

## **Surface Characteristics of Hazardous Weather Conditions in Coastal Regions of Baffin Island**

In 2004, the Nunavut office of C-CIARN North became a partner in a multi-year research project led by McGill university to examine the surface characteristics of hazardous weather conditions in coastal regions of Baffin Island. The project leaders, Drs. Ron Stewart and Nikolaj Nwari, are meteorologists with McGill's department of Atmospheric Sciences. Nwari and Stewart's research will be conducted over several years using a variety of methods to advance our understanding of the characteristics and variability of a range of hazardous weather conditions - high winds, freezing rain, blowing snow, heavy snowfall – that directly affect peoples' livelihood and well-being throughout the North. The fundamental questions being addressed concern both the large scale conditions associated with weather hazards and their local impacts. The research aims to produce results that can be applied directly to help reduce community level vulnerability to weather hazards.

The C-CIARN Nunavut office facilitates and supports the research project in a variety of ways, including:

- Providing information (site-specific weather conditions and archival information) and advice to help refine the study design
- Providing logistic support (e.g. office space, transportation, accommodation) in support of field data collection in Iqaluit;
- Arranging meetings between the project researchers with interested local stakeholders (e.g. municipal planners) to discuss potential research collaborations and/or applications of study results;
- Coordinating public information sessions, presentations and other outreach activities to enhance community awareness of and interest in the research;
- Facilitating student involvement in research activities.

Field research began in Oct 2004 with a small pilot study to investigate meteorological surface conditions associated with severe winter storms in the vicinity of Iqaluit, Nunavut. Wind speed, direction and air pressure data were collected with a mobile automated weather station at several locations (and various elevations) in the vicinity of Iqaluit, Nunavut. These data were compared with similar information from the Environment Canada weather station at the Iqaluit airport to assess the importance of micro-topography in determining surface wind characteristics. Wind conditions at the Iqaluit airport likely reflect unique topographic features of the airport location. Topography and associated surface wind conditions further inland and/or at higher elevations may differ considerably from the airport site.

On November 16, 2004, the automated weather station was installed at the site of a proposed new subdivision. The station will provide municipal planners with accurate site-specific wind data for microclimate assessments of snow drifting patterns likely to result from placement of proposed buildings. Normally, wind data for building assessments is simply inferred from the airport weather station. Students from Nunavut Arctic College's Environmental Technology Program assisted with the station installation and received training in its use and maintenance. Students will assist the C-CIARN Nunavut office in downloading station data throughout 2005. A municipality of Iqaluit planner provided advice on where the station should best be located to provide the most useful data for city planning purposes.

Students from the Nunavut Arctic College Environmental Technology Program, and researcher Nikolaj Nwari, install a mobile automated weather station at the site of a new subdivision in Iqaluit, Nunavut



Photo: J. Shirley, Iqaluit. Nov, 2004

Nwari and Stewart's research is part of the ArcticNET program - a Canadian network of centers for excellence focused on research to document and assess the impacts of climate change in the Canadian Arctic.