T228-005 **Room: IC** **Time: May 29 10:00-10:15**

Teleseismic Body Waveform Analysis of The 2007 Southern Sumatra Earthquakes With a 2.5D Finite-Difference Method

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Teleseismic body waveform analysis is one of the major methods in the source process study of large earthquakes. It is also possible to relocate small earthquakes by using teleseismic waveforms to provide improved distribution of earthquakes (e.g., Okamoto 1994). For shallow subduction zone earthquakes, it is quite important to consider the effects of the laterally heterogeneous structure near the source on the teleseismic body waveforms: the thick ocean (water) layer with dipping ocean bottom and the thick sediments with low seismic wave velocity often cause very large effects which are not reproduced by flat-layered model structure (e.g., Wiens 1989; Yoshida 1992; Okamoto 1993).

In this paper, we study how the lateral heterogeneity in the Sumatra trench affect the teleseismic waveforms and discuss the effect on the study of the source process of the recent large earthquakes on 12 September 2007. For that purpose, we synthesize the teleseismic body waveforms using a 2.5D finite-difference method (Okamoto 1994; Takenaka and Kennett 1996) which incorporates the lateral heterogeneity in the Sumatra trench. A 2.5D, laterally heterogeneous model structure is assumed based on the seismic and gravity studies conducted in the nearby area (Kieckhefer et al. 1980, 1981; Kopp et al. 2001).

We study some small aftershocks as well as the main shock. First, a waveform relocation technique (Okamoto and Takenaka 2008 (submitted)) is applied to two shallow thrust aftershocks (2007/09/14 06:01 Mw6.2; 2007/09/26 15:43 Mw6.0). The relocated positions are close to the assumed plate interface, and their depths (15km and 19km, respectively) are found to be shallower than those of the PDE and GCMT solutions. For 09/14 event, the 2.5D synthetics reproduce well the large later phases observed at stations located close to one of the nodal lines (i.e., stations at about 180 to 280 degrees in azimuth). These phases are not reproduced when a 1D model structure is applied. Second, the result of the slip distribution analysis of the main shock (09/12 11:10 Mw8.4) suggests a major slip area at about 150 km northwest of the epicenter and at a depth of about 19 km. These results are preliminary ones because the assumed structure needs to be refined further. We will report the results with the refined model structure in the meeting.