Division of Ocean Sciences

Fall 2000 Newsletter

Division of Ocean Sciences Restructures to Meet Changing Needs

Ocean sciences are changing. The amount of international cooperation in research today is substantially greater than a decade ago. The number of special focused research programs, with their associated planning structures and steering committees, has increased dramatically. And both Congress and the Administration have demonstrated significant interest in ocean science, which has manifested itself in numerous interagency activities such as the National Oceanographic Partnership Program.

To respond to the changes that have already occurred and to prepare for increased activity in the decades to come, the Division was recently restructured. Since 1981, the Division had been divided into two Sections: the Ocean Sciences Research Section, within which all the research programs resided; and the Oceanographic Centers and Facilities Section, which provided support for the Academic Research Vessel Fleet and the Ocean Drilling Program. The new structure for the Division arranges programs into logical groupings by research interests and functions (see Figure 1). It consists of the following three sections:

- **Ocean Section (OS)**: consisting of the Biological Oceanography, Physical Oceanography, and Chemical Oceanography Programs. OS supports research on processes occurring within the water column from the air/sea interface to the ocean floor.

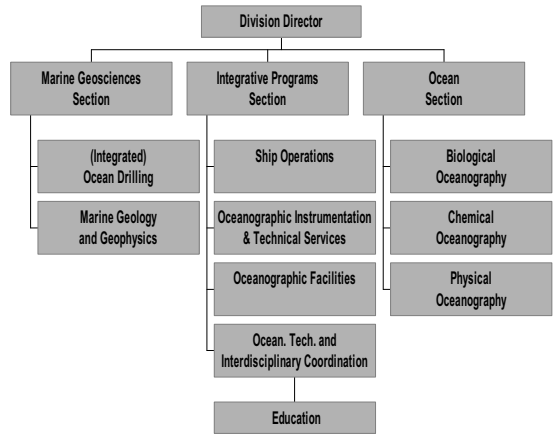

FIGURE 1: New organizational chart for the Division of Ocean Sciences

- **Marine Geosciences Section (MGS)**: consisting of the Marine Geology and Geophysics and the Ocean Drilling Programs. MGS supports research on processes that occur on and below the seafloor and at the water/sediment/rock interface.

- **Integrative Programs Section (IPS)**: consisting of the Ship Operations, Instrumentation and Technical Services programs, the Oceanographic Technology and Interdisciplinary Coordination program, the Education program, and activities related to the National Ocean Partnership Program. IPS supports activities, including both research and facility support, that are supportive of the objectives of the Division as a whole, that do not have clearly identifiable disciplinary 'homes', and that are fundamentally important to both OS and MGS.

This new structure is expected to improve internal efficiencies and to allow for balanced growth across the Division. The addition of a new senior-level Section Head will allow management to give increased attention to strategic issues such as the development of the Integrated Ocean Drilling Program as well as the interagency long-range plan for the Academic Research Vessel Fleet and the interagency plan for U.S. integrated ocean observations.

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Letter from the Division Director

Au Revoir - and Thank You ……

This will be the last OCE Newsletter to which I will contribute. On December 1st I begin a new job as Director, Lamont-Doherty Earth Observatory at Columbia University.

As I write this it is almost precisely five years since I joined NSF as the Division Director for Ocean Sciences. I shall not attempt a grand retrospective of this interesting half-decade, not only because it would not be possible to provide a balanced and representative view in this small space, but also because the two year lag between budget preparation and implementation means that the most exciting stuff is yet to come!

The most important message I wish to convey is one of sincere thanks to the community for support and help over the past five years as I have tried to give ocean sciences research the recognition that it deserves both at NSF, and within broader U.S. Federal Government planning. I leave NSF with an even greater appreciation and respect for the quality and significance of the science in which oceanographers are engaged. I believe that progress has been made in establishing the fact that basic knowledge of the ocean's dynamic processes is critical to the national interest and to the planet's long term health. This is achieved through you - the community - and the myriad of planning and public outreach activities in which you are engaged.

The future for the NSF budget looks more positive today than at any other time that I can recall. As the budget growth that NSF is fighting for becomes reality, the rapid progress on important problems that this will enable will reaffirm the importance of ocean sciences in the national interest. But NSF will continue to manage a tough competitive system - this IS the way to maintain quality, to insure that resources are directed to the most exciting topics, and to retain world leadership.

So, thank you, for your support, your understanding and your confidence.

I return to the academic community with great respect for my NSF colleagues here, and with confidence that the health of the ocean science research and education enterprise will continue to grow.

I am sincerely indebted to Don Heinrichs who has agreed to interrupt his retirement to return to the Division in the role of Interim Division Director effective 1 December, and so insure a smooth transition to new leadership.

Mike

G. Michael Purdy
Director
Division of Ocean Sciences

FastLane Update

Proposal Preparation

Thanks to the efforts of everyone in the ocean sciences community (Principal Investigators, Research Staff and Assistants, Sponsored Research Office Staff, etc.), we attained our goal of 100 % submission of proposals via FastLane for the 15 August 2000 target date. We received a total of 505 proposals consisting of 285 individual proposals and 220 proposals for 92 collaborative activities.

As most of you are aware, 1 October 2000 was the date set forth in Important Notice No. 123 (3 September 1998) as the deadline for the changeover to full electronic submission of proposals at NSF. The ocean sciences community made rapid progress toward meeting that deadline, considering that its utilization of FastLane in FY 1999 was only approximately 19%. This percentage increased to 44% in the first half of FY 2000 and, with 100% submission for the 15 August 2000 target date, we attained a submission rate for FY 2000 of about 60%.

There continue to be some printing problems (< 5%) with proposals not opening when 'Print Entire' is selected. In most cases, these were repaired by NSF staff, but it does demonstrate the importance of checking the 'Print Entire' function prior to submitting the proposal. Proprietary and Type 3 fonts are still an issue but many of our TeX and LaTeX users were able to change to Type 1 fonts, making electronic viewing of their proposals much easier.

Use of color figures remains an issue since NSF does not print proposals in color. OCE recommends that for those proposals submitted containing scientifically necessary color, PIs should continue to submit the requisite number of full hardcopies directly to the applicable Program Officer. Special instructions for proposals that contain high resolution graphics can be found at http://www.fastlane.nsf.gov/a1/newstan.htm#color.

Annual/Final Project Reports

Since October 1999, NSF has required that all Annual and Final Project Reports be submitted via FastLane. The electronic system is not forgiving when it comes to missed deadlines, which results in delays in commitments of continuing grant increments. In the case of final reports, late submissions delay the processing of new awards for PIs and associated Co-PIs. Annual project reports are due 90 days **before** the end of the current budget period. Final project reports are due 90 days **after** expiration of a grant. Approximately 30 days before expiration, NSF sends out a notice to remind the PI of the requirement to file the final report. To avoid grant processing complications, we urge PIs to get annual and final project reports in on time.

We greatly appreciate everyone's patience and persistence as we all become more familiar with this new electronic process for submitting proposals and reports. We will continue to keep you informed of any important changes to this system and hope that it gets easier for you as time goes on. Please do not hesitate to contact the OCE FastLane representative, Kandace Binkley, if you have any questions. She can be reached by phone at (703) 292-8582 or by sending an email to ocefl@nsf.gov.

(continued from page 1)

The restructuring will entail several changes in responsibilities. Mike Reeve, who recently became head of the former Oceanographic Centers and Facilities Section will serve as head of the Integrative Programs Section. Larry Clark, former Program Director of the Oceanographic Technology and Interdisciplinary Coordination program, was recently named as head of the Ocean Section. A search will be initiated for the new Section Head for the Marine Geosciences Section. In the meantime, Don Heinrichs (brought out of retirement temporarily to help with the transition process) will serve as Acting Section Head for MGS in addition to serving as Interim Division Director. The staffing at the Program level will not be affected by these changes, so community investigators are expected to experience no changes in their routine interactions with program staff. But this strengthening of the senior management of the Division will enable NSF to continue to play an increasing leadership role in ocean sciences research and education on both the national and international scenes.

Program News

Biological Oceanography

Personnel News

Dr. Kendra Daly is coming to the end of her tenure as Visiting Scientist and Associate Program Director for Biological Oceanography. She will leave the NSF in February 2001 to take up a faculty position at the University of South Florida's (USF) College of Marine Science – St. Petersburg. Kendra has been a fantastic colleague here in OCE, serving the NSF and the community in many capacities with major contributions to U.S. GLOBEC and U.S. JGOFS. She roped some of us into holiday-time singing careers, a la Handel, and brought levity to BioOCE events. USF is lucky indeed.

We are currently looking for a replacement for Dr. Daly as Visiting Scientist and Assistant/Associate Program Director for Biological Oceanography. See the job announcement posted at http://www.nsf.gov/home/chart/work.htm. We are open to scientists with a variety of expertise in the field of biological oceanography / marine ecology; we are particularly interested in scientists with good experience in microbial ecology and the U.S. academic science enterprise. No singing credentials are needed.

Alison Sipe, our former Sea Grant Fellow and Science Assistant in the Biological Oceanography and Oceanographic Technology and Interdisciplinary Coordination Programs, has left for greener pastures. She has been mountain-biking the "slick rock" terrain of Utah for a brief breather on her way to pursuing interests in molecular biosciences. Alison provided much to the Division during her year-and-a-half tenure (e.g., in Biocomplexity, LExEn, Field Stations and Marine Labs, Genomics, and other areas) and was an absolutely wonderful person to work with. We will miss her and hope that she is not lost to the ocean sciences community.

Update on GLOBEC

In cooperation with NOAA, NSF/OCE/Biological Oceanography is supporting the U.S. GLOBEC Northeast Pacific Program in the Coastal Gulf of Alaska. This will complement the California Current System part of the Northeast Pacific Program that was initiated a year ago. The NSF will support 10 of the 14 awards made in support of these programs in 2000. More information on the U.S. GLOBEC Northeast Pacific Program is available at http://globec.oce.orst.edu/groups/nep/.

U.S. GLOBEC Northwest Atlantic/Georges Bank Program: The Biological Oceanography Program, on behalf of the Division of Ocean Sciences, and in cooperation with NOAA Coastal Oceans Program, intends to initiate *Integration and Synthesis of the U.S. GLOBEC Northwest Atlantic/Georges Bank Program Studies: The impact of oceanographic and climate-related processes on the dynamics of plankton and fish populations*. This will be the fourth and final phase of the U.S. GLOBEC Northwest Atlantic Program. Its principal objective is to foster integration and synthesis of data collected during the field phases of the program, and other relevant data and knowledge, through group interactions and modeling activities. No new fieldwork will be supported.

The Phase IV initiative is absolutely open to the participation of scientists without past involvement in U.S. GLOBEC as well as past and present U.S. GLOBEC investigators. The organization of principal investigators and proposals with emphasis on the integration of observations and models, and the close coordination of research groups with one another, will be vital to the success of the Phase IV synthesis effort. Look for the announcement to be released from NSF and NOAA this fall.

Update on Biocomplexity

The second round of the Biocomplexity (Phase II) competition was concluded in June of this year. As was the case for the first year of the competition, ocean science investigators were well represented among the awards. About 300 research proposals and about 170 incubation activity proposals were submitted. Five ocean science-related projects were awarded a total of $16.4 M of ~ $45 M for the overall competition (16 awards total). Three projects will be managed by the OCE Biological Oceanography Program, one by the Office of Polar Programs, Arctic Natural Sciences Program, and another by the Directorate for Biological Sciences, Ecology Program. In addition to these large interdisciplinary projects, six smaller awards (around $100,000 each) for "Incubation Activities" were awarded for OCE-related planning activities to develop future Biocomplexity proposals.

Biocomplexity research awards (listed by the lead investigators below, along with the subject and other institutions involved):

- *Alan Hastings et al. (U.C. Davis, Scripps, S.F. Estuary Inst.)* on: An invasive marsh grass, interactions with sediment geophysics,water flows, and other plants species; changes in invertebrate communities and bird foraging; influences on the environmental value to humans;influences on the ability of the system to facilitate further invasive species. San Francisco Bay.
- *Mark Bain et al (Cornell Univ.)* on: Interactions of hydrodynamics, embayment characteristics, watershed, water quality and ecosystem properties in Lake Ontario.
- *Jesus Pineda et al (WHOI, UNC, Cent. Connecticut, CICESE - Mexico)* on: Internal waves, long and cross shelf transport, life historydynamics and behavior in the determination of benthic population dynamics. San Diego/Northern

Baja California.

- *Peter Verity et al (Skidaway, Gerogia Tech)* on: Physical-biological-geochemical coupling in the alternate states of a marine phytoplankton dominated system: Phaeocystis and complex system adaptation, Norwegian Sea.
- *Falkowski et al (Rutgers, and many others)* on: The adaptive radiation/evolution in the ocean's primary producers.

Biocomplexity incubation awards (listed with lead investigator and title):

- *Craig Cary, U. Delaware,* Origins of Biocomplexity: Colonization and Succession of Microbial Communities in a Dynamic Geochemical Environment
- *Robert DeSalle, American Museum of Natural History,* Development of an integrated research plan for analyzing the viability of a marine reserve network
- *David Eggleston, North Carolina State Univ.,* Interactions between Life and Environment in the Coastal Zone, North Carolina
- *Joel Morrison, Ohio State Univ.,* Biocomplexity of Lake Erie
- *Kenneth Tenore (for Roberta Marinelli), U. Maryland,* Multiscale models of ecological and geochemical interactions in marine sedimentary environments
- *Pedro Verdugo, U. Washington,* The colloid gap: interfacial phenomena among marine biological, chemical and physical environmental systems and their role in carbon cycling

More details on these awards, including abstracts, can be found at http://www.nsf.gov/home/crssprgm/be/.

LExEn 2000-2001 Results

Bio OCE served as the "lead" for the participation of OCE in LExEn this year. The competition has been finalized with 25 awards coming from both 2000 and 2001 funding. The award list can be accessed at http://www.nsf.gov/home/crssprgm/lexen/start.htm. Seven awarded projects involve OCE.

Census of Marine Life

As part of National Oceanographic Partnership Program (NOPP) activities, the Biological Oceanography Program participated in the review of proposals to develop the Ocean Biogeographic Information System (OBIS) (see: http://core.cast.msstate.edu/NOPP00BAA.html#topicb). Nineteen proposals were received for OBIS activities and eight were recommended for awards (see: http://core.cast.msstate.edu/censobis1.html). Three proposals will be managed by the Biological Oceanography Program. Funding within NSF for this activity was provided by OCE/OTIC Program and by the Systematics Program and DATABASE within the Directorate of Biological Sciences (BIO).

The need for a focus on "species" and to develop biological data bases using "state of the art" technology was highlighted as a cross cutting issue in the OEUVRE (Ocean Ecology: Understanding and Vision for REsearch) report. OBIS activities are a modest beginning to address this issue.

Research Experiences for Undergraduates (REU)

REU Supplements – deadline to Program 1 February 2001: Bio OCE is encouraging PIs to propose ways in which they and other collaborating scientists supported by OCE might use a number of undergraduates in a sort of research consortium arrangement. We are interested in arrangements that provide experience with interdisciplinary research in a community setting of PIs, graduate students, post-docs and technicians. In addition, the setting should provide students with diverse research experiences. Consortial arrangements might include mentorship by a number of PIs at a single institution. Alternatively, a consortium might occur in a field operation implemented by PIs/mentors from different institutions. We are looking for creative plans for the use of REU supplements that would not fit well in the context of REU sites, but do more to show undergraduate students the diversity and dynamics of interdisciplinary research in the ocean sciences.

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Chemical Oceanography

During the past twelve months, the Chemical Oceanography Program (CO) has continued to receive and fund research proposals covering a wide topical range. The funding rate for the past three core program panels has varied between 19% and 25%. Despite the topical breadth, there has been a marked increase in the number of proposals addressing various aspects of three areas: the marine nitrogen cycle, coastal groundwater-seawater interactions, and iron geochemistry. In particular, the number of high-quality iron-related proposals submitted to CO has increased so rapidly that it has become a challenge to find the optimal balance between meeting the most critical needs for research in this rapidly growing field of marine biogeochemistry and maintaining the flexibility required to support cutting-edge research in other emerging domains of the discipline. Our core Program panels and mail reviewers have played pivotal roles in helping us strike what we believe is the proper balance, but it is never easy to decline funding for a hot research idea — and our principal investigators rarely send us any other kind! What are your thoughts on this? We'd like to know!

In cooperation with our long-time JGOFS partner, the Biological Oceanography Program, we are now running the next-to-last proposal competition for the U.S. JGOFS Synthesis and Modeling Project (SMP). As in the past three years, the SMP proposal panel met during the same week as the core Ocean Science Research Section panels in November, 2000. Although the final call for proposals for the U.S. JGOFS Program will come in August or September, 2001, we anticipate that the two immensely popular and productive time-series activities initiated under U.S. JGOFS — HOT and BATS — will continue after the parent program closes in CY 2003-2004.

Ocean Carbon Cycle Research: The Next Decade

CO continues to play a major leadership role in the planning and implementation of global carbon cycle research at NSF and beyond. The pace of global carbon cycle research planning has accelerated markedly in CY 2000 in the federal agencies as well as in the academic community, and the Program has formed supportive contacts throughout both of these spheres. During CY 2000, especially during the last few months, several community-based ocean carbon cycle planning activities have not only flourished but, moreover, have also begun to work together to help the Division of Ocean Sciences develop plans for the next decade of carbon cycle research. The community can expect to see major steps forward in the planning and implementation of ocean carbon cycle research opportunities at NSF in 2001 and 2002. In the interim, we encourage interested parties to become acquainted with progress that has been made in major segments of the U.S. carbon cycle research community by checking the following web sites:

- OCTET: *Ocean Carbon Transport, Exchanges and Transformations: OCTET Workshop Report.* (March, 2000). Available on-line at http://alpha1.msrc.sunysb.edu/octet .
- EDOCC: *Ecological Determinants of Oceanic Carbon Cycling: EDOC Workshop Report. (March, 2000).* Available on-line at http://picasso.oce.orst.edu/orsoo/edocc .
- SOLAS: *Surface Ocean Lower Atmosphere Study.* SOLAS Home Page at http://www.ifm.uni-kiel.de/ch/solas/ .
- RIOMAR: *River-Dominated Ocean Margins: A Proposed Initiative in the Carbon Cycle Science Plan* . Available on-line at http://www.tulane.edu/~riomar/ .
- Chapman et al. *The Need for Continuing Deep-Ocean CO2 Survey.* Available on-line at http://ocean.tamu.edu/WOCE/hydrography7.pdf
- *A U. S. Carbon Cycle Science Plan.* (Report of the Carbon and Climate Working Group to the Agencies of the U. S. Global Change Research Program. Available on-line at http://www.carboncyclescience.gov/planning.html .

The above do not constitute an exhaustive set of resources on planning in carbon cycle research, but any oceanographer seriously interested in the subject should be acquainted with them — as well as with carbon-related topics in the four ocean sciences "futures" reports (APROPOS, FOCUS, FUMAGES, OEUVRE).

Personnel News

In July, 2000, Dr. Peter Milne of the Rosenstiel School of Marine and Atmospheric Sciences (University of Miami) began a two-year rotation in the Chemical Oceanography Program as Associate Program Director. Peter's background encompasses both ocean and atmospheric chemistry, and he has experience in the biomedical end of chemistry as well, which should help strengthen our programmatic purview.

Dr. Simone Metz finished the first or her two years as Associate Program Director in October and has quickly settled into the Program and the Division as a seasoned program officer. Simone, with assistance from Peter, has done a marvelous job of improving and maintaining our mail and panel review activities.

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Marine Geology and Geophysics

MARGINS

The second MARGINS funding competition was held in April, 2000. A joint OCE-EAR panel reviewed 25 proposals and recommended funding 10. These included 4 projects to work in the Izu-Bonin-Marianas subduction area, 2 studies in Costa Rica/Mid Americas seismogenic zone, 1 in Cascadia seismogenic zone and 1 lab study. The other funded proposals included a workshop and support of the MARGINS office. The MARGINS community also held two "theoretical institutes" and planning workshops on the themes of "inside the subduction factory" and "from source to sink", with the objectives of summarizing the state of the art and detailed planning of coordinated programs in the selected "focus" areas. These workshops were attended by a broad segment of the community and a dynamic mix of more experienced and younger researchers. Documents detailing the deliberations of these groups are expected shortly and will help guide future research in these areas.

A new joint EAR-OCE program announcement for MARGINS has been issued. The new "Announcement of Opportunity" includes all four initiatives (seismogenic zone, subduction factory, rupture of continental lithosphere and source to sink themes) and "focus" areas identified by the MARGINS community. The MARGINS proposals deadline remains the same (January 16th, 2001) for FY 2001, but for FY 2002 the

deadline will change to November 1st, 2001. The change is necessitated because the old deadline meant several conflicts with other MG&G deadlines and panels which tended to overtax the reviewer community. Earlier deadline and panel meetings will also help make early funding decisions and allocation of ship time for at-sea work.

RIDGE

Planning for RIDGE 2000 continued with the Exploratory Studies Workshop held in Nashville on October 5-7. The results of this workshop, together with the results of the Integrated Studies Workshop and the RIDGE 2000 meeting, will be used to generate the Science Plan for RIDGE 2000. The RIDGE Steering Committee has selected Charles (Chuck) Fisher of Pennsylvania State University to be the first chair of the RIDGE 2000 Program. His appointment will take effect on October 1, 2001.

Personnel News

We are pleased to announce that Rodey Batiza has joined MG&G as a Program Director. Rodey comes to NSF from the University of Hawaii at Manoa, Department of Geology and Geophysics, School of Oceanography, Earth Sciences and Technology (SOEST). Among other responsibilities, Rodey will be involved in the management of the MARGINS program. We welcome him aboard.

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Ocean Drilling Program

Principals decide principles

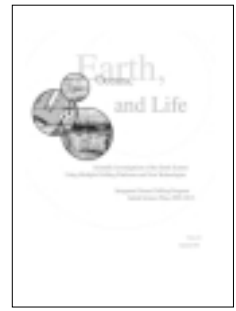
It is always a pleasure to be able to report progress, and this summer has seen significant progress in the development of the policies and principles that will guide the Integrated Ocean Drilling Program (IODP), the future scientific drilling program post-2003. The Science and Technology Agency of Japan (STA) and the U.S. National Science Foundation (NSF) have agreed on a set of principles, which define the relationship between the two agencies with respect to IODP, their joint relationship with future international partners, and the operation of future scientific drilling assets. This important step makes it possible for the providers of the two major physical assets of the program, the 'Riser capable' and the 'non-Riser' drilling platforms, to properly manage their legal and financial responsibilities. Of even greater significance, the principles allow IODP's most important asset, the global intellectual capital of all its members, to govern the scientific activities of the future program. This will be executed through a centrally managed structure that will implement the very best science possible as recommended by a single science advisory structure.

The wide ranging principles developed over a period of time by STA and NSF, and agreed to this past August, are contained in a set of four documents: IODP Program Principles, IODP Platform Principles, IODP Membership Principles, and IODP Implementation Principles. These documents form the foundation of the new program. These principles also form a basis for a formal understanding between STA and NSF. The Program Principles state that, first and foremost, IODP is a scientific research program, which is based on international cooperation. It will be guided by a science advisory structure composed of scientists and engineers representing IODP members, and the results of the Program's scientific and engineering activities will be openly available.

The Platform Principles state that at the core of IODP's capability will be two vessels: a riser capable platform made available by STA, which will be owned and operated by the Japanese Marine Science and Technology Center (JAMSTEC), and the non-riser platform made available by the National Science Foundation. Legal and financial responsibility, including mobilization and platform operation costs, for the riser-capable vessel will reside with Japan and for the non-riser vessel with the United States.

The Platform Principles recognize that access, on an occasional basis, to additional drilling capabilities (beyond the two primary vessels) may be required to meet specific objectives of the science advisory structure. As with the two primary platforms, legal and financial responsibility, including mobilization and platform operation costs of additional drilling platforms, is to reside with the organization that decides to offer this additional capability to the Program. Provision of such a capability

The IODP Draft Initial Science Plan (version 5.0), and additional planning information on the program, is available at http://www.IODP.org/.



will not be considered a contribution *in lieu* of annual IODP membership contribution. Science operation costs for additional drilling capabilities will, however, be eligible for support from IODP program funds.

The Membership Principles, in addition to defining eligibility, spell out membership rights and responsibilities. The intent is to have IODP membership open to national or government agencies (or their representatives) which have an interest and/or capability in geosciences research, and signing of a memorandum of understanding with STA and NSF based on a 10 year commitment to participate. The financial contribution required for one participation unit has yet to be determined, however, financial contributions from international partners will be co-mingled to support science operation costs. It is understood that STA and NSF will contribute equally to total program cost and acquire additional units necessary to fully support the program.

These principles were agreed to between STA and NSF and then presented to the IWG for consideration and discussion at their fifth meeting this August in Tokyo.

IODP will officially begin on 1 October 2003 at which time membership and implementing agreements will go into effect. The IWG agreed to an Interim Science Advisory Structure (ISAS), which will be organized and begin operating in June 2001 and exist until 1 October 2003, to continue scientific planning for IODP. ISAS will be a joint working group representing JOIDES and the Japanese OD21 Science Advisory Committee with an Interim Planning Committee (IPC) serving as its highest-level committee and management authority. IPC will be co-chaired by the present chairs of IPSC and the OD21-SAC. IPC will encourage the international community to submit drilling proposals for IODP. These will be examined and reviewed by ISAS, however, final evaluation, ranking, and scheduling will be conducted by the formal IODP Science Advisory Committee, which will be established on 1 October 2003. The ISAS committees are expected to meet in conjunction with their equivalent JOIDES committee.

On another note, the riser vessel is under construction and the final piece of the budget for its completion, as announced by JAMSTEC, should be in place by 2001. So, as you can see, a lot has been accomplished over the summer months, but there is a lot more to do.

NSF continues to seek the funds and authorization to implement the new scientific ocean drilling program. In December, the Directorate for Geosciences will inform NSF's governing body, the National Science Board (NSB), of progress to date. In the spring of 2001, NSF will formally review the finalized science plan produced by IPSC and intends to seek preliminary program approval from the NSB by fall of 2001.

In preparation for NSF's formal review of the internationally prepared IPSC science plan, NSF has asked USSAC to prepare a companion document reflecting how well the plan meets the U.S. scientific community's requirements for a future scientific ocean drilling program as reflected in numerous U.S. sponsored workshops and science planning activities.

USSAC is also engaged in a continuing effort, at NSF's request, to examine and recommend optimal models for the support of U. S. scientists in the future IODP.

Beyond 2001, NSF funding will begin to focus on research and data acquisition required for preparation of drilling proposals in IODP.

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Ocean Technology and Interdisciplinary Coordination

Technology Development

The overarching objective of the OTIC Technology Development Program is to support efforts to develop new tools and capabilities for conducting ocean science research. In some cases technology development is undertaken as part of a research project, and in other cases technology development projects lay the groundwork for providing the research community with new tools and capabilities. Laying the groundwork for new capabilities that address sustained, time-series observations remains a high priority for the Program. Two areas have been identified that require new and improved capabilities: systems for making sustained observations for ocean

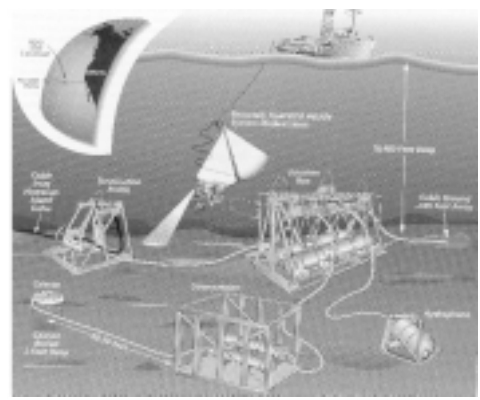

Diagram of a ocean observatory. Graphic courtesy of Jayne Douchette & E. Paul Oberlander, Woods Hole Oceanographic Institution.

research, and long-term chemical and biological sensors.

In July 2000, the National Academy of Sciences (NAS), Ocean Studies Board published a report entitled "Illuminating the Hidden Planet: The Future of Seafloor Observatory Science." Two findings included the statements that "seafloor observatories have significant scientific merit and they will complement and extend current scientific approaches" and "the extent to which seafloor observatories will address future requirements for conducting multidisciplinary research is very significant, and essential in some fields." The NAS lead recommendation was that "NSF should move forward with the planning and implementation of a seafloor observatory program." Plans are underway to develop an initiative that will start building a network of ocean observatories to facilitate the collection of long time-series data streams needed to understand the dynamics of biological, chemical, geological and physical processes. The NAS report validates the premise that future ocean research requirements will require capable research vessels and other mobile platforms to enable the spatial exploration of our oceans. Additionally, a new paradigm requires a system of observatories to facilitate the 'temporal' exploration of our oceans.

The NAS report further points out that some technologies are ready for establishing and maintaining a system of observatories, while others need further development, especially in the field of chemical and biological sensors. At a sensor workshop held at the Spring 2000 ASLO meeting, it was agreed that a lack of inexpensive and reliable sensors impedes chemical and biological research. For example, it was cited that 3,000 profiling floats are planned to be deployed as part of the international ARGO Program (http://www.argo.ucsd.edu) to monitor global changes in ocean temperature and salinity as part of a climate observing system. The inability of biogeochemists to utilize any of these floats was perceived as a tremendous missed opportunity to link physical, chemical, and biological processes to climate variability. Relevant sensors are just not available.

A sensor network and information exchange has been established on the www.aslo.org web page. The exchange will include an interactive, searchable directory where individuals and industry representatives will be able to submit or update statements about their research activities, interests, and basic contact information. Other features will include links to sensor-related web sites, and a discussion forum.

The OTIC program would welcome proposals for developing innovative new sensors that address ocean science research requirements. Program would also be receptive to proposals for conducting one or more community workshops along the lines of the MARCHEM workshop in 1993. A feature of that workshop was participation by several commercial instrument manufacturers and several analytical chemists. The cross-fertilization of ideas among these individuals and the ocean scientists produced some creative sensor designs and resulted in several successful prototypes.

Coastal Ocean Processes (CoOP) program

The two new CoOP research projects on Wind-Driven Transport Processes in the NE Pacific have successfully gotten underway. One is headed by Jack Barth at Oregon State University entitled "Coastal Ocean Advances in Shelf Transport (COAST)." Field studies will be organized into three specific campaigns employing two ships, moorings, and aircraft and satellite-based observations. Two of these campaigns will occur during upwelling in 2001 and one during downwelling in 2003. The second project is headed by John Largier at Scripps Institution of Oceanography, with collaborators at San Francisco State University, and University of California - Davis and Santa Cruz, and is entitled "Wind Events and Shelf Transport (WEST)." WEST is a 5-year study of the role of wind-driven transport in shelf productivity. Investigators aim to better understand the competing influences of wind on productivity by studying the 3-dimensional circulation, wind field, size-structured plankton distributions, productivity processes and transport over the shelf off Bodega Bay in northern California.

The two major projects in CoOP's Great Lakes initiative, KITES and EEGLE, are in their fourth year, having completed their final field seasons. Both projects have two years to go for data processing and analysis. Links to these projects' web sites, as well as the COASTS and WEST web sites, are on the CoOP web page http://www.skio.peachnet.edu/coop/.

And CoOP has recently published a new report entitled "Transport and Transformation Processes over Continental Shelves with Substantial Freshwater Inflows." This is the report from the CoOP Buoyancy-Driven Transport Processes Workshop held in October 1998. The CoOP Science Steering Committee has recommended that buoyancy-driven transport be the topic for the next major process study. An Announcement of Opportunity is anticipated in FY 2002. Copies of the report are available through the CoOP Office.

Larry Clark (hclark@nsf.gov)
Lisa Rom (erom@nsf.gov)

Physical Oceanography

In the past year, the Program has received about 180 proposals spanning a broad range of ocean science topics for consideration by the May 2000 and November 2000 panels. Amongst the proposals recommended for funding at the May panel, we had a good number of laboratory studies on mixing, coastal flows, and geophysical fluid dynamics. There seems to be growing interest in the community in the study of abys-

sal flows and their interaction with topography as well as linkages between polar and sub-polar oceans and linkages between the sub-tropical and tropical oceans. The Program continues to see a number of proposals dealing with near-shore processes. Each panel considers several interdisciplinary proposals; for example, from the May 2000 panel, two proposals have been jointly funded by the Physical and Biological Oceanography Programs.

The bulk of the proposals that the Program receives and funds involve single investigators or small numbers, typically 2-4, of collaborators. However, the Program also tries to maintain the capacity to absorb larger research collaborations where the science warrants a combined effort. An example might be a project that involves 5-10 investigators bringing several techniques to bear on a particular problem of high scientific interest. Since the budget for such an effort may reach as high as $5M to $8M over five years, the Program can usually only accommodate one such project every year or two. Because they involve a reasonably large commitment of resources, such proposals usually receive very detailed scrutiny from the mail reviewers and panel.

The Program is always delighted to see adventurous proposals. From discussions with investigators at meetings and during site visits, we sometimes get the impression that the review process is perceived as being very conservative. We suspect that our review panelists would not describe themselves as conservative. Our experience has been that, like most of the community, what excites our panelists most is interesting and innovative science. The Program feels that funding such science is its main objective.

The Program is beginning to see science proposals that involve the use of new instrumentation, such as moored profilers and gliders, as primary observational tools. To begin to meet the demand for moored profilers, the Division of Ocean Sciences has funded a small Moored Profiler (MP) instrument pool at WHOI. This is intended as a community resource and follows the example of a somewhat larger Ocean Bottom Seismometer pool recently funded by the Division. It is anticipated that requests to use these instruments will be made as part of regular science proposals and that the distribution of MPs will be scheduled after funding decisions have been made, rather like the ship scheduling process (though much more informal). As demand warrants, the Division may provide funds to add more instruments to the pool. Potential users of moored profilers are encouraged to contact WHOI directly for information on the logistics associated with deploying and recovering MPs and information on the associated costs that should be included in proposals. Further details can be found at http://hrp.whoi.edu/mprof/mpintro.html. The Program hopes that the OBS and MP pools will provide models for how other types of instrumentation with a wide range of potential applications, both new, such as gliders, and old, such as traditional moorings and floats, can be made available to the community in an efficient and readily accessible manner. Scientists and institutions wishing to explore instrument and resource pools further are encouraged to discuss their ideas with the Program.

CLIVAR News

After several years of hard work, the U.S. CLIVAR Science Steering Committee and its implementation panels have written implementation plans for the three regions of higher priority to the U.S.: the Pacific and Atlantic sectors and the Pan-American region. The cornerstones of these plans are the Pacific Basin Extended Climate Study (P-BECS), the Atlantic Climate Variability Experiment (ACVE), and the Pan-American Climate Study (PACS) respectively. The primary interest of the Physical Oceanography Program is to start implementing the extra-tropical aspects of the P-BECS and ACVE plans beginning with the February 15, 2001 target date. The rationales are to encourage synergy with the SEARCH (Study of Environmental Arctic Change) program and the developing ocean carbon cycle research program, and to complement the emphasis on the tropics of NOAA's Office of Global Programs. The assumption is that the Argo program, a key element of a global ocean observing system, will be implemented separately as NOAA's contribution to the National Ocean Partnership Program in coordination with international partners.

For more information about the U.S. CLIVAR program, please contact Dr. David Legler, the director of the U.S. CLIVAR Project Office (legler@usclivar.org) or check the CLIVAR web site: http://www.usclivar.org/index.html.

On a related topic, we would like to encourage interested physical oceanographers to actively participate in developing plans for ocean carbon research with their biological and chemical oceanographer colleagues. As mentioned in the Spring 2000 newsletter, several efforts are underway which focus on different aspects of the problem like the role of the biological and solubility pumps, the carbon flux between the ocean and atmosphere, the role of continental margins, and long term changes in carbon inventories. For more details on these planning efforts, please read the Chemical Oceanography Program description.

WOCE News

The AIMS phase of WOCE is winding down. Scientists interested in submitting to the February 15 and August 15, 2001 target dates should use the existing program announcement (NSF 97-88) as guidance for their proposals. We anticipate that the final WOCE conference will be hosted by the U.S. in the Spring/Summer of 2002.

Personnel News

We anticipate that the current staff will remain in place for

the coming calendar year, but will be looking for new rotators in 2002. Anyone interested in giving something back to the community by serving a one- or two-year tour in the Physical Oceanography Program is encouraged to contact Dr. Eric Itsweire for more information.

Eric Itsweire (eitsweir@nsf.gov)
Steve Meacham (smeacham@nsf.gov)
Bill Wiseman (wwiseman@nsf.gov)
Jeannie Belsches (jbelsche@nsf.gov)

Education

Many advances have been made in science education in the last decade. For example, K-12 education has been revolutionized by recommendations contained in "The Benchmarks for Science Literacy" (AAAS, 1993) and the "National Science Education Standards" (National Research Council, 1996). Unfortunately, recommendations for the study of oceanography or marine sciences are not a part of either of these documents. Many opportunities to advance society's interest in and understanding of the ocean and the importance of ocean research have been missed. In order to address the lack of leadership in ocean science educational reform, NSF sponsored a workshop to discuss how NSF can promote and foster ocean science education in the United States.

The workshop, which was jointly supported by the Division of Ocean Sciences and the Division of Undergraduate Education, was held May 23-26, 2000 at The University of Southern Mississippi's (USM) Institute of Marine Sciences in Long Beach, MS. Dr. Sharon Walker, USM, and Dr. Dean McManus, University of Washington (UW), were co-chairs for the workshop. Members of the steering committee are listed below.

The workshop recommended the formation of a Center for Ocean Sciences Education Excellence (COSEE) that will enable the NSF and other Federal agencies to establish a nationally coordinated effort to promote ocean science in both formal and informal educational settings. The report of this workshop was submitted to NSF on September 12, 2000 and the full text is available on two websites:

http://www.ims.usm.edu/cosee/ and
http://www.ocean.washington.edu/cosee/.

Dave Karl talks science with a group of kindergarten students at a local school in Hawaii. Photo courtesy of Ed Laws at the University of Hawaii.

The report recommends strategies by which COSEE could promote ocean science education in informal education, grades K-8, grades 9-12, and undergraduate levels. In addition, the report recommends strategies for promoting teacher preparation and professional development and for the use of new technologies and results of ocean science research in educational materials.

Workshop members felt that COSEE should consist of regional centers that would work together to:

- facilitate the integration of research into high-quality educational materials to engage the minds of young students in the excitement of discovery and develop their interest into a mature understanding of the relevance of the ocean to their lives;
- promote the education of the public about the ocean and its influence on the quality of their lives and the prosperity of the nation;
- assist in developing curricula with core competencies for more effective education;
- foster the inclusion of underrepresented and underserved groups for new ideas and perspectives;
- encourage the sound preparation of teachers;
- provide opportunities for professional development of in-service teachers, undergraduate faculty, and administrators;
- assist in improving the reward structure for teaching, including faculty and graduate student teaching;
- encourage the use of information technology;
- establish internships; and
- provide career information across the spectrum of the ocean science community.

Workshop members recommended that COSEE should "effect many of these changes by fostering collaborations and partnerships both among people and between organizations and formulate strategies to evaluate these initiatives."

NSF wishes to thank the COSEE chairs, the steering committee, and the workshop participants for their efforts. We urge everyone to review the report and provide comments to Lisa Rom (erom@nsf.gov). NSF/OCE plans to gather community response to the report during sessions at the Fall 2000 meeting of the American Geophysical Union and other meetings as appropriate. We will attempt to prioritize the workshop recommendations and issue an announcement of opportunity for

the formation of COSEE if community response and budgetary considerations are favorable.

Steering Committee for COSEE Workshop

Dean A. McManus, School of Oceanography and Center for Instructional Development and Research, University of Washington, Seattle, WA (Co-Chair)
Sharon H. Walker, The University of Southern Mississippi, Institute of Marine Sciences and J.L. Scott Marine Education Center and Aquarium, Biloxi, MS (Co-Chair)
Benjamin Cuker, Department of Marine & Environmental Science, Hampton University, Hampton, VA
Patricia Goodnight, River Terrace School, Washington, D.C.
Susan Humphris, Department of Geology and Geophysics, Woods Hole Oceanographic Institution, Woods Hole, MA
Paula Keener-Chavis, Charleston Math & Science Hub, College of Charleston, Charleston, S.C.
Donald Reed, Department of Geology, San Jose State University, San Jose, CA
Veronique Robigou, School of Oceanography, University of Washington, Seattle, WA
Jerry R. Schubel, New England Aquarium, Boston, MA

PLEASE NOTE OUR NEW PHONE NUMBERS!

On July 31, 2000, NSF switched to a new phone system. The new numbers for key areas within the Division of Ocean Sciences are:

Front Office: 703-292-8580
Marine Geosciences Section: 703-292-8581
Ocean Section: 703-292-8582
Integrated Programs Section: 703-292-8583
FAX: 703-292-9085

Numbers for individual NSF staff members can be found at http://staff.nsf.gov/

Proposal Target Dates/Deadlines

Programs	Target Dates/Deadlines
Ocean Section (OS)*	
Unsolicited proposals for Biological Oceanography, Chemical Oceanography, and Physical Oceanography	Feb. 15 & Aug. 15
Marine Geosciences Section (MGS)*	
Unsolicited proposals for Marine Geology & Geophysics and the Ocean Drilling Program	Feb. 15 & Aug. 15
Integrated Programs Section (IPS)	
Instrumentation Development/OTIC	Feb. 15 & Aug. 15
Oceanographic Instrumentation	Sept. 15
Shipboard Scientific Support Equipment	Sept. 1
Ship Operations	Oct. 1
Oceanographic Technical Services	Oct. 15
Inter-Agency and Special Initiatives	
Climate Variability and Predictability (CLIVAR)	Feb. 15 & Aug. 15
Ridge Inter-Disciplinary Global Experiments (RIDGE)	Feb. 15 & Aug. 15
WOCE, Analysis, Interpretation, Modeling, and Synthesis (AIMS)	Feb. 15 & Aug. 15
Joint Global Ocean Flux Study (JGOFS)/Synthesis and Modeling	TBD 2001
Continental Margins Research (MARGINS)	Jan. 16, 2001; Nov. 1, 2001
Ecology of Harmful Algal Blooms (ECOHAB)	Jan. 31, 2001
Earth System History (ESH)	Feb. 14, 2001
Other NSF programs of interest to ocean scientists	
Major Research Instrumentation	Feb. 7, 2001
CAREER (Faculty Early Career Development Program), Geosciences Directorate	TBD 2001
Research Experiences for Undergraduates (REU) Program (NSF 00-107) (contact research program regarding REU Supplements)	Sept. 15 (deadline)
Biocomplexity in the Environment (BE)	TBD 2001
Nanoscale Science and Engineering (NSE)	TBD 2001
Information Technology Research (ITR)	dates vary depending on size of project

* Proposals for field programs that require the use of University-National Oceanographic Laboratory System (UNOLS) ships in the following calendar year (2002) must be submitted by the February 15, 2001, target date.

Other Noteworthy News...

NSF Sees 13.6% Growth in FY 2001 Budget

For FY 2001, NSF received $4.426 billion — $529 million or 13.6% over FY 2000. This represents the largest dollar increase the Foundation has ever received, in real or constant dollars. Within this increase, the Research and Related Activities Account, from which the Division of Ocean Sciences is funded, received $391.1 million over last year, for a total of $3.35 billion. For further details, please go to the NSF web site at http://www.nsf.gov/od/lpa/congress/start.htm.

Oceans Act of 2000 Signed

The Oceans Act, which becomes effective on January 20, 2001, establishes a Commission to make recommendations for coordinated and comprehensive national ocean policy that will promote (1) protection of life and property, (2) stewardship of ocean and coastal resources, (3) enhancement of maritime commerce, (4) expansion of human knowledge of the marine environment, (5) investments in technologies to promote energy and food security, (6) close cooperation among government agencies, and (7) U.S. leadership in ocean and coastal activities. The Commission will have sixteen members, twelve nominated by Congress and all appointed by the President within 90 days of January 20. The Commission's report will be expected within eighteen months of establishment.

GEO Diversity Program in Development

The Directorate for Geosciences is undertaking an initiative to broaden participation in the geosciences by traditionally underrepresented groups. Plans for the GEO diversity program are under development, with a program announcement expected in January and a proposal due date in April or early May. In August 2000, a workshop was convened of community members with experience in diversity programs. Their report gives a number of recommendations for both short- and long-term activities. To read the report, and for further information, please see http://www.geo.nsf.gov/geo/diversity/. Comments may be provided at any time to geo_diversity@nsf.gov.

Future of Ocean Sciences Report Due Out Soon

Final touches are being put on the document that will synthesize the four disciplinary workshop reports: FUMAGES (Future of Marine Geology and Geophysics), FOCUS (Future of Ocean Chemistry in the U.S.), APROPOS (Future of Physical Oceanography), and OEUVRE (Ocean Ecology: Understanding and Vision for Research). The Committee working on this project, chaired by Peter Brewer and Ted Moore, expect to have a draft out for comment in late 2000. The report builds on the four workshop reports and provides a compelling description of the most important and promising opportunities for discovery in the ocean sciences over the next decade. The draft document, as well as the four disciplinary reports, will be available at http://www.joss.ucar.edu/joss_psg/project/oce_workshop/.

International Safety Management (ISM) Code to Apply to UNOLS Vessels

An International Safety Management (ISM) Code has been adopted by the International Maritime Organization (IMO) and is included as Annex IX of the International Convention for the Safety of Life at Sea (SOLAS). The objectives of the ISM Code are to ensure safety at sea, prevention of human injury or loss of life, and avoidance of damage to the environment and property. Each ship operating institution subject to ISM is required to establish a Safety Management System that includes a safety and environmental policy and procedures necessary to implement that policy.

In July of 2002, the ISM code will apply to all vessels over 500 tons on international voyages. The research vessels of the UNOLS fleet are classified as cargo vessels under this code. Those over 500 tons (MELVILLE, KNORR, THOMPSON, REVELLE, ATLANTIS, EWING, and the new AGOR-26) will be required to comply by 2002. The operators of these Class I UNOLS vessels have already begun the process of establishing Safety Management Systems so that they will be in compliance with ISM by July 2002. The operators will be making every effort to make the administrative aspects of this process invisible to scientists while, at the same time, encouraging full participation by scientists in efforts to ensure safe operation of the research vessels. In the future, all UNOLS vessels may have to comply with ISM.

We will keep you updated on further developments.

Now Available!

Illuminating the Hidden Planet: The Future of Seafloor Observatory Science

Committee on Seafloor Observatories: Challenges and Opportunities, Ocean Studies Board, National Research Council

For copies, please e-mail Shannon Hughes at shughes@nsf.gov or go to http://books.nap.edu/catalog/9920.html

Vacancies in the Division of Ocean Sciences

Director, Division of Ocean Sciences
ES-1 to ES-4; Closing deadline: January 15, 2001

The Division Director provides leadership and direction to the NSF division responsible for funding research and education in the ocean sciences, which includes biological, chemical and physical oceanography; marine geology and geophysics; scientific ocean drilling; and oceanographic facilities and vessels. The Director serves as a member of the Directorate for Geosciences leadership team and as the Foundation's principal spokesperson in the area of ocean sciences. Other responsibilities include assessing needs and trends involving the ocean sciences, implementing overall strategic planning and policy setting for the Division, determining funding requirements, preparing and justifying budget estimates, balancing program needs, allocating resources, overseeing the evaluation of proposals and recommendations for awards and declinations, and representing NSF to relevant external groups.

Position announcements, which include information about appointment options as well as the qualification requirements and application procedures, are available at http://www.nsf.gov/home/chart/work.htm. Employment for this Senior Executive Service (SES) position may be on a temporary or permanent basis in the Federal service. Alternatively, the selectee may be assigned under Intergovernmental Personnel Act (IPA) provisions. Ms. Kathy Tolson (703-292-4378) is the point of contact in the Division of Human Resource Management (HRM). Hearing impaired applicants may call NSF's TDD line at 703-292-5090. Nominations and inquiries should be directed to Dr. Jarvis Moyers, Division Director for Atmospheric Sciences, and chair of the search committee for the new OCE Division Director. Dr. Moyers may be reached at jmoyers@nsf.gov or by phone at 703-292-8520.

Associate Program Director, Oceanographer
AD-1360-3; Ocean Drilling Program

The Associate Program Director provides technical and scientific oversight to ensure integrity and consistency in proposal process; monitors program resources and technical developments with respect to program supported facilities and scientific infrastructure; administers review and award recommendations; represents program, Division, and Foundation, within the scientific community, accurately reflecting NSF policy and positions, pursues affirmative action and EEO goals; provides scientific and technical evaluation for other programs in NSF, including international and cross-directorate programs, etc.. Applicants for this position must have four or more years of managerial, successful research and/or research administration experience pertinent to the position; plus a Ph.D. or equivalent experience in marine science, marine engineering, or a related field. Previous involvement with ocean drilling would be an advantage, but is not required. For more information, please go to http://www.nsf.gov/home/chart/work.htm.

Assistant or Associate Program Director, Biological Science Administrator
AD-401-2, AD-401-3 respectively; Biological Oceanography Program

Primary responsibilities involve proposal evaluation, project development and support, program planning and budgeting, and related administrative duties. Applicants for the AD-2 level or Assistant Program Director position must have a Ph.D. in biological oceanography, marine ecology or related disciplinary field, or a masters degree in one of the above cited disciplines, plus two or more years of successful research, research administration, and/or managerial experience pertinent to the position beyond the degree. Applicants for the AD-3 level, or Associate Program Director position, must have a Ph.D. or equivalent experience in biological oceanography, marine ecology or related disciplinary fields. In addition, four or more years of successful research, research administration, and/or managerial experience beyond the Ph.D., pertinent to the position, is required. Experience in microbial ecology is desirable, though not required. Also, a broad understanding of the current status of the relevant United States academic scientific community and its interrelationship with NSF, other federal agencies, and international planning efforts is desirable. For more information, please go to http://www.nsf.gov/home/chart/work.htm.

Program Director, Oceanographer
AD-4; Ocean Technology and Interdisciplinary Coordination Program

Coming soon! Please monitor our job information web site, http://www.nsf.gov/home/chart/work.htm, for the forthcoming vacancy announcement.

Math Awareness Month
"Mathematics and the Ocean"
April 2001

For details, please see
http://www.mathforum.com/mam
(after January 2001)

Staff Changes

The summer and fall have seen numerous staff changes in the Division of Ocean Sciences, including several in senior management.

After five years of service to NSF, Division Director G. Michael Purdy will leave on November 30, 2000, to assume the position of Director, Lamont Doherty Earth Observatory at Columbia University. His leadership and good humor will be greatly missed.

We are delighted that the recently retired Don Heinrichs has agreed to serve as Interim Division Director during the recruitment and selection period for a new Division Director. Within the new division structure (see page 1), Don will also serve as Acting Section Head for the new Marine Geosciences Section.

We are pleased to announce that Larry Clark has been selected to serve as Head of the Ocean Section. Larry has been with NSF since 1979, working in ocean technology development since 1982. Since 1993 he has served as Program Director for the Ocean Technology and Interdisciplinary Coordination program.

Mike Reeve, formerly Head of the Oceanographic Centers and Facilities Section, has transitioned to the position of Head of the Integrated Programs Section, which includes oceangraphic facilities.

Mike Purdy congratulates Ronnie Butler on her Director's Award of Excellence.

Additional staff changes include:

James Allan, Associate Program Director for the Ocean Drilling Program has left NSF and his home institute, Texas A&M University, to work as Chair of the Department of Geology at Appalachian State University. **Catherine Bowler**, Science Assistant, has left Ocean Sciences to work for the Division of Environmental Biology. Among other responsibilities, she is presently working on the agency-wide Biocomplexity program. **Elizabeth Day** has moved to NOAA to become the National Education Coordinator for the Sea Grant program. **Veronica Butler**, Program Assistant for Ocean Sciences, retired this year after many years of dedicated and cheerful service. She began working for NSF in 1959.

Veronica Marjerison, Program Assistant for the Biological Oceanography Program, has left the NSF to work full-time at Recreation Equipment Incorporated (REI). **Rachel Pressley**, Student Hire, has left the Division to study economics at the University of Maryland. **Alison Sipe**, a former Sea Grant Fellow and Science Assistant, is now pursuing her interest in molecular biosciences. **Anne Tenney**, Staff Associate, has returned to the Division after a three-year detail with the NSF Director's Office.

We also welcome several new arrivals to the Division.

Rodey Batiza is the new Program Director for the Marine Geology and Geophysics Program. Rodey comes to NSF from the Universtiy of Hawaii at Manoa, Department of Geology and Geophysics, School of Oceanography, Earth Sciences and Technology (SOEST). His research interests are igneous and metamorphic petrology and geochemistry, marine geology, crustal and lithospheric evolution, vulcanology, and upper mantle and crustal processes.

Linda Goad is expected to come on board in January 2001 as Program Manager for Marine Facilities, Linda is from the University of Michigan and has experience in both science and management of research vessels, including her role as marine Superintendent. Her research has included a wide variety of topics within the field of algal physiology.

Peter Milne arrived in July as Chemical Oceanography's new Associate Program Director. Peter has been at the Rosenstiel School of Marine and Atmospheric Sciences, University of Miami, since 1989. He has experience in marine chemistry, environmental chemistry of natural waters and atmospheric systems. Peter's other research interests include optical and spectroscopic measurement techniques as applied to environmental and biomedical problems.

For additional copies, call (703) 292-8580 or visit our web site at: www.geo.nsf.gov/oce/ocepubs.htm
Editor: Anne Tenney (atenney@nsf.gov)

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