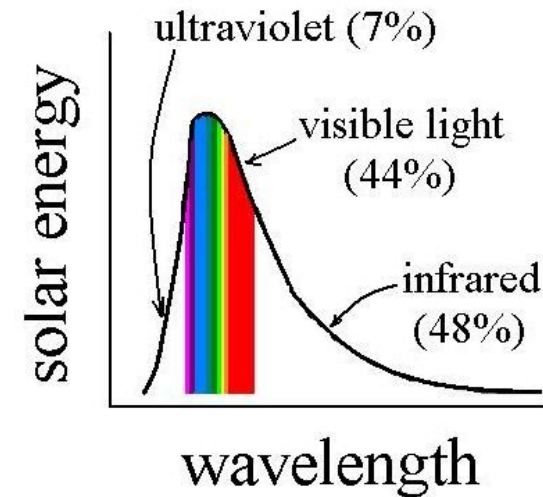
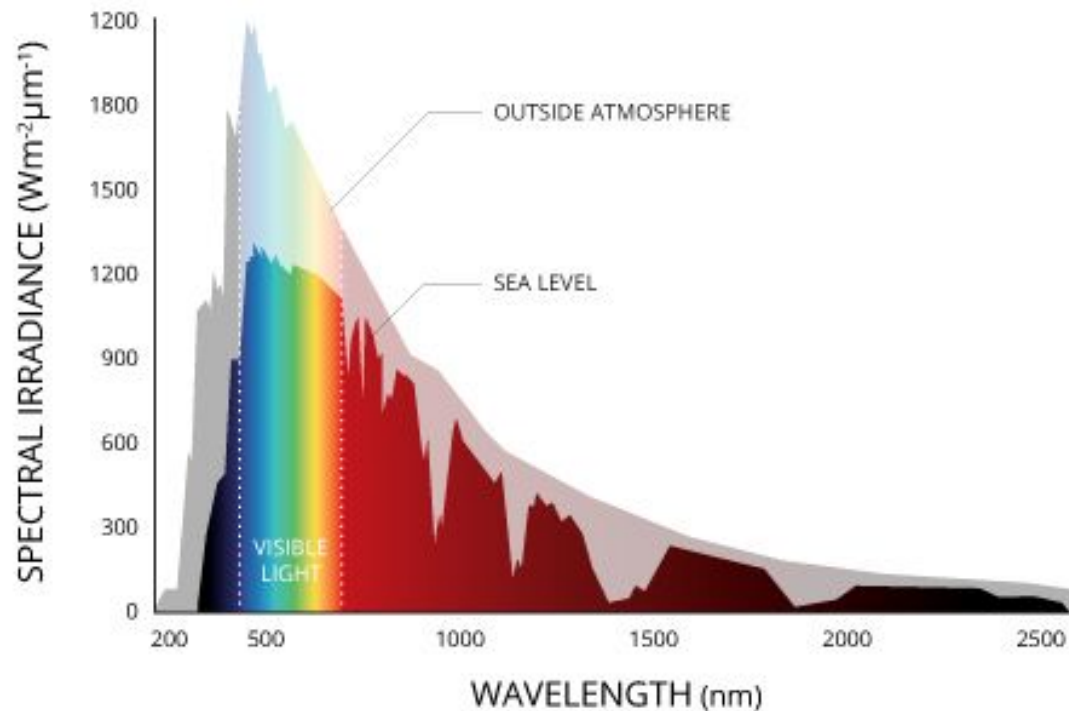
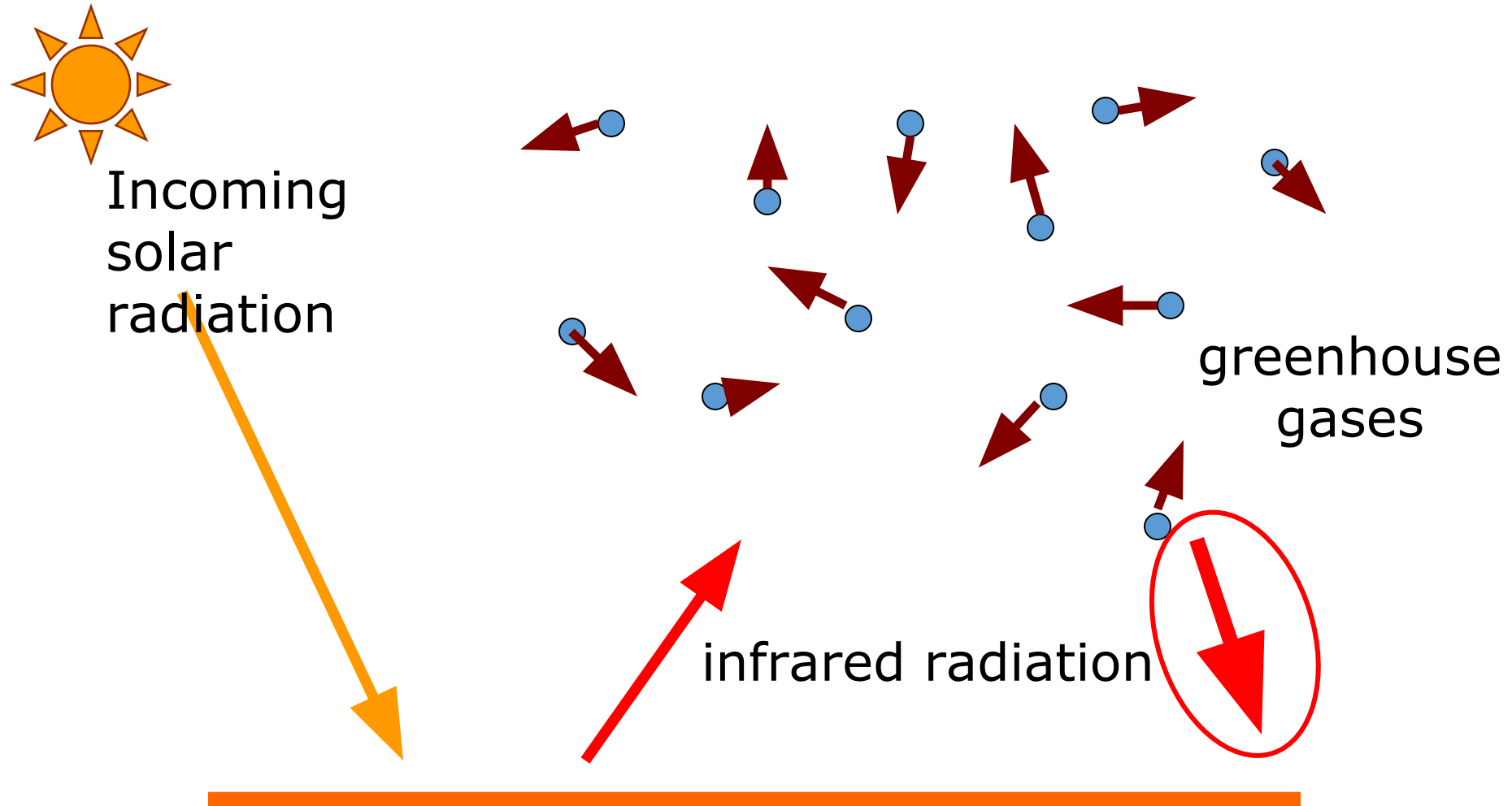


Solar Radiation

- Most of the solar radiation that reaches Earth is made up of visible and infrared light.
 - Only a small amount of ultraviolet radiation reaches the surface.



The Greenhouse Effect



IR (long wave) radiation emitted by Earth's surface interacts with gases in the atmosphere... Some of these gases trap the heat (IR) and warm up the Earth even more

Greenhouse Gases

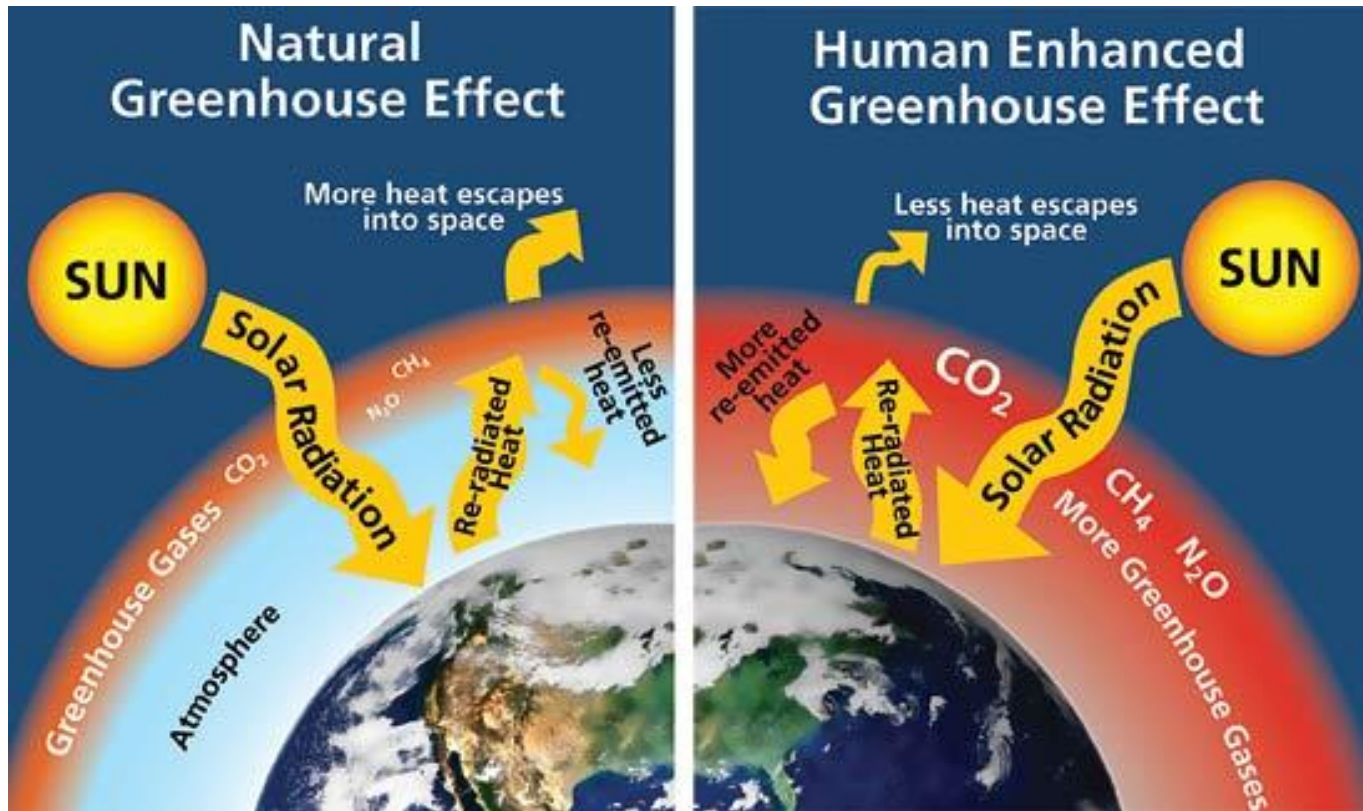
- The 'greenhouse gases' play an important role in trapping the infrared radiation.



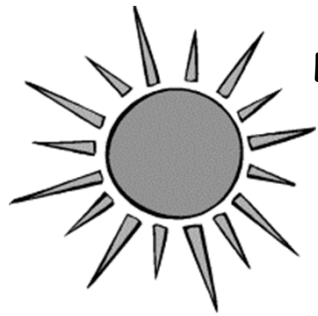
Greenhouse gases:

- 1. Water vapor (H_2O)**
- 2. Carbon Dioxide (CO_2)****
- 3. Methane (CH_4)**
- 4. Ozone (O_3)**
- 5. Nitrous Oxide (N_2O)**
- 6. Chlorofluorocarbons (CFCs)**

Human Influence on Greenhouse Gases



- Increased CO₂
- Chlorofluorocarbons (CFCs)
 - do not occur in nature
 - in other words, are man-made



Light from the Sun

1. What type of radiation does the sun emit?

Long wave

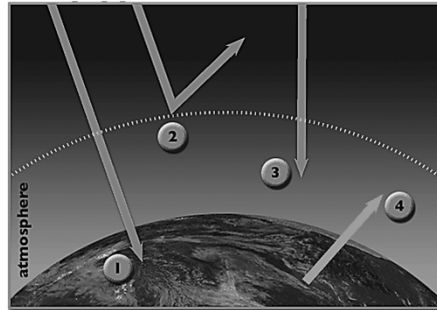
The radiation passes through the Earth's **atmosphere** and hits the Earth's surface

Some of the radiation that hits the Earth's surface does not bounce back. This means it has been **absorbed** / reflected / transmitted

2. When the radiation hits the Earth's surface/atmosphere some of it bounces back into space. This means it has been absorbed / **reflected** / transmitted

3. When radiation passes through something this means that it is absorbed / reflected / **transmitted**

4. This radiation warms the Earth's surface and the heat energy is radiated back into space.
This is called **long wave** radiation.



The Greenhouse effect

What gases in the atmosphere stop the heat from escaping?

- i. CO₂ (carbon dioxide)
- ii. H₂O (water vapor)
- iii. CH₄ (methane)
- iv. O₃ (ozone)
- v. N₂O (nitrous oxide)
- vi. CFCs (chlorofluorocarbons)



This is because these gases **absorb** / reflect / transmit the heat energy?



Which gas has increased due to humans?

CO₂

What would earth be like without the greenhouse effect?

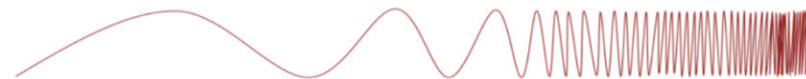
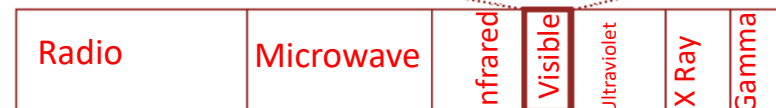
Much colder! The natural greenhouse effect warms up the Earth enough so that life is possible

Electromagnetic Spectrum

What is the electromagnetic spectrum?

Represents all the different forms of light/electromagnetic energy

Red Orange Yellow Green Blue Violet



high wavelength
low frequency
low energy

low wavelength
high frequency
high energy