

# COLLABORATIVE ADAPTATION ON PRINCE EDWARD ISLAND



# COLLABORATIVE ADAPTATION ON PRINCE EDWARD ISLAND

## Overview

- **Climate Change and PEI**
  - ▣ Past impacts
  - ▣ Future impacts
- **Collaborative Adaptation Efforts on PEI**
  - ▣ Past collaborations and projects
  - ▣ Creation of Climate Change Secretariat
  - ▣ Climate Change Action Plan
    - Development of an Adaptation Strategy
- **Looking to the future**

# **COLLABORATIVE ADAPTATION ON PRINCE EDWARD ISLAND**

## **Impacts of Climate Change**

### **Globally**

- 16 of the 17 warmest years on record have occurred since 2001
- Sea level rise (1900-2009): 17 cm

### **PEI**

- Local sea level rise (1911-2002): 32 cm
- A decrease in sea ice over the past 40 years
- Increased storminess and coastal flooding
- Evidence of increased rates of coastal erosion on PEI

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## Climate change impacts on PEI

Increased storminess



Basin Head (2004)



Charlottetown Yacht Club (2010)



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## Climate change impacts on PEI

Worsening coastal erosion (loss of property and infrastructure)  
Average rate of erosion: 28 cm per year



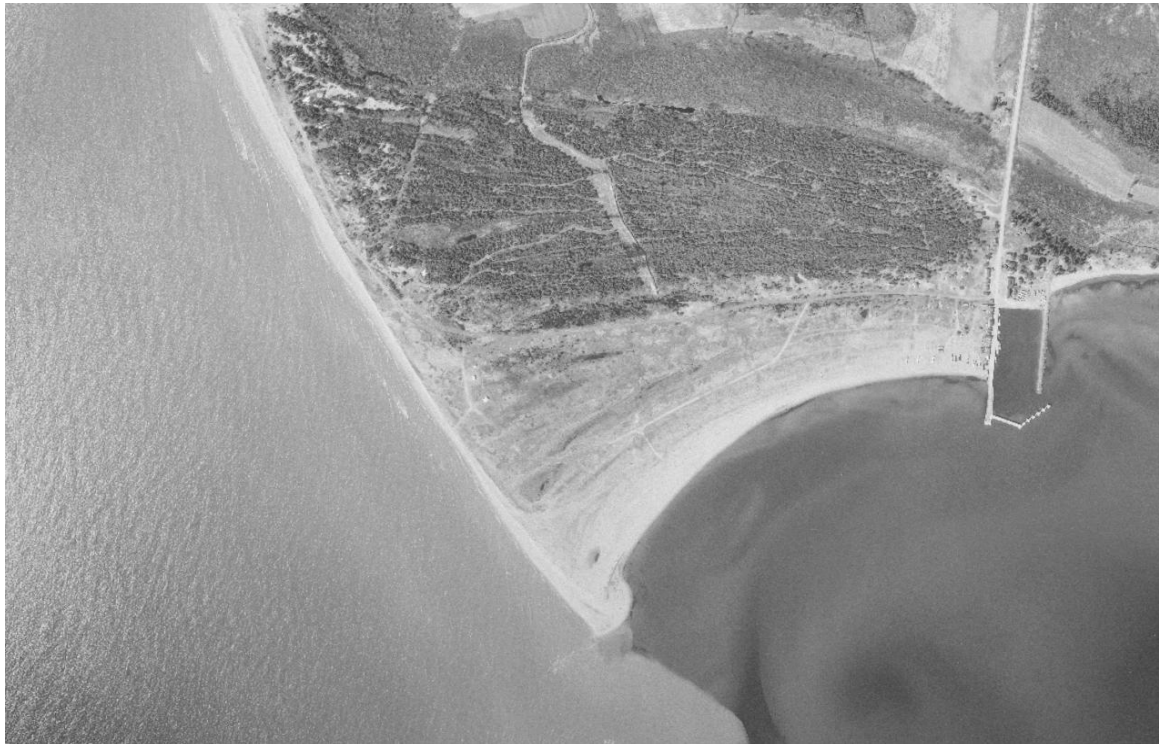
Brae Harbour



Anglo Tignish

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## Climate change impacts on PEI



West Point (1968)

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## Climate change impacts on PEI

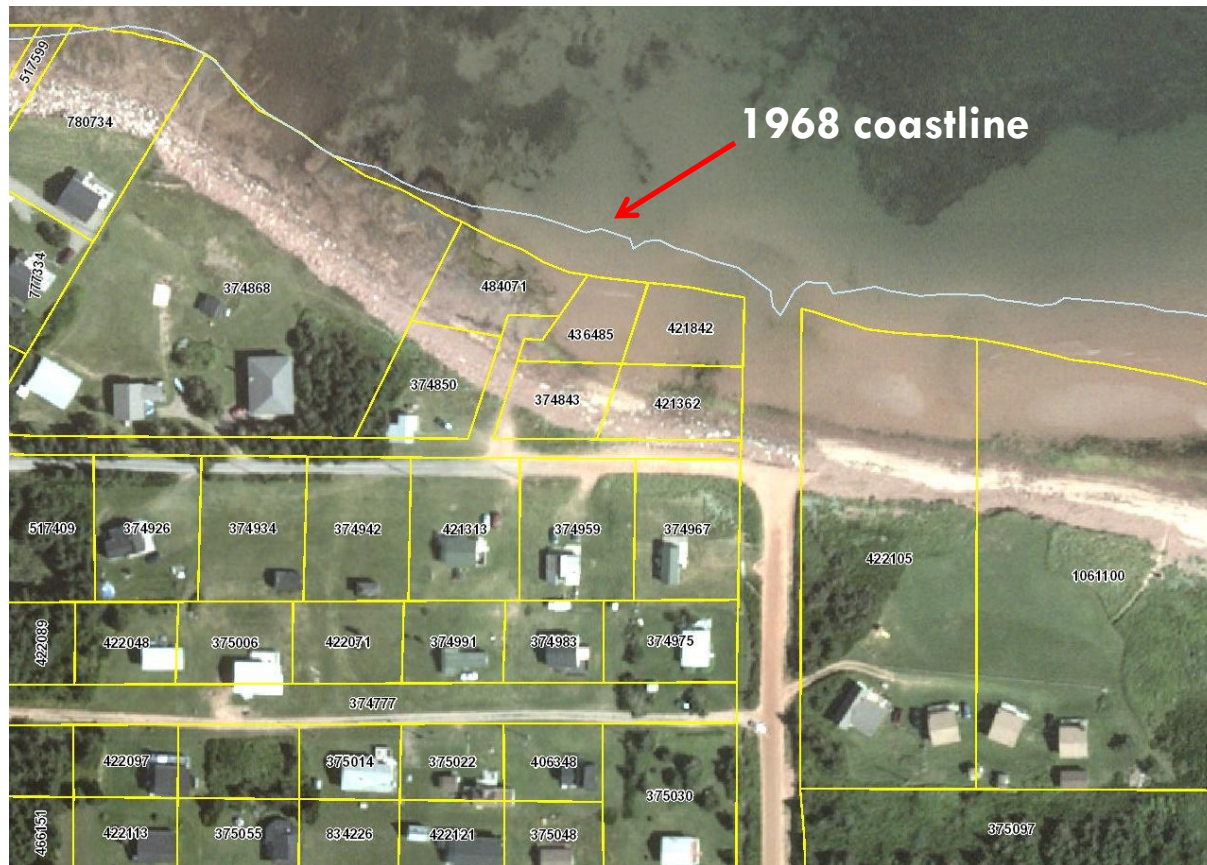


West Point (2010)



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## Climate change impacts on PEI



Savage Harbour (2010)



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## Climate change impacts on PEI

Sea level rise → storm surges reach farther → increased flooding



North Rustico (2010)



Rusticoville (2010)

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## Climate change impacts on PEI

More intense rainfall events



Charlottetown (2008)



Kildare(2014)

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Charlottetown (Hurricane Juan), 2003



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## Temperature change: future impacts

- More frost free days
- Longer, warmer summers
  - ▣ Longer growing season but also increased stress upon crops during peak summer
  - ▣ Potential opportunities for new crops
- Warmer waters in estuaries
  - ▣ Potential for more anoxic events



Covehead

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## Precipitation change: future impacts

- More winter precipitation fall as rain (not snow)
  - ▣ Possible impacts upon nature and timing of groundwater recharge
  
- More heavy rainfall events
  - ▣ Increased soil erosion
  - ▣ Increased potential for pesticide runoff



West River (2002)

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## Sea level rise: future impacts



Charlottetown waterfront



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## Sea level rise: future impacts

- More shoreline erosion



Victoria-by-the-Sea

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## Sea level rise: future impacts

- More shoreline erosion
- Saltmarsh migration / expansion



Hillsborough River

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## Sea level rise: future impacts

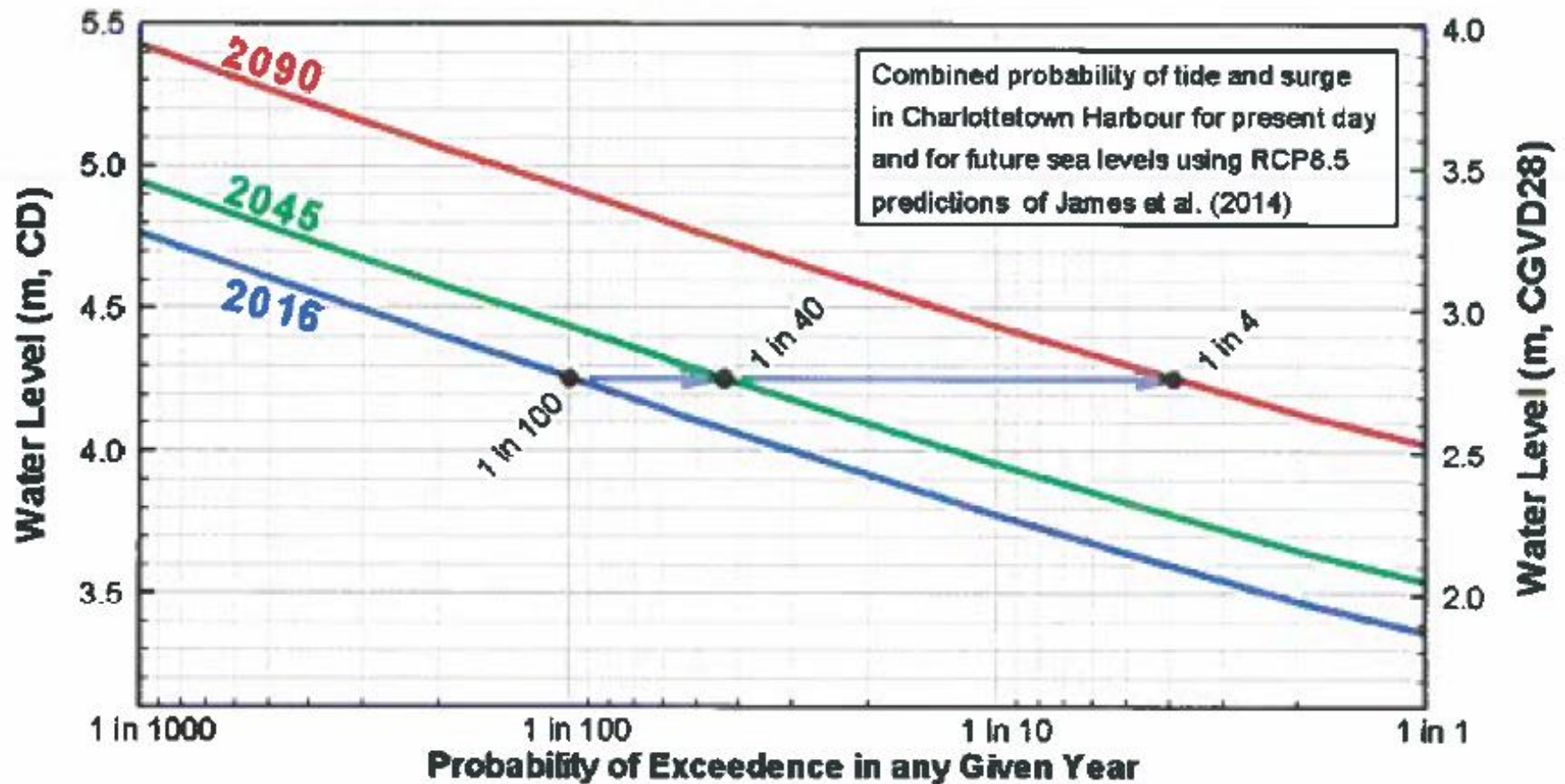
- More shoreline erosion
- Saltmarsh migration / expansion
- More coastal flooding



North Rustico (2010)



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Probability of encountering high water levels (tide + storm surge) in selected years

Source: Coldwater Consulting Ltd.

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## Increased storminess in Charlottetown

A 2.5 m storm event  
(would flood much of the Charlottetown waterfront)

- **Present day** **4% chance**  
of occurring in any given year
- **2045** **8% chance**  
of occurring in any given year
- **2090** **100% chance**  
of occurring in any given year

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**CBCnews** | Canada

## IN THE NEWS

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## Is extreme weather the new normal?

No easy answers, suggests Canada's weather guru David Phillips

By Janet Davison, CBC News Posted: Aug 8, 2013 5:11 AM ET | Last Updated: Aug 8, 2013 10:05 AM ET



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## Collaborative adaptation



Atlantic Climate Adaptation Solutions Association  
(ACASA)



UNIVERSITY  
of Prince Edward  
ISLAND

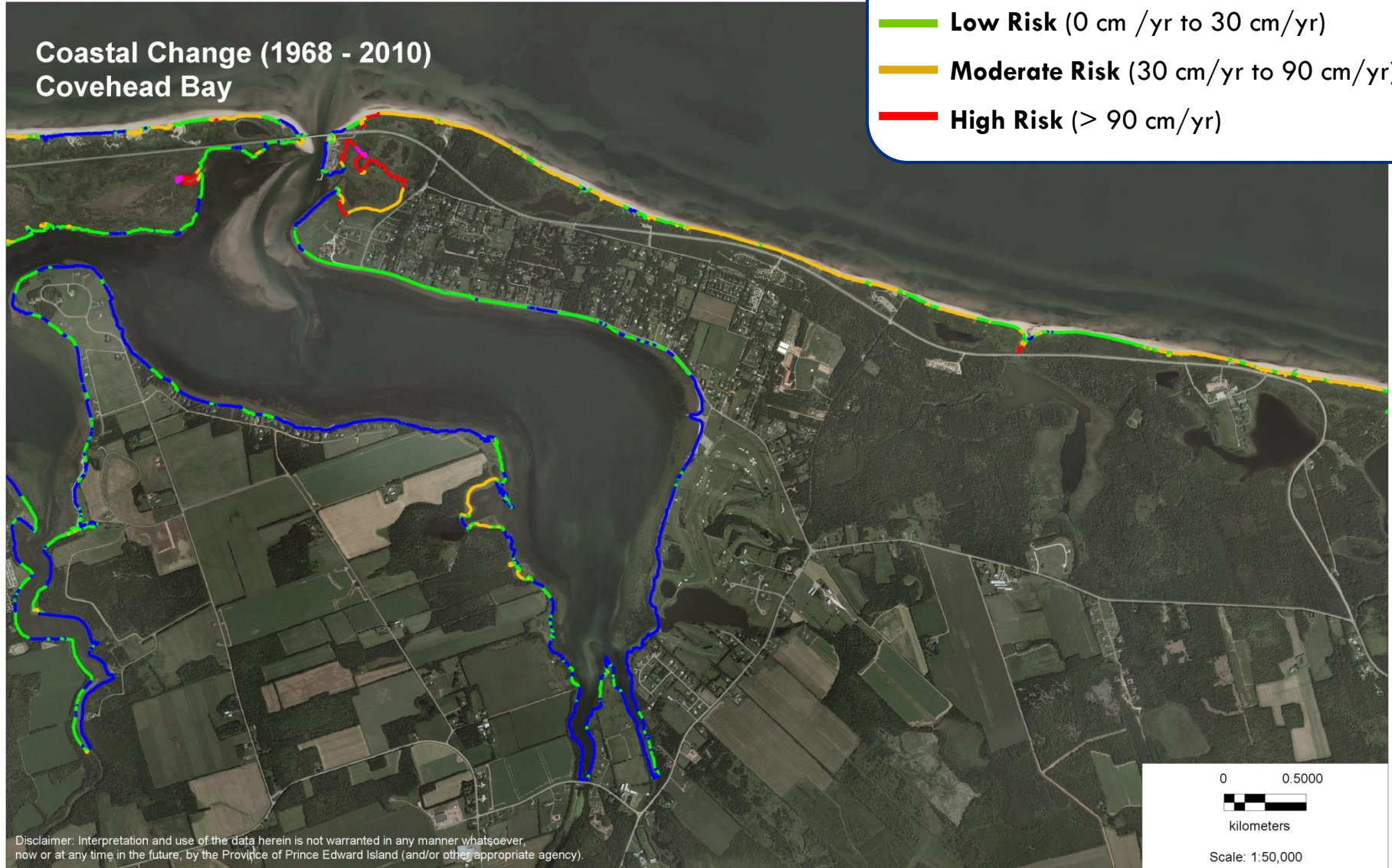


Natural Resources  
Canada

Ressources naturelles  
Canada



# Coastal erosion: 1968-2010





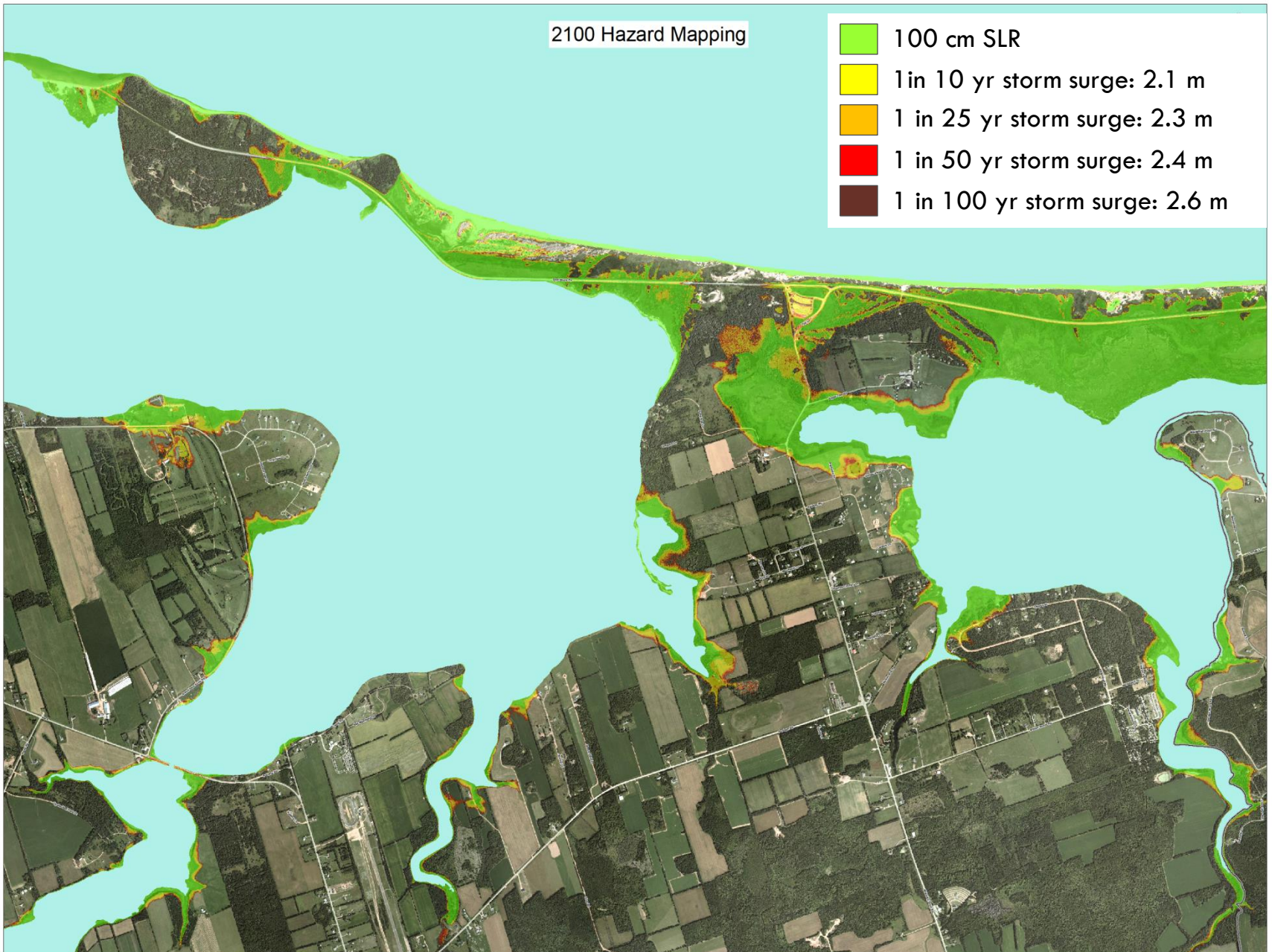
# 2050 Hazard Mapping

- 50 cm SLR
- 1 in 10 yr storm surge: 1.6 m
- 1 in 25 yr storm surge: 1.8 m
- 1 in 50 yr storm surge: 1.9 m
- 1 in 100 yr storm surge: 2.1 m





100 cm SLR	
1 in 10 yr storm surge: 2.1 m	
1 in 25 yr storm surge: 2.3 m	
1 in 50 yr storm surge: 2.4 m	
1 in 100 yr storm surge: 2.6 m	



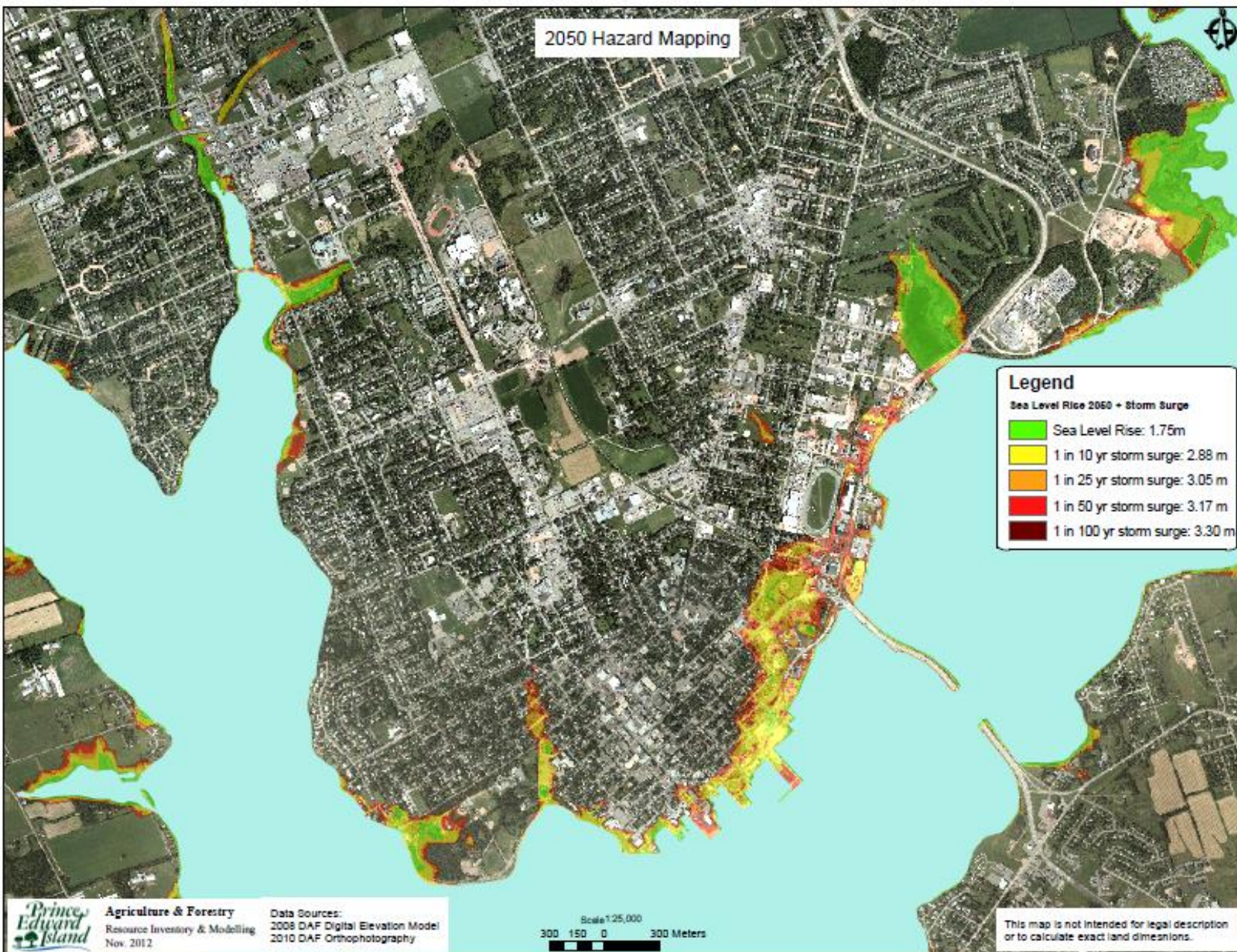


## 2050 Hazard Mapping

### Legend

Sea Level Rise 2050 + Storm Surge

- Sea Level Rise: 1.75m
- 1 in 10 yr storm surge: 2.88 m
- 1 in 25 yr storm surge: 3.05 m
- 1 in 50 yr storm surge: 3.17 m
- 1 in 100 yr storm surge: 3.30 m



**Agriculture & Forestry**  
Resource Inventory & Modelling  
Nov. 2012

**Data Sources:**  
2008 DAF Digital Elevation Model  
2010 DAF Orthophotography

Scale 1:25,000  
300 150 0 300 Meters

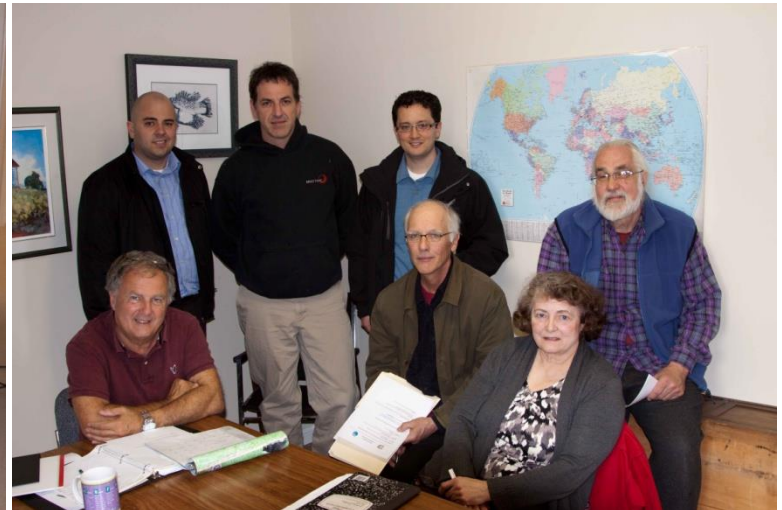
This map is not intended for legal description  
or to calculate exact land dimensions.



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## Collaborative Adaptation Efforts on PEI

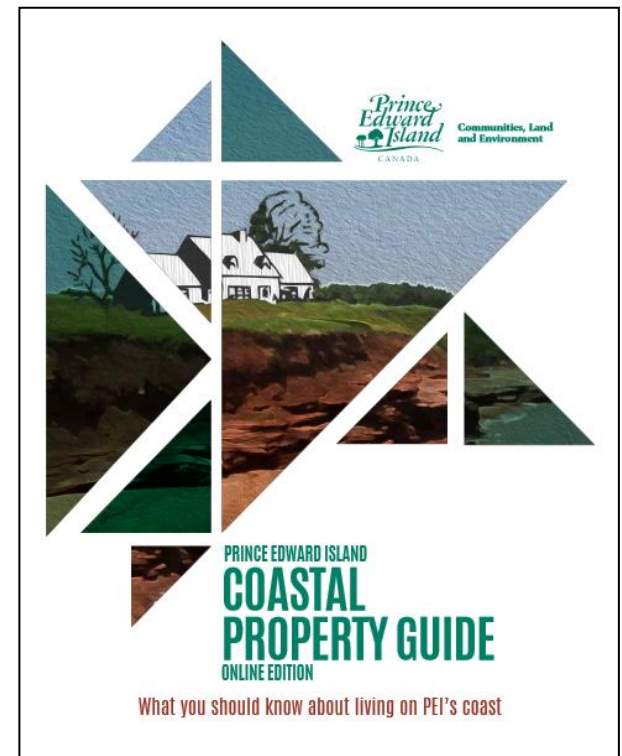
- Other past collaborations and projects
  - Vulnerability assessments for small coastal communities
    - Sharing data re: impacts; identifying vulnerable assets



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## Collaborative Adaptation Efforts on PEI

- Other past collaborations and projects
  - Building capacity with local decision makers
    - Workshops targeting communities and professionals (e.g. engineers, planners, etc)
    - Partnership with the University of Prince Edward Island to conduct erosion monitoring at over 100 sites around PEI
    - Plain language decision tools and resources



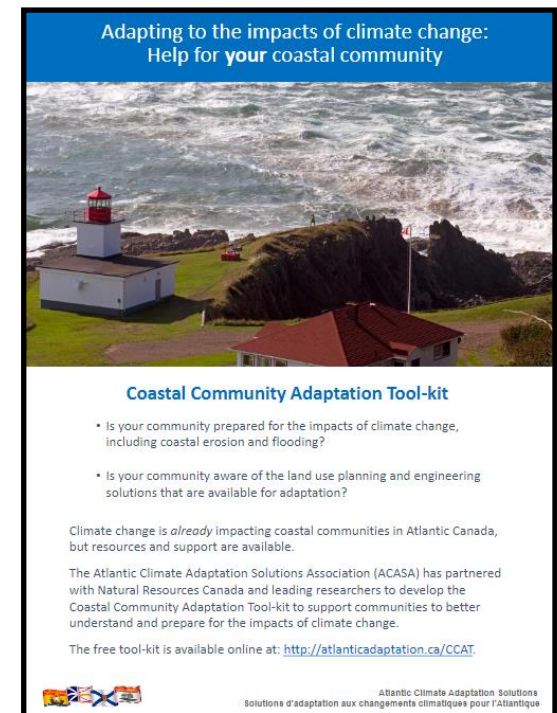
# COLLABORATIVE ADAPTATION ON PRINCE EDWARD ISLAND

## Collaborative Adaptation Efforts on PEI

- Other past collaborations and projects
  - Building capacity with local decision makers

### Coastal Community Adaptation Toolkit

- Regional project that brought together provincial governments, universities, engineers, and consultants
- Produced an Online Decision Tree tool
  - Allows users to input site characteristics and impacts
  - Produces a list of suitable adaptation options (engineering options and land use planning options)



# COLLABORATIVE ADAPTATION ON PRINCE EDWARD ISLAND

## Collaborative Adaptation Efforts on PEI

- Creation of a Provincial Climate Change Secretariat
  - ▣ Advisory table that spans departments and disciplines across the provincial government:
    - Dept of Transportation, Infrastructure and Energy
    - Dept of Communities, Land and Environment, including Provincial Planning Branch
    - Dept of Finance
    - efficiencyPEI
    - PEI Energy Corporation
    - Executive Council Office

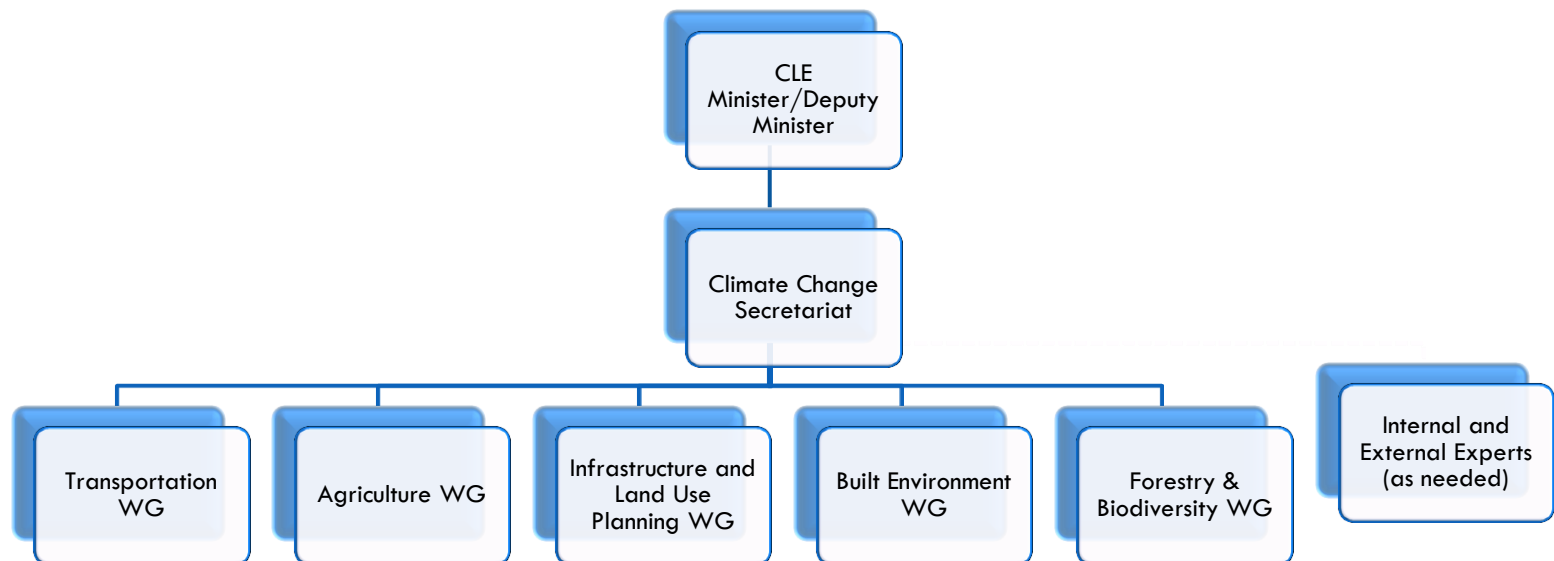




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## Collaborative Adaptation Efforts on PEI

- Creation of a Provincial Climate Change Secretariat
  - ▣ Oversees working groups with membership from all government departments, as well as external stakeholders



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## Collaborative Adaptation Efforts on PEI

- PEI Climate Change Action Plan
  - ▣ Energy Strategy
  - ▣ Mitigation Strategy
  - ▣ Carbon Pricing
  - ▣ Adaptation Strategy

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## Looking to the future



# **COLLABORATIVE ADAPTATION ON PRINCE EDWARD ISLAND**



**Thank you!**