Geophysical Research Abstracts, Vol. 7, 08497, 2005
SRef-ID: 1607-7962/gra/EGU05-A-08497

An original image of the seismic rutpture of the Sumatra Mw=9.0 using PMCC detections on regional seismic records from small array

J. Guilbert (1), Y. Cansi (1), E. Schissele (1), A. Roueff (1), J. Vergoz (1)
(1) Commissariat à l'Energie Atomique, Laboratoire de Détection et de Géophysique, France

The rupture of the Sumatra earthquake (Mw=9.0) is complex and quite difficult to estimate using classical programs of inversion. These difficulties are due to the duration of the rupture which implies to introduce a global earth model. The source estimation using teleseismic P and SH waves from broad-band records allows us to describe only the first stage of the rupture with a time window of only 130sec. We go around this limitation using seismic records at regional distances. We estimate the source duration and the velocity of the rupture using a direct image of the P-Pn waves across a small seismic array at regional distance. The CMAR-array (Chiang Mai Array) is a seismic array installed in Thailand by the International Monitoring System for the CTBT. The CMAR-array is 14Deg far from the hypocentre. The PMCC image which represents the variations of azimuth and velocity of homogeneous wave front across the array gives us the opportunity to understand how the rupture propagated. This representation permits to observe the smooth and regular variations of azimuth of 40Deg during more than 5 minutes. In addition, we apply an accurate time-frequency-wave number analysis to separate the Pn and Sn wavelets. This second step permits to increase and improve our representation of this exceptional seismic