

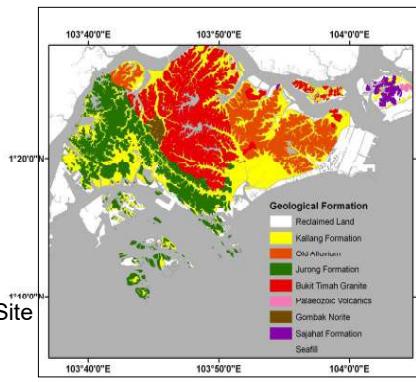


## Generation of Ground Motion Maps by Incorporating Site Response Analysis and Kriging Method

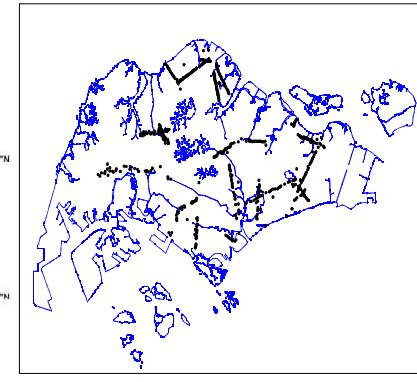
Development of a method to generate ground motion intensity maps of Singapore. Site response analysis is performed using an equivalent-linear method. The generated maps can be used for evaluation and assessment of potential seismic damage/loss in urban areas.

### • Geological condition of Singapore

- Ground Types B, C, D and S<sub>1</sub>
- Tall Buildings Over the Soft Soil Formations



Geological Map of Singapore



Distribution of Soil Profiles

### • Collection of Soil Profiles

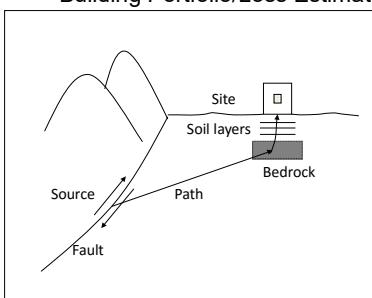
- 555 Soil Profiles Collected
- Mainly Measured by Suspension P-S Logging or Micro-tremor Techniques

### • Site Response Analysis

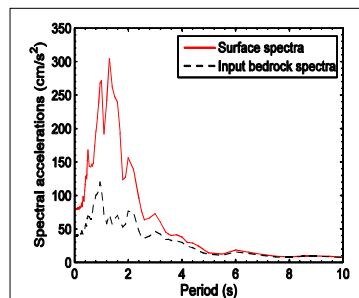
- SHAKE Program for One-dimensional Site Response Method
- Obtaining Surface Spectrum

### • Intensity Maps with Kriging

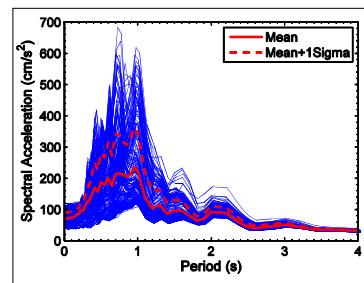
- Assigning Values at Un-sampled Locations
- Building Portfolio/Loss Estimate



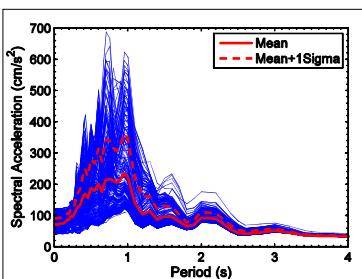
Schematic Ground Motion Propagation from Source to Site (Kramer, 1996)



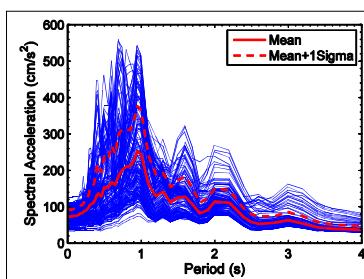
Response Spectra Using SHAKE at KAP Site



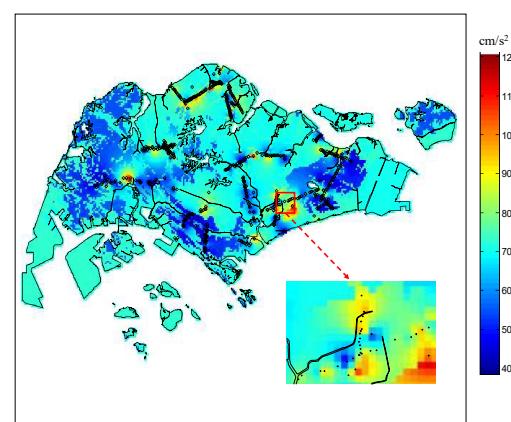
Ground Type B (114 Profiles)



Ground Type C (251 Profiles)



Ground Type D (190 Profiles)



Surface PGA Map of Singapore Using Kriging Technique

### Contact Us:

Executive Director, ICRM ([ExecDir-ICRM@ntu.edu.sg](mailto:ExecDir-ICRM@ntu.edu.sg))  
N1-B1b-07, 50 Nanyang Avenue, Singapore 639798  
Tel: +65 6592 1866