

Risk modeling not about being accurate



One of the hot topics in Monte Carlo this year was risk modeling where its accuracy was called into question. We spoke with **Mr Bill Keogh**, President of **EQECAT**, who said that dialogues on a model's accuracy are not helpful as the product is really not about accuracy.

By **Benjamin Ang**

“**T**here is a false sense of model accuracy” and “Modeling is a highly imperfect science”, were just two of the statements made in Monte Carlo this year.

Mr Bill Keogh informed us that models are an analytical framework for exploring, understanding and quantifying uncertainties of risks. “Given that’s what they do, we don’t talk about it being accurate. We talk about helping clients set rational expectations about risks. It is a very different way of thinking.”

Elaborating, he said: “The most important thing that models do is to capture and express the uncertainties.” There are so many uncertainties involved in modeling a hazard, how buildings are affected by the hazard, and losses that “the model’s job isn’t to be accurate but is to give a deeper understanding of the risks and all of the uncertainties of the risks”.

Consensus information as the source

Moreover, Mr Keogh said that before the Japan earthquake and tsunami, any model made based on information outside existing data would probably not be welcomed.

He explained: “Our CAT risk models are built based on existing data or research done in different countries. Our starting point is always the information available to us, but we always analyse the information and try to test and stress the assumptions.”

In Japan, information from the Japanese Headquarters for Earthquake Research Promotion (HERP) data was relied upon. That was the consensus opinion on the fault system and the maximum magnitude for earthquakes in Japan, he said.

“As we all know today, the assumptions in the data set were incorrect, and the maximum magnitude was actually higher than everybody believed,” he noted. While the maximum magnitude anticipated for the Japan trench was 8.0-8.3, the actual event recorded a magnitude of 9.0. This difference in magnitude released approximately 20-30 times more energy than anticipated.

Moving beyond consensus

In the case of Japan, EQECAT did model higher magnitude earthquake than the HERP data set anticipated, but not as high as a 9.0. He said: “We asked clients today that if we had included a higher magnitude event in our Japan earthquake mode previously, would they have believed it? Oftentimes the answer is ‘probably not’. Simply because the scientific consensus then was, an earthquake at a magnitude that high could not happen.”

However, moving forward, he said they will stress test the models even more. Additional characteristic events that are beyond consensus will be included, and these could be on the basis on whether clients want them included.

With the option, at least clients will have information

that they could assess. “The probability of the events could be shown as ‘zero’ and it won’t necessarily show up in the analysis. But they will have the information to see what size loss could come from those events.”

Scientific community in overdrive

New information has come out of the CAT events from countries such as Japan, New Zealand and Chile, for the global scientific community to research and analyse.

“In Tohoku, for example, the number of ground motion records that we have now has doubled the number of ground motion readings that we have from all earthquakes in history,” he said. “It could take perhaps years to develop and incorporate into the models, and we don’t actually know what the answers will be, because there is just so much new information.”

Moving on to multiple risk models?

On calls for the use of multiple risk models to improve accuracy, Mr Keogh sees this as a positive development. If only one model is used, there may be a possibility of two risks: one – the biases of that model; and two – becoming complacent with that one view of risk.

“When you see two differing results from more than one perspective, it will force you to dig into the details and understand why the results are different,” he said. In the process, people learn about the models and its assumptions. Models will help form the view, but it is not the whole structure. Clients really need to own their views of risks. “You should not outsource your view of risks to anyone. It is a strategic asset that is informed by models, but clients need to own their view of risks.” he said.▲

Mr Bill Keogh

