Solid Earth Discussions

Solid Earth Discuss., author comment AC1
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Reply on RC1

Dariusz Botor et al.

Author comment on "Thermal history of the East European Platform margin in Poland based on apatite and zircon low-temperature thermochronology" by Dariusz Botor et al., Solid Earth Discuss., https://doi.org/10.5194/se-2021-8-AC1, 2021

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30/03/2021

Replay to Anonymous Reviewer 1

Thank you for all your corrections, comments, and suggestions regarding our manuscript. Since they are helpful and constructive, we will include them in a revised version of the paper. Our response to specific comments provided both in the review document and annotated manuscript are detailed below.

- Fission track dating was done at the Institute of Geological Sciences, Polish Academy of Sciences in Kraków (Poland). This information will be included in the 'Methods' chapter.
- The possible extent of fluid flow will be wider discussed in the text including alternative solutions. Concerning the latter, we already considered variation in the geothermal gradient through time while postulating the influence of advective heat transfer. Therefore, we refer to paleotemperatures in the text as a proxy of paleothermal gradient. The interpretation assuming short□lasting pulses of potassium□bearing hot fluids that effectively promote illitization in porous rocks is presented in a recent paper by Derkowski et al. (2021). We cite and use this interpretation since reporting a full set of arguments presented by Derkowski (2021) exceeds the scope of our study. We agree that the gap between the VR- and illite/smectite-derived paleotemperatures might be the effect of contamination by detrital illite. This remains an option that cannot be entirely excluded. However, in the case of detrital illite the results should be highly incoherent, whereas in the Tłuszcz IG-1 and other studied boreholes the VR-derived paleotemperatures are consistently lower than those calculated from illite/smectite data.
- A new figure is drafted that shows previous FT dating by Środoń et al. (2013) and Botor et al. (2019) as well as some other results from the adjacent areas. Simplified results are presented jointly with the locality of sampling. The figure provides a background for the extended discussion of results.
- We are going to make several changes to the remaining figures:
- Figure A1 will be merged with A2 and redrafted to show the distribution of track lengths for each sample.

- The position of the Teisseyre-Tornquist Zone, Caledonian Deformation Front and Variscan Deformation Front will be shown in Figure 2.
- Lettering will be increased in Figures 3 and 5.
- A reference to the map by Pożaryski and Dembowski (1983) will be added to the caption of Figure 14.
- The title will be shortened as recommended.
- All recommended changes to the tables format will be implemented.
- Short information is going to be supplemented to 'Geological setting' how the position of the Teisseyre-Tornquist Zone and Caledonian Deformation Front were determined.
- We are going to include remaining corrections that are marked directly on the annotated manuscript.

Sincerely,

Dariusz Botor

Please also note the supplement to this comment:
https://se.copernicus.org/preprints/se-2021-8/se-2021-8-AC1-supplement.pdf