

## The method for joint tomography using both NECESSArray and global bulletin data

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In the last SSJ, we presented the results of our delay time tomography using the triplicated data observed by NECESSArray. Our tomography used the array analysis method by Iritani et al. (2010, GRL) in measuring traveltimes, which enables accurate phase identification and retrieval of the information of secondary phases. However, because the method can be applied only to the array data, its application was so far restricted to regional tomography, and corrections of the effects of structures outside the studied region were not straightforward.

In this study, we propose a new tomography method to apply our method to global tomography. The basic idea is to use both array waveform data (e.g., NECESSArray data) and global bulletin data (e.g., EHB data). The measurements of traveltimes for the former dataset are identical to what we have done in our previous tomography. The traveltime data in the latter dataset are used with modified phase associations. We assume that the phase type of the first arrivals of the bulletin data should be identical to that for the nearby event used in the analyses of the array waveform data. Such modifications can be applied only to the regions where we have dense arrays, however, because the phase misidentification can be greatly suppressed, the accuracy of the obtained model should be improved in these regions. If we focus only on the structures in these regions, they are assumed to be the results of the regional tomography with accurate corrections of the outside effects.

We applied this method to the NECESSArray data and the EHB bulletin data. At the time of the presentation, we plan to show how much improvements we can achieve by modified phase associations. We also plan to compare the models with and without NECESSArray data and discuss the plausibility of the features which are pointed out in our previous study.

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