



# MAKING WAVES

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National Science Foundation (NSF)

Spring, 2012

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## **OCE Division Director's Message**

**D**ear Members of the Ocean Sciences Community,

Our Spring, 2012, newsletter is full of important announcements and information. I am especially thrilled to report that Dr. Deborah Bronk of the Virginia Institute of Marine Sciences, College of William and Mary, will become the new head of the Ocean Section beginning in mid-August. We are very much looking forward to having her join us as part of the senior

management team for OCE. I also want to draw your attention to our announcement about a solicitation of proposals to manage the design and construction of up to three Regional Class Research Vessels. The remainder of my letter focuses on the budgetary opportunities and challenges confronting OCE in FY12 and beyond.



OCE's FY12 budget is \$352 million, equal to FY11. In addition, included in NSF's FY 2012 construction account is full funding of \$103 million for the next stage of the Ocean Observatories Initiative (OOI). Both these outcomes are good news because, at an earlier stage in the budget process, reductions appeared to be the more likely outcome. Given a flat budget, it might be expected that budgets of programs within OCE would also remain constant but several interacting factors have presented us with a challenge. First is the fact that the stimulus fund pulse received in 2009 as part of the ARRA (American Recovery and Reinvestment Act of 2009) has now been expended. In addition to supporting grants for research, those funds also helped to support facilities operations over the past several years. At the same time, the operational cost for facilities in FY12 continues to rise. Added together, those factors have created a significant budget challenge, equivalent to 9% of our total allocation (i.e., \$31 million). Those rising costs are driven primarily by the necessity to maintain OCE's ongoing facilities commitments: the completion of the submersible RHOV Alvin upgrade, the transition of OOI from construction to Operations and Maintenance (O&M), and the academic fleet O&M.

We have dealt with these challenges in the following manner. We deferred a small number of Global Class ship days-at-sea to 2013 but only where it would minimally impact the science funded. The Ocean Technology and Interdisciplinary Coordination (OTIC) program was cut by 53%. All flexible funds were applied to the deficit. The remainder was achieved through a 5% reduction in funding for OCE's core science budgets (BioOCE, PhysOCE, ChemOCE, MG&G) and the Integrated Ocean Drilling Program (IODP).

**OCE Division Director's Message (continued)**

The budget pressures faced by OCE reflect the growing costs of facilities to support ocean science. Over the past decade, the percentage of the OCE budget that is invested in major infrastructure (i.e., O&M for OOI, IODP, and the Academic Research Fleet including submersibles) has risen slowly from 40% to about 46%. In FY 2012 it jumped to 50%. This occurred because all of our increased costs in FY 2012 were related to facilities yet we had no new funding to offset those costs.

How will we manage the rising costs of infrastructure in the future? We support our facilities to serve the science mission. We cannot afford to allow facilities costs to continue to rise at the expense of support for investigator-based science. The good news is that the President's FY 2013 budget request to Congress includes a 2.9% increase for OCE or about \$10 million. It also includes the \$65 million in construction funds to continue the full build of OOI. Congress has been generally supportive of NSF but there is much uncertainty about the final outcome of the FY 2013 budget and beyond.

In order to control future infrastructure costs, we will use a multi-pronged approach over the long term that focuses on increased efficiency of O&M expenditures in all forms of infrastructure investment and new sources of revenue wherever possible. For fleet operations, increased economic efficiency can be gained by retiring older and underutilized vessels at an accelerated rate as a component of right-sizing the fleet. For OOI, we are asking the OOI Project Team to identify efficiencies that can support reduction of the O&M costs substantially below what was originally anticipated. For IODP, new sources of funds are being sought from partnering nations and the occasional use of the Joides Resolution by industry may help defray expenses. We recognize that implementation of this plan will require sacrifices across all the types of platforms and institutions we support. Our goal is to implement a balanced funding approach that permits us to continue needed investments in facilities while also sustaining robust programs in science and education for the benefit of the entire ocean sciences community and the Nation. While we may face challenges ahead, let us not lose sight of the many outstanding advancements in science, technology, and education enabled by the generous budget that supports the ocean sciences.



**David Conover, Director**  
**Division of Ocean Sciences**



### **Upcoming Solicitation Due Dates**

Most OCE programs continue to have 2 target dates per year for unsolicited proposals: February 15 and August 15. For programs under the [Oceanographic Centers, Facilities and Equipment](#) umbrella, please go to the website. Note, as described in the newsletter, that the Oceanographic Technology and Interdisciplinary Coordination (OTIC) Program now has a single annual target date of February 15.

In addition to opportunities referenced elsewhere in the newsletter, we'd like to highlight the following program solicitations, with their next proposal due dates:

- [Decadal and Regional Climate Prediction using Earth System Models](#) (NSF 12-522) May 11, 2012
- [Transforming Undergraduate Education in Science, Technology, Engineering and Mathematics](#) (NSF 10-544) May 28/29, 2012 (type 1 proposals)
- [Hydrologic Sciences](#) (NSF 09-538) June 1, 2012
- [Petrology and Geochemistry](#) (NSF 09-543) June 6 –July 6, 2012
- [GeoPRISMS](#) (successor to the MARGINS Program) (NSF 12-537) July 2, 2012
- [Frontiers in Earth System Dynamics](#) (NSF 12-547) July 2, 2012
- [Sedimentary Geology and Paleobiology](#) (NSF 09-560) July 16, 2012
- [Collections in Support of Biological Research](#) (NSF 11-558) July 27, 2012
- [Instrument Development for Biological Research](#) (NSF 10-563) July 27, 2012
- [Opportunities for Promoting Understanding through Synthesis](#) (NSF 12-506) August 1, 2012
- [NSF Scholarships in Science, Technology, Engineering, and Mathematics](#) (NSF 12-529) August 14, 2012
- [International Research Experiences for Students](#) (NSF 12-551) August 21, 2012
- [Opportunities for Enhancing Diversity in the Geosciences](#) (NSF 10-599) September 3, 2012
- [Science, Technology, Engineering, and Mathematics Talent Expansion Program](#) (NSF 11-150) September 25, 2012
- [Discovery Research K-12](#) (NSF 11-588) October 4, 2012
- [Paleo Perspectives on Climate Change](#) (NSF 10-574) October 18, 2012
- [Arctic Research Opportunities](#) (NSF 10-597) October 18, 2012
- [Advancing Digitization of Biological Collections](#) (NSF 11-567) October 19, 2012



Lions mane jellyfish (*Cyanea capillata*)  
Credit: Sean Colin, Roger Williams University & John Costello, Providence College



### **Deepwater Horizon Oil Spill Principal Investigator Workshop**

The National Science and Technology Council (NSTC) Subcommittee on Ocean Science and Technology (SOST) convened the second Deepwater Horizon (DWH) Oil Spill Principal Investigator Workshop on October 25-26, 2011, in St. Petersburg, Florida. The Final Report is now available at the [workshop webpage](#). The workshop brought together scientific investigators and stakeholders from academic institutions, private research institutes, industry, and state and federal agencies active in Gulf of Mexico science and research. This workshop was an opportunity for scientific investigators to update results of studies that were in progress during the first coordinating conference in October, 2010; share results of more recent projects; provide input to future Gulf of Mexico research directions; and foster collaborative partnerships. Approximately 150 individuals participated in the workshop with representation from 18 states and five sectors (academia, federal government, private industry, state government, and non-profit organizations). The two-day meeting was organized to include plenary talks, panel presentations, and discussion sessions within thematic breakout groups.



On a related note, we wish to call your attention to a Gulf of Mexico Oil Spill and Ecosystem Science Conference being organized by the Gulf of Mexico Research Initiative in New Orleans on January 21-23, 2013. Details are available on the [conference website](#).

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### **The Belmont Forum and International Opportunities Fund**

The Belmont Forum, which was formed in 2009, includes the world's main funders of environmental change research and international science councils. It also serves as the Council of Principals for the International Group of Funding Agencies for Global Change Research (IGFA). The Belmont Forum aims to mobilize international resources at a scale that matches the challenge from global environmental change, in order to catalyze delivery of the environmental science-derived solutions that society needs. The "Belmont Challenge" is to deliver knowledge needed for action to mitigate and adapt to detrimental environmental change and extreme hazardous events.



To meet the Belmont Challenge and help facilitate international collaboration, the Belmont Forum agreed to develop Collaborative Research Actions (CRAs) that will:

- Address societally relevant global environmental change challenges;
- Leverage Belmont Forum members' existing investments through international added value; and
- Bring together new partnerships of natural scientists, social scientists, and users.

The Belmont Forum is collaborating with the G8 Heads of Research Councils on a joint funding mechanism known as the International Opportunities Fund. The first call is aimed at supporting CRAs on Coastal Vulnerability and Freshwater Security. The countries involved in this initiative are currently Australia, Brazil, Canada, France, Germany, India (pending), Japan, Russia, South Africa, the United Kingdom, and the United States. Possibilities for collaboration for non-participatory countries and developing countries also exist. Proposals are invited for projects of 2-3 years duration with project budgets of 1-2M Euros. The deadline for pre-proposal submission is July 20, 2012. For more information, see the [Belmont Forum website](#).



### **Tips to Help Your Proposal**

By Mike Sieracki, OCE Program Director

In the January, 2012, Newsletter, we highlighted [NSF Grant Proposal Guide requirements for Biographical Sketches](#). We would like to expand on that to make it clear why it is important for you, the PI submitting a proposal, to ensure that the list of collaborators and other affiliations in your Biographical Sketch is accurate and up to date.

One of the most important jobs NSF program officers do is assign reviewers to proposals. Before selecting reviewers, program officers need to identify conflicts of interest that disqualify potential reviewers. A well organized, accurate and up to date [Collaborators and Other Affiliations section of your Biographical Sketch](#) will better enable an efficient and effective assignment of the best reviewers for your proposal. List last names in alphabetical order so that we can easily find them, and give each person's current organizational affiliation. It is especially important to keep your list of collaborators and other affiliations current, adding new collaborators and removing those for which conflicts have expired. If you do not list a collaborator and we ask them to review your proposal, they will either decline or, when the conflict is realized, their review will be excluded from consideration. If you keep an expired conflict on your list, we cannot ask that person to review your proposal, even if they might be the most qualified to do so. List individuals who have been collaborators on a project or on a book, article, report, or paper within the last 48 months. If you have not collaborated with a person for more than 48 months, remove their name from the list. List individuals who have been co-editors of a journal, compendium, or conference proceedings within the last 24 months. If you have not co-edited with a person for more than 24 months, remove their name from the list.

Your list of collaborators and other affiliations must also include the names of your own graduate advisor(s) and all individuals for whom you have served as thesis advisor, with their current organizational affiliations. These constitute lifetime conflicts of interest for proposal review purposes. Also list your own principal postdoctoral sponsor(s) and all individuals for whom you have served as a postgraduate-scholar sponsor within the last five years, with their current organizational affiliations. Remove names of postdocs you sponsored more than five years ago. Sponsor-postdoc affiliations will be considered in terms of collaborations, co-authorship of papers, co-PI on proposals, etc.

Based on institutional conflicts, we exclude from reviewing a proposal anyone who is from the same institution as the PI or co-PIs. Also, we do not typically send a proposal to two reviewers at the same institution.

Identifying the best reviewers, without conflicts, to review a proposal has many challenges. You can help by providing accurate and up to date information in your Biographical Sketch. Another great way to help is to use the "List of Suggested Reviewers" function when you submit your proposal in FastLane. Just be sure they are not in conflict!



**Letter from the NSF IODP Team**

Dear Colleagues,

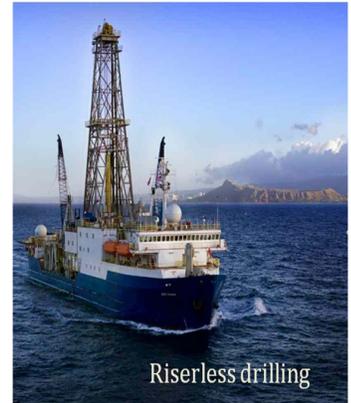
We would like to thank the community for their active participation in the recent survey conducted by Ocean Leadership on Building U.S. Strategies for 2013-2023 Scientific Ocean Drilling, leading up to the U.S. IODP workshop in Denver April 30 – May 2, 2012. Over 433 U.S. participants took the survey. For more details on the results, please see the article in the spring issue of [Core Discoveries](#). It is clear that the U.S. science priorities for the post 2013 IODP program align well with the international ones described in the New Science Plan, while reflecting the unique perspective of the U.S. community.

NSF will be presenting to the National Science Board (NSB) an information item for continued operations of the Joides Resolution post FY2013 at its meeting on May 3-4, 2012. The NSB will then consider an action item at its July, 2012 meeting. We look forward to the NSB's consideration of further JR operations in support of IODP, in the midst of very significant budget challenges in 2013 and beyond.

Sincerely,

The NSF IODP Team

(Rodey Batiza, Jamie Allan, Thomas Janecek, Jim Beard, and Leonard Pace)



Riserless drilling

**JOIDES Resolution**

**OOI Update**

The Ocean Observatories Initiative (OOI) has populated its public website with the complete planned moorings/cable sites, the instrument deployment tables and the projected schedule. This is a good resource for information about the planned build and the current status of the project. Hyperlinks provide detailed information on:

- [Locations for the deployments and pertinent information](#)
- [Summaries of all installations](#) (click the array and then go to each area and click the downward arrow).
- [Projected deployment schedule](#)
- [Awarded contracts \(instruments\)](#). In the future, the project will populate the tables with the awarded instrument identification.



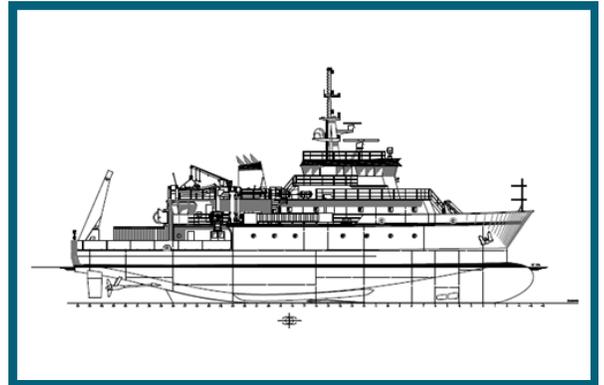
The first deployment of gliders is planned for this summer off the coast of Oregon. See the Endurance & Pioneer Array for gliders or mobile assets for sensor payload information.

If you have questions, please use the “Have a Question” button on the top right hand side of the website and the project team will gladly answer you.



### **RCRV Solicitation**

The Regional Class Research Vessel (RCRV) project has been approved by NSF for advancement to the Conceptual Design Review phase as a candidate Major Research Equipment and Facilities Construction project. The solicitation for design and construction of this 3-ship program was released on April 27. The solicitation can be accessed at: <http://www.nsf.gov/pubs/2012/nsf12558/nsf12558.htm>. Proposals will be due on September 7, 2012. The number of vessels actually built is contingent on availability of funding and projected science utilization. The primary operational area for the RCRVs will be the US coastal estuaries and shelf/slope waters of the east, west and gulf coasts.



### **OTIC Program Proposal Submission Change**

For the past 30 years, OCE has supported oceanographic technology development first through the Oceanographic Technology Program and then, beginning in 1993, through the Oceanographic Technology & Interdisciplinary Coordination (OTIC) Program which acquired a broader focus. The Program expanded its funding of ocean technology to include everything from acoustic and optical sensors and communications, moorings, ocean bottom seismometers (OBS), remotely operated vehicles (ROV), imaging systems, in situ instruments such as flow cytometers and mass specs, strain and gravity meters, and microbial samplers to also include Observatories (HUGO, H2O, LEO-15, MARS, ACO, OOI), Coastal Ocean Process Program (CoOP), and the National Ocean Partnership Program (NOPP) sensors and marine mammal projects. OTIC has historically accepted proposals coincident with the OCE research program regular biennial February 15 and August 15 target dates. Unfortunately, with FY2012 OCE budget levels and OCE's increasing investment in Operations & Maintenance support for ships, OOI, and other facilities, available OTIC funding has been reduced to help balance the Division budget. The OTIC Program has determined it cannot support the historical approach of two submission target dates. We have accepted proposals submitted to the February 15 target date but we regret we will **not** be accepting proposals for the August 15, 2012 target. For planning purposes, the next time PIs can submit to the OTIC Program will be February 15, 2013. If you have any questions please contact Kandy Binkley at [kbinkley@nsf.gov](mailto:kbinkley@nsf.gov).



Blue crab (*Callinectes sapidus*)  
Credit: William Kier,  
University of North Carolina Chapel Hill



### **CAREER Proposals**

The NSF Faculty Early Career Development (CAREER) Program provides junior faculty an opportunity to hone their skills as scholar-educators through outstanding research, excellent education and the integration of education and research within the context of the mission of their organizations. A CAREER proposal presents unique opportunities over regular research proposals in that it has a five year duration and requires both science and education components that will broaden and deepen the expertise of the PI. It is recommended that new PIs consider writing a CAREER proposal after they have had some experience with writing proposals to disciplinary programs and had a chance to familiarize themselves with the opportunities and requirements at their institution.



**“SciGirls” Dolphin Dive**  
Credit: Twin Cities Public Television, Inc.

Some things to keep in mind about the CAREER Program:

CAREER is not just for faculty at research universities. Faculty members at undergraduate teaching institutions, aquaria and museums have been equally successful in getting funding, but fewer apply. Researchers at institutions that do not offer tenure often are eligible, if the institution has made a long term commitment to the PI.

The unique nature of the CAREER program often leads to PIs proposing too much work or too broad of a scope of work. The strongest proposals have well-integrated and complementary research and education components. Partnerships with existing educational programs are good ways for junior faculty to achieve their educational goals and learn from experts along the way.

Both components of the proposal should have a clearly stated need or a compelling problem to be solved. There should be clear goals with anticipated results or outcomes, where by at the end of the project you can measure the impacts of both components.

The Ocean Sciences Division welcomes CAREER proposals for the upcoming July 25, 2012, submission deadline. Prospective PIs are strongly encouraged to contact their NSF program officer prior to submitting a CAREER proposal. The program officer can provide guidance on the distinguishing characteristics of a successful CAREER proposal and point you to resources that may help you develop yours. In addition to discussions with disciplinary program officers, we encourage you to contact Michelle Hall or Lisa Rom, OCE program officers for Ocean Sciences Education, for more information.

For details, please see the [CAREER Program website](#).



### **Undergraduate Research Experiences**

The NSF-wide Research Experiences for Undergraduates (REU) program provides internships for undergraduates at academic institutions nationwide in all fields of science supported by NSF. The program supports either individual students via an *REU Supplement* or cohorts of students via an *REU Site*. All students must be U.S. citizens or permanent residents, and they cannot have graduated before they participate in the program. Programs may run at any time of year, although most operate during the summer months. OCE currently funds about two dozen REU Sites that are mainly located at coastal institutions and marine laboratories. We encourage the submission of additional proposals to the REU Site program. See the [REU program website](#) for details. The program solicitation (NSF 09-598) will be revised soon, and we expect an August/September proposal deadline. Please contact Lisa Rom at [elrom@nsf.gov](mailto:elrom@nsf.gov) or 703-292-7709 with questions about the program.

The REU program encourages projects with an international dimension. In addition, NSF's Office of International Science and Engineering (OISE) manages the International Research Experiences for Students (IRES) program, which supports international research experiences for both undergraduate and graduate students. The next proposal deadline is August 21, 2012. See the [IRES program website](#) for details. Questions about the IRES program should be directed to Maija Kukla, OISE Program Manager, at [mkukla@nsf.gov](mailto:mkukla@nsf.gov).

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### **OCE Research in the News**

- [Gulf of Mexico Oil Spill's Effects on Deepwater Corals](#): Damaged deep-sea corals discovered months after Deepwater Horizon oil spill.
- [Expedition to Seamount Yields New Information about Seafloor Structure](#): Integrated Ocean Drilling Program geologists investigate seamount that formed in unusual way.
- [Global Sea Level Likely to Rise 70 Feet in Future Generations](#): Scientists looked back in time in the geologic record to see the future.
- [New Research Lowers Past Estimates of Sea Level Rise](#): Projections for the future still loom large.
- [Hot Meets Cold at New Deep-Sea Ecosystem: Hydrothermal Seep](#): Habitats overlap at Jaco Scar in depths off Costa Rica.
- [Oceans Acidifying Faster Today than in Past 300 Million Years](#): The rate of change in ocean pH is unprecedented in the last 300 million years.
- [Record of Marine Ecosystem Change Frozen in World's Glaciers](#): History of influence of industrial revolution hidden in glacial ice.
- [Scientists Aboard Iberian Coast Drilling Expedition Report Early Findings](#): Underwater river of mud and sand tells tale of climate change and ocean gateways, new oil and gas exploration possibilities.
- [Federal Government Releases Ocean Action Plan](#): Draft requested comments on actions agencies will take to improve the health of oceans, coasts, and Great Lakes.
- [Ocean Acidification Linked with Larval Oyster Failure in Hatcheries](#): Increase in ocean acidification led to collapse of oyster seed production at Oregon hatchery.
- [Gulf of Mexico Topography Played Key Role in Gulf Oil Spill](#): Scientists document how geology, biology worked together after oil disaster.
- [Scientists Look to Microbes to Unlock Earth's Deep Secrets](#): To find answers, oceanographers install observatories beneath remote seafloor.
- [Trouble in Paradise: Ocean Acidification This Way Comes](#): Sustainability of tropical corals in question, but some species developing survival mechanisms.



**Staff Changes**

**Deborah Bronk:** OCE is very pleased to announce that Dr. Deborah Bronk will become the Section Head for the Ocean Section within the Division effective August 13, 2012. In her position as Section Head, Dr. Bronk will oversee the core science programs in Physical, Chemical, and Biological Oceanography, will be involved in the numerous cross-divisional, cross-directorate, and inter-agency programs in which OCE is engaged, and will be part of the senior management team of OCE. Dr. Bronk is a Professor of Physical Sciences at the College of William and Mary's Virginia Institute of Marine Science. She received a B.S. in marine science and biology from the University of Miami and her Ph.D. in Marine Estuarine and Environmental Science from the University of Maryland. Her research focuses on nitrogen, addressing both basic and applied questions. Experimental approaches include both laboratory and field studies with over fifty research cruises and field trips to environments spanning freshwater and riverine systems, the blue water open ocean, the Arctic and Antarctica. She currently serves as president of the Association for the Sciences of Limnology and Oceanography and is treasurer of the Council of Scientific Society Presidents. Dr. Bronk has served as a member of the Ocean Carbon and Biogeochemistry Scientific Steering Committee, the Carbon Cycle Science Plan Working Group, the Ocean Time-Series Advisory Committee, an EPA Nutrient Criteria Review Committee and the US National Committee for the Intergovernmental Oceanographic Commission.



**Stacy Beharry:** Dr. Stacy Beharry joined OCE this February as a Knauss Sea Grant Fellow. Stacy completed her doctoral degree in oceanography at Old Dominion University where she developed new statistical approaches for analyzing chemical data. Her interests include fisheries biology, population dynamics, and statistics.

**Olivia Lee:** Dr. Olivia Lee successfully completed her Knauss Sea Grant Fellowship with the OCE Integrated Programs Section at the end of February. While at NSF, she prepared draft and final environmental assessments pursuant to the National Environmental Policy Act; facilitated and monitored Incidental Harassment Authorization applications submitted by our grantees to the National Marine Fisheries Service; and participated in the Endangered Species Act Section 7 consultation process with National Marine Fisheries Service and U.S. Fish and Wildlife Service. Additionally, Dr. Lee worked with other federal agency staff to develop and advance a national biodiversity database. As a result of Dr. Lee's efforts, we now have a standardized format for agencies to use to collect Protected Species Observer data from the field and a more efficient mechanism to migrate it to central database collections. Dr. Lee is currently pursuing post-doctoral positions within her field of expertise of marine mammal research.



## Data Citation in the Geosciences

In a [March 29, 2012 Dear Colleague Letter on Data Citation](#), the NSF Directorate for Geosciences encouraged members of the community to lead an evolutionary transformation to establish data citation within the geosciences as the rule rather than the exception.



## IGERT-CIF21 Track

A [March 29, 2012 Dear Colleague Letter](#) announced that NSF will soon institute a new Cyberinfrastructure Framework for 21<sup>st</sup> Century Science and Engineering (CIF21) track in its Integrative Graduate Education and Research Traineeship (IGERT) program as a mechanism to address the training and education needs in computational and data-enabled science and engineering and cyberinfrastructure research. Specific requirements, deadlines and eligibility are to be published shortly.



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NSF Headquarters

This newsletter is designed to share timely information about the National Science Foundation's Division of Ocean Sciences. If you have comments or questions, please communicate with the relevant OCE program officer, or with Larry Weber ([lweber@nsf.gov](mailto:lweber@nsf.gov)), who serves as newsletter editor. The newsletter will be distributed by email and posted on the [OCE homepage](#). Please feel free to forward to colleagues.

If you would like to subscribe to the OCE Newsletter, please follow the instructions below:

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- 2) In the text of the message, put the following command:

subscribe ocenewsletter your name

**Example: subscribe ocenewsletter John Doe**

- 3) You will receive instructions via email on how to proceed.

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