

Nidia D. David Escamilla

Energy Enters the Earth System primarily as Solar Radiation and eventually escapes as Heat

Goals for Students Understanding

STANDARDS:

- 4. b,c, d
- 5.a
- 7.c
- 8. a, c

1. Students know that the Earth's climate system is driven primarily by energy received by the sun in the form of light energy, or electromagnetic radiation. Some of this energy is absorbed by the clouds and Earth's surface, and some reflected back to space.

2. Students know that most of the light energy that is absorbed by earth's surface is reradiated as longer wave heat energy. Certain gases in Earth's atmosphere, called greenhouse gases, trap longer-wavelength heat energy, which warms the earth. Without this "greenhouse effect", Earth would not be habitable.

3. Students know that another factor that influences earth's temperature is the albedo effect. Albedo is a measure of a percentage of incoming light energy that is reflected.

4. Students know that the movement of air masses within the Earth's atmosphere is driven by the uneven heating of a spherical earth.

5. Students know that interactions between oceans and land have a significant impact on regional climate.

Readings:

Holt: Earth Science Student's Textbook. p. Atmosphere and solar Radiation. p. 556-558

Writing Strategy: Using Cornell Notes students will write the following Key Concepts:

- Solar Radiation
- Electromagnetic Spectrum
- Albedo Effect
- Green House Effect
- Conduction
- Convection

Labs:

Effects of Solar Energy (Holt. p. 35)
Green House Effect (EDC. p. 7. 14-7.16)
Albedo Effect (EDC. p. 7.17-7.19)

Assessment Strategies:
Interpretation of Graphs
Looking at Climate Data (EDC. p.7.5-7.10)
Looking for patterns in the World Climate Map.
Interactions Between Ocean and Atmosphere. (EDC. 7.27-
7.28)

Re-enforcement Readings:
Road to St. Therese Is Paved with Ice (EDC. 7.2-7.4)
Following the Path of Light Energy (EDC. 7.13-7.14)

Websites:
The Atmosphere: www.scilinks.org Code: HQ60112
Albedo Effect:
www.svs.gsfc.nasa.gov/vis/000000/8002400/8002477/index.html
The Green House Effect: www.scilinks.org code:HQ60694

Assessment:
Have students write short stories or make models of what Earth
might be without CO₂, water vapor, or methane. In the story students have to

use all key