

## Study of crustal movement and tsunami associated with the 2004 Sumatra-Andaman Earthquake in the Andaman Islands, India

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We surveyed vertical crustal movement and tsunami height in the Andaman Islands, associated with the 2004 Sumatra-Andaman earthquake. Along the western coast of North Andaman, we found biological paleo-shoreline indicators which are uplifted micro atolls (Porites of coral) and oyster banks. The height of them suggests that the amount of uplift was 1.5-1.6 m in maximum since the 2004 earthquake. Based on the eyewitness in northern margin of Middle Andaman, over 1 m of postseismic subsidence may have occurred during one month after the 2004 earthquake. In the eastern part of South Andaman, the tide gauge data shows ca. 1 m of coseismic subsidence. Therefore the Andaman Islands were tilted southeastward during the 2004 earthquake.

We also identified several levels of old micro atolls higher than those uplifted by the 2004 earthquake, and their heights are distributed at intervals of 7-10 cm. These observations indicate that the same type of uplift events and its following interseismic subsidence have occurred repeatedly. Recurrence of large earthquake can probably be evaluated by dating them.

Measuring the inundation indicators such as watermark, inundation height of the 2004 tsunami showed that the tsunami height was 1.2-5.0 m (ave. 3.1 m) in the Andaman Islands. This result is smaller than the Sumatra Island and the southwestern coast of Thailand. Because of such relatively small tsunamis, tsunami deposits were not preserved in most of the coastal areas.

Our results provide important parameters to discuss the seismic source and rupture process of the 2004 earthquake. The mega-thrust may have slipped relatively slow beneath the Andaman Islands.