

Video summary	Before watching	While watching
<p>This video explores what a tsunami is and what causes them, focusing on two recent tsunamis that rocked Japan and Indonesia, each with very different causes.</p> <p>On 11 March 2011 a huge underwater earthquake happened off of the Japanese coast, causing a series of powerful tsunami waves which destroyed the reactors of the Fukushima Nuclear Power Plant, releasing radiation into the atmosphere.</p> <p>On 22 December 2018 an eruption at Anak Krakatau caused an underwater landslide, which led to tsunami waves striking the coastline of Java, Indonesia.</p> <p>This video concludes with the impact of tsunamis and how they can differ dependent on the warning systems in place and the population density of the location affected.</p>	<p>Ask students to recap the causes of an earthquake. This is a good opportunity to revisit the different types of plate boundaries and the hazards that occur at each.</p> <p>Ask students to give suggestions on what a tsunami is and what the impact of a tsunami might be. Can students suggest any locations where tsunamis have happened - for example, the 2004 Boxing Day Tsunami in the Indian Ocean.</p> <p>Introduce key terms such as:</p> <p>Tsunami: a series of large, destructive waves that can be caused by earthquakes, volcanic eruptions or landslides into the ocean.</p> <p>Displaced: the shifting of land or rock - for example, the movement of plates under the ocean can displace large areas of water, forcing them upwards to cause a tsunami wave.</p> <p>Nuclear power: electricity generated by power plants that derive the required heat from the process of fission in a nuclear reactor.</p> <p>Landslide: a collapse of a mass of earth or rock from a volcano, mountain or cliff.</p> <p>Magnitude: a measure of the size of an earthquake or the amount of energy released by an earthquake.</p>	<p>You may wish to stop at relevant points during this short video to pose questions and check understanding, or wait until the end. Useful questions might include:</p> <ul style="list-style-type: none"> • What is an earthquake? • What is a tsunami? • What would you see before a tsunami wave hits the coastline? • What caused the tsunami that hit Tohoku in Japan in 2011? • How did the people living in Tohoku know that there was going to be a tsunami? • What impacts did the tsunami have on Tohoku? • What happened at the Fukushima nuclear power plant? • What caused the tsunami that hit Java? • What impacts did the tsunami have on Java? • What factors can alter the impacts of a tsunami?
After watching		
<p>Look at a map of where tsunamis have occurred. Ask students to describe any patterns they can identify - for example, do they occur in certain oceans or close to plate boundaries?</p> <p>Task students to create a storyboard on how a tsunami is formed. Students can then use this to help them explain the causes of a tsunami. They may want to create two pathways - one for an earthquake being the cause, and the other for the volcanic eruption and landslide that occurred in the Sunda Strait.</p>		

After watching (continued)

Completing further research on one of the two events in the film, students could create a timeline of events from the cause to the response and recovery efforts. Students can then use this information to help them to create a table of impacts associated with tsunamis. This table should be divided into 'social', 'economic' and 'environmental' impacts. They may also want to consider what can affect the impacts and how they are experienced - for example, having working warning systems and evacuation routes.

With the research completed by students they could write a disaster report or a newspaper article which includes the causes, impacts and the responses to the tsunamis. They could take their report one stage further by giving recommendations on how governments and scientists could help coastal communities to prepare for tsunamis.

Curriculum notes	Where next?	Links
<p>This clip will be relevant for teaching Geography at KS3 in England, Wales and Northern Ireland and 3rd and 4th Level in Scotland.</p> <p>In the English National Curriculum this film can be used to help teach the following:</p> <ul style="list-style-type: none"> <i>Physical geography relating to geological timescales and plate tectonics.</i> 	<p>Tsunamis may be rare, but when they do occur they cause widespread destruction.</p> <p>Research the 2004 Indian Ocean tsunami. How does it compare to the two tsunamis studied in the film?</p> <p>On 26 December 2004 an earthquake with a magnitude of 9.1 struck off the coast of Sumatra, Indonesia. It caused widespread devastation across southeast and south Asia.</p> <p>Students could also research the limited warnings that were given. In 2004 tsunami warning technology was not as sophisticated as it is today. As a result of the 2004 tsunami, research and development was undertaken to improve early warning systems around the world.</p>	<p>Plate tectonics: https://www.bbc.co.uk/bitesize/topics/zn476sg/articles/zrcgr2p</p> <p>Plate margins and plate tectonics: https://www.bbc.co.uk/bitesize/topics/zqvb7v4/watch/zyk46rd</p> <p>Earthquakes and tsunamis: https://www.bbc.co.uk/bitesize/topics/zn476sg/articles/zc4rcmn</p>