

## Visualization of strong motion in the 2005 Fukuoka earthquake

FUJIOKA, Akira<sup>1\*</sup>, TAKENAKA, Hiroshi<sup>2</sup>, OKAMOTO, Taro<sup>3</sup>, MURAKOSHI, Takumi<sup>4</sup>, OHSHIMA, Mitsutaka<sup>5</sup>

<sup>1</sup>Faculty of Sciences, Kyushu Univ., <sup>2</sup>Faculty of Sciences, Kyushu Univ., <sup>3</sup>Tokyo Institute of Technology, <sup>4</sup>Dept. of Earth and Ocean Sciences, National Defense Academy, <sup>5</sup>SHIMIZU CORPORATION

Earthquakes occur deep under the ground, so we can observe neither interior of the earth or hypocenter. As is not only the case with earthquakes, it seems natural to use computer simulations to study what out of reach of us. In this paper, we visualize records of the earthquake as part of computer simulations. Here we use records of the 2005 Fukuoka earthquake (Mjma7.0) which occurred on March 20. We used strong-motion records of Fukuoka prefecture, Kyushu University, K-NET and KiK-net (total number of 113). Original records are acceleration except some stations of Kyushu University. We integrate them to the displacement records, and resampled to 10 Hz. We visualize these three-component seismic motions in each direction. We make geographical data with the 250m-mesh Digital Elevation Model supplied by the Geographical Survey Institute. For visualizing we use ParaView.

From the visualization, we can see propagation characteristics of P-wave and S-wave. We can also see opposite polarities of the P-wave across the extension line of fault and propagation of the forward rupture directivity pulse (so-called killer pulse) along the extension of fault. After S-wave passed at some stations, we can see propagation of Rayleigh wave. It also found that seismic motion was amplified in a basin, and there are areas in which attenuation caused by time course was smaller than other areas. There is soft ground in Tsukushi Plain, and seismic waves remained over the long duration there. One minute after the earthquake occurred, they were attenuated in most areas, but in Tsukushi plain, they were still remained.

**Acknowledgments:** We used strong-motion records supplied by Fukuoka prefecture, Kyushu University and the National Institute for Earth Science and Disaster Prevention (K-NET, KiK-net) and 250m mesh Digital Elevation Model published by Geographical Survey Institute.

**Keywords:** visualization, strong motion, 2005 Fukuoka earthquake