Announcements

• Exam 1, Wednesday 2/28 In Class.
  • Bring dark pencil, eraser, a calculator.
  • All relevant equations and constants will be provided.

• What to expect:
  • 15-20 questions.
  • 50% conceptual.
  • 50% problem solving.
When is Exam1?

a) A week from Wednesday

b) Not a week from Wednesday
ICLICKER QUESTION #2

Would removing all greenhouse gases from the Earth’s atmosphere be a good idea for global climate?

a) Yes, the temperature would go back to pre-industrial levels.
b) Yes, the temperature would stabilize at current levels.
c) No, global warming would accelerate.
d) No, the global temperature would drop below freezing.
e) No, global warming would continue.
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Feedback Effects

• Positive – rising temperature causes a further increase.
• Negative – rising temperature causes a decrease.

Can you think of examples of positive or negative feedback?
Positive Feedback Cycle

- **Surface Temperature Increases Slightly**
  - Effect
  - **Increased evaporation from the oceans.**
    - Effect
    - **Enhanced greenhouse effect.**
      - Effect
      - **More water vapor in the atmosphere.**

Schematic of just one of dozens of possible climate feedbacks.
Negative Feedback Cycle

- **Effect**
  - Surface Temperature Increases Slightly
  - Increased evaporation from the oceans.
  - Reflects more sunlight back into space.
  - More low clouds in the atmosphere.
  - Surface temperature decreases slightly.
Current CO2 Concentration in the Atmosphere

- CO2 levels are the highest they’ve been in the past 650,000 years.
- The rate of increase is faster than in previous cases.
- The rise of \( CO_2 \) is now leading the temperature, suggesting something different is going on.