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Tremor research could predict size

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With the devastation of last month's Pakistan earthquake still fresh in the mind, scientists say they have developed a way of predicting the size of a tremor even as it starts.

Seismologists have tried and failed for years to predict where and when quakes will happen and how big they will be.

Now there is a glimmer of light on the horizon - at least for the latter goal, according to scientists at the University of California, Berkeley.

"We can determine the magnitude within a couple of seconds of initiation of rupture and predict the ground motion from seconds to tens of seconds before it is felt," said lead researcher Richard Allen.

Although that time frame would be far too short for people to react and evacuate, it could be enough to tell local emergency services almost instantaneously the scale of the disaster they are likely to be facing

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when the dust settles.

It could also set off alarm bells in far flung centres so they could begin to mobilise support earlier.

Up to now, the cascade theory of earthquakes that portrays them as acting like a row of dominoes, with one action triggering another in sequence, has meant it has been impossible to gauge the scale of the quake until it has ended.

By that time communications could well have been destroyed leaving local emergency services in an information black hole.

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But the study led by Allen and co-author Erik Olson, published in the latest edition of Nature science journal, uses a different theory.

It suggests the size, type and depth of the first break on the fault line - that can be measured as it happens - gives a very good indication of the earthquake's eventual reach.

"Most seismologists are surprised, and frequently sceptical, that you can predict the magnitude of an earthquake before it has ended," Allen said in a statement from Berkeley.

"But this is telling us that there is something very different from what we thought about the physics of the processes involved in the rupture."

In a commentary on the research also published in Nature, Rachel Abercrombie of Boston University said the new theory had crucial implications but that more work was needed.

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