Increased seismicity rates across the central United States have raised scientific questions and local and national concerns about the impact of shale gas production on infrastructure and subsurface structures such as faults. This talk will focus on recent research on North Texas earthquakes. But the central US is not historically aseismic and intraplate faulting is not uncommon. This talk explores similarities and differences between the intraplate New Madrid seismic zone, host to the large (M7+) earthquakes of 1811-1812 and focus of the Earthscope NELE experiment, and ongoing earthquake sequences occurring in the Fort Worth (Barnett Shale) Basin. Both New Madrid seismicity and North Texas earthquakes occur along reactivated ancient faults located in the basement granites and overlying sedimentary units and release natural tectonic stresses. New Madrid has a long paleoseismic record of large earthquakes. In contrast, North Texas had no credible felt earthquakes prior to 2008 and the recent swarms have been linked to local wastewater injection associated with shale gas extraction (2008/2009 DFW; 2009 Cleburne; 2013 Azle); studies of the 2014/2015 Irving-Dallas and 2015 Venus sequences are ongoing.

Biographical Sketch

**Dr. Heather DeShon** is a seismologist at Southern Methodist University whose research focuses on understanding earthquake initiation and rupture complexity. She uses high-resolution earthquake relocation and tomography to explore the spatial and temporal relationships between seismic source characteristics and structural variability. Her background in using local amphibious seismic networks to understand subduction seismogenic zone processes has more recently been applied to studies of intraplate seismicity and lithospheric structure in the central US. More broadly, her research interests are aimed at improving the characterization of seismic and tsunami hazard. Heather received her BS in Geophysics and Mathematics at Southern Methodist University and a PhD in Earth Sciences (Geophysics) from the University of California-Santa Cruz.