Status of Geoscience Employment and Graduate Outcomes

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US Geoscience Employment by Highest Degree Level, 2017

- MS (Geo degree), 146,300
- BS (Geo degree), 115,500
- PHD (Geo degree), 39,800
- BS (non Geo degree), 38,500
- PHD (non Geo degree), 30,800
- MS nonGeo, 15,400
Employment in the Pandemic

- 88% of geoscience employers received government assistance
- Effective geoscience unemployment rate was 4%.
# Field of Degree, Doctorates, 2020-21

<table>
<thead>
<tr>
<th>Field</th>
<th>Share</th>
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<tbody>
<tr>
<td>Geophysics (21.0%)</td>
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<tr>
<td>Biological Oceanography (3.2%)</td>
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<tr>
<td>Geological Ocean. (1.6%)</td>
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<tr>
<td>Other (1.6%)</td>
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<tr>
<td>Environ Science (1.6%)</td>
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<tr>
<td>Hydrology (3.2%)</td>
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<tr>
<td>Chemical Ocean. (1.6%)</td>
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<tr>
<td>Petroleum Geology (1.6%)</td>
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<tr>
<td>Paleontology (1.6%)</td>
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<tr>
<td>Geomorphology (3.2%)</td>
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<tr>
<td>Civil Eng (3.2%)</td>
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<tr>
<td>Geology (25.8%)</td>
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<tr>
<td>Earth Science (11.3%)</td>
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<td>Soil Science (3.2%)</td>
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<td>Geochemistry (14.5%)</td>
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</tbody>
</table>

*American Geosciences Institute*

Connecting earth, science, and people
Occupational status of 2019-2021 geoscience graduates

Percent of recent graduates

- Retired
- Not employed
- Enrolled in degree program
- Non-academic profession
- K-12 faculty
- Post-doc
- Academic faculty
Changes in occupational status, Feb 2020 - Mar 2022
Recent geoscience graduates, Classes of 2014-2021

Initial population
Most recent population
Transitions between statuses

- Student
- Post-doc
- Academic faculty
- Non-academic professional
- K-12 faculty
- Unemployed
- Retired
Geoscience Skill Intensity - Doctorates, 2020-21

Percent of graduates

- Prior
- Always
- Research
- Course
- Used
- None

Skills:
- Making Inferences
- Spatial/Temporal Uncertainty
- Integrate Data
- Field Observations
- GIS
- Data Analysis
- Technological Versatility
Quantitative Skills by Degree Level, 2020-21
Percent of graduates

- Algebra
- Stats
- Calc 1
- Calc 2
- Calc 3
- Linear Algebra
- Diff Eq
- Comp Method
- Spatial Stats

Colors:
- BS
- MS
- PhD
COVID-Era Graduates Skills Reflection
Skills Wished had Gained

- No
- Project management
- Programming skills
- Database management
- Field skills
- Lab skills
- Data visualization and mapping software
- Machine learning, AI, data science
- Proficiency with virtual platforms

Respondents
Employment Sectors of Master's Graduates, 2020-21

- Mining (18%)
  - Waste Mgmt (6%)
  - Local Gov (6%)
- Oil & Gas (6%)
  - Federal (12%)
- Prof Services (6%)
- Health Care (6%)
- Research Institute (6%)
- State (24%)
Employment Sectors of Doctorate Graduates, 2013-2020

Percent of employed graduates

- Other
- Institute Res
- Info Sci
- NGO
- Construction
- Prof Services
- Mining
- Oil & Gas
- Agriculture
- Federal Govt
- State Govt
- K12
- 4YC
- 2YC
Macro Drivers Into the Future
Geoscience Goes Gig-lite

Upstream

Downstream

Major Companies

Geo Jobs Growth

Smaller Firms

Geo Jobs Growth
Other Apparent Factors

- AI/ML greatly reducing middle-skill geo jobs
  - Seismic/Strat Interpreters
  - Loggers
- Spread of fixed-price contracts
  - Shifting risk to smaller firms
  - Demanding higher skills/agility for increasing margin
- Increase in the singleton geoscientist
- Geosciences reluctance to be solution providers
  - Skillfulness and innovative thinking are winning traits