



Direct teleseismic array rupture tracking for the 26/12/2004, Sumatra, Mw=9, earthquake

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Using different dense broadband networks at teleseismic distances as longperiod arrays, it is possible to image directly the propagation of the rupture in space and time. The rupture started in the South at the hypocenter, propagated first unilaterally to the Northnorthwest for about 215 s with increasing slip rates till it reached the northern tip of Sumatra. After a decrease of the average slip rate for about a minute, the rupture turned to the North following the strike of the subduction zone with again increasing slip rates. The rupture terminated after about 7 minutes north of the Andaman Islands. The estimated rupture length is about 1150 km and the average rupture velocity lies between 2.5 and 2.9 km/s. Limitations of the method are due to the presence of later secondary phases and/or unknown structure under the receiver arrays. Later secondary phases can partly be resolved using high-resolution array techniques and thus allows reducing ambiguities in the results. Further, analysing smaller reference events from the aftershock sequence, it is possible to account partly for the unknown structure under the receiver arrays by deriving mislocation corrections for the Sumatra Trench region.