



Name \_\_\_\_\_

Model being Reviewed \_\_\_\_\_

## Peer Review – Greenhouse Effect Model

Read the following explanation of the Greenhouse Effect before beginning your model review.

**Solar radiation** coming from the sun comes into the Earth's atmosphere, some of which is **reflected** off **clouds** (**water vapor**) or **Earth's surface** and can go back out into space, but some is **absorbed** by the atmosphere or Earth's surface. When absorbed energy is released from things like the Earth's surface, it is called **infrared radiation (heat)**. Some infrared radiation (heat) goes out to space, but some gets trapped in the atmosphere by **greenhouse gases (GHGs)**. GHGs include carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), sulfur hexafluoride (SF<sub>6</sub>), and **water vapor** in the form of **clouds**. GHGs have a very large effect despite their *relatively low concentration* (< 0.5%) compared to other atmospheric gases like nitrogen, oxygen, and argon that make up more than 99.5% of the gases in the Earth's atmosphere. The trapped infrared radiation warms the planet, which is good to a certain extent, but continued rise in GHG concentrations are warming the planet too much.

1. Do you see all the terms that needed to be included in the model? (Found in **bold** above, check off terms that you see, "X" the ones you cannot find.)

- Solar radiation
- Atmosphere
- Infrared radiation (heat)
- Greenhouse gases (GHGs)
- Clouds (water vapor)
- Earth's surface
- Reflect(ed)
- Absorb(ed)
- Temperature

Check the box if the statement is similar enough to information found in the model descriptions.

- Solar radiation* comes into the *atmosphere* (can be *reflected* or *absorbed* by *clouds*/Earth's surface).
- Infrared radiation (heat)* gets *absorbed*/trapped by *Greenhouse gases (GHGs)*.
- Trapped *infrared radiation (heat)* causes *temperature* to rise.
- Clouds (water vapor)* can *reflect* some *solar radiation*, but also *absorbs* and *traps* *infrared radiation (heat)*.

2. Are the different gases in the atmosphere listed and identified as either GHGs or other gases? (Underlined in the explanation above, check off terms that you see, "X" the ones you cannot find.)

- |  |  |
|--|--|
| <input type="checkbox"/> <i>carbon dioxide (CO<sub>2</sub>)</i>      | <input type="checkbox"/> <i>Nitrogen</i> |
| <input type="checkbox"/> <i>methane (CH<sub>4</sub>)</i>             | <input type="checkbox"/> <i>Oxygen</i>   |
| <input type="checkbox"/> <i>nitrous oxide (N<sub>2</sub>O)</i>       | <input type="checkbox"/> <i>Argon</i>    |
| <input type="checkbox"/> <i>sulfur hexafluoride (SF<sub>6</sub>)</i> |  |
| <input type="checkbox"/> <i>water vapor (clouds)</i>                 |  |

3. Is it clear that GHGs are found at much lower concentrations than other gases in the atmosphere? **Y/N**

4. On a scale of 1-5, how well do you think the model aligns with the explanation given above? **1 2 3 4 5**

5. On a scale of 1-5, how would you rate the creativity and presentation of the model? **1 2 3 4 5**

6. On a scale of 1-5, how would you rate the creativity and presentation of the model? **1 2 3 4 5**

7. Elaborate on why you gave the ratings above.