Preparing our Workforce: Thinking Differently about Geoscience Careers

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Content provided by the American Geosciences Institute
Why I’m here

- To explain the geoscience job market.
- To get you to think outside the box!
- To help facilitate and guide your job searches.
- To be a resource for you!
My Career Pathway

Photo Credit: Emma Rude, AGI's Life in the Field Contest, 2014
What Geo Careers do you know?

- What Geo subjects interest you?
  - What skills do you need to be successful?
Participation Slide

- Geo Subjects:

- Geo Skills:
What Geo Careers do you know?

- What Geo subjects interest you?
  - What skills do you need to be successful?

- What Geo careers interest you?
  - What skills do you need to be successful?
Participation Slide

- Geo Careers:

- Geo Career Skills:
What Geo Careers do you know?

- What Geo subjects interest you?
  - What skills do you need to be successful?

- What Geo careers interest you?
  - What skills do you need to be successful?

- What are your other interests or hobbies?
  - What skills do you need to be successful?

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Participation Slide

- Other Subjects/Hobbies:

- Other Skills:
Overarching Theme:

Transferrable skills are vitally important to any and every geoscience career!
Think outside the box!
A subset of data that highlights significant disparity between skill appraisal and student preparation

**Technical Skills**
- Structure, tectonic, seismic investigations
- Deformational history
- Sediment/soil age relationships
- Health, safety, regulations, QA/QC
- Preparation of geological investigations
- Earthquake mechanisms and seismic hazards
- Paleontology
- Tectonic/geologic modeling

**Geology**
- Fiscal management
- Self-awareness
- Adaptability
- Entrepreneurial
- Supervising
- Time management
- Project management

**Non-technical Skills**
- Ethical practices
- Relationship-building
- Visioning

Student preparation indicated by faculty and students (n=89)
Importance of skill in professionals’ current position (n=72)
Diameter indicates magnitude of importance/preparation

**Data Source:** Geoscience Career Master’s Preparation Survey Report, by Heather R. Houlton, American Geosciences Institute. Technical and non-technical skill names adapted from the ASBOG Task Analysis Survey, and the AAG EDGE Geography and Career Planning Survey, respectively.

The relative sizes of the circles can only be compared within the same category of either technical skills or non-technical skills. Skills selected for this graphic displayed statistically significant disparity between student preparation and rated importance, as indicated by the Geoscience Career Master’s Survey Data Analysis (i.e. Larger blue circles indicate that professionals found these skills to be more important than the overall preparation of students when graduating from their Master’s programs). The preparation of students was determined by aggregating data of student and faculty responses.
The Breakdown: Workforce Trends

US Geoscience Degrees Granted
1973-2015

- Bachelor's
- Master's
- Doctorate
The Breakdown: Workforce Trends

324,411 geoscience jobs exist today with postsecondary teachers, 2014 (BLS)

156,000 geoscientists expected to retire by 2024 (~48%) (AGI)

32,400 geoscience job growth by 2024 (~10% change) (BLS)

58,000 total new graduates (with BS, MS and PhD)

Net deficit of over 90,000 geoscientists by 2024

Content provided by the American Geosciences Institute
Geoscience Age Distribution by Membership Society without Student Memberships

Exploration Geophysicists (SEG)
Petroleum Geologists (AAPG)
Hydrologists (NGWA)
Economic Geologists (SEG)

Content provided by the American Geosciences Institute
Age Distribution of Geoscientists Employed in the Federal Government

Content provided by the American Geosciences Institute
Students Seeking/Accepted Employment in Geoscience

- Accepted a position in the geosciences
- Seeking employment in the geosciences
- Not seeking employment in the geosciences

Percentage of Graduates

- BA/BS
- MA/MS
- Ph.D.
Useful Resources for Finding Geoscience Employment

- Campus Recruiting Event/Job Fair
- College/University Career Center
- Internet Job Board/Searches
- Professional Society
- Conference Networking
- Faculty Referral
- Student Organization
- Personal Contacts
- Other

Percentage of Graduates Employed in the Geosciences
Bachelor’s Grads’ Accepted Positions (2015)

Graduates with a BA/BS

- Oil and Gas: 16%
- Environmental Services: 40%
- Federal Government: 11%
- 4-Year University: 9%
- Information Services: 7%
- K-12 Education: 3%
- Nonprofit/NGO: 4%
- State or Local Government: 4%
- Agriculture/Forestry/Fishery: 2%
- Finance: 2%
- Research Institute: 2%

Graduates with a BA/BS
Master’s Grads’ Accepted Positions (2015)

Graduates with a MA/MS

- Oil and Gas: 67%
- Environmental Services: 13%
- 4-Year University: 4%
- Mining: 4%
- Research Institute: 4%
- State or Local Government: 4%
- Construction: 2%
- Nonprofit/NGO: 2%
- Research Institute: 4%
Doctoral Grads’ Accepted Positions (2015)

Graduates with a Ph.D.

- 4-Year University: 51%
- Research Institute: 20%
- Oil and Gas: 15%
- Federal Government: 12%
- Nonprofit/NGO: 2%
Starting Salaries of Geoscience Graduates (2015)

<table>
<thead>
<tr>
<th>Salary Range (USD thousands)</th>
<th>BA/BS</th>
<th>MA/MS</th>
<th>Ph.D.</th>
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<tbody>
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<td>Less than 30K</td>
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<td>30K-40K</td>
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<td>40K-50K</td>
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<td>More than 120K</td>
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2015 Median Annual Salaries All Geoscience Occupations

2015 Median Annual Salaries for Geoscience-Related Occupations

- Management Occupations: $133K
- Engineering and Natural Science Managers: $120K
- Petroleum Engineers: $94K
- Environmental Engineers: $90K
- Geoscientists: $74K
- Hydrologists: $80K
- Geographers: $95K
- Postsecondary Teachers: $83K
- K-12 Teachers: $79K
- Librarians: $75K
- Education Administrators: $54K

All U.S. Occupations: $36,200

Median Annual Salary (SUSD)
Questions?
Thank you!

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