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Interactive comment on "Wave-equation based traveltime seismic tomography – Part 2: Application to the 1992 Landers earthquake (M_w 7.3) area" *by* P. Tong et al.

Anonymous Referee #2

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This manuscript used wave equation based tomographic method to study 3D Vp, Vs and Poisson's ratio in the 1992 Landers earthquake area. This study shows 3D crustal variations in this region and relates these variations with the occurrence of earthquakes. I'd like to recommend this paper for publication but I have several minor modifications that I want the authors to consider.

1. page 2568 Line 10, it is better to use "10,000 CPU hours". 2. page 2570 Line 23, both of which "showed" strong ..... and "suggested" .... 3. page 2571 Line 1, "the the fault zone" 4. page 2571-Page 2572, the authors used acoustic wave equation to model wave propagation in 3D elastic crust. Is it appropriate? 5. It seems that the authors didn't consider tradeoffs between source location and velocity heterogeneities.

How about the effects of the source error on velocity anomalies. 6. What is the goal to put m0 in the inversion, why not directly use m1 as the starting model. 7. It is better to cite this wave equation travel time tomography paper somewhere (Luo and Schuster, 1991, Geophyscis) 8. Page 2578, after equation 7, it is better to clarify D is the first or second derivative operator 9. Page 2581, Line 10, refines-> refine. 10. In the inverted model m4 with magnitude 8% however in the check board test, only 5% anomalies are validated, why not use 8% in the check board tests. 11. In figure 11, it is better to include mean and standard deviation values for histograms. 12. In supplementary materials, it is better to include comparison figures between your model with previous published models in this region. 13. It is better to include Poission ratio map in supplementary materials or in the main text.

Interactive comment on Solid Earth Discuss., 6, 2567, 2014.