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Mt. A MAD lab receives significant grant

Trees could hold key to understanding oil-sands impact

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The Mount Allison University Dendrochronology (MAD) research team has received a generous grant from the Association of American geographers to study tree-rings at the Athabasca tar-sands. They hope to better understand the environmental and ecological impact of natural resource development in the Alberta energy sector.

As the price of oil continues to fluctuate, even more so with the recent political instability in Libya, the Middle East, and the nuclear situation at Fukushima, oil-dependant nations seek more stable supplies for their energy. Though research is ongoing for green and renewable alternatives, most of these developments cannot yet serve as an adequate replacement for fossil fuel. Many look to Canada as a country with huge oil reserves, that also has a stable economy and an effective political authority - and there is a lot of pressure on Canada to deliver. Most of the energy reserves are found in the Athabasca oil sands of Alberta. Not only can the development of Canada's oil sands offer other countries a stable and reliable source of energy, but this oil windfall also generates large inflows of revenue, attracts more investors, and produces tax dollars for the federal government. The project is viable – however, its progress may carry significant consequences for the environment.

The tar-sands of Alberta contain over an estimated 1.5 trillion barrels of oil, placing Canada second only to Saudi Arabia in terms of total oil reserves. However, unlike the clean crude oil in Saudi Arabia that flows easily from the ground, the energy found in Alberta must undergo a long and intensive refinement process before it can be transformed into useable energy. This process extracts oil known as bitumen, from a natural mixture of minerals, sand, water, and clay. In recent years, this procedure has come under the scrutiny. Environmentalists and geographers have revealed Alberta oil sands development to be detrimental to the environment. This spring, Dr. Colin Laroque and Geoff Kershaw of the MAD lab will travel to Alberta and apply the rather unconventional method of tree-ring analyses in the hopes of finding answers to some long-standing questions.

According to Laroque, "[t]here has been a lot of research around the environmental effects of the Alberta Oil Sands. Most studies have looked at soil and lake water samples to measure substances though, making it hard to determine how long the substances have actually been there. By using dendrochronology, looking at tree rings and measuring the age of the tree, we will be able to provide a timeline of when they first appeared in the area. Analyzing the tree rings also allows us to see changes in the climate patterns and adaptations over the trees' lifetime." Accompanied by Alberta native Kershaw, the two will travel by canoe to Fort McMurray, the boomtown of oil-sands development, and collect data from trees along the way.

Internet Photo/Mount Allison

Geoff Kershaw takes a core sample while on a research trip.

Kershaw commented, "We expect to have our field work finished in two weeks. Following this, we will review the samples both in the MAD Lab at Mount Allison and also at the Canada Light Source, Canada's national synchrotron research facility at the University of Saskatchewan. These two facilities will help give us a better picture of the level of substances, when they began to appear in the environment, as well as the effects that they, and climate change, have had on the trees."

If successful, the MAD lab may not only offer a objective way to confirm existing research, but their findings might also uncover the answers to many unanswered questions including the disappearance of certain species of plants, and other changes in the ecosystem which have been reported by locals.