

Energy enters the earth system primarily as solar radiation and eventually escapes as heat.

Key Concepts: Standard 4. a-d

- a. Amounts of incoming solar energy relative to Earth's internal energy and society's energy use.
- b. Fate of solar radiation – reflection, absorption and photosynthesis
- c. Greenhouse gases and significance of greenhouse effect
- d. Comparison of atmospheric conditions on Earth, Venus and Mars – greenhouse conditions and climatic consequences.

Review

- Explain how radiant energy reaches the Earth.
- Describe how visible light and infrared energy warm the Earth.
- Summarize the processes of radiation, conduction and convection.
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Demos

- Radiometer - Device that measures thermal energy (looks like light bulb with wind vane inside)
Students could predict what makes it spin – incandescent light, fluorescent light, sunlight, fan, hair drier etc. (If you have enough of them you could do it as a qualitative lab)
- Hot air balloon made of large black garbage bags taped together. (do outside, be careful not to lose control of bags)

Activities

- Blue and Red Skies p. 556 Holt
- Effects of Solar Energy (light and dark surfaces) p.535 Holt
More extensive investigation (data table and graphing) pp 61-67 NSTA
Meteorology
- Determining the Effect of Temperature on air movement. (convection) p 259
C&C (spiral of tissue paper)
- Solar Oven – build, test, retool and retest
- Notebook

Readings

Holt – listed on p T25, 17.5 and 17.6 pp 420- 423

Concepts & Challenges Sec 11-3 & 11-4 pp256-259, 13.1 pp308-309, 13.4pp 314-315

Assessments

- Quizzes – include released test items
- Unit Test – include released test items
- Research atmospheric conditions
- Present on Mars, earth, Venus compare and contrast
- 2-3 page paper/presentation on one alternative energy source- include pros/cons
- Recreate how the earth's atmosphere captures solar E and returns to space

Supplementary materials

- Nye – Energy, Heat
- Word searches and crosswords
- Current events – news articles, editorials