

Application of DSM synthetic seismograms for spherically symmetric transversely isotropic media to data analysis

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The Earth's seismic velocity structure can provide information for inferring the pattern of flow and stress in the Earth. Waveform inversion is a promising technique for inverting for anisotropic structure, since all of the information in the observed waveforms can be used. In this study, we invert complete seismograms (including both body and surface waves) to determine spherically symmetric transversely isotropic (TI) structure. The software for computing synthetic seismograms in TI media was presented and validated by Kawai et al. (2002 SSJ). We conducted a test inversion as an example for observed waveforms of CNSN (Canadian National Seismic Network) data. The 3 unknowns (elastic constants: L, N, and F) in the D'' layer beneath Central America can be determined. These preliminary results suggest the feasibility of using waveform inversion to determine the Earth's anisotropic structure.