Fault geometry and mainrupture onset location of the largest aftershock of the 2005 West Off Fukuoka Prefecture earthquake

Naoko Katayama[1]; Hiroshi Takenaka[1]; Yosuke Yamamoto[1]; Takeshi Nakamura[1]; Genti Toyokuni[1]; Kenji Uehira[2]; Hiroshi Kawase[3]

[1] Dept. Earth & Planet. Sci., Kyushu Univ.; [2] SEVO, Kyushu Univ.; [3] Faculty of Human-Env. Studies, Kyushu Univ.

The West Off Fukuoka Prefecture earthquake occurred on 20 May 2005. The largest aftershock of this earthquake occurred on 20 April 2005. We analyze the strong-motion data near the source of the largest aftershock. The strong-motion of the largest aftershock has two remarkable features. One is that a long period and large amplitude pulse is identified on the fault-normal component of the particle velocity waveforms, which is caused by the forward rupture directivity. The other is that the initial rupture phase and the main rupture phase are clearly seen on the P-wave portion of the records, which is caused by the initial rupture starting at the hypocenter and the main rupture at the main rupture onset location.

From the strong motion record, we obtained the relative location of the onset of the main rupture with respect to the initial hypocenter. The distance between them is 0.6 km, and the onset of the main rupture is located southeast below the hypocenter. The main rupture began 0.3 s later from the origin time. We also determined the focal mechanism solutions of the initial rupture and the main rupture events. The strikes of the fault planes for the initial and main ruptures are both 313 degrees.

[Acknowledgements] We used the strong-motion records supplied by Fukuoka Prefecture Government, the Japan Meteorological Agency (JMA) and the National Institute for Earth Science and Disaster Prevention(K-NET, KiK-net).