

## **Development of a Waikato Basin T<sub>0</sub> and Depth Model by the H/V Spectral Ratio Method**

**Presented by Dr Seoko Jeong**

Following his technical paper recently published as a part of the 2019 Pacific Conference on Earthquake Engineering Seoko Jeong will present on his research with a Q and A session to follow.

This paper presents the development of a preliminary model of the fundamental site period (T<sub>0</sub>) across the Waikato Basin using the Horizontal-to-vertical (H/V) spectral ratio technique. We measured the ambient vibration of the ground at over 100 sites across the Waikato Basin, and produced a T<sub>0</sub> map by spatially interpolating T<sub>0</sub> obtained by the H/V spectral ratio technique. The measured site periods were over 5 seconds near Te Rapa and Gordonton, suggesting a deep sedimentary basin. This finding is also consistent with previous studies. We also found that most parts of the Waikato Basin, except very near the basin edge, have fundamental site periods longer than 0.6s, which means they should be categorised as site class D at a minimum, according to NZS1170.5: 2004. More site-specific assessments of shear wave velocity profiles will be able to identify site class E locations. Using the depths to the greywacke basement obtained from the existing petroleum logs in the region, we established a fundamental site frequency-depth correlation.



Seokho is a lecturer in Civil Engineering at the University of Waikato, with expertise in Geotechnical Earthquake Engineering and Geophysics. His current research is focused on the spatial variability of the seismic hazard and the associated risk caused by the complex near-surface site effect, such as the topographic effects and the sedimentary basin effects. Seokho has a BE in Civil Engineering from Changwon National University in South Korea, Master in Earthquake Engineering and Engineering Seismology (MEEES) from Grenoble Alps University/University of Pavia/University of Patras as part of the Erasmus Mundus program in Europe, and PhD in Civil Engineering from Georgia Institute of Technology in the USA.