

SEA LEVEL RISE QUIZ

Preparation

- ▶ Play the following ABC Catalyst segment for students
<https://www.abc.net.au/catalyst/sea-level-rise/11014820>
- ▶ Provide students with the attached question and answer sheet, or write questions on the board, for students to copy into their science books
- ▶ Following watching the Catalyst segment, allow students 15mins to complete the answers to the questions on their answer sheet, or science book.
- ▶ Provide students with a print out of the Brisbane and Gold Coast predicted sea level rise maps, along with Cairns Regional Council storm tide maps @ <https://www.cairns.qld.gov.au/community-environment/natural-disasters/storm-surge>
- ▶ Hold a class discussion to share responses to the questions

Questions and answers

- Q1: How much lower do scientists estimate the sea level was 25,000 years ago? Why was the sea level at this point?**
- A1: 120m lower than modern sea levels. This was caused by the last ice age.
- Q2: When did scientists first notice a rise in modern sea levels? Where was this recorded?**
- A2: The 19th century, in the 1840s at Port Arthur penal colony. An accurate high tide marker was etched into the seawall of the prison.
- Q3: How high have sea levels risen at Port Arthur since 1840? What impact has this had?**
- A3: 13cm. This has caused flooding of Port Arthur on a regular basis.
- Q4: How fast do scientists predict the sea level is rising per year?**
- A4: 3mm per year, however this may increase over time.
- Q5: Scientists predict that average temperatures will be 2 degrees Celsius warmer at the end of this century. How high was the sea level recorded by Dr Mick O'Leary the last time the earth's temperature was 2 degrees Celsius warmer than modern temperatures?**
- A5: Seven to nine metres higher than current sea levels.
- Q6: If scientists predict that average temperatures will be 2 degrees Celsius warmer at the end of this century, will sea levels be 9 metres higher by the end of this century, as they were the last time temperatures were 2 degrees Celsius warmer? Why/why not?**
- A6: No, it is predicted that there will be a lag effect in the time between the earth becoming 2 degrees Celsius warmer, and sea levels rising to nine metres, as ice sheets take a very long time to melt.
- Q7: How much higher could sea levels be by the end of this century?**
- A7: One metre
- Q8: How do you think a sea level rise of 1 metre will affect major cities in Australia that are built on low-lying land?**
- A8: No specified answer, question aimed at starting discussion.
- Q9: Think about where you live in the Cairns region, and referring to the storm surge zone maps from the Cairns Regional Council, what impact do you estimate an increase in sea levels by 1m will have on your local area? How do you think it will affect the things you like to do in Cairns? (eg going to the Beach, recreation at the esplanade)**
- A9: No specified answer, question aimed at starting discussion



Curriculum links

7	Geography	ASHGK042: Geographical Knowledge and Understanding Unit 1: Water in the world	Causes, impacts and responses to an atmospheric or hydrological hazard
7	Geography	ACHGS053: Geographical Inquiry and Skills; Communicating	Present findings, arguments and ideas in a range of communication forms selected to suit a particular audience and purpose; using geographical terminology and digital technologies as appropriate
7	Science	ACSHE223: Science as a Human Endeavour; Nature & development of science	Science knowledge can develop through collaboration and connecting ideas across the disciplines of science
7	Science	ACSHE120: Science as a Human Endeavour; Use & influence of science	Science and technology contribute to a range of contemporary issues; these solutions may impact on other areas of society and involve ethical considerations
7	Humanities & Social Science	ACHASSK183: Knowledge and Understanding; Geography	The way that flows of water connect places as they move through the environment and the way these affect places
7	Humanities & Social Science	ACHASSK185: Knowledge and Understanding; Geography	The nature of water scarcity and ways of overcoming it, including studies drawn from Australia and West Asia and/or North Africa
7-8	Health & Physical Education	ACPPS072: Personal, Social and Community health; Being healthy, safe and active	Practise and apply strategies to seek help for themselves or others
7-8	Health & Physical Education	ACPPS073: Personal, Social and Community Health; Being healthy, safe and active	Investigate and select strategies to promote health, safety and wellbeing
8	Science	ACSHE135: Science as a Human Endeavour; Use & influence of science	Science and technology contribute to finding solutions to a range of contemporary issues; these solutions may impact on other areas of society and involve ethical considerations
8	Science	ACSHE136: Science as a Human Endeavour; Use & influence of science	Science understanding influences the development of practices in areas of human activity such as industry, agriculture and marine and terrestrial resource management
8	Geography	ACHGK053: Geographical Knowledge; Landforms & landscapes	The causes, impacts and responses to a geomorphological hazard
9	Science	ACSHE160: Science as a Human Endeavour; Use & influence of science	People use scientific knowledge to evaluate whether they accept claims, explanations or predictions, and advances in science can affect people's lives, including generating new career opportunities
9	Science	ACSSU180: Science Understanding; Earth & space sciences	The theory of plate tectonics explains global patterns of geological activity and continental movement
9	Geography	ACHGK063: Geographical Knowledge; Biomes & food security	The challenges of food production, including land and water degradation, shortage of fresh water, competing land uses, and climate change, for Australia and other areas of the world

Classroom activity

Classroom resources provided by Cairns Regional Council



9	Geography	ACHGS069: Geographical Inquiry & Skills; Interpreting, analysing & concluding	Identify how geographical information systems (GIS) might be used to analyse geographical data and make predictions
9	Geography	ACHGK063: Geographical knowledge and understanding Unit 1: Biomes & food security	Challenges to food production, including land and water degradation, shortage of fresh water, competing land uses, and climate change, for Australia and other areas of the world
10	Geography	ACHGK070: Geographical Knowledge and Understanding Unit 1: Environmental change and management	Human-induced environmental changes that challenge sustainability

Sea level rise quiz

Q1: How much lower do scientists estimate the sea level was 25000 years ago? Why was the sea level at this height?

Q2: When did scientists first notice a rise in modern sea levels? Where was this recorded?

Q3: How high have sea levels risen at Port Arthur since 1840? What impact has this had?

Q4: How fast do scientists predict the sea level is rising per year ?

Q5: Scientists predict the earth to be 2degrees warmer at the end of this century, how high was the sea level recorded by Dr Mick O'leary the last time the earth's temperature was 2degrees warmer than modern temperatures?

Q6: If scientists predict that average temperatures will be 2degrees warmer at the end of this century, will sea levels also be 9m higher by the end of this century, as they were the last time temperatures were 2 degrees warmer? Why/why not?

Q7: How high could sea levels be by the end of this century?

Q8: How do you think a sea level rise of 1metre will affect major cities in Australia, which are built on low lying land?

Q9: Think about where you live in the Cairns region, and referring to the storm surge zone maps from the Cairns Regional Council, what impact do you estimate an increase in sea levels by 1m will have on your local area? How do you think it will affect the things you like to do in Cairns? (eg going to the beach, recreation at the Esplanade)
