

# Earthquake equation cuts out guess work

Nicky Phillips, Sydney Morning Herald, 7-6-10

Earthquake forecasting may be substantially enhanced by a technique developed by Australian scientists that can pinpoint where past quakes took place.

David Robinson, a seismologist with Geoscience Australia, said it was almost impossible to predict where an earthquake would strike, or how powerful it would be.

The only way to forecast where earthquakes may happen was to study their past behaviour, he said.

"The more detail we have about them the more we can study the processes that lead up to them and what we might expect in the future."

In Australia the exact location of the source of the quake, the hypocentre, could only be located in 60 per cent of cases because of a limited number of tracking stations.

"We need to reduce that level of uncertainty for any detailed understanding of earthquakes that could help with forecasting and mitigating risk [which could] ultimately reduce losses."

Australia experiences about two medium-sized earthquakes measuring about five on the Richter scale every year and a more severe event, about magnitude six, every five years.

One of Australia's most devastating earthquakes, in Newcastle in 1989, measured 5.3 and resulted in 13 fatalities.

Mr Robinson said the location of past quakes had been traced by using data from the seismic tracking stations around Australia.

But only 60 per cent of those quakes could be pinpointed to within 10 kilometres of where they had occurred.

By using more of the data recorded from an earthquake and its aftershocks, Mr Robinson and his colleagues had developed a mathematical technique that enabled them to identify groups of earthquakes that had taken place in the same vicinity.

"If we ... see groups of earthquakes we can locate them very accurately," Mr Robinson said.

He presented his research at the Australian Earth Sciences Convention, which was held in Canberra yesterday.

The new technique could pinpoint the exact location of an earthquake to within a few hundred metres.

"[Now] we can see if the [earthquakes] are all on the same fault and learn what parts of the earth can host earthquakes."

As well as better forecasting, such detailed seismic information could also be used in building codes, in the preparation of emergency responses and to influence insurance policy and pricing, he said.