Job Duties of Oceanographers

Many job opportunities for oceanographers exist with scientific research institutions (universities) and various government agencies. Private companies who are engaged in searching for economic sea floor deposits, investigating areas for sea farming, and evaluating natural energy production from waves, currents, and tides also hire oceanographers. The job duties of oceanographers vary from place to place, but can be generally described as follows:

**Geological oceanographers and geophysicists** explore the ocean floor and map submarine geologic structures. Studies of the physical and chemical properties of rocks and sediments give us valuable information about Earth’s history. The results of their work help us understand the processes that created the ocean basins and the interactions between the ocean and the sea floor.

**Physical oceanographers** investigate such ocean properties as temperature, density, wave motions, tides, and currents. They study the ocean-atmosphere relationship that influences weather and climate, the transmission of light and sound through water, and the ocean’s interactions with its boundaries at the sea floor and the coast.

**Chemical oceanographers and marine geochemists** investigate the chemical composition of seawater and its interaction with the atmosphere and the sea floor. Their work may include analysis of seawater components, desalination of seawater, and studying the effects of pollutants. They also examine chemical processes operating within the marine environment and work with biological oceanographers on studies of living systems. Their study of trace chemicals in seawater helps us understand how ocean currents move seawater around the globe, and how the ocean affects climate.
Biological oceanographers, marine biologists, and fisheries scientists study marine plants and animals. They are interested in how marine organisms develop, relate to one another, adapt to their environment, and interact with it. Their work includes developing ecologically sound methods of harvesting seafood and studying biological responses to pollution. New fields associated with biological oceanography include marine biotechnology (the use of natural marine resources in the development of new industrial and biomedical products) and molecular biology (the study of the structure and function of bioinformational molecules—such as DNA, RNA, and proteins—and the regulation of cellular processes at the molecular level). Because marine biology is the most well-known oceanographic field (and because the larger marine animals have such wide appeal), it is currently the most competitive sector of oceanography.

Marine and ocean engineers apply scientific and technical knowledge to practical uses. Their work ranges from designing sensitive instruments for measuring ocean processes to building marine structures that can withstand ocean currents, waves, tides, and severe storms. Subfields include acoustics, robotics, electrical, mechanical, civil, and chemical engineering and naval architecture. They often use highly specialized computer techniques.

Marine archaeologists are involved in the systematic recovery and study of material evidence, such as shipwrecks, graves, buildings, tools, and pottery remaining from past human life and culture that is now covered by the sea. Marine archaeologists use state-of-the-art technology to locate various underwater sites.

Marine policy experts combine their knowledge of oceanography and social sciences, law, or business to develop guidelines and policies for the wise use of the ocean and coastal resources. Marine policy requires a knowledge of at least one of these other disciplines as well as a sound understanding of oceanographic issues.
Sources of Information

- Consult the catalog of any college or university that offers a curriculum in oceanography or marine science.

- The Oceanography Society publishes an excellent brochure entitled *Careers in Oceanography and Marine-Related Fields*. The Oceanography Society can be contacted at 4052 Timber Ridge Drive, Virginia Beach, VA 23455 and their telephone number is

- The National Sea Grant College Program of NOAA publishes a comprehensive brochure entitled *Marine Science Careers: A Sea Grant Guide to Ocean Opportunities*, which includes interviews with working oceanographers. The Sea Grant College can be reached c/o NOAA, SSMC3 Room 11606, 1315 East-West Highway, Silver Spring, MD 20910 and their telephone number is

- The Scripps Institution of Oceanography at the University of California, San Diego publishes an informative brochure aimed at perspective students entitled *Preparing for a Career in Oceanography*. General information about Scripps can be obtained by contacting the Scripps Communication Office at the Scripps Institution of Oceanography, University of California San Diego, 9500 Gilman Drive Department 0233, La Jolla, CA 92093-0233 and their telephone number is

Some Websites that contain oceanography career information on-line:

- The Sea Grant Website on marine careers including a link to their highly-recommended booklet *Marine Science Careers: A Sea Grant Guide to Ocean Opportunities* at [http://marinecareers.net](http://marinecareers.net)


- The Oceanography Society Website, which includes “Career Profiles”, providing options and insights into a variety of oceanographic careers: [http://tos.org/career-profiles](http://tos.org/career-profiles)

- Peter Brueggeman of the Scripps Institution of Oceanography maintains a Website that offers a comprehensive list of information about careers in oceanography, marine science, and marine biology including many links at [http://ocean.peterbrueggeman.com/career.html](http://ocean.peterbrueggeman.com/career.html)

- The SUNY Stony Brook Biological Sciences Department offers a listing of worldwide marine laboratories and institutions at [http://life.bio.sunysb.edu/marinebio/mblabs.html](http://life.bio.sunysb.edu/marinebio/mblabs.html)

- The Woods Hole Oceanographic Institution has developed a Website devoted to the advancements of women in oceanography. It features biographies and unique perspectives of women scientists at [http://www.womenoceanographers.org](http://www.womenoceanographers.org)