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WORKSHOP ON ARCTIC CLIMATE

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Executive Summary

The two-day workshop, organized by the Canadian Foundation for Climate and Atmospheric Sciences (CFCAS) in February 2003, explored the natural science, social science and policy implications of climate change in the Canadian Arctic. Over 100 participants – including researchers, policy makers, industry representatives, northern residents, the media, funding agencies, and politicians – identified key areas of concern. Climate models suggest Canada's North is already being disproportionately affected by climate change. Early signs include the thinning of arctic sea ice, earlier ice break-up and later freeze-up, shorter pack-ice hunting season, increasing temperatures, changes in precipitation and snow depths, loss of permafrost, increased flooding, and changes in biodiversity. The workshop found a strong need for a national strategy or plan for northern climate science that would direct and coordinate monitoring, research and support. Pressing research needs are myriad and include studies of atmosphere and water temperature fluxes, studies of dynamic and thermodynamic sea ice processes, studies of the coupling of physical and biological systems in the Arctic, studies of climate system feedbacks (e.g. the albedo effect), studies of arctic contaminants, and research into better models and measuring of climate variations and longer-term change. Canada must participate in international science efforts to better understand and define the arctic system in terms of both its impact on, and its response to, global environmental change. Many workshop participants underscored the importance of climate monitoring in the north. They also emphasized the advantage of using the traditional knowledge of resident indigenous peoples when doing arctic climate research. Logistics, the harsh environment, and elevated costs are among the challenges faced by researchers in the North. These underscore the need for stable research funding as well as cooperation and sharing among research platforms and programs.

Recommendations

1. Climate models suggest northern latitude environments will be disproportionately affected by climate change. Thus, the Arctic will be a test case in determining climate change effects – the region is the so-called global “canary” for climate change. ***The workshop recommends that climate change be recognized as the primary scientific concern in the North.***
2. While many northern science programs are in place or are planned, there is no overall body to integrate programs, maximize research benefits, and set priorities. National and international research partnerships are crucial, but to form effective alliances there must be a strategic plan. ***The workshop recommends the creation of a national research agenda for the Arctic.***
3. Northern indigenous people have a wealth of experience and knowledge about the land that has been handed down century after century. Traditional knowledge describes the current environmental changes and must be recorded, analyzed and archived. ***The workshop recommends that researchers engage local communities early in their research, to take advantage of traditional knowledge and to explain the purpose of their research.***
4. The workshop identified many needs and opportunities for arctic climate research. ***The workshop recommends the development of more integrated, large-scale, network research programs that present new opportunities for multidisciplinary work and for intensive studies in particular areas.***
5. Participants also expressed concern about the decline of monitoring networks and the lack of climate sampling in the North. Article 5 on Research and Systematic Observation in the United Nations Framework Convention on Climate Change (UNFCCC) obliges governments to monitor climate and to report on observations of the climate system. ***The workshop recommends that climate-monitoring variables be prioritized and that long-term funding be made available to support monitoring networks.***
6. The multidisciplinary use of ships, northern research camps, and other research platforms (such as aircraft, satellites, and other remote sensing devices) need to be used in a more comprehensive and cost-effective way. ***The workshop recommends more coordination and shared use of research platforms both nationally and internationally.***
7. A coordinated data archiving policy in Canada would ensure the long-term survival of data and greatest access by the scientific community. Archives are becoming increasingly important as science focuses on change over the

medium to long term. ***The workshop recommends that all Canadian research granting agencies establish policies to ensure data collected by researchers is submitted to the appropriate data centres.***

8. The workshop identified concerns within the Canadian scientific community about access to remote sensing data in a cost-effective manner. ***The workshop recommends that a coordinated national approach be adopted for delivering earth observation data to northern researchers.***
9. The federal government has a large intellectual and infrastructure capacity to undertake northern research, but federal researchers often lack necessary research funds. On the other hand, universities with research support often do not have access to needed northern infrastructure. ***The workshop recommends greater efforts be made to use the complementary capacities of universities and federal agencies in northern research.***
10. Logistics, the harsh environment, and rapidly rising costs are some of the challenges faced by northern researchers. Meanwhile, funding stability is crucial for anyone who wants to sustain a long-term program in the North. ***The workshop recommends that stable funding arrangements take into account rapid increases in the costs of northern research.***
11. Previous work has identified a decline in Canada's capacity for conducting northern research. Significant progress has been made over the past few years; nevertheless, ***the workshop recommends that strategic planning and implementation, involving researchers and local communities, be in place to ensure that research capacities are enhanced where they are most needed.***
12. Training and recruiting the next generation of northern scientists – and, in particular, sustaining their commitment to working in the North – is vital. ***The workshop recommends that universities play a central role in developing and implementing a strategy for encouraging interest in northern research among students.***
13. The workshop also recognized the need for enhanced support for student research projects. ***The workshop recommends that, in addition to dedicated scholarships for students working in the North, resources be made available to support graduate students working in the North on smaller short- and long-term research initiatives.***
14. Northern transportation routes will be affected by climate change. A Northwest Passage potentially open for extended national and international travel will become a substantial issue in the coming years. ***The workshop recommends that legislation, monitoring and research programs be put in place to anticipate and mitigate the impacts of the new transportation regime in the North.***

15. The lack of Canadian involvement in international arctic science has been criticized recently. Canadian scientists who get a free ride on northern expeditions initiated by other countries must often compromise their own research priorities. ***The workshop recommends that resources and coordination mechanisms be put in place to ensure that Canada is able to take a leadership role in northern monitoring, process research, modeling, and impact studies in areas of concern to Canadians.***
16. The workshop noted that the government A-base budget is declining for monitoring and research programs. ***The workshop recommends that funding for northern science initiatives by federal government researchers be increased to complement the increased funding available in universities.***
17. Northern communities must become involved in the research agenda; however, the cost of community consultation and involving northerners in research led by researchers from the south can be extremely high. ***The workshop recommends a large-scale coordinated mechanism to engage northern communities in scientific initiatives.***
18. ***The workshop recommends preparing a letter to the prime minister that would (i) congratulate the government on its 2003 budget investments in the North, (ii) reaffirm the importance of an arctic component in any international initiatives led by Canada, (iii) recommend a national arctic research agenda and coordination mechanism, and (iv) offer to help set the future arctic science agenda, through additional discussion and/or documentation.*** The letter could be crafted jointly by several concerned agencies.
19. Several previous arctic science workshops have been held over the past few years. These identified existing deficiencies and recommended action, but little was done. ***The workshop recommended that efforts be made to ensure workshop recommendations are followed up.***

For a copy of the Report, contact CFCAS at (613) 238-2223 ext. 201
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