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Supporting Information for

Insights into exhumation and mantle hydration processes at the Deep Galicia margin from a 3D high-resolution seismic velocity model

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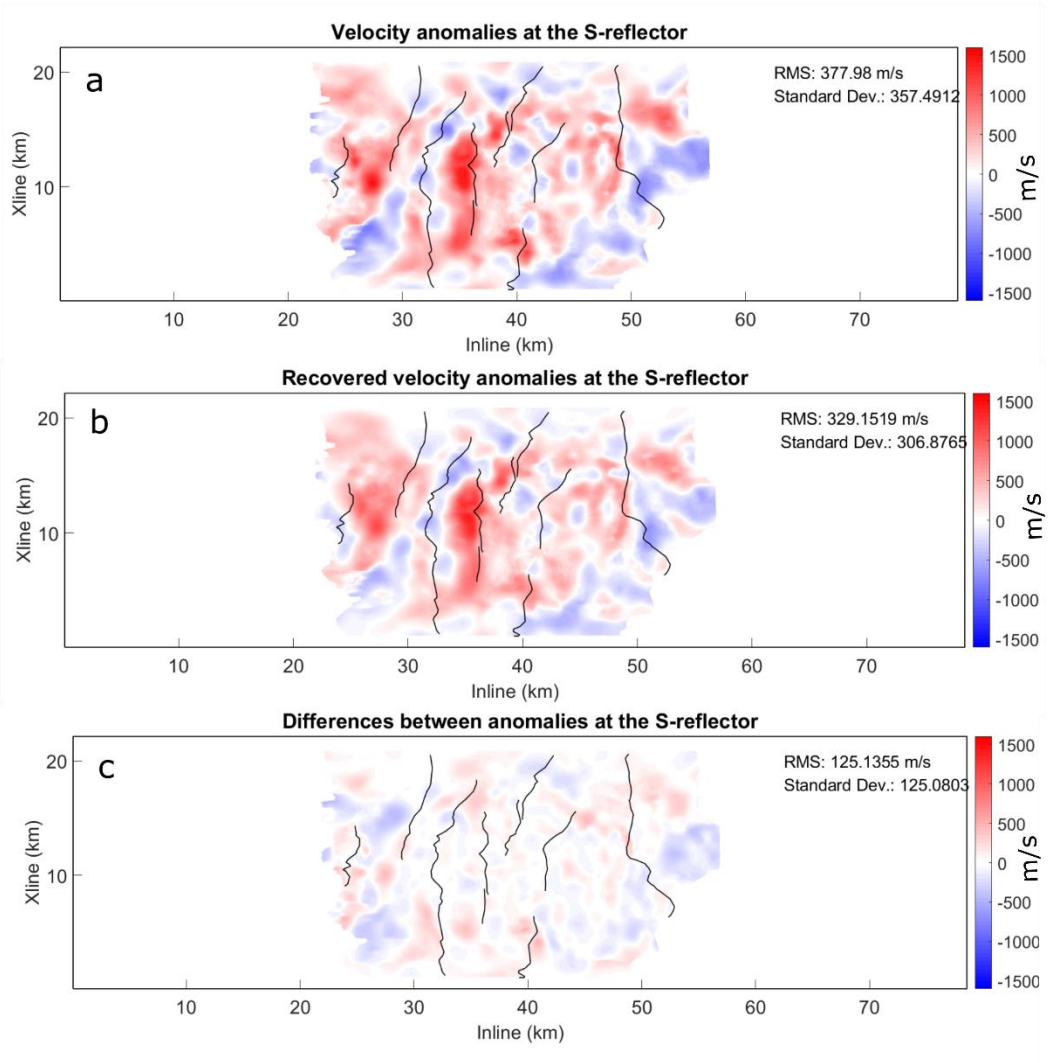
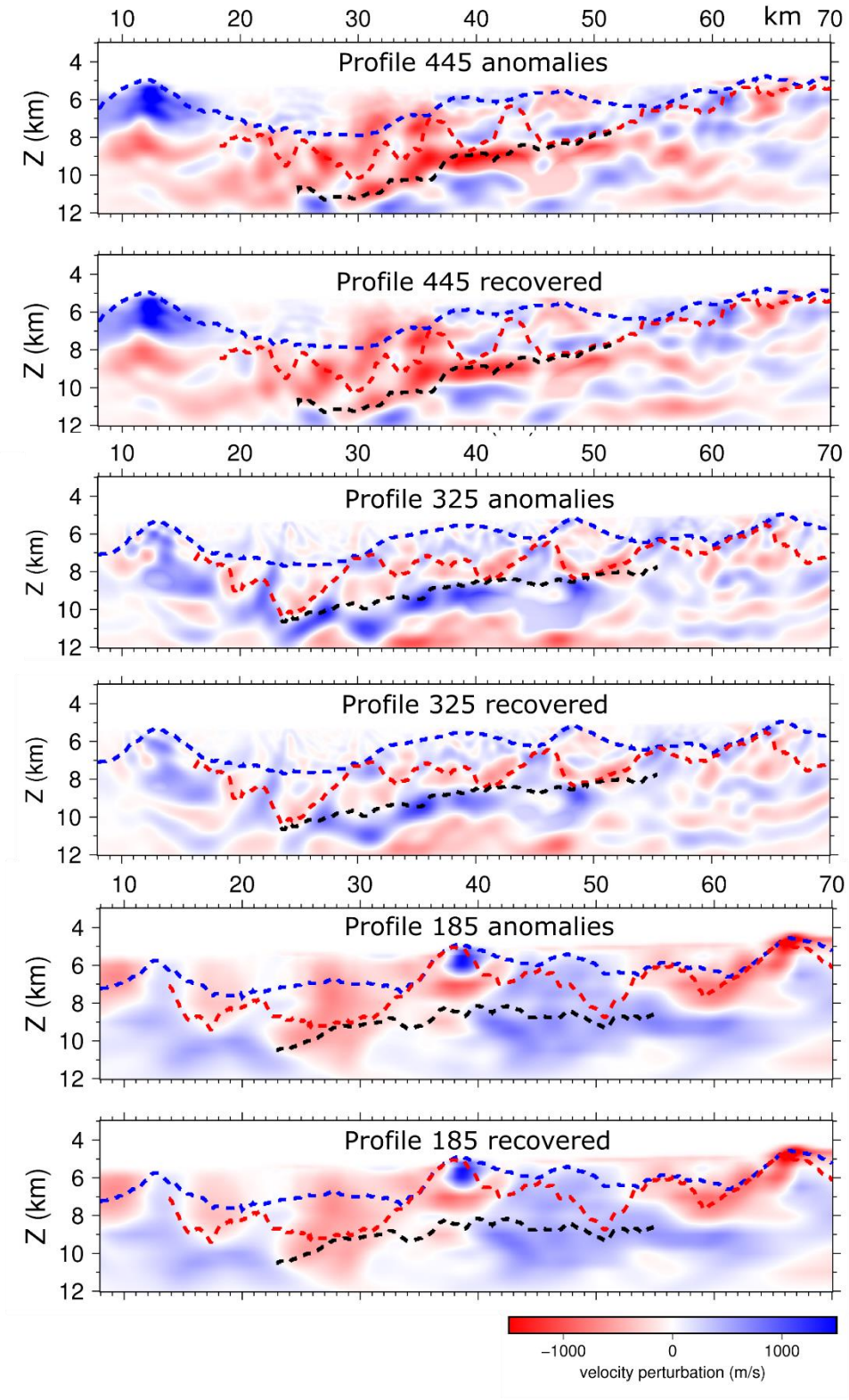
Contents of this file

Introduction

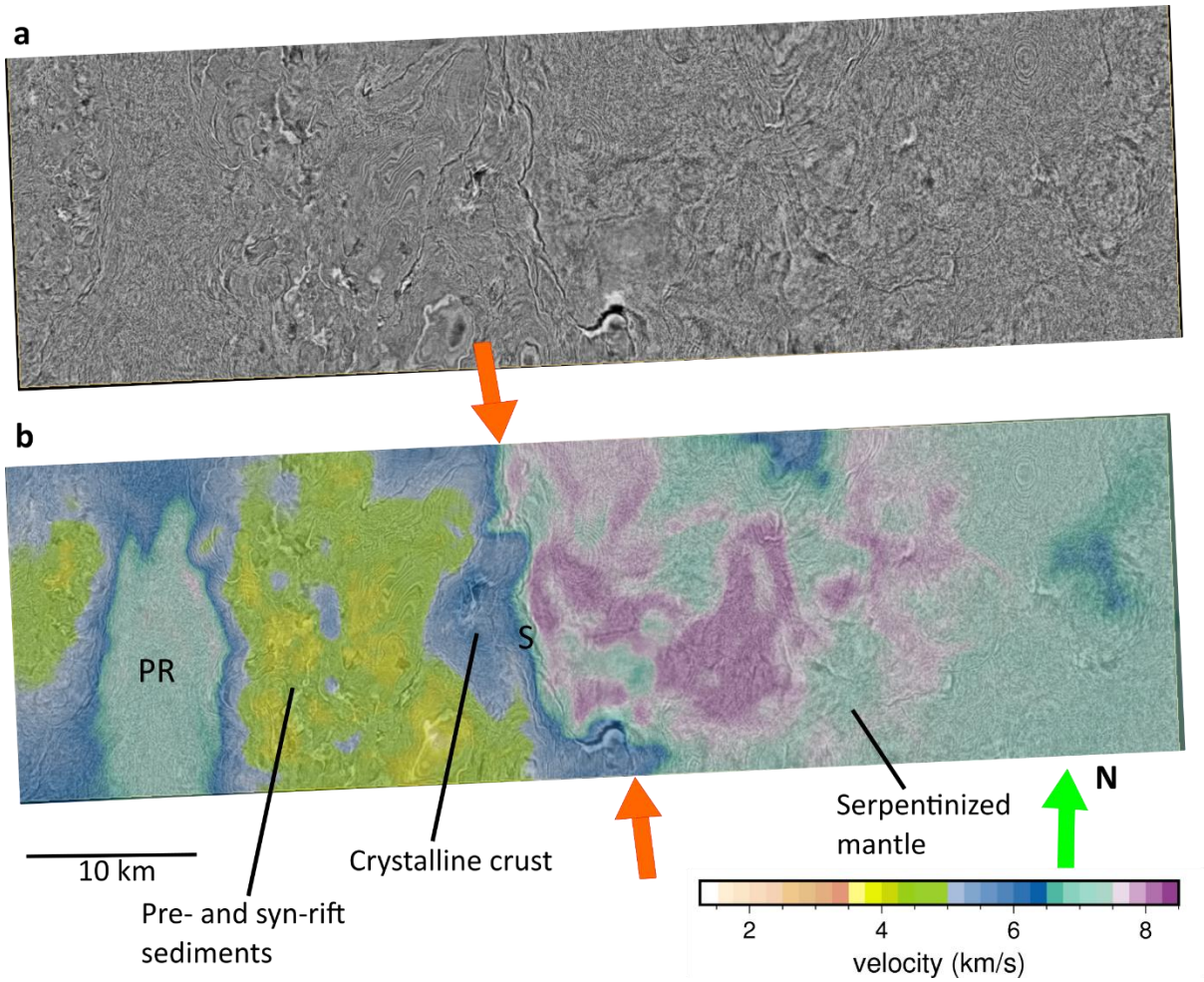
The figure names are same as seen in the main text.



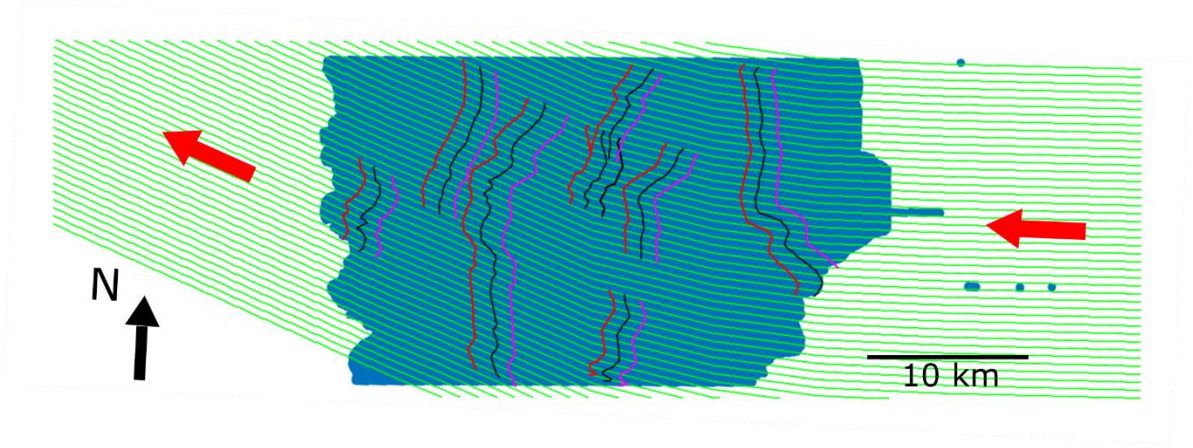
Supplementary Figure 1| Result from restoring anomaly test at the S-reflector. a) actual anomalies introduced by the 3D FWI b) recovered anomalies c) difference between actual and recovered anomalies. The black lines are the fault intersections with the S-reflector.



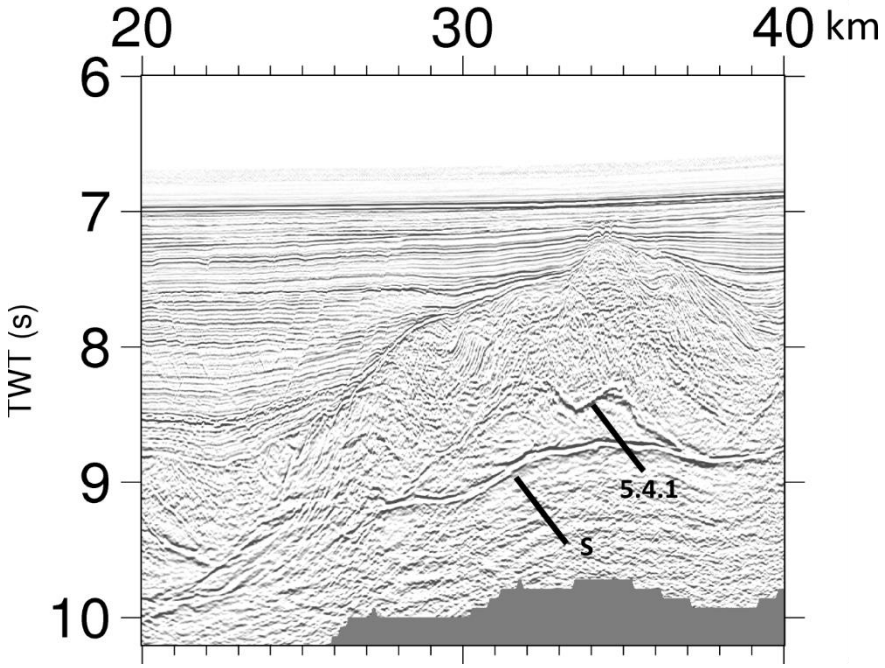
Supplementary Figure 2 | Result of the restoring anomaly test along profiles 185, 325 and 445. a) profiles are the actual anomalies b) profiles are the recovered anomalies. Colour scale for each profile are given below.



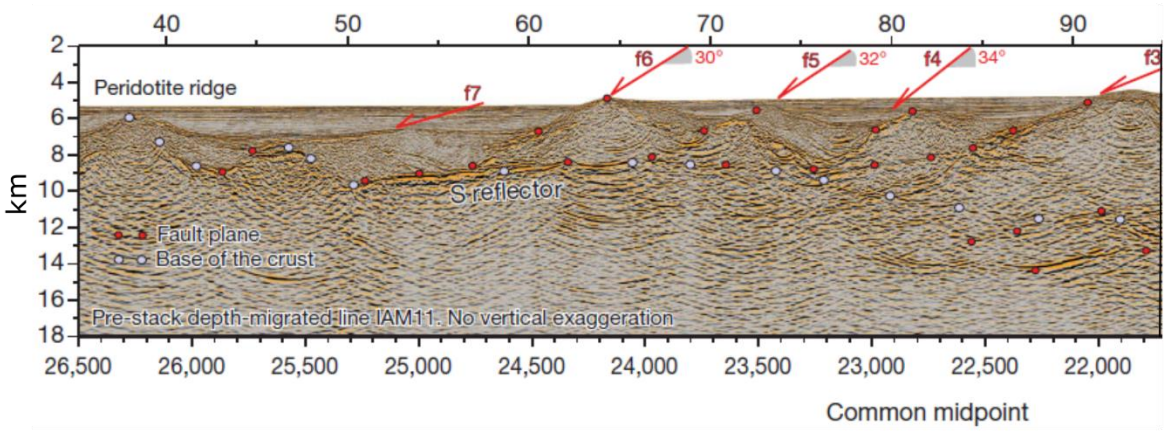
Supplementary Figure 3| a) Time slice from the 3D multichannel seismic data across the whole surface of the volume (location in Figure 1) at 9 s (average time of the S-reflector) b) 3D FWI model overlaid on the time slice at 9s. The velocity model shows a good match with the reflector (S) at the crust-mantle boundary pointed by the orange arrows. The green arrow marks north. Labels S and PR are the S-reflector and the Peridotite ridge, respectively.



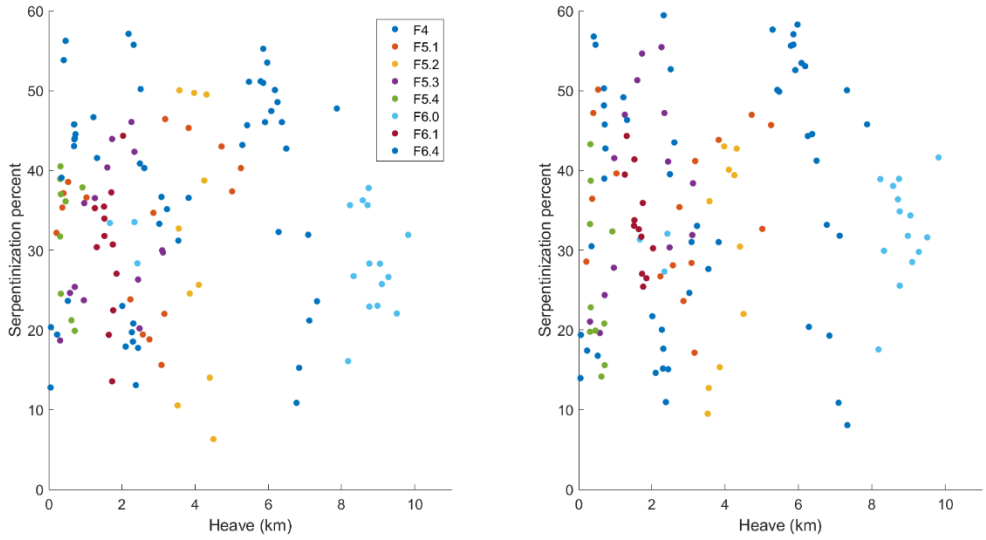
Supplementary Figure 4 | Arbitrary lines (green) plotted over the map view of the S-reflector with fault intersections marked in black and 1 km boundaries in the hanging wall and footwall sides of each fault intersection in red and magenta, respectively. The arbitrary lines are drawn in the direction of the corrugations shown using red arrows identified in the 3D time-migrated seismic volume (Lymer et al., 2019).



Supplementary Figure 5 | Seismic section 325 in time showing 5.4.1 not intersecting with the S



Supplementary Figure 6 | 2D Prestack depth migrated seismic image of the DGM (IAM 11) from Ranero & Pérez-Gussinyé, (2010). The fault numbering shown using red arrows is different from this study. The S-reflector is nearly flat with a low slope.



Supplementary Figure 7 | Serpentinization percent of the footwall (left) and hanging wall (right) sides plotted against fault heaves for the individual faults through the 3D volume. The colours corresponding to different faults are shown in the legend.