

CAREERS IN EARTH SCIENCE

Is a Career in Earth Science Right for You?

Earth science is the study of the Earth. Understanding the natural processes that shape the Earth over time, sustaining our water resources, beaches and soils, is part of what Earth scientists do. This understanding is essential to recognizing where and how human activity can disrupt essential natural cycles, so geoscientists also contribute to protecting our environment and cleaning up areas that human activity has degraded. Other Earth scientists work to understand natural hazards such as volcanic eruptions, earthquakes and tsunamis. This is the foundation for helping our society prepare for natural disasters, and here too Earth scientists make important contributions. Similarly, planetary scientists study the planets and moons of our Solar System to better understand Earth's special place in the solar system.



If you enjoy natural science, math, chemistry or physics, and are interested in learning how the Earth works, you can contribute to helping humanity thrive on our changing planet as an Earth scientist.

Earth Scientists Work in Many Fields

- ▶ **Hydrology** is concerned with problems of water supply, quality and management.
- ▶ **Geophysics** uses physics and mathematics to understand the Earth, like studying earthquake epicenters, mapping the seafloor, and identifying tectonic faults in the subsurface.
- ▶ **Petrology and Mineralogy** uses the texture and composition of rocks and minerals to learn about the conditions deep in the Earth, inside volcanoes, and within rising mountain ranges.
- ▶ **Planetary Science** investigates the surfaces and interiors of distant moons and planets, typically using remote sensing data gathered by satellites.
- ▶ **Geochemistry** uses theoretical and laboratory chemistry techniques to learn about the origin of Earth, its atmosphere, and oceans. A key goal is to understand how Earth's surface and climate have changed over time and to recognize when human activities can disrupt the Earth system.
- ▶ **Engineering Geologists** study landslides and evaluate land stability for the construction industry to determine where to build houses.

Career Opportunities in Earth Sciences

- ▶ At **universities** and in **research labs**, Earth scientists work to understand the world around them as research scientists continually making discoveries about how our Earth works. To do this, they work at field sites around the world, in labs and with computers.
- ▶ At **state and federal agencies**, Earth scientists typically work on teams that manage water resources and public lands, help enforce environmental laws, and participate in the planning of new infrastructure, like roads, rail, and urban renewal.
- ▶ In **private industry**, Earth scientists often work to assess the environmental impacts of new construction, plan the clean-up of contaminated land, and check for compliance with environmental regulations.
- ▶ Employment opportunities in the field are projected to grow along with growing **global demands for energy, clean water, and a more sustainable industry and agriculture**.
- ▶ As human impacts on our environment grow, the range of careers that value geologic knowledge are continually expanding. Environmental law, renewable energy, public health risk management, sustainable business practices and urban planning are all examples of fields where the contributions of Earth scientists are becoming increasingly important.



The Basic Academic Requirements

A Bachelor degree is the minimum educational requirement for any position as an Earth scientist. However, beginning positions in research, teaching, and exploration usually require a Master's degree. Typically, a doctorate is necessary to develop and lead research projects, or to teach at the college level.

A high school student should prepare for a career in Earth science by following a diversified college-preparatory curriculum that includes courses in chemistry, physics, and mathematics. Courses in writing and computer science are also useful in these interdisciplinary fields.

Want More Information?

Contact the Department of Earth Sciences at the University of Hawai'i at Mānoa. The department offers a Bachelor of Arts degree in Earth and Environmental Science, Bachelor of Science degree in Earth Sciences, and Master of Science and Doctorate degrees in Earth and Planetary Sciences.



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