

# Characterizing the Rupture of Large Earthquakes Using IMS Seismic Arrays

Vindell Hsu

Pacific Tsunami Warning Center, 91-270 Fort Weaver Rd. Ewa Beach, HI 96706

## Abstract

At the occurrence of the 26 DEC 2004 Sumatra Earthquake, two problems facing the geophysicists at PTWC were estimating the moment magnitude and determining the source characteristics of the great earthquake. Potential tsunami threat and wave height forecasting require such information before warning messages can be sent out. After the Sumatra earthquake, it has been shown that the rupture length can be determined using large regional arrays (aperture in the order of hundreds of km) in Japan and in Germany. We demonstrate in this study that a much smaller IMS array can perform the same task. The KSRS seismic array in central South Korea is an IMS (international Monitoring System) primary seismic station with a 19-element SP array and a 7-element LP array. Figure 1 below shows the back azimuths, apparent velocity, F-statistics, and the waveform of the Sumatra earthquake using the LP array. Figure 2 shows the range of the back azimuths that covers the entire rupture length of the Sumatra earthquake.

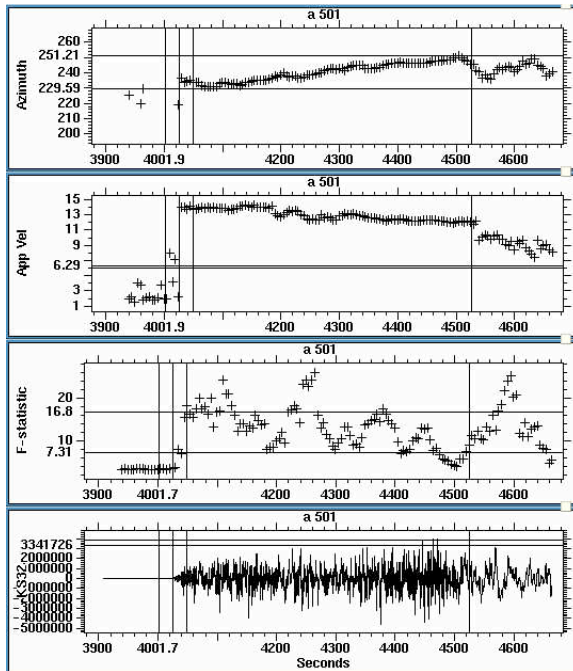


Figure.1

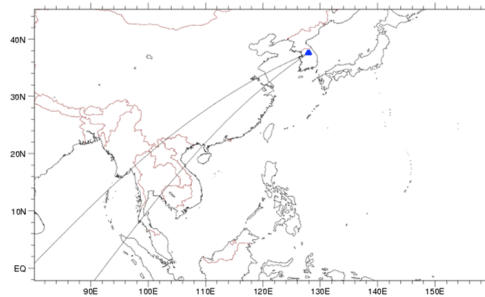


Figure 2