

# Playing with Sea Level

by Nicholas J. Biles

**I**MAGINE THAT THE ATLANTIC SEASHORE is fifty miles further east—or that a large coastal city like Baltimore has fish swimming down Charles Street. Both these events are possible in a world where sea level is constantly adjusting to slow changes in global climate.

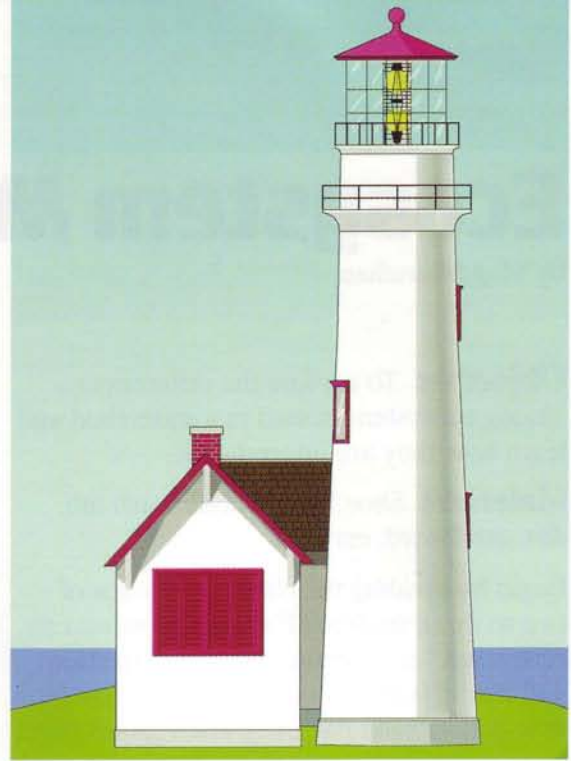
In the earth's history, sea level has been higher and lower than its present level, depending on the average temperature of the earth. Currently, sea level is rising at about 1 cm/year as we continue to move out of the last ice age.

**Objective:** To visualize how shorelines change as sea level adjusts to global climate conditions.

**Materials:** Coastal marine charts showing bathymetric contour lines or water depths, topographic maps with altitudinal contour lines, and colored pencils. Marine charts are available directly from the National Oceanic and Atmospheric Administration or at marinas and marine supply stores. Topographic maps are available from state and U.S. Geological Surveys and outdoor recreational supply stores.

In small groups, students follow or trace contour lines and use colored pencils to shade in areas of the map. For example, on a topographic map, shade in the area of land that would be under water if sea level rose twenty feet. The twenty foot contour is the first line in from the coast. Different color shading is used to show additional rises in sea level. At the present rate, how long would it take sea level to rise 100 feet? What would the area of land covered by your map look like?

Another group uses the coastal marine chart. Given that sea level was about 320



feet lower during the last ice age, locate the continental shelf on the chart and determine where the coastline would have been 20,000 years ago. Shade in this area to see how much land has been given back to the sea.

Here is a progression of questions to spark discussion about sea level changes:

- What is ice?
- What happened to the polar ice caps as the earth entered each ice age?
- Where did the water come from to make the polar ice caps?
- What happened to sea level as the ice caps grew?
- What happened to the shoreline as sea level dropped?
- What has happened to the polar ice caps since the end of the last ice age?
- How has sea level changed since the end of the last ice age?
- How has the shoreline changed since the end of the last ice age?
- What will happen to sea level if the ice continues to melt?
- What does sea level change mean for animal and human communities living near the shore?