Classroom activity

Classroom resources provided by Cairns Regional Council

Natural disasters

SEA LEVEL RISE QUIZ

Instructions:

1. Play the following ABC Catalyst segment for students, http://www.abc.net.au/catalyst/stories/4045476.html
2. Provide students with the attached question and answer sheet, or write questions on the board, for students to copy into their science books
3. Following watching the Catalyst segment, allow students 15mins to complete the answers to the questions on their answer sheet, or science book.
4. 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 (see http://www.cairns.qld.gov.au/community-information/cyclone-emergency-information/evacuation-maps-conditions or ask the Cairns Disaster Management Unit for hard copies)
5. Hold a class discussion to share responses to the questions, reflecting on the answers provided by the teacher's edition of the question and answer sheet

Answers:

A1: 120m lower than modern sea levels. This was caused by the last ice age

A2: The 19th century, in the 1840's at Port Arthur penal colony an accurate high tide marker was etched into the seawall of the prison.

A3: 13cm. This has caused flooding of the Port Arthur on a regular basis

A4: 3mm per year, however this may increase over time

A5: Seven to nine metres higher than current sea levels

A6: No, it is predicted that there will be a lag effect in the time between the earth becoming degrees warmer, and sea levels rising to nine metres, as ice sheets take a very long time to melt, many centuries

A7: One metre

A8: No specified answer, question aimed at starting discussion

A9: No specified answer, question aimed at starting discussion

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Curriculum links

11-12	Science	ACSES005: Introduction to Earth systems Science Inquiry Skills	Interpret a range of scientific and media texts and evaluate processes, claims and conclusions by considering the quality of available evidence; use reasoning to construct scientific arguments
		ACSES098: Science Understanding; the cause and impacts of Earth hazards	Earth hazards result from the interactions of Earth systems and can threaten life, health, property or the environment; their occurrence may not be prevented but their effect can be mitigated
		ACSES099: Science understanding: the cause and impacts of Earth hazards	Plate tectonic processes generate earthquakes, volcanic eruptions and tsunamis; the occurrence of those events affects other Earth processes and interactions (eg ash clouds influence global weather)
		ACSES101: Science understanding: the cause and impacts of Earth hazards	Major weather system generate cyclones, flood events and droughts; the occurrence of these events affects other Earth processes and interactions (for example, habitat destruction and ecosystem regeneration)
		ACSES102: Science understanding: The cause and impact of Earth hazards	Human activities, including land clearing, can contribute to the frequency, magnitude and intensity of some natural hazards (for example drought, flood, bushfire, landslides) at local and regional scales
		ACSES103: Science understanding: The cause and impact of Earth hazards	The impact of natural hazards on organisms, including humans, and ecosystems depends on the location, magnitude and intensity of the hazard, and the configuration of Earth materials influencing the hazard (for example biomass, substrate)
	Geography	ACHGE012: Geographical Knowledge and Understanding Overview of natural and ecological hazards	An overview of the nature of natural hazards (atmospheric, hydrological and geomorphic) and ecological hazards
		ACHGE013: Geographical Knowledge and Understanding Overview of natural and ecological hazards	The concept of risk as applied to natural and ecological hazards
		ACHGE014: Geographical Knowledge and Understanding Overview of natural and ecological hazards	The temporal and spatial distribution, randomness, magnitude, frequency and scale of spatial impact of natural and ecological hazards at a global scale
		ACHGE015: Geographical Knowledge and Understanding Overview of natural and ecological hazards	The role of spatial technologies in the study of natural and ecological hazards

Sea level rise quiz

Question 1:
How much lower do scientists estimate the sea level was 25000 years ago? Why was the sea level at this height?

Question 2:
When did scientists first notice a rise in modern sea levels? Where was this recorded?

Question 3
How high have sea levels risen at Port Arthur since 1840? What impact has this had?

Question 4:
How fast to scientists predict the sea level is rising per year ?

Question 5:
Scientists predict the earth to be 2degrees warmer at the end of this century, how high was the sea level recorded by Dr Mick Oleary the last time the earth's temperature was 2degrees warmer than modern temperatures?

Question 6:
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 2degrees warmer? Why/why not?

Question 7:
How high could sea levels be by the end of this century?

Question 8:
How do you think a sea level rise of 1metre will affect major cities in Australia, which are built on low lying land?

Question 9:
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)