We would like to thank Anonymous Referee #2 for his evaluations and positive feedback.

Below we list answers to the general and specific comments:

The rational for some parts of the interpretation requires clarification, for example the interpretation of the anorthosite intrusions in transparent regions of the crust. Nonreflective zones occur in many areas, but can only be reasonably, and speculatively, inferred to be intrusions where underlying reflections are present, demonstrating good signal penetration into the deeper crust. Why isn't the transparent crust at 6-24 km between CDP 5000 and 6000 on line 1200 interpreted to be a pluton? Consistency in the interpretation is necessary.

Now, we added some explanation, as well as brought the magnetic anomaly plots on top of the interpretation figures. The revised text reads: "The interpreted shapes of the AMCG bodies in Figures 7-9 are only tentative and rely on coincidence of three evidences: (1) presence of mostly transparent crust in seismic sections, (2) occurrence of the AMCG suite outcrops at the top of the basement (after Krzemińska et al., 2017), and (3) concurrence of magnetic highs (Figs 3, 7-9) due to elevated magnetic susceptibility of the AMCG rocks"

What are the black lines on the interpreted seismic sections intended to show? Are they intended to indicate representative reflection fabrics or shear zones or something else; the first is a characterization of the data to assist the reader, the second is an interpretation, which requires more explanation, even if only in general terms.

Black lines shown in the interpreted figures indeed indicate representative reflection fabric, shear zones, truncations, etc. Our interpretation of the data is kept to minimum. Probably the most subjective features are the inferred positions of the AMCG suites. In the revised text we added the following sentence: "Black lines in Figs. 7-9 delineate representative reflection fabrics and shear zones, which we infer from the data."

How do you define the lower crust mentioned on page 6, lines 10-12, i.e. it's top as Moho is already inferred?

Similarly to Moho, we used WARR-derived top of the lower crust as a guideline. Then, with such a proxy of the lower crust depth, we checked the change in reflectivity patterns between middle/lower crustal level. It led us to the conclusion about the reduced thickness of the lower crust as compared with the WARR model.

When discussing features on the seismic sections, it would greatly help the reader if they were identified on the figure by a label that was then referenced in the text.

We added now labels (S, C', T) to interpretation figures and cross-reference them in the text.

The inference of S-C' fabrics is an interesting result, but needs to be clearly demonstrated, because I couldn't really see this in the data. I suggest adding a cartoon-like figure to explain what structure you are inferring from the data, and a couple of labels on the seismic to explain where these features are seen. What do you mean by non-coaxial flow? Be clear on direction relative to strike of orogeny.

We added a new figure (Fig. 10) with a cartoon showing S-C' structure formation. Non-coaxial flow is a deformation in which the lines parallel to the principal strain axes have rotated away from their initial positions (as in simple shear).

Equations (1) to (3) are not really necessary as most specialists are familiar with them, but they could be retained, but in this case the assumptions should be stated, e.g. linear sweep. All sweep parameters should be included in the text: start and end frequencies, type of sweep, e.g. linear upsweep, start and end tapers etc.

We kept the equations for completeness. All sweep parameters are listed as well.

The number of figures could be reduced. Figure 3 is not really necessary unless the authors are going to interpret plutons from the magnetic fabric shown or to clearly use the figure for some specific aspect of the interpretation.

In fact, we increased number of figures in the revised version. We prefer to keep Fig. 3, as it's showing magnetic highs related to plutons. Now, those AMCG complexes are indicated in Fig. 3. We also added magnetic anomaly plots above the interpreted sections to support interpretation of the AMCG bodies (see the first comment). Because of this, 2 figures with interpretation had to be split into 3 figures (Fig. 7-9).

It is useful to see the comparison of displays in Figure 4, but I think Figure 5 could be omitted, especially if the number of black lines, many of which are not clearly justified, is reduced in the interpreted sections.

We prefer to keep "clean" uninterpreted sections in Fig. 4-5 and then their interpreted counterparts in the revised Fig. 7-9

The frequency decay in the lower panel in Figure 6 does not contribute much and can also be removed, but the refraction Moho, or its range over these parts of the lines, should be indicated in the upper panel.

We removed the frequency-decay curves and added the averaged WARR Moho location.

Minor comments, questions and suggested edits:

Majority of those, mostly editorial, corrections were implemented in the revised manuscript (see the manuscript in the track-changes mode). We list of all the suggestions for completeness, but only those requiring more detailed answer are commented below.

Title suggestion: Imaging the East European Craton margin in Northern Poland using extended correlation processing of regional seismic reflection profiles

We changed it accordingly

P1,L8: remove both "the"
P1,L11: 3-layer cratonic crust
P1,L15: which we primarily associate with Paleoproterozoic crust formed during
P1,L16: and are similar to those observed…
P1,L18: What is direction of crustal flow: orogeny normal? Be specific.
P1,L19: Didn't you indicate shortening in the text, so why extension here? Not clear.
P1,L22: of thickened crust
P2,L9: by refraction
P2,L10: define LT. They portray relatively
P2,L13: 1980s. Give years acquired
P2,L17: aimed to provide
P2,L19: data has already
P2,L20: These seismic profiles have been used as
P2,L20: a new interpretation

P2,L22: deformation extends much
P2,L23: showed that these… study deep
P2,L27: apply extended
P2,L28: Precambrian crust
P2,L29: cover, previous inferences were based mostly on
P2,L30: (K..,2017), but with these new seismic reflection data it is now possible
P2,L31: these new data
P2,L32: to that observed
P2,L33: remove ? … of Mesoproterozoic magmatism
P3,L1: Can you indicate the known extent of the Svecofennian orogeny in Figure 1? Is it defined by the coloured terranes in Figure 1. If so, please state explicitly.
Made clear in the revised caption.
P3,L2: with a 1.83-1.84 Ga
P3,L6: has been recognized
P3,L7: during Rodinia breakup
P3,L8: has been recognized
P3,L98: by Caledonian
P3,L14: by PolandSPAN
P3,L23: are clearly visible
P3,L24: Refer to labels on Fig.3 to indicate intrusions
We overlaid location of the AMCG intrusions shown in Fig. 2 in Fig. 3 now.
P3,L27: employed acquisition
P3,L31: recorded with
P3,L35: structure with a processing sequence optimized to preserve the
P3,L39: that by using
P3,L40: the PolandSPAN data could be
P4,L2: upsweep. This is important!
P4,L5: means that the reference signal we correlate with the recorded data was truncated during the correlation process, preserving the full bandwidth for the original record length, but losing bandwidth at later times.
P4,L30: Define Vrms
P4,L32: Why is DMO ”vital”? DMO applies very little correction at late times, so is the effect due to the suppression of steeply dipping noise, i.e. similar to an F-K filter. How was DMO applied? F-K in common offset or Kirchhoff implementation? Are these crooked lines, which will affect results of algorithm: F-K not tur 3-D DMO, but Kirchhoff may be.
We agree that the sensitivity of DMO at later times is low. Anyway, in our case there was a clear uplift in the stacks after DMO observed – both in reflector continuity and overall signal-to-noise improvement. We run Kirchhoff DMO on offset planes. The geometry of the profiles are smoothly-varying, with shots kept within 200 m of the receiver line, so they are not considered as typical ‘crooked lines’
P5,L9: yields curves
P5,L10-13: Not clear to me exactly how the frequency decay curves were computed, e.g. what “amplitude values”. Needs to be reworded. However, since I suggested that these displays be removed, this section could be omitted with corresponding edits elsewhere.
In fact, in the revised version we removed frequency-decay curves.
P5,L20: Cite figures here
P5,L21: From exactly what feature are you tracking the lower crust-mantle transition? Downward termination of reflectivity, but note there are coherent events in the mantle, which could be noise, so you need to exclude these, and explain how/why.
We believe that this can be deduced from the text between lines 21-33 on page 5 in the original manuscript, where we also mention sub-Moho reflectivity vs migration artifacts/noise. However, we

modified the opening sentence in the revised manuscript: “The transition between the lower crust and the uppermost mantle is often trackable (as a change in a generally reflective crust vs transparent mantle or as a band of stronger reflectivity at the expected Moho depth)”.
P5,L24: would flatten out at 20 km
P5,L25: In contrast to the poorly
P5,L27: and extends for
P5,L28: Moho can also be inferred from both amplitude… which we present in
P5,L29: time where the curves do not decay further
P5,L31: some reflections might continue into the upper mantle, such as events visible on line 5600
P5,L33: the one on line 5600
P5,L35: Poland show a much more... crust compared with
P5,L36: which is a result of the different methodologies employed. DELETE TO. However, as discussed
P6,L2: defined as the base of bands of intermittent reflections dividing
P6,L10-12: How are you defining the lower crust using the reflection data? Explain.
Already explained in the ‘general comments’. We added additional explanation in the revised manuscript: “The depth to lower crust was inferred using WARR data and the change in the reflectivity patterns observed between the middle/lower crustal depths.“
P6,L17: Label these features on figures. How are they inferred from the seismic reflections or gaps in seismic reflectivity.
Explanation and labels added.
P6,L25: Use label to indicate position in Figure 7.
P6,L27-39: This can be explained
P7,L2: 2005) due to the structural record
P7,L10: of AMCG magmatism
P7,L13: How related to lower crustal delamination? Please clarify.
This part was reworded to “Increased mantle reflectivity in the vicinity of the AMCG bodies may signify fragments of delaminated lower crustal material”.
P7,L15: of a lower/middle
P7,L38-39: with Caledonian deformation… represent a Proterozoic
P8,L4: with Paleoproterozoic crustal formation… Orogeny, and which are similar to those observed
P8,L13: basement may be linked

Figure 1: Darken coastline to make location of terranes clearer with respect to NE Europe.
Changed accordingly
Figure 4,5,7: Distance scale is too small to be legible. Depth annotation does need to be so frequent, perhaps every 5 km?
Changed accordingly

On behalf of the authors,

M. Mężyk