

# Seismic Investigations

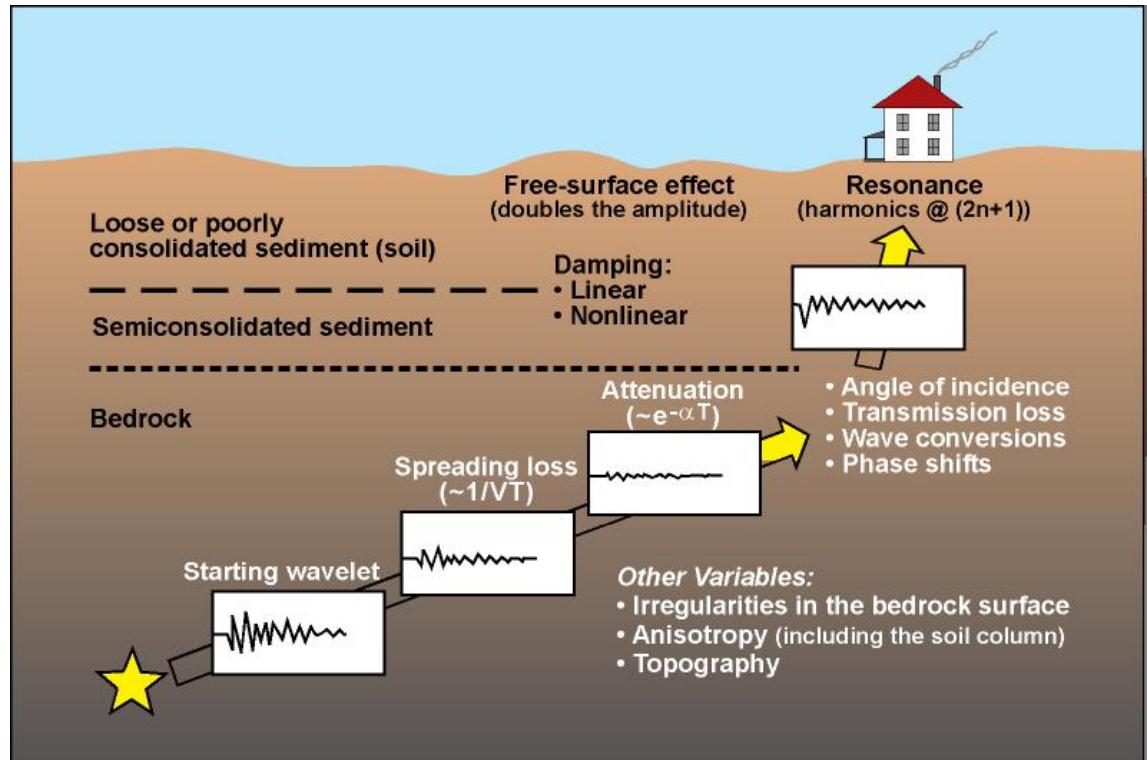
Earthquake Input Parameters  
for the PGDP, Paducah, and Jackson  
Purchase Region

KRCEE CAB Presentation, March 2005

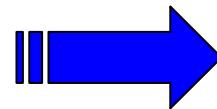
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# Issues

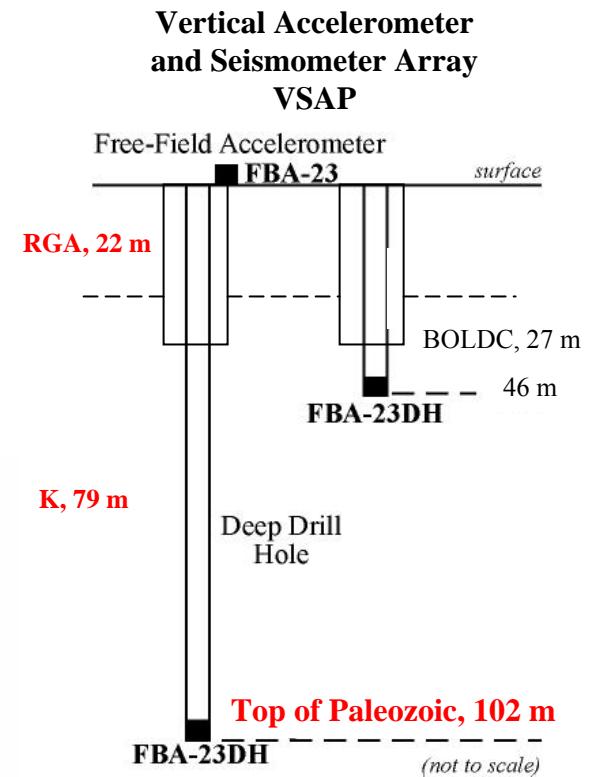
- What are the likely seismic design ground motions at the PGDP site?
  - Source Effect
  - Path Effect
  - Site Effect
- Needed for accurate modeling and seismic design



# Network Enhancement



100 0 100 Miles

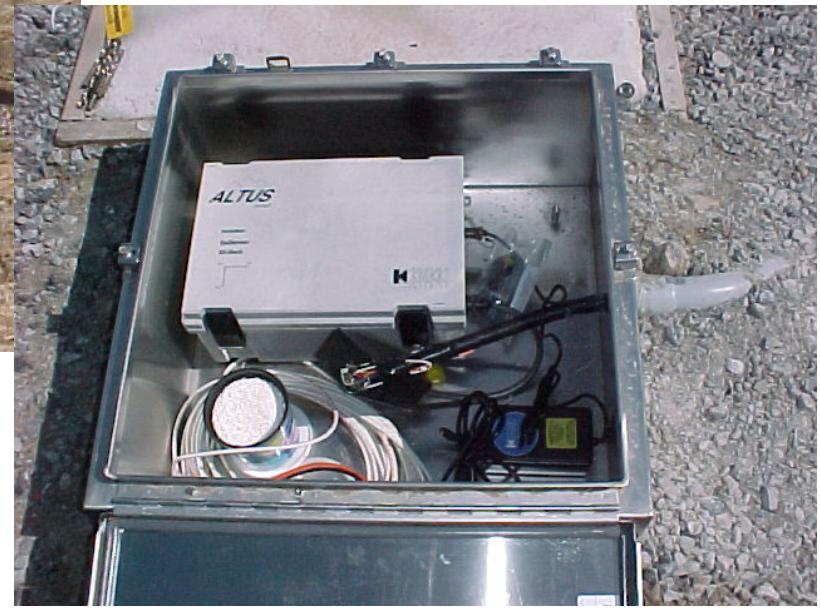


# Strong-motion Instrumentation

- Kinemetrics K-2 accelerograph; high dynamic range for pseudo-broadband capability
- Kinemetrics FBA-23 and Episensor force-balanced accelerometers; capable of staying “on scale” under motions up to 2g’s.

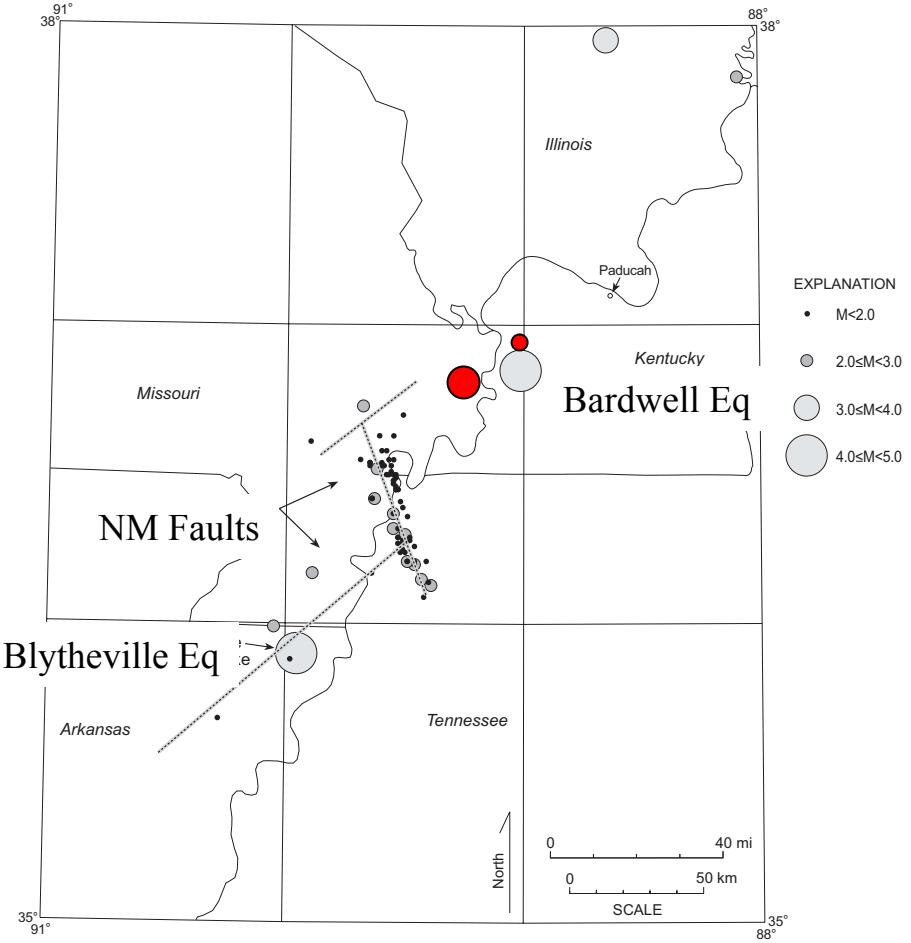


# Typical Completion

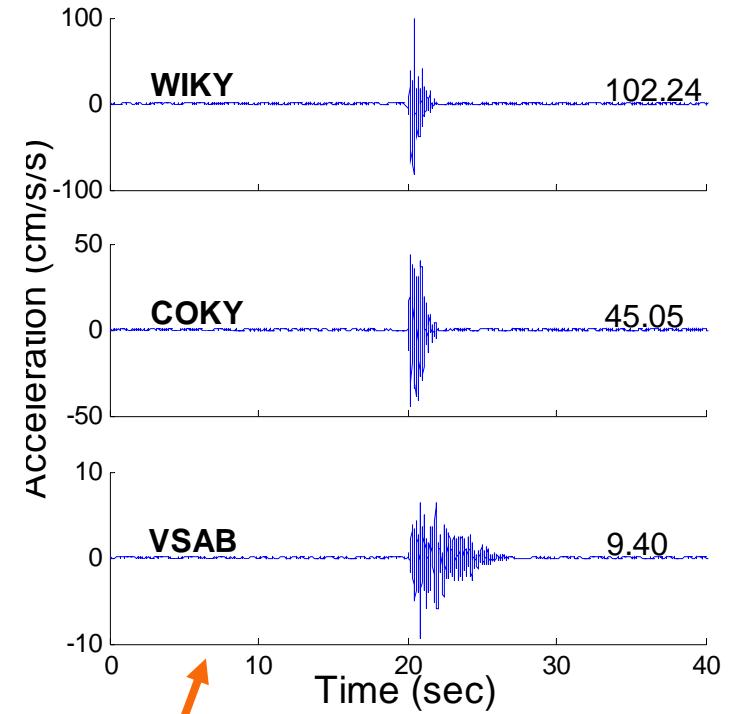
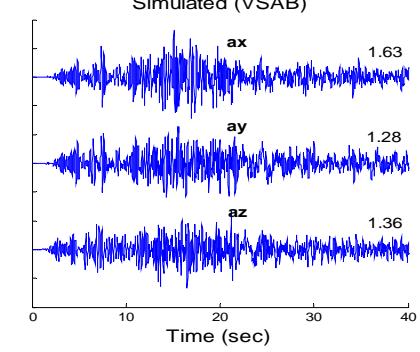
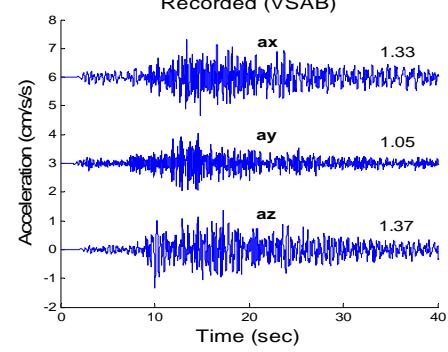
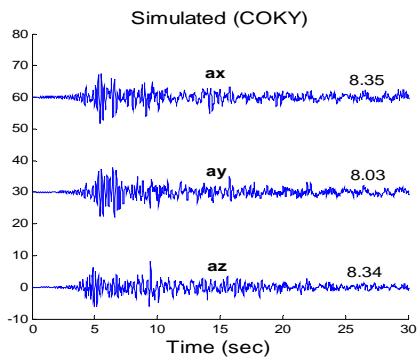
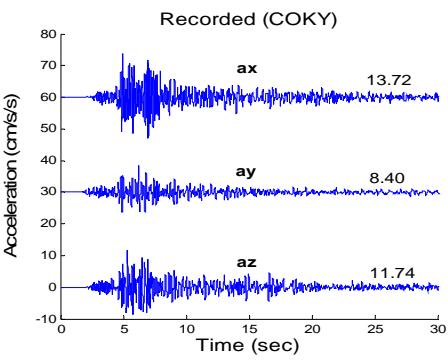
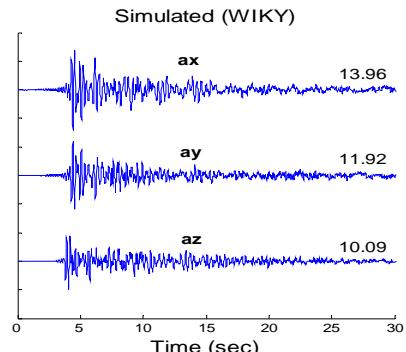
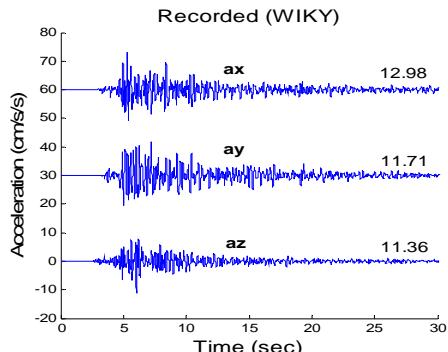


# So far?

- 2 similar events in 2003 (M4.0)
  - Bardwell, 2 km focal depth
  - Blytheville, 18 km focal depth
- Need statistically significant population
  - 12Feb04, 2.4  $M_D$ , 9 km depth
  - 15Jul04, 3.5  $M_D$ , 4 km depth



# $M_w$ 4.0 June 06, 2003 Kentucky Earthquake



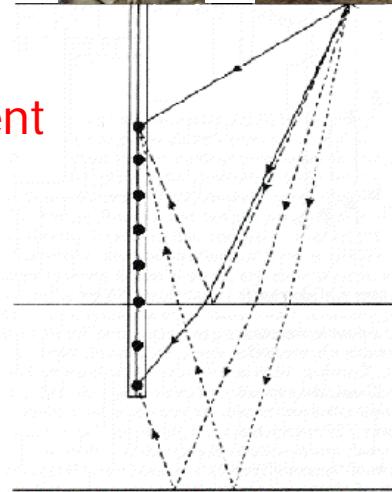
Stochastic Point Source Model

Composite Source Model

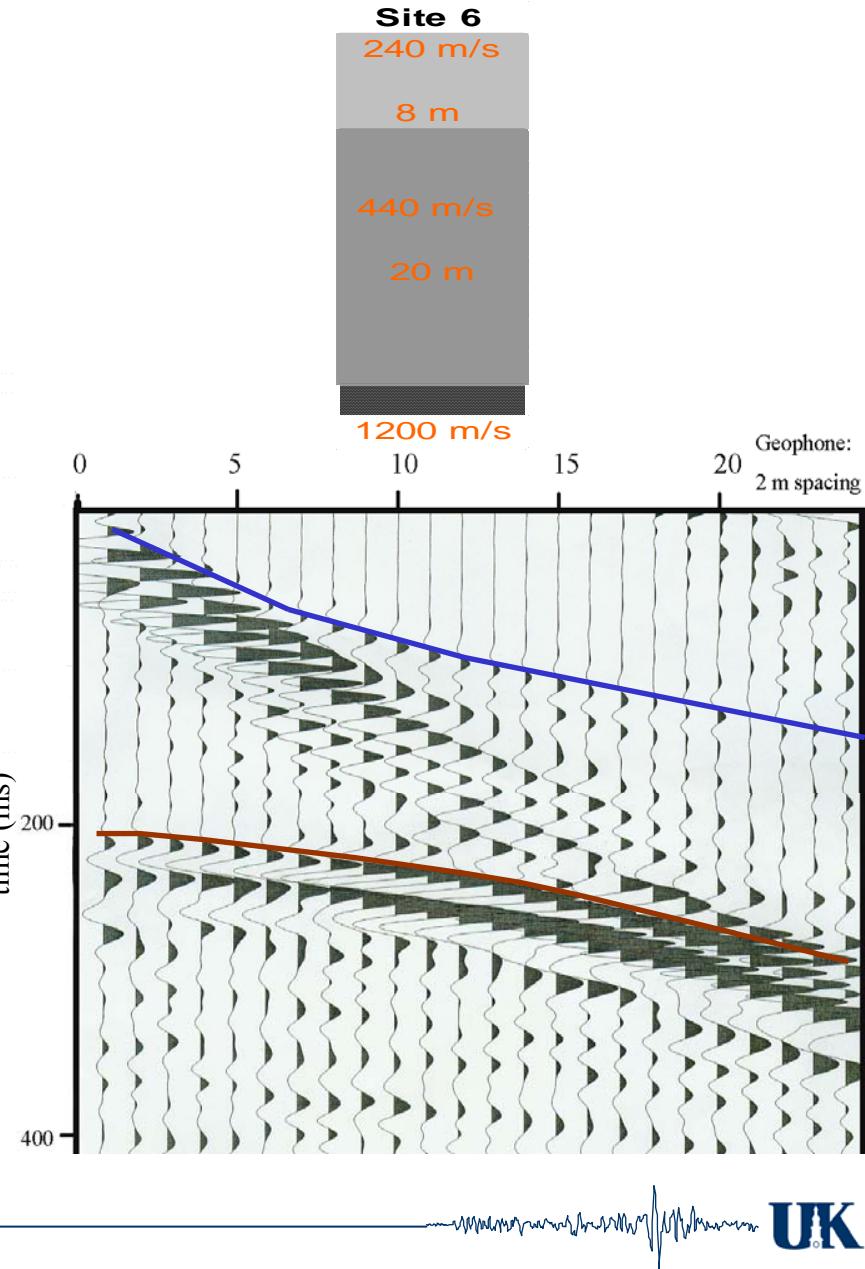
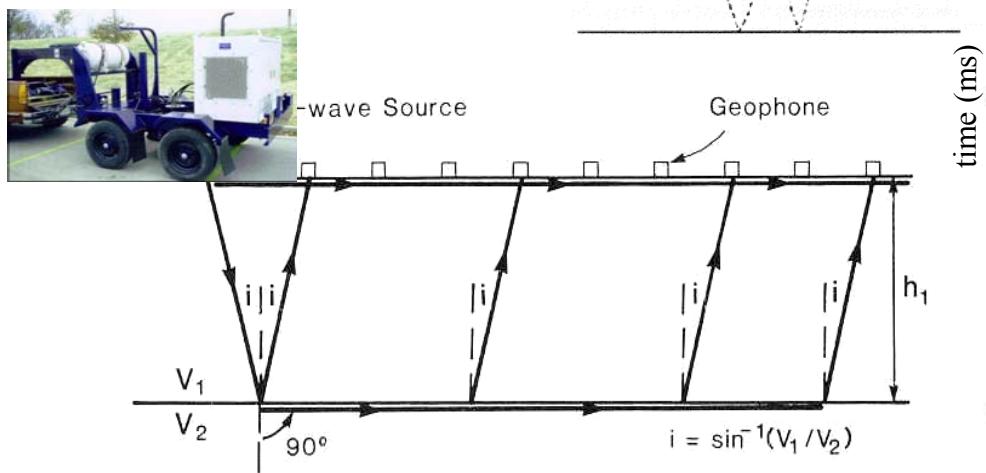
# Define Site Velocity Model



Downhole Seismic S-wave Measurement



Surface Seismic S-wave Refraction/Reflection



# Design Ground Motion Model

