

## Plausibility of the Waveform Inversion Model Confirmed by Using the Normalization of Waveform Data

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We previously inverted for the whole mantle S wave structure by using the waveform inversion to which we applied our efficient methods for computing synthetic seismograms (Takeuchi et al. 2000, PEPI) and our appropriate weighting methods (Takeuchi & Kobayashi 2004, GJI). Processing a large data set (consisting of about 16,000 waveform traces) by using the Earth Simulator, we detected the predominance of larger horizontal scale lengths of the heterogeneities in the vicinity of the 670 discontinuity, and we suggested the existence of the boundary layers at the upper and lower mantle boundary where horizontal flows are dominant (Takeuchi 2005, SSJ).

However, the plausibility of the obtained model was not very clear, and its confirmation was a remaining problem. In this study, we invert for the structure models by adopting the conditions for the inversion used in the previous studies and check the consistency to the previous models and the validity of the above boundary layer models. We found that the consistency is greatly improved when we adopt the normalization method of waveform amplitudes used in the previous studies (e.g. Woodhouse & Dziewonski 1984, JGR) and, at the same time, boundary layer structures are confirmed. The significance of this result will be discussed in the presentation.