

Data Gathering Buoys

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INTRO: This is Superior Science News. Today's program explores efforts to gauge the effect of climate change on Lake Superior.

For the last three years, researchers with the Large Lakes Observatory at the University of Minnesota Duluth have been examining warming trends in Lake Superior. Assistant Professor Jay Austin is among scientists documenting the effects of climate change in the lake.

"The long-term impact right now is that we see significantly warmer summers in Lake Superior than we did 25 years ago, but it's still a cold lake. The other lakes are warming as well."

Researchers placed four data-gathering buoys across Lake Superior in mid-May and late June. Large Lakes Observatory Director Steve Colman says the moorings will measure things like temperatures and currents throughout the water column.

"The nice thing about the buoys is that they collect data that's continuous through time. They're constant every five minutes or every hour or whatever they're programmed to do. They make a measurement or several measurements. So, you have a time series of these data through a season or through a year and that's very valuable kind of information that's difficult to obtain in any other way."

Austin says three of those buoys will be taking measurements from below the surface of the lake.

"Those are measuring temperature from about 15 meters depth all the way down right to the bottom. In one case, 250 meters or about 800 feet deep. We actually have temperature loggers recording the temperature there every 10 minutes from now until September sometime. They're basically little metal canisters. So, we have 15 of those on each one of those moorings so we can see the development of the thermal structure of the lake over the course of the season."



Colman says the buoys will shed further light on the how the lake works.

"It's amazing how little data there are on the Great Lakes. There are many parts of the ocean that are much better known than Lake Superior or Lake Huron, for instance."



Austin says their research has only yielded warming trends based on the upper layer of the lake so far. Director Steve Colman says the buoys will collect data from the depths of Lake Superior not yet explored in efforts to determine the effect of climate change.

"As you probably know, in the summertime, a layer of warm water sits on top of the much colder water. The temperature is only one part of the equation. What we really need to know is the heat content of that layer. In order to know what the heat content is, we have to know both the temperature and the thickness."

Austin says they'll have precision electronic equipment at their fingertips to collect the data, including those small metal canisters ... powered only by D-cell batteries.

NAT SOUND:

"This'll last for a year. There's a little plug here. You plug it into your computer, and it tells you what it found out. It's really neat stuff."

Austin says they want to establish models so that they can compare future data on the lake.

"When you see a weather forecast in the newspaper or on the radio, people are using a computer model of the atmosphere to figure out what the weather's going to be like two, three, five days from now. We're starting to build those for the lake, not so much to predict what the lake temperature is going to be two days from now, but because we want to be able to run different scenarios, see how the lake responds to different forcing conditions, see how it might respond to climate change -- things like that."

Austin says the National Science Foundation will help further their research by funding the placement of seven buoys in the water for the next three years. Minnesota Sea Grant and the Natural Resources Research Institute at UMD are helping Austin refine his buoy data Web site and aiding him with public outreach for the project.

For Superior Science News, I'm Marie Zhuikov.

OUTCUE: This has been a production of the Minnesota Sea Grant program at UMD and KUWS radio.

Audio files of Superior Science News programs can be found at **www.seagrant.umn.edu/superior/radio**.

Lake Superior buoy data can currently be viewed here:
www.d.umn.edu/~jaustin/buoy_2008.html