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Interactive comment on “Study on the limitations of traveltime inversion in the presence of extreme velocity anomalies” by I. Flecha et al.

I. Flecha et al.

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We modified the manuscript in order to carefully follow the recommendations provided by the reviewer.

- 1) We have changed the title to Study of the limitations of traveltime inversion applied to subbasalt imaging.
- 2) We have included a couple of sentences in the introduction referencing to FWI (Full-waveform inversion).
- 3) Further details on the acquisition have also been included.
- 4) Specifications on the starting model, picking uncertainties, criteria on when to stop

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the inversion have also been added. The explanation concerning aspect of the TTT algorithm have been included. However, we think the reader should go to the original paper where the algorithm was presented for additional details as we are not the authors of the inversion algorithm.

- 5) Differences between Fig. 1 and 3, note that fig. 3 is the result of only inverting first arrivals as it is now specified in the figure caption.
- 6) Theoretical models has been changed to True model.
- 7) The characteristics of the noise has been included in the description of figure 6.
- 8) The sediment velocity is better constrained in figure 4 than the one derived from the first arrivals, this has been fixed in the text.
- 9) We there is no benefit by using large apertures to infer basalt seismic properties mostly because at far offsets the phases that sample the basalt are difficult to identify.
- 10) In shot gathers the base of the basalt generates a very weak event and is not usually identified in the shot gathers and therefore it is not used in the inversion scheme.

Fig 12, The horizontal scale is offset.

Please also note the supplement to this comment:

<http://www.solid-earth-discuss.net/5/C581/2013/sed-5-C581-2013-supplement.pdf>

Interactive comment on Solid Earth Discuss., 5, 189, 2013.

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