



Canadian Foundation for Climate
and Atmospheric Sciences (CFCAS)

Fondation canadienne pour les sciences
du climat et de l'atmosphère (FCSCA)

backgrounder

The Polar Climate Stability Network



The work of the PCSN focuses on climate change at high northern latitudes. Polar regions showcase the effects of climate change on plants, animals and humans living there. Places at high latitudes will also be most strongly affected by greenhouse gas-induced global warming. The issue of the stability of northern ecosystems is an important national concern.

The work of the PCSN focuses on four primary themes:

- 1) Rapid climate change occurring in both the oceans and on land;
- 2) The vulnerability of glaciers and sea ice in Northern Canada to global warming;
- 3) Investigating climate changes in Canadian ocean waters and on the Canadian land mass that have occurred in the past; and
- 4) The connections between changes in Arctic climate and lower latitudes, both past and future.

Researchers' results are shared with scientific peers, federal departments and others. The Network is poised to have a significant impact on policy in Canada and in the G-8 nations.

The Network is receiving \$5 million over five years from the Canadian Foundation for Climate and Atmospheric Sciences. The Network was created in 2005.

Speakers

Gordon McBean (Chair, CFCAS) is a professor at the University of Western Ontario. Past positions have included Assistant Deputy Minister, Meteorological Service of Environment Canada, professor of atmospheric and ocean sciences, University of British Columbia, and Senior Scientist, Canadian Climate Centre. Dr. McBean has served on many national and international scientific committees and is a lead author for the PICC WGI assessments for 1990 and 1995, and is a Review Editor for the IPCC WGII 2007 assessment.

Richard Peltier (Lead Investigator, PCSN) is a professor of physics at the University of Toronto. His research interests include understanding the physics global environmental change.

Garry Clarke (Co-Investigator, PCSN) is a professor in the school of earth and ocean sciences at the University of British Columbia. His research is devoted to understanding the physics of glaciers and ice sheets.

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Shawn Marshall (Co-Investigator, PCSN) is a professor in the department of geography at the University of Calgary. He is a glaciologist and climatologist with broad interests in earth system science.

Gregory Flato (Co-Investigator, PCSN) is a research scientist at the Canadian Centre for Climate Modelling and Analysis. His research interests include the observation and modelling of Arctic sea-ice.

Students in the PCSN

The primary goal of the Network is to generate new information while providing a solid foundation for the training of young scientists in Canada; people who will advance our understanding of Canadian environmental change issues and become future scientific leaders.

The PCSN involves senior scientists and a number of graduate students, post-doctoral fellows and research associates. This year, 36 students, post-doctoral fellows and research associates were fully or partially supported for their polar research.

The importance of polar regions

The vast Canadian land mass in polar regions is expected to be one of the areas on the Earth's surface that will experience the most severe climate impacts.

According to the Intergovernmental Panel on Climate Change (IPCC), the effects of climate change on the biophysical environment include:

- a reduction in the thickness and extent of glaciers and ice sheets;
- changes in natural ecosystems with detrimental effects on many organisms including migratory birds, mammals and higher predators;
- reductions in the extent of sea ice and permafrost;
- increased coastal erosion;
- a decrease in the depth of permafrost and seasonal thawing; and
- species invasions as climatic barriers are lowered.

For Arctic human communities, impacts will be mixed and include detrimental effects on infrastructure and traditional indigenous ways of life.

The Canadian Foundation for Climate and Atmospheric Sciences (CFCAS)

The CFCAS is the main funding body for focused university-based research on climate, atmospheric and some oceanic research in Canada. The Foundation is an autonomous non-profit agency, established in 2000, with its current mandate ending in 2010-11. To date, it has invested \$109 million of its total budget of \$110 million in leading research initiatives. The Foundation focuses on funding policy-relevant research and initiatives. Results benefit federal priorities and Canadian society.

The Foundation has four thematic priorities:

- 1) Arctic, northern and cryospheric climate science
- 2) High-impact weather, including drought
- 3) Climate change and its impacts on the physical environment; air quality
- 4) Prediction and monitoring of atmospheric and oceanic conditions

To date, the Foundation has supported 129 projects, 2 major initiatives and 24 networks.