

Environment Canada
Prairie and Northern Collaboration on
STAR: status report

Regional Participation

- Hydrometeorology and Arctic Laboratory
 - Ron Goodson
 - support the required high resolution atmospheric modelling.
 - Bob Kochtubajda
 - Logistics liaison with project
 - study Arctic atmospheric hazards.
 - collaborate with Yvonne Bilan-Wallace on hazard impacts studies.
 - co-lead the user community interactions research theme with Dr. G. McBean
 - use of the computer cluster located at the HAL facility to run the regional version of GEM-LAM for post-analysis.
 - model runs for operational support to be run out of CMC.
- Services Division
 - Yvonne Bilan-Wallace
 - evaluate storm hazard impacts on the community and local environment.
- Prairie and Arctic Storm Prediction Centre
 - Ed Hudson
 - Weather office liaison

Storm impacts ... on northern communities



What we would like to do...

- Develop a better understanding of general impact of weather events on northern communities... infrastructure issues, safety, travel issues
- Look at specific storms characteristics to better understand how unique attributes of the storm and other contributing factors (i.e. local activities, pre-existing conditions) might contribute to different impact outcomes

Goals.....

- Develop a better understanding of what defines “high impact weather” in the arctic
- Develop a better understanding of communication barriers and what we can do to “get the message out”
- Develop a better understanding of what types of information would contribute toward improved safety and economic productivity.

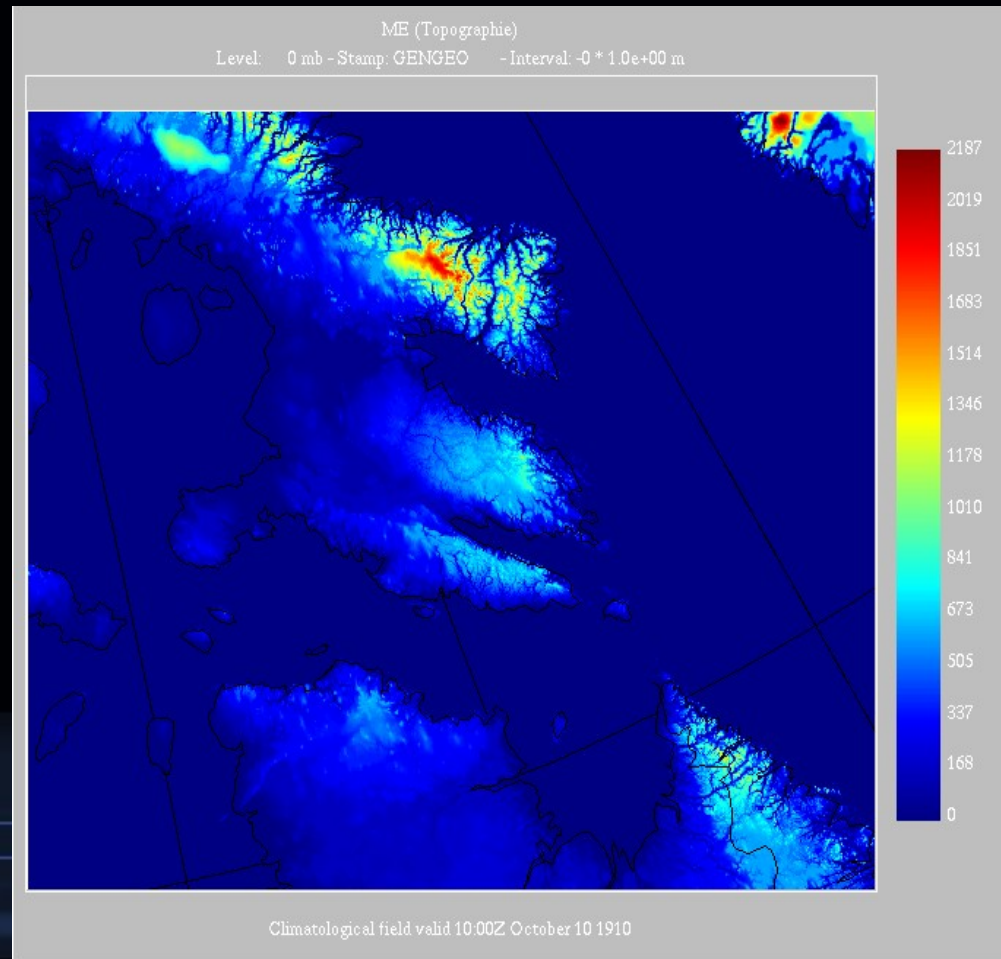
What's happened to date....

- Preliminary discussion with other groups happening or planned (Arctic College, Nunavut Research Institute, MSC Adaptation group, NU Protective services)
- Need to investigate ethics issues and federal rules on conducting survey, data ownership etc.
- Need to look for MSC (IPY?) resources to hire research help (student). This will largely impact the scope of work

Modelling

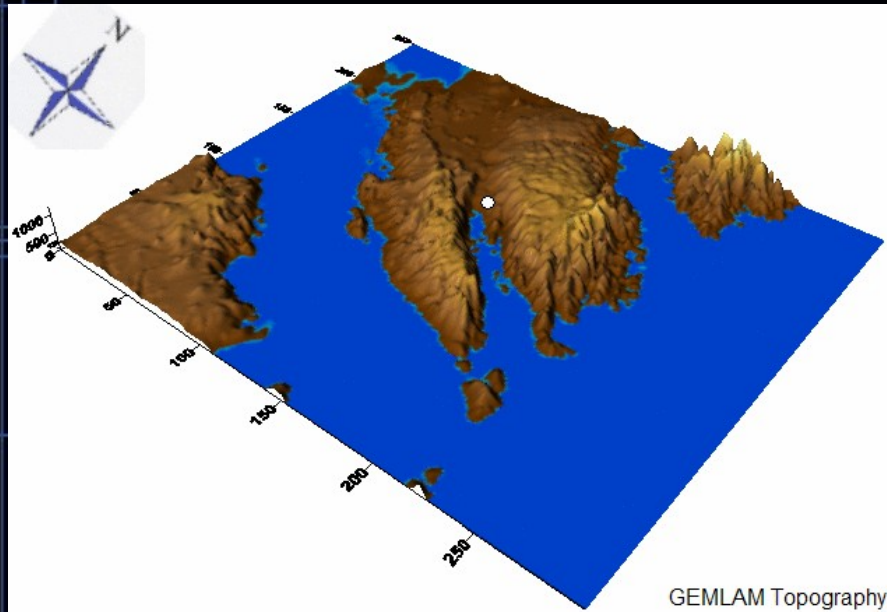
- Edmonton – GEMLAM Test Cases
 - Test runs with different surface roughness
 - Case studies for northeasterly wind storms
- CMC – Daily GEMLAM
 - Computer scripts for current runs over the BC and Ontario-Quebec windows will provide template for Arctic GEMLAM runs
 - Information gained from current runs are providing valuable information leading to improvements to GEMLAM implementation
 - Expect Arctic window daily runs to begin late winter06 – early spring07

Arctic Domain - Preliminary

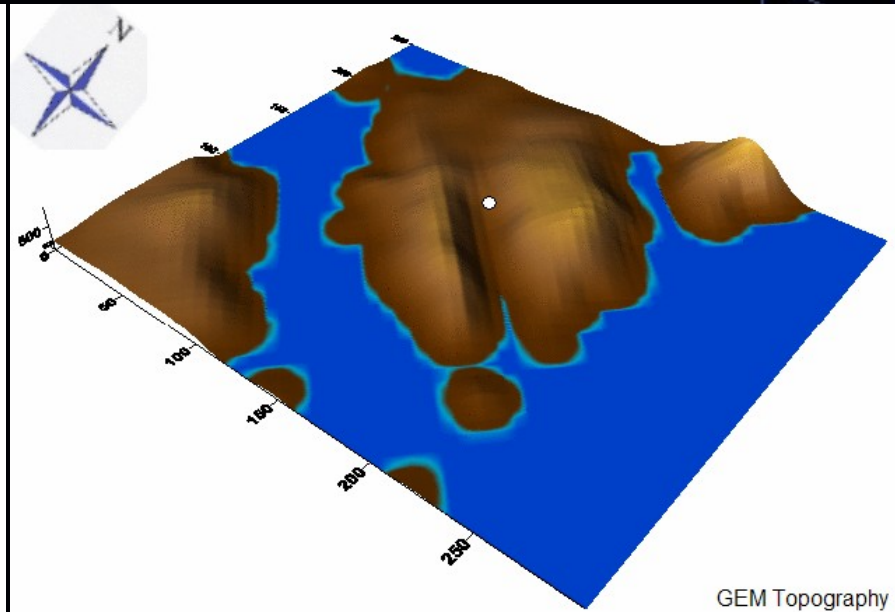


Input required

- **For STAR – need to decide**
 - Current GEMLAM daily runs are 1 per day for 24 hours with hourly output.
 - Length of run means longer computer resources
 - May want to consider tradeoffs between size of window and length of run
 - All of this subject to CMC operational considerations
 - **What output products required for field support** – many are available
 - The usual suspects - winds, vertical motion, temperature, moisture
 - Outputs from cloud physics – precipitation amounts & rates, precipitation types, cloud water content
 - Incoming / outgoing long and short wave fluxes
 - Etc.
 - Data not validated
 - **Delivery of output products**
 - Location – MSC IPY website (hosted at Canadian Ice Centre) or via STAR website ? (and potentially weatheroffice.ec.gc.ca website for “legacy” products)
 - Formats
 - Still images versus animations versus java applets



GEMLAM Topography



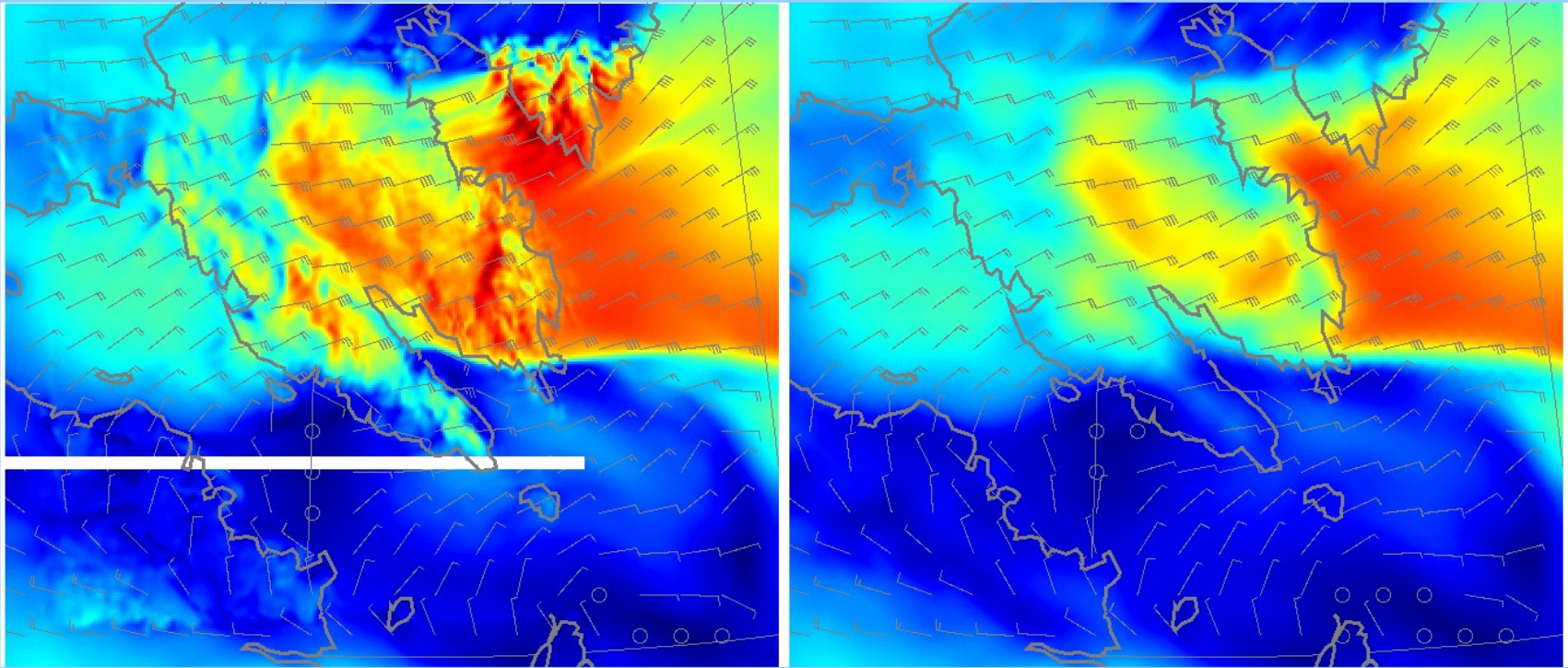
GEM Topography

GEMLAM and GEM output

Legend

Start < > < > Zoom

Wind Speed Temperature Wind Barb Sea Level Pressure



Logistics support

- Upper Air Station
 - Security clearances are required for access to the Iqaluit station.
 - Power requirements
- Forecast support
 - Our Sciences and Prediction Divisions will collaborate to provide specialized forecast support during the field experiment.
 - Resources permitting (manpower, funding, accommodations), we will endeavour to set up and operate an onsite office in Iqaluit for a period of the field study coincident with the operation of the research aircraft.