions? Adaptation Research?
- OCB support on specific activities? (meetings, data support, web support, etc.)
- Form a special subcommittee to move this further? Lisa’s research helps identify this



Summary of Discussion

Three prongs to discussion

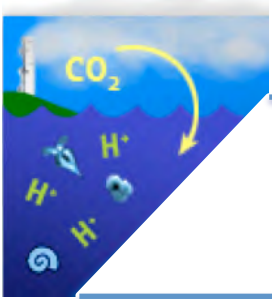
1. Exchanging data and ideas with social scientists
2. Communicating science to public
3. Adaptation strategies



Summary of Discussion

Exchanging data and ideas with social scientists

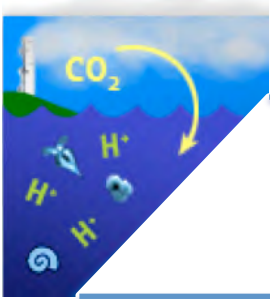
- Ed Miles was only one with real concept of what “social scientist” means
- For purposes of our discussion, we talked about economists
 - (probably offending entire departments of anthropology, political science, international relations, etc.)
- Ed pointed out that there is a problem with the reward structures of our fields
 - But we’re not going to change that
- Stick with trying to talk to applied folks



Summary of Discussion

Talking to Economists

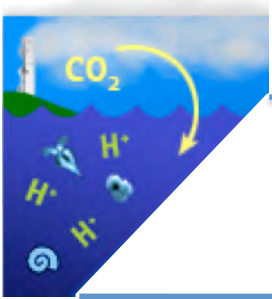
- Jim Palardy stood in for the field
- Economists are trying to put a value on ecosystems
- Earth and life scientists would love to have this information too
- Hard to put numbers on many of these things
 - What's a coral reef worth?
 - How about a planktonic community?



Summary of Discussion

Talking to Economists

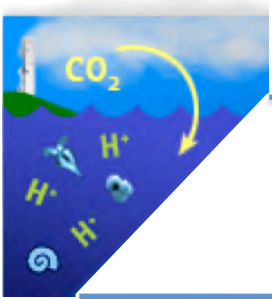
- Jim Palardy offered an economists' vision where everything is fungible
 - Correct as far as Matlab is concerned, but hard to swallow
- Major disconnect: Economists think the Earth scientists and biologists have the easy job.
- There needs to be more communication
 - Dating service (or at least a database) of economists with interest in environmental change
- Until we put a price on environmental change, hard to incorporate into policy models



Summary of Discussion

Communicating Science

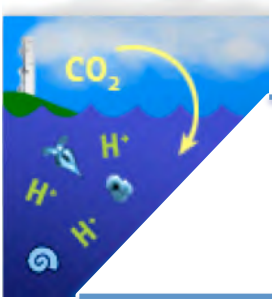
- Erica Goldman and Matt Wright (COMPASS), Lisa Suatoni (NRDC) had most experience with this
- OA has been really well communicated up to now
 - Joanie Kleypas, Dick Feely, Scott Doney
- Information has been disseminated largely free of political baggage
 - This is probably about to change.
- Now is a critical time to get word out about OA
 - As we saw in Lisa Dropkin's presentation



Summary of Discussion

Communicating Science

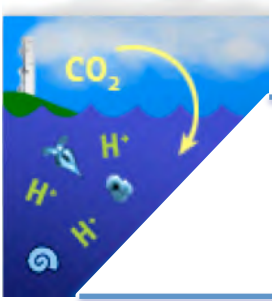
- Compelling stories are best
 - Everyone loves the shellfish farm story
 - Clear linkages between cause and effect + a happy ending
 - But is this the only example like this?



Summary of Discussion

Communicating Science

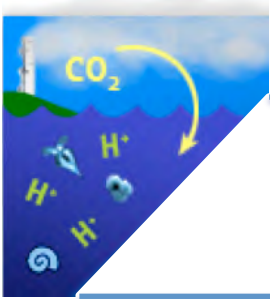
- Discussion about whether scientists should even be primary communicators
 - Should we blog or tweet?
- Conclusion that if we do, make sure we do it well
 - Good communication is essential to fulfill our mission to the public
 - Poor communication can make things worse
- One cartoon in the *New Yorker* can do more than a CV-full of *Science* and *Nature* pubs



Summary of Discussion

Communicating Science

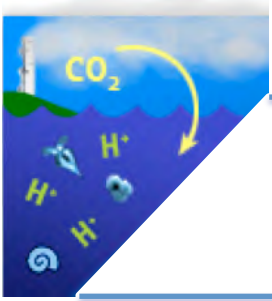
- Discussion of how we should handle the complexity
 - Should we link ocean acidification to other environmental changes?
 - Risk of linking with political baggage
 - Is oversimplification a disservice to society?



Summary of Discussion

Communicating Science

- Need to find new ways to reach the public
 - Suggestions to find interested groups
 - Shellfish and aquaculture associations
 - Churches, other community groups where people turn for information
- Training opportunities exist
 - COMPASS, Aldo Leopold

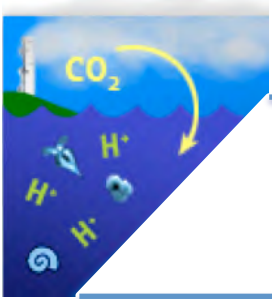


Summary of Discussion

Adaptation Strategies

(note to evolutionary biologists: this does not mean what you think it means)

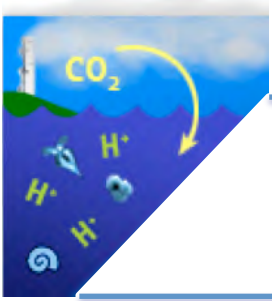
- Shellfish farmers can turn off pumps
- What will rest of ocean do?
- Society doesn't have mechanisms in place to deal with problems over long time scales



Summary of Discussion

Adaptation Strategies

- Concern whether we should discuss adaptation given uncertainty
 - Might be taken as excuse to do nothing
- Are there any good options?
- This discussion highlights importance of linking Earth and Life sciences with social sciences and communication



Main Summary

Society response to OA requires public to understand issues involved = communication

Linking changes in Earth to changes in society requires collaboration with social scientists

Many of us are way out of our comfort zone on both these points