

Energy in Earth's Atmosphere

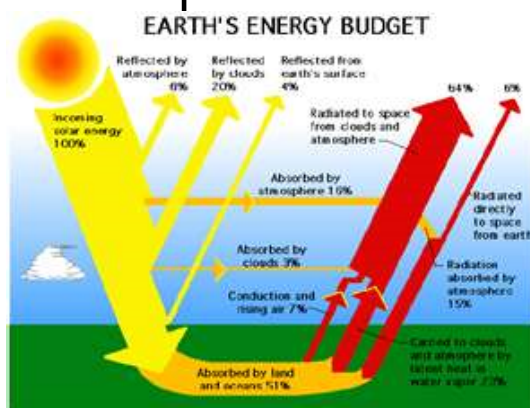
Energy from the sun

- energy travels by radiation from the sun as electromagnetic waves
- EM waves are classified into 3 groups
 - visible light- colors we can see
 - ultraviolet radiation- invisible
 - infrared radiation- invisible but can be felt

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Energy in the atmosphere

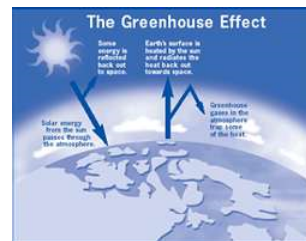
- some solar energy is absorbed by the atmosphere before it reaches the surface
 - ozone layer absorbs UV radiation
 - water vapor and carbon dioxide absorb infrared radiation
- some is reflected
 - clouds, dust particles and gases reflect solar energy by scattering the light



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Energy at the surface

- solar energy reaches the surface and reflected back into the atmosphere as infrared radiation
- much of that infrared radiation cannot travel back into space so it is absorbed by the gases in the air
- Greenhouse effect- gases form a blanket around the earth that holds that heat in
 - natural process



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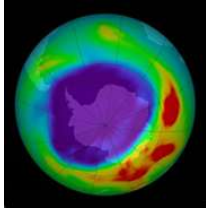
Global Warming

- gradual increase in the temperature of Earth's atmosphere
- gases normally trap heat in atmosphere
- added gases to the atmosphere which then trap more heat in
 - added by human activities



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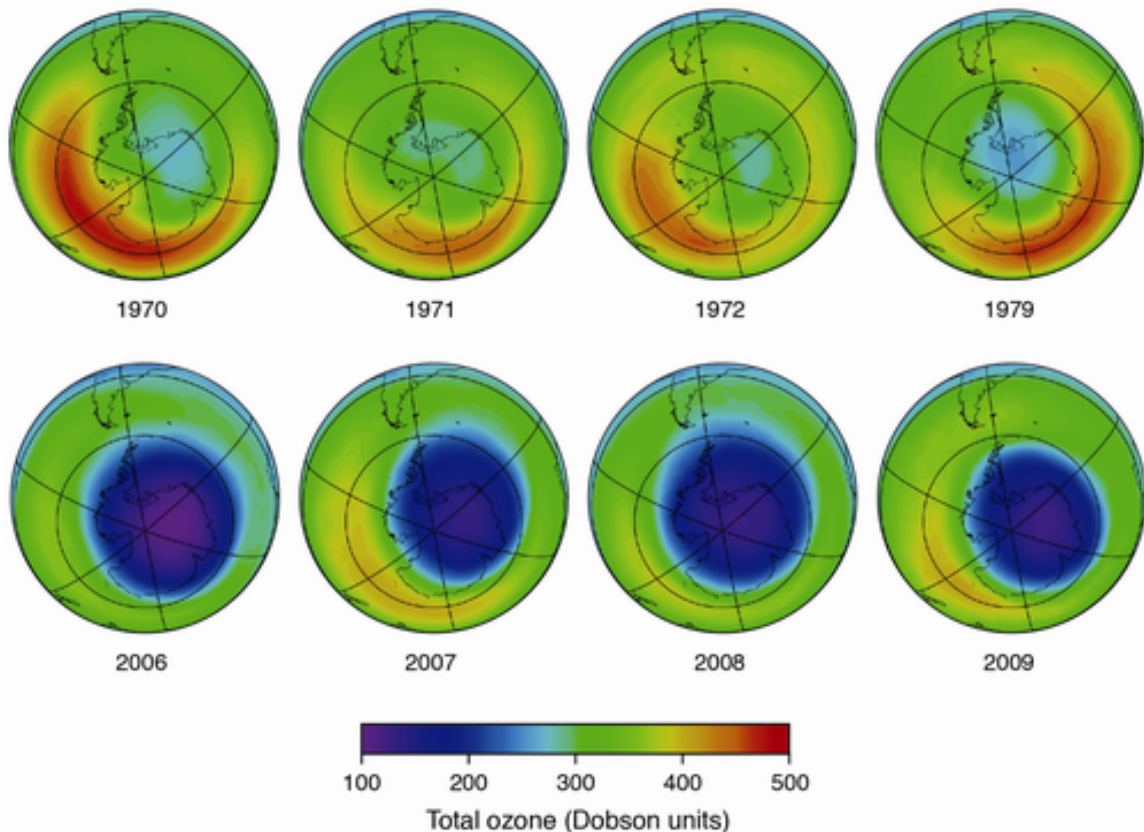
Ozone depletion



- began to thin in the 1970s over Antarctica
- by 2000, the hole was the size of Africa
- Chlorofluorocarbons (CFCs)- chemical compound found in air conditioners, refrigerators, aerosol sprays and some cleaners
 - can last for 50-100 years and rise to the stratosphere
 - UV radiation breaks down the CFC molecules into atoms which then break down into oxygen atoms
- decrease in ozone allows more UV radiation to come into atmosphere
- hole has started to shrink and is not as deep as it originally was

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Antarctic Total Ozone
(October monthly averages)



Dec 11-8:27 AM