

Activity 1.3

RISING SEA LEVELS, SINKING HOPES

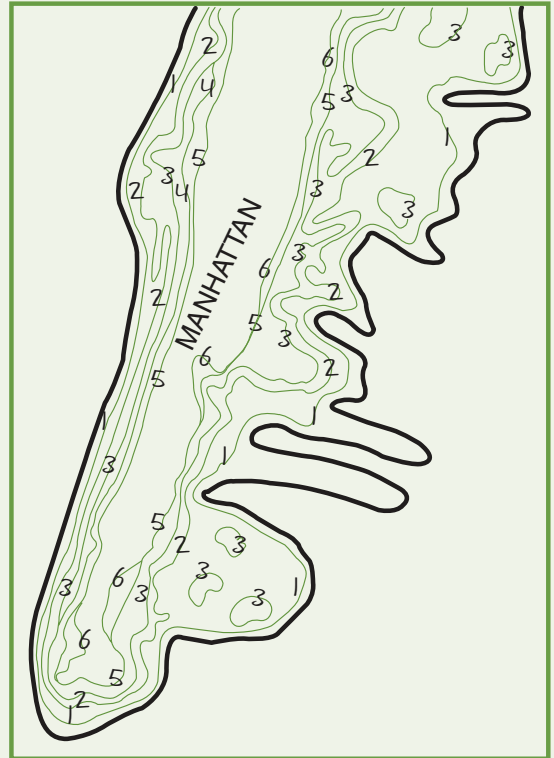
In this exercise, students analyze sea-level rise using topographic maps. Provide each student with a copy of Student Sheet 1.3. Also provide each student with six colored pencils, each of a different color.

In the first part of the activity, students examine the following topographical map of Manhattan Island, New York. They color-code the regions that would be flooded if sea level rose in 1-meter increments up to 6 meters. Explain that a 6-meter rise in sea level is a worst-case scenario and is not predicted to occur during this century. According to the Intergovernmental Panel on Climate Change, a 6-meter rise would occur if the entire Greenland ice sheet were to melt. The IPCC predicts that the most likely sea-level rise by 2100 is between 80 centimeters and 1 meter. Longer term, however, sea level will continue to rise even after CO₂ emissions have been reduced or eliminated.

Students will see that a 1-meter sea-level rise would flood a large land area. A 2- to 3-meter rise would also flood large areas. After that, 1-meter increments of sea-level rise would flood smaller geographic areas.

You may need to discuss topographic maps with your students in advance of this activity. If so, share the following information: A topographic map is a map that shows the elevation of Earth's surface features. Elevation is the height of something above sea level. The elevation of sea level is 0. Topographic maps, or "topos," show elevation with contour lines.

FIGURE 1.3.1



Contour lines are lines that connect places that are at the same elevation.

Call students' attention to the topographic map of Manhattan on the student sheet. Have them examine its contour lines. Tell them that the contour lines on the map reflect the shape of the land because they connect points of equal elevation.

After examining New York, students examine a map indicating sea-level rise in Florida. They identify the cities that are flooded at various increments of sea-level rise.



STANDARDS

Sample NGSS Disciplinary Core Ideas

ESS2.A: Earth Materials and Systems

- Rainfall helps to shape the land and affects the types of living things found in a region. Water, ice, wind, living organisms, and gravity break rocks, soils, and sediments into smaller particles and move them around. (4-ESS2-1)

LS2.C: Ecosystem Dynamics, Functioning, and Resilience

- Ecosystems are dynamic in nature; their characteristics can vary over time. Disruptions to any physical or biological component of an ecosystem can lead to shifts in all its populations. (MS-LS2-4)

