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Site Assessment of a New State-Wide Seismic Network in Texas (TexNet), USA.

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Earthquake activity has recently increased in the southern mid-continent of the U.S., including Texas. To monitor seismicity activity in the state of Texas, a new seismicity monitoring program known as TexNet, was funded by the Texas State Legislature in 2015.

TexNet consists of 22 new permanent broadband (120s post-hole) seismic stations that will complement the 17 stations currently operating in the State. These permanent stations will provide the baseline seismicity of the state. In addition, 36 portable stations (incorporating both a 20s post-hole seismometer and a post-hole accelerometer) will be used to densify the network in specific areas, of the State, depending on measured seismicity level, proximity to infrastructure, or other scientific investigations.

One goal for TexNet is to provide authenticated data needed to evaluate the location, and frequency of earthquakes. To minimize the uncertainties in earthquake locations and increase detectability of the network, an extensive site assessment survey was conducted. The initial station positions were chosen based on Earthscope, Transportable Array (TA) site positions, while ensuring that the stations were relatively evenly-spaced across the State. We then analyzed the noise and earthquake data from the TA seismometers, and added new locations based on geology, topography, and absence of nearby human activities. A 30-min noise test was conducted at each site to identify the site amplification using HVSR information. A 24-hr survey then followed, where the noise level during day and night was identified, analyzed using power spectral density and compared to the NHNM and NLNM (Peterson, 1993; USGS Open File Report, 322). Based on these survey results nearby alternative sites were evaluated to improve final site position. Deployment and data streaming started on September 2016, and will be discussed during this presentation.