Dear Editor,

Please, find enclosed my review for the manuscript entitled „Post-Caledonian tectonic evolution of the Precambrian and Palaeozoic Platforms boundary zone offshore Poland based on the new and vintage multi-channel reflection seismic data “ by Q. Nguyen et al.

The presented study deals with seismic reflection data from the Baltic Sea in a region, where the Koszalin Fault crosses the Caledonian Deformation Front. The geological framework is quite complicated and the tectonic history still under debate.

To use seismic lines from different acquisition campaigns is a common practise in geophysics as this often enables to profit from a relatively good data coverage. As seismic lines from different acquisition campaigns, which took place up to more than 25 years ago, are used to decipher the tectonic evolution in this part of the Baltic Sea, the goals of this study are not only tectonic ones, but also methodological ones. Whereas the theme of this study (or both themes) fit well in the scope of the journal Solid Earth, the twofold goals are a bit problematic in terms of the manuscript. In its present version, in my opinion, neither goal is lastly achieved, however, the manuscript provides the impression that the focus of the study/manuscript lastly is on the tectonic evolution of the study area in the region of the Koszalin Fault crossing the Caledonian Deformation Front.

Thus, 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. 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.

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 ist described as an inactive feature, and thus e.g. motions along the Koszalin fault (and other faults) should be relative to the intercepting CDF.

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.

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.

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)?

Summarising, in my view, the results of this study could become of interest to be published in Solid Earth, however, only after the mentioned mainly manuscript strategic issues are resolved.

I hope, my comments are of help for your final decision about this manuscript.