

SEA LEVEL RISE & FLORIDA'S COASTLINE LESSON PLAN

TITLE	Sea Level Rise and Florida's Coastline
SUBJECT	Climate Change
AUTHOR	Karolyn Burns, The CLEO Institute
GRADE LEVEL	Grades 3-5
DURATION	Two 60-minute sessions, one to collect data and run the demonstration, one to share and analyze data
FLORIDA STANDARDS	<p>3RD GRADE STANDARDS: SC.3.E.6.1, SC.3.N.1.1, SC.3.N.1.2, SC.3.N.1.3, SC.3.N.1.4, SC.3.N.1.5, SC.3.N.1.6, SC.3.N.1.7, SC.3.N.3.2, SC.3.N.3.3, SC.3.P.8.1, SC.3.P.8.2, SC.3.P.9.1, SS.3.G.1.1, SS.3.G.1.2, SS.3.G.1.4, SS.3.2.4, MAFS.3.MD.2.4, MAFS.3.MD.1.2, LAFS.3.RI.3.7, LAFS.3.W.1.2, LAFS.3.W.3.7, LAFS.3.SL.1.1</p> <p>4TH GRADE STANDARDS: SC.4.N.1.1, SC.4.N.1.2, SC.4.N.1.4, SC.4.N.1.5, SC.4.N.1.6, SC.4.N.1.7, SC.4.N.3.1, SC.4.E.6.5, SC.4.P.8.2, SC.4.L.17.4, SS.4.C.2.1, SS.4.C.2.2, SS.4.G.1.1, SS.4.G.1.3, SS.4.G.1.4, MAFS.4.MD.1.1, MAFS.4.MD.2.4, LAFS.4.RI.3.7, LAFS.4.W.1.2, LAFS.4.W.3.7, LAFS.4.SL.1.1, LAFS.K12.SL.2.4, LAFS.K12.SL.2.5</p> <p>5TH GRADE STANDARDS: SC.5.E.7.1, SC.5.E.7.7, SC.5.N.1.1, SC.5.N.2.1, SC.5.P.9.1, SS.5.G.1.4, SS.5.G.4.1, MAFS.5.G.1.1, MAFS.5.G.1.2, MAFS.5.MD.3.4, MAFS.K12.MP.3.1, LAFS.5.W.1.2, LAFS.5.SL.1.1, LAFS.K12.R.3.7, LAFS.K12.W.1.1</p>
OVERVIEW	Students will create a model of the state of Florida and measure the water level as ice (representing glaciers) melts into the ocean.
OBJECTIVE	In this lesson, students will directly observe the flooding of coastal areas due to sea level rise and make predictions about how both the human and ecological communities are affected by it.
MATERIALS	Plastic bin or storage container (one per group), water, ice cubes, foam or clay, rulers, toothpicks, colored pencils/crayons, topographical map of Florida (provided) and student worksheets.
ACTIVITIES & PROCEDURES	<p>DAY ONE</p> <p>Students will watch the following video about sea level rise from NASA climate change:</p> <p>https://www.youtube.com/watch?v=msnOHuPep9I</p> <p>Then discuss the various reasons, both past and future, for sea level rise. What happens as sea ice melts, both to the ocean and to the surrounding land? Will ice floes or ice caps have a greater impact on shorelines?</p>

<p>ACTIVITIES & PROCEDURES <i>CONT'D</i></p>	<p>Use the student worksheets to make predictions about these effects. Elicit prior knowledge- have students seen news stories about coastal flooding or sea level rise? Which areas are most likely to be affected? What can people do to prevent this from causing further damage?</p> <p>Half of the student groups will create a landmass in one container out of foam or clay, and place ice cubes on top. Toothpicks can be used to prevent them from sliding into the water. Pour enough water into the container to reach halfway up the landmass, and measure the initial sea level. The amount of water should be measured and decided ahead of time, as it will vary depending on the container. This amount should be specified in the blank space on the presentation.</p> <p>Use the student worksheet to record measurements every 5 minutes. When the second group of students is adding the sea ice, the ice should be added first and then water added second to keep levels even. In the second set of groups, place the ice cubes directly in the water and let them melt while taking measurements. Refer back to the predictions- are the data similar or different? Why is sea level rise different for sea ice vs. land ice?</p> <p>DAY 2</p> <p>Once the ice has melted and students have filled out the data sheet, they will plot the data on the provided graph and share it with the groups that had the other scenario. Were their results alike or different? Use CER to make a claim as to which scenario contributes more to sea level rise (on worksheet) Once the students are in agreement as to the results, give each group a topographic map of Florida. One has been added as a slide in the presentation as well. It is very high-resolution from the USGS and can be zoomed into a smaller local area as needed. Students will use the data on the map to color in areas that are most likely to flood due to sea level rise.</p>
<p>EXTENSIONS & ACCOMMODATIONS</p>	<p>Students can send a letter or a version of their presentation to their local elected officials, as part of a lesson on formal letter-writing, local government, and/or civic engagement. They can also present their risk mitigation strategies to others in their community, such as their family, faith community, or town hall meetings.</p>
<p>CONCLUSIONS</p>	<p>Students will be able to describe the difference in effect of melting sea ice vs. glaciers on land on sea level rise. They will collect data from the demonstration and make predictions about the effects on both human and ecological communities as flooding and storm surges increase due to climate change. They will apply the results to a map of Florida and plot where the communities will be most affected by sea level rise.</p>