COSEE

CENTERS FOR OCEAN SCIENCES EDUCATION EXCELLENCE

Agenda At a Glance

Monday, May 3		
various	Participant Arrival	
7:00 pm	Welcome Dinner	Ballroom, Salon A&B
Tuesday, May 4		
7:30 am	Council breakfast meeting	Harbor Room
7:30 am	Breakfast (non-Council members)	Ballroom Foyer
8:30 am	Welcome, Expectations, Introductions	Ballroom, Salon A&B
9:00 am	Plenary: *Strategies to Engage Scientists*	Ballroom, Salon A&B
10:00 am	Break & Networking	Ballroom Foyer
10:15 am	Concurrent Sessions:	
	Scientist Engagement with Educators	Ballroom, Salon A&B
	Scientist Engagement with Multiple Methods	Salon C
	Scientist Engagement via Concept Mapping & Web-based Tools	Harbor Room
11:15 am	Plenary: *Summary Session*	Ballroom, Salon A&B
12:00 pm	Lunch	Ballroom Foyer
	"Different Center, Same Boat"	Ballroom, Salon A&B
1:30 pm	Plenary: *Current Trends in Education Research, Policy & Practice*	Ballroom, Salon A&B
2:30 pm	Break & Networking	Ballroom Foyer
2:45 pm	Concurrent Sessions:	
	Cyberlearning	Ballroom, Salon A&B
	STEM Education & National Policies	Salon C
	Psychology of Learning & Access to Learning	Harbor Room
3:30 pm	Plenary: *COSEE 2010 Annual Operating Plan*	Ballroom, Salon A&B
4:00 pm	Reflections/Announcements	Ballroom, Salon A&B
4:30 pm	Adjourn	
6:30 pm	Reception, Dinner & Lecture	Seattle Aquarium
Wednesday, May 5		
7:30 am	Council breakfast meeting	Harbor Room
7:30 am	Breakfast (non-Council members)	Ballroom Foyer
8:30 am	Welcome Back & Announcements	Ballroom, Salon A&B
8:45 am	Plenary: *Decadal Review Progress*	Ballroom, Salon A&B
10:00 am	Plenary: *Report on the Future Visions Community Meeting*	Ballroom, Salon A&B
10:30 am	Break & Networking	Ballroom Foyer
10:45 am	Plenary: *Evidence of COSEE Efforts*	Ballroom, Salon A&B
12:00 pm	Lunch	Ballroom Foyer
	Working Group Meetings	Ballroom, Salon A&B
1:00 pm	Plenary: *Central Coordinating Office Report*	Ballroom, Salon A&B
1:15 pm	Plenary: *Council Report*	Ballroom, Salon A&B
1:30 pm	Plenary: *Working Group Reports*	Ballroom, Salon A&B
2:30 pm	Plenary: *COSEE China Update*	Ballroom, Salon A&B
2:45 pm	Closing Remarks/Adjourn	Ballroom, Salon A&B
3:00 pm	Non-mandatory Council/NAC Meeting	Harbor Room
5:00 pm	Meeting Adjourn	

Welcome

Welcome to the National COSEE Network May Meeting!

Throughout the United States, COSEE Centers provide innovative and exciting ocean science activities that explore and test communications and interactions among scientists, educators, and the public. As we prepare for the next decade, we can look with pride on our beginnings at the turn of century and our evolution to a strong national Network. This year's theme addresses the future of broader impacts of ocean sciences research and how COSEE can be a major contributor in developing pathways that benefit both the science and education communities. We will also look at how COSEE can assist with programs that broaden participation, leading to increased diversity in the future ocean sciences workforce.

What the National COSEE Network does, and is, depends on us—the people behind the programs and activities. We are family, friends and colleagues. A success for one of us helps all of us.

Please enter into discussions informally and formally. Make new friends. Enjoy the beautiful city of Seattle. Many thanks to COSEE Ocean Learning Communities and the Seattle Aquarium for being our gracious hosts.

Director, COSEE SouthEast and 2009-2010 National COSEE Council Chair

---

Meeting Theme

"The future of broader impacts in ocean sciences – Strategies for engaging scientists now and in the next decade."

Meeting *Objectives*

1. *To identify strategies/programs/practices within and outside COSEE for engaging scientists*
2. *To identify how the driving forces and new technologies are changing the education system*
3. *To look at what COSEE is doing now with an eye toward the future, so that we can begin to understand how our programs might evolve.*

Day 1: Tuesday, May 4, Detailed Agenda

7:30 am	Council breakfast meeting	Harbor Room
7:30 am	Breakfast (non-Council members)	Ballroom Foyer
8:30 am	Welcome, Expectations, Introductions Gail Scowcroft, COSEE National Network Director Lundie Spence, COSEE Council Chair	Ballroom, Salon A&B
9:00 am	Plenary: *Strategies to Engage Scientists* Facilitator: Susan Bullerdick, COSEE OLC Scribe: Amy Sprenger, COSEE OLC Presenters: Rick Keil, COSEE OLC Tansy Clay, COSEE OLC Purpose: *Presentation and discussion of a model used for engaging scientists. Based on the COSEE Ocean Learning Community January Workshop: Addressing Broader Impact Requirements.* Outcome: *Understanding of a scientist centric event developed to engage scientists.*	Ballroom, Salon A&B
10:00 am	Break & Networking	Ballroom Foyer
10:15 am	Concurrent Sessions (Choose session A, B, or C) Facilitators: Kathy Sider, COSEE OLC & Susan Bullerdick, COSEE OLC Purpose: *To identify and share Center strategies related to scientist engagement and include contributions from Network.* Outcome: *Sharing of break-out discussions via poster paper.*	
	Session A: *Scientist Engagement with Educators* Scribe: Janice Mathisen, COSEE OLC Presenters: Laura Murray, COSEE Coastal Trends Craig Strang, COSEE California	Ballroom, Salon A&B
	Session B: *Scientist Engagement with Multiple Methods* Scribe: Amy Sprenger, COSEE OLC Presenters: Rosanne Fortner, COSEE Great Lakes Jane Lee, COSEE West	Salon C
	Session C: *Scientist Engagement via Concept Mapping & Web-based Tools* Scribe: Romy Pizziconi, COSEE CCO Presenters: Christy Herren, COSEE Ocean Systems Annette deCharon, COSEE Ocean Systems Janice McDonnell, COSEE NOW	Harbor Room
11:15 am	Plenary: *Summary Session* Facilitator: Susan Bullerdick, COSEE OLC Scribe: Tansy Clay, COSEE OLC	Ballroom, Salon A&B
12:00 pm	Lunch *"Different Center, Same Boat"* Facilitator: Annette deCharon, COSEE Ocean Systems Purpose: *Goal is to spark collaboration among Center staff members with similar job functions or other interests in COSEE, e.g.,Web developers/administrators, professional development facilitators/coordinators, scientists, evaluators, formal and informal educators, administrators/PIs/Directors.* Outcome: *Each group will produce a poster describing potential Network-wide and/or multi-Center opportunities and challenges. The posters will displayed for the remainder of the meeting.*	Ballroom Foyer Ballroom, Salon A&B

Day 1: Tuesday, May 4, Detailed Agenda

1:30 pm	Plenary: *Current Trends in Education Research, Policy & Practice* Facilitator: Sarah Schoedinger, NOAA Scribe: Suzanne Perrin, COSEE OLC Presenters: Daniel C. Edelson, Vice President, Education and Children's Programs, National Geographic Society Andrew Shouse, Acting Assistant Professor, the Learning in Informal and Formal Environments (LIFE) Center, University of Washington John Bransford, Professor of Education and Psychology, Director of the Learning in Informal and Formal Environments (LIFE) Center, University of Washington Purpose: *Presentation in trends in national STEM education polices, cyberlearning, and the psychology of learning that will impact the environment in which the COSEE Network operates.* Outcome: *Attendees will have a better awareness of current research, policies, and practices affecting their programs and program participants.*	Ballroom, Salon A&B
2:30 pm	Break & Networking	Ballroom Foyer
2:45 pm	Concurrent Sessions (Choose A, B, or C) Facilitator: Sarah Schoedinger, NOAA Purpose: *To identify other strategies and trends to prepare for the future of ocean science education and outreach.* Outcome: *Documentation of input from COSEE Centers.*	
	Session A: *Cyberlearning* Scribe: Susan Bullerdick, COSEE OLC Presenter: Daniel C. Edelson, Vice President, Education and Children's Programs, National Geographic Society	Ballroom, Salon A&B
	Session B: *STEM Education & National Policies* Scribe: Janice Mathisen, COSEE OLC Presenter: Andrew Shouse, Acting Assistant Professor, the Learning in Informal and Formal Environments (LIFE) Center, University of Washington	Salon C
	Session C: *Psychology of Learning & Access to Learning* Scribe: Tansy Clay, COSEE OLC Presenter: John Bransford, Professor of Education and Psychology, Director of the Learning in Informal and Formal Environments (LIFE) Center, University of Washington	Harbor Room
3:30 pm	Plenary: *COSEE 2010 Annual Operating Plan* Scribe: Suzanne Perrin, COSEE OLC Presenter: Billy Spitzer, COSEE New England & CCO Purpose: *Report on COSEE's progress on the 2010 Annual Operating Plan for the National COSEE Network.* Outcome: *Identify what we have completed, where we are on track, and where we are falling behind.*	Ballroom, Salon A&B
4:00 pm	Plenary: *Reflections/Announcements* Facilitator: Gail Scowcroft, COSEE CCO Scribe: Susan Bullerdick, COSEE OLC	Ballroom, Salon A&B
4:30 pm	Adjourn	
6:30 pm	Reception, Dinner & Lecture	Seattle Aquarium

Strategies for Engaging Scientists

PLENARY SESSION PRESENTERS

Tansy Clay, COSEE Ocean Learning Communities

Tansy holds a Ph.D. in Oceanography from the University of Washington. She is working as a post-doc with COSEE Ocean Learning Communities focusing on science outreach and education and is the program manager for the University of Washington OACIS GK-12 program. Tansy is interested in helping to connect scientists and current research with a broader community. In addition, her research interests are on the interactions between zooplankton morphology and small-scale flows, and how these interactions affect plankton movement.

Rick Keil, COSEE Ocean Learning Communities

Rick is the Fleming Professor for Undergraduate Education in the School of Oceanography at the University of Washington. He is interested in the application of organic geochemistry to emerging environmental issues such as climate change and pollutant distributions and sinks in marine systems. He employs a diverse toolset of field and lab approaches to basic and applied research questions, with current research focuses on regional climate reconstruction, carbon flow between land and sea, marine pollution, and organic chemistry in anoxic environments. He is the faculty mentor for the SoundCitizen program started by his undergraduate students.

CONCURRENT SESSION PRESENTERS

Session A: Scientist Engagement with Educators

Laura Murray, COSEE Coastal Trends

Laura is a Research Professor at the University of Maryland, Center for Environmental Science, Horn Point Laboratory. Her expertise and research interests include seagrass and wetlands ecology, with a focus on the response of submersed aquatic vegetation to nutrient enrichment. She is currently the director of the Center of COSEE Coastal Trends and the director of the Environmental Science Education Center at the Horn Point Laboratory. She has published in both the scientific research and in the science education fields. Murray earned a B.S. degree in marine science and an M.S.T. in biology/education from the University of West Florida, and a Ph.D. in wetlands ecology from the College of William and Mary.

Craig Strang, COSEE California

Craig Strang is Associate Director of Lawrence Hall of Science at the University of California, Berkeley, Director of COSEE California, and founding Director of the Marine Activities, Resources & Education (MARE) Program. He is currently on the NMEA Board of Directors Executive Committee and Chairs the NMEA Ocean Literacy Committee.

Strategies for Engaging Scientists

CONCURRENT SESSION PRESENTERS CONTINUED

Session B: Scientist Engagement with Multiple Methods

Rosanne Fortner, COSEE Great Lakes

Rosanne is Director of COSEE Great Lakes, a Fellow of the AAAS, former President of the National Marine Educators Association, and a former Fulbright Senior Scholar in Cyprus. She "retired" from The Ohio State University in 2005 after 32 years of teaching, research and curriculum development in environmental science education, much of the subject matter focusing on the Great Lakes. Dr. Fortner's current activities besides COSEE include teaching online courses for UNC-Wilmington, updating the Abstracts of Research in Marine and Aquatic Education for NOAA, evaluating augmented reality games for Wisconsin Sea Grant and working with the Beach Preservation Society in Oak Island, NC. Her favorite job is being the grandmother of five little sea stars!

Jane Lee, COSEE West

Jane Lee is the Program Manager for the University of Southern California side of COSEE West. She received her undergraduate degree from the University of California, Berkeley in English and Integrative Biology and her graduate degree in Biology from the University of California, Los Angeles with an emphasis in deep-sea ecology. Her research interests include the ecology and hydrodynamics of euphausiids and siphonophores. She has done research in Monterey Bay, Tahiti, and Panama.

Session C: Scientist Engagement via Concept Mapping & Web-based Tools

Annette deCharon, COSEE Ocean Systems

Annette is the Senior Marine Education Scientist, at the University of Maine. Since 1997, she has authored over 30 web-based and other multimedia publications including the award winning "Phytopia: Discovery of the Marine Ecosystem" CD-ROM. She is currently Director of COSEE Ocean Systems where her long-term goal is to help the COSEE Network reach rural and inland audiences. Annette also serves as the education lead for NASA's upcoming Aquarius mission that will measure global ocean surface salinity.

Janice McDonnell, COSEE Networked Ocean World

Janice is the Science Engineering & Technology Agent for the Department of 4-H Youth Development at Rutgers University and the Director of the Centers for Ocean Science Education Excellence Networked Ocean World. COSEE NOW is dedicated to providing an online venue where science and education professionals can collaborate on transformative ocean education projects. The 4-H Science, Engineering, and Technology (SET) Initiative is combines non-formal STEM education with hands-on inquiry-based learning in a youth development context.

Strategies for Engaging Scientists

COSEE COASTAL TRENDS SCIENTIST-EDUCATOR-STUDENT PARTNERSHIP PROGRAM

The purpose of our Scientist-Educator Partnership Program is to create partnerships among scientists, educators and students to help advance teacher understanding of science concepts, to improve scientist communication skills, and to develop classroom and field applications that build on research experiences

We select scientists associated with research that addresses current and relevant ocean science topics, and meet the goals of the Ocean Literacy Essential Principles and Fundamental Concepts (http://www.coexploration.org/), the COSEE Coastal Trends ocean science course and the National Science Education Standards. The components of the Scientist-Educator program include: 1) establishing Scientist-Educator Partnership teams, 2) an orientation program, 3) a six-week research/education experience, 4) assembly of an education module, 5) follow-up workshops and field-testing of the modules, and 6) integration of modules into the ocean science course. The program teams an ocean scientist, a graduate student, an educator, and an underrepresented college student. This four member team works together for six weeks during the summer to improve scientist communication/pedagogy skills, help scientists meet education and outreach requirements for research proposals, help advance teacher/student understanding of ocean science research, and assemble an education module that communicates the scientists' ocean science research to formal and informal audiences. The responsibilities of each team member are as follows: a) scientists and graduate students lead research, b) teachers lead communication/pedagogy skills and classroom activity development, c) undergraduate students lead research adaptation to public audiences.

The educational modules assembled by the Scientist-Educator Partnership teams serve as an essential communication tool for the diverse team members to "gather up" and discuss ocean science research in general, the research topic specifically, communication of the research topic to formal and informal audiences, classroom pedagogy skills and processes, and how to make the content relevant to broad audiences (specifically those underrepresented in science). Module development thus becomes a mechanism for team work, collaboration, and focus for the Science-Educator Partnership. The final product becomes part of what the scientist can "claim" as meeting the "Broader Impact" for proposals.

Evaluation data indicates that each team member benefits from participating in the Scientist-Educator Partnership program. Scientists create Broader Impacts for their research programs and gain increased understanding of education techniques and communicating complex concepts to non-science audiences. Graduate students gain science communication skills as well as early career education experience. Teachers develop ocean science content knowledge and an increased understanding of the scientific research process, resulting in enhanced preparation for teaching ocean science concepts in the classroom. Undergraduates gain research experience and learn to work in a team-oriented environment as well as developing valuable professional contacts.

Strategies for Engaging Scientists

A COSEE CALIFORNIA STRATEGY FOR ENCOURAGING INCLUSION OF EDUCATION COMPONENTS IN NSF PROPOSALS TO SATISFY "BROADER IMPACT" REQUIREMENT

PROPOSAL ONE.

COSEE CA has long specialized in providing researchers with opportunities to participate in education and outreach activities as a way to fulfill the broader impact component of their research proposals. In the past, these options have included opportunities at informal science centers, including the Birch Aquarium at Scripps, but recently, have grown to include opportunities to work with formal science educators in San Diego Unified School District. Using our recently forged relationships with the school district and the activities that have been born out of that collaboration, COSEE CA is now able to provide researchers with a set of options for education and outreach that includes both formal and informal education. Examples of the types of activities researchers are invited to consider are enumerated below. COSEE CA provides the "infrastructure" and tailors each researcher's activities to fit the needs of teachers, students and/or public audience. Because personal relationships now exist between COSEE personnel and both formal and informal science educators, the "match-making" between research scientists and projects that we know fulfill specific needs within the K-12 and informal community are greatly facilitated. Time commitments and expectations are clearly articulated in the options provided to the researchers, as are budgetary requirements for education staff, materials and services needed to fulfill the broader impact component.

- Host a teacher for a summer research experience
- Provide a Virtual Lab Tour for Middle School Classrooms
- Create a web-based interactive animation or visualization that supports middle and high school Earth and ocean science curriculum materials
- Contribute to the Perspectives on Ocean Science Speaker series
- Support a "STARS" undergraduate summer intern (program targeting under represented students)
- Showcase your research in a SEA Days (Science, Exploration, Adventure Days) Event at the Birch Aquarium at Scripps
- Connect with Teachers in the Birch Aquarium Geoscience Education Program
- Provide Professional Development for Birch Aquarium Staff
- Sponsor and participate in a Professional Development Workshops for San Diego Unified School District High School Earth and Marine Sciences Teachers

PROPOSAL TWO.

Collaborative partnerships to build a new Community of Practice

Collaborations between scientists and educators have been emerging as mechanisms for science education reform over the last two decades. The work they have done together includes, but is not limited to, scientists providing professional development programs for teachers (National Research Council, 1996), graduate science students teaching lessons in K-12 classrooms (Busch & Tanner, 2006), and scientists offering their content knowledge in development of curriculum and instructional materials (Linn, 1995). In most of these instances, the scientists provide their subject matter expertise, which the educators use to ensure the scientific accuracy and credibility of their pedagogical activities.

Strategies for Engaging Scientists

continued.

The successful model we have developed in the Communicating Ocean Sciences courses creates, fosters, and relies upon a partnership between scientists and informal educators that go beyond these typical roles, as the content material of these courses is peripherally the expertise of both. That is, the course uses ocean (and climate sciences) as the subject matter to introduce undergraduate and graduate student scientists to inquiry-based science pedagogy, and is co-taught by an ocean scientist and a science educator in a classroom or informal environment. The students learn about learning and teaching ocean sciences in formal and informal environments, and apply their understanding in a 6-week practicum wherein they facilitate hands-on activities in a K-8 classroom or informal setting. For scientists, teaching the course draws on their expert knowledge of ocean and climate sciences, but encourages them to think about how they communicate and teach this content in relation to their beliefs on how people learn. For the science educators, teaching the course utilizes their expert knowledge of learning and teaching science, but also requires them to articulate their pedagogical content knowledge.

As members in these distinct communities of practices engage in collaborative partnerships, they cross into and out of the boundaries of each other's communities; over time and continued commitment, they may create a new community in which to "meet" and do work together. Boundaries are understood as being constituted by normative practices, rules, and roles embedded in distinct communities of practice, which both facilitate and constrain learning. Crossing boundaries between communities of practice "exposes our experience to different forms of engagement, different enterprises with different definitions of what matters, and different repertoires–where even elements that have the same form belong to different histories" (Wenger, 1998, p. 140). Since participants enter into new and unknown domains that challenge their claims to expertise, boundary crossing calls for a re-conceptualization of expertise from vertical to horizontal. That is, there is a shift from viewing knowledge as distributed hierarchically among people who possess different levels of skill and competency to "knowledge as distributed across actors who are competent in different types of practices, and with whom individuals must negotiate the use of multiple tools and patterns of interaction" (Anagnostopoulos, Brass, & Subedi, 2007, p. 102).

For this breakout group, we propose to discuss this model in two ways. First, we would like to examine what features and characteristics of this type of collaborative partnership make the model successful. Second, and building from this first discussion, we suggest exploring ways of applying this collaborative partnership model for other shared activities and programs around the National COSEE Network.

Strategies for Engaging Scientists

COSEE GREAT LAKES HELPS RESEARCHERS REACH THEIR AUDIENCES. COSEE PROGRAMS CAN GUIDE SCIENTISTS THROUGH THE PROCESS OF MAKING RESEARCH COMPELLING, RELEVANT, AND EASY TO UNDERSTAND.

Professional Development

COSEE Great Lakes held a professional development "School for Scientists" at the annual meeting of the International Association for Great Lakes Research [IAGLR] in 2007 and 2009. Experienced regional leaders provided information on such questions as

- How should I prepare for a presentation at a school?
- What are those Educational Standards that teachers have to meet?
- How can I develop an effective statement of "Broader Impact" for my project?
- How can I engage underrepresented groups in my science?
- Does writing science for the public have to involve "dumbing it down?"
- What level of detail does a decision maker need?
- What are funders looking for when they ask for "outreach?"
- And more!

Following our sessions at IAGLR, science communication specialists are available to meet with individual researchers to discuss their needs.

Educator House Calls are a second form of professional development. If there is a group of scientists at a Great Lakes facility who want to reach out to educators and students, COSEE Great Lakes can organize a one-day interactive briefing with teachers in that area. Five teachers will visit to help scientists get to know about their world: what a school day is like, what Education Standards drive their curriculum, and what their students find interesting. The teachers will want to know about science work too, and after hearing their stories the scientists see what kinds of information and materials might be useful to the teachers. We hope a House Call by educators will give each research group a new idea of how to engage teachers and students in the excitement their science brings.

Research

Dr. Chankook Kim, PhD, worked with COSEE Great Lakes Director Rosanne Fortner on baseline research about scientists in education. His study characterizes the cultures of scientists and teachers and identifies their perspectives about collaboration for science education. The research was reported in journals and meetings of educators and scientists.

Strategies for Engaging Scientists

COSEE WEST SCIENTIST ENGAGEMENT ACTIVITIES

COSEE West engages scientists and researchers in many different ways in our education and outreach efforts. Here is a summary of what we do:

1. Presentations at in-person lectures/workshops – Scientists/researchers are asked to give a 50-minute talk at one of our Wednesday night lectures or Saturday workshops. Lectures are open to the public and include a one hour dinner after the talk, in which educator participants and the scientist sit down to an informal dinner where they can continue discussing all things marine science. Our workshops are open to formal and informal educators. Scientists give a talk and answer questions, and are also invited to participate in presenting hands-on activities. Talks are recorded for posting to COSEE West website and/or future use in an online workshop.

2. Presentations and participation in online workshops – We have three models we use for plugging scientists into our online workshops:

   1) *Base Model* – Scientists whose talks we have previously recorded may also be included in an online workshop. If they are amenable, we post their lecture and ask them to be available online at least once a day for one week to answer questions from our participants.

   2) *Professor Model* – A professor who is teaching a course at their university/college/institution films three lectures during that course that they feel are accessible to a broader audience. Those lectures comprise one online workshop. The professor and their graduate students or exceptional undergraduate students are available online to answer questions and interact with workshop participants. The online workshop occurs AFTER the university course finishes.

   3) *Field Model* – Similar to the professor model, but the university course is a field studies course, where students undertake research projects in the field. Online workshop participants follow the progress of the projects, watch/listen to lectures by the professors on the ecology/biology/geology of the field locality and interact with the students via discussion groups.

3. Broader impacts in grant proposals – Scientists have asked us to help with their broader impacts sections of various grant proposals. We have been involved with outreach projects utilizing the Santa Monica Bay Observing system (Dr. Nicholas Grubber, formerly of UCLA) and we are involved with a National Science Foundation Science and Technology Center (STC) that just got funded, based at the University of Southern California (Dr. Katrina Edwards, USC).

Strategies for Engaging Scientists

COSEE OCEAN SYSTEMS SCIENTIST ENGAGEMENT: PEER-TO-PEER "REVELATIONS" USING CONCEPT MAPPING

COSEE Ocean Systems engages scientists through an intensive and collaborative workshop process focused on consensus-based concept mapping (deCharon et al., 2009). Scientists and educators interact as peers in small teams to effectively communicate complex science topics (e.g., climate change, ocean acidification, computer modeling, atmospheric aerosols) to formal or informal audiences of their choice. Each workshop cohort produces of a series of database-linked concept maps that evolve from scientist-created to "team-refined" for a target audience (Fig. 1). Evaluation data reveal positive interactions between scientists and educators during these workshops: on average, educators rated the quality of interaction 6.7 on a 7.0 Likert-type scale.

A key facet of the OS model of collaboration is the professional development of scientists, a rarity given their traditional role in workshops is delivering content. OS participating scientists are taught concept mapping to help communicate how their research fits into "the big picture" on the first half-day of the workshop. Although all educators who attended the workshops were familiar with concept mapping, only one of the participating scientists had previous experience with the technique. Scientists also learn about the rigorous quantitative processes developed by OS to match make their research with educators' needs based on Ocean and Climate Literacy Principles. For many, this is a chance to receive immediate constructive feedback on efficacy of their communication to non-science audiences while learning about the challenges that educators face integrating scientific topics.

One objective of this model is flexibility: although the full length version of the workshop is three days, COSEE-OS staff have designed shorter and longer versions of the collaboration process depending upon the venue and participants' needs (e.g., scientists, educators, graduate students). To sustain the contact between workshop participants and build the capacity for other groups to implement the COSEE-OS workshop model, four workshops (November 2008 – October 2009) have been fully documented online (Fig. 2). Webpages include information on each participant, concept maps describing the evolution of ideas over the course of each workshop, facilitation process descriptions, evaluation and feedback data, and participants' reflections (http://cosee.umaine.edu/coseeos/workshops). To share this engagement process with the Network meeting participants, OS staff will offer a "mini workshop experience" to introduce participants to the process as well as the tools (e.g., http://cosee.umaine.edu/tools/).

deCharon, A., et al., 2009. "Online Tools Help Get Scientists and Educators on the Same Page." Eos Transactions, American Geophysical Union Vol. 90(34): 289–290, August 25, 2009.

Fig 1: Scientist Mike Whitney and educators Carrie Birdson, Louise McMinn and Karen Roman Young discuss their map during an OS workshop at University of Connecticu t .

Fig 2: Webpages designed to share the workshop experience with remote/virtual audience s .

Strategies for Engaging Scientists

CENTERS FOR OCEAN SCIENCES EDUCATION EXCELLENCE NETWORKED OCEAN WORLD (COSEE NOW) SCIENTIST-EDUCATOR PARTNERSHIPS

A key objective of the COSEE NOW program is to foster a collaborative community of scientists and educators. Through our social networking website, COSEE NOW aims to document the successful outreach activities of ocean scientists and to provide further opportunities for scientists to engage in these activities. The website and its associated resources (i.e., webinars, podcasts, and education projects) provide a mechanism by which scientist can connect with educators in order to communicate their science to broader audiences (beyond their peers).

Effective scientist-educator partnerships result when ideas are shared, each partner's expertise is respected, and the partners work toward the common goal of delivering high-quality products and services to broader audiences. Although it is not necessary for scientists and educators to become experts in each other's fields, it is desirable for each to learn enough of the other's domain to appreciate and discuss viewpoints and constraints characterizing each discipline.

COSEE NOW has developed operating principles to ensure productive collaborations and effective program or product development. First and foremost, we promote the importance of understanding (and not assuming) knowledge about our audiences and their needs. We promote a culture of evaluation for our own work, as well as encouraging scientists and educators to incorporate evaluation into their work developing programs and products.

Metrics of successful partnership for scientists are:

1. Scientists find their work more rewarding because a broader audience is interested and participating in their research..
2. Education projects (e.g., the MATE drifter project) have a positive impact on a scientist's science because they have additional relevant data to incorporate through citizen science or collaborative science projects.
3. Scientists feel that their funding opportunities are improved because of the increased broader impact of their science.
4. Scientists have an increased sense of contribution to society because they are directly contributing to a more science literate public.
5. Scientists attract new students to the field of oceanography as a result of increase partnering with educators and engaging in education and public outreach activities.
6. Scientist's work in education and public outreach are recognized as service in the tenure and promotion process at institutions of higher education.

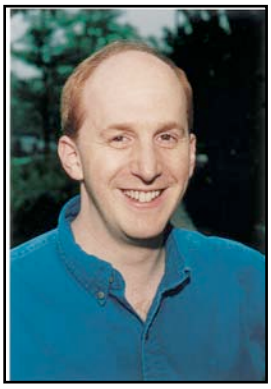
Metrics of successful partnership for educators are:

1. Educators are more engaged in science teaching and feel connected to the scientific enterprise.
2. Educators feel more confident in teaching the nature and process of science and are better equipped to connect students/youth to ocean careers.
3. Educators use real time data and current research to improve ocean literacy in their classrooms and in informal settings.

COSEE NOW is dedicated to providing an online venue where science and education professionals can collaborate on transformative ocean education projects. COSEE NOW is working to demonstrate that there is benefit to seeding and facilitating productive partnerships between scientists and educators and benefit to online collaboration and purposeful networking of scientists and educators.

Current Trends in Education, Research, Policy & Practice

PLENARY SESSION PRESENTERS



Daniel C. Edelson, Vice President for Education, National Geographic Society
Executive Director, National Geographic Education Foundation

Daniel C. Edelson, Ph.D., is vice president for Education at the National Geographic Society and executive director of the National Geographic Education Foundation. In these positions he oversees the National Geographic Society's outreach to educators and directs the Society's efforts to improve teaching and learning in geography and related disciplines.
The division he directs, National Geographic Education Programs, develops resources for learners and educators, offers professional development programs for educators, conducts public awareness and outreach activities, and provides grants to support geographic literacy initiatives throughout the United States.

Andrew Shouse, The Learning in Informal and Formal Environments (LIFE) Center, University of Washington

Andrew Shouse is an education researcher whose interests include equitable science education in formal and informal settings, and communication of educational research to policy and practice audiences. Shouse joined the University of Washington in 2008 as Associate Director of the Institute for Science and Mathematics Education where he directs and/or contributes to a portfolio of externally funded research and development partnerships focused on broadening participation in science, including: Exploring Databases (NSF), SoundCitizen Science Apprenticeship (NSF), and System STEM Development, an effort to expand project-based STEM learning throughout K12 schools in the Puget Sound region. Previously in his tenure with the National Research Council (NRC) Shouse directed two science education consensus studies and edited the reports: Learning Science in Informal Environments: People, Places, and Pursuits (NRC, 2009; with Philip Bell, Bruce Lewenstein, and Michael Feder) and Taking Science to School: Learning and Teaching Science in Grades K-8 (NRC, 2007; with Rick Duschl and Heidi Schweingruber). Shouse authored (with Sarah Michaels and Schweingruber) Ready, Set, Science! Putting Research to Work in K-8 Science Classrooms, a 2008 Association of Educational Publishers Distinguished Book Award winner.

John Bransford, Shauna C. Larson Endowed Chair in Learning Sciences, Co-Director of The LIFE (Learning in Informal and Formal Environments) Center University of Washington College of Education

John Bransford is an internationally renowned scholar in cognition and technology. He is the Shauna C. Larson University Professor of Learning Sciences at the University of Washington College of Educaion in Seattle. Dr. Bransford co-chaired several National Academy of Science and a National Academy of Education committees, resulting in the publication of multiple volumes on How People Learn and Preparing Teachers for a Changing World. Dr. Bransford is Co-Director and Co-Principal Investigator of the LIFE (Learning in Informal and Formal Environments) Center, an National Science Foundation (NSF) Science of Learning Center. Prior to 2003 he was Centennial Professor of Psychology and Education and co-director of the Learning Technology Center at Vanderbilt University.

Special Event: Seattle Aquarium

Tuesday, May 4, 6:30 - 9:00 PM

Seattle Aquarium Reception, Dinner and Lecture

COSEE Ocean Learning Communities created this evening as an opportunity for members of the COSEE Network to not only gather for a private dinner and enjoy the aquarium but to also learn more about the center's ocean learning community building efforts and to hear from a local scientist. Along with the COSEE Network guests, OLC is inviting members of their ocean learning community to attend the evening. Their invited guests include leaders of State, regional and local based marine organizations and institutions, members of the learning science community, ocean scientists and graduate students. This is a unique opportunity for informal cross sharing between members of the OLC community and members of the COSEE Network.

The evening will include:
A reception with light refreshments and cash bar,
Dinner, conversation and dessert in the Puget Sound Great Hall,
Guest Speaker: Patrick Christie,
An opportunity to tour the aquarium's exhibits

The guest speaker will be Dr. Patrick Christie from the University of Washington. Dr. Christie is an Associate Professor with the School of Marine Affairs and the Jackson School of International Studies. Dr. Christie's research considers the human dimensions of marine protected area networks, tribal perspectives on the state of Puget Sound, and the feasibility of marine ecosystem-based management in tropical contexts. He has led various comparative, socio-ecological research projects in the Philippines and Indonesia on the practice of marine resource management. Dr. Christie was recently selected as a Pew Fellow in Marine Conservation.

Day 2: Wednesday, May 5, Detailed Agenda

7:30 am	Council breakfast meeting	Harbor Room
7:30 am	Breakfast (non-Council members)	Ballroom Foyer
8:30 am	Welcome Back & Announcements Gail Scowcroft, COSEE National Network Director Lundie Spence, COSEE Council Chair	Ballroom, Salon A&B
8:45 am	Plenary: *Decadal Review* Scribe: Tansy Clay, COSEE OLC Presenter: Linda Duguay, COSEE West *Decadal Review Committee Report* Presenter: Don Elthon & Lisa Rom, NSF *Timeline and NSF Perspective* Purpose: *To define the current status of the Decadal Review process.* Outcome: *Network recognition and agreement of the various roles, responsibilities, timelines, and products needed for the Decadal Review.*	Ballroom, Salon A&B
10:00 am	Plenary: *Report on the Future Visions Community Meeting* Scribe: Giovanna Scalone, COSEE OLC Presenter: Cheryl Peach, COSEE California, Visions Steering Committee Chair Purpose: *To define the Network engagement in the Future Visions Community Meeting and update on progress.* Outcome: *Network awareness.*	Ballroom, Salon A&B
10:30 am	Break & Networking	Ballroom Foyer
10:45 am	Plenary: *Evidence of COSEE Efforts* Scribe: Shelley Stromholt, COSEE OLC Presenter: Mark St. John, Inverness Research, National Network Evaluation *Progress of cornerstone claims and use of organizing tools* Presenter: Chris Parsons, COSEE NOW *Report on the results of the Evaluation Working Group surveys* Purpose: *To update the Network on Decadal Review evidence.* Outcome: *Network awareness and support of evaluation process.*	Ballroom, Salon A&B
12:00 pm	Lunch Working Group Meetings	Ballroom Foyer Ballroom, Salon A&B
1:00 pm	Plenary: *Central Coordinating Office Report* Scribe: Charlotte Spang, COSEE OLC Presenter: Gail Scowcroft, COSEE CCO	Ballroom, Salon A&B
1:15 pm	Plenary: *Council Report* Scribe: Charlotte Spang, COSEE OLC Presenter: Lundie Spence, COSEE SouthEast, Council Chair	Ballroom, Salon A&B
1:30 pm	Plenary: *Working Group Reports* Facilitator: Lundie Spence, COSEE SouthEast Scribe: Tansy Clay, COSEE OLC Presenter: Jessie Kastler, COSEE CGOM *Scientist Engagement Working Group* Presenter: Sharon Walker, COSEE CGOM *Messaging and Marketing Working Group* Presenter: TBD *Governance Working Group*	Ballroom, Salon A&B

Day 2: Wednesday, May 5, Detailed Agenda

1:30 pm *cont.*	Plenary: *Working Group Reports* Presenter: Phil Bell, COSEE OLC *Diversity Working Group* Presenter: Elizabeth Vernon Bell, COSEE SouthEast *Professional Development ad hoc Committee* Presenters: Catherine Cramer, COSEE New England & Carla Companion, COSEE Ocean Systems *Excellence in Networking Tools Sub-Group (ENTs)/WWG*	Ballroom, Salon A&B
2:30 pm	Plenary: *COSEE China Update* Scribe: Susan Bullerdick, COSEE OLC Presenter: Bob Chen, COSEE New England	
2:45 pm	Closing Remarks/Adjourn	Ballroom, Salon A&B
3:00 pm	Non-mandatory Council/NAC Meeting	Harbor Room
5:00 pm	Meeting Adjourn	

NOTES

Working Group Summaries

SCIENTIST ENGAGEMENT WORKING GROUP (SEW-G)

Members

Alaska	Nora Deans
California	Craig Strang, Cheryl Peach (alt.), Lynn Tran (alt.)
Central Coordinating Office	Andrea Kecskes, Gail Scowcroft (alt.)
Central Gulf of Mexico	Jessie Kastler (SEW-G leader, production team)
	Brian McCann (production team leader)
	Sharon Walker (principal investigator)
Coastal Trends	Laura Murray, Cathy Gerbisz (alt.)
Great Lakes	Rochelle Sturtevant
National Network Evaluators	Pam Castori
Networked Ocean World	Sage Lichtenwalner, Janice McDonnell (alt.)
	Ari Daniel Shapiro (production team)
New England	Catherine Cramer (production team)
Ocean Learning Communities	Tansy Clay
Ocean Systems	Carla Companion
	Lisa Taylor (production team)
Pacific Partnerships	Jan Hodder, Coral Gehrke (alt.)
Southeast	Carrie Thomas
West	Linda Duguay, Lynn Whitley (alt.), Jane Lee (alt.)

This working group is sponsored by grant 0943509 from the National Science Foundation, Enhanced Engagement of Scientists for Broader Societal Impacts, provided to COSEE:CGOM through the American Recovery and Reinvestment Act. The grant provides two years of funding for the production team to work with representatives of each Center to produce a series of robust, engaging, interactive, multimedia online case studies that showcase the education and outreach efforts of some of the scientists who have worked with the COSEE Network. The SEW-G will debut its first complete case study during its presentation at the May Network Meeting in Seattle.

This working group has met monthly via conference call since November 9, 2009. Initial discussions centered on the selection of one featured scientist from each Center, to ensure that the case studies represent diversity in gender, ethnicity, scientific discipline and research styles, level of participation in COSEE, career stage, and strategies used in education and outreach efforts.

Additionally, SEW-G is reviewing and approving the work of the production team, which meets weekly via Skype teleconference. This includes work to determine the look and feel of the case study website, as well as consideration of actual case studies. The production team has visited two scientists, Dr Bob Chen, of COSEE-New England, and Dr. Carrie Thomas, of COSEE-Southeast, and will have substantially completed their case studies by May. The production team will visit Dr. Rick Keil, of Ocean Learning Communities, during the week of the May Network Meeting, and visits with other featured scientists are scheduled.

For each case study, videos, text, photos and other multimedia elements are grouped into three sections. “At Work” describes research efforts and “Collaborations” highlights education and outreach efforts. The third section, “Viewpoints,” includes insights of the scientists and their colleagues regarding topics of individual concern, e.g., changing the academic culture to reward education efforts, and scientists’ role in educating the public about climate change.

Working Group Summaries

PROFESSIONAL DEVELOPMENT AD HOC COMMITTEE
coseepd@lists.ucla.edu

Listserv Members: E.V. Bell, Marilyn Sigman, Helen Domske, Lynn Whitley, Linda Duguay, Lundie Spence, Gwen Noda, Barbara Spector, Medea Steinman, Christy Herren, Lesley Smith, Janice McDonnell, Jennifer Albright, Jane Lee, Lyndsey Manzo, Gail Scowcroft, Annette deCharon, Angela Bliss, Andrea Kecskes

The COSEE Professional Development (PD) Ad Hoc Committee emerged from the 2009 COSEE Network Meeting where PD coordinators and facilitators from the different Centers had the opportunity to meet and share ideas, address challenges and brainstorm ideas for network-wide PD initiatives. The group that met decided to capture the momentum of the discussions and continue nurturing network-wide communication beyond the scope of the network meeting. Thus, the PD group formed and held the first of its one-hour, monthly teleconference in the fall of 2009. Each teleconference is designed around a particular topic of interest identified by the PD Ad Hoc Committee and provides a format that encourages Centers to share their successes, highlight quality resources, seek advice on challenges or new projects and generally keep the communication lines open among the COSEE Network.

Since the fall of 2009, the group has discussed best practices in professional developed, enhancing diversity in marine science and just recently partnered with the Excellence in Network Technologies subgroup (ENTs) for collaboration on the ENTs Wiki and trainings on various cyber learning tools

All Centers are encouraged to invite their PD staff to attend the meetings and join the listserv: coseepd@lists.ucla.edu.

NOTES

Working Group Summaries

EXCELLENCE IN NETWORKING TOOLS SUB-GROUP (ENTs)
Co-Chairs: Catherine Cramer and Carla Companion
Members: Nora Deans, Annette deCharon, Coral Gehrke, Sean Graham, Jane Lee, Sage Lichtenwalner, Brian McCann, Romy Pizziconi, Mike Senise, Marilyn Sigman, Lisa Taylor

During the May 2009 Network meeting, the Web Developers and Administrators group that met during the *Different Center, Same Boat* session agreed on the Network-wide need for more information on the use of online networking tools. In July 2009 the Web Working Group (WWG) agreed unanimously to support the formation of the Excellence in Networking Tools Sub-Working Group (ENTs). Carla Companion (COSEE-OS) and Catherine Cramer (CCO) are now serving as interim co-Chairs of ENTs. ENTs reports to the Council through the Chair of the WWG.

The ENTs proposed charter is to "explore new ways to broaden the reach of COSEE by using online networking tools to increase internal/external collaboration, communication, and exposure." The ENTs use web conference and collaborative tools (such as Google Docs and Wikis) to create resources and work collaboratively. Through bi-weekly telecons, the ENTs focus on:

- Developing strategies for the support of online tool use across the COSEE Network
- Creating online tool resources for COSEE Centers to use as references
- Discussing effective practices, standards or guidelines for online tool use
- Evaluating current and future online networking projects for effectiveness
- Assisting in cross promotion, collaboration and networking between Centers
- Presenting a consistent voice, appearance or methodology in online tool use

ENTs has focused most of its collaborative energy on the development of an *Online Tools Guidebook*. The guidebook introduces COSEE Network members to a wide variety of online tools and assists them in choosing the tools that best fit their needs. Individual tool descriptions include: potential application, relevant features, use by the COSEE Network, examples of successful implementation, reviews from individuals in the COSEE Network, tips and advice for first-time tool users, and resources (links) for more information. Using a wiki format, the *Guidebook* is available for all COSEE Network members to use and review, and can be easily updated to reflect new tools and information. The *Online Tools Guidebook* can be found at <http://coseenow.net/ents/index.php/Main_Page>

In addition, ENTs provides expertise to Centers through joint telecons with other working groups. Topics of these trainings have included survey tools, blogs, and online learning. Network members are encouraged to contact ENTs for any help in online tool use; the wiki also contains contact information for ENTs members who have experience with particular tools and are able to act as resources to the Network. The ENTs also solicit feedback from the Network and other working groups to gather information to include in future *Guidebook* revisions. ENTs also creates monthly *Tools That Work* reviews for publication in COSEE Network News, which provide the Network with case studies for successful tool use.

COSEE China Update

Robert F. Chen, COSEE New England

Robert F. Chen, Professor, Environmental, Earth and Ocean Sciences, University of Massachusetts, Boston, is a marine organic geochemist whose interests include development of coastal observation systems and oceanographic sensors, dissolved organic matter cycling in coastal systems, indicators of ecosystem health, contaminants in estuaries, and ocean and environmental science education. He was awarded an Office of Naval Research Young Investigator Award in 1997 and has received support from NSF, ONR, DOE, SeaGrant, and NATO. Dr. Chen has been a PI or co-PI on $18.5M in NSF funded science education programs including co-PI of COSEE-New England. He currently serves as PI of the Center for Coastal Environmental Sensor Networks. He has published 49 peer-reviewed papers, made over 100 conference presentations and supervised five PhD and eight MS theses.

COSEE CHINA

Bob Chen and Xuchen Wang, UMassBoston

Summary

Fifteen US delegates from 8 COSEE Centers traveled to Beijing, China to participate in a workshop with representatives from 7 Chinese universities with the leading programs in oceanography, and representatives from the US National Science Foundation, the State Oceanic Administration of China (SOA), and the National Natural Science Foundation of China on March 8-9, 2010. The workshop accomplished its goals, sharing information about ocean science education efforts, forging a number of relationships between individuals from both countries, and the establishment of a COSEE-China. The two-day workshop was followed by visits by the US participants to Xiamen University and Ocean University of China (OUC)in Qingdao to further explore opportunities for collaboration.

History

In 2006, Xuchen Wang took Bob Chen on his first trip to China. When visiting Xiamen University, Minhan Dai, now Dean, College of Oceanography and Environmental Science (Chen and Dai were Postdocs at WHOI together) asked for a talk on Ocean Education in addition to one on Chen's research. Chen and Dai were very interested in exploring the possibility of a COSEE-China. Chen and Wang discussed this possibility with Bill Chang, then Director of the NSF Beijing Office. Several years later, Chen wrote a proposal to the NSF International Planning Workshops and was funded to conduct the First COSEE-China Planning Workshop. Chen, Wang, Dai, Wenqing Cao (Associate Dean of Education, Xiamen University) and Huiwang Gao (OUC at the suggestion of Bill Chang) were co-PIs on the proposal. With a simple email request to the COSEE Network, applications were received, and the US participants were selected. As the workshop approached, there was a flurry of interest on the Chinese side with other universities (only Xiamen and OUC were included in the original proposal) and officials from the SOA and NSFC as well as the US NSF joining the workshop.

Workshop

After formal welcomes and introductions by the hosts and funding agency leads, Profs. Chen and Dai introduced the goals of the workshop. Marilyn Decker (Boston Public Schools) offered an overview of Science Education in the US, Drs. Jingpeng Guo (SOA), Minhan Dai, and Wensheng Jiang (OUC) described the state of ocean research and education in China, and Chen attempted to characterize the state of ocean research and education in the US. The participants then rolled up their sleeves and, in small groups, discussed the purpose and vision for COSEE-China. The next day, each of the Chinese partner universities shared their perspectives, and the whole group developed a plan for moving COSEE-China forward. By the end of the workshop, SOA had committed to supporting the initiation of COSEE-China. Sharing of experiences, perspectives, and goals, and development of collaborations and friendships continued at the banquet the first night, a Chinese acrobat show or shopping trip the second night, and a joint visit to the Forbidden City.

COSEE China Update

Xiamen

The US delegates (and several Xiamen colleagues) flew to Xiamen where they were welcomed with great food, a foot massage experience, and karaoke in addition to an observation of an undergraduate class, a stimulating discussion with about 50 undergraduate oceanography majors, a tour of the labs and campus, and ongoing discussions with students and faculty that will be involved in COSEE-China at Xiamen University. However, the main highlight was the visit of the US delegation (and for the first time several of the Xiamen faculty) to the affiliated Keji High School. About 60 students greeted us and shared their dreams and interests in ocean science. The excitement of joining educators with bright students invigorated the group and inspired many ideas of how COSEE-China and the US COSEE Network might work together to support ocean education initiatives in both countries. The US delegates left their Xiamen colleagues with multiple formal and informal relationships formed.

Qingdao

After a flight to Qingdao, the US delegates were given a tour of facilities at the Ocean University of Qingdao, and then had a formal discussion organized by the International Relations Office of OUC. The impressive ocean research facilities and sheer numbers of oceanography students, programs, and activities offered many opportunities for work between COSEE-China and the COSEE Network including jointly hosting international ocean education conferences. A visit to Ocean Polar World gave the US delegates a brief look into an informal ocean science organization. The time in Qingdao was too short, and the US delegates were winding down after a flurry of activity and learning all week

Future of COSEE-China

Two days after the workshop in Beijing, the State Oceanic Administration committed to supporting the initiation of COSEE-China. They will host a second COSEE-China planning meeting in July, 2010 of the 7 participating universities plus about 3 more (Ocean University of Shanghai, Ocean University of Guangdong, Ocean University of Dalian) whose programs are co-hosted by SOA. A final report on the China side is being completed and a final workshop report on the US is being written. China-COSEE participants have been invited to the COSEE Network meeting in Seattle in May, 2010. The China-COSEE participants will also be invited to the November, 2010 COSEE Council meeting. The structure that was agreed upon at the COSEE-China Planning Workshop is that a liaison (and potentially a part-time staff member) to COSEE-China would be part of the COSEE Central Coordinating Office. Funding (if any) would be run through the CCO. The liaison would be a non-voting member of the COSEE Council.

US Participants:

Bob Chen, University of Massachusetts Boston, Professor
Xuchen Wang, University of Massachusetts Boston, Professor
Lundie Spence, South Carolina Sea Grant, Director, COSEE-Southeast
Linda Duguay, University of Southern California, USC SeaGrant Director
Marilyn Decker, Boston Public Schools, Former Director of Science
Walker Smith,Virginia Institute of Marine Science, College of William and Mary, Professor
Luis Cifentes, Texas A&M Univesity, Associate Dean
Eric Simms, Scripps Institute of Oceanography, Science Educator
Ari Daniel Shapiro, Woods Hole Oceanographic Institution, Postdoctoral Fellow
Carrie Armbrecht, University of Maine, Masters Student
Karen Chan, University of Washington, Doctoral Student
Laura Dover, Oregon State University, Doctoral Student
Kim Frashure, University of Massachusetts Boston, Doctoral Student
Carrie Ferraro, Rutgers University, Doctoral Student

COSEE China Update

US Participants, cont.

Jennifer Martin, Virginia Institute of Marine Science & Thomas Nelson Community College, Doctoral Student & Community College Associate Professor

Don Elthon, Ocean Sciences Education Division of Ocean Sciences, US National Science Foundation, Program Officer

William Chang, Director East Asia and Pacific Region, NSF

Alexander DeAngelis, Director, Beijing Office of the NSF

Gary Oba, Acting Consulate General, U.S. Xiamen Diplomacy Office

China Participants:

Minhan Dai, Xiamen University, College of Oceanography and Environmental Science, , Professor/Dean

Huiwang Gao, Ocean University of China, College of Environmental Science and Engineering, Professor/Dean

Wenqing Cao, Xiamen University, College of Oceanography and Environmental Science, Professor/Associate Dean for Education

Weiran Lim, Ocean University of China, Professor/Deputy President

Wensheng Jiang, Ocean University of China, College of Physical and Environmental Oceanography, Professor/Vice-Dean

Wenhong Song, Ocean University of China, Centre for Enhanced Teaching and Learning, Professor/Director

Daidu Fan, School of Ocean and Earth Sciences, Tongji University, Professor

Liping Zhou, Peking University, Centre for Ocean Research, Professor/Executive deputy Director

Chendong Ge, Nanjing University, The Key Laboratory of Coast and Island Development, Ministry of Education and Department of Coastal Ocean Sciences, Professor/Deputy Director

Ying Ye, Zhejiang University, Department of Ocean Science and Engineering, Professor/ Deputy Dean

Nianqiao Fang, China University of Geosciences, School of Ocean Sciences, Professor/Dean

Jingpeng Guo, Division of Personnel Training, State Oceanic Administration, Deputy Director

Yuchen Chai, Division of Earth Science, NSF-China, Deputy Director

Jianguo Ren, Ocean Science and Polar Science Program, Earth Science Division, NSF-China, Director

Ge Bai, Bureau of International Cooperation, NSF-China, Deputy Director

Huai Chen, Division of Americas, Oceania and Eastern Europe, Bureau of International Cooperation, NSF-China, Director

Xiuping Li, Division of Americas, Oceania and Eastern Europe, Bureau of International Cooperation, NSF-China

Special Events

Thursday, May 6, 7:00 PM

Sound Conversations at the Seattle Aquarium: Spicing Up the Waterways of Puget Sound, Rick Keil

Dr. Keil is an Associate Professor at the School of Oceanography, University of Washington. He and his team of undergraduate researchers formed the nonprofit program SoundCitizen in late 2008 to help bring citizens into active research on the connections between urban watersheds and Puget Sound. Dr. Keil will discuss how by tracking cooking spices and emerging pollutants from households to Puget Sound, we can better understand how our daily lives and activities affect our local waterways.

To purchase tickets for this event visit,
https://www.seattleaquarium.org/NetCommunity/SSLPage.aspx?pid=214
$10 per ticket.

Friday, May 7, 8:30 AM – 1:30 PM

Ocean Inquiry Project Research and Education Cruise

Join the Ocean Inquiry Project for an in-depth look (literally) at Puget Sound. You'll do CTD casts, plankton net tows, water sampling and analysis, as well as bottom sampling at several interesting locations in Elliot Bay, one of the main hubs of human activity on the Sound. Participants conduct the research-data collection guided by our experienced instructors who will focus your inquiry abilities on this dynamic marine environment. Lunch will be provided, but bring layers of warmth and rain protection. Capacity: 24.
Event is FREE, however preregistration is required.

For more details about these special events contact Andrea Kecskes, CCO, akecskes@gso.uri.edu or Susan Bullerdick, COSEE OLC, susan@aquariumsociety.org

NOTES

Participant List

Ammerman, Jim COSEE Great Lakes james.ammerman@stonybrook.edu	Cooper, Patricia COSEE California pcooper@hawaii.edu	Hood, Carroll COSEE National Advisory Committee cahood@raytheon.com
Apple, Jude COSEE Pacific Partnerships jude.apple@wwu.edu	Cramer, Catherine COSEE CCO catherinecramer@comcast.net	Hotaling, Liesl COSEE Networked Ocean World lhotaling@thebeaconinstitute.org
Ban, Elizabeth The Sant Ocean Hall, Smithsonian NMNH BanE@si.edu	deCharon, Annette COSEE Ocean Systems annette.decharon@maine.edu	Kastler, Jessica COSEE Central Gulf of Mexico jessica.kastler@usm.edu
Barnhardt, Ray COSEE Alaska rjbarnhardt@alaska.edu	Dorph, Rena COSEE California rdorph@berkeley.edu	Kecskes, Andrea COSEE Central Coordinating Office akecskes@gso.uri.edu
Bell, Philip COSEE Ocean Learning Communities pbell@u.washington.edu	Duguay, Linda COSEE West duguay@usc.edu	Keil, Rick COSEE Ocean Learning Communities rickkeil@uw.edu
Bell, Elizabeth Vernon COSEE SouthEast elizabeth.vernon@scseagrant.org	Elthon, Don National Science Foundation delthon@nsf.gov	Kingsley, Gordon National Advisory Committee gordon.kingsley@pubpolicy.gatech.edu
Bishop, Tina COSEE West, California, Coastal Trends, Great Lakes tina@coexploration.net	Espinoza, Sara COSEE National Advisory Committee Sara@neetf.org	Kryc, Kelly National Advisory Committee kelly.kryc@moore.org
Bliss, Angela COSEE SouthEast acbliss@uga.edu	Ferraro, Carrie COSEE Networked Ocean World ferraro@marine.rutgers.edu	Kwon, Patricia COSEE West pkwon@aqmd.gov
Bullerdick, Susan COSEE Ocean Learning Communities susan@aquariumsociety.org	Fortner, Rosanne COSEE Great Lakes fortner.2@osu.edu	Lee, Jane COSEE West janejl@usc.edu
Castori, Pamela COSEE NNE pcastori@inverness-research.org	Gehrke, Coral COSEE Pacific Partnerships cgehrke@uoregon.edu	Lynds, Susan COSEE West susan.lynds@colorado.edu
Chen, Bob COSEE New England bob.chen@umb.edu	Gurbisz, Cassie COSEE Coastal Trends cgurbisz@umces.edu	Mathisen, Janice COSEE Ocean Learning Communities janice.mathisen@seattle.gov
Clay, Tansy COSEE Ocean Learning Communities tansy@u.washington.edu	Halversen, Catherine COSEE California chalver@berkeley.edu	Matsumoto, George National Advisory Committee mage@mbari.org
Companion, Carla COSEE Ocean Systems carlajean@gmail.com	Hodder, Jan COSEE Pacific Partnerships jhodder@uoregon.edu	Mayhew, Michael COSEE Central Coordinating Office michael.mayhew@comcast.net

Participant List

McCammon, Molly COSEE Alaska mccammon@aoos.org	Rom, Lisa National Science Foundation elrom@nsf.gov	Sprenger, Amy COSEE Ocean Learning Communities asprenger@oceaninquiry.org
McCann, Brian COSEE Central Gulf of Mexico bmccann@ext.msstate.edu	Scalone, Giovanna COSEE Ocean Learning Communities gscalone@u.washington.edu	St. John, Mark Inverness Research Mstjohn@inverness-research.org
McDonnell, Janice COSEE Networked Ocean World mcdonnel@marine.rutgers.edu	Schoedinger, Sarah NOAA Sarah.Schoedinger@noaa.gov	Steinman, Medea COSEE Ocean Systems medea.steinman@maine.edu
Murray, Laura COSEE Coastal Trends murray@hpl.umces.edu	Scowcroft, Gail COSEE Central Coordinating Office gailscow@gso.uri.edu	Strang, Craig COSEE California cstrang@berkeley.edu
Noda, Gwen COSEE West gwennoda@ucla.edu	Searle, Rick Ocean Networks Canada rsearle@uvic.ca	Stromholt, Shelley COSEE Ocean Learning Communities stromhos@uw.edu
Parsons, Chris COSEE Networked Ocean World cp@word-craft.com	Shuler, Sally National Advisory Committee shulers@si.edu	Tuddenham, Peter COSEE West, California, Coastal Trends, Great Lakes peter@coexploration.net
Peach, Cheryl COSEE California cpeach@ucsd.edu	Sider, Kathleen COSEE Ocean Learning Communities kathy.sider@seattle.gov	Van Dover, Cindy National Advisory Committee clv3@duke.edu
Perin, Suzanne COSEE Ocean Learning Communities suzanne1@u.washington.edu	Sigman, Marilyn COSEE Alaska ffmjs1@uaf.edu	Walker, Sharon COSEE SouthEast sharon.walker@usm.edu
Petrulis, Bob COSEE SouthEast petrulis@mailbox.sc.edu	Simms, Eric COSEE California esimms@ucsd.edu	Walsh, Elly COSEE Ocean Learning Communities ewalsh2@u.washington.edu
Pizziconi, Romy COSEE Central Coordinating Office romy@gso.uri.edu	Spence, Lundie COSEE SouthEast Lundie.Spence@scseagrant.org	Whaley, Dan National Advisory Committee dwhaley@climos.com
Randolph, Carolyn National Advisory Committee george2drs@bellsouth.net	Spitzer, Billy COSEE New England bspitzer@neaq.org	Yoder, Jim COSEE Networked Ocean World jyoder@whoi.edu

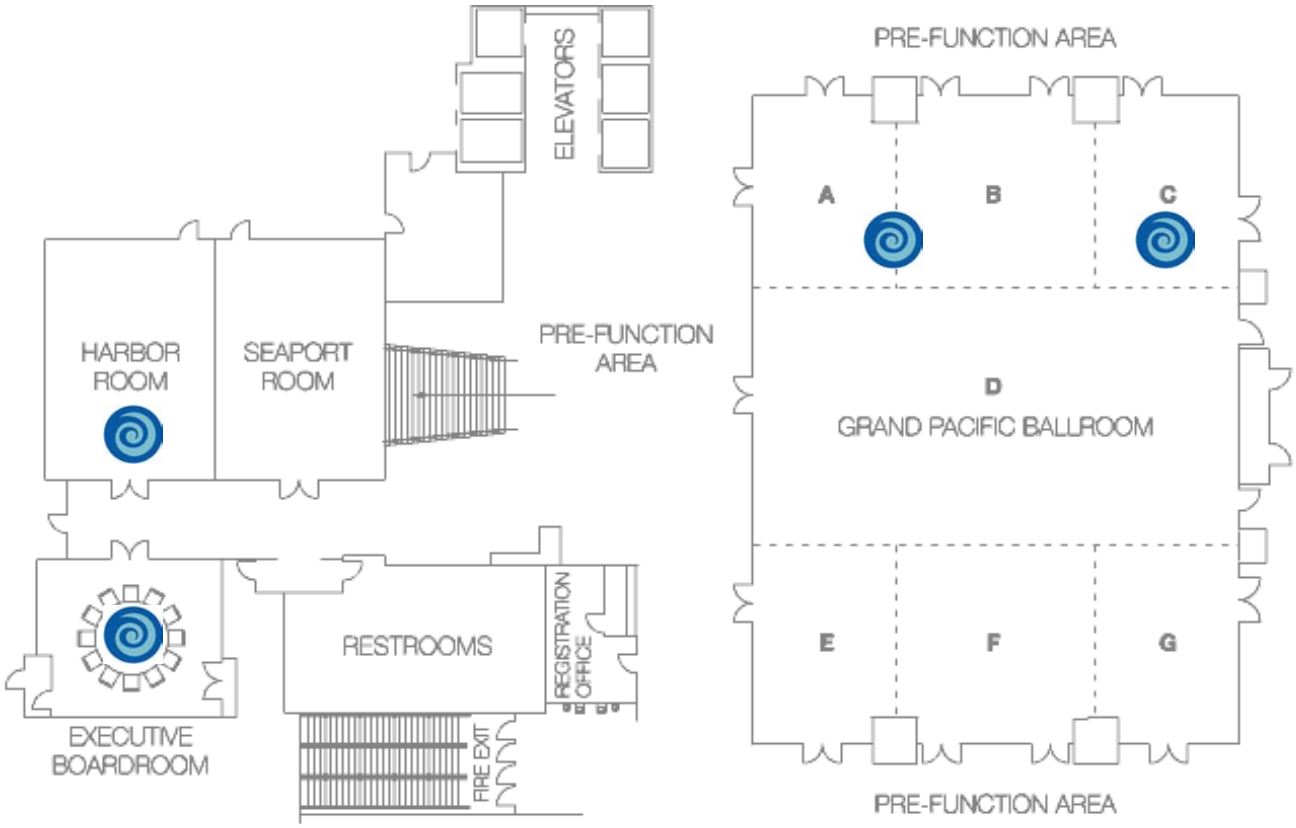
Notes/Thoughts/Contacts/To Do

WAYS THE NETWORK MEETING IS GOING "GREEN"

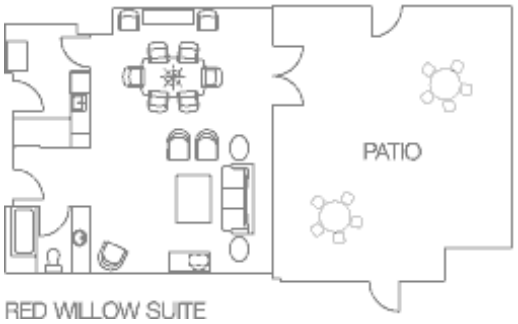
- Pack your water bottles and coffee mugs, water dispensers will be placed in the meeting areas. Bottled water will not be available.
- All meals will be served on and use biodegradable plates and flatware.
- Recycle a name-tag from a previous meeting (name-tags will not be provided). We all have a ton of them, who needs one more!!
- Meeting booklet is printed on recycled paper.

Marriott Waterfront Seattle

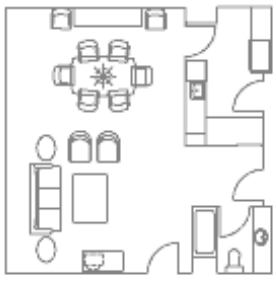
*Meeting will occupy the Ballroom Salon A&B, Salon C, Harbor Room and Executive Boardroom



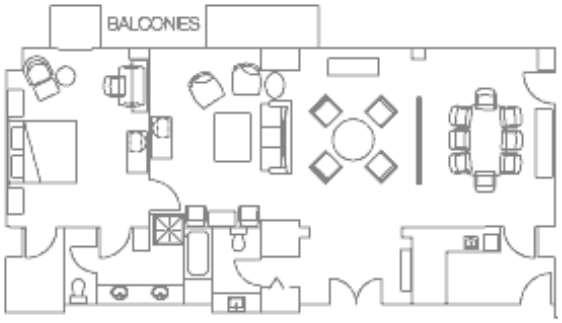
CONFERENCE SUITES



RED WILLOW SUITE



ALKI SUITE



PRESIDENTIAL SUITE