Public can track precious ice core samples as they travel to new home in Edmonton from Ottawa

By Claire Theobald | First posted: Thursday, January 12, 2017 08:04 PM MST

Researchers are counting on a monitoring system created by a University of Alberta professor to keep ice core samples that could reveal thousands of years of climate information from turning into a worthless puddle.

Beginning Thursday, the entire Canadian Ice Core Archive is being transported 3,400 kilometres by truck from Ottawa to its new home at the U of A.

“We have modified a beautiful new freezer container to act as a kind of safe haven as the ice crosses the country,” said Jeff Kavanaugh, a U of A associate professor who leads an environmental instrumentation course in the Department of Earth and Atmospheric Sciences. “One of the safeguards we wanted to have in place for the transportation of the ice cores is to monitor the temperature of the freezer as it crosses the country.”

Previously housed in the Ice Core Research Laboratory in Ottawa, the Ice Core Archive contains more than 1,000 metres of ice core samples — each approximately a metre long — collected from Arctic and subarctic Canada over 40 years, with some of the deepest core samples collected from ice tens of thousands of years old, if not older. Some samples date back to the last ice age.

The ice cores are invaluable to researchers because of what is trapped inside, including air bubbles containing ancient atmosphere, tiny microbes — some of which have been brought back to life in labs and could prove key in the development of new pharmaceutical drugs — and industrial contaminants.

The ice core samples can give researchers valuable information on past climates and environments.

If the ice melts, however, their scientific value is lost.

Kavanaugh has custom-built a monitoring system using open-source hardware — equipped with a GPS receiver and cellular uplink — that is programmed to send text messages every hour with the location and interior temperature of the container.

The system will also alert Kavanaugh if the interior temperature warms past -18 C so he can initiate a backup plan before the ice has a chance to melt.

Members of the public can follow the ice cores on their journey on Twitter, with hourly updates posted on @IceCoreTRacker1.

Once the ice cores make it safely to their new home at the U of A, local researchers will archive and analyze the samples while acquiring new ice cores to fill in gaps in the environmental record. The samples will also be made available to other researchers for study.

Source: Edmonton Sun