

Distributions of Damage and Heights of the tsunami of the 2004 Sumatra Earthquake in the city area of Banda Aceh and its vicinity

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The severest damage of the tsunami of the 2004 Sumatra Earthquake took place at the city area of Banda Aceh and villages on the western coast of the north part of Sumatra Island. At Banda Aceh, whose population is about 250 thousands, about thirty thousand people were killed due to the tsunami. We visited Banda Aceh and its westward coast, and made a field research of the damage and measurement of tsunami heights. Almost all houses were swept away in the residential zone of the city within 2 kilometers from the coast line. Sea water inundated about 5 to 6 kilometers from the coast line.

The Great Mosque is located at the central area of the city, and the port of Ulee Lheue is located about 4.5 kilometers from the mosque. We put seven standard level points along the street called Iskandar Street which connects the Great Mosque and the Ulee Lheue port. We measured tsunami inundation heights at 55 points by using water mark on walls or columns of buildings in the city area. At Baiturrahim Mosque, which is located at Ulee Lheue port area, sea water rose up to the height of 12.2 meters above the mean sea level. The water mark on the ceiling board of the second floor of the building of the 5th Junior high school shows that the tsunami inundation height was 8.8 meters above the mean sea level. Whole of the residential area of Lhoknga Village on the western coast, which is situated about 15 kilometers north west from the central part of Banda Aceh is entirely swept away. We estimated tsunami heights by measuring broken twigs and/or trashes of coconut trees, sediment of trashes on the ground, traces of tsunami run-up. Tsunami heights are generally 15 to 30 meters or more on the west coast. We found out the maximum inundation height of 34.9 meters in the valley about 2 kilometers south of Lhoknga village.