

# Northeastern Minnesota Experiment to Study Effects of Climate Change

By KBJR News 1

October 12, 2012 Updated Oct 12, 2012 at 7:09 PM CDT

Grand Rapids, MN (Northland's NewsCenter) - Researchers are hoping that a first of its kind experiment in Northeastern Minnesota will provide new information on the effects of climate change.

Construction is underway on the \$50 million project, called SPRUCE (Spruce and Peatland Responses Under Climatic and Environmental Change). The project is located in the Marcell Experimental Forest, north of Grand Rapids.

"This is a whole ecosystem experiment," said Randy Kolka, a soil research scientist with the U.S. Department of Agriculture Forest Service.

Funded by the U.S. Department of Energy, the project is a collaborative effort between the USDA Forest Service and Oak Ridge National Laboratory, which is located in Tennessee.

Once up and running, the experiment will slowly heat 12 to 16 transparent chambers, which will be about 30 feet tall and 40 feet in diameter. The scientists will slowly heat the chambers to various temperatures, measuring how the entire ecosystem, from soil to treetops, responds to elevated temperatures and carbon dioxide levels.

"This tower resides in the center of those chambers and represents the means by which we can document how warm our little plot of ecosystem has become," said Oak Ridge National Laboratory researcher, Paul Hanson, of a large tower, waiting to be placed in the area where the chambers will eventually be.

The site in the Marcell Forest was chosen in part because of its high carbon ecosystem.

"I'm bouncing on essentially two to three layers of carbon, peat moss" said Hanson of the sponge-like terrain, which stores thousands of layers of carbon below its surface.

The researchers say that the peat land ecosystem in the Marcell Forest is representative of other high carbon ecosystems. Kolka says that while peat lands only represent about three percent of the earth's surface, they hold about 30-percent of the earth's soil carbon.

Additionally the peat lands in the Marcell Forest have been studied for about 50 years, providing valuable information about the area's ecosystem. Scientists say data indicates that temperatures in the area have increased by three or four degrees in the past 50 years.

Temperatures in the experiment's warming chambers will be increased by as much as 18 degrees. While an 18-degree temperature increase in the earth's atmosphere is unlikely, the dramatic temperature shift in the experiment will allow the researchers to find the ecosystem's "tipping point."

"What is the ecosystem's breaking point or tipping point?" Kolka said of one of the questions the researchers hope to answer, "What does it take to really change these ecosystems?"

The experiment will seek to answer the researchers' questions over the course of the next decade.

Kolka and Hanson say that no experiment studying whole ecosystems has been conducted before.

"This is going to be the only experiment on the planet that's using that combination, that is simulating to the extent we can, what you would expect of future climate change," said Kolka.

The unique experiment is attracting scientists from around the globe. About 50 people are currently involved in the project. Kolka expects that number to double as the experiment progresses. He says that research coordinators and new scientists will be hired once the experiment begins.

The researchers say that data gathered from the experiment will be greatly valuable to the scientific community.

"The experiment allows us to look forward 100, 150 years into the future and see how these ecosystems respond," said Hanson.

Researchers at the Marcell Experimental Forest hope to have the warming chambers constructed by spring of 2013. They say the experiment should be up and running by the spring of 2014.

Written for the web by Jennifer Austin.

Original link:

<http://www.northlandsnewscenter.com/news/video/Northeastern-Minnesota-Experiment-Hopes-to--173971751.html>

No longer online:

[www.kbjr6.com/](http://www.kbjr6.com/)