

Anderson Park (ANPK)

Before utilizing the Vs profiles or the experimental dispersion data presented herein, it is strongly recommended that the user read and understand the document titled “Analysis Methodology”, particularly the section titled “Limitation of Inversion Derived Vs Profiles”, for a short discussion of the relevant limitations of the data presented.

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Figure 1: Site plan indicating locations of individual three-component, 20-s seismometers composing 2D arrays for Microtremor Array Measurements (MAM) and the linear array of 24, 4.5-Hz geophones used for Multichannel Analysis of Surface Waves (MASW) testing. MAM and MASW arrays are denoted in the legend by their largest extent/aperture.

Table 1: Latitude and longitude coordinates for MAM seismometer locations.

Station Identifier	Latitude (°)	Longitude (°)
ANPK_C50_11	-41.279519	174.770129
ANPK_C50_12	-41.279675	174.770282
ANPK_C50_14	-41.279871	174.770191
ANPK_C50_15	-41.279940	174.769957
ANPK_C50_16	-41.279835	174.769737
ANPK_C50_17	-41.279641	174.769699
ANPK_C50_18	-41.279501	174.769873
ANPK_C50_19	-41.279716	174.769979
ANPK_C50_20	-41.279654	174.770108
ANPK_BigX_11	-41.279397	174.770214
ANPK_BigX_12	-41.279623	174.770890
ANPK_BigX_14	-41.280044	174.770501
ANPK_BigX_15	-41.280133	174.769748
ANPK_BigX_16	-41.280334	174.770187
ANPK_BigX_17	-41.279705	174.769030
ANPK_BigX_18	-41.279244	174.769371
ANPK_BigX_19	-41.279720	174.769986
ANPK_BigX_20	-41.279665	174.770112

Note: A .kmz with the location of each MAM seismometer is provided.

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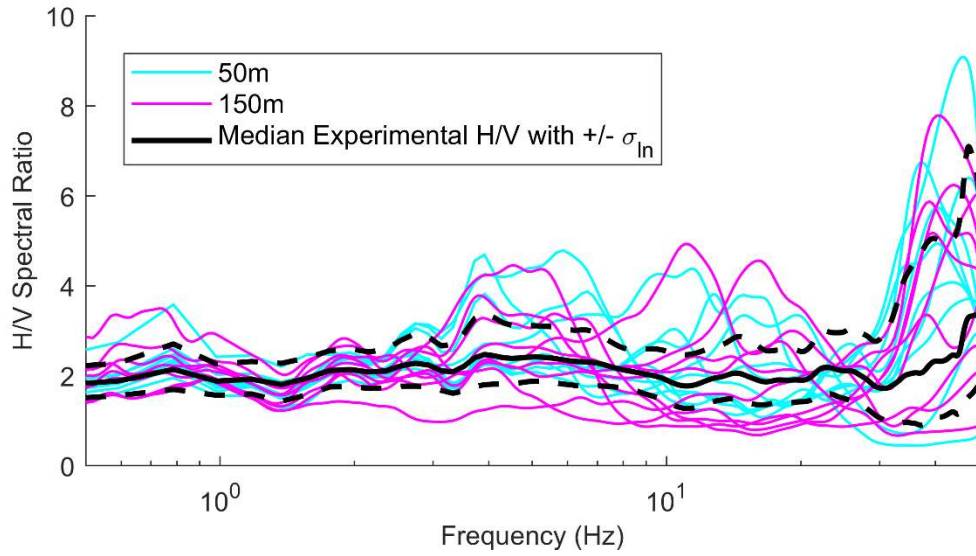


Figure 2: Horizontal-to-Vertical (H/V) Spectral Ratio curves derived from all single station seismometer recordings from the MAM arrays. The lognormal median experimental H/V curve with \pm one standard deviation curves determined from all single station measurements are shown. Due to the unclear nature of the H/V curve at this location, a reliable estimate of the fundamental frequency for the site ($f_{0_H/V}$) could not be obtained. Thus, we decided to report only inversion results which did not use the low-quality $f_{0_H/V}$ peak as a target.

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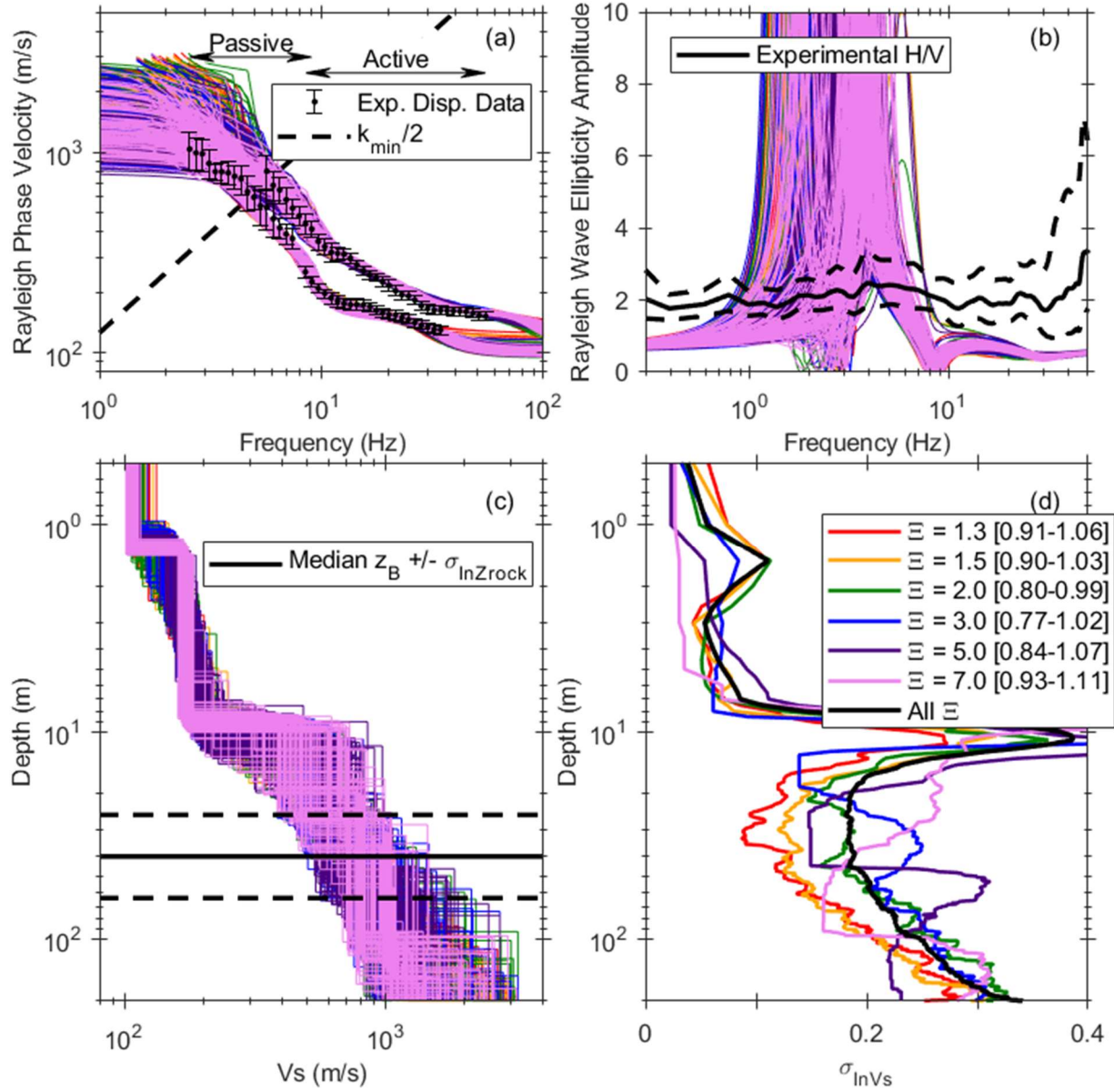


Figure 3: Inversion results. Shown for each layering ratio (Ξ) inversion parameterization are the 100 lowest misfit: (a) theoretical fundamental and first higher mode Rayleigh wave dispersion curves with the experimental dispersion data; (b) theoretical Rayleigh wave ellipticity with the lognormal median and \pm one standard deviation experimental H/V data; (c) shear wave velocity (V_s) profiles with the lognormal median depth to soft ($V_s > 760$ m/s) rock; and (d) standard deviation of the natural logarithm of V_s (σ_{lnVs}). The range of misfit values associated with the 100 lowest misfit velocity profiles for each Ξ inversion parameterization are shown in brackets in the figure's legend. Note the 1000 lowest misfit and statistical median V_s profiles for each Ξ inversion parameterization and reference location are provided in text format in the sub-directory V_s Profiles.

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Table 2: Resolution depth (d_{res}) and maximum depth (d_{max}) for the Vs profiles as determined by the array geometry and experimental dispersion data. See document Analysis Methodology for details.

Resolution Depth (d_{res})	Maximum Depth (d_{max})
63m	200m

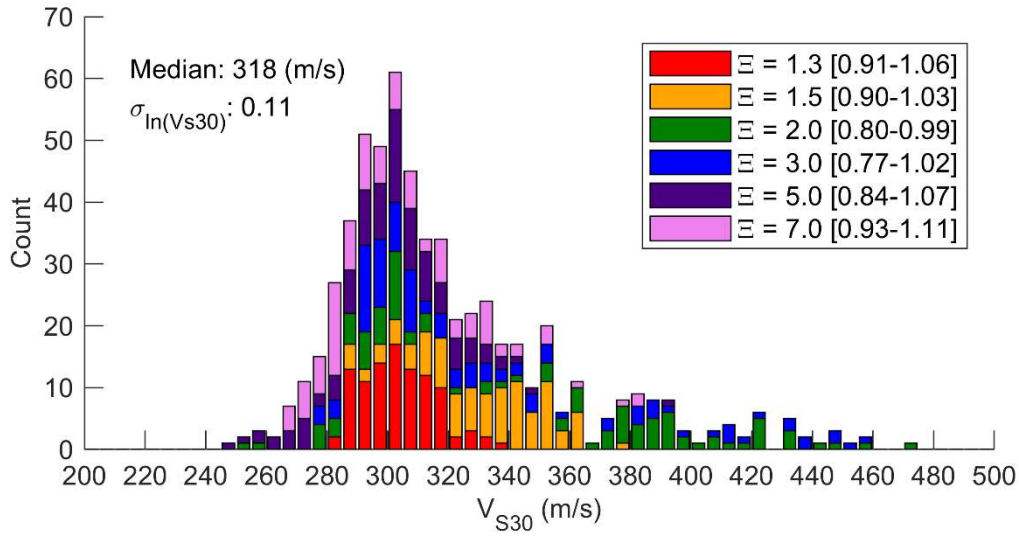


Figure 4: Distribution of the time averaged shear wave velocity in the upper thirty meters (V_{s30}) for the 100 lowest misfit velocity profiles from each layering ratio (Ξ) inversion parameterization. The lognormal median V_{s30} value and corresponding standard deviation of the natural logarithm of V_{s30} ($\sigma_{\ln V_{s30}}$) are provided in the figure.

Table 3: Experimental dispersion data in the form of the mean and standard deviation Rayleigh phase velocity discretized in terms of frequency. The approximate intersection of the theoretical array resolution limit ($k_{\text{min}}/2$) for the largest MAM array and the fundamental mode Rayleigh experimental dispersion data has been indicated with a dashed line. Dispersion data with frequencies below the dashed line are less certain and should be used with caution. See document Analysis Methodology for more information.

Frequency (Hz)	Rayleigh Phase Velocity (m/s)	Velocity Standard Deviation (m/s)
55	152	8
51	154	8
48	158	8
45	160	8
42	161	8
39	161	8

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37	162	8
34	130	7
34	162	8
32	130	7
32	163	8
30	134	7
30	167	9
28	137	7
28	171	9
26	141	7
26	183	9
25	146	7
25	192	10
23	150	8
23	194	10
22	154	8
22	203	12
20	155	8
20	217	13
19	158	8
19	225	13
18	163	8
18	238	12
16	170	9
16	245	12
15	173	10
15	257	13
14	174	12
14	274	14
14	173	10
14	296	18
13	176	11
13	310	17
12	181	12
12	313	23
11	187	12
11	317	33
10	198	10
10	338	31
9.7	209	12
9.7	359	33
9.0	226	14
9.0	414	37
8.5	253	16
8.5	439	49

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7.9	481	52
7.4	371	43
7.4	526	56
6.9	391	46
6.9	579	87
6.5	420	50
6.5	648	96
6.1	682	111
6.1	466	88
5.7	804	156
5.7	531	120
5.3	539	106
5.0	596	82
4.6	635	130
4.3	736	124
4.1	757	99
3.8	789	106
3.6	798	93
3.3	800	77
3.1	879	147
2.9	982	179
2.7	993	182
2.5	1036	224

Table 4: Lognormal median depth to the National Earthquake Hazards Reduction Program (NHERP) Site Class B (“soft rock” = 760 m/s) boundary determined from surface wave inversion Vs profiles.

	Lognormal Median (m)	Lognormal Standard Deviation (#)
BC Boundary	40	0.46