



Ocean Acidification Breakout

Fearless Leader: Joanie Kleypas

Participants: 36 people

1) First we used the opportunity of having a broader community of scientists to see if there were any major issues that have been missed in previous OA discussions.

Items that were re-emphasized:

- Need to better understand cell physiology and bio-calcification in key organisms
- that OA is occurring in the context of climate change and should not be considered in isolation
- Impact of OA on nutrient and metal chemistry
- How can we scale global changes to physiological scales (micro-environments versus external change)
- Food web changes
- Impacts in coastal ocean can be very different from impacts in open ocean
- We need long term observations of pCO₂ and another C variable on VOS and moorings in a variety of environments (e.g. enhance global observing network)
- Need to understand acclimation and adaptation
- Need for suite of approaches, including perturbation experiments as well as investigating natural gradients

New items that came up:

- Impacts of OA on atmospheric chemistry (e.g. DMS production)
- One barrier to understanding OA is separating the anthropogenic effects from the natural variability – how do we distinguish CO₂ uptake impacts from other things that change pH
- Potential changes in metal toxicity resulting from OA

2) I want to do an ocean acidification project but I can't because...

- It is not easy to measure the carbonate parameters
- technology is not ready for autonomous measurements of the most appropriate measurements (needs more investment)
- more investigators/core facilities for making high quality carbon measurements
- there is a lack of standardized protocols for calcification studies - need to provide a guide of minimum meta data reporting for OA studies; need to make the broader OA community aware of ocean carbon community sampling and analysis protocols.
- We need to figure out how best to scale lab experiments to the field.
- Modelers need the longer term responses – more useful than these immediate response experiments
- need a calcification sensor!



3) What should OCB be doing?

- OA workshop is a good first start.
- Help coordinate groups of investigators who want to work together on a common project
 - E.g., Open ocean mesocosm and “CO₂ addition” studies
 - Ongoing coral reef and other coastal studies (e.g. linking with existing field efforts of USGS and NOAA)
 - Taking advantage of existing observation networks (HOT, BATS, ICON stations, LTERs, ORION, other observing system stations)
- Facilitating communication
 - Maintaining informational website on past and ongoing OA research
 - Mike Roman’s “dating service”
 - Active inclusion of individual PI’s
 - workshops, etc.
- Question: does OCB-OA need to address purposeful CO₂ sequestration?

