Geologic hazards issues in Kentucky

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Geologic Hazards Section
Kentucky Geological Survey

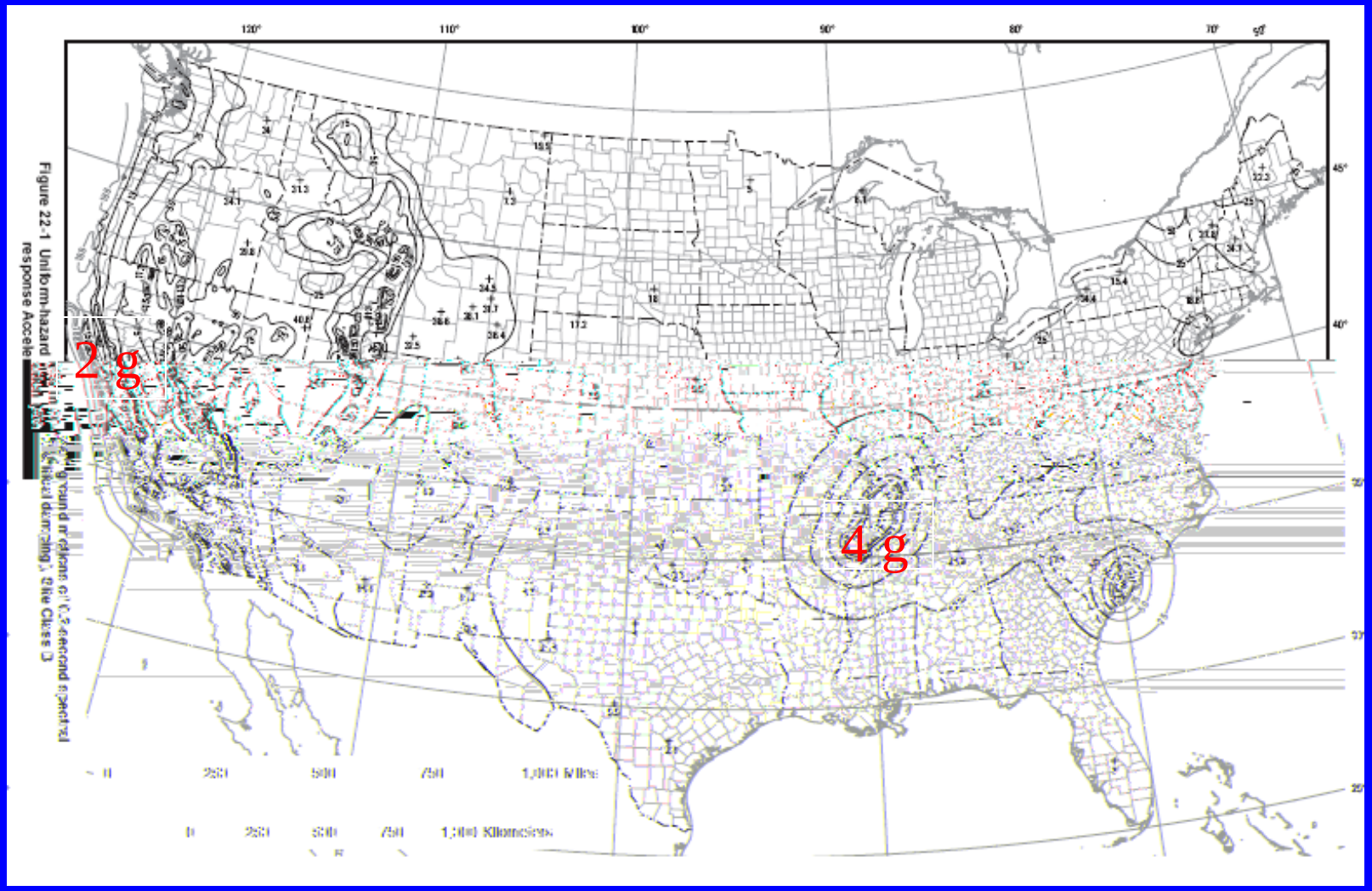
KGS Annual Seminar
May 17, 2013

Geologic hazards

- Seismic hazards
- Landslides
- Sinkholes (Water Section)
- Others

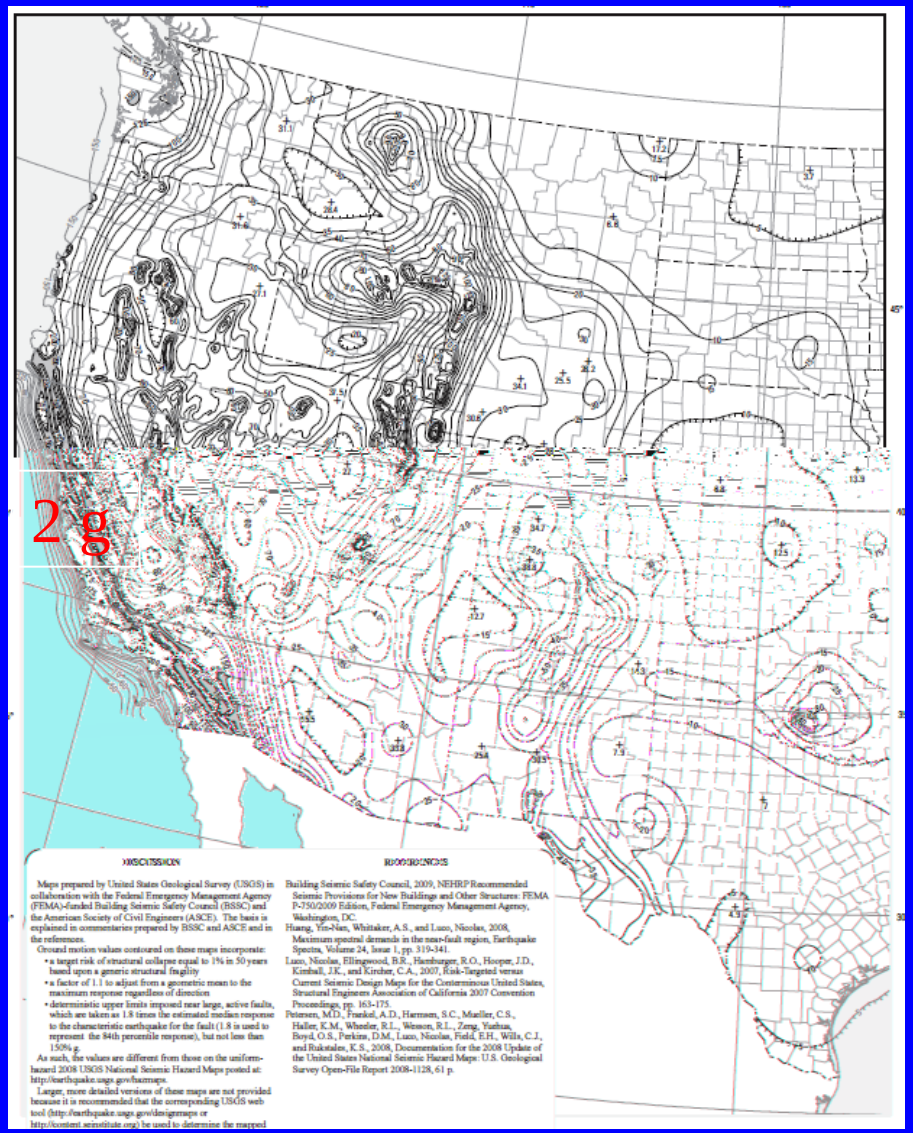
Where is the highest seismic hazard or design requirement in the Continent US?

NEHRP 0.2 sec Spectral Response Acceleration for the U.S. (2% PE in 50 yrs.) – the USGS hazard map



(2009 NEHRP Provisions)

ASCE_7-10 Design Ground Motion



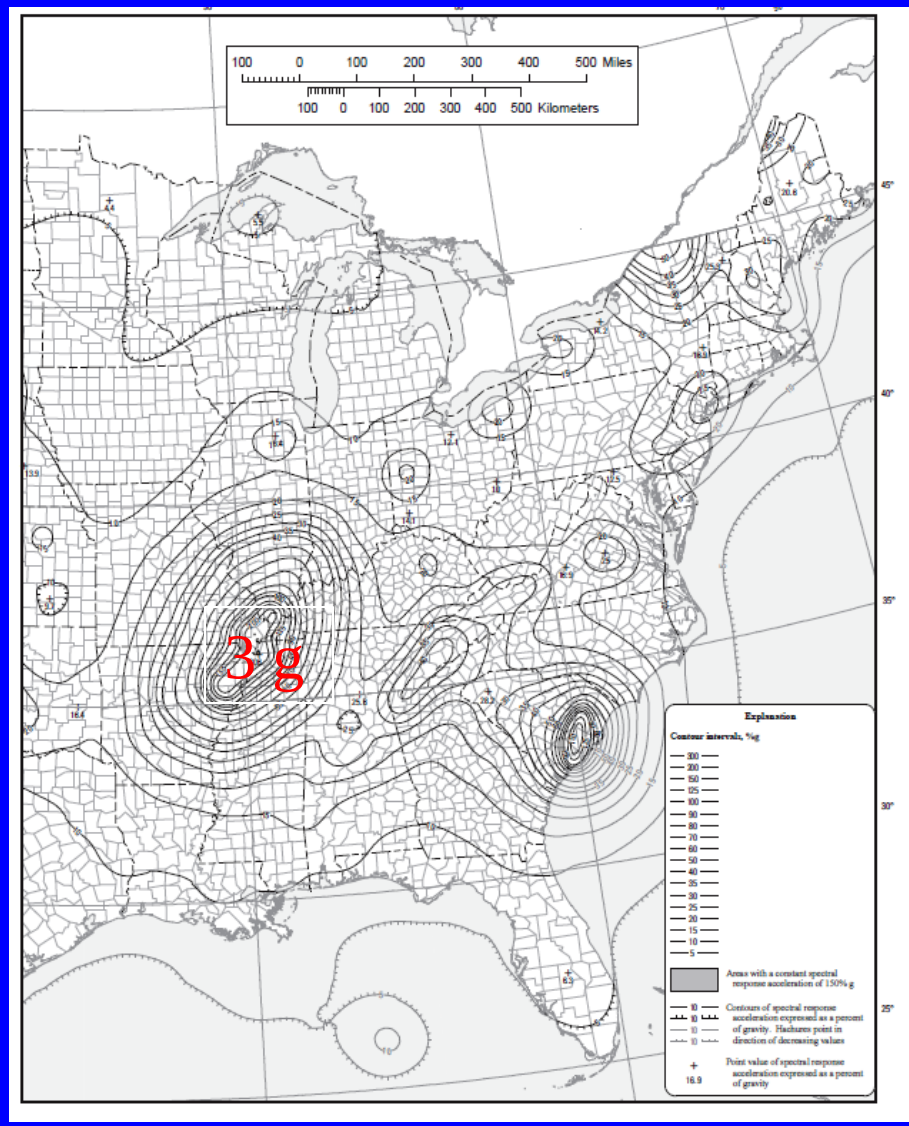


Figure 22-1 Ss Risk-Targeted Maximum Considered Earthquake (MCER) Ground Motion Parameter for the Conterminous United States for 0.2 s Spectral Response Acceleration (5% of Critical Damping), Site Class B.

Development of NEHRP Provisions

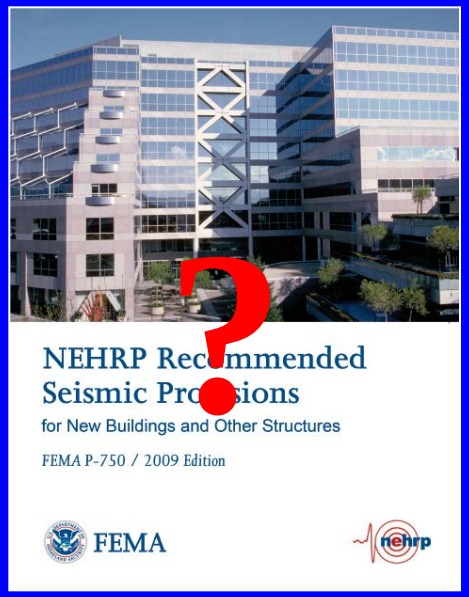
Science

Seismic Hazard Map
(USGS)

BSSC – Seismic Design Procedures
Reassessment Group (SDPRG)

Policy

Seismic *Design Ground Motions*
(FEMA)



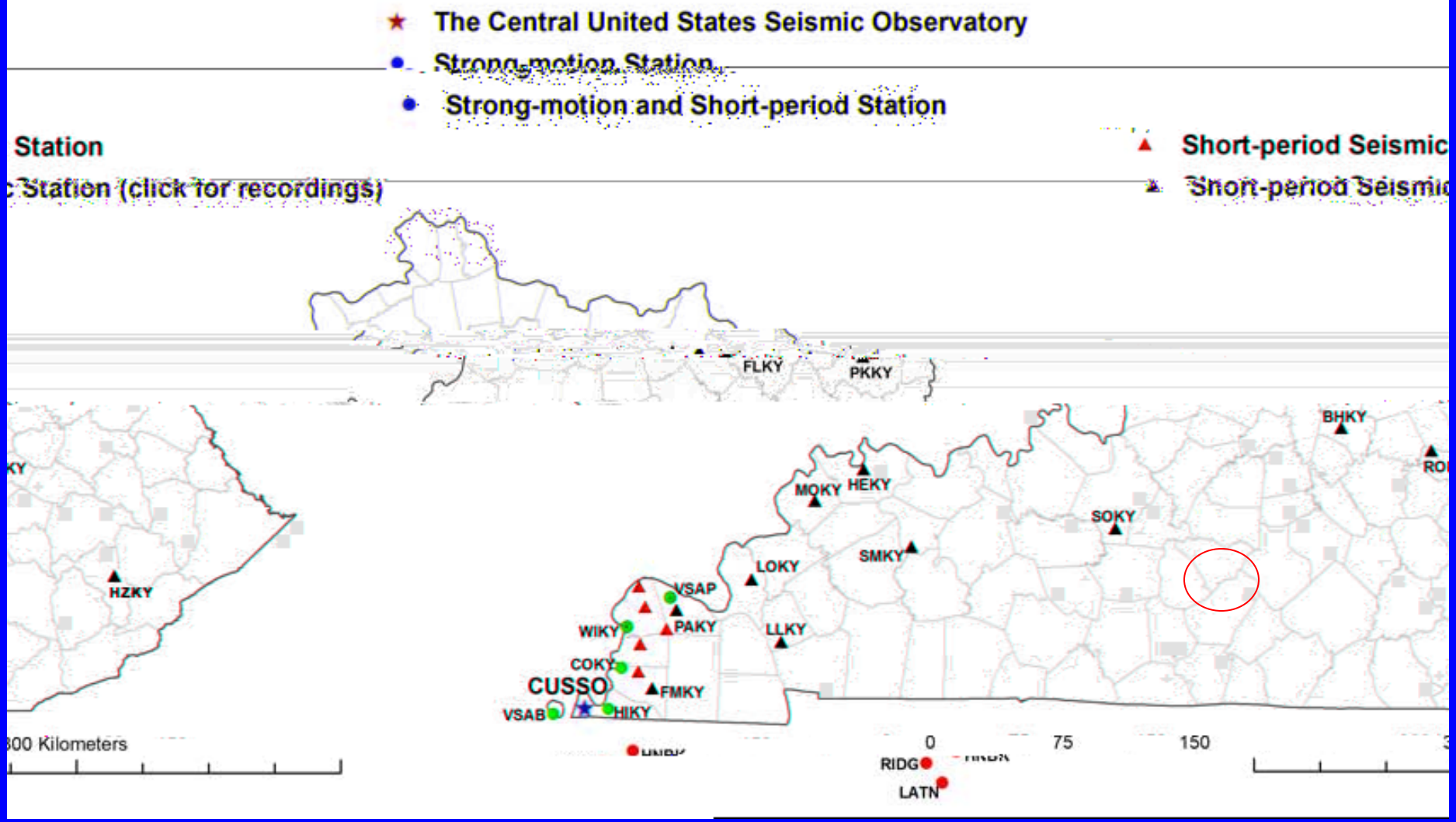
Federal agencies

State Agencies

Other organizations

Click on Station to see current Seismic Recordings

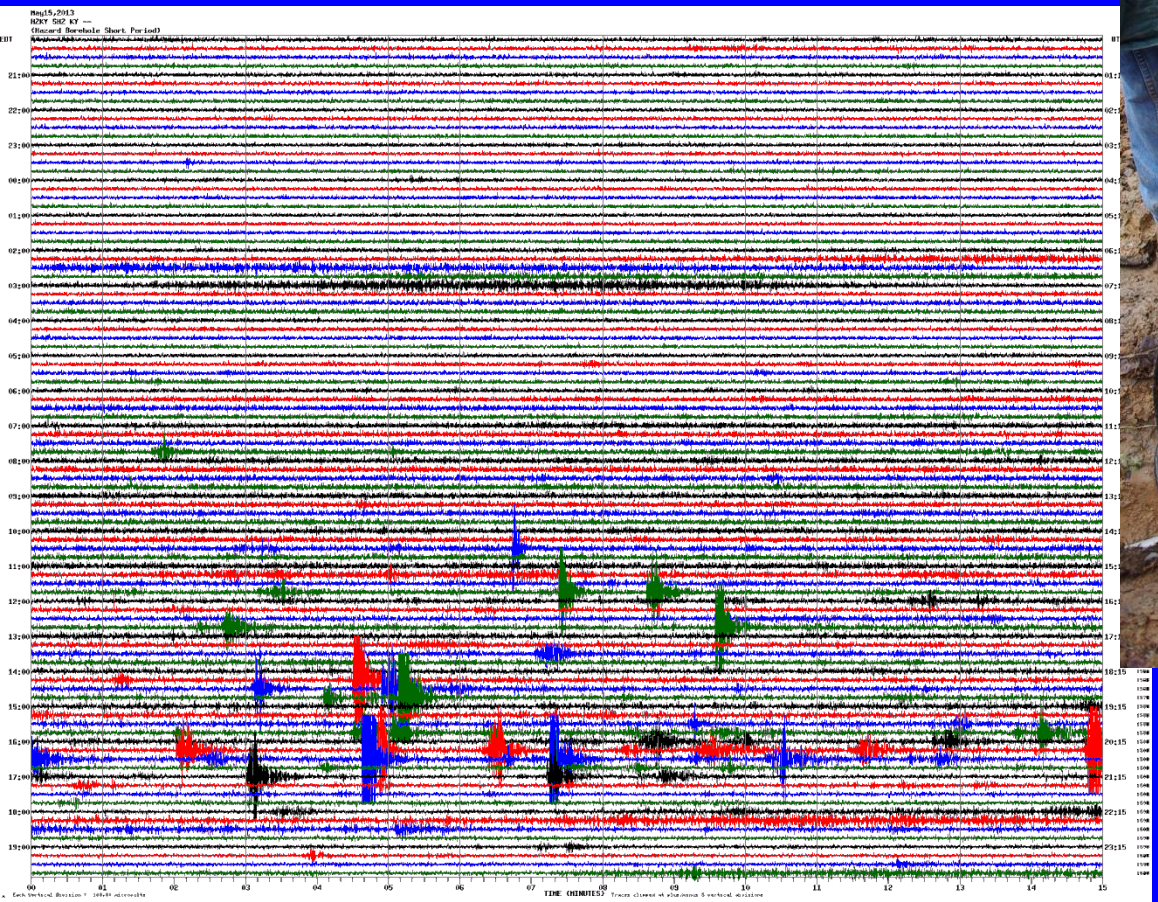
Kentucky Seismic and Strong-Motion Network



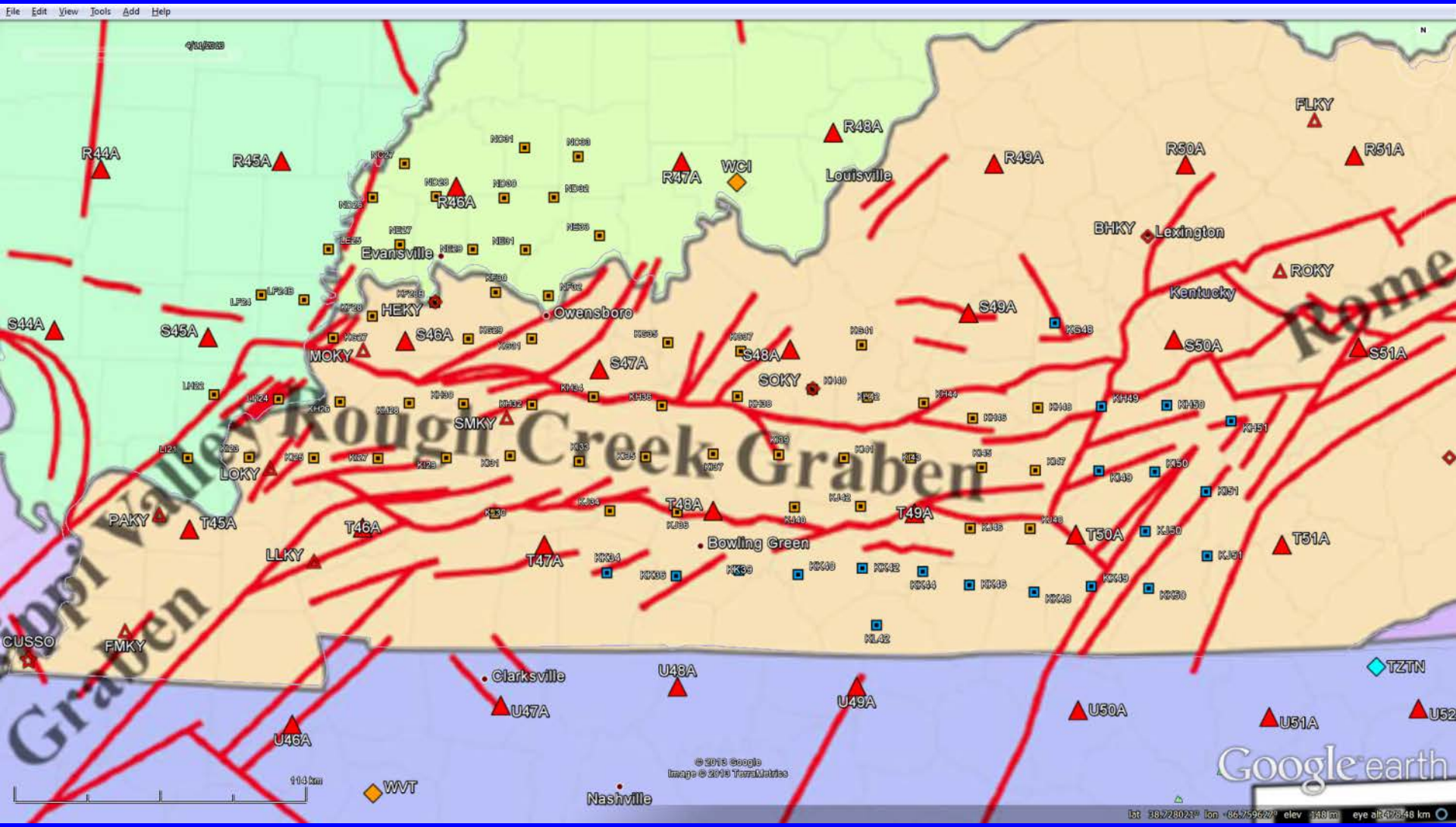
http://www.uky.edu/KGS/geologichazards/equake3.htm


COUNTY COURTHOUSE
11.15.2012

5/15/2013

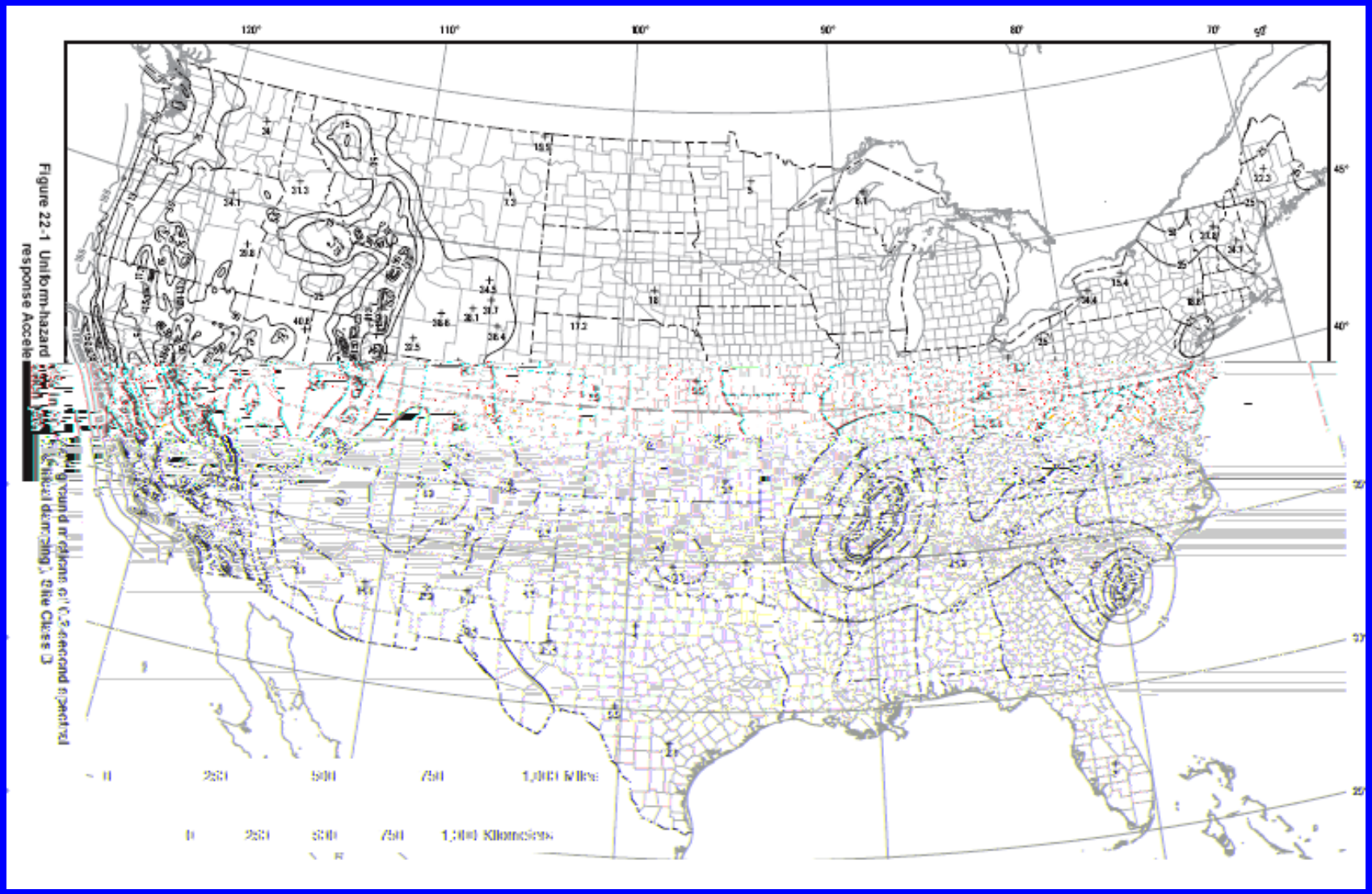

May15,2013
KDKY SHZ KY --
(Blacard Borehole Short Period)
EDT
TIME (MINUTES)

EarthScope – Largest Research Project in Earth Science (NSF)



We are working with OIINK group (IU, Purdue, UIUC, IGS, ISGS)

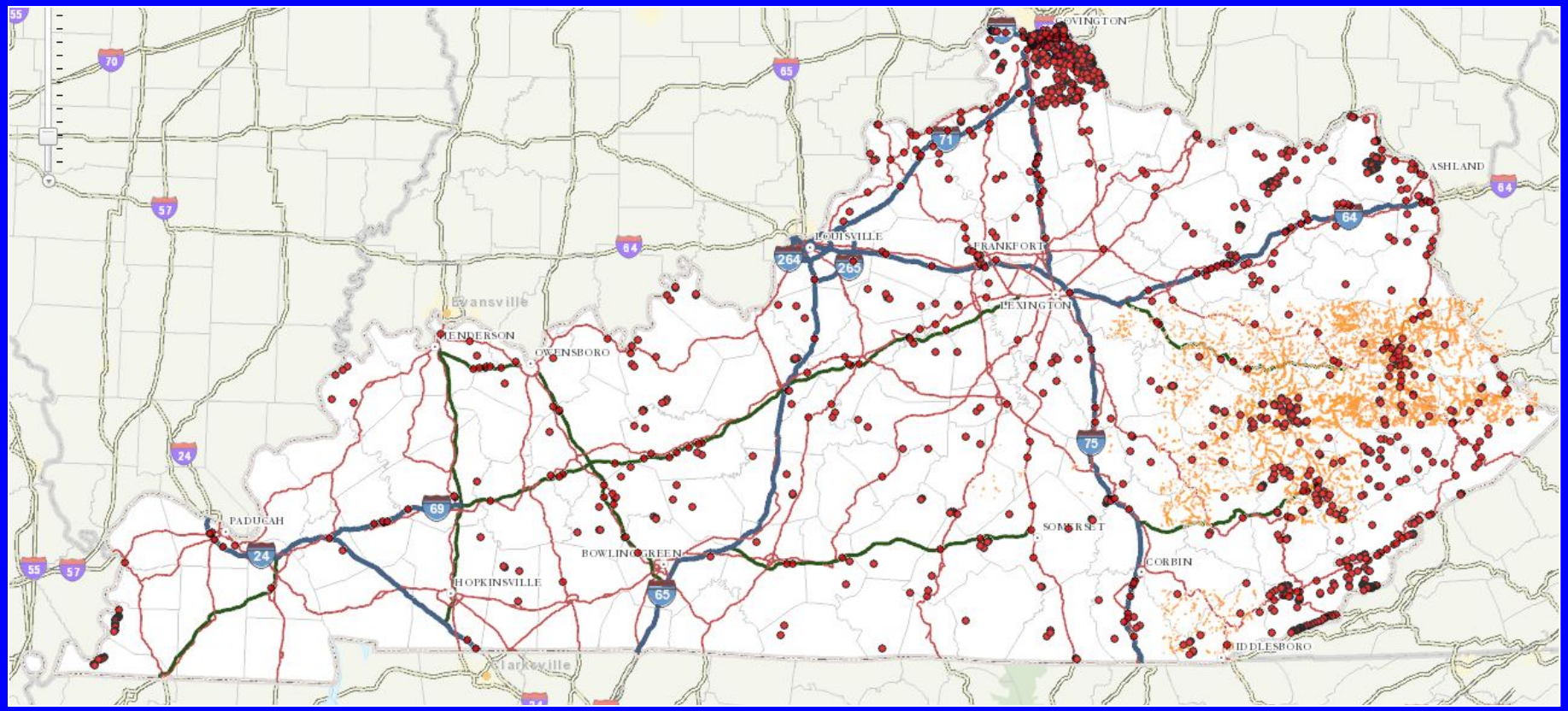
http://earthquake.usgs.gov/hazards/



USGS is updating the seismic hazard maps – draft maps are due June 2013 (10 to 50% reduction for the NMSZ)

Landslide Hazard

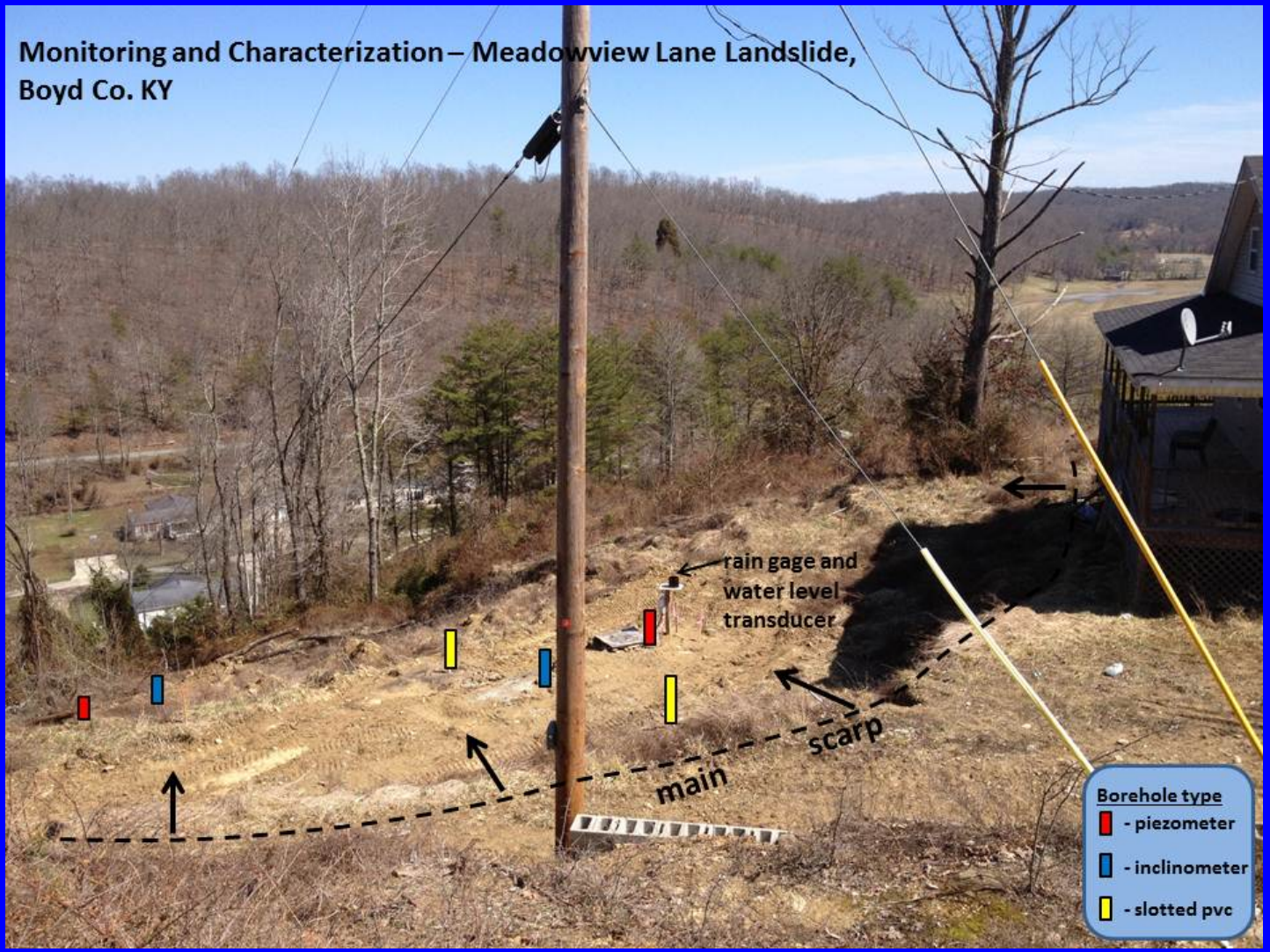
Landslide Information Map Service



- Known landslide locations
- Areas susceptible to debris flows
- Landslides located from LiDAR and aerial photography
- LiDAR hillshade layer (where available)

Landslide Inventory Database

Landslide Hazard Research



OBJECTIVES

- Total Station surface monitoring
- Depth of sliding mass
- Direction and velocity
- Groundwater monitoring
- Rainfall data
- Geotechnical soil properties
- Electronic resistivity

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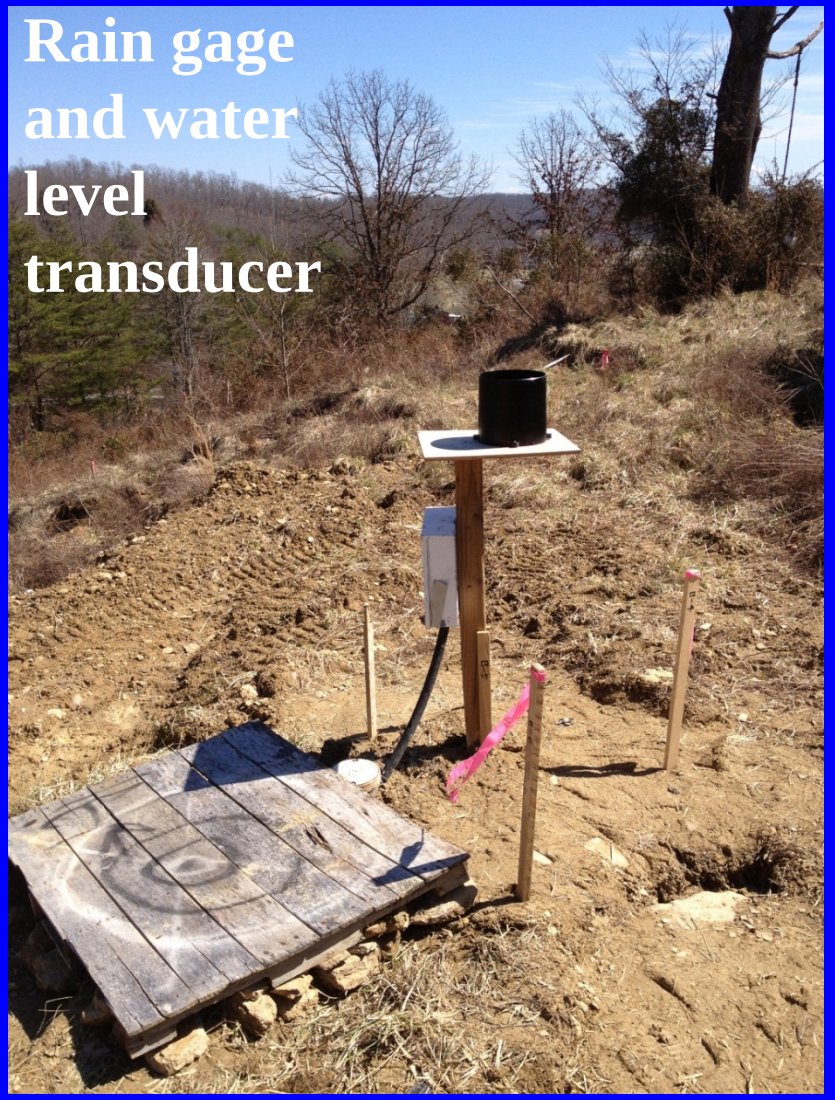

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UK
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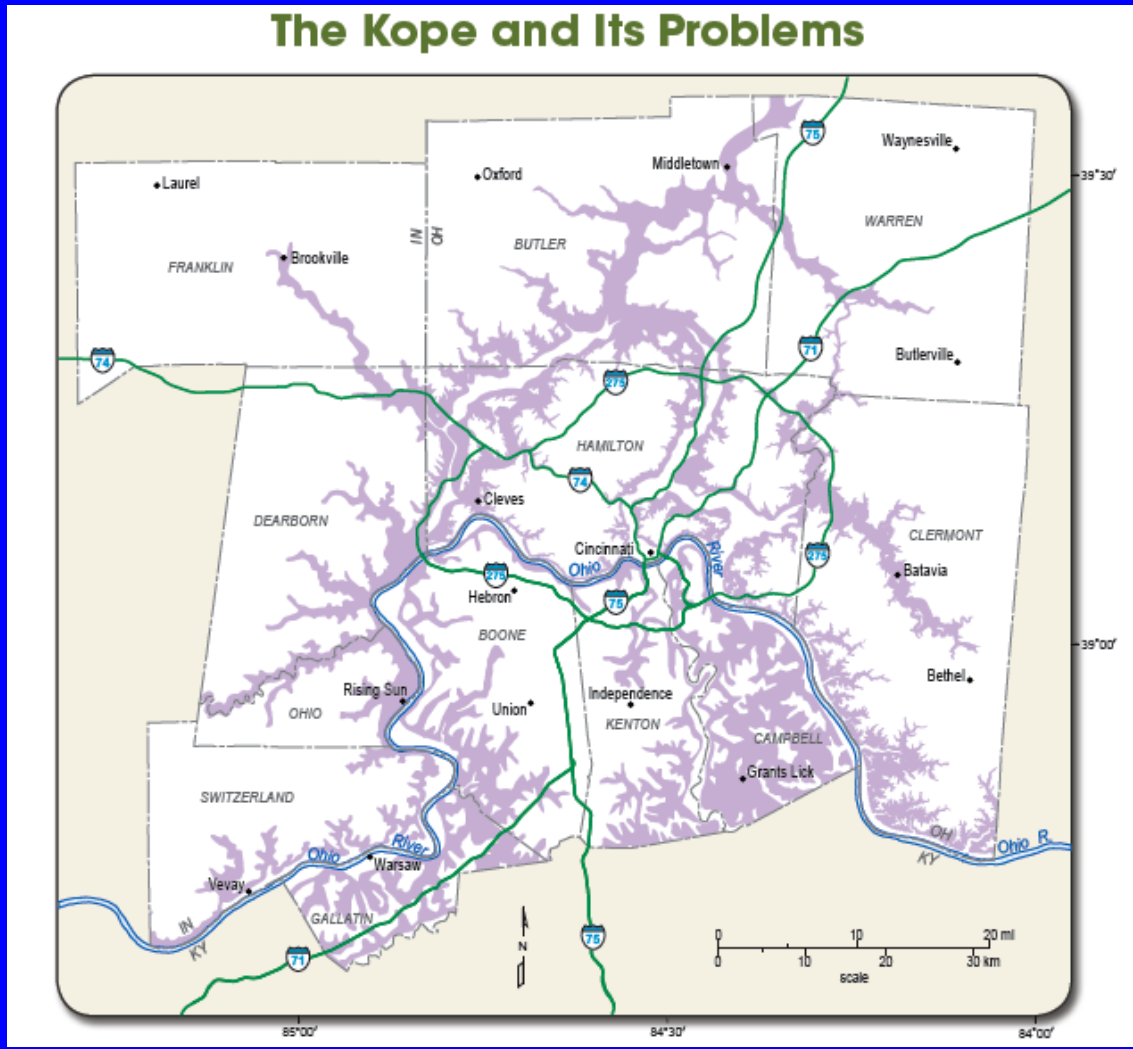
Joint landslide publication with the University of Cincinnati, Indiana Geological Survey, and Ohio Geological Survey



Question?

Comment?

Suggestion?