

Ocean Acidification

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15 What is ocean acidification and why does it matter?

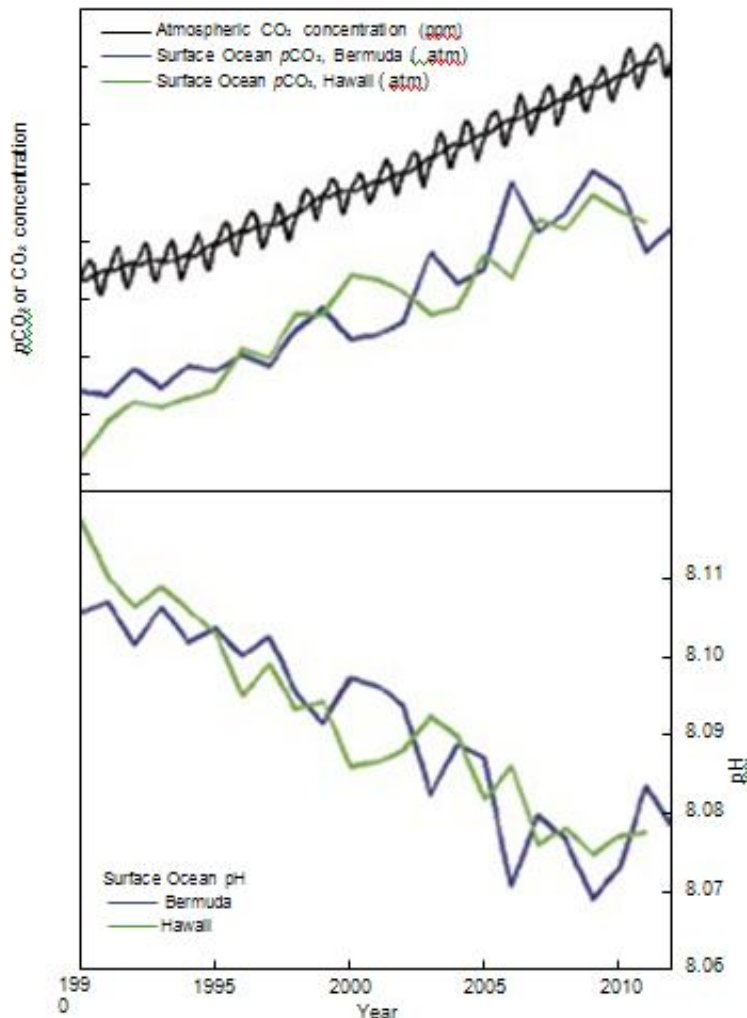


figure 7. As CO₂ in the air has increased, there has been an increase in the CO₂ content of the surface ocean (upper box), and a decrease in the seawater pH (lower box). Source: adapted from Dore et al. (2009) and Bates et al. (2012).

Direct observations of ocean chemistry have shown that the chemical balance of seawater has shifted to a more acidic state (lower pH) [Figure 7]. Some marine organisms (such as corals and some shellfish) have shells composed of calcium carbonate which dissolves more readily in acid. As the acidity of sea water increases, it becomes more difficult for them to form or maintain their shells.

CO₂ dissolves in water to form a weak acid, and the oceans have absorbed about a third of the CO₂ resulting from human activities, leading to a steady decrease in ocean pH levels. With increasing atmospheric CO₂, the chemical balance will change even more during the next century. Laboratory and other experiments show that under high CO₂ and in more acidic waters, some marine species have misshapen shells and lower growth rates, although the effect varies among species. Acidification also alters the cycling of nutrients and many other elements and compounds in the ocean, and it is likely to shift the competitive advantage among species, with as-yet-to-be-determined impacts on marine ecosystems and the food web.

Source: NAS

URL: <http://dels.nas.edu/resources/static-assets/exec-office-other/climate-change-QA.pdf>

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A NOAA-led research team has found the first evidence that acidity of continental shelf waters off the West Coast is dissolving the shells of tiny free-swimming marine snails, called pteropods, which provide food for pink salmon, mackerel and herring, according to a [new paper](#) published in *Proceedings of the Royal Society B*.

http://www.noaa.gov/stories/2014/20140430_oceanacidification.html