Comparing Models GRM, Refraction Tomography and Neural Network

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The general reciprocal method (GRM) is effective when the velocity structure is relatively simple and refractors are gently dipping. Refraction tomography is capable of modeling the complex velocity structures. In contrast to time consuming and complicated numerical methods, neural network is found to be of potential applicability. Neural network ability to establish a relationship between an input and output space is considered to be appropriate for mapping seismic velocity. Accordingly a preliminary attempt is made to evaluate the applicability of neural network to determine velocity and elevation of subsurface models corresponding to arrival time data. The training and testing process of the neural network is successfully accomplished using the synthetic data. The evaluation of the applicability of the trained neural network to observed data indicates that the neural network can satisfactorily compute velocity and elevation corresponding to arrival times. The similarity of those models shows the success of neural network as a new alternative in seismic data interpretation.

Keywords: GRM, refraction tomography, neural network