

of Cepstral Methods for the Improved Processing of Seismic Data

In this paper, we discuss research in improving shallow depth estimates by adding enhancements to our Cepstral processing. These enhancements include: 1) the employment of a predictive lifter to the Complex Cepstrum, which should improve the depth phase removal; thereby, giving a better estimate of the P-phase; 2) the effectiveness of the lifter in removing a second explosion from the seismogram; 3) The use of Mel Cepstrum (taken from speech literature) for discriminating events of interest (explosions versus earthquakes); 4) the identification of ripple fire events as a screening tool for reducing the analysts' work load by quickly identifying ripple fire mining explosions. Finally, we investigate Complex Cepstrum methods to improve very shallow event depth estimates, including pre-filtering, use of single station data versus array data, for identifying multiple explosions, and weighting of the time series (seismogram); thereby, taking advantage of minimum/maximum phase sequences.

Primary author: KEMERAIT, Robert (U.S. Air Force Technical Applications Center)

Presenter: KEMERAIT, Robert (U.S. Air Force Technical Applications Center)

Track Classification: 3. Advances in sensors, networks and processing