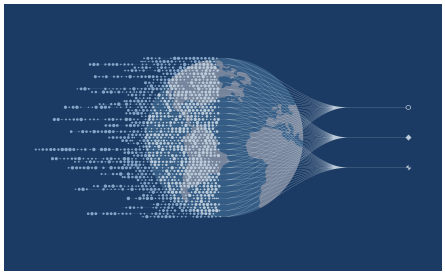

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nonlinear thresholding of Stockwell transforms to denoise seismic waveforms

Stockwell transform, commonly known as S Transform (ST, Stockwell et al., 1996) is an extension of the continuous wavelet transform (CWT) and involves an inverse frequency-dependence of the localizing Gaussian window as well as a modulating phase factor, which result in better frequency resolution than CWT or short-time Fourier transform (STFT). We are leveraging that advantage by implementing an S Transform thresholding method for noise suppression in seismic data. Because of the better frequency resolution provided by the S Transform, combined with the proven efficiency of thresholding methods in improving the signal to noise ratio in general, we expect the S Transform-based thresholding approach to be superior to standard methods and the previously developed CWT thresholding. The approach should lead to better downstream products, including improved signal detection and event characterization.

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