Assessment of teleseismically-determined source parameters for the April 25, 2015 M_w 7.9 Gorkha, Nepal earthquake and the May 12, 2015 M_w 7.2 aftershock

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Supplementary Figures S1-S4

Supplementary QuickTime Animations M1-M2:

(LYK_M1_Network_BPs_H.264.mov)

(LYK_M2_Global_BPs_H.264.mov)
Fig. S1. Comparison of observed broadband (0.005-0.9 Hz) P and SH waveforms for the April 25, 2015 event (black traces) with synthetics produced for the finite fault model in Fig. 6 (red traces). The station name, azimuth from the source (φ), and epicentral distance (Δ) are shown to the left of the traces, and the observed peak-to-peak amplitude in microns is shown in blue to the right. Trace amplitudes are all normalized to common value.
Fig. S2. Finite-fault inversions with varying constraint on range of rake for subevents on each subfault. (a) Slip model (left) and shear stress variation (right) for a model with rake constrained to within ± 0.1° of the average rake of the gCMT best-double rake of 96°. (b) Similar plot for rake constrained to within ±15° of 96°. (c) Solution for rake constrained to within ±30° of 96°. The average strike (φ), dip (δ), and rake (λ) of each solution is indicated along with the seismic moment and residual waveform mismatch value (Var.). The stress drop estimates discussed in the text are shown for each case as well.
Fig. S3. Comparison of observed broadband (0.005-0.9 Hz) P waveforms for the May 12, 2015 event (black traces) with synthetics produced for the finite fault model in Fig. 8 (red traces). The station name, azimuth from the source (φ), and epicentral distance (Δ) are shown to the left of the traces, and the observed peak-to-peak amplitude in microns is shown in blue to the right. Trace amplitudes are all normalized to common value.
Fig. S4. Observed (red traces) and modeled (blue traces) P wave (left) and SH wave (right) signals for the 2015 aftershock. The synthetics are for the finite-source model in Fig. 8. The signals are plotted with respect to azimuth from the source with true relative amplitudes for P and SH separately. SH amplitudes are all scaled by 0.2 with respect to P. The data are aligned on the first-arrival time.
Animation M1. Back-projection of teleseismic high-frequency P waves from large-aperture networks in Europe (left animation, 0.5-2.0 Hz), Alaska (central animation, 1.0-3.0 Hz), and Australia (right animation, 0.5-2.0 Hz). Aftershock locations prior to May 12 are shown by the circles on each map. The beam power distribution across the source grid at each time is shown by the color palette, ranging from zero power (white) to normalized peak power (purple). The white star indicates the mainshock epicenter. The time sequence of peak power for each network is shown at the top with the red marker indicating time relative to the origin time. Fig. 2 shows the position of the peak power at each time.
Animation M2. Back-projection of teleseismic P waves from the global networks in Europe for passbands of 0.2-3 Hz (left) and 0.05-0.2 Hz (right). The beam power distribution across the source grid at each time is shown by the color palette, ranging from zero power (white) to normalized peak power (purple). The red star indicates the mainshock epicenter. The time sequence of peak power for each network is shown at the top with the red marker indicating time relative to the origin time. Fig. 3 shows the position of the peak power at each time.