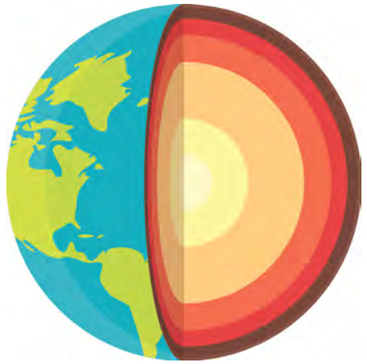
GEOSCIENCE

CAREER EXPLORATION GUIDE

WHAT IS GEOSCIENCE?



Because geoscientists study socially relevant aspects of the Earth, their work is important for people and the sustainability of our planet.

Geoscience is the scientific study of Earth and its four main interrelated spheres: the lithosphere, the hydrosphere, the atmosphere, and the biosphere, all of which 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. As defined by the American Geosciences Institute, "geosciences" comprises a variety of sub-fields, including traditional solid earth science (e.g., geology, geophysics), environmental earth science, atmospheric science, oceanography, and geo-related disciplines (e.g., hydrology), among others.

Because geoscientists study socially relevant aspects of the Earth, their work is important for people and the sustainability of our planet. Geoscientists perform environmental assessments and study natural cycles globally. They locate water, mineral, and energy resources. They predict natural hazards and future risks. These areas are relevant to societies and economies, which connect the geosciences to the larger field of sustainability, or an integrated study of environmental, social, and economic systems.

Runoff from snow and rain in the Sierras feeds Mono Lake.

WHAT IS A GEOSCIENTIST?

There are many different types of geoscientists. Researchers in these disciplines explore the Earth's systems and its interacting physical, chemical, and biological processes in order to help people understand their relationship to the environment. Some examples are:

OCEANOGRAPHER

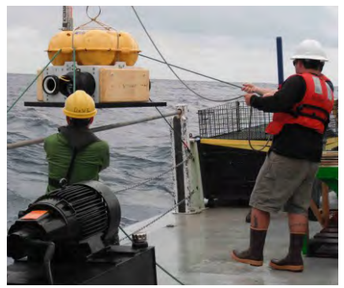
Someone who studies the motion and circulation of ocean waters; the physical and chemical properties of the oceans; and how these properties affect coastal areas, ocean life, climate, and weather.

CLIMATOLOGIST

Someone who studies past, present, and future climate using geologic archives, observations from instruments and satellites, and computer models.

HYDROLOGIST

Someone who researches the distribution, circulation, and physical properties of Earth's surface and ground water.



SEISMOLOGIST

A scientist who studies earthquakes and their effects, like tsunamis and landslides.

HOW DOES THE FUTURE LOOK FOR GEOSCIENTISTS?

From now through 2028, jobs in geosciences, including geoscience teachers, are expected to grow slightly faster than the average for all occupations. The need for geoscientists is expected to significantly increase in the future, especially with almost half in the current workforce expected to retire within the next 10 years (BLS 2019). For those interested in working in industry, opportunities are expected to increase, specifically in jobs involving geographical information systems (GIS) and other technologically driven positions (Fazekas 2005).

WHAT TYPES OF JOBS DO GEOSCIENTISTS DO?

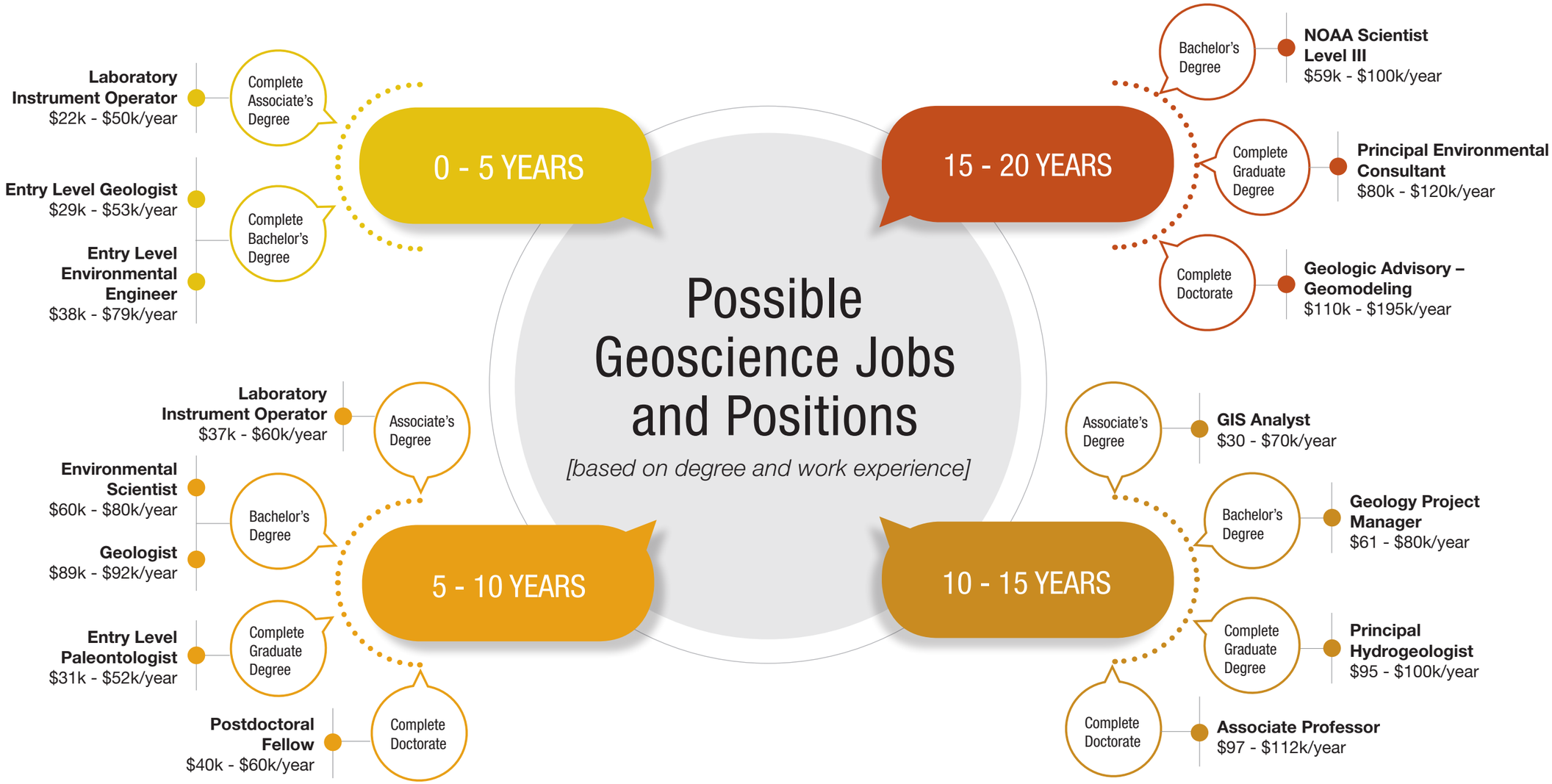
Geoscientists study the physical aspects of the Earth. Individuals interested in a career in geoscience could end up working in a lab, office, or in the field. Fieldwork is frequently outdoors, allowing geoscientists to closely observe to the aspects of the Earth they are studying, like geysers, volcanoes, and different parts of the ocean. Geoscientists study these aspects of the Earth to understand and solve present and past challenges. Some examples of the problems that geoscientists are working to solve include, but are not limited to: seismologists working towards early detection of earthquakes; oceanographers working to see how changing ocean currents are going to affect our climate; and climatologists and climate modelers working to create more accurate models to investigate how average rainfall will change in the future and how that will affect crops in different areas of the world.

WOULD I ENJOY A CAREER IN GEOSCIENCE?

If you are someone who is interested in how the Earth works, want to participate in research that impacts society and likes to apply math and science to complex problems, then a major in geoscience might be a good fit for you.

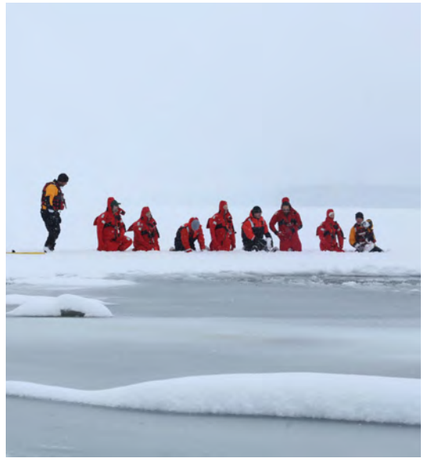
ESTIMATED SALARIES FOR GEOSCIENTIST JOBS, BASED ON EXPERIENCE AND EDUCATION

Depending on the type of job, geoscientists can work in an office during normal business hours or can teach within academic institutions and conduct research. There are other positions that require significant travel, sometimes to remote destinations and with round-the-clock responsibilities. The average pay for a geoscientist just entering the field is $44,000 per year. For a more experienced geoscientist, the average pay is $91,000 per year (BLS 2019).



GEOSCIENCE AND CLIMATE CHANGE:

Geoscientists look to the past to see the future. The research being conducted by geoscientists will help create sustainable and resilient societies as the climate changes. Geoscience is shifting to become a more applied science, and researchers have been working to address climate change and resource availability in environmental and management contexts (Thornbush 2017). Geoscientists' work is essential as we move towards sustainability and resilience.



GEOSCIENTISTS DAY-TO-DAY:

Some day-to-day tasks of a geoscientist might include fieldwork to collect samples or conduct surveys, data processing and analysis, data visualization and interpretation using geographic information systems (GIS), assessment and compliance with local environmental regulations, writing reports and presenting their findings. A professor might do many of these things and teach classes as well. An individual's day-to-day schedule will change depending on his/her commitments to an office, a lab, or in the field; or if they work at an academic institution, for the government, a non-profit or for a private company.

A FEW TRAITS THAT ARE TYPICAL OF GEOSCIENTISTS:

Geoscientists need to have strong technical and quantitative skills. They also need to be good communicators and have strong attention to detail. They must be able to do quantitative data analysis, have strong reasoning skills, enjoy working with large datasets, and engage collaborative teams (InTeGrate, 2013).

The personality tests below might help you decide if you would enjoy being a geoscientist in the future.

- O*NET Interest Profiler: **www.mynextmove/explore/ip**
- Careerwise: **www.careerwise.minnstate.edu/careers/interestProfiler**
- Careerinfonet: **www.careerinfonet.org/skills/skills**

WHAT GEOSCIENCE RELATED PROGRAMS ARE AVAILABLE AT CUNY'S 2-YEAR COLLEGES?

	AREAS OF STUDY									ASSOCIATE'S DEGREE TYPE		
	Science	Chemistry	Biology	Biotechnology	Earth and Planetary Science	Engineering Science	Geographic Information Science	Environmental Science	Environmental Technology	Associates in Science	Applied Associate's in Science	Associate's in Art
BRONX												
Bronx Community College	●			●				●	●	●	●	
Hostos Community College	●									●		
MANHATTAN												
Borough of Manhattan Community College	●			●			●			●		
Guttman Community College	●											●
QUEENS												
LaGuardia Community College			●					●		●		
Queensborough Community College	●	●	●	●		●		●		●		
BROOKLYN												
Kingsborough Community College		●	●	●	●	●				●		

WHAT GEOSCIENCE RELATED PROGRAMS ARE AVAILABLE AT CUNY'S 4-YEAR COLLEGES?

	AREAS OF STUDY														BACHELOR DEGREE TYPE		
	Biology	Chemistry	Physics	Earth Science	Geographic Information Science	Environmental Science	Earth Science Education	Natural Sciences	Applied Chemistry / Toxicology	Molecular Biology	Geology	Earth and Environmental Science	Biophysics	Geography	Bachelor of Science	Bachelor of Arts	Bachelor of Engineering
BRONX																	
Lehman College	●	●	●	●	●	●						●		●	●	●	
MANHATTAN																	
Hunter College	●	●	●			●	●							●		●	
City College of New York	●	●	●	●			●				●	●	●		●	●	●
John Jay College of Criminal Justice									●	●					●		
Baruch College	●							●								●	
QUEENS																	
Queens College	●	●	●			●					●				●	●	
York College	●	●	●				●				●				●	●	
BROOKLYN																	
Brooklyn College Community College	●	●	●				●					●			●	●	
Medgar Evers College	●														●		
New York City College of Technology									●								
STATEN ISLAND																	
College of Staten Island	●	●	●				●					●		●	●	●	

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PROJECT PARTNERS:

BRONX COMMUNITY COLLEGE

STELLA AND CHARLES GUTTMAN COMMUNITY COLLEGE

Hostos Community College

LaGuardia Community College

Lamont-Doherty Earth Observatory
COLUMBIA UNIVERSITY | EARTH INSTITUTE

QUEENSBOROUGH COMMUNITY COLLEGE

TEACHERS COLLEGE
COLUMBIA UNIVERSITY
A Graduate School of Education, Health & Psychology