

# Opportunities for Integrating Climate Change Science into Sustainable Forest Management

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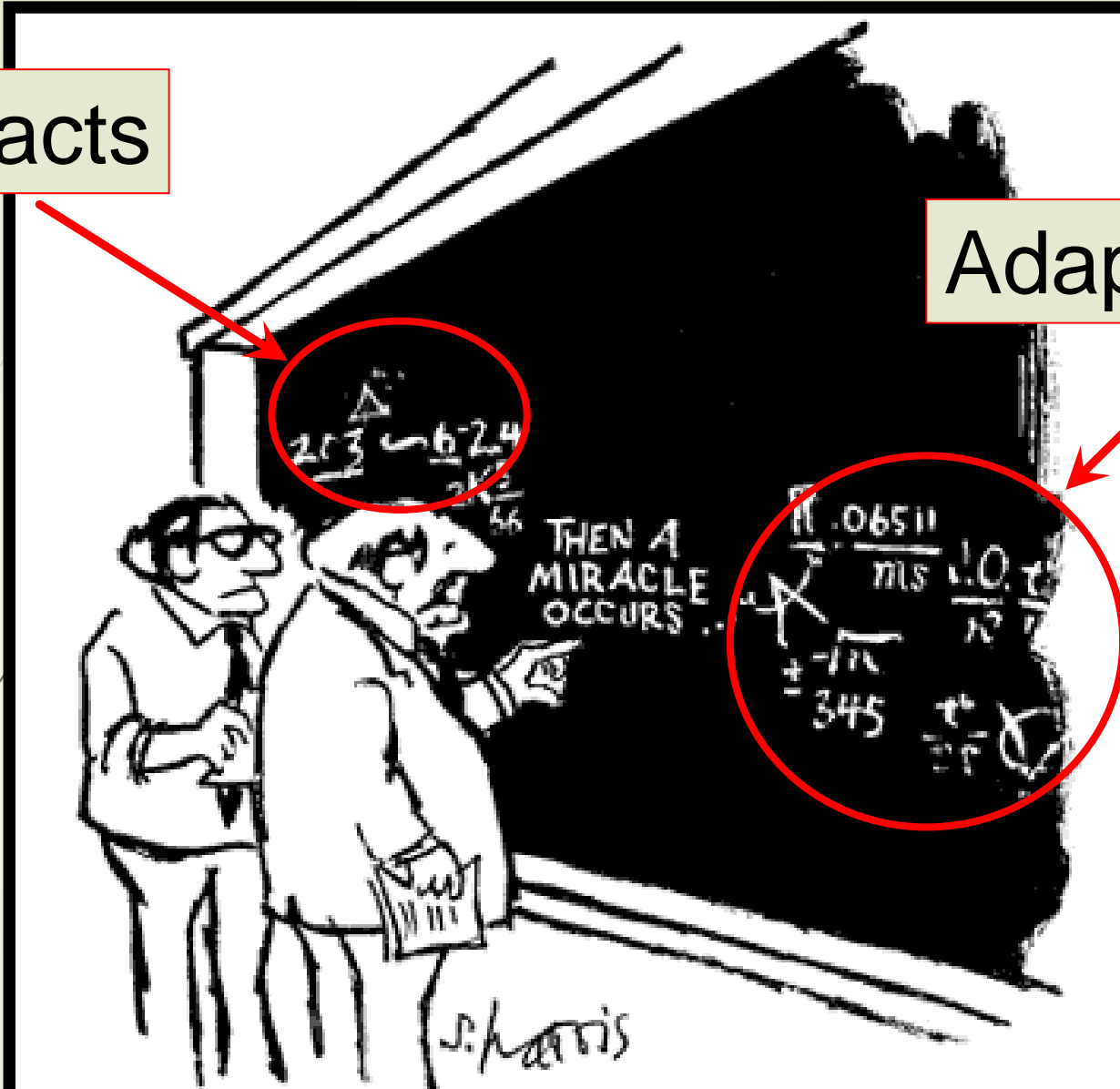
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Adaptation Canada 2016, April 13 2016

# Impacts

# Adaptation



“I think you should be more explicit here in step two.”

# Vulnerability Assessment Approach

- Developed by IPCC
- Links climate change impacts to adaptation
- Several case studies have shown how it can be applied to real-world planning exercises

# Vulnerability to Climate Change

## The IPCC Approach

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$$V = f(E, S, A)$$

V = Vulnerability

E = Exposure: climate variability & change

S = Sensitivity: system characteristics

A = Adaptive Capacity: ability to implement adaptation

$E + S = \text{Impacts}$

# Forest Management Planning

- Many jurisdictions require FMPs
- Usually long-term perspective, e.g. 20 years
  - Wood supply analysis may be up to 200 hundred years
- Carried out by companies or government
- Excellent vehicle for incorporating (mainstreaming) climate change into management decision making
  - Required by legislation
  - Resources allocated
  - Strategic focus
  - Intensive data-gathering
  - Often include extensive public consultation

# Evolution of Forestry Vulnerability Assessments (1)

- ▶ Early efforts in mid-2000s mostly one-off *ad hoc* approaches
- ▶ Ranged from policy analysis to intensive modeling to community-based
- ▶ Some done under regulatory requirements, some out of interest, some based on concerns from stakeholders

# Evolution of Forestry Vulnerability Assessments(2)

- In 2008 the Canadian Council of Forest Ministers established the Forest Sector Vulnerability Study
- Resulted in a suite of technical supporting documents and a practitioners guidebook
- Focused on incorporating VA into FMPs
- Based on Canadian SFM practices
- National-level focus on CCFM C&I, but can be modified to fit local management objectives

# Documents and tools

- Available at the CCFM web site:

<http://www.ccmf.org/english/core-products-cc.asp>





Yukon

Northwest Territories

Nunavut

Newfoundland and Labrador

British Columbia

Alberta

Saskatchewan

Hudson Bay

Quebec

Manitoba

Prince Edward Island

Vanderhoof

Mistik Mgmt

Quebec RAC

San Jose Watershed

ESRD Framework

Island Forests

Ontario

New Brunswick

Nova Scotia

Kamloops

West Kootenay

Sandilands

Hearst

Clay Belt

Le Bourdon

Lake Simcoe

Pacific Ocean

Atlantic Ocean

# Conclusions from VA case studies (1)

- Enabling factors:
  - Funding!
  - Must have both biophysical and social science expertise
  - A local champion to bridge the gap between researchers and the company or community
  - Guidance frameworks, e.g. the CCFM products
  - Merging of traditional/local knowledge and science

# Conclusions from VA case studies (2)

- Adaptation options were developed in some case studies, but awareness, capacity building and understating of vulnerabilities seen to be more valuable
- Uncertainty is difficult for stakeholders to understand; starting with current vulnerability is useful
- Need a thorough discussion of non-climate factors that may be important, e.g. economic conditions



# Conclusions from VA case studies (3)

- Challenging technical and analytical requirements require specialized expertise; this varies tremendously among communities, governments and companies
- Requires collaboration between managers and scientists: jargon, culture clash, willingness by all to learn from each other
- Lack of policy and regulation for VA
- Large technical reports less useful; awareness and capacity-building much more important

# Current Initiatives

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- Provincial governments considering incorporating VA into planning guidelines, and undertaking VA themselves
- Natural Resources Canada's Forest Change Program generating useful and relevant information for decision-making related to adaptation
- Natural Resources Canada's Adaptation Platform includes a Forestry Working Group that is sharing information among researchers and practitioners
- Companies are incorporating VA into FMPs, e.g. Mistik Management in SK

# Current Initiatives

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- Forestry Adaptation Community of Practice
- Web forum and library hosted by Ontario Centre for Climate Impacts and Adaptation Resources
- Part of their larger Adaptation CoP
- Sign up at <https://www.ccadaptation.ca/en/facop>
- Funded by the Canadian Council of Forest Ministers Climate Change Task Force

# Take Home Message

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Adaptation is not an end in itself, but a means to an end:

**Continuing to deliver Sustainable Forest Management in a changing environment!**