Dear reviewer,

Thank you for your insightful comments that will improve our manuscript. Below are the answers (in black) to your comments (in red).

lines 254 – 265: Please explain better, this part of text is unclear.

The explanation about how the thickness of the carbonate layer was acquired laid out in lines 255-266 was rewritten in a more clear and concise way. The new text is the following:

"*The interface with the least data at our disposal was the Carbonate rock complex (CRC) bottom depth. The CRC bottom depth was estimated combining geological and structural data published in available Basic Geological Maps at the 1:100,000 scale with accompanying Explanatory Notes that cover entire Dinaridic area, as well as geological-structural data published in studies of Tišljar et al. (2002), Vlahović et al., (2005) and Balling et al., (2021). Based on the collected data, we determined the spatial extent of the Paleozoic–Paleogene CRC. Since the CRC represents a very distinctive layer in the Dinarides, we additionally estimated its thickness. Assessment of CRC thickness was initially performed at the scale of each of more than 80 geological maps covering the study area, using thicknesses presented in geological columns on each map. Derived values of CRC thickness were further considered in respect to the deformation styles and large-scale structural relations (e.g., Balling et al., 2021). Several regional carbonate nappe systems in the External Dinarides characterized by extensive folding and thrusting could reach a combined stacking thicknesses up to 12000 m, but thicknesses are not evenly spatially distributed. Significant variability of the CRC total thickness in the Dinarides is caused by combination of (1) initial differences in thickness due to significant paleogeographic differences along the Adria Microplate passive margin, since a total thickness of the Adriatic Carbonate Platform and thick underlying and thin overlying carbonates is in the range of 4500–8000 m (Tišljar et al., 2002; Velić et al., 2002; Vlahović et al., 2005), (2) structural position of individual nappe systems in respect to the active collision front, and (3) variable strain rates and stress orientation during the Cretaceous–Paleogene Adria–Europe collision. Nappe stacking systems in the central and southern part of the External Dinarides, where CRC is the thickest (Fig. 3c), locally incorporate up to four thrust sheets composed of different segments of the entire carbonate succession."*

lines 371 – 376: What velocities for Neogene deposits did you get with these relations? Fromto??

The values we obtained from Brocher's (2008) relations ranged from around 0.7 km/s near the surface, to around 5.6 km/s at greatest depths of Neogene deposits (which was 7.5 km below surface). The information has been added in the text.

lines 409 and 410: Do you have the sides reversed (SE and NW)?

Indeed, we have made a mistake. It has been corrected. Thank you for pointing out this mistake.

Figure 4: Please edit the coordinate marks that overlap at the 20 and 30 km depth slices.
Figure 4 has been updated to correct this.

line 571, 615: Brocher's
Corrected in the text

lines 614, 615: Can you explain what relations you used? What is a similar age? The deposits mentioned range from the Lower Miocene to more recent times.
There are several velocity-depth relations derived in Brocher (2005) which are defined for different depth ranges. The relations derived for the shallowest depths are reported to be Plio-Quaternary, and for the greater depths the relations were derived using information from basins which were mostly deposited during the Miocene. As there is little information about these structures in the greater Dinarides area the best we could do was a first order approximation, and therefore using those relations seemed appropriate.

line 618: you said earlier 6.2–6.3 km/s
It has been corrected in the text, it must have been a leftover from an earlier version. Thank you for pointing it out.

Figures 9 and 10: What hypocenter parameters did you use to calculate travel times? A hypocenter derived based on the mentioned 1D model or a new 3D model, or some other velocity model? It would be interesting to show the locations of the hypocenters in the studied area based on the commonly used 1D model and the new 3D model.
We used the hypocenter from the Croatian catalogue (45.4188N, 16.2082E, 7.57 km). It was the mainshock of the recent Petrinja Mw6.4 earthquake which was well recorded on many stations, and its location is very well defined. We relocated it using the new model, but since it was so well recorded, there was not much difference between the two hypocenters (see Fig 1 below). The initial location was based on the 1D model mentioned in the main text with added station corrections. Relocations with the new 3D model were done for a large group of earthquakes from the main catalogue with mixed results, mostly connected with the setup of the Fast Marching Method (de Kool et al., 2006) as implemented within the FMTOMO package (Rawlinson and Urvoy, 2006). Whereas travel times showed significant improvement with the new 3D model relocations stayed close to the initial locations. As relocating proved to be a significant undertaking we opted to do this in connected paper (following this one) where we would do relocations in line with tomography and/or updating of a new model.

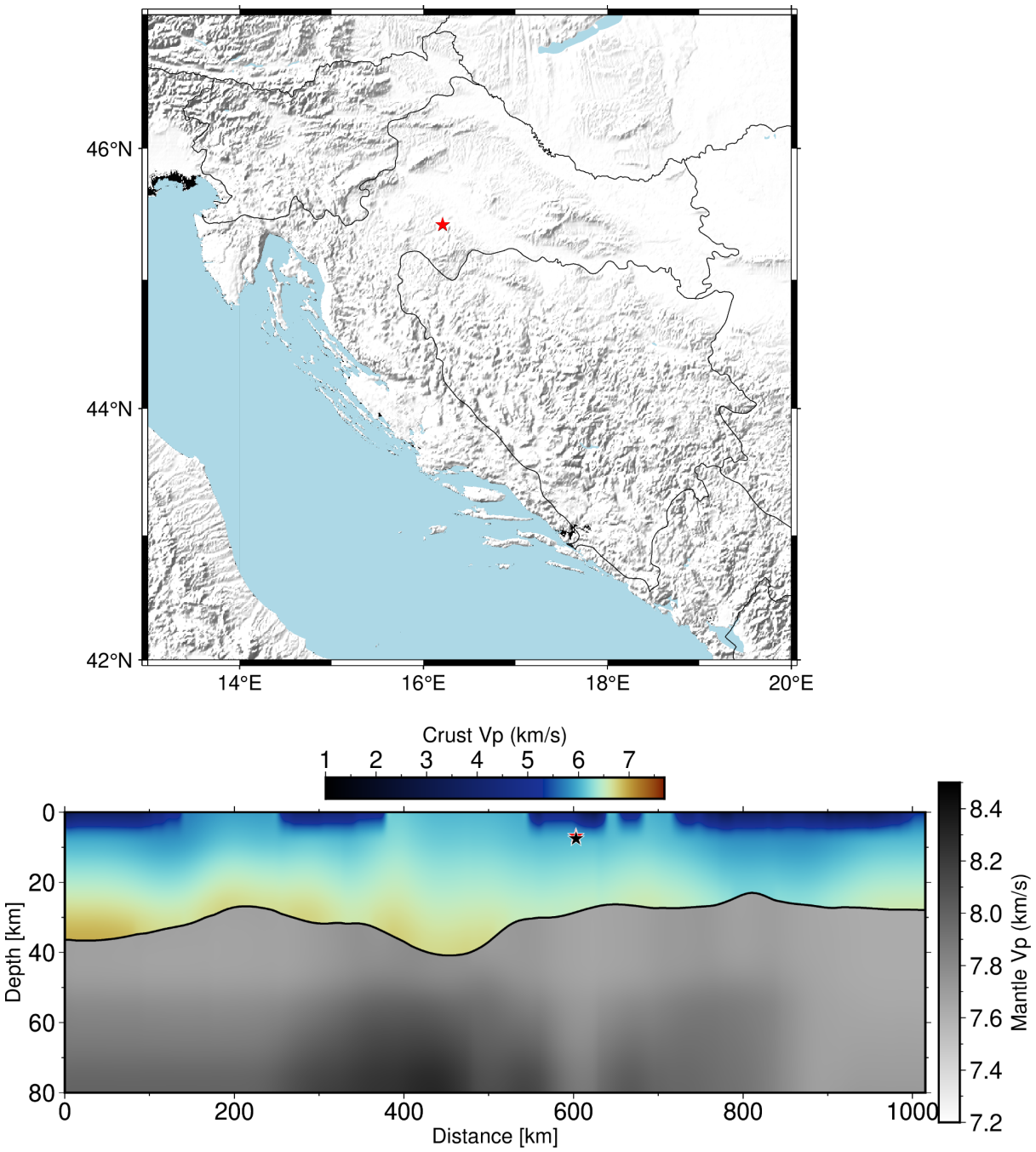

Fig 1. a) Mapview of the Petrinja earthquake used for testing the new model. Red start is the new location and black is the old. **b)** cross-section cutting through hypocenter location showing only minor depth variation between locations.

Match the references in the text to the list

There were some leftover references from the first draft, we have fixed the mismatch between the reference list and the text.

I recommend a careful proofreading

Done. Hopefully we minimised the number of mistakes in the text.