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Solid Earth Discussions

Interactive comment on "The fate of fluids released from subducting slab in northern Cascadia" *by* K. Ramachandran and R. D. Hyndman

Anonymous Referee #1

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This is a very interesting study, and can be accepted after the authors address the following comments and suggestions in a revised version.

1. This is not the first tomographic work in northern Cascadia. The authors should mention the previous tomographic studies for this region made by other researchers.

2. A figure showing the distribution of seismic stations and earthquakes used should be provided.

3. Just the checkerboard resolution test (Fig. 3) is not convincing and sufficient. The authors should conduct some synthetic tests to confirm the main features appearing in the obtained tomographic images.

4. In almost all the tomographic studies published until now, low-velocity anomalies are shown in red color, whereas high-velocity anomalies are shown in blue color. I hope the authors can follow this conventional way to show their tomographic results (Figs. 4a and 4b).

5. The Southwest Japan subduction zone is similar to Cascadia that a young and warm oceanic plate (the Philippine Sea plate) is subducting, and several tomographic studies have suggested fore-arc mantle serpentinization there (e.g., Xia et al., Tectonophysics 449, 85-96, 2008; Zhao et al., J. Asian Earth Sci. 42, 1381-1393, 2011). I suggest the authors to give a brief discussion on the comparison of Cascadia with SW Japan.

6. Page 947: Lines 12-14 are repeated in Lines 17-18.

7. Page 948, Lines 25-27: Please simply change 551 ms to 0.551 s, 727 ms to 0.727 s, etc.

8. Page 949, Lines 6-7: "the estimated uncertainties"? Please provide the actual values.

9. The numbers in Figs. 2-4 are too small to read. Please enlarge them.

Interactive comment on Solid Earth Discuss., 3, 943, 2011.