

## Estimation of the activity events of the Kego Fault Zone based on the sedimentary ages in Geo Slicer cores in Hakata Bay

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### Introduction

The Kego Fault Zone, passes through Fukuoka city area, is active fault. Its extension reaches to the sea area. A part of the extension has been reported by Okamura et al (2009), but it is different from the Kego Fault seen in land area in a characteristic. Therefore submarine active fault investigation in Hakata Bay was carried out to clarify the character of the Kego Fault Zone in the sea area this time.

### Method

Submarine acoustic survey was carried out to determine location of active faults. Location of active faults was pinpointed by a result of acoustic survey and by precedent studies. A geo-slicer survey was carried out in two spots (HKA1 and HKA2 sites) where it was thought that data connected with the fault activity were easy to be provided by stratum collection.

As a result of geo-slicer survey, 3 sedimentary cores at HKA1 site and 4 sedimentary cores at HKA2 site, of approximately 8-10m in length were obtained. In addition, volcanic glass content in sedimentary sample was found, and refractive index was measured.

### Shape of faults based on the submarine acoustic survey

As a result of the submarine acoustic survey, in HKA2 site, the east side subsidence in the fault was recognized like the Kego Fault of the inland area and Okamura et al (2009). On the other hand, in HKA1 site located on the east side from HKA2, the west side subsidence in the fault was recognized. In other words a graben structure is confirmed. For both sites, the displacement of the stratum of the acoustic basement is clear (depth 8 m). It is very likely that a multiple activity history of the faults was recorded at these sites.

### Age-estimation of the sedimentary cores and the latest fault activity event

Contents of the volcanic glass collected from every 20cm depth interval in the sedimentary cores were examined. This refraction indexes of glass and the results of radiocarbon date of sedimentary core indicated that it is the K-Ah tephra origin. The peak of the volcanic glass content is the key bed of the K-Ah as the ash falling event (ca. 7,300 cal. yBP). Based on the results of radiocarbon dating and volcanic glass examination, after acoustic basement (about 8,900 yBP), fault activity events were recognized two times at least at HKA1 site, although only one time at HKA2 site. The latest activity event of the former is about 4,200 to 4,800 yBP, however the latter one is about 8,000 to 8,300 yBP. Therefore, two faults in the Kego Fault Zone are remarkably different in activity.

Keywords: Kego Fault Zone, Hakata Bay, acoustic sections, Geo-Slicer survey, K-Ah tephra fall event, latest activity event