

Ocean Currents in a Dish

Estimated Time: 45 minutes

SUMMARY

Explore the movement of water in our oceans using a baking dish, food colors, hot water, and ice cubes. The ocean has an interconnected current that is powered by the sun, rotation of the Earth, and differences in water density. In this experiment you will simulate ocean currents caused by temperature differences.

WHAT YOU'LL LEARN

- Water temperature can cause movements in bodies of water that can transport nutrients, animals, and sometimes trash.
- Topography and nearby land masses can alter ocean currents.

| Materials Used | Resources Used |
|---|---|
| <ul style="list-style-type: none"> • 9 x 13 baking dish (clear glass if possible) • Hot water (over 80 degrees or warmer) • ice cubes • Cold water (add ice cubes to help decrease the temperature) • red food coloring • blue food coloring • play doh or modeling clay • aquarium gravel or clean rocks | <ul style="list-style-type: none"> • https://www.nationalgeographic.org/activities/mapping-ocean-currents/ • https://oceanservice.noaa.gov/facts/eddy.html • https://www.nationalgeographic.org/media/ocean-currents-and-climate/ |

WHAT TO DO

1. Find a clean level table or countertop, with towels readily available for spills!
2. Add a few drops of blue food coloring to cold water and add to the baking dish. Put a few ice cubes into the dish and observe the color. Does it move around the ice cubes? Add drops of red food color to your hot water.
3. Carefully add it to the baking dish. Pay careful attention to the color additions and watch the movement of the colors where hot and cold waters mix.
4. Look for eddies: swirls of water where the temperatures meet. In this case, this is the hot water moving through the cold water quickly. There are quick moving currents in the water, too. These eddies bring nutrients to phytoplankton which then serve as a larger food source for other creatures that live in the ocean!
5. Next, dump your water out of the baking dish and dry the dish.
6. Use the play doh or modeling clay and create mountain ranges, cliffs, and basins. Make sure that any water you add can flow all around your landmasses. Add gravel carefully to create higher and lower spots.
7. Repeat the experiment from steps 2-3, carefully adding the cold blue water first to not disrupt your landscape and then the hot water.

8. Do you see any differences in the eddies forming or the currents created in this round of your experiment? What effect does the land have on the currents formed in this hot and cold water experiment?

TIPS

- Check out the live formation and identification of eddies here:
<https://www.horizonmarine.com/eddywatch>