

Magmatic Activity and Dynamics of Melt Supply of Volcanic Centers of Ultraslow Spreading Ridges: Hints from Local Earthquake Tomography at the Knipovich Ridge

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Contents of this file

Figures S1 to S9

Introduction

The supporting information include seven figures. They show the horizontal (Figure S1) and vertical (Figure S2) checkerboard tests for the entire network area and the complete resultant velocity fields and Vp/Vs-ratio for the entire network area (Figure S3). Furthermore, Figures S4, S5, S6 and S7 show the ray coverage of the Logachev and the entire network area, respectively. Figure S8 shows the absolute velocities along the cross section of the Logachev area and Figure S9 the absolute velocities along the cross section of the entire network area.

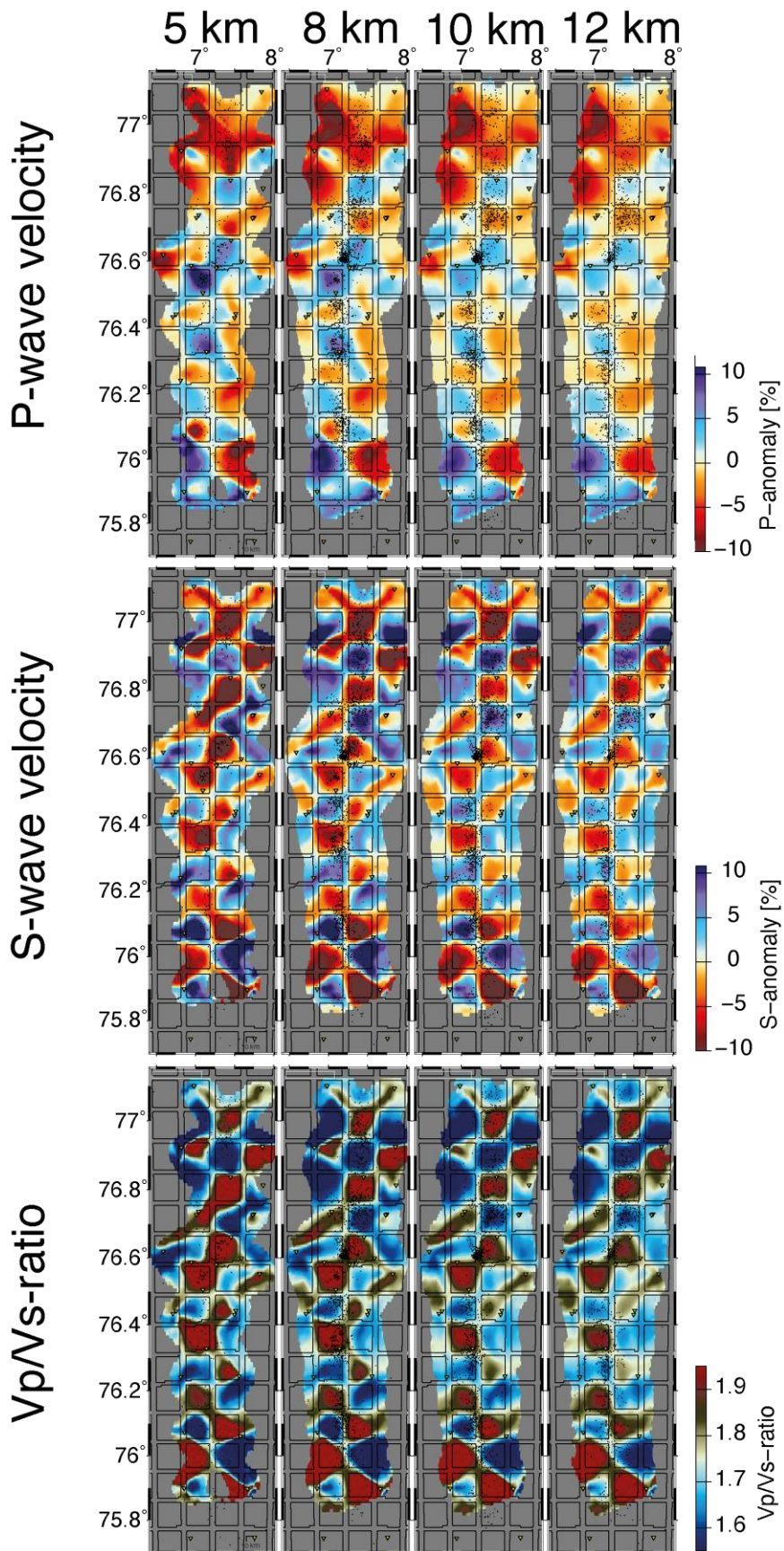


Figure S1. Checkerboard test in horizontal sections for the entire network area. The upper row of subfigures refers to the P-phase velocity structure, the middle row to S-velocity structure and the lower row to the Vp/Vs-ratio. For each the checkerboard test results are given for the four depth sections at 5, 8, 10 and 12 km below the sea level. The color code for the respective anomalies is given to the right of each row. The shapes of the checkerboard cuboids are indicated by the black lined squares. The cuboids have a side length of 8 km.

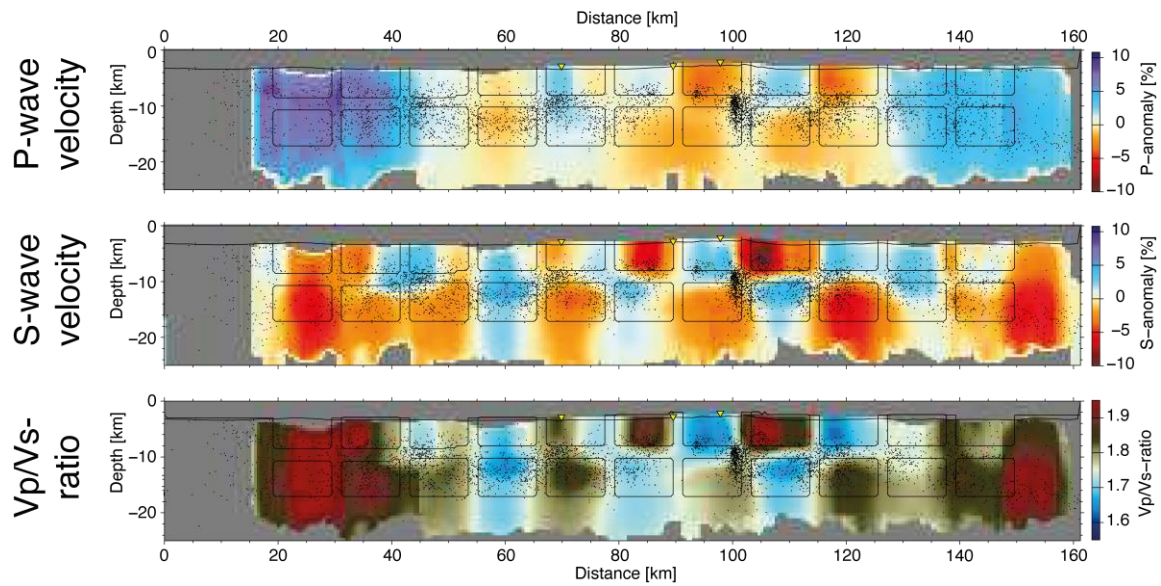


Figure S2. Checkerboard test in vertical sections of the entire network area. The upper subfigure refers to the P-velocity structures, the middle subfigure to the S-velocity structures and the lower subfigure to the Vp/Vs-ratio. The shapes of the checkerboard cuboids are indicated by the black lined squares.

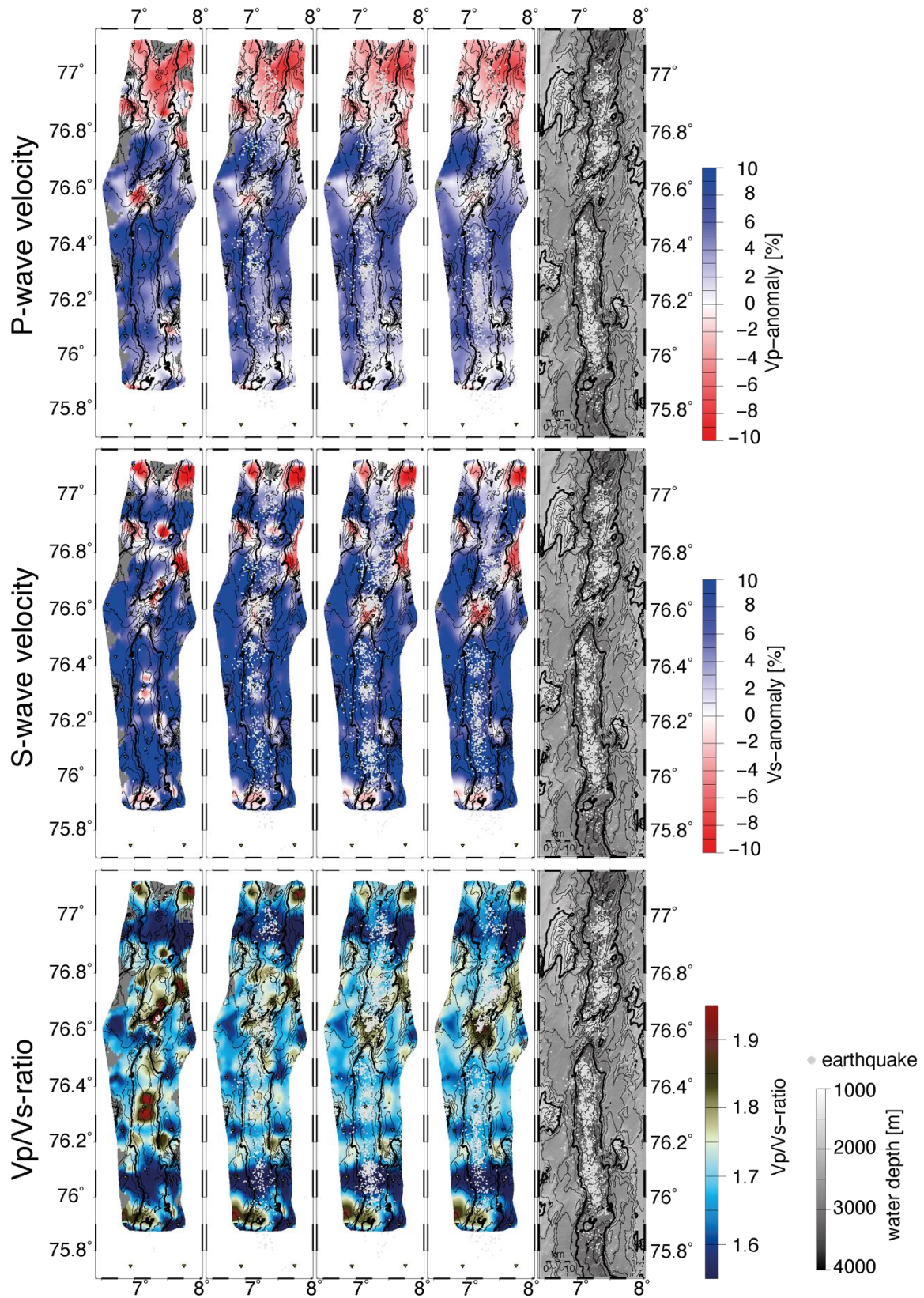


Figure S3. Tomography results for the entire network area. The upper row of subfigures refers to the P-velocity structures, the middle row to the S-velocity structures and the lower row to the Vp/Vs-ratio. Each row shows the map view at 5, 8, 10 and 12 km below the sea level. The respective color code is given to the right of each row. The gray circles mark the earthquakes, yellow triangles indicate the station positions. The bathymetric maps to the right of the map views with color coded water depth and contour lines (thicker black solid lines are 1000 m contours, thinner black solid lines are 200 m contours).

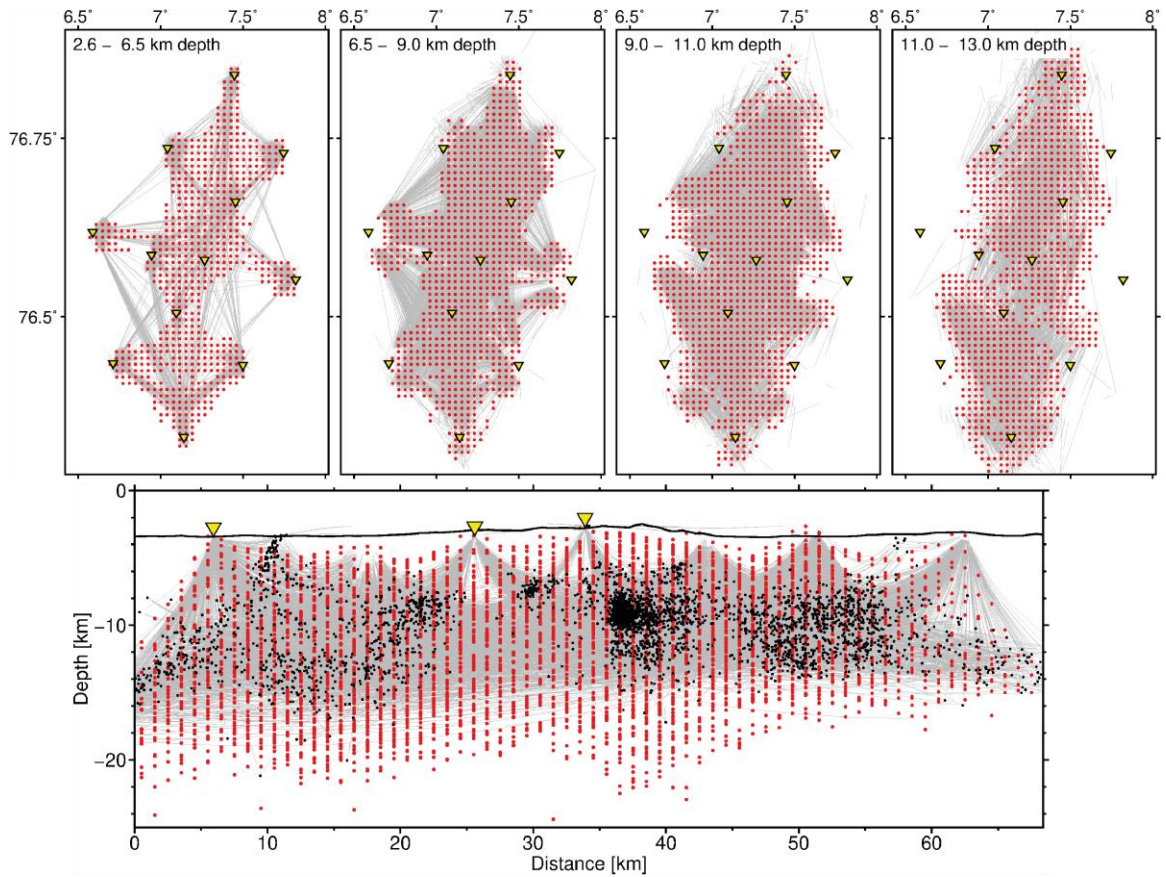


Figure S4. Ray coverage of P-waves of the Logachev area. Stations are indicated by yellow triangles, rays as gray lines. Red dots mark nodes used for inversion. The upper row of subfigures shows the map view corresponding to 5, 8, 10 and 12 km below the sea level with depth range used for ray plotting given in the upper left corner. In the lower subfigure ray coverage of the cross section is shown with earthquakes that are marked by black circles.

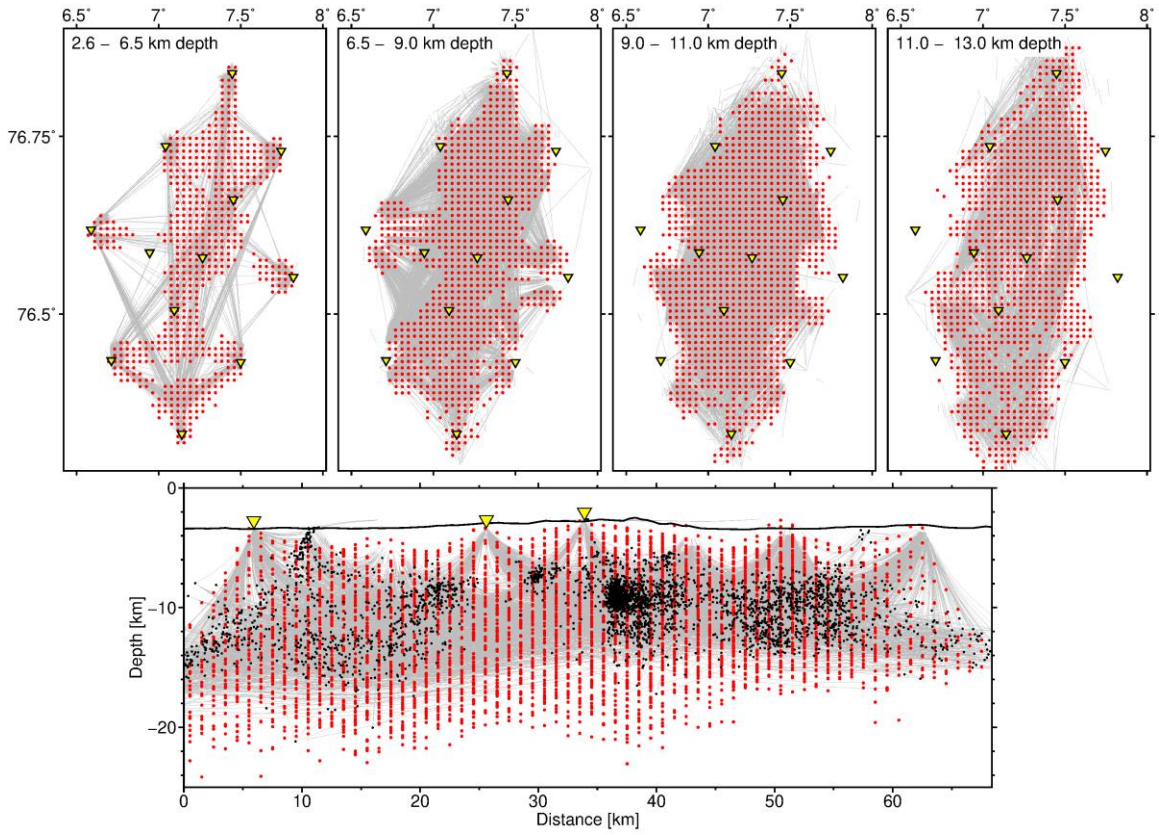


Figure S5. Ray coverage of S-waves of the Logachev area. Stations are indicated by yellow triangles, rays as gray lines. Red dots mark nodes used for inversion. The upper row of subfigures shows the map view corresponding to 5, 8, 10 and 12 km below the sea level with depth range used for ray plotting given in the upper left corner. In the lower subfigure ray coverage of the cross section is shown with earthquakes that are marked by black circles.

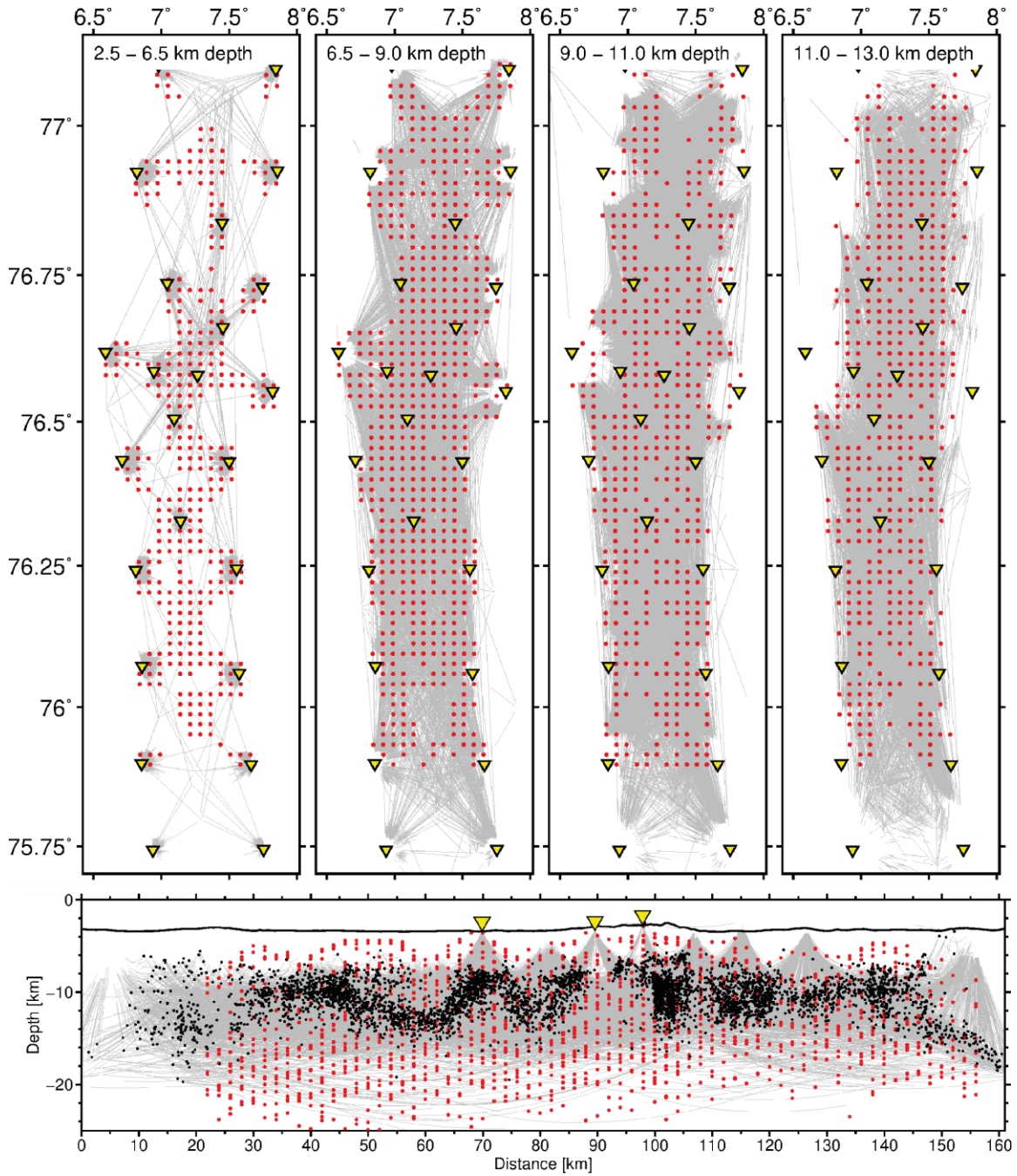


Figure S6. Ray coverage of P-waves of the entire network area. Stations are indicated by yellow triangles, rays as gray lines. Red dots mark nodes used for inversion. The upper row of subfigures shows the map view corresponding to 5, 8, 10 and 12 km below the sea level with depth range used for ray plotting given in the upper left corner. In the lower subfigure ray coverage of the cross section is shown with earthquakes that are marked by black circles.

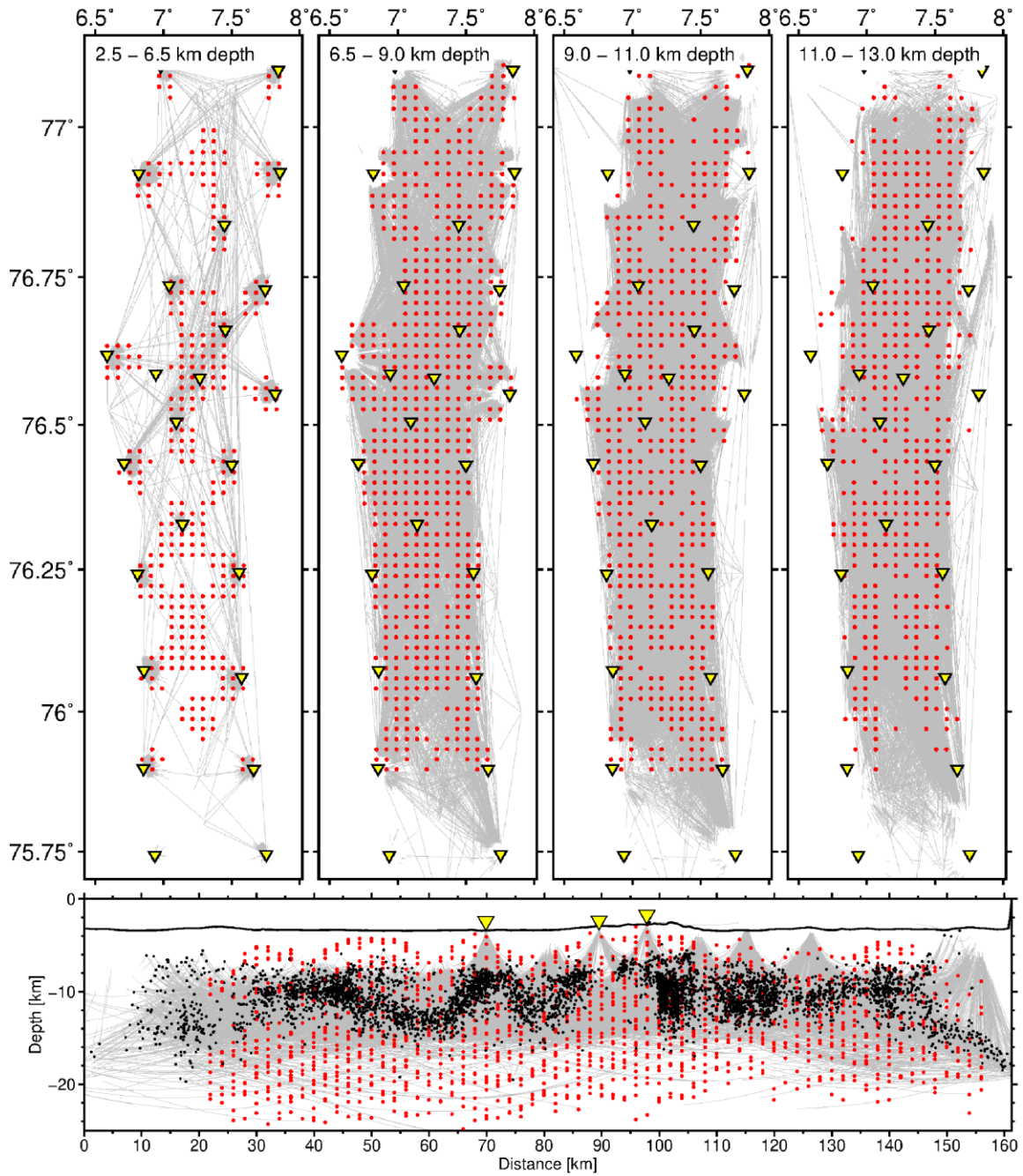


Figure S7. Ray coverage of S-waves of the entire network area. Stations are indicated by yellow triangles, rays as gray lines. Red dots mark nodes used for inversion. The upper row of subfigures shows the map view corresponding to 5, 8, 10 and 12 km below the sea level with depth range used for ray plotting given in the upper left corner. In the lower subfigure ray coverage of the cross section is shown with earthquakes that are marked by black circles.

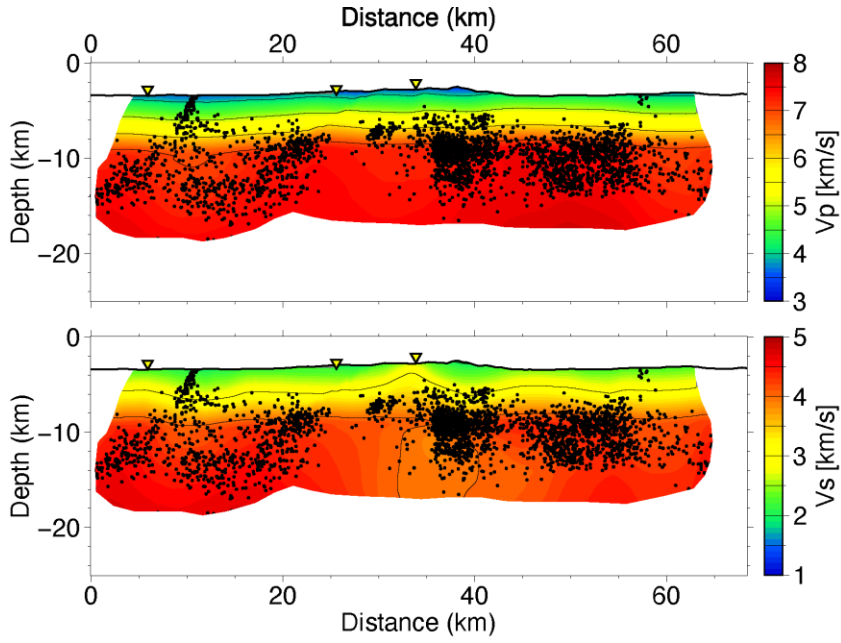


Figure S8. Absolute velocity for the Logachev area along 7.25°N cross section as indicated in Figure 4 in the main text. Velocity contour lines are indicated every 1 km/s.

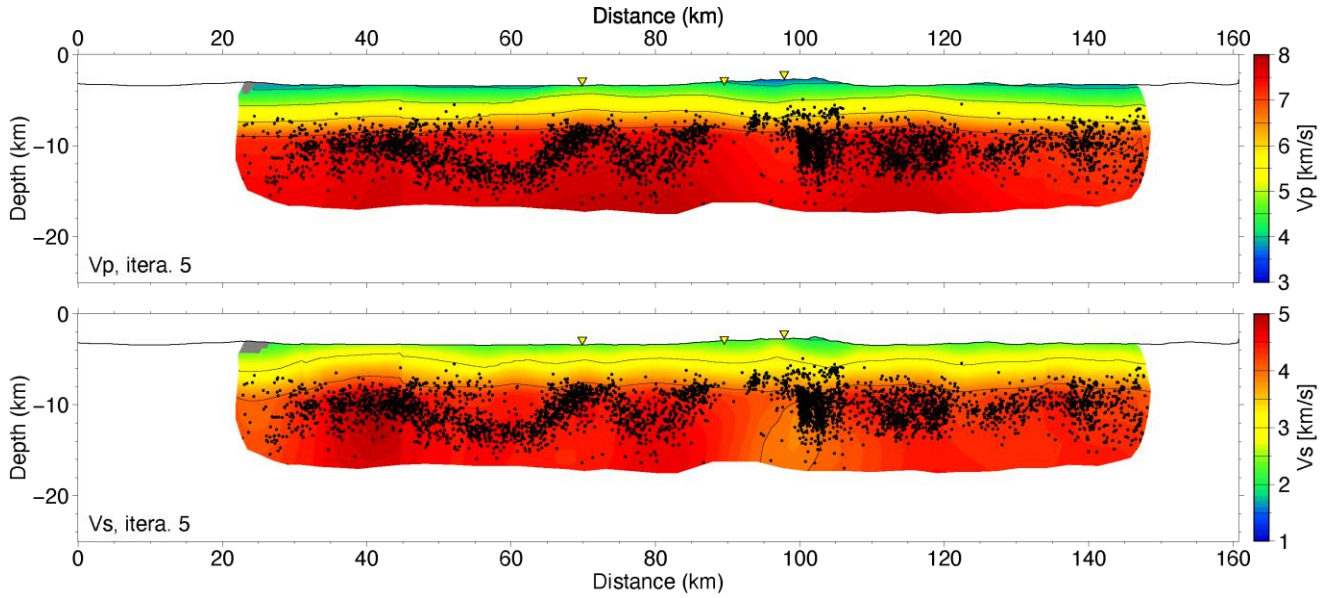


Figure S9. Absolute velocity for the entire network area along 7.25°N cross section as indicated in Figure 5 in the main text. Velocity contour lines are indicated every 1 km/s.