COSEE

CENTERS FOR OCEAN SCIENCES EDUCATION EXCELLENCE

National COSEE Network Meeting

May 7-9, 2012

San Diego, California

Agenda At a Glance

Monday, May 7		
Various	Participant Arrival	
7:00 pm	Welcome Dinner Meeting	Red Marlin Restaurant (located on Hyatt property)
Tuesday, May 8		
7:30 am	Council breakfast meeting	Palm I
7:30 am	Breakfast (non-Council members)	Palm Court
9:00 am	Welcome, Expectations, Introductions, Status of the COSEE Program	Palm II
9:20 am	Plenary: *NSF Education Perspective*	Palm II
10:00am	Plenary: *COSEE Accomplishments Highlighted by the Decadal Review Panel*	Palm II
10:20 am	Break & Networking	Palm Court
10:50 am	Plenary: *National Perspective on Ocean Science Education*	Palm II
11:10 am	Plenary: *Reflection*	Palm II
12:10 pm	Lunch & Networking	Palm Court
12:10 pm	NAC Meeting	Cabrillo
1:40 pm	Plenary: *Review of the 2012 Annual Operating Plan*	Palm II
2:20 pm	Break & Networking	Palm Court
2:40 pm	Plenary: *Increasing Networking and Partnerships*	Palm II
3:50 pm	Breakout Session: Creating Partnerships Outside the Network	Palm II, Mariner Point
4:40 pm	Plenary: *Summary Session*	Palm II
5:00 pm	Wrap-up/Reflections/Announcements	Palm II
5:15 pm	Break & Networking	Palm Court
5:45 pm	Networking & Partnership Building (optional, hosted by the NCO & COSEE CA)	SWIM Lounge
Wednesday, May 9		
7:30 am	Council breakfast meeting including NAC Report Out	Mission II
7:30 am	Breakfast (non-Council members)	Palm Court
9:00 am	Welcome Back & Announcements	Palm II
9:15 am	Plenary: *Broadening Participation*	Palm II
10:00 am	Plenary: *Diversity Working Group & Diversity Project Performance Metrics*	Palm II
10:00 am	Scoping Session	Mission I
11:00 am	Break & Networking	Palm Court
11:30 am	Plenary: *Broader Impacts Wizard*	Palm II
12:25 pm	Plenary: *Scientist Survey Results*	Palm II
12:50 pm	Lunch & Scoping Session Report Out	Palm Court/Palm II
1:30 pm	Scoping Session, continues	Mission I
1:50 pm	Plenary: *Different Center, Same Boat*	Palm II
3:00 pm	Scoping Session Report Out/Closing Remarks/Adjourn	Palm II
3:15 pm	Scoping Session, continues	Mission I

Welcome

Welcome to San Diego and the 2012 National COSEE Network Meeting!

It has been a pleasure and a privilege to serve as the National COSEE Council Chair over the last year. This has been an eventful and challenging year, one in which the COSEE Community enjoyed a highly successful NSF decadal review, but also one in which we have had to grapple with the reality of shifting NSF and National priorities for funding science, technology, engineering and mathematics (STEM), and STEM education. While the future of NSF funding dedicated to ocean sciences education is uncertain, the last decade of COSEE funding has provided us with a strong National Network of collaborators from across a wide range of disciplines – from ocean sciences to the science of learning – and has allowed us to establish a National reputation for excellence in linking ocean sciences research and education. Thus we must look toward developing new ways to leverage and build on the excellent foundation that COSEE has established, and to using the strengths of individual Centers and our significant capacity as a Network to continue to engage the scientific community in increasing ocean literacy across the Nation.

This year's Network meeting is focused on celebrating COSEE accomplishments and looking toward our future. Many sessions in the meeting have been created with an eye toward providing Network members with information that can help them understand and compete for future funding, including ideas on how to measure success in increasing diversity in STEM. There is also time to network and share ideas. As we move into a transition period in which we must seek creative solutions to maintaining our Network, nurturing these linkages is essential. I encourage everyone to take advantage of this time to forge new collaborations that can tap into emerging programs at NSF, as well as other funding sources. We must also begin to imagine a future for the Network that allows us to continue to operate as the coherent and highly functional community that we are, while nimbly adapting to the changing landscape for STEM.

Please take time to enjoy San Diego and find out why it has the reputation for being one of America's finest cities. The ocean is a short stroll away, downtown is home to many fine restaurants and other attractions, and the surrounding area is replete with opportunities to enjoy southern California culture.

I would like to close by thanking the National COSEE Office at the University of Rhode Island for their tireless efforts on behalf of the Network. The Network is far stronger for Gail Scowcroft's ceaseless work in organizing, motivating and leading the community. I would also like to express my heartfelt thanks to outgoing Executive Committee member Linda Duguay, whose monumental efforts in leading the Decadal review process and as Council Chair saw us through two of the most challenging years since the Network was established in 2002. Finally, my thanks to all of you, the heart of COSEE, and the Network's most important asset. I am certain that with creativity and a positive, forward-looking attitude we can forge a future for the Network that is sustainable for decades to come.

Cheryl Peach
Scripps PI for COSEE California
National COSEE Council Chair

Meeting Themes:
- Celebrating COSEE Accomplishments
- Looking toward the Future

Meeting Objectives:
- To identify opportunities for future collaborations and partnerships, and for tapping into new and emerging programs at NSF and other funding agencies.
- To increase understanding of effective practices in measuring success in increasing diversity in STEM.

Day 1: Tuesday, May 8, Detailed Agenda

7:30 am	Council breakfast meeting	Palm II
7:30 am	Breakfast (non-Council members)	Palm Court
9:00 am	Welcome, Expectations, Introductions Status of the COSEE Program Gail Scowcroft, COSEE National Network Executive Director Cheryl Peach, COSEE Council Chair and COSEE California	Palm II
9:20 am	Plenary: *NSF Education Perspective* Presenter: Tim Killeen, NSF Assistant Director for Geosciences Facilitator: Cheryl Peach, COSEE California Scribe: Birch Aquarium Staff Purpose: Provide an overview of NSF Geosciences perspective on the future of NSF science education initiatives. Outcome: Gain an understanding of how and where the National COSEE Network might adapt to the future directions in NSF science education programs.	Palm II
10:00 am	Plenary: *COSEE Accomplishments Highlighted by the Decadal Review Panel* Presenter: Michelle Hall, NSF Facilitator: Cheryl Peach, COSEE California Scribe: Birch Aquarium Staff Purpose: Highlight COSEE's accomplishments based on the decadal review panel synthesis. Outcome: Establish COSEE accomplishments as the foundation for potential new partnerships/ collaborations and activities, both internal and external.	Palm II
10:20 am	Break & Networking	Palm Court
10:50 am	Plenary: *National Perspective on Ocean Science Education* Presenter: Michelle Hall, NSF Facilitator: Linda Duguay, COSEE West Scribe: Birch Aquarium Staff Purpose: Provide an overview of the Interagency Working Group for Ocean Science Education activities and the national perspective on the future of ocean sciences education. Outcome: Gain an understanding of how and where the National COSEE Network might adapt to the future directions in ocean sciences education.	Palm II
11:10 am	Plenary: *Reflection* Facilitator: Gail Scowcroft, National COSEE Office Scribe: Birch Aquarium Staff Outcome: One top idea from each group. Format: PIs & evaluators spread out, each table reports out one top idea based on what was heard from the speakers.	Palm II
12:10 pm	Lunch & Networking	Palm Court
1:40 pm	Plenary: *Review of the 2012 Annual Operating Plan & Discussion of Prioritizations* Facilitator/Presenter: Billy Spitzer, National COSEE Office/COSEE Ocean Systems Scribe: Birch Aquarium Staff Purpose: Review progress and make adjustments as needed. Highlight tasks that are completed, on track, behind, or deferred. Discuss activities that might position COSEE for the future. Outcome: Identify tasks that need follow up, or mid-year adjustments to the plan. Identify new activities to be considered for the next year's AOP.	Palm II

Day 1: Tuesday, May 8, Detailed Agenda

2:20 pm	Break & Networking	Palm Court
2:40 pm	Plenary: *Increasing Networking and Partnerships* Panel: Cathy Manduca (Integrate Project), Scott Glenn (OOI EPE), Linda Duguay (C-DEBI, QuickScience) Facilitator: Jan Hodder, COSEE Pacific Partnerships Scribe: Coral Gehrke, COSEE Pacific Partnerships Purpose: Learn about projects that involve ocean scientists and educators and discuss possibilities to involve COSEE in these projects. Outcome: Opportunities for the involvement of scientists and educators from COSEE in new projects.	Palm II
3:50 pm	Breakout Session: *Creating Partnerships Outside the Network* Facilitator: Jan Hodder, COSEE Pacific Partnerships Scribe: Each group will have to designate a scribe Purpose: Follow up on ideas for partnering with other projects. Outcome: Center and/or Network Action plans for new partner opportunities. Format: Assemble in small groups focused on one of the three projects discussed in prior session or on other partnership ideas. Guiding question 1: In what are the opportunities for partnering with the project at Center level and at the Network level? Guiding question 2: What other networks and partnerships do you see your Center engaging? Walk about to gather information and see who is interested in new collaborations.	Palm I, Palm II, Mariner Point
4:30 pm	Plenary: *Summary Session* Facilitator: Jan Hodder, COSEE Pacific Partnerships Scribe: Coral Gehrke, COSEE Pacific Partnerships Outcome: Wrap up reflection on potential new partnerships.	Palm II
5:00 pm	Plenary: *Wrap-up, Reflection, Announcements* Facilitator: Gail Scowcroft, National COSEE Office Cheryl Peach, COSEE California	Palm II
5:15 pm	Break & Networking	Palm Court
5:45 pm	Networking & Partnership Building (optional, hosted by the NCO & COSEE CA)	SWIM Lounge

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National Science Foundation

PLENARY SESSION PRESENTERS

Timothy L. Killeen, Assistant Director for Geosciences National Science Foundation

Born in Cardiff, Wales, Killeen received a BSc in Physics and a Ph.D. in Atomic and Molecular Physics from the University College, London. Killeen came to NSF under an Intergovernmental Personnel Act (IPA) assignment in July 2008 as Assistant Director for Geosciences. Prior to NSF, Killeen was Director of the National Center for Atmospheric Research (NCAR) for eight years, and remains as a Senior Scientist in NCAR's High Altitude Observatory, where his research interests include the experimental and theoretical study of the Earth's upper atmosphere. He came to NCAR from the University of Michigan where he was Professor of Atmospheric and Space. During his tenure at Michigan, he also held positions as Director of the University of Michigan's Space Physics Research Laboratory and Associate Vice President for Research.

Killeen is Past President of the American Geophysical Union (AGU), a Fellow of the American Meteorological Society (AMS), a former AMS Councilor, and a member of the National Academy of Engineering. Killeen has served as President of the Space Physics Section of the American Geophysical Union, and on numerous NASA, NSF, AGU and university committees. He served as co-chair of the NASA Sun-Solar System Connection Strategic Roadmap Committee, and is a past Editor-in-Chief of the Journal of Atmospheric and Solar-Terrestrial Physics.

Michelle Hall, COSEE Program Officer, National Science Foundation

Michelle Hall is trained as a geological engineer and geophysicist and has worked in industry, government and academia prior to joining the NSF as a program manager in ocean science education. Outside of NSF, her research interests have focused on making science and science research more accessible to broad audiences through curricula and research experiences that promote inquiry, data analysis, and scientific thinking. She is an author of several high school and college level technology-based, data-rich curricula that explore earth systems processes including earthquakes and plate tectonics, tropical cyclones, physical and chemical oceanography, and water resources. She is presently engaged in offering free-choice learning programs for youth and developing educational games that promote STEM learning.

2012 Annual Operating Plan Status Report

PLENARY SESSION PRESENTER

Billy Spitzer, National COSEE Office and COSEE Ocean Systems

William Spitzer is a member of the NCO team, responsible for the National Advisory Committee and orientation of new Centers. He is also PI of COSEE Ocean Systems. At the New England Aquarium, he is Vice President for Programs, Exhibits, and Planning, and is responsible for oversight of exhibit design, animal care, volunteer, and education programs. He also is responsible for coordinating implementation of the Aquarium's strategic plan, across all departments and programs throughout the institution. Previously, he served as Director of Education, leading the development, delivery and evaluation of institutional education programs and exhibits that reach more than one million Aquarium visitors, and thousands through outreach to youth and community organizations, schools and hospitals. He has served as Principal Investigator for a number of informal science education projects funded by NSF, IMLS, and foundations. Prior to coming to the Aquarium, Dr. Spitzer worked at TERC, an educational research and development firm in Cambridge, MA. At TERC, he focused on creating professional development opportunities for teachers and learning opportunities outside schools in museums and science centers, supported by effective applications of technology. Dr. Spitzer has a background in physics, chemistry and oceanography.

2012 Annual Operating Plan Status Report

The National COSEE Network Strategic Business Plan
Annual Operating Plan 2012

The development of the Annual Operating Plan provides an opportunity to reflect on the work of the past year; changes in external circumstances; and challenges and opportunities for the upcoming year.

Reflections on 2011 Progress

During the past year, preparation for COSEE's Decadal Review was a major focus of Network activities. Although it consumed a great deal of effort, the Decadal Review provided an invaluable opportunity to summarize our collective activities and impact, and provided insights regarding future directions and priorities. We are generally on track and moving forward on building our Network capacity (Goal #1), and making steady progress on best practices (Goal #2) and developing Network-level partnerships (Goal #3). We are also working on ways to maintain continuity and engagement for Centers that are no longer NSF-funded.

Key Challenges and Opportunities for 2012

1. Major ocean science research initiatives – There is a clear and consistent message from NSF that COSEE should seize the opportunity to align and partner with major ocean science research and facility initiatives, ocean science and technology centers, etc. and lead education and outreach components.

2. Diversity and underrepresented audiences – Leadership and a strategic approach are needed to increase representation and participation of underrepresented audiences. This needs to be a cross-cutting effort across all activities.

3. Informal science education – There is a growing interest in informal science education (ISE) within COSEE. ISE is also a good opportunity to engage scientists, and there are a number of ISE funding sources available within NSF and elsewhere. We have an opportunity at the upcoming November Council meeting to provide some professional development on how to use ISE to reach underserved populations, linking these two themes and providing a segue to a future strategic focus on ISE.

4. Integrating technology and data - COSEE needs to keep up with developments in cyberlearning, which is blurring the boundaries between formal and informal education. This is also an important theme at NSF (see NSF report on cyberlearning), and there is an opportunity to develop education and outreach applications that take advantage of the open access data being produced from NSF-funded research. How can COSEE apply and build on what has been learned in these areas over the past 10-15 years based on experience in the geosciences community? How can we apply what is known about using ocean sciences data at the pre-college level? We may want to look for a new Network partner in this area, and/or bring this expertise into the National Advisory Committee. This is also an active area of research in the science of learning community, and there may be opportunities for learning scientists to "piggy back" on the work we do.

5. Impact evaluation – How can we conduct evaluation at the national Network level in the absence of a national evaluator? We need more rigorous approaches to evaluation and obtaining evidence of impact (beyond self-reported attitudinal changes and program satisfaction surveys), but impact evaluation studies may be more expensive than most Centers have budgeted. Supplemental funding will support research on the nature of COSEE's influence on scientists' teaching and research practices.

6. Best practices – Best practices as defined in the COSEE Strategic Plan are those that have been spread into the field and taken to scale , and are backed by multiple sources of evidence. We need to do more work on how COSEE effective practices are propagated throughout and beyond the Network. Working groups, peer-reviewed publications, and partnerships are all potential strategies.

2012 Annual Operating Plan Status Report

cont.

7. New science standards - The new NRC national science standards provide more leverage to engage ocean scientists with K-12 educators, since ocean science is included in numerous places – but this will depend on how the framework is translated into specific standards. An update on the process is on the agenda item for November Council meeting. We may want to form a Network task force to coordinate our voice and to help craft our collective input into the standards development process.

8. Peer-reviewed publications - COSEE needs to increase its output of peer-reviewed publications. Although much of this may happen at the Center level (especially for thematic centers), there are also Network level opportunities. The annual best practices work sessions will now have a steering committee involved in their planning and execution (starting with the session on broadening participation next Fall) – and one of the expected products should be a peer-reviewed publication, shepherded by the steering committee. The steering committee needs to spend time before the work session to review the literature and think about what COSEE can contribute that will build on what is already documented. Participants can come to the work session with a poster on what they have already done. Other working/learning groups could be organized among a subset of Centers with a particular area of interest (e.g., a group formed among the six Centers working on issues related to integrating native cultures and Western ocean science information).

9. Working groups - Working groups have, in some cases, exemplified the impact we can have as a Network by working together. We have a great opportunity to strengthen our working groups in terms of how they operate and achieve key goals (including producing peer-reviewed publications, propagating best practices, retaining unfunded centers, and engaging COSEE's "deep bench" staff). However, we need to determine what working groups need to be effective and successful – how they are organized and led, expectations and motivations for participation, what support they need, how they can be intellectually stimulating and provide learning/growth opportunities.

10. Partnerships - Partnerships can expand our capacity in key areas, such as working with ocean science research initiatives, informal science education, and cyberlearning. We have learned a lot over the past year about what kinds of Network level partnerships seem to be the most fruitful. We need to think very strategically about which partnerships to maintain, which new ones we should develop, and how they help to meet our strategic priorities.

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Action/Deliverable	Lead	When	Additional Resources	Status	Notes re action steps in 2012
Goal 1: Build capacity of the National COSEE Network					
Objective 1.1: Improve Planning, Reporting and Evaluation					
1. Develop draft Annual Operating Plan (AOP)	SBPWG	Sep 2011 - Nov 2011	N/A	On schedule	
2. Review and approve AOP with NCC, NAC, NSF	ExComm	Nov 2011	N/A	Completed	
3. Track AOP implementation	NCC	Dec 2011 - Nov 2012	N/A	On schedule	
4. Gather participation, program, and product data (from Centers)	Centers & EWG	Aug 2012	N/A		Supplemental NSF funding will support further research on COSEE impact on scientists' teaching and research via case studies and revised scientist survey. EWG is seeking funding for national evaluation database to capture activity across Centers.
5. Gather impact data (from Center evaluations)	EWG	Jul 2012	N/A		Use supplemental NSF funding to focus on COSEE's impact on scientists.
6. Review progress on a quarterly basis (Feb, May, Aug, Nov)	NCC	Dec 2011 - Nov 2012	N/A	On schedule	
7. Make adjustments and develop next AOP (then repeat steps # 2-6 annually)	SBPWG	Sep 2012 - Nov 2012	N/A		
Objective 1.2: Support Strategic Partnerships					
8. To retain the strongest partnerships and activities from Centers whose funding has ended, create 2-3 collaborations with currently funded Centers to support these "legacy" programs	NCC	May 2012		On schedule	Where possible, keep key people from unfunded Centers engaged in Working Groups and Network meetings.
9. Develop a Partnerships and Collaborations Working Group to identify and vet potential partners, create templates for partnership agreements, and help to create a balanced portfolio of COSEE Network level partnerships.	PCWG	May 2012	[Received NSF funding]	On schedule	Identify and pursue high priority strategic partnerships: ocean research initiatives, data/tech/cyberlearning, informal science education. Clarify "rules of engagement" for Center vs. Network partnerships.
Objective 1.3: Enhance Leadership and and Accountability					
11. Identify changes in "Network architecture" needed to support vision and goals.	NCC	May 2012	N/A	Behind schedule	Strengthen effectiveness of Working Groups as vehicles for producing peer-reviewed publications, fostering professional growth, involving COSEE's "deep bench" staff, and keeping unfunded Centers engaged. Clarify "rules of engagement" for Center vs. Network partnerships.
Objective 1.4: Build COSEE's Profile Among Key Constituencies					
15. Continue to develop and enhance COSEE's web presence to facilitate partnership building and outreach	WWG	Dec 2012	[Received NSF funding]	On schedule	Online "community center" on www.cosee.net has been created. Development of collaborative communication tools is on track.
16. Develop 13 multimedia case studies of successful scientist engagement	SEWG	Dec 2011	[Received NSF funding]	Completed	Remaining case studies should be completed by Spring 2012.
17. Establish/maintain COSEE "presence" at 4-6 key national professional meetings per year (esp. ocean science and science education)	NCO	Dec 2012	[Received NSF funding]	On schedule	Targeting Ocean Sciences (Feb), NSTA (March), Science & Engineering Festival (April), MTS (Sept), SANAS (Oct), and AGU (Dec)
18. Develop annual award program for scientists or private sector entities who contribute to COSEE's success	NCO		[Not funded]	Deferred	This is not being pursued, at NSF's request.
Objective 1.5: Increase fundraising capacity					
19.Be responsive to partnering opportunities to build independent, external funding for COSEE.	NCO	Dec 2011		On schedule	NCO will initiate a Development Working Group.
20. Develop loca/regional business partnerships	Centers		N/A	Behind schedule	May be realistic for some Centers but not all. At this point, there is no specific target date or action in 2012.
21. Pursue 3-5 additional funding sources beyond NSF-OCE		Dec 2012		On schedule	See #19 above.
Goal 2: Propagate effective practices, innovations, and products					
Objective 2.1: Identify					
23. Choose annual focus topic/theme for 2012	NCC	Nov 2011	N/A	On schedule	Complete work on Broadening Participation theme with workshop in Sep 2012. Consider focusing next on Informal Science Education. Form a Steering Committee to conduct literature review, plan best practices workshop, and produce a peer-reviewed publication.

Action/Deliverable	Lead	When	Additional Resources	Status	Notes re action steps in 2012
24. Produce literature review or "white paper" for 2012 topic	EWG	Jun 2012	N/A	Completed	Literature review on Broadening Participation was included in the Decadal Review report.
25. Survey of Center activities and evaluation results (Survey Monkey)	NCO	Jun 2012	N/A	Completed	Summary of Broadening Participation activitites was included in the Deacadal Review report.
26. Summarize activity and evaluation data, including data from NCO/NSF site visits	NCO	Jul 2012	N/A	Deferred	NSF has requested that the NCO does not conduct site visits. NCO would like to make one site visit to each of the four new Centers within the next two years.
27. Conduct effective practices workshop	NCO	Sep 2012			The 2012 workshop will be on Broadening Participation. Best practices workshops to be held in conjunction with annual Center evaluators' workshops.
28. Produce workshop proceedings	Best Practices Workshop Steering Committee	Oct 2012			Produce peer-reviewed publication.
29. Document 1-2 repeatable, proven, "mature" effective practice outreach programs in which scientists as well as educators can engage to fulfill broader impact	NCO with relevant Centers	Dec 2011	May require some additional funding	On schedule	Discussions underway with AMS and several other professional societies re dissemination of relevant COSEE products at conferences. Bob Chen is coordinating production of a "best of COSEE activities" CD. Other activities may need to be deferred pending funding.
Objective 2.2: Adopt within the Network					
30. Implement ongoing internal professional development on the annual topic/theme (e.g., via webinar, miniconference, study group, or self-assessment tools), involving external partners as appropriate	NCC	Jan 2012 - May 2012	TBD	Behind schedule	Use working groups as a strategy for professional development within COSEE. Reactivate Diversity Working Group. Form an Informal Science Working Group.
31. Include internal professional development on the annual topic/theme at the May Network meeting	NCC	May 2012	N/A	On schedule	Nov 2011 NCC meeting will include a focus on broadening participation through informal science education, linking these two themes.
32. Implementation of program(s) (from #29) on small, medium, and/or large scale as appropriate	Centers and/or Network	Ongoing	Depends on scale of implementation	Behind schedule	Not yet clear how best practices in teacher professional development, scientist engagement, and broadening participation are being implemented across the Network. Four Centers have recently collaborated to complete a 4-part scientist/grad student workshop series on "deconstructing science through concept maps." At this point, there are no additional specific target dates or actions in 2012.
Objective 2.3: Disseminate beyond the Network					
33. Develop 1-2 strategic partnerships to extend COSEE practices to reach additional ocean scientists (e.g., through professional societies)	NCO/Network/ Centers	Dec 2012	Depends on scale of implementation	On schedule	Continue work with SACNAS, Ocean Sciences, and AGU meetings. Maintain focus on young career scientists by facilitating proposal writing and broader impact workshops, assisting in proposal writing, and facilitating linkages to ongoing programs at individual Centers. Work with IBP and DWG to adapt the SACNAS model to reach out to other national societies and networks that serve underrepresented groups.
34. Identify opportunities within NSF (beyond OCE) and other federal agencies to extend COSEE practices or programs to other disciplines (e.g., in NSF/GEO, geology, atmospheric scientists)	NCO/Network/ Centers	Ongoing	Depends on scale of implementation	On schedule	Discussions underway with AMS, ASLO, MTS, SACNAS, Inner Space Center. MoU's have been signed with AMS and ASLO, and in development with MTS. Hurricane webinar series developed with AMS. Theme-based educational resources being made available on www.cosee.net (on oil spills, etc.).
35. Develop 1-2 strategic partnerships to extend COSEE practices to other networks relevant to STEM (e.g., NSTA, NABT, ASTC, AZA, NMS, Seagrant)	NCO/Network	June 2012	Depends on scale of implementation	On schedule	Hurricane webinar 5-part series (Feb-June) being developed by the NCO with AMS and URI Grad School of Oceanography, based on formats developed by COSEE NOW and COSEE OS. Discussions underway with NSF ITEST program, NEEF, Inner Space Center. Presentations at national meetings such as ASTC and MTS are being used to disseminate best practices.

Action/Deliverable	Lead	When	Additional Resources	Status	Notes re action steps in 2012
36. Institutionalize successful programs	NCO/Centers	Completed and ongoing	N/A	On schedule	SIO and WHO are collaborating w/ NCO on programs at SACNAS to recruit under-rep undergrads into ocean science grad programs. NCO is partnering w/ ASLO multicultural program on proposal writing workshops at OS mtgs to help under-rep undergrads and grad students write better proposals and address broader impact. Four Centers have recently collaborated to complete a 4-part scientist/grad student workshop series on "deconstructing science through concept maps."
Objective 2.4: Compile Evidence, Evaluate, and Publish					
37. Document evidence that multiple COSEE effective practices, innovations, and products are being used broadly within and across COSEE Centers and externally through strategic partnerships			N/A	Deferred	This activity is deferred until Network evaluation work is resumed.
38. Create 1-3 peer-reviewed publications per year on COSEE effective practices, innovations, and products	Centers	Dec 2012	N/A	On schedule	See Decadal Review report for 2002-2011 publications on teacher professional development, scientist engagement, and broadening participation. Publication(s) to be included in scope of the steering committee for future best practices workshops.

Goal 3: Create strategic partnerships to extend COSEE's reach					
Objective 3.1: Scientific Community					
40. Increase quality engagements within the academic, private, and government scientific community (leveraging effective practices from Goal #2)	NCC	Sep 2012	[Leverage new NSF-funded COSEE initiatives]	On schedule	Once the SEWG has completed its case studies (see #16), the NCC will work with the SEWG team to expand the number of scientist/educator partnerships. The NCO is continuing to offer Young Investigators Workshops to provide proposal writing support and facilitating linkages to ongoing programs at Centers (next workshop is at Ocean Sciences in Feb 2012).
42. Establish a COSEE presence in major ocean science graduate programs	Centers		N/A	Behind schedule	In Oct 2010, NCO addressed deans of oceanographic institutions re addressing diversity in ocean sciences. At this point, there is no specific target date or action in 2012. Grad students are being reached via prof. societies (see #36 above).
43. Increase COSEE's profile in relevant ocean science agencies and organizations. Identify 2-3 additional strategic partners (industry, NGO's, federal agencies), and establish partnership agreements	PCWG	Sep 2012	[Received NSF funding for Collab. & Partnerships Coordinator]	On schedule	The Partnerships and Collaborations Working Group will identify and pursue high priority strategic partnerships: ocean research initiatives, data/tech/cyberlearning, informal science education. MoU's have been signed with AMS and ASLO, and in development wtih MTS.
Objective 3.2: Underrepresented Audiences					
44. Evaluation demonstrates COSEE's progress towards use of innovative and effective approaches to overcome barriers to access and participation for underrepresented and underserved audiences	DRWG		TBD	Completed	Initial diversity survey has been completed. Decadal Review report includes a summary of COSEE activities to broaden participation. Further activities are deferred until national evaluation work is resumed.
45. Increase diversity in the NAC	NAC	May 2012	Nominating Committee	Behind schedule	This should be addressed in future recruitment efforts.
46. Increase diversity in the NCN	Centers	Nov 2012	TBD	Behind schedule	Consider survey to identify diversity not captured via meeting attendance. Use working groups as a strategy to engage COSEE's "deep bench" staff.
47. Develop 2-3 quality partnerships that focus on underrepresented/underserved groups	DWG	Ongoing	TBD	On schedule	Discussions continuing w/ IBP re joint programs, but no specifics yet. No activity right now with Boys & Girls Clubs, not a high priority. The PCWG is prioritizing partnerships to pursue. Partnership with ASLO multicultural program is going well (see #36 above).
Objective 3.3: Geographic					

Action/Deliverable	Lead	When	Additional Resources	Status	Notes re action steps in 2012
48. Develop 2-3 partnerships that provide access to COSEE for people in the "heartland" via other networks relevant to STEM	NCN	May 2012	[Leverage renewed/new Center funding where possible]	On schedule	Will disseminate COSEE materials via NAML meeting, Ocean Sciences Education Retreat (JOI), Naval STEM Forum, NSF STEM Network Forum, Science and Engineering Festival. Target specific regions where assistance is needed to promote ocean science literacy (monitor state standards over time). Continuing discussions w/ NSTA.
49. Build momentum for an ocean science initiative in all 50 states	NCN	May 2012	TBD	On schedule	Strong, unified feedback from ocean science education community facilitated integration of oceans into new national science standards framework. Develop a Network task force to monitor/advocate state standard process as part of development of new national science standards.
50. Develop an international presence for COSEE	NCN	Ongoing	TBD	On schedule	COSEE China moving forward and producing informational materials w/ COSEE logo. Continuing discussions w/ Canada, Mexico, France.

Future task	
Completed	
On schedule	
Behind schedule	
Needs attention	
Carryover from previous year	
Deferred	

Networking and Partnerships

PLENARY SESSION PRESENTERS

Cathy Manduca, Director, Science Education Resource Center

Dr. Cathryn A. Manduca is director of the Science Education Resource Center (SERC) at Carleton College SERC is engaged in a wide variety of professional development projects for undergraduate faculty that use workshops, virtual events, and community authored websites to facilitate sharing of teaching materials and expertise. In association with this work, SERC has developed tools and strategies for disseminating educational resources, and engages in evaluation and research projects, including research on faculty learning in professional development programs and its impact on teaching and student learning. As part of this work, Manduca directs InTeGrate, an NSF funded STEP Center improving geoscience literacy and preparing a workforce that can use geoscience to address the challenges faced by society. Manduca is also the Executive Director of the National Association of Geoscience Teachers (NAGT). Established in 1937, NAGT works to foster improvement in the teaching of the earth sciences at all levels of formal and informal instruction, to emphasize the cultural significance of the earth sciences, and to disseminate knowledge in this field to the general public. Manduca received her BA in Geology from Williams College and her PhD in Geology from the California Institute of Technology. She is a fellow of the AAAS, and has received the American Geophysical Union prize for excellence in geophysical education, and the SCIENCE prize for online resources in education.

Scott Glen, Professor and Co-Director, Coastal Ocean Observation Lab (COOL) Institute of Marine and Coastal Sciences, Rutgers University

Professor Glenn has established a long history of integrated research and teaching, using ocean observatories to bring the ocean into the classroom. He has designed and implemented sustained real-time ocean observation and forecast systems: (a) for offshore oil exploration at Shell Oil Company (1983-1986), (b) for the Naval Oceanography Command supporting fleet operations while at Harvard University (1986-1990), and (c) since 1990, for a wide range of scientific and societal applications at Rutgers University.

Dr. Glenn is co-PI for the National Science Foundation (NSF) Centers for Ocean Sciences Education Excellence-Networked Ocean World (COSEE-NOW), a science advisor for the NOAA Ocean Sciences K-12 Curriculum Sequence, and a collaborating scientist and teacher for the NSF Communicating Ocean Sciences to Informal Audiences (COSIA) course. In recognition of this work, he received the first Rutgers Scholar-Teacher Award for combining research and education, and was recognized by NSF as 1 of 10 scientists making an impact on ocean sciences education.

In 2009, Professor Glenn led an international team of scientists and students that navigated the first autonomous underwater glider across an ocean basin. The robotic glider known as RU27, the Scarlet Knight, is now on display in the Smithsonian National Museum of Natural History. The mission was documented in the award-winning feature length film Atlantic Crossing: A Robot's Daring Mission, shown nationwide on PBS. In 2010, he was named New Jersey Professor of the Year by the Carnegie Foundation for the Advancement of Teaching and the Council for Advancement and Support of Education. He is now the PI of the NSF Ocean Observing Initiative (OOI) Education and Public Engagement (EPE) Implementing Organization (IO). His own Ocean Observatories undergraduate research course sequence, focused on the use of autonomous underwater gliders in regional, polar and global observatories, has grown to over 70 students.

Networking and Partnerships

PLENARY SESSION PRESENTERS cont.

Linda Duguay, COSEE West

Dr. Linda Duguay was born in Providence, Rhode Island. She spent her first 21 years in the Ocean State where she developed her life long interest in Ocean Sciences. She obtained her undergraduate education in Biology at the University of Rhode Island (URI) and completed her MS and Ph.D. research in Biological Oceanography at the Rosensteil School of Marine and Atmospheric Sciences of the University of Miami (UM) Florida. She has held research and teaching positions at the State University of New York at Stony Brook (SUNYSB) Marine Sciences Research Center, Southampton College of Long Island University (LIU), the Chesapeake Biological Laboratory of the University of Maryland (UMD) Center for Environmental and Estuarine Studies, and St. Mary's College, St. Mary's City. She served as a program manager at the National Science Foundation (NSF) in Ocean Sciences and the Office of Polar Programs from 1990 to 1999. In August of 1999, Linda moved to the University of Southern California to become the Director of the Southern California Sea Grant program and Deputy Director of the Wrigley Institute for Environmental Studies. Linda served as a CO-PI of COSEE-West since it's first funding in 2002. She is currently the lead PI at USC for the NSF supported COSEE-West program and Past Chair of the COSEE Council.

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Day 2: Wednesday, May 9, Detailed Agenda

7:30 am	Council breakfast meeting, including NAC report out	Mission II
7:30 am	Breakfast (non-Council members)	Palm Court
9:00 am	Welcome Back & Announcements Gail Scowcroft, COSEE National Network Executive Director Cheryl Peach, COSEE Council Chair and COSEE California	Palm II
9:15 am	Plenary: *Broadening Participation: Effective Practices and Realistic Evaluation Metrics for the Geosciences* Presenter: Dr. Roger Levine, Evaluation Consultant; former evaluator for the NSF Opportunities for Enhancing Diversity in the Geosciences (OEDG) program Facilitator: Sue Cook, COSEE Florida Scribe: Birch Aquarium Staff Purpose: Learn about effective practices and metrics used to evaluate OEDG diversity projects. Outcome: Gain an understanding of what works and how to assess project success; produce an informational summary for use at the Diversity 'Best Practices' Work Session at the University of Rhode Island, September 10 and 11, 2012.	Palm II
10:00 am	Plenary: *Diversity Working Group Overview* *Diversity Project Performance Metrics: What short-term measures can Centers use as indicators of longer-term project success?* Facilitator: Sue Cook Scribes: Birch Aquarium & COSEE Florida Staff, additional scribes designated by groups Purpose: Present DWG scope and plans for September workshop; Discuss ways to choose and develop short-term indicators that Centers can use to predict longer-term patterns. Outcome: Identify and develop performance measures that COSEE Centers can use to evaluate project success; begin to test the value of these tools in summer 2012; report pilot results (if any) at September workshop. Format: Divide into small groups based on audience (formal, informal and hybrid).	Palm II
10:00 am - 12:20 pm	Scoping Session For lead PIs, Center Evaluators, and NAC	Mission I
11:00 am	Break and Networking	Palm Court
11:30 am	Plenary: *Broader Impacts Wizard* Facilitator/Presenter: Carrie Ferraro, COSEE Networked Ocean World Scribe: Birch Aquarium Staff Purpose: Demonstrate the COSEE NOW tool for assisting researchers with Broader Impacts. Outcome: Expand use of the Broader Impacts Wizard within the Network.	Palm II
12:00 pm	Breakout Session: *Broader Impacts Wizard Discussion* Facilitator: Carrie Ferraro, COSEE Networked Ocean World Format: Table discussion on broader impacts and use of the Broader Impacts Wizard.	Palm II
12:20 pm	Plenary: *Scientist Survey Results* Presenters: Patricia Kwon, COSEE West, Andrea Anderson, COSEE OLC, Rena Dorph, COSEE California Facilitator: Linda Duguay, COSEE West Scribe: Birch Aquarium Staff Purpose: Brief overview of the results of the 2012 Scientist Survey conducted this spring. Outcome: What does the survey tell us about the impacts on scientists of their participation in COSEE on their professional practices including research, teaching, and education outreach? How might these results inform a vision for a future COSEE?	Palm II

Day 2: Wednesday, May 9, Detailed Agenda

12:50 pm	Lunch	Palm Court
	Scoping Session Progress Report	Palm II
1:30 - 3:00 pm	Scoping Session continues	Mission I
1:50 pm	Plenary: *Different Center, Same Boat Fostering Peer Relationships within the COSEE Network* Facilitator: Liesl Hotaling, National COSEE Office, COSEE Networked Ocean World Introduction and Purpose (10 minutes) Round table with focused discussions (70 minutes) Format: Form break-out groups according to participant's function within COSEE and/or personal interest. Limit group size to ~ eight participants. For each group, identify a scribe and a team leader. Process: *Part One* (20 minutes): Identify and analyze new ways to collaborate. a. Each person comes up with a new/innovative way or idea within his/her function that will strengthen the Network. b. Share with idea with the group. c. Group selects 1-3 ideas for further development. *Part Two* (20 minutes): For each idea, develop a brief description for implementation in these categories: a. Outcome/product/idea b. Process/method c. Staff/administrative effort d. Cost e. Target audience f. Outcome/benefit to the Network *Part Three* (20 minutes): Walk about *Part Four* (10 minutes): Wrap up and summary Purpose: Participants identify similar needs, available resources, potential collaborations and best practices in several areas, for example: 1. Web developers/administrators 2. Professionals development facilitators/coordinators 3. Scientists 4. Promotion/branding/marketing personnel 5. Evaluators 6. Formal educators 7. Informal educators 8. Administrators/PIs/Directors Outcome: List of new ideas that can strengthen the Network. Action: Network members review the ideas for potential implementation.	Palm II
3:00 pm	Plenary: *Scoping Session Report Out* *Closing Remarks, Adjourn*	Palm II
3:15 pm	Scoping Session, continued	Mission II

Broadening Participation

PLENARY SESSION PRESENTER

Roger Levine, Consultant, Redwood City, California

Dr. Levine has been involved with social science and evaluation research for over 35 years and involved with STEM diversity research for over 25 years. From 2002 – 2011, he was the Project Director for a contract providing technical evaluation assistance to the National Science Foundation's (NSF) Directorate for Geoscience's Opportunities for Enhancing Diversity (OEDG) Program. This program, designed to increase the number of underrepresented minorities in the geosciences, has funded over 100 different projects, serving students and teachers at all grade levels. His team has helped these projects design and implement evaluation plans to assess their success in meeting both specific project goals and overall program goals. He also directed a review of the NSF Geoscience Directorate's portfolio of education and diversity programs. Results were used by the Second Geoscience Working Group to produce Geoscience Education and Diversity: Vision for the Future and Strategies for Success.

In recognition of his involvement with STEM and diversity research, Dr. Levine completed a commissioned paper for the National Academies, entitled Learner Diversity in Earth System Science, in which a conceptual model linking effective diversity enhancing strategies and specific barriers and hurdles to a diverse STEM work force was developed. He has made dozens of presentations at professional organizations, served as a member of Technical Work Groups, national study Steering Committees, advisory panels, and has authored articles published in education, medical, and psychological journals. He earned a BS in Biology from Rensselaer Polytechnic Institute, an MS in Psychology from Tufts University, and a Ph.D. in Behavioral Endocrinology from Stanford University.

Broader Impacts Wizard

PLENARY SESSION PRESENTER

Carrie Ferraro, COSEE Networked Ocean World

Dr. Ferraro earned her Ph.D. in Oceanography from Rutgers University. Her graduate research focused on microbial ecology. More specifically, she studied how environmental conditions relate to the types of active bacteria found at a location. Dr. Ferraro continues to work at Rutgers within the Institute of Marine and Coastal Sciences as a program coordinator for the Education and Outreach group and COSEE Networked Ocean World.

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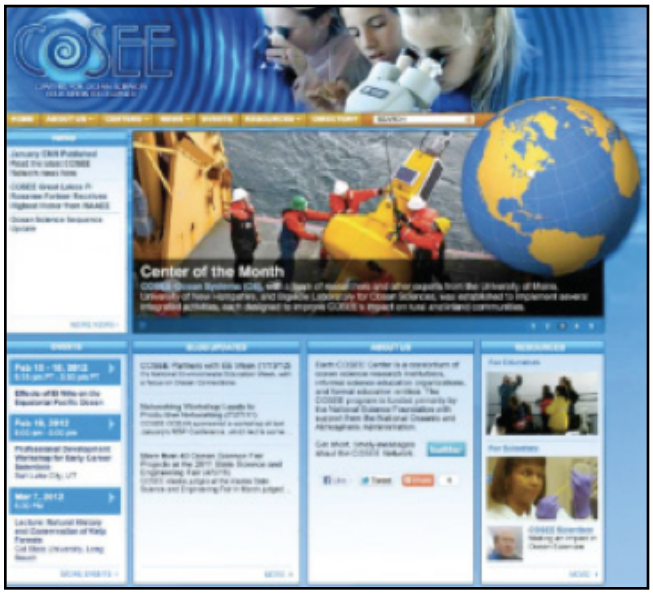
Working Group Summaries

Web Working Group (WWG)

The Web Working Group (WWG) was formed by consensus at the July 2007 Council meeting to examine how the Centers could work together to make existing and future COSEE information more accessible, engaging, and up-to-date. Today, the WWG supports collaborations and connections between institutions, organizations and individuals involved in COSEE's web-based ocean sciences education efforts by centralizing the online posting of news, events, educational and scientific resources, and people; encouraging the sharing of these across Centers and the National COSEE Office (NCO); and promoting the use of common terminology among Centers.

Since the 2011 Network meeting, the WWG:



- With Raytheon Web Solutions, designed and developed a new interactive home page for COSEE.net (see image at right). COSEE Centers will be able pinpoint areas of interest (e.g. scientist research areas) on a rotating globe which, when clicked upon, will open a box containing information on that locale. This functionality will be implemented in Spring 2012.
- Delivered a 508-compliant public web site for COSEE SouthEast (published live in December 2011).
- Revised the COSEE.net home page to accommodate blogs and a fifth feature story (COSEE Scientists Making an Impact). Added three new banners that randomly generate when the home page is loaded.
- Created and populated new "About Us" pages for the NCO, COSEE Council, and the National Advisory Committee on COSEE.net.
- Implemented "About Us" functionality for COSEE Island Earth on COSEE.net.
- Modified existing functionality to allow moderated blog commenting and auto table generation.
- Implemented social network-based bookmark and sharing options (Facebook, Twitter, LinkedIn).
- Created "theme" pages for displaying related ocean science resources (e.g., oil spills, hurricanes, biodiversity, ocean salinity; see http://www.cosee.net/resources/themes/).
- Published COSEE conference details, governance documents, and information on COSEE's annual Network meetings on COSEE.net. Updated existing pages on ocean literacy, ocean careers, COSEE history, and scientist-educator partnerships.
- Established a YouTube channel and Facebook page.
- Archived legacy web pages (Central Gulf of Mexico, Coastal Trends, Great Lakes, and New England).
- Met twice monthly to collaboratively identify, evaluate, and prioritize action items to enhance the look and functionality of the websites. Currently under development for inclusion in the CMS: photo and video galleries, and slideshows.
- Reviewed options for implementing new databases into the existing CMS structure. Center's needs for databases vary including: accommodation of information for up to 5,000 new members; developing a "broader impacts" warehouse for educational resources; and a "techopedia" highlighting various technologies.
- Continued to populate the CMS database and test system components, providing feedback to the developers for system refinements while tentatively identifying desired improvements.
- Updated the Network as to WWG activities and CMS improvements with monthly articles in CNN.

Working Group Summaries

WWG continued

COSEE File Manager
The WWG continues to oversee use of the COSEE File Manager, which serves as a repository and access portal for documents belonging to COSEE. This application cultivates linkages and promotes collaboration within the Network by supporting the sharing of files between Centers, working groups, the NCO, and other COSEE entities in a password-protected environment readily accessible by all COSEE personnel.

Excellence in Networking Tools Subgroup (ENTS)

In July 2009, the WWG formed the ENTS, which is used as a vehicle for ongoing dialogue regarding the use, development and implementation of social networking tools. The ENTS 1) address strategies for the support and development of social networking tools across COSEE; 2) develop effective practices, standards and guidelines for blogs and other social networking tools; 3) create references and guidelines for increasing social networking literacy; 4) evaluate the merits, appropriate use, documentation, and success of various tools; and 5) support various Centers in the creation and maintenance of Center social networking pages and accounts. In 2011, the ENTS offered a webinar series on the use of a variety of social networking tools and served as the "go to group" for networking solutions while continuing to develop the "Online Tools Guidebook," a resource for the network on web technology and "Tools that Work," a section for technology related success stories and case studies in CNN and on the COSEE Network website (http://www.cosee.net/resources/tools/). See the ENTS "About Us" page here: http://www.cosee.net/about/aboutgroups/ents/.

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Working Group Summaries

Evaluation Working Group (EWG)

Submitted by Patricia Kwon, EWG Chair for the COSEE Network (April 2012)

The EWG has been evolving since its establishment in 2007. The group was inactive in 2008 and became extremely active with weekly teleconferences starting in 2009 with work for the decadal review, administration of Network surveys, and future evaluation planning. In September 2011, the EWG will be starting a study of scientists to look at the effects of scientists' broader impacts activities on their research and teaching, which has been funded through a COSEE EWG supplemental proposal.

Members of the EWG include: PI Craig Strang; Gail Scowcroft and Romy Pizziconi from the NCO; Center Evaluators Andrea Anderson, Rena Dorph, Patricia Kwon, Ted Repa, Diana Payne, Pam Van Dyk, Patti Bourexis, Genevieve Manset, and Carol Baldassari; National Advisory Committee member Gordon Kingsley; and Michelle Hall and Lisa Rom from NSF. Patricia Kwon is the current EWG Chair, Council liaison, and liaison to the Center Evaluators.

EWG Mission: To serve the COSEE Network, NSF, and Center Evaluators by providing information and advice on 1) collective evaluation needs, and 2) existing resources and collaborative opportunities that document the extent to which COSEE goals and objectives are achieved, as well as the Network's impacts.

Scope of Work: The EWG will perform the following tasks and report to the COSEE Council on all plans, recommendations and activities.

Task 1: Provide a forum for identifying collaborative opportunities among the Center Evaluators (CEs):

a. Assist in the identification of and mechanisms for integrating specific evaluation research being conducted in the Centers;

b. Establish the scope of CE input to the portfolio of COSEE evaluation products, research, and lessons learned;

c. Establish the standards for reporting existing or new "return on investment" data being collected by the CEs;

d. Assist in brokering relationships among CEs and between the Network and CEs; and

e. Provide logistical support for projects involving multiple CEs and the Network.

Task 2: Provide periodic review and assessment of Network plans

Task 3: Work on study of scientists looking at broader impacts activities and their effects on research and teaching*

Task 4: Provide recommendations for a cross-Center evaluation plan*

Task 5: Provide a conceptual framework for a COSEE Network database*

The primary work of the EWG in 2011-2012 is conducting the COSEE Scientist Study, looking at the impacts of scientists' participation in COSEE on their professional activities in research, teaching and education outreach. The Scientist Engagement Survey for scientists participating in COSEE in 2011 was significantly revised based upon the research questions, conceptual model, scope of work, timeline, and budget for the scientist study agreed upon at the

Working Group Summaries

EWG continued

September 2011 planning meeting. The revised Scientist Engagement Survey was administered in March 2012, with preliminary analysis in April 2012. Draft results for the COSEE Scientist Study will be presented at the May Network meeting with final results presented at the September evaluators meeting.

The EWG has also started an evaluation café discussion series to explore conceptual frameworks, theories, metrics, and evaluation practices related to traditional knowledge learning communities, scientist presentation protocols, concept mapping, COS/COSIA, Citizen Science, and distance learning (and future topics TBD).

The EWG will also participate in the scoping session process for a future vision of COSEE at the May Network meeting.

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Partnerships and Collaborations

COSEE Partnerships and Collaborations

ASLOMP COSEE Luncheon

COSEE partnered with the ASLO Multicultural Program to offer a luncheon for ASLOMP students during the 2012 Ocean Sciences Meeting. The luncheon offered an opportunity to meet and discuss research and career opportunities with representatives from several programs.

COSEE/REU Program

- SACNAS Conversations with Scientists – the REU program conducted a PI Meeting in San Jose, CA in conjunction with the 2011 SACNAS Conference. REU PIs attended the Conversations with Scientists event during the SACNAS Conference to speak with students regarding research and career opportunities in the ocean sciences.

- ASLOMP Luncheon – the REU program was represented by several REU PIs during the ASLOMP luncheon during the 2012 Ocean Sciences Meeting.

ASLO/COSEE

- Shared booth space during the Ocean Sciences Meeting – COSEE and ASLO collaborated to create a large, shared booth space during the Ocean Sciences Meeting to offer a space for scientists to sit and speak about Broader Impacts efforts and questions.

- Signed MOU between the organizations – During the ASLO Board meeting conducted during the 2012 Ocean Sciences Meeting, the MOU between ASLO and COSEE was finalized and signed.

AGU/COSEE

- Sharing a booth during the USA Science and Engineering Festival – The AGU Education Team and COSEE have partnered to share a booth and offered several hands-on activities during the 2012 USA Science and Engineering Festival in Washington, D.C. (http://www.cosee.net/about/conferences/scienceengineering/)

- Working to create a possible award for Ocean Sciences Education through AGU/Ocean Sciences Section – Liesl Hotaling and Jim Yoder have been in discussions with Peter Schlosser, the AGU Ocean Sciences Section President, to create an Ocean Sciences Education Award through the Ocean Sciences Section to be awarded during the AGU Fall Meeting. The concept is currently being discussed within the AGU Ocean Sciences Section leadership.

AGU/ASLO/MTS/COSEE

In addition to collaborating with AGU to offer a booth during the USASEF, COSEE and AGU also collaborated with ASLO and the Marine Technology Society (MTS) to participate in the Sea/SkyFest group within the USASEF organized by American Meteorological Society.

AMS/COSEE

The American Meteorological Society teamed up with COSEE and the Hurricanes: Science and Society program to offer a webinar series about hurricanes during the spring of 2012 in preparation for the hurricane season. (http://www.hurricanescience.org/resources/webinar2012/)

NAML/COSEE

- NAML was represented during the ASLOMP/COSEE luncheon during the 2012 Ocean Sciences Meeting.

- In discussions to create an MOU between the organizations.

Collaborative Award Update

Scientist Engagement Working Group (SEW-G)

Enhanced Engagement of Scientists for Broader Societal Impacts is a grant to COSEE Central Gulf of Mexico from the National Science Foundation, through the American Recovery and Reinvestment Act. The project initiated the formation of the Scientist Engagement Working Group (SEW-G) and provided funds to all Centers in existence at that time to work together on a single project for the National COSEE Network. The project is producing a series of rich case studies documenting scientists' individual efforts in education and public outreach. Members of the SEWG meet monthly to advise the production team, which works with a featured scientist from each funded Center to produce his or her case study. The production team comprises representatives of COSEE Ocean Systems, OCEAN, New England, and the National COSEE Office, as well as Central Gulf of Mexico.

In June 2011 the project evaluator, Inverness Research Inc., conducted a preliminary assessment that elicited six reviews of the five case studies published at that time. Reviewers included experts with background in education, outreach and broader impacts efforts of scientists. Reviewers uniformly found the case studies to be credible and interesting, and of potential use to new scientists, ocean scientists and ocean science educators. Reviewers recommended changes to clarify intended audiences and improve the way of navigating the abundant resources on the case study website. The home page of the website is being revised to invite users to explore education and outreach via several specific avenues: 1) Projects lists types of education project by audience and topic, 2) Top Ten considers the questions featured scientists and their colleagues repeatedly introduced during interviews, and 3) Home provides full case studies of each featured scientist.

The project is in a one-year, no-cost-extension of the original grant and has published nines case studies at www.cosee.net/engaging_scientists. The production team has completed all travel to scientists and produced most of the text and video for the remaining four cases studies, and is working with the last featured scientists and their Center representatives to finalize details.

The SEW-G continues to meet monthly to advise the production team on the remaining case studies. Inverness Research is preparing to conduct its final assessment of the project, which will include interviews with COSEE staff members and early career scientists.

Collaborative Award Update

Faculty-Graduate Student Collaborative Workshops

Annette deCharon, Linda Duguay, Janice McDonnell, Cheryl Peach, Carla Companion, Carrie Ferraro, Patricia Harcourt, Christen Herren, Patricia Kwon, Sage Lichtenwalner, Theodore Repa, Eric Simms, and Lynn Whitley

Encouraged by science faculty members who worked with educators during concept-mapping workshops, four Centers for Ocean Sciences Education Excellence (COSEE) designed and implemented concept-map based trainings for graduate students. Funded by a 2008 American Recovery and Reinvestment Act grant, the resulting "Faculty-Graduate Student Collaborative" (FGSC) workshops were revised to incorporate pedagogical activities such as demonstrations on the learning cycling and discussions of common misconceptions about science. Another new design element for the FGSC workshops was inclusion of non-scientists as target audiences for concept-map based presentations.

The primary participants in the FGSC workshops were faculty-level scientists and graduate students. Table 1 shows the locations and target audiences of each workshop. The pilot event was held in January of 2010 at the University of Maine's Darling Marine Center. Based on analysis of formative evaluation data from this pilot, the project team spent several months revising the workshop model and then tested its transferability to other settings with other facilitators. Each included pre- and post-workshop evaluation data collection and, in January 2012, Centers administered a "follow-up" survey with all graduate students who had participated in the workshop series.

Table 1. FGSC Workshop Locations & Target Audiences

COSEE Center	Ocean Systems	West	NOW	California
Month/Year	February 2010	April 2011	May 2011	October 2011
Participants' Home Institutions	University of Maine; Bigelow Laboratory for Ocean Sciences	USC; UCLA; Cal State Long Beach; Cal State Fullerton	Rutgers University	Scripps Institution of Oceanography
Numbers of Participants	17 grad students, 5 faculty members	20 grad students, 5 faculty members	18 grad students, 5 faculty members	16 grad students, 5 faculty members
Target Audience	High School Students	High School Students	Informal Audiences (using expert proxies)	Undergraduate Students

For each workshop, data were collected to evaluate all participants' overall satisfaction; these results were used to improve the FGSC workshop model and test the model's transferability from venue-to-venue. Given that the workshops were based on a COSEE-Ocean Systems model with demonstrated effectiveness with educators, graduate students were asked to evaluate workshop elements for many of the same objectives, including: Usefulness of concept mapping to "deconstruct complex science"; Efficacy of strategies employed to foster collegial interactions with faculty during workshops; and Change in comfort with or personal relevance of Ocean Literacy (OL) and Climate Literacy (CL) statements. In addition, during the workshop, faculty and graduate students both gave and received feedback on concept-map based presentations with the objective of understanding how concept maps can be used to give effective presentations to a non-scientist target audience. Lastly, in a follow-on survey, graduate students provided feedback on the longer-term objectives of this project, including the application of workshop content and/or skills for educational outreach, teaching, and their research.

Collaborative Award Update

Consistent with the objectives outlined above, the FGSC workshops were designed to:

- *Apply pedagogical techniques to ocean sciences content* primarily through the use of concept mapping but also with targeted activities about how people learn, common misconceptions, and discussion of "homework" exercises that included asking laypeople about basic ocean sciences content;

- *Employ OL and CL frameworks* to quantitatively "match-make" graduate students with faculty members and also measure graduate students' change in comfort with and perception of relevance with these fundamental statements; and

- *Use a simple rubric to both give and receive feedback* about presentations in these categories: (i) Big Picture; (ii) Jargon; (iii) Organization of the Concept Map; and (iv) Take Home Message.

The close correlation in methodology between the original COSEE-OS scientist-educator collaborative workshops and the FGSC workshops allowed high-level comparison of the evaluation feedback from participants in both models. Educators and graduate students gave nearly identical ratings for many components of the workshops, attesting to the overall robustness and the transferability of the concept-mapping workshop model. On the other hand, despite the general increases in post-workshop comfort with OL and CL statements for both educators and graduate students, the relevance of this content to ocean sciences research at the graduate level is more ambiguous.

Concept mapping was employed to help small teams of graduate students and faculty members deconstruct their complex knowledge into its component parts that were, in turn, graphically reorganized based on the perceived needs of their target audience. Evaluation data from graduate students supports the usefulness of concept mapping as an activity to promote collegial discussions with faculty-level scientists. The workshops culminated with graduate students presenting their concept maps to members of their target audiences, either directly or to proxies with expertise on their needs. Feedback to graduate students indicates that their concept-map based presentations were favorably received, particularly in terms of placing scientific ideas in a "big picture" context.

Select Quotes from Participating Graduate Students from Follow-up Survey

"[It has] helped me in organizing my thoughts for my dissertation to flow in a logical sequence."

"I used it to organize my qualifying exam."

"It has made me think more about how the message is conveyed to lay-people."

"It is a great visual tool to use while presenting concepts to diverse audiences."

"I have used at least one concept map to organize ideas at the beginning of each new project. I included concept maps in my dissertation work, in lectures and presentations, in organizing thoughts instead of taking notes, and… in designing new algorithms e.g. in testing new data analysis tools."

Select Quotes from Participating Faculty

"Hard part was doing the first draft of the concept map. (It was) relatively easy to work with the group to collaboratively improve it."

"I found the workshop to be very beneficial for two reasons. First, the concept-mapping tool will help me to articulate the details of my research in a more coherent manner, particularly when asked to communicate it to different audiences. Second, I believe the concept-mapping tool can be an incredibly powerful way to organize lectures or to bring together concepts from several lectures into a larger model. "

"Using this mapping tool will help share my ideas and state a comprehensive image to my students, funding agency, and colleagues. (It) is great in the sense that it can serve as a self-reflecting tool... if your map is not clear to others, that means your ideas are not clearly organized in your head!"

Follow-up survey feedback from graduate students shows much promise in terms of applying the skills they developed during FGSC workshops to their own work (see select quotes above). This outcome is consistent with the original vision of the research scientists who recommended that the SEC workshops be revised to include graduate students; that is, having these emerging scientists better understand and communicate the bigger context of their research. In addition, feedback from participating faculty members (see select quotes at left) indicates that they recognize concept mapping as a valuable meta-cognitive tool that highlights not just what they know, but how they think. Thus in contrast to the "sage on the stage" role researchers traditionally play in education workshops, this project offered valuable professional development to scientists who, particularly as graduate students, may be expected to teach with little or no training in good education practice.

Participant List

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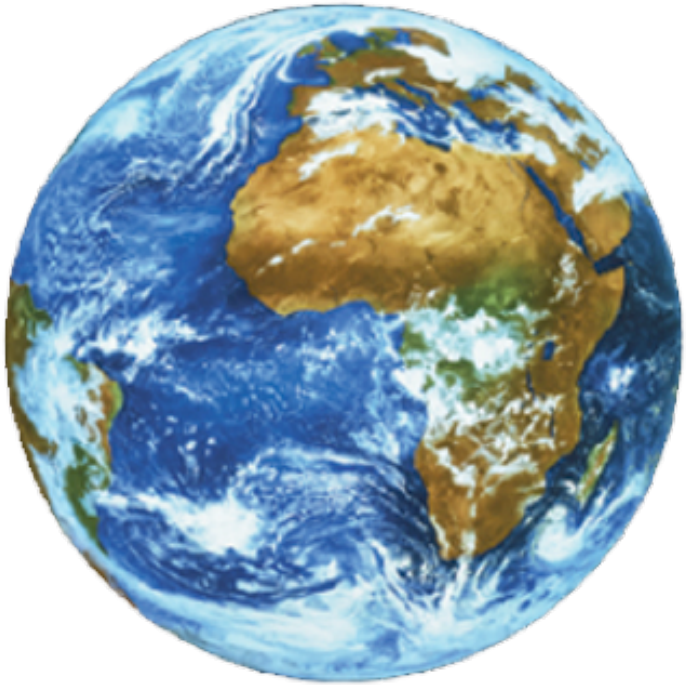
Notes/Thoughts/Contacts/To Do



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.
- 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.

Hyatt Regency Mission Bay

*Meeting will occupy the Palm I, Palm II, Palm Court, Mission I, Mission II, Cabrillo, Mariner Point