


CRC for Climate & Weather Risk Technologies

Business confidence in a climate of uncertainty

Met Office Hadley Centre

THE AUSTRALIAN NATIONAL UNIVERSITY

USQ AUSTRALIA




The challenge

High-impact weather: severe thunderstorms, heatwaves, bushfires, floods and droughts; they cost money and lives, and with climate change, potentially, they may become more frequent and/or more severe in many sectors.




Thunderstorm incidence

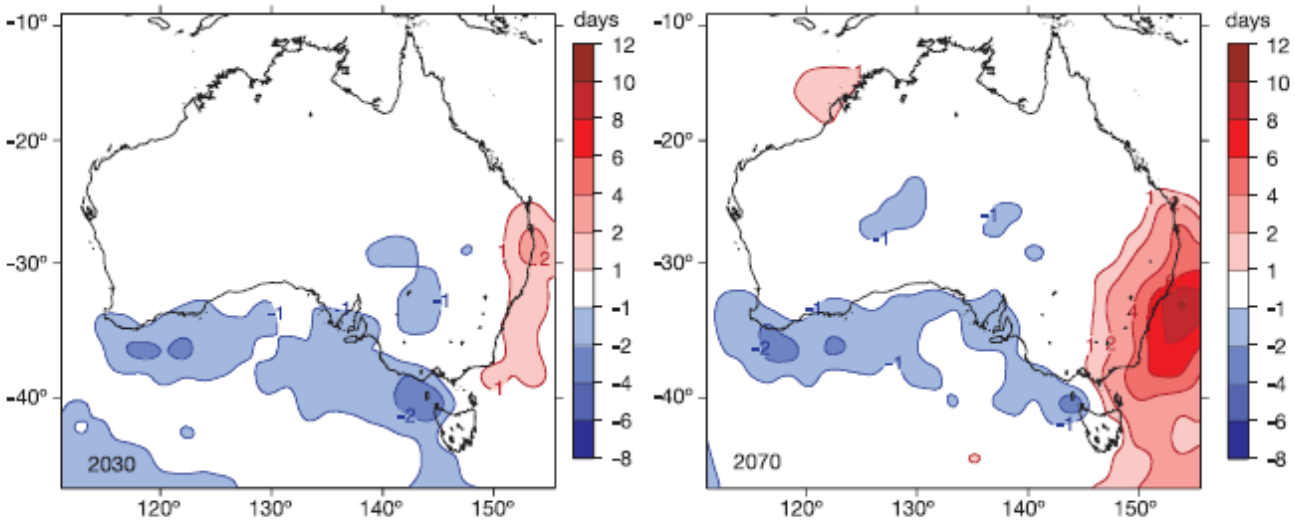
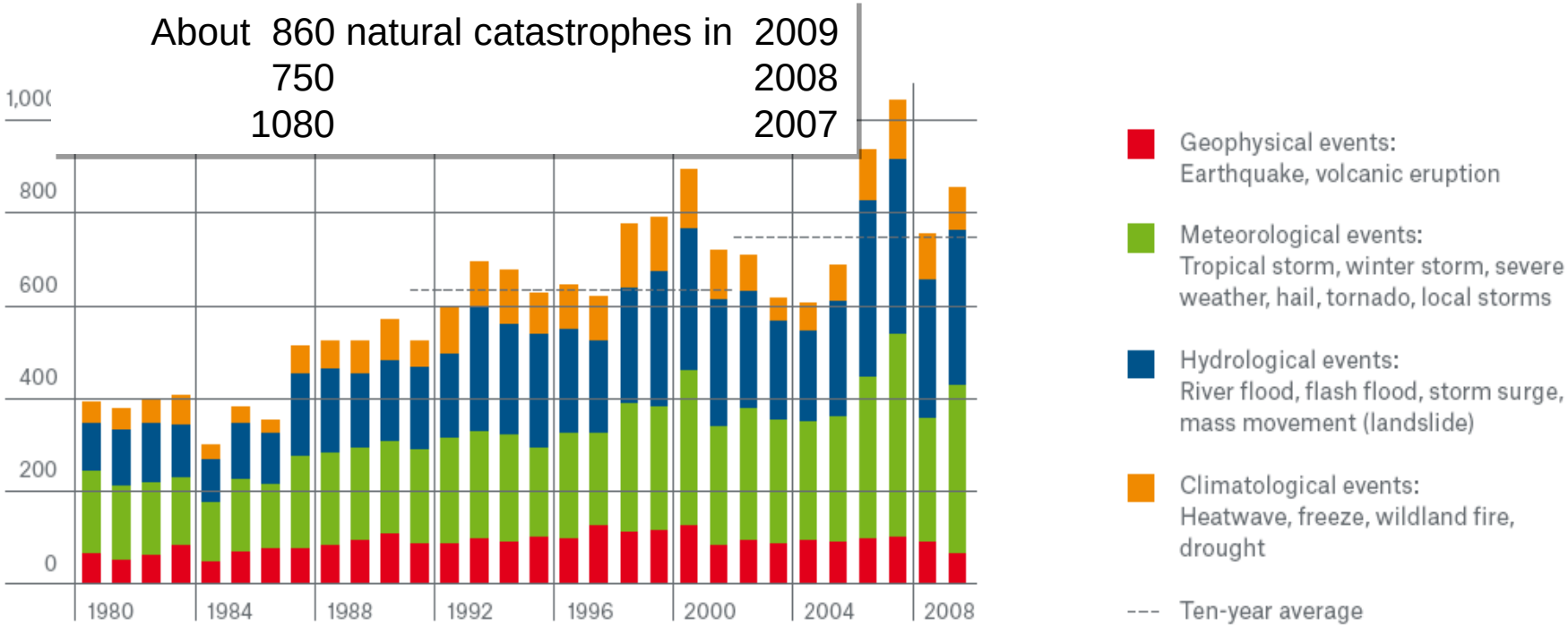


Figure 5.52: Projected changes in hail risk (hail-days per year) for 2030 and 2070 from the CSIRO Mark 3.5 model for the SRES A2 scenario. Blue regions indicate a decrease in hail risk and red regions indicate an increase in hail risk. The large-hail risk for this region is projected to almost double, increasing by between 4 to 6 days per year.

Is there a likelihood of an increased number of severe thunderstorms over the east coast networks? – **yes...**



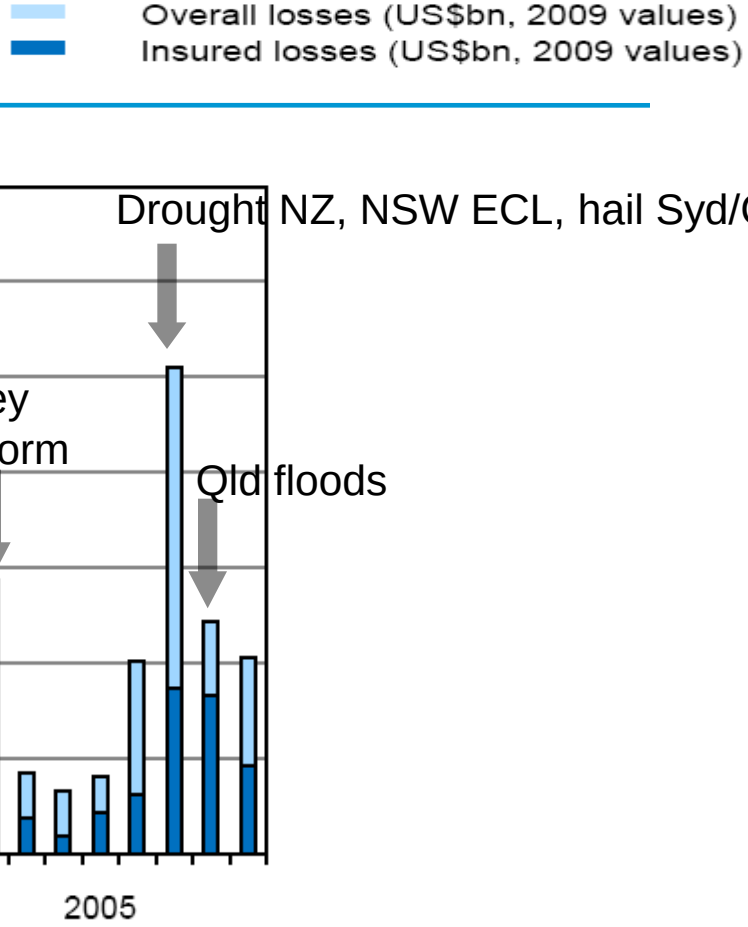

Natural catastrophes



Global number of natural catastrophes 1980 to 2009 (Source: Munich Re)



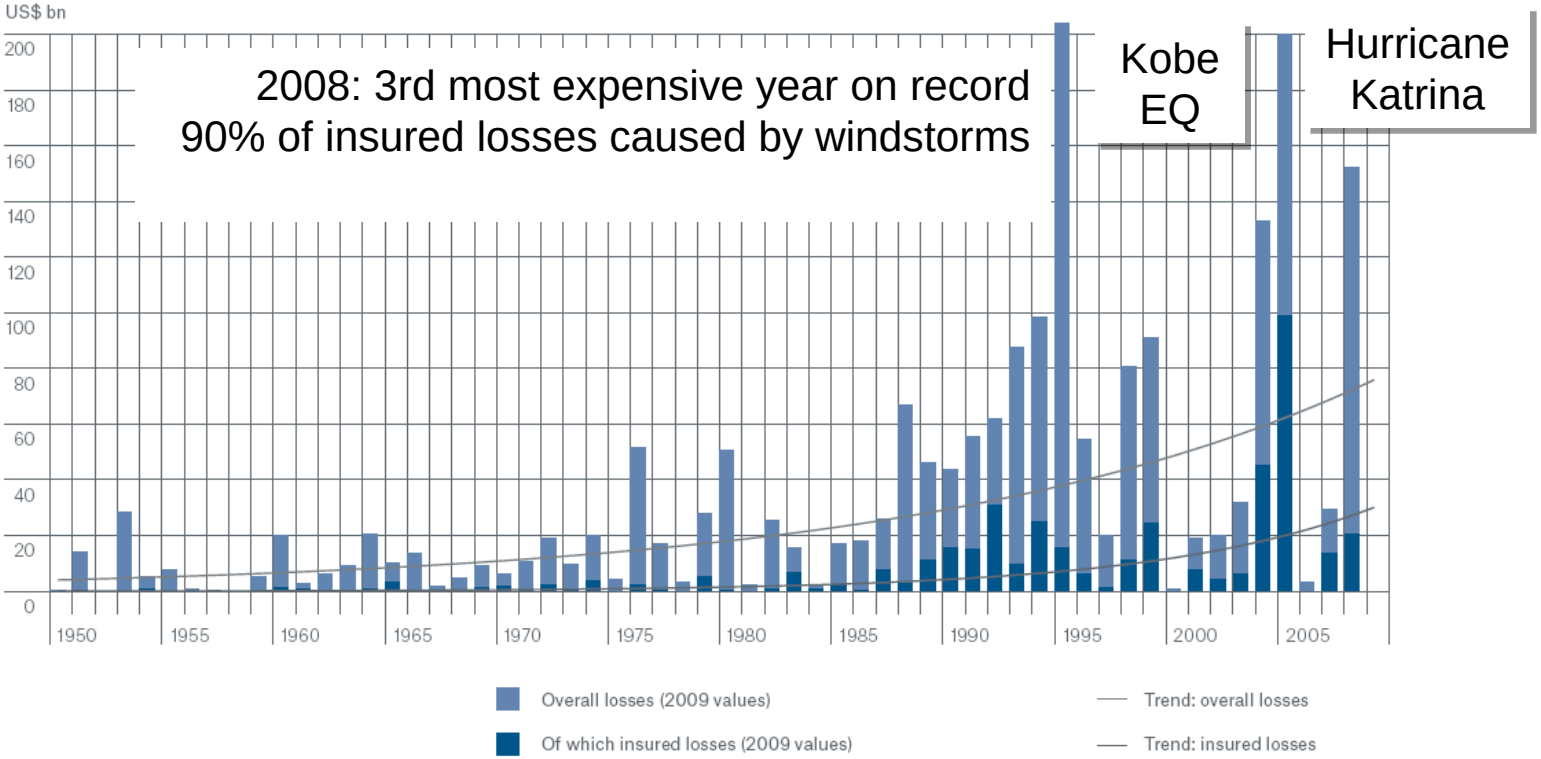

Extreme events



Annual losses in Australia/Oceania, 1980 to 2009; US$bn in 2009 values. (Source: Munich Re)




Counting the cost



Overall and insured losses from great natural catastrophes, 1950–2009; in 2009, US$50 billion overall, US$22bn insured (Source: Munich Re)




The threat, risk

In Australia, 19 out of the 20 largest property insurance losses since 1967 have been weather-related; the largest being April 1999 Sydney hailstorm ($A2 billion in 2005 dollars).

Globally, 37 of the 40 largest insured losses from natural catastrophes since 1970 have been weather-related.

- Australian Business Roundtable on Climate Change, April 2006




The vision

Our mission is to increase the wealth, safety and well-being of Australian and international businesses and communities by turning climate and weather science into applied risk management technologies, practices and tools.




The research

Research designed to create practical tools that will assist the insurance, energy, planning and legal sectors to manage risk in ways that would not otherwise be conceived.

Research aimed at enabling short-term management decisions and long-term strategic planning, through rigorous analysis and the application of world-leading science.




Our position

An industrial incubator for new ideas, not one of blue sky research

A generator of innovation through the union of disparate commercial and academic endeavours

A world-class centre of climate and weather risk expertise that expands user-value of existing services

A core business of research, commercialisation, education and training




The partners

- University of Southern Queensland
- UK Met Office Hadley Centre for Climate Research
- Australian National University

Met Office
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Chief scientist

Professor Roger Stone
Professor in Climatology and Water Resources
Director, Australian Centre for Sustainable Catchments,
University of Southern Queensland, Toowoomba,
Queensland, Australia.




CRC for Climate & Weather Risk Technologies

Increasing profits, cutting costs, protecting assets, saving lives

Program 1 :
Corporate & Financial Risk Tools

Program 2 :
Industry & Logistics Risk Tools

Program 3 :
Community & Public Safety Risk Tools

Analysing and translating climate and weather science

Decision science, climate law & institutional frameworks

Climate and weather risk education and training

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Program 1: Financial risk

This research program focuses on financial and legal risk, particularly in relation to governance and operational responsibilities; this includes corporate and social responsibility, insurance, lending and investments, as well as climate law.

Program 2: Industry and logistic risk

This program is concerned with engineering and associated aspects related to mining, the energy industry, airline fuel management systems emergency services, especially involving development of engineering solutions to climate and weather risk management and adaptation issues.

Program 3: Community risk

This research program focuses on public safety and health risk, as well as by the challenges of building community and personal responsibility for responding to the risks posed by high impact weather events and climate change.

Applications, projects

The CRC for C&WRT will focus on mitigating the financial impact of climate change and extreme weather events in three core areas:

- Financial,
- Engineering and infrastructure; and
- Public safety.

Financial

The outputs from particular projects may include:

- new insurance products and premium assessments in advance of probable events;
- improved databases upon which to develop historical risk analyses; and
- better decision-making systems for extreme events.

Industry

Tools, processes to mitigate damage to infrastructure and resources; these type of projects could deliver:

- climate and weather models that aid business decision processes; and
- systems to assist business manage the impacts of climate and weather and to develop more resilient management systems.

Public safety

Protecting people from weather and climate risks is a focus. The outcomes from various projects could be:

- risk management and preparedness decision-support systems to help regions manage and respond to severe weather events; and
- recovery strategies that reduce the time, cost and impact of extreme events.




Deliverables

- Tools that help businesses, government and communities be more resilient, flexible and adaptable in an environment of extreme weather events and a changing climate.

- Improved decision-making processes to support risk management strategies, a comprehensive range of solutions to climate and weather risk to businesses, government and people.

The benefit

A 10-year investment of $160 million in the proposed CRC for C&WRT could deliver a $1.68 billion return modelled over 10 years* by reducing the impact of five weather events:

- Heatwave (heat-related death, fires, loss of productivity)
- Precipitation (floods)
- Tropical cyclones
- Seas surge/inundation (sea level rise and storms)
- Storms (heavy rain, hail, snow)

* SPP Consulting, independent economic analysis April 2010




Insurance applications

New and emerging technologies – management tools, practices and processes – that hold the promise of better-informing decisions about risk and governance on longer-term timescales.




Managing the risk

- Adapting insurance risk models to accommodate the changing climate
- Assessing the rising vulnerability of modern societies and technologies
- Recognising higher risks for people in extremely exposed regions

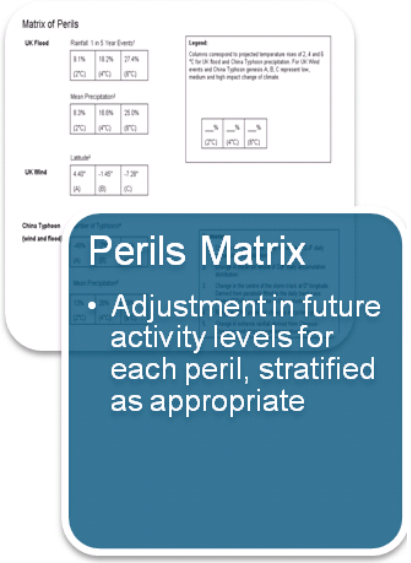



Managing the risk

- Managing the insurance density caused by higher standards of living
- Recognising past weather activity does not represent the future
- Generating a more reliable climate and weather risk outlook
- Setting competitive, real premiums




Assessing the risk



Met Office

ABI Association of British Insurers

AIR




Assessing the risk

- Flood losses once every 100 years in UK could rise 30% to £5.4b with 4°C temp.*
- Under natural climate variations wind losses for UK could rise 25% to £827m*
- 1-in-200 year typhoon loss in China may reach £1.1b with global temp rise of 4°C

* **Based on work with re/insurers by CRC partner UK Met Office**
(Objective scenarios of impacts on UK storms & rainfall, and Chinese typhoons, including post-IPCC AR4 science update)

How you get involved

- A **core** partner, providing research and associated activities
- An **associate** partner, involved in a specific project or activity with investment in that activity
- An **active** stakeholder involved in place-based research and activities
- A **registered user** or adopter of research and development or other outputs of the CRC
- A **sponsor** of the CRC's activities and products




The opportunity

"By considering the future climate when making decisions about infrastructure, health, water management, agriculture, biodiversity and housing, Australia will be in a better position to deal with the unavoidable impacts of climate changes."

- Federal Department of Climate Change and Energy Efficiency website, April 2010

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