



MAKING WAVES

June 28, 2011

Newsletter of the Division of Ocean Sciences (OCE)

Summer, 2011

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OCE Division Director's Message

I am pleased to share with you the new OCE electronic newsletter entitled "Making Waves." We expect to produce the newsletter on a regular schedule of four issues per year with this being the summer edition. In this issue, you will find updates on the NSF/OCE budget, program solicitations, staff changes, ocean policy news, and other topics. Please let us know if you like the content and send in suggestions for improvement.

Since starting my service as OCE Division Director in July, 2010, I have been invigorated by visits to campuses and laboratories and facilities, and by meeting personally with many OCE PIs. Individually and collectively, your research and education efforts are inspiring. I've also had the opportunity of engaging with the [NSF Geosciences Advisory Committee](#), which is made up of distinguished colleagues from the geosciences community. The Committee is charged to provide advice, be a base of contact with the community, serve as a forum, provide broad input into long-range plans, and perform oversight of Geosciences programs. An OCE Subcommittee serves the same role for ocean sciences. I'd like to welcome Susan Lozier (Duke University), Steven Gaines (UC-Santa Barbara) and Brian Taylor (University of Hawaii) as new Advisory Committee members. They will also serve on the OCE Subcommittee. During the April 13-14, 2011, Committee meeting, OCE staff received valuable input on a number of topics, including efforts to update the OCE strategic plan, OCE engagement with the National Ocean Council, recent developments in the Ocean Observatories Initiative and Integrated Ocean Drilling Program, and NSF's Science, Engineering and Education for Sustainability (SEES) and Cyberinfrastructure Framework for 21st Century Science and Engineering (CIF21) initiatives.

The Division has been very busy since the February 15, 2011, proposal target date, culminating with a 55-member panel of external experts that met May 23-27 to review 419 projects. I was reminded of how critically important the partnership between NSF and the research community is for the peer review system to work. For this

latest round of OCE proposals, literally thousands of mail and panel reviews provided assessments of the intellectual merit and broader impacts of the proposed projects. PIs will be informed of decisions soon. A very special thanks to all of you who serve as reviewers!

Two items in the newsletter deserve special note.

First, are the challenges we face in an uncertain budget environment. For example, the 2011 solicitation for the NOAA/NSF Comparative Analysis of Marine Ecosystem Organization (CAMEO) program was cancelled at the request of NOAA. The good news is that funding for all existing CAMEO projects will continue. In addition, the rising cost of fuel has greatly increased the cost of sea-going operations. Consequently, OCE was forced to reduce the number of expeditions in the Integrated Ocean Drilling Program (IODP) during fiscal year 2012. My letter to the IODP community explaining the budget realities that led to this decision is reprinted in this newsletter. I share it because it is important for all members of the ocean sciences community to understand the tradeoffs that will likely become even more challenging in the near future.

Second, is the announcement that Phil Taylor will be leaving NSF after 26 years of dedicated service to OCE, NSF and the academic community. Phil will be moving in mid-July to a new position with the University of Southern California. We wish him well in his new position.



David Conover
OCE Division Director

David Conover, Director
Division of Ocean Sciences

Budget Update

The federal government, including NSF, operated under a series of continuing resolutions from October 2010 through mid-April 2011 when a budget for the remaining 5 ½ months of FY 2011 was approved by Congress and signed by the President. NSF's FY 2011 budget is \$6.806 billion, a decrease of ~ 1% over the enacted FY 2010 funding level and ~ \$618 million less than the proposed FY 2011 budget. NSF has submitted an operations plan to Congress which must be approved by OMB and Congress before OCE has its official Division budget. Until then, we are authorized to spend up to 90% of our FY 2010 budget. These budget uncertainties have complicated our operations, resulting in delays for some funding decisions, postponements of new solicitations, and limitations on staff travel. Given this difficult budget environment, the Geosciences Directorate established some general management principles: meet commitments



NSF FY2012 Budget Request to Congress

on continuing grant increments; maintain funding of critical facilities; continue participation in NSF-wide and GEO priorities; and continue to support education and workforce development programs (e.g. CAREER, REU, COSEE).

[NSF's FY 2012 budget request](#) is \$7.767 billion, an increase of \$894 million (13%) over the 2010 enacted level. How the Geosciences Directorate fits within the overall NSF budget request is presented in the [PowerPoint slides](#) used by Dr. Tim Killeen during the February 14 budget rollout. [OCE's FY 2012 budget request](#) of \$385 million represents a 10% increase over the Division's \$349 million FY 2010 enacted level.

While securing the requested FY 2012 budget from Congress will be difficult, there is bi-partisan support for the value of science and technology to economic growth and competitiveness, and the key role that geosciences play in addressing important national needs. We should be cautiously optimistic!

SEES—Science, Engineering and Education for Sustainability

NSF established the Science, Engineering, and Education for Sustainability (SEES) investment area in FY 2010 in order to address challenges in climate and energy research and education using a systems-based approach to understanding, predicting, and reacting to change in the linked natural, social, and built environment. SEES is expected to be a 5-year effort, extending through FY 2015. A [Dear Colleague Letter](#) was issued in January to provide an update on SEES. It is important to note that many of OCE's programs and funded projects are part of the SEES portfolio. You may wish to visit the NSF [SEES website](#) to learn about specific SEES-related funding opportunities. These include, for example:



SEES

- [Dimensions of Biodiversity](#) (NSF 11-518): A significant number of ocean sciences researchers submitted proposals for the March 28, 2011 deadline for this solicitation, and OCE Program Directors are working with colleagues from several other Directorates on proposal review. Dimensions of Biodiversity is expected to be a 10-year program, so please look for future solicitations.
- [Ocean Acidification](#): Ocean Acidification is intended to be a five-year cross-Foundation research program. An April, 2010, solicitation resulted in 22 awards for a total of approximately \$24M. NSF anticipates a revised Ocean Acidification solicitation within the next few months with a pro-

posal deadline three months later. Investigators planning to submit research proposals on any aspects of ocean acidification should target this solicitation and should not submit proposals to participating core programs. Further guidance about submitting or resubmitting to the Ocean Acidification program will be forthcoming.

- [Research Coordination Networks \(RCN\)](#) (NSF 11-531): There is now a SEES track for RCN proposals, for which the next proposal deadline is February 3, 2012. General (non-SEES track) RCN proposals to OCE should be discussed with relevant program officers and submitted to the August 15 or February 15 Division target dates. The Biological Oceanography Program has identified [three broad themes](#) of interest for RCN proposals.
- [Partnerships for International Research and Education \(PIRE\)](#) (NSF 11-025): A February 2011 [Dear Colleague Letter](#) announced that the FY 2011-2012 PIRE competition will be focused exclusively on SEES. Watch for the new PIRE solicitation.
- [Dynamics of Coupled Natural and Human Systems \(CNH\)](#) (NSF 10-612): The CNH program encourages submission of SEES-relevant proposals. The next deadline is November 15, 2011.
- [Water Sustainability and Climate \(WSC\)](#) (NSF 11-551): The next proposal deadline is October 19, 2011.

The “Earth Cube” - Towards a National Data Infrastructure for Earth System Science

With the new NSF budget thrust, Cyberinfrastructure for the 21st century (CIF21), NSF places significant emphasis on computational and data-rich science and engineering, with the goal of providing a sustainable, community-based and open cyberinfrastructure for researchers and learners. The Geosciences Directorate (GEO) and the Office of Cyberinfrastructure (OCI) are partnering to seek transformative concepts and approaches to create integrated data management infrastructures for research and education across the Geosciences. With the intent of supporting the creation of a prototype “Earth-Cube” system, GEO and OCI will hold a series of webinars beginning on July 11, 2011. See details in the [Dear Colleague Letter NSF 11-065](#).

Connecting Researchers and Public Audiences (CRPA)

Connecting Researchers and Public Audiences (CRPA) awards support active researchers to share with the public key features of their research such as the methods, results, and significance. Awards promote broader impacts of NSF-funded STEM research projects by furthering the general public’s STEM literacy. CRPA projects should connect with public audiences in informal settings. Principal Investigators must have had an active NSF funded research award within the last 12 months to be eligible. For more information, please check the [Informal Science Education website](#) and also [Program Solicitation NSF 11-546](#) or email DRLISE@nsf.gov.

Upcoming Solicitation Due Dates

OCE programs continue to have 2 target dates per year for unsolicited proposals: August 15 and February 15. In addition, under the [Oceanographic Centers and Facilities](#) umbrella, there are target dates of October 15 for Oceanographic Instrumentation, November 1 for the Ship Operations Program, and November 15 for Oceanographic Technical Services.



Credit: Justin Marshall, University of Queensland

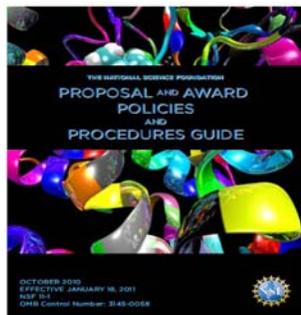
Please see the long list of [OCE-relevant funding opportunities](#) on the OCE homepage. In addition to those already referenced elsewhere in the Newsletter, we’d like to highlight the following, with their next proposal due dates:

- [Margins Program](#) (NSF 07-546) July 1, 2011
- [Faculty Early Career Development \(CAREER\) Program](#) (NSF 11-690) July 27, 2011 (for GEO)
- [Research Experiences for Undergraduates - Sites](#) (NSF 09-598) August 24, 2011 (except for REU Site proposals re-

quiring access to Antarctica, for which the deadline was June 3)

- [Catalyzing New International Collaborations](#) (NSF 11-508) September 1, 2011
- [International Research Fellowship Program](#) (NSF 06-582) September 13, 2011
- [ADVANCE: Increasing the Participation and Advancement of Women in Academic Science and Engineering Careers](#) (NSF 10-593) October 3, 2011 (letters of intent)
- [Opportunities for Enhancing Diversity in the Geosciences](#) (NSF 10-599) October 5, 2011
- [Geoscience Education](#) (NSF 10-512) October 12, 2011
- [Paleo Perspectives on Climate Change](#) (NSF 10-574) October 18, 2011
- [Arctic Research Opportunities](#) (NSF 10-597) October 18, 2011
- [Postdoctoral Fellowships in Polar Regions Research](#) (NSF 09-612) October 18, 2011
- [East Asia and Pacific Summer Institutes for U.S. Graduate Students](#) (NSF 10-591) November 9, 2011

New NSF Proposal Requirements



NSF Proposal and Award Policies and Procedures Guide

The latest version of the [NSF Proposal and Award Policies and Procedures Guide \(PAPPG\) \(NSF 11-001\)](#), which is effective for all proposals submitted on or after January 18, 2011, includes two noteworthy revisions:

- All proposals must now include a supplementary document of no more than two pages describing plans for data management and sharing of the products of research, or assert the absence of the need for such plans. The Data Management Plan will be reviewed as part of the intellectual merit or broader impacts

of the proposal, or both. The goal is to provide clear, effective, and transparent implementation of the [NSF policy on Dissemination and Sharing of Research Results](#). More specific guidance is available online for [GEO Directorate Data Policies](#) and [OCE Division Sample and Data Policy](#).

- In response to [National Science Board recommendations](#), NSF revised its Cost Sharing policy. With the exception of a very limited number of programs where cost-sharing is required, the “inclusion of voluntary committed cost sharing is prohibited.” While institutional resources must still be described in the Facilities, Equipment and Other Resources section of the proposal, “the description should be narrative in nature and must not include any quantifiable financial information.”

Integrated Ocean Drilling Program Update

The science plan for the new program, "Illuminating Earth's Past, Present, and Future" is now available on the IODP website (www.iodp.org). This exciting science plan, a direct outgrowth of the INVEST meeting held in Bremen in 2009 and attended by over 600 community scientists, highlights new research frontiers that require ocean drilling and poses a series of challenges to be met with drilling and research strategies. It emphasizes innovative, transformative, and high-risk/high-reward topics, many of which hold direct relevance to pressing societal issues, including climate change, ocean acidification, deep life, and geohazards.

Due to financial pressures of multiple causes, we are not presently able to support more than three expeditions in the current

program during 2012. So that all members of the ocean sciences understand the financial pressures and tradeoffs that led to this decision, the text of an explanatory letter sent to the IODP community is reprinted as an appendix at the end of this newsletter.



JOIDES Resolution

Regional Class Research Vessel (RCRV) Update

OCE communicated in January that it intended to receive planning proposals for a new RCRV. Since then, NSF has undertaken a review of the internal Major Research Equipment and Facilities Construction (MREFC) process, which is used to approve major facilities such as RCRV. OCE will provide more information to the community on the RCRV project as soon as it becomes available.

R/V Sikuliaq Update

The [first science planning workshop](#) for the Alaska Region Research Vessel, now named the R/V *Sikuliaq*, was hosted by the University of Alaska Fairbanks (UAF) in Marinette, Wisconsin on May 10-11, 2011. UAF gave an overview of the ship's capabilities and various science-support scenarios from coring operations to multibeam surveys. Science participants gave presentations on the various science programs being planned in the high latitudes that could utilize the capabilities of the ship. Tours of the mock-up and the production facilities were given. A workshop report is expected to be available in June. Plans are being made for a town hall meeting for *Sikuliaq* science planning at the December, 2011, AGU meeting and the next formal science workshop at the February, 2012, Ocean Sciences meeting in Salt Lake City.

The *Sikuliaq* has been added to the UNOLS scheduling system. In order to assist OCE with the planning of the first series of research cruises, 2-3 page Letters of Intent are requested by the end of September, 2011, that address the following:

1. What are the scientific questions and goals of the planned project?

The Belmont Forum

Dr. Tim Killeen, Assistant Director for Geosciences at NSF, is chairing the [Belmont Forum](#) in an effort to improve international coordination among research funding agencies in order to improve co-design, co-alignment, and co-funding of major research programs. The Belmont Forum has identified the following "[Collaborative Research Actions](#)," with the intent of focusing initially on the first two.

- Coastal Zone Vulnerability
- Freshwater Security

2. Why does this project require the use of the *Sikuliaq*?
3. What is the proposed approach and location?
4. What is a rough estimate of the project cost and number of science days?



OCE science programs are prepared to accept research proposals requesting *Sikuliaq* as early as February, 2012, for science operations beginning in 2014. Likewise, OPP is prepared to accept research proposals requesting *Sikuliaq* as early as October, 2011, for science operations beginning in 2014. Investigators should contact their Program Officer for details.

Funded science cannot be conducted during the test and trials period which is now scheduled for July, 2013, through December, 2013. However, there will be opportunities for the science community to participate in trials to ensure operational readiness. Contact Dan Oliver (dkoliver@alaska.edu) for details on participation with tests and trials.

- Food Security
- Securing the Biodiversity-Ecosystem Services Baseline
- Ocean Acidification
- Forests and Agriculture



Belmont Forum

If you are interested in more information on Belmont Forum activities, please contact Maria Uhle (muhle@nsf.gov) or Larry Weber (lweber@nsf.gov).

National Ocean Council

OCE staff continue to be engaged in activities of the [National Ocean Council \(NOC\)](#), serving as members on each of the Priority Objective [Strategic Action Plan groups](#): 1) ecosystem-based management, 2) coastal and marine spatial planning, 3) inform decisions and improve understanding, 4) coordinate and support, 5) resiliency and adaptation to climate change and ocean acidification, 6) regional ecosystem protection and restoration, 7) water quality and sustainable practices on land, 8) changing conditions in the Arctic, and 9) ocean, coastal, and Great Lakes observations, mapping, and infrastructure.



Final Recommendations of the Interagency Ocean Policy Task Force

The Obama Administration took another important step to implement the Nation's first comprehensive ocean policy by launching a series of events and opportunities aimed at gathering public input from the communities that depend on and care for our

ocean, coasts, and Great Lakes. Feedback and comments gathered through these public engagement opportunities will assist the National Ocean Council as it continues implementing a new National Policy for the Stewardship of the Ocean, our Coasts, and the Great Lakes.

The National Ocean Council has launched a month-long online public review period for strategic action plan outlines that will be developed over the summer. These strategic actions plans will propose attainable goals and specific, measureable actions the Federal government can implement to address key challenges facing our ocean, coasts, and Great Lakes.

To provide feedback for the strategic action plans outlines or to get information on "Regional Listening Sessions," please visit the [NOC website](#).

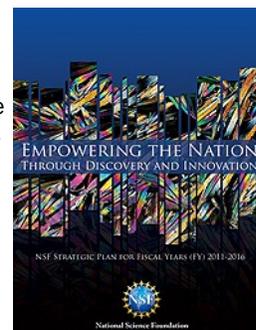
Note also that the NOC held a [Coastal and Marine Spatial National Planning workshop](#) in Washington, DC on June 21-23.

If you are interested in more information on NSF's engagement with NOC, please contact Margarida Yuan (myuan@nsf.gov).

NSF's 2011-2016 Strategic Plan

NSF recently released its new strategic plan, [Empowering the Nation Through Discovery and Innovation: NSF Strategic Plan for Fiscal Years 2011-2016](#). The plan outlines three strategic goals: transform the frontiers, innovate for society, and perform as a model organization. The first two goals align with the two merit criteria that NSF applies in evaluating every research proposal it receives—intellectual merit and broader impacts. The third goal emphasizes the importance of operational excellence and encour-

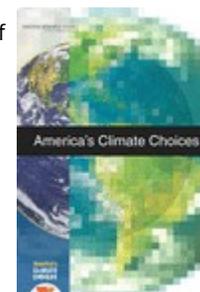
ages experimentation in business processes. The plan sets performance targets to measure progress in achieving the strategic goals, and lays out near-, mid- and long-term actions for the agency to take.



Policy Reports Related to Ocean Sciences

The National Research Council (NRC) recently released a report, ["Critical Infrastructure for Ocean Research and Societal Needs in 2030."](#) The pithy 15-page report raises a number of key issues. The following is quoted to whet your interest. "Ocean research infrastructure supports both fundamental and applied scientific research that addresses urgent societal concerns such as climate change, human health, domestic offshore energy production, national security, marine shipping, tsunami detection and severe storm tracking, sustainable fisheries and aquaculture growth, and changes in marine ecosystem services. However, significant components of national infrastructure are aged, obsolete, or insufficient to meet growing societal demand for scientific information to enable safe, efficient, and environmentally sustainable use of the ocean. A comprehensive range of ocean research infrastructure will be needed to overcome these challenges, and more interdisciplinary and multidisciplinary research will require a growing suite of infrastructure."

The NRC on May 12 issued the final report of ["America's Climate Choices,"](#) which includes a volume on "Advancing the Science of Climate Change." The report finds that, "Current efforts of local, state, and private sector actors are important, but not likely to yield progress comparable to what could be achieved with the addition of strong federal policies that establish coherent national goals and incentives, and that promote strong U.S. engagement in international-level response efforts. The inherent complexities and uncertainties of climate change are best met by applying an iterative risk management framework and making efforts to: significantly reduce greenhouse gas emissions; prepare for adapting to impacts; invest in scientific research, technology development, and information systems; and facilitate engagement between scientific and technical experts and the many types of stakeholders making America's climate choices."



America's Climate Choices

Recent OCE Staff Changes

Larry Weber: Larry joined OCE as a Program Director at the end of March. He served previously as Director of the NSF Office of International Science and Engineering (OISE), Head of the NSF Tokyo Office, and OISE Program Director. Before joining NSF in 1987, Larry was a Researcher in the Department of Oceanography at Texas A&M University. His research focused on marine phytoplankton ecology and involved multiple international collaborations in the Antarctic Ocean and the Mediterranean Sea. Larry has a B.S. in Biology from Brigham Young University-Hawaii Campus and a Ph.D. in Biological Oceanography from Texas A&M University.

Lewis Incze: Lew joined OCE's Biological Oceanography group as a Program Director in April. He comes to OCE from the University of Southern Maine where he served as Director of the Aquatic Systems Group and a Research Professor in the Department of Environmental Science. Lew's research has been focused on plankton ecology, fisheries and climate change effects. Before going to Maine, he held positions at the Northwest and Alaska Fisheries Science Center, Pacific Marine Environmental Laboratory, and Bigelow Laboratory for Ocean Sciences. Lew has a B.S. in Biology from Cornell University, M.S. in Oceanography from the University of Maine, and Ph.D. in Fisheries from the University of Washington.

Virginia Selz: Ginny joined OCE's Chemical Oceanography group as a Science Assistant in February. She has a M.S. in Marine and Estuarine Science from Western Washington and a B.S. in Ocean, Earth, and Atmospheric Sciences and Biology from Old Dominion University.

Jane Montgomery: Jane moved from NSF's Chemistry Division in March to join the OCE Front Office as a Program Specialist.

Jasmine Owens and Amber Mitchell: Jasmine, a student at Bowie State University, and Amber, a student at Hampton University, are working with OCE under the Student Temporary Employment Program.

Mike Lesser: Mike has joined OCE's Biological

Oceanography group as a Program Director in June. He comes from the University of New Hampshire, Department of Molecular, Cellular and Biomedical Sciences, where he held the position of Research Professor. He received his Ph. D. in Zoology from the University of Maine. His areas of expertise include marine algal and invertebrate physiology, molecular genetics, and various aspects of coral reef ecology. This is a return visit to NSF for Mike; he served as a IPA rotator in the Biological Oceanography Program 2006-2007.

Cynthia Suchman: Cynthia, who came to OCE 3 years ago from the Virginia Institute of Marine Science, left in May to take the position as Executive Director of the North Pacific Research Board. She will be missed by OCE colleagues. Many thanks Cynthia for your outstanding contributions!

Phil Taylor: Phil will be leaving NSF to take on a new position as the Executive Director of Research Advancement and Federal Relations at the University of Southern California. For over 26 years, Phil has provided dedicated and exemplary service to OCE, GEO and NSF. In addition, he has often served as the point person for OCE with respect to interagency interactions and international relations. His leadership, knowledge and collegiality will be missed. But at the same time, we are happy for Phil that another institution has recognized his abilities and is offering him the opportunity to begin a new chapter in his professional career.

Phil began his career at NSF in 1985 as an Assistant Director in the Biological Oceanography Program. He became Associate Director in 1986 and Director of Biological Oceanography in 1989. Phil took over leadership of the Ocean Section in 2005, first in an acting capacity (2005-2006), then as Section Head from 2008 to the present. He served a stint as Acting Division Director in 2010. During his career at NSF, he has been recognized with numerous awards for program management and collaborative integration and has contributed immeasurably to countless research and education initiatives.



Larry Weber



Virginia "Ginny" Selz



Amber Mitchell



Phil Taylor

Opportunities to Learn about NSF

If you would like to meet directly with NSF administrators and program officers, including representatives from OCE, plan to attend an [NSF Regional Grants Conference](#) when it is held in your area. The next such conference will be October 17-18, 2011, hosted by the University of Texas at Austin.

CAREER OPPORTUNITIES IN OCE

Anticipated Position Searches—Ocean Science Section Head, Also Program Directors in Chemical Oceanography & Biological Oceanography

We anticipate the posting of a search for a new Head of the Ocean Section of OCE in the very near future. The Ocean Science Section Head is a key member of the OCE leadership team and is responsible for planning, management, and budgeting of programs in the section, including Biological, Chemical, and Physical Oceanography. Please watch the Career Opportunities list on the OCE website for the formal announcement. Nominations, expressions of interest, or questions about the position can be directed to David Conover at dconover@nsf.gov. We also anticipate within the next year posting announcements for the chemical and biological oceanography programs. For more information about these opportunities, contact Don Rice (drice@nsf.gov) for chemical oceanography and Dave Garrison (dgarriso@nsf.gov) for biological oceanography.

Join Us—Become a Rotator at NSF

OCE has about 2 dozen full-time Program Directors. About ¼ of the Program Directors (plus the Division Director) are rotators who generally come to NSF for 2-3 years. Qualifications of a successful rotator candidate include a Ph.D. degree or equivalent and an established record of research and education in a field appropriate for the position. The Division is regularly looking for new rotators. Share in the discovery by being an OCE rotator! To learn more, go to the [Career Opportunities – Rotators](#) section of the NSF Homepage or

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Research.gov Integration with InCommon Federation

Effective from May 2011, NSF grantees who are members of the InCommon Federation will be able to sign in to Research.gov and seamlessly access FastLane using only their university-issued user ID and password. To participate, institutions must be members of the InCommon Federation and submit a request for this partnership to Research.gov. Click [here](#) to see if your grantees' institution is a member. Grantees can email feedback@research.gov to receive more information on the service, including on-boarding documents.

Research Experience for Teachers

An April 7, 2011 [Dear Colleague Letter: Research Experiences for Teachers \(RET\) Supplement Opportunity](#) encouraged Directorate for Geosciences' grantees to make special efforts to actively engage K-12 educators and community college science faculty in their NSF-funded projects. Please contact your OCE Program Director if you are interested in requesting an RET supplement.

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OCE Newsletter

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), 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 (send subscription requests to: ocenewsletter@listserv.nsf.gov). If you do not want to receive the newsletter by email, please send an email to OCENEWSLETTER-signoff-request@LISTSERV.NSF.GOV. You can also contact Margarida Yuan (myuan@nsf.gov) for assistance.

Newsletter of the Division of Ocean Sciences (OCE)

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The Division of Ocean Sciences (OCE) supports basic research and education to further understanding of all aspects of the global oceans and their interactions with the earth and atmosphere. The division also offers opportunities to participate in global change research programs and other focus programs.

OCE supports the operation, acquisition, construction, and conversion of major shared-use oceanographic facilities needed to carry out oceanographic-related research programs.

Dear Members of the Ocean Drilling Community,

I thank you for the many letters of support for the Integrated Ocean Drilling Program (IODP) we received from students, post-docs, faculty, and research scientists from the U.S. and across the globe. We at NSF agree with your collective voices about the tremendous advances in knowledge of earth history and processes that scientific ocean drilling has achieved over more than 40 years of operation. We understand that ocean drilling is the only way to acquire such knowledge. We are gratified to read each of your individual perspectives on how much this program means to your career and to the progress of science. We expect nothing less from the program investments we make at NSF. Your letters assure us that our investment in scientific ocean drilling has been wise. Such successes lay a strong foundation as we consider IODP for renewal beyond the current 10-year program that ends in 2013.

NSF shares your frustration over the need to reduce the JOIDES Resolution (JR) schedule to 6 months of operation in Fiscal Year (FY) 2012. This circumstance does not reflect a decline in NSF's support for scientific ocean drilling which remains strong despite a ~1% cut in the overall FY 2011 budget for NSF. However, the reasons for the projected reduction in drilling time are longstanding and complex, involving much more than the current national economic crisis or the increased cost of fuel. Below I provide a "big picture" view of the overall investment by NSF in IODP. I explain the causes of the reduced JR schedule in FY 2012 and outline some steps being taken by OCE in hopes of alleviating the situation.

In the seven-year period from the beginning of IODP in FY 2004 to the end of FY 2010, NSF expended \$517.4 million in ocean drilling including the JR retrofit (\$115M), stimulus funds (\$25M), and annual operating funds (\$377.4M). Expenditures in FY 2011-2013 will likely bring the entire investment in the 10 year program to well over \$700 million. While this is less than some may have hoped for when program was authorized by the National Science Board (NSB), it still represents a very substantial investment. It is important to understand that NSB approval is an authorization to expend funds, not an appropriation. Back in the early years of the previous decade when NSF's overall budget was growing rapidly, ramping up the IODP/NSF budget to a much higher level seemed plausible. Unfortunately, world events since then have dramatically altered the economic landscape in which we now operate and that goal may no longer be attainable.

Another way to view NSF's support for ocean drilling is to compare our investment in IODP relative to other programs. The budget for IODP resides entirely within the Division of Ocean Sciences (OCE). In FY 2010, IODP expenditures totaled \$63.4M representing 18% of the total OCE budget (\$349.9M) making it by far the largest single program in the division. By comparison, in FY10 the budget of the Marine Geology and Geophysics core science program stood at \$28.4M, less than half (45%) of the IODP budget. From FY 2004 to FY 2010, the total OCE budget increased from about \$320M to \$350M or 9.4% while at the same time the IODP budget increased by 25%. Other OCE programs saw much lower proportional increases. For example, our investment in core science programs in the Ocean Section (Biological, Chemical, and Physical Oceanography Programs) increased by 11.1%, the Marine Geology and Geophysics Program declined by 3.4%, and expenditures on the academic research fleet remained essentially flat (0.0%). Hence, since FY 2004, IODP has been treated far more favorably than any other program in OCE. Given a flat budget in FY 2011, and increased fuel costs affecting not only IODP but also the entire academic research fleet, any additional increase in the IODP budget would have to come at the expense of other programs in OCE.

If the IODP budget has been increasing, why is our ability to keep the JR at sea declining now? First and foremost are the costs of fuel which have skyrocketed over the last few years. Second, IODP operating costs over the last few years have been subsidized by \$25M in one-time stimulus funds received in 2009. Those extra funds are what enabled 8 months of operation since the JR left the shipyard but now are nearly exhausted. Third, cost overruns during the retrofit of the JR were temporarily financed by the vessel owner. Those additional costs were amortized by adding them to the cost of the lease at a rate of \$5M per year. That excess cost directly reduces funds available for expeditions. The good news is those added costs will be fully paid off by the end of FY 2013.

NSF recognizes and understands the stress to the IODP program caused by a reduction to a 6 month drilling schedule. We are taking actions to alleviate the situation. We are allowing the US Implementing Organization (USIO) to try to schedule an industry-funded expedition in the near future. Doing so would have three major benefits. First, it would remove NSF-funded day-rate costs during the period that the JR was used by an industry organization. Those saved funds could be applied elsewhere. Second, it would enhance staff retention by enabling at least some of the crew to have more days at sea at no cost to NSF. Third, it would set the stage for a viable business plan in a proposed renewal of the program. In addition, discussions with international partners about future expedition scheduling are currently underway.

Our record shows that among its many ocean science priorities, OCE has provided strong support for ocean drilling science. Our regard for the value of ocean drilling remains high while recognizing that other areas of ocean science also deserve increased support. We look forward to the release of the new Science Plan and the findings of the National Research Council (NRC) review of ocean drilling science. Using these reports and others (e.g., the update of the Ocean Research Priorities Plan due this summer; the just-released NRC study on future ocean science infrastructure needs) a new subcommittee of the Advisory Committee for Geosciences will provide guidance to NSF on balancing the scale of future investment in ocean drilling as we contemplate the potential renewal of the drilling program in a time of federal budget uncertainty.

The NSF relies heavily on input from the academic community in making decisions. We really appreciate hearing from the community about the value of the programs we support. Thank you again for sharing with us your views about the importance of ocean drilling science.

Regards,

David O. Conover, Director

Division of Ocean Sciences