

# Lab Study: Ocean Climate Change

## Activity Outline

### Year Level 10-11

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<sub>2</sub> by the world's oceans may mitigate the climatic effects of anthropogenic emissions of CO<sub>2</sub>, the resulting decrease in pH could have negative consequences for oceanic organisms. In this activity, students will review the carbon cycle, understand how a higher concentration of CO<sub>2</sub> causes atmospheric warming, test how an increase in dissolved CO<sub>2</sub> 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

#### Student Outcomes:

##### Science Syllabus

Year 10: ACSSU189, ACSIS198, ACSIS199, ACSIS200, ACSIS204, ACSIS205, ACSIS208

##### Chemistry Syllabus

Year 11: ACSCH074, ACSCH075, ACSCH076, ACSCH087, ACSCH088

##### Geography Syllabus:

Year 10: ACHGK070, ACHGK071, ACHGK073, ACHGK074, ACHGK075, ACHGS076, ACHGS079

Year 11: ACHGE022, ACHGE023, ACHGE024, ACHGE025, ACHGE026, ACHGE027

##### Earth and Environmental Science:

Year 11: ACSES039, ACSES043, ACSES048, ACSES049, ACSES050, ACSES051, ACSES052

##### Marine and Aquaculture Technology Syllabus

Year 10: Module 39; Coastal Management

Year 11: Core Module 2; Optional Module 6

#### Key competencies

Collecting, analysing and organising information

Communicating ideas and information

Working with others and in teams

Working scientifically

Using technology