

## Ocean Carbon and Biogeochemistry Workshop 2012: Overview

### Welcome

The 2012 OCB Summer Science Workshop was held July 16-19, 2012 at the Woods Hole Oceanographic Institution Quissett Campus, Clark 507, in Woods Hole, MA.

### Workshop Highlights

[Multiple stressors in marine ecosystems](#) (Chair: Cindy Lee, Stony Brook Univ.)

Marine ecosystems are facing multiple anthropogenic stressors, and although we are learning much about how individual stressors may impact ecosystems, we know little about synergistic effects. Speakers in this session will highlight theoretical or experimental approaches to predicting interactions among multiple changing factors that affect marine ecosystems and biogeochemical processes, including temperature, eutrophication, stratification, acidification, hypoxia, etc. Confirmed speakers for this session include Jorge Sarmiento (Princeton Univ.), Lisa Levin (Scripps Inst. of Oceanography), Wei-Jun Cai (Univ. of Georgia), and Nicolas Gruber (ETH Zurich).

[Ocean biogeochemistry from satellite data](#) (Chair: David Siegel, Univ. of California, Santa Barbara)

Satellite ocean color data represent a critical observational resource in support of OCB research. Planning for the next NASA ocean color research mission PACE (Pre-Aerosol, Clouds, and ocean Ecosystem, <http://decadal.gsfc.nasa.gov/PACE.html>) is currently underway, with an anticipated 2019 launch. This session will open with a tutorial on satellite ocean color remote sensing, followed by plenary talks on PACE science objectives, science definition, and plans forward. The session will conclude with a panel discussion and an opportunity to provide community input to PACE planning. Confirmed speakers for this session include David Siegel (Univ. of California, Santa Barbara), Michael Behrenfeld (Oregon State Univ.), and Carlos Del Castillo (Johns Hopkins Univ.).

[Land-ocean transport and linkages with global change](#) (Chair: Thomas S. Bianchi, Texas A&M Univ.)

Approximately 87% of Earth's land surface is connected to the ocean by rivers. Over the past 50 years, increases in the human population have had severe global impacts on large-river systems through enhanced fertilizer usage, damming, deforestation, and many other land-use changes. Speakers in this session will describe processes and quantify key fluxes across the land-ocean continuum, including river transport, plume dynamics, and continental margin sediments, and explore impacts of recent land-use changes. Confirmed speakers for this session include Valier Galy (Woods Hole Oceanographic Inst.), Steven Lohrenz (Univ. of Massachusetts, Dartmouth), Neal Blair (Northwestern Univ.), and Peter Raymond (Yale Univ.).

[Integrating measurements across multiple time and space scales](#) (Chair: Craig Carlson, Univ. of California, Santa Barbara)

Long-term biogeochemical studies conducted over decades at single locations (i.e. Ocean station Papa, HOT, BATS, CARIACO) or across large regional areas (i.e. CalCOFI / CCE-LTER) allow researchers to integrate and synthesize data over multiple temporal and spatial scales. In this session, presenters will draw upon decades of data to describe emerging biogeochemical patterns from these various types of time-series programs. Biogeochemical models are integral in the synthesis of these vast data sets. An overview of these modeling efforts and outputs will be included. Finally, there will be a presentation describing an international effort to quantify the regional carbon fluxes from a combination empirical and model output. Confirmed speakers for this session include Steve Emerson (Univ. of Washington), Mark Ohman (Scripps Inst. of Oceanography), Katja Fennel (Dalhousie Univ.), and Galen McKinley (Univ. of Wisconsin, Madison).

[New observations from an Arctic Ocean in rapid transition](#) (Chair: Jeremy Mathis, Univ. of Alaska, Fairbanks)

The Arctic is undergoing rapid changes in response to warming, accelerated melting of large ice sheets, and reductions in seasonal sea ice cover. This session will include an overview of recent findings from [ICESCAPE \(Impacts of Climate change on the Eco-Systems and Chemistry of the Arctic Pacific Environment\)](#), a 2010-2011 NASA shipborne field campaign in the Beaufort and Chukchi Seas that is exploring the implications of these changes for marine ecosystems and associated physical and biogeochemical processes. In addition to the Pacific sector, one of the plenary speakers will address carbon cycling in the Atlantic sector of the Arctic. The session will also include an introduction to the NASA Terrestrial Ecology Program's proposed Arctic field campaign [ABoVE \(Arctic-Boreal Vulnerability Experiment\)](#)



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, with ample time for OCB community input and discussion. Additional content for this session is still under development, so please check back soon. So far, confirmed speakers for this session include Jeremy Mathis (Univ. of Alaska, Fairbanks), Leif Anderson (Univ. of Gothenburg), and Peter Griffith (NASA GSFC).

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