



Relocation of seismicity before and after (1900-2005) the Sumatra-Andaman Islands earthquake of 26 December 2004

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In the Sumatra-Andaman Islands region the motion of the India/Australia plates is generally northeast at a rate of about 6 cm/yr with respect to the Eurasia plate, producing motion of many smaller plates that lie between these plates. The earthquake of 26 December 2004 occurred as thrust faulting on the interface between one of the smaller plates, the Burma microplate, and the India plate. The zone of aftershocks for the 26 December earthquake is over 1300 km long. Since aftershocks occur on and very near the fault planes of mainshocks, the length of the aftershock zone suggests that the main-shock fault-rupture may have extended northwest of the mainshock epicenter by an amount significantly larger than the initial 500 km rupture model. However, a great earthquake may also trigger earthquake activity on faults that are distinct from the mainshock fault plane and separated from it by tens or even hundreds of kilometers. Further analysis of carefully relocated aftershocks using multiple event relocation where appropriate, as well as a reevaluation of historical seismicity, in the Sumatra-Andaman Islands region may help to better understand the manner in which associated seismic activity developed following the mainshock. The Centennial Catalog (Engdahl and Villasenor, 2002) lists about 10 relocated earlier earthquakes with $M \geq 7$ coincident with the rupture zone of the 26 December earthquake. The most important of them is the 1941/06/26 event (M_w 7.7) that had a number of large aftershocks and a report of a tsunami. It is also clear that seismic activity in the Nicobar-Andaman area is at a much lower level than in northern Sumatra.