**Target group:**

Introductory biology or chemistry

**Overall learning objective for a bigger module:**

Learning objective:

Content: Understand the connection between burning fossil fuel, generation of CO2 and global warming

Process: Understand how to make and evaluate alternative models

**Tidbit learning objective:**

Process: Generate alternative explanations with mechanisms for how burning fossil fuel could change global temperature

**Assessment:** Elicit misconceptions. Where are they at? Continue to monitor on-line in blog. Later essay questions?

**Group:**

IPCC curve of temperature increase vs. time. Burning fossil fuels has been proposed as a cause of global warming. Propose possible mechanisms (more than one) whereby burning fossil fuels could lead to global warming?

1 minute think by yourself and then talk to members of your group.

After group work, have groups present models and put on the board.

Come up with ways to evaluate the models:

 Positive criteria:

Your model needs to explain the magnitude of observed changes in temperature

 It must not violate these laws:

 conservation of energy: energy in = energy out + energy retained

 conservation of mass:

What could you do between now and the next class to help explore this model. Please discuss how to explore the model on the blog/folder/wiki, each group mem (Find the numbers that you need) and then in the next class period quantitatively evaluate the model. Do you need an exact model or could you estimate?

Possible mechanisms:

heat generated from burning

Carbon dioxide

Soot (Pollution)

NOx 🡪 O3

nature gas: CH4 (fracking)