Our Amazing Atmosphere: Station 2

Guiding Question:

How does the composition and structure of the atmosphere insulate the Earth?

At this station you will be investigating three websites to gain a better understanding of the greenhouse effect and the molecular structure of greenhouse gases.

Instructions: A Climate Minute

1. Watch the video "A Climate Minute" by clicking the link [http://www.youtube.com/watch?v=Hi3ERes0h84](http://www.youtube.com/watch?v=Hi3ERes0h84)
2. How does the greenhouse effect insulate Earth?
3. Discuss the question and record your response in your science notebook.

Instructions: Greenhouse effect Simulation

1. Open the greenhouse effect simulation at the following website: [http://phet.colorado.edu/en/simulation/greenhouse](http://phet.colorado.edu/en/simulation/greenhouse)
2. Click on the Photon Absorption and select "Infrared Photon"
3. Click on "Build Atmosphere" and discuss how each of the molecules in each of the gases are structured.
4. Add 5 molecules for each of the gases shown.
5. Compare how infrared photons react directly with nitrogen, oxygen and the greenhouse gases (methane, carbon dioxide and water vapor).
6. Draw each molecule in your science notebook.
7. Which greenhouse gases trap the most heat in the atmosphere? Why?

Instructions: Molecular Dances

1. Watch "The Molecule Dance" by clicking the following link. [http://www.youtube.com/watch?v=ZPC_jaJwQWs](http://www.youtube.com/watch?v=ZPC_jaJwQWs) and [http://scied.ucar.edu/greenhouse-effect-movie-scott-denning](http://scied.ucar.edu/greenhouse-effect-movie-scott-denning)
2. Demonstrate how each of the molecules move in the following gases: nitrogen, oxygen, methane, carbon dioxide, and water vapor.
3. In your science notebooks, describe how each of the molecules move.
4. How does the movement of the molecules methane, carbon dioxide, and water vapor trap more heat in the Earth's atmosphere?

Now that you have viewed the resources, please discuss the guiding question below and record your response in your science notebook.

Guiding Question:

How does the composition and structure of the atmosphere insulate the Earth?