

Outline of the 2005 Western off Fukuoka prefecture earthquake

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An intraplate sea-floor earthquake of M7.0 occurred western off Fukuoka prefecture at 10:53 on March 20, 2005 (JST). The focal mechanism showed a lateral strike-slip fault type with a pressure axis of ENE-WSW direction. Aftershocks distributed along a vertical plane about 30km long extending to WNW-ESE direction. The maximum intensity of lower 6 was recorded in Fukuoka and Saga prefectures. This earthquake killed one person by collapse of block walls and caused complete and partial collapses of houses and buildings, and landslides in the Genkaijima-island upon the source region and in the other areas in Fukuoka and Maebaru cities near the source region.

According to hypocenter re-determination by the DD method (Waldhauser and Ellsworth, 2000), the main shock was located in the bottom of the source region. Rupture of the fault extended in bilateral directions, originating from the main source. The source process estimated from the near field strong motions suggested that large asperity existed in the shallow and south-east part of the source region, which is consistent to many hazards in the Genkai-jima-island.

Aftershock activity showed almost normal decay, though M5.4 earthquake (maximum aftershock) occurred on March 22 near an epicenter of the main shock and M5.0 earthquake occurred on April 10 near the south-east edge of the source region. Number of the earthquakes $M > 3.0$ decayed with p-value 1.22 of the modified Omori formula parameter.

CFF caused by the main shock for the left lateral fault earthquakes showed stress increase of about 50kPa near the south-east area of the source region. Aftershock activity of shallower earthquakes including M3.3 earthquake began to occur from March 23 near Umino-nakamiti about 10km distant from the SE edge of the source region. This seismic activity seems to be induced by the main shock. However, seismic activity is low in the region of Kego fault located in the south-east direction of the source region.

Many linear structures of the seismicity exist along faults with strike of NW-SE direction, however, seismic activity is low in this area historically. Earthquake of M7.0 class has not been recorded in the area, though M6.0 earthquake occurred in 1898 near the west part of Fukuoka Bay.

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