

# Earthquake

## NEWCASTLE EARTHQUAKE

The earthquake lesson plan provides teachers and students with an opportunity to investigate the 1989 Newcastle earthquake through individual or classroom activities.

### Objectives

The objective of this lesson plan is to ensure that students are able to:

- ▶ know the steps to take during an earthquake.
- ▶ recall most or all of the information learned on how to protect themselves and survival in an earthquake.
- ▶ understand the causes and effects of earthquakes.
- ▶ be assessed on their learning and knowledge of earthquakes.

### The Newcastle Earthquake

Australia's sixth largest city, Newcastle was devastated by an earthquake at 10.27 am on 28 December 1989.

The earthquake measured 5.6 on the Richter scale and was the first earthquake in Australia that resulted in death and destruction - 13 people died, more than 160 people sustained injury and over 10,000 buildings in Newcastle were damaged.

### Get the facts

Students can get the facts on the Newcastle Earthquake by using these resources:

- ▶ General information of earthquakes and survival
- ▶ Geoscience Australia
- ▶ Earthquake information – University of Queensland (UQ) website
- ▶ Earthquake Centre – USGS website

### Newcastle Earthquake information

- ▶ City of Newcastle website – Newcastle Earthquake
- ▶ Newcastle Earthquake page – All shook up website
- ▶ Jacaranda online – Newcastle Earthquake worksheet

### Take time to investigate!

Students can investigate the earthquake individually, in pairs or groups to find the answers to the following:

1. What is an epicentre? Where was the epicentre in this earthquake?
2. What are the main causes of earthquakes? What was the cause of the Newcastle earthquake?
3. How far away from the epicentre was the earthquake felt?
4. What is the measurement used for earthquakes? How does this scale work?
5. How did the emergency services react to the earthquake?
6. How different would it have been if it wasn't school holidays when the earthquake struck?
7. What else could be done to prevent people from dying in earthquakes?
8. How likely is the Cairns region to be affected by an earthquake? Discuss in your class with your teacher.

## Curriculum links

11	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
11	Geography	ACHGE013: Geographical Knowledge and Understanding; Overview of natural and ecological hazards	The concept of risk as applied to natural and ecological hazards
11	Geography	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
11	Geography	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
11	Geography	ACHGE023: Geographical Knowledge and Understanding; Depth and study of an ecological hazard	The magnitude, frequency, duration, temporal spacing and effects of the hazard
11	Geography	ACHGE024: Geographical Knowledge and Understanding; Depth and study of an ecological hazard	The diffusion and resulting spatial distribution of the hazard, and how an understanding of biophysical and human processes can be used to explain its spread
11	Geography	ACHGE025: Geographical Knowledge and Understanding; Depth and study of an ecological hazard	The physical and human factors that explain why some places are more vulnerable than others
11-12	Earth and Environmental Science	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
11-12	Earth and Environmental Science	ACSES099: Science Understanding; The cause and impacts of Earth hazards	Plate tectonic processes generate earthquakes, volcanic eruptions and tsunamis; the occurrence of these events affects other Earth processes and interactions (eg ash clouds influence global weather)
11-12	Earth and Environmental Science	ACSES100: Science Understanding; The cause and impacts of Earth hazards	Monitoring and analysis of data, including earthquake location and frequency data and ground motion monitoring, allows the mapping of potentially hazardous zones, and contributes to the future prediction of the location and probability of repeat occurrences of volcanic eruptions, earthquakes and tsunamis
11-12	Earth and Environmental Science	ACSES100: Science Understanding; The cause and impacts of Earth hazards	Monitoring and analysis of data, including earthquake location and frequency data and ground motion monitoring, allows the mapping of potentially hazardous zones, and contributes to the future prediction of the location and probability of repeat occurrences of volcanic eruptions, earthquakes and tsunamis

# Experiment

Classroom resources provided by Cairns Regional Council



11-12	Earth and Environmental Science	ACSES101: Science Understanding; The cause and impacts of Earth hazards	Major weather systems generate cyclones, flood events and droughts; the occurrence of these events affects other Earth processes and interactions (eg habitat destruction, ecosystem regeneration)
11-12	Earth and Environmental Science	ACSES102: Science Understanding; The cause and impacts of Earth hazards	Human activities, including land clearing, can contribute to the frequency, magnitude and intensity some natural hazards (eg drought flood, wildfires & landslides) at local and regional scales
11-12	Geography	ACHGEE013: Geographic Knowledge & Understanding; Overview of natural and ecological hazards	The concept of risk as applied to natural and ecological hazards
12	Earth and Environmental Science	ACSES094: Science as a human endeavour; The cause and impact of earth hazards	People can use scientific knowledge to inform the monitoring, assessment and evaluation of risk
12	Earth and Environmental Science	ACSES098: Science Understanding; The cause and impact 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
12	Earth and Environmental Science	ACSES099: Science Understanding; The cause and impact of Earth Hazards	Plate tectonic processes generate earthquakes, volcanic eruptions and tsunamis; the occurrence of these events affects other Earth processes and interactions (for example, ash clouds influence global weather)