

## What does a geoscientist do?

- Plan and carry out field studies, collect samples and conduct surveys.
- Supervise the work of technicians and coordinate work with other scientists, both in the field and in the lab.
- Search for and develop natural resources, such as petroleum and rock ores.
- Analyze aerial photographs, detailed records of geologic formations, rock samples, and other data to locate deposits of natural resources and estimate their size.
- Conduct laboratory tests on samples collected in the field.
- Use a variety of geology-related tools, including hammer and chisel to collect rock samples, ground-penetrating radar equipment to search for oil or minerals, x-rays and electron microscopes to determine the chemical and physical composition of rock samples, remote sensing equipment to collect data, and geographic information systems (GIS) and modeling software to analyze collected data.
- Make geologic maps and charts.
- Prepare written scientific reports and review reports and research done by other scientists.
- Present findings to clients, colleagues, and other interested parties.
- Lead environmental protection and preservation projects, including cleaning up and reclaiming land. Some specialize in a particular aspect of the Earth, such as its oceans or deserts.

(Source: <http://www.bls.gov/ooh/life-physical-and-social-science/geoscientists.htm#tab-2>)

## Geoscience careers

**Engineering geologists** apply geologic principles to civil and environmental engineering, offer advice on major construction projects, help with environmental cleanup, and reduce of natural hazards.

**Geologists** study the materials, processes, and Earth's history, and investigate how rocks formed and how they change.

**Geochemists** use physical and organic chemistry to study the composition of elements found in ground water, from wells or aquifers, and of earth materials, including rocks and sediment.

**Geophysicists** use principles of physics to learn about the Earth's surface and interior. They also study the properties of Earth's magnetic, electric, and gravitational fields.

**Mineralogists** study the structure and composition of minerals, and their uses.

**Oceanographers** study motion and circulation of ocean waters, physical and chemical properties of the oceans, and how these properties affect coastal areas, climate, and weather.

**Paleontologists** study fossils found in geological formations in order to trace the evolution of plant and animal life and the geologic history of the Earth.

**Petroleum geologists** explore the Earth for oil and gas deposits, analyze geological information to identify sites that should be explored, collect rock and sediment samples from sites through drilling and other methods, test samples for the presence of oil and gas, and estimate the size of oil and gas deposits, and work to develop sites to extract oil and gas.

**Seismologists** study earthquakes and related phenomena, such as tsunamis, use seismographs and other instruments to collect data on these events.

For additional specialties, visit the American Geosciences Institute, <http://www.americangeosciences.org/>

**Stratigraphers** study stratified rock formations and determine how they formed.

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## Important skills

**Communication skills.** Geoscientists write reports and research papers. They must be able to present their findings clearly to clients or professionals who do not have a background in geoscience.

**Critical thinking skills.** Geoscientists base their findings on sound observation and careful evaluation of data.

**Interpersonal skills.** Geoscientists work as part of a team with engineers, technicians, and other scientists.

**Outdoor skills.** Geoscientists may spend significant amounts of time outdoors. Familiarity with camping skills, general comfort being outside for long periods, and specific skills such as boat handling or even being able to pilot an aircraft could prove useful.

**Physical stamina.** Geoscientists may need to hike to remote locations while carrying testing and sampling equipment when they conduct fieldwork.

**Problem-solving skills.** Geoscientists work on complex projects, evaluate statistical data and other forms of information in order to make judgments and inform the actions of other workers, which requires a special ability to perceive and address problems quickly, to ensure the safety of all team members.

(Source: <http://www.bls.gov/ooh/life-physical-and-social-science/geoscientists.htm#tab-4>)