



Acterra

YOU(TH)
BE THE
CHANGE

SEA LEVEL RISE

WHAT YOU WILL LEARN

1

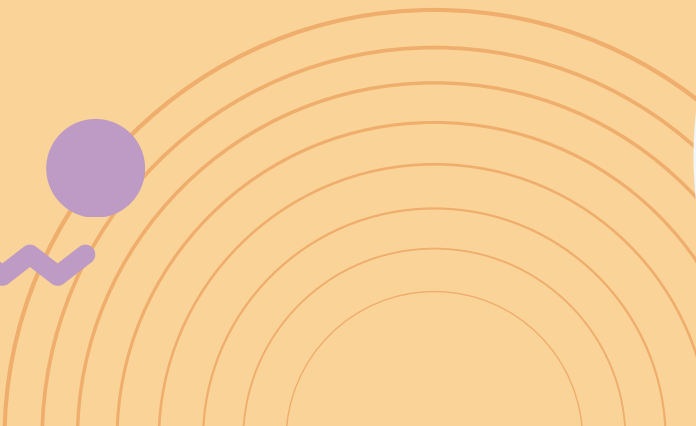
Session 2 Review
Sea Level Rise Background

2

Adaptation VS Mitigation
Adaptation Strategies

3


Distribution of Risks
Reflection Activity



LESSON 3:

SEA LEVEL RISE

Time	60 Minutes
Next Generation Science Standards	<p><u>Next Generation Science Standards</u></p> <p>MS-ESS3 Earth and Human Activity MS-ETS1-2 Engineering Design</p> <p><u>Disciplinary Core Ideas</u></p> <p>MS-ESS3.B: Natural Hazards Mapping the history of natural hazards in a region, combined with an understanding of related geologic forces can help forecast the locations and likelihoods of future events.</p> <p>ETS1.B: Developing Possible Solutions There are systematic processes for evaluating solutions with respect to how well they meet the criteria and constraints of a problem.</p>
Vocabulary	Sea level rise, Adaptation, Mitigation, Adaptation strategy, Hard engineering, Soft engineering, Climate migrants

Materials	<u>Session 3 PowerPoint</u> 
Topics Covered	<ol style="list-style-type: none">1. Session 2 review2. Where is water on Earth3. Sea level rise background4. Adaptation vs mitigation, Adaptation strategies, Adaptation case study5. Adaptation Activity <p>Optional Enrichment:</p> <ol style="list-style-type: none">1. Distribution of risks2. Deeper dive into possible sea level rise scenarios3. dependent on varying greenhouse gas pathways4. Sea level rise article and writing assignment
Learning Goals	<ol style="list-style-type: none">1. Understand what causes sea level rise2. Understand the difference between climate change mitigation and climate change adaptation3. Reflect on the types of adaptation strategies and their pros and cons4. Develop an awareness of how sea level rise will cause people to migrate around the world5. Develop an awareness of how sea level rise will affect the San Francisco Bay Area6. Understand how we can slow sea level rise and reduce its impacts

INTRODUCTION

Review Lesson 2: Climate Change Impacts

Ask | "What do you remember from Lesson 2?"

Drought! Increased global temperatures! Solutions! Climate! Weather!

Bonus: List the vocab words from Lesson 2 (and a few from Lesson 1!) on the board and have students independently try to remember what each word means - even the act of trying to remember is helpful, even if they ultimately can't remember. Then go through each vocab word as a class. If there are any words that nobody remembers, make a note of it (an you can re-review it at the beginning of the next class)

After the review, go over the agenda and begin the lesson.

Today's Agenda:

1. Session 2 review
2. Where is water on Earth
3. Sea level rise background
4. Adaptation vs mitigation
5. Adaptation strategies
6. Adaptation case study
7. Adaptation Activity

Optional Enrichment:

1. Distribution of risks
2. Deeper dive into possible sea level rise scenarios dependent on varying greenhouse gas pathways
3. Sea level rise article and writing assignment

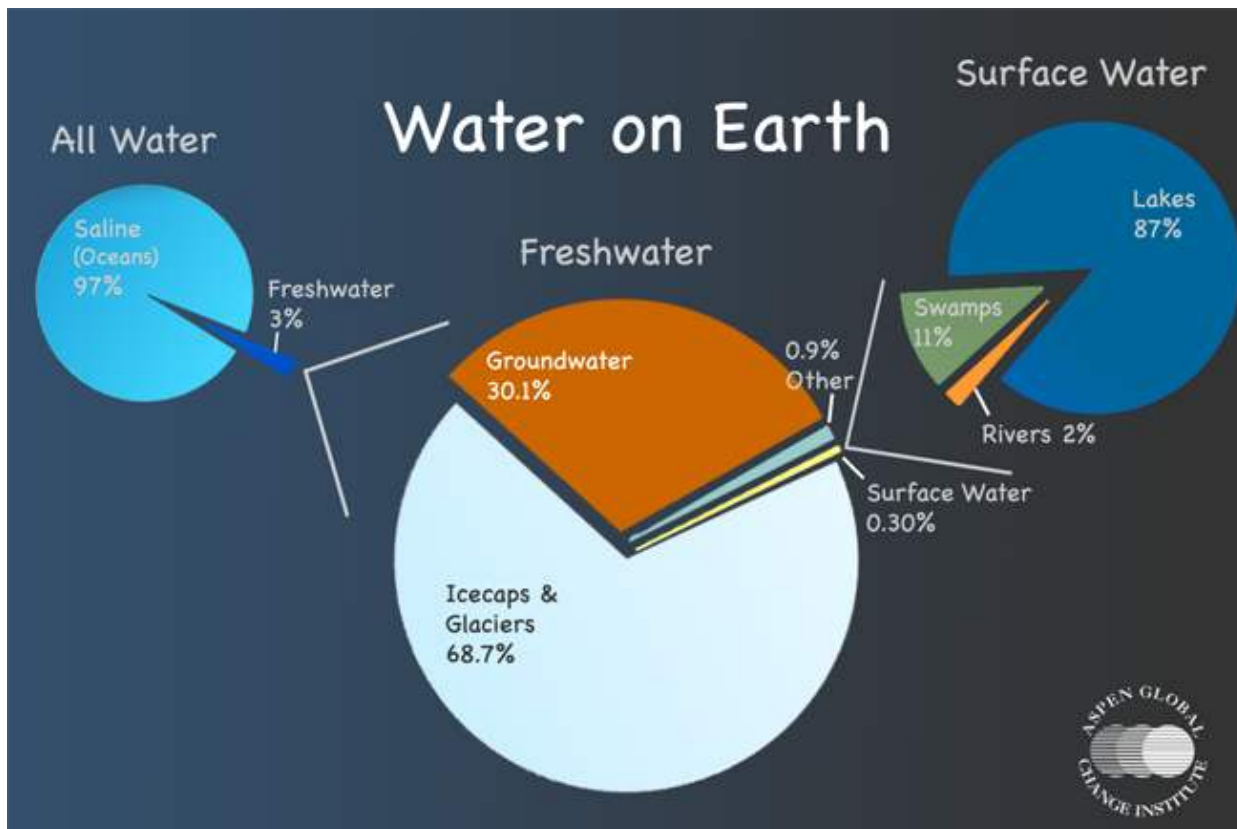


WHERE IS WATER ON EARTH

Engage Explore, Explain, Elaborate, Evaluate



#1 Review how water is distributed on Earth. You might remember this image from the last lesson. 97% of water on earth is in our oceans as salt water.



This water is not drinkable and can not be used for for irrigation. We use some of this 3% of the freshwater. In this freshwater, around $\frac{2}{3}$ is stored in icecaps and glaciers. Right now we're using surface water and ground water.

ASK | "Where is there a lot of ice in the world?" | "Is this ice on land or in the water?" | "Will ice on land and ice in the water, cause sea level rise by melting?"

SEA LEVEL RISE BACKGROUND

Engage, **Explore** Explain, Elaborate, Evaluate



#1 Why does sea level rise happen?

Visit [*NASA's Global Ice Viewer*](#) and go through Glaciers, Greenland and Iceland, Arctic and Antarctica. This will give the students an understand of where and how ice is distributed on Earth.

Remember we discussed sea level rise when we covered Thwaites Glacier.



Sea level rise: Sea level rise is an increase in the tide level of the world's oceans due to the effects of global warming. Sea level rise is caused primarily by two factors related to global warming: 1. the expansion of seawater as it warms, and; 2. the loss of Greenland and Antarctica's ice sheets.

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