

The Disaster



THE DISASTER

We were terrified. Then the sea became very strange, with the water receding over 200 metres. Suddenly we saw that fish had been left on the beach, and some people were happy at their luck at finding them. They tried to gather them up, but then we saw a huge wave coming, and people tried to run and save themselves. But many people died because they were not fast enough. It was particularly bad for the children. All of the children in this village have died. About half of the 300 people from the village are gone.

Two men from Alu Naga village, a traditional settlement right on the beach next to the estuary. The remaining half kilometer to Alu Naga has been wrecked and is only usable by foot with some considerable difficulty.

THE EARTHQUAKE

Millions of Indonesian lives were about to change abruptly soon after 8am on Sunday morning, December 26, 2004, when the largest earthquake in 40 years shook Northern Sumatra.

The United States Geological Survey¹ measured the earthquake at 9.0 on the Richter scale, making it one of the largest recorded². The epicenter was some 150 kilometers south of Meulaboh and about 250 kilometers from Banda Aceh, the capital of Aceh province. The earthquake originated at a shallow point, some 30 kilometers below the Indian Ocean. In terms of energy released, it is the worst natural event in Indonesia since the eruption of Krakatoa in 1883, according to the Badan Meteorologi dan Geofisika (BMG or the National Meteorology and Geophysics Agency).

Map 2.1 The December 26, 2004 Earthquake



than 100 kilometers and a displacement of about 15 meters.

The earthquake was a megathrust event, where one tectonic plate subducts beneath another. In this case, the quake occurred along the boundary of the India and Burma plates, along the Sunda Trench. The India plate moves an average of 6 centimeters per year in relation to the Burma plate, and generates strike-slip faulting several hundred kilometers east of the Sunda Trench (see map 2.1 left). Many strong aftershocks followed the initial earthquake. Analyses of their characteristics indicate that nearly 1200 kilometers of the plate boundary fractured and slipped, with a likely width of more

¹ See <http://neic.usgs.gov/neis/>

² The following are the largest measured earthquakes: Valdivia, Chile, 1960, magnitude 9.5; Prince Williams Sound, Alaska, 1964, magnitude 9.2; Andeanof Islands, Alaska, 1957, magnitude 9.1; and Kamchatka, 1952, magnitude 9.0

THE TSUNAMI

The earthquake generated a large tsunami that traveled rapidly throughout the Indian Ocean, striking beachfront areas in many countries with catastrophic results in Indonesia, Thailand, Sri Lanka, India and Bangladesh, as well as other Asian and East African countries. More than 150,000 people died with many more still missing, while infrastructure, productive activities and the natural environment were either destroyed or damaged.

The tsunami traveled at high speeds. BMG estimates the tsunami took 45 minutes to reach places 120 kilometers from the epicenter; in 2 hours, it had traveled 1000 kilometers.³ Without effective early warning systems, people were unaware of the incoming tsunami, and the death toll was extremely high as a result, as shown in Table 2.1.

Table 2.1 Human Toll in the Asian Earthquake and Tsunami in 2004⁴

Continent and Country	Deaths	Missing	Displaced
Asia	157,314	27,303	1,162,006
Indonesia	110,229	12,132	703,518 ⁵
Sri Lanka	30,899	6,034	425,620
India	10,672	5,711	NA
Thailand	5,303	3,396	NA
Maldives Is.	81	21	21,663
Malaysia	68	6	8,000
Myanmar	59	3	3,205
Seychelles	3	NA	NA
Africa	150		5,000
Somalia	150	NA	5,000
Total	157,464	27,303	1,167,006

Records show the earthquake and associated tsunami is the second most lethal event of its kind after the 1976 Tangshan earthquake in China that killed an estimated 255,000 people.

³ Personal communication from the Director, Badan Meteorologi dan Geofisika, Jakarta, 9 January 2004.

⁴ Regional overview data shown up to 14 January 2005. Source: UN/OCHA Reliefweb.

⁵ UN/OCHA situation report, January 17, 2005 indicates the IDP estimate may be reduced by around 100,000 to 603,518 people

Box 2.1 Other Notable Tsunami

July 17, 1998: An offshore quake triggers a wave that strikes the north coast of Papua-New Guinea, killing some 2,000 people and leaving thousands more homeless.

August 16, 1976: A tsunami kills more than 5,000 people in the Moro Gulf region of the Philippines.

March 28, 1964: The Good Friday earthquake in Alaska sends out a wave swamping much of the Alaskan coast and destroying three villages. The wave kills 107 people in Alaska, four in Oregon and 11 in California as it sweeps down the US West Coast.

May 22, 1960: A wave reported as up to 35 feet high kills 1,000 people in Chile and causes damage in Hawaii, where 61 people die, and in the Philippines, Okinawa and Japan as it sweeps across the Pacific.

April 1, 1946: An Alaskan quake generates a tsunami that destroys North Cape Lighthouse, killing five. Hours later the wave arrives at Hilo, Hawaii, killing 159 people and doing millions of dollars in damage.

January 31, 1906: A devastating offshore quake submerges part of Tumaco, Colombia, and washes away every house on the coast between Rioverde, Ecuador, and Micay, Colombia. Death toll estimated at 500 to 1,500 people.

June 15, 1896: The Sanriku tsunami strikes Japan without warning. A wave estimated at more than 70 feet high hits a crowd gathered to celebrate a religious festival, killing more than 26,000 people.

August 27, 1883: The eruption of the volcano Krakatau (also spelled Krakatoa) generates a massive wave that sweeps over the shores of nearby Java and Sumatra, killing 36,000 people.

INDONESIA'S DEVASTATION

In many of Aceh's coastal towns, people had rushed out of buildings after the earthquake and were trying to help victims buried under the rubble. They were caught by the tsunami as the wave poured through the streets. As a result of the earthquake and tsunami, approximately 110,000 people died in Indonesia. The worst affected areas were Banda Aceh, the capital of Aceh province, and the north-west coast and islands off the coast, where hundreds of villages remain isolated and cut off from land transport and communication. Many buildings and infrastructure collapsed or failed due to the quake, and there is some evidence of land subsidence in coastal areas. The ensuing tsunami swept debris and sea water into homes and buildings up to 5 kilometers inland, crushing them and further damaging roads, bridges,

