Dear Stephen Hicks,

Thank you for managing the review process of our manuscript and many thanks to the reviewers for taking the time to give such extensive and good comments on our manuscript.
Below you find a detailed response to all of the comments made by the reviewers (including this email exchange). We took into account all comments and suggestions the reviewers gave. Here we want to give a summary of the general changes we made and a response to the suggestions in your email. All our responses are indented and written in red.

Summary of general changes (not all requested by the reviewers):

- Throughout the paper the frequencies for which the data were bandpass filtered and analysed have been changed to more consistent values.
- The used instrument response for all analyses (and therefore the values displayed in the figures) had an error of one power of ten. This has been corrected for all existing and new figures and analyses.
- We have added an analysis of the particle motion of (newly) selected events to show the quality with which the SG-boxes record the waveforms even when tilted. We have also added the horizontal components of the same waveforms used in these analyses (Fig. 6 and 7) to the supplementary material.
- Results of GNSS flow velocities for both the Greenland and Gornergletscher deployment have been added to the supplementary material. A deployment map for the Greenland deployment is also added to the supplementary material.

Dear Ana,

I hope this email finds you well. I have reached a decision regarding your submission to Seismica, "Self-sufficient seismic boxes for monitoring glacier seismology in Greenland". Thank you once again for submitting your work to Seismica.
I am pleased to say that I have now received two peer-review reports for your manuscript. Both reviewers are supportive of your work being published in a Report format in Seismica. However, they suggest that some revisions are needed before publication. In particular, I agree with both reviewers that a further exploration and brief interpretation of some of the interesting signals captured by the seismic network would greatly widen the impact of your deployment methodology.

We have included an additional analysis of the waveform/event quality in section 4.2 of the manuscript. Further analysis of icequakes recorded with SG-boxes on Sermeq Kujalleq is a subject to ongoing research related to fast ice flow. Because we had singular sensor deployments in Greenland in 2021 we were not able to perform the same analyses for this dataset as we did for the one at Gornergletscher that was specifically designed to test the SG-boxes (see also the response to Reviewer B major comment number 2). We feel that a more extensive analysis of the recorded icequakes with the array from the deployment at Gornergletscher is beyond the scope of the technical instrumentation study we address. We hope that this explanation and the additional analysis we give on the particle motion (partly) satisfy this request.

In addition, I agree with Reviewer A that it would be good to comment on glacier movements that were potentially recorded in the GNSS data by your instruments.

> We agree that including GNSS flow velocity results provide a completer view of the performance of the SG-boxes. We still wanted to keep the focus of the manuscript mainly on the seismic performance therefore we mention the GNSS results in the text (line 89-93) and included figures of both the Gornergletscher and Greenland deployment into the supplementary material.

Please find below the comments submitted in the webform by Reviewer A, with Reviewer B's full report in pdf format attached.
When you are ready to resubmit the revised version of your manuscript, please upload:
- A 'cleaned' version of the revised manuscript, without any markup/changes highlighted.
- A version of the revised manuscript clearly highlighting changes/markup/edits.
- A 'response-to-reviewers' letter that shows your response to each of the reviewers' points, together with a summary of the resulting changes made to the manuscript.

Please note that Seismica does not have any strict deadlines for submitting revisions, but naturally, it is likely to be in your best interest to submit these fairly promptly, and please let me know of any expected delays.
Once I have read your revised manuscript and rebuttal, I will then decide whether the manuscript either needs to be sent to reviewers again, requires further minor changes, or can be accepted.
I wish you the best with working on the revisions. Please don't hesitate to contact me with any questions or comments about your submission, or if you have any feedback about your experience with Seismica.

Kind regards,
Stephen Hicks
Imperial College London

Detailed review response

Review A

General notes:

● I'm glad you did this study! Your SG boxes seem like a valuable tool for many situations, and I think other cryoseismologists would be excited to use, customize, and build on them.

● That being said, I do think some work is needed to strengthen several of your arguments so you can share this interesting study most effectively. See my detailed comments below.

● Figures are generally good and convey their meaning well. There are a few cases of small fonts and hard-to-read dashed lines, but those should be easy fixes

We checked all figures and adjusted lines and font sizes where necessary. Mainly Figure 5, 6, 8 and 9 (previously 4, 5, 7, 9) have been adjusted to make them clearer and better readable.

● There is occasionally some ambiguity about whether temperature data is from the temperature sensor within the SG box or at a nearby weather station. Please be very clear every time you mention temperature to help the reader assess the influence of external environmental factors vs. internal instrument performance factors.

Thank you for pointing this out, throughout the manuscript I have changed "Temperature" to "Air temperature" where necessary.

● There's a bit of inconsistency with voice; you appear to have mostly active, but occasionally drop into passive. Going through to make the voice consistent throughout would make this article a bit of a smoother read.

Thank you, checked and changed where necessary.

● There are several cases of an unspecified "this" at the beginning of sentences (e.g. in the abstract, "this constitutes…"). It's good practice to put a noun there (e.g. "this rate constitutes"), increasing clarity by changing the "this" from an ambiguous pronoun to a definite article. Similarly, there are a few ambiguous "it"s also starting sentences that could be swapped out for a noun to improve clarity.

Checked and changed where necessary.

Line-by-line and figure-by-figure notes:

● Abstract: Should have an "and" before "a GNSS receiver."

Changed.

● 12: It would improve this introduction and strengthen your argument to mention a few cryoseismic sources and methods other than icequakes in this paragraph, such as detecting hydrology-related tremor signals or using cross-correlations to infer structure. Podolskiy & Walter has several references you could use.

Added glaciohydraulic tremors as source of information with appropriate references. line: 18

● 43: Stray comma after "are"

Fixed.

● 49: I think “directly” might be an overstatement of the coupling when the box is just sitting on top without any further attachment. Consider rephrasing.

Rephrased to: “The concept is to place the box directly on top of the ice such that ground movement is conveyed to the geophone inside the box.” Line: 50

● 58: It could benefit your audience to be a bit more descriptive about the box in this paragraph, in case they would like to build something similar. For example, you say the geophone is attached to the box, but how? Is there any additional waterproofing for components inside the box, or are you relying on just the box itself for that? Does the battery generate any heat that could conduct out? What features of the box allow for helicopter deployment/retrieval, like a loop/hook on the outside?

Thank you for pointing this out, indeed some info is missing considering the design of the box. Info is added on water-proofing, spikes at the bottom and wires/ropes we used on top for deploying from helicopter.
Line 47: waterproofing
Line 54-55: Spikes to prevent sliding
Line 63-64: Ropes attached to top for deploying/retrieving from hovering helicopter.

→ Battery heat is not specifically considered and has not been a problem so far. The MSR data logger logs the temperature inside the box and this never became too high for any of the instruments to function. The temperature mostly becomes higher when there is strong solar energy as the black box absorbs a lot of heat.

● Figure 1: Adjusting the light balance in the photo in 1b would make it easier to see what’s going on.

Adjusted the lighting. No better photo is available unfortunately. We hope it is clearer now.

● 75: No hyphen necessary in “data gaps”

Fixed.

● Figure 2: It would be very helpful to have a medium-scale map or satellite image here. I think it would help the reader understand the context of the array and local cryoseismicity within the glacier system. In addition, some topographic lines on the current map and increasing the font sizes of the labels would be very helpful.

We agree with the reviewer that a clearer map was needed. We changed the background map to a Swisstopo map, which more clearly shows the position, the elevation of the glacier, the location of the Monte Rosa hut and crevassed areas on the glacier.

● 90: This sentence should cite the relevant figure.

Fixed (line 115).

● Figure 3: Somewhere in this figure or the text, you should specify the wind speed in more detail. >20 km/hr includes both 21 km/hr and 100 km/hr, which are very different! Please add something like “sustained winds averaging X km/hr with gusts of up to Y km/hr” to help the reader better understand the influence of the wind.

We added this information. (line 122, Figure 4 and line 141).

● 104: I’d like to hear more detail about how you chose these average PSD parameters. Why 5.12 seconds and 20 minutes? Do you see any icequake clusters that could still dominate a 20-minute period and show up above the real noise? Could you get by with 30 second windows instead to save computation time?

The 5.12 sec is because we use a frequency window which is a closest power of 2 to the sampling frequency of 400 Hz. This makes the code run for calculating the spectrograms run a lot faster. The 20 min windows were arbitrarily chosen during the early analysis and we have now changed this to hourly windows. This makes Figure 5 more readable (less erratic PSD averages) and in our opinion does not reduce the main message of the results. Overall, we did not see icequake clusters that dominate 60 min windows and all clear peaks can be attributed to maintenance visits or tilt events.

- 107: Please refer the reader to the supplemental data here.

  Done, line 133.

- 110: For future studies, consider median PSD instead of average PSD. Median does a better job of reducing the influence of discrete events, so you may even be able to gloss right over your maintenance visits.

  We chose not to use the median as we want to show the maintenance visits and the tilt events as two separate aspects in the data.

- 127: Missing “e” on “therefore”

  Fixed.

- 128: It feels like you’ve left the reader hanging on the noise levels. You say that the wind data might not be perfect (which is very fair), and then offer tilt as an alternative, but then there’s no correlation with tilt. I’d like to hear you cover some more possibilities, such as comparisons with the internal temperature of the box, or with any data relevant to local hydrology (I think expecting hydrologic noise to be completely and entirely below 30 Hz might not be the best assumption)

  We added air temperature to Figure 5. Overall, we cannot explain all the elevated noise levels with the wind/temperature data that we have from the Meteostation in the Monte Rosa hut. We rephrased the part about tilt (line 154-158), as indeed it should not be offered as an additional explanation the way it was. We cross-checked the internal temperature of the box as well but this follows the general trend of the air temperature and does not show a different correlation than with the air-temperature in Figure 5.

- 128: You include the data for the other two sites in your supplemental data, but I don’t see those other stations mentioned in this paragraph at all. If you feel the stations are similar enough that what you say about G015 applies to all three, please clearly state so. If there are minor differences between the stations that you feel are worth noting, please discuss them briefly in the text and refer the reader to the supplemental data. If there are significant differences, then add the supplemental figure to the main text and discuss it all in detail.

  Figures of station GO17 and GO18 are added to the Suppl. Material (Fig S2 and S3). They do show a significant difference in correlation than GO15 and were therefore not included in the main manuscript.

- Figure 4: It’s hard to see the dashed line in 4a with how rapidly the data is varying; replace it with a solid line in a dark enough color to be distinct from the lighter line. 4b is a bit better (the dashed line for wind speed is fine), but I still have a hard time seeing the line for 30-90 Hz.

  Figure 4 became Figure 5, is adjusted and hopefully clearer now.

- Figure 5: This figure and section really made me understand the noise conditions and differences between stations so much better than before! If you’re considering a bit of

restructuring, I think it would be clearest to have this figure and this section as the first subsection of 4.1, not the last. That way, you start with the PPSD giving you the big overall picture of what the noise is like at the two stations, then going into detail on why that is through discussions of wind, tilt, etc.

Thank you for this comment. The reordering indeed makes sense, so sections have been exchanged. Section 4.1.1 and Section 4.1.2 have been swapped.

● 149: This section should be stronger. I'd like to see some quantitative measure of the correlation of the different components, especially since I can't really see in Figure 6 the lower correlation that you mention during the tilt.

This section has been partly re-written to make it clearer. There is no reduced correlation during tilt, but this was not stated clearly enough in the text so it has been rephrased (line 175-182). To extend the results on the waveform and event quality we added a new figure (Figure 7) and additional text (Lines 184-193) on particle motion.

● 156: The sentence starting here seems like a fragment; rephrase it to be part of the previous sentence.

Rephrased (line 195)

● 159: Capitalize ObsPy the same way that they themselves do.

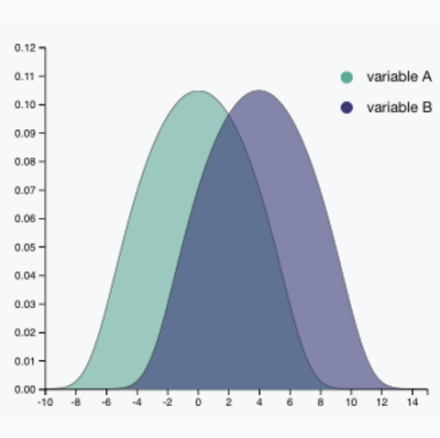
Fixed.

● 165: "False Detection" to me implies that they're detecting things that aren't icequakes, but couldn't they be detecting real icequakes but with lower-quality data so as to not meet a strict cross-correlation criteria? I suggest that you elaborate on why you claim that the detections are false.

Additional explanation is added in the paragraph (line 209-211). To further answer this question: We generally do not seem to miss lower quality icequakes in the SG-boxes only due to the settings of the threshold, but probably some cases of this will happen as it is not a perfect method. The bulk of false detections in the SG-boxes (I would estimate at least 70 %) consists of multiple events picked by the algorithm within noise bursts and do not relate to an event. For future data processing of SG-boxes data, we would look into more sophisticated picking methods. However, for this analysis we wanted to use the most conventional and simple algorithm, to show that even with such a relatively simple method, we still obtain a valuable data return.

● Figure 7: Could the top part perhaps be re-plotted as some sort of density surface plot? I like the attempt to show amplitude diversity, but it's not coming across as effectively as it could because of how saturated the low-amplitude events are.

Our illustration has been used in previous studies and seems most appropriate. So after playing around with different plotting techniques, we decided not to change this figure panel.



● Figure 7: I would appreciate it if noise level in at least one relevant frequency band could be added to this figure. I understand that it broadly correlates with wind speed, but I think it would be ideal to be able to compare the noise level and event detection rates especially at low amplitude) directly.

We decided not to include another line in the plot as we think it would make the plot less clear overall. We think temperature added to Figure 5 already largely satisfies this suggestion. As in Fig. 5 both wind and temperature can be (partly) correlated to the noise.

● 180: You showed the wind part clearly, but I think you need to better substantiate the claim about meltwater flow. I see correlation with temperature, but it's a bit of a jump to say that it's definitely meltwater flow without further substantiation.

Rephrased "meltwater flow" to "air temperature".

● 197: That could be an explanation, but I'd like to hear you say what features of your data does and doesn't support that explanation. More detailed comparisons of relative amplitude levels in different frequency ranges with data related to hydrology (like temperature) would help you back up or dismiss this explanation. Check out work on glaciohydraulic tremor to see the kinds of correlations I mean.

Temperature now included in Figure 5 and is also included in Figure 8. Further, we have added additional explanation about the hydrology and hydrologic noise/tremor on the Greenland icesheet. (Line 245-251). We feel that additional analysis regarding glaciohydraulic tremor is outside of the scope of this paper.

● Figure 8: It seems odd to me to introduce another data set in the discussion section like this. I would have expected the Greenland data to be introduced in section 4, where all the data is introduced, and then have the discussion section reserved for just discussion of all the data.

We added additional explanation on the deployment in Greenland (line 234-239) with additional material in the Suppl. Material (S4). The data presented in Figure 9 is meant as additional support to the correlation between noise and wind and temperature. We did not perform additional analysis on the data in Greenland as we just had single station deployments. Since insights from the Greenland data are therefore much less tangible than the Gornergletscher deployment, we decided not to overemphasize this section and only include it as part of the discussion.

● 209: You've already told us this information. Delete it unless you're planning on discussing it in more detail, such as in comparison with the Greenland data.

Deleted.

● 210: After all the discussion of icequakes in the Gornergletscher data, I expected to see at least some analysis of icequakes in the Greenland data for comparison. Please include some!

In the discussion we now added this information as well (Line 234-239). The reason for not having an analysis of the icequakes in Greenland was because we only had single station deployments there. The single stations separated by 5 km did not allow for straightforward insightful analysis of the recorded events. In 2022 we had a more extensive deployment where SG-boxes were placed in arrays of at least 3 sensors along the same glacier flowline in Greenland. Analysis of icequakes recorded with SG-boxes on this particular glacier is a subject of ongoing research.

● 213: “hard-to-access” should be hyphenated.

Fixed.

● 214: Swap “we could assess” for “we assessed.”

Changed thanks.

Review B

The authors of the study present the design and test of self-sufficient boxes each hosting a seismic sensor and a GNSS receiver for glacial applications. These so-called "SG-boxes" are designed to be deployed on remote and/or heavily crevassed glaciers (e.g. from a hovering helicopter), where installations of established on-ice installations are not possible. During a 15-day test campaign on a Swiss glacier, Nap et al. find that the seismic data from the newly developed boxes exhibit significantly increased noise levels compared to the data of classical and co-located geophone installations. The study presents evidence that the increased noise levels are caused by wind, melt water and coupling issues, as the boxes are simply placed on the ice surface. However, despite of this, the authors detect thousands of icequakes, about one third of the icequakes detected by the geophones, which might be used to study glacier dynamics.
The manuscript is very well written and easy to follow, the results and conclusions appear robust. Furthermore, such easy-to-deploy and self-sufficient boxes will be very interesting to investigate ice dynamics with seismic measurements in places that were previously out of reach. Yet, I have two major issues concerning the content of the manuscript. First, even though the "G" in SG-Boxes stands for GNSS, time series of ice motion (which I believe it is intended for) are not presented. Second, the authors also placed several SG-Boxes on a heavily crevassed region of one of the fastest flowing glaciers in Greenland. While noise levels of several days are discussed, I am missing any results and discussion on the scientific outcome of this deployment related to glacier-flow seismicity. Apart from these issues, I have several smaller comments listed below, which I believe should be addressed prior to publication.

Major comments:

1) From the instrument description, it is a key element of the SG-boxes to contain a GNSS receiver to track ice flow, yet, no such time series are presented. I guess even for the two weeks on Gornergletscher with potentially little ice flow, there should be some displacement visible on the GNSS records. This is even more important for the deployment in Greenland, where ice flow is expected to be meters per day. So I

suggest to present and discuss also these time series, as I think that they critically contribute to the science of this application.

→ We agree that the performance of the SG-boxes is not fully presented when the "G" part is left out completely. GNSS data results are added to the Suppl. Material for both the Gornergletscher (S1) and Greenland deployment (S4.2). We decided to not add this to the main paper as the GNSS sensors are well established material that on its own did not need further testing or "proof". We wanted to keep the main focus of the manuscript on the technical side of seismic sensor performance.

2) Even though it is the targeted area with the SG-boxes, the conducted deployment in Greenland is only presented/mentioned in the discussion. Neither details like deployment maps nor actual results are presented (there is nothing mentioned about icequakes), only noise levels are shown. According to Fig. 8, data from at least 7 days are available, so I would have expected to see some icequake detections/waveforms or a GNSS time series together with the icequake detections as in Fig. 7. For the purpose of this publication, which is to introduce the SG-boxes, It does not need to go into scientific detail, but I think to present at least some targeted signals is necessary for the proof of concept.

→ We now provide additional information regarding this comment in the discussion (line 234-239). Also, an overview map of the deployment in Greenland and GNSS results are added to the Suppl. Material. (S4)
Additional answer to your comment: Essentially, the reason for not having an analysis of the icequakes in Greenland is because we only had single station deployments. Single SG-boxes separated by 5 km did not allow for the Gornergletscher-type analysis of the recorded events in this "high-noise" environment. Therefore, we feel like further analysis of this data is beyond the scope of the technical instrumentation study we address. In 2022 we had a more extensive deployment where SG-boxes were placed in arrays of at least 3 along the same glacier in Greenland. So, analysis of icequakes recorded with SG-boxes on this particular glacier is a subject to ongoing research related to fast ice flow.

Other comments/questions:

line 13: "sub-surface data" → sub-surface information

changed

line 43: remove comma after "are"

fixed

line 47: I would like to read some more information on the omni-directional geophones. Do these devices 1) have some self-leveling system and 2) can they be arbitrarily be tilted or is there a maximum angle? If the box is strongly tilted as temporarily on Gornergletscher by more than 45 degrees, the vertical component would be closer to the horizontal (and vice versa) in case there is no leveling system (which I understand is the case?). Also, is the instrument response affected by tilting? I suggest to provide more details on this in the instrumentation and the discussion section.

We added information on the omni-directionality (line 53-54). This is all the information the company (SENSOR Nederland) provides. Also see the additional

figure and text added in Section 4.2 to further show that the omni-directional geophones remain in their original position.

line 57: What is a MSR logger? Please specify.

Additional info is added to text (line 59-60)

line 58: Related to the orientation of the components: apart from logging the tilt of the box, is there a way to track to rotation of the box (e.g. during the tilting events) and thus the orientation of the horizontal components?

We added light intensity sensors to two sides of the box that were also logged every 5 min by the MSR data logger to see if we could use this (with sunlight) to determine the orientation of the box. However, this unfortunately did not work, the light intensity we measured was too strong to accurately deduct an orientation from it. So we decided not to include it in the manuscript.

line 59 and the following lines: A general question on the deployment: in steep and/or highly crevassed areas, I imagine that the boxes might eventually slide away (maybe even into crevasses?) due to melt etc. Can you comment on this and on potential measures to prevent this from happening (e.g. attaching the box with a rope to a pole drilled into the ice)?

We installed spikes underneath the boxes to prevent sliding to a certain degree (this info has now been added to Section 2, line 54-55). Other than that, we did not take potential measure to prevent sliding. In many areas in Greenland, it would not be possible to drill a pole into the ice to attach the box. This could potentially be done, but one should consider the negative effect this could have on noise from the pole shaking in the wind and the potential negative effect on GNSS signal reception.

line 81: I think the background noise does not necessarily exceed the amplitude of the signal in order to compromise it, also smaller noise amplitudes can do so.

Rephrased (line 96-97)

line 114: "Figure 4c" → Figure 4b

Fixed.

line 114: Actually the noise levels of the SG-box are slightly lower than those of the geophone around the 3rd of july. This corresponds to a time where the box is tilted by around 20 degrees – could the lower noise level be due to a less sensitive geophone when tilted (even though nominal omni-directional)?

We do not think this is the case. You are right that the 30-100 Hz and 100-190 Hz window drop below that of the geophone for a period of time but we do not seem to see an effect on the data during this time, in terms of decreased sensitivity. In Figure 8 the time window where this happens does not correlate to a similar window of decreased detections in the SG-box data. And the waveforms during this time (one example is shown in Fig. 6 and 7) show a high level of resemblance.

line 127: "Therefor,comparison" → Therefore, the comparison

Fixed.

line 128: Section 4.1.3 does not exist, please correct.

Fixed.

line 131: "range frequencies" → range of frequencies

Fixed.

line 130 following lines and Fig. 5: I am surprised that the geophone's PSDs are close to the NLNM for frequencies of 1-3 Hz – are the data corrected for instrument response? In addition, is there a specific reason why you show the mean of the PPSDs? I guess if you

show the median, the difference between SG-box and geophone will be somewhat less and I think it would be still a fair comparison.

Thank you for pointing this out. As explained in the response letter, we made an error of one power of ten in the instrument response of both the SG-box and the geophones (related to the conversion factor of the Data-CUBE). This has been corrected and now the PPSD amplitudes are higher and do not come as close to the NLNM anymore.

line 142: comma after "Other than increased noise"

Fixed.

line 146: "Figure 4a" → Figure 4c

Fixed.

line 139 and following lines: It is not directly mentioned that you are looking at the vertical component – please do so, it makes it much more easy to follow (would also be good to mention in the caption). In addition, related to one of my earlier comments, what does a highly tilted vertical component mean in terms of polarization? Does it still measure the vertical motion, or only a projection of it?

We added a phrase that we are looking at the vertical component in Figure 6 (line 172) and we added Figure S4 and S5 in the Suppl. Material. We also added Figure 7 in the main manuscript to further demonstrate that even during tilt the SG-box components still provide waveforms with good fidelity and that closely resemble the geophones.

line 155-157: Combine the first two sentences with a comma.

Done.

line 161: For completeness, what was the STA/LTA ratio to trigger an event?

Added (line 200-201).

line 194: Problem with formatting degrees Celsius.

Fixed.

Data availability: the data are not accessible, on zenodo it says "Gone - The record you are trying to access was removed from Zenodo. The metadata of the record is kept for archival purposes."

The Zenodo account was labeled as spam and was disabled somehow. Still trying to fix.

References: Aster & Winberry (2017) is listed twice, please correct.

Fixed.

Figures:

Fig. 1: Maybe you can increase the size of panel a, as it is really hard to see the details (e.g. geopone location) in the current version.

Made panel a bigger. Hopefully it is clearer now.

Fig. 2: I suggest removing the blue triangles from the figure, caption and main text, as they are not used and "relevant" for this paper. In addition, I suggest providing some coordinate reference for this figure, as it is not possible to infer the actual glacier position of the measurements otherwise.

Removed none relevant sensors and added different background map to provide more clarity on setting of glacier.

Fig. 3: Are the waveforms band-pass filtered? Are the horizontal lines in the SG-boxes' spectrograms characteristic to the geophones, or coming from the boxes' design?

The waveforms and also the data that went into the spectrograms are corrected for instrument response with a pre-filter with the following corners: 1.5, 1.6, 195, 200 Hz. We could not determine with certainty where the horizontal stripes in the spectrograms come from. This could be either the box' design or an artifact of the geophones themselves.

Fig. 4, caption (b): "Ratio between average PSD of geophone and SG-box" → Ratio between average PSD of SG-box and geophone. Also, for panel (a), I suggest using the same units as in the remainder of the work, i.e. m/s instead of counts.

Changed (Fig 5 now).

Fig. 7: Rewrite the caption – some information is given twice. Also, use (a) and (b) instead of bottom and top to be consistent.

Changed (Fig. 8 now).

Supporting information: I think the supplementary material is not mentioned in the manuscript, please check.

This was indeed not mentioned and has been fixed. The figures mentioned in this comment are now Fig. S2 and S3 in the Suppl. Material and mentioned in line 133 and 146.