

Signatures of Land-level Changes in Andaman & Nicobar Islands (India) due to M 9.3 Sumatra Earthquake of 26 December 2004

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The great mega thrust earthquake M 9.3 occurred on 26 December 2004 at 06:28:53am Indian Standard Time (00:58:53 UTC; Indonesian local time 7:58:53 am). This was the most devastating earthquake recorded so far in the last two centuries around the globe (e.g., M 9.0 Kamchatka 1952; M 9.1 Alaska 1957; M 9.5 Chile 1960). This event occurred along the plate boundary marked by subduction zone between the Indian and the Burma Plates (which is part of Eurasian Plate). The subduction zone is characterized by NS arcuate trench running parallel on the western side of the Sumatra & Nicobar-Andaman Islands. Large amount of energy released during this event caused ground shaking at several locations along all landmasses adjoining this arc. More prominent was the tsunamis that was caused by this subduction in the seafloor. The maximum intensity of shaking along the Andaman-Nicobar islands is about VII on the MSK scale and that along the mainland Indian coast about V on MSK scale. The overall pattern of damage and geomorphological changes are captured by an aerial survey over most of the Andaman-Nicobar islands. This was augmented by field investigations at the North, Middle, South and Little Andaman islands and the Great and Car Nicobar islands. Differential movements resulted in uplift and subsidence at various places along the Andaman and Nicobar Islands. The uplift along the west coast resulted into emergence of new shoreline. Uplift of about 1.2m was recorded at Ariel Jetty in the North Andaman Island. Prominent subsidence was observed along the east coast of Andaman and Nicobar Islands: (i) about 3m submergence at Indira Point at the southern tip of the Nicobar Islands, (ii) about 1.2m at Car Nicobar military residential colony in Car Nicobar Islands, (iii) about 1.0m submergence at Port Blair in South Andaman Island. The islands closer to the epicenter of the subduction event experienced more relative subsidence than other islands to the north.