Supporting Online Material for

DETERMINATION OF THE SHEAR WAVE VELOCITY STRUCTURE OF SUBSTATIONS BY THE HVSR INVERSION METHOD USING BROADBAND AND STRONG GROUND MOTION EARTHQUAKE DATA IN THE LAKE VAN REGION, EASTERN TÜRKIYE

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PDF file includes:
Figures S1–S11

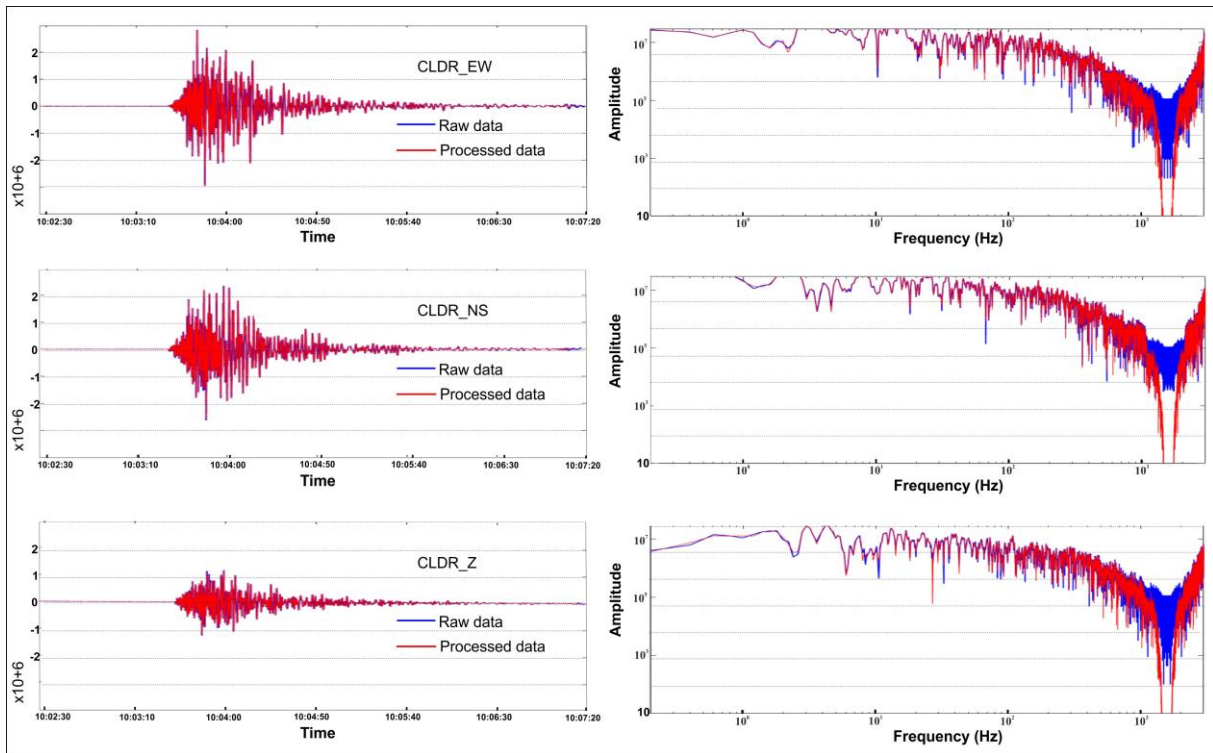**Fig. S1** Example of triaxial seismogram waveform (E-W, N-S, and vertical) and amplitude spectra for the Van-Saray earthquake (44.02^{0}N, 38.47^{0}E, M$_w$=5.4, and h=7.48 km), which occurred on 25 June 2020 and was recorded at the KOERI broadband station CLDR
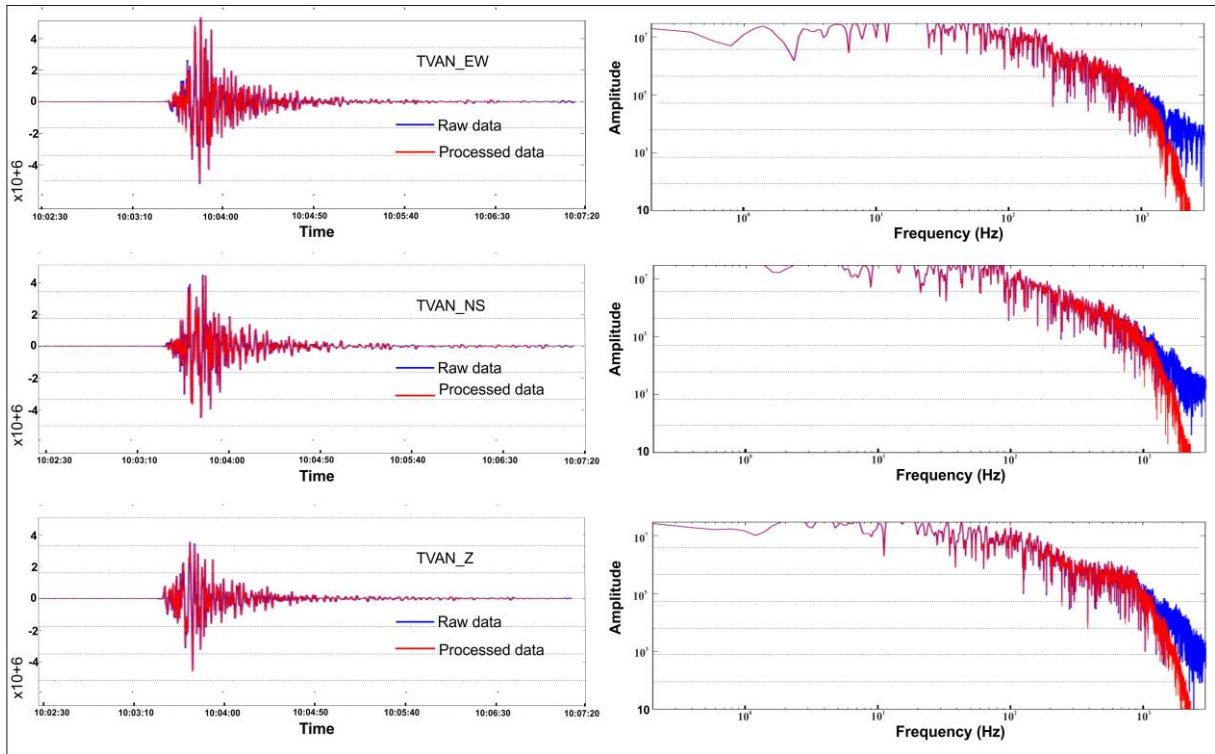
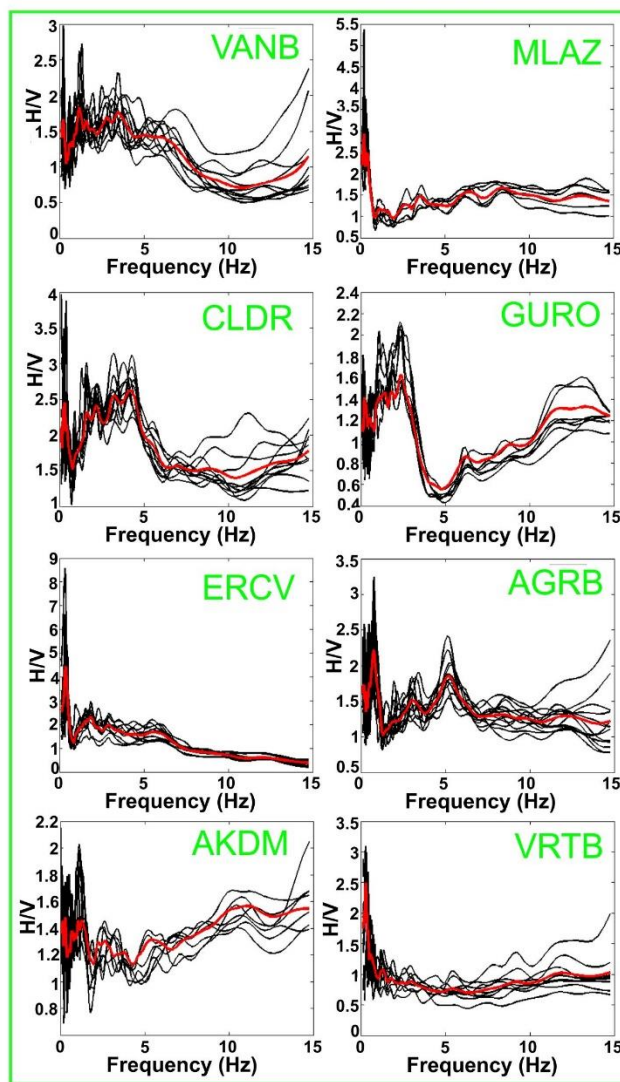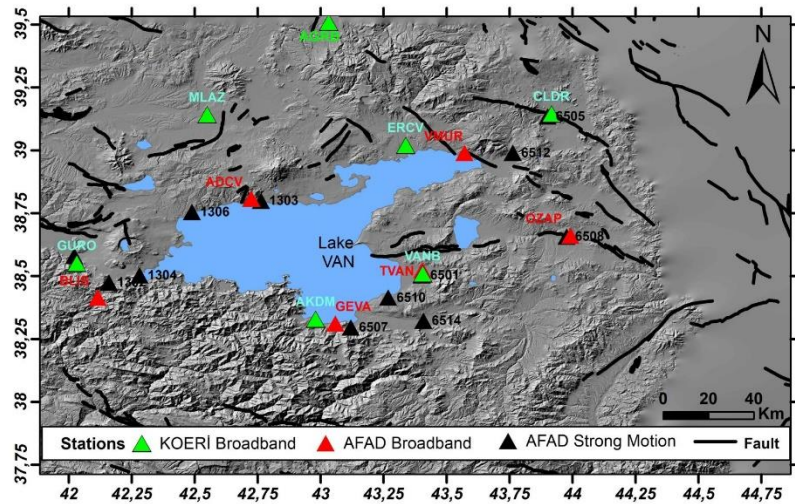**Fig. S2** Similar to Fig. S1, but for the AFAD broadband station TVAN

Fig. S3 (**a**) The map shows the locations of broadband and strong motion stations. (**b**) The information on the fundamental resonance frequency and amplitude values of the KOERI stations. Each black curve represents a different earthquake record curve for each station, and the red thick lines show the average EHVSR curves
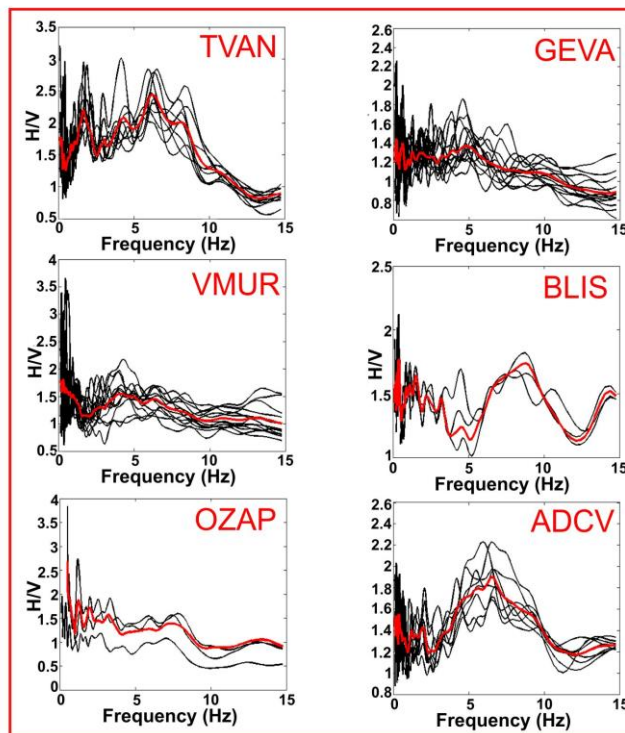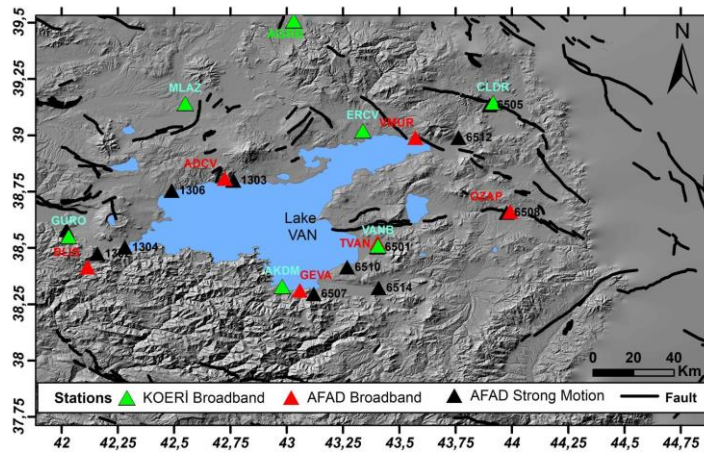
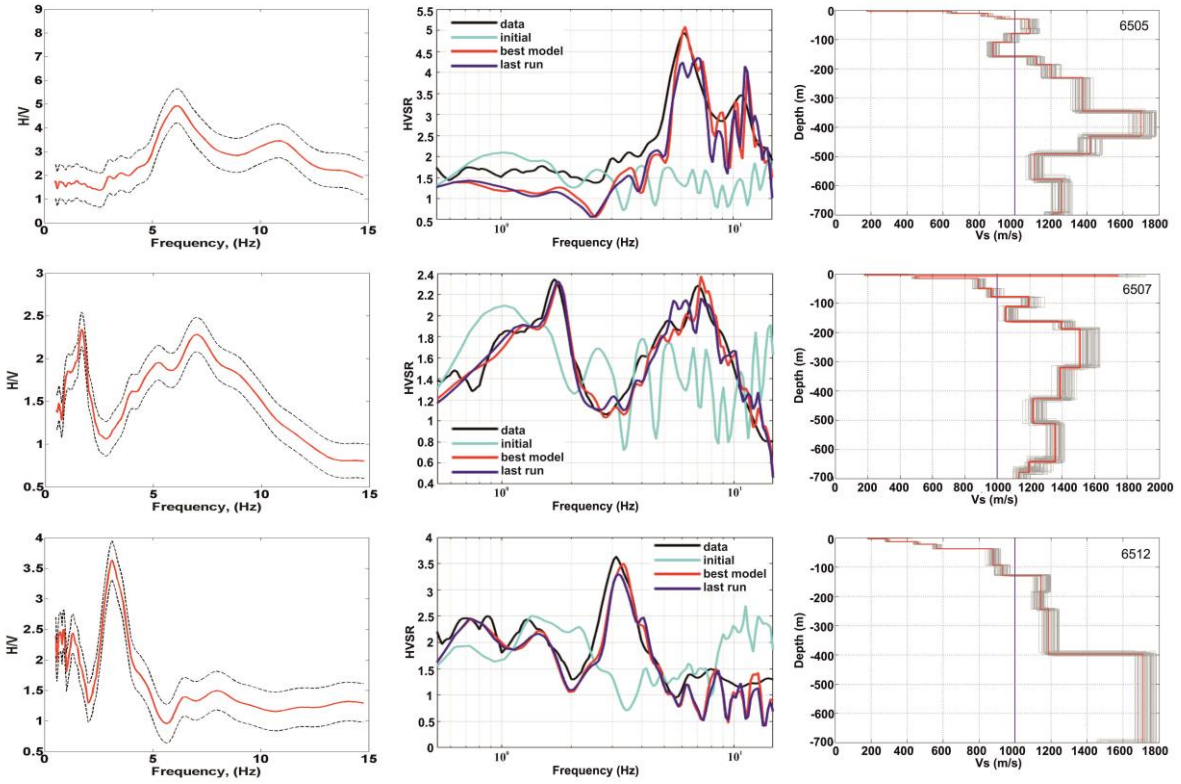**Fig. S4** Similar to Fig. S3, but for the AFAD broadband stations

Fig. S5 The inversion results for the strong motion stations (6505, 6507, and 6512). The left panel shows the mean curves and standard deviations, the middle panel shows the inversion results, and the right panel demonstrates the best Vs velocity models
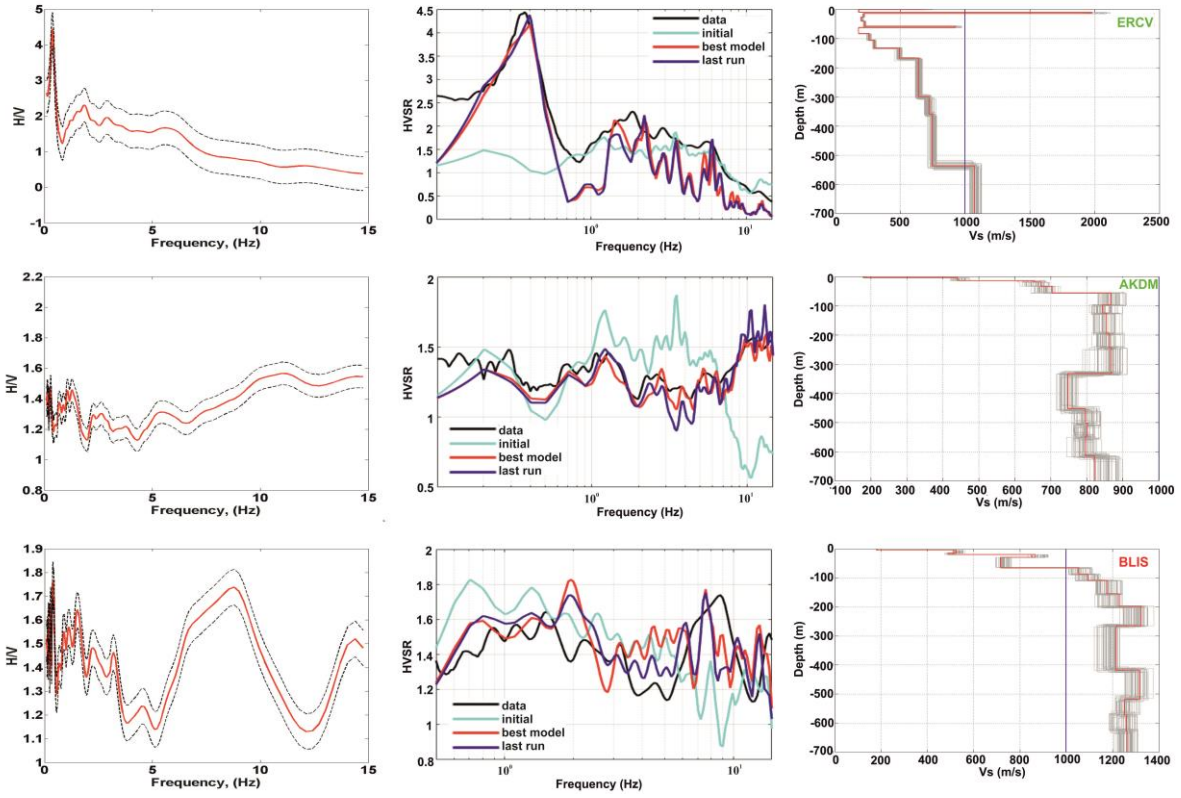
Fig. S6 Similar to Fig. S5, but for broadband stations (ERCV, AKDM, and BLIS)
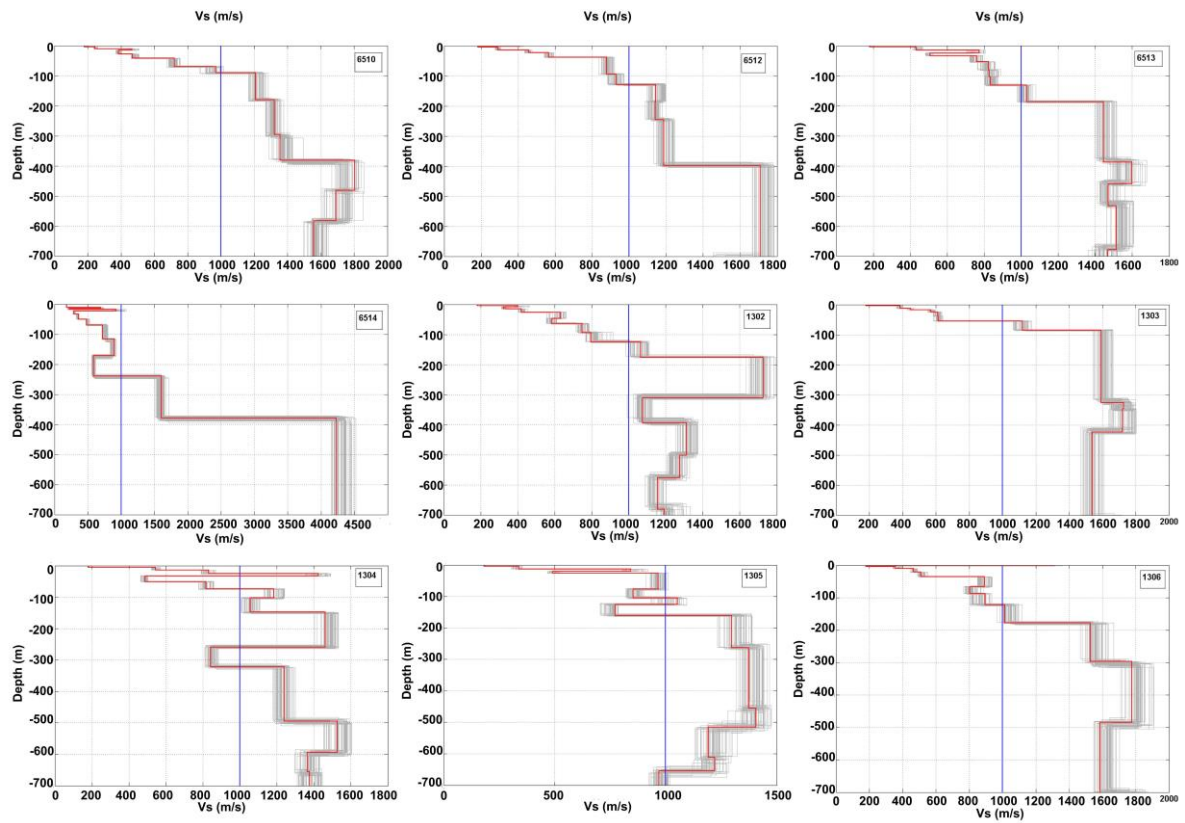
Fig. S7 The results of the optimum Vs velocity models for strong motion stations 6510, 6512, 6513, 6514, 1302, 1303, 1304, 1305, and 1306
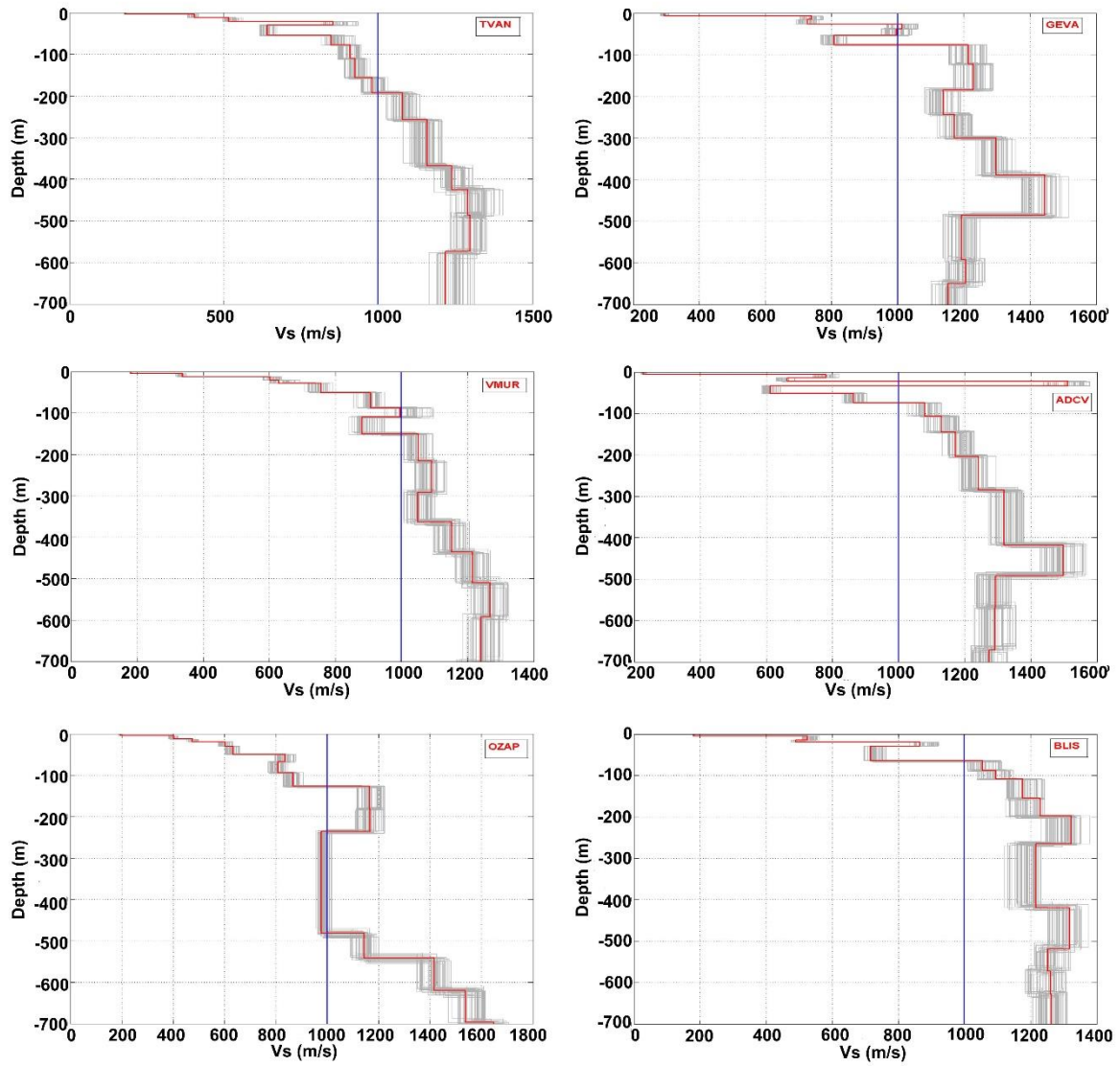
Fig. S8 Similar to Fig. S7, but for broadband stations (TVAN, GEVA, VMUR, ADCV, OZAP, and BLIS)
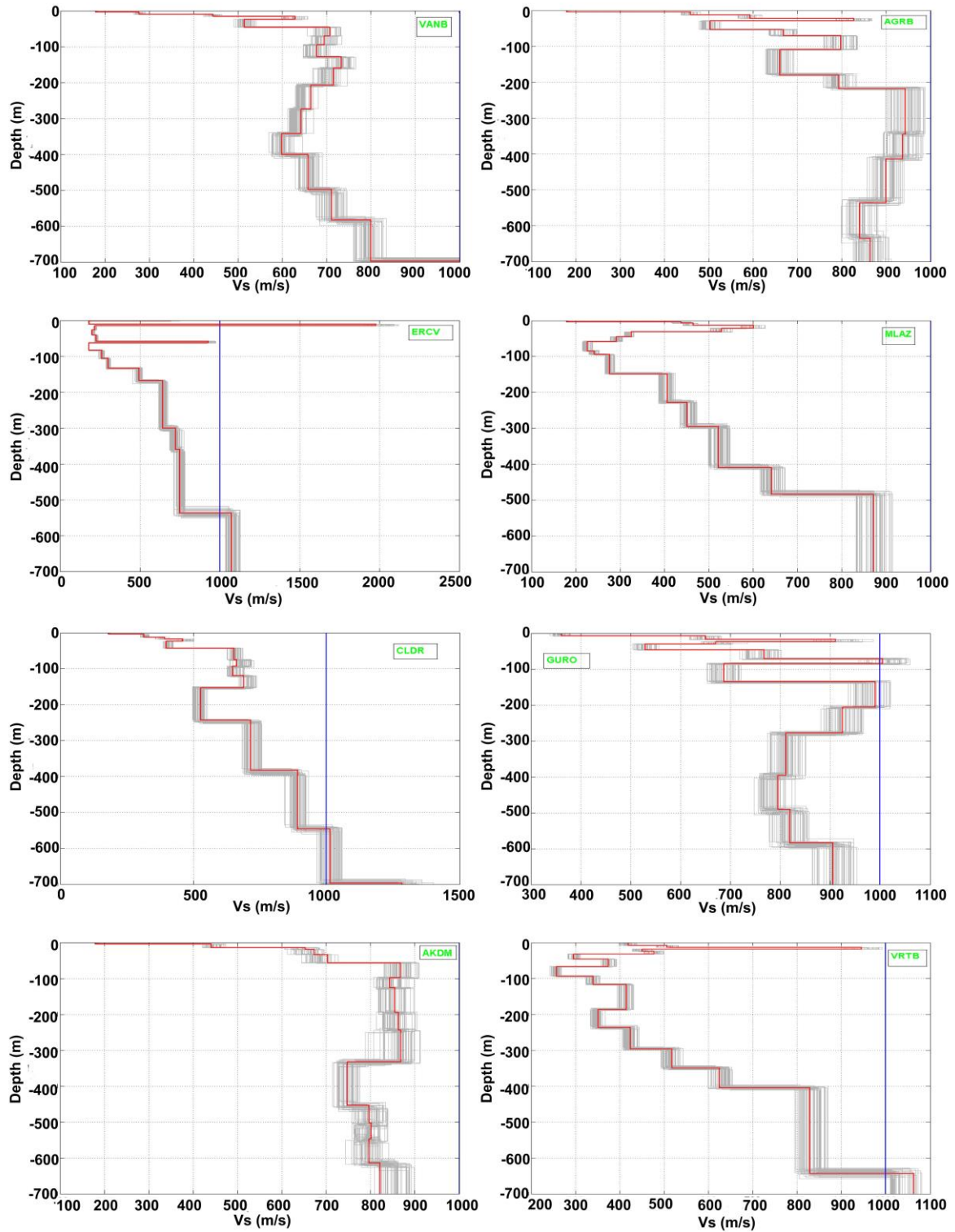
Fig. S9 Similar to Fig. S7, but for broadband stations (VANB, AGRB, ERCV, MLAZ, CLDR, GURO, AKDM, and VRTB)
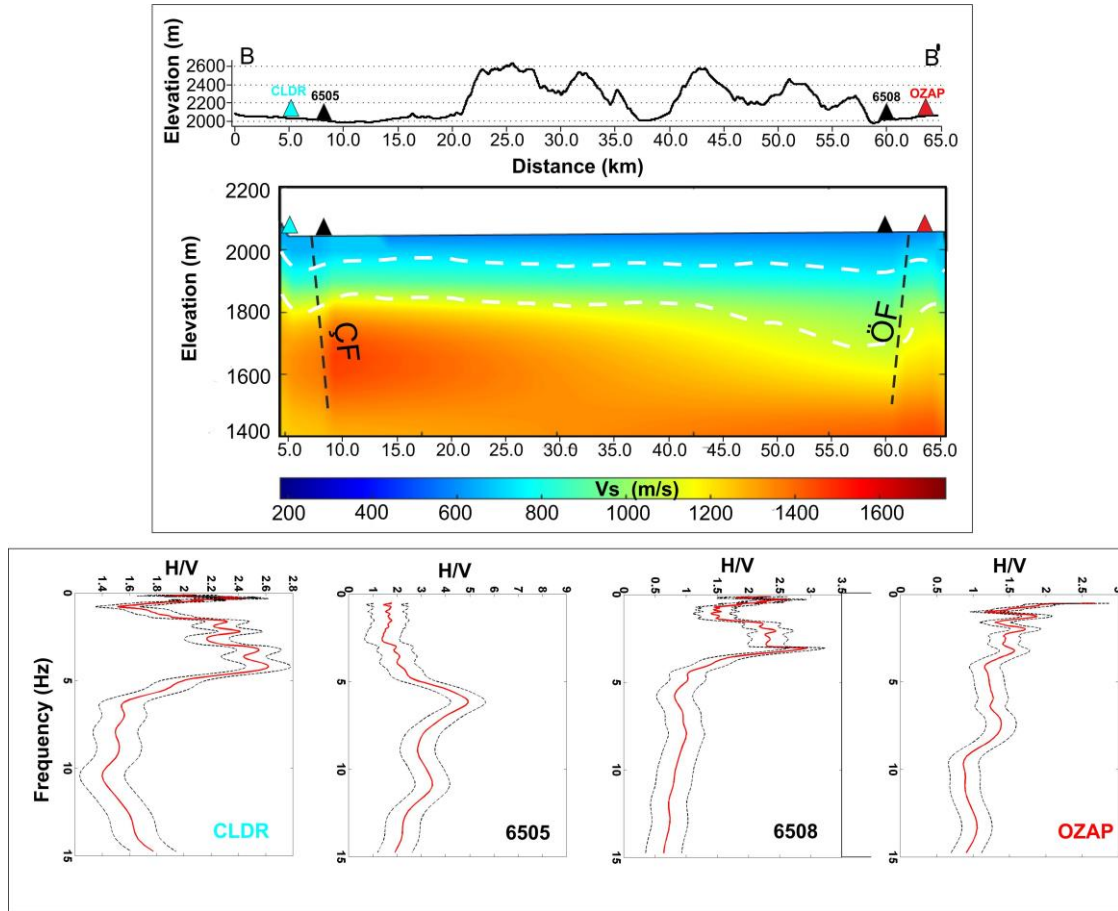
Fig. S10 (a) The northwest-southeast directional cross-section (B-B') is obtained from substation Vs velocities by inversion of the EHVSR curves. Abbreviations: ÇF; Çaldıran fault zone, ÖF; Özalp thrust fault. **(b)** The EHVSR curves are obtained from the inversion
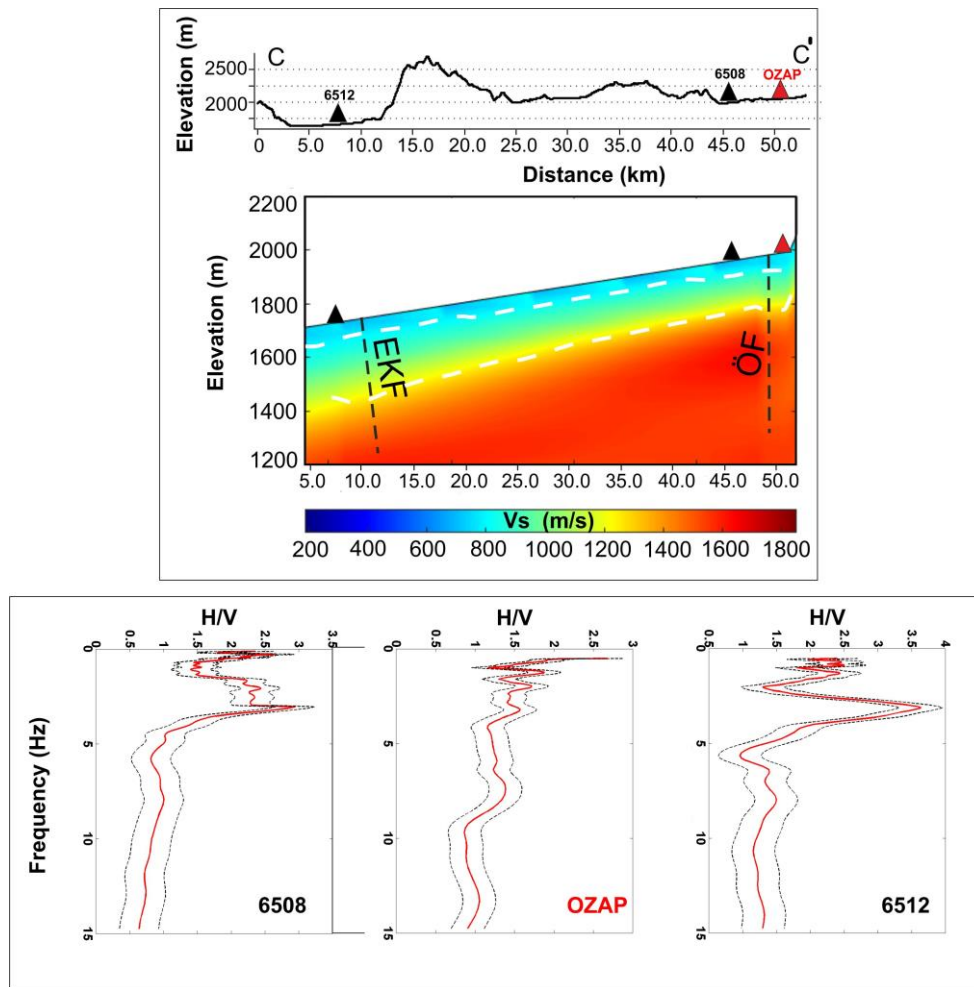
Fig. S11 (a) The northwest-southeast directional cross-section (C-C') is obtained from substation Vs velocities by inversion of the EHVSR curves. Abbreviations: EKF; Erciş-Kocapınar Fault, ÖF; Özalp Thrust Fault. **(b)** The EHVSR curves are obtained from the inversion