Speaker: Dr. Van Bang Phung（Postdoctoral Fellow, IESAS）
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Title: Methodology for developing Empirical Ground Motion Models Compatible Shear -Wave Velocity Profiles and Kappa.
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<Abstract>

A method is presented for developing empirical ground-motion models (GMMs) that include the 1-D shear-wave (VS) velocity profiles and the high-frequency attenuation parameter (kappa) which are consistent with the site scaling in the GMM.
Rather than simply providing the site scaling in terms of the time-averaged shear-wave velocity over the top 30 m (VS30), the method also provides the corresponding depth-dependent VS(z) profiles and the kappa value for the selected VS30 value.
An initial regression is conducted frequency by frequency to develop a GMM for the Fourier amplitude spectrum (FAS).
The resulting site amplification as a function of VS30 is then evaluated in terms of the frequency dependence of the site amplification for a given VS30 value.
For each VS30 value, the kappa is estimated from the high-frequency slope of the log(FAS), and the VS(z) profile is estimated using the inverse quarter-wave-length method (IQWL).
Holding the VS30 scaling due to the inverted 1-D profiles fixed, the regression for the GMM coefficients is repeated to allow the path and source terms to adjust to the fixed VS30 scaling for the 1-D VS profiles. Not all of the empirical amplification can be explained by the 1-D VS profiles and kappa values.
For soft sites (VS30< 500 m/s), and intermediate periods (0.5-2 sec), there is additional amplification in the empirical data which is attributed to 3-D path and site effects. For stiff sites (VS30>500 m/s), the 1-D VS profiles can explain the observed amplification.
Using the proposed method, the resulting GMM provides a VS(z) profile, kappa, and 3-D effect for each VS30value,
which provides a more informative handoff of ground-motion information for use in site-specific site response studies.