Dr. Gilda Currenti
Editor
Solid Earth

08/04/2021

Re: Manuscript reference number se-2020-219.

Dear Dr. Gilda Currenti,

We would like to thank you for your work, and we thank the reviewers for their remarks. The modifications along with replies to all comments are detailed below.

Yours sincerely,

Itzhak Lior.

General modifications:

In the manuscript's title, we propose to replace the acronym "DAS" with "Distributed Acoustic Sensing".

Response to editor comments:

(Q1) Line 88-98: the description of the method is more clear, but there is still a repetition in the definition. Please, rephrase the description, be more direct by saying that the semblance it is applied to the analytical signal and define it once.

(R1) The text following Equation 2 was revised as follows:
"...where $2L+1$ is the number of adjacent stations over which slowness is estimated, $x_j - x_0$ is the distance between station j and the middle station, $g(t)$ is the seismic trace and $h(t)$ is the Hilbert transform of $g(t)$. The slowness with the highest semblance represents that of the most locally coherent plane wave at the specific time t. Including the Hilbert transform in Eq. (2) is equivalent to applying the conventional definition of semblance (Taner et al., 1979) on the analytical signal $g(t) + ih(t)$. This approach has the key advantage of allowing for reliable semblance calculation at the zero-crossings of the original signal, owing to the property that the amplitude of the analytical signal (which is the signal envelope) does not have zero-crossings.".

(Q2) Line 209-216: All the plots are in slowness. Please, report the results in slowness in order to directly compre with figs. You can add the value in velocities in parenthesis.

(R2) Semblance values are reported while equivalent velocities are given in parenthesis.

(Q3) Caption Figure 4: Check the description of panel (d). Should it be obtained by FK analysis?

(R3) This line was revised: "...converted to ground accelerations: using **semblance-derived** slowness (panel c), and **FK-derived** (panel d)".

(Q4) Line 250: correct the typo "in panels a and a".

(R4) We added a comma for better readability of this sentence. Its first half presents panel a, and the second half (following the new comma) presents panel b:
"filtered strain-rate data is shown in panels a**,** and a comparison between converted strain-rate (red curves) and accelerations (blue curves) is shown in panels b".

(Q5) Line 549: change "Equations (A1)" in "Equations (B1)".

(R5) Done.

Response to Reviewer #2:

(Q1) Colorbars in Figures 2,4, and 5 are missing for the waveform plots.

(R1) Color bars were added to figure 2.

The color bar in figure 4 refers to all relevant panels (a and c-f), the following was added to the figure caption: "The color code is uniform for panels (a) and (c)-(f) and indicated in the colorbar in the top row.".

In figure 5, the color code is different for each panel. A uniform color code will not work due to the large differences between the signals. We added the min and max micro-strain-rate values plotted at each panel, to the top right corner. The following was added to the figure caption: "...the minimum and maximum plotted micro-strain-rate values are indicated at the top right of each panel".