

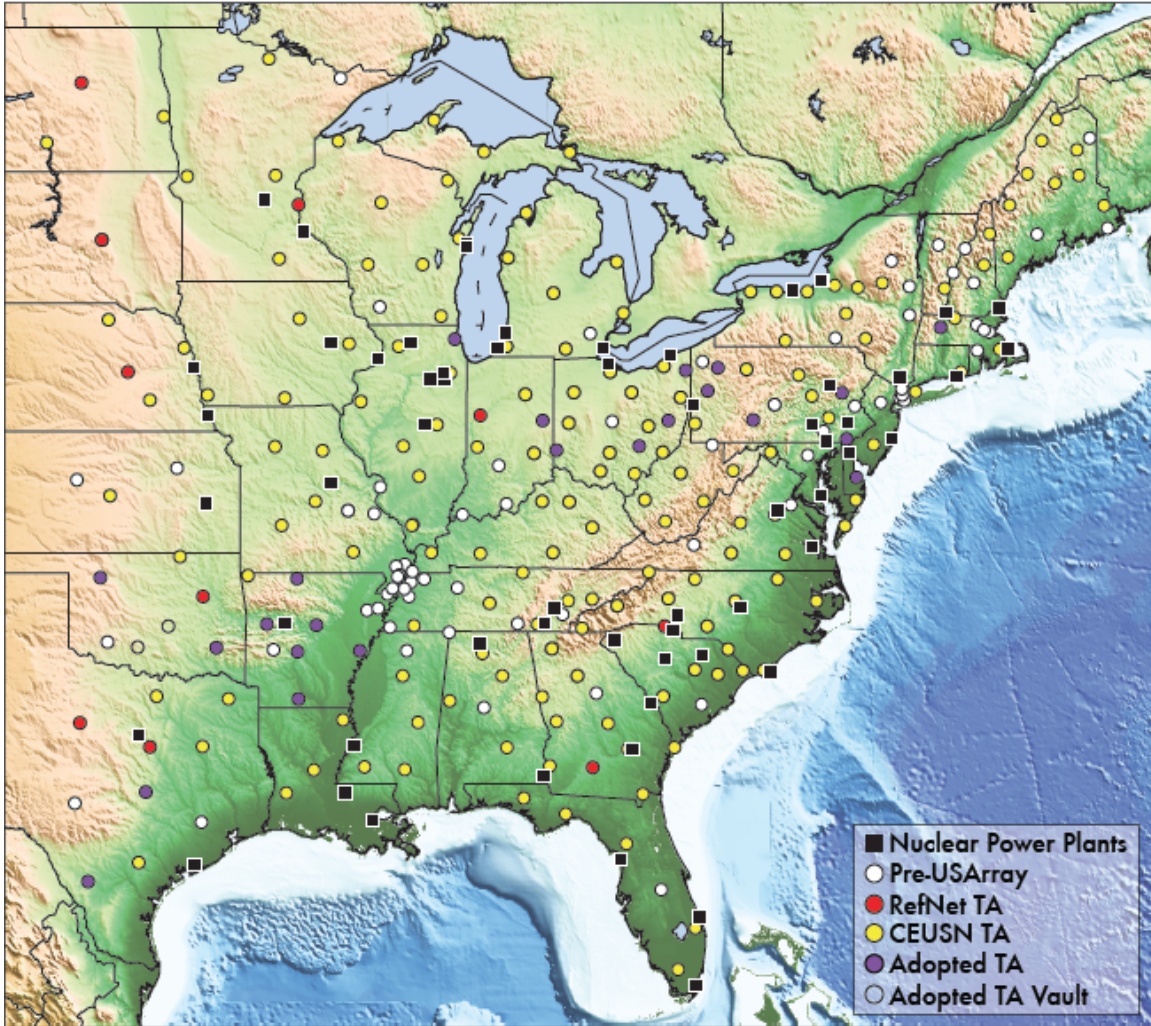
Leveraging EarthScope USArray with the Central and Eastern United States Seismic Network

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Recent earthquakes, such as the 2011 M5.8 Mineral, Virginia earthquake, raised awareness of the comparative lack of knowledge about seismicity, site response to ground shaking, and the basic geologic underpinnings in this densely populated region. With this in mind, the National Science Foundation, United States Geological Survey, United States Nuclear Regulatory Commission, and Department of Energy supported the creation of the Central and Eastern United States Seismic Network (CEUSN). These agencies, along with the IRIS Consortium who operates the network, recognized the unique opportunity to retain EarthScope Transportable Array (TA) seismic stations in this region beyond the standard deployment duration of two years per site. Stations were selected using multiple criteria, including proximity to known regions of seismic hazard, nuclear power plants, and other critical facilities.

The CEUSN mission is to produce data that enables both researchers and federal agencies to better understand the basic geologic questions, background rates of earthquake occurrence and distribution, seismic hazard potential, and associated societal risks. This multi-agency collaboration is motivated by the opportunity to use one facility to address multiple missions and needs in a way that is rarely possible.

The CEUSN will encompass 159 broadband TA stations, more than 30 with strong motion sensors added, that are scheduled to operate through 2017. Stations were prioritized in regions of elevated seismic hazard that have not been traditionally heavily monitored, such as the Charlevoix and Central Virginia Seismic Zones. The stations (network code N4) transmit data in real time, with broadband and strong motion sensors sampling at 100 samples per second. The CEUSN, together with the existing backbone coverage of permanently operating seismometers in the central and eastern United States, will form a network of over 300 broadband stations.



Map shows the 159 CEUSN stations (yellow) that will be operated and maintained by the IRIS Consortium until 2018. The CEUSN stations were chosen specifically for proximity to nuclear power plants (black squares), as well as other critical infrastructure. The distribution of seismic stations across the central and eastern United States fills in regions of seismic hazard that have not been heavily monitored in the past.