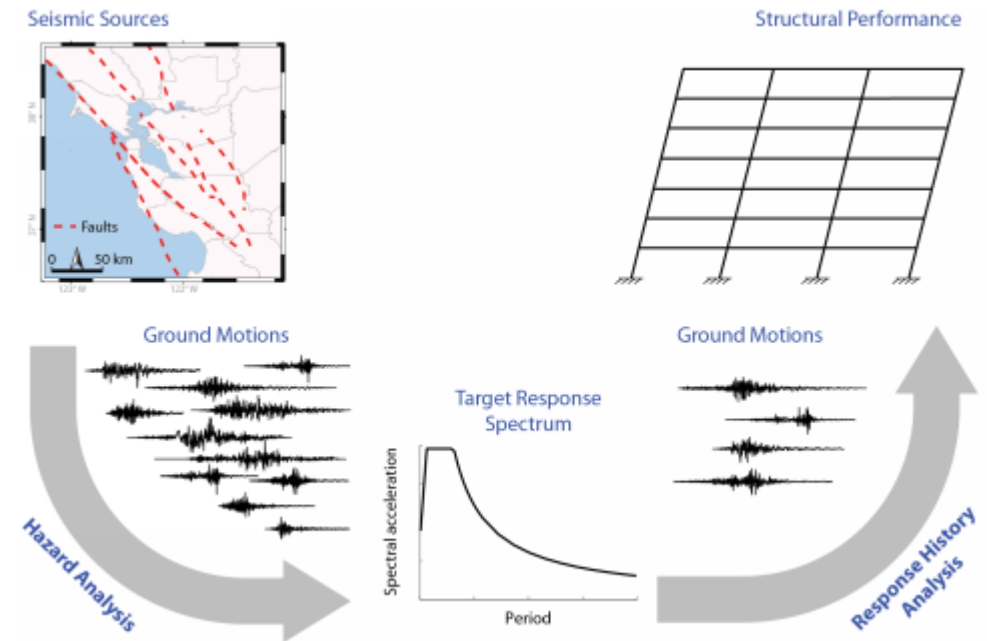


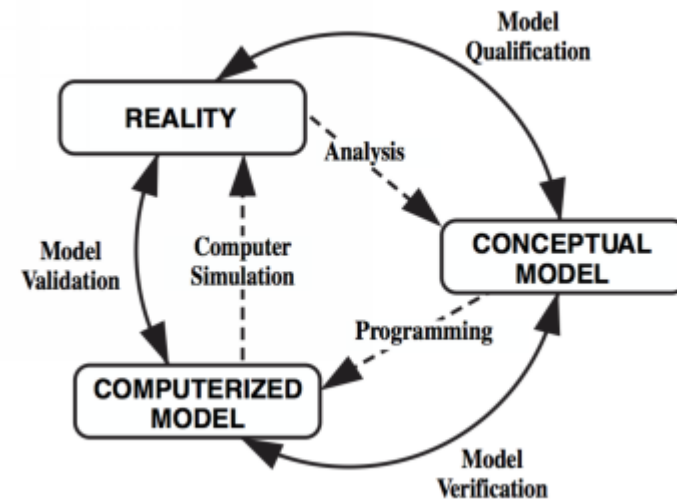
Guidance for the utilization of earthquake-induced ground motion simulations in engineering practice

- Report is complete
- Paper submitted to Earthquake Spectra – earthquake engineering practice paper
- (https://dl.dropboxusercontent.com/u/35408783/Bradley_GuidanceUtilisationGmSimulationsEngPractice_Eqs_2016_submitted.pdf)
- Key components
 - Overview of key ground motion simulation ingredients
 - Ground motion features of relevance for engineering objectives
 - Use of simulations for hazard analysis or response history analysis



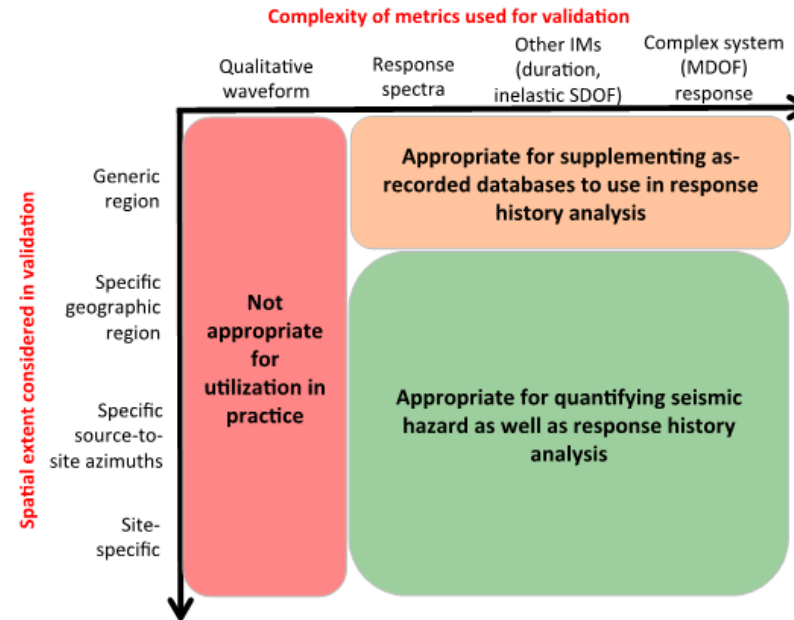
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- Ground motion features of relevance for engineering objectives cont...
- Use of simulations for hazard analysis or response history analysis
- Multi-component and multi-site ground motions
- Relevant IMS and usable frequency range of simulations
- Treatment of uncertainties
- Recommended Documentation



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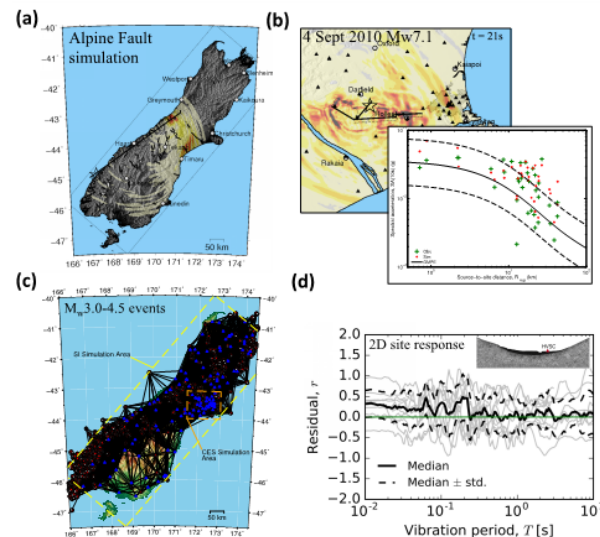
- A graphical matrix for ground motion simulation validation



- Validation metrics and 'pass' criteria
- Explicit consideration of uncertainties

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- Utilization documentation checklist and summary
 - This will depend on regulatory context...NZ example is in the report
- Finally, an example application for GM simulation of Alpine Fault earthquakes on the Canterbury Plains



Complexity of metrics used for validation					
	Qualitative waveform	Response spectra	Other IMs (duration, inelastic SDOF)	Complex system (MDOF) response	
Spatial extent considered in validation	Generic region	✓	✓	✓	✓
	Specific geographic region	✓	✓	✓	Areas for further validation
	Specific source-to-site azimuths	✓	✓	✓	
	Site-specific	✓	✓		