

ATMOSPHERIC AND OCEANIC SCIENCES

About Atmospheric and Oceanic Sciences

The Department of Atmospheric and Oceanic Sciences offers, at the undergraduate level, a broad range of courses in atmospheric chemistry, atmospheric physics, meteorology, ocean and atmosphere dynamics, and climate. The study of atmospheric and oceanic sciences is based largely on physics and applied mathematics. All required courses except those at the introductory level generally have prerequisites or corequisites in physics, mathematics, and atmospheric science.

One of the goals of the discipline is to develop the understanding necessary to improve our ability to predict the weather. Another important area of study focuses on the changes in global and regional climate caused by the changing chemical composition of the atmosphere. The approach to the study of climate change is quantitative in the Department of Atmospheric and Oceanic Sciences. Like other physical sciences, atmospheric and oceanic sciences attempt to create theoretical models of their complex processes as a means of analyzing the motion and composition of the air, seawater, and sea ice; thermodynamic behaviours; and the interaction of the atmosphere and ocean with the other components of the climate system such as land and ice sheets.

From one viewpoint, the atmosphere and ocean may be studied as a large volume of gas or liquid by the methods of fluid mechanics: wind or currents, circulation patterns, turbulence, and energy and momentum exchanges are the ideas employed in this approach. Alternatively, the atmosphere and ocean may be studied from the point of view of their detailed physical processes: how water condenses in the air; how seawater freezes to form sea ice; how cloud droplets make rain; how sunlight warms the surface of the Earth; how heat is exchanged between the ocean and the atmosphere; and how the atmosphere and ocean interact to shape the weather and climate. A comprehensive understanding requires both viewpoints, and these are reflected in the curriculum.

Available Programs

- Atmospheric Science Minor (B.Sc.)

Location

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