Precise aftershock distribution of the 2005 West off Fukuoka Prefecture Earthquake using seismic network in marine and land area

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The 2005 West off Fukuoka Prefecture Earthquake (Mj = 7.0) occurred on March 20, 2005 in the northern part of Kyushu, Japan. To study the aftershock activity, we deployed eleven pop-up type ocean bottom seismometers (OBSs), sixteen offline temporary stations, and eight online temporary stations in and around epicenter region. We combined data from theses stations with those from permanent stations located around the aftershock area, and calculated station correction values from these data. Then we applied these values to travel time data, and obtained precise hypocenter distribution especially for the depth.

We found that the station correction values, even of OBS stations, are very small. This shows that seismic velocity structure in northern part of Kyushu is homogeneous, and the SEVO routine structure is not irrelevant.

The mainshock locates in the northwesterly central part of aftershock region, and its depth is 9.7 km. The earthquake source fault of the main shock was left-lateral strike-slip fault. The aftershocks were located in a depth range of 2-16 km and laterally extend for about 25 km in the direction of NW-SE. Most of the aftershocks were located on vertical planes, but dip angle of the plane changes in a depth of 10 km near the mainshock. And their strikes were changed with areas. These features suggest spatial variations of crustal structure and/or stress field.