



Division of Ocean Sciences

Fall 1997 Newsletter

The Anatomy of a Decision

Bob Wall, my predecessor as Head of the Ocean Sciences Research Section, wrote an article for *EOS* (vol. 63, no. 9) in 1982 entitled, "Ocean Sciences Peer Review in NSF." Nothing much has changed since then in our underlying philosophy or in the mechanics of how we do our job. Every three years a Committee of Visitors reviews our procedures and statistics, inspects the documentation associated with proposals, and reports on our stewardship. Usually, these reports are published. The most recent report can be found in *The Oceanography Magazine* (vol. 9, no. 2, 1996).

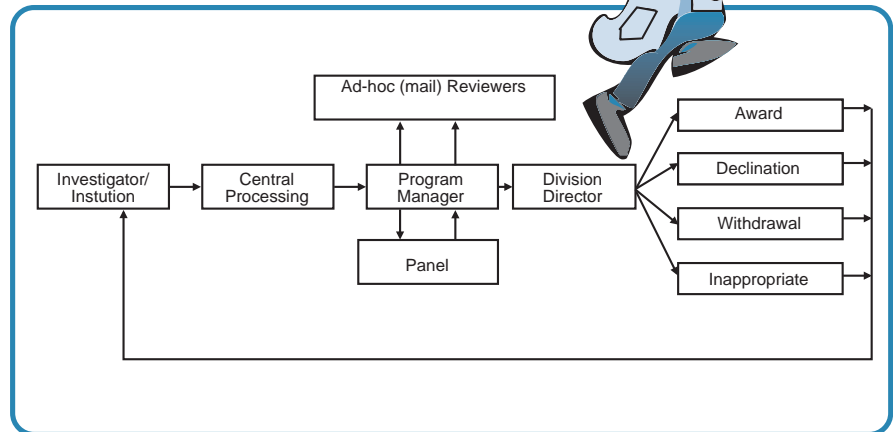
In essence, the proposal arrives; the program officer reads it and selects an appropriate group of reviewers; the reviewers provide written comments and usually an overall rating; a panel convened at NSF having read the proposal also reads the reviews, discusses and evaluates the proposal, and arrives at a rating; and the program officers analyze the advice to arrive at a recommendation to either fund or decline in the context of their reading of the proposal.

This is the pathway of most proposals, but gradually the back-

drop for these activities has been changing. Proposal numbers have gradually increased, award rates have gradually decreased (50% to 25% overall approximately), decision times have shortened, and award size has not kept pace with inflation. The number of annual target dates for unsolicited proposals has decreased to two, but the number of special panels for targeted programs has increased greatly. All of this

biological oceanography or marine geology and geophysics. Where four panel members were usual in 1982, now there may be up to nine or ten. Special panels have multiplied to better provide focused expertise needed to handle, for instance, a group of 70 proposals

related to bio-geochemical cycling



inevitably increases stress on the system from everybody's perspective. There has been a continuous effort to increase the transparency and efficiency of the process since 1982 (as there had been up to that time) to reassure the scientific community and the Congress that peer or merit review is still the most effective way to make decisions for support of scientific proposals. Many changes have been small or incremental, a few have been (or will be) more immediately striking.

Over time, general panels have increased in size. This enables better coverage of the increasing range of specialties in broad areas like

in the Arabian Sea, or REU (Research Experiences for Undergraduates) Sites.

While the number of special competitions in targeted areas have increased, NSF continues working to reduce the burden of proposal writing and reviewing. ABRs (Accomplishment-Based Research renewal proposals) were introduced to allow the proposer to focus on track record and attach reports and papers rather than 15 pages of project description. New rules enabling the proposer to eliminate proposal appendices and severely restrict situations where project descriptions could exceed 15 pages

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Dear Colleagues,

Earlier this year, in Science Magazine, one eminent member of our community was quoted as saying, referring to NSF's Ocean Sciences Division:

"You can try to pull the wool over our eyes any old way you want, guys, but you can't hide the fact that this meeting is secretly designed to address resource shortages by fiddling with [research] priorities."

This is indeed a juicy quote. It is replete with innuendo (use of the word 'secretly' is especially tantalizing). It is clearly irresistible to any self-respecting journalist. And, most importantly, it embodies important misperceptions that are substantially relevant to a number of activities that are ongoing in our community. (The meeting being referred to is the NSF/OCE supported Future of Marine Geosciences Workshop (FUMAGES), the objective of which was to identify the most exciting future opportunities for research in Marine Geology and Geophysics, held in Ashland, Oregon last Fall, the report of which can be found/obtained at: <http://www.joi-odp.org/>).

For the sake of brevity I will skip over the accusations of wool-pulling and the characterization of us all as 'guys' (was this in the Dave Barry sense of the word or not?), and focus upon the central theme that we (NSF) *secretly* design activities to help us *fiddle* with research priorities. Nothing secret goes on here at NSF - our planning and decision making processes are as open as is practical - at every level. Community members play key roles in reviewing individual proposals, both by mail and in panels; every three years a Committee of Visitors of community leaders has access to all our proposal jackets including all the Program Manager confidential notes (see *Oceanography* vol 9, no. 2, 1996); our advisory committee hears about and comments upon all significant planning decisions; not to mention the fact that currently five of our Associate Program Managers are on temporary assignment here from universities and research institutions around the U.S. It is not possible to keep secrets here - nor do we want to!

But do we 'fiddle' with research priorities? Strictly speaking the answer is yes (though, needless to say I would prefer a verb that suggested a modestly more systematic and logical thought process than 'fiddle.') We cannot responsibly manage the taxpayers' money without making decisions about how best to distribute the funds among the basic disciplines and a few carefully chosen and essential facilities. The alternative, to run an open competition each year for the whole of the Division's budget, would not be manageable! So, yes, of course we have to decide about how much money is going to the Biological Oceanography program versus the Physical Oceanography program, etc.

But at the program level (i.e. typically at the ~\$20M per year level) there is much less structure - and we believe that this is healthy. Of course program officers, within their ~\$20M budgets, keep track of how much they spend, for example, on paleoceanography versus geochemistry versus seismology, and generally they make sure they support *some* geochemistry, *some* paleoceanography and *some* seismology (providing excellent proposals are available), but they do not set rigid goals for the distribution of funds at this level - at this level the quality of the proposals is the primary driver that controls what research is supported. In the Ocean Sciences Division we believe that keeping six relatively large research-directed programs (Biological Oceanography, Chemical Oceanography, Marine Geology and Geophysics, Physical

Oceanography, Oceanographic Technology and Interdisciplinary Coordination and the Ocean Drilling Program) provides the important flexibility to allow the proposal review process to redirect significant resources to the most fruitful research opportunities. We strongly resist any bureaucratic temptations to “micromanage” the disciplines by creating smaller subunits.

So, given this, why did we stimulate and support the FUMAGES activity? And why are we stimulating and supporting similar activities for Chemical, Physical, and Biological Oceanography? (Updates on the FOCUS, APROPOS, and Biological Oceanography activities can be found in the Program reports section in this Newsletter). If there is no “secret” process, and if we are not going to use the results to ‘fiddle’ with the distribution of the funds within the disciplines, then what’s the point?

As Ocean Scientists in the closing years of the 20th Century, we are fortunate to be working in one of the most exciting and rapidly-advancing fields in the natural sciences. Frequently I see evidence that we do not appreciate just how far and how rapidly our science has evolved in the last decade as new observations and new insights have exploded the ancient myths of 20 years ago. We believe it is time to stop and take a broad look at how we have come to where we are, and see whether we can recognize missed opportunities for accelerated understanding.

We hope the community will undertake these activities in the classical way by forming steering committees (membership of which can be found on page 7 of this newsletter). We are specifically *not* asking the community to devise plans for the implementation of these ideas and we are *not* asking for the setting of priorities. We are asking for an articulation of the most exciting and productive opportunities for progress in basic research in the ocean sciences. And if problem areas are identified, we ask for ideas for separate targeted planning activities directed toward devising practical solutions. We have adopted the highly conventional tack of organizing by basic discipline for logistical simplicity, while recognizing the growing importance of research problems that cross one or more of these boundaries. We are encouraging some duplication of effort by the different disciplines and we are planning a fifth activity specifically targeted at exploring interdisciplinary opportunities.

So the message I am trying to convey here is that these workshops and their associated community-wide deliberations are purely science-oriented activities. Please enjoy them - use them to convey your best and brightest visions of the future to your colleagues. They are excellent opportunities to have real impact on the future directions of your field. Research directions in the Ocean Sciences will not be chosen by sallow-faced federalists in the dark backrooms of Ballston secretly fiddling with budget spreadsheets - they will be chosen by you, through an open process of discussion and debate that is open to ALL members of our community.

This is the third of these newsletters from the Ocean Sciences Division - we have received essentially no feedback on whether the kind of information we are providing is of interest - please let us know how we could make it more useful to you.



G. M. Purdy
Director
Division of Ocean Sciences

P.S. A note to a friend: sorry for abusing your quote, but it helped me make some very important points.

Anatomy cont...

were introduced to reduce both proposer and reviewer workloads. SGRs (Small Grants for Exploratory Research) which provide support (up to \$100,000) for high risk or fast-turnaround proposals with a limit of three pages of project description and no requirement for external review, were developed as a grant mechanism. Some coherent groups of proposals receive either a mail or panel review but not both.

Even in our regular review cycles involving 400 proposals or more, only about 70% need further review by the panel. This is achievable because the mail reviews are in close agreement and provide a clear message to the program officer.

Providing helpful feedback to the proposer (P.I.) has always been an important goal. Mail reviews began to be provided to the P.I. in the seventies. In addition, a few years ago, summaries of the panel discussion were added. In the past year we have added a written statement by the program officer containing a short analysis of how the decision was reached with the information at hand.

Nevertheless, the heart of the decision-making process has stayed the same. Bob Wall went to great lengths to make the point that although average mail and panel ratings form the basis for statistical presentations, relying on averages to defend or object to decisions can be misleading. As he wrote "one proposal with an average mail review rating of "very good" might have two rather perfunctory excellents, a qualified very good, and one very-well considered and critical fair." Another proposal with the same average rating "might be rated as good by two reviewers who feel the new methodology proposed is unproven, and excellent by two other reviewers, one of whom knows from experience that the approach will work and the other who feels the potential scientific payoff is worth the risk."

Frequently the average panel and average mail review ratings of individual proposals differ significantly. Bob Wall wrote "Mail reviewers judge an individual [proposal] in relative isolation and need have little concern for being challenged. By contrast, panelists make their judgments with more information at hand, including mail reviewer comments and some knowledge of available funds and of other proposals competing for these funds. Furthermore, their judgments are made in a forum where differing perspectives and values may well be challenged and where small group dynamics can be significant."

Bob concluded, under the heading *The Final Decisions*, "Throughout this entire process, the members of the program staff are clarifying their own views concerning proposals and sifting and filtering advice provided by mail and panel reviewers. By the end of a panel meeting, decisions for a majority of the proposals [though perhaps not as large a majority as in 1982] have become clear. For a sizeable minority, however, the members of the program staff go through a post-panel period of reflection and analysis."

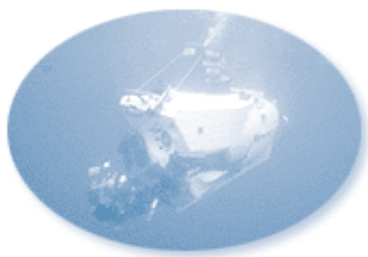
He went on to indicate the many considerations with which program officers are charged to take into account in making their recommendations. These include impact on the scientist or the field of science, budget limitations, status of the P.I. in regard to new versus established or underrepresented minority status investigators, geographical balance and others – any of which "can become important in the close calls which have to be made and justified."

Finally, although the fundamental bedrock of external review continues at the heart of our system of judgment, he concluded then as I conclude now, "Notwithstanding all of the advice given both before and after the fact, it is fair to say that OSRS program staff play the most significant role in how these particular governmental decisions are made. They operate at

the critical interface and provide the clearest window between academic research scientists and the governmental bureaucracy. They exchange advice with and are accountable to both. They are the heart of the OSRS peer review policy."

It is likely that these quotes will stand the test of a further 15 years of time and can be called up again in 2012. Outwardly, however, there will be a lot of changes. The mechanics of the process will become entirely electronic. Even now we receive over 70% of our mail reviews electronically. We are prepared to receive proposals electronically, and for some solicitations the NSF is already requiring it on an experimental basis. The NSF FastLane project already permits P.I.s to maintain information within the system which is a part of every proposal, so that only changes (e.g. change of phone number, address etc.) need be updated. The universal acceptance of electronic communication could eventually facilitate significant changes in proposal review (by shortening turnaround times), such as making it feasible to permit proposers to comment on reviews prior to the panel meeting rather than at the end of the process.

Another significant change was instituted on October 1. In 1981 four criteria for merit review were first formally established as research performer competence, intrinsic scientific merit, utility or relevance and effect on infrastructure. Over the years, reviewers usually only addressed performer competence and scientific merit in reviews. Times have changed. According to the National Science Board Review Task Force, seminal events over the past 15 years - notably the end of the Cold War and the rise of global economic competition - have altered the context for public support of research and education. It is now more important than ever to highlight and document the broader potential impacts of NSF's



investments in research and education.

In the future, the two principal merit review criteria will be “*What is the intellectual merit and quality of the proposed activity?*” and “*What are the broader impacts of the proposed activity?*” (Details of these can be examined on the NSF home page.) The first emphasizes significantly advancing knowledge including across different fields, exploration of new lines of inquiry, expertise and achievement of the proposer in relation to increasing the probability of success and conceptual design, management plan, and resources. The second stresses advancing discovery while concurrently promoting education activities, infrastructure of all kinds, diversity of participants, scientific literacy, as well as the potential impact on meeting societal needs.

Although flexibility is retained in applying these criteria and there are no pre-assigned weightings, the second criterion should not be ignored by proposers, reviewers, or program officers, and should play an appropriate role in the merit review process and decision. Furthermore with respect to the first criterion, proposals with the best chance for an award recommendation will be those which embody significant advances of knowledge and exploration of new lines of inquiry. This does not represent a “sea change” if you will excuse that expression, but it does codify points which program officers have tried to make to unsuccessful proposers for several years, as competition has become fiercer. A technically competent proposal from a well-regarded P.I. with respectable but not outstanding review scores may well

not be competitive. To be compelling, it must be convincing in the context of the new criteria.

I suggest that you self-test your proposal before submitting it. Or perhaps better still, ask a colleague unconnected with its preparation to do this for you, objectively applying the new criteria. This is what the NSF will be asking reviewers and its program officers to do on proposals submitted after October 1. If you are unsure of your proposal’s competitiveness, you would, of course, be advised to reconsider your proposal before submitting it. ●

-Mike Reeve

Program News

This section is intended to provide current and upcoming information regarding activities of the Division’s programs. For more on each of the programs and special initiatives mentioned below, please refer to the Division’s Home Page at <http://www.geo.nsf.gov/oce/start.htm>.

Marine Geology and Geophysics

The report of the Future of Marine Geosciences (FUMAGES) workshop held December 5-7, 1996, in Oregon has been posted on the JOI web site and can be accessed at: <http://www.joi-odp.org/>. Some themes common to various subdisciplines of marine geosciences that emerged in the report include:

- 1) the societal imperative of making rapid progress in scientific understanding of complicated non-linear systems;
- 2) the central role of focused fluids in producing volcanic, tectonic, and thermal modification of the planet;
- 3) the recognition that present-day conditions may not be representative of the whole of the geologic history;

4) the importance of explicit incorporation of effects of the biosphere on marine geosciences;

5) the appreciation that we must move beyond the steady-state models to study geologic events as they happen; and

6) the limitation of existing funding structures and technology for problems that span the shoreline.

To ensure the widest possible community input, the MG&G scientific community is encouraged to send comments to Dr. Marcia McNutt (mcnutt@mbari.org). Comments regarding any gaps that might still exist are especially welcome. It is hoped that the report will become a “growing” document as new ideas are appended to the main body of the report.

The MARGINS Initiative Office has moved from Rice University to the University of Hawaii at Manoa under the new steering committee chairmanship of Brian Taylor. The office is being funded jointly by the NSF Divisions of Ocean and Earth Sciences in order to underscore the multidisciplinary nature of MARGINS. The MARGINS community has an exacting planning period ahead of them to identify detailed scientific experiments that will fulfill the objectives envisaged in the initial science plan of the initiative. ●

- Bil Haq
(bhaq@nsf.gov)

Chemical Oceanography

As evidenced by proposals, public presentations, and published papers over the last 18 months, the field of chemical oceanography is bristling with new ideas and appears to be set for a renaissance. We note with satisfaction that groups of marine chemists and other oceanographers have begun to coalesce to tackle questions in ocean chemistry at every scale from molecular to global and from microsecond to era. While much of this development is in various interdisciplinary arenas of marine biogeochemistry, we are also witness-

ing exciting new developments in hydrogeochemistry, chemical geology, and physical chemistry. Given the quickening pace, we believe that the FOCUS ("Future of Ocean Chemistry in the U.S.") workshop and community dialog is coming not a moment too soon.

Funding decisions for the first round of the U.S. JGOFS Synthesis and Modeling Project (SMP) proposals have been made. SMP is sponsored jointly by the Chemical and Biological Oceanography Programs at NSF and the Ocean Biology and Biogeochemistry Program at NASA. Approximately \$1.1M of FY 98 funds from NSF and \$2.2M of FY 97 funds from NASA have been committed to support the first year of 18 SMP proposals. In general, successful proposals were characterized by technical soundness and innovation, relevance to the objectives of the SMP, and a clear provision for collaboration among observationalists and modelers. Many of the successful projects will take advantage of the new ocean color satellite technology.

The Program wants to remind the marine chemistry community that we encourage the submission of requests for REU supplements for consideration on or about the times of the November and May Panels. Requests to support summer students ideally should be submitted in time for the November Panel, and requests for academic year support in time for the May Panel. ●

- Don Rice
(drice@nsf.gov)

Physical Oceanography



The NSF-sponsored workshop on Physical Oceanography (APROPOS) will take place December 15-17, 1997, in Monterey, California. For practical reasons, the size of the actual workshop will be limited, but we encourage everyone to participate in this

dialog between NSF and the community. For more information, please visit the web page set up on the following UCAR site: http://www.joss.ucar.edu/joss_psg/project/oce_workshop/apropos/

There you can see a description of the workshop, a list of the Steering Committee members, and comments from your colleagues in response to the "Dear Colleague" letter sent by the Steering Committee. You can also post your own views and comments. As follow-up activity to the workshop, the Steering Committee plans to host an evening session at the Ocean Sciences Meeting in San Diego. Its function is to present a synopsis of the discussions that will have taken place at the workshop and get broad community input on where Physical Oceanography is heading to incorporate in their report.

On the science front, the forecast of the development of a strong El Niño, possibly as large as the 1982-1983 event, has generated a lot of interest from our West Coast investigators. This interest has resulted in "rapid response" proposals to study the effect El Niño has on the coastal environment as it reaches and propagates up the coast. The advance-warning required to respond to the event would not have been possible without the observing and prediction system developed by the TOGA (Tropical Ocean Global Atmosphere) program and maintained by CLIVAR (CLimate VARIability and predictability), and is a good example of the important legacy that large programs can leave behind.

As mentioned in the previous newsletter, planning for CLIVAR continues both internationally and nationally. Groups of U.S. Oceanographers are meeting to start formulating plans for climate studies in both the Atlantic and Pacific Oceans within the context of the international CLIVAR Science Plan. We expect more community meetings to take place in the coming year. In the meantime,

proposals addressing CLIVAR objectives (<http://www.clivar.ucar.edu/hp.html>) can be sent to the regular target dates of February 15 and August 15. For additional background information, copies of the report of the Ocean CLIVAR workshop (San Antonio, June 1996) are available from the U.S. WOCE Office.

Wyrtki Indian Ocean Atlases are also available: Copies of this IDOE-era atlas have been removed from the NSF warehouse will be distributed to anyone who can use them. ●

- Eric Itsweire
(eitsweir@nsf.gov)

Biological Oceanography

The program has been involved in many panels over the past six months.

The interagency ECOHAB Program, Ecology and Oceanography of Harmful Algal Blooms, has started several projects funded at the end of Fiscal Year 1997. The Biological Oceanography Program is joined by NOAA (Coastal Oceans Programs), EPA (Office of Research and Development, National Center for Environmental Research and Quality Assurance), and ONR in mounting ECOHAB. Sixty projects, both large multi-disciplinary regional research programs and individual projects, were submitted in response to the inter-agency announcement. Nine projects have been selected for funding. Two regional research programs in the Gulf of Maine and the Eastern Gulf of Mexico and seven individual projects here are funded. NSF is funding/co-funding five projects including the Gulf of Maine program; EPA is funding three projects and NOAA is funding/co-funding two (both of the regional research programs). For those who are interested, the Biological Oceanography Program has a list of the awards.

U.S. GLOBEC's Northeast Pacific Program (NEP) and CoOP's California Current studies have also just begun. OCE's Biological Oceanography

Program, Ocean Technology and Interdisciplinary Coordination Program (Larry Clark), NOAA's Coastal Oceans Program, and NASA's Ocean Biology/Biogeochemistry Program are all involved. Fifty-one projects were submitted to the "big program," inter-agency announcement. One will be funded as a CoOP modeling project by NSF. Thirteen projects (including modeling, retrospective analyses and monitoring) will be funded as the initial stage of NEP. NSF is supporting eight projects (full or part), NOAA six and NASA one. Integrated process studies for NEP and CoOP should start no later than the year 2000. Again, we have a list of the awards for interested individuals.

The announcement for Phase III of U.S. GLOBEC's Northeast Atlantic Program, NSF-97-163, is now on the street (see <http://globec.whoi.edu/>).

Ocean Sciences and Environmental Biology have received 17 proposals in response to the Long-Term Ecological Research Program - Land/Ocean Margin Ecosystem announcement. These are under review currently with the Biological Oceanography Program administering the overall process. Decisions will be made by the end of the year. At least two new LTER projects are anticipated that emphasize major ecological questions on the linkages between terrestrial and coastal ecosystems.

As mentioned above, the Program is working with Chemical Oceanography and NASA's Ocean Biology/Biogeochemistry Program to implement the U.S. JGOFs Synthesis and Modeling Project (SMP). Forty-three project proposals were submitted. For the first stage, NASA expects to fund ten projects and NSF eight. The announcement soliciting the next round is expected in FY1998. Either Chemical or Biological Oceanography can provide a list of the awards.

The first round of LExEn (Life and Extreme Environments) is also complete. The Biological Oceanography

Program served as the lead for OCE this time around. This NSF-wide program received ninety-one project proposals and will fund 25. OCE will fund seven individual projects ranging from microbial ecology and physiology to geochemistry. In addition, several others that are very ocean specific will be supported elsewhere at NSF (Chemistry, Biology, Engineering). Again, we have a list of the awards. The announcement for the next phase of LExEn is available at <http://www.nsf.gov/home/crssprgm/lexen/start.htm>.

And for those who have submitted proposals to the August 15th target date, we have not forgotten you in the shuffle of special programs. You should expect to hear results after the 15th of December following our November panel. ●

- Phil Taylor
(prtaylor@nsf.gov)

Ocean Drilling Program

With its departure from New York City in late July, the JOIDES Resolution said good-bye to U.S. waters for the foreseeable future. Drilling programs over the next two years will take the vessel into the south Atlantic, the Antarctic, the Indian Ocean, and then into the western Pacific (see applicable WEB sites for details).

The departure was celebrated with an open house and tours of the vessel, plus a reception and dinner for representatives of the participating countries, funders, and friends of the Program. Media coverage of the program included articles in a number of newspapers on the results of the incoming leg off New Jersey, and the National Geographic sailed a reporter to provide daily coverage of the outbound leg to the Geographic's homepage.

As reported in the last newslet-

Steering Committees

dedicated to the Advancement and Study of Oceanography

APROPOS: Advances and Primary Research Opportunities in Physical Oceanography Studies

William R. Young, Scripps, Chair
Thomas Royer, ODU, Co-Chair
John Barth, OSU
Eric Chassignet, UMIAMI, RSMAS
James R. Ledwell, WHOI
M. Susan Lozier, Duke
Stephen G. Monismith, Stanford
Peter Rhines, UW
Peter Schlosser, LDEO

FOCUS: Future of Ocean Chemistry in the U.S.

Ellen Druffel, UCI, Co-Chair
Larry Mayer, UMaine, Co-Chair
Miike Bender, URI
Edward Boyle, MIT
Rick Jahnke, SkIO
Bill Jenkins, WHOI
Cindy Lee, SUNY-SB
George Luther, UDel-CMS
Billy Moore, USCar-Columbia

FUMAGES: Future of Marine Geosciences

Marcia McNutt, MIT, Co-Chair
Paul Baker, Duke, Co-Chair
Bob Detrick, WHOI
Bill Curry, WHOI
John Delaney, UW
Casey Moore, UCSC
Charlie Langmuir, LDEO
Orrin Pilkey, Duke
Brian Taylor, UH, SOEST

OEUVRE: Ocean Ecology: Understanding and Visions for Research

Peter Jumars, Co-Chair, UW
Mark Hay, Co-Chair, UNC-Chapel Hill
Bess Ward, UCSC
George Jackson, TAMU
Richard Barber, Duke
Bruce Frost, UW
Pete Peterson, UNC

ter, planning for ocean drilling beyond 2003 (the termination date for the present Ocean Drilling Program) is intensifying. Presently referred to as the Integrated Ocean Drilling Program (IODP) the new program is being designed to encompass a much wider array of drilling capabilities, especially including the development of a deep water riser capability which will be used on a ship to be designed and built by Japan. A second vessel with capabilities similar to those of the JOIDES Resolution would be used to address shallower drilling objectives in the new program. Scientific planning for the new program is to be done by one international organization, similar to JOIDES which plans the present ODP.

Scientific planning for the deep drilling (riser) portion of the IODP took a major step forward this past July as 150 international scientists and engineers met in Tokyo to participate in CONCORD (CONference on Cooperative Ocean Riser Drilling). The meeting, co-chaired by Dr. Hans Christian Larsen (Denmark) and Professor Ikuo Kushiro (Japan), was organized to address the specific scientific problems that could be addressed by a riser-equipped drilling vessel.

The conference participants identified a number of critical and exciting research programs that extended from exploring the deep biosphere to deployment of multi-sensor observatories. One particular experiment - the study of an active seismogenic zone within a subduction zone - was unanimously selected by the participants to be the highest priority for initial implementation. There was also lively discussion of returning to the "roots" of ocean drilling with planning for a deep hole into the lower ocean crust penetrating the Moho. The Conference recommendations will next be considered by an International Working Group for the IODP (IWG/IODP) which is composed of senior international earth and ocean science program executives. The IWG/

IODP is co-chaired by NSF and STA (Japanese Science and Technology Agency) officials.

Finally, we recently heard that Tim Francis is stepping down this Fall as the deputy director of Ocean Drilling at Texas A&M, a post he has held for the last 7 years. Tim has a wide-ranging history with the ODP, having served as an active participant in numerous ODP and JOIDES planning activities before migrating to Aggieville. We will miss Tim's humor and his dedication and hard work on behalf of the scientific community and Program, but we also wish him smooth sailing in all his future pursuits. ●

- Bruce Malfait
(bmalfait@nsf.gov)

Educational Activities in OCE

In addition to the various educational activities funded through proposals submitted to the research programs in OCE (student support, post-doctoral support, workshops, short courses, etc.), several major educational initiatives are supported each year by the division.

For the last decade, a series of Research Experience for Undergraduate (REU) sites have been supported by OCE. These REU sites each involve 8-12 undergraduate science students who participate in an organized program of research in the ocean sciences typically for 8-12 weeks. The students get experience in formulating and executing research plans, as well as a number of "nuts and bolts" areas such as working with computers, writing reports, and presenting results in a seminar setting. OCE currently supports nine summer REU sites and two fall semester sites. The listing of current NSF-supported REU sites, including those from OCE, are located at <http://www.nsf.gov/home/crssprgm/reu/reulist.htm>.

OCE also supports about a dozen programs aimed at improving the educational and research opportunities

for minorities in the ocean sciences. Several of these initiatives involve support for academic-year mentoring and research experiences for minority undergraduate students. Others involve summer REU Sites or minority faculty enrichment programs. The overall theme in these efforts is to attract minority students into the ocean sciences, then provide a supportive infrastructure of mentoring and research experiences in an effort to improve the retention and opportunities for minorities at all educational and research levels.

OCE also participates in the NSF-wide CAREER initiative. The objective is to identify leading-edge scholars early in their academic careers and to provide them with stable funding for four to five years. Successful CAREER proposals outline a compelling four to five year research program, coupled with an innovative educational effort involving the integration of this research into the educational environment.

OCE received 29 CAREER proposals for the FY97 competition and funded six. The FY97 awards went to E. Virginia Armbrust of the University of Washington, Jacqueline E. Dixon of the University of Miami, Miguel A. Goni of the University of South Carolina, Gail Kineke of Boston College, Don Levitan of Florida State University, and Florence I. M. Thomas of the Dauphin Island Sea Lab. Congratulations to the FY97 CAREER recipients!

The first competition for the Professional Opportunities for Women in Research and Education Program (POWRE) was recently completed. The Directorate for Geosciences received 51 proposals and 10 supplement requests and recommended nine proposals and one supplement for awards. Three of these were for OCE investigators. The next deadline for a POWRE submission is December 9, 1997.

The Division of Ocean Sciences is always interested in novel approaches

designed to promote scientific awareness and literacy, to entrain minority scientists within the ocean sciences community, and to facilitate public outreach. Please feel free to contact me at (703) 306-1586 or delthon@nsf.gov with any suggestions or questions that you might have. ●

- Don Elthon

Budget Outlook

On September 30, 1997, members of the House and Senate Appropriations VA, HUD, and Independent Agencies subcommittees completed conferencing their FY 1998 bill, which provides funding for the National Science Foundation and other agencies. The conferees have recommended an appropriation for the National Science Foundation that constitutes approximately a 5% increase over the FY 1997 level.

Although the FY 1998 budget for the Division of Ocean Sciences will not be determined until after the appropriation is finalized, we do expect to target specific areas for enhancement in FY 1998. These areas include: the GLOBEC and CoOP programs, which will initiate new joint studies in the northeast Pacific; the LTER program to support two new coastal sites; and the Ocean Drilling Program to accommodate initial costs associated with the refit of the JOIDES Resolution drillship.

In preparing the FY 1998 budget, both the Administration and Congress continued to express support for scientific research and education activities. The enhanced budget for NSF in FY 1998 is a testament to this support. Nevertheless, the recent balanced budget agreement may prevent any substantial increase in the NSF or the Division budgets for the foreseeable future. ●

Proposal Target Dates

Ocean Sciences Research Section (OSRS).

Unsolicited Proposals for Biological Oceanography, Physical Oceanography, Chemical Oceanography, and Marine Geology & Geophysics. Target dates: February 15, 1998, and August 15, 1998. Proposals for field programs that require the use of University-National Oceanographic Laboratory Systems (UNOLS) ships in the following calendar year (1999) must be submitted by the February 15, 1998, target date.

OSRS Inter-Agency and Special Initiatives.

Global Ocean Ecosystems Dynamics (GLOBEC)	December 15, 1997 (deadline)
Environmental Geochemistry & Biogeochemistry Program (EGB)	January 7, 1998 (deadline)
Earth System History (ESH)	January 15, 1998 (deadline)
Life in Extreme Environments (LExEn)	January 15, 1998 (deadline)
Ridge Inter-Disciplinary Global Experiments	Feb. 15 & Aug. 15
World Ocean Circulation Experiment (WOCE)	Feb. 15 & Aug. 15
Joint Global Ocean Flux Study (JGOFS) / Synthesis And Modeling	August 15, 1998 (anticipated)
Climate Variability and Predictability (CLIVAR)	Feb. 15 & Aug 15

Oceanographic Centers & Facilities Section.

Ocean Drilling Program	Feb 15 and Aug 15
Oceanographic Instrumentation	Sept. 1
Shipboard Scientific Support Equipment	Sept. 1
Ship Operations	Oct. 1
Technical Services	Oct. 1
Ship Construction/Conversion	contact the program

Ocean Sciences Special Programs.

The following announcements are available on the NSF homepage by searching the on-line document database data base for the indicated announcement number at (<http://www.nsf.gov/cgi-bin/pubsys/browser/odbrowse.pl>).

	Deadline Dates:
Professional Opportunities for Women in Research and Education (POWRE), NSF-97-91	December 9, 1997
Research Planning Grants (MRPG) and Career Advancement Awards (MCAA) for Minority Scientists and Engineers (NSF 94-147)	February 15 & August 15, 1998 (target date)
Research Experiences for Undergraduates (REU) Program (NSF 96-102).	Site Deadline: September 15, 1998 Supplements: contact the program
Faculty Early Career Development Program (CAREER) (http://www.nsf.gov/pubs/1997/nsf9787/nsf9787.txt).	July 22, 1998

Interdisciplinary Proposals

Do we do a good job reviewing and making decisions about interdisciplinary proposals? This is a question that we pose to ourselves frequently. It is important because approximately 30% of all the proposals that we handle in a typical year are, by our definition, interdisciplinary (defined in our division as a proposal that has more than one program [either inside or outside our division] involved in its review). It is important also because we are very aware that some of the most exciting and important research lies at the boundaries between the core disciplines.

The majority of the requests for interdisciplinary research programs are handled by one of our existing interdisciplinary programs e.g. CoOP, JGOFS, EGB, LExEn etc., and therefore the whole management and review process is handled by individuals with the required mix of expertises. We are bold enough to believe that we do quite well here - the quality of this process is relatively simple to assess because we can look at particular panel activities, and review directly the success or otherwise of an overall program activity.

Of more concern are the unsolicited proposals that are submitted to our core disciplinary programs. Appropriate choice of mail reviewers in this case requires ad hoc interaction between program managers. For panel review we take care to schedule all four of our disciplinary panels during the same week here at NSF so that these proposals can be looked at and discussed by members of multiple panels. So an established system exists (and has existed for many years) to take special care with these important proposals, but nevertheless, concerns remain. These proposals may receive undue criticism in the mail review process with reviewers tending to focus on the details of their own specialty rather than making a qualified assessment of the project as a whole.

In recognition of these concerns we have a new policy that requires the division to keep track of all interdisciplinary proposals that we are handling. What this means in practice is that lists of interdisciplinary proposals being reviewed in the division, along with definitions of the special

handling they are receiving, will be reviewed regularly by the section heads and division director. This will occur whether or not you self-identify your proposal as interdisciplinary (providing it genuinely *does* cross disciplinary boundaries).

Whether or not you choose to tick the "Interdisciplinary" box on the cover sheet of your proposal is completely up to you (of course!). If you do not, and the program staff believe the content of the proposal is best reviewed by experts from multiple fields then it will be tracked as an interdisciplinary proposal in exactly the same way. Our most important advice is that if you have any questions or doubts about this, contact your program manager before you submit the proposal.

As our research explodes in new and exciting cross-disciplinary directions, the challenge to review the proposals we receive appropriately and thoroughly increases. We do not have all the answers on how best to do this, but we believe that this new process of continued and detailed monitoring of exactly how each proposal is being handled will allow us to continue a process of quality control and improvement. 🌐

- G. Michael Purdy

OCE-Profile - Ann Sutherland “The Jacket Stops Here!”



Ann Sutherland

When members of the scientific community contact the Division of Ocean Sciences (OCE), they usually interact with our program managers. But there are a lot of people *behind the scenes* in our division who make sure that the 1,400 proposal actions we handle each year get processed. As any hardened IPA can tell you, there is an unbelievable amount of work that goes into the processing of not only each award, but each proposal. As our Financial Operations Specialist, Ann Sutherland is one of our most important behind the scenes members.

Ann is the person in the Division that keeps track of almost everything dealing with proposals. A line of two or three people waiting outside her office to ask questions is typical. Ann is responsible for tracking all of the award recommendations and checking the allocation of all of the Division’s program funds. If you received an award from OCE in the last thirteen years, Ann committed the funds.

Ann has worked for OCE since she came to NSF in 1984. Thirteen years of experience here means she knows where to find the codes we need or how to locate a proposal that may have been borrowed by or sent to another Division. Ann describes herself very modestly, “basically I am just a checker. After a proposal has gone through a program, and a decision has been made about whether it will be awarded or not, I go through and make sure all the correct codes are in place and that the correct information about the PI’s has been entered into the computer.” She actually is an essential part of the proposal review process – at one time or another, every proposal in the Division goes through Ann’s office.

Ann began her work for the government at the National Institute of Health. Prior to that she taught first and second grade after receiving a B.S. in Elementary Education. She was raised in what she describes as an “idyllic little town” called Arden in northern Delaware. She and her husband moved to the Washington area when he began working for the Environmental Protection Agency as an Entomologist. They now enjoy spending their free time antiques, exploring the genealogy of their families and, of course, playing with their beautiful grandchildren. ●

- Peggy Booth

The IPAs of OCE

Approximately one third of the program officers in our Division are not permanent employees of NSF but are working with us temporarily (normally for one to two years). They are on leave from their home institutions via a government-wide program called the "Intergovernmental Personnel Act" (IPA). Currently we have six individuals working with us as IPAs (see below) and their contribution to the quality of the job we do reviewing your proposals and managing the research programs is huge. They constitute an essential mechanism of bringing new ideas and perspectives to the forefront in our decision-making processes at all levels within the division, from individual grants to policies to program planning. IPAs function as full members of our Program Staff - there is no division in authority or access to information between NSF employees and IPAs at the same level of seniority.

We are always interested in talking with members of the community who may be interested in joining us for a one or two year stint. If you have any interest at all please contact the appropriate Program Officer - we may not have an opening today, but in the near future we always will! It provides you with a unique overview of the state of your discipline that cannot be gained in any other way.

Below are brief words about each of the six IPAs currently in residence (and having fun!) in OCE.

Jim Ammerman, from Texas A&M, is working in the Biological Oceanography program while he's here at NSF. His area of interest is microbial phosphorus cycling in marine and estuarine environments, some of which is a part of the JGOFS program. Some of Jim's research is performed at the Bermuda Time Series



Jim Ammerman, Dick Ou, Kendra Daly, Ken Buesseler, Sandy Shor, Don Elthon

Station (BATS). Unfortunately during two of his most recent trips he's had rough weather. In Jim's own words he got "2.5 days of work done at the BATS site before Hurricane Lilli passed about 100 miles south of Bermuda... 25-foot swells forced us back." We're glad he made it back safely though!

Kendra Daly is taking a break from the University of Tennessee, Knoxville to do time with us, also in BIO. Kendra's main fascination is with polar regions - particularly zooplankton predator-prey interactions and the influence of plankton on biogeochemical cycles. She has more than five years of sea-time under her belt and is yearning to get back out to sea again. Her current research includes the effects of seasonal sea ice on Antarctic krill, dimethylsulfide production by krill, and the influence of plankton on carbon and nitrogen cycling in arctic, Antarctic and tropical regions.

Ken Buesseler, leader of the famed *Cafe Thorium* lab (see *Currents*, vol 5, no. 2 1996), is taking a breather from Woods Hole Oceanographic Institution to experience the warmer

climate of D.C. At least, his kids, (Hannah, 6, and Lydia, 12) are. As is the life of most IPAs, Ken actually doesn't get away from the office much! While Ken is not working in the Chemical Oceanography Program, he is directing his ongoing research which involves *Thorium*, used as a tracer of sinking particles within the ocean to determine the rate of biological and chemical processes.

Don Elthon, originally from Iowa, has temporarily departed the University of Houston to help us out. He is working in the Marine Geology and Geophysics program. Don's area of study is in understanding the origin and evolution of basaltic magmas. While Don is not at NSF, he is trying to interpret his research data or the mysteries of life, as explained by his two kids, Martin and Jeannie.

Hsien-Wang (Dick) Ou, volunteered from Lamont-Doherty Earth Observatory of Columbia University to gain experience working in the Physical Oceanography Program here. Besides his official duty, Dick's research in coastal and climate dynamics

also keeps him busy. Dick enjoys being at NSF and says he is quite impressed with the whole proposal review process. Dick also has two girls, Melissa (age 15) and Christina (age 7).

Sandy Shor, has temporarily deserted the University of Hawaii to (in his words) "pay his dues to NSF." After spending two and a half years with the Ocean Drilling Program, Sandy now handles the Instrumentation and Technical Services Program in OCFS. Before coming here, Sandy had directed UH's seafloor mapping program since 1986. He keeps his hand in research working with the Naval Research Lab on various aspects of seafloor geomorphology. Sandy and his wife recently had a baby daughter named Hannah. ●

Lead Times - Seagoing Research Projects

Ship scheduling is a complex process. The academic research fleet is a "distributed asset" with multiple operations, multiple research sponsors, and capabilities and operating modes responsive to different components of national research requirements.

The University-National Oceanographic Laboratory System (UNOLS) is the primary advisory group to NSF and other federal agencies for assessment of the match of oceanographic facilities to academic research programs. Twenty UNOLS institutions operate 28 research ships and the research submersible ALVIN. The UNOLS ship scheduling process is designed to match research project requirements with ship capabilities, integrate seasonal and weather requirements for a diverse set of research projects from all fields of oceanographic and environmental sciences, and minimize unproductive, non-working transits between project sites. Only after a seagoing research project has successfully competed in the conventional merit review process is support provided for the required ship time and ship operations.

All research proposals to NSF that request ship time on vessels operated by UNOLS member institutions must be submitted with lead time for support/decline decisions to be made by the research program office no later than July/August of the year before the cruise, i.e. July/August 1998 for January to December cruises in 1999. The merit review process for research projects submitted to most NSF program offices takes about 6 months. This requires proposal submission in the January/February (or earlier) timeframe. The final logistics plans, coordination of research projects, and assignment of specific research ships and cruise dates can only be done after the full mix of science projects is known.

NSF Requirements

All proposals to NSF that anticipate use of a UNOLS ship must include a copy of the NSF-UNOLS Ship Time Request Form (often referred to as NSF Form 831). Copies of the request form may be obtained from:

UNOLS Office
University of Rhode Island
P.O. Box 392
Saunderstown, RI 02874
Tele (401) 874-6825
Fax: (401) 874-6486
email: unols@gsosun1.gso.uri.edu

NOTE: The UNOLS Office and the ship operating institutions are developing a fully electronic interactive ship time request form for access via the web. Currently the electronic form is in the "beta test phase." You may access and use the web form via the UNOLS Home page at: <http://www.gso.uri.edu/unols/unols.html> if desired. NSF expects a full transition to the electronic form in 1998 after the test and improvement phase of development is complete.

All proposals that anticipate use of a UNOLS ship must be submitted to the program office responsible for merit review of the science project with sufficient lead-time for a July/August science program decision for cruises in the following year.

NOTE: Proposals for seagoing research projects to the Ocean Sciences Division must be submitted by the February 15 target date to be considered for the next year cruises. Program announcements for Global change coordinated studies or other special competitions may have deadlines or target dates somewhat later in the year. In all cases, however, the research program offices must provide support recommendations by July/August or the seagoing phase of a study may not be supported in the following year. ●

- Don Heinrichs

*Please pass this on to
any recent graduates*

Job Opportunity

National Science Foundation (NSF)

NSF's Division of Ocean Sciences is seeking qualified applicants for the position of Science Assistant. At least one and possibly up to four such positions may be available.

The position will be filled on a temporary basis for possibly up to 3 years.

The per annum starting salary for AD-1 is \$20,908 and AD-2 is \$38,330.

Primary responsibilities: AD-1; the Science Assistant is a professional level position whose function is to assist the section head and program managers in proposal review and processing, program management, and database management and access. This includes coordinating preparation for panel meetings and participating in reviewer selection; initial screening of proposals; developing databases for reports; and providing information regarding Foundation objectives, programs, policies, and procedures. AD-2; in addition to the above, participates in the planning, budget development, merit review, and proposal recommendation processes, preparation of material on supported research areas and liaison with other programs, agencies, and organizations. This includes evaluating proposals against NSF objectives; assisting in administering the merit review process; participating in the development of short and long range plans; establishing objectives for research progress and program evaluation; and furthering the goals of NSF to achieve full electronic operations in all phases of proposal management and communications.

Qualification required: AD-1 level, applicants must have a baccalaureate degree in ocean sciences or related field. AD-2 level, applicants must have a Ph.D. or a masters degree plus 2 or more years of successful research, research administration, and/or pertinent managerial experience or, equivalent experience in ocean science or related fields.

Interested applicants seeking more information should write the National Science Foundation, Division of Human Resources Management, room 315, 4201 Wilson Boulevard, Arlington, Virginia 22230; Attention: Catherine Handle, or call 703-306-1185. For technical information call Dr. M. Reeve, Ocean Sciences Research Section, 703-306-1582. Hearing impaired individuals may call TDD 703-306-0189.

For general information about NSF and its organization and programs, check its Web Site: <http://www.nsf.gov/>.

NSF is an equal opportunity employer.

The Foundation provides awards for research and education in the sciences and engineering. The awardee is wholly responsible for the conduct of such research and preparation of the results for publication. The Foundation, therefore, does not assume responsibility for the research findings or their interpretation.

The Foundation welcomes proposals from all qualified scientists and engineers and strongly encourages women, minorities, and persons with disabilities to compete fully in any of the research and education related programs described here. In accordance with federal statutes, regulations, and NSF policies, no person on grounds of race, color, age, sex, national origin, or disability shall be excluded from participation in, be denied the benefits of, or be subject to discrimination under any program or activity receiving financial assistance from the National Science Foundation.

Facilitation Awards for Scientists and Engineers with Disabilities (FASSED) provide funding for special assistance or equipment to enable persons with disabilities (investigators and other staff, including student research assistants) to work on NSF projects. See the program announcement or contact the program coordinator at (703) 306-1636.

The National Science Foundation has TDD (Telephonic Device for the Deaf) capability, which enables individuals with hearing impairment to communicate with the Foundation about NSF programs, employment, or general information. To access NSF TDD dial (703) 306-0090; for FIRS, 1-800-877-8339.

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<http://www.geo.nsf.gov/oce/ocenew.htm>
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Sites of Interest:

JGOFS <http://www1.who.edu/jgofs.html>

WOCE <http://www-ocean.tamu.edu/WOCE/uswoce.html>

ODP <http://www-odp.tamu.edu/>

OCE <http://www.geo.nsf.gov/oce/start.htm>

JOI <http://www.joi-odp.org>

UNOLS <http://www.gso.uri.edu/unols/unols.html>

JOIDES <http://www.who.edu/joides>

GLOBEC <http://www.usglobec.berkeley.edu/usglobec/globec.homepage.html>

LMER <http://www.mbl.edu/html/ECOSYSTEMS/lmer/lmer.html>

CoOP <http://www.hpl.umces.edu/coop>

ECOHAB <http://www.redtide.who.edu/hab/>

RIDGE <http://ridge.unh.edu/>

LEXEN <http://www.nsf.gov/home/crssprgm/lexen/start.htm>

MESH <http://mystipc.oce.orst.edu/MESH/mesh.htm>

MARGINS <http://www.soest.hawaii.edu/margins>

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