

From the Poles to the Coasts [MC]

Grades: K-2

Time: 45 minutes to 1 hour

Goals: To understand how climate change and rising temperatures affects sea level rise.

Objectives:

Students will be able to: define climate change; describe sea level rise; and understand how polar ice melting can affect the entire world oceans and coastal ecosystems.

Directions: Use the space below to describe a polar bear or penguin habitat and how it is affected by sea level rise and climate change. Answer the following questions in your description: where does your animal live? Where does it sleep? What happens to their habitat as the climate changes?



A large, empty rounded rectangular box with a thin black border, intended for students to write their descriptions and answers to the questions provided in the directions.

Key Words:

Sea level rise
Melting ice
Antarctic

Global warming
Coastal flooding

Climate change
Arctic

Background Information:

Adapted from National Geographic

When certain gases are released into the earth's atmosphere, they mix with the elements that make up our atmosphere, such as oxygen and nitrogen, creating heat-trapping compounds. When the sun warms the earth throughout the year, these compounds and gases will keep the heat on earth longer than they should be, making the surface of the planet hotter. Ecosystems around the world are affected by this surface temperature and some ecosystems, such as coral reefs, are highly sensitive to temperature changes.

When heat is added to ice, it melts the ice rather quickly. If an excess amount of heat is trapped near the poles, where most of the glacial ice is located, these areas of ice will melt. When water is heated, it expands. So when ice melts and continues to be heated, it will expand to other parts of the world, creating a global change in how much water is present on the planet. This is what is known as sea level rise.

Coastal habitats, such as barrier islands, are hugely affected by these rises in sea level and changes to the global waters. As sea levels rise, flooding and erosion can cause damage to both the ocean side and estuary side of these islands. Since most people live close to the coast, the damage is not only to the islands themselves, but to people's homes and businesses as well. When rising waters from the ocean enter into a freshwater system, such as a river, with rising tides, it can be catastrophic to the wildlife that cannot handle saltwater or their loss of habitat.

If they are correct, scientists say that rising sea level will continue but over the last 20 years has accelerated more than ever before. This could put coastal ecosystems and coastal cities underwater by the year 2100. These measurements and calculations are daunting, but there are ways, such as alternative energy sources, to discontinue the causes of these emitted gases from being released into our atmosphere.