



Atlantic Climate Adaptation Solutions (ACAS)

an initiative of the Atlantic provinces and the
Government of Canada



Natural Resources
Canada

Ressources naturelles
Canada

Regional Adaptation Collaborative

Atlantic Provinces and the Government of Canada partnered to deliver the *Regional Adaptation Collaborative* (RAC) Program.

\$3.7 Million Federal
\$4.6 Million Provincial

over 3 years
2009 - 2012



Cost-Benefit / Economic Impact



- Atlantic Canada is already affected by severe weather events
- Inaction costs money too
- NRTEE estimates costs of climate change up \$43B per year by 2050
- Atlantic coastline is particularly vulnerable due to size and exposure
- 40-68% of losses can be averted with cost effective measures available today

Cost-Benefit / Economic Impact

- Atlantic Canada is already affected by severe weather events

New Brunswick

- December 2010
- Flooding and Storm Surge

\$35 Million and counting...



Cost-Benefit / Economic Impact

- Atlantic Canada is already affected by severe weather events

Nova Scotia

Meat Cove, Cape Breton

- Aug 21 and 22, 2010
- Torrential Rains, Severe Flash Flooding

\$7 Million



Cost-Benefit / Economic Impact

- Atlantic Canada is already affected by severe weather events

Prince Edward Island

North and Eastern Shore

- Dec 26 and 27, 2004
- Nor'easter - Snow, Wind and Storm Surge

\$9 Million



Cost-Benefit / Economic Impact

- Atlantic Canada is already affected by severe weather events

Newfoundland and Labrador

200 Communities

- Sep 20 and 21, 2010
- Hurricane Igor - Rain and Wind

\$165 Million

NOTE: upgraded infrastructure after Hurricane Chantal prevented or minimized damage



Regional Adaptation Collaborative

Projects will:

- help assess climate risk and vulnerability
- advance adaptation decision making through the development of regionally relevant tools, knowledge, networks and policies



Coastal Risk and Vulnerability



Inland Risk and Vulnerability



Infrastructure Risk and Vulnerability



Groundwater Risk and Vulnerability



Capacity Building with Communities/Practitioners

Atlantic Canada Cooperation



Atlantic Climate Adaptation Solutions

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Adaptation Project Locations

New Brunswick

Acadian Peninsula – Coastal Erosion, Flood Vulnerability

Moncton – Inland Flooding, Storm water Management in relation to tides/sea-level

Grand Falls – Slope erosion and stability

Saint John – Flood Risk and Land Use in tidal environment

Tantramar – Infrastructure Risk and Dyke Flood Protection

Richibucto – Modeling saltwater intrusion in municipal wells

Infrastructure Risk Assessments – Port Elgin, Memramcook, Cocagne

Nova Scotia

Yarmouth – Coastal impacts (erosion , flood risk, infrastructure) awareness & capacity

Lunenburg - Coastal impacts (erosion , flood risk, infrastructure) awareness & capacity

Minas Basin – Coastal Impacts (dyke mgm't, saltwater intrusion,

infrastructure) awareness & capacity

Oxford – Inland Flooding, Storm water Management in relation to tides/sea-level (saltwater intrusion, infrastructure)

Tantramar - Infrastructure Risk and Dyke Flood Protection

HRM – Coastal and Inland Impacts (Infrastructure, wave models,

Adaptation Project Locations

Prince Edward Island

Summerside – Coastal change and erosion rates between 1935 – present;
Saltwater intrusion

Stratford – Erosion, Shoreline

Classification , Storm water Drainage

Hillsborough River – Flood Risk Maps

Community Vulnerability Assessment –

Souris, Mt Stewart, Victoria, N. Rustico

Entire Province –

Inventory Extreme Weather Events

Climate Change Scenarios

Establish High Water Marks

Shoreline Classification

Vector Shorelines

Land Use Inventory

Storm Surge Hazard Mapping

Updating IDF Curves

Newfoundland and Labrador

Community Vulnerability Assessment –

Logy Bay, Ferryland, Corner Brook,

Irishtown, Fortune, Indian Bay, Nain

Shearstown – Comparison of mapping

technology (e.g. LiDAR, satellite)

West Coast – Saltwater Intrusion

Flood Risk Protocols – Bay Roberts,

Stephenville Crossing

Flood Risk Assessment – 30+
communities

All communities –

Climate Forecasting Scenarios

Shoreline Classification

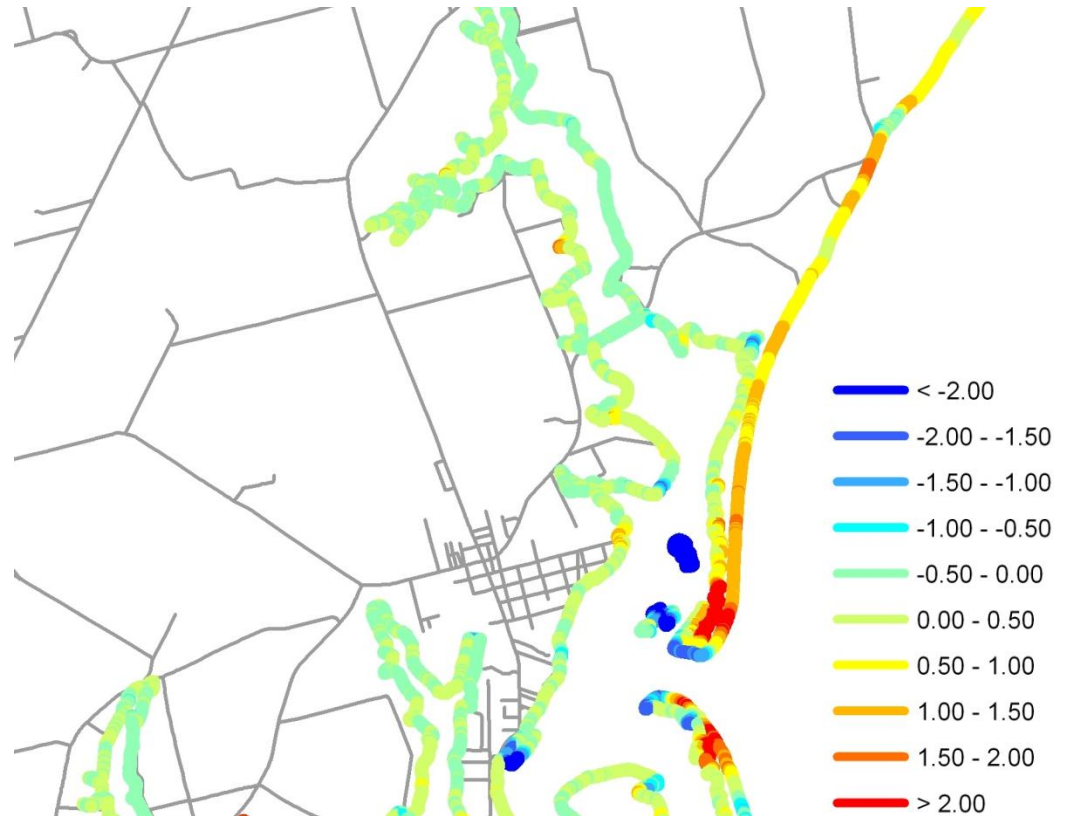
Coastal Land Use Risk and Vulnerability

Coastal Erosion Assessment - Prince Edward Island

- erosion will increase with more intense and frequent storms
- \$4 Billion worth of property at risk

PRELIMINARY RESULTS:

- historical erosion rates updated
- future rates will likely be 1.5 - 2 times
- coastal development policies are inadequate



Alberton, PEI

Inland Land Use Risk and Vulnerability

Grand Falls, NB Slope Stability and Erosion Assessment

- Bank failure and erosion threatens numerous properties and significant infrastructure
- Impacts from heavy rain events and river flooding expected to increase



PRELIMINARY RESULTS:

- Risk assessment and mapping completed and recommendations made for improved stormwater management, bank stabilisation and future development planning



Infrastructure Risk and Vulnerability

Chignecto Isthmus, Nova Scotia and New Brunswick

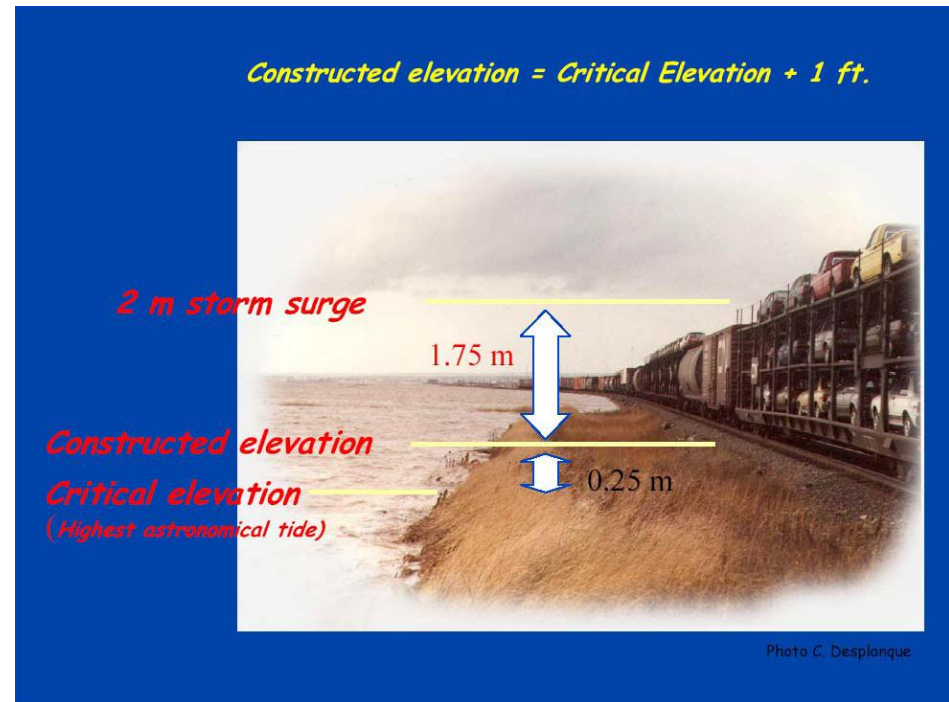
- Much critical infrastructure not built to withstand future climate conditions.
- Vulnerable to sea level rise and storm surges, e.g. dykes, road and rail in Chignecto Isthmus

PRELIMINARY RESULTS:

- Assessments of infrastructure vulnerability to:
- Sea Level Rise + 1 metre ?
- Storm surges + 2 metres ?

NEXT STEPS:

- Recommendations for infrastructure / transportation adaptations - design and placement.

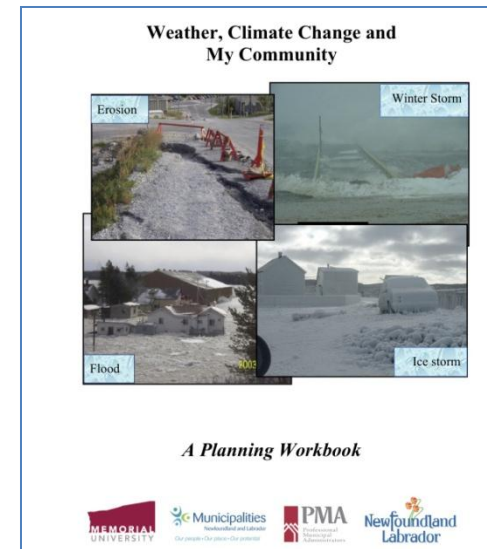


Community Vulnerability Assessment Tool

- Many communities in the Atlantic provinces have limited capacity and face environmental challenges such as erosion, flooding, and storm surge. Climate change is likely to exacerbate these challenges.
- The vulnerability assessment tool is a workbook designed to assist small rural communities in assessing the impacts of climate change on their communities.

This Vulnerability Assessment Tool:

- Has been piloted in six NL communities;
- Is currently being piloted in PEI;
- Is at the planning stage for NB.



Cover page of the workbook



Community mapping session in Logy Bay, NL

Managing Groundwater Resources

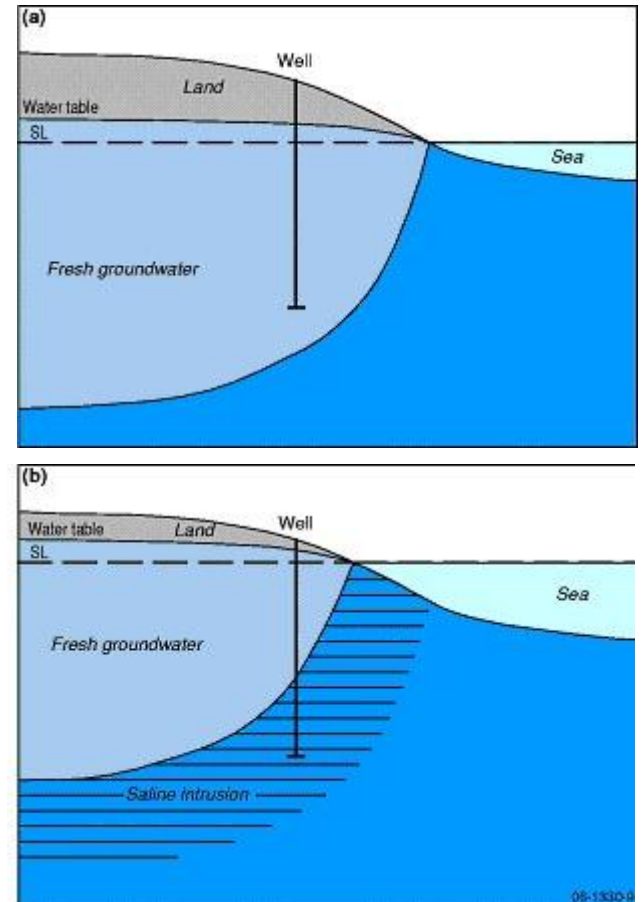
Summerside and Lennox Island First Nation, Prince Edward Island

- 1 in 4 properties are within 500m of the coast
- sea level rise: 1 m by 2100

PRELIMINARY RESULTS:

SLR will have a **small** effect on saltwater intrusion

water demand, coastal erosion could be greater

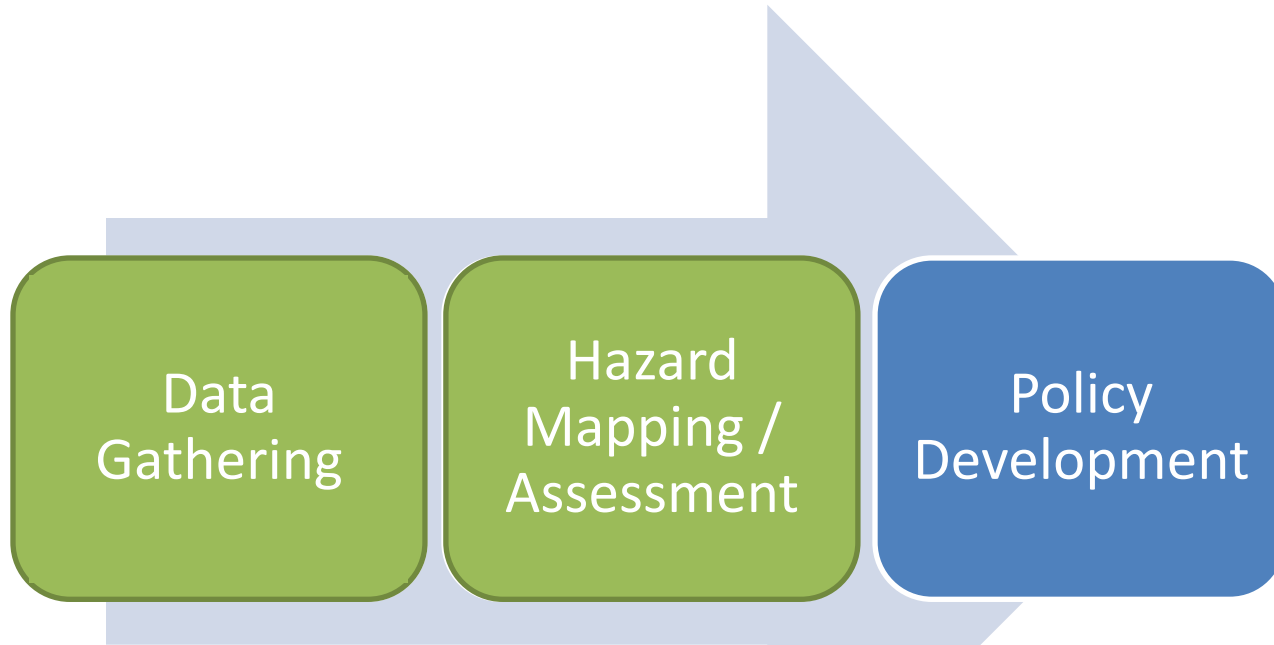


Examples of Supporting Projects



- Climate Scenarios – atmospheric & sea-level
- LiDAR, air photos, satellite imagery for all provinces
- Socio-economic scenarios and vulnerabilities
- Municipal Policy Review (NS)
- Pilot Community Assessment Mentors
- EMO Planning Review
- Extreme Weather Events Catalogue
- Updating IDF Curves
- Case Studies – issues and actions

Going Forward



federal funding support ends **March 2012**
all projects must be completed **December 2012**

Climate Change Concerns



- monitoring:
 - weather stations (EC)
 - tide gauge (DFO - Canadian Hydrographic Service)
 - erosion (NRCan)
- information and expertise
 - climate science and scenarios (locally and nationally)
 - rainfall intensity analysis

Provinces are left to take on these responsibilities or do without this important information