



An acidifying ocean

Background reading for teachers

This reading gives you the background for each slide, with sources you can check.

Carbon dioxide uptake

NOAA scientists estimate the ocean absorbs about a third of the carbon dioxide released each day.¹ Other sources put the share since the industrial era at about a quarter.² The slide gives both ends of that range.

pH change

Average surface ocean pH has fallen from about 8.2 to about 8.1. Because pH is logarithmic, this is roughly a 26 to 30% increase in hydrogen ion concentration, which is usually described as the ocean becoming about 30% more acidic.^{1, 2} Under high-emission scenarios, a further drop of 0.3 to 0.4 pH units is possible this century.¹

Calcifiers

Acidification reduces the carbonate ions that calcifying organisms use to build calcium carbonate shells and skeletons, making calcification harder for many corals, molluscs and shelled plankton.¹ Responses vary between species, which is worth discussing with older students.

Sources

1. NOAA PMEL and Climate.gov. The origin and impacts of ocean acidification, with Richard Feely. climate.gov
2. World Ocean Review 7 (2021). The ocean is acidifying. worldoceanreview.com

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