AGU and Advancement of Women

Stephanie Pfirman
Barnard College, Columbia University
Columbia Earth Institute ADVANCE coPI
and
AGU Committee on Education and Human Resources

With input from:
Tim Killeen, Ines Cifuentes, Tuija Pulkkinen, Heather Macdonald, Cathy Manduca
Representation of Women in AGU Sections and Focus Groups

55,000 members
Women strongest representation in biology, “not specified,” focus groups, chemistry, volcanology -- not physics
Percent of PhDs Earned by Women in Selected Fields, 1990 to 2000

- Life Science
- All Fields
- Chemistry
- Geoscience
- Physics
- Engineering
Sorted by # women, not including section totals
AGU Diversity Plan

• The AGU Diversity Plan was developed & approved by the Committee on Education and Human Resources in 2002
• Recommends that AGU:
  – **Educate** the membership on diversity issues and their impact on the field, and continue to support educational reform efforts
  – **Engage** the full diversity of scientists in Union activities
  – **Outreach** to professional scientists, educational organizations, and the public at-large about the excitement of the geosciences, the diversity of scientists who are AGU members and the diversity of fields studied by Earth and space scientists
  – **Facilitate** collaborations between research institutions, K-16 educational organizations, formal and informal education providers, Earth and space science industries, media, and the membership of AGU
  – **Partner and collaborate** with other professional scientific, mathematical, and engineering societies, formal and informal educational organizations, public media outlets, and industry to breakdown cultural barriers to diversity
Activities

• Annual meetings
  – AGU Heads and Chairs of Earth and Space Sciences (since 1997)
    • Workshops (Heather Macdonald):
      – 2007: Interdisciplinarity and Diversity (Pfirman)
      – 2006: Breakout on dual career issues
  – Student travel grants targeted towards under-represented minorities
    • 50% women
  – “Issues Facing Women Chairs, Deans, and Other Academic Leaders”
    • Lunch -- Heather MacDonald and Marjorie Chan ($ from AWG Foundation)
• Earth Science Women's Network
  • Initiated at spring AGU 2002, now 400 members
  – Special sessions organized by members
• Eos publications
• Honors
• Leadership
• Partnerships
Special Sessions at Annual Meetings

- **2007 Navigating a Career in the Geosciences: Strategies for Success**
  - *Presiding:* S Pfirman, Barnard College; P Culligan, Columbia University; R E Bell, Lamont-Doherty Earth Observatory, Columbia University

- **2005 Recruitment and Retention of Students, Faculty, and Staff: Departmental Strategies That Work/Building Strong Geoscience Departments - Challenges, Opportunities, and Successes**
  - *Presiding:* R Richardson, University of Arizona; T Bralower, Pennsylvania

- **2004 Diversity and Equity in the Earth and Space Sciences: Global Perspectives on the Issues and Obstacles**
  - *Presiding:* F R Hall, University of New Orleans; R Johnson, University Corporation for Atmospheric Research; C Alexander, Jet Propulsion Laboratory, California Institute of Technology

- **2004 Strategies and Resources for Success in the Geosciences: The NSF-ADVANCE Initiative and Other Opportunities**
  - *Presiding:* R E Bell, Lamont-Doherty Earth Observatory; E Anthony, University of Texas at El Paso

- **2003 Fixing the Holes in the Leaky Pipeline**
  - *Presiding:* R E Bell, Lamont-Doherty Earth Observatory; C O'Riordan, AGU
Eos Publications

2007  Retreating to Advance Women Geoscience Faculty
2007  The Science of Diversity
2007  Assessing the Publication Productivity and Impact of Eminent Geoscientists
2006  Mentoring Program for Women in Physical Oceanography
2006  Barriers and Bias Hold Back Women in Academic Science
2005  Women, Work, and the Academy
2004  Are We Slighting Female Colleagues?
2003  Where are the Women Geoscientist Professors?
2003  Academic Specialties in U.S. Are Shifting: Hiring of Women ...
2003  Righting the Balance: Gender Diversity in the Geoscience
2002  Women exploring the oceans

Orange = Columbia ADVANCE
AGU Honors and Women
Eos 2004 (also 2003, 1995, 1994)
The percentage of women nominated was less than the percentage of female members over 40, and the success rate was less than for men

LETTERS
Are We S slighting Female Colleagues?

PAGE 402

There has been considerable discussion in Eos, and elsewhere, concerning gender imbalance in the geosciences. It is unfortunate that in choosing the 2004 AGU Fellows this imbalance was exacerbated by choosing only 7% women, significantly less than the proportion of women in the field. It seems that the "Old Boy Network" is perpetuating itself. If there are few models for women, we will have few women.

—STEVEN RUDNICK, University of Massachusetts, Boston

Reply
PAGE 402

The AGU Fellows Committee takes its role seriously and makes every effort to eliminate any bias in the Fellows selection process. Gender imbalance is an issue that continues to concern the committee. The following information may help put this problem into perspective.
The total number of Fellows selected in any year cannot exceed 0.1% of the membership at the end of the previous year. For 2004 this limit was 41 Fellows. Although women represent 17% of the total AGU membership, the percent of members over the age of 40 that are women is only 11% (most Fellows are over 40 at election). The total number of women nominated was 13 (7% of nominations). The total number of men nominated was 127 (93% of nominations). Three women were elected to fellowship in 2004 (7% of the total class of 41, a 23% success rate) compared with 38 men (a 30% success rate).

Thus the percentage of women nominated for Fellowship in 2004 was less than the percentage of women members, even when the membership pool is adjusted for age. Although the nomination success rate for women is likely to fluctuate from year to year, given the small number of nominees, it is clearly more likely that women will be elected as Fellows if more women are nominated.

Fellow nominations for 2005 are now complete. Of 134 complete nominations received, 10 are for women (7.5%). Thus the trend (gender underrepresentation) continues. This trend can only be reversed by members. We urge your assistance.

Note that the deadline for 2006 Fellows nominations is 1 October 2005.

Eos previously published an article on this topic [84(10), 11 March 2003, p.92].

—LINDA ABRIOLA, Fellows Committee Chair
AGU Honors
Representation of Women

• Medalists
  – 2003: 0 out of 10
  – 2004: 2 out of 12
  – 2005: 2 out of 9
  – 2006: 1 out of 12
  – 2007: 5 out of 10 (50%)
    • 2 of the 3 Macelwane medalists
    • 2nd women Bowie medalist since 1939
    • 2nd woman to win the Fleming Medal since its founding in 1962
    • 1st ever woman Ewing Medalist since medal was founded in 1976
    • Gender of the committee chairs may have been a factor
      – 9 of the 10 committees were chaired by women (President Killeen formally charged committees with language about diversity, women and underrepresented minorities)

• Fellows
  – 2004: 3 of 41 (7%)
  – 2008: 6 of 51 (12%)
    • Fellows committee chaired by a woman
AGU Honors
Issues and Recommendations

• Selection criteria tend to favor the more "male" career choices
  – Difference in "female" and "male" career developments
    • Result: Women fare less well in the section rankings
  – Women chairing awards and fellows committees appear to have made a difference
    • Is it primarily committee make-up that drives diversity in awards or are there other factors, such as those embedded in the nominating process?
    • Are there requirements in the nominating and selection process that make it easier for white males to get awards?

• Recommendations
  – Section committees should be made aware of gender distribution (rules don’t come from President)
  – All committees, be they section or union wide, should include both genders
  – Selection criteria
    • Presently include prior medals and achievements -- if you've been overlooked by other organizations, AGU will do it again
    • Include accomplishments beyond discovery such as integration, application, teaching, producing students who fair well, and collaborations
# AGU Leadership

## Representation of Women

<table>
<thead>
<tr>
<th>Section</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atmospheric Sciences</td>
<td>4 total; 1 woman secretary</td>
</tr>
<tr>
<td>Biogeosciences</td>
<td>3 total; 1 woman secretary</td>
</tr>
<tr>
<td>Geodesy</td>
<td>3 total; 1 woman secretary</td>
</tr>
<tr>
<td>Geomag &amp; Paleomag</td>
<td>3 total; 1 woman president-elect</td>
</tr>
<tr>
<td>Hydrology</td>
<td>3 total; 0 women</td>
</tr>
<tr>
<td>Ocean Sciences</td>
<td>6 total; 3 women</td>
</tr>
<tr>
<td></td>
<td>(1 woman president and 2 secretaries)</td>
</tr>
<tr>
<td>Planetary Sciences</td>
<td>3 total; 0 women</td>
</tr>
<tr>
<td>Seismology</td>
<td>3 total; 1 woman secretary</td>
</tr>
<tr>
<td>SPA</td>
<td>5 total; 1 woman president</td>
</tr>
<tr>
<td>Tectonophysics</td>
<td>3 total; 1 woman president-elect</td>
</tr>
<tr>
<td>VGP</td>
<td>4 total; 1 woman secretary</td>
</tr>
<tr>
<td>Union Officers</td>
<td>6 total; 1 woman general secretary</td>
</tr>
</tbody>
</table>

**The Council:** Composed of the union officers and the presidents and presidents-elect of the sections -- 5 of 28 (18%) are women, “secretaries” are poised to advance …
Partnerships

• Joint Society Conference on Diversity in the Earth & Space Sciences in 2003 - Jill Karsten and CEHR
  – Ca. 70 representatives from 27 scientific societies and 6 federal agencies
  – Formal resolution adopted
    (http://www.agu.org/sci_soc/education/jsc/RESOLUTION.final.pdf)

• National Association of Geology Teachers - Cathy Manduca
    • AGU and NAGT collaboration
  – “On the Cutting Edge” workshops (DLESE/NAGT): women and underrepresented minorities, particularly
    – Early Career Geoscience Faculty
    – Preparing for an Academic Career in the Geosciences
    • AGU publicizes these workshops.
  – “Building Strong Geoscience Departments”
Outlook

- Foster *Eos* articles, special sessions, Heads and Chairs meetings on issues and best practices
- Leadership and honors
  - Raise member and section leadership awareness of gender issue
  - Demonstrate to women the benefits of section affiliation
    - Encourage women to run for section officers
  - Try different ways to change the culture
    - Having women chair committees
    - Working with sections to adjust selection criteria?
Percentage of PhDs Awarded to Women by Fine Field, Two-Year Averages

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Oceanography</td>
<td>23</td>
<td>39</td>
<td>38</td>
</tr>
<tr>
<td>Earth Sciences</td>
<td>19</td>
<td>29</td>
<td>34</td>
</tr>
<tr>
<td>Atmospheric Sciences</td>
<td>14</td>
<td>25</td>
<td>33</td>
</tr>
</tbody>
</table>

Source: National Science Foundation
Valian et al. analysis

- Reasons for award differential in cognitive psychology
  - Sex differences in productivity (f-124 vs. m-162), h index (f-23 vs. m-25), and cites (f-387 vs. m-480)
    - Lower but not significant difference
  - Sex differences in return on productivity
    - No difference in awards for men vs. women at research institutions (? for equal productivity?)
  - Sex differences in initial sorting (fewer women at research inst?)
    - Initial sorting of women into teaching intensive schools

- What predicts actual awarding of honor, can explain 49%
  - Year of PhD
  - Quantity of publications
    - Yes when considered alone
  - h-index
    - Yes – but limited predictive value +4%
  - Number of citations for “home run” – most highly cited paper: 440
    - Yes -- +13%, and is best predictor (47%?) when other factors not used
    - Best sellers tend to be longer … synthesis?