

GRACE Educational Curriculum OCEANS	
Teachers	Grades 6-8
Science & Math	

Currents

Background Information:

GRACE is the name of a pair of satellites that will measure the gravity field of Earth. GRACE stands for Gravity Recovery and Climate Experiment. GRACE will help study problems in geophysics, oceanography and atmospheric science.

Objective: To observe the effects of currents on a body of water

Standards: Science: unifying concepts and processes; science as inquiry; physical science; earth and space science;
Math: measurement; computation & estimation

Vocabulary: Current Geophysics Oceanography

Materials: Shoe box sized clear plastic box
Warm water
Ruler
8 oz. Foam cup
Ice to fill the cup
Food coloring
Stop watch

Directions to the Teacher:

1. Fill the plastic box with 3 cm of warm water.
 2. Fill the cup with ice, make a small hole in the bottom of the cup. Place the cup in the middle of the plastic box. Put 3 drops of food coloring on top of the ice. Start the stop-watch. Observe the currents formed and record those observations on the worksheet.
 3. Observe for 15 minutes, recording observations throughout experiment.
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Extensions:

- What is Topex Poseidon? Research and write a report.
- What is Jason-1? Research and report to the class.
- Why does NASA want to study oceans from space?

References / Resources:

http://www.pmel.noaa.gov/bering/pages/env_cur.html

<http://geosun1.sjsu.edu/~dreed/130/lab10/17.html>

Observation Worksheet:

TIME [minutes]	OBSERVATIONS
0	
3	
6	
9	
12	
15	

Conclusions: Answer each of the questions below using *complete sentences!*

1. Where does the cold water go when it leaves the cup?
 2. In the ocean, why is the warm water on top of the cold water?
 3. What is the purpose of the food coloring?
 4. What climactic zone (equatorial or polar) does the ice represent?
 5. What happened when the cold water hit "land" (the side of the container)?
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Answer Sheet

Conclusions: Answer each of the questions below using *complete sentences*!

1. Where does the cold water go when it leaves the cup?

The cold water moves to the bottom.

2. In the ocean, why is the warm water on top of the cold water?

Sun warms from above OR cold water sinks.

3. What is the purpose of the food coloring?

The food coloring is used to view the cold currents.

4. What climactic zone (equatorial or polar) does the ice represent?

The ice represents the polar zone.

5. What happened when the cold water hit "land" (the side of the container)?

Upwelling occurs when the cold water hits land.
