7. Science Management Plan
10-11-06

A. How does the Institute identify new intellectual opportunities?
B. What are some recent examples of intellectual opportunities?
These two questions are best answered together, using examples to demonstrate how CIOSS Fellows identify new research opportunities. We interpret "intellectual opportunities" and "research opportunities" as being the same.

All except one of the present CIOSS Academic Fellows are housed in COAS at OSU (Michelle Wood is housed in Biology at the University of Oregon). Because of this, CIOSS Fellows "benefit" from the COAS soft money culture, in which they must maintain an awareness of, and compete successfully for, new research opportunities. To do this, they read the literature and attend national conferences, serve on steering committees and panels for oceanographic and atmospheric sciences research programs, take part in Science Working Teams for NASA and other agencies and periodically talk with program managers from the major funding agencies. They receive newsletters from the national research programs, which include announcements of upcoming and active requests for proposals (RFPs). The weekly COAS newsletter includes short descriptions of new RFPs from Federal funding agencies.

In some cases, NOAA/NESDIS makes its interests known to CIOSS and the other NESDIS CIs, through mechanisms such as the annual Directors' Meeting or the periodic telecoms that Al Powell (NESDIS/STAR Director) has initiated (see Section 5B). Other methods by which CIOSS becomes aware of (or generate) opportunities include exchanges of personnel from other NESDIS CIs and exchanges of CIOSS personnel with NESDIS and other NOAA offices. Examples include early visits to CIOSS by Ken Eis and Dusanka Zupanski from CIRA and reciprocal visits to CIRA by Strub and Chelton; visits to NESDIS HQ by Strub, Chelton, Allen and Egbert on several occasions and recently by Jim Richman to NCEP and the JCSDA. Productive visits to CIOSS by NOAA personnel include those of Laury Miller (NESDIS) and Richard Reynolds (NCDC). These visits and exchanges have definitively identified numerous opportunities for research (intellectual) collaborations.

Once collaborations are established, more frequent phone and electronic communications occur between established partners, presently including increased communications between Chelton and Reynolds; Strub and Miller; Freilich and Chang; Stan Wilson, Abbott, Chelton and Freilich; numerous members of the COAST project, etc. These types of communications would be even more frequent if there were NOAA personnel on site at CIOSS or if there were a full-time CIOSS Deputy Director who actively identified and facilitated collaborations between CIOSS academic and Federal Fellows. Once opportunities are identified, they are discussed with other CIOSS Fellows, who respond singly or in teams to formal RFP's and internal NOAA opportunities.

The proposal that resulted in the creation of CIOSS serves as a good example. Through service on panels with NOAA colleagues, COAS faculty members became aware that an RFP for a new oceanographic, remote sensing CI would soon appear. COAS faculty began to discuss a response, first informally and then at scheduled meetings. Most of the work was done by several

COAS members, although over a dozen professors participated and contributed (many of the present Fellows).

With the establishment of CIOSS, new internal NOAA opportunities became available. These internal opportunities are identified by the less formal contacts described above (exchanges, Directors' Meetings, telecoms, etc). As an example, Laury Miller visited CIOSS for a short period (~10 days) in the summer of 2005. Possible collaborations were identified during the visit, including a project working with NOAA personnel to extend alongtrack altimeter data closer to the coast (presently underway with Strub and Corinne James in COAS and Remko Scharroo at NESDIS) and a related project combining data from altimeters, scatterometers, tide gauges and coastal radars to produce higher resolution surface current fields in the 100-150 km band adjacent to the coast. The basic project was already funded (work by post-doc Martin Saraceno at CIOSS) but Laury Miller connected this work with a similar effort NESDIS was funding to produce coarser fields of surface currents for the global ocean. Although no new funding was generated, the intellectual resources available to address the problem were increased. New opportunities may also be developed in the course of the collaborations. Similarly, a one-month visit by Richard Reynolds in summer 2005 led to continued collaborations with Dudley Chelton, significant improvements to the Reynolds SST product and a manuscript in preparation, but no funding to date.

An example of a project that generated new funding is represented by the formation of the COAST project. In this case, discussions between NESDIS and CIOSS personnel (Stan Wilson, Paul Menzel, Eric Bayler, Mark Abbott, Ricardo Letelier and Ted Strub) identified the need and opportunity for Risk Reduction for the HES-CW sensor. This led to an initial proposal to conduct several workshops to define the HES-CW characteristics needed for different applications and to develop a brochure to inform the oceanographic community of its capabilities. At these workshops, it was determined that data sets did not exist for the development of HES-CW algorithms. Plans for a broader field program were made and presented to the GOES-R Risk Reductions Program (Paul Menzel). The result is a major field effort that will collect optical data in 3 different U.S. coastal ocean environments. These data will allow the simulation of any future ocean color sensors, including VIIRS, and the development of appropriate algorithms for those sensors.

Sometimes, apparent "opportunities" are not appropriate for CIOSS. An example is the atmospheric forecast theme of the "THORPEX" experiment. After repeated urgings by Fran Holt (the CoRP Director at the time), Ted Strub and Jim Richman attended a THORPEX planning meeting. By attending the meeting, they determined that there was no real oceanographic component in THORPEX, due to limited funding and a focus on the atmospheric aspects of the experiment. This is an example of an instance in which the presence of NOAA personnel at CIOSS might have clarified whether THORPEX was, or was not, a real opportunity for CIOSS earlier in the process.

C. What is the strategy for new starts?

The meaning of this question is not entirely clear. If the question asks, "How does CIOSS help new projects get off the ground, once funded?", the answer is that logistical management of CIOSS projects occurs within COAS and new projects have available all of the COAS administrative capabilities. This includes budget reports and support, purchasing, travel, Human

Resources, office space, the COAS computer network, etc. These are described in detail in the answers to the Administrative Questions (Section 8).

Scientific management and oversight of the project is the responsibility of the project PIs, most of whom are experienced in handling research grants. One aspect that CIOSS has recently initiated in the handling of research grants is an annual internal review, including presentations to other CIOSS and COAS personnel. The format of these presentations and discussions is still evolving but included new starts this year. This may provide early feedback on new project plans.

D. What review mechanisms are in place to make program adjustments?
The primary mechanism for reviewing and adjusting CIOSS activities and priorities consists of formal meetings and informal interactions of members of the Council of Fellows. Discussions between Council members in Corvallis and in NESDIS are accomplished through personal interactions, email exchanges and telephone calls. Physical meetings of the Council occur periodically and have sometimes included the NESDIS members of the Council using telecoms. Many of the issues deal with the uses of "core" funding for research and outreach projects and the methods of selecting and evaluating those projects. The process is still evolving, as demonstrated by changes in the type of projects funded. In Year-3, the Council changed the initial strategy of funding only Post-Docs to the approach of funding focused projects with more direct involvement of PIs, and providing support for PIs, technicians, Post-Docs and students. This was based on the difficulty in recruiting Post-Docs for specific projects in a timely fashion and the slow pace of productivity of Post-Docs during their first year after transitioning from their PhD thesis work to a new research project.

In Year-3, all projects were new starts. Productivity has greatly improved and most of these new projects have been continued for a second year of funding. The Council recently instituted the public presentations by all "activities" as an internal review. This included continued research and outreach projects, new research projects, recent and future workshops. In the future, annual internal reviews may focus on the smaller subset of old projects that are proposing continuation and projects proposed for new starts. Other activities may be presented and reviewed separately.

E. How much of the Institute resources are reserved for new opportunities or bright ideas?
Formally, the annual core budget does not include a line item for "bright ideas". However, annual proposals for research with "core" funds are solicited and reviewed to identify the best ideas for potential funding. A line item for reserve funding for unspecified "bright ideas" could be included in the CIOSS budget, but this is not currently done. The methods used to "bootleg" outreach activities provide examples of how new ideas can be supported to a limited extent. CIOSS has been able to "bootleg" some new and formally "unfunded" projects with support of the order of $10K-$30K, through various methods. These have primarily been outreach projects.

During the first three years, funds were included in the CORE budget for unspecified workshops, in the form of "participant support", which carries no indirect cost burden. These supported an initial MODIS workshop, the two Ocean Vector Wind workshops, some visits by collaborating research scientists, etc., but only a fraction of the budgeted funds were used. In Year-1, the Council initiated support for the SMILE high school program and formally applied to NOAA to convert some of the "participant support" to salary for the SMILE high school coordinator.

Although eventually successful, this turned out to be a difficult process that will not be repeated in future years. In Year-2, SMILE was supported by an "add-on" of $40K, made available by NESDIS program managers. In Year-3, we solidified our support for SMILE by making it one of the projects explicitly covered by the core funding that is outside of Task-I Administration. This shows a progression of support for a new project that began as "boot leg" and evolved into ongoing support with annual funding.

Another example is the method used to provide some support for the Pilot Interactive Display that is being developed by Molly Phipps for the Hatfield Marine Science Center (HMSC). In this case, the unused salary that had been intended for the Deputy Director (Mike Freilich) was used. As explained previously, Freilich has provided advice to CIOSS from his role as Associate Dean but has not taken the salary originally intend for him. This makes a small amount of funding available (approximately $10K). If this pilot project is successful, CIOSS will seek other funds to help build a larger and more permanent display.

A factor that makes it exceedingly difficult to set aside funds for unanticipated "bright ideas" is the six-month delay in NOAA annual funding. Given a stated 90-day internal NOAA performance measure for processing of the annual omnibus proposals for CIs, CIOSS submitted its draft annual omnibus proposal in early February, 2006. Requested revisions by Eric Bayler resulted in the delay of submission to the NOAA Grants Management Division (GMD) until late March 2006. Although the NOAA GMD has a stated performance measure of processing CI grants within 2 months, the time required during the last four years has usually been 5-6 months. During the six months without funding at the beginning of each operating year, the CIOSS administrative office has survived only by using unspent funds from the previous year. The need to save funds to cover the unfunded six-month period at the beginning of each year has made it very difficult to set aside funds for "Bright Ideas" or other initiatives.

F. What is the internal review process for science proposals?
Although details of this process have evolved over the first four years of CIOSS, the basic strategy has remained the same. For the annual omnibus proposal (core funding for Administration, Core Research and Outreach), CIOSS has solicited short proposals from CIOSS Fellows each year, sometimes using a format involving a presentation by proposing PIs to the Council of Fellows and sometimes using only a written format. In the future, a combination of written and presentation formats will be used. The local Council of Fellows serves as the first review panel, using their own priorities and those expressed by NOAA/NESDIS/STAR Program Managers as guidance. The top proposals are then sent to the NESDIS/STAR Program Managers for the Cooperative Research Program (Ingrid Guch) and the Satellite Oceanography and Climate Division (Kent Hughes, acting program manager). There, the proposals are evaluated by the Program Managers and their Branch Chiefs. After the NESDIS evaluation is communicated to the CIOSS Council of Fellows, a final annual omnibus proposal is prepared and submitted through the Grants.gov electronic system. After further interactions between CIOSS and the Program Managers, the revised proposal is sent to the Grants Management Division.

The logical use of the internal review process that has been developed over the past 3 years is to have those proposing for the next year give presentations summarizing their progress, accompanied by written proposals. This procedure has been severely hampered by the fact that funding for a given year does not arrive from NOAA until six months after the start date, while NOAA asks for proposals six months before the next year's start date. Thus, it is impossible to

ask projects for “progress” on projects for which funding has only just arrived. Our strategy for the next year will still be to ask for presentations from those proposing new or ongoing projects, ignoring the history of funding. The presentations will summarize the proposals and allow the Council members to ask questions and discuss the proposals with the PIs, somewhat like the ONR site review format.

Projects other than those proposed for core funding will also present their proposals during the internal review process, to allow the Council to evaluate the overall program. The details of these projects are usually determined by the PIs and those within NOAA who are funding the projects. Reviews of these projects range from formal reviews by NSF-style panels to individual negotiations. Review by the CIOSS Council assures that these projects fit within the CIOSS Themes and allows the Council to recommend collaborations with core projects.

G. Do you have any quantitative performance measures for tracking your research program?

Performance measures for the research projects are the criteria usually used for research (publications, presentations, etc.). These are described in Section 2D, as is the evolution of our procedures for “internal review”. Use of these criteria by the Council have resulted in decisions to change the strategy for conducting CIOSS-funded research, as demonstrated by the change from “Post-Doc Projects” to more focused research projects with more direct involvement of PIs in Year-3.