



# Minority Retention and Success through Professional Development

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## ABSTRACT

There are several programs at the undergraduate, graduate, postdoctoral, and junior faculty levels all around the United States that are designed and implemented to improve the participation of underrepresented racial/ethnic minorities in science, technology, engineering and mathematics (STEM). One of such programs, The Minorities Striving and Pursuing Higher Degrees of Success in Earth System Science Professional Development Program (MS PHD'S PDP) is a community of talented minorities from across the Earth system science and engineering disciplines that fosters a nurturing environment for undergraduate and graduate students.

The MS PHD'S initiative sponsors programs that provide minorities with increased exposure to Earth system science community, via participation in scientific conferences, mentoring relationships and virtual community activities. The 2003 MS PHD'S in Ocean Sciences Program facilitated activities that supported meaningful engagement of 25 underrepresented minority students at the final *Joint Global Ocean Flux Study (JGOFS) Open Science Meeting*, entitled *A Sea of Change: JGOFS Accomplishments and the Future of Ocean Biogeochemistry*. Future MS PHD'S sponsored activities will facilitate the engagement of program participants at AGU and other professional society meetings. <http://msphds.marine.usf.edu/>

## INTRODUCTION

❖ **Objective:** To provide Earth system science (ESS) exposure & professional development experiences that facilitate the advancement of underrepresented minority undergraduate & graduate students committed to achieving outstanding Earth system science careers.

## ❖ FACTS

- ☑ There is a decreasing trend in the number of geoscience doctoral degree recipients pursuing careers in academia, research institutions, & government (federal & state) agencies.
- ☑ Decreasing numbers of ethnic minorities (defined as Asian, Black, Hispanic & Native American) enrolled in or obtained geoscience degrees (AGI, 2001b).

These recent trends combined with the above data indicate a strong need for specific recruitment & retention efforts designed to significantly increase the number of minorities pursuing degrees & participating in ESS-research related careers.

## OCEAN SCIENCES PROGRAM: A PILOT PROJECT

### ❖ Ocean Sciences Program Overview

- Held in conjunction with the Final JGOFS Program Open Science Meeting,
- Funded by NASA, with support from JGOFS, NOAA-NMFS Northeast Fisheries Science Center, National Academies Ocean Studies Board, AGU, ASLO, AMS, CORE, AAAS,

## PROFESSIONAL DEVELOPMENT PROGRAM

❖ **Major Goal:** Reduce gaps in preparation, representation, & participation of minorities in ESS by providing:

☑ **Structure:** Over a 5 year period, the *Professional Development Program* will engage 75 students in 3 phases of ESS exposure & professional development activities.

### Program Activities:

Facilitate student opportunities for:

- Increase ESS community exposure,
- Participation in scientific conferences, mentoring relationships, virtual activities, & fieldtrips;
- Enhance professional skills, grantmanship, oral & written communication



## ❖ GOALS:

- Provide resources regarding future funding, education & career opportunities
- Facilitate networking opportunities with established ESS researchers & educators
- Provide on-going interaction, communication & support via membership within
  - ☑ virtual community comprised of peers,
  - ☑ junior- & senior-level researchers, & educators committed to facilitate the full participation of minorities in ESS.



**ESS Exposure**  
Participation in scientific conferences  
Field trips to NASA & other ESS-focused facilities (e.g. Smithsonian, NAS, CAS)  
Virtual community discussions

**Mentoring Relationships**  
Among peers, researchers & educators.  
Virtual community  
Web video conferencing  
Real-time virtual discussions

**Networking Opportunities**  
Earth system scientists and ESS educators  
Federal agency program officers  
Professional society representatives  
Peers & near-peers

**Professional Development Opportunities**  
Academic/professional goal setting & strategic planning activities  
Information regarding future funding, education, career opportunities & resources. Actual & virtual mini-workshops



### PHASE 1:

- Initial 'physical' as opposed to 'virtual MS PHD'S' participant
- I. Mentee & mentor partnership interaction, networking, professional development, broad ESS exposure, scientific presentations discussions & community building activities.
  - II. 'Behind the scenes' tours of the NASA Ames Research Center, California Academy of Sciences, & Aquarium of the Bay.

### PHASE 2:

- Each participant will attend a professional society meeting that most closely aligns with his or her specific ESS interests.
- I. AGU, AMS, ASLO, ESA, & TOS will serve as MS PHD'S Professional Society Partners & as such will host Phase 2 activities in conjunction with their meetings.
  - II. Additionally, the Association of Women Geoscientists is also providing funds to support the Phase 2 activities.

### PHASE 3:

- Series of 'capstone' activities that will take place at the National Academies.
- I. brown bag discussions, government agency visits, & dialogs with professional society & foundation representatives.
  - II. Tour OF NASA Goddard Space Flight Center facilities
  - III. Each participant that successfully completes all program activities will be awarded a certificate & scholarship.