



Photo: www.dkiservices.com

Event: United Nations Conference on Climate Change

Important Numbers:

November 30 – December 11, 2015: Dates of the climate talks

2 °C: Int'l governments want to limit global warming to a maximum of 2 °C.

3.2 mm: The amount of sea level rise in 2015 (or 0.13 inches)

www.sites.psu.edu/scinews/

Event Description

Leaders from around the world recently gathered in Paris to discuss how to reduce carbon emissions. The international community must work together to find solutions that limit the amount of greenhouse gases released into the atmosphere and cause climate change. As world leaders work with scientists and economists to reach an agreement, some places are already feeling **one** of the many negative effects of global warming - sea level rise. Land surface in low-lying island nations, like the Marshall Islands in the South Pacific, is shrinking and flooding regularly. In the US, nearly 40% of the population lives in coastal communities that are at risk of flooding. How high oceans rise around the world largely depends on what we do NOW to limit carbon emissions.

Lesson Description

Students investigate how the rising sea levels affect different coastal US cities – e.g., Galveston, TX; Fort Lauderdale, FL; and San Jose, CA – perhaps in their lifetimes.

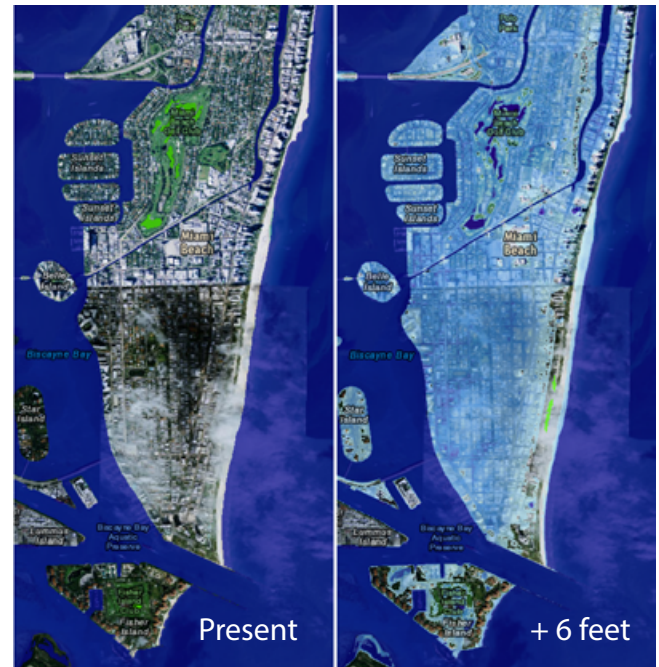
The National Oceanic and Atmospheric Administration (NOAA) produced an interactive Google Earth Engine map that shows the effects of sea level rise on US coastal cities. In a class setting or in small groups focus on different cities along the coast and compare the effects of 1 ft and 4-6 ft of sea level rise (slide bar on left side of the website). Both are possible outcomes 100 years from now and demonstrate the urgent need to reduce carbon emissions. Follow with a discussion of *why sea level rises if the planet gets warmer*. See lesson materials (2) for an explanation of why sea level rises & other ideas to accompany this activity.

Lesson Materials - download from the *SciNews* website

(1) Sea Level Rise and Coastal Flooding Impacts Map:

Produced by the National Oceanic and Atmospheric Administration (NOAA), this map shows how vulnerable our coasts are to rising sea level (<https://coast.noaa.gov/slr/>)

(2) Sea level rise in US cities_teachers (word): Explanation of sea level rise, cities to focus on, and group activity.



A “Before and After” map of Miami Beach from NOAA’s Sea Level Rise and Coastal Flooding Impacts Map. The present (left) is compared with what the FL coastline could look like in a worst case scenario in 100 years (right) with sea level increased by 6 feet. Map area covered in blue denotes land that will be underwater. Most of Miami Beach is lost to the sea.


Additional Media (see *SciNews* website for links!)

- Youtube videos showing maps of Earth’s surface if all of the ice on the planet melted.
- Interactive articles on Greenland melting and the Marshall Islands disappearing into the ocean from the NYTimes.

Alternative Lesson Plan: (link provided on the *SciNews* website)

For a more independent student exercise, an alternative version of the lesson plan is provided as a worksheet.

Next Generation Science Standards
MS-ESS3-5:
Stability & Change; Global Climate Change


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