

Three dimensional seismic velocity structure around the Futagawa-Hinagu fault zone, Kyushu, Japan

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The Futagawa-Hinagu fault zone runs between the western slope of the somma of Mt. Aso and the southern part of the Yatsushiro Sea. This fault zone is the west end of Median Tectonic Line, and consists of the mainly right lateral faults containing a few normal faults uplifting in the southeast side relatively. On Oct. 31, 1999, an earthquake of Mj4.0 occurred at the junction of the Futagawa fault system and the Hinagu fault system, and aftershock activity continued for months around the junction. On Jun. 8, 2000, an earthquake of Mj4.8 occurred at 5 km southwest of the focal region, and active seismicity continued for several months in this area. About 80 earthquakes (M3.0 or greater) have occurred around the joint of these fault systems for one year since Oct. 31, 1999, and seismicity still lasts. It is expected that an earthquake maximum of M7.5 will occur at the central part of the fault zone, and the probability of that within 30 years is 6 % in the maximum. This area is one of the most dangerous active fault zones in Japan. Therefore it is very important to determine the structure of this area.

We estimated the three dimensional seismic velocity structure around the Futagawa-Hinagu fault zone by using damped least squares method after Aki and Lee (1976). We utilized first P-wave arrival times which were recorded at the stations of Kyushu Univ., Hi-net, and Japan Meteorological Agency. Kyushu Univ. has installed many temporal stations around the focal region, we also used the records observed at these stations.

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