Expedition to the Arctic to Learn About Sea Ice

Part 1. Introduction.

Narrator: Bundle up tight and put on your sunglasses! You're now at the North Pole, where it's cold all year long and the sun never sets in the summer and never rises in the winter. We're about to explore the Arctic Ocean to learn about sea ice.

The Arctic Ocean surrounds the North Pole, and because it's so cold up here, the top layer of the ocean freezes, creating sea ice. Some parts of this ocean have sea ice all year, while other parts freeze in the winter but melt in the summer.

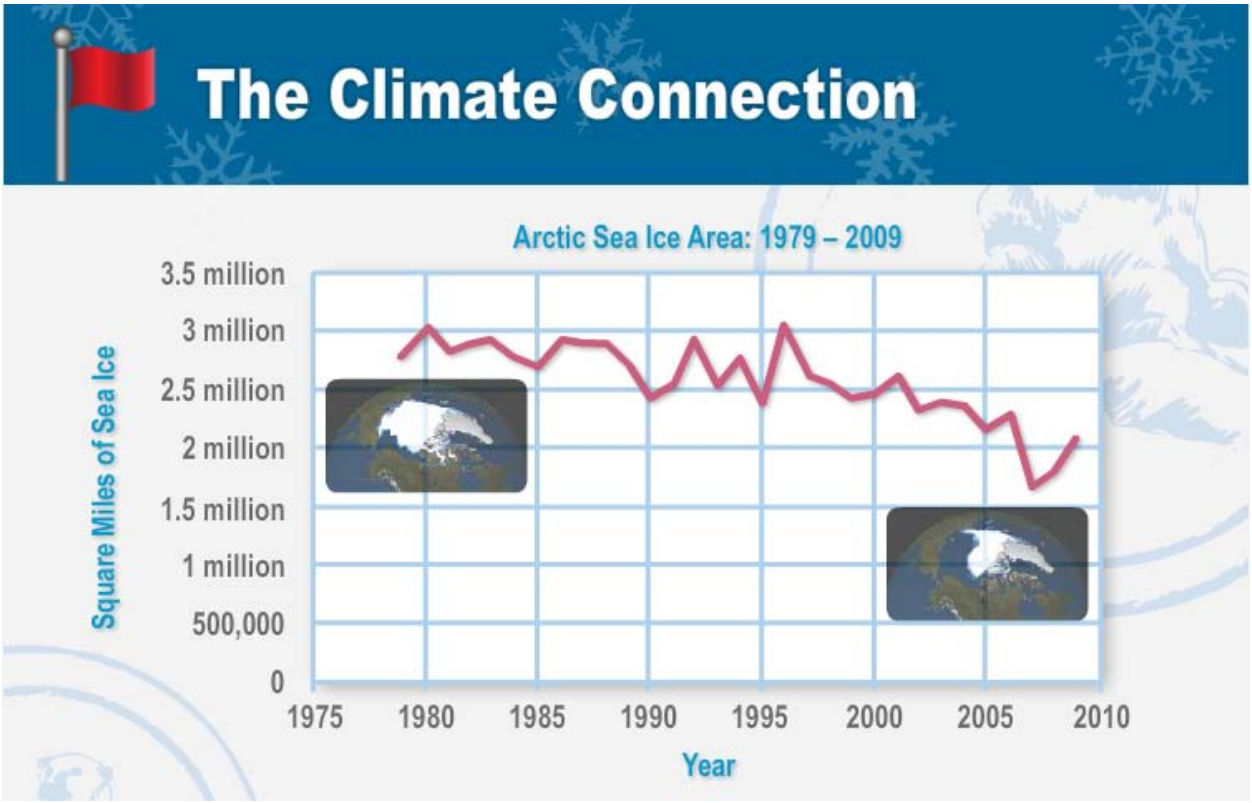
Global temperatures are rising, which is causing sea ice in the Arctic to melt. This satellite picture shows the Arctic back in 1979. Can you tell where the sea ice is? That's right, it's the bright white area in the center of the picture.

Part 2. Disappearing Arctic Sea Ice.

Narrator: This satellite picture was taken in September 2007.

Narrator: Can you see how different the Arctic Ocean looks in this more recent picture? 2007 had the least amount of ice on record, and 2008, 2009, and 2010 also had much less than the normal amount of ice.

Part 3. The Climate Connection.



Narrator: This graph shows how many square miles of the Arctic Ocean were frozen each September from 1979 to 2009. Can you see how the ice is decreasing over time? This pattern is called a trend, and it is a clue that the climate is changing. During this same time period, people released more greenhouse gases into the atmosphere, causing global temperatures to rise.

Part 4. Test Your Knowledge.

Narrator: Okay, let's take a minute and test your knowledge about climate change and sea ice. The open ocean is dark and absorbs a lot of the sun's energy, making the earth hotter. But bright white snow and ice reflect more of the sun's energy back into space. It's the same reason people wear white clothing on hot summer days. Just like sea ice, white clothing reflects more of the sun's energy, so we feel cooler.

So how do you think reducing the amount of sea ice could further change the climate?

The text on the screen asks: "How do you think reducing the amount of sea ice could further change the climate? Choose the correct answer." You have two choices:

A. Make the climate cooler.
B. Make the climate warmer.

Answer: The correct answer is B. As sea ice melts, the Earth absorbs more of the sun's energy and becomes hotter.

Part 5. Sea Ice and Arctic Life.

Narrator: You might be asking yourself, why is Arctic sea ice so important? Well, we just learned that sea ice helps reflect sunlight and keep the Earth's climate cool. Rising temperatures upset this balance, setting off a chain reaction. As it gets warmer, more ice melts, which causes the Earth to absorb more energy from the sun and become even hotter.

Another big reason we care about sea ice is because it provides habitat for many different animals like polar bears. Polar bears roam the ice in search of seals and other food. Some polar bears also build dens on the ice. As the ice shrinks, polar bears will lose their homes and hunting grounds.

Part 6. The Arctic Food Web.

Narrator: Climate change doesn't just hurt polar bears—it threatens other Arctic animals, too. That's because all Arctic animals are connected by a food web. Tiny shrimplike creatures called krill are the foundation of this food web. Krill are eaten by fish, seabirds, and seals, which then become food for larger animals like polar bears.

The number of krill has been declining, and climate change may be the cause. That's because krill feed on algae and tiny plants that live under sea ice, and now the ice is shrinking. Less krill means less food for other animals in the Arctic.

People are affected, too. Native peoples, such as the Inuit and the Yup'ik, depend on the Arctic food web for fishing and hunting. Arctic fisheries also provide jobs for many other people.

Part 7. Test Your Knowledge.

Narrator: Time to test your knowledge about climate change again. Use your mouse to complete the food web by dragging the missing images to their correct locations. Can you see how all Arctic animals are affected by reduced numbers of krill?

Onscreen activity: The user assembles a diagram of a food web on the screen. In this example, a polar bear is at the top of the web, with a seal just below. Fish and shellfish are below the seal, and a photo of krill appears at the bottom of the web.

Part 8. What Have You Learned?

Narrator: You can pack up that parka now! Your journey to the Arctic is over. What have you learned?

Onscreen text: The amount of Arctic sea ice is decreasing.

Narrator: Arctic sea ice has decreased during the last 30 years because of climate change.

Onscreen text: Sea ice helps keep the Earth cool.

Narrator: Sea ice helps keep the Earth cool by reflecting sunlight back into space. If more sea ice melts, the Earth will become even warmer.

Onscreen text: Melting sea ice affects every animal in the food web and people too.

Narrator: Melting sea ice is affecting the food web in the Arctic, from the tiniest krill to the largest whales. It also impacts the people who live there.

Part 9. Congratulations!

Narrator: Congratulations. You've earned a passport stamp by learning about how climate change affects Arctic sea ice.

Onscreen code: 573426