# Towards a better understanding of the Los Angeles basin structure using data from the LAB2022 nodal array experiment

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## Array architecture

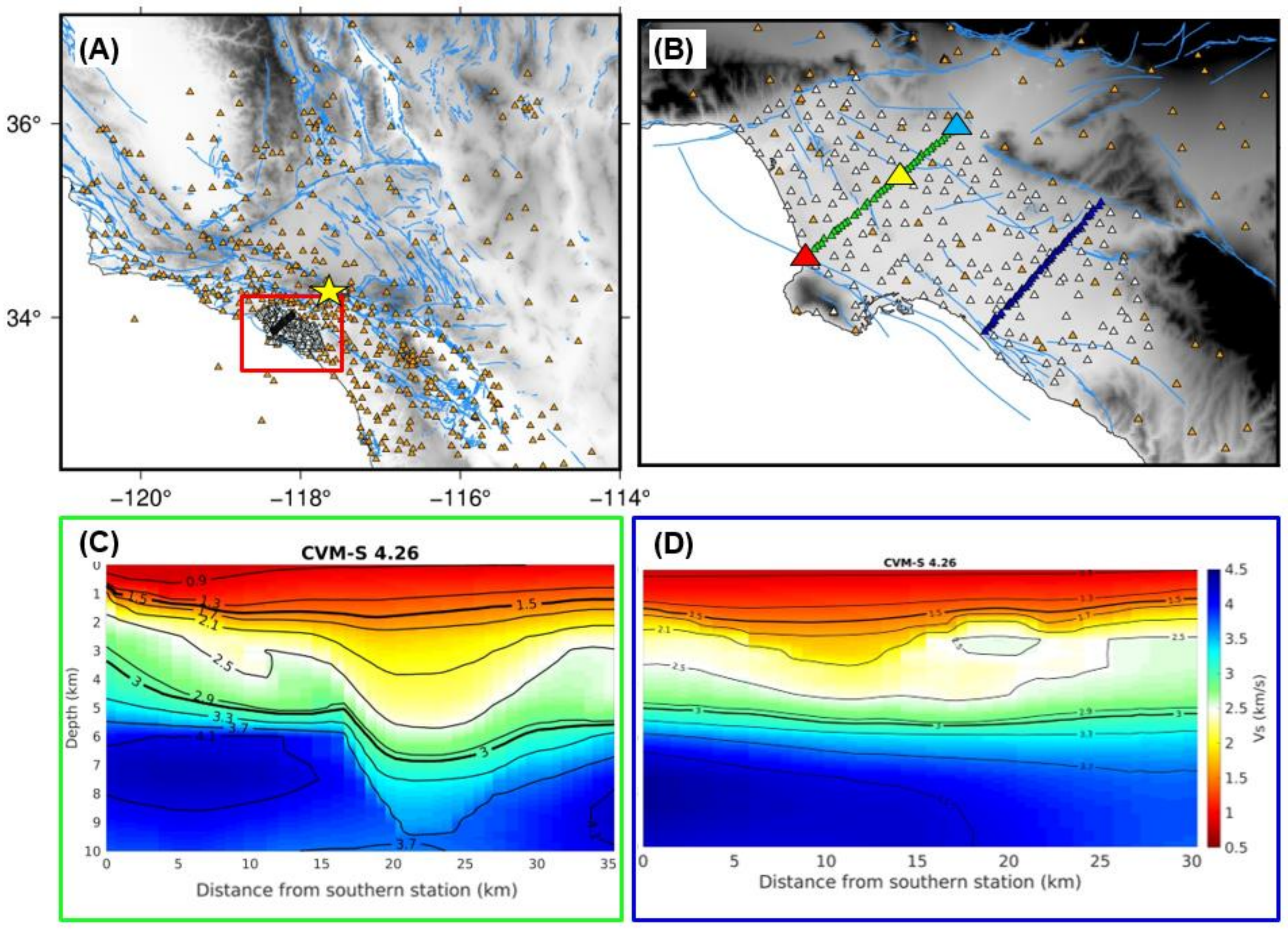



**Figure 1.** (A) Station map showing the locations of regional stations (orange triangles) and the new nodal arrays (white triangles). (B) Inset map.from (A) zooming in the LA basin. Light-blue star denotes location of source station in Figure 2a. Yellow star corresponds to source beam center in Figure 3a-c. Red star corresponds to receiver beam center in Figure 3. (C) Shear velocity (Vs) models extracted from CVM S-4.26 along the two linear arrays.

## Ambient-Noise Cross-Correlations

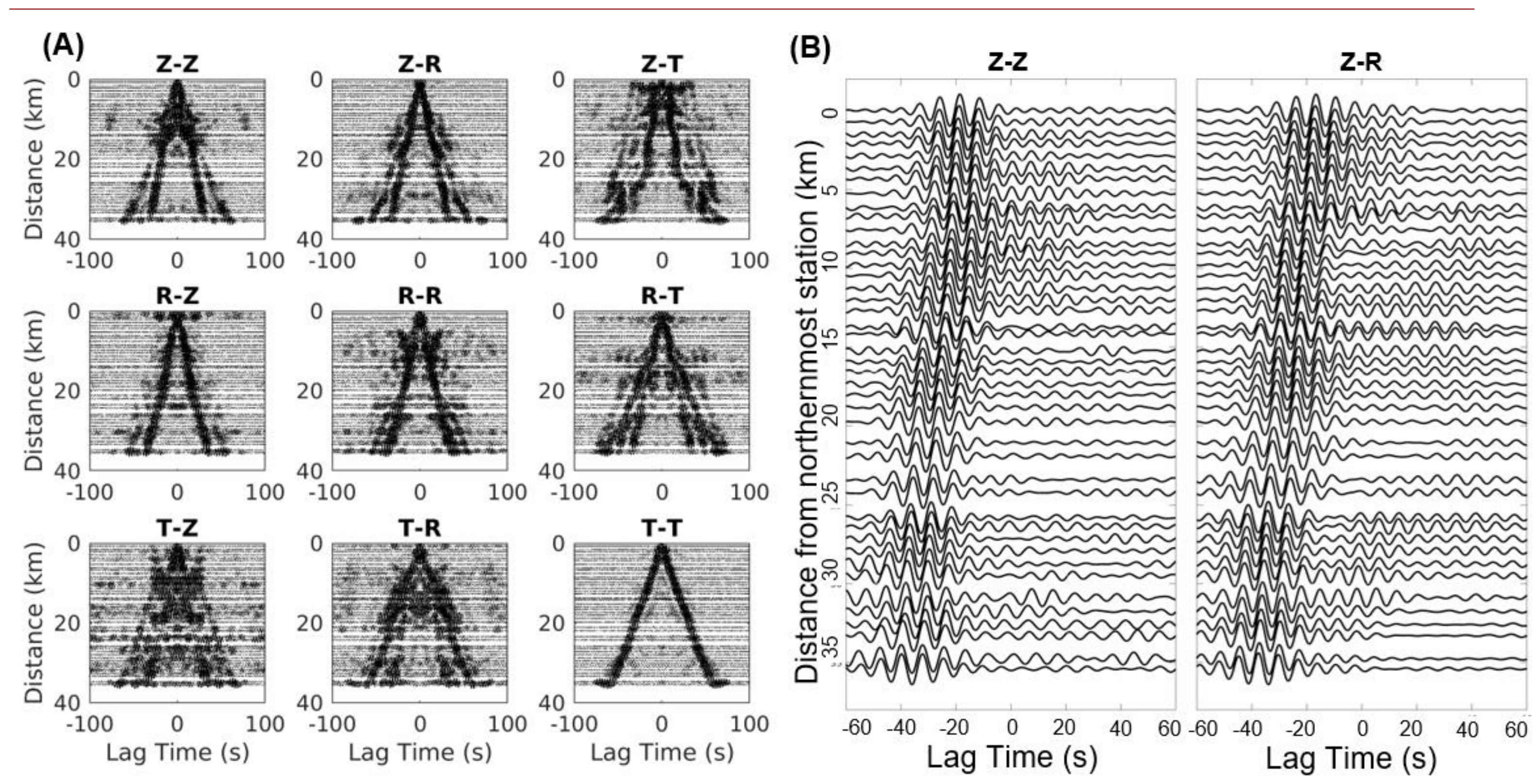



**Figure 2.** (A) 9-component ambient-noise cross-correlogram record sections between virtual source station (nodal station W01; light-blue triangle in Fig 1b) to all WestLine receivers, band-passed near 3s period. (B) Z-Z and Z-R component record-sections between virtual source station BFS (broad-band station; yellow star in Fig 1a) to all WestLine nodal stations, band-passed near 8s period.

## Beamforming

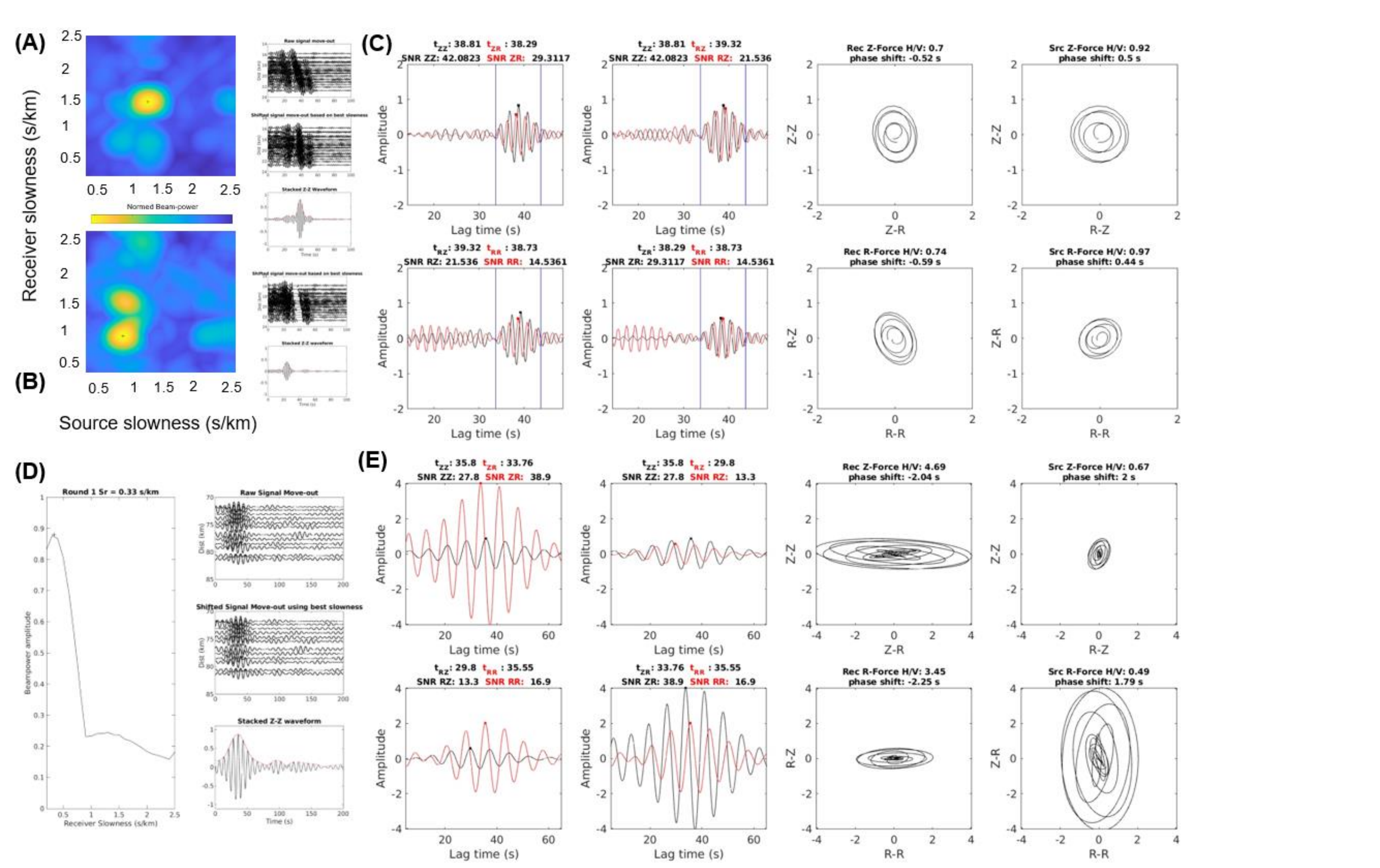



**Figure 3.** (A) Double beamforming example for the pair W20-W48 depicting the beampower plot, the signal move-out before and after shifting and the stacked waveform. (B) Similar to (A), but for the higher mode. (C) Example Rayleigh wave H/V measurement for the example in A. The four panels to the left depict the waveforms (components in title of each plot), while the four panels to the right depict the particle motion for the signal window enclosed by the blue bars. (D) Example of single beamforming using regional station BFS as the source and W48 as the beam center. (F) Similar to (D) but for measuring H/V using the regional network stations as virtual sources.

## Love wave phase velocities

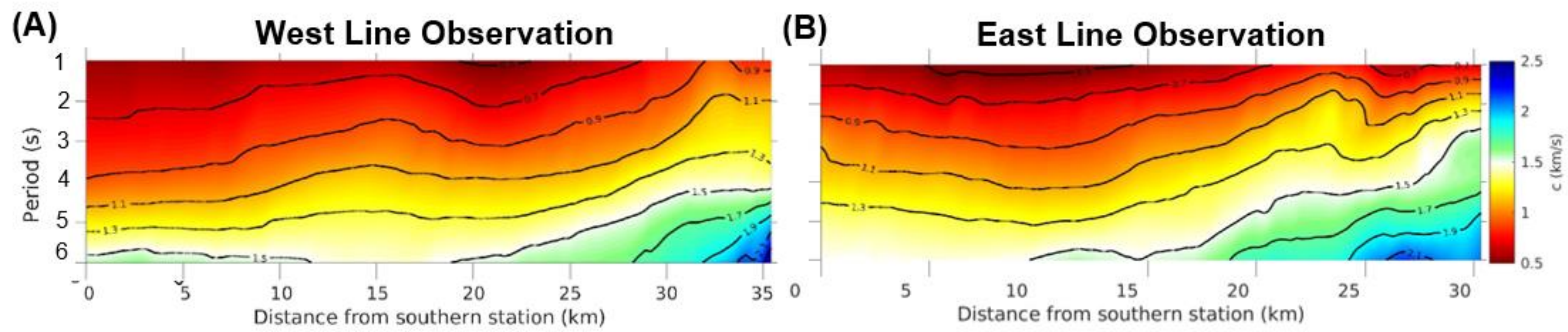



**Figure 4.** (A) Measured Love wave phase velocities across the WestLine for 1-6s periods. (B) Same as (A), but for the EastLine.

## Rayleigh wave phase velocities (fundamental mode)

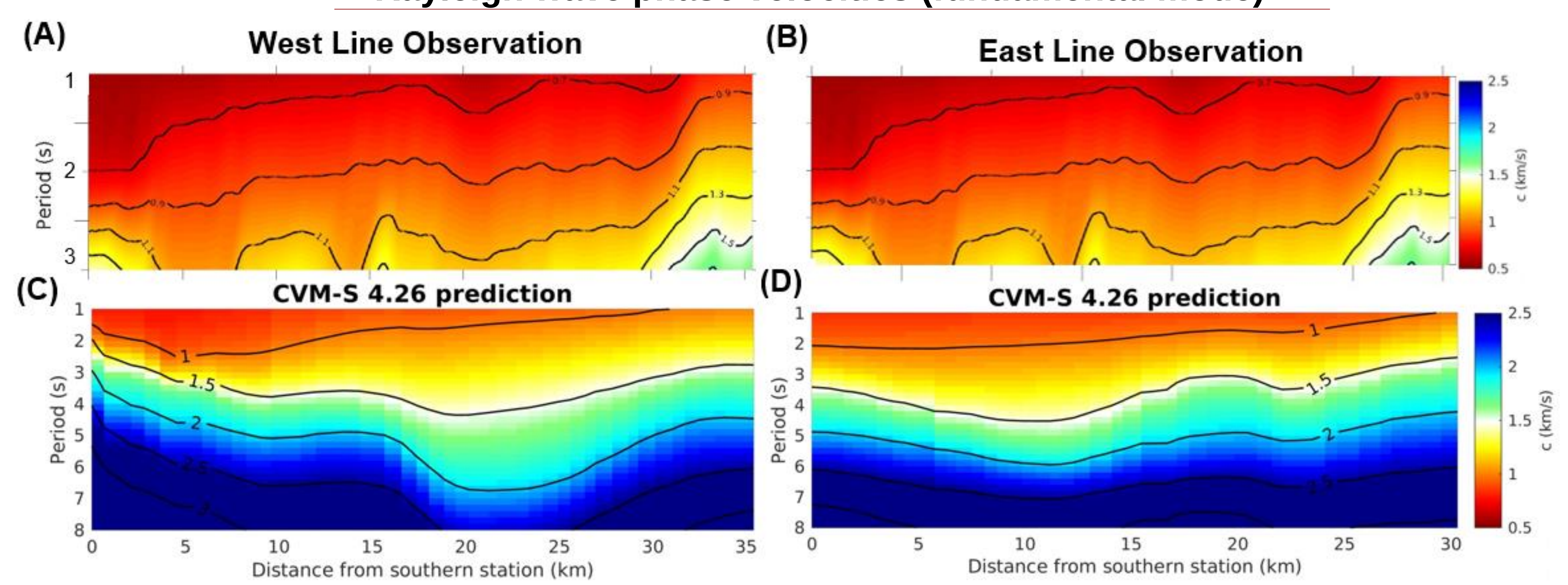



**Figure 5.** (A) Measured Rayleigh wave fundamental mode phase velocities across the WestLine for 1-3s periods. (B) Same as (A), but for the EastLine. (C) CVM-S 4.26 predictions using the model shown in Fig 1c. (D) Same as (C), but for the EastLine.

## Rayleigh wave phase velocities (higher mode)

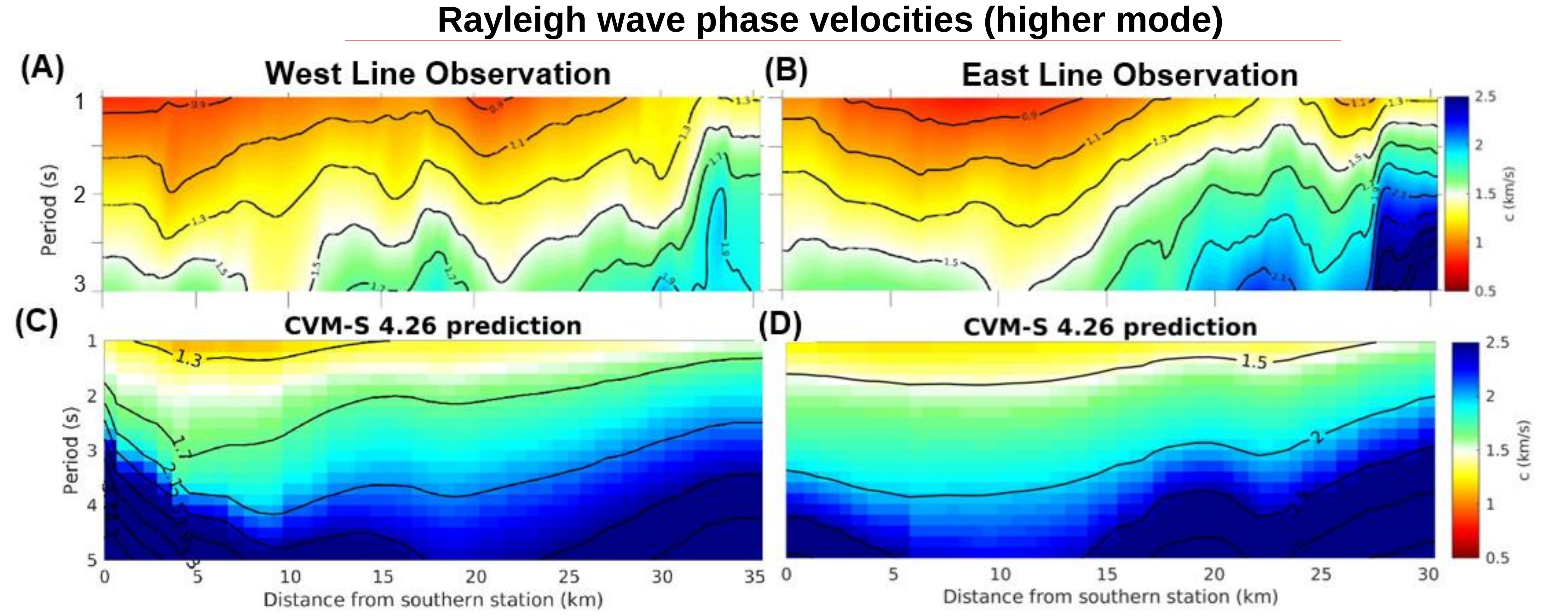
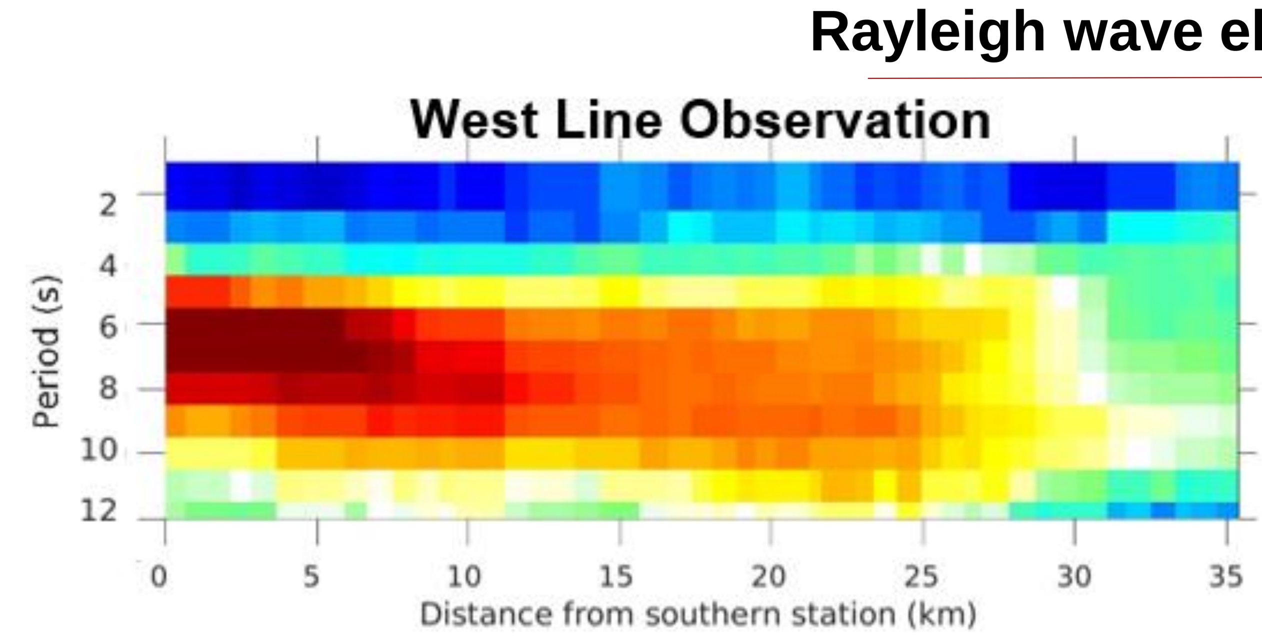



**Figure 6.** (A) Measured Rayleigh wave higher mode phase velocities across the WestLine for 1-3s periods. (B) Same as (A), but for the EastLine. (C) CVM-S 4.26 predictions using the model shown in Fig 1c. (D) Same as (C), but for the EastLine.

## Rayleigh wave ellipticity (fundamental mode)



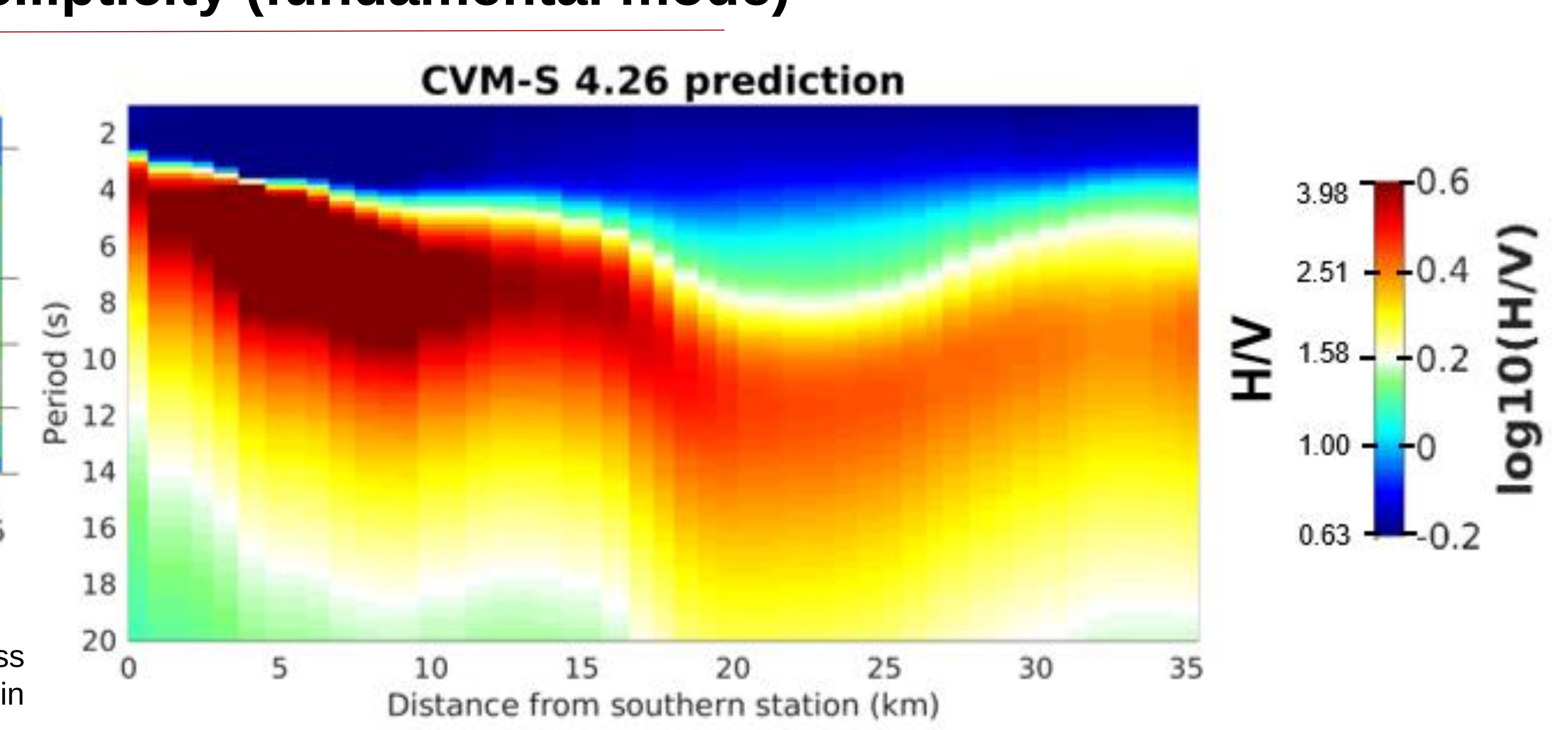




**Figure 7.** (A) Measured Rayleigh ellipticity (fundamental mode) or H/V ratio across the West Line. (B) Predicted Rayleigh wave ellipticity using the model shown in Figure 1c.