

A Summary of **Climate Change: Solving it Together II**

September 22, 2007 Lakehead University, Thunder Bay

By Betty Chambers, Kerstin Muth and Graham Saunders

Environment North, an organization based in Thunder Bay, Ontario and the Northwest region, held its second conference on climate change and its relevance for the region. Co-organizers include the Food Security Research Network and Lakehead University Student Union. All three Rotary Clubs in Thunder Bay, the Chronicle-Journal and the Bay Credit Union were the major sponsors. The event was sold out, with 235 people participating.

Local food producers and ‘green-options’ groups presented displays at the conference.

A goal of Environment North was to make this a “carbon-neutral” event. Transportation, food, lighting and other details result in greenhouse gas emissions. Environment North reduced some carbon costs by using local food produce and offering incentives that encouraged walking, cycling, public transit and car pooling. It is compensating for actual energy use by investment in a renewable energy project in the Northwest.

A brief summary of main speakers and main points of their presentations of each session follows. A copy of this summary with additional links and a report on making the event “carbon neutral” will be posted on our website www.environmentnorth.ca.

Introduction

Climate Change in the Northwest *Graham Saunders and Dr. David Kemp*

Graham Saunders is a columnist, a lecturer at Lakehead University and is the current president of Environment North. Dr. Kemp is currently the coordinator of a new graduate program at Lakehead University in Thunder Bay - Master of Environmental Studies in Northern Environments and Cultures.

Evidence from around the world strongly suggests that most of the dramatic changes in climate observed in recent decades are due to changes in the composition of the atmosphere and that this is linked to the burning of fossil fuels and changes in land use. In Northwestern Ontario records show increases in temperatures, less snowfall, more rainfall and a small increase in precipitation. In order to detect the effect of climate changes on our ecosystems we will need to know more about current conditions.

Water

Lake Superior: The Canary in the Coalmine

Dr. Jay Austin

Dr. Austin's background includes degrees in mathematics, physics and oceanography, with research in the Pacific and Atlantic Oceans. He is currently at the University of Minnesota – Duluth, investigating the effects of climate change on large lakes.

Dr. Austin discussed rapid warming and other changes in Lake Superior during recent decades. He offered evidence of decreasing ice coverage and duration as a likely explanation.

- Lake Superior is very sensitive to climate change
- Climatologists worldwide keeping a close eye on Lake Superior

- Good long-term data available going back 100 years
- 4 buoys on Lake Superior: a rich, more recent source of data
- For every 1° C degree change in air temperature, Lake Superior's surface water temperature has increased by 2° C degrees
- Temperature increase has been especially dramatic since 1980
- Average wind speeds have also increased, by 30%
- Result is shortened period of winter ice cover, over a much greater surface area (30 days fewer than 100 years ago)
- Less ice to reflect shortwave solar radiation means greater lake absorption of solar energy
- Result is greater evaporation rates over a longer period of time each year
- These changes partially account for lower water levels on Lake Superior
- Extended period of relative drought in the area's watershed also a contributing factor.

Quetico Park: A Changing Ecosystem

Robin Reilly

Mr. Reilly is the Superintendent of Quetico Provincial Park. He has degrees in environmental planning and landscape architecture. The family home in Atikokan has solar panels and other innovations to reduce energy use.

Mr. Reilly discussed area water issues and potential effects of climate change on the Park. He questioned the concept of parks as places that should remain the same, with discussion of planning options for future landscapes.

- Management Plan for the park under review over next 18 months
- Includes process for public input, with plan to be brought forward in 2009
- Brand new Parks Ontario Act available as a guide
- In light of climate change and resulting changes in the park's ecosystems, questions arise concerning management of the park
- How do we balance aspects such as recreational enjoyment vs. environmental management?
- Should we try to preserve the status quo, preserve the status quo but begin intensive data-collection, or begin using data to intervene and manipulate the environment of the park?
- Interventions might include selective logging, spraying, letting forest fires burn, legislating aspects of use such as forbidding use of live bait for fishing.
- Should research and decision-making be specific to the park, or more regional?

Climate Change in the Quetico Region

- Precipitation
 1. Less snow on the ground:
 - 1960 - 15 weeks of knee-deep snow
 - 2000 - 8 weeks of knee-deep snow
 2. Decline in snow on the ground each decade
 3. Larger percent of precipitation now coming in form of storm events, therefore greater percent "flushed out" versus absorbed by the forest floor.
- Temperature and wildlife:
 1. E.g., caribou prominent in 1920's, more recently moose, and now deer moving in (various factors influencing these changes including climate)
 2. Moose can't tolerate summer heat, feed less, and reduced feeding means less winter body fat, therefore less able to tolerate winter cold, more vulnerable to predators
 3. Moose suffer from increased tick infestations introduced by deer populations, irritation leads to rubbing off of fur, i.e. less winter insulation
 4. Warmer temperatures bring more invasive species into park, e.g. spiny water flea.
- Climate change is happening faster than species ability to adapt.

Food

Food Security and Climate Change

Food Security Research Network

Drs. Connie Nelson and Doug West of Lakehead University are co-founders of the Food Security Research Network. The “Network” has grown to a broad coalition of agricultural producers, community groups, First Nations, education and government agencies.

Dr. Nelson and other members of the Network discussed some of the complexities of the global food web, regional networks and research in the context of climate change. Traditional areas of food production are vulnerable to land-use practices and changes in temperature and precipitation. Diminishing oil supply for both production and delivery of food is likely to profoundly affect cost and availability.

- Food Security Research Network (FSRN: 14 Organizations and 11 partners)
- Climate Change affecting how we look at food sourcing, and forces a re-think current practices
- Water, air, land (soil quality) all play a part
- Local food security is interconnected to global environmental changes
- A warmer local climate has both positive and negative implications for local food production
- Warmer weather and longer growing seasons could mean greater productivity
- However, more heat may mean drought, and issues with invasive insect and plant species
- Imported food means greater dependency on oil, and creation of greenhouse gases.
- Switching to biofuels not a solution, as arable land still required for food production
- Much of our food requires corn as a key ingredient
- Current agricultural practices may be at a tipping point in terms of viability, sustainability
- Need to emphasize biodiversity (e.g. seed banks) when trying to ensure food security
- Climate Change seen as an opportunity to transform the way we live in a positive way
- Problem with how local food is portrayed in the local media
- Need for a Thunder Bay and District Food Charter, dedicated to promotion of local foods
- Need for careful land-use planning, and local control of such things as seed stores.

Native perspectives re Food Security Issues

Dr. Brian McLaren

- Outlook discouraging, e.g. imported canned versus locally harvested blueberries
- Possibility of blueberry industry is lost in bigger economic realities of current logging practices
- Changing food supply too rapid to allow adjustment, e.g. disappearance of woodland caribou, snowshoe hare.
- Logging has often encroached on native lands without proper consultation with local bands
- Urban environmentalists have own special interests when it comes to northern forests
- Natives want greater input into future forest landscapes
- Research on food security includes wild gardens in Aroland, and community/family gardens in Ginoogaming with Important discoveries around soil and climate limitations
- Important to disconnect from the idea that food comes only from a grocery store
- Important to consider the ecological impact of transported foods.

Roots to Harvest

Erin Beagle

- Food safety an issue
- E.g. Sobering fact is that food-related cancers higher in Ontario than in BC, where there is more control of food supply
- Other countries forced to grow food for us, leading to soil & environmental degradation, not to mention environmental impacts due to shipping, etc.
- How to protect our own food supply an increasing concern

- Marketing Boards have somewhat stabilized our food supply, but in some ways have limited alternative agricultural practices.
- E.g. is the widespread use of chemicals really necessary?

Forest

The Future of the Boreal Forest

Dr. Mike Flannigan

Dr. Flannigan is a senior research scientist with the Canadian Forest Service and Editor-in-Chief of the International Journal of Wild land Fire. He has taken on leadership roles with the US National Assessment on Global Change and other international initiatives.

Dr. Flannigan suggested that projected rates of warming may stress our forests beyond a threshold. This stress will come from direct influences such as drought and excess heat or cold. However, the most rapid and possibly most significant impacts of climate change may be because of forest fires and insects. The interplay between climate change and disturbance may overshadow direct effects of global warming.

- Recent greenhouse gas levels, especially CO₂ levels unparalleled in last 400 000 years driving surface temperatures up
- Greatest increases at higher latitudes, e.g. Canada's North and Arctic regions
 - E.g. Winter roads to northern communities no longer reliable
- Extreme weather events predicted, such as storms and drought, forest fires
- Drier surface means greater chance of fire ignition, and greater availability of dry fuel to feed new fires
- Higher wind speeds will exacerbate the situation
- Increased concern for insect infestations
 - Compacted cycle of such forest pests as the spruce budworm
 - Speed and range of pine beetle infestation surprised us
- Some areas of Boreal forest destined to become scrublands and grasslands
- Character of the forest depends on ability of seedlings to adapt
- Likely a new mix of forest species
- Humans can change how they use and manage the forests, but next 20-30 years are critical
- Brief video shows how fast a forest fire moves through a pine forest killed by the pine beetle.

What Regional Data Shows Us About the Future of our Northern Forests

Dr. Bill Parker

Dr. Parker is with Forestry Faculty at Lakehead University and is one of a handful of forest geneticists in the world who works in the area of adaptive genetics of trees.

Dr. Parker offered insights into practices that may allow certain species a chance to cope with future climate scenarios. He discussed potential adaptive abilities of the forest. Climate change impacts forests at all levels: individual genotypes, populations, species and ecosystems. In order to survive as the climate changes, plant species must either migrate to suitable new locations, if they still exist, or genetically adapt to the new climate conditions.

- Magnitude of change in the forest uncertain, as speed of climate change unknown
- Climate (temperature and precipitation) is the main determinant of plant growth
- Growth determined by both biotic, and abiotic factors
- Research at Obonga Lake data suggests a rise in temp of 2-8 degrees likely by 2050
- Scientists using both climate and biological models to predict change in ecosystems

- Data collection focuses on how specific species respond to specific conditions (e.g. soil types, temperature, precipitation.)
- Appears there will be a reduction in genetic variation
- This will have both economic and social consequences.

Shelter

Building Design and Building Performance

Peter Spafford

Peter Spafford's work as Quality Assurance Manager with Building Professionals Consortium takes him throughout North America. He develops and delivers training courses for the construction and renovation industry and has been involved with several community-based energy efficiency programs in Canada.

Mr. Spafford discussed how newer materials and systems can improve residential and commercial buildings. His talk included topics of health & safety, durability and ensuring that energy conservation is cost effective.

- Reminders of a global perspective - many people around the world have limited or no options for shelter
- In current modern buildings what guarantees exist that buildings will perform according to specifications? Quality control is essential in assuring future performance with regards to health and safety (e.g. mold development), energy efficiency (proper insulation and sealing).
- Cost effectiveness achieved by energy efficiency and avoidance of renovation or demolition and reconstruction.

Energy Efficient Building Design

Michelle Gibson and John Stephenson

Michelle Gibson and John Stephenson are architects and partners in the firm Kuch Stephenson Gibson Malo.

They discussed some local examples of energy efficient building design. They outline opportunities to integrate sustainability into the design process, citing local projects which have embraced the philosophy of energy efficient design. Topics will include issues such as orientation, efficient mechanical systems and passive solar energy gain with window placement.

- Worldwide, 30-40% of primary energy used to service buildings
- 60% of fossil-fuel energy used in buildings
- 48% of greenhouse gases attributed to buildings
- Fossil-fuel energy use extremely high in developed countries
- Contributes significantly to global warming
- There are strategies that can be used to curb building-related energy use, but unpopular on a large scale due to expense
- We need higher building code standards
- Public-private partnerships essential
- Government incentive programs for Commercial Building one idea, e.g. cash incentives for those who reduce energy use by a certain percent
- Leading Energy Efficiency Design System (LEEDS) options:
 - CBIP (Commercial Building Incentive Program)
 - Orientation and Layout
 - Building Envelope
 - Windows

- Lighting
 - Ventilation
 - HVAC
 - Storm Water Management
 - Green materials and Options
- For L'École Verendrye:
- Total cost of energy efficient design options
\$210,000 - \$60,000 CBIP = \$150,000
 - Combined payback in 3.6 years, 59% energy savings

The final session featured **Spirit: Change From the Heart**

Preparing for the day

Otesha

The Otesha Project's award-winning, theatre performances have reached over 60,000 Canadians over the past four years. In an entertaining, and captivating way, Otesha's performances showcase the many ways that each person can help tackle issues of global inequity and environmental degradation through the everyday choices that an average person makes.

The group presented a light yet serious look at *the Choices* we make in our daily lives, via live theatre. In particular the group examined choices we make in the morning preparing for the day and how changes can be made which significantly reduce our environmental footprint.

Afterthoughts and Acknowledgements

Climate Change: Solving it together II can be viewed as a successful event. The conference received excellent coverage and in-depth reporting by the media. The speakers were enthusiastic of the event and many are interested in participating in future conferences or workshops. Environment North and our partners continue to receive praise from many people who attended.

We would like to acknowledge the generous support of our sponsors. This includes all three Rotary clubs in Thunder Bay: Fort William, Lakehead and Port Arthur, the Bay Credit Union and the Chronicle Journal. These organizations and companies have shown an interest in the issues surrounding climate change and wish to take an active part in increasing awareness of the issue.

As we indicated in the introduction to this summary the conference is a carbon-neutral event. The following individuals have made donations in helping us to make a contribution to a local renewable energy project that will generate carbon-free electricity for many years. Thanks go to Bob and Carol Edwards, Michael, Margaret and Bruce Hyer, Ostrom Outdoors, Maltese Grocery and Knox Shuniah United Church.