

Ocean Currents and Water Temperature

There are many types of currents that affect the movement of water in the ocean, including surface currents, turbidity currents, and deep currents. Surface currents are the result of wind; turbidity currents are the result of underwater landslides; and deep ocean currents are caused by changes in the density of the water. The water at the North and South Poles is very cold and very dense. The water at the equator is warmer and not as dense. This change in density causes ocean water to move in layers as you will see in this experiment.

OBJECTIVES

Using Scientific Methods Model the movement of cold and warm water currents.
Compare the differences in ocean currents at different temperatures.

MATERIALS

- clear glass baking pan, 33 cm × 23 cm × 5 cm
- food dye, yellow
- ice cubes, made with water dyed blue, 4
- water, warm

SAFETY



PROCEDURE

1. Pour warm water into the baking pan to a height of 3 cm. The warm water will represent the water at the equator.
2. Color this water with the yellow food dye.
3. Allow the water to become still after mixing in the dye.
4. Gently place two blue ice cubes at one end of the pan and another two ice cubes at the opposite end. The ice cubes represent the Earth's poles. Predict what you think will happen.

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5. Observe how the warm and cold water move in relationship to each other.
6. Draw a cross-section diagram of your setup. Be sure to include the direction in which the two types of water are moving.

ANALYSIS AND CONCLUSION

1. **Analyzing Results** What happened to the blue water from the ice cube as it began to melt?

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EXTENSION

1. **Making Models** If time allows, empty the pan and use warmer water than you did the first time and repeat the experiment. Were there any differences in the experiment with a greater range of temperature? Explain your observations.