

PREVIOUSLY UNKNOWN FAULTS AT THE FOOT OF THE HIMALAYA DISCOVERED

Relevant for: Geography | Topic: Mountains, changes therein and in Flora & Fauna and the Effects of such changes

Deeper look: The work highlights the need to look below the surface to fully understand earthquakes and structures within the Himalaya. | Photo Credit: [John Waldron](#)

Data from an oil and gas exploration company has now helped geologists discover a series of faults at the foot of the Himalaya. The international team notes that this fault system in the southeastern region of Nepal has the potential to cause earthquakes in the densely populated country.

The team looked at seismic reflection data, which are routinely collected by exploration companies looking for oil and gas. In this method, seismic waves are produced by small explosions at multiple sources, and many recorders called geophones record the sound echoing off layers beneath the surface.

The signals are combined to make an image that looks like a slice showing layers through the top few kilometres of the Earth's crust. The researchers were able to identify the faults because the pattern of layers showed bends.

"Our research highlights the need to look below the surface, and further afield, to fully understand earthquakes and structures within the Himalaya," said Michael J. Duvall a graduate student from the Department of Earth and Atmospheric Sciences at the University of Alberta, Canada, in a release. "This network of faults show that the Himalayan deformation reaches further [about 40 kilometres further south] than we previously thought." He is the first author of the paper recently published in the journal *Proceedings of the National Academy of Sciences*.

When asked if this fault could affect India, corresponding author John W.F. Waldron explained in an email to *The Hindu*: "The faults we detected don't appear to extend into India, but seismic waves from an earthquake occurring on them might affect regions of India near the border... other similar faults might be present elsewhere along the southern edge of the Himalaya and might extend beneath northern India. We don't currently have access to data that would help us explore this."

He adds that the study is at a preliminary stage and work with seismologists might add to the present study by clarifying how these faults move.

"The problem is that good scientific records of earthquakes go back less than a hundred years. During this time there don't seem to have been any earthquakes on the faults that we discovered. However, the time between earthquakes on typical faults is often hundreds or thousands of years, and is very haphazard," explains Prof. Waldron.

As to whether 2015 Nepal earthquakes could have had a connection to this fault, he answered that they "occurred much further within the mountain belt where we have known for many years about faults. As far as we know, the faults we newly discovered did not move in that event."

Prof. Waldron adds: "General earthquake preparedness is most important in my opinion, rather than trying to guess where the next earthquake will be. Making sure buildings are safe in an

earthquake is probably the most important factor.”

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