

# Working with Willis Reinsurance

Walker Institute external engagement

## The insurance sector is highly sensitive to climate related risk

The insurance industry exists because of risk and uncertainty. But too much uncertainty, such as that associated with climate related catastrophe, can expose insurance companies to large losses.

For example, insured losses from the 2007 June and July flooding in the UK amounted to over £3 billion. Munich Re reported that weather-related economic losses in 2005 amounted to over \$200 billion, with insured losses of over \$45 billion from Hurricane Katrina alone.

Catastrophes don't have to strike the UK directly for UK-based companies to suffer heavy losses. As a result of Hurricane Katrina the British insurance market lost around \$2.5 billion. Reinsurance is in place to insure insurance companies against the huge losses associated with catastrophic events. The figures quoted above make it easy to see why one of the world's largest reinsurance brokers, Willis Reinsurance, wants to protect its clients, such as insurance companies and governments, from potentially massive future losses.

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## Reassuring the reinsurance industry

Over the last two decades, growing scientific evidence has shown that our climate is changing and that we are already feeling the effects. In particular, the risks are increasing from extreme events such as heatwaves and heavy rainfall. The insurance and reinsurance industry have realised that they literally cannot afford to ignore it.

To help understand climate risk, Willis Reinsurance has called on the Walker Institute to be a major partner in a unique academic / industry collaboration – the Willis Research Network. This partnership brings together researchers from leading international scientific institutes, catastrophe modellers and insurers to increase knowledge of catastrophic events. The Walker Institute's role is to undertake climate research focusing on the reinsurance industry as the end-user. Through long-term relationships and strong communication, our research is helping the insurance industry understand changes in weather-related risk, allowing them to make informed decisions in the face of climate change.



NOAA satellite image of Hurricane Katrina. Hurricane Katrina cost the British insurance market \$2.5 billion.

'The insurance sector has an important role to play in adaptation as it is in the business of calculating risk costs and has begun to explore how risks can be expected to change into the future.'

Association of British Insurers

'Societies have a long record of adapting to the impacts of weather and climate through a range of practices that include crop diversification, irrigation, water management, disaster risk management, and insurance. But climate change poses novel risks often outside the range of experience.'

IPCC Fourth Assessment Report, 2007

## Our involvement in the Willis Research Network

**Research** Use of state-of-the-art global climate models to improve risk assessment

**Communication of climate information** Disseminating up-to-date and scientifically sound climate advice

**Industrial experience** Researchers gain experience working with industry.

## Bridging the gap between climate research and the insurance industry

Being part of the Willis Research Network is not just about translating scientific research into information that insurers can use; the network is a multi-way flow of information and learning.

Researchers at the Walker Institute are welcomed as integral members of the Willis team.

Willis recognise that scientists can only begin providing them with the information that they need once scientists understand how the insurance industry works, the nature of catastrophe modelling, and the needs of their clients.

## Using high-resolution climate simulations to understand climate-related catastrophe

There are two important aspects of weather-related catastrophe that worry insurers: change in exposure (associated with the frequency and location of events) and change in extremes (associated with the severity of events).

We are running some of the world's highest resolution simulations of the global climate system which are able to reproduce extreme weather including hurricanes and typhoons – a major achievement in global climate modelling.

By simulating a climate with increased carbon dioxide and higher sea surface temperatures, in line with current trends, we can see what may happen in a changing climate, for example to typhoons in the western Pacific. This will not tell us how many typhoons we will get next year, or where the hurricanes will strike, but the statistical information will give us an estimation of how typhoon activity, in terms of frequency, severity and location, is likely to change.

We are introducing this information into catastrophe models so that insurance premiums begin to take into account the impact of climate change and climate variability.

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