



**Canadian Foundation for Climate and Atmospheric Sciences  
Submission to the House of Commons Committee on Finance  
October 2, 2003**

## **Introduction**

The Canadian Foundation for Climate and Atmospheric Sciences (CFCAS) congratulates the Government for its forward-looking initiatives to support research in climate and atmospheric sciences. These include the mid-term renewal of the Foundation.

**CFCAS is the only funding body entirely dedicated to supporting university –based research in climate change, weather prediction, extreme weather, air quality and marine climate.** Since 2000 the Foundation has invested \$45 million in climate and atmospheric research to help meet Canada’s needs. A good proportion of these funds are going towards the training of (and helping to retain) the skilled researchers who will help Canada address its Kyoto commitments and will tackle the environmental problems of the future. CFCAS will continue to invest up to \$10 million a year in weather and climate research important to Canadians.

## **1. Weather and the economy, security and health**

**Weather and climate have a major impact on Canadians and the Canadian economy.** Weather directly impacts on Canadians as evidenced by Hurricane Juan that struck Atlantic Canada earlier this week. The cost of fighting this year’s BC forest fires ended up at over \$7 million a day: most of these fires resulted from lightning strikes impacting on drought-stressed forests. The changing climate has also influenced disease vectors, resulting in an increase of West Nile Virus in the prairies, and the spread of exotic species that affect agriculture, clog our waterways and infect our forests. Better climate information will give policymakers the sound scientific advice they need for decisions on these and other issues.

We support the proposals of the Heart and Stroke Foundation, made earlier this morning, on the need for a national health monitoring system and request that that be done in a way that would allow for research on weather-climate-health relationships.

We are all concerned with rising insurance rates: climate-related disasters cost the global insurance industry \$55 billion US in 2002, most for damage from windstorms and floods. The 1998 ice storm cost Canada \$5.5 billion, in addition to tragic human impacts. Quebec has already moved entire communities in its north due to melting permafrost. As we look to rebuilding our national infrastructure, we need to make our cities, where most people

live, more resilient, less vulnerable to hazards. The research supported by the CFCAS will directly input to the natural hazards assessment component of the proposed Research Alliance for Disaster Resilient Cities: RADR-Cities, which will build our overall capacity to provide input to critical decisions in the future. The Insurance Bureau of Canada, in its brief to this Committee, will also speak on the importance of supporting these initiatives.

In short, weather and climate impact heavily on Canada's economy and security at all levels: local, provincial, national and international. We must continually advance our understanding of weather, improve our prediction abilities, refine the tools and strategies needed to adapt to climate change and learn to manage weather risks.

**CFCAS recommends that the Federal Government enhance its financial investment in climate and atmospheric research.**

## **2. Partnerships and national infrastructure**

University and government research in weather, climate and oceanography are mutually reinforcing and complementary. The Canadian Foundation for Climate and Atmospheric Sciences encourages partnerships among researchers, technicians, policymakers and other stakeholders, to make the best use of the human and physical resources available. Professors funded by CFCAS work closely with scientists from federal laboratories and with the private sector. This gives us good 'bang for the buck'.

Partnerships also concentrate resources on problems of national or international importance, and minimize duplication of effort. The 12 CFCAS research networks depend heavily on federal facilities for basic weather data, sophisticated computer models, technical support or complementary expertise, yet many federal facilities are inadequate. The 2002 closure of Canada's Arctic Stratospheric Ozone Observatory at Eureka removed a world facility. Canada is vast and its conditions unique: do we really want to depend on other countries for essential weather, climate and ozone layer information?

Canada, the United States and other countries are collaborating on research on **Earth Observing Systems** aimed at better weather predictions. Canada must work with its international partners on surface, in-situ and remote sensing of our climate and ocean conditions and their effects.

**CFCAS recommends that the Government reinforce its investments in scientific infrastructure as well as in the monitoring systems that are essential for acquiring long-term systematic weather, climate and ocean observations (this capacity resides primarily in federal laboratories) and support international scientific links and research involving Earth Observing Systems.**

This infrastructure also serves academics and the private sector and is needed for the training and retention of good scientists.

### **3. Highly Qualified Personnel**

Canada is both gaining and losing skilled people. The Foundation is working to redress the chronic shortage of skilled climate scientists, but cannot actively stimulate scientific mobility under its present mandate.

**The CFCAS recommends the establishment of programs for short-term international scientific exchange, to encourage mobility and sharing of research and best practices related to climatic factors.**

The Federal Innovation Agenda anticipates Canada will be a top nation in R and D by 2010. The Foundation works to support research of demonstrable benefit to Canada, but also recognizes the need for the reflective scientific enquiry that is best for training students to think and analyse and adjust to new research challenges.

### **4. Northern Canada**

Huge opportunities and needs exist for work in Canada's north and we are pleased that ArcticNet has now been funded. Yet logistical support in the Arctic remains inadequate and piecemeal. A better mechanism to coordinate partnerships and logistics for Arctic research is long overdue, as is a mechanism to coordinate work on issues such as preparations for International Polar Year 2007. The *Amundsen* icebreaker research vessel is an excellent initiative, but needs to be fully dedicated to research, not split with coast guard patrols. Canada could learn from other countries' arrangements, including the U.S. system: VECO Polar Resources (VPR), which is the U.S. National Science Foundation's Arctic logistics contractor.

**CFCAS recommends early and decisive action on coordinated, cost-effective and efficient provision of logistical support for northern research.**

The north is already affected by climate change and we need vastly improved tools to know what is going on and its likely impact. Within 4 years the world will celebrate International Polar Year, yet Canada, with sovereignty over large polar regions, is the only polar nation that does not yet have an intersectoral planning group busy coordinating IPY plans at home and with other circumpolar nations.

**CFCAS recommends that the Federal Government expand the mandate of an existing organization to lead and coordinate Canada's activities for International Polar Year, and as a clearinghouse for information resulting from Arctic research.**

### **5. International partnerships**

Canadian scientists, with Foundation support, have been and will continue to be very active in international global environmental change and related scientific programs. Unfortunately, the overall coordination mechanisms, within Canada, to effectively link with these international programs have largely disappeared. By taking a coordinated approach to participation in international programs, Canada benefits through better

knowledge transfer, leverage to shift the priorities and emphasis of these programs, and more effective participation in general.

**The CFCAS recommends that the Federal government provide support for an existing organization, such as the CFCAS, to provide the much needed and very beneficial coordination of Canadian participation in international environmental change research programs.**

## **Conclusion**

Over the three years of its existence, CFCAS has committed over \$45 million to weather, climate and air quality research in Canada's universities. But ours is a small country in population, though vast geographically. We urge renewal of infrastructure in federal research laboratories to ensure they meet both public and private needs, and can support partnerships that concentrate intellectual resources, stretch financial resources and enable us to compete in, and in some cases to lead, international research efforts. We recommend better coordination of logistical support for northern studies and for participation in international programs and continued support for the training and retention of the young scientists who will help Canada meet its climate change commitments and domestic needs in the future. These initiatives will enhance Canada's activity and image as a responsible, respected and competitive nation and will push Canada towards its innovation goals.