

## What is Physical Oceanography?

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What do you think of when you hear the word, “oceanography”? If you are like most people, you may at first think of the salty water that fills the oceans, and then you might think of some of the amazing animals that live in the oceans, like dolphins, whales, and sharks!

Oceanography, defined as the study of the oceans, actually includes learning about so much more. Oceanography is a huge topic, that definitely includes the study of all life in the oceans, but also topics such as waves, currents, rising sea level, underwater volcanoes, melting sea ice, and how the ocean and atmosphere work together to shape Earth’s climate.

Oceanographers usually specialize in one of these topics. My special focus is on ocean currents—where they are, how strong they are, and the physical forces that move them. This particular area of study is part of what is called physical oceanography.

The currents in the ocean are similar to winds in the atmosphere. Sometimes the wind is strong, and other times there is almost none. Some regions on Earth are windy all the time, and others are not. There are extreme wind events like hurricanes, tornados, Santa Anas, and monsoons. In the ocean, water generally moves more slowly than do the winds, but there are similar features. Some currents are gentle, others are fast and furious! Some currents move in the same direction for hundreds of miles, while others swirl around like a giant, slow-motion whirlpool.

Ocean currents are super important for life on earth because they affect Earth’s climate. The oceans absorb heat and greenhouse gases from the atmosphere, and ocean currents take the heat and greenhouses gases deep into the ocean, where it will be trapped for thousands of years. Without the oceans and ocean currents, our planet would be warming much faster than it is already. We need physical oceanographers to help us understand how Earth’s climate may change in the future so we can all get prepared.