

JOURNEY INTO MIDNIGHT

LIGHT AND LIFE BELOW THE TWILIGHT ZONE

SEAMAIL™

TO: Virtual Deep-Sea Science Team
FROM: Jake, the SeaDog
SUBJECT: LIGHT MEETS THE OCEAN

Hi Science Team

Water is clear, so light should be able to pass right through, right? Not quite! It can go through a small amount of water in a glass. But can sunlight travel to the deep parts of the ocean.

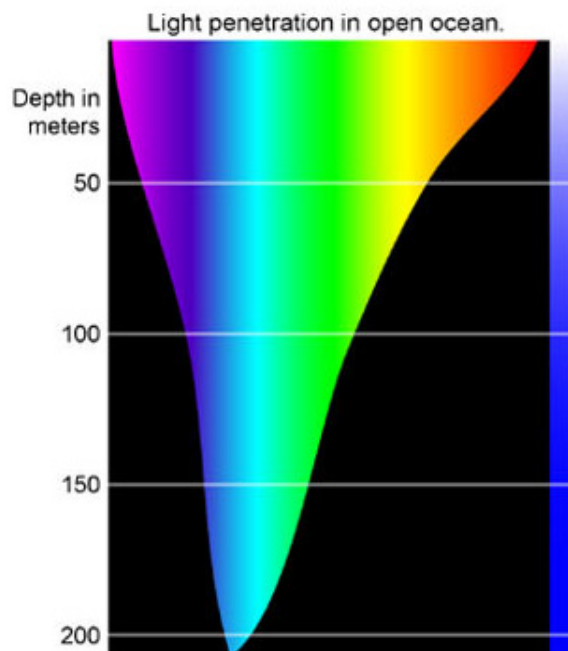
No. Sunlight only travels a little way down before it vanishes. It doesn't disappear all at once.

The light from the sun, white light, is actually made of wavelengths different color light. You probably know the wavelengths as the colors in the rainbow: red, orange, yellow, green, blue, indigo, and violet.

Different wavelengths travel to different depths. Red light disappears 25 meters (75 feet). Between 50-100 meters (150 and 300 feet), violet, orange, and yellow are gone as well. Blue is the last color (light wave) to run out of steam, it travels the deepest. That is why most deep sea animals only see the color blue.

Scientists divide the ocean into layers or "zones," based on how much visible light from the sun is present. The first zone stretches from the ocean surface down to about 600 feet (200 meters). It receives the most light. This zone is home to life forms called phytoplankton. Algae, sea plants, and phytoplankton use light from the sun to make food for themselves. Some animals live there all the time. Others visit to find food.

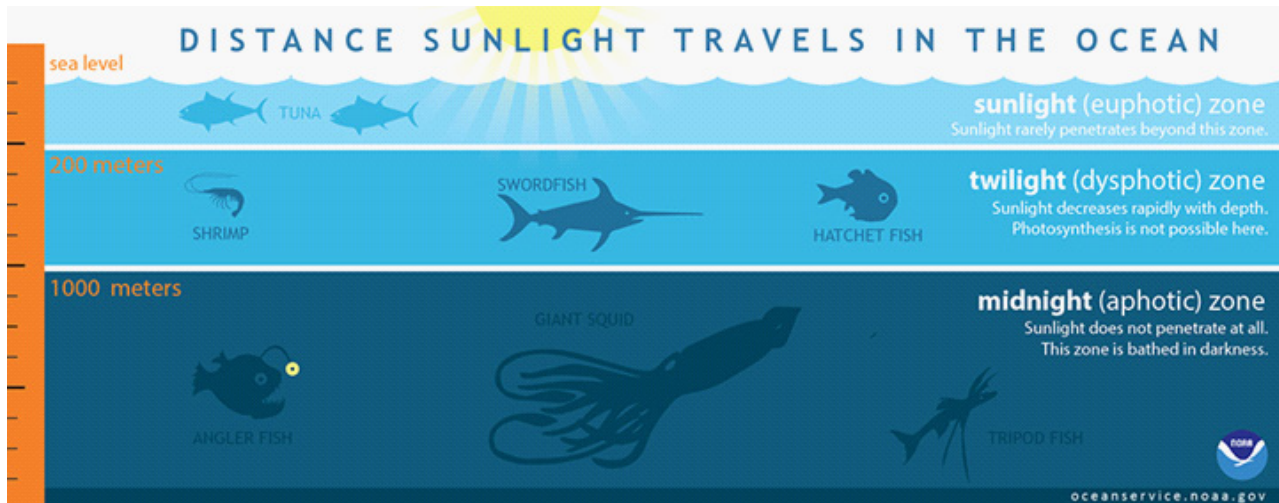
Between 200 and 1,000 meters (600 to 3,280 feet) is the **twilight zone**. Sunlight disappears quickly in the twilight zone.



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Light Meets the Ocean CONTINUED

Sunlight does not penetrate the eternal darkness below 1,000 meters (3,280 feet). That is the **midnight zone**. Animals in the midnight zone live, feed, and avoid predators in total darkness.



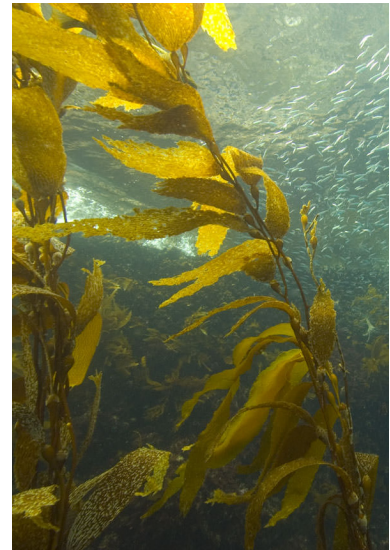
All over the world, ocean animals hide in the twilight zone during the day. At night they swim upward to find food. Larger animals swim up to feed on the tiny animals. This daily migration from the deep ocean to shallower areas is called **vertical migration**. It's the of the largest migrations of animals on earth.

The ocean is full of amazing things! Glad you're joining us to learn more.

Jake, the SeaDog

Jake, the SeaDog
WhaleTimes and Deep-Sea Explorer
Journey into Midnight
WhaleTimes.org

Fellow Science Team members, I'm wondering, **Seaweed (and other kinds of algae) and ocean plants cannot not live below about 600 feet. Can you figure out why?**



Credit R. Schwemmer NOAA National Marine Sanctuaries



Ocean Exploration and Research

Journey into Midnight: Light and Life Below the Twilight Zone research funded by NOAA-Office of Exploration and Research



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