Geoscientists from American and Canadian universities are installing a series of seismometers in Minnesota, Wisconsin, and Ontario in the context of SPREE (Superior Province Rifting EarthScope Experiment). These seismometers will record earthquakes that occur locally, regionally, and throughout the world. Scientists use the seismic waves from these earthquakes to produce high-resolution images of the Earth’s interior.

Why install the seismometers in the middle of a continent, where earthquakes are rare? We want to study a somewhat linear geologic feature called the Midcontinent Rift. About a billion years ago, this part of the continent started to break apart, or "rift". Over about 20 million years, an enormous amount of volcanic rock was erupted or intruded into the crust. In total, the Midcontinent Rift contains at least about a half million cubic kilometers of igneous volcanic rock—enough to fill up all of the Great Lakes twenty times, and enough for an ocean floor twice the area of Lake Superior.

All of Earth’s oceans started as such rifts. For example, the Americas rifted apart from Europe and Africa to form the Atlantic Ocean. But despite its impressive size, the Midcontinent Rift failed to break North America apart.

The subsurface structure of the Midcontinent Rift is still relatively unknown. We’ll use the data recorded by the seismometers to create images of the rift’s structure deep below the surface—like taking a CAT scan or an ultrasound of the Earth. Studying the structure of the rift will provide clues about why it started, how it progressed and regressed, and why it failed.

The seismic stations will remain in place for about two and a half years. Sixteen stations in Ontario are placed north of Lake Superior. In Minnesota and Wisconsin, two lines of stations cross the rift and one line follows the rift for a total of 67 stations. Each station is placed in an area far from sources of noise and vibration such as roads, railroads, and occupied buildings.

The seismometer itself is buried underground, and all of the electronics are powered by solar panels. Twice a year, graduate students will visit the stations to collect the data recorded by the seismometers and check to make sure the station is functioning properly.

This project is funded by the National Science Foundation (www.nsf.gov) through EarthScope (www.earthscope.org) and is enabled by the dozens of landowners and park rangers that allow and assist us with installing and running these stations on their land. Thank you so much!!

SPREE represents a collaboration between Northwestern University, Washington University in St. Louis, the University of Minnesota, the University of Manitoba, and the University of Quebec at Montreal.
For Issues with the Website Please
Contact the Webmaster
Trevor Bollmann at
trevor@earth.northwestern.edu

Thanks for Visiting Our Site!!!