

LIBERTY SCIENCE CENTER

Modeling the Water Cycle

OBJECTIVES

- To appreciate that scale models can be an important tool to use to help understand global processes
- To recognize and explain the essential elements of the water cycle

MATERIALS

- Artist's clay or plastic mountain model
- Plastic shoe box with cover
- Petri dish
- Lamp
- Water
- Crushed ice

PROCEDURE

1. Discuss the water cycle with students. Show or draw a graphic of the water cycle and explain the various parts.
2. Using the clay, shape a mountain.
3. Place the mountain on one side of the shoe box with the sloped side facing the interior of the box where the "ocean" will be.
4. Pour water into the "ocean" basin until about one-fourth of the mountain slope is covered.
5. Replace the lid of the shoe box.
6. Place a petri dish on top of the shoe box over the mountain (as shown).
7. Place crushed ice into the petri dish.
8. Position the lamp over the ocean. Turn on the lamp. Do not touch the lamp, as it heats up to high temperatures quickly.
9. Have students observe the container carefully and note any changes that they see. It might help to add a little smoke to the aquarium to help them see the circulation. (A few matches lit, then blown out and quickly dropped into the box will work).

EVALUATION

Have students report which piece of the model simulated which segment of the water cycle.

EXTENSION

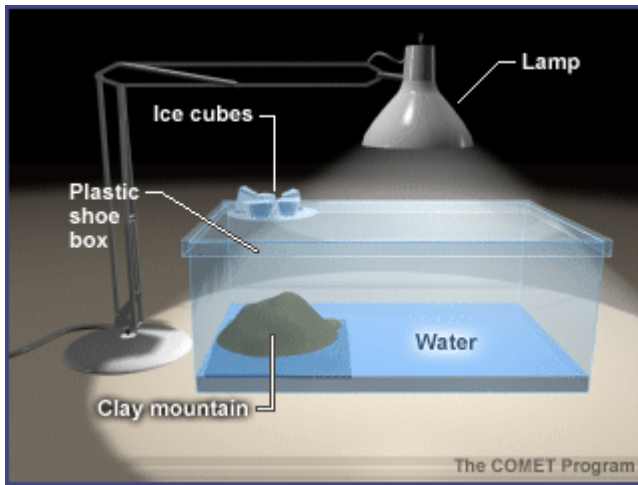
To make this activity more challenging to your students, you can ask:

- Why might scientists use a model like this in their research into the water cycle in the real world? Can you think of any reason that using such models might be a problem?
- After observing this activity, explain why water is considered a renewable resource.

BACKGROUND

Water, in its different forms, cycles continuously through the lithosphere, hydrosphere, atmosphere, and biosphere. Water evaporates into the atmosphere from the land and the sea. Plants and animals use and reuse water and release water vapor into the air. Once in the air, water vapor circulates and can condense to form clouds and precipitation, which fall back to earth. At one time or another, all of the water molecules on earth have

been in an ocean, a river, a plant, an animal, a cloud, a raindrop, a snowflake, or a glacier. The phase of water is determined by its temperature and pressure.



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New Jersey Science Standards: 5.8 (A,B,C,D), 5.10 (A,B)