

Interactive comment on “Late Cretaceous to Paleogene exhumation in Central Europe – localized inversion vs. large-scale domal uplift” by Hilmar von Eynatten et al.

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This manuscript presents a compilation of thermochronological data from Central Europe, strengthened by roughly 150 new AFT & AHe data. Using this data, the uplift and exhumation history of Central Europe is constrained, and different driving mechanisms are discussed based on thermal modeling and rough calculations of the response signals to isostatic and dynamic processes. The study concludes that a combination of thrust related exhumation and large-scale domal uplift explain best the data.

The study presents an effort that is comprehensive, of timely importance and is very well written. It should be published after some very minor corrections.

C1

Figure 1: Does not work well in b&w. The profile is very schematic, and more detail should be added; The fault at the northern fringe of the TF is not shown in the map, or it should be located in the U-Permian section.

Figure 2: This is an interesting plot, but some revisions would be good to make it more accessible. Currently on y-axis you plot number of samples. Instead you should use % (as you do in Fig 8). Error bars on ages are missing. Alternatively, you could simply use the format of Fig. 8B, which is very straight forward to read. I am skeptical about the meaning of median ages. For calculating the median you pool ages that are unrelated. While it does make more sense for very steep curves, a median age e.g. for the Erzgebirge seems geologically meaningless.

Thermal modeling: The hyperbolic cooling trend is visible in TF, but not so much in HM. I find it unfortunate that you present envelopes only, as the single path plot would show this better.

Reconstruction of missing sequence: in line 495 ff you discuss that thickness of the Jurassic to L-Cretaceous strata was possibly thicker. How would this influence your thermal model, as temperature at deepest burial would increase?

Dynamic topography: You discuss plate movements of Eurasia citing Seton et al. 2012. This is a great paper, however a global model, which often cannot take into account more local results. Aren't there more local studies constraining plate movements for that particular region (ideally also in a global reference frame)?

The text is full of abbreviations. I suggest to get rid of most of them. Often not needed, and makes the text harder to follow.

There is mixed used of AE & BE (gray v grey; modeling v modelling...)

Very minor comments: Line 27: add references

Line 46: this must have been said also earlier than 1997

C2

Line 97: add that few samples are from drill holes or specify near-surface to <500 m.

Line 113: the right side, not the left side. You could also say the eastern side (not sure right and left even though used in Germany is suitable here. Maybe it is....)

Line 139: " by numerous studies (as reviewed below)"

Line 168: here and elsewhere - I find the word significant overused and pushy. suggest to not use it but be quantitative instead.

Line 180: reference missing

Line 239: Reference missing

Caption Fig. 4 and elsewhere - are page numbers required after the ref.?

Line 594: put "t" in italics

Line 608 ff: you might consider including the reference of Bourgois et al., maybe particularly as you disagree with this interpretation, and it is a well-known paper.

Interactive comment on Solid Earth Discuss., <https://doi.org/10.5194/se-2020-183>, 2020.