

Anisotropic elastic full waveform inversion: application to borehole seismic data

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Borehole Vertical Seismic Profiling (VSP) data are measurements of the seismic waves injected by the sources at the surface and propagating through the subsurface to the receivers underground in the well. Typically, some information about the subsurface is already available from surface seismic and sonic log measurements before acquiring VSP. Borehole data address the needs of more detailed and specialized information in the vicinity of the well up to several hundred meters of lateral coverage. Such includes, but not limited to, finer spatial resolution image, anisotropy and shear properties and multiples generators. Borehole and surface seismic data differ in the acquisition configurations, sensor types, data frequencies and types and level of the noise. Those impact on the wave physics needed to be considered, processing algorithms and workflows. We review applications of the elastic waveform inversion to borehole seismic data for different acquisitions and highlight issues regarding to parameters' resolution.