

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

6. Click on the "1750" button and record the minimum temperature. _____
7. Record: CO₂ _____ CH₄ _____ N₂O _____
8. What happens to the sunlight photons as they hit the ground? _____
9. What happens to the temperature when you add clouds? _____
10. How are the photons affected by adding clouds? _____

Today

11. Click on the "Today" button and record the minimum temperature. _____
12. Record: CO₂ _____ CH₄ _____ N₂O _____
13. What happens to the sunlight photons as they hit the ground? _____
14. What happens to the temperature when you add clouds? _____
15. How are the photons affected by adding clouds? _____

Prompt #1

In a paragraph or two, describe how the Greenhouse Gases affected Earth's atmosphere during the Ice Age, the year 1750 and Today.

Prompt #2

What would happen if there were no Greenhouse gases? _____ (Adjust the Greenhouse Gas Concentration Level to None.) Why might this be?

Prompt #3

What would happen if Greenhouse gases increase? _____ (Adjust the Greenhouse Gas Concentration Level to Lots.) Why might this be?

Prompt #4

Identify some natural and some human processes that might increase or decrease the amount of greenhouse gases in the atmosphere. Hint: See the poster on Mr. Odell's wall.