

## Chapter 2 Review

# Energy: Warming the Earth and the Atmosphere

## Energy

- What are some forms of energy?
- What was the pre-energy view of heat?
- Temperature measures what?
- At what temperature does water freeze? Boil?
- What temperature is the same on the Celsius and Fahrenheit temperature scales?
- 10 deg C is how many degrees Fahrenheit?
- What is a calorie?
- What is a food Calorie?
- Why do coastal areas have less extreme temperature ranges than inland areas?

## Specific heat and latent heat

- Which of these 3 substances takes the most energy to warm 1 kilogram by 1°C and which takes the least to warm it by 1°C: air, water, clay?
- To what does "latent heat" refer?
- How does evaporation and condensation transfer energy from the Earth's surface into the atmosphere?
- How does an air conditioner work?

## Energy transfer

- In an oven, how do you know there is
  - ◆ Conduction
  - ◆ Convection
  - ◆ Radiation
- Answer the same question for a car engine.
- Consider sending a message to the back of the room by 3 ways:
  - ◆ Telephone game (whisper message from person to person)
  - ◆ Carry note to back of room
  - ◆ Shout to back of room

Which procedure corresponds to which method of energy transport (convection, conduction, radiation)?

## Radiation

- What is a wavelength? Does red or blue light have a longer wavelength?
- Roughly what fraction of a meter is a wavelength of visible light: billionth, millionth, 0.001, or 0.1?
- In what part of the spectrum is the Sun the brightest: ultraviolet, visible, infrared, or microwave?
- In what part of the spectrum is the radiation emitted by the Earth the brightest?
- What 2 gases in the Earth's atmosphere are the most important absorbers of infrared radiation?

## Earth's Energy Budget

- About what fraction of the sunlight that reaches the Earth is reflected back to space?
- About what fraction of the sunlight that reaches the Earth is absorbed at the Earth's surface?
- What is by far the most important way that the Earth's surface transfers energy into the atmosphere?
- What process puts almost twice as much energy into the Earth's surface than sunlight does?
- What causes an aurora?
- Where are auroras most common?