

Take-Home portion of Final Exam.

Please complete the following exercise and bring it with you to the final exam (8am, Thursday May 31st, 2012*).

As you recall from the course syllabus, these are the Student Learning Outcomes for geog3/meteor3:

1. Students will be able to **describe atmospheric processes**, transient conditions and phenomena related to weather and climate.
2. Students will demonstrate the ability to engage in the **climate change debate** and **use scientific theory** and reasoning to sort through conflicting claims and ideas.

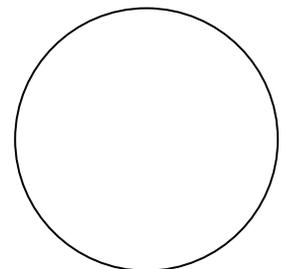
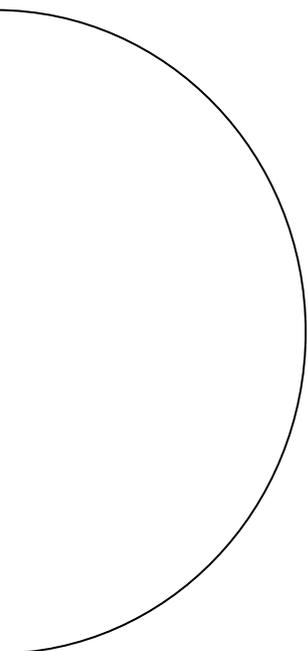
I have designed an exercise that will allow you the opportunity to demonstrate that you have achieved these outcomes:

I. Use the following guidelines to explain the Greenhouse Effect and Global Warming.

1. Define the **Greenhouse Effect** (*I recommend you use the definition I provided in lecture*). **(2 points)**
2. Make use of a **diagram** to do so (a template/starting point is provided below).
3. In your diagram, **label** the following (and define, where necessary):
 - a. Sun, Earth, and their respective temperatures; **(2 points)**
 - b. wavelengths of radiation (“shorter” vs. “longer”, UV, visual or thermal infrared), and direction(s) of that radiation using directional arrowheads (< or >); **(4 points)**
 - c. percent solar radiation reflected by Earth’s atmosphere, ratio of solar radiation intercepted by Earth and its atmosphere vs. the total amount of radiation emitted by the sun; **(2 points)**
 - d. **Greenhouse gases** (GHGs) *and* what they do (their role). **(2 points)**
4. **Identify** three (3) greenhouse gases (be sure to include, and label as such, the most abundant greenhouse gas). **(4 points)**
5. Is the **greenhouse effect** a “good” thing or a “bad” thing? **Explain** why. **(2 points)**
6. **Explain** how **global warming** is associated with the **greenhouse effect** and **human activity** (*within* your response, make sure to name *and* explain **three (3)** human activities, in total, that increase the concentration of two (2) GHGs in the Troposphere). **(5 points)**
7. **Explain** the **Milankovitch Cycles**, and how the ever-changing relationship between Earth and Sun influences “natural” climate change. **(4 points)**

Make it legible (3 points)

TOTAL: 30 points



*** late papers will not be accepted.**