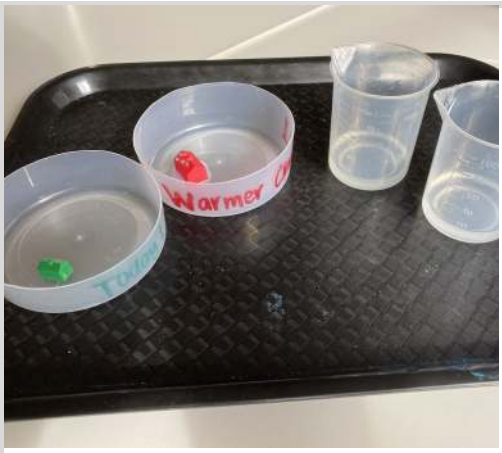
Sea Level Rise



OVERVIEW

Students model sea level rise under a normal and warming climate, demonstrating how this global phenomenon could impact local coastal communities in San Diego.

SCIENCE QUESTION

How will a warmer climate impact San Diego?

GRADE

3rd

TIME

60 minutes

STANDARDS

Science and Engineering Practices: Developing and Using Models

Develop and/or use models to describe and/or predict phenomena.

Objectives

At the end of the lesson, students will be able to:

- Explain why ice melted differently under two climatic conditions
- Identify the effects of melting land ice on coastal communities
- Use evidence to make predictions about how sea level rise may affect San Diego

Materials

- Lamp
- Water
- Ice cubes
- Tablespoon
- 2 small bowls
- Modeling clay
- 2 toy houses (optional)
- Blue food coloring (optional)
- Sticky notes or scrap paper
- Pen

Instructions

1. View the complementary 3rd grade video lesson on San Diego Coastkeeper's website.

2. Set up the experiment.

- Add 3 tablespoons of water and one drop of blue food dye into the bottom of each bowl. Explain to students that this represents the ocean.
- Form the modeling clay into 2 roughly equal domes. Place one in the bottom of each bowl, making sure the tops are flat enough for your ice and houses (if using) to rest on.
- Add 2 ice cubes and a toy house on top of each clay island.
- Using scrap paper or a sticky note, label one bowl "warmer climate." Label the other bowl "normal climate."
- Carefully place the "warmer climate" bowl in the direct sun and the "normal climate" bowl in the shade or indoors. If it is not sunny, place the "warming climate" bowl under a lamp (close enough that the warmth of the lightbulb is on the bowl) and place the "normal climate" bowl nearby.
- To make it easier to observe the change, you may wish to use a marker or crayon to mark the water level on the outside of each bowl.
- Begin a stopwatch once both bowls are in place.

3. While the stopwatch is running, ask students to make a hypothesis about what will happen. Will there be any change in the ice? Will change happen at the same rate, or will it be faster in one bowl than the other? Why?

4. Check back on the bowls after about 30 minutes. If little change has occurred, check back periodically until most of the ice has melted. Allow students to observe what happened and summarize their results.

- What happened? Did the ice change at all? What about the water level or the land/houses?
- Were the results the same in both bowls? Why or why not?

5. Explain to students that they just modeled sea level rise. It happens for a few different reasons, but the melting of land ice, like glaciers, contributes to it. Sea level rise happens faster in a warmer climate, so chance are your sea level rose faster in the "warming climate" container.

- **Sea level rise**– an increase in the level of the world's oceans

6. Scientists have found that San Diego's climate is getting warmer over time. Ask students: What does this mean for people who live near the ocean? How might it affect people living in San Diego?

Visit www.sdcoastkeeper.org to check out supplemental videos, activity books, and more to extend the lesson!