Dear Editor and Referees,

Thank you very much for evaluating our manuscript and helpful suggestions. Please find below our responses to all the comments. Our responses are written in bold font. We refer to line numbers in the revised manuscript where changes are highlighted (annotated version of the manuscript). We have also made some corrections to English use and typos throughout the whole text. We think that we have addressed all of your comments, and we hope that the new version might be considered suitable for publication.

On behalf of the authors,

Quang Nguyen

Reviewer #1:

1. I would strongly recommend to the authors to think about how to clearly express the main aim of the manuscript. One possibility would be to provide details of the processing schemes and multiple removal in supplementary online material, which then would also make space for a more thorough tectonic discussion and e.g. a 4D conceptual tectonic evolution concept. Another way to solve this problem could be to split the manuscript into two manuscripts, part 1 and 2, with the first methodological one focusing on processing (and how to consistently integrate the seismic profiles of various origin) and the second focusing on the tectonic evolution of the study area.

We decided to move a detailed description of seismic processing to Supplementary Material. The latter was further developed according to recommendations by Reviewer 2 (e.g., by showing velocity models).

One of the reasons for this suggestion is that in my view, in section 5, it is not becoming clear, how the new processing applied to the various seismic lines led to their improvement and added to the presented interpretation.

Processing has paramount importance for seismic interpretation and therefore we emphasized this part in our paper. We wanted to demonstrate that our processing of the new BalTec data offshore Poland is the first and the only existing one that produced final PSTM results. For the vintage PGI97 data, the main aim was to check to what extent the reprocessing can improve the quality of the seismic sections. We do not focus though, on how the improved seismic sections can be used in reinterpretation of these data in general. However, we believe that the reprocessing was essential to be able to interpret seismic structures in the vicinity of the Koszalin Fault, which is central to our paper.

2. However, there are statements, which may lead to some confusion: e.g. the last sentence of the "conclusions" sounds as if the fact that the Koszalin Fault runs oblique to the Caledonian Deformation Front is a new finding - however, this is already visible from Figure 1, and thus should be a well known feature. Please clarify and think about the 4D evolution concept, as mentioned in the preceding paragraph. In my view, this is important, as the CDF is described as an inactive feature, and thus e.g. motions along the Koszalin fault (and other faults) should be relative to the intercepting CDF.

Thank you for pointing this out. Indeed, the last sentence of 'Conclusions' was unnecessary and has been removed from the revised manuscript. We also appreciate the suggestion to build a 4-D evolution concept, but at this stage, a 4-D model would represent an over-interpretation due to the rather low data density.

3. Basically, the manuscript is well organised and figures are both, necessary and helpful. The English clearly would benefit from shaping by a native speaker. Figures should be checked to avoid potential confusion like e.g. in figure 1: annotations of the seismic lines shown in the maps are not consistent, e.g. is the prolongation of DBE-6A shown in red in A and in green in B, also the CDF is not shown in B. Due to the many bright colours, figure 1B is not easy to read.

Thank you for your comment. We fixed the annotations, added the CDF to Figure 1b in the revised manuscript, and modified Figure 1b to make it easier to read.

4. Drill holes are quite sparse in the study area. However, the authors mention that the interpretation is tight to wells positioned on or close to the seismic lines. Thus, it would be very useful to show such a seismic line together with the stratigraphic record of the drill hole used to tie the interpretation.

Seismic to well tie is important for the interpretation. Unfortunately, in our study, well data available are limited to just stratigraphy markers and the checkshot survey (time-depth chart). No wells log or stratigraphy records are available. We already mentioned this limitation in section 3. Therefore, the interpretation was based on a few wells (ex. L2-1/87, K9-1/89, or A8-1/83...) and published studies (we mentioned that in section 6).

To further mitigate the effect of a limited borehole database, we have added a new figure (Fig. 5) to the revised manuscript to illustrate well ties. All wells contributing to the seismo-stratigraphic interpretation through line intersections are shown in Figure 1b and mentioned in the text.

5. In section 4.1, velocity analysis is described. And velocities should be also known from cited wide angle seismic data. Thus, depth migration should be possible, which could be very useful for reconstructing the tectonic evolution of the study area. Would this be an attempt to aid interpretation (and obtain the correct geometry of faults)?

The wide-angle seismic data are too sparse to create a meaningful depth migration model, especially in terms of lateral velocity variations within individual formations. As soon as depth-migrated seismic data are shown, readers assume that, for example, all undulations of layer thicknesses are geologically real. With time sections, readers know that imaging artifacts are possible. We are convinced that inaccurate depth sections are more misleading than time sections. We hence stick to time migrated sections.