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Solid Earth
Discussions

Interactive comment on "Tomography of the 2011 Iwaki earthquake (M 7.0) and Fukushima nuclear power plant area" *by* P. Tong et al.

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We appreciate this anonymous reviewer for his/her thoughtful comments and suggestions. In the online materials, we have added some details on the finite-frequency tomography, such as how to construct the finite-frequency travel-time sensitivity kernels. Please see Lines 34-50 in Pages 2-3 of the online materials. The same as our previous work (Tong et al., 2011, GJI), hypocentral parameters were simultaneously inverted together with the 3-D velocity model in this study. We have explicitly stated this point in the revised manuscript. Please see Lines 98-100 in Page 5. We agree with the reviewer that it is not an easy task to determine the Poisson's ratio using the Vp and Vs results obtained from two separate inversions. The amplitudes of Vp and Vs anomalies directly affect the determination of the Poisson's ratio image. In this work,

we have used nearly the same amount of P and S wave data (199,363 P-wave and 184,919 S-wave arrival times from 6506 earthquakes) for the tomographic inversions, which result in the same level of dense ray-path coverage in the study area for both Vp and Vs tomography. Hence both the pattern and amplitudes of Vp and Vs anomalies are well recovered. This point of view is also supported by the reviewer. In the revised manuscript, we have added related discussions on the determination of the Poisson's ratio image. Please see Lines 102-107 in Page 5. As the reviewer pointed out, the fact that the ray and finite-frequency results appear similar also supports that both Vp and Vs anomalies are correctly recovered. Figure 6b and Figure S12b have been corrected in the revised manuscript.

Interactive comment on Solid Earth Discuss., 3, 1021, 2011.