

## ***Interactive comment on “Exploring the potentials and limitations of the time-reversal imaging of finite seismic sources” by S. Kremers et al.***

**B. Artman (Referee)**

brad.artman@spectraseis.com

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I had some trouble getting the appropriate feeling from this submission. Seems like a overly prepared term paper, but not quite complete journal article. It feels too much like a work in progress rather than a substantive manuscript. I encourage another crack at it to reach the potential I can feel, but don't see met yet on the page.

I think the article is overly pessimistic and a bit incomplete. Neglected are several references. A few might help address some of the problems they identified, and a few simply have to be included because the work is so similar it must be acknowledged- and they seem to have accomplished a few of the things these authors are having trouble with.

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Allmann and Shearer. A High-Frequency Secondary Event During the 2004 Parkfield Earthquake. *Science* (2007) vol. 318 (5854) pp. 1279-1283  
<http://dx.doi.org/10.1126/science.1146537>

Ishii et al. Extent, duration and speed of the 2004 Sumatra–Andaman earthquake imaged by the Hi-Net array. *Nature* (2005)  
<http://www.nature.com/nature/journal/v435/n7044/abs/nature03675.html>

and a new one from me explains some post-processing strategies that might be beneficial: Witten, B. and Brad Artman. Signal-to-noise estimates of time-reverse images. *GEOPHYSICS*, VOL. 76, NO. 2 (MARCH-APRIL 2011); P. MA1–MA10, doi: 10.1190/1.3543570

I suggest the application of an automatic imaging condition is quite useful and important. This was the main point of the Artman et al. 2010 article, though they don't reference that article in this context. These ideas can help with the no-sink problem often. Imaging conditions conventionally remove the time axis to keep an image in space. The authors have kind of gone the other way (interestingly) in section 3.3 by integrating over space to keep time. (By the way Sv is a terrible choice for the quantity since that has significant seismological meaning already). St in section 4 is an auto-correlation imaging condition as explained in Artman 2010.

Choosing the data for the Tottori EQ wisely might also address some of the problems. If the time window selected is dominated by surface waves- we can't expect good results. This was not mentioned in the section 5.

Interactive comment on Solid Earth Discuss., 3, 217, 2011.

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