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Supplementary Materials for

Cascading elastic perturbation in Japan due to the 2012 M_w 8.6 Indian Ocean earthquake

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This PDF file includes:

Fig. S1. Migration of seismic coherence.
Legends for movies S1 and S2

Other Supplementary Material for this manuscript includes the following:
(available at advances.sciencemag.org/cgi/content/full/1/9/e1500468/DC1)

Movie S1 (.mov format). High sample rate seismic coherence.
Movie S2 (.mov format). Low sample rate seismic coherence.

Figure S1 – Migration of Seismic Coherence
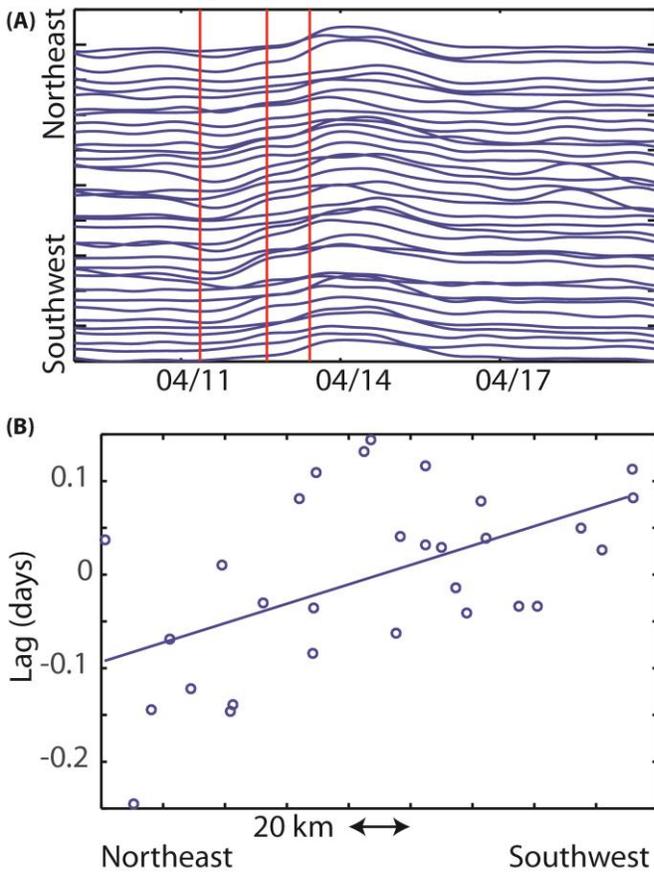
Fig S1. Migration of Seismic Coherence. Shown in (A) are long period inter-station seismic coherence observations at stations shown with green triangles in Figure 1B sorted northeast to southwest along the eastern coastline of Japan. The three red vertical lines are the hypocentral times of the IOE, P1, and P2, respectively. We calculate the time lag of each curve relative to a stack of all curves, which indicates that coherence begins in the north and migrates to the south, shown in (B). The apparent migration rate is an order of magnitude faster than that shown in Figure 2A, though it should be noted that coherence is a regional measurement, while earthquake epicenters are point locations. The spatial trend in the coherence observations is evident, but smoothing in time and space results in an exaggerated migration rate.

Movie S1 - High Sample Rate Seismic Coherence

We show the 5-10 Hz seismic coherence time series in a video displayed at one frame per 10 seconds of actual time. Blue indicates lower coherence and red indicates higher coherence. UTC time is shown in the white box at the upper left. At this frame rate individual seismic events are evident. The numbers that appear on the map of Japan are the magnitudes and locations of cataloged earthquakes from the Japan Meteorological Agency.

Movie S2 – Low Sample Rate Seismic Coherence

We show the gradient of the 5-10 Hz seismic coherence time series, with a low pass filter applied, displayed at one frame per hour of actual time. This time series is equivalent to gradient of the black curve shown on Figure 2b. No individual seismic events are evident at this band pass and sample rate. Only positive values of the gradient are shown; zero or negative values appear as blue. Seismic coherence begins to increase in our primary study area (Figure 1) shortly after Love waves from the Mw 8.6 Indian Ocean earthquake pass through at 2012-April-12 9:02 UTC.