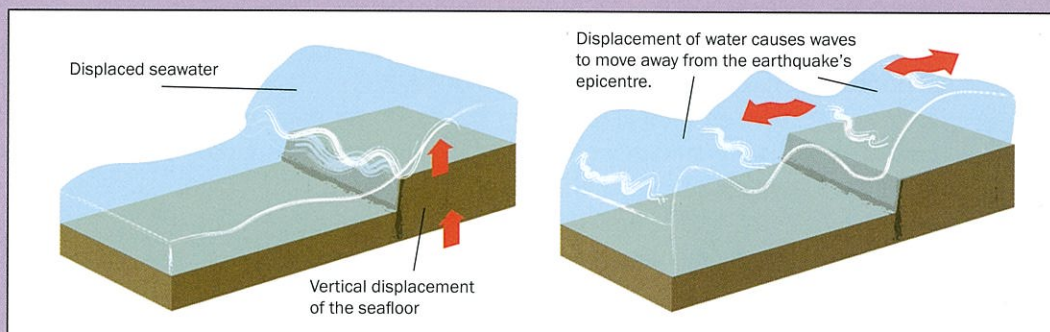


Boxing Day Tsunami (December 2004)

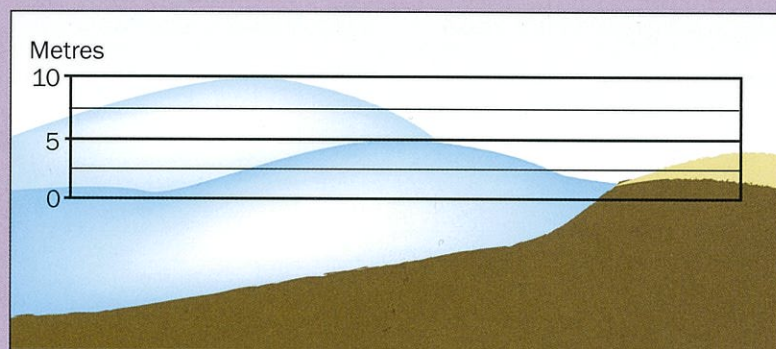
Processes causing tsunami

A tsunami forms when the energy of an underwater earthquake jolts the seafloor vertically by several meters displacing the massive volume of seawater above. When the displacement of water reaches the surface of the sea, large waves are formed and move away from the earthquake's epicentre.



5.8

In deep water, a tsunami's waves can travel at many hundreds of kilometres per hour. However, as they approach the shallower waters of coastlines, tsunami waves will slow down and increase in height.

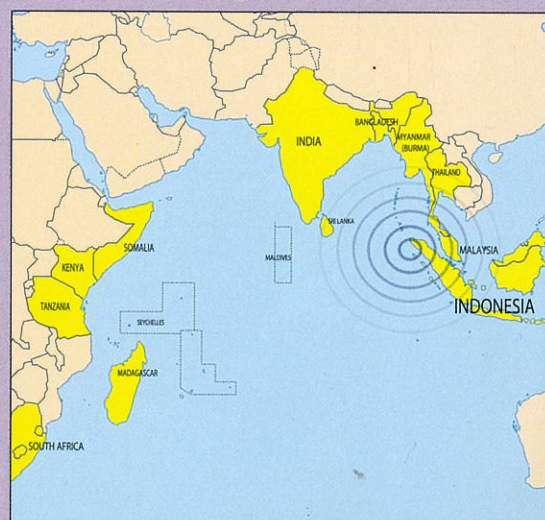


5.9

Background

On 26 December 2004, a deep sea earthquake with a magnitude of 9.1 caused the most destructive tsunami in recorded history. It was the largest earthquake since the 9.2 magnitude Alaskan earthquake of 1964, and was among the five largest earthquakes in the past century. The Boxing Day earthquake occurred in the Sunda subduction zone (off the west coast of the Indonesian island of Sumatra), where the Indo-Australian plate is sliding beneath the Eurasian plate.

The resulting tsunami, travelling at an estimated 500–1000km per hour away from the epicentre slowed to a mere 10km per hour as it neared the coastline but in doing so it increased in height to a devastating 24m as it neared the coast



5.10

Case Study – Global Focus

of Aceh Province in Indonesia. Within a period of 10 hours of the initial earthquake, the tsunami would go on to devastate the coastal regions of 15 countries with Indonesia, Sri Lanka, India, Thailand and Myanmar being most affected. In all, a total of 229,866 people were lost, including 186,983 dead and 42,883 missing.

Effects on the natural environment

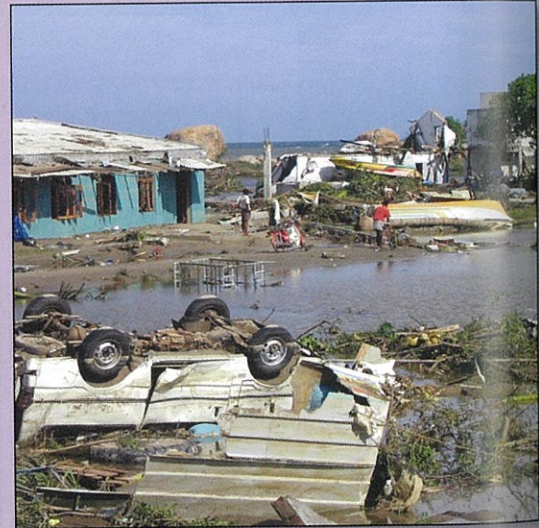
The Boxing Day tsunami had a significant effect on coastal ecosystems bordering the Indian Ocean. Not only did the tsunami's waves destroy dune systems, coral reefs, mangroves and coastal vegetation, but it also resulted in the contamination of groundwater supplies as a result of inundation.

Effect on social and economic activities

Despite the high death toll, many lives were saved from the effects of disease and hunger as a result of the immediate international humanitarian response that followed the disaster. Because the effects of the tsunami were so widespread, humanitarian aid was required to rebuild infrastructure and provide food, shelter and medical supplies. Of particular concern was the threat of diseases such as cholera, dysentery and typhoid which could spread easily in areas where population densities were high. Therefore the main priority of international aid groups was to provide sanitation facilities and fresh drinking water. To further reduce the risk of disease spreading in the days after the tsunami, considerable effort was spent burying bodies. Where the body was that of a foreign tourist, the body was temporarily frozen using dry-ice until a DNA sample could be taken for later identification.



The scale of the destruction cause by the tsunami was huge.



Many of the world's poorest people lost everything.

Gleebruk: April 04



Gleebruk: January 05



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Case Study – Global Focus



The impact on the community is far reaching.



Damage to buildings from the tsunami.

Preparation and response

Numerous government and non-governmental agencies around the world offered aid and other support to countries affected by the tsunami. The New Zealand government for example donated NZ\$62 million to support United Nations efforts and other international programmes. An RNZAF Hercules was also deployed to assist with evacuation and transportation of relief supplies. The New Zealand public also donated millions of dollars through a range of charitable organisations. Globally government and non-government agencies pledged US\$1.4 billion to the relief effort – a total well below the US\$5 billion needed according to the World Bank.

In June 2006, the Indian Ocean Tsunami Warning System was launched to provide warning to the inhabitants of the coastal areas bordering the Indian Ocean. The warning system consists of 25 seismographic stations relaying information to 26 national tsunami information centres, as well as three deep-ocean sensors. However, the system will only be effective if individual governments put plans into place that enable the efficient flow of information between tsunami information centres and those populations at risk.

The tsunami impacted some of the poorest people in Asia. Both large-scale industrial fishing fleets and boats belonging to subsistence fisherman were destroyed by the tsunami's numerous wave surges.

Tourism earnings were down in some areas in the months following the tsunami. For example, the coastal resorts of Thailand suffered from the reduced numbers of tourists. Both the earthquake and the resulting tsunami are thought to have affected shipping navigation in the Malacca Straits by changing the depth of the seabed and by disturbing navigational beacons. Compiling new navigational charts may take many years.



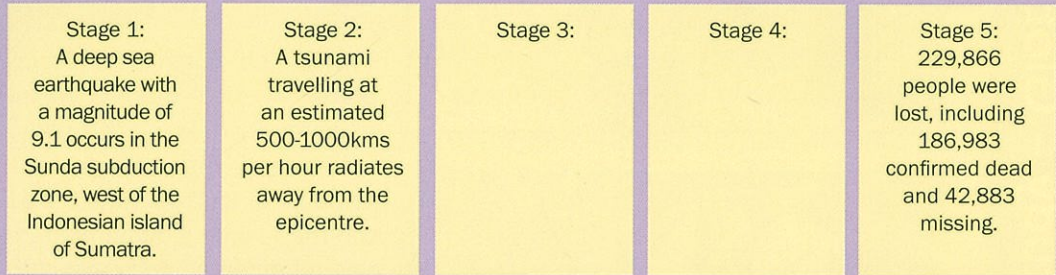
International aid is a necessity in such disasters.



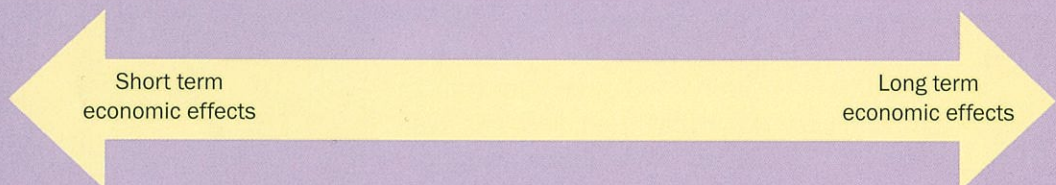
World Vision aid housing in Banda Aceh.

Global focus – The Boxing Day Tsunami

- 1 Why is the Boxing Day Tsunami considered a global event?
- 2 Using specific information from the text, copy and complete the following sequence of events diagram for the Boxing Day Tsunami.



- 3 Using the information from the text, decide which economic activities are more likely to recover in the short term and which activities are likely to take a longer period of time to recover, by placing the following activities on the continuum below.
 - Crop production
 - Subsistence fishing
 - Industrial fishing
 - Tourism
 - Shipping



- 4 Rank the following reasons why the Boxing Day Tsunami was so destructive, from most significant to least significant. Justify your answer.

