Working with Willis Reinsurance

Walker Institute partnerships

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.

The Association of British Insurers estimate that insured losses from the 2007 June and July flooding in the UK will amount to around £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, Lloyds of London, 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 it's clients, such as insurance companies and governments, from potentially massive future losses.

"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.

Reassuring the reinsurance industry

In the last two decades, the scientific community has raised the alarm that the climate is changing and we are already experiencing the effects.

The insurance industry has woken to the fact that they literally cannot afford to ignore it.

To help, Willis Reinsurance has called on the Walker Institute to become a major partner in a unique academic-industrial 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 will help the insurance industry understand changes in weather-related risk, allowing them to make informed decisions in the face of climate change.

A climate of change for insurance

"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.

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.

Researches 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.

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.

Using high-resolution climate simulations to improve understanding and prediction of 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).

Using the Earth Simulator supercomputer, based in Japan, we are running some of the world's highest resolution simulations of the global climate system. These simulations are now able to reproduce extreme weather including hurricanes and typhoons – a very important 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, for example to typhoons in the western Pacific, with a changing climate.

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.

Our aim is to introduce this information into catastrophe modelling so that insurance premiums begin to take into account the impact of climate change and climate variability.

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

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