Study reveals seismic shift in methods used to track earthquakes

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The team, led by scientists from the University of Edinburgh, says that the new method, which uses data collected from earthquakes, potentially allows the Earth's seismic activity to be mapped more comprehensively.

Scientists currently monitor underground movements, such as earthquakes and nuclear tests, using seismometers - instruments that measure the motion of those events at the Earth's surface. This helps to indicate where they took place.

Now, by analysing the seismic waves from two different earthquakes, the team has been able to simulate the seismic waves from one of the earthquakes as if they were recorded by a seismometer at the location of the second.

The discovery allows earthquakes themselves to be used as virtual seismometers that record passing waves from tremors that happen elsewhere in the world.

Using earthquakes in this way substantially increases the number of locations that could be used to detect seismic activity. And since earthquakes occur deep inside the Earth, using them also allows scientists to monitor seismic activity from far deeper than previously possible.

The research, published in *Nature Geoscience*, was carried out in collaboration with the British Geological Survey and Utrecht University.

Andrew Curtis, Professor of Mathematical Geoscience at the University of Edinburgh, said: "This turns the way we listen to seismic movements on its head. By using earthquakes themselves as virtual microphones that record the sound of the Earth's internal movements, we can listen to the Earth's stretching and cracking from directly within its most interesting, dynamic places."

Dr Brian Baptie, Seismology Team Leader at the British Geological Survey, said: "This discovery shows how we can measure strains deep inside the Earth and helps improve our understanding of the processes driving earthquake activity."

Source: University of Edinburgh