

Response to Topic Editor's Comments:

Thank-you for your extensively revised manuscript. As both referees recommended major revision and said they were willing to review a revised manuscript, I will send it back to them. However, here follow some comments of my own. Some of these concern inconsistencies and lack of clarity which I think best for you to address before I re-send it to the referees.

Dear Editor,

Thank you for your valuable comments and help us deliver a better presentation of our work. We have implemented all your comments into our revision. The following are our point-to-point replies to your comments.

Thank you,
Zheguang Zou, Parsa Bakhtiari Rad, Leonardo Macelloni, and Likun Zhang

Editor comments:

Authors reply in bold.

Line 9. Better “. . findings highlight . .”? **Corrected as suggested.**

Line 16. “in a capacity limited to the surface water” → “for surface waters only”? **Corrected as suggested.**

Line 18. “low” → “coarse”. [“low” does not fit with “>”] **Corrected as suggested.**

Lines 19-20. Better “. . ocean dynamics such as internal waves, solitons, tidal beams, eddies and fronts (that affect thermohaline fine structures) are expected to vary both spatially and temporally.”? [NB punctuation] **Corrected as suggested.**

Line 43. Better “. . The close spacing of 3D seismic lines and . .” **Corrected as suggested.**

Line 52. Better omit “until”, “moves” → “moved” **Corrected as suggested.**

Line 54. “these” → “there”, “await” → “waiting”. **Corrected as suggested.**

Lines 54-55. “. . how are . . variations distributed . .” **Corrected as suggested.**

Figure 1 caption line 2. “. . oriented to go down the continental” **Corrected as suggested.**

Line 73. “ranging” → “ranges” **Corrected as suggested.**

Line 75. “is” → “was” (twice) **Corrected as suggested.**

Line 77. Better “. . . anti-aliasing filtering (frequency range, 3-200 Hz). We . . .”? **Corrected as suggested.**

Line 78. Omit “fall”. **Corrected as suggested.**

Line 98 end. “velocities” **Corrected as suggested.**

Lines 98-99. Regarding referee comment “Why does the velocity model have to be calibrated with the CTDs and in what way did you do this calibration?” you have given an answer in your “Response” but there is no change in your text. Your text ought to include a summary of your response so that a final paper is self-contained; readers should not be expected to read your responses as well. **Implemented in Lines 101-104.**

Line 99. “mismatch” – between what and what? **Corrected as “between model and measurement”.**

Lines 104-105. Better with “,” after “small” and after “(50 m)” **Corrected as suggested.**

Lines 117-118. I think you want “. . . direction; down the continental slope) and crossline (perpendicular to inline; the northeast-southwest direction; along the continental slope on a broad scale); see . . .” **Corrected as suggested.**

Line 138. Better “. . . are density and sound speed; the subscripts 0 and 1 specify adjacent layers. . .”? **Corrected as suggested.**

Line 145. “. . . derived reflection coefficient correlates highly ($R = . . .$ ” **Corrected as suggested.**

Line 168. Can omit “excerpted”. **Corrected as suggested.**

Line 171. “. . . along an inline transect . . .” **Corrected as suggested.**

Line 180. Omit “that”. **Corrected as suggested.**

Line 184. Omit “that”. **Corrected as suggested.**

Line 239. “be” → “is” **Corrected as suggested.**

Line 252. “are” → “form” **Corrected as suggested.**

Line 254. “. . crossline variation can be derived from . .” **Corrected as suggested.**

Line 256. More simply “. . The correlations are plotted as functions of inline or crossline number.” **Corrected as suggested.**

Section 3.3. Referee 1: “What is the level of noise here?” Your response: “The signal-to-noise ratio (SNR) of our seismic images is ranging from 8-10 (using the formula of Ruddick, 2013).” I think this response should be in the manuscript. **We have added this information in Lines 125-126.**

Figure 9. Caption line 3. The text refers to upper as 250-500 m and lower as 500-750 m. Caption line 4. Elsewhere “Inline” is 1900-2130. Please make the text and figure caption consistent. **We have made the text and figure caption consistent.**

Figures 9d and 10. You need to say how you make the scales for time and space equivalent. Especially, M2 is a frequency (cycles per day not cycles per metre). **We have explained this in Figure 9 and 10 captions.**

Line 275. I do not understand “severe” in this context. **Rephrased as “the crossline variation fluctuates more than the inline variation”.**

Line 302. “it” → “them” **Corrected as suggested.**

Lines 303-304. “. . etc.) have frequencies 10^{-6} – 10^2 Hz and wavenumbers 10^{-4} – 10^2 cpm . .” **Corrected as suggested.**

Line 305. “. . variation in 3D imaging . .” **Corrected as suggested.**

Line 308. “. . account for out-of-plane . .”? **Corrected as suggested.**

Line 310. “stack” → “stacking” **Corrected as suggested.**

Line 313. “. . always to perform . .” **Corrected as suggested.**

Line 316. Omit “(“ **Corrected as suggested.**

Line 320. Add “,” at end. **Corrected as suggested.**

Lines 330-331. “validated” → “shown”? “. . (Fig. 6) and by faster . . and is verified . .” **Corrected as suggested.**

Line 342. “occurred” → “occur”. **Corrected as suggested.**

Line 350. Better “Here we briefly discuss mesoscale ocean processes apparent in our 3D seismic images. . .”? **Corrected as suggested.**

Line 351. “shows” → “show”. **Corrected as suggested.**

Line 353. “According to our seismic images (Figs. 5–7), this mesoscale ocean process should have a”; I think this is not what you mean. It suggests that internal tides and waves have a temporal cycle longer than 8 days. Perhaps “For clear inference from our seismic images (Figs. 5-7) an ocean process should have a”
Corrected as suggested.

Line 355. Please omit “up”; it does not fit with depth. However, it is not clear what you are trying to say here. Processes in 250-400 m or 750-900 m could be imaged equally well if of equal strength? **Revised it as “a depth of influence down to 800 m (generating internal wave field near the seafloor)”**

Line 358. “. . We suggest that . .” **Corrected as suggested.**

Line 362. “provide” → “providing” **Corrected as suggested.**