Authors response to Reviewer comment 2 (by Franz Neubauer)

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Line by line response

General comment 1: General: use "sedimentary rocks" instead "sediments" (which is rather Central European use)

Response: Done.

Line 15: multiple deformation stages before and during the Aar Massifs rise: You mean rise or exhumation?

Response: Was changed to exhumation to be consistent.

Line 18: Line 18: vertical or horizontal block extrusion models?

Response: It is vertical block extrusion; However, the sentence has now been completely removed to increase clarity and conciseness.

Line 21: sedimentary rocks

Response: Changed (see also general comment 1).

Line 21: Looking for Fig. 1b, it is difficult to recognize the NW-SE strike of the frontal margin. The overall margin seems rather NE-SW trending.

Response: Corrected.

Line 24: Line 24: be specific: pre-Alpine (Variscan) crystalline substratum

Response: Changed accordingly (without the "Variscan" to avoid confusion over the quite complex pre-Alpine evolution of the basement).

Line 52: synthesized lithostratigraphic framework

Response: Suggested change was made.

Line 91: and now Lower Helvetic

Response: Changed as suggested.

Line 94: at around 20 Ma

Response: Implemented.

Line 116: basis

Response: Corrected.

Line 124: Show trace of the "Jungfraubahnen" railway tunnel in Fig. 2. I could not find it.

Response: The railway tunnel is indicated on the map (semitransparent green line) and also shown in the map legend. Therefore, we refrained from further highlighting it as we feel it would be otherwise visually overrepresented in the map.

Line 161: *Fms*.

Response: Corrected.

Line 166: rather lithologic than stratigraphic content

Response: Changed accordingly.

Line 179: exhumation-related

Response: Corrected.

Line 234: Why the jump suddenly to the model Fig. 11b?

Response: The idea is to illustrate the sediment imbrication and we now reference Fig. 10, since it is better suited to do so, and it keeps the figure referencing consistent.

Line 262: superficial words deleted as suggested.

Line 297: towards the paleo-SE,

Response: Corrected, as suggested.

Line 300: Somehow unclear: Deep water conditions in the NW when the normal faults trend NW-SW?

Response: Clarified by changing it to “paleo-SE”, to avoid confusion as these sediments are presently found to the SW of our study area.

Line 306: Table

Response: Corrected.

Lines 318 and 319; mineral names corrected

Line 325: corrected to “pelitic”

Line 329: Could you show these reactivated normal faults resp. thrusts on Fig. 2?

Response: These normal faults are hard to indicate, as they are strongly overprinted by the subsequent stages. The main such fault array is the JSW, which then later is a major SZ3 thrust and therefore indicated as such. Thus, unfortunately we see no better way to indicate those normal faults in another way than we already did.

Line 353: weaker sedimentary rocks than what other rocks?

Response: We named the relevant units and added a reference to the section where we discuss the sediments in question.

Figure 1: Why post-Variscan intrusives. It seems rather late-stage Variscan.

Response: The timing and geodynamic context of those units is quite complex, we wanted to follow the map of Berger et al. (2017b) but mislabeled them. We corrected it to “Late to Post-Variscian intrusives”.

Fig 3: Explain mineral abbreviations in Rows 2 and 3. i) These two generations of minerals are difficult to recognize.

Response: We added mineral abbreviation descriptions in the figure caption. To better illustrate the 2 mineral generations, we increased the magnification of the first and the third image in the second row. We highlighted a core rim structure stemming from the later overprint and labelled the preserved high-T fabric differently (now black) compared to the later grown minerals (now red). The difficulty in illustrating is that we want to highlight the fabric without preferred orientation. By zooming in too much (for better depicting the smaller grains of the later growth) this is not comprehensible anymore. We hope the revised figure now offers an acceptable compromise between both.

Fig. 8: Explain mineral abbreviations. Use crinoid or echinodermata instead of echinoderm.

Response: We added mineral abbreviation descriptions in the figure caption and changed “Echinoderms” to “Echinodermata”. We corrected the figure caption following the suggestions.

Fig. 11: Also indicate the potential root of the incorporated basement slabs in (a).

Response: We made changes to (a) to indicate the most-likely origin.

Table 2: The table needs some corrections of typos. Furthermore, explain in caption what you mean with "Confidence" and "Local only?"

Response: The “Confidence” was a qualitative assessment of our confidence in a) the Fm. attribution and b) the thickness constraint derived from the cited sources. The “Local only” column

was supposed to indicate the continuity throughout the study area. Much of this is discussed in Appendix A. Thus, we proceed to remove the two columns to increase comprehensibility of the table 2. We now reference Appendix A in the figure caption for additional information. All errors within the table have been corrected following the suggestions.

Table 3: Paraautochthonous

Response: Corrected to “Para-Autochthonous”

Table A1: The table needs some corrections of typos.

Response: All corrections were made following the reviewer’s suggestions.

Appendix A: Geological map compilation and Mesozoic litho-stratigraphy: Some corrections are needed, too.

Response: Corrections were made following the comments (and highlight in the marked-up pdf; see also response to comments on Lines 512 to 522 below).

Line 512: northwestern strata of which age?

Response: late Permian to early Triassic; text is now amended.

Line 515: Lower

Response: Corrected.

Line 519: Late Triassic/Early Jurassic

Response: Corrected.

Line 522: Reischiben Fm., and

Response: Corrected.