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Solid Earth
Discussions

Interactive comment on "The lithosphere-asthenosphere boundary observed with USArray receiver functions" *by* P. Kumar et al.

Anonymous Referee #1

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This manuscript presents receiver function imaging of the LAB beneath North America using the new large USArray data set. The authors find an LAB at shallow depths $\sim$100km that persists across the continent. This is in agreement with previous receiver function results from single stations but does not agree with tomographic estimates that find a deeper root ($\sim$200km). The authors briefly suggest that silicate melt from increased water (Mierdl et al., 2007) is the cause of the observation.

It difficult to assess the scientific quality of the paper since no methods are presented, and for a description of the technique the reader is referred to a manuscript that is currently submitted to Tectonophysics (Kind et al., 2012).

Similarly, it is difficult to determine the scientific significance since the authors state that some earlier version of these results was published in SRL (Kumar et al., 2012),

however, this manuscript is not available online yet.

Finding an LAB across the entire US at shallow depth is an important result that might have big implications. The figures are nice, and the result is exciting. However, the authors go into little to no detail relating these results to tectonic features, other observables, etc. Similarly, the interpretation and discussion is very brief, not comprehensive.

Interactive comment on Solid Earth Discuss., 4, 1, 2012.