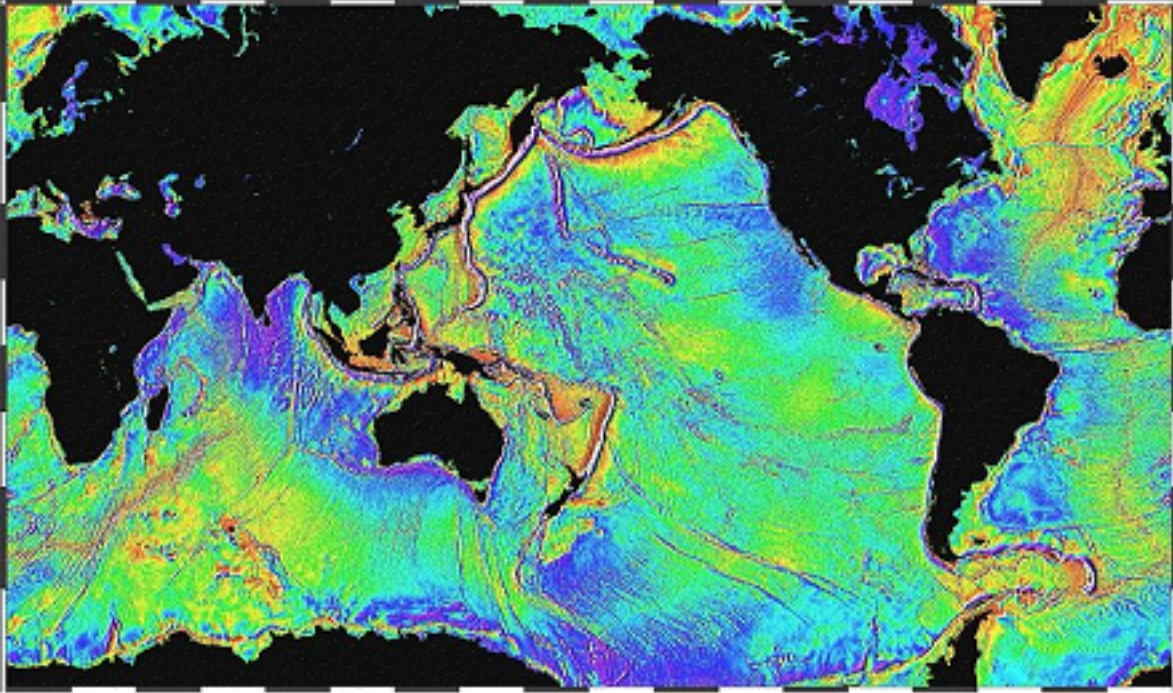
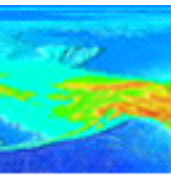
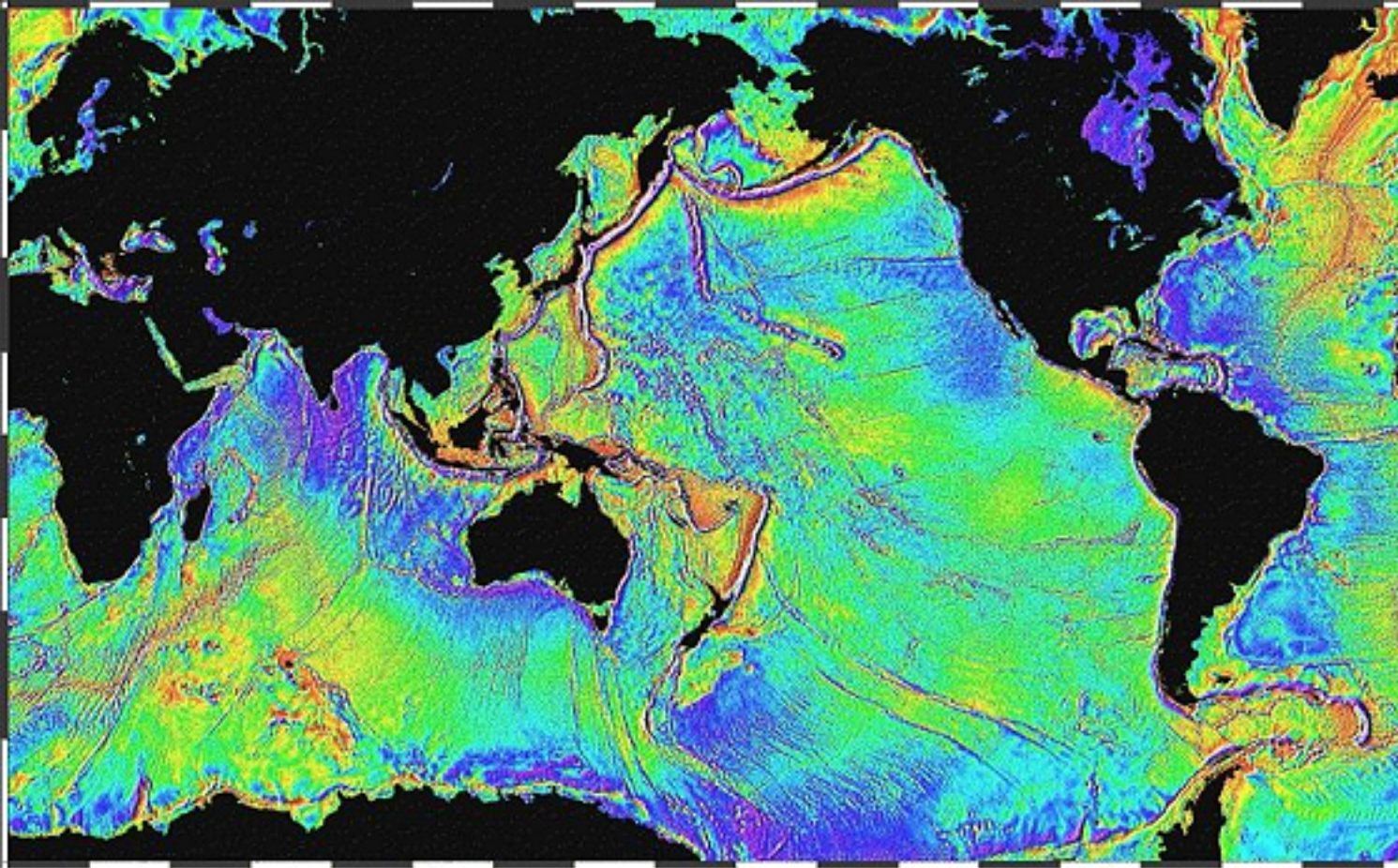


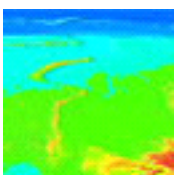
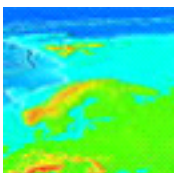
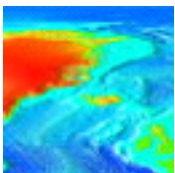
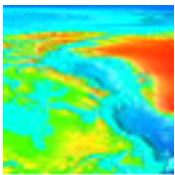
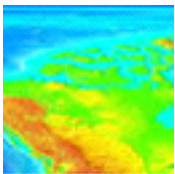
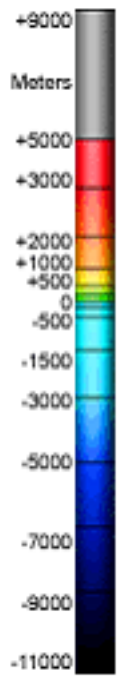
Physical Oceanography

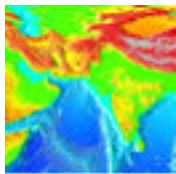
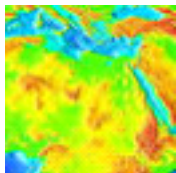
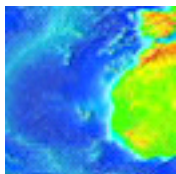
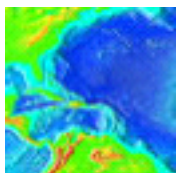
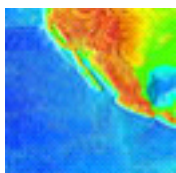
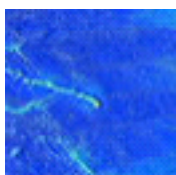
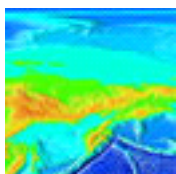
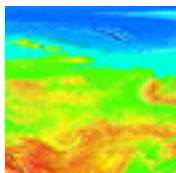
Nicholas Penny

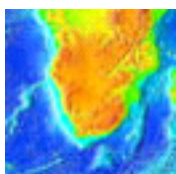
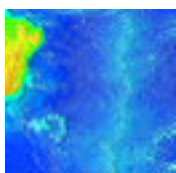
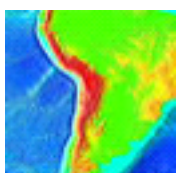
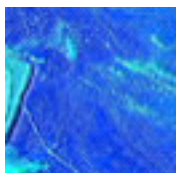
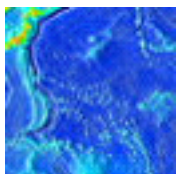
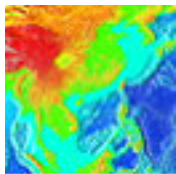


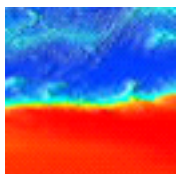
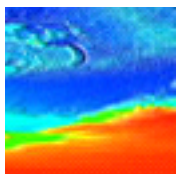
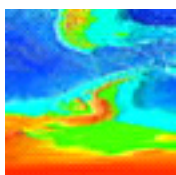
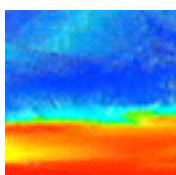
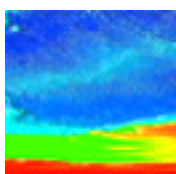
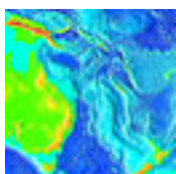
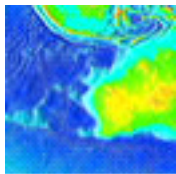
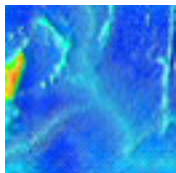
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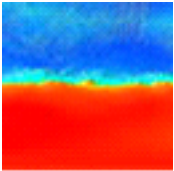
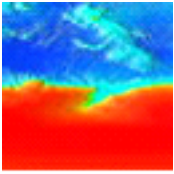












97 percent of the world's water resides in the oceans, and the rest (the water that resides on land) usually comes from clouds formed by condensation. The high specific heat of the oceans helps to control the earth's climate, and its high absorption of gasses helps to control the earth's atmosphere. All of these things contribute to the importance of Physical Oceanography; the study of the ocean's physics and motion.

The temperatures of the world's oceans are incredibly important. They can vary from 0C in the polar regions, to 35C in some tropical regions. However, water of varying temperature can be moved around through such phenomena as the gulf-stream.

-Gulf Stream. Warm water from the tropics is carried north, and as it travels it loses heat to the surroundings and increases in salinity, and as it loses temperature it sinks. When this cold water sinks, it falls into deep cold water currents that flow south, and more warm water fills the gap. Because of this, places such as Norway can be much warmer than places along the same latitude.

-Salinity. The salinity of the oceans can also vary according to the temperature. The salinity of the southern waters can be as high as 41 ppt (parts per ton), but in the colder regions salinity averages around 34 ppt.

Almost all oceanic movement is driven by the sun and atmosphere:

-Wind. Air currents along the ocean's surface can influence aquatic motion at up to a Kilometer in depth.

-Ekman transport. Wind moving along the surface of the ocean grabs a thin layer, and the water alongside moves 90 degrees to the right of the wind's direction. This itself can affect water 100-150 meters deep.

-Rossby Waves. Rossby Waves, also known as Planetary Waves, are extremely large waves that are caused by the disparity in temperature between continents and oceans.

There are also several very important currents

- Antarctic Circumpolar Current. This is the largest cross ocean current, running between the Indian, Pacific, and Atlantic oceans. The wind whips across the uninterrupted oceanic spaces, creating sizable swell.
- Kuroshio Current.