

## A Study on the Ground Motion Characteristics close to the Basin Edge

Ryota Hamabe<sup>2</sup>, \*Shinichi Matsushima<sup>1</sup>, Takashi Azuma<sup>3</sup>, Florent De Martin<sup>4</sup>

1. Disaster Prevention Research Institute, Kyoto University, 2. Graduate School of Engineering, Kyoto University, 3. National Institute of Advanced Industrial Science and Technology, 4. French Geological Survey

The 1995 Kobe Earthquake brought significant damage around the Kobe area in Japan. It was notable that a “Damage Belt” with an area with a width of 1km and length of 20km was formed. The main cause of this phenomenon was called the “Basin-Edge Effect”, which is a result of the constructive interference of seismic waves owing to the basin edge structure, i.e. the interference between the direct S-wave propagating upward and the basin-induced/diffracted surface waves propagating laterally. Therefore, this phenomenon should not be limited to the Kobe area. In this study, we conduct a ground response analysis at sites close to the basin edge, assuming various types of basin structures, to understand the influence of the subsurface structure to the characteristics of the ground motion close to the basin edge. Also, the observed microtremor Horizontal-to-Vertical spectral ratio (MHVR) will be used to understand the relation between the shape of the MHVR and the basin edge shape. A method to estimate the region of amplification of ground motion due to the Basin-Edge effect at the basin edge estimated from MHVRs will be introduced.

Keywords: Basin-Edge effect, Basin edge, Amplification factor, Horizontal-to-Vertical spectral ratio