



Climate change

Impact on natural disasters in Qld

Preparation

This lesson will inform students of the changes to natural disasters in Queensland that are expected to occur with the changes in climatic patterns predicted over the next century.

- ▶ Provide students with a print out, or PDF from the Federal Environment department on the expected consequences of Climate Change on Natural Disasters within Queensland
<http://www.climatechange.gov.au/climate-change/climate-science/climate-change-impacts/queensland>

- ▶ Give students sufficient time to read the article, either within class time or as a homework task
- ▶ Ask students to make notes of the key findings of the article. Suggested reading time: 15 minutes.
- ▶ Provide students with the following questions to review whilst reading the article. Suggested time for answering questions: 15 minutes
- ▶ Following reading the article conduct an in class discussion to go over students responses to the questions. Suggested time for in class discussion: 15minutes

Quiz questions and answers

Q1: What are the changes to the coastal zone that have been experienced over the last 15years in comparison the sea levels from the 20th century? How is this expected to affect Queensland's coastal zone into the future?

Answer

- ▶ Sea levels in the 20th century rose by 1.7mm per year.
- ▶ Within the last 15 years this has changed to 3.2mm per year.
- ▶ This will lead to a 1.1m change in sea levels over the next century.
- ▶ This will affect the coastal zone by inundating between 48,300 and 67,700 residential buildings and 4700km of road; 570km of railways and 1440 commercial buildings worth \$12.9 billion, \$2.3 billion and \$15 billion respectively.

Q2: How is Climate change likely to influence the frequency, strength and location of tropical cyclones in Queensland over the coming century?

Answer

- ▶ There is expected to be a reduction in the total number of cyclones, but a higher proportion of severe tropical cyclones of category 3 and above.
- ▶ Cyclones are also expected to be able to form and decay 100km south of current limits by 2100.

Q3: How is climate change expected to change rainfall patterns and events in the next century? What kinds of natural disasters will these changes affect?

Answer

- ▶ Overall rainfall for most of the state is expected to decline however the amount of extreme rainfall events will increase.
- ▶ Reductions in rainfall will likely increase drought events and bushfires.
- ▶ Increases in extreme rainfall events will increase flooding events for Queensland

Q4: How will Climate Change affect human health in Queensland?

Answer

- ▶ Increases in days above 35 degrees Celsius are expected to lead to heat related deaths.
- ▶ The projected change in temperature related deaths by 2070 in Queensland is 4131.

Q5: With the knowledge you now have about how climate change will affect natural disasters over the coming century, how will natural disasters affect the natural environment?

Answer

- ▶ Increases in atmospheric CO2 will increase ocean acidification.
- ▶ Sea surface temperature increases will increase coral bleaching events.
- ▶ Increases in sea surface temperatures will result in 34-65% of coral reefs being above the critical limit for bleaching.
- ▶ Temperature increases will cause cloud and

highland rainforests to become reduced in area, and more fragmented.

- ▶ Australian tropical rainforest vertebrates are likely to all become extinct with a 2degree Celsius change in average temperatures.

Q6: How will the effects on the natural environments affect communities living in disaster prone areas?

Answer:

- ▶ Great Barrier Reef Tourism will be severely affected which employees 58000 people and is worth \$5.4billion.
- ▶ Agriculture will also be affected with a 33.5% decline in beef production, and 17% decline in sugar production by 2050.

Q7: As a class discuss ways in which you think Australia can reduce the risk of climate change to Australia and ways in which Queenslanders could adapt to the predicted changes climate change will cause to natural disasters.

Curriculum links

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 and influence of science	Science and technology contribute to finding solutions to a range of contemporary issues; these solutions may involve ethical considerations
7	Science	ACSHE121: Science as a Human Endeavour; Use and influence of science	People use science understanding and skills in their occupations and these have influenced the development of practices in areas of human activity
7	Geography	ACHGK042: Geographical knowledge and understanding Unit 1: Water in the world	Causes, impacts and responses to an atmospheric or hydrological hazard
7	Humanities & Social Science	ACHASSK192: Knowledge and Understanding, Geography	Strategies used to enhance the liveability of places, especially for young people, including examples from Australia and Europe
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
8	Science	ACSHE135: Science as a Human Endeavour; Use and 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 and 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	ACHGK051: Geographical Knowledge and understanding Unit 1: Landforms and landscapes	Human causes and effects of landscape degradation
8	Geography	ACHGK053: Geographical Knowledge and Understanding Unit 1: Landforms and landscapes	The causes, impacts and responses to a geomorphological hazard

Classroom activity

Classroom resources provided by Cairns Regional Council



8	Geography	ACHGK059: Geographical Knowledge and Understanding Unit 2: Changing nations	Management and planning of Australia's urban future
9	Science	ACSHE160: Science as a Human Endeavour: Use and 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 & Understanding; Biomes & food security	The 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
9	Geography	ACHGS069: Geographical Inquiry; Interpreting, analysing & concluding.	Identify how geographical information systems (GIS) might be used to analyse geographical data and make predictions
10	Science	ACSHE191: Science as a Human Endeavour; Nature & development of science	Scientific understanding, including models and theories, is contestable and is refined over time through a process of review by the scientific community
10	Geography	ACHGK070: Geographical Knowledge & Understanding Unit 1: Environmental change and management	Human-induced environmental changes that challenge sustainability
10	Geography	ACHGK073: Geographical Knowledge & Understanding Unit 1: Environmental change and management	The application of systems thinking to understanding the causes and likely consequences of the environmental change being investigated

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- ▶ Make notes on key points of the article
- ▶ Read the questions below and provide answers in the space provided following completion of the article
- ▶ Participate in the class discussion by sharing and comparing your answers to the questions with your classmates.

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Q4: How will climate change affect human health in Queensland?

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