S152-P030 **Room: Poster Session Hall** **Time: May 23**

Three-dimensional P and S wave velocity structure around the Futagawa-Hinagu fault zone

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The Headquarters for Earthquake Research Promotion in Japan (HERP; 2002) evaluated the long-term probability of the large earthquake occurrence on the Futagawa-Hinagu fault zone. According to the report, in the case where both the central part and the southwestern part simultaneously rupture, the large earthquake of M7.9 will occur at most. Also, in the case where the central part rupture separately, the large earthquake of M7.6 will occur and the probability of the earthquake occurrence in 30 years is from 0 % to 6 %, which is higher probabilities compared to those of other active faults.

In this study, we applied the double-difference tomography method proposed by Zhang and Thurber(2003) to the area around the Futagawa-Hinagu fault zone to determine three dimensional (3-D) P- and S-wave velocity structures. Initial velocity structures for the inversion were those of the JMA2001 model (Ueno et al., 2002) used routinely in Japan Meteorological Agency. The grid interval was 2 km horizontally and vertically.

We used 57,782 P arrival times, 57,418 S ones, 310,721 double differences of P ones and 437,412 those of S ones of 5,861 regional earthquakes that occurred from October 1997 to July 2006, observed at 21 permanent stations. Incidentally, we did not use the arrival time data picked as EP and ES, whose accuracy were not good.

After the inversion, the RMS of travel time residuals and those of double differences was reduced from 0.112 sec. to 0.063 sec. We obtain 3-D P- and S-wave velocity structures around the target area which are more accurate and have higher resolution than previous ones, and are consistent with those by previous studies (e.g. Nakamura et al., 2003). The obtained velocity model is similar to the JMA2001 model at all depths on the average. The patterns of P- and S-wave velocity structures are similar to each other. We can see the characteristic P-wave velocity anomaly which is lower on the southeastern side of the active fault and higher on the northwestern side at almost all depths. The boundary of both areas is probably the fault plane of the active fault. Therefore, the dip angle of the active fault probably 90 deg. at all depths. After relocation, we can see the sharp picture of the seismicity, and vertical thin lines of it. Those lines are presumably small and weak rupture planes of the fault zone.

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References: HERP, 2002: The long-term probability of the large earthquake occurrence on the Futagawa-Hinagu fault zone.; Nakamura et al., 2003, Abstr. 2003 Japan Earth Planet. Sci. Joint Meeting, S053-P010.; Ueno et al., 2002, Q. J. Seismol., 65, 123-134.; Zhang and Thurber, 2003: BSSA, 93, 1875-1889.