

Solid Earth Discuss., community comment CC1
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Reply on RC1

Marcel Paffrath

Community comment on "Imaging structure and geometry of slabs in the greater Alpine area – a P-wave travel-time tomography using AlpArray Seismic Network data" by Marcel Paffrath et al., Solid Earth Discuss., <https://doi.org/10.5194/se-2021-58-CC1>, 2021

Dear reviewer,

I shortly want to clarify here an issue regarding the checkerboard resolution test. It seems that we have not communicated clearly enough how the test was conducted. Due to the inability to resolve the crustal structure with teleseismic data, we did not perturb the uppermost ~100 km with a checkerboard at all. However, we simulated through the a priori crustal (and upper most mantle) model together with the checkerboard perturbation below to examine how smearing of the checkerboard anomalies interferes with the a priori model.

The results in Fig. 10 therefore show the resolved checkerboard pattern together with the (slightly altered) a priori crustal model (which is for the checkerboard test also part of the starting model). Any alteration of the a priori crustal model is therefore caused by smearing or the noise we added. However, this alteration of the crustal model is nearly everywhere way below 1%! I attached a figure showing only the velocity differences relative to the starting model as well as one through the checkerboard model used to calculate synthetic traveltimes.

We are aware of the possible missinterpretation of the a priori crustal model as artifacts of the checkerboardtest, as we already received feedback from colleagues who had the same problem. We will therefore certainly clarify this (e.g. using the provided figures or highlight the boundaries of the a priori model) in the revised manuscript!

Kind regards,

Marcel Paffrath

Please also note the supplement to this comment:

<https://se.copernicus.org/preprints/se-2021-58/se-2021-58-CC1-supplement.zip>