

Proudly presents...

5A – Expecting the Unexpected – Are We Prepared for Major Natural Catastrophe?

Managing catastrophic risk



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Agenda

Disaster risk – a growing risk for three or four decades

Catastrophe risk – an emerging risk, unlikely but high consequence

Risk management – awareness, risk transfer, risk reduction



Hurricane Juan, 2003

1. Disaster risk

A serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources.

United Nations

Pine Lake, Alberta, 2000



Canadian disasters

Almost 1,000 events in the Canadian Disaster Database

10 to 20 events added each year

Some events include:

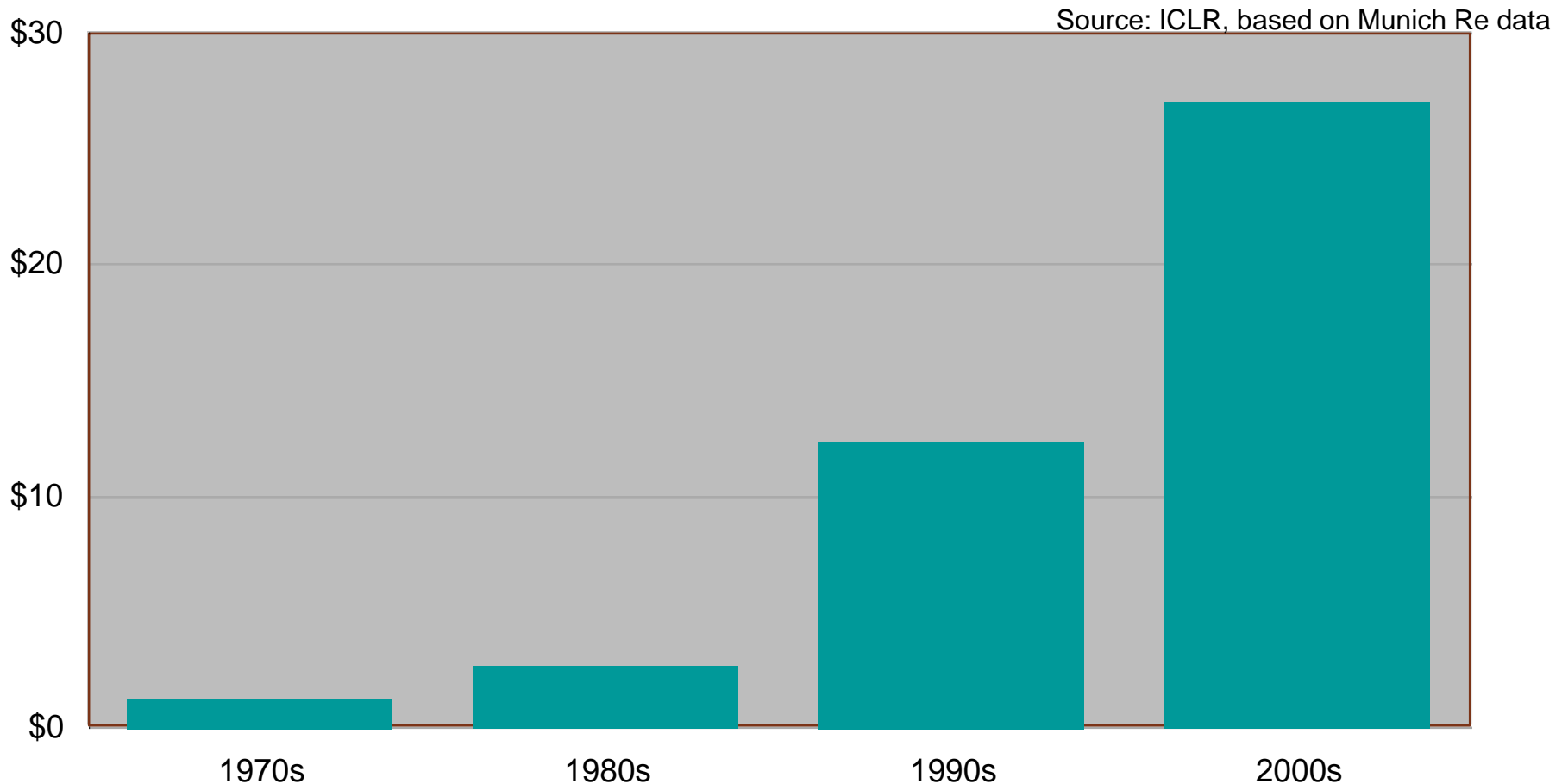
- Edmonton tornado 1987
- Slave Lake wildfire 2011
- Great ice storm 1998

Edmonton, 1987



Rising disaster damage

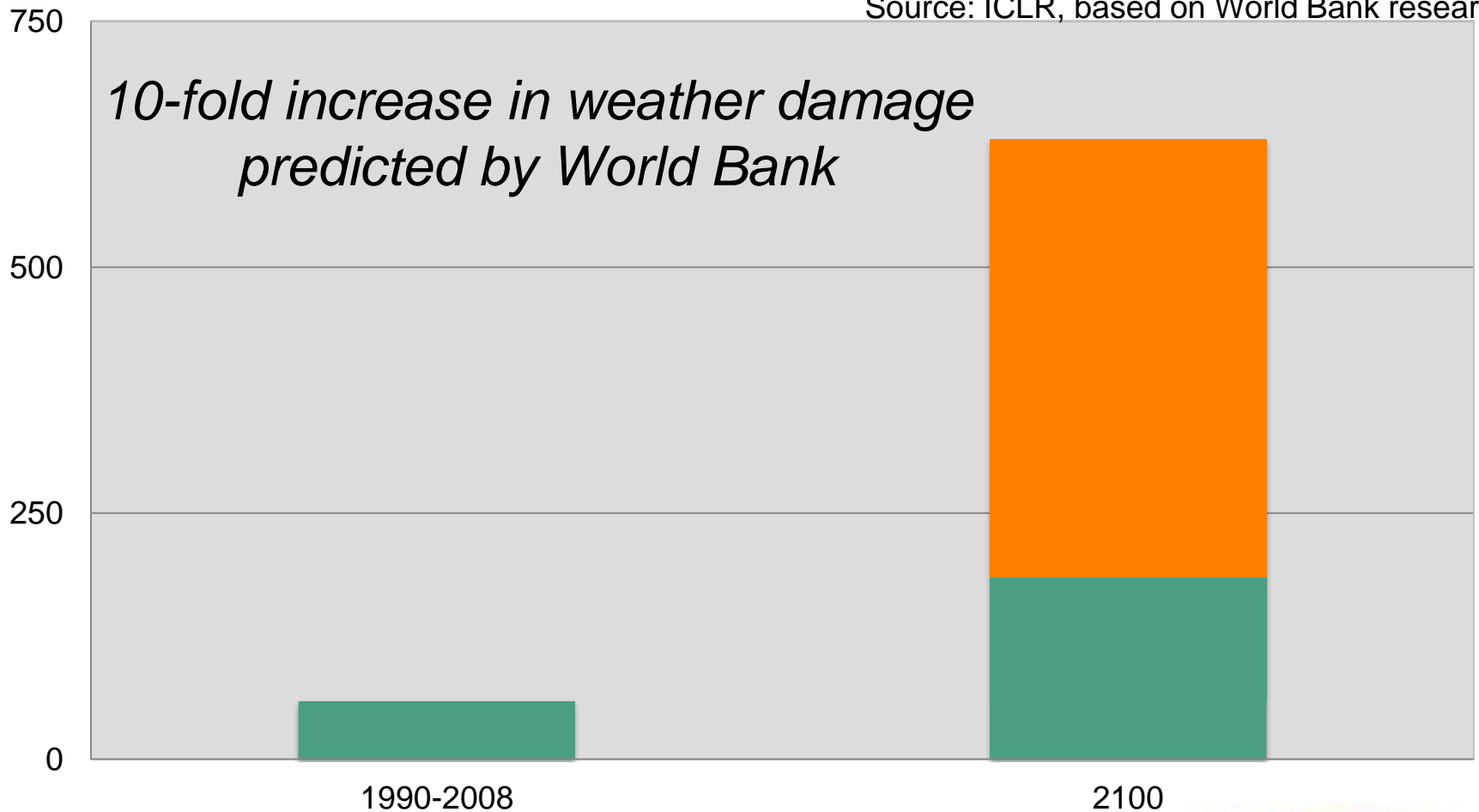
Annual global insurance disaster claims, US\$ billions



Damage expected to grow

Expected damage with current climate (green) & climate change (orange), US\$b

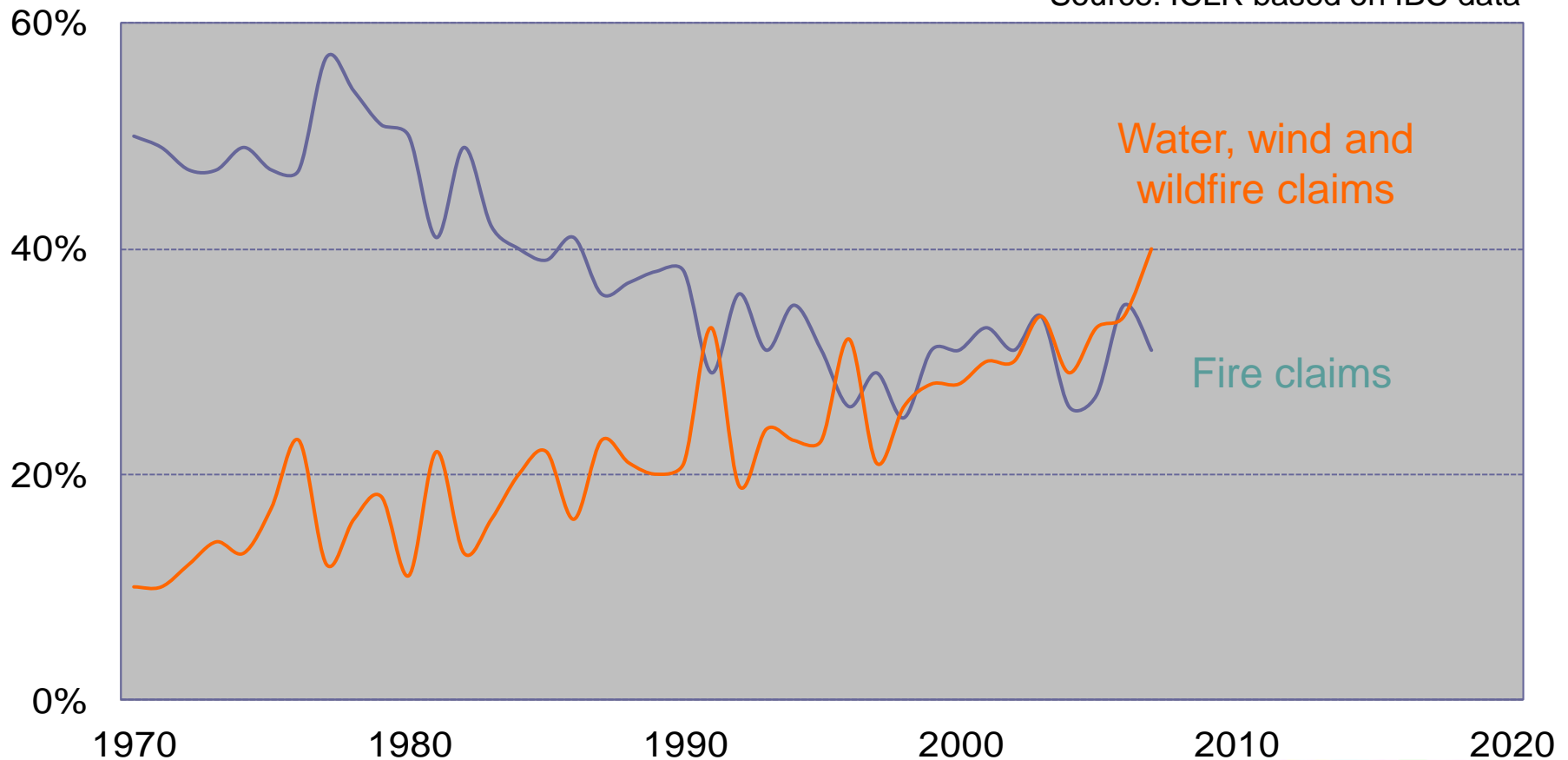
Source: ICLR, based on World Bank research



Water damage claims are up

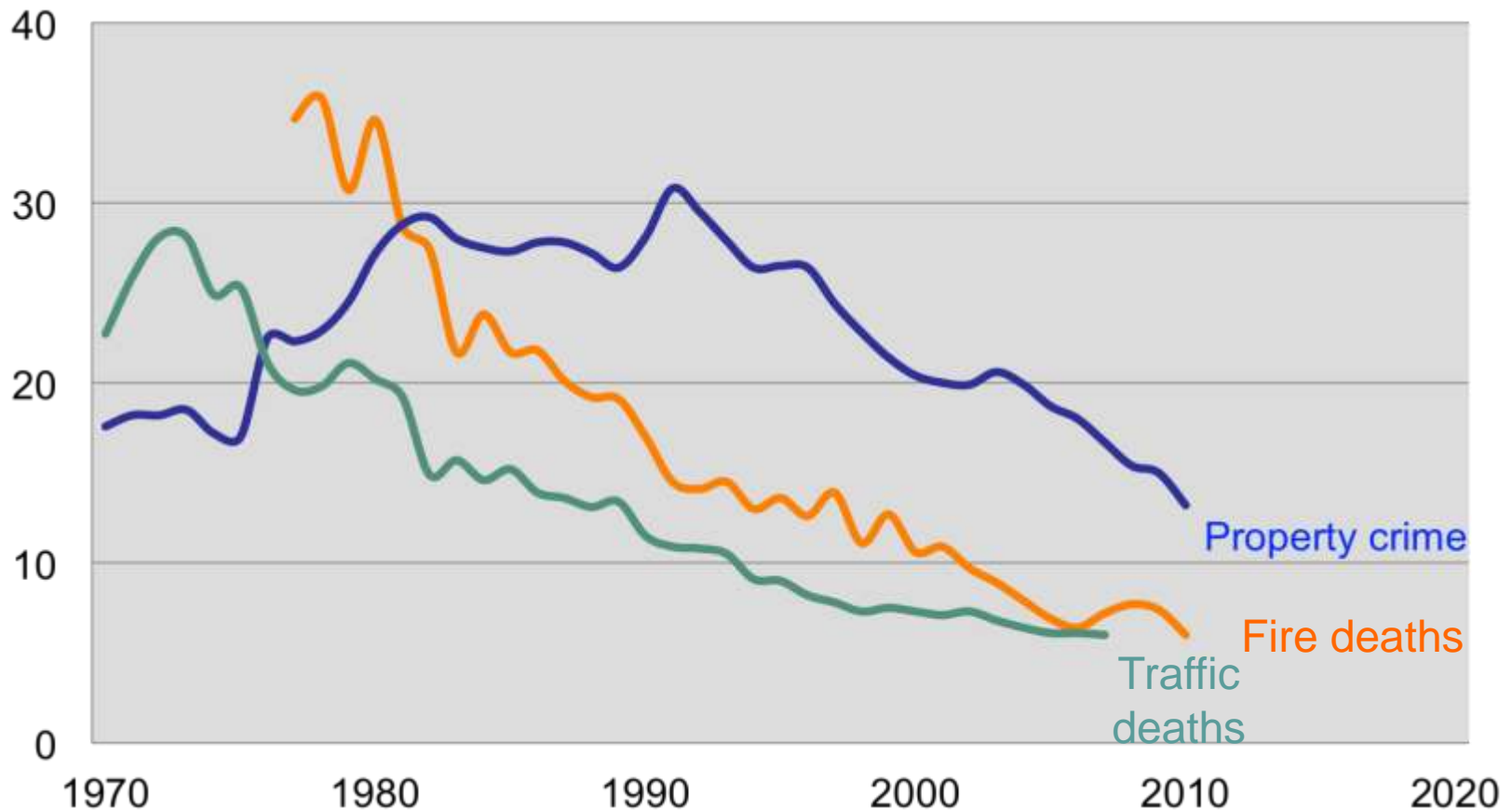
Share of property claims incurred, Canada

Source: ICLR based on IBC data



Traditional risks are shrinking

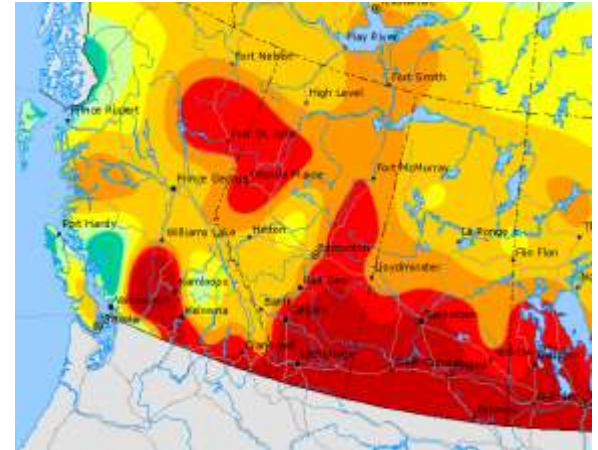
Per capita crime rate for Canada, fire death and road fatality rates for Ontario



Changing insurance practices

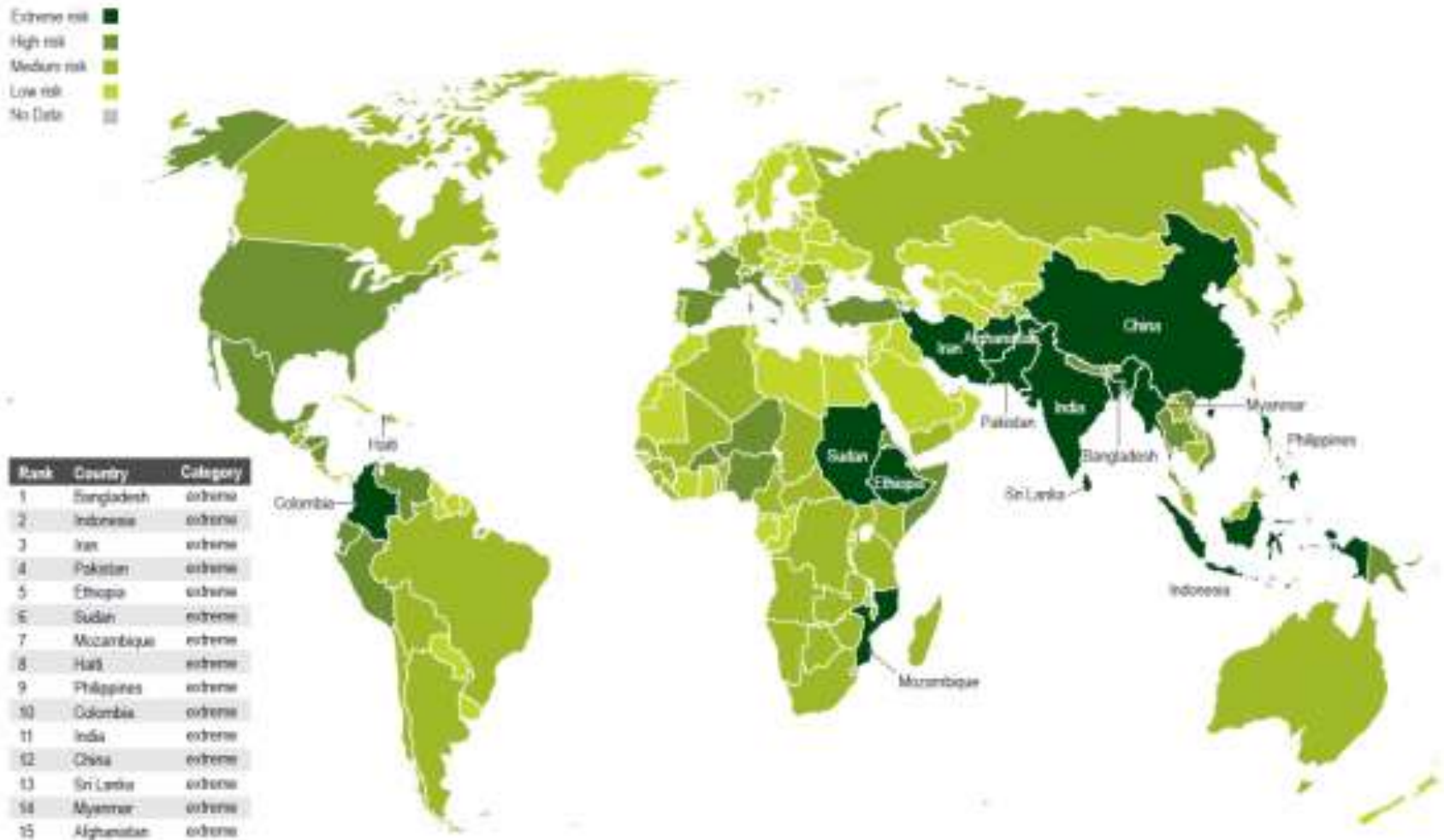
Transforming property insurance:

- underwriting
 - primary risks, maps, models
- claims
 - cat response teams, storm tracking
- solvency
 - models, reinsuring, ERM
- loss prevention



Disaster risk index, 2010

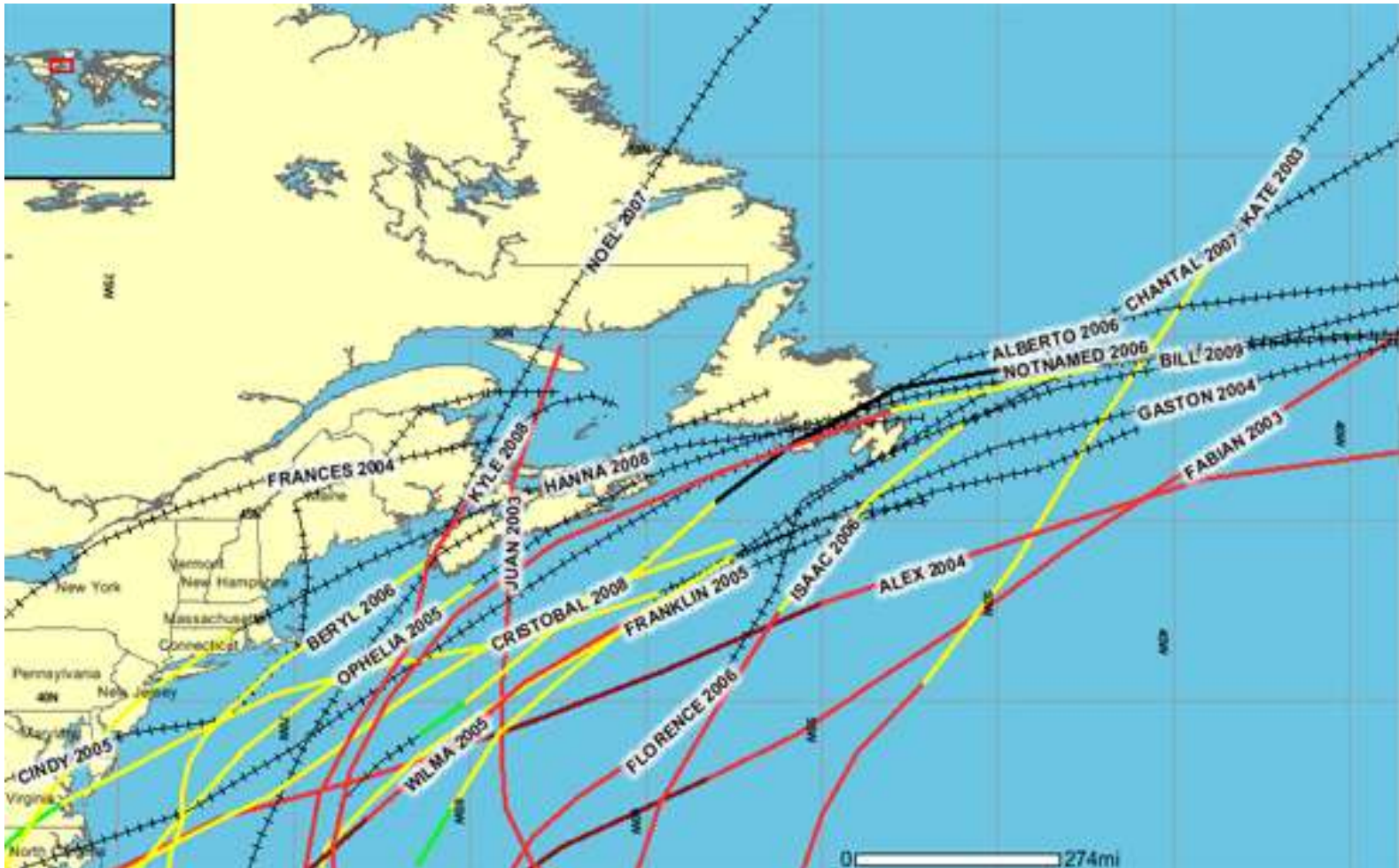
Source: Maplecroft



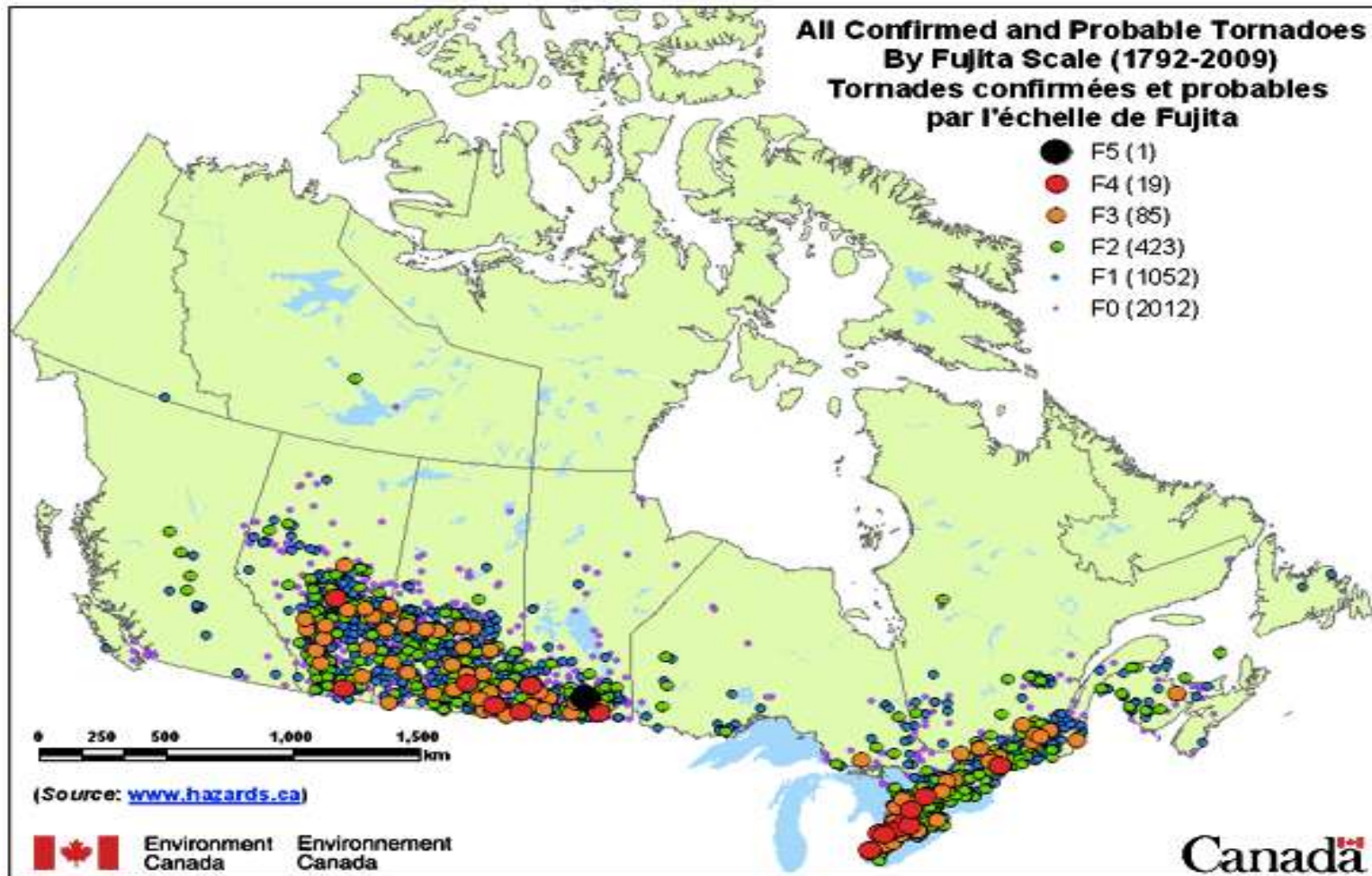
2. Catastrophe risk

- Low probability, high consequence event
- A very large disaster
- Japan \$275 billion (5% of GDP), Katrina \$150 billion (1%)
- Haiti \$8 b (100+%), St. Lucia \$.1 b (10%), Grenada \$.1 b (9%)
- Canada \$5 billion (.3%)
- Canadian catastrophe \$35 billion? (2% of GDP)

Hurricane experience

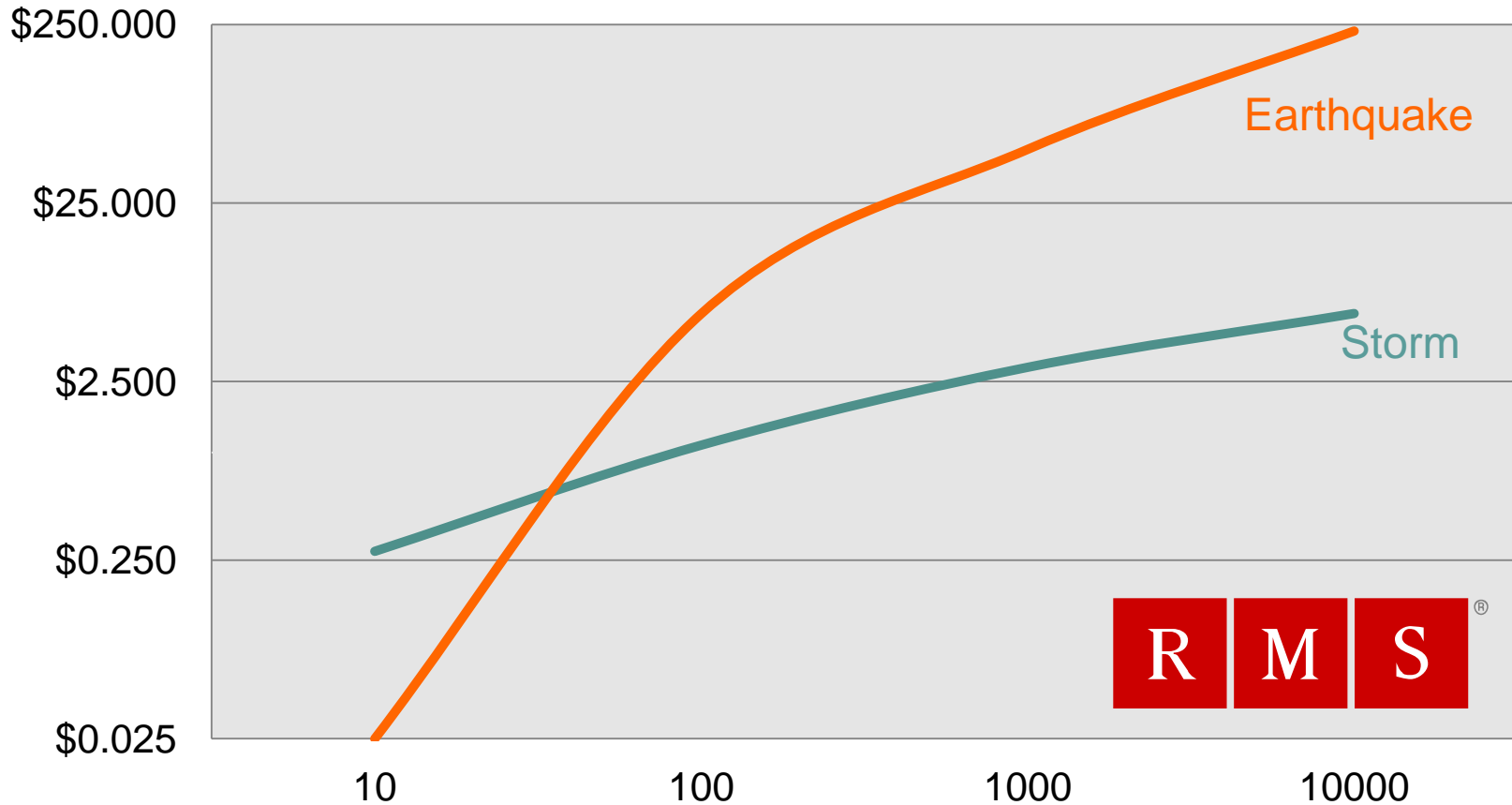


Tornado experience



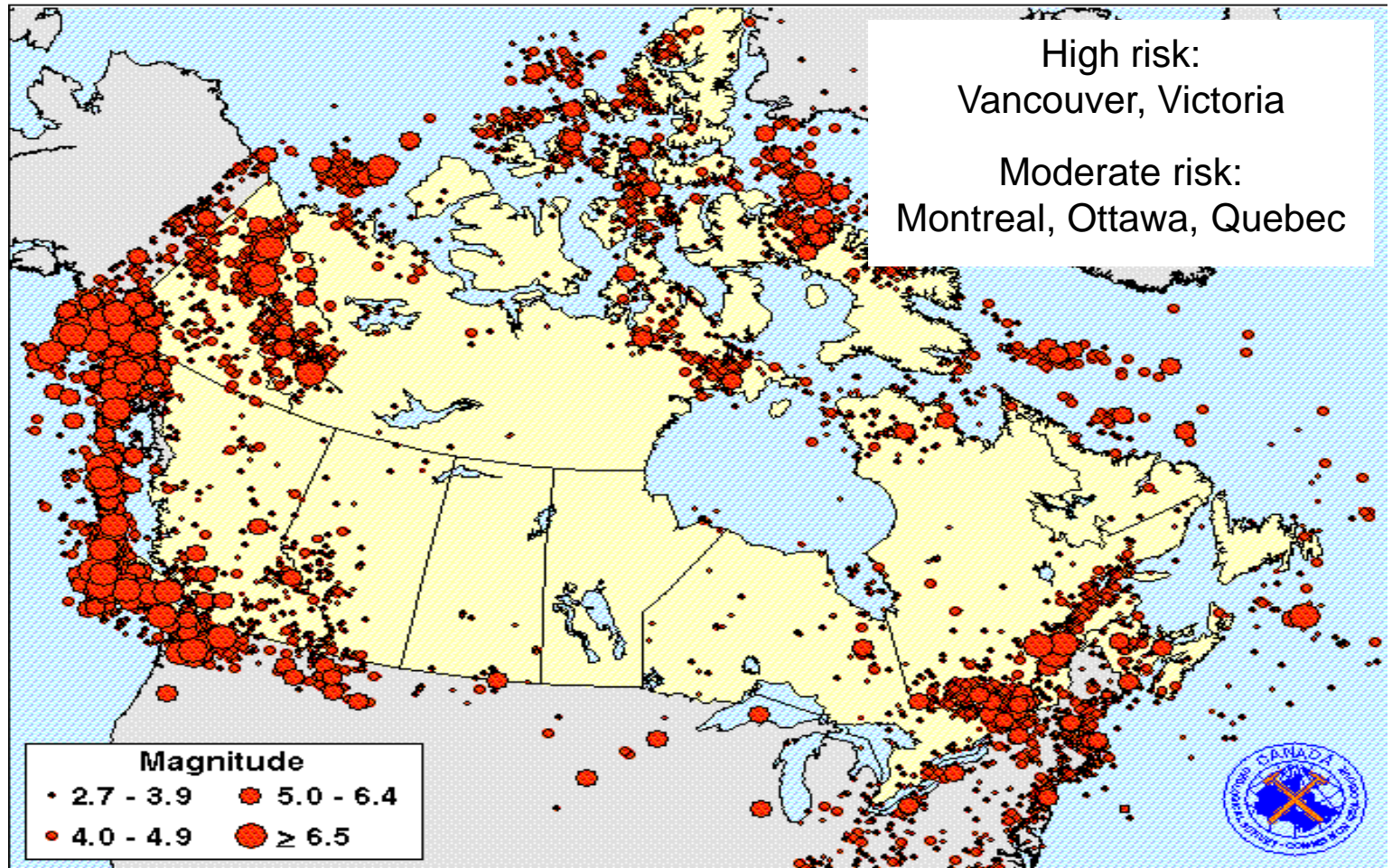
Catastrophe risk

Insured loss, billions of dollars, Canada



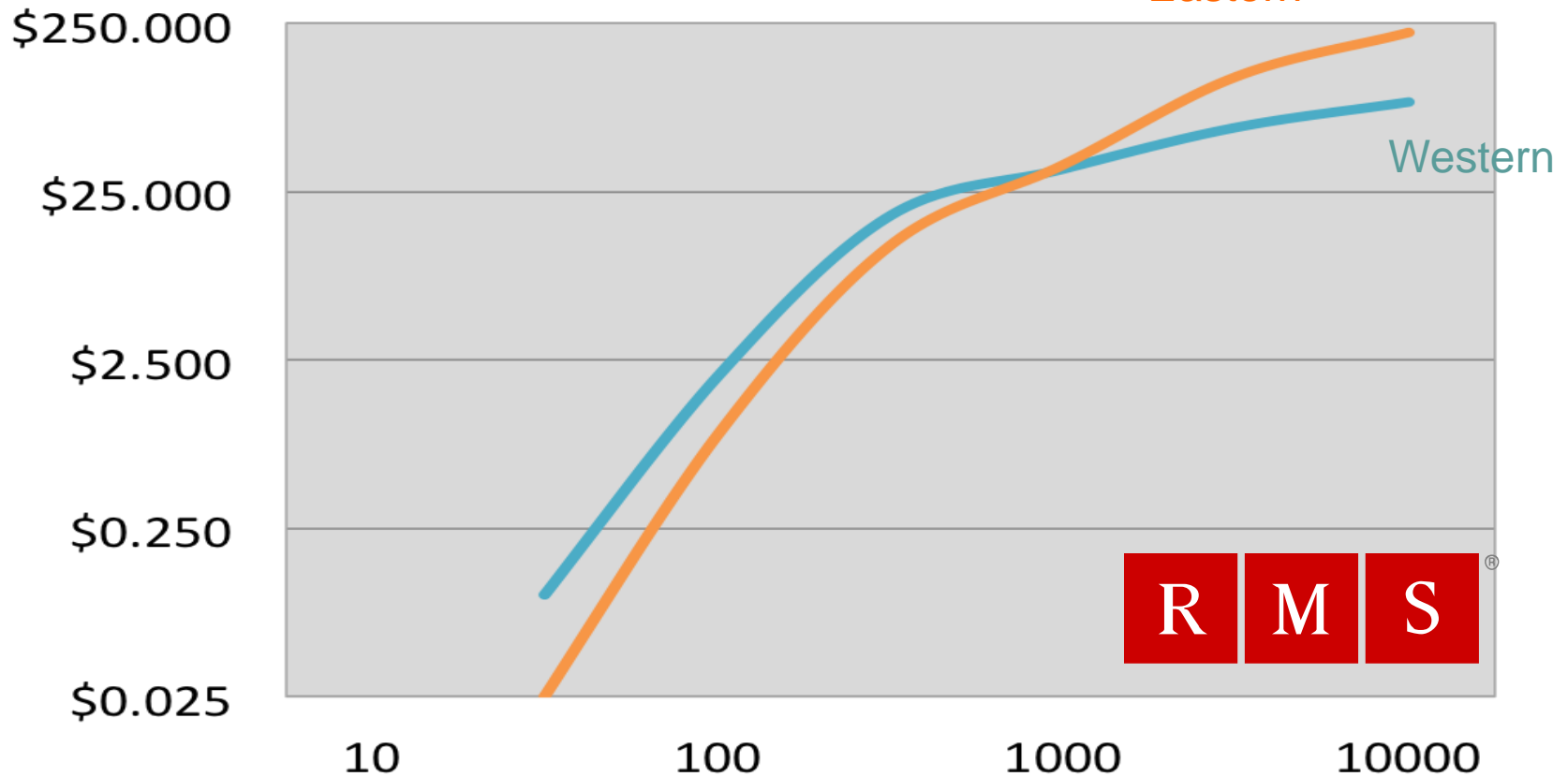
Return period in years

Earthquakes experience



Earthquake risk

Insured loss, billions of dollars, Canada



Return period in years

3. Risk management

Increasing weather damage
projected for *homes*, industry
and infrastructure.



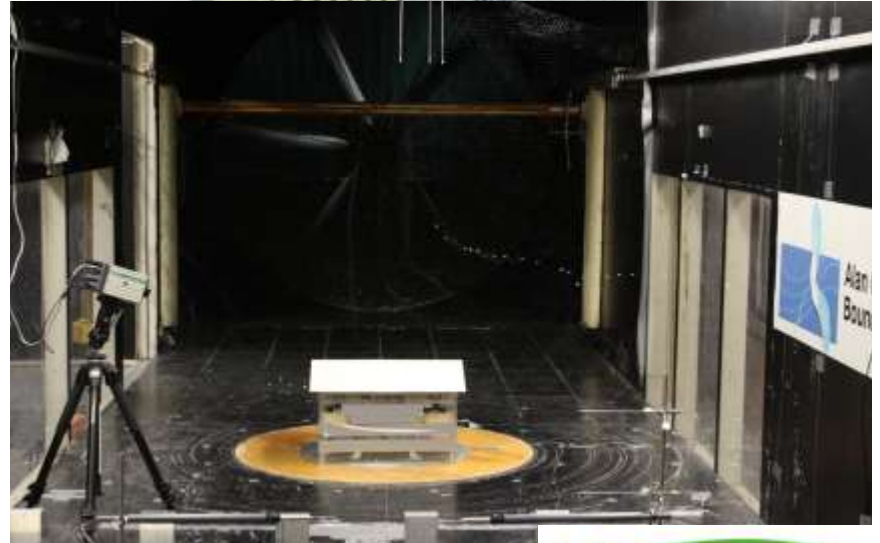
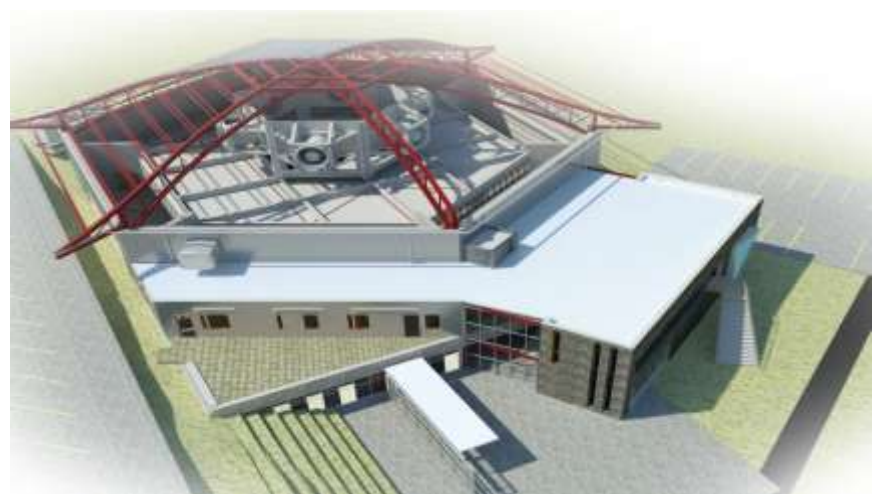
World class research

WindEEE Dome

Boudary Layer Wind Tunnel

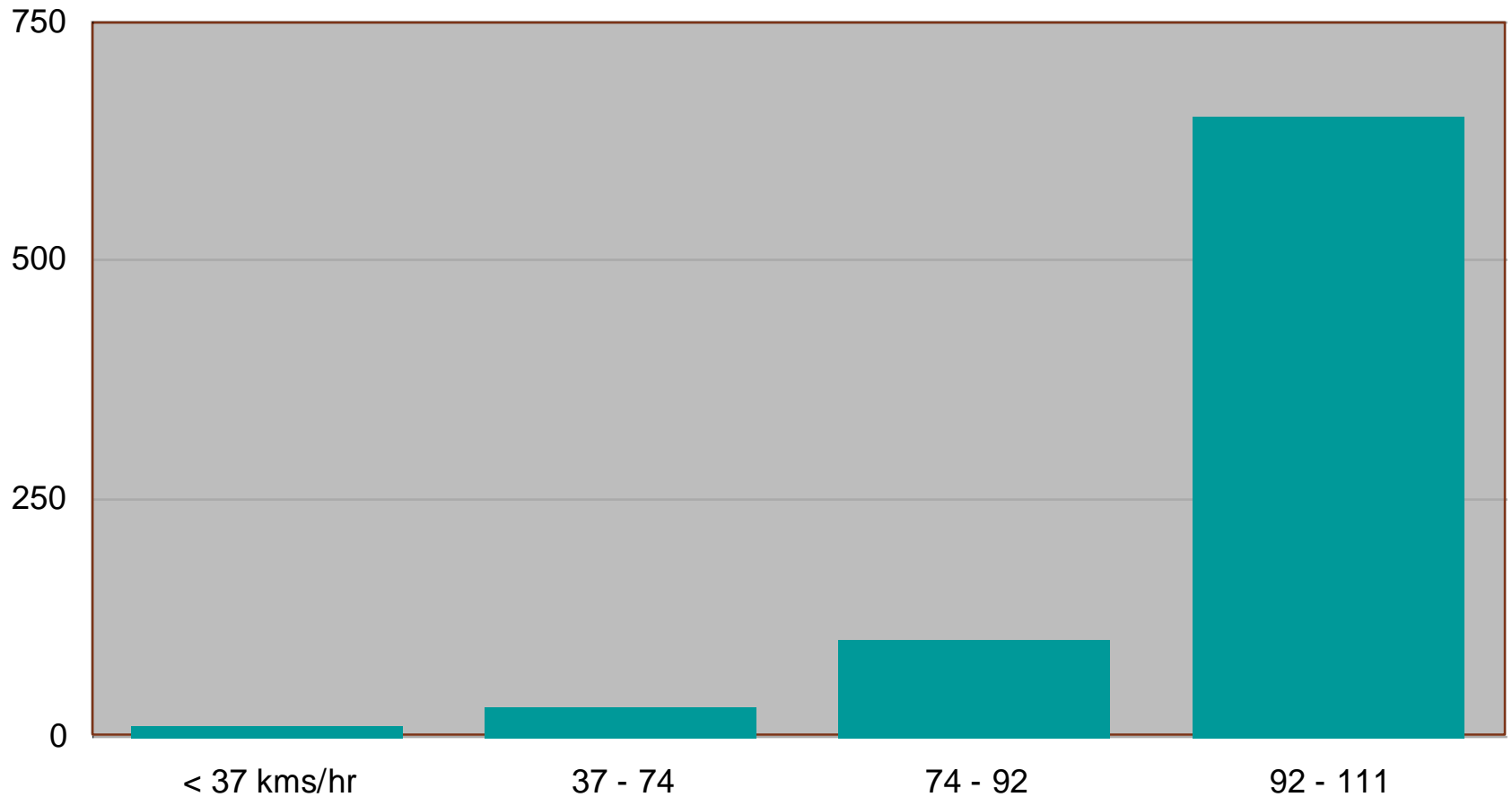
Insurance Lab for Better Homes

(three little pigs project)



Wind damage

Index of wind damage relative to wind speed

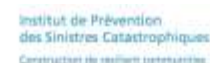
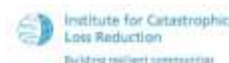


We can build resilient homes

Three homes completed

Guide for builders

Discussions with builders



Designed for safer living®

Home builder's guide

Designed for safer living® is a program endorsed by Canada's insurers to promote disaster-resilient homes.

May 2009

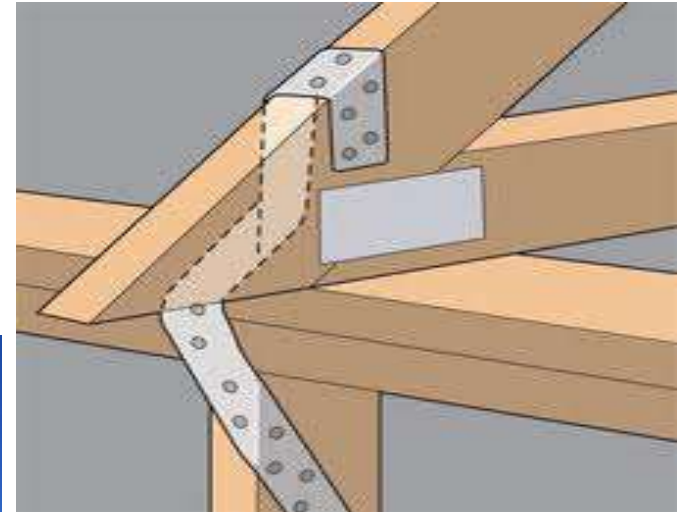


Preventing wind damage

Strap roof trusses to walls

Better attach roof deck

Less risk in shorter homes with hip roof



Preventing wind damage

Better connections roof to foundation

Waterproof membrane on roof

Impact resilient windows



Preventing wind damage

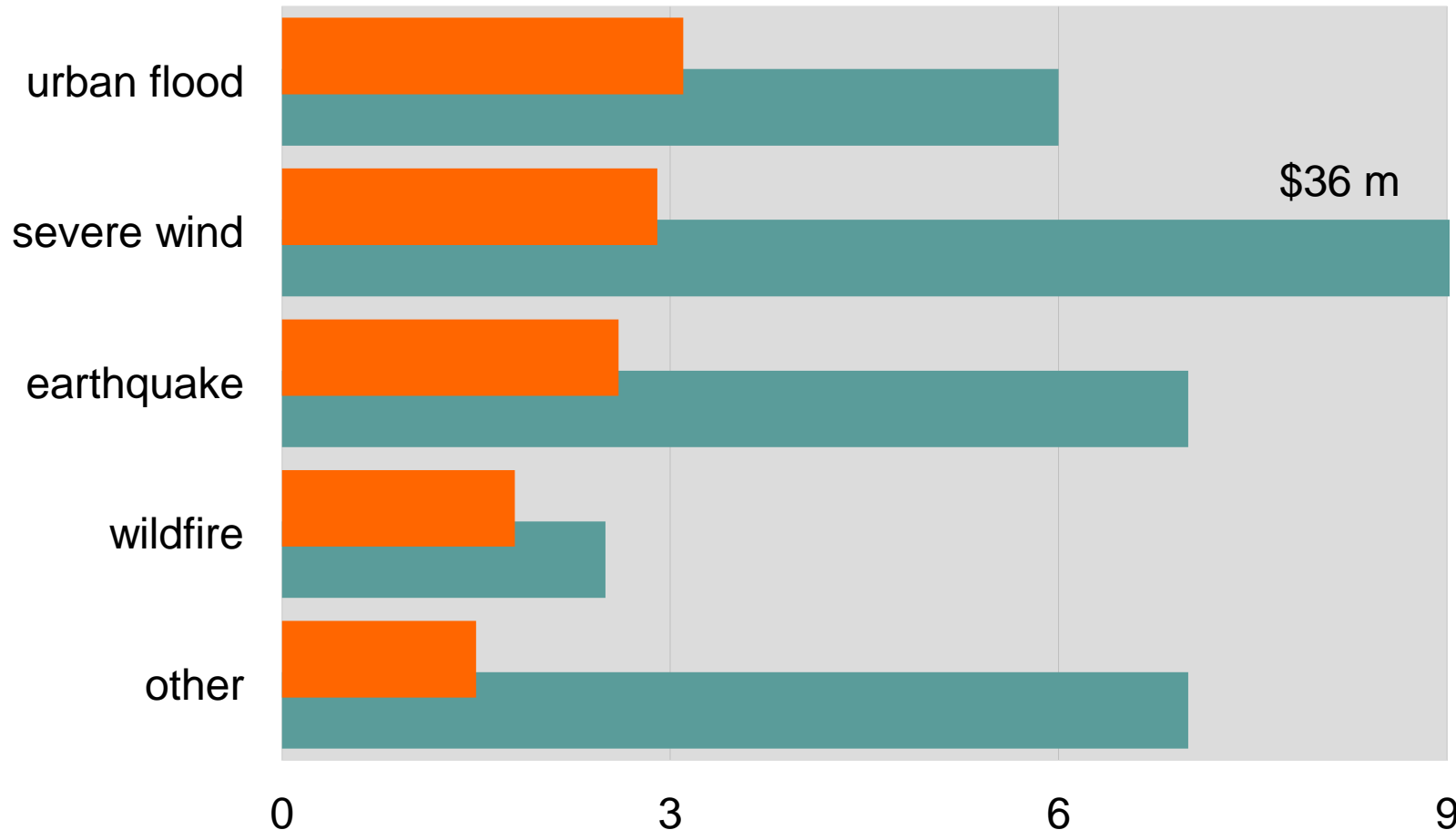
Active public awareness program:

- advice for homeowners
- demonstration retrofits – Halifax, London and Edmonton



Focus on urban flood and wind

Research spending by ICLR staff (orange) and affiliates (green), 1997-2011, \$ m



Conclusion

- Most people and businesses have experienced disaster risk
- Catastrophic risk is a new risk, likely an urban earthquake
- ICLR can be a partner to provide a science base for disaster and catastrophic risk management

