

Dear authors,

Thanks for the good response and explanations to my comments. All points that were unclear for me have been clarified and the manuscript now sounds smooth and complete to me. The title now is more representative about the study. Objectives and used approach are clearly stated and make easy to follow the work. Following you can find just some minor comment, mostly suggestions.

I really like all used figures, clear and indicative, and you did a good job on improving them, especially figures 4 and 6. Some of the labels are still small (i.e., the axis labels on figure 10), a bit uncomfortable but readable, so it is ok. A suggestion maybe for future works, when you insert the figure in the manuscript your smaller text in the figures should be at least as big as the caption size, in this way you can ensure a clear readability to the reader. I know that some times there is no space for writing bigger text, but you keep them small even when the space was available. Just something to keep in mind for your next work.

I understand the problem of working with legacy data and of its availability, but not having the stacked section from Dataset 2 was a big downside for your work. So, I am glad to see that at the end you managed to use it, it highlights the good results of your work.

In section 3.3 you could add a phrase stating what you said in the response to my comment regarding the starting velocity model used for the tomography “The initial inversions were performed using basic models (1D) with smooth velocity gradients and without introducing lateral velocity variations. These early inversions were primarily aimed at assessing the quality of the picks and identifying potential errors in the acquisition geometry. Even these preliminary inversions yielded excellent convergence, with a significant reduction in misfit (i.e. one order of magnitude). Based on the results of the initial inversions and supported by petrophysical data, smooth lateral velocity variations and variable velocity gradients with depth were introduced in the initial model to reflect trends observed in both datasets. The aim was not to use a highly detailed initial model, but rather to reflect these trends without compromising the independence of the inversion from the initial model. These updated models facilitated faster inversion processes, allowing us to reduce the size of the inversion grid, which resulted in an improvement in the resolution of the final velocity model.”. You can summarize it but I think it will be interesting and useful to have it in the text.

Line 186. You say that the total record length is 3000 ms, but you are recording a 16 s sweep. So, must likely your total record length is 19 s and 3000 ms after cross correlation with the sweep.

Line 266. The added arrows in figure 6 are very useful, just add in the text “from fig.6” when you refer to them (i.e., arrow 1 in fig. 6).

Figure 10 in the caption you miss a space between “1 and 2”. “features identified in the section” is a bit general, I know you describe them properly in the text but the caption should be independent, try to be a bit more specific (i.e., identified features related to faults).

Line 426. I would suggest to replace “have identified a major south-dipping fault (F1) and a north-dipping fault (F2) to the south of Stonepark and Pallas Green.” with “have improved the delineation of a major south-dipping fault (F1) and a north-dipping fault (F2) to the south of Stonepark and Pallas Green increasing the confidence on their interpretation” or something similar, since some of these vertical structures (especially the northernmost one) can be inferred already from figure 9a (even if with lower confidence).

I am surprised that in the tomography model there are no low velocity zones corresponding to the identified faulted zones. Could it be because the faults do not reach shallow depth and are deeper than the computed model? Could you discuss it on a sentence?