

Engaging Underrepresented Minority Students in the Ocean Sciences

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The American Geological Institute

- Non-profit federation of 46 geoscientific and professional associations.
 - American Society of Limnology and Oceanography (ASLO)
 - American Geophysical Union (AGU)
 - Consortium for Ocean Leadership - Liason
- Main purpose:
 - Provide information services.
 - Strengthen geoscience education.
 - Increase public understanding of the role of the geosciences in society.



Talk Overview

- Geoscience Demographics and Minority Participation
- Geoscience Employment Outlook
 - Why should we care about diversity?
- Challenges to engaging minorities in the ocean sciences
 - Attitudes toward Geo- and Ocean Sciences Careers
- Strategies for engaging underrepresented students
 - Recommendations
 - AGI's approach



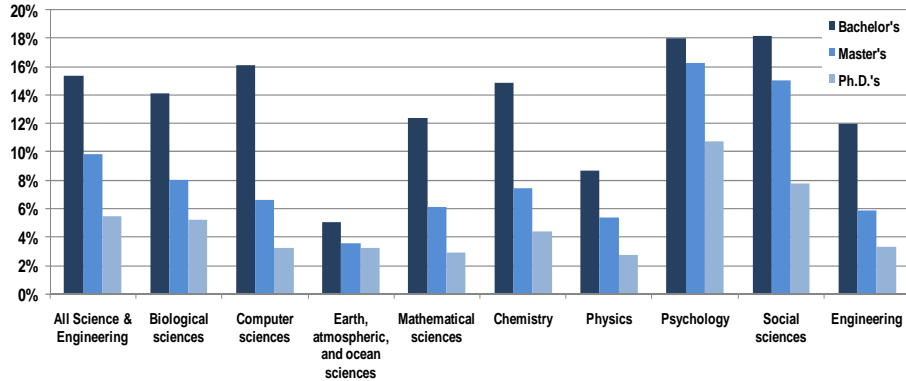
Student Demographics

- Geosciences degree production has been steady over the past 10 years, but enrollments are on the rise.
- Participation of women in geoscience degree programs is approaching parity
- Participation by underrepresented minority (African Americans, Hispanic/Latino and Native American) students is **LOW**.



Minority Participation in STEM

Percent of Degrees Conferred to Underrepresented Minorities in Science & Engineering Fields (1995-2004)

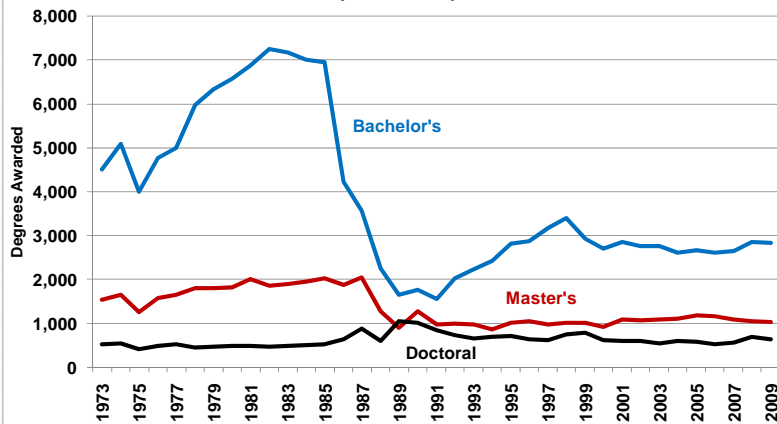


Source: AGI Geoscience Workforce Program, data derived from NSF's Science and Engineering Degrees, by Race/Ethnicity of Recipients: 1995-2004



Workforce Supply Shortage

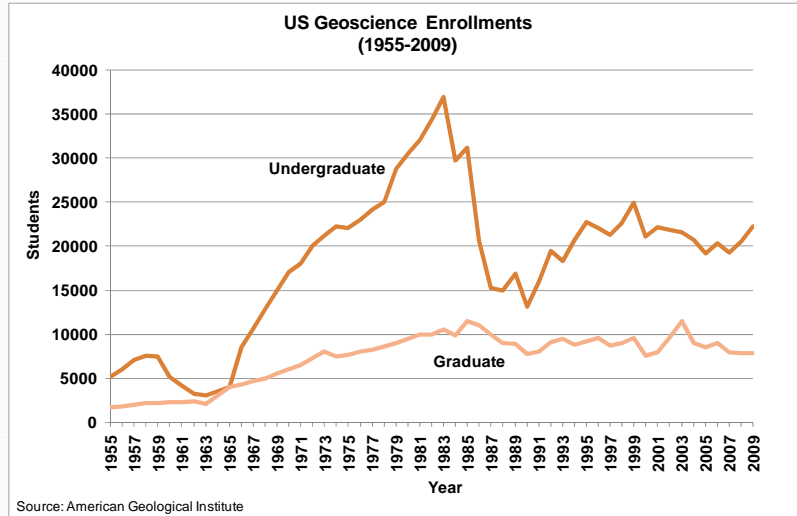
US Geoscience Degrees Granted (1973-2009)



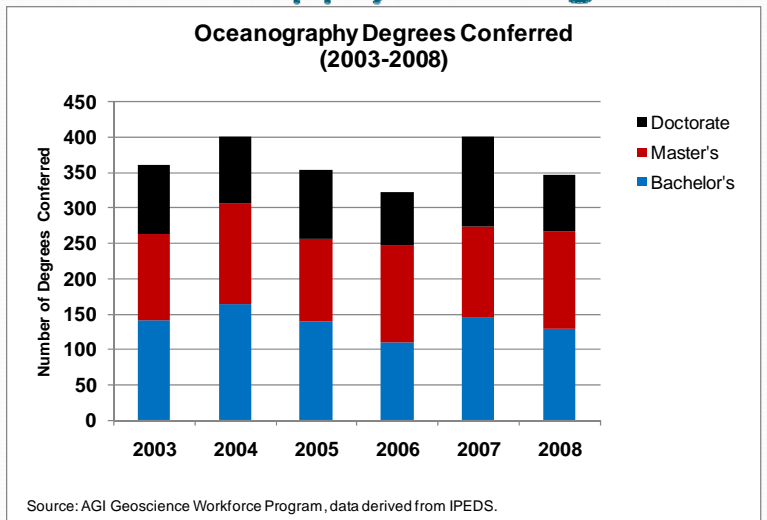
Source: American Geological Institute



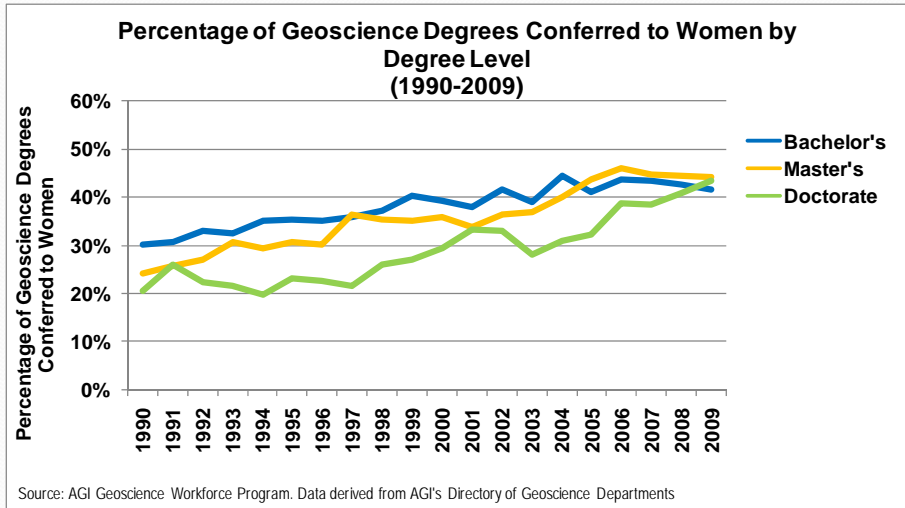
Workforce Supply Shortage



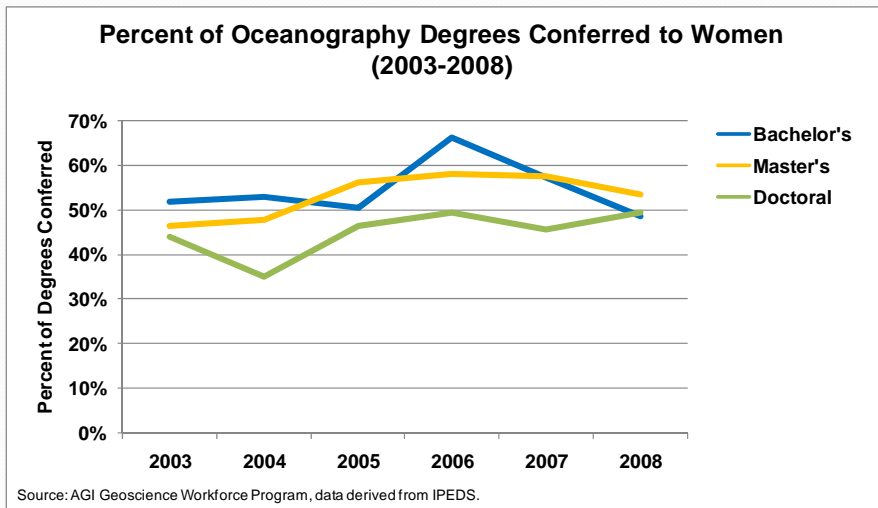
Workforce Supply Shortage



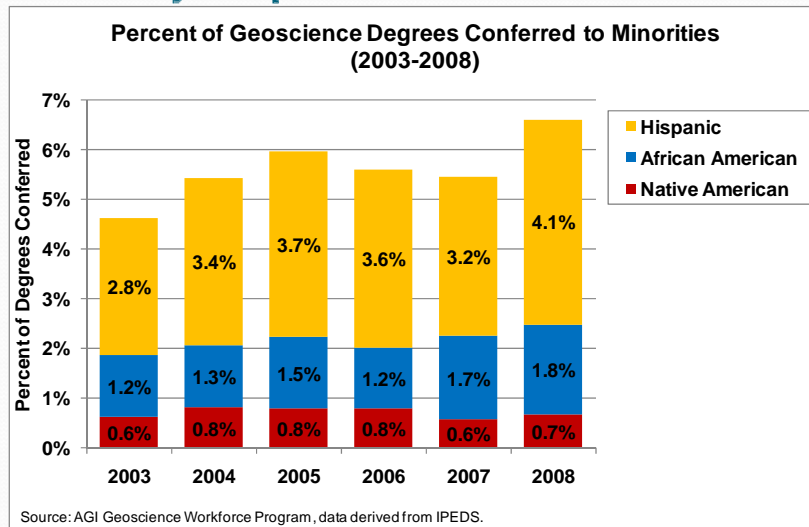
Gender Representation



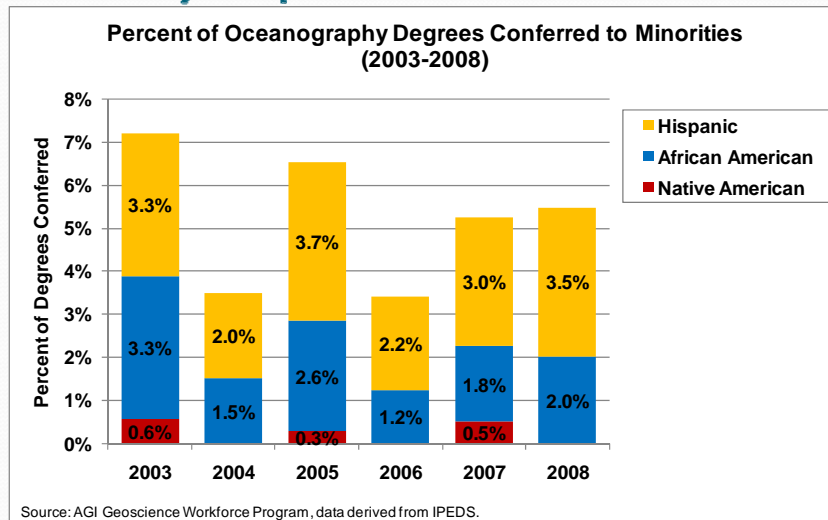
Gender Representation



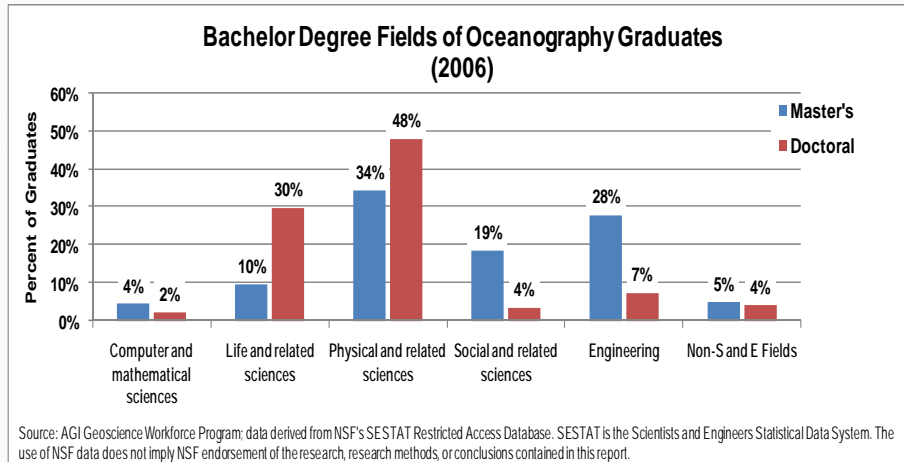
Minority Representation



Minority Representation



Degree Backgrounds



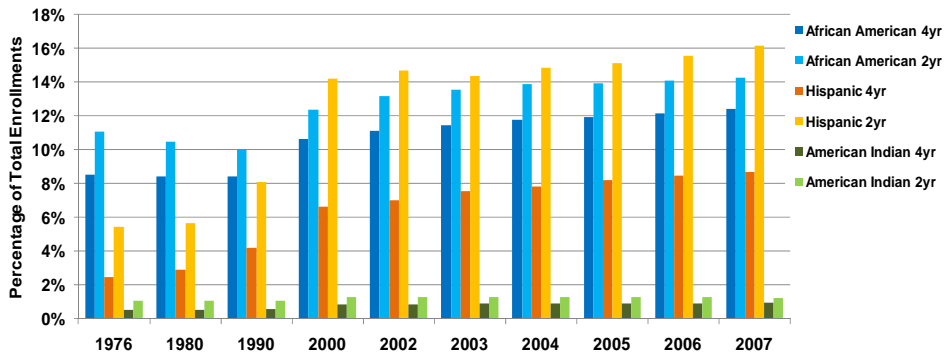
US Population Demographics

- African American, Hispanic/Latino and Native American minorities comprise 30% of the US population.
- By 2050, they are expected to comprise 45%.



College Demographics

Minority Enrollments at Colleges and Universities
(1976-2007)

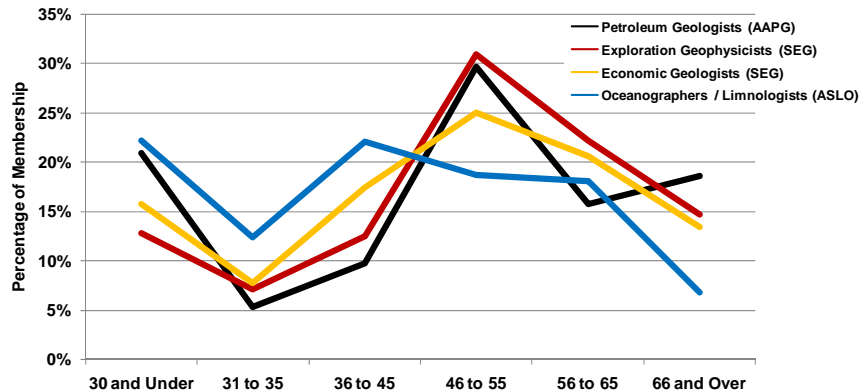


Source: American Geological Institute, data derived from NCES Digest of Education Statistics



Workforce Demographics

Geoscience Age Demographics by Professional Society

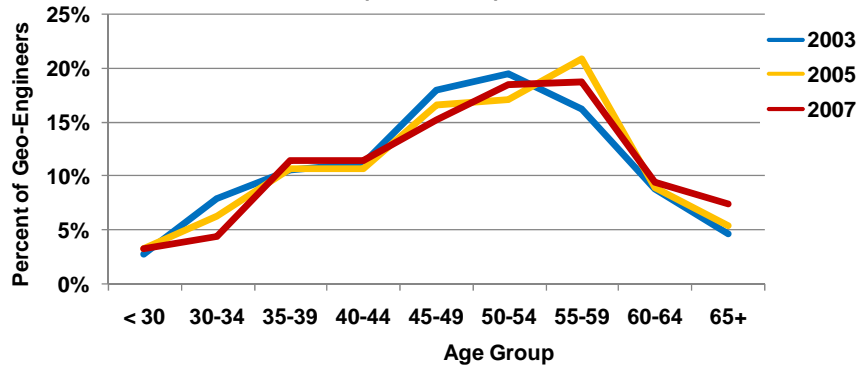


Source: AGI Geoscience Workforce Program, data provided by the Society of Exploration Geophysicists, American Association of Petroleum Geologists, Society of Economic Geologists, and the American Society of Limnology and Oceanography



Workforce Demographics

Age Distribution of Oceanographers in Government (2003-2007)

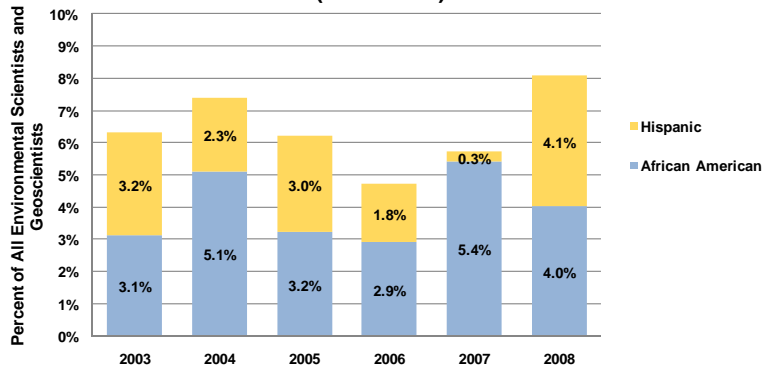


Source: AGI Geoscience Workforce Program, data derived from the Office of Personnel Management fedscope database



Minority Representation in the Workforce

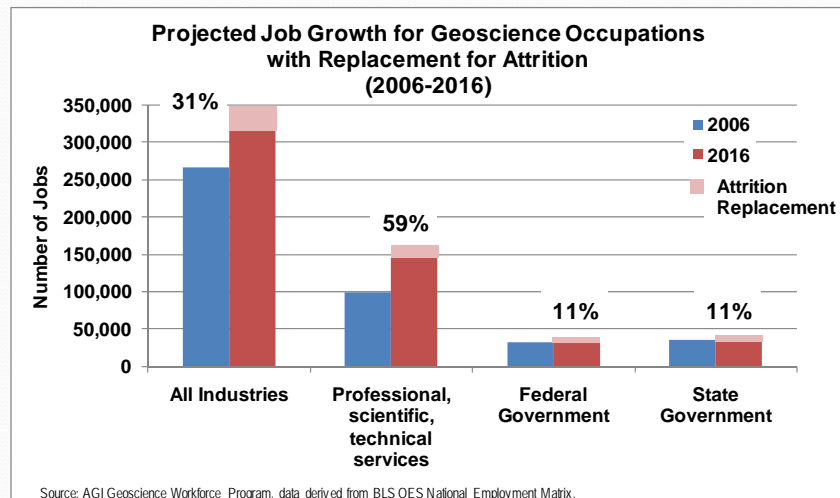
Minorities in Environmental Science and Geoscience Jobs (2003-2008)



Source: AGI Geoscience Workforce Program, data derived from the U.S. Bureau of Labor Statistics



Workforce Projections

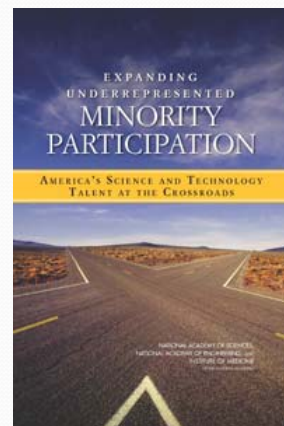


Why should we care?

- Maximize human resource potential
- Incorporate diverse ideas and approaches to spur innovation
- Have enough trained scientists to meet workforce demand

National Academies study:

“Academic leadership...should articulate underrepresented minority participation as a key commitment to set a tone that raises awareness and effort.”



Challenges to engaging students in STEM fields?

- K-12 Preparedness
- Academic and financial support
- Family influence
- Cultural sensitivities
- Completion rates

What challenges are unique to the geosciences and ocean sciences that makes us the bottom of the barrel?



Challenges to engaging students in Geosciences/Ocean Sciences?

- Image
- Career and opportunity awareness
- Career Mobility
- Lack of college programs where students live, and at Minority Serving Institutions
- Isolation



Geosciences: An Image Problem?



- Caucasian (often mature men)
- Hard Hats and safety suits
- Dirty
- Unfamiliar setting
- Makes money?



Geosciences: An Image Problem?



- Diverse peers
- Professional
- Clean
- Familiar, located in my town
- Helps my family
- Makes money



How do you get there?

- College
- Medical School
- Residency

•?



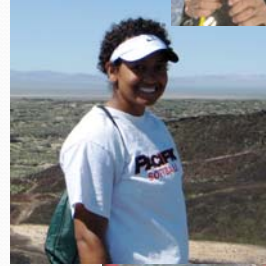
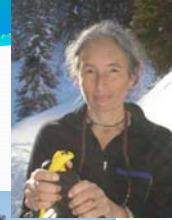
Strategies to increase diversity

- Tackle our image problem
- Promote clear career paths
- Address concerns of parents and families
- Support MSI's
- Provide academic and social support



AGI's programs

- Understand the problem
 - Workforce Data Analysis
- Academic and social support:
 - Minority Participation Program scholarships
- Career Awareness and family support
 - Student Engagement Campaigns
- Communication and dissemination



Marketing the geosciences

- Campaign to raise awareness of the geosciences
- Careers brochure sent to high scorers on the SAT



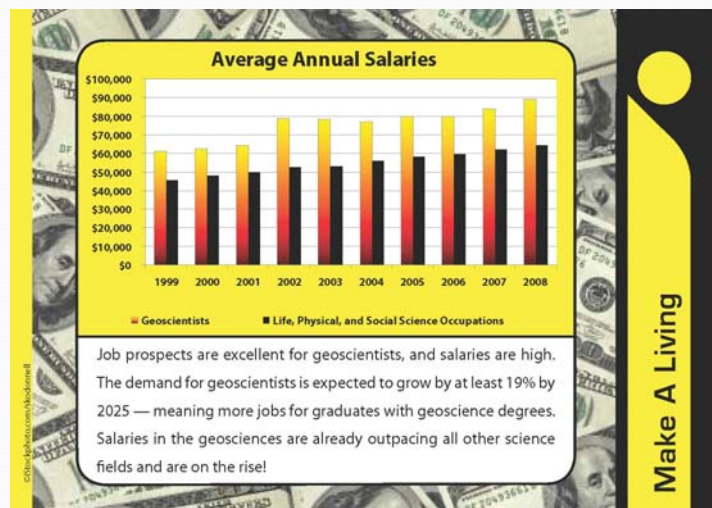
Students want to make a difference

As a geoscientist, you will help solve some of society's most pressing problems.

- ▶ Develop the energy resources that keep our economy running
- ▶ Find sustainable supplies of natural resources, including clean water, petroleum and Earth materials
- ▶ Protect citizens and communities from devastation by natural hazards, such as volcanic eruptions, earthquakes, floods, landslides and hurricanes
- ▶ Understand changes in global climate patterns
- ▶ Predict the behavior of Earth's Systems and the universe
- ▶ Advise policymakers on decisions that balance society's needs with the ability to keep the world healthy

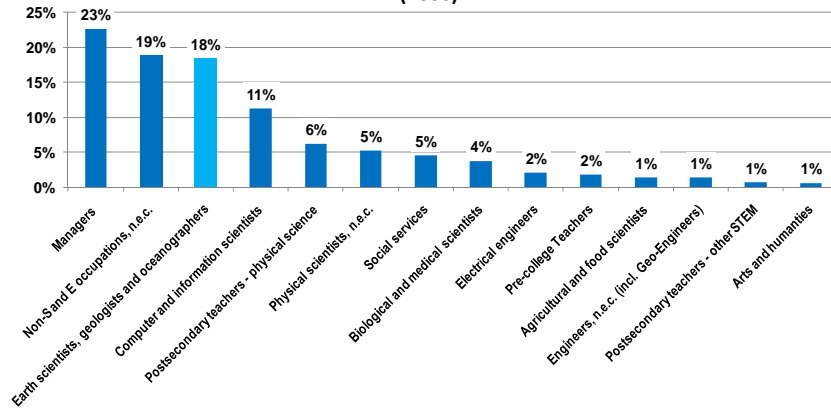
Make A Difference

Parents want them to make a living



Where will I work?

Where do Oceanography Degree Recipients Work?
(2006)



Source: AGI Geoscience Workforce Program; data derived from NSF's 2006 SESTAT Restricted Access Files. SESTAT is the Scientists and Engineers Statistical Data System. The use of NSF data does not imply NSF endorsement of the research, research methods, or conclusions contained in this report.



Joining the "club"



- Reduce isolation for minority students
- Promote professional Societies' role in communicating science and creating community



Ongoing student support to increase completion and retention

- Once students join your departments, they need:
 - Inclusive atmosphere
 - Mentoring
 - Academic support
 - Career counseling
 - Community (including families)



American Geological Institute

- **AGI's demographic and workforce data is available in the Status of the Geoscience Workforce, 2009**

www.agiweb.org/workforce

