The Greenhouse Effect

There are factors that may influence weather patterns and climate and their effects within ecosystems (for example: elevation, proximity to oceans, prevailing winds, fossil fuel burning, volcanic eruptions).

The Greenhouse Effect PhET Simulation Lesson

Learning Goals: Students will analyze how Greenhouse Gases affect Earth’s temperature and identify processes that might increase or decrease Earth’s temperature.

Go to: <http://phet.colorado.edu/en/simulation/greenhouse>

Ice Age

1. Click on the “Ice Age” button and record the minimum temperature. \_\_\_\_\_\_
2. Record: CO2 \_\_\_\_\_ CH4 \_\_\_\_\_ N2O \_\_\_\_\_
3. What happens to the sunlight photons as they hit the ground? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Are all of the sunlight photons being reflected back into space? \_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. What happens to the temperature when you add clouds? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. How are the photons affected by adding clouds? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1750

1. Click on the “1750” button and record the minimum temperature. \_\_\_\_\_\_\_
2. Record: CO2 \_\_\_\_\_ CH4 \_\_\_\_\_ N2O \_\_\_\_\_
3. What happens to the sunlight photons as they hit the ground? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. What happens to the temperature when you add clouds? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. How are the photons affected by adding clouds? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Today

1. Click on the “Today” button and record the minimum temperature. \_\_\_\_\_\_\_
2. Record: CO2 \_\_\_\_\_ CH4 \_\_\_\_\_ N2O \_\_\_\_\_
3. What happens to the sunlight photons as they hit the ground? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. What happens to the temperature when you add clouds? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. How are the photons affected by adding clouds? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Turn to your neighbor and describe how the Greenhouse Gases affected Earth’s atmosphere during the Ice Age, the year 1750 and Today.

What would happen if there were no Greenhouse gases? \_\_\_\_\_\_\_ (Adjust the Greenhouse Gas Concentration Level to None.)

What would happen if Greenhouse gases increase? \_\_\_\_\_\_\_\_ (Adjust the Greenhouse Gas Concentration Level to Lots.)

Identify some natural or human processes that might increase or decrease the amount of greenhouse gases in the atmosphere.