

Minority Students Pursuing Higher Degrees of Success in Ocean Sciences (MS PHD'S In Ocean Sciences): A Pilot Project

ANNUAL REPORT

INTRODUCTION

The *Minority Students Pursuing Higher Degrees in Ocean Sciences Program (MS PHD'S in Ocean Sciences Program)* facilitated activities that supported meaningful engagement of underrepresented minority students at the final *Joint Global Ocean Flux Study (JGOFS) Program Open Science Meeting*. This conference, entitled *A Sea of Change: JGOFS Accomplishments and the Future of Ocean Biogeochemistry*, was held in Washington, D.C., May 5-8, 2003. The *MS PHD'S in Ocean Sciences Program* built upon the existing experiences and scientific knowledge of 22 highly talented underrepresented minority students who expressed interest in various aspects of Earth system science. The overall goal of the *2003 MS PHD'S in Ocean Sciences Program* was to provide mentoring experiences that encouraged the retention and advancement of highly talented minority graduate and undergraduate students interested in pursuing professional careers in the Earth system science.

The *2003 MS PHD'S in Ocean Sciences Program*, was a pilot project that capitalized on the tremendous opportunity to provide underrepresented minority participants in-depth exposure to leading edge Earth system science research and interaction with scientists responsible for these advancements. The program participants gained insight into future marine biogeochemistry research initiatives through a week-long engagement in educational, scientific and professional development enrichment activities. These enrichment activities were designed to increase the participants' exposure to the ocean sciences and equip them with additional information to be utilized in making their post-baccalaureate academic and professional career decisions.

PROGRAM FORMAT

The *2003 MS PHD'S in Ocean Sciences Program* consisted of three main components (pre-JGOFS meeting, JGOFS meeting and Post-JGOFS meeting activities). As a pilot project, each component of the 2003 program was designed to incorporate insight gained from formative and summative assessment tools. A summary of the project's evaluation has been provided as an appendix to this report. (The complete project evaluation document is available upon request.) The three program components are described below.

PRE-JGOFS MEETING ACTIVITIES

Participation and Mentor Preparation

From January through May of 2003 JGOFS Ocean Science meeting mentors announcements and requests were posted on the JGOFS meeting web site and listserv. Data gained via on-line surveys were utilized to establishing mentor-mentee partnerships. Extensive efforts were made to assign each student to a JGOFS scientist with similar scientific and professional interests.

Two weeks prior to the JGOFS meeting, the meeting mentors were provided a "virtual" orientation. This orientation included:

- an overview of the *MS PHD'S in Ocean Sciences Program*;
- suggestions regarding the type of information/guidance/advice to share with mentees (career experience, professional goals, research activities, graduate school experience, future opportunities for mentees, etc.);
- expectations of mentors at the meeting (e.g. discussing the science material being presented and introducing their assigned mentees to their science colleagues); and
- mentor-mentee partnership responsibilities after the JGOFS meeting.

After accepting these responsibilities, the science meeting mentors "virtually" introduced themselves to their *MS PHD'S in Ocean Sciences Program* mentees. After these initial introductions, it was the students' responsibilities of sustaining the "virtual" discussions with their mentors.

Orientation and Howard University Activities

On May 4th (one day before the JGOFS conference), the *MS PHD'S in Ocean Sciences Program* participants attended a program orientation at Howard University (a Historically Black College). During the orientation the program goals, format and expectations were re-visited and the participants were given journals in which to chronicle program experiences and reflections. Following this orientation, Dr. Orlando Taylor, Howard University Dean of Graduate Studies and Dr. Cynthia Winston, Howard University Assistant Professor made presentations regarding graduate school opportunities and a study on successful minority scientists, respectively. Immediately after these presentations, Howard University graduate students and faculty conducted a campus tour for the program participants.

After the completion of the university tour, the graduate and undergraduate participants assembled into four predetermined groups (grouped by broad science discipline), in which they were introduced to the program evaluator and a minority Earth system scientist who served as their program mentor. These groups were designed to facilitate near-peer and peer mentoring opportunities. After separating the participants and program mentors by groups, each group was provided with group de-briefings schedules with the PI and program evaluator. During these de-briefing sessions the groups shared new insights, knowledge, thoughts, science, etc.

JGOFS MEETING ACTIVITIES

Science Exposure and Networking

On May 5th, immediately prior to the beginning of the JGOFS meeting, JGOFS science meeting mentors and program participants examined the conference agenda and identified scientific talks and poster presentations that they would both attend and discuss. Throughout the JGOFS meeting, the science meeting mentors encouraged their mentees' full participation by suggesting identifying additional sessions for them to attend and facilitating discussions between their mentees and professional colleagues.

From May 6th-8th, the program participants conducted five-minute video taped presentations, during which they briefly described their research experience, interests and professional goals. The PI, mentors, participants and program evaluator provided feedback to the participants on strategies to enhance their presentation and communication skills. These presentations were conducted not only for the purpose of identifying individuals with similar interests, facilitating networking, and increasing their awareness of various earth system science opportunities (e.g. summer research experiences, scholarships, college/university degree programs, various careers, etc.), but also to provide the program participants with a supportive environment in which to refine their presentation skills.

Brownbag Discussions

From May 5th through 7th, during the scheduled JGOFS meeting lunch break, the program participants were involved in a series of "brown bag" discussions entitled "Graduate School Programs - How to Choose, Be Admitted and Succeed", "How to Identify and Successfully Apply for Graduate and Post-Graduate Funding" and "Earth System Sciences Career Opportunities." In addition to JGOFS meeting attendees, representatives from several government agencies (e.g. NASA, NOAA, NOAA Sea Grant, NSF and EPA) and professional organizations (Ford Foundation, ASLO, AGU, AAUW and CORE) were invited to participate in these brownbag discussions.

POST-JGOFS MEETING ACTIVITIES

Wallops Flight Facility Tour

On May 8th the *MS PHD'S in Ocean Sciences Program* participants attended a program orientation and tour the NASA Wallops Flight Facility. During the tour the scientists from the Wallops Flight Facilities presented their research activities and discuss future research initiatives. These activities were coordinated with the assistance of Dr. Ming-Ying Wei and Dr. Chuck Trees.

NASA Goddard Space Flight Center Activities

On May 9th the *MS PHD'S in Ocean Sciences Program* participants participated in a series of earth system science-related activities at the NASA Goddard Space Flight Center. The itinerary included science presentations, demonstrations and an informal question and answer session with NASA scientists and educational program officers. These experiences were coordinated by Dr. Blanche Meeson.

Smithsonian and IMAX Movie

On May 10th the students were given a "behind the scenes tour" of the National Museum of Natural History Smithsonian Institute, arranged by Dr. Sorena Sorensen.

VIRTUAL COMMUNITY

One of the major outcomes of the *MS PHD'S in Ocean Sciences Program*, is the establishment of a virtual community in which the educational and research achievements, as well as the professional development of future underrepresented minority earth system scientists were encouraged. This virtual community, consists of two components (a listserv and a website) and is comprised of all 2003 program applicants (both successful and unsuccessful), as well as interested Earth system scientists and educators.