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Section 16.1 - Energy in Earth's Atmosphere

I. Energy from the Sun

A. Nearly all energy in Earth's atmosphere comes from the sun.
1. It travels

2. Electromagnetic waves are classified by wavelength. Most energy is in the form of visible light and infrared radiation. Small amount is ultraviolet radiation.

B. Visible Light
1. Includes all the colors of the rainbow (ROYGBIV). Red & orange are longer wavelengths, blue & violet are shorter.

C. Non-visible Radiation
1. Infrared –

2. Ultraviolet radiation -

II. Energy in the Atmosphere
A. Sunlight must pass through the atmosphere before reaching the Earth's surface. Some is reflected back (25%), some absorbed by gases (20%), some reflected by the surface (5%), and the rest is absorbed by the Earth (50%).

B. The ozone layer

C. Light being reflected in all directions by dust particles and gases is called _____.

D. Gas molecules scatter shorter wavelengths more than longer, so that is why the sky appears blue during the day.
E. At dusk and dawn,

III. Energy at Earth's Surface
A. Energy that is absorbed by the Earth is released back into the atmosphere by _____.

B. This infrared radiation does not all escape back into space, but is trapped by the gases in the atmosphere and heats up the air. This is known

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Section 16.2 - Heat Transfer

I. Thermal Energy & Temperature

A. Temperature is the average amount of energy of motion of each particle in a substance.
   1. A

B. Thermal energy refers to the total energy of motion in the particles of a substance.
   1. It is

C. Temperature Scales
   1. Two most commonly used are Celsius and Fahrenheit.
   2. Celsius -
   3. Fahrenheit -

II. Heat Transfer

The three methods of transfer are:
   A. Radiation -
   B. Conduction -
   C. Convection -

The troposphere is heated by a mix of all three types.
   - radiation heats the earth
   - earth heats closest air by radiation & conduction
   - remaining troposphere is heated by convection (warm air rising & cool air taking its place).

The upward movement of warm air and the downward movement of cool air form _____. These move heat throughout the troposphere.