Southern Cross University
National Marine Science Centre

Lab Study: The Acid Test - Ocean Acidification

Activity Outline

Year Level 11 & 12
Global climate change is in the news daily. We hear about increased air temperatures, glaciers melting and more extreme weather events, but other effects may include changes to natural biogeochemical cycles, such as the carbon cycle. Although the natural absorption of CO^2 by the world's oceans may mitigate the climatic effects of anthropogenic emissions of CO^2, the resulting decrease in pH could have negative consequences for oceanic organisms. In this activity, students will review the carbon cycle, test how an increase in dissolved CO^2 can affect the pH of seawater and hypothesize on how this could affect calcium carbonate-based organisms.

Key terms
carbon cycle, anthropogenic factors, pH, calcium carbonate, seawater, climate change, water temperature, atmospheric compounds, dissolved compounds, carbonic acid, ocean currents, calcium dependent organisms, ocean acidification

Objectives and outcomes
This activity is designed to incorporate outcomes from the following Content Endorsed Course 6 syllabuses.

BIOLOGY Stage 6 Syllabus (2002)
Objectives P2, 3, 4, 5, 11, 12, 13, 14, 15, 16
Objectives H2, 3, 4, 5, 11, 12, 13, 14, 15, 16

EARTH AND ENVIRONMENTAL SCIENCE Stage 6 Syllabus (2002)
Objectives P2, 3, 4, 5, 10, 11, 12, 13, 14, 15, 16
Objectives H2, 3, 4, 5, 10, 11, 12, 13, 14, 15, 16

GEOGRAPHY Stage 6 Syllabus (1999)
Objectives P4, 5, 6, 7, 8, 9, 11, 12
Objectives H1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12

CHEMISTRY Stage 6 Syllabus (2002)
Objectives P2, 4, 5, 9, 11, 12, 13, 14, 15, 16
Objectives H2, 4, 5, 9, 11, 12, 13, 14, 15, 16

MARINE SCIENCE Stage 6 Syllabus (2000)

Core Module 2; Optional Module 6

Key competencies

Working scientifically
Collecting, analysing and organising information
Communicating ideas and information
Using technology
Working with others and in teams