

CLIMATE CHANGE

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WHAT'S HAPPENING IN YUKON CLIMATE CHANGE RESEARCH

How do climate change scientists get the facts on climate change? By gathering data from around the globe, sharing it across borders and analysing it collectively. For some time, Yukon scientists have been taking part in this global research. This fact sheet describes some of their work.

Past research

Since the 1970s, there have been over 160 studies related to climate change in the Yukon and in adjacent regions of the north. These vary from studies of the Yukon's past climate, to indicator studies looking at current climate trends and impacts, to climate change predictions examining potential impacts on land, water, vegetation, wildlife and human activity in the Yukon. A bibliography of these studies is available on Taiga Net's Internet site. (*Taiga Net is at www.taiga.net/webdata/climatechange/index.html*)

Current research

Research directly related to climate change, or research that includes climate change as part of a broader study, is ongoing in the Yukon. Many of the Wolf Creek Research Basin studies of the southern Yukon are relevant to climate change, as is the work of the Arctic Borderlands Ecological Knowledge Co-operative which deals with northern Yukon research.

Wolf Creek Research Basin

When the Wolf Creek project began in 1992, it concentrated on water research. Research activities have expanded to include climate and climate change, vegetation, forestry, fisheries and wildlife.

The Wolf Creek drainage basin was chosen for research because it is conveniently close to Whitehorse and because

of the variety of terrain it offers. Wolf Creek drains almost two hundred square kilometres of land with a change in elevation of 1,300 metres, ranging from rugged mountain top to thick boreal forest.

The project began as part of Indian and Northern Affairs Canada's Arctic Environmental Strategy, in partnership with Environment Canada's National Hydrology Research Institute. Then the site was adopted as Canada's third Canadian Global Energy and Water Cycle Experiment (GEWEX) program site, linked with the World Climate Program. The goal of the GEWEX program is to help develop accurate computer models of energy and water balance processes in order to learn more about the effects of climate change.

In 1997, Wolf Creek was added to the list of about a hundred stations making up Canada's Ecological Monitoring and Assessment Network (EMAN). The goal of EMAN is to monitor environmental stress on Canadian ecosystems, particularly on the plants and animals that are part of them. (*Source: www.taiga.net/wolfcreek*)

The International Tundra Experiment (ITEX) is one of more than 20 studies under way in the Wolf Creek Research Basin. An international group of tundra ecologists began ITEX in 1990. Their goal was to discover what effects global warming might have on the northern environment.

The Yukon's ITEX study involves monitoring one-metre-square patches of vegetation. At some of the patches, scientists simply monitor the changes in the vegetation over a period of years. At other sites, small, open-topped greenhouses are used to increase the temperature by a couple of degrees, which is approximately the level of warming predicted by most climate change models for northern regions. (*Source: Your Yukon Collection #87: www.taiga.net/yourYukon/col87.html*)

"Cooperation is critical to affordable research."

Yukon North Slope Long-term Research & Monitoring Plan



COOPERATION IN YUKON CLIMATE CHANGE RESEARCH

Arctic Borderlands Ecological Knowledge Co-operative

The purpose of this Co-operative is to monitor and assess ecosystem changes in the northern Yukon. One of the main changes that is being monitored is climate change.

Like the Wolf Creek Research Basin, the Co-op is also part of the national Ecological Monitoring and Assessment Network. As its name implies, the program involves a co-operative effort among scientists, governments and community organizations to collect, interpret and communicate ecological information. Sharing of information and integration of scientific data with local knowledge are key components of the Co-operative.

The Co-op is coordinated through the Canadian Wildlife Service, a branch of Environment Canada, Pacific and Yukon Region.

Arctic Borderlands Ecological Knowledge Co-op data comes from many sources, one of which is community-based ecosystem monitoring. With this type of data collecting, local knowledge serves as the basis for documenting environmental conditions. Local observations of environmental elements such as wild berries, the subsistence fishery, the Porcupine caribou herd, other animals (unusual and noteworthy observations), local weather conditions, and community life are the focus of monitoring.

Data is collected as community researchers interview local community members and tabulate their observations in a computer data base which is summarized in an annual report. These reports are available from Environment Canada. (Source: *Arctic Borderlands Ecological Knowledge Co-op: www.taiga.net/coop*)

Climate change makes research possible

Not only are scientists researching climate change in the Yukon, but the changing climate is making some new research possible.

Late in the summer of 1997, a significant archeological find was made on a melting snow patch on Thandlät Mountain in the southern Yukon. That summer, aerial surveys found 35 other, similar sites. All were high patches of permanent snow and ice that are melting because of recent warm temperatures.

Signs of caribou and caribou hunting, dating back over 4,000 years ago, can now be seen. Researchers say that the Thandlät site offers a rare opportunity to explore a number of questions regarding prehistoric ecology of large caribou populations, implications of climate change on caribou populations, and human use of high elevation hunting sites. (Sources: *Draft: In Pursuit of Prehistoric Caribou on Thandlät, Southern Yukon, Kuzyk, Russel, Farnell, Gothardt, Hare and Blake, and Your Yukon Column #9: www.taiga.net/yourYukon/col9.html*)

Taiga Net

Much of the information for this sheet comes from an internet site created in the Yukon, by Yukon researchers. Taiga Net (www.taiga.net) includes material "developed co-operatively by Canadian, U.S., and territorial government agencies, First Nations government organizations, universities, co-management bodies, and non-profit societies." It is divided into six main groups: Your Yukon, Arctic Borderlands Ecological Knowledge Co-operative, Wetlands, Caribou, Sustainability of Arctic Communities, and Wolf Creek Basin. Information on Yukon environmental studies, many of them focused on, or relevant to, climate change research, can be found within each of these groups.

"Knowledge gained from small research projects can be applied to explain global climate change."