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Interactive comment on "noisi: A Python tool for ambient noise cross-correlation modeling and noise source inversion" *by* Laura Ermert et al.

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This is an interesting paper about a tool for efficient modelling of noise cross-correlations with applications in noise source inversion. Overall the paper is well written, but at places it is can use some additional explanations.

Here are some examples:

It is not clear why the correlation function is first introduced in terms of integrals (eqs 2 and 4) and later discretized (eq 7). Since in this paper the correlation function is not used as a representation of a Green's function between x_1 and x_2, it seems that one doesn't need the integral form of eq 4. Wouldn't it make more sense to define the correlation function as a summation (like in eq 7) right from the start? (honoring the

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fact that sources are in general sparsely and irregularly distributed, such as in Figures 3a and 6a). If there is a good reason to start with the integral representation then this should be clearly explained.

Figure 5 shows sensitivity kernels. This needs more explanation. I assume the left panel shows eq 6 as a function of xi, for fixed x_1 and x_2 (shown by the triangles) and fixed n and m. If this is correct, please state this explicitly (or if it is not correct, explain what it shows instead). How are omega_0 and omega_1 chosen? The right panel, which shows the function A of eq 8, needs even more explanation. There are no spatial variables in eq 8. I assume C in eq 8 is implicitly a function of x_1 and x_2, but not of xi. It remains unclear to me which of these variables are taken along the axes in the right panel of Figure 5.

Some minor points:

Lines 15-20: I suggest to add some references to the pioneering papers in each of the fields of application mentioned here.

Line 51: 'It presents a ... alternative for cross-correlation modeling.' Why do you say 'an alternative'? Isn't cross-correlation modeling what the paper is about?

Line 93: The star instead of the bracket should be set as a superscript.

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