



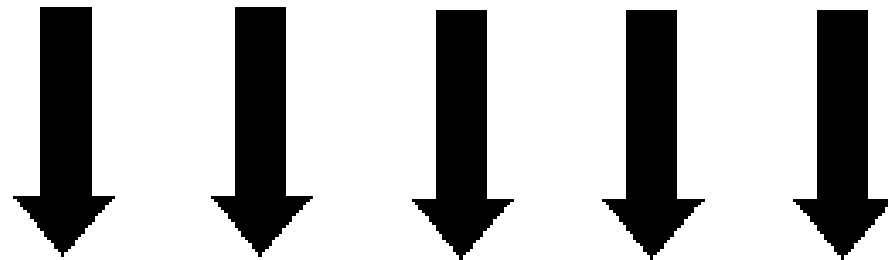
LIMNOLOGY 7

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Light

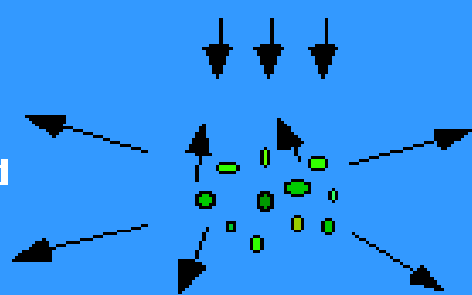
- Light is an energy; it can turn from one state to another.
- This energy can be transformed into potential energy (photosynthesis) or heat energy by biochemical reaction.
- This event occurs when the conversion of light into potential energy (photosynthesis) and heat within a certain ratio in lakes.
- The conversion of light into potential energy always remains below 100%, much of the light turns into heat so it disappears.

Incident Light (from the sun)



Absorbed Light

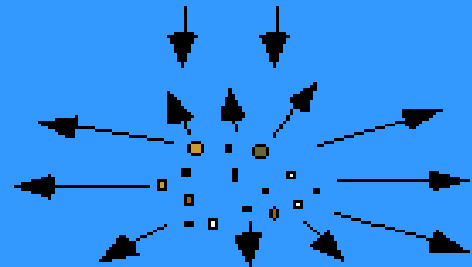
Scattered Light



Phytoplankton

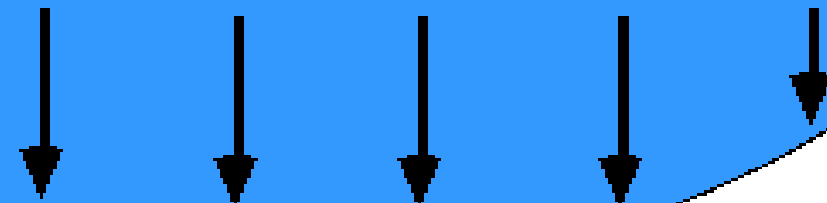


Dissolved Organics



Total Suspended Solids (Particulates)

Scattered Light



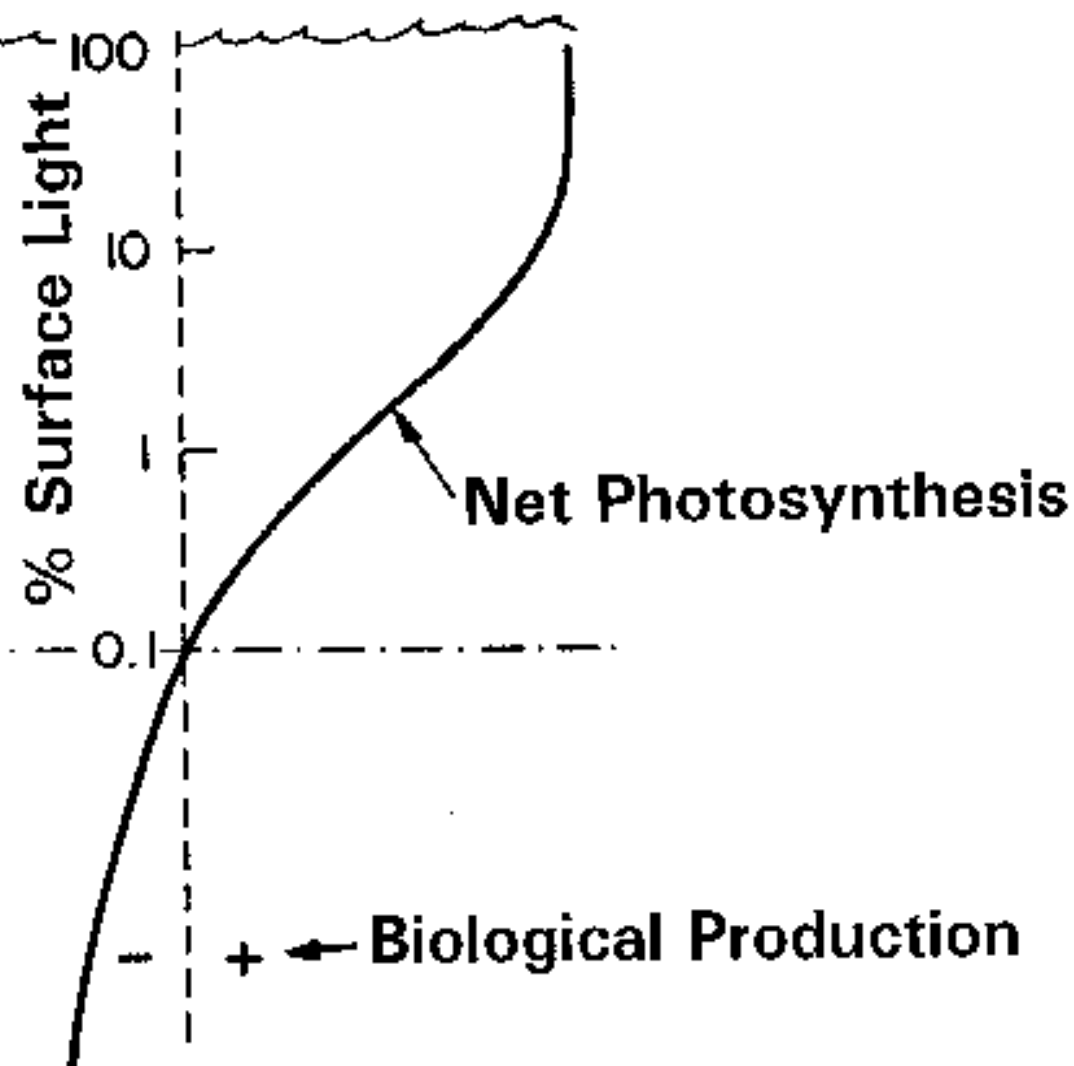
Attenuated Light

- **Light** or **visible light** is electromagnetic radiation within the portion of the electromagnetic spectrum
- Visible light is usually defined as having wavelenghts in the range of 380–750 nm, between the infrared (with longer wavelenghts) and the ultraviolet(with shorter wavelenghts)

- The main source of light on Earth is the Sun
- 300-380 nm Ultraviolet
- 380-750 nm Visible radiation
- 400-700 nm PAR Photosynthetically Active Radiation
- 750-3000 nm Infrared

Euphotic Zone:

Net photosynthetic rate is positive. Biological production is regulated by nutrient input.



Aphotic Zone:

Net photosynthetic rate is negative. Biological production is limited by lack of light.

Colour of lakes

- Lakes appears blue for several reasons;
- Surface water reflects the color of sky
- The blue appearance of water is most strongly due to the reflection of blue light and the highest permeability. Chlorophyll and humic substances give the water a green or brown color
- Green algae in lakes often lend a green color.
- Cyanobacteria blooms give a blue-green color to lakes

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