

Aftershocks to Philippine quake found within nearby megathrust fault

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On 31 August 2012 a magnitude 7.6 earthquake ruptured deep beneath the sea floor of the Philippine Trench, a powerful intraplate earthquake centered seaward of the plate boundary. In the wake of the main shock, sensors detected a flurry of aftershocks, counting 110 in total.

Drawing on [seismic wave](#) observations and rupture mechanisms calculated for the aftershocks, Ye et al. find that many were located near the epicenter of the main intraplate quake, but at shallower depth and all involving normal faulting. Some shallow thrusting aftershocks were located farther to the west, centered within the potentially dangerous megathrust fault formed by the subduction of the [Philippine Sea plate](#) beneath the Philippine Microplate, the piece of crust housing the Philippine Islands.

In the past century, the most [powerful earthquakes](#) have occurred within megathrust faults. The particular portion of the megathrust fault nearest to the 31 August intraplate earthquake, and the section that housed the shallow thrusting aftershocks, have not had a strong earthquake since at least 1600. That [aftershocks](#) from the main intraplate shock took place within the interplate boundary suggests that the two systems may be coupled.

Previous research in other locales suggests that the rupture of a nearby megathrust fault sometimes follows on the heels of a large offshore intraplate thrust earthquake. Similarly, previous research has found that the stress accumulation that could lead to the rupture of an intraplate

thrust earthquake can at least in part be explained by the build-up of stress in a nearby interplate boundary.

The authors suggest that more work needs to be done to identify whether there is an accumulating slip deficit within the Philippine Trench megathrust fault.

More information: Intraplate and interplate faulting interactions during the August 31, 2012, Philippine Trench earthquake (Mw 7.6) sequence, *Geophysical Research Letters*, [doi: 10.1029/2012GL054164](https://doi.org/10.1029/2012GL054164) , 2012

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