
Important Ocean Currents

Background Information: Ocean currents are basically water movements. Currents are the rising and sinking of warmer and colder water. These water movements change constantly and have an effect on the climate. Warm and cold ocean currents can change the climate. Ocean currents are driven by prevailing wind. The earth's rotation causes them to form spiral or circular paths. Landmass, the temperature of water, and density of water also affect currents. The factors that influence ocean currents also influence climate. Since wind, density, temperature, and landmass differ around the world, the currents and the climates differ. GRACE will be collecting data about ocean currents to assist with the climate experiments around the globe. Currents may cause the weather to change in a part of the world that would affect its climate drastically.

Objectives:

At the end of the lesson, students will be able to:

- Identify wind, water temperature, and water density and its effect on ocean currents and the climate.
- Understand what an ocean current is and how it is formed.
- Understand the correlation between the ocean currents and our climate.

Standards:

Science: unifying concepts and processes; science as inquiry;
and life science

Language Arts: writing skills

Vocabulary:

Density

Ocean currents

Landmass

Materials:

9 x 13 Cake pan
Water (hot and cold)
Mashed potato bud flakes (instant mashed potato) or other floating flaky product (herb)
Food coloring
Salt
Lab Sheet
Plastic cup

Directions to the Teacher:

1. Review the included information and other related information on ocean currents and their relation to the GRACE project.
 2. Divide students into groups or have each student select a lab partner. Complete the predictions on the lab sheet.
 3. Each group will fill the cake pan 2/3 full with cold water.
 4. Ask students to sprinkle potato flakes over water surface and gently blow across the middle of the surface (wind). Keep blowing and see if the current forms a pattern around the pan. Ask students the following questions: Are the flakes moving in the same direction as the water? Are they following the path of the current that your wind has made? Draw the path that the flakes made on the attached lab sheet and write a sentence or paragraph (depending on grade level and ability) about the movement that the current created.
 5. Empty the cold water and flakes from the pan and refill it with the same amount of cold water.
 6. Now fill a cup with hot water, add 2 tablespoons of salt and five drops of food coloring. Stir this mixture carefully.
 7. Carefully, pour this mixture into the pan with cold water. Observe how this mixture moves. This mixture is denser due to the salt. It shows deeper water currents and how currents change due to density. Draw the path that the colored water made on the lab sheet and write a sentence or paragraph about the movement and explain.
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Extensions:

- What would happen to the ocean if there were an oil spill?
- How would we clean an oil spill?
- What would happen to the animals or sea life?

References / Resources:

Websites:

- [http://seawifs.gsfc.nasa.gov/OCEAN PLANET/HTML/](http://seawifs.gsfc.nasa.gov/OCEAN_PLANET/HTML/)
- www.oceanplanetoverview.html

Jenkins, Steve. Hottest, Coldest, Highest and Deepest. Houghton-Mifflin, NY.

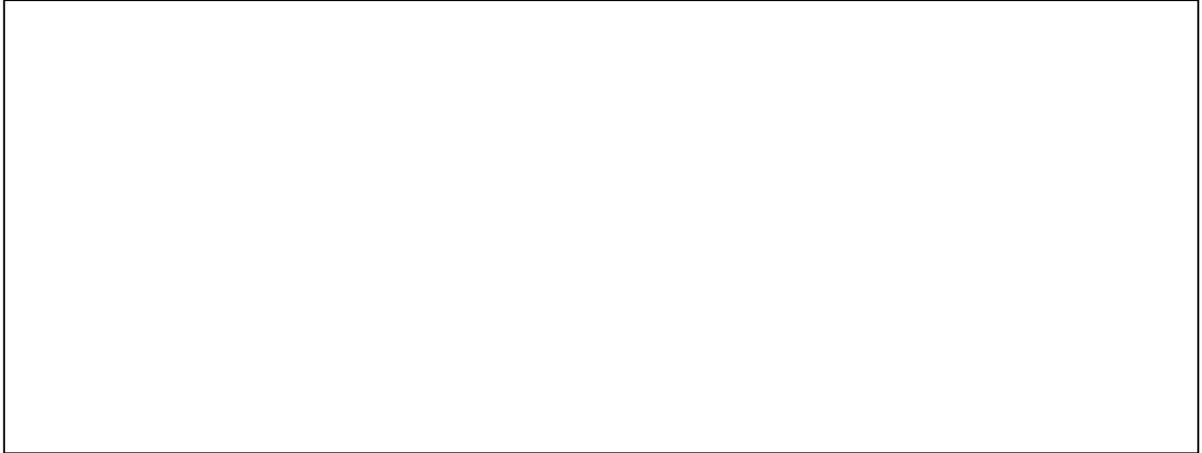
Important Ocean Currents Lab Sheet

Predictions:

When blowing on the surface, how will the flakes and ocean currents move?

How do you think the ocean currents will move with denser water and varied temperature?

Experiment 1: Draw the path that the ocean current took.



Write a sentence or paragraph to describe what happened.

Experiment 2: Draw the path that the ocean current made.



Write a sentence or paragraph that describes what happened and explain.
