

# Seismic moment distribution and characteristic earthquakes

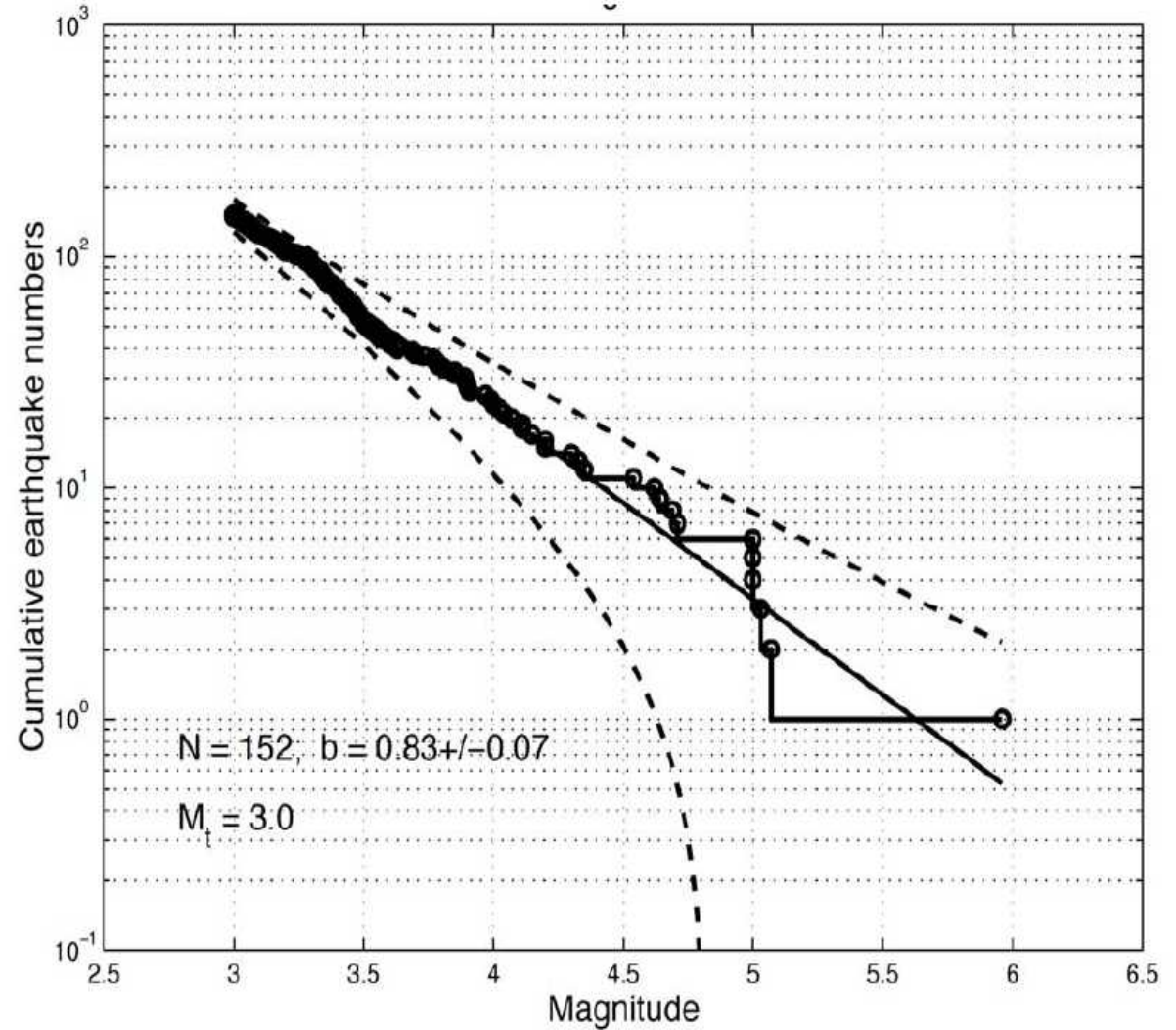
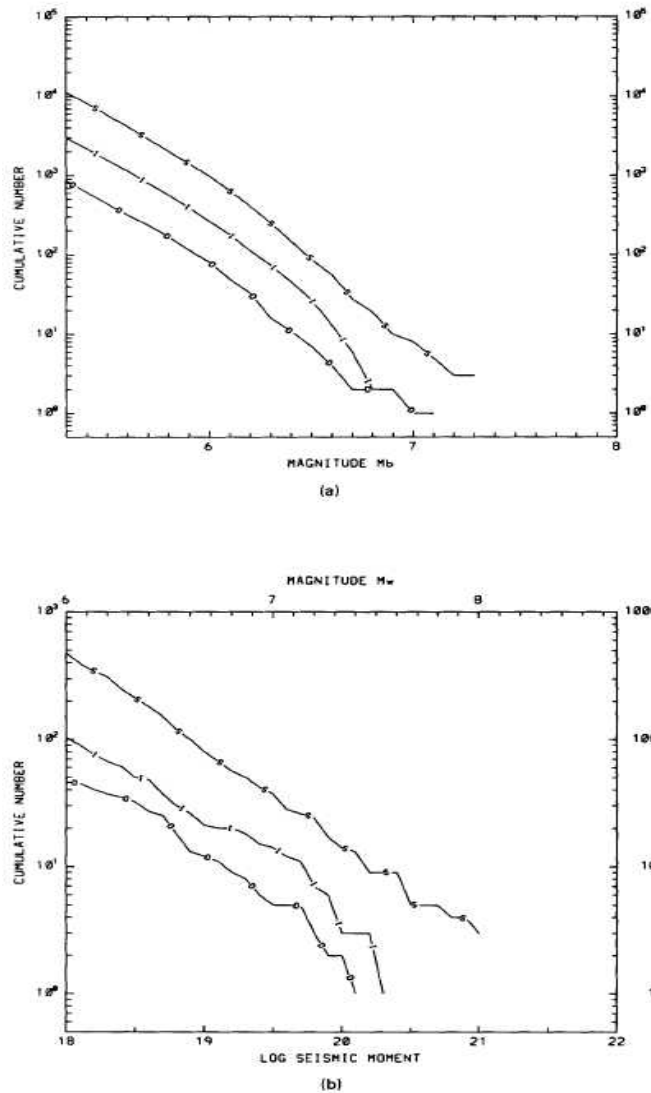
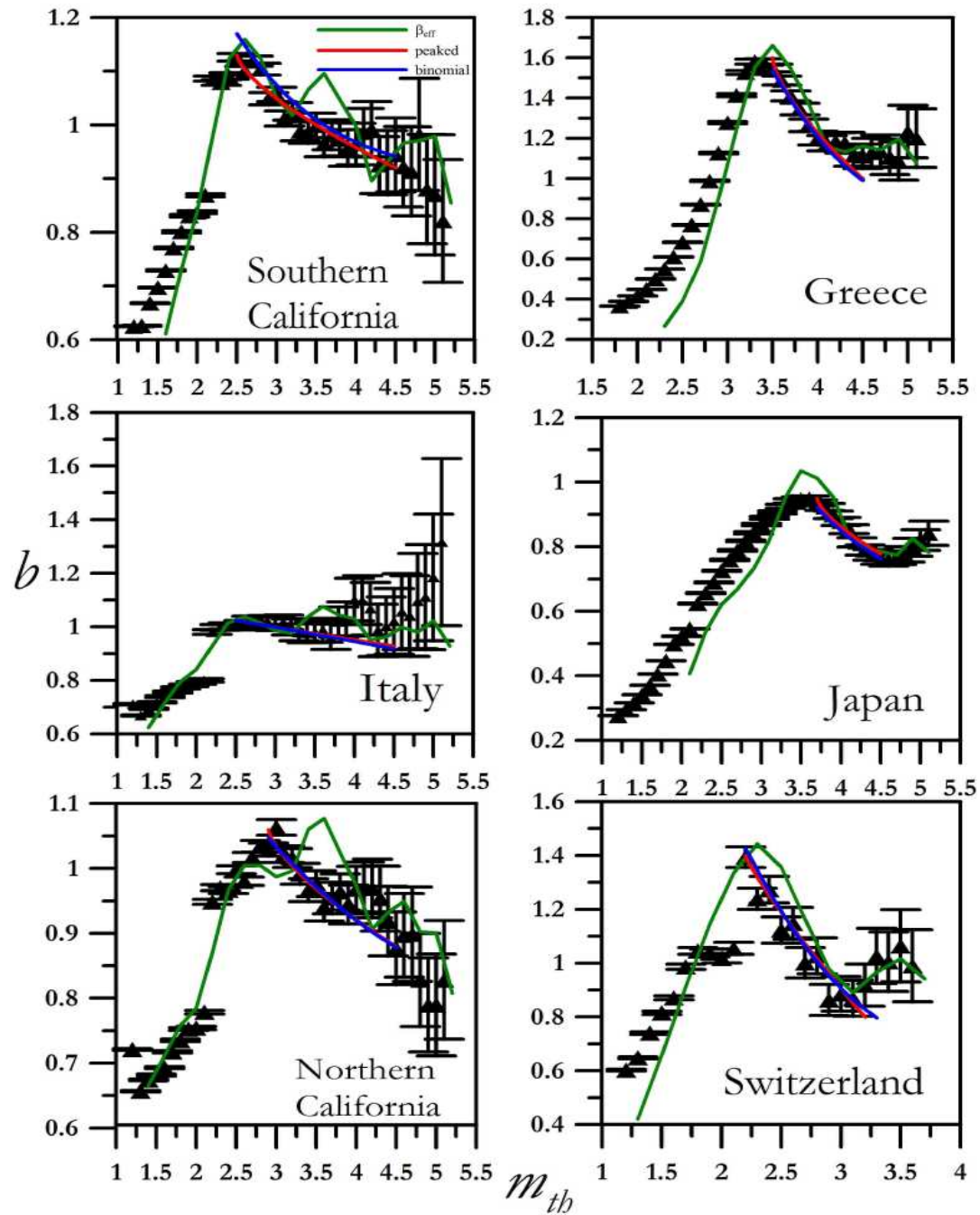
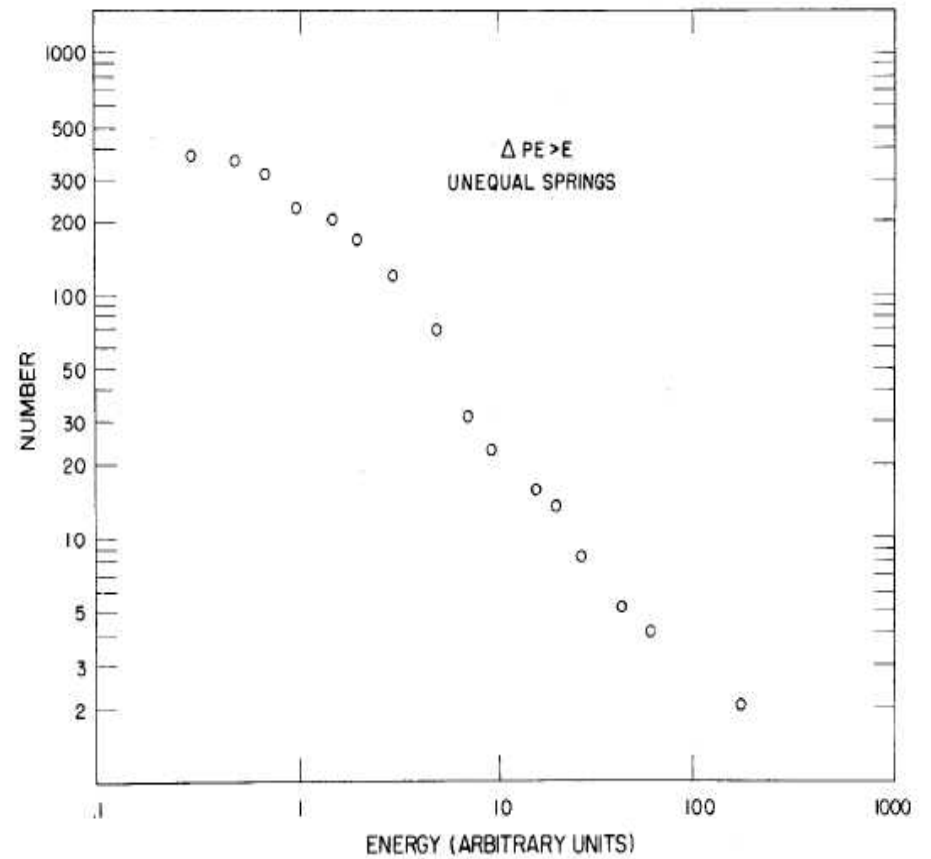
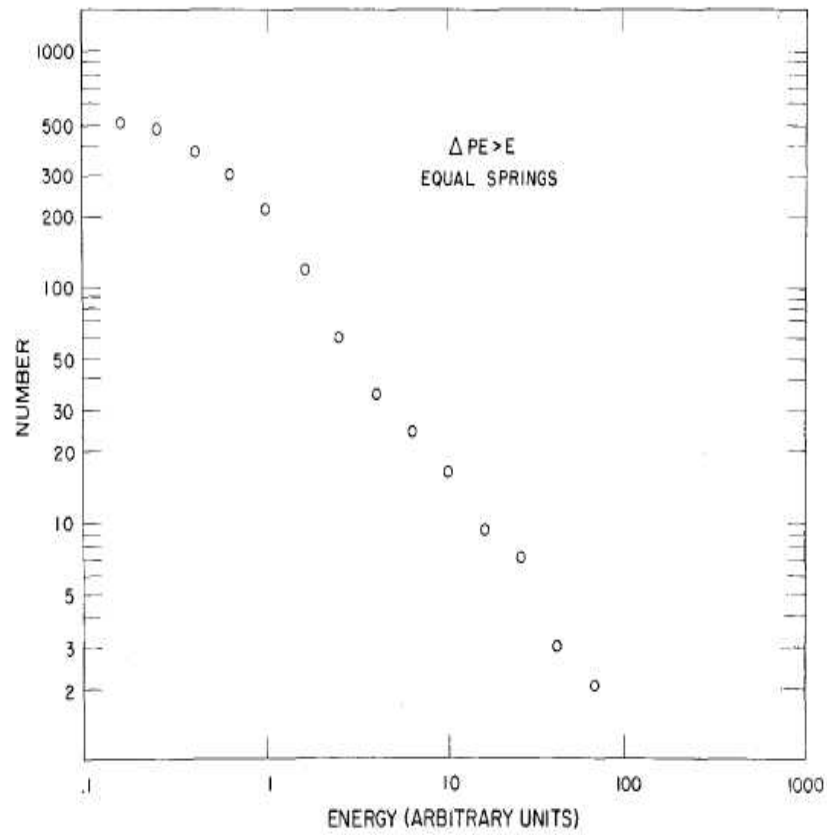


Figure 1. Magnitude–frequency relation for earthquakes from 1967 through 2005 in the Parkfield box proposed by Michael and Jones (1998). Solid line is the best fit Gutenberg-Richter approximation; dashed lines are 95% confidence limits based on Poisson occurrence. The observations fall within the range expected for a Gutenberg-Richter distribution, contrary to the characteristic model, which would imply a significant surplus of magnitude-6 “characteristic” events. (Figure adapted from Jackson and Kagan, 2006.)

# Effective b exponent



# Burridge-Knopoff result (the role of disorder)



# Aftershocks in spring-block models

- Aftershocks are absent in the BK model. Also the estimated  $b$  is too small
- Introducing spatial heterogeneity (Rundle and Klein [1993], Steacy et al. [1996], Gross [1996] and Steacy and McCloskey [1999])

No big difference

- Introducing state-rate-equation in the friction law (Pellettier (2000))

No big difference

- Introducing viscoelastic coupling (Hainzl et al. 1999)

