

PROPERTIES OF OCEAN WATER - LIGHT

Why is the ocean blue?

Longer wavelengths are absorbed first (i.e. red)

Blue light is strongly scattered, reflected to our eyes

The diagram illustrates the absorption of white light by the ocean. A sun icon at the top emits white light, which is separated into colors (300-800 nm). The diagram shows that red light (longer wavelength) is absorbed first, while blue light (shorter wavelength) penetrates deeper and is scattered back to our eyes.

2.2 PROPERTIES OF SEAWATER SEAWATER

- Light and temperature in the sea vary with depth.
- The sun provides energy that heats surface waters and light that penetrates to particular depths.

1 - very turbid coastal water
2 - moderate turbidity
3 - very clear tropical water

ABSORPTION & EFFECTS

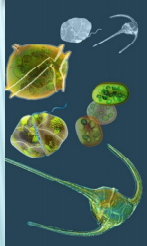
Light is absorbed based on its location along the **visible light** spectrum and water clarity.

Most visible light is absorbed in the first 100 m below sea level. Blue wavelengths by 300 m.

Many animals at depths below 100 meters tend to be red e.g. some squid, shrimp, rockfish.
Why do you think this might be the case?

EFFECTS OF LIGHT IN THE PHOTIC ZONE

- High phytoplankton productivity.
- Floating sea weeds
- Subtidal kelp
- Coral reefs
- Diurnal vertical migration
e.g. dinoflagellates

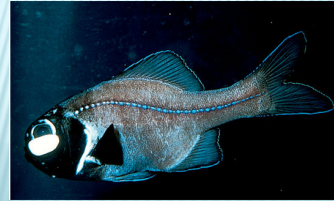


→ Generally 65% of visible light is absorbed in the first meter, becomes more dim and colors harder to distinguish when snorkeling/diving.

<https://www.uts.edu.au>

LIFE IN THE APHOTIC ZONE

- Dependent on nutrients washing in from shore.
- Detrital snow raining down from photic zone.
- Cold, dark, higher pressure – unusual adaptations for animals to find food and mates.



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