Geophysical Research Abstracts, Vol. 7, 02977, 2005
SRef-ID: 1607-7962/gra/EGU05-A-02977

Interaction of the seismic source and subduction zone structure for the 2004 December 26 Sumatra-Nicobar-Andaman earthquake

B.L.N. Kennett

Research School of Earth Sciences, The Australian National University
(brian.kennett@anu.edu.au)

The Mw 9.0 earthquake on 2004 December 26 initiated off the coast of Sumatra. In several different models of the source mechanism the main slip is concentrated in a zone of about 600 km up to Car Nicobar Island. The northward extension of the fault marked by the aftershock zone seems to have propagated much slower with low tsunamigenic potential.

The changes in the character of the earthquake source behaviour tie closely to the nature of the subduction zone revealed by seismic tomography. Joint tomography using both P and S wave arrivals has been used to generate models of the bulk-sound and shear wavespeed structure to complement conventional P wave images. The subduction zone is very clearly imaged in shear wavespeeed. Changes in the relative strength of the bulk-sound and shear perturbations provide an indication of changes in physical properties in the subducting material. A distinct change occurs at the point where the faulting pattern is modified.