

HDS004-P08

Room:Convention Hall

Time:May 27 09:00-10:45

## Source fault and rupture process of the 2006 Yogyakarta earthquake

Yasuyuki Kawazoe<sup>1\*</sup>, Kazuki Koketsu<sup>1</sup>, Yosuke Aoki<sup>1</sup>

<sup>1</sup>ERI, University of Tokyo

The Yogyakarta earthquake with a moment magnitude of 6.3 occurred in the central part of Java, Indonesia on 26 May 2006 at 22:54 UTC, causing severe damage to the densely populated area of the Yogyakarta region. About 6,000 people were killed, and 50,000 were injured. The Opak River fault, located along the damage area, was thought to be a possible source fault of the earthquake, whereas the aftershocks were distributed 10 - 20km east of the Opak River fault (Walter et al., 2007).

Therefore, to clarify the source fault geometry, we first analyzed SAR data. We obtained an InSAR image by comparing the data acquired before and after the earthquake (29 April and 14 June, 2006).

We derived the surface trace of the actual source fault from this InSAR image. We next located three point sources by performing the waveform inversions of Kikuchi and Kanamori [1991] at various positions along the derived fault trace. We chose 29 teleseismic stations at epicentral distances between 30 and 100 degree, and retrieved vertical components of broadband P-wave seismograms for these stations from the Data Management Center of IRIS.

Using the obtained locations and focal mechanisms of point sources together with the aftershock distribution, by Walter et al. (2007) and our InSAR image, we defined the two-segment fault plane and its larger segment was assumed to be bent. We next performed a finite fault inversion of the teleseismic data using the method of Kikuchi et al. [2003]. The Green's functions were computed with the method of Kikuchi and Kanamori [1991]. In addition to the teleseismic data, we further included strong motion waveform data observed at the NIED stations called BJI and LEM, and performed a joint inversion of the both data using the method by Yoshida et al. [1996] with the revisions by Hikima and Koketsu [2005].

This study identifies the source fault of the 2006 Yogyakarta earthquake and derived its rupture process by the waveform inversions. The inversion results imply that the Yogyakarta earthquake consists of two subevents and the larger one occurred 20 s prior to the smaller one.

Keywords: Yogyakarta earthquake, source process