

Intro to Sea Level Rise

To introduce the topic of sea level rise and over-view how it relates and is caused by climate change, this lesson seeks to familiarize the reader with what the phenomenon of sea level rise is, how it happens, and projects how it will affect current and future generations. It connects sea level rise to other issues that are related- such as the impacts to coastal communities.

OBJECTIVES

1. Discuss sea level rise
2. Discuss how sea level rise relates to other issues
3. Encourage participation in discussions surrounding climate change
4. Encourage problem solving skills and problem analysis
5. Criticize the future in relation to climate

DISCUSSION QUESTIONS

1. Perform Activity A and then revisit these discussion questions to reflect and dig deeper into the material.
 - a. How are sea level rise and climate change connected? Why does rising temperatures affect the Earth's oceans?
 - b. Why do you think there is a differentiation between regional and global sea level rise? Why do you think certain regions are affected differently?
 - c. A few feet doesn't sound like a significant increase at first, but has been proven it'll have detrimental effects on coastlines. How do you feel this affects perceptions about sea level rise in the future?
 - d. List ways to mitigate sea level rise. How do you think society will adapt to face this problem?
2. While looking at Activity B about modeling and mapping, answer these questions.
 - a. Where do you see blue (ocean) at 1 ft of sea level rise? What about at 10 ft?
 - b. Pick a city or enter an address that is included on the map and see how it would be affected. How is the town affected, if it is? At what point does the town flood or become heavily affected by the increase in water? What amount of sea level rise would the city be able to withstand?
 - c. Did the mapping predictions shock you? Why/why not?
3. IPCC Report: Impacts to Coastal Communities and Islands. Perform Activity C and answer the questions below.
 - a. Is it true that there are high rates of communities settling near coasts? Why do you think that is?
 - b. What ways could society mitigate sea level rise? What infrastructure could we use- what are the pros and cons of storm barriers and other man-made mitigation?
 - c. What are equitable and just options to help communities that might need to be relocated?

ACTIVITIES

-Activity A: Introduction to Sea Level Rise

Watch these short videos linked here: NASA Climate Change "Earth Science Basics: Sea Level Rise" <https://www.youtube.com/watch?v=ul4SweILeo8> and "Rising Tides: Understanding Sea Level Rise" <https://www.youtube.com/watch?v=cXzfOpZSmk8>

After reviewing these videos, review the discussion questions in order to reflect on what you've learned.

-Activity B: Modeling- How does it work and what does it prove?

Watch this video about measuring sea level rise:

SciShow "The Ridiculous Reason It's Hard to Measure Sea Level"

<https://www.youtube.com/watch?v=9hciQPtNhD8>

Then, click here to look at how mapping and modeling can be used to project future impacts of sea level rise.

Launch the tool and explore. NOAA's mapping tool allows us to see possible effects on communities due to sea level rise as well as the areas most at risk in the United States and the Americas

-Activity C: Global consequences of sea level rise

The IPCC Report overviews effects of sea level rise on coastal communities and low lying islands.

Read Chapter 4, section 3: "Exposure, Summary, and Impacts" and answer the discussion questions.

OTHER RESOURCES

<https://www.climate.gov/news-features/understanding-climate/climate-change-global-sea-level>

<https://sealevel.nasa.gov/understanding-sea-level/key-indicators/global-mean-sea-level/>

<https://www.pnas.org/content/pnas/115/9/2022.full.pdf>