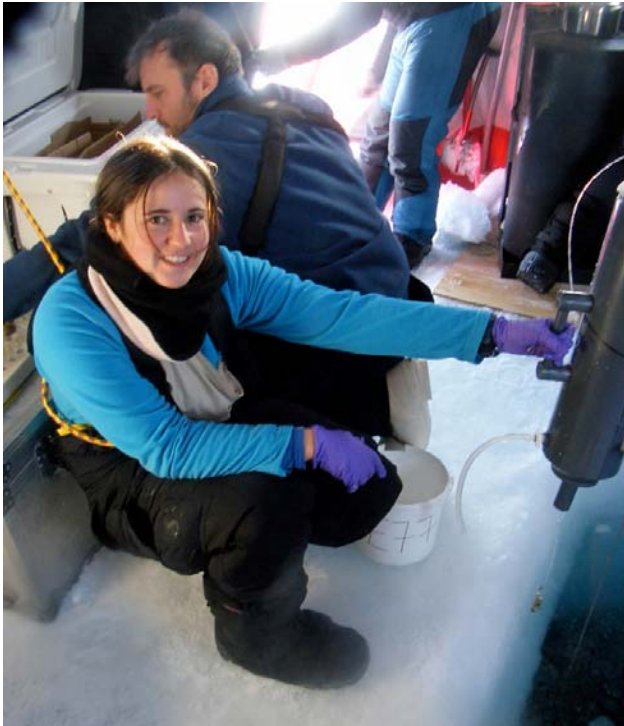


Ocean acidification



Continued buffering relies on there being enough chalk in the water to cope with the increased levels of carbon dioxide being dissolved into the seas, but this is a slow process and happens over thousands of years. So the rate of buffering at the moment does not match the rate of carbon dioxide addition and the ocean buffering system is not able to prevent the rapid decrease in pH that we are seeing in the oceans today. Since the beginning of the Industrial Revolution, there has already been a 0.1 drop in pH level. Models predict that the pH level will continue to lower (become more acid) to 7.7 in the next 100 years and to 7.4 in 300 years.

- This may seem like a small amount but the impact can be quite large. For example, your and my blood pH is kept constant by processes in our bodies. If this pH level changed by 0.1 in either direction, it would be time to call an ambulance and take you straight to hospital. All organisms need to regulate their internal pH and marine creatures are no exception. The difference is that many marine organisms are more dependent on the ocean to act as a pH regulator. It is also important for those organisms that have shells made of calcium carbonate – they find it difficult to maintain their shells, which start to dissolve as the pH decreases (just like in a fizzy drink, only much slower).
- The Arctic acts as a bellwether for acid levels in our seas and their impact on the marine ecosystem. Acidification is thought to happen here faster than anywhere else.
- Ice Base Scientist Dr. Ceri Lewis, from the University of Exeter, explains: "Within only a few decades, an increase in ocean acidity may cause seawater to become corrosive to the carbonate shells of the smaller marine creatures that are so abundant in our marine ecosystems, with potentially serious consequences for both them and the larger marine fish and mammals that rely on them for food.
- "Here at the Ice Base we're running a series of experiments with copepods collected during special plankton trawls of the Arctic Ocean. We're seeing how they'll respond to pH levels expected in 100 and 300 years, according to predictions provided by the IPCC (Intergovernmental Panel on Climate Change). You might say we're sending them into the future!"

Edited from an original blog on the Catlin Arctic Survey website by Dr. Helen Findlay, pictured above