The Third U.S. Ocean Acidification Principal Investigators' Meeting

Woods Hole Oceanographic Institution

June 9-11, 2015

Jeremy Mathis, Kim Yates and Heather Benway

The second U.S. Ocean Acidification Principal Investigators' Meeting was held in Washington, DC at Gallaudet University's Kellogg Conference Center on September 18-20 2013.

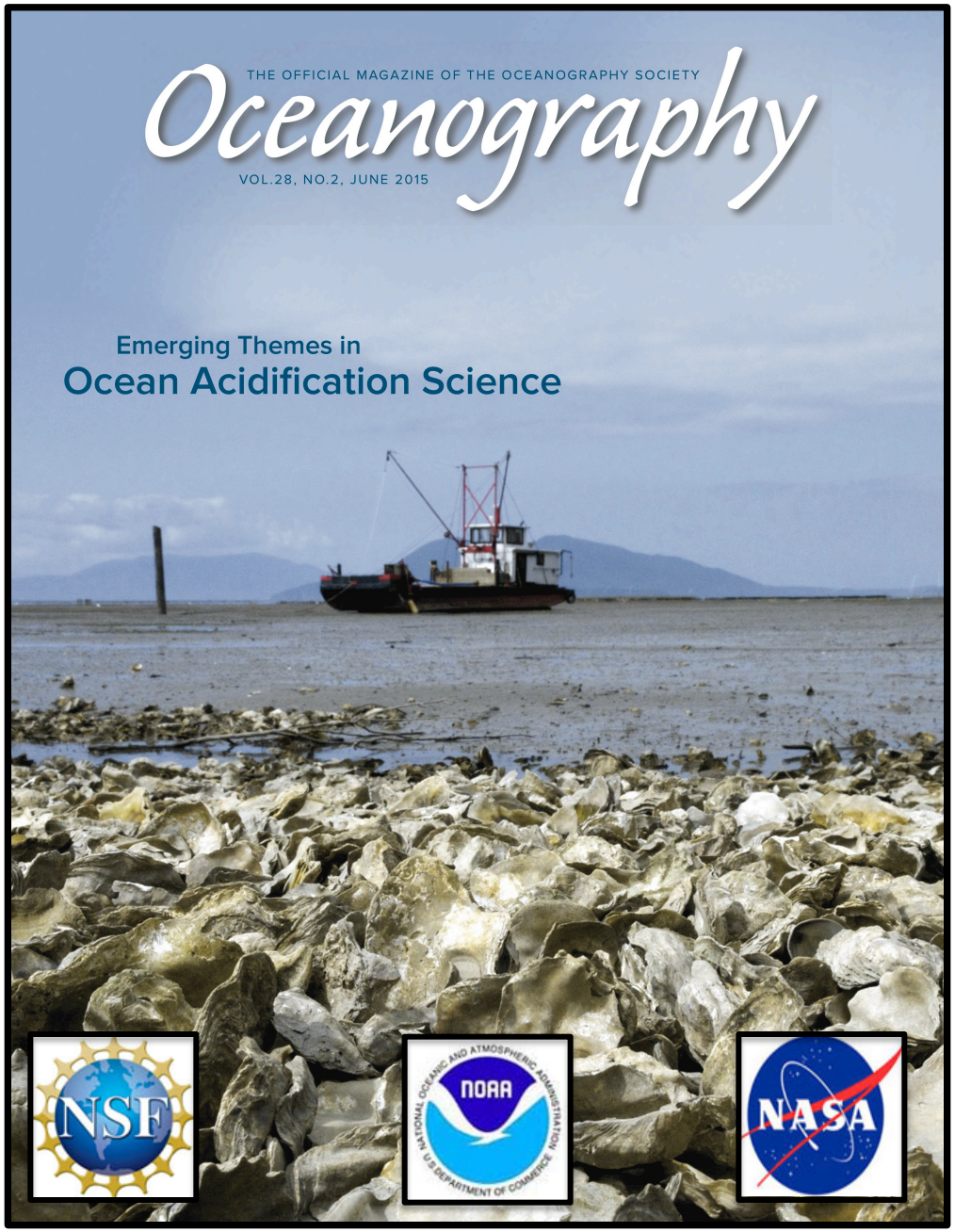
1) Strengthen scientific collaboration and minimize duplication of effort

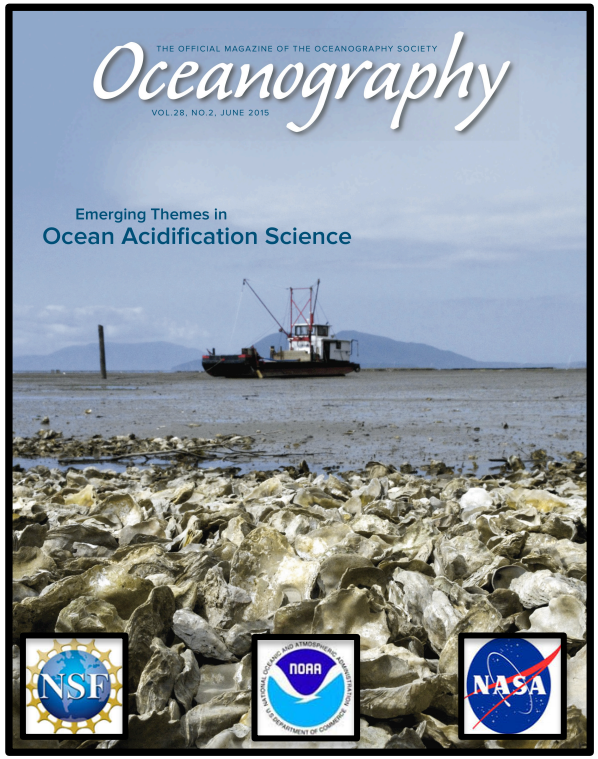
2) Synthesize current state of knowledge, identify major uncertainties, and discuss the way forward

3) Promote effective data management and sharing

4) Explore how to apply results of OA studies to the world outside the lab

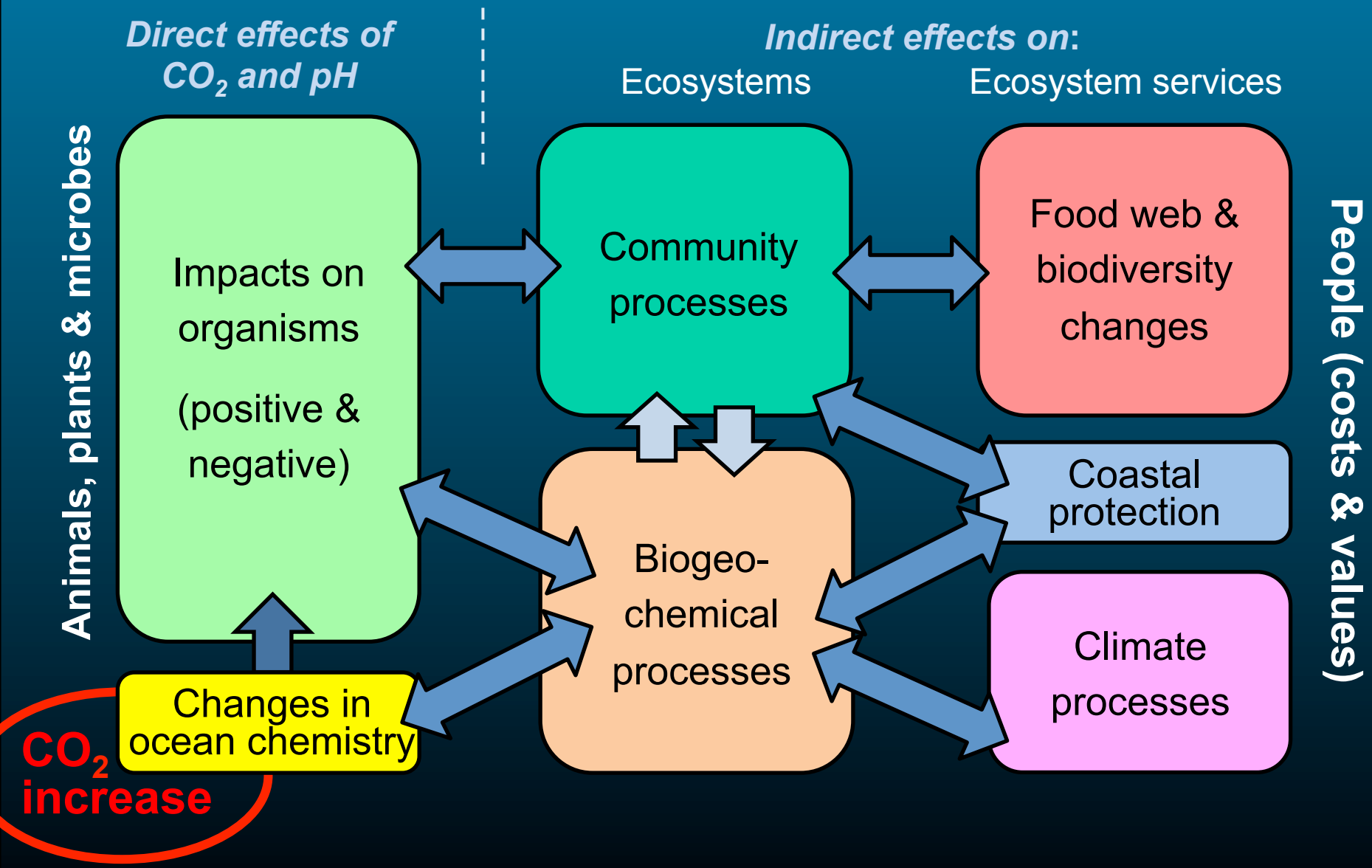
5) Identify outstanding research questions



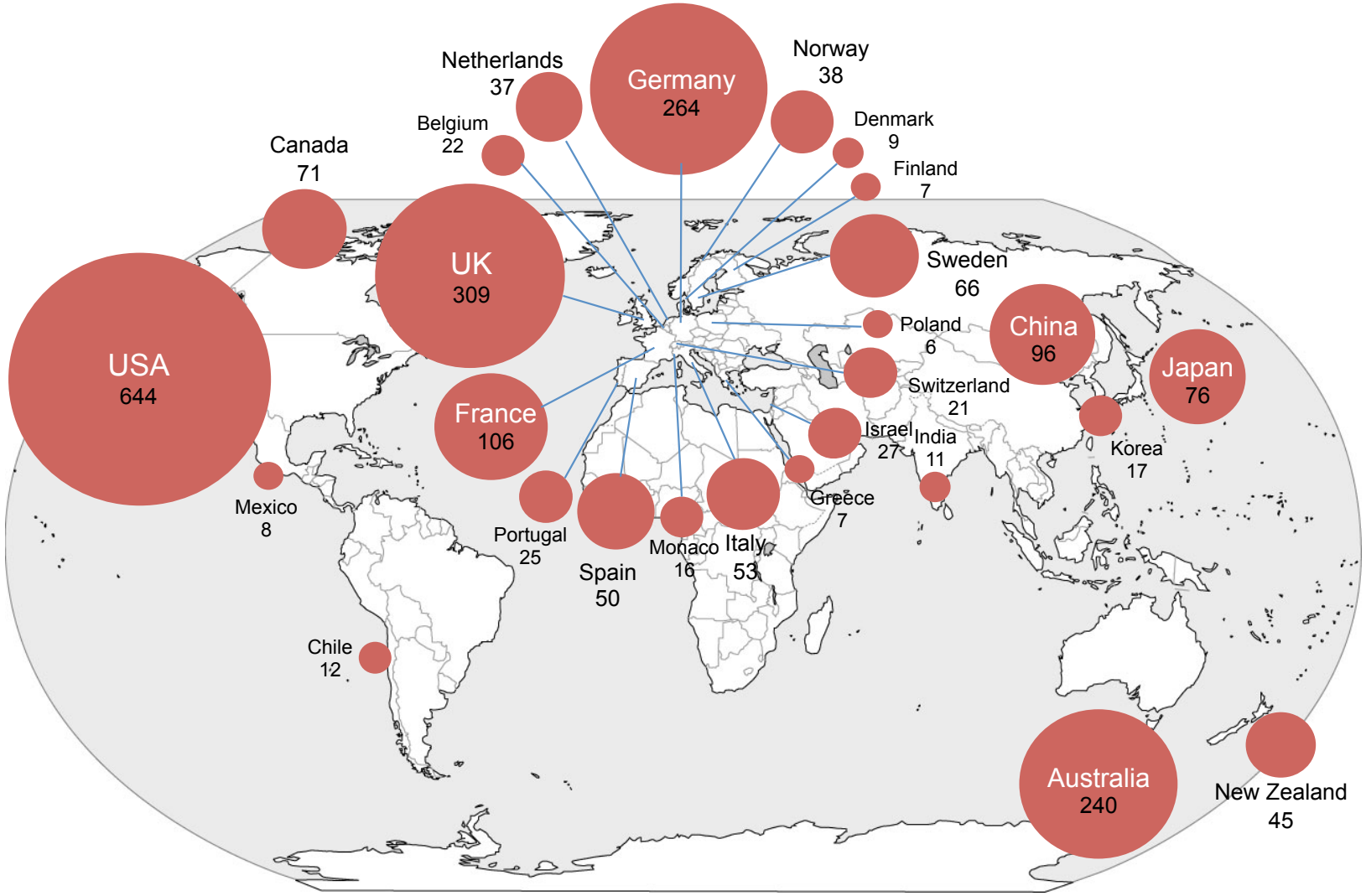


- Edited by Cooley, Yates, Mathis and Williamson
- Over 150 authors from more than 50 institutions

1. Introduction to this Special Issue on Ocean Acidification: The Pathway from Science to Policy
2. Understanding Ocean Acidification Impacts on Organismal to Ecological Scales
3. Coupling Chemical and Biological Monitoring to Understand the Impact of Ocean Acidification on Coral Reef Ecosystems
4. Understanding, Characterizing, and Communicating Responses to Ocean Acidification: Challenges and Uncertainties
5. Technology for Ocean Acidification Research: Needs and Availability
6. And on Top of All That… Coping with Ocean Acidification in the Midst of Many Stressors
7. Geochemical Proxies for Estimating Faunal Exposure to Ocean Acidification
8. Response of Photosynthesis to Ocean Acidification
9. Characterizing the Natural System: Toward Sustained, Integrated Coastal Ocean Acidification Observing Networks to Facilitate Resource Management and Decision Support
10. How Can Present and Future Satellite Missions Support Scientific Studies that Address Ocean Acidification?
11. Ocean Acidification in the Surface Waters of the Pacific-Arctic Boundary Regions
12. The Potential for CO2-Induced Acidification in Freshwater: A Great Lake Case Study
13. Impacts of Coastal Acidification on the Pacific Northwest Shellfish Industry and Adaptation Strategies Implemented in Response
14. Core Principles of the California Current Acidification Network: Linking Chemistry, Physics and Ecological Effects
15. Ocean Acidification Science Needs for Natural Resource Managers of the North American West Coast
16. Ocean and Coastal Acidification off New England and Nova Scotia
17. Getting Ocean Acidification on Decision Makers' To-Do Lists: Dissecting the Process Through Case Studies
18. Transdisciplinary Science: A Path to Understanding the Interactions Among Ocean Acidification, Ecosystems, and Society
19. Data Management Strategy to Improve Global Use of Ocean Acidification Data and Information



Mathis et al., 2015 (adapted from Williamson and Turley, 2012)



- Between 2000 and 2013, the number of papers increased by 35% per year.
- Around 75% of the total OA literature has been published since the last Oceanography special issue (2009)

Mathis et al., 2015

Game Plan for the Next 3 Days

OA research needs to accelerate its transitions from:

1) single stressors to multiple stressors (including rising temperature, decreasing oxygen, changes in nutrients or food supply, and interactions with pollutants);

2) physiological responses over timescales of weeks/months to population responses over years/decades, including the potential for genetic adaptation;

3) single species to communities, food-webs, and ecosystems; and

4) carbon cycle-focused oceanography and impact studies to a more transdisciplinary approach that includes the human perspective and explores both mitigation and human adaptation options.

Game Plan for the Next 3 Days

Daily Tutorials

Tutorial 1. Paleo-Proxies and the Biological Effects of Past OA Events

Tutorial 2. Finding Resiliency – Evolution and Adaptation to OA on Different Time Scales

Tutorial 3. Deep vs. Shallow: The Responses to OA on Varying Spatial Scales

Sessions

Session 1. Paleo-Responses and Geochemical Proxies

Session 2. Single/Multiple Species Response to OA and Cross-Ecosystem Comparisons

Session 3. Carbonate Chemistry

Session 4. Multiple Stressor Responses

Session 5. Evolution and Adaptation

Session 6. Temporal Perspectives on OA

Session 7. Feedbacks between Seawater Chemistry and Organisms

Session 8. Ecosystem Modeling of Ocean Acidification

Session 9. Technological Advances to Support OA Research

NOAA Ocean Acidification Program PI Meeting
Friday June 12th