Determination of temporal distribution of moment release using long period body wave data

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　　We perform waveform inversion of long period body wave data to determine the temporal distribution of moment release. First, we conduct the centroid moment tensor inversion. Then, we fix the centroid location, and put time grids for each of which the Green's functions are computed. We perform linear waveform inversion to determine moment tensor for each time grid, in which change of the source mechanism is allowed. We apply the smoothness constraint between the adjacent time grids to stabilize solutions. We apply this method to an analysis of the 2003 Tokachi-Oki earthwuake. The obtained temporal change of scalar moments of the subevents is consistent with the moment rate function inferred from analyses of teleseismic broadband P and SH waveforms. The source mechanisms of the subevents are primarily reverse faults, which is consistent with the preliminary reports of this earthquake. These results suggest that it should be possible to determine temporal distribution of moment release of large earthquakes using long period body wave data. We plan to apply this method to analyses of other large earthquakes to investigate its applicability and effectiveness.