Stochastic Finite Fault

Pacific Engineering and Analysis
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- ## Stochastic Finite Fault
- ## Simple Model
  - Sum **M** 5.0 Point Sources
  - Geometrical Attenuation
    - Ray Trace
    - Specified G(R) (trilinear?)
  - Equivalent-Linear Site-Response
    - Amplification Assumes Vertically Propagating Shear-Waves
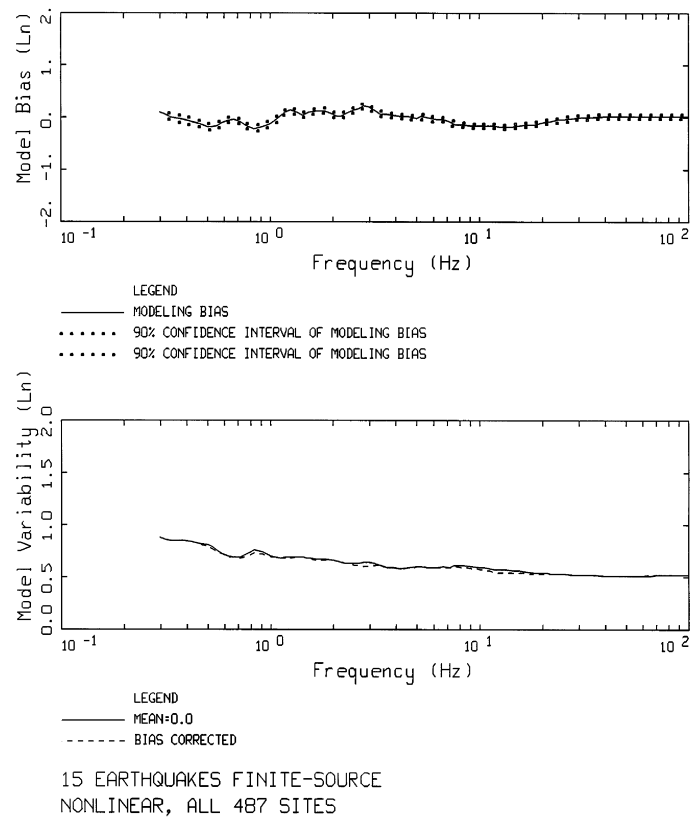   - RVT, Time Histories Optional

- Limitations
  - Simple Frequency Independent Geometrical Attenuation
  - Vertically Propagating Shear-waves
    - Average Horizontal Component
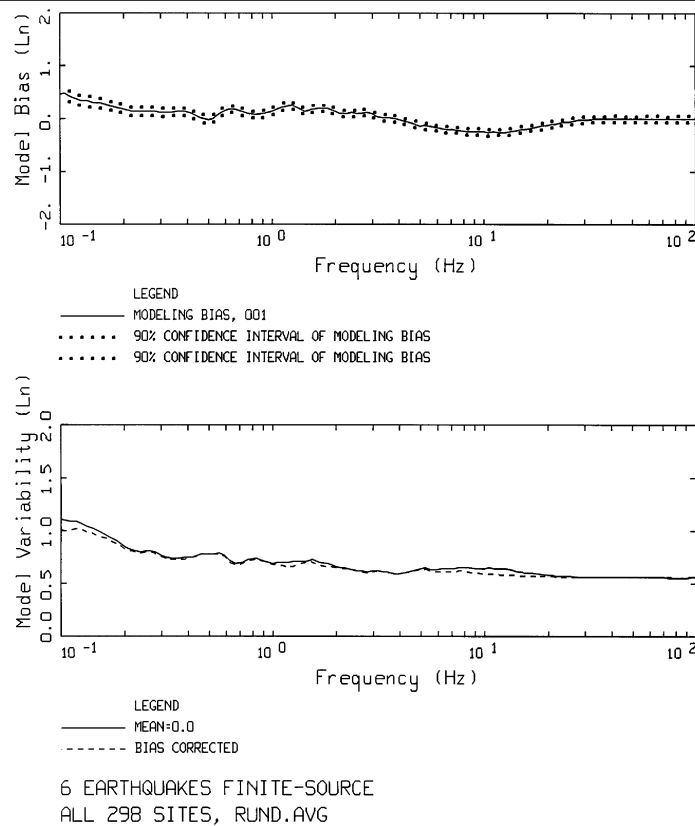
Simulation

Fixed	Free (Optimized)
Magnitude	Slip Model
Rupture Velocity	Hypocenter
$(0.8 \cdot V_S (h))$	Static Stress Drop
$\Delta\sigma$ (Subevent)	(L, W, Depth)
Slip Velocity	$\Delta\sigma$ (Subevent)*
Velocity Profile	Slip Velocity*
Nonlinear Dynamic	Kappa (rock)
Material Properties	Region Specifc $Q=Qo(f)**\eta$
Kappa (soil)	

Model Bias (Ln) vs **Frequency (Hz)**

LEGEND
——— MODELING BIAS
•••••• 90% CONFIDENCE INTERVAL OF MODELING BIAS
•••••• 90% CONFIDENCE INTERVAL OF MODELING BIAS

Model Variability (Ln) vs **Frequency (Hz)**

LEGEND
——— MEAN=0.0
- - - - - BIAS CORRECTED

15 EARTHQUAKES FINITE-SOURCE
NONLINEAR, ALL 487 SITES

5

Model Bias (Ln) vs **Frequency (Hz)**

LEGEND
——— MODELING BIAS, 001
•••••• 90% CONFIDENCE INTERVAL OF MODELING BIAS
•••••• 90% CONFIDENCE INTERVAL OF MODELING BIAS

Model Variability (Ln) vs **Frequency (Hz)**

LEGEND
——— MEAN=0.0
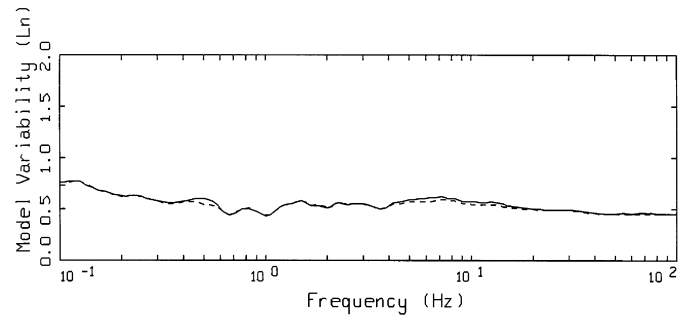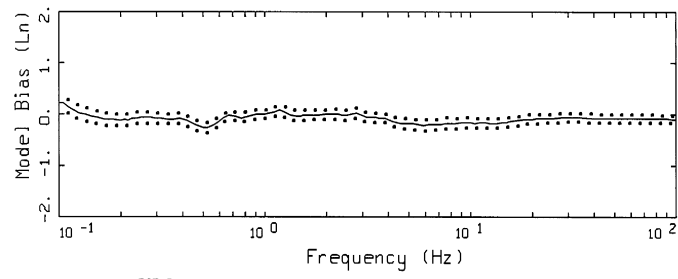- - - - - BIAS CORRECTED

6 EARTHQUAKES FINITE-SOURCE
ALL 298 SITES, RUND.AVG

6

6 EARTHQUAKES FINITE-SOURCE
ALL 88 SITES <= 20 KM, RUND.AVG

7