

Graduate Thesis Research

AIRD is actively involved with graduate students in the Faculty of Environment, and participates in graduate research in three main ways:

- provision of data (e.g., climate data, climate change scenarios) and guidance in assessment methodologies;
- research mentoring and thesis supervision; and
- financial support and valuable work experience in the research field

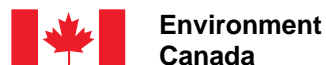
Here are examples of graduate theses from students who benefited from the UW-AIRD partnership:

- Assessing Stakeholder Impacts and Adaptations to Low Water Levels in the Trent River Watershed
- Spatial-Temporal Analysis and Simulation Modelling of Lake Huron Coastal Wetlands: A Case Study
- Implementation of a GIS to Assess the Effects of Climate Change on the Wetland Complex at Long Point, Ontario
- Ecosystem Impacts of Climate Change on the Riding Mountain National Park (RMNP) Region and Implications for Its Ecosystem Conservation Plan
- Social Marketing of Residential Energy Efficiency in Waterloo Region
- A GIS Approach to Modelling Potential Climate Change Impacts on the Lake Huron Shoreline
- Climate Change and Terrestrial Biome Distribution in Canada's Protected Areas Network: Assessment and Implications for Policy and Planning

If you are an upper year undergraduate or graduate student and looking for a thesis topic, maybe AIRD can help. Visit our website (www.fes.uwaterloo.ca/research/aird/students.html) for a list of climate change research ideas. If you are interested in any of the topics please contact one of our researchers.

What are the added benefits for students working with AIRD?

- ✓ Learn impact assessment methodologies used in climate change research
- ✓ Enhance your knowledge of geographic tools, data formats and instrumentation
- ✓ Be introduced to Environment Canada's rich internal research community
- ✓ Obtain access to the latest climate data, climate change scenarios and downscaling software



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ADAPTATION & IMPACTS RESEARCH DIVISION



Environment
Canada



Adaptation & Impacts Research
in the Faculty of Environment
University of Waterloo

Adaptation and Impacts Research Division (AIRD)

History of AIRG

OUR MISSION

To provide scientific expertise and leadership to Canadians on the environmental, social and economic risks, vulnerabilities, impacts, and adaptations associated with atmospheric variability and change.

The **Adaptation & Impacts Research Division (AIRD)** is part of the Atmospheric Science and Technology Directorate (ASTD), Science and Technology Branch of Environment Canada (EC). Established in April 1994, it is among a select few government agencies specializing in climate change and variability impacts and adaptation research.

The University of Waterloo AIRD office, in the Faculty of Environment, is one of seven research nodes in Canada. In 1997, AIRD entered into an innovative research partnership with the Faculty of Environment to advance Canadian's knowledge of the social, economic and environmental risks, impacts and vulnerabilities associated with climate variability and change, and to explore viable adaptation strategies.

AIRD currently has staff at the following locations: EC Headquarters in Downsview, Ontario; the Centre for Environment at the University of Toronto; the Faculty of Environmental Studies at York University; the Institute for Resources, Environment and Sustainability at the University of British Columbia; the Faculty of Forestry and Environmental Management at the University of New Brunswick; and Ouranos in Montreal, Quebec.

OUR REPUTATION

AIRD has extensive national and international experience in the field of climate change research. AIRD was the first to conduct integrated climate change impact assessments in the Great Lakes-St. Lawrence and Mackenzie Basins, and to undertake a national assessment (Canada Country Study). Internationally, members of AIRD have contributed to Intergovernmental Panel on Climate Change Scientific Assessments for the United Nations, and provided expert advice to the International Joint Commission and the Arctic Science Committee.

What are the benefits of University partnerships?

- ✓ Increase exposure to current research in the field of climate change
- ✓ Enhance network of contacts
- ✓ Work with research scientists who are leaders in the impacts and adaptation field
- ✓ Support the next generation of researchers

AIRD Members in FES

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| RESEARCH AREAS | UW | Other AIRD Locations |
|------------------------------|----|----------------------|
| Water Management/Resources | ✓ | ✓ |
| Great Lakes Wetlands | ✓ | |
| Climate Change Scenarios | ✓ | ✓ |
| Communication Practices | ✓ | ✓ |
| Transportation | ✓ | |
| Urban Environments | ✓ | ✓ |
| Human Health | ✓ | ✓ |
| Hazards/Extreme Events | ✓ | ✓ |
| Adaptation Modelling | ✓ | ✓ |
| Stakeholder Beliefs & Values | ✓ | ✓ |
| Energy | | ✓ |

Avenues of Climate Change Research

EXAMPLES OF UW-AIRD RESEARCH PROJECTS

The Tap Runs Dry: Lessons Learned and Forgotten by Southern Ontario Communities during Past Severe Droughts and Implications for Climate Change

This project documents past drought impacts and responses in southern Ontario communities. As part of project, a vulnerability index and web-based mapping tool will be developed to quantify and visualize drought vulnerability in southern Ontario.

Great Lakes Coastal Wetland Communities: Vulnerabilities to Climate Change and Response to Adaptation Strategies

This project assesses the vulnerability of Great Lakes coastal ecosystems to climate change. The project analyses the historical wetland vegetation response to water level fluctuations for 11 wetlands on Lakes Erie, Ontario and Huron and developed a model to project vegetation response to future water level changes. Finally, the resulting impacts on bird and fish habitat are modelled and adaptation strategies developed.

Weather-related Road Transportation Hazards

With emphasis on Canadian cities, this research explores the link between changing weather conditions and collision rates and driver behaviour to develop approaches for improving the safety of Canadian motorists.

Toronto-Niagara Region Study on Atmospheric Change

Through community case studies, this research examines the vulnerability and adaptability of urban regions and activities to a number of atmospheric stresses including weather, climate and air quality, and the role of stakeholders in developing effective adaptive strategies.

Climate Change and Water Quality in the Great Lakes Region - Risks, Opportunities and Responses

This white paper commissioned by the Great Lakes Water Quality Board explores potential changes in climate, the associated effects on ecosystems, human activities and adaptation options.

Implications of Climate Change for Canada's Boundary and Trans-Boundary Water Management

This project examines the implications of recently developed scenarios of climate change for selected bi-national and inter-provincial water agreements. AIRD contributed a review and assessment of climate change scenarios to the project.

RESEARCH AT OTHER AIRD LOCATIONS

- An Assessment of Natural Hazards and Disasters in Canada
- Climate Change and Waterborne Disease in Canada
- Canada's New Wind Chill Index
- Canada-China Cooperation in Climate Change
- Canadian Drought: Climatology, Impacts and Adaptation
- Assessment of Energy Impacts in Canada