

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_1
- Tall Buildings Over the Soft Soil Formations

• Collection of Soil Profiles

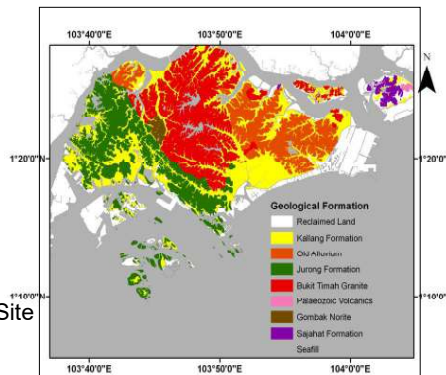
- 555 Soil Profiles Collected
- Mainly Measured by Suspension P-S Logging or Micro-tremor Techniques

• Site Response Analysis

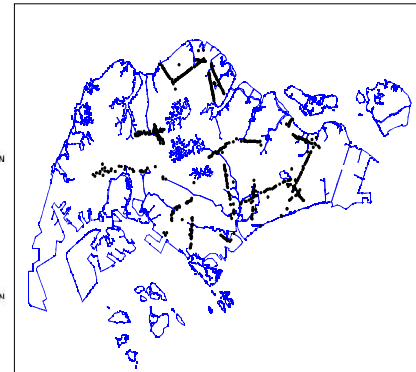
- SHAKE Program for One-dimensional Site Response Method
- Obtaining Surface Spectrum

• Intensity Maps with Kriging

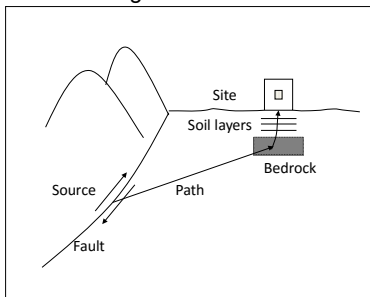
- Assigning Values at Un-sampled Locations
- Building Portfolio/Loss Estimate



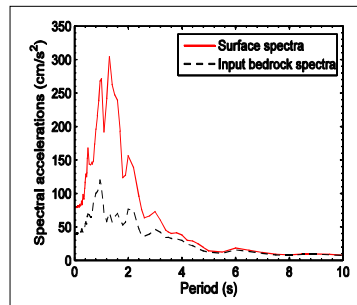
Geological Map of Singapore



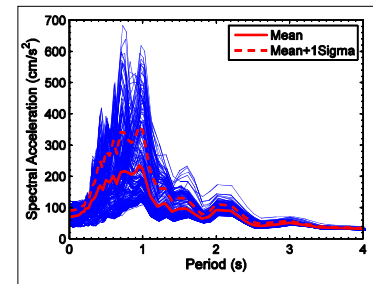
Distribution of Soil Profiles



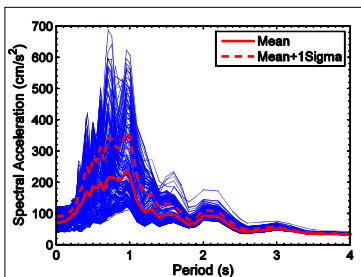
Schematic Ground Motion Propagation from Source to Site (Kramer, 1996)



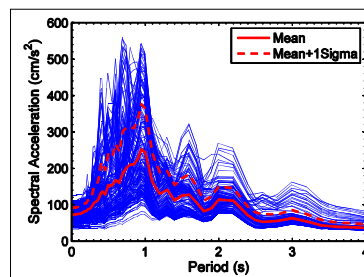
Response Spectra Using SHAKE at KAP Site



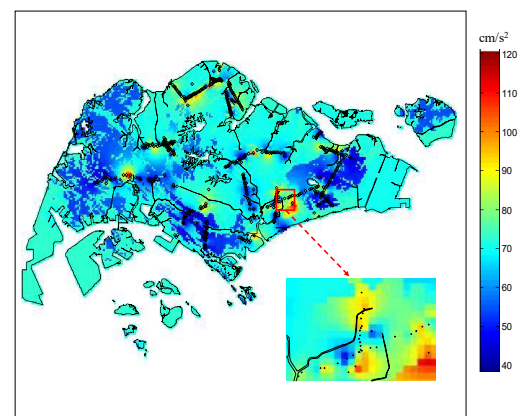
Ground Type B (114 Profiles)



Ground Type C (251 Profiles)



Ground Type D (190 Profiles)



Surface PGA Map of Singapore Using Kriging Technique

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