A Career in Geoscience

Photo credit: Kate Swanger

What is Geoscience?

- Geoscience is the scientific study of Earth and its 4 main, interrelated spheres: the lithosphere the hydrosphere, the atmosphere, and the biosphere.
- The spheres are characterized in terms of how they work today, how they operated in the past, and how we expect they may behave in the future.

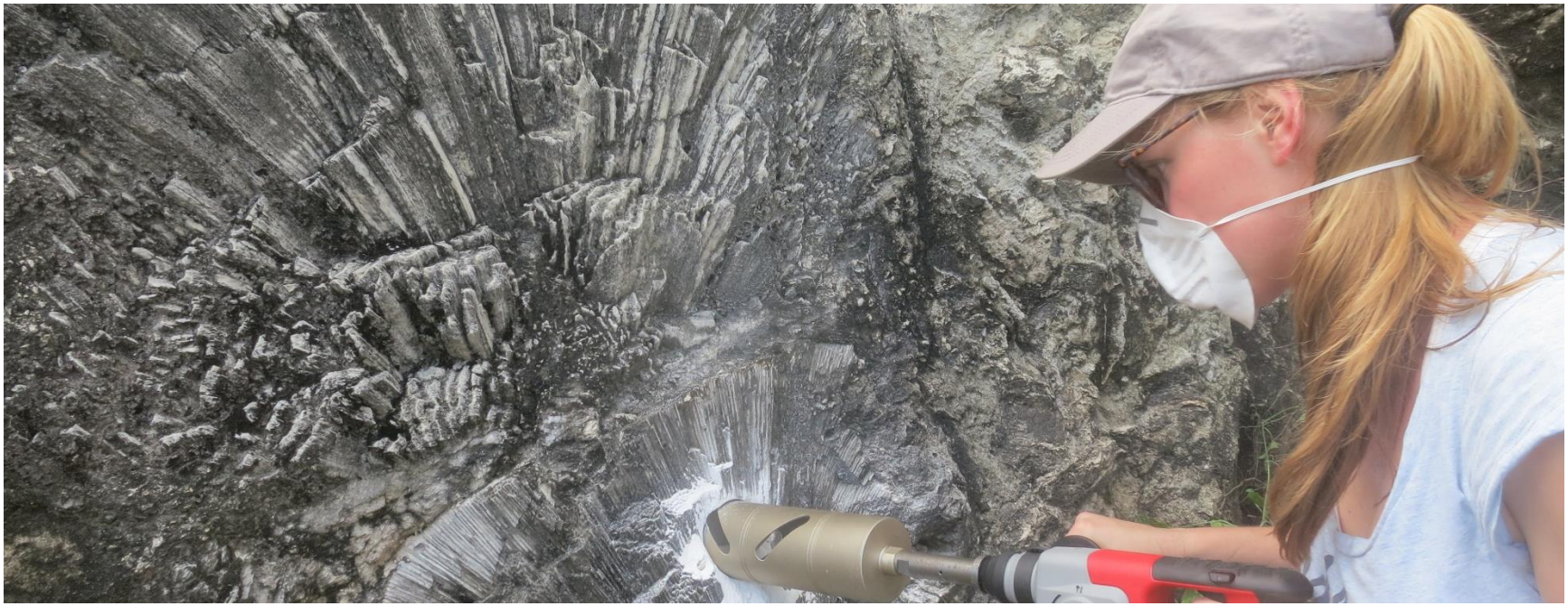

Photo credit: Kevin Krajick

- Geosciences” are comprise a variety of sub-fields: traditional solid earth science (e.g., geology, geophysics), environmental earth science, atmospheric science, oceanography, and geo-related disciplines (e.g., hydrology), among others.

Photo credit: Lamont-Doherty Earth Observatory

Why are Geoscientists important?

- Geoscientists explore the Earth's natural cycles and help people understand their relationship to the environment.
- The areas they study are relevant to societies and economics, which connects the geosciences to the larger field of sustainability.

Photo credit: Blake Dyer

Career Outlook in The Future

- The need for geoscientists, including geoscience teachers, is growing faster than the average for other careers.
- 50% of the current geoscience workforce is set to retire within the next 10 years.

Geoscience and Climate Change

Geoscientists are looking to the past to better understand how our futures will be impacted by climate change through their research.

Photo credit: Jonathan Kingslake

Geoscience and Climate Change (cont'd)

- **Changing Ice** – Climatologists and glaciologists working together to study polar ice sheets, how fast they are melting in response to climate change, and how this will affect sea level change in the future.
- **Ocean Acidification -** Oceanographers studying how a reduction of pH levels (caused by an uptake in CO_2) in oceans is affecting marine organisms and ecosystems.
- **Extreme Weather** - Meteorologists and climatologists work together to study current and past extreme events such as hurricanes or droughts in order to create models, assess areas at risk, and create early warning systems so communities can be prepared.

Photo credit: American Geophysical Union

Photo credit: Blake Dyer

What types of geoscientists are there?

There are many different geoscientists, they can be:

- Oceanographers
- Atmospheric scientists
- Climatologists
- Geologists
- Environmental scientists
- Paleontologists
- Hydrologists
- Seismologists

Photo credit: Jen Lamp

Who Hires Geoscientists?

Not-for-profits:

- Academic institutions
- Environmental non-profits like Sierra Club and The Nature Conservancy.

Government Institutions:

- National Oceanic and Atmospheric Administration (NOAA)
- National Science Foundation (NSF)
- United States Geological Survey (USGS)

Private Industries:

- Natural resources industry
- Scientific/technical consulting
- Environmental remediation

Photo credit: Lamont-Doherty Earth Observatory

Geoscientist Salaries:

- Beginning geoscientist: $44,000 per year (BLS 2019).
- Experienced geoscientist: $91,000 per year (BLS 2019).

Lab Instrument Operator	**Entry Level Geologist**	**Assistant Professor of Geoscience**	**Principal Hydrogeologist**
$22,000 - $50,000 per year 0 – 10 years experience	$39,000 - $53,000 per year 0 – 5 years experience	$51,000 - $71,000 per year 5 – 10 years experience	$95,000 - $100,000 per year 10 – 20 years experience

Geoscientists at Work

Photo credit: Kevin Krajick

A paleoclimatologist takes a tree ring sample in an old-growth forest. The tree rings may help to characterize the region's climate history going back to the 1800s. This natural source of data, called a proxy, can improve models and help scientists make more accurate predictions about future climate.

Geoscientists at Work

By studying stream bed sediments, a geochemist tries to build a history of how water levels have changed at Mono Lake, California. By studying how bodies of water have responded to climate change in the past, scientists will be able to better project how they will change as the world warms, and how that will affect the communities dependent on the affected watersheds.

Photo credit: D. Funkhouser

Geoscientists Day-to-Day

In any given day, a geoscientist can expect to:

- Study different aspects of the Earth's systems;
- Complete fieldwork and collect samples;
- Prepare samples from the field in a lab for processing and analysis;

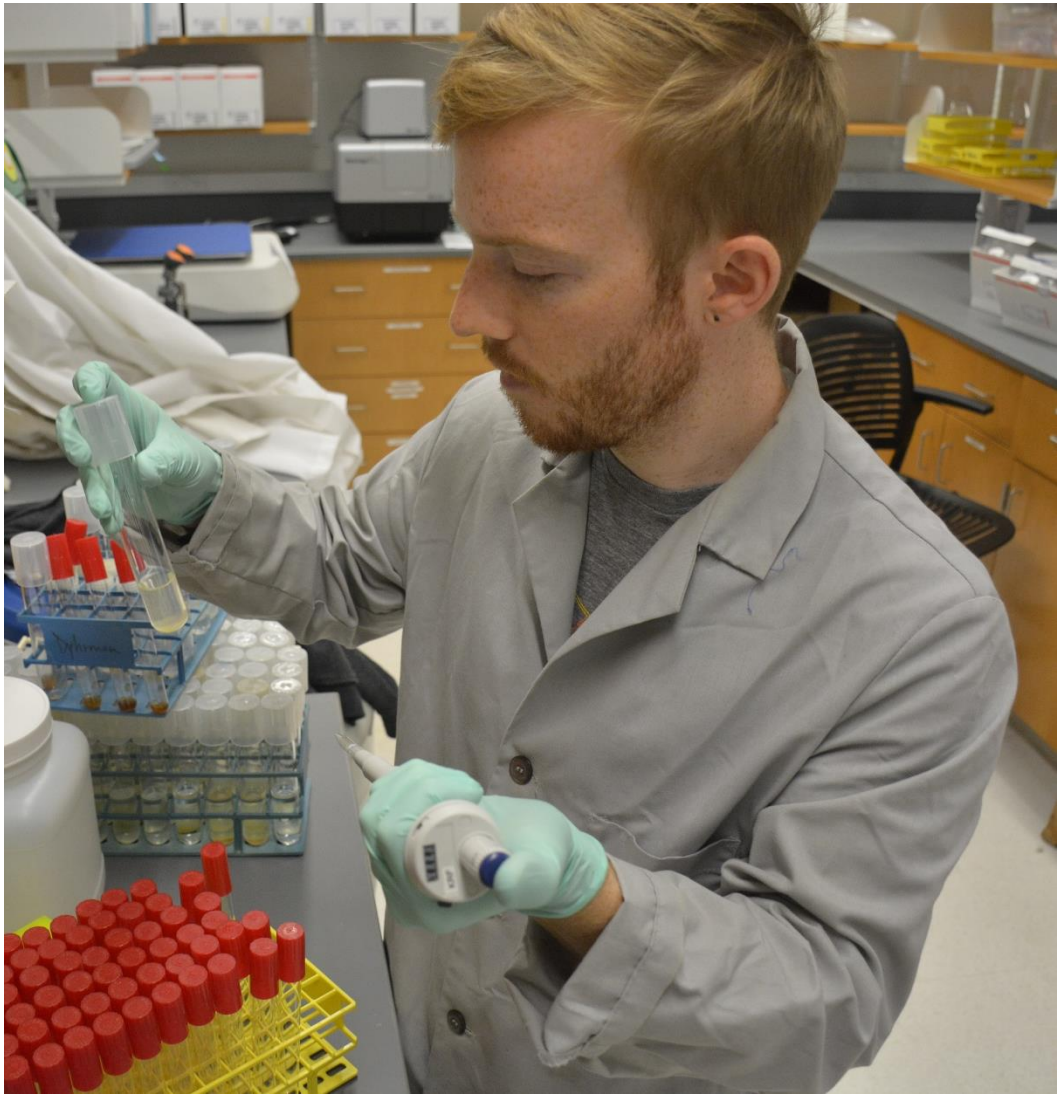

Photo credit: Lamont-Doherty Earth Observatory

Geoscientists Day-to-Day Continued:

- Compare data analyses to relevant studies;
- Write reports and present their findings, often to clients/funders;
- Teach classes at the undergraduate and graduate levels.

Photo credit: Lamont-Doherty Earth Observatory

Photo credit: Lamont-Doherty Earth Observatory

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Is Geosciences a good fit for me?

Questions Geoscientists Ask:

- How does the Earth work?
- How can we fulfill energy demands sustainably?
- What are the risks associated with extreme events?
- How can data be applied to solve real world issues?

Geoscientist personality traits:

- Technical Skills
- Quantitative Skills
- Good communication
- High attention to detail
- Enjoy thinking through problems and working with data

Photo credit: Lamont-Doherty Earth Observatory

How to Get Started

- Take math and science courses like calculus, statistics, biology, geology, or environmental science.
- Build up your communication and critical thinking skills.
- Get real world experiences through summer internships and conferences like the annual American Geophysical Union meetings.
- Explore your interests by applying for internships and participating in class field trips related to environmental science.
- Talk to your professors about research opportunities and how you can get involved.

If you have any questions follow up with: