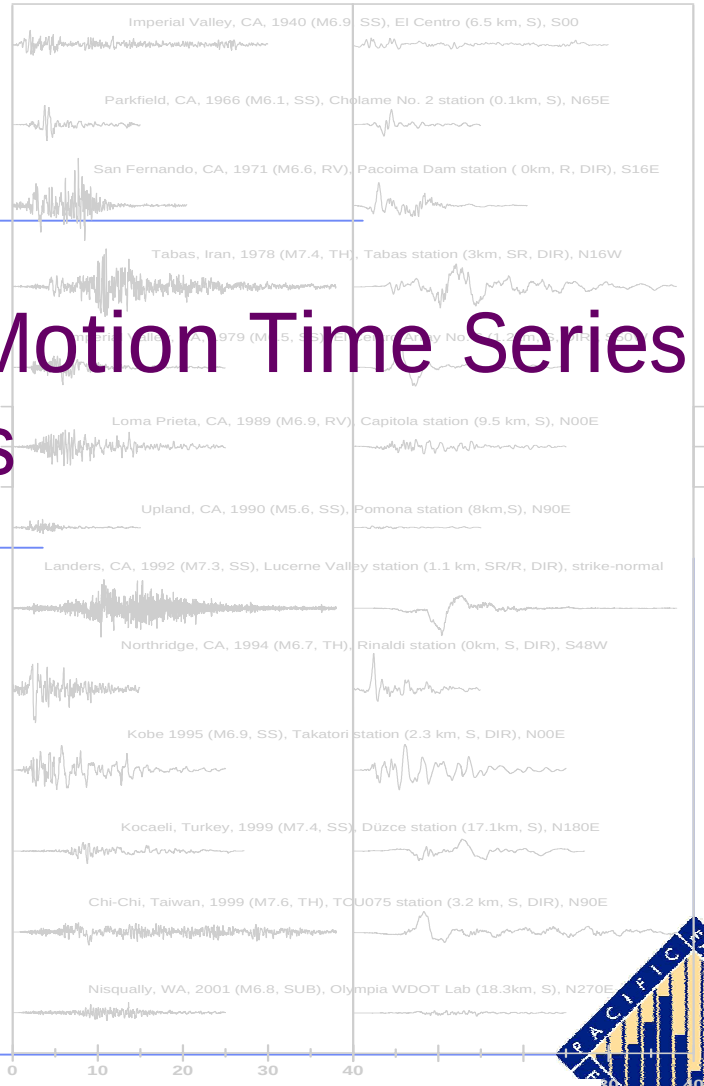
Selection of Ground Motion Time Series for Nonlinear Analysis



PEER Annual Meeting

January 20, 2006

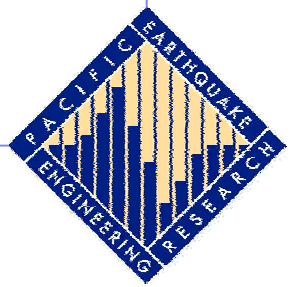
San Francisco

Selection of Ground Motion Time Series for Nonlinear Analysis

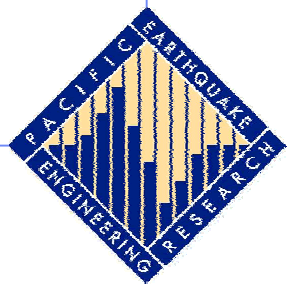
- State-of-the-practice
  - *Marshall Lew*
- What PEER has done so far
  - *Nico Luco*
- What PEER is doing now
  - *Tom Shantz*
- Issues to be considered in the next couple of years
  - *Yousef Bozorgnia*
- Discussions

State-of-the-Practice in Time Series Selection

Marshall Lew

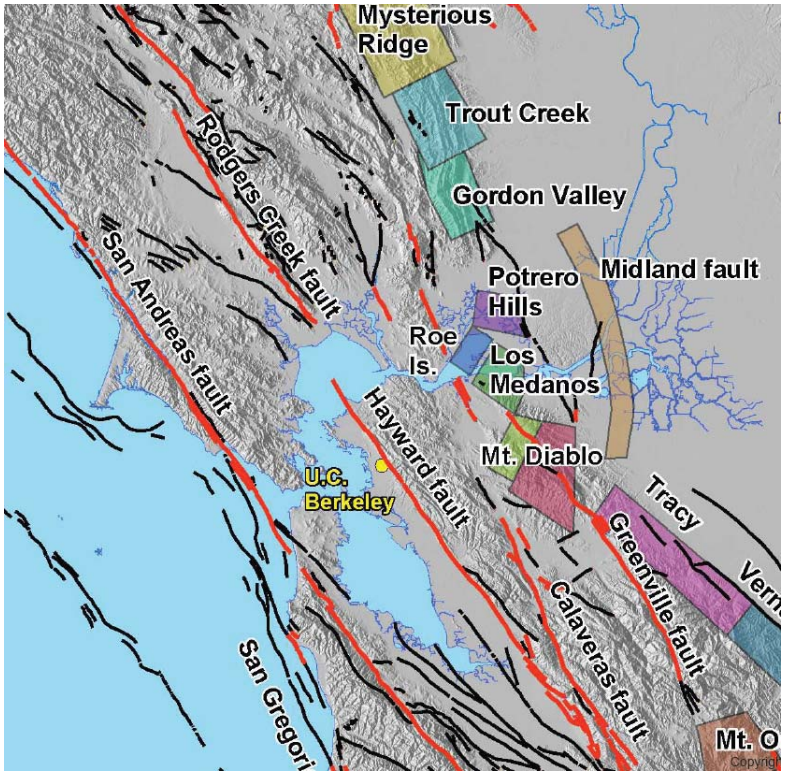


Issues to be considered in the next couple of years ...



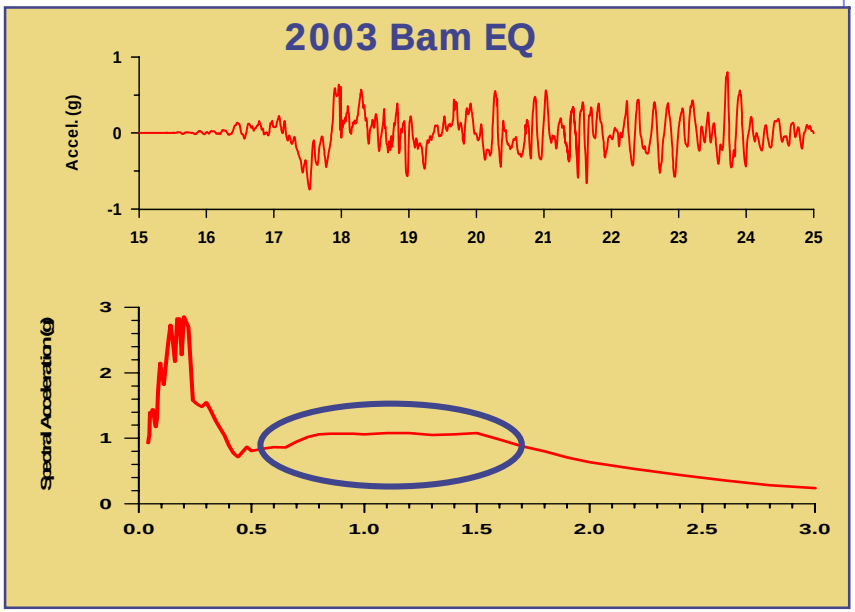
Issues to be considered ...

- Near-fault effects
  - Example: in CA, there are 8386 bridges (out of 12550), 67%, within 10 km of faults



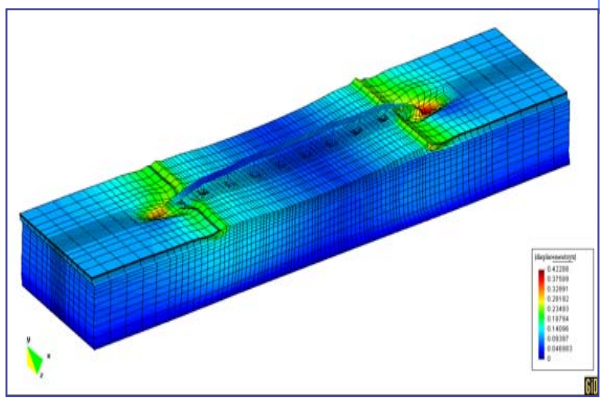
Issues to be considered ...

- Near-fault effects
  - Fault-normal, fault parallel
  - Narrow-band directivity effects on elastic and inelastic response



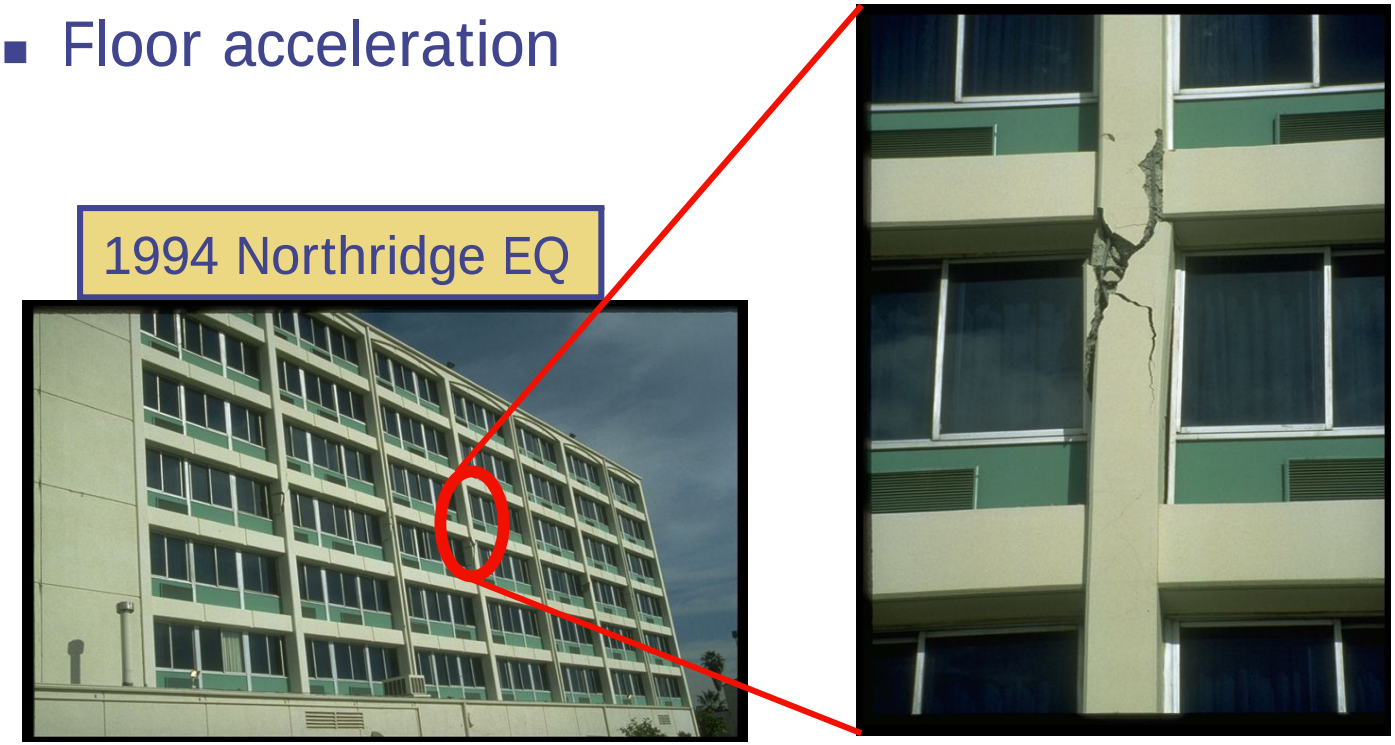
Issues to be considered ...

- Two- (and three-) dimensional structural models:
  - Selection of time series in two (or three) directions
  - Especially, in near-fault areas
- Benchmarking
  - Consider complex bridge and building models



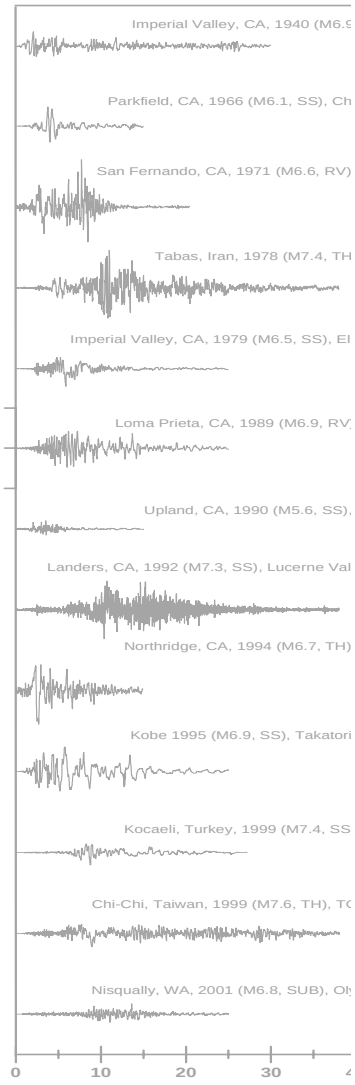
Issues to be considered ...

- Multiple EDPs, e.g.,
  - Interstory drift and
  - Floor acceleration



Issues to be considered ...

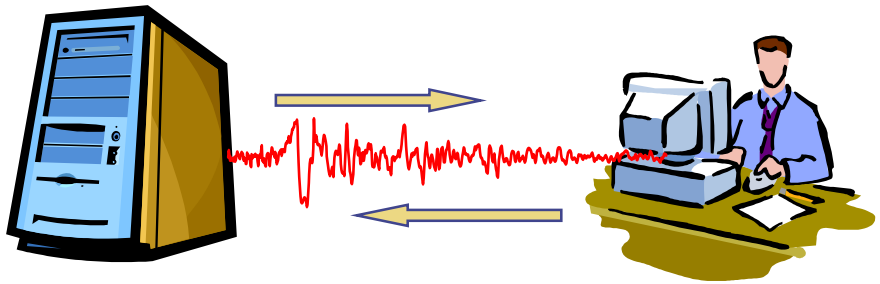
- Number of records?
  - Is it related to complexity of the structural system?
- Quantification of uncertainty in the process of time series selection and scaling



PEER

Issues to be considered ...

- Final product: practical guidelines and "computer modules" for time series selection



PEER
Strong Motion Database

Design
Engineer

Discussions ...