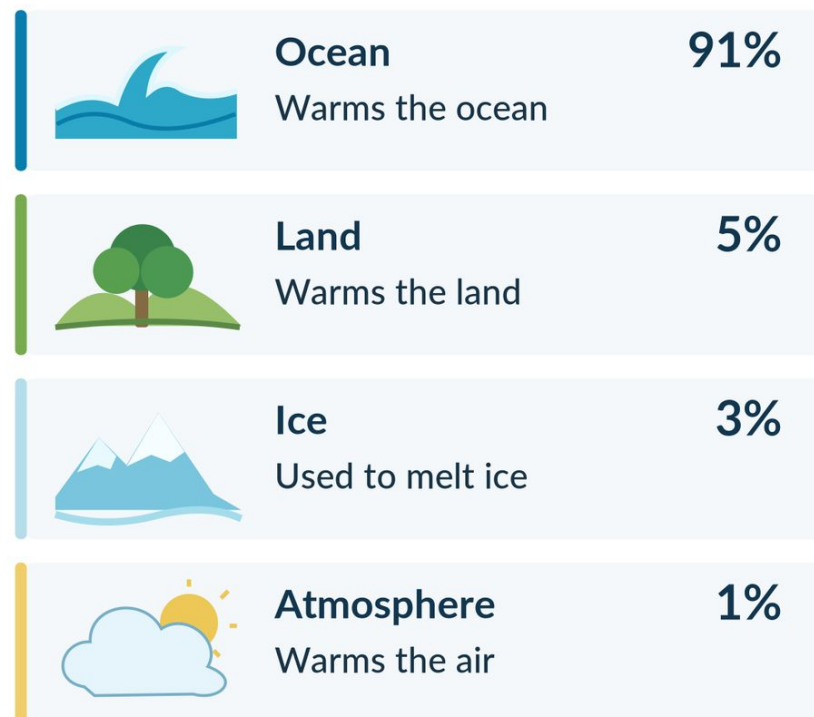
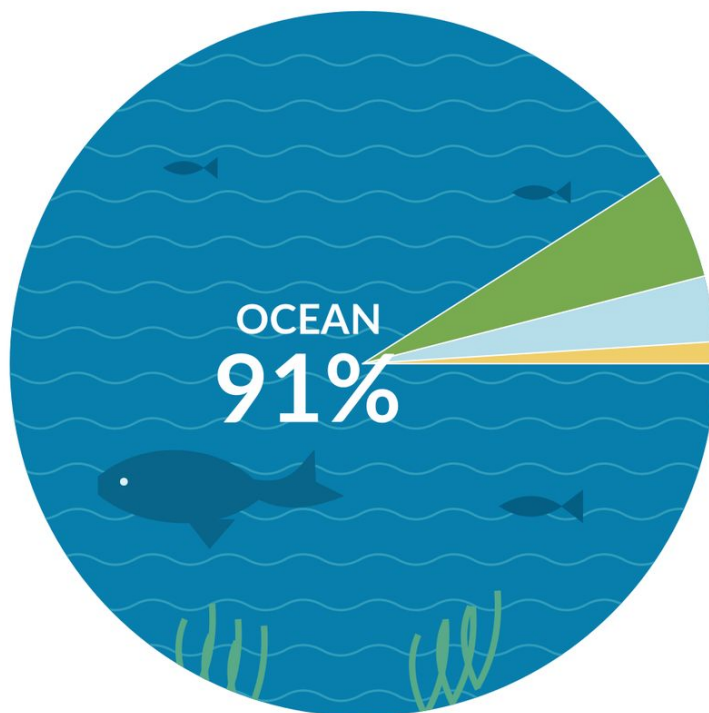


Illustration 7.1 - Where heat goes

WHERE DOES THE EXTRA HEAT GO?

Energy gained by Earth's climate system, 1971–2018



About nine-tenths of the extra heat goes into the ocean.

IPCC AR6 (2021), WGI, SPM A.4.2 • Heat gain, 1971–2018 • Approximate shares.

Illustration 7.2 - How ocean heat is stored over time

Illustration 7.2 — Heat in the ocean

Heat absorbed at the surface can slowly mix into deeper layers and remain there for a long time.

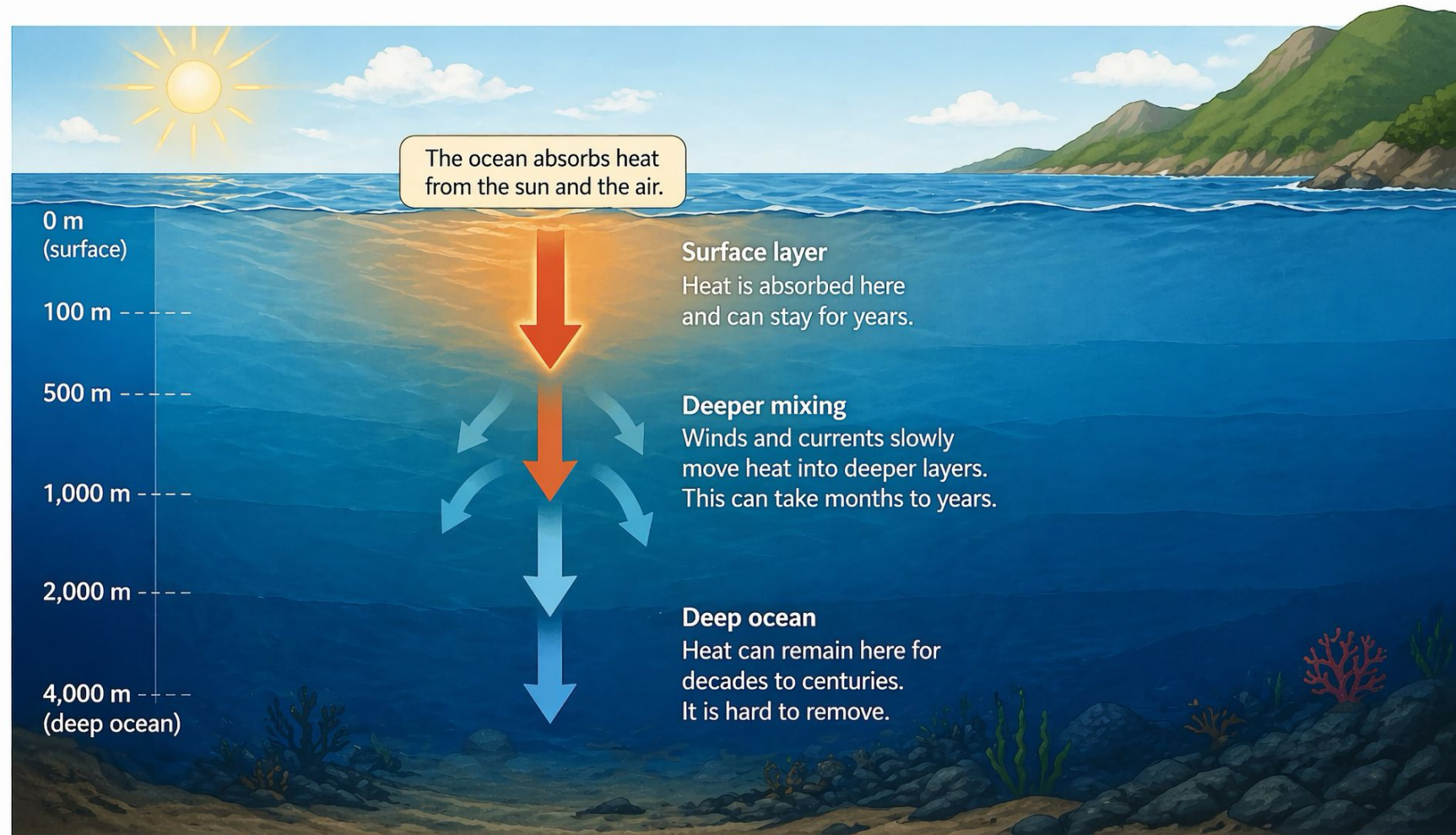
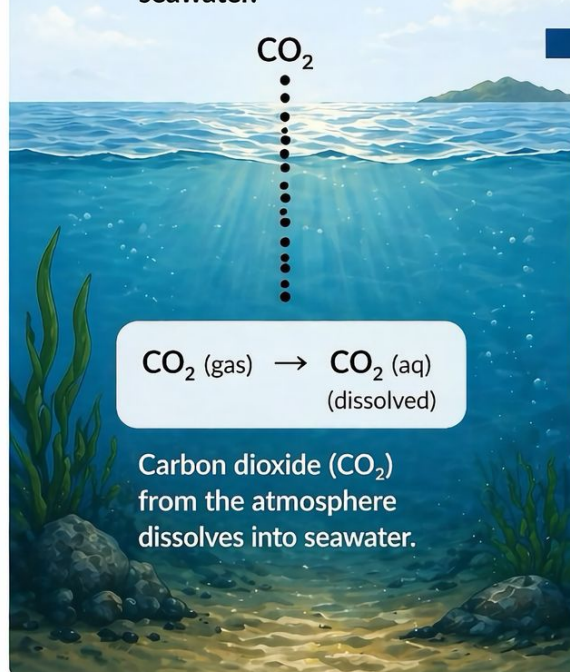


Illustration 7.3 - Ocean acidification

ILLUSTRATION 7.3 OCEAN ACIDIFICATION

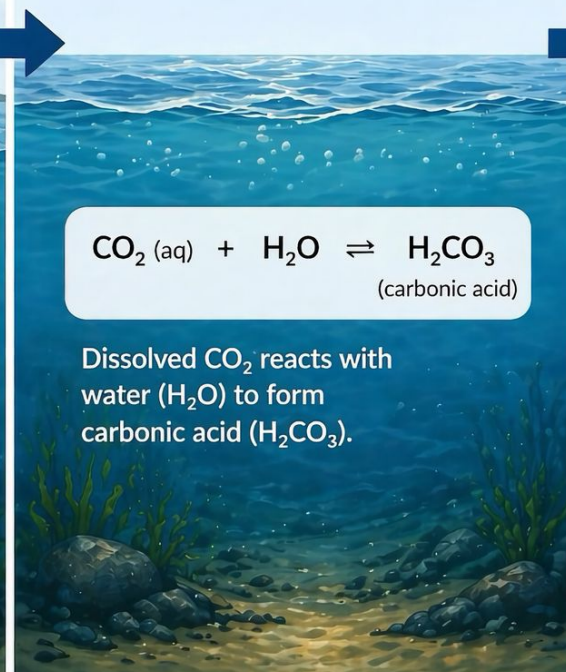
Carbon dioxide dissolving in seawater changes ocean chemistry and can make it harder for some organisms to build shells and skeletons.

- 1** Carbon dioxide from the air dissolves in seawater.

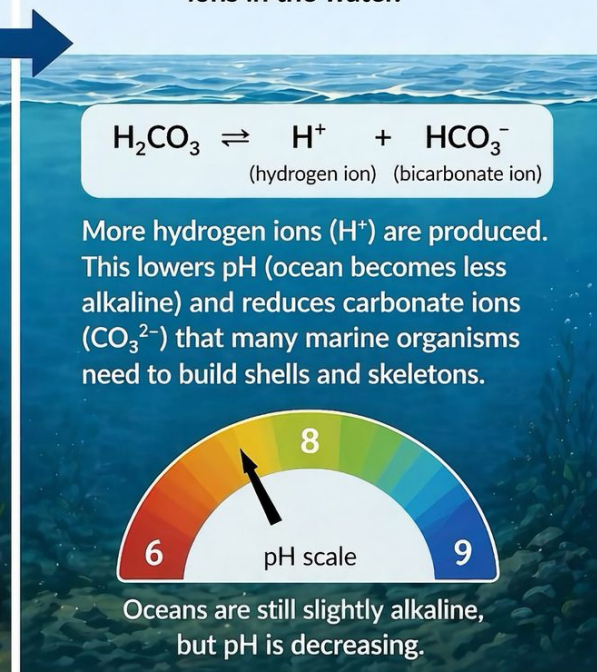


The ocean is not turning into acid. It is still slightly alkaline, but the balance of chemicals is changing.

- 2** It reacts with water to form carbonic acid.



- 3** This lowers pH and reduces carbonate ions in the water.



Some organisms that can be affected:



Corals



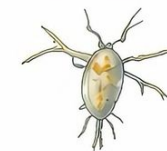
Oysters



Mussels



Snails



Plankton

Illustration 7.4 - Blue carbon ecosystems

Illustration 7.4 — Blue carbon ecosystems

Mangroves, seagrass meadows, and salt marshes store carbon, protect coastlines, and support marine life.



MANGROVES

Mangrove trees trap carbon in their roots, leaves, and in the waterlogged mud below. Carbon can be stored for hundreds of years.

SEAGRASS MEADOWS

Seagrasses take in carbon dioxide through their leaves and store carbon in their roots and the seabed.

SALT MARSHES

Marsh plants trap carbon in their roots and in the mud. Waterlogged soil keeps carbon locked away for a long time.

WHY THEY MATTER



STORE CARBON

These ecosystems absorb CO₂ and store it in plants and soils.



PROTECT COASTS

They reduce wave energy, slow storm surges, and help prevent erosion.



SUPPORT WILDLIFE

They provide food and habitat for many species, on land and in the sea.



HELP PEOPLE

They support fisheries, livelihoods, tourism, and local communities.



BUILD RESILIENCE

Healthy coasts are better able to cope with storms and sea-level rise.

Restoring and protecting blue carbon ecosystems helps both the climate and people.