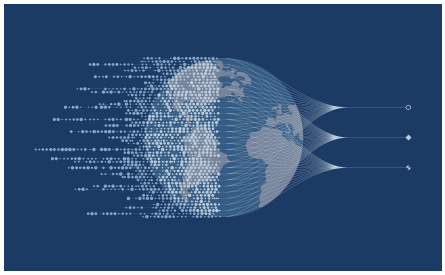

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-variable moment tensor joint inversion of traditional seismic and gradiometer data

Traditional moment tensor inversions are a common tool used to characterize events of interest for nonproliferation monitoring. Many inversions assume a known source time function and solve for the moment tensor of a seismic source. However, this requires a source time function to be assumed, which could result in inaccurate results if, for example, an explosion source time function is used for data resulting from an earthquake. Additionally, a traditional moment tensor inversion does not allow for the characterization of complex sources that may evolve over time. The time-variable moment tensor approach used in this study does not assume any a priori source time function, and allows for a source that evolves, such as an explosive source that is followed by slip on near-source joints, to be characterized through time. We build upon previous work that inverted traditional seismic data for a time-variable moment tensor result and incorporate seismic gradiometer data into our inversion through a joint inversion framework. The inclusion of gradiometer data allows for additional information concerning the seismic strain field to be incorporated into the inversion, thus allowing us to potentially separate complex source mechanisms depending on the placement of the gradiometer stations.

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