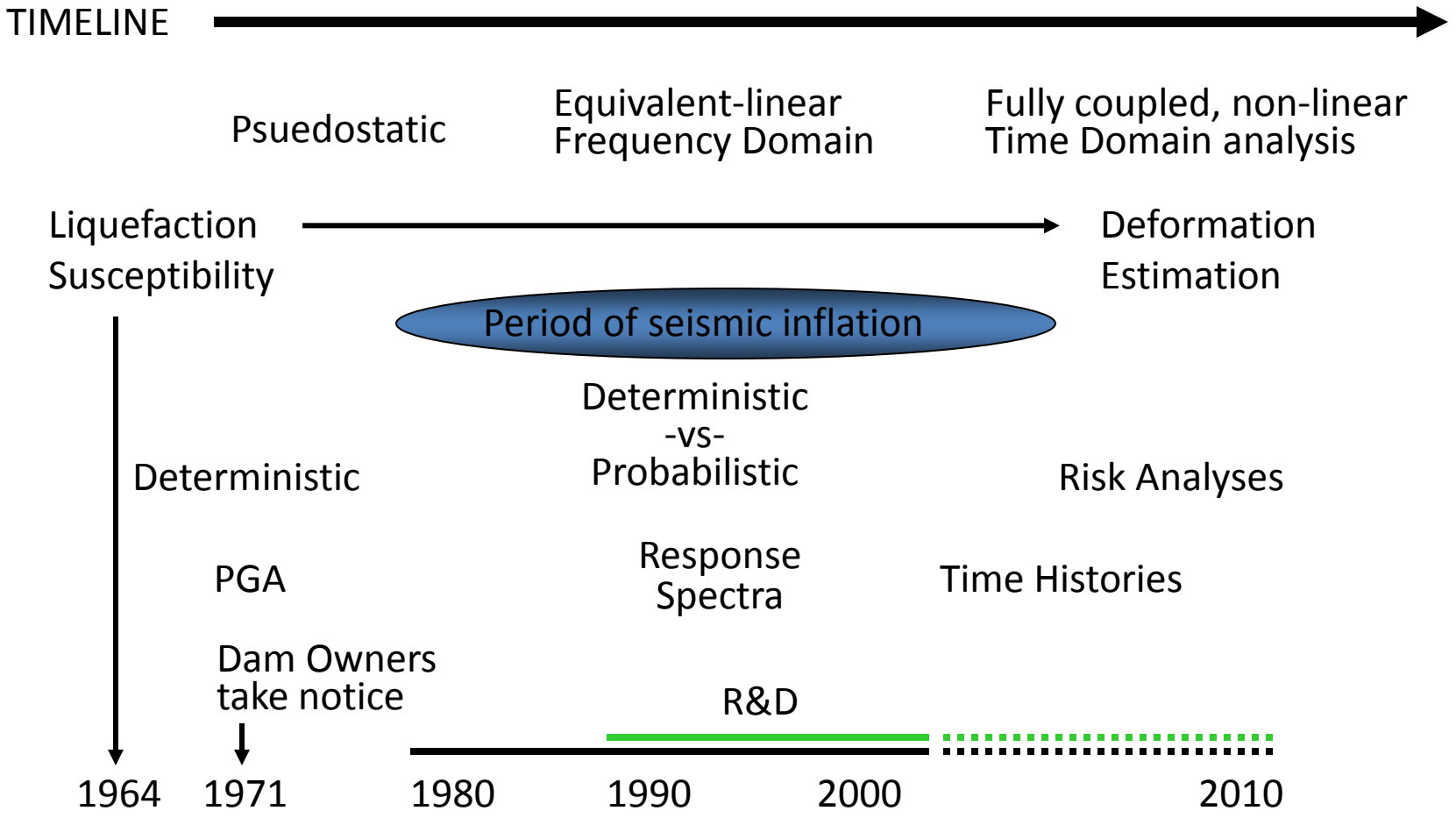
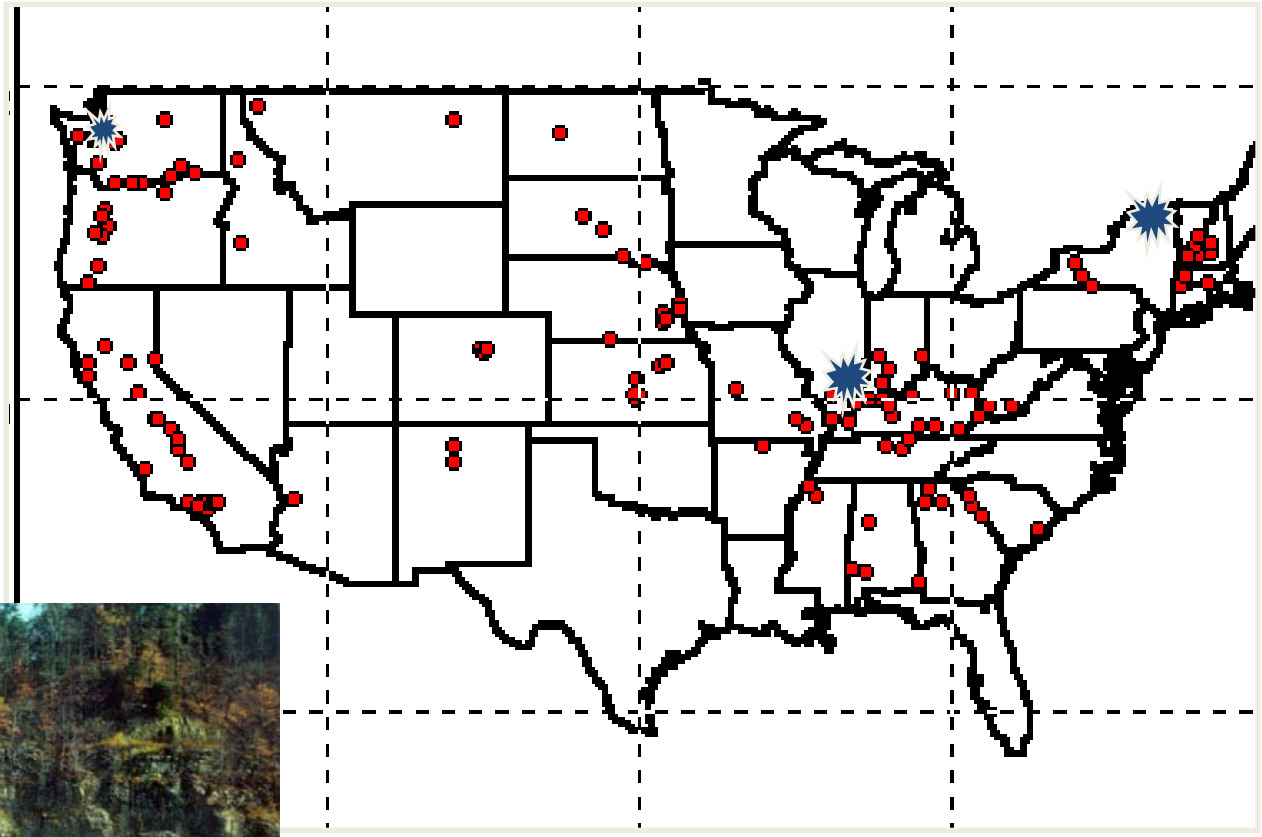
Earthquake Engineering -Dams

Policy chasing a moving target and a rapid growth in the state-of-knowledge and expectation of leading edge practice organization



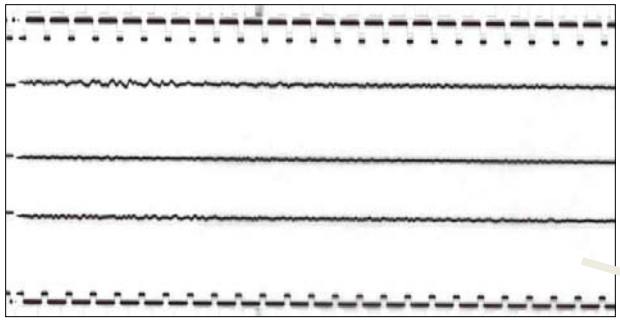
USACE Earthquake Strong Motion Monitoring

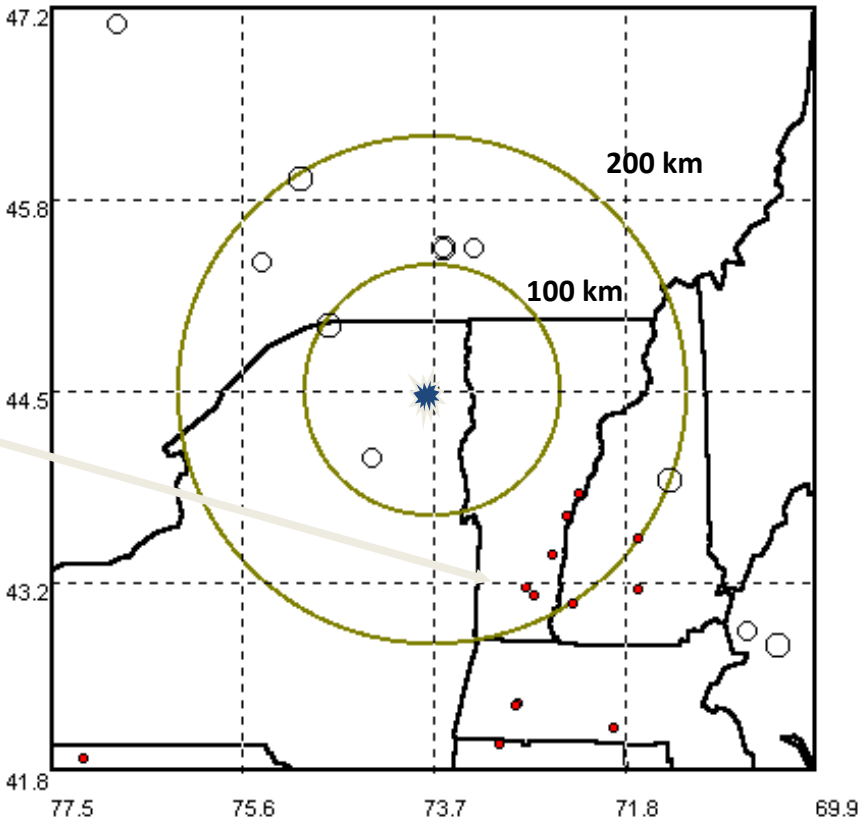


USCE SMIP Stations

SMIP station at Bluestone Lake, WV

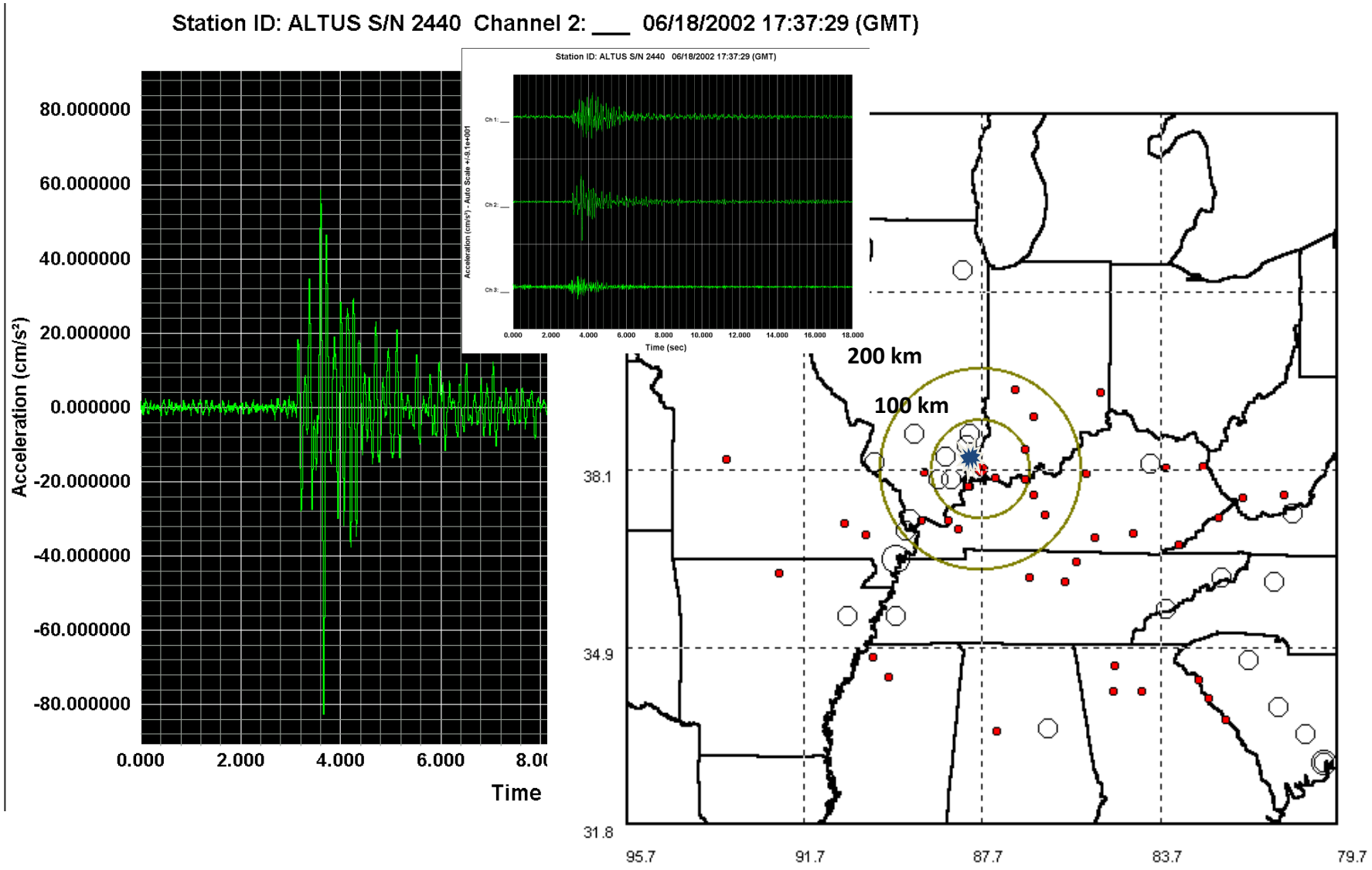
USACE SMIP Monitoring – N . New York Earthquake M=5.0





Example Film Record from Analog Accelerograph

USACE SMIP Monitoring – Indiana Earthquake M =5.0



Example Digital Record from Upgraded Seismic Station

Ground Motion Issues
On-going R&D Needs

- **Continued Development of Delineation and Characterization of Deterministic Source Zones**
- **Investigation of Acceleration Time Histories for Phasing, Energy Delivery Characteristics**
- **Finite Fault Modeling for determining bounds on characteristics that are Important to engineering analysis**
  - **Support complex constitutive models**
  - **Constrain time history selection**
- **Data Collection**
  - **Structural monitoring**
  - **Ground motion monitoring (strong and weak motions)**
  - **Monitoring free field level ground and free field steep valley**

Geotechnical R&D Future Thrusts

- Fragility curve development
- Analysis of embedded structures
- Validation of large deformation estimation
- Physical modeling to add case histories, validate analyses
- Application and Adaption of Technology to Levees