Solid Earth Discussions

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Reply on RC3

Dario Zampieri et al.

Author comment on "Geodynamic and seismotectonic model of a long-lived transverse structure: The Schio-Vicenza Fault System (NE Italy)" by Dario Zampieri et al., Solid Earth Discuss., https://doi.org/10.5194/se-2021-29-AC3, 2021

We would like to express our appreciation for the positive review of Prof. Hugo Ortner of our submitted manuscript and acknowledge the insightful comments that helped to improve the manuscript. We answered to all the points raised as it can be seen in the attached files.

The main points raised by RC3 are the following:

- The geometry of the indentation model that would be delimited by the Giudicarie system and not the SVFS. We discussed more in detail this problem in the last paragraph of the Discussion chapter (#5). We also cited the papers suggested by the reviewer together with a recent paper just published by Solid Earth by Verwater et al. (2021). We suggest that there was an evolution of the indenter boundary that now would be delimited by the SVFS. The Adriatic plate indenter has been traditionally considered as delimited by the Giudicarie fault system to the west and the Pustertal-Gailtal fault to the north. Hence, the SVFS represented an intraplate structure crossing the Mesozoic Trento platform. However, we think that since the late Messinian the Adriatic block decoupled from its nearly stationary northwestern (Padanian) protuberance and the western indenter margin widened incorporating the SVFS, while leaving outside the contractional deformation the Lessini-Berici-Euganei foreland block.
- The timing of activity of the faults forming the zipper model that if not contemporaneous would indicate a truncation relationships of the conjugate faults and disregards the zipper structure. If your hypothesis is true, all the SVF would be dextral (also south of Posina). However, we observe that the thrust front near Schio has a sinistral offset (see Figure 5), and also more to the south there are more geological evidences of sinistral activity.

- The 30° transtensional analogue model performed by Fedorik et al. (2019). We described better in the text these experiments and their implications for our model.
- The GPS velocity field not showing deformation across the SVFS. Unfortunately, the geometry of the GPS network is not as dense as necessary to register the interseismic deformation connected to a locked fault. Besides, we expect the SVFS to move with low rates and the area deformed during the interseismic period to be very narrow across the fault itself. For these reasons we did not discuss this topic in the text.

Other comments were discussed and answered in the attached annotated files.

Best regards,

Dario Zampieri, Paola Vannoli and Pierfrancesco Burrato

Please also note the supplement to this comment:
https://se.copernicus.org/preprints/se-2021-29/se-2021-29-AC3-supplement.zip