

Study Goals

Can emerging space science technologies enable coordinated oceanographic and satellite observations to better constrain the marine carbon cycle?

Steps:

- a. establish a lingua franca to enable increased communication;
- b. identify observations that would improve carbon cycle quantification;
- c. assess present robotic, autonomy and satellite capabilities;
- d. explore coordinated solutions to obtain observations; and
- e. develop a collaborative research agenda.

Study Roadmap

Oct 2013

Workshop #1 - Identification of science goal and solution.

Nov 2013 - Feb 2014

Refine concepts, research technology potential, sharpen science.

Feb 2014

Report from subgroups; group feedback. Preparation of KISS report.

Mar 2014

Submit KISS report. Consider KISS follow-on funding.
Develop strategies for future efforts and proposals.

Roadmap for the week

- Monday: Short course, introduction, and brainstorming.
- Tuesday: Identify measurement goals.
- Wednesday: Identify technical challenges.
- Thursday: Secure consensus and breakout into subteams.
- Friday: Conclusions and planning.

KISS Goals

KISS encourages the following:

- Concentrate on **revolutionary** ideas.
 - Science-focused.
 - Pursue solutions that lead to breakthroughs.
 - Think outside the box! Think big!
- Seek a **consensus** on observations and technical solutions.
- Encourage **interaction** between diverse disciplines.
- Build long-term research **collaborations**.

KISS and Carbon

There exist many great ideas for observing the marine carbon cycle.

Are there new assets or resources that would benefit the biogeochemistry community?

We believe that an integration of the expertise in the room can produce unique ideas.

Study Goals

To determine whether emerging space science technologies could enable coordinated oceanographic and satellite observations to better constrain the global ocean carbon budget.

Specifically, we propose to:

- a. establish a lingua franca between the participants' different research communities that will enable increased communication;
- b. identify the observational capabilities required to quantify the carbon cycle;
- c. assess the present capabilities of the ocean robotics, autonomous science, and satellite communities to provide these capabilities;
- d. investigate if coordinated ocean robots and satellites using autonomous science can obtain those observations; and
- e. develop a collaborative research agenda aimed at solving these problems.

Study Roadmap

Oct 2013: Workshop #1 - establish a lingua franca, identify the crucial measurements, assess and identify technical solutions

Nov 2013 - Feb 2014: Working Groups meet “virtually” to refine concepts and draft portions of white paper. Identify potential funding sources

Feb 2014: Workshop #2 - Review white paper and obtain feedback from entire group. Develop strategies for future efforts and begin planning proposal efforts.

Mar 2014: White paper submission and potential pursuit of follow-on KISS funding.

Goals for the Week

- Monday: Short course, introduction, and brainstorming
- Tuesday: Identify Measurement Goals
- Wednesday: Identify Technical Challenges
- Thursday: Secure Consensus and breakout into subteams
- Friday: Conclusions and planning

KISS Goals

KISS wants us to:

- Concentrate on revolutionary ideas:
 - Science-focused.
 - Pursue solutions that lead to breakthroughs.
 - Think outside the box! Think big!
- Seek a consensus on the necessary new observations and and pursue technical solutions
- Bring together communities that normally do not interact and build decadal long research collaborations
- KISS can provide funds for a follow-up study toward a larger collaborative research program

This week's goals

1. Review the existing science and technologies
 2. Identify the crucial science observation(s)
 3. Identify necessary technologies
 4. Finalize the science observation(s) and technology(ies) we will address
 5. How do we tackle this problem?
 6. What do we need to achieve by the next workshop and how do we achieve it?
- (1) occurs throughout the workshop - e.g., at this morning's short course, talks on Tuesday and Wednesday, Tuesday's poster session, and through informal conversations throughout the week.
 - *What follows is a roadmap for the week - we encourage you to provide suggestions on how to refine it!*

Tue: Identify Measurement Goals

- Brainstorming discussion this afternoon
- Breakout groups independently identify ~3 key observations or limits in our understanding of the science
 - Each group ranks their ideas by its scientific merit and how revolutionary the idea is (a KISS criteria)
- Ideas are presented to the entire workshop and as a group we prioritize the ideas.
 - Start with the top ranked ideas and work our way down.
 - Goal is to identify 3 “game-changing” ideas

Wed: Identify Technical Challenges

- On Wednesday morning, each breakout group will focus on 1 of the 3 identified science challenges. Criteria include:
 - Why aren't we doing it now?
 - How would we do this?
 - What is the required technology?
 - Are the required technology advances small or large and thus require funding beyond conventional sources.? i.e., why not just go to NSF?
- Each group presents its results.
- Full workshop discussion on the problem(s) we will tackle

Lunchtime field trip to La Brea Tar Pits

Thu: Consensus and Preparation

- Review where we stand
 - Ensure links between the science and technology
 - Final convergence on the technical challenges we will investigate
- Determine necessary expertise and define subteams.
- Subteam meetings
- End of day round-up

Fri: Planning Ahead

- Summarize what we've achieved
- Establish goals for the second workshop
- Final “face-to-face” working group meetings
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On Tues morning we break into 3 breakout groups (e.g., group A, B, C). Each group is asked to identify a number of key observations or limits in our current understanding of the science problem (i.e. global carbon). I think each group should strive for five ideas. They should also rank their ideas by both their scientific merit and how revolutionary the idea would be (a KISS criteria). A ranking scheme could be: Marginally beneficial; beneficial; highly beneficial; game-changer. 5 ideas/group with 3 groups is 15 ideas; however, I expect that different groups will come up with the same idea, so in reality we might only have 7-10 ideas.