

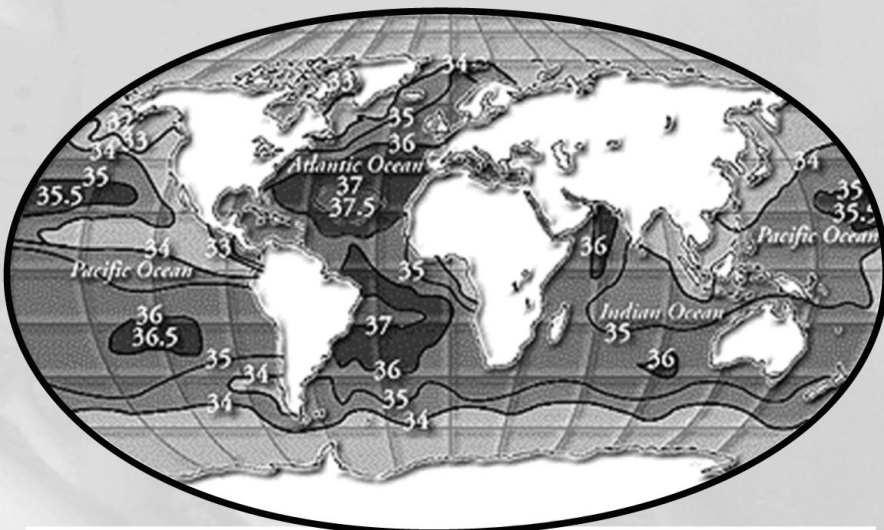
Activity 2 SALINITY AND DEEP OCEAN CURRENTS

CONCEPTS

- Salt water is more dense than fresh water, and is, therefore, heavier.
- When ocean water evaporates, the water becomes more dense because most of the salt remains in the water.
- Density is a primary driver of deep ocean currents.

MATERIALS

- 4 Baby food jars
- 2 Laminated index cards
- 1/2 Cup table salt
- 2 Colors of food coloring
- 1 Stir stick
- 1 Dish pan (for spills)
- Towels
- Map of surface salinities



Surface Salinities of the Oceans - Sea surface salinities. Note that the highest surface salinities occur in the middle of ocean basins, where the evaporation rate is high and the rainfall rate is low. Low salinity areas are often near sources of fresh water, such as major rivers and melting ice. [Source: NASA, Jet Propulsion Laboratory]

ACTIVITY

1. Fill 2 baby food jars with water.
2. Dissolve 1/4 cup salt in one of the jars and add blue food coloring. Make sure to mark the jar "Salt Water."
3. Add a drop of red food coloring to the other jar and label it "Fresh Water."
4. Place a 3 x 5 index card on top of the jar of salt water and carefully invert it. Place the salt water jar on top of the fresh water container and have someone carefully remove the card. Observe the results.
5. Use the second set of jars to repeat the experiment. This time, invert the fresh water jar over the salt water jar. Remove the card, and observe the results.

QUESTIONS: Is salt water heavier or lighter (higher or lower in density) than fresh water? Make sure that you explain your answer in terms of the results that you obtained from your experiment. If evaporation causes surface water to be salty, where would you expect ocean water to be very dense?

EXTENSION: Refer to the map of sea surface salinities. Based on its distribution, what other common environmental process do you think increases ocean surface salinity? It may help to know that deep ocean currents are often formed near earth poles.

Source

Visit to an Ocean Planet, NASA/JPL Educational CD-ROM, originally adapted from Kolb, James A. Marine Science Center. Marine Science Project: For Sea. P. 88-90.