

Paleoseismicity on the extension of the Kego fault in Hakata Bay, Kyushu, Japan

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Paleoseismicity of the extension of the Kego fault in Hakata Bay was investigated on the basis of high-resolution seismic profiling and piston coring surveys.

The submarine active faults in the central Hakata Bay are east-dipping fault with left-lateral strike-slip component and extend NW-SE trend. These characteristics of the submarine active faults suggest that the faults are northwestern extension of the Kego fault. The northwestern end of submarine active faults overlaps with the epicenter distribution area of aftershock of the 2005 West Off Fukuoka Prefecture Earthquake on March 20 and its largest aftershock on April 20. The earthquakes on March 20 and April 20 were occurred along the active fault system, which is considered the reactivation of Kego fault system.

We identified two faulting events in the Holocene sequence based on the high-resolution seismic sections across the submarine fault. Vertical-displacements among these two events show 30 cm each approximately. The acoustic basement layer is vertically dislocated about 3m by pre-transgression faulting events. Radiocarbon dating of core samples shows that the last event occurred after ca 4500 yr cal BP and the second event existed during ca 6500-8500 yr cal BP. The vertical-displacement of the acoustic basement layer are recorded multiple seismic events before ca 9000 yr cal BP.