THE TRADING FLOOR INTERVIEW

Catastrophe modelling pioneer Karen Clark tells us why she thinks reinsurers could still be vulnerable to surprise hurricane losses

What are the major trends in cat modelling now?

The most significant trend in cat modelling is the industry adoption of new open loss modelling platforms. Open loss models have the same fundamental structure as the traditional cat models, but the model components are visible to the model users, and the model assumptions can be accessed and customised.

For example, primary insurers are utilising their own claims data to refine the open model damage functions to be more reflective of their actual experience, which improves the accuracy of the model loss estimates. Reinsurers are building their own bespoke models and customising the model components according to their proprietary views of risk. The traditional cat models don't allow users to see inside or refine any of the model components.

All of the cat models are based on the same science, but the uncertainty around the science requires model developers to make assumptions based on judgement and expert opinion. The differences in the loss estimates between model vendors result from different assumptions and not different science.

Once you understand that, it's clear why (re)insurers should have complete transparency on and control over those assumptions and why cat modelling is heading to open platforms.

Are insurers prepared for another Hurricane Andrew?

Insurers are likely prepared for an exact repeat of Andrew, but many are not prepared for an Andrew making landfall 50 miles north or occurring somewhere else along the Gulf Coast where the losses would be much higher.

Every major event tends to be a surprise. This is partly because the exceedance probability curves and probable maximum losses (PMLs) that (re)insurers use to manage cat risk don't provide enough visibility into where losses above the PML – the "surprise" losses – are likely to occur. In fact, the traditional metrics can mask exposure concentrations and give a false sense of security.

CEOs and boards understand model uncertainty, but they don't like surprises – particularly unpleasant ones. They want to know where they can have large and outsized losses relative to competitors before the events occur – information the traditional models don't provide.

"Every major event tends to be a surprise"

In response, KCC developed the Characteristic Event (CE) methodology that provides information on potential losses from a return period, such as 100- and 250-year events, for landfall locations spaced at 10-mile increments along the coast. These metrics clearly highlight exposure concentrations and show where a company is likely to have a significant loss above the PML.

The CE numbers can look scary at first – these are the unpleasant surprises – but with this knowledge (re)insurers can implement underwriting guidelines to avoid the losses they don't want.

How far have models improved from the earliest days? How close would they be on the next major event?

Of course, the models have improved enormously since the first versions were developed in the late 1980s, but I haven't seen significant improvement in the major vendor models over the past several years. A lot of what I've seen is counterproductive and not in the best interests of the model users, which is why I got back into the modelling business. For example, (re)insurers have to spend too much time trying to understand volatile numbers from opaque model updates.

At KCC, our focus is on improving the accuracy of the models so the industry has more reliable loss estimates. We think we will be close on the next major event – and all events – because we put a lot of emphasis on our real-time event tracking systems and producing accurate loss estimates for actual events.

Will models ever be able to predict the holy grail of US landfall frequency?

Not in the foreseeable future. Atmospheric interactions are complex and chaotic and scientists cannot reliably predict hurricanes for one season or for a five-year period. KCC has researched the performance of the so-called "near-term" hurricane models, and they haven't demonstrated any real skill. We would not recommend pricing or trading based on short-term predictions.

The purpose of a cat model is to inform (re)insurers and ILS investors on what could happen – not what will happen. If the modellers get that right, the models provide enormous value to the industry.

What new risks are modellers looking to model?

There's a lot of interest in a private flood market in the US right now, so we have seen growing demand for flood models. Although flood models do exist, the industry does not yet have high confidence in them, so modellers are working on improvements. There's also increasing pressure to incorporate climate change, so modellers are researching how best to do that.

Karen Clark founded Applied Insurance Research (AIR), which became AIR Worldwide, and is a co-founder of Karen Clark & Co (KCC), where she is presently president and CEO.