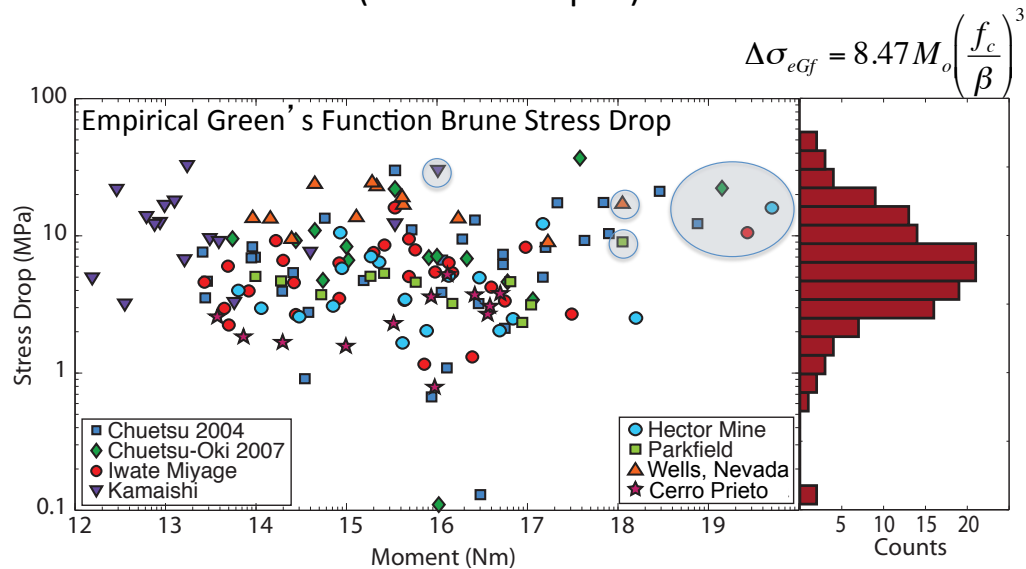
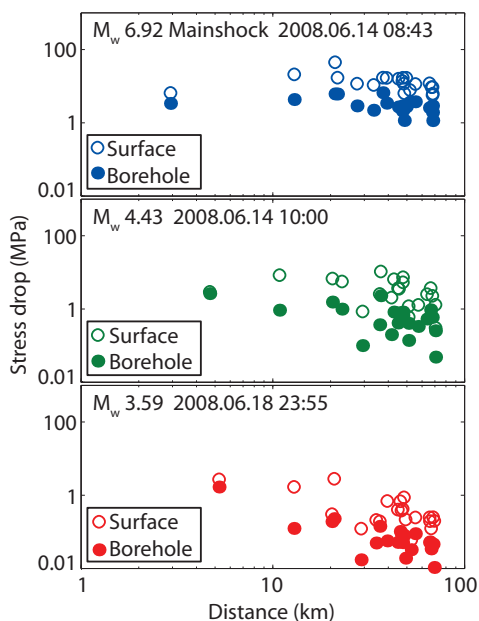


a_{RMS} Stress Drops vs. eGf Brune Stress Drops (in Eastern Japan)



Annemarie Baltay, Stanford, abaltay@stanford.edu
Greg Beroza, Stanford; Tom Hanks, USGS

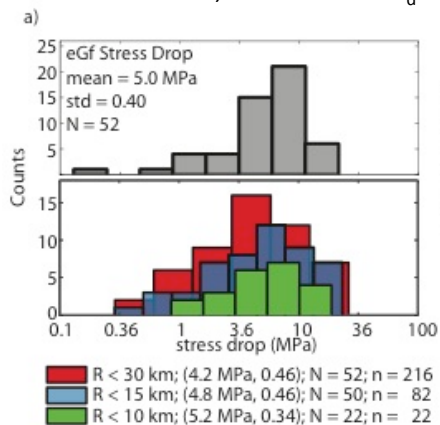
a_{RMS} Stress Drop



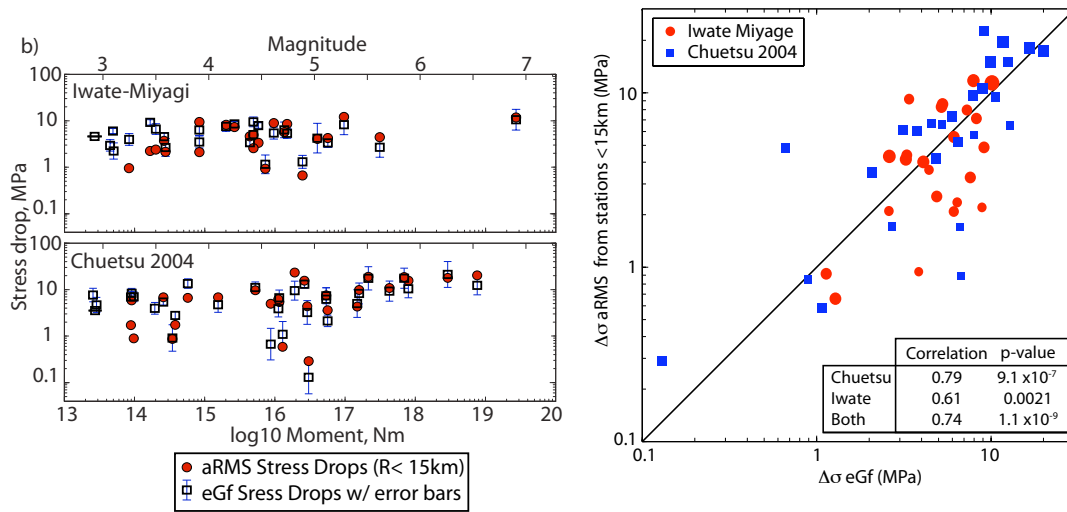
$$\Delta\sigma_{aRMS} = a_{RMS} \frac{106\rho R}{0.85\sqrt{2}(2\pi)^2} \sqrt{\frac{f_c}{f_{max}}}$$

f_c known *a priori* from eGf study

a_{RMS} -- root-mean-square acceleration,
from time-series, with duration $T_d=1/f_c$

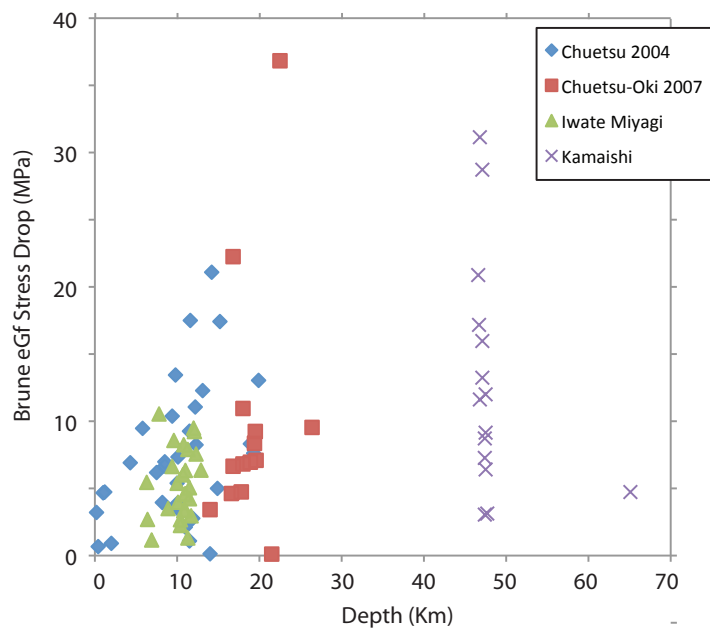


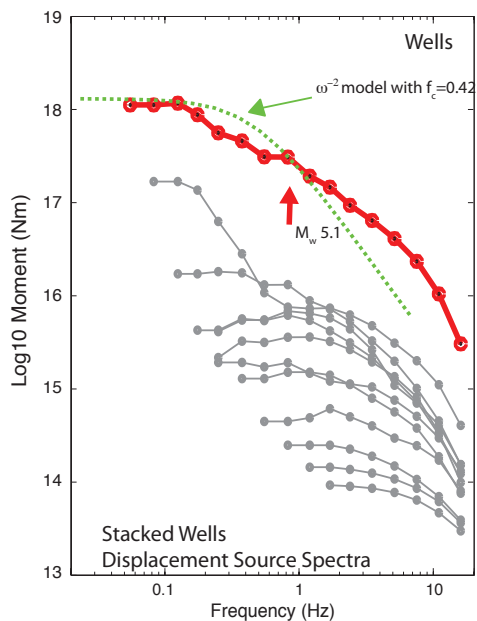
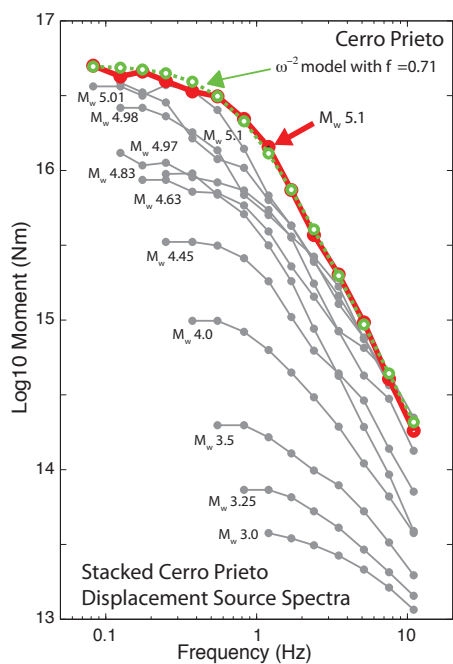
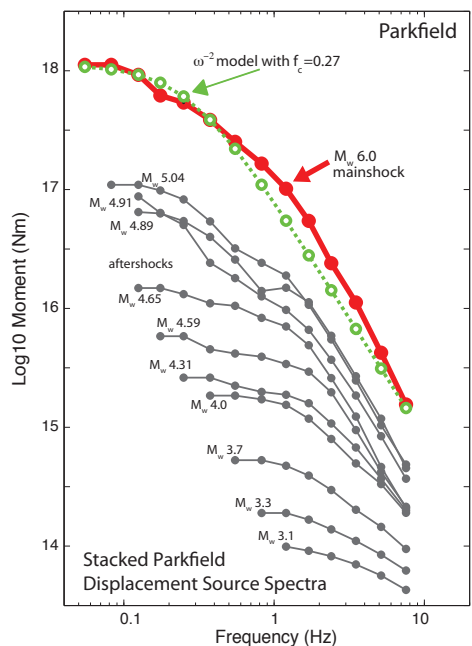
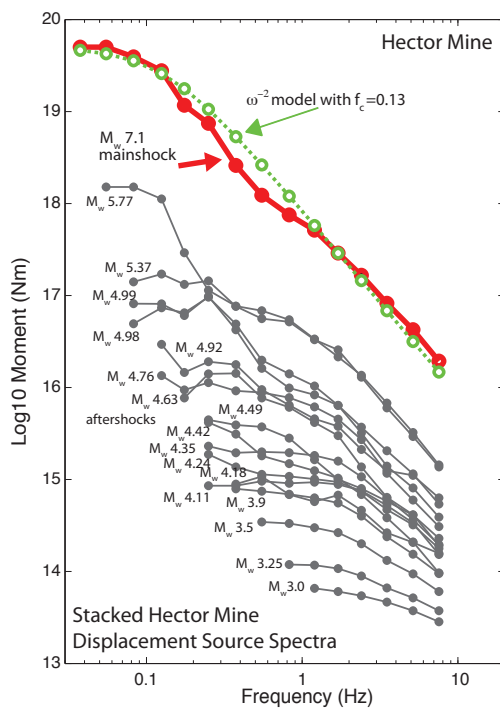
a_{RMS} stress drop compares well to eGf Brune stress drop for $R < 15$ km. For larger events, farther event-station distances can be considered, depending on attenuation.

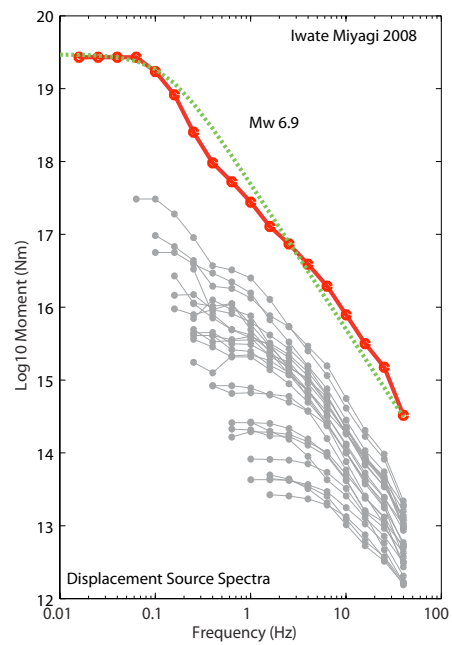
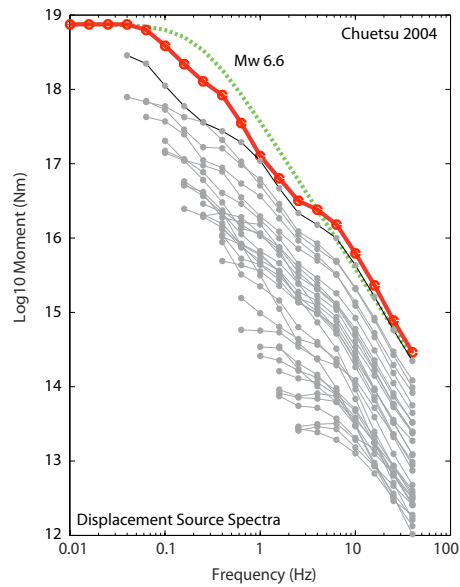
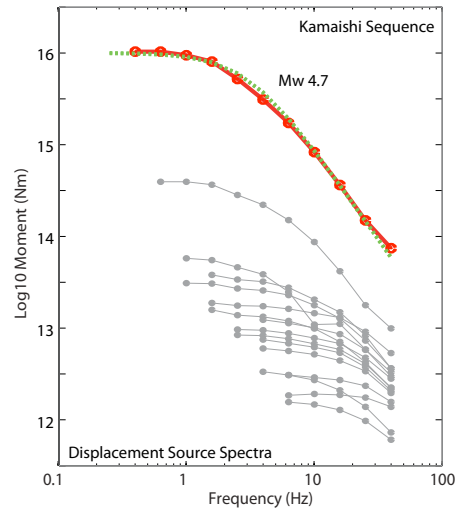
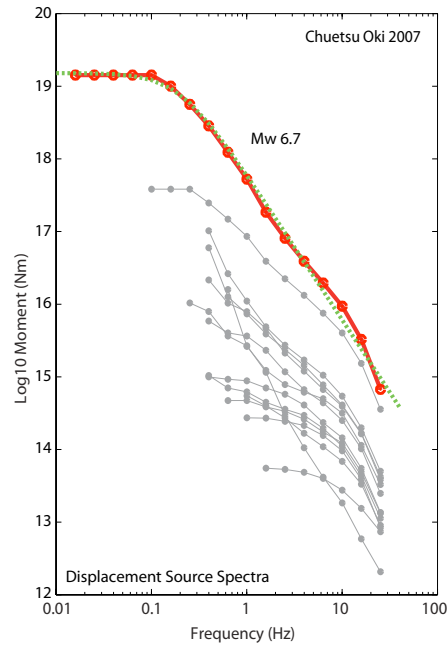


eGf Brune stress drop: mean = 5.0 Mpa; log10-std = 0.40
 a_{RMS} stress drop: mean = 4.8 Mpa; log10-std = 0.46

Depth Dependence?







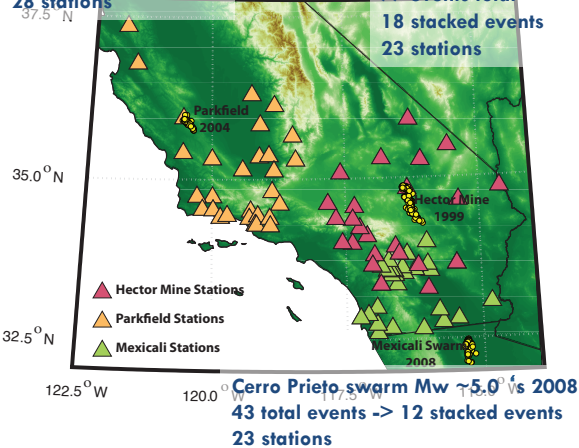
Western US Data Sets

Parkfield Mw 6.0 2004

47 events total ->

11 stacked events

28 stations

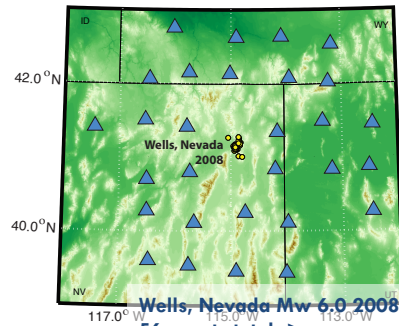


Hector Mine Mw 7.1 1999

77 events total ->

18 stacked events

23 stations



Wells, Nevada Mw 6.0 2008

56 events total ->

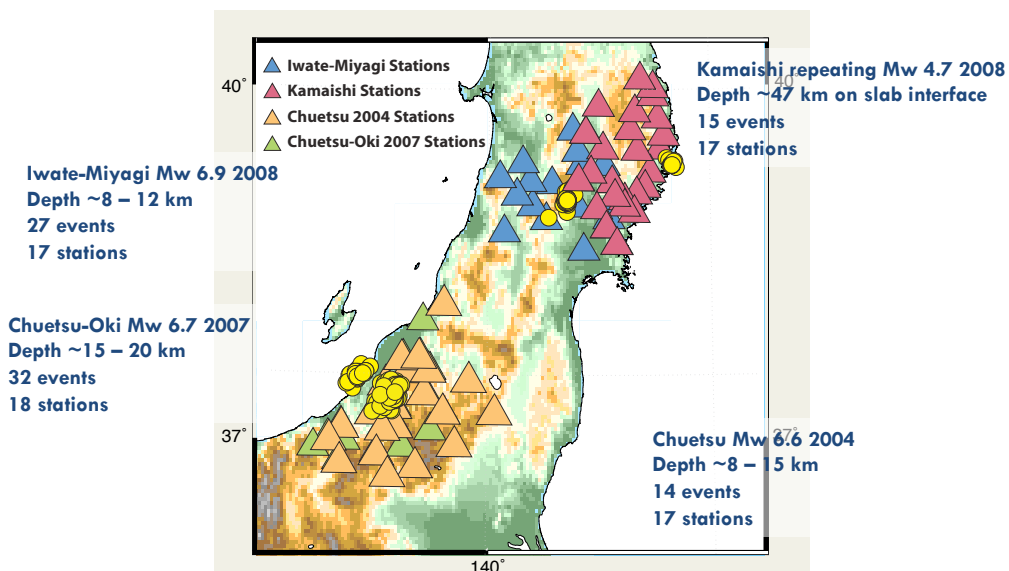
12 stacked events

29 stations

CalTech, Berkeley, Anza broadband networks

USArray Stations

Honshu, Japan Data Sets



Iwate-Miyagi Mw 6.9 2008

Depth ~8 – 12 km

27 events

17 stations

Chuetsu-Oki Mw 6.7 2007

Depth ~15 – 20 km

32 events

18 stations

Kamaishi repeating Mw 4.7 2008

Depth ~47 km on slab interface

15 events

17 stations

Chuetsu Mw 6.6 2004

Depth ~8 – 15 km

14 events

17 stations

Co-located HiNet (broadband) and KikNet (strong motion up- and down-hole) stations