

Events and Treaty Monitoring

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Besides earthquakes, other sources can generate seismic and other observable geophysical signals that could potentially be misidentified or misinterpreted as explosions. One common source of such signals are collapses which, like explosions, are generally shallow and, consequently, have many identifying features similar to explosions. In this study, we collect, analyze and characterize collapses from around the world which are associated with mining activity or nuclear testing. While most of the collapses are from more recent activity, a portion of the signals are derived from legacy seismic recordings of post-shot collapses made during days of active nuclear testing. We present on progress we are making toward the development of a collapse source model, as complementary to the more commonly recognized earthquake (e.g. Brune) and explosion (e.g. Mueller-Murphy) source models. We also discuss and test several identification methods for collapses, including cross-spectral (low-to-high frequency) ratios, coda-derived source spectra and event identification on the moment tensor hypersphere.

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Promotional text

This research contributes to nuclear-test-ban monitoring goals by identifying nuisance events that can prevent the misidentification of collapses as explosions.

Oral preference format

in-person

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